

# CPC COOPERATIVE PATENT CLASSIFICATION

## Y GENERAL TAGGING OF NEW TECHNOLOGICAL DEVELOPMENTS; GENERAL TAGGING OF CROSS-SECTIONAL TECHNOLOGIES SPANNING OVER SEVERAL SECTIONS OF THE IPC; TECHNICAL SUBJECTS COVERED BY FORMER USPC CROSS-REFERENCE ART COLLECTIONS [XRACs] AND DIGESTS

(NOTES omitted)

### Y10 TECHNICAL SUBJECTS COVERED BY FORMER USPC

### Y10T TECHNICAL SUBJECTS COVERED BY FORMER US CLASSIFICATION

#### NOTE

This subclass has been introduced in January 2015 in view of the CPC to accommodate for technical subjects formerly covered by USPC

#### Former US Class 16 series

<b>16/00</b>	<b>Miscellaneous hardware [e.g., bushing, carpet fastener, caster, door closer, panel hanger, attachable or adjunct handle, hinge, window sash balance, etc.]</b>	16/191	. . Detachable
		16/193	. . Leg elevators
		16/1937	. . . Sliding
		16/1943	. . . Swinging
		16/195	. . Locked
16/05	. Bushing	16/196	. . . Shimmy dampening
16/063	. . Providing a restricted or insulated environment [i.e., sealable] for internal elements	16/197	. . Lubricators
		16/199	. . Pintles
16/075	. . Bung or tap	16/201	. . Pintle retainers
16/082	. . . Threaded	16/202	. . . Frame
16/088	. . Providing strain relief	16/203	. . Frame
16/10	. Carpet fasteners	16/204	. . . Single leg frame or fork
16/104	. . Combined fasteners and stretchers	16/205	. . Rigid wheel supports
16/109	. . Hook	16/207	. . Scrapers
16/113	. . Moldings	16/209	. . Sliding
16/118	. . Rug	16/21	. . . for tubular leg
16/122	. . Stair	16/211	. . Sockets
		16/212	. . Spring supported
16/124	. . . Risers	16/214	. . Inclined axle
16/125	. . . Rods	16/216	. . Caster guard
16/126	. . . . Catches	16/218	. . Obstruction climbing aid
16/1263	. . . . . Sliding	16/22	. Thermally released check or closer
16/1267	. . . . . Swinging	16/27	. Checks and closers
16/127	. . Sliding	16/276	. . Liquid
16/131	. . Strips	16/2766	. . . Concentric spring chamber
16/134	. . Swinging	16/2769	. . . . Cam
16/14	. Carpet stiffener or anti-slip device, <u>per se</u>	16/2771	. . . Hinge
16/18	. Casters	16/2774	. . . . Floor pivot
16/182	. . Adjustable	16/2777	. . . Multiple piston
16/184	. . Wheels	16/2782	. . . Oscillating cylinder
16/1847	. . . Antifrictionally mounted	16/2788	. . . Oscillating piston
16/1853	. . . Multiple	16/2793	. . . Side spring chamber
16/1857	. . . . Antifrictionally swivelled	16/2796	. . . . Cam
16/186	. . Antifrictionally swivelled	16/2799	. . . Spring and flexible link
16/1867	. . . Ball	16/2804	. . . Spring and gear
16/1873	. . . Cylinder	16/281	. . Pneumatic
16/1877	. . . . Pivoted	16/282	. . . Flexible link
16/188	. . Ball	16/283	. . . Hinge
16/1887	. . . Antifrictionally mounted	16/285	. . . Spring and gear
16/1889	. . . . Ball	16/286	. . . Spring and lever
16/1891	. . . . Cylinder	16/287	. . Spring and flexible link
16/1893	. . . Pivoted	16/293	. . Spring and gear
16/19	. . Bracket supports		

- 16/299 . . Spring and lever
- 16/304 . . Hinge
- 16/31 . Gate hangers
- 16/33 . . Sliding and swinging
- 16/35 . Panel hangers, travelers and/or tracks
- 16/353 . . with flexible panel attaching means
- 16/354 . . . Covered, hollow or slotted track
- 16/3543 . . . . with antifriction means
- 16/3545 . . . . . Wood track
- 16/3547 . . . . . Wood track
- 16/355 . . . with antifriction means
- 16/356 . . Ball
- 16/359 . . Cylinder
- 16/361 . . Guide brackets
- 16/364 . . Guide rollers
- 16/367 . . Link and lever
- 16/37 . . Sliding shoe
- 16/372 . . . Drapery supports
- 16/373 . . Track and bracket
- 16/375 . . . Drapery supports
- 16/376 . . Covered, hollow or slotted track
- 16/377 . . . Wood
- 16/378 . . . Drapery supports
- 16/3785 . . . . Wood
- 16/379 . . Tracks
- 16/3797 . . . Drapery supports
- 16/3803 . . . Laminated
- 16/381 . . Wheel mounts
- 16/3813 . . . Antifrictionally mounted wheels
- 16/3816 . . . Door elevating
- 16/3819 . . . Floor
- 16/3822 . . . Reciprocating track
- 16/3825 . . . Traveling wheel
- 16/3828 . . . Swinging
- 16/3831 . . . Swiveling
- 16/3834 . . . Vertically adjustable
- 16/3837 . . . Wheel and guide roller
- 16/384 . . Wheels
- 16/387 . . Overlapping doors, common track
- 16/39 . Ferrules, rings, and thimbles
- 16/42 . . Ring ferrules
- 16/44 . Handle, handle component, or handle adjunct
- 16/444 . . having receptacle within
- 16/447 . . for plow
- 16/451 . . Length adjustable pull handle for luggage or luggage cart [e.g., wheeled suitcase handle, etc.]
- 16/455 . . Luggage-type [loop style] handgrip for carrying [e.g., suitcase, handbag, briefcase, shopping bag, package, etc.]
- 16/4554 . . . Extensible handle
- 16/4559 . . . Detachable handle
- 16/4563 . . . Welded or adhesively attached handle
- 16/4567 . . . Swinging handle
- 16/4569 . . . . with means permanently connecting the handle to a carried article
- 16/4571 . . . . with means permanently connecting the handle to a carried article
- 16/4576 . . . . with carrier handle including a user enhanced grip attachment
- 16/458 . . Door handle
- 16/459 . . . Detachable handle
- 16/46 . . . Knob type
- 16/462 . . Drawer pull
- 16/4628 . . . Lift
- 16/4636 . . . Knob type
- 16/464 . . . . Swinging
- 16/4644 . . . Loop type
- 16/4652 . . . Ring type
- 16/466 . . Handle having mounted grip means [e.g., bicycle handlebar grips, etc.]
- 16/469 . . Detachable handle
- 16/4696 . . . for battery
- 16/4701 . . . for casket
- 16/4707 . . . for container
- 16/4713 . . . Auxiliary handle
- 16/4719 . . . Extension
- 16/4724 . . . Cord or rope related
- 16/473 . . Extensible handle
- 16/476 . . Handle with ergonomic structure [e.g., finger engagement structure such as indents, grooves, etc.] and handle user-interaction [human engineering] enhancements such as improved handle dimensions and handle positioning
- 16/48 . Insulated handle
- 16/484 . . Handwheel
- 16/487 . . Knob type
- 16/491 . . Wire type
- 16/495 . . Unshaped or unattached pad
- 16/498 . . Bar-type handle
- 16/499 . . . for lawnmower
- 16/50 . . . Swinging
- 16/501 . . . . Casket handle
- 16/502 . . Braced handle
- 16/506 . . Knob-type handle
- 16/508 . . . with flexible suspending means
- 16/509 . . Lift
- 16/513 . . Loop-type handle
- 16/515 . . . Swinging
- 16/516 . . Ring-type handle
- 16/52 . Hinge
- 16/521 . . including frangible or fusible portion
- 16/522 . . with diverse art portion or attachment
- 16/524 . . Ball and socket
- 16/525 . . Pliant or elastic hinge
- 16/5253 . . . Metallic
- 16/5257 . . . Snap or X hinge
- 16/526 . . Eyeglass hinge
- 16/527 . . Retractable pintle
- 16/5275 . . . Latch hinge
- 16/528 . . Latch hinge
- 16/5285 . . . Resilient securing means
- 16/529 . . including lever for shifting one member of hinge relative to another
- 16/531 . . having staggered leaves
- 16/532 . . including adjustment for changing relative orientation of hinged members
- 16/5321 . . . having plural independent adjustments
- 16/5322 . . . . All rectilinear
- 16/53225 . . . . . including screw-operated means to move hinged members
- 16/5323 . . . Pivotal adjustment
- 16/53235 . . . . including screw-operated means to move hinged members
- 16/53238 . . . . . About hinge axis

- 16/5324 . . . including means to move hinged members
- 16/53247 . . . . Along or parallel to hinge axis
- 16/5325 . . . . including threaded hinge pin
- 16/53253 . . . . Screw-operated
- 16/53257 . . . . . to shift plate toward or away from hinged member
- 16/5326 . . . having adjustable spacer between leaf and hinged member [e.g., shim]
- 16/5327 . . . Adjustable along or parallel to hinge axis
- 16/5329 . . . having interdigitated surfaces or slot for hinge-to-member fastener
- 16/533 . . having cover
- 16/5335 . . . Leaf cover
- 16/534 . . having clamp for attaching hinge to hinged member
- 16/5345 . . . Circumferential clamp
- 16/535 . . having means to facilitate assembly and disassembly of hinge sections to join or disjoin hinged members
- 16/5353 . . . Resiliently biased hinge
- 16/5355 . . . . having helical spring along hinge axis
- 16/5357 . . . Resiliently biased retaining means
- 16/5358 . . . . having discrete latch and spring to slide or pivot latch
- 16/5359 . . . . Discrete retaining means for pivotal contacting surfaces
- 16/536 . . . Separation of pivotal contacting surfaces
- 16/53605 . . . . having movable or removable connector
- 16/53607 . . . . . Pintle removable from remainder of hinge
- 16/536075 . . . . . and additional connector for pintle or separate pintle sections
- 16/53608 . . . . . Screw-threaded connector
- 16/5361 . . . . Axially shifting hinge sections
- 16/53613 . . . . . At specific angular orientation of hinge sections
- 16/53615 . . . . Hook and pin
- 16/5362 . . . . Hook in aperture
- 16/53625 . . . . Hook to hook
- 16/5363 . . . and discrete movable or removable connector to fasten one hinge section to another
- 16/5367 . . . by relatively sliding connection [e.g., dovetail]
- 16/5369 . . . . including receiving connector attachable to hinged member
- 16/537 . . having means to reduce friction between hinge parts
- 16/5373 . . . by fluid lubricant
- 16/5377 . . . Ball or roller bearing
- 16/5379 . . . . Circularly distributed balls or rollers
- 16/538 . . Resiliently biased hinge
- 16/5381 . . . including means to render spring ineffective through all or a portion of swing
- 16/53815 . . . . comprising manipulatable element or portion
- 16/5382 . . . Biased from either direction toward neutral position [e.g., double acting]
- 16/53822 . . . . Helical spring transverse to hinge axis
- 16/53824 . . . . Plural hinge axes [e.g., multiple pintle]
- 16/53825 . . . . . and barrels for helical springs on separate axes
- 16/53826 . . . . Resiliently biased rolling or sliding cam surface
- 16/53828 . . . . by helical spring along hinge axis
- 16/5383 . . . having transverse helical spring or elastic strip
- 16/53832 . . . . Plural hinge axes [e.g., multiple pintle ]
- 16/53833 . . . . . Four or more axes
- 16/53834 . . . . . to counterbalance weight of hinged member [e.g., closure biased to open position]
- 16/53835 . . . . . including pivoted coaxial spring retaining bar
- 16/53836 . . . . . Over-center spring or linkage travel [e.g., "holdback hinge"]
- 16/53838 . . . . . having means to hold hinged members against pivotal movement about hinge axis [i.e., catch]
- 16/5384 . . . Over-center spring or linkage travel [e.g., "holdback hinge"]
- 16/53843 . . . . Plural hinge axes
- 16/53845 . . . . . Coil spring having axis along or parallel to hinge axis
- 16/53848 . . . . . including camming or sliding surface to deflect spring perpendicularly to the hinge axis
- 16/5385 . . . having means to hold hinged members against pivotal movement about hinge axis [e.g., catch]
- 16/5386 . . . having force adjustment
- 16/53862 . . . . Rotatable spring-engaging collar
- 16/538627 . . . . . having detention aperture or protuberance
- 16/538633 . . . . . having tool-receiving aperture
- 16/53864 . . . Plural hinge axes [e.g., multiple pintle]
- 16/5387 . . . having axially biased camming surface
- 16/5388 . . . Coil
- 16/53883 . . . . Plural coils
- 16/53885 . . . . . to counterbalance weight of hinged member [e.g., horizontal closure biased to open position]
- 16/53888 . . . . On pintle
- 16/5389 . . . torsion spring
- 16/539 . . Gravitating hinge having vertical axis
- 16/5393 . . . having lift rod
- 16/5395 . . . having plural spaced hinge axes
- 16/5398 . . . including cam surface and follower
- 16/53984 . . . . and rolling element
- 16/53985 . . . . . Between opposing surfaces
- 16/53987 . . . . . and detent in cam surface
- 16/53988 . . . . On axially twisted or helically fluted element
- 16/53992 . . . . including means to hold hinged members against pivotal movement
- 16/53996 . . . . . having aperture for slidably receiving pintle [e.g., camming knuckle]
- 16/54 . . including means to hold or retard hinged members against pivotal movement [e.g., catch]
- 16/5401 . . . Magnetic
- 16/5402 . . . Resiliently biased catch
- 16/54021 . . . . having spring force adjustment
- 16/54023 . . . . including toggle linkage
- 16/54024 . . . . . having discrete manipulatable release means [e.g., lever]
- 16/540243 . . . . . including cam or eccentric
- 16/540247 . . . . . Sliding release means or lever-actuated sliding catch
- 16/54025 . . . . Sliding
- 16/540253 . . . . . Movement along or parallel to hinge axis
- 16/540254 . . . . . Interdigitated or plural sockets
- 16/540255 . . . . . . Opposed interdigitated sliding collars on hinge axis
- 16/540256 . . . . . and catch receiving socket
- 16/540257 . . . . . and catch receiving socket

- 16/54026 . . . . Pivoted
- 16/54028 . . . . Plural alternately useable detents
- 16/54029 . . . . Spring arm
- 16/540295 . . . . . Plural opposed arms
- 16/5403 . . . . by friction
- 16/54033 . . . . Screw-threaded adjustment
- 16/54034 . . . . . Along or parallel to hinge axis
- 16/540345 . . . . . Threaded pintle
- 16/54035 . . . . Cam or wedge actuator
- 16/54038 . . . . On hinge pin or between surfaces surrounding hinge axis
- 16/5404 . . . . Pivoted
- 16/54044 . . . . Plural alternately useable detents
- 16/54048 . . . . and sliding
- 16/54052 . . . . Serially connected pivoted arms between leaves [e.g., brace]
- 16/54056 . . . . About axis along or parallel to hinge axis
- 16/5406 . . . . by transversely moving pin in slot
- 16/5407 . . . . having discrete manipulatable release means [e.g., lever operated]
- 16/5408 . . . . by shifting hinged members
- 16/54085 . . . . Along hinge axis
- 16/5409 . . . . Sliding
- 16/54095 . . . . Along or parallel to hinge axis
- 16/541 . . . . including toothed gear
- 16/542 . . . . comprising nested open curved portions attached to hinged members
- 16/543 . . . . including hinge pin
- 16/544 . . . . including transversely moving pin in slot
- 16/5443 . . . . Plural noncollinear pins and slots
- 16/5444 . . . . Parallel slots
- 16/5445 . . . . having pin fixed to pivoted arm or plate
- 16/5448 . . . . Hinge pin movable along slot
- 16/545 . . . . including sliding surfaces to permit relative translation of hinged members
- 16/5453 . . . . and stop or abutment for pivotal movement
- 16/5457 . . . . Movement transverse to hinge axis
- 16/546 . . . . Three-hinged members
- 16/547 . . . . having plural hinge axes [e.g., multiple pintle]
- 16/5472 . . . . having transverse or skewed axes
- 16/5474 . . . . Connected by serially arranged pivoted links between hinged members
- 16/5475 . . . . Plural sets of serially arranged pivoted links
- 16/5476 . . . . Four or more axes
- 16/5478 . . . . including stop or latch
- 16/548 . . . . including laminated leaf
- 16/549 . . . . Wire hinge
- 16/551 . . . . having stop or abutment
- 16/5513 . . . . Adjustable or resilient
- 16/5515 . . . . comprising relieved axially opposed relatively rotating surfaces
- 16/5518 . . . . comprising platelike bearing portion curved about hinge axis
- 16/552 . . . . Hinge axis passes through hinged member [e.g., floor hinge]
- 16/5525 . . . . Pintle or pivot concealed in hinged member
- 16/553 . . . . including means to retain pintle in hinge [e.g., tamper proof, nonrising pintle, etc.]
- 16/5535 . . . . Threaded or slotted pintle or knuckle
- 16/554 . . . . including means to fasten leaf to member
- 16/5543 . . . . by expandable connector
- 16/5547 . . . . Self-penetrating fastener
- 16/555 . . . . Specified material
- 16/557 . . . . Specific pintle structure
- 16/558 . . . . Specific leaf structure
- 16/559 . . . . having prongs or cooperating structure on leaf
- 16/5595 . . . . Angular leaf sections
- 16/55963 . . . . Parallel sections
- 16/55975 . . . . Coplanar sections
- 16/55988 . . . . including planar section perpendicular to hinge axis
- 16/56 . . . . Closers
- 16/568 . . . . Spring and flexible link
- 16/577 . . . . Spring and gear
- 16/585 . . . . Spring and lever
- 16/593 . . . . Spring
- 16/595 . . . . Bow
- 16/597 . . . . Rubber
- 16/599 . . . . torsional
- 16/5995 . . . . Coil
- 16/60 . . . . Volute
- 16/602 . . . . Weight
- 16/61 . . . . Closure checks
- 16/615 . . . . Inertia
- 16/62 . . . . Pneumatic
- 16/625 . . . . Spring
- 16/628 . . . . Rubber
- 16/6285 . . . . Rubber cushioned
- 16/629 . . . . Multiple or opposed buffer surfaces
- 16/6295 . . . . Link type
- 16/6298 . . . . Sash balances
- 16/63 . . . . Cord and counterweight
- 16/635 . . . . Sash and cord
- 16/64 . . . . Spring
- 16/641 . . . . Drum and cord
- 16/642 . . . . Friction roller
- 16/643 . . . . Lever
- 16/644 . . . . Rack and pinion
- 16/645 . . . . Rack and pinion
- 16/65 . . . . Sash-cord fasteners
- 16/655 . . . . Bendable
- 16/66 . . . . Chain
- 16/665 . . . . Clamps
- 16/67 . . . . Hooks
- 16/675 . . . . Knot
- 16/68 . . . . Slack-cord holders
- 16/685 . . . . Weight
- 16/69 . . . . Sash-cord guides
- 16/698 . . . . Wheel and casing
- 16/706 . . . . Casings
- 16/71 . . . . Sheet metal, single piece
- 16/714 . . . . Multiple wheel
- 16/722 . . . . Sliding
- 16/73 . . . . Sash weights
- 16/743 . . . . Composite
- 16/755 . . . . Sectional
- 16/767 . . . . Weight and wheel
- 16/78 . . . . Window-bead fasteners
- 16/82 . . . . Counterbalance device, per se
- 16/84 . . . . Spring
- 16/86 . . . . Door escutcheon or similar element
- 16/90 . . . . Paper weight
- 16/95 . . . . Miscellaneous element or attachment

**Former US Class 24 series**

<b>24/00</b>	<b>Buckles, buttons, clasps, etc.</b>	24/1437	. . . . . Both ends threaded
24/10	. Miscellaneous	24/1439	. . . Radial screw
24/11	. Album fasteners	24/1441	. . . Tangential screw
24/12	. Gun band type	24/1443	. . . . Adjustable girth
24/13	. Article holder attachable to apparel or body	24/1445	. . . . . Step adjustment
24/1303	. . Chatelaine safety hooks	24/1447	. . . . . Plural separable parts
24/1306	. . Flower	24/1449	. . . . Wire
24/1309	. . . Pin attached	24/1451	. . . . Plural separable parts
24/1312	. . Napkin	24/1453	. . . . Pivotal strap parts
24/1315	. . . Hook	24/1455	. . . . Plural wrap
24/1318	. . . Neck enclosing	24/1457	. . Metal bands
24/1321	. . Pencil	24/1459	. . . Separate connections
24/1324	. . . Clasp attached	24/1461	. . . . One piece
24/1326	. . . . Finger ear, belt attached pencil holder	24/1463	. . . . . Sheet metal
24/1329	. . . . Pencil holder with paper clip	24/1465	. . . . . Buckle band connection
24/1332	. . . . Combined and convertible pencil holder	24/1467	. . . . . Swedged sheet metal band connection
24/1335	. . . . Container type pencil holder	24/1469	. . . . . End-to-end integral with band connecting means
24/1338	. . . . Separate pencil holder and pocket engaging clip	24/1471	. . . . Pivoted parts
24/1341	. . . . Sliding jaw pencil holding clip	24/1473	. . . . Wedging parts
24/1344	. . . . Wire pencil holder	24/1476	. . . . Wire
24/1347	. . . . Flexible shank pencil holder	24/1478	. . . Circumferentially swagged band clamp
24/135	. . . . with movable catch [e.g., pin pivoted lever, roller, etc.]	24/148	. . . End-to-end integral band end connection
24/1353	. . . . Pivoted jaw pencil holder	24/1482	. . . Ratchet and tool tightened band clamp
24/1356	. . . Pin attached	24/1484	. . . Spring closed band clamp
24/1359	. . . Rule holder	24/1486	. . . Screw locked band clamp
24/1362	. . Sleeve holder [e.g., for inner coat]	24/1488	. . . Swedged to lock band ends
24/1365	. . Pin attached	24/149	. . Wire
24/1368	. . Arm or leg carried holder	24/1492	. . . Separate connections
24/1371	. . Eyeglass holder including retaining means	24/1494	. . . . Wire
24/1374	. . Neck supported holder	24/1496	. . Wooden bands
24/1376	. . Holder contains pocket engager [e.g., antitheft device, wallet protector]	24/1498	. . Plastic band
24/1379	. . Key ring holder	24/15	. Bag fasteners
24/1382	. . Receptacle type holder	24/152	. . Swedged bag tie
24/1385	. . . Eyeglass or spectacle case	24/153	. . Plastic band bag tie
24/1388	. . Open-ended holster type holder	24/155	. . Resilient slot bag tie
24/1391	. . Article held by clip with spring [e.g., leaf, coil] member	24/157	. . Twist-to-close bag tie
24/1394	. . Article held by clip	24/158	. . Slides to lock bag end within housing
24/1397	. . Article held by flexible connector [e.g., chain]	24/16	. Belt fasteners
24/14	. Bale and package ties, hose clamps	24/1604	. . Tighteners
24/1402	. . Packet holders	24/1608	. . Hinged
24/1404	. . . Cord	24/1612	. . . Ring connected belt ends
24/1406	. . . Adjustable bands	24/1616	. . . Bent over flanged ends
24/1408	. . . Closed loops	24/162	. . . Pintle pin connected belt ends
24/141	. . . Plastic bands	24/1624	. . . V and round belts
24/1412	. . with tighteners	24/1628	. . . Overlapped belt ends
24/1414	. . . Wedge	24/1632	. . . Sheet metal knuckles, common pintle
24/1416	. . . Winder	24/1636	. . . Wire knuckles, common pintle
24/1418	. . . Self-locking [dead center or snap action]	24/164	. . . Knuckle integral with belt material
24/142	. . . . Adjustable girth	24/1644	. . . Multiple pintles interconnected V-belt type
24/1422	. . . . . Rack bar	24/1648	. . Lacing
24/1424	. . . . Lever	24/1652	. . One piece
24/1427	. . . . Worm and tooth	24/1656	. . . Deflecting prong
24/1429	. . . . Pivotal worm band clamp	24/166	. . Screw clamp
24/1431	. . . . Radial worm band clamp	24/1664	. . Splices
24/1433	. . . . Integral thread	24/1668	. . Wire
24/1435	. . . . External thread	24/1672	. . Butt connected belt ends
		24/1676	. . V, round, trapezoidal belts
		24/168	. . Flanged belt ends, connector hold ends
		24/1684	. . Lapped ends of endless belts
		24/1688	. . Hinged ends of endless belts

24/1692	. . Wire strands reinforce belts	24/2115	. . . . Jewelry
24/1696	. . Hook and loop type fastener and zipper belt end connection	24/2117	. . . Strap tighteners
24/17	. Buttoners	24/2119	. . . Tie chain tighteners
24/18	. Cuff holder	24/2121	. . . Cargo tie down
24/181	. . Adjustable	24/2123	. . . Cover fasteners
24/183	. . Sleeve clasp and button for cuff	24/2125	. . . Chain tighteners
24/184	. . Sleeve clasp and clasp for cuff	24/2126	. . . Strap tightener machine
24/185	. . Sleeve clasp and hook for cuff	24/2128	. . . toggle actuated sliding jaw
24/186	. . Sleeve clasp and pin for cuff	24/213	. . . Jewelry
24/188	. . Sleeve pin and button for cuff	24/2132	. . . Split ring with tightener
24/189	. . Pin fastener	24/2134	. . . Concrete form panels
24/19	. Necktie fastener	24/2136	. . . Seat belt buckles
24/1903	. . Bands	24/2138	. . . Chain, cable, wire tighteners, and anchors
24/1907	. . . End-securing pin	24/214	. . . Envelope fasteners
24/191	. . . Gripping	24/2142	. . . Ski boot and garment fasteners
24/1914	. . . Depressors	24/2143	. . Strap-attached folding lever
24/1917	. . . . Button engaging	24/2145	. . . toggle latch
24/1921	. . . . Pin or spur	24/2147	. . . Strap tightener
24/1924	. . Button engaging	24/2149	. . . Tire antiskid strap tightener
24/1928	. . . Adjustable	24/2151	. . . Seat belts
24/1931	. . . Cord loop	24/2153	. . . Split ring fasteners
24/1934	. . . Pivoted or sliding jaw	24/2155	. . . Jewelry-watch straps
24/1938	. . . Pin attached	24/2157	. . . Tie downs [covers, articles]
24/1941	. . Collar button combined	24/2158	. . . Cable, wire, rope tightener
24/1945	. . . Clasp attached	24/216	. . . Ski boot and garment fasteners
24/1948	. . . Pin attached	24/2162	. . . Dress hem raisers
24/1952	. . . Separable fastener	24/2164	. . Midline
24/1955	. . Tie, attached hook	24/2166	. . Jewelry
24/1959	. . Magnetic, adhesive, or snap type fastener connects tie to shirt	24/2168	. . Seat belt
24/1962	. . Tie engaging loop with shirt engaging fastener	24/217	. . Accordion straps
24/1966	. . Tie knot engaging and collar attaching	24/2172	. . Parallel poles clamp
24/1969	. . Tie clip and shirt clasp attaching	24/2174	. . form panels for walls
24/1972	. . Tie clip and fastening pin	24/2175	. . Cargo tie down
24/1976	. . Tie pin with shirt fastener	24/2177	. . Chain tighteners
24/1979	. . Tie stiffener with shirt fastener	24/2179	. . Split band with tightener
24/1983	. . with pivotal jaws having spring means	24/2181	. . Tire chain tighteners
24/1986	. . Slider	24/2183	. . Ski, boot, and shoe fasteners
24/199	. . Ornamental	24/2185	. . Fixed jaw with sliding or pivoted jaw
24/1993	. . . Key shaped	24/2187	. . Rack and pinion and circular tighteners
24/1997	. . Resilient clasp	24/2189	. . Circular flange container clamp
24/20	. Paper fastener	24/2191	. . Strap stretching tools, tighteners, and sealers
24/201	. . with screw threaded or notch engaging securing means	24/2192	. . Buckle type
24/202	. . Resiliently biased	24/2194	. . Integral piece
24/203	. . . including means to open or close fastener	24/2196	. . toggle
24/204	. . . . Pivotaly mounted on pintle	24/2198	. . Stocking top
24/205	. . . One piece	24/22	. Trouser guards, clips, straps [e.g., above shoetops]
24/206	. . . . Mounted on support means	24/23	. Bedclothes holders
24/207	. . Adhesive	24/24	. T-head nongripping, fabric engaging type
24/208	. . Corner fastened	24/25	. Zipper or required component thereof
24/209	. . Paper-penetrating	24/2502	. . Plural zippers
24/21	. Strap tighteners	24/2504	. . . Zipper chain
24/2102	. . Cam lever and loop	24/2505	. . . having surface sealing structure
24/2104	. . . Step adjusted	24/2507	. . . having slider or interconnected sliders with access opening for diverse-art member
24/2106	. . . . Ski boot and garment fasteners	24/2509	. . Plural independently movable sliders
24/2108	. . . . Split ring tightener	24/2511	. . with distinct, stationary means for anchoring slider
24/2109	. . . . Chain and rope tighteners	24/2513	. . . and for aligning surfaces or obstructing slider movement
24/2111	. . . . Tire chain tighteners	24/2514	. . with distinct member for sealing surfaces
24/2113	. . . . Strap tighteners	24/2516	. . with distinct separable-fastener

- 24/2518 . . . having coiled or bent continuous wire interlocking surface
- 24/252 . . . with stringer tape interwoven or knitted therewith
- 24/2521 . . . with stringer tape having specific weave or knit pattern
- 24/2523 . . . with core encircled by coils or bends
- 24/2525 . . . with mounting portion having structural formations complementary to stitching
- 24/2527 . . . Attached by stitching
- 24/2529 . . . . String or stringer tape having distinctive property [e.g., heat sensitive]
- 24/253 . . . with stringer tape having distinctive property [e.g., heat sensitive]
- 24/2532 . . . having interlocking surface with continuous cross section
- 24/2534 . . . Opposed interlocking surface having dissimilar cross section
- 24/2536 . . . having interlocking surface formed from single member with varying cross section
- 24/2538 . . . Opposed surface having dissimilar cross section
- 24/2539 . . . Interlocking surface constructed from plural elements in series
- 24/2541 . . . having either noninterlocking element in, interrupted, or unequal length series
- 24/2543 . . . with element structural feature unrelated to interlocking or securing portion
- 24/2545 . . . Dissimilar opposed elements
- 24/2546 . . . Wire element
- 24/2548 . . . Preattached to mounting cord
- 24/255 . . . having interlocking portion with specific shape
- 24/2552 . . . . including symmetrical formations on opposite walls for engaging mating elements
- 24/2554 . . . . including complementary formations on opposite walls for engaging mating elements
- 24/2555 . . . . Mating elements having reversed orientation of formations
- 24/2557 . . . having mounting portion with specific shape or structure
- 24/2559 . . . . including embracing jaws
- 24/2561 . . . Slider having specific configuration, construction, adaptation, or material
- 24/2563 . . . including relatively movable spaced wings [i.e., restraining walls]
- 24/2564 . . . including converging channel and relatively movable separator island
- 24/2566 . . . including position locking-means attached thereto
- 24/2568 . . . . Protrusion on pull tab directly engaging interlocking surfaces
- 24/257 . . . . having surface engaging element shifted by reorientation of pull tab
- 24/2571 . . . . . Resilient or spring biased element
- 24/2573 . . . . . Selectively shifted by either of two pull tabs
- 24/2575 . . . . . with relatively movable link
- 24/2577 . . . . . Biased by distinct spring
- 24/2579 . . . . . having aperture cooperating with guide post
- 24/258 . . . including means preventing bunching of structure-to-be-secured or stringer
- 24/2582 . . . having specific contour or arrangement of converging channel, separator island, or wing
- 24/2584 . . . . Spaced segments of each wall of channel supported by different wings
- 24/2586 . . . including pull tab attaching means
- 24/2588 . . . including means for attaching components of slider together
- 24/2589 . . . with ornamental slider
- 24/2591 . . . with means for concealing surfaces
- 24/2593 . . . including complementary, aligning means attached to ends of interlocking surfaces
- 24/2595 . . . having specific mounting connection or reinforcing structure at connection
- 24/2596 . . . including means attaching interlocking surfaces together
- 24/2598 . . . including means for obstructing movement of slider
- 24/26 . . Slit closing means including guides on opposite edges of slit and slidable bridging component
- 24/262 . . with hand-actuated lever for shifting bridging component
- 24/264 . . including structure linking and allowing variations in separation between opposite-guide-contacting portions of component
- 24/266 . . having bridging components attached in series along carrying element
- 24/268 . . having separate, independently movable, bridging components
- 24/27 . . including readily dissociable fastener having numerous, protruding, unitary filaments randomly interlocking with, and simultaneously moving towards, mating structure [e.g., hook-loop type fastener]
- 24/2708 . . Combined with diverse fastener
- 24/2717 . . with distinct structure for sealing securement joint
- 24/2725 . . with feature facilitating, enhancing, or causing attachment of filament mounting surface to support therefor
- 24/2733 . . having filaments formed from continuous element interwoven or knitted into distinct, mounting surface fabric
- 24/2742 . . having filaments of varied shape or size on same mounting surface
- 24/275 . . with feature facilitating or causing attachment of filaments to mounting surface
- 24/2758 . . . Thermal or adhesive
- 24/2767 . . having several, repeating, interlocking formations along length of filaments
- 24/2775 . . having opposed structure formed from distinct filaments of diverse shape to those mating therewith
- 24/2783 . . having filaments constructed from coated, laminated, or composite material
- 24/2792 . . having mounting surface and filaments constructed from common piece of material
- 24/28 . . Freight container to freight container fastener
- 24/29 . . Drum or can spacer fastener
- 24/30 . . Trim molding fastener
- 24/301 . . having externally threaded attaching means
- 24/302 . . . and laterally extending biasing appendage
- 24/303 . . having laterally extending biasing appendage
- 24/304 . . Resilient metal type
- 24/306 . . . Strip formed
- 24/307 . . . Sheet metal formed
- 24/308 . . . Wire formed
- 24/309 . . Plastic type

24/31	. Plural fasteners having intermediate flaccid connector	24/3467	. . Pin
24/312	. . Chain connector	24/3468	. . . and pin
24/314	. . Elastic connector	24/3469	. . . . and disconnect means
24/316	. . . Strap connector	24/3471	. . . . . Hook and eye type
24/318	. . Strap connector	24/3472	. . . . and hook
24/32	. having magnetic fastener	24/3473	. . . . . having connector allowing movement
24/33	. having adhesive fastener	24/3475	. . . . . having intermediate connector allowing movement
24/34	. Combined diverse multipart fasteners	24/3476	. . . and hook
24/3401	. . Buckle	24/3477	. . . . having intermediate connector allowing movement
24/3403	. . . and buckles	24/3479	. . . . . and adjustment means
24/3404	. . . . having separate material adjustment means	24/348	. . . . Hook having locking means
24/3405	. . . . having separate disconnect means	24/3481	. . . including a button fastening element
24/3407	. . . . . Pivotal lever type	24/3483	. . . and penetrating prong
24/3408	. . . . having disconnect structure	24/3484	. . Hook
24/3409	. . . . . Resilient cooperating means	24/3485	. . . and hook
24/3411	. . . . and pin	24/3487	. . . . having biasing spring
24/3412	. . . . Crossed belt accommodating	24/3488	. . . . Separately connected
24/3413	. . . and clasp	24/3489	. . . . having securing means
24/3415	. . . and pin	24/3491	. . . . . Sliding
24/3416	. . . and hook	24/3492	. . . . . Snap type
24/3417	. . . . having disconnect means	24/3493	. . . . . Pivoted
24/3419	. . . . having penetrating prong	24/3495	. . . having penetrating prong
24/342	. . . . Buckle having plural receiving slots	24/3496	. . . including a button fastening element
24/3421	. . . including a button fastening element	24/3497	. . Button fastening element including another fastener element
24/3423	. . . and separable fastening means for attached fastener	24/3499	. . Penetrating prong
24/3424	. . . . Snap fastener	24/35	. Interchangeable button loop and pin
24/3425	. . . having roller means	24/36	. Button with fastener
24/3427	. . Clasp	24/3602	. . Loss-preventing devices
24/3428	. . . having pivoted members	24/3604	. . Adjustable
24/3429	. . . . Cam type member	24/3606	. . Cloth shanks and covers
24/3431	. . . . Plural clasps	24/3609	. . Multiple attachment
24/3432	. . . . . and toggle operator	24/3611	. . Deflecting prong or rivet
24/3433	. . . . . Spring biased	24/3613	. . . Anvil or plate
24/3435	. . . . . . Coil	24/3615	. . . Integral
24/3436	. . . . . and cam	24/3617	. . Hinged leaf
24/3437	. . . . Coil spring biased	24/3619	. . . Axially rotating
24/3439	. . . Plural clasps	24/3621	. . . Double
24/344	. . . . Resilient type clasp	24/3623	. . . Sliding
24/3441	. . . . . and cam	24/3626	. . Sliding bar
24/3443	. . . . . Spring biased jaw	24/3628	. . Integral or rigid stud
24/3444	. . . . . Circular work engageable	24/363	. . . Bent sheet metal [integral]
24/3445	. . . . . and pin attachment	24/3632	. . Link
24/3447	. . . . . and disconnect means	24/3634	. . . Integral rubber button, extendable shank
24/3448	. . . including a button fastening element	24/3636	. . . Extendably connected
24/3449	. . . and hook	24/3638	. . . Pivoted leaf
24/3451	. . . . having intermediate connector allowing movement	24/364	. . . Releasably locked
24/3452	. . . . . and adjustment means	24/3643	. . . French cuff
24/3453	. . . . having gripping configuration on clasp jaw	24/3645	. . . Tufting
24/3455	. . . . . Penetrating type	24/3647	. . . Integral piece
24/3456	. . . . having cam	24/3649	. . Pin attached
24/3457	. . . . having separable jaws	24/3651	. . Separable
24/3459	. . . and penetrating prong	24/3653	. . . Screw
24/346	. . . and pin	24/3655	. . . Spring
24/3461	. . . . having separate pin loss prevention means	24/3657	. . . . Resilient head
24/3463	. . . . . Pin coextensive, coplanar, and contiguous with clasp jaw	24/366	. . . . Resilient socket
24/3464	. . . . Pin coextensive, coplanar, and contiguous with clasp jaw	24/3662	. . . . Rotating head
24/3465	. . . . Pin forms part of clasp jaw	24/3664	. . . . with operating devices
		24/3666	. . Separate thread bar



24/3668	. . Spiral fastener	24/3789	. . having means covering tip of lacing
24/367	. . Covers	24/3792	. . . Tasseled
24/3672	. . . Metal or plastic caps	24/3795	. . . with plural components
24/3674	. . Pads	24/3797	. . . with permanently deformed mounting structure
24/3677	. . Flexible button	24/38	. Strap cable or pipe button
24/3679	. . Swivel button	24/39	. Cord and rope holders
24/3681	. . Tufting type	24/3902	. . Chain
24/3683	. . Button with cavity for friction grip fastener	24/3904	. . . Bead chain fasteners
24/3685	. . Button with shank for friction grip fastener	24/3907	. . Sheathed strand
24/3687	. . Heat or adhesive secured type	24/3909	. . Plural-strand cord or rope
24/3689	. . Thread or wire through apertured button	24/3911	. . Friction disk
24/3691	. . Eye shank type button	24/3913	. . Knot engaging
24/3694	. . Ornamental type	24/3916	. . One-piece
24/3696	. . for cuff or collar	24/3918	. . . Wedge slot
24/3698	. . Fabric embracing	24/392	. . . Wire
24/37	. Drawstring, laced-fastener, or separate essential cooperating device therefor	24/3922	. . . . Cord runs through center of coil
24/3703	. . Includes separate device for holding drawn portion of lacing	24/3924	. . . Sheet material
24/3705	. . . Device engages tie in lacing	24/3927	. . . Slack adjuster
24/3708	. . . . and fully covers tie	24/3929	. . . Rubber
24/3711	. . . Device engages element or formation on lacing	24/3931	. . . Wire
24/3713	. . . having relatively movable holding components or surfaces	24/3933	. . . Swagged, deformable
24/3716	. . . . with pivotal connection therebetween	24/3936	. . Pivoted part
24/3718	. . . . with integral resilient linking structure therebetween	24/3938	. . . Lever tension
24/3721	. . . . . formed from wire	24/394	. . . Cam lever
24/3724	. . . having lacing wound thereabout or wedged therein	24/3942	. . . . Laterally shifted rope
24/3726	. . with holding means fixedly mounted on lacing	24/3944	. . . . Cam engaging or disengaging
24/3729	. . . and forming lacing tips	24/3947	. . . . Fixed and movable jaws, movable jaw pulled
24/3732	. . Includes lacing holding structure within directing means therefor	24/3949	. . . . Link-connected parallel jaws
24/3734	. . having diverse shaped directing means for lacing	24/3951	. . . . Dual cam
24/3737	. . having lacing directing means in particular pattern	24/3953	. . . Pivotal means with plate aperture
24/3739	. . Includes lacing guiding roller within directing means	24/3956	. . . Jaws locked together by cam, wedge, lever, or screw
24/3742	. . having eyelet type directing means	24/3958	. . Screw clamp
24/3745	. . . with permanently deformed mounting structure	24/396	. . . Screw clamp with snubber
24/3747	. . . . Mounting structure formed from different material than directing passage	24/3962	. . . Tangential bolt
24/375	. . having hook shaped directing means	24/3964	. . . J-shaped bolt
24/3753	. . . and movable component or surface for closing throat	24/3967	. . . Bolt perpendicular to cable axis
24/3755	. . . Mounted by structure allowing bodily movement thereof	24/3969	. . Sliding part or wedge
24/3758	. . . formed from wire	24/3971	. . . Rope looped about movable member
24/3761	. . . with mounting structure formed from different material	24/3973	. . . Rope clamped between cone and socket
24/3763	. . . with permanently deformed mounting structure	24/3976	. . . Sliding ball
24/3766	. . . . Expanding stud	24/3978	. . . Screw actuated
24/3768	. . having loop or sleeve shaped directing means	24/398	. . Bendable, ductile
24/3771	. . . Entirely formed from flaccid material	24/3982	. . Safety release
24/3774	. . . Mounted by structure allowing bodily movement thereof	24/3984	. . Alignable aperture and spring pressed moving element
24/3776	. . . formed from wire	24/3987	. . Loop, adjustable
24/3779	. . . with permanently deformed mounting structure	24/3989	. . Snubbers, cleats by dielectric loss
24/3782	. . . . Loop or sleeve closed when mounted	24/3991	. . Loop engaging
24/3784	. . . . Expanding stud	24/3993	. . Ball or roller
24/3787	. . having elastic segment in lacing	24/3996	. . Sliding wedge
		24/3998	. . Helical preform
		24/40	. Buckles
		24/4002	. . Harness
		24/4005	. . . Combined buckles and snap hooks
		24/4007	. . . Lock
		24/4009	. . . . Key
		24/4012	. . . Clamping
		24/4014	. . . . One-piece
		24/4016	. . . . Pivoted part or lever
		24/4019	. . . . Sliding part or wedge

24/4021	. . . Cross bails	24/4412	. . . . with separate, cavity-blocking gate on receiving member
24/4023	. . . . Pivoted stud plate	24/44128	. . . . Resilient inserted or receiving member
24/4026	. . . . Rigid stud	24/44137	. . . . . Inserted or receiving member substantially covered or coated for protection or to promote gripping
24/4028	. . . Penetrating tongue	24/44145	. . . . . Resilient inserted member
24/403	. . . . Guarded	24/44154	. . . . . having engaging face formed from nonmetallic material
24/4033	. . . . One-piece	24/44162	. . . . . having head and neck type engaging face
24/4035	. . . . Multiple	24/44171	. . . . . having internal supporting or reinforcing element
24/4037	. . . . Pivoted	24/44179	. . . . . Circular head or neck
24/404	. . . . . Lever actuated	24/44188	. . . . having wedge shaped, inserted and receiving members
24/4042	. . . . . Stud	24/44197	. . . . with specific means for attaching to flaccid strap or supporting strap
24/4044	. . . . Sliding part or wedge	24/44205	. . . . . On the inserted member
24/4047	. . . Strap loops and attaching devices	24/44214	. . . . having necked button sliding along length of closed, variable width loop
24/4049	. . . Loop shields	24/44222	. . having flaccid gripping member
24/4051	. . Garment shielded	24/44231	. . . formed from elastic material
24/4053	. . Combined pressure bar and guard	24/44239	. . Encircling gripping member including semirigid band and operator for tightening
24/4056	. . . Hook attached	24/44248	. . Encircling gripping member including semirigid band and means for adjusting girth
24/4058	. . Penetrating prong	24/44256	. . with specifically shaped, nongripping, rigid structure for connecting independently operable clasps, clips, or support-clamps
24/406	. . . One-piece	24/44265	. . Gripping member face integral with or rigidly affixed to screw-driving portion
24/4063	. . . . Hook attached	24/44274	. . having either discrete flaccid or thin, nonbiasing, integral, connecting hinge
24/4065	. . . Pivoted	24/44282	. . having equally spaced or continual gripping faces revolving about central axis
24/4067	. . . . Hook attached	24/44291	. . including pivoted gripping member
24/407	. . . Slide	24/44299	. . . Pivoted member also slides
24/4072	. . Pivoted lever	24/44308	. . . . Tapered face
24/4074	. . . Hook attached	24/44316	. . . Pivoting gripping member either supports or coacts with sliding engaging face
24/4077	. . . Looped strap	24/44325	. . . having three or more pivotally connected gripping members
24/4079	. . Sliding part of wedge	24/44333	. . . having toggle operator for moving
24/4081	. . . Hook attached	24/44342	. . . having rigid linking arm pivotally connected to each gripping member
24/4084	. . . Looped strap	24/4435	. . . . with extended lever portion
24/4086	. . Looped strap	24/44359	. . . . having lever end modified for attachment to support
24/4088	. . One-piece	24/44368	. . . Pivoted gripping member applies camming force
24/4091	. . . Hook attached	24/44376	. . . Spring or resiliently biased about pivot
24/4093	. . . Looped strap	24/44385	. . . . Distinct spring
24/4095	. . Fabric covered	24/44393	. . . . . Attached solely by spring
24/4098	. . Ornamental and/or object supported	24/44402	. . . . . with operator for moving pivoted member
24/41	. Pierced earring fastener	24/4441	. . . . . Camming or wedging element
24/42	. Independent, headed, aperture pass-through fastener	24/44419	. . . . . Pivoted or rotated element
24/43	. Fastener with revolving component wrapping structure-to-be-secured about fastener	24/44427	. . . . . with position locking-means for gripping members
24/44	. Clasp, clip, support-clamp, or required component thereof	24/44436	. . . . . including pivoted arm
24/44009	. . Gripping member adapted for tool actuation or release	24/44444	. . . . . having specific surface material or irregularity on or along engaging face
24/44017	. . with specific mounting means for attaching to rigid or semirigid supporting structure or structure-to-be-secured	24/44453	. . . . . having specific handle structure
24/44026	. . . for cooperating with aperture in supporting structure or structure-to-be-secured		
24/44034	. . Dissociable gripping members		
24/44043	. . . Channel and inserted bar		
24/44051	. . . . having operator or locking means		
24/4406	. . . . Resilient channel or bar		
24/44068	. . having gripping member actuated by fluid force		
24/44077	. . having inserted and receiving interlocking members connected by bendable, nonbiasing strap		
24/44085	. . . Discrete flaccid strap		
24/44094	. . . . with distinct means for preventing separation of members		
24/44103	. . . . . Slidably mounted		
24/44111	. . . . with separate flaccid flap or pocket for protecting structure-to-be-secured		

24/44462 . . . . .	Coil spring	24/44786 . . . . .	Opposed faces located in and bias towards common plane in nonuse position
24/4447 . . . . .	having coil portion coaxial or parallel with pivotal axis	24/44795 . . . . .	Resilient gripping member having tightly twisted portion
24/44479 . . . . .	Flat or leaf spring	24/44803 . . . . .	Resilient gripping member having coiled portion
24/44487 . . . . .	Closed by gravity or weight of structure-to-be-secured	24/44812 . . . . .	Convolutions of coil form faces
24/44496 . . . . .	with operator means for moving pivoted member	24/44821 . . . . .	Relatively movable segments of resilient gripping member contact and cross in nonuse position
24/44504 . . . . .	Threaded cylindrical rod and mating cavity	24/44829 . . . . .	Segments form opposed engaging faces
24/44513 . . . . .	Camming or wedging element	24/44838 . . . . .	having specific handle structure
24/44521 . . . . .	Pivoted or rotated element	24/44846 . . . . .	having specific handle structure
24/4453 . . . . .	with position locking-means for gripping members	24/44855 . . . . .	Terminal end of resilient member having engagement or disengagement enhancing structural modifications
24/44538 . . . . .	Integral locking-means	24/44863 . . . . .	having specific surface irregularity on or along engaging face
24/44547 . . . . .	having inserted and receiving interlocking engaging faces	24/44872 . . . . .	having specific handle structure
24/44556 . . . . .	Resilient gripping member	24/4488 . . . . .	Movably attached to gripping member
24/44564 . . . . .	having specific surface material or irregularity on or along engaging face	24/44889 . . . . .	Interlocking faces
24/44573 . . . . .	including track or way guided and retained gripping member	24/44897 . . . . .	with reinforcing member
24/44581 . . . . .	Biased by distinct spring	24/44906 . . . . .	having specific surface irregularity on or along engaging face
24/4459 . . . . .	with operator for moving guided member	24/44915 . . . . .	Corrugated or toothed face
24/44598 . . . . .	Threaded cylindrical rod and mating cavity	24/44923 . . . . .	Clasp, clip, or support-clamp cut or shaped from a single sheet of resilient, uniformly thick, planar material
24/44607 . . . . .	Track or way oblique to path of gripping member	24/44932 . . . . .	having specific surface material or irregularity on or along engaging face
24/44615 . . . . .	with position locking-means for gripping members	24/4494 . . . . .	having specific handle structure
24/44624 . . . . .	Integral locking-means	24/44949 . . . . .	including resilient biasing wire
24/44632 . . . . .	with specific mounting means for attaching to flaccid supporting structure or structure-to-be-secured	24/44957 . . . . .	Coiled wire
24/44641 . . . . .	having gripping member formed from, biased by, or mounted on resilient member	24/44966 . . . . .	having gripping member shifted by operator
24/4465 . . . . .	Integrally combined, independently operable, diverse clasps, clips, or support-clamps	24/44974 . . . . .	Threaded cylindrical rod and mating cavity
24/44658 . . . . .	with specific means for mounting to flaccid supporting structure or structure-to-be-secured	24/44983 . . . . .	formed from single rigid piece of material
24/44667 . . . . .	Mounting means made entirely from integral wire portion of resilient gripping member	24/44991 . . . . .	having specific surface irregularity on or along engaging face
24/44675 . . . . .	Wire coiled about flaccid supporting structure	24/45 . . . . .	Separable-fastener or required component thereof [e.g., projection and cavity to complete interlock]
24/44684 . . . . .	with operator for moving biased engaging face	24/45005 . . . . .	with third detached member completing interlock [e.g., hook type]
24/44692 . . . . .	Camming or wedging element	24/4501 . . . . .	Quick connect or release [e.g., spring and detent]
24/44701 . . . . .	Encircling sleeve type element	24/45016 . . . . .	for jewelry
24/44709 . . . . .	Pivoted or rotated element	24/45021 . . . . .	including eyelet [e.g., shoes]
24/44718 . . . . .	Element pivots or rotates in plane parallel to plane bisecting opposed engaging faces	24/45026 . . . . .	for key holder
24/44726 . . . . .	Elongated element with pivot between cam and handle portions	24/45031 . . . . .	for tire chain, strap, etc. [e.g., rotatable or sliding spring gate]
24/44735 . . . . .	for moving engaging face of U-shaped gripping member	24/45037 . . . . .	for apparel and related accessories
24/44744 . . . . .	with position locking-means for engaging faces	24/45042 . . . . .	Button, button related
24/44752 . . . . .	Integral locking-means	24/45047 . . . . .	Snap [e.g., key hole type]
24/44761 . . . . .	Pivoted lock member	24/45052 . . . . .	Post and receiver [e.g., pin and slot]
24/44769 . . . . .	Opposed engaging faces on gripping member formed from single piece of resilient material	24/45058 . . . . .	Hook [e.g., within cavity]
24/44778 . . . . .	Piece totally forms clasp, clip, or support-clamp and has shaped, wirelike, or bandlike configuration with uniform cross section throughout its length	24/45063 . . . . .	Belt, strap, etc. [e.g., buckle or snap fastener]
		24/45068 . . . . .	Glove
		24/45073 . . . . .	Purse, wallet, etc.
		24/45079 . . . . .	Belt, strap, harness, etc.
		24/45084 . . . . .	for safety belt buckle, strap, harness, etc.
		24/45089 . . . . .	Sliding or rotating element
		24/45094 . . . . .	Element having key slot
		24/45099 . . . . .	Resilient element [e.g., snap type]

24/45105 . . . .	for upholstery, panel, trim strip, etc. [e.g., spring biased]	24/4534 . . . . .	and position locking-means for gate
24/45111 . . . .	Link with pivoted gate	24/45346 . . . . .	Includes distinct biasing spring
24/45115 . . . .	Hook	24/45351 . . . . .	Coil type spring
24/4512 . . . .	Snap with spring bias [e.g., gate]	24/45356 . . . . .	Coiled about pivotal axis of gate
24/45126 . . . .	for connecting chains [e.g., opposed pivoted hook]	24/45361 . . . . .	having position locking-means for gate
24/45131 . . . .	for heavy load bearing device [e.g., chain, rope, cable, etc.]	24/45366 . . . . .	Locking-means pivotally connected
24/45136 . . . . .	Haim, harness, whiffletree, rein, etc.	24/45372 . . . . .	Locking-means slidably mounted
24/45141 . . . .	for chain, rope, cable, etc.	24/45377 . . . . .	Gate closes when structure-to-be-secured is tensioned
24/45147 . . . .	Coupler with sliding socket to complete interlock	24/45382 . . . . .	Track or way guided gate
24/45152 . . . .	Each mating member having similarly shaped, sized, and operated interlocking or intermeshable face	24/45387 . . . . .	having means biasing gate
24/45157 . . . .	Zipper-type [e.g., slider]	24/45393 . . . . .	Guide of gate encircles shank
24/45162 . . . .	for garment [e.g., with ribs and grooves interlocking elements]	24/45398 . . . . .	Cavity in shank forms track or way
24/45168 . . . .	for container [e.g., bag]	24/45403 . . . . .	with position locking-means for gate
24/45173 . . . .	Resilient element	24/45408 . . . . .	Resilient, self-biased gate
24/45178 . . . .	Snap [e.g., identical elements]	24/45414 . . . . .	with position locking-means for gate
24/45183 . . . .	Clasp [e.g., spring type]	24/45419 . . . . .	Gate and hook formed from plastic
24/45188 . . . .	for jewelry [e.g., buckle type]	24/45424 . . . . .	Gate and hook formed solely from wire
24/45194 . . . .	for belt or strap	24/45429 . . . . .	Gate and hook formed from single piece of sheet metal
24/45199 . . . .	Hook	24/45435 . . . . .	Projection pivotally attached to shank or mounting structure
24/45204 . . . .	for belt, strap, etc. [e.g., with pivoted gate locking member]	24/4544 . . . . .	Projection slidably mounted to shank or mounting structure
24/45209 . . . .	for apparel	24/45445 . . . . .	Projection self-biased towards shank or mounting structure
24/45215 . . . .	Slot and tab or tongue	24/4545 . . . . .	and formed solely from wire
24/4522 . . . .	Sliding or rotating element	24/45455 . . . . .	Cooperating with relatively stationary wire gate
24/45225 . . . .	including member having distinct formations and mating member selectively interlocking therewith	24/45461 . . . .	Interlocking portion actuated or released responsive to preselected condition [e.g., heat, pressure]
24/4523 . . . .	Hook	24/45466 . . . .	having electric or fluid powered, actuation or release, of interlock
24/45236 . . . .	Multiple catch [e.g., with pivoted gate]	24/45471 . . . .	Projection having movable connection between components thereof or variable configuration
24/45241 . . . .	Slot and tab or tongue	24/45476 . . . .	with additional, similar projection for engaging different cavity
24/45246 . . . .	having teeth or serrations [e.g., sliding with respect to each other]	24/45482 . . . .	and operator therefor
24/45251 . . . .	Resilient element [e.g., with spring]	24/45487 . . . .	including camming or wedging element on projection member
24/45257 . . . .	Snap with cavity	24/45492 . . . . .	Pivotally attached element
24/45262 . . . .	Pin, post and receiver	24/45497 . . . .	including pivotal connection between projection components
24/45267 . . . .	Notched clasp [e.g., with receiving slot]	24/45503 . . . . .	Component slides relative to connection
24/45272 . . . .	Projection passes through cavity then moves toward noninserted portion of its member to complete interlock [e.g., snap hook]	24/45508 . . . . .	and spring or resilient extension biasing about pivot
24/45277 . . . .	Entire projection member forms loop or ring when interlocked	24/45513 . . . .	including slidably guided connection between nonself-biasing projection components
24/45283 . . . . .	Includes slidable gate closing entrance throat	24/45518 . . . . .	and distinct spring biasing component
24/45288 . . . .	Hook type projection member	24/45524 . . . .	including resiliently biased projection component or surface segment
24/45293 . . . . .	Plural hooks entering opposite sides of same cavity	24/45529 . . . . .	Requiring manual force applied against bias to interlock or disengage
24/45298 . . . . .	Hooks formed solely from wire	24/45534 . . . . .	having connected leading edge and separated trailing arms
24/45304 . . . . .	Noninserted portion of projection member includes movably connected gate for closing access throat	24/45539 . . . . .	Cooperating with cavity having side walls and axially biased component capping end
24/45309 . . . . .	Threaded gate		
24/45314 . . . . .	Revolvably mounted disc shaped gate		
24/45319 . . . . .	Pivotally connected gate		
24/45325 . . . . .	Gate swings transversely to plane of hook		
24/4533 . . . . .	Gate also slides relative to pivot		
24/45335 . . . . .	having means biasing gate about pivot		

24/45545 . . . . .	forming total external surface of projection	24/45707 . . . . .	having aperture therein alignable with parallel access opening
24/4555 . . . . .	and encircling hollow central area	24/45712 . . . . .	having interlocking portion thereof housed continuously within cavity
24/45555 . . . . .	having separate mounting means inserted into area	24/45717 . . . . .	having cavity with side walls and axially biased component capping end
24/4556 . . . . .	Plastic deformation of means or surface required for mounting	24/45723 . . . . .	having slidably connected, nonself-biasing interlocking component
24/45565 . . . . .	having separate mounting means encompassing cross section of projection	24/45728 . . . . .	Blocking removal of formation on projection from complementary formation on side wall of cavity
24/45571 . . . . .	having dome-shaped head and expansion slit along side	24/45733 . . . . .	and position locking-means therefor
24/45576 . . . . .	and connected surface at tip of head	24/45738 . . . . .	and relatively movable handle therefor
24/45581 . . . . .	having inserted end formed by oppositely biased surface segments	24/45743 . . . . .	Requiring manual force thereon to interlock or disengage
24/45586 . . . . .	Constructed from wire	24/45749 . . . . .	Plural, oppositely shifting, similar interlocking components
24/45592 . . . . .	having both resiliently biased and rigid components forming external surface of projection	24/45754 . . . . .	having closed aperture therethrough alignable with parallel access opening
24/45597 . . . . .	Projection member including noninserted spring for engaging and pushing against receiving member	24/45759 . . . . .	having flaccid component defining access opening of cavity
24/45602 . . . . .	Receiving member includes either movable connection between interlocking components or variable configuration cavity	24/45764 . . . . .	Component formed solely by flaccid cord
24/45607 . . . . .	with additional cavity for engaging different projection	24/4577 . . . . .	with nonflaccid component
24/45613 . . . . .	having common means actuating or releasing interlocking components or surfaces	24/45775 . . . . .	having resiliently biased interlocking component or segment
24/45618 . . . . .	and interlocking with independently associated or dissociated projection members	24/4578 . . . . .	Cavity or projection rotates about axis of cavity to dissociate
24/45623 . . . . .	and operator therefor	24/45785 . . . . .	Requiring manual force applied against bias to interlock or disengage
24/45628 . . . . .	for plural, oppositely shifting, similar interlocking components or segments	24/45791 . . . . .	and partially blocking separate, nonresilient access opening of cavity
24/45634 . . . . .	Operator includes camming or wedging element	24/45796 . . . . .	and closed elongated access opening for guiding transverse projection travel after insertion
24/45639 . . . . .	including pivotally connected element on receiving member	24/45801 . . . . .	Nonresilient walls define opening
24/45644 . . . . .	for shifting pivotally connected interlocking component	24/45806 . . . . .	formed from wire
24/45649 . . . . .	Element and component pivot about same axis	24/45812 . . . . .	and access opening with gapped perimeter for allowing movement of noninserted projection support therepast
24/45654 . . . . .	for shifting slidably connected and guided, nonself-biasing interlocking component	24/45817 . . . . .	Cavity constructed solely from wire
24/4566 . . . . .	including slidably connected and guided element on receiving member	24/45822 . . . . .	Partially blocking separate, nonresilient, access opening of cavity
24/45665 . . . . .	for shifting pivotally connected interlocking component	24/45827 . . . . .	and bodily shifted into or out of interlock location by manual force thereon
24/4567 . . . . .	for shifting slidably connected and guided, nonself-biasing, interlocking component	24/45832 . . . . .	formed from wire
24/45675 . . . . .	having pivotally connected interlocking component	24/45838 . . . . .	having curved or bent engaging section conforming to contour of projection
24/45681 . . . . .	Blocking removal of formation on projection from complementary formation on side wall of cavity	24/45843 . . . . .	Similar, distinct sections
24/45686 . . . . .	and position locking-means therefor	24/45848 . . . . .	having distinct sections engaging projection at spaced points
24/45691 . . . . .	and relatively movable handle therefor	24/45853 . . . . .	including separate, nonprojection-engaging spring for biasing
24/45696 . . . . .	Requiring manual force thereon to interlock or disengage	24/45859 . . . . .	Biased component or segment entirely formed from wire
24/45702 . . . . .	Plural, oppositely shifting, similar interlocking components	24/45864 . . . . .	having portion of cavity deformed during mounting
		24/45869 . . . . .	and cooperating with separate mounting component
		24/45874 . . . . .	having axially extending expansion slit along side of cavity
		24/4588 . . . . .	Means for mounting projection or cavity portion

- 24/45885 . . . . Allows bodily movement facilitating interlock
- 24/4589 . . . . . About pivotal connection
- 24/45895 . . . . . Includes resilient component separate from portion
- 24/45901 . . . . . Allows relocation of portion
- 24/45906 . . . . . Having component of means permanently deformed during mounting operation
- 24/45911 . . . . . and formed from or fixedly attached to projection or cavity portion
- 24/45916 . . . . . Cooperates with detached component of means
- 24/45921 . . . . . having shape facilitating impaling of mounting surface
- 24/45927 . . . . . and inserted into or through cavity or projection
- 24/45932 . . . . . and encircling cavity or projection
- 24/45937 . . . . . Consisting of thermally fusible substance
- 24/45942 . . . . . having threaded formation
- 24/45948 . . . . . having specific structure for cooperating with stitching
- 24/45953 . . . . . having shape facilitating impaling of mounting surface
- 24/45958 . . . . . Plural distinct cavities or projections
- 24/45963 . . . . . Hook type
- 24/45969 . . . . . Hook-shaped projection member passing through cavity
- 24/45974 . . . . . formed from single piece of sheet metal
- 24/45979 . . . . . formed solely from wire
- 24/45984 . . . . . Cavity having specific shape
- 24/4599 . . . . . including closed elongated access opening for guiding transverse projection travel after insertion
- 24/45995 . . . . . having access opening with gapped perimeter for allowing movement of noninserted projection support therepast
- 24/46 . . . . . Pin or separate essential cooperating device therefor
- 24/4602 . . . . . with separately operable, manually releasable, nonpenetrating means for mounting [e.g., drapery hook]
- 24/4604 . . . . . having distinct guiding, holding, or protecting means for penetrated portion
- 24/4605 . . . . . Means detachable from or flaccidly connected to pin [e.g., hatpin type]
- 24/4607 . . . . . for pin having plural penetrating portions
- 24/4609 . . . . . including relatively movable guiding, holding, or protecting components or surfaces
- 24/4611 . . . . . having operator for moving holding component or surface
- 24/4613 . . . . . Moves pivoting holding component
- 24/4614 . . . . . Moves slidably guided, nonself-biasing, holding component
- 24/4616 . . . . . having pierceable [e.g., cork] or naturally resilient [e.g., rubber] surfaces
- 24/4618 . . . . . with pivotal connection therebetween
- 24/462 . . . . . with slidable connection between nonself-biasing components
- 24/4621 . . . . . having resiliently biased component or surface
- 24/4623 . . . . . Coiled about longitudinal axis of held portion
- 24/4625 . . . . . and aperture therein alignable with another spaced aperture of means
- 24/4627 . . . . . and nonresilient structure for guiding portion thereto
- 24/4629 . . . . . including structure for cooperating with formation [e.g., cavity] formed on penetrating portion
- 24/463 . . . . . for pin having plural penetrating portions
- 24/4632 . . . . . Each independently movable towards and into cooperation with means
- 24/4634 . . . . . including relatively movable guiding, holding, or protecting components or surfaces
- 24/4636 . . . . . with connection allowing component to revolve about axis of held penetrating portion
- 24/4638 . . . . . with pivotal connection therebetween
- 24/4639 . . . . . having position locking means therefor
- 24/4641 . . . . . Spring or resiliently biased
- 24/4643 . . . . . with slidable connection between nonself-biasing components
- 24/4645 . . . . . Component slides parallel to axis of held penetrating portion
- 24/4646 . . . . . Means engages formation formed on penetrating portion
- 24/4648 . . . . . having nonresilient and resilient components
- 24/465 . . . . . Means formed from single resilient wire
- 24/4652 . . . . . Means formed from resilient sheet metal
- 24/4654 . . . . . with independent, spaced, intermediate connections, or formations [e.g., coils], about which portion or means move
- 24/4655 . . . . . Includes slidable connection
- 24/4657 . . . . . with pivotal connection between penetrating portion and means
- 24/4659 . . . . . Connection also permits sliding movement
- 24/4661 . . . . . Resiliently biased about connection
- 24/4663 . . . . . with slidable connection intermediate penetrating portion and means
- 24/4664 . . . . . having resilient bridging structure between portion and means
- 24/4666 . . . . . Means includes structure for cooperating with formation [e.g., cavity] formed on portion
- 24/4668 . . . . . and penetrating portion formed from wire
- 24/467 . . . . . Bridging structure includes elongated nonwire element
- 24/4671 . . . . . Wire also forms coiled bridging structure about which portion moves
- 24/4673 . . . . . including distinct device for cooperating with coil
- 24/4675 . . . . . having means also formed from same wire
- 24/4677 . . . . . with cavity for guiding structure-to-be-secured towards penetrating portion [e.g., stocking support]
- 24/4679 . . . . . having penetrating portion retractable or of changeable length
- 24/468 . . . . . having interconnected distinct penetrating portions
- 24/4682 . . . . . Connection allows movement therebetween
- 24/4684 . . . . . Slidable connection
- 24/4686 . . . . . Resilient connection
- 24/4688 . . . . . formed from common wire
- 24/4689 . . . . . and pointing in same direction
- 24/4691 . . . . . Penetrating portion includes relatively movable structure for resisting extraction

- 24/4693 . . having specific wire penetrating portion
- 24/4695 . . . Wire curved or bent
- 24/4696 . . having distinct head structure
- 24/4698 . . . Movably connected to penetrating portion
- 24/47 . . Strap-end-attaching devices
- 24/4709 . . Bendable sheet material
- 24/4718 . . Watch pintle connected
- 24/4727 . . Webbing to tube [lawn chair]
- 24/4736 . . Buckle connected
- 24/4745 . . End clasp
- 24/4755 . . Hook
- 24/4764 . . Ring-loop
- 24/4773 . . Cargo tiedown
- 24/4782 . . Watch strap
- 24/4791 . . Enlarged end epoxy
- 24/48 . . Pivoted edge stays
- 24/49 . . Fastener destructively secured by reshaping distortion force [e.g., ductile fastener]
- 24/492 . . Distorted structure having shape facilitating impaling
- 24/493 . . . and distinct fastener structure cooperating with impaled structure
- 24/495 . . . . Detached cooperating structure
- 24/497 . . . including plural impaling elements
- 24/498 . . . . Elements form single aperture [e.g., split shank type]
- 24/50 . . Readily interlocking, two-part fastener requiring either destructive or tool disengagement
- 24/505 . . including additional fastener structure linking parts
- 24/51 . . Hanger on portable article support for manual attachment thereof to overhead support [e.g., drapery hook]
- 29/15 . . Cord heddle making
- 29/16 . . Cotter-pin making
- 29/17 . . Crankshaft making apparatus
- 29/18 . . Expanded metal making
- 29/185 . . by use of reciprocating perforator
- 29/19 . . Eyebolt or hook making
- 29/20 . . Fence barb making
- 29/203 . . by use of reciprocating cutter or die
- 29/207 . . by use of rotary cutter or die
- 29/21 . . Finger-ring forming or sizing
- 29/22 . . Fishhook making
- 29/23 . . Gem and jewel setting
- 29/24 . . Hinge making or assembling
- 29/25 . . Lacing-stud making
- 29/26 . . Paper-fastener making
- 29/27 . . Plow or cultivator iron making
- 29/28 . . Puddlers balls making
- 29/29 . . Railway-chair making
- 29/30 . . Foil or other thin sheet-metal making or treating
- 29/301 . . Method
- 29/302 . . . Clad or other composite foil or thin metal making
- 29/303 . . . with assembling or disassembling of a pack
- 29/304 . . . . Using transitory solid cover material
- 29/305 . . . . including bond prevention treatment
- 29/306 . . . . Disassembling of a pack
- 29/307 . . . by shaving or longitudinal cutting
- 29/308 . . . Using transitory material
- 29/309 . . Means for opening or separating a pack
- 29/31 . . Spectacle-frame making
- 29/32 . . Spiral cutting of flat stock
- 29/33 . . Stereotype-plate finishing
- 29/34 . . Means for forming clench-tongue [eg, for tieband]
- 29/35 . . Tire upsetting, with cutting, punching, etc.
- 29/36 . . toothed-cylinder making apparatus [e.g. , texture working cylinder]
- 29/37 . . Impeller making apparatus
- 29/38 . . Type finishing and grooving
- 29/39 . . Venetian blind assembling
- 29/40 . . Umbrella-frame making
- 29/41 . . Barrier layer or semiconductor device making
- 29/413 . . Barrier layer device making
- 29/417 . . . Electrolytic device making [e.g., capacitor]
- 29/42 . . Piezoelectric device making
- 29/43 . . Electric condenser making
- 29/435 . . Solid dielectric type
- 29/44 . . Filing
- 29/442 . . of key article
- 29/444 . . Continuous band type
- 29/446 . . Reciprocating type
- 29/448 . . File-blank stripper
- 29/45 . . Scale remover or preventor
- 29/4506 . . for hollow workpiece
- 29/4511 . . . Interior surface
- 29/4517 . . Rolling deformation or deflection
- 29/4522 . . . for wire or rod
- 29/4528 . . with rotary head
- 29/4533 . . Fluid impingement
- 29/4539 . . . with heater
- 29/4544 . . . Liquid jet
- 29/455 . . . Airblast

**Former US Class 29 Series****29/00 Metal working**

- 29/10 . . Battery-grid making
- 29/11 . . Bias [i.e. , helically] cutting of tubular stock
- 29/1106 . . including orbital cutter
- 29/1113 . . . within stock support
- 29/1119 . . . with orbiting strip accumulator
- 29/1125 . . including means to inflate stock
- 29/1131 . . with means to feed stock along support or mandrel
- 29/1138 . . . Single means produces compound motion
- 29/1144 . . . . Endless belt drive means
- 29/115 . . . Axially
- 29/1156 . . . Rotatably
- 29/1163 . . with means to rotate and store stock supply
- 29/1169 . . . Axis of rotation parallel to support or mandrel
- 29/1175 . . with means for arcuate shift of mandrel
- 29/1181 . . including means to handle produced strip or web
- 29/1188 . . . with common adjustment for cutter
- 29/1194 . . Method
- 29/12 . . Buckle making
- 29/13 . . Button-fastener making
- 29/14 . . Shredding metal or metal wool article making
- 29/142 . . Metal wool making
- 29/143 . . . Shaving or longitudinal cutting
- 29/145 . . . . Soap-pad making
- 29/147 . . Metal wool bundling
- 29/148 . . . Soap-pad making

29/4556	. . Chainer	29/4905	. . . . . Employing workholding means
29/4561	. . Scraper or scalper	29/49052	. . . . . by etching
29/4567	. . Brush type	29/49053	. . . . . Multitrack heads having integral holding means
29/4572	. . Mechanically powered operator	29/49055	. . . . . with bond/laminating preformed parts, at least two magnetic
29/4578	. . . Tack or needle type	29/49057	. . . . . Using glass bonding material
29/4583	. . . Hammer	29/49059	. . . . . with work positioning means
29/4589	. . . Blade or chisel	29/4906	. . . . . Providing winding
29/4594	. . Hand tool	29/49062	. . . . . Multilayered winding
29/46	. Burning in, wearing in, or oil burnishing	29/49064	. . . . . by coating
29/47	. Burnishing	29/49066	. . . . . Preformed winding
29/471	. . of water laid fibrous article [e.g., paper]	29/49067	. . . . . Specified diverse magnetic materials
29/473	. . . Heated burnishing member	29/49069	. . . . . Data storage inductor or core
29/474	. . . . Burnishing tool reciprocates across work surface	29/49071	. . . . . by winding or coiling
29/476	. . Continuous feed	29/49073	. . . . . by assembling coil and core
29/477	. . of gear article	29/49075	. . . . . including permanent magnet or core
29/479	. . by shot peening or blasting	29/49076	. . . . . From comminuted material
29/48	. Upholstered article making	29/49078	. . . . . Laminated
29/481	. . Method	29/4908	. . . . . Acoustic transducer
29/482	. . Tufting	29/49082	. . . Resistor making
29/483	. . . with means to clench fastener	29/49083	. . . . . Heater type
29/484	. . . with means to insert guide pin or fastener	29/49085	. . . . . Thermally variable
29/486	. . Cover stretching	29/49087	. . . . . with envelope or housing
29/487	. . Edge-roll forming	29/49089	. . . . . Filling with powdered insulation
29/488	. . form or holder	29/49091	. . . . . with direct compression of powdered insulation
29/489	. . . with follower	29/49092	. . . . . Powdering the insulation
29/49	. Method of mechanical manufacture	29/49094	. . . . . by oxidation
29/49002	. . Electrical device making	29/49096	. . . . . with winding
29/49004	. . . including measuring or testing of device or component part	29/49098	. . . . . Applying terminal
29/49005	. . . Acoustic transducer	29/49099	. . . . . Coating resistive material on a base
29/49007	. . . Indicating transducer	29/49101	. . . . . Applying terminal
29/49009	. . . Dynamoelectric machine	29/49103	. . . . . Strain gauge making
29/49011	. . . . Commutator or slip ring assembly	29/49105	. . . Switch making
29/49012	. . . . Rotor	29/49107	. . . Fuse making
29/49014	. . . Superconductor	29/49108	. . . Electric battery cell making
29/49016	. . . Antenna or wave energy "plumbing" making	29/4911	. . . . including sealing
29/49018	. . . with other electrical component	29/49112	. . . . including laminating of indefinite length material
29/4902	. . . Electromagnet, transformer or inductor	29/49114	. . . . including adhesively bonding
29/49021	. . . . Magnetic recording reproducing transducer [e.g., tape head, core, etc.]	29/49115	. . . . including coating or impregnating
29/49023	. . . . . including disassembly step	29/49117	. . . Conductor or circuit manufacturing
29/49025	. . . . . Making disc drive	29/49119	. . . . Brush
29/49027	. . . . . Mounting preformed head/core onto other structure	29/49121	. . . . Beam lead frame or beam lead device
29/49028	. . . . . Mounting multitrack head	29/49123	. . . . Co-axial cable
29/4903	. . . . . with bonding	29/49124	. . . . On flat or curved insulated base, e.g., printed circuit, etc.
29/49032	. . . . . Fabricating head structure or component thereof	29/49126	. . . . . Assembling bases
29/49034	. . . . . Treating to affect magnetic properties	29/49128	. . . . . Assembling formed circuit to base
29/49036	. . . . . including measuring or testing	29/4913	. . . . . Assembling to base an electrical component, e.g., capacitor, etc.
29/49037	. . . . . Using reference point/surface to facilitate measuring	29/49131	. . . . . by utilizing optical sighting device
29/49039	. . . . . with dual gap materials	29/49133	. . . . . with component orienting
29/49041	. . . . . with significant slider/housing shaping or treating	29/49135	. . . . . and shaping, e.g., cutting or bending, etc.
29/49043	. . . . . Depositing magnetic layer or coating	29/49137	. . . . . Different components
29/49044	. . . . . Plural magnetic deposition layers	29/49139	. . . . . by inserting component lead or terminal into base aperture
29/49046	. . . . . with etching or machining of magnetic material	29/4914	. . . . . with deforming of lead or terminal
29/49048	. . . . . Machining magnetic material [e.g., grinding, etching, polishing]	29/49142	. . . . . including metal fusion
		29/49144	. . . . . by metal fusion



29/49146 . . . . .	with encapsulating, e.g., potting, etc.	29/4924 . . . . .	Scroll or peristaltic type
29/49147 . . . . .	Assembling terminal to base	29/49242 . . . . .	Screw or gear type, e.g., Moineau type
29/49149 . . . . .	by metal fusion bonding	29/49243 . . . . .	Centrifugal type
29/49151 . . . . .	by deforming or shaping	29/49245 . . . . .	Vane type or other rotary, e.g., fan
29/49153 . . . . .	with shaping or forcing terminal into base aperture	29/49247 . . . . .	Valve lifter making
29/49155 . . . . .	Manufacturing circuit on or in base	29/49249 . . . . .	Piston making
29/49156 . . . . .	with selective destruction of conductive paths	29/4925 . . . . .	Repairing, converting, servicing or salvaging
29/49158 . . . . .	with molding of insulated base	29/49252 . . . . .	Multi-element piston making
29/4916 . . . . .	Simultaneous circuit manufacturing	29/49254 . . . . .	Utilizing a high energy beam, e.g., laser, electron beam
29/49162 . . . . .	by using wire as conductive path	29/49256 . . . . .	with assembly or composite article making
29/49163 . . . . .	with sintering of base	29/49258 . . . . .	with thermal barrier or heat flow provision
29/49165 . . . . .	by forming conductive walled aperture in base	29/49259 . . . . .	with fiber reinforced structure
29/49167 . . . . .	with deforming of conductive path	29/49261 . . . . .	by composite casting or molding
29/49169 . . . . .	Assembling electrical component directly to terminal or elongated conductor	29/49263 . . . . .	by coating or cladding
29/49171 . . . . .	with encapsulating	29/49265 . . . . .	Ring groove forming or finishing
29/49172 . . . . .	by molding of insulating material	29/49266 . . . . .	Gudgeon pin, wrist pin, piston pin, or boss therefor
29/49174 . . . . .	Assembling terminal to elongated conductor	29/49268 . . . . .	with other attaching provision for connecting rod
29/49176 . . . . .	with molding of electrically insulating material	29/4927 . . . . .	Cylinder, cylinder head or engine valve sleeve making
29/49178 . . . . .	by shrinking of cover	29/49272 . . . . .	with liner, coating, or sleeve
29/49179 . . . . .	by metal fusion bonding	29/49274 . . . . .	Piston ring or piston packing making
29/49181 . . . . .	by deforming	29/49275 . . . . .	including forging or hammering
29/49183 . . . . .	of ferrule about conductor and terminal	29/49277 . . . . .	including casting or molding
29/49185 . . . . .	of terminal	29/49279 . . . . .	including rolling or die forming, e.g., drawing, punching
29/49187 . . . . .	with forming eyelet from elongated conductor	29/49281 . . . . .	including coating or plating
29/49188 . . . . .	with penetrating portion	29/49282 . . . . .	including grinding or honing
29/4919 . . . . .	Through insulation	29/49284 . . . . .	including machining or angular cutting
29/49192 . . . . .	with insulation removal	29/49286 . . . . .	Crankshaft making
29/49194 . . . . .	Assembling elongated conductors, e.g., splicing, etc.	29/49288 . . . . .	Connecting rod making
29/49195 . . . . .	with end-to-end orienting	29/4929 . . . . .	including metallurgical bonding
29/49197 . . . . .	including fluid evacuating or pressurizing	29/49291 . . . . .	including metal forging or die shaping
29/49199 . . . . .	including deforming of joining bridge	29/49293 . . . . .	Camshaft making
29/49201 . . . . .	with overlapping orienting	29/49295 . . . . .	Push rod or rocker arm making
29/49202 . . . . .	including oppositely facing end orienting	29/49297 . . . . .	Seal or packing making
29/49204 . . . . .	Contact or terminal manufacturing	29/49298 . . . . .	Poppet or I.C. engine valve or valve seat making
29/49206 . . . . .	by powder metallurgy	29/493 . . . . .	Valve guide making
29/49208 . . . . .	by assembling plural parts	29/49302 . . . . .	Repairing, converting, servicing or salvaging
29/4921 . . . . .	with bonding	29/49304 . . . . .	Valve tappet making
29/49211 . . . . .	of fused material	29/49306 . . . . .	Valve seat making
29/49213 . . . . .	Metal	29/49307 . . . . .	Composite or hollow valve stem or head making
29/49215 . . . . .	by impregnating a porous mass	29/49309 . . . . .	including forging
29/49217 . . . . .	by elastic joining	29/49311 . . . . .	including extruding
29/49218 . . . . .	with deforming	29/49313 . . . . .	including casting
29/4922 . . . . .	with molding of insulation	29/49314 . . . . .	with assembly or composite article making
29/49222 . . . . .	forming array of contacts or terminals	29/49316 . . . . .	Impeller making
29/49224 . . . . .	with coating	29/49318 . . . . .	Repairing or disassembling
29/49226 . . . . .	Electret making	29/4932 . . . . .	Turbomachine making
29/49227 . . . . .	Insulator making	29/49321 . . . . .	Assembling individual fluid flow interacting members, e.g., blades, vanes, buckets, on rotary support member
29/49229 . . . . .	Prime mover or fluid pump making	29/49323 . . . . .	Assembling fluid flow directing devices, e.g., stators, diaphragms, nozzles
29/49231 . . . . .	I.C. [internal combustion] engine making	29/49325 . . . . .	Shaping integrally bladed rotor
29/49233 . . . . .	Repairing, converting, servicing or salvaging	29/49327 . . . . .	Axial blower or fan
29/49234 . . . . .	Rotary or radial engine making	29/49329 . . . . .	Centrifugal blower or fan
29/49236 . . . . .	Fluid pump or compressor making	29/4933 . . . . .	Fluid coupling device
29/49238 . . . . .	Repairing, converting, servicing or salvaging		

29/49332 . . . Propeller making	29/49432 . . . Nozzle making
29/49334 . . . Utilizing hollow tube blank	29/49433 . . . Sprayer
29/49336 . . . Blade making	29/49435 . . . Flexible conduit or fitting therefor
29/49337 . . . Composite blade	29/49437 . . . Flue connector device making
29/49339 . . . Hollow blade	29/49439 . . . Trap making
29/49341 . . . with cooling passage	29/4944 . . . Return connector device making
29/49343 . . . Passage contains tubular insert	29/49442 . . . T-shaped fitting making
29/49345 . . . Catalytic device making	29/49444 . . . Elbow or L-shaped fitting making
29/49346 . . . Rocket or jet device making	29/49446 . . . Ferrule making or reforming
29/49348 . . . Burner, torch or metallurgical lance making	29/49448 . . . Agricultural device making
29/4935 . . . Heat exchanger or boiler making	29/49449 . . . Traction apparatus, e.g., for tractor
29/49352 . . . Repairing, converting, servicing or salvaging	29/49451 . . . Harvester guard
29/49353 . . . Heat pipe device making	29/49453 . . . Pulley making
29/49355 . . . Solar energy device making	29/49455 . . . Assembly
29/49357 . . . Regenerator or recuperator making	29/49456 . . . with shaping
29/49359 . . . Cooling apparatus making, e.g., air conditioner, refrigerator	29/49458 . . . Disc splitting to form pulley rim groove
29/49361 . . . Tube inside tube	29/4946 . . . Groove forming in sheet metal pulley rim
29/49362 . . . Tube wound about tube	29/49462 . . . Gear making
29/49364 . . . Tube joined to flat sheet longitudinally, i.e., tube sheet	29/49464 . . . Assembling of gear into force transmitting device
29/49366 . . . Sheet joined to sheet	29/49465 . . . Gear mounting
29/49368 . . . with inserted tubes	29/49467 . . . Gear shaping
29/49369 . . . Utilizing bond inhibiting material	29/49469 . . . Worm gear
29/49371 . . . with subsequent fluid expansion	29/49471 . . . Roll forming
29/49373 . . . Tube joint and tube plate structure	29/49472 . . . Punching or stamping
29/49375 . . . including conduit expansion or inflation	29/49474 . . . Die-press shaping
29/49377 . . . Tube with heat transfer means	29/49476 . . . Gear tooth cutting
29/49378 . . . Finned tube	29/49478 . . . Gear blank making
29/4938 . . . Common fin traverses plurality of tubes	29/4948 . . . with specific gear material
29/49382 . . . Helically finned	29/49481 . . . Wheel making
29/49384 . . . Internally finned	29/49483 . . . Railway or trolley wheel making
29/49385 . . . Made from unitary workpiece, i.e., no assembly	29/49485 . . . Multiple part or composite
29/49387 . . . Boiler making	29/49487 . . . with axle or hub
29/49389 . . . Header or manifold making	29/49488 . . . Steering wheel
29/49391 . . . Tube making or reforming	29/4949 . . . Material winding, e.g., reel, spool
29/49393 . . . with metallurgical bonding	29/49492 . . . Land wheel
29/49394 . . . Accumulator making	29/49494 . . . Assembling tire to wheel body
29/49396 . . . Condenser, evaporator or vaporizer making	29/49496 . . . Disc type wheel
29/49398 . . . Muffler, manifold or exhaust pipe making	29/49497 . . . Assembling wheel disc to rim and hub
29/494 . . . Fluidic or fluid actuated device making	29/49499 . . . Assembling wheel disc to rim
29/49401 . . . Fluid pattern dispersing device making, e.g., ink jet	29/49501 . . . with disc shaping
29/49403 . . . Tapping device making	29/49503 . . . Integral rim and disc making
29/49405 . . . Valve or choke making	29/49504 . . . Disc shaping
29/49407 . . . Repairing, converting, servicing or salvaging	29/49506 . . . Tensioned spoke type wheel making
29/49409 . . . Valve seat forming	29/49508 . . . Tensioning all spokes simultaneously
29/4941 . . . Valve stem or tire valve making	29/4951 . . . Tensioning spokes in series
29/49412 . . . with assembly, disassembly or composite article making	29/49512 . . . Tensioning spokes individually
29/49414 . . . Joining plural semi-circular components	29/49513 . . . Compression, e.g., nontension, spoke type wheel making
29/49416 . . . with material shaping or cutting	29/49515 . . . Joining spokes to rim and hub
29/49417 . . . including molding or casting	29/49517 . . . Joining spokes to rim
29/49419 . . . including machining or drilling	29/49519 . . . Joining spokes to hub
29/49421 . . . including metallurgical bonding	29/4952 . . . Making plural spokes from a single blank
29/49423 . . . including metal deforming	29/49522 . . . Individual spoke making
29/49425 . . . including metallurgical bonding	29/49524 . . . Rim making
29/49426 . . . including metal shaping and diverse operation	29/49526 . . . with assembling
29/49428 . . . Gas and water specific plumbing component making	29/49528 . . . Demountable rim making
29/4943 . . . Plumbing fixture making	29/49529 . . . Die-press shaping
	29/49531 . . . Roller forming
	29/49533 . . . Hub making
	29/49535 . . . with assembling

29/49536 . . . . .	Hub shaping	29/49631 . . . . .	Columnar member
29/49538 . . . . .	Tire making	29/49632 . . . . .	Metal reinforcement member for nonmetallic, e.g., concrete, structural element
29/4954 . . . . .	Wheel trim making, e.g., wheel cover, hubcap	29/49634 . . . . .	Beam or girder
29/49542 . . . . .	with means for retaining trim member on wheel	29/49636 . . . . .	Process for making bearing or component thereof
29/49544 . . . . .	Roller making	29/49638 . . . . .	Repairing
29/49545 . . . . .	Repairing or servicing	29/49639 . . . . .	Fluid bearing
29/49547 . . . . .	Assembling preformed components	29/49641 . . . . .	Linear bearing
29/49549 . . . . .	Work contacting surface element assembled to core	29/49643 . . . . .	Rotary bearing
29/49551 . . . . .	Work contacting surface wound about core	29/49645 . . . . .	Thrust bearing
29/49552 . . . . .	with prestressing of component by heat differential, e.g., shrink, fit	29/49647 . . . . .	Plain bearing
29/49554 . . . . .	Work contacting surface having annular axial sections	29/49648 . . . . .	Self-adjusting or self-aligning, including ball and socket type, bearing and component making
29/49556 . . . . .	Work contacting surface element assembled to end support members	29/4965 . . . . .	Deforming socket to secure ball
29/49558 . . . . .	Includes securing removable cover on roller	29/49652 . . . . .	Die-press shaping
29/4956 . . . . .	Fabricating and shaping roller work contacting surface element	29/49654 . . . . .	having liner
29/49561 . . . . .	toothed roller	29/49655 . . . . .	having liner
29/49563 . . . . .	with coating or casting about a core	29/49657 . . . . .	Socket making
29/49565 . . . . .	One-piece roller making	29/49659 . . . . .	by molding or casting
29/49567 . . . . .	Dental appliance making	29/49661 . . . . .	Nonmetallic socket
29/49568 . . . . .	Orthodontic device making	29/49663 . . . . .	by assembling
29/4957 . . . . .	Sound device making	29/49664 . . . . .	Ball making
29/49572 . . . . .	Hearing aid component making	29/49666 . . . . .	with metallurgical bonding
29/49574 . . . . .	Musical instrument or tuning fork making	29/49668 . . . . .	Sleeve or bushing making
29/49575 . . . . .	including diaphragm or support therefor	29/4967 . . . . .	Nonmetallic
29/49577 . . . . .	Phonograph component making	29/49671 . . . . .	Strip or blank material shaping
29/49579 . . . . .	Watch or clock making	29/49673 . . . . .	Die-press shaping
29/49581 . . . . .	having arbor, pinion, or balance	29/49675 . . . . .	having inner lining layer
29/49583 . . . . .	having indicia, face, or dial	29/49677 . . . . .	having liner
29/49584 . . . . .	having case, cover, or back	29/49679 . . . . .	Anti-friction bearing or component thereof
29/49586 . . . . .	having crown, stem, or pendent	29/4968 . . . . .	Assembling of race, cage, and rolling anti-friction members
29/49588 . . . . .	Jewelry or locket making	29/49682 . . . . .	Assembling of race and rolling anti-friction members
29/4959 . . . . .	Human adornment device making	29/49684 . . . . .	with race making
29/49591 . . . . .	Bracelet making	29/49686 . . . . .	Assembling of cage and rolling anti-friction members
29/49593 . . . . .	Finger ring making	29/49687 . . . . .	with cage making
29/49595 . . . . .	Latch, clasp, or fastener component making	29/49689 . . . . .	Race making
29/49597 . . . . .	Ornamental stock making	29/49691 . . . . .	Cage making
29/49599 . . . . .	Knob or knob shank making	29/49693 . . . . .	Roller making
29/496 . . . . .	Multiperforated metal article making	29/49694 . . . . .	Ball making
29/49602 . . . . .	Coil wound wall screen	29/49696 . . . . .	Mounting
29/49604 . . . . .	Filter	29/49698 . . . . .	Demounting
29/49606 . . . . .	Turnbuckle making	29/497 . . . . .	Pre-usage process, e.g., preloading, aligning
29/49607 . . . . .	Spring-head clip making	29/49702 . . . . .	Lubricating
29/49609 . . . . .	Spring making	29/49703 . . . . .	Sealing
29/49611 . . . . .	for vehicle or clutch	29/49705 . . . . .	Coating or casting
29/49613 . . . . .	for human comfort	29/49707 . . . . .	Bearing surface treatment
29/49615 . . . . .	Resilient shock or vibration absorber utility	29/49709 . . . . .	Specific metallic composition
29/49616 . . . . .	Structural member making	29/4971 . . . . .	Nonmetallic bearing element
29/49618 . . . . .	Restoring existing member, e.g., reinforcing, repairing	29/49712 . . . . .	Ball making
29/4962 . . . . .	Grille making	29/49714 . . . . .	Hollow ball
29/49622 . . . . .	Vehicular structural member making	29/49716 . . . . .	Converting
29/49623 . . . . .	Static structure, e.g., a building component	29/49718 . . . . .	Repairing
29/49625 . . . . .	Openwork, e.g., a truss, joist, frame, lattice-type or box beam	29/49719 . . . . .	Seal or element thereof
29/49627 . . . . .	Frame component	29/49721 . . . . .	with disassembling
29/49629 . . . . .	Panel	29/49723 . . . . .	including reconditioning of part
		29/49725 . . . . .	by shaping
		29/49726 . . . . .	Removing material

- 29/49728 . . . . . and by a metallurgical operation, e.g., welding, diffusion bonding, casting
- 29/4973 . . . . . Replacing of defective part
- 29/49732 . . . . . by attaching repair preform, e.g., remaking, restoring, or patching
- 29/49734 . . . . . and removing damaged material
- 29/49735 . . . . . Mechanically attaching preform with separate fastener
- 29/49737 . . . . . Metallurgically attaching preform
- 29/49739 . . . . . Mechanically attaching preform by separate fastener
- 29/49741 . . . . . Screw threaded fastener
- 29/49742 . . . . . Metallurgically attaching preform
- 29/49744 . . . . . Screw threaded preform
- 29/49746 . . . . . by applying fluent material, e.g., coating, casting
- 29/49748 . . . . . by shaping, e.g., bending, extruding, turning, etc.
- 29/4975 . . . . . including heating
- 29/49751 . . . . . Scrap recovering or utilizing
- 29/49753 . . . . . Metalworking to consolidate scrap
- 29/49755 . . . . . Separating one material from another
- 29/49757 . . . . . by burning or heating
- 29/49758 . . . . . During simulated operation or operating conditions
- 29/4976 . . . . . Temperature
- 29/49762 . . . . . Center locating and shaping
- 29/49764 . . . . . with testing or indicating
- 29/49766 . . . . . torquing threaded assemblage or determining torque herein
- 29/49767 . . . . . Determining relative number of threaded member rotations
- 29/49769 . . . . . Using optical instrument [excludes mere human eyeballing]
- 29/49771 . . . . . Quantitative measuring or gauging
- 29/49773 . . . . . by radioactive tracing
- 29/49774 . . . . . by vibratory or oscillatory movement
- 29/49776 . . . . . Pressure, force, or weight determining
- 29/49778 . . . . . with aligning, guiding, or instruction
- 29/4978 . . . . . Assisting assembly or disassembly
- 29/49782 . . . . . of a slide fastener
- 29/49783 . . . . . of slider
- 29/49785 . . . . . of interlocking element
- 29/49787 . . . . . Obtaining plural composite product pieces from preassembled workpieces
- 29/49789 . . . . . Obtaining plural product pieces from unitary workpiece
- 29/4979 . . . . . Breaking through weakened portion
- 29/49792 . . . . . Dividing through modified portion
- 29/49794 . . . . . Dividing on common outline
- 29/49796 . . . . . Coacting pieces
- 29/49798 . . . . . Dividing sequentially from leading end, e.g., by cutting or breaking
- 29/49799 . . . . . Providing transitory integral holding or handling portion
- 29/49801 . . . . . Shaping fiber or fibered material
- 29/49803 . . . . . Magnetically shaping
- 29/49805 . . . . . Shaping by direct application of fluent pressure
- 29/49806 . . . . . Explosively shaping
- 29/49808 . . . . . Shaping container end to encapsulate material
- 29/4981 . . . . . Utilizing transitory attached element or associated separate material
- 29/49812 . . . . . Temporary protective coating, impregnation, or cast layer
- 29/49813 . . . . . Shaping mating parts for reassembly in different positions
- 29/49815 . . . . . Disassembling
- 29/49817 . . . . . with other than ancillary treating or assembling
- 29/49819 . . . . . with conveying of work or disassembled work part
- 29/49821 . . . . . by altering or destroying work part or connector
- 29/49822 . . . . . by applying force
- 29/49824 . . . . . to elastically deform work part or connector
- 29/49826 . . . . . Assembling or joining
- 29/49828 . . . . . Progressively advancing of work assembly station or assembled portion of work
- 29/49829 . . . . . Advancing work to successive stations [i.e., assembly line]
- 29/49831 . . . . . Advancing station
- 29/49833 . . . . . Punching, piercing or reaming part by surface of second part
- 29/49835 . . . . . with shaping
- 29/49837 . . . . . of first part
- 29/49838 . . . . . by stringing
- 29/4984 . . . . . Retaining clearance for motion between assembled parts
- 29/49842 . . . . . Between tube-forming helical coils
- 29/49844 . . . . . Through resilient media
- 29/49845 . . . . . by deforming interlock
- 29/49847 . . . . . by folding part into plural ears
- 29/49849 . . . . . by wrapping around
- 29/49851 . . . . . of link closure
- 29/49853 . . . . . of sphere, i.e., ball, in socket
- 29/49854 . . . . . Ball point pen making
- 29/49856 . . . . . Allowing assembled sphere to move in single plane only
- 29/49858 . . . . . of flange into tubular socket
- 29/4986 . . . . . Outwardly deforming internally fitted rod
- 29/49861 . . . . . Sizing mating parts during final positional association
- 29/49863 . . . . . with prestressing of part
- 29/49865 . . . . . by temperature differential [e.g., shrink fit]
- 29/49867 . . . . . of skin on frame member
- 29/49869 . . . . . by flexing
- 29/4987 . . . . . Elastic joining of parts
- 29/49872 . . . . . Confining elastic part in socket
- 29/49874 . . . . . Prestressing rod, filament or strand
- 29/49876 . . . . . by snap fit
- 29/49877 . . . . . of flexible wall, expansible chamber devices [e.g., bellows]
- 29/49879 . . . . . Spaced wall tube or receptacle
- 29/49881 . . . . . of separate helix [e.g., screw thread]
- 29/49883 . . . . . Ribbing
- 29/49885 . . . . . with coating before or during assembling
- 29/49886 . . . . . to roughen surface
- 29/49888 . . . . . Subsequently coating
- 29/4989 . . . . . with spreading of cable strands
- 29/49892 . . . . . Joining plate edge perpendicularly to frame
- 29/49893 . . . . . Peripheral joining of opposed mirror image parts to form a hollow body
- 29/49895 . . . . . Associating parts by use of aligning means [e.g., use of a drift pin or a "fixture"]

29/49897 . . . .	Registering mating opposed tool parts [e.g., registering a punch and a cooperating die]	29/49989 . . . .	Followed by cutting or removing material
29/49899 . . . .	by multiple cooperating aligning means	29/49991 . . . .	Combined with rolling
29/49901 . . . .	Sequentially associating parts on stationary aligning means	29/49993 . . . .	Filling of opening
29/49902 . . . .	by manipulating aligning means	29/49995 . . . .	Shaping one-piece blank by removing material
29/49904 . . . .	Assembling a subassembly, then assembling with a second subassembly	29/49996 . . . .	Successive distinct removal operations
29/49906 . . . .	Metal deforming with nonmetallic bonding	29/49998 . . . .	Work holding
29/49908 . . . .	Joining by deforming	29/50 . . . .	Convertible metal working machine
29/49909 . . . .	Securing cup or tube between axially extending concentric annuli	29/505 . . . .	Vise type
29/49911 . . . . .	by expanding inner annulus	29/51 . . . .	Plural diverse manufacturing apparatus including means for metal shaping or assembling
29/49913 . . . . .	by constricting outer annulus	29/5101 . . . .	Slide fastener or slide fastener element
29/49915 . . . . .	Overedge assembling of seated part	29/5102 . . . .	Binding or covering and cutting
29/49917 . . . . .	by necking in cup or tube wall	29/5103 . . . .	Cutting covering material only
29/49918 . . . . .	At cup or tube end	29/5104 . . . .	Type of machine
29/4992 . . . . .	by flaring inserted cup or tube end	29/5105 . . . .	Drill press
29/49922 . . . . .	by bending over projecting prongs	29/5107 . . . . .	Drilling and other
29/49924 . . . . .	of parallel side-by-side elongated members	29/5108 . . . . .	Portable
29/49925 . . . . .	Inward deformation of aperture or hollow body wall	29/5109 . . . . .	Lathe
29/49927 . . . . .	Hollow body is axially joined cup or tube	29/511 . . . . .	Grinding attachment
29/49929 . . . . .	Joined to rod	29/5111 . . . . .	Pulley or wheel
29/49931 . . . . .	Joined to overlapping ends of plural rods	29/5112 . . . . .	Convertible
29/49933 . . . . .	After thinning	29/5113 . . . . .	Commutator
29/49934 . . . . .	by axially applying force	29/5114 . . . . .	Lathe and tool
29/49936 . . . . .	Surface interlocking	29/5115 . . . . .	Planer
29/49938 . . . . .	Radially expanding part in cavity, aperture, or hollow body	29/5116 . . . . .	forging and bending, cutting or punching
29/4994 . . . . .	Radially expanding internal tube	29/5117 . . . . .	Fastener [zipper]
29/49941 . . . . .	Peripheral edge joining of abutting plates	29/5118 . . . . .	Riveting
29/49943 . . . . .	Riveting	29/512 . . . . .	Ball making
29/49945 . . . . .	by driven force fit	29/5121 . . . . .	Wire working
29/49947 . . . . .	by applying separate fastener	29/5122 . . . . .	with means to feed work during tool contact
29/49948 . . . . .	Multipart cooperating fastener [e.g., bolt and nut]	29/5123 . . . . .	including nonrotary flying tool
29/4995 . . . . .	Nonthreaded	29/5124 . . . . .	with means to feed work intermittently from one tool station to another
29/49952 . . . . .	At least one part is nonmetallic	29/5125 . . . . .	Stock turret
29/49954 . . . . .	Fastener deformed after application	29/5126 . . . . .	Swiss type
29/49956 . . . . .	Riveting	29/5127 . . . . .	Blank turret
29/49957 . . . . .	At least one part nonmetallic	29/5128 . . . . .	Rotary work - vertical axis
29/49959 . . . . .	Nonresilient fastener	29/5129 . . . . .	Rotary work - horizontal axis
29/49961 . . . . .	At least one part nonmetallic	29/513 . . . . .	Stationary work
29/49963 . . . . .	Threaded fastener	29/5132 . . . . .	Belt drive
29/49964 . . . . .	At least one part nonmetallic	29/5133 . . . . .	Crankshaft
29/49966 . . . . .	with supplemental joining	29/5134 . . . . .	Collapsible tube
29/49968 . . . . .	Metal fusion joining	29/5135 . . . . .	Endless belt
29/4997 . . . . .	At least one part nonmetallic	29/5136 . . . . .	Separate tool stations for selective or successive operation on work
29/49972 . . . . .	with separating, localizing, or eliminating of as-cast defects from a metal casting [e.g., anti-pipe]	29/5137 . . . . .	including assembling or disassembling station
29/49973 . . . . .	Compressing ingot while still partially molten	29/5138 . . . . .	and means to machine work part to fit cooperating work part
29/49975 . . . . .	Removing defects	29/5139 . . . . .	and means to sever work prior to disassembling
29/49977 . . . . .	From center of ingot to leave hollow blank	29/514 . . . . .	comprising means to strip insulation from wire
29/49979 . . . . .	After deforming	29/5141 . . . . .	and means to stake electric wire to commutator or armature in assembling of electric motor or generator
29/4998 . . . . .	Combined manufacture including applying or shaping of fluent material	29/5142 . . . . .	and means to sever work from supply
29/49982 . . . . .	Coating	29/5143 . . . . .	and means to machine product
29/49984 . . . . .	and casting	29/5145 . . . . .	to sever product to length
29/49986 . . . . .	Subsequent to metal working	29/5146 . . . . .	Common reciprocating support for spaced tools
29/49988 . . . . .	Metal casting	29/5147 . . . . .	including composite tool
		29/5148 . . . . .	including severing means
		29/5149 . . . . .	to sever electric terminal from supply strip

- 29/515 . . . . to trim electric component
- 29/5151 . . . . Means comprising hand-manipulatable implement
- 29/5152 . . with turret mechanism
- 29/5153 . . . Multiple turret
- 29/5154 . . . tool turret
- 29/5155 . . . . Rotary tool holder
- 29/5157 . . . . Sliding tool holder
- 29/5158 . . . . Fluid operated
- 29/5159 . . . . Cam operated
- 29/516 . . . . . Longitudinal turret axis
- 29/5161 . . . . . Transverse turret axis
- 29/5162 . . . . Lever operated
- 29/5163 . . . . Rack-and-pinion operated
- 29/5164 . . . . Screw operated
- 29/5165 . . . including rotating and/or locking means
- 29/5166 . . . . Frictional and positive
- 29/5167 . . . . Lock means for tool or work turrets
- 29/5168 . . Multiple-tool holder
- 29/517 . . . Laterally movable stock holder
- 29/5171 . . . Axial tool and transversely movable slide rest
- 29/5172 . . . . Rotary tool spindle
- 29/5173 . . . Longitudinally and transversely movable
- 29/5174 . . . . Rotary tool spindle
- 29/5175 . . . Oscillating tool
- 29/5176 . . including machining means
- 29/5177 . . . and work-holder for assembly
- 29/5178 . . Attachment
- 29/5179 . . Speed controller
- 29/518 . . Carriage stop mechanism
- 29/5182 . . Flash remover
- 29/5183 . . Welding strip ends
- 29/5184 . . Casting and working
- 29/5185 . . Tube making
- 29/5186 . . Covering
- 29/5187 . . Wire working
- 29/5188 . . Radiator making
- 29/5189 . . Printing plate
- 29/519 . . Turret
- 29/5191 . . Assembly
- 29/5192 . . Armature
- 29/5193 . . Electrical connector or terminal
- 29/5195 . . Tire valve or spark plug
- 29/5196 . . Multiple station with conveyor
- 29/5197 . . Multiple stations working strip material
- 29/5198 . . Continuous strip
- 29/5199 . . Work on tubes
- 29/52 . . Plural diverse manufacturing apparatus
- 29/53 . . Means to assemble or disassemble
- 29/53004 . . with means to regulate operation by use of templet, tape, card or other replaceable information supply
- 29/53009 . . . with comparator
- 29/53013 . . . . Computer input
- 29/53017 . . . Web or strand-carried information supply
- 29/53022 . . with means to test work or product
- 29/53026 . . with randomly actuated stopping or disabling means
- 29/5303 . . . Responsive to condition of work or product
- 29/53035 . . . Responsive to operative [e.g., safety device, etc.]
- 29/53039 . . with control means energized in response to activator stimulated by condition sensor
- 29/53043 . . . including means to divert defective work part
- 29/53048 . . . Multiple station assembly or disassembly apparatus
- 29/53052 . . . . including position sensor
- 29/53057 . . . Responsive to timer
- 29/53061 . . . Responsive to work or work-related machine element
- 29/53065 . . . . with means to fasten by deformation
- 29/5307 . . . . . Self-piercing work part
- 29/53074 . . . . with means to fasten by elastic joining
- 29/53078 . . . . with means to fasten by frictional fitting
- 29/53083 . . . . including means to apply magnetic force directly to position or hold work
- 29/53087 . . with signal, scale, illuminator, or optical viewer
- 29/53091 . . . for work-holder for assembly or disassembly
- 29/53096 . . including means to provide a controlled environment
- 29/531 . . Nuclear device
- 29/53104 . . Roller or ball bearing
- 29/53109 . . . including deforming means
- 29/53113 . . Heat exchanger
- 29/53117 . . . including means to manipulate heat exchanger tube bundle
- 29/53122 . . . including deforming means
- 29/53126 . . Means to place sheath on running-length core
- 29/5313 . . Means to assemble electrical device
- 29/53135 . . . Storage cell or battery
- 29/53139 . . . . including deforming means
- 29/53143 . . . Motor or generator
- 29/53148 . . . . Means to assemble commutator
- 29/53152 . . . . Means to position insulation
- 29/53157 . . . . Means to stake wire to commutator or armature
- 29/53161 . . . . including deforming means
- 29/53165 . . . Magnetic memory device
- 29/5317 . . . Laminated device
- 29/53174 . . . Means to fasten electrical component to wiring board, base, or substrate
- 29/53178 . . . . Chip component
- 29/53183 . . . . Multilead component
- 29/53187 . . . Multiple station assembly apparatus
- 29/53191 . . . Means to apply vacuum directly to position or hold work part
- 29/53196 . . . Means to apply magnetic force directly to position or hold work part
- 29/532 . . . Conductor
- 29/53204 . . . . Electrode
- 29/53209 . . . . Terminal or connector
- 29/53213 . . . . . Assembled to wire-type conductor
- 29/53217 . . . . . Means to simultaneously assemble multiple, independent conductors to terminal
- 29/53222 . . . . . Means comprising hand-manipulatable implement
- 29/53226 . . . . . Fastening by deformation
- 29/5323 . . . . . Fastening by elastic joining
- 29/53235 . . . . . Means to fasten by deformation
- 29/53239 . . . . . Means to fasten by elastic joining
- 29/53243 . . . . Multiple, independent conductors
- 29/53248 . . . . Switch or fuse

- 29/53252 . . . Means to simultaneously fasten three or more parts
- 29/53257 . . . Means comprising hand-manipulatable implement
- 29/53261 . . . Means to align and advance work part
- 29/53265 . . . with work-holder for assembly
- 29/5327 . . . Means to fasten by deforming
- 29/53274 . . Means to disassemble electrical device
- 29/53278 . . . Storage cell or battery
- 29/53283 . . . Means comprising hand-manipulatable implement
- 29/53287 . . Means to place traveler on ring or ring on bobbin of a textile machine
- 29/53291 . . Slide fastener
- 29/53296 . . . Means to assemble stop onto stringer
- 29/533 . . . Means to assemble slider onto stringer
- 29/53304 . . . Means to assemble teeth onto stringer
- 29/53309 . . . Disassembly means
- 29/53313 . . Means to interrelatedly feed plural work parts from plural sources without manual intervention
- 29/53317 . . . Box or pallet assembly means
- 29/53322 . . . Means to assemble container
- 29/53326 . . . . Handle to container
- 29/5333 . . . . Label to container
- 29/53335 . . . . Pressurized dispensing container
- 29/53339 . . . . Hypodermic syringe
- 29/53343 . . . . including fluid component
- 29/53348 . . . Running-length work
- 29/53352 . . . . Means including orbiting running-length work supply
- 29/53357 . . . . Pipe section
- 29/53361 . . . . Assembled to article
- 29/53365 . . . Multiple station assembly apparatus
- 29/5337 . . . including assembly pallet
- 29/53374 . . . including turret-type conveyor
- 29/53378 . . . including converging conveyors
- 29/53383 . . . and means to fasten work parts together
- 29/53387 . . . . by deforming
- 29/53391 . . . . by elastic joining
- 29/53396 . . . . by friction fit
- 29/534 . . Multiple station assembly or disassembly apparatus
- 29/53404 . . . including turret-type conveyor
- 29/53409 . . . including converging conveyors
- 29/53413 . . . . and primary central conveyor
- 29/53417 . . . Means to fasten work parts together
- 29/53422 . . . . by deforming
- 29/53426 . . . . by elastic joining
- 29/5343 . . Means to drive self-piercing work part
- 29/53435 . . including assembly pallet
- 29/53439 . . including provision to utilize thermal expansion of work
- 29/53443 . . Means to assemble or disassemble container and fluid component
- 29/53448 . . Vehicle wheel
- 29/53452 . . . Railway wheel
- 29/53457 . . Tumbler lock
- 29/53461 . . toy doll
- 29/53465 . . Film or tape cartridge
- 29/5347 . . Crystal to watch or clock
- 29/53474 . . Means to insert or extract pen point
- 29/53478 . . with magazine supply
- 29/53483 . . . and magnetic work-holder or positioner
- 29/53487 . . . Assembling means comprising hand-manipulatable implement
- 29/53491 . . . . One work part comprising living tissue
- 29/53496 . . . . comprising driver for snap-off-mandrel fastener; e.g., Pop [TM] riveter
- 29/535 . . . . One work part comprising nut or screw
- 29/53504 . . . . One work part comprising paper clip
- 29/53509 . . . . Means to assemble tire stud into tire tread
- 29/53513 . . . . Means to fasten by deforming
- 29/53517 . . . . . Fastening sinker to fishing line
- 29/53522 . . . Means to fasten by deforming
- 29/53526 . . Running-length work
- 29/5353 . . . Assembled on core
- 29/53535 . . including means to vibrate work
- 29/53539 . . including work conveyor
- 29/53543 . . . including transporting track
- 29/53548 . . . . and work carrying vehicle
- 29/53552 . . Valve applying or removing
- 29/53557 . . . Engine valve unit puller or applier
- 29/53561 . . . Engine valve spring compressor [only]
- 29/53565 . . . . Plural spring engagement
- 29/5357 . . . . Screw operated
- 29/53574 . . . . . Parallel or tong type, side entrance
- 29/53578 . . . . . Lever operated
- 29/53583 . . . . . Single jaw or valve engagement
- 29/53587 . . . . . Plier type
- 29/53591 . . . to or from wheel rim of resilient tire or tube
- 29/53596 . . . Removal tool
- 29/536 . . . Piston ring inserter or remover
- 29/53604 . . . Plier-type operation
- 29/53609 . . . . with ring encirclement
- 29/53613 . . Spring applier or remover
- 29/53617 . . . Transmission spring
- 29/53622 . . . Helical spring
- 29/53626 . . . Flat spiral spring [e.g., watch or clock type]
- 29/5363 . . . Circular spring
- 29/53635 . . . Leaf spring
- 29/53639 . . Means to stake watch or clock
- 29/53643 . . . Plier type
- 29/53648 . . Brake lining to brake shoe
- 29/53652 . . Tube and coextensive core
- 29/53657 . . to apply or remove a resilient article [e.g., tube, sleeve, etc.]
- 29/53661 . . . Nipple to nursing bottle
- 29/53665 . . . Well protector to sucker rod
- 29/5367 . . Coupling to conduit
- 29/53674 . . Loose-leaf sheet binder
- 29/53678 . . Compressing parts together face to face
- 29/53683 . . Spreading parts apart or separating them from face to face engagement
- 29/53687 . . by rotation of work part
- 29/53691 . . . Means to insert or remove helix
- 29/53696 . . Means to string
- 29/537 . . tool handle and tool
- 29/53704 . . tool chuck and tool
- 29/53709 . . Overedge assembling means
- 29/53713 . . . Belt-hook attacher
- 29/53717 . . . Annular work
- 29/53722 . . . . with radially acting tool inside annular work
- 29/53726 . . . . with second workpiece inside annular work one workpiece moved to shape the other

29/5373 . . . . . comprising driver for snap-off-mandrel fastener; e.g., Pop [TM] riveter  
 29/53735 . . . . . including near side fastener shaping tool  
 29/53739 . . . . . Pneumatic- or fluid-actuated tool  
 29/53743 . . . . . Liquid  
 29/53748 . . . . . and gas  
 29/53752 . . . . . having rotary drive mechanism  
 29/53757 . . . . . having allochiral actuating handles  
 29/53761 . . . . . having repositionable annulus engaging tool  
 29/53765 . . . . . including near side fastener shaping tool  
 29/5377 . . . Riveter  
 29/53774 . . . . Single header  
 29/53778 . . . . Pipe joiner  
 29/53783 . . . Clip applier  
 29/53787 . . . Binding or covering  
 29/53791 . . . Edge binding  
 29/53796 . . Puller or pusher means, contained force multiplying operator  
 29/538 . . . Hubcap and hub  
 29/53804 . . . Battery post and terminal  
 29/53809 . . . Cotter pin and cooperating member  
 29/53813 . . . Plier type means  
 29/53817 . . . Valve stem pin or key and another member  
 29/53822 . . . Machine key and another member  
 29/53826 . . . Arbor-type press means  
 29/5383 . . . having fluid operator  
 29/53835 . . . having wedge operator  
 29/53839 . . . having percussion or explosive operator  
 29/53843 . . . . Tube, sleeve, or ferrule inserting or removing  
 29/53848 . . . having screw operator  
 29/53852 . . . . C-frame  
 29/53857 . . . . Central screw, work-engagers around screw  
 29/53861 . . . . Work-engager arms along or parallel to screw  
 29/53865 . . . . . with arm connecting engaging means  
 29/5387 . . . . . Pivotal arms  
 29/53874 . . . . . Pivotal grippers on screw  
 29/53878 . . . . . Tubular or tube segment forms work-engager  
 29/53883 . . . . . Screw threaded work-engager  
 29/53887 . . . . . Movable grippers on screw  
 29/53891 . . . . . Plate or bar forms work-engager  
 29/53896 . . . having lever operator  
 29/539 . . . . Plier type means  
 29/53904 . . Means comprising piston ring group contractor or holder  
 29/53909 . . Means comprising hand manipulatable tool  
 29/53913 . . . Aligner or center  
 29/53917 . . . Tube with tube  
 29/53922 . . . Auto wheel with auto chassis  
 29/53926 . . . Clutch plates  
 29/5393 . . . Means comprising impact receiving tool  
 29/53935 . . . . C-frame  
 29/53939 . . . . Thread protector [e.g., wheel axle type]  
 29/53943 . . . Hand gripper for direct push or pull  
 29/53948 . . . . Centrifugal separator  
 29/53952 . . . . Tube sleeve or ferrule applying or removing  
 29/53957 . . . . Thread-tapping grip  
 29/53961 . . with work-holder for assembly  
 29/53965 . . . for assembling a luminescent mantle

29/5397 . . . and assembling press [e.g., truss assembling means, etc.]  
 29/53974 . . . having means to permit support movement while work is thereon  
 29/53978 . . including means to relatively position plural work parts  
 29/53983 . . Work-supported apparatus  
 29/53987 . . Tube, sleeve or ferrule  
 29/53991 . . Work gripper, anvil, or element  
 29/53996 . . by deforming  
 29/54 . . Miscellaneous apparatus

**Former US Class 70 series**

**70/00 Locks**  
 70/10 . Miscellaneous  
 70/20 . Attack-actuated defeating mechanisms  
 70/25 . . With reset mechanisms  
 70/30 . Hasp  
 70/308 . . Combination lock  
 70/317 . . . Hasp-carried  
 70/325 . . . Keeper-carried  
 70/333 . . Key lock  
 70/342 . . . Hasp-carried  
 70/35 . . . . Keeper-encasing  
 70/358 . . . . . Dead bolt  
 70/367 . . . . . Latching bolt  
 70/375 . . . . . Dead bolt  
 70/383 . . . . . Latching bolt  
 70/392 . . . Keeper-carried  
 70/40 . Portable  
 70/402 . . Fetters  
 70/404 . . . Manacles and cuffs  
 70/407 . . . . Nippers  
 70/409 . . . Shackles  
 70/411 . . Clamps  
 70/413 . . Padlocks  
 70/415 . . . Combination and/or key-controlled  
 70/417 . . . Combination-controlled  
 70/42 . . . . Non-shackle type  
 70/422 . . . . Rigid shackle  
 70/424 . . . . . Sliding  
 70/426 . . . . . Removable  
 70/428 . . . . . Pivoted  
 70/43 . . . . . Sliding detent  
 70/433 . . . . . Swinging detent  
 70/435 . . . . Flexible shackle  
 70/437 . . . Key-controlled  
 70/439 . . . . Non-shackle type  
 70/441 . . . . . Housing extension and cooperating detent  
 70/443 . . . . . Single stem or shank  
 70/446 . . . . Rigid shackle  
 70/448 . . . . . Divided shackle  
 70/45 . . . . . Divided jaw type  
 70/452 . . . . . Sliding  
 70/454 . . . . . Removable  
 70/457 . . . . . Arcuate locus  
 70/459 . . . . . Both legs engaged  
 70/461 . . . . . Short leg engaged  
 70/463 . . . . . Long leg engaged  
 70/465 . . . . . Pivoted  
 70/467 . . . . . Sliding detent



70/47	. . . . . Free end only engaged	70/5208	. . . . . Multiple dead bolts
70/472	. . . . . Pivoted end only engaged	70/5212	. . . . . Sliding dead bolt
70/474	. . . . . Swinging detent	70/5217	. . . . . Swinging dead bolt
70/476	. . . . . Free end only engaged	70/5221	. . . . . Locking latch bolt, biased
70/478	. . . . . Pivoted end only engaged	70/5226	. . . . . Combined dead bolt and latching bolt
70/48	. . . . . Arcuate locus	70/523	. . . . . Multiple dead bolts
70/483	. . . . Flexible shackle	70/5235	. . . . . Multiple latch bolts
70/485	. . . With seal	70/5239	. . . . . Dead bolt, dogged latch bolt
70/487	. . . Parts, accessories, attachments and adjuncts	70/5243	. . . . . Manually dogged latch bolt
70/489	. . . . Housings	70/5246	. . . . . Dead bolts
70/491	. . . . Shackles	70/5248	. . . . . Multiple
70/493	. . . . Protectors	70/5252	. . . . . Sliding and swinging
70/496	. . . . Sheaths	70/5257	. . . . . Combination operable only
70/498	. . . . Shields or canopies	70/5261	. . . . . Key operable only
70/50	. Special application	70/5265	. . . . . Sliding and rotary
70/5004	. . For antitheft signaling device on protected article	70/527	. . . . . Sliding
70/5009	. . For portable articles	70/5274	. . . . . Combination operable only
70/5013	. . . Canes, umbrellas, apparel	70/5279	. . . . . Key operable only
70/5018	. . . Robes	70/5283	. . . . . Swinging
70/5022	. . . Tools	70/5288	. . . . . Combination operable only
70/5027	. . . Supporting stands	70/5292	. . . . . Key operable only
70/5031	. . . Receptacle	70/5296	. . . . . Single
70/5035	. . . . Bag	70/5301	. . . . . Sliding and swinging
70/504	. . . . Collapsible throat	70/5305	. . . . . Combination operable only
70/5044	. . . . Pivoted rigid jaw	70/531	. . . . . Key operable only
70/5049	. . . . Attache or briefcase, portfolio	70/5314	. . . . . Sliding and rotary
70/5053	. . . . Interengageable slide fastener type	70/5319	. . . . . Sliding
70/5058	. . . . Trunk and/or suitcase	70/5323	. . . . . Multidirectional displacement
70/5062	. . . . Projecting fixed or movable lug type	70/5327	. . . . . Keeper interlocking
70/5066	. . . . Bolt type	70/5332	. . . . . Curved
70/5071	. . . . Hasp controlled	70/5336	. . . . . Combination operable only
70/5075	. . . . Link and lever of hasp type	70/5341	. . . . . Key operable only
70/508	. . . . Hasp type	70/5345	. . . . . Swinging
70/5084	. . . . Hasp-carried lock	70/535	. . . . . Keeper and housing interlocking
70/5089	. . . . Loop type	70/5354	. . . . . With hooked end
70/5093	. . For closures	70/5358	. . . . . Combination operable only
70/5097	. . . Cabinet	70/5363	. . . . . Key operable only
70/5102	. . . . Projecting lug type	70/5367	. . . . . Screw
70/5106	. . . . External catch	70/5372	. . . . . Locking latch bolts, biased
70/5111	. . . . Projectable bolt	70/5376	. . . . . Keeper interlocking
70/5115	. . . . Multiple bolts	70/5381	. . . . . Projectable beyond normal biased position
70/5119	. . . . Multidirectional displacement	70/5385	. . . . . Spring projected
70/5124	. . . . Swinging and hooked end	70/5389	. . . . . Manually operable
70/5128	. . . Drawer	70/5394	. . . . . Directly acting dog for exterior, manual, bolt manipulator
70/5133	. . . . Dead bolt	70/5398	. . . . . Related dog for interior, manual, bolt manipulator
70/5137	. . . . Till	70/5403	. . . . . Dog having a dog
70/5142	. . . . Combination	70/5407	. . . . . Related dogging means for latch-bolt
70/5146	. . . Window	70/5412	. . . . . Dog and dog actuator always interconnected
70/515	. . . . Sliding sash	70/5416	. . . . . Exterior manipulator declutched from bolt when dogged
70/5155	. . . Door	70/542	. . . . . Manual dog-controller concentric with bolt manipulator
70/5159	. . . . Emergency exit	70/5425	. . . . . Shiftable rollback serves as dog
70/5164	. . . . Links to limit opening	70/5429	. . . . . Additional dog-controller key actuated for dogging and undogging
70/5168	. . . . Braces		
70/5173	. . . . Sliding door		
70/5177	. . . . Extending keeper		
70/5181	. . . . Rigid or fixed		
70/5186	. . . . Extensible		
70/519	. . . . Projecting or extending bolt		
70/5195	. . . . Projectable bolt		
70/5199	. . . . Swinging door		
70/5204	. . . . Interfitting lock housing and keeper		

70/5434	. . . . .	Dog-controller axially slidable and axially rotatable	70/5659	. . . . .	Dead bolt
70/5438	. . . . .	Dog-controller rotatable	70/5664	. . . . .	Latching bolt
70/5442	. . . . .	Key-actuated lock releases dog	70/5668	. . . . .	Shaft-carried lock
70/5447	. . . . .	Manual bolt-manipulator operation releases dog	70/5673	. . . . .	Freely movable when locked
70/5451	. . . . .	Manual bolt-manipulator operation releases dog	70/5677	. . . . .	Shaft-carried clutch
70/5456	. . . . .	Interior manual bolt-manipulator serves as dog-controller	70/5681	. . . . .	Gear
70/546	. . . . .	For both dogging and undogging	70/5686	. . . . .	Planetary
70/5465	. . . . .	Manual dog-controller	70/569	. . . . .	Lever
70/5469	. . . . .	With additional lock actuated dog-controller	70/5695	. . . . .	Guide
70/5473	. . . . .	Additional dog-controller controls both dogging and undogging	70/5699	. . . . .	Quadrant
70/5478	. . . . .	Accessible at door edge	70/5704	. . . . .	Lever-carried lock
70/5482	. . . . .	Slidable only	70/5708	. . . . .	Fixed lever-receiving keeper
70/5487	. . . . .	Manual bolt-manipulator is slidable only	70/5712	. . . . .	Lever-carried lock
70/5491	. . . . .	Manual bolt-manipulator is lever	70/5717	. . . . .	Multiple
70/5496	. . . . .	Freely movable external manipulator	70/5721	. . . . .	Externally mounted locking device
70/55	. . . . .	Dogged bolt or connections	70/5726	. . . . .	With padlock
70/5504	. . . . .	Automatic	70/573	. . . . .	Single
70/5509	. . . . .	Snub bolt	70/5735	. . . . .	Externally mounted locking device
70/5513	. . . . .	By manipulator	70/5739	. . . . .	With padlock
70/5518	. . . . .	Connections only	70/5743	. . . . .	Disconnectable
70/5522	. . . . .	Gravity projected	70/5748	. . . . .	Foldable
70/5527	. . . . .	Projecting mechanism is lock controlled	70/5752	. . . . .	Universal mounting
70/5531	. . . . .	Combination and/or key operable	70/5757	. . . . .	Handle, handwheel or knob
70/5535	. . . . .	Trip release	70/5761	. . . . .	Retractable or flush handle
70/554	. . . . .	Cover, lid, cap, encasing shield	70/5765	. . . . .	Rotary or swinging
70/5544	. . . . .	Pivoted	70/577	. . . . .	Locked stationary
70/5549	. . . . .	Cover-carried lock	70/5774	. . . . .	Externally mounted locking device
70/5553	. . . . .	Dead bolt	70/5779	. . . . .	With padlock
70/5558	. . . . .	Latching bolt	70/5783	. . . . .	Combination lock
70/5562	. . . . .	Removable	70/5788	. . . . .	Push pin or button
70/5566	. . . . .	External locking devices	70/5792	. . . . .	Handle-carried key lock
70/5571	. . . . .	Freely movable when locked	70/5796	. . . . .	Coaxially mounted
70/5575	. . . . .	Directly seating	70/5801	. . . . .	Axially movable bolt
70/558	. . . . .	Cover-carried lock	70/5805	. . . . .	Freely movable when locked
70/5584	. . . . .	Dead bolt	70/581	. . . . .	Combination lock
70/5589	. . . . .	Latching bolt	70/5814	. . . . .	Push pin or button
70/5593	. . . . .	Movably seating	70/5819	. . . . .	Handle-carried key lock
70/5597	. . . . .	Cover-carried lock	70/5823	. . . . .	Coaxial clutch connection
70/5602	. . . . .	Dead bolt	70/5827	. . . . .	Axially movable clutch
70/5606	. . . . .	Latching bolt	70/5832	. . . . .	Lock and handle assembly
70/5611	. . . . .	For control and machine elements	70/5836	. . . . .	Wheel
70/5615	. . . . .	Valve	70/5841	. . . . .	Rotation blocking
70/5619	. . . . .	Locked stationary	70/5845	. . . . .	Spoke gap traversing type
70/5624	. . . . .	Externally mounted locking device	70/585	. . . . .	Brake type
70/5628	. . . . .	Valve encasing	70/5854	. . . . .	Bolt, nut, stud, stud-cap
70/5633	. . . . .	Housing-carried lock	70/5858	. . . . .	Locked stationary
70/5637	. . . . .	With padlock	70/5863	. . . . .	Freely movable when locked
70/5642	. . . . .	Rod	70/5867	. . . . .	Encased
70/5646	. . . . .	Rotary shaft	70/5872	. . . . .	For cycles
70/565	. . . . .	Locked stationary	70/5876	. . . . .	Anchors
70/5655	. . . . .	Housing-carried lock	70/5881	. . . . .	Stands
			70/5885	. . . . .	Drive
			70/5889	. . . . .	For automotive vehicles
			70/5894	. . . . .	Plural point
			70/5898	. . . . .	With switch
			70/5903	. . . . .	Hood
			70/5907	. . . . .	With switch
			70/5912	. . . . .	Fuel valve
			70/5916	. . . . .	With switch
			70/592	. . . . .	Cap combined
			70/5925	. . . . .	Transmission

- 70/5929 . . . . Cover combined
- 70/5934 . . . . Selective-type shift rod, fork or block
- 70/5938 . . . . . With switch
- 70/5942 . . . . Planetary type
- 70/5947 . . . . . With switch
- 70/5951 . . . . . With switch
- 70/5956 . . . . Steering mechanism with switch
- 70/596 . . . . Pilot wheel control or linkage
- 70/5965 . . . . Control levers with switch
- 70/5969 . . . . Other element with switch
- 70/5973 . . . . Remote control
- 70/5978 . . . . . With switch
- 70/5982 . . . . Accessories
- 70/5987 . . . . Spare or mounted wheel or tire
- 70/5991 . . . . . Tire or rim only
- 70/5996 . . . . For seats
- 70/60 . . . . Systems
- 70/625 . . . . Operation and control
- 70/65 . . . . Central control
- 70/675 . . . . Serially operable
- 70/70 . . . . Operating mechanism
- 70/7006 . . . . Predetermined time interval controlled
- 70/7011 . . . . Positively initiated delay interval
- 70/7017 . . . . . Interval terminating
- 70/7023 . . . . . Repeating interval
- 70/7028 . . . . Electric
- 70/7034 . . . . Clockwork control
- 70/704 . . . . . Continuously operating once initiated
- 70/7045 . . . . . Emergency release
- 70/7051 . . . . Using a powered device [e.g., motor]
- 70/7057 . . . . Permanent magnet
- 70/7062 . . . . Electrical type [e.g., solenoid]
- 70/7068 . . . . . Actuated after correct combination  
recognized [e.g., numerical, alphabetical, or  
magnet[s] pattern]
- 70/7073 . . . . . Including use of a key
- 70/7079 . . . . . Key rotated [e.g., Eurocylinder]
- 70/7085 . . . . . Using a dial having indicia or pointer and  
indicia
- 70/709 . . . . . Plural interdependent or plural  
independently operable tumbler sets
- 70/7096 . . . . . With mechanism having rocker arm or  
linked bars
- 70/7102 . . . . . And details of blocking system [e.g., linkage,  
latch, pawl, spring]
- 70/7107 . . . . . And alternately mechanically actuated by a  
key, dial, etc.
- 70/7113 . . . . Projected and retracted electrically
- 70/7119 . . . . Projected electrically only
- 70/7124 . . . . Retracted electrically only
- 70/713 . . . . Dogging manual operator
- 70/7136 . . . . Key initiated actuation of device
- 70/7141 . . . . Combination and key
- 70/7147 . . . . Combination or key
- 70/7153 . . . . Combination
- 70/7158 . . . . Individual blocking elements
- 70/7164 . . . . Selectively operable
- 70/7169 . . . . Complex movement or puzzle type
- 70/7175 . . . . Labyrinthian passage
- 70/7181 . . . . Tumbler type
- 70/7186 . . . . Plural interdependent sets
- 70/7192 . . . . Plural independently operable sets
- 70/7198 . . . . . Single tumbler set
- 70/7203 . . . . . With ball or roller
- 70/7209 . . . . . Interset sliding tumblers
- 70/7215 . . . . . Individually set sliding tumblers
- 70/722 . . . . . Manually operable
- 70/7226 . . . . . Associated movable operator
- 70/7232 . . . . . . Removable
- 70/7237 . . . . . Rotary or swinging tumblers
- 70/7243 . . . . . Interset tumblers
- 70/7249 . . . . . . Tumblers released
- 70/7254 . . . . . . Fence held spaced from tumblers
- 70/726 . . . . . Individually set
- 70/7266 . . . . . . Movable selector
- 70/7271 . . . . . . Associated movable operator
- 70/7277 . . . . . . Removable
- 70/7282 . . . . . . Pin or rod and slot
- 70/7288 . . . . . . Spindle operator
- 70/7294 . . . . . . Concentric spindles
- 70/7299 . . . . . . Axially shiftable spindle
- 70/7305 . . . . . . Manually operable
- 70/7311 . . . . Step-by-step
- 70/7316 . . . . Combination upsetting
- 70/7322 . . . . Permutation
- 70/7328 . . . . Compound tumblers
- 70/7333 . . . . . With fastener or holder
- 70/7339 . . . . . Pin and socket
- 70/7345 . . . . . Removable change element
- 70/735 . . . . Operating elements
- 70/7356 . . . . Fences
- 70/7362 . . . . . Bolt or lock housing supported
- 70/7367 . . . . . Tumbler structure and position
- 70/7373 . . . . . Nested
- 70/7379 . . . . . Variant diameter
- 70/7384 . . . . . Mounts
- 70/739 . . . . . Motion-restraining means
- 70/7395 . . . . . Friction holder
- 70/7401 . . . . Spindles
- 70/7407 . . . . Operating indicators
- 70/7412 . . . . . Portable combination setting guide
- 70/7418 . . . . . Dials
- 70/7424 . . . . Tampering prevention or attach defeating
- 70/7429 . . . . Resonance type
- 70/7435 . . . . Hidden or covered dial
- 70/7441 . . . . Key
- 70/7446 . . . . Multiple keys
- 70/7452 . . . . Selective shutout type
- 70/7458 . . . . Interdependent
- 70/7463 . . . . Master- and change-key
- 70/7469 . . . . Change-key shutout
- 70/7475 . . . . Submaster- and change-key
- 70/748 . . . . . Change-key shutout
- 70/7486 . . . . Single key
- 70/7492 . . . . Tumblerless push or pull key
- 70/7497 . . . . Tumblerless warded
- 70/7503 . . . . Tumbler and ward type
- 70/7508 . . . . Tumbler type
- 70/7514 . . . . Sliding and rotary or swinging tumblers
- 70/752 . . . . Sliding tumblers
- 70/7525 . . . . . Longitudinal
- 70/7531 . . . . . Transverse
- 70/7537 . . . . . Rotary or swinging tumblers

70/7542	. . . . .	Single set	70/7876	. . . . .	Bow or head
70/7548	. . . . .	Directly key engaged	70/7881	. . . . .	Bitting
70/7554	. . . . .	Cylinder type with auxiliary tumblers or wards	70/7887	. . . . .	Frangible
70/7559	. . . . .	Cylinder type	70/7893	. . . . .	Permutation
70/7565	. . . . .	Plural tumbler sets	70/7898	. . . . .	Threaded
70/7571	. . . . .	Concentric tumblers	70/7904	. . . . .	Magnetic features
70/7576	. . . . .	Sliding and rotary plug	70/791	. . . . .	Ejecting feature
70/7582	. . . . .	Sliding plug	70/7915	. . .	Tampering prevention or attack defeating
70/7588	. . . . .	Rotary plug	70/7921	. . . . .	Armoring
70/7593	. . . . .	Sliding tumblers	70/7927	. . . . .	Anti-jimmy
70/7599	. . . . .	Transverse of plug	70/7932	. . . . .	Anti-pick
70/7605	. . . . .	Pin tumblers	70/7938	. . . . .	Guard ward
70/761	. . . . .	Rotatable pins [e.g., MEDECO lock]	70/7944	. . . . .	Guard tumbler
70/7616	. . . . .	Including sidebar	70/7949	. . . . .	Yielding or frangible connections
70/7621	. . . . .	Including sidebar	70/7955	. . . . .	Keyhole guards
70/7627	. . . . .	Rotary or swinging tumblers	70/796	. . . . .	Portable
70/7633	. . . . .	Transverse of plug	70/7966	. . . . .	Combination-controlled
70/7638	. . . . .	Cylinder and plug assembly	70/7972	. . . . .	Portable
70/7644	. . . . .	Key- and tool-controlled	70/7977	. . . . .	Key-controlled
70/765	. . . . .	Key only controlled	70/7983	. . . . .	Portable
70/7655	. . . . .	Cylinder attaching or mounting means	70/7989	. . . . .	Key securers, fasteners or retainers
70/7661	. . . . .	Detachable or removable cylinder	70/7994	. . . . .	Portable
70/7667	. . . . .	Operating elements, parts and adjuncts	70/80	. . .	Parts, attachments, accessories and adjuncts
70/7672	. . . . .	Cylinder	70/8027	. . .	Condition indicators
70/7678	. . . . .	Adjustable	70/8054	. . . . .	With recorder
70/7684	. . . . .	Plug	70/8081	. . . . .	Electric
70/7689	. . . . .	Tumblers	70/8108	. . . . .	Padlock
70/7695	. . . . .	Plate	70/8135	. . . . .	With register
70/7701	. . . . .	Pin	70/8162	. . . . .	Padlock
70/7706	. . . . .	Operating connections	70/8189	. . . . .	Contactual feeler
70/7712	. . . . .	Rollbacks	70/8216	. . . . .	Tampering detector
70/7718	. . . . .	Intermediate	70/8243	. . . . .	With seal
70/7723	. . . . .	Cylinder rings	70/827	. . . . .	Attention-directing
70/7729	. . . . .	Permutation	70/8297	. . . . .	For combination-operated mechanism
70/7734	. . . . .	Automatically key set combinations	70/8324	. . . . .	Housings
70/774	. . . . .	Adjustable tumblers	70/8351	. . . . .	Operating attachments
70/7746	. . . . .	Removable change element	70/8378	. . . . .	Knobs, hand grips, etc.
70/7751	. . . . .	With ball or roller	70/8405	. . . . .	Combination finders
70/7757	. . . . .	Push or pull key operation	70/8432	. . . . .	For key-operated mechanism
70/7763	. . . . .	Key ejecting	70/8459	. . . . .	Housings
70/7768	. . . . .	Key-removal preventing	70/8486	. . . . .	Cylindrical
70/7774	. . . . .	False or picking key trapping	70/8514	. . . . .	Face plate
70/778	. . . . .	Operating elements	70/8541	. . . . .	Mounting arrangements
70/7785	. . . . .	Tumblers	70/8568	. . . . .	Escutcheons
70/7791	. . . . .	Keys	70/8595	. . . . .	Key guides, internal
70/7797	. . . . .	Picking	70/8622	. . . . .	Key insertion guides
70/7802	. . . . .	Multi-part structures	70/8649	. . . . .	Keyhole covers
70/7808	. . . . .	With foldable shank or stem	70/8676	. . . . .	Key holders
70/7814	. . . . .	With extensible shank or stem	70/8703	. . . . .	Flexible
70/7819	. . . . .	With slidable bit portion	70/873	. . . . .	One-piece
70/7825	. . . . .	With pivoted or swinging bit portion	70/8757	. . . . .	Releasable catches
70/7831	. . . . .	Nested second key	70/8784	. . . . .	Parallel key loops, coaxially mounted, individually movable
70/7836	. . . . .	Plural shanks, stems or bit wings	70/8811	. . . . .	Key identification
70/7842	. . . . .	Single shank or stem	70/8838	. . . . .	Adjustment provisions
70/7847	. . . . .	Round rigid	70/8865	. . . . .	Reversible structures
70/7853	. . . . .	Tubular	70/8892	. . . . .	Silencers or mufflers
70/7859	. . . . .	Flat rigid	70/8919	. . . . .	Antifriction provisions
70/7864	. . . . .	Cylinder lock type	70/8946	. . . . .	Emergency unlocking or release arrangements
70/787	. . . . .	Irregular nonplanar or undulated	70/8973	. . . . .	Mounting aids, guides and assistors

**Former US Class 74 Series****74/00 Machine element or mechanism**

- 74/10 . High frequency vibratory devices
- 74/11 . Tripping mechanism
- 74/111 . . Speed controlled
- 74/113 . . . Valve gear trips [e.g., steam engine "Corliss" type]
- 74/114 . . Retarded
- 74/115 . . . Plural, sequential, trip actuations
- 74/116 . . . Clock train
- 74/118 . . . . Winding knob trip [e.g., alarm mechanism]
- 74/119 . . Hit and miss
- 74/12 . Gyroscopes
- 74/1204 . . with caging or parking means
- 74/1207 . . . Rotor spin and cage release type
- 74/1211 . . . and resetting means
- 74/1214 . . with gimbal lock preventing means
- 74/1218 . . Combined
- 74/1221 . . Multiple gyroscopes
- 74/1225 . . . with rotor drives
- 74/1229 . . Gyroscope control
- 74/1232 . . . Erecting
- 74/1236 . . . . by plural diverse forces
- 74/1239 . . . . by jet
- 74/1243 . . . . by weight
- 74/1246 . . . . by friction
- 74/125 . . . . by magnetic field
- 74/1254 . . . . by motor torque
- 74/1257 . . . Damping
- 74/1261 . . with pick off
- 74/1264 . . . Optical
- 74/1268 . . . Pneumatic
- 74/1271 . . . Conducting liquid
- 74/1275 . . . Electrical
- 74/1279 . . . Electrical and magnetic
- 74/1282 . . with rotor drive
- 74/1286 . . Vertical gyroscopes
- 74/1289 . . Horizontal gyroscopes
- 74/1293 . . Flexure hinges for gyros
- 74/1296 . . Flywheel structure
- 74/13 . Machine starters
- 74/131 . . Automatic
- 74/132 . . . Separate power mesher
- 74/133 . . . Holders
- 74/134 . . . Clutch connection
- 74/136 . . . Worm and wheel
- 74/137 . . . Reduction gearing
- 74/138 . . Radial meshing
- 74/139 . . Cam operated
- 74/14 . Rotary member or shaft indexing, e.g., tool or work turret
- 74/1406 . . with safety device or drive disconnect
- 74/1412 . . with locating point adjusting
- 74/1418 . . Preselected indexed position
- 74/1424 . . . Sequential
- 74/1429 . . . . Skip position
- 74/1435 . . . . Held by torque
- 74/1441 . . . . Geneva or mutilated gear drive
- 74/1447 . . . . Velocity control
- 74/1453 . . . . Interlocked rotator and brake
- 74/1459 . . . . . Diverse-type brakes
- 74/1465 . . . . . with axially acting friction brake
- 74/1471 . . Plural operators or input drives
- 74/1476 . . with means to axially shift shaft
- 74/1482 . . Single revolution input effects desired fractional output
- 74/1488 . . Control means
- 74/1494 . . Locking means
- 74/15 . Intermittent grip type mechanical movement
- 74/1502 . . Escapement
- 74/1503 . . Rotary to intermittent unidirectional motion
- 74/1505 . . . Automatically controlled
- 74/1506 . . . . Speed
- 74/1508 . . . Rotary crank or eccentric drive
- 74/151 . . . . Adjustable
- 74/1511 . . . . Lever transmitter
- 74/1513 . . . . Adjustable leverage
- 74/1515 . . . . Rack and pinion transmitter
- 74/1516 . . . . Adjustable throw
- 74/1518 . . . . Rotary cam drive
- 74/1519 . . . . Adjustable throw
- 74/1521 . . . . . Radial cam
- 74/1523 . . . . . Radial cam
- 74/1524 . . . Intermittently engaged clutch
- 74/1526 . . Oscillation or reciprocation to intermittent unidirectional motion
- 74/1527 . . . Screw and nut devices
- 74/1529 . . . Slide actuator
- 74/1531 . . . . Multiple acting
- 74/1532 . . . Rack actuator
- 74/1534 . . . . Multiple acting
- 74/1535 . . . . . Inwardly facing racks
- 74/1537 . . . . Oscillating
- 74/1539 . . . . . Multiple acting
- 74/154 . . . . . Inwardly facing racks
- 74/1542 . . . Strap actuator
- 74/1544 . . . . Multiple acting
- 74/1545 . . . . . Spring or weight return
- 74/1547 . . . . Single acting
- 74/1548 . . . . . Engine starter type
- 74/155 . . . . . Spring or weight return
- 74/1552 . . . . . Spring or weight return
- 74/1553 . . . Lever actuator
- 74/1555 . . . . Rotary driven element
- 74/1556 . . . . . Multiple acting
- 74/1558 . . Grip units and features
- 74/156 . . . Compound movement handle
- 74/1561 . . . . Reversible
- 74/1563 . . . . Transverse pivots
- 74/1565 . . . Gripper releasing devices
- 74/1566 . . . . Power pawl lifter
- 74/1568 . . . . . Automatic
- 74/1569 . . . . . Idle stroke
- 74/1571 . . . . . Cooperating holding pawl
- 74/1573 . . . . . Power stroke
- 74/1574 . . . . . Cooperating holding pawl
- 74/1576 . . . . Holding pawl lifter
- 74/1577 . . . Gripper mountings, lever
- 74/1579 . . . . Reversible
- 74/1581 . . . . Multiple acting
- 74/1582 . . . . . Single ratchet or clutch
- 74/1584 . . . Gripper mountings, slide

74/1585	. . . . Multiple acting	74/1824	. . . . Slidable connections
74/1587	. . . Grip features	74/18248	. . . Crank and slide
74/1589	. . . . Driving band	74/18256	. . . . Slidable connections [e.g., scotch yoke]
74/159	. . . . . Clamping	74/18264	. . . Crank and multiple pitmans
74/1592	. . . . Driven band and gripper	74/18272	. . . Planetary gearing and slide
74/1594	. . . . . Positive grip	74/1828	. . . Cam, lever, and slide
74/1595	. . . . Driving ratchet-bar or rack	74/18288	. . . Cam and lever
74/1597	. . . . . Multiple acting	74/18296	. . . Cam and slide
74/1598	. . . . Driven ratchet-bar and power dog	74/18304	. . . . Axial cam
74/16	. Alternating-motion driven device with means during operation to adjust stroke	74/18312	. . . . . Grooved
74/1608	. . Constant length stroke with means to displace end limits	74/1832	. . . . . Multiple screw
74/1616	. . . Cyclical displacement responsive to the alternating-motion	74/18328	. . . . . Alternately rotated screw
74/1625	. . Stroke adjustable to zero and/or reversible in phasing	74/18336	. . . . . Wabblers type
74/1633	. . . Plural driving means to jointly drive the driven device	74/18344	. . . Unbalanced weights
74/1642	. . . Device driven from selected points on oscillating link	74/18352	. . . Trammel-pitman
74/165	. . . Driving lever with adjustable pivot point	74/1836	. . Rotary to rotary
74/1658	. . . Eccentric and strap drive, shiftable eccentric	74/18368	. . . Inertia or centrifugal transmitters
74/1667	. . . . Changing the extent of eccentricity	74/18376	. . . Crank, pitman, lever, and crank
74/1675	. . . Crank pin drive, shiftable pin	74/18384	. . . Crank, lever, and crank
74/1683	. . . Cam and follower drive	74/18392	. . . Crank, pitman, and crank
74/1692	. . . . Axial-type cam [e.g., wabblers type]	74/184	. . . Cranks, link connected
74/17	. Rotary driven device adjustable during operation relative to its supporting structure	74/18408	. . . Cranks, slidable connections
74/173	. . Screw and nut adjusting means	74/18416	. . Rotary to alternating rotary
74/177	. . Rack and pinion adjusting means	74/18424	. . . Mangle connections
74/18	. Mechanical movements	74/18432	. . . . Shiftable driven gear
74/18008	. . Oscillating to reciprocating and alternating rotary	74/1844	. . . . . Central teeth
74/18016	. . Oscillating to reciprocating and intermittent rotary	74/18448	. . . . Mutilated gearing connections
74/18024	. . Rotary to reciprocating and rotary	74/18456	. . . Crank, pitman, and lever
74/18032	. . . Rotary to reciprocating or rotary	74/18464	. . . Reciprocating rack connections
74/1804	. . Rotary to reciprocating and alternating rotary	74/18472	. . . . Crank and pitman actuator
74/18048	. . Rotary to reciprocating and intermittent rotary	74/1848	. . . . . Simple crank actuator
74/18056	. . Rotary to or from reciprocating or oscillating	74/18488	. . . Oscillating rack connections
74/18064	. . . Head motions	74/18496	. . . . Mangle actuated
74/18072	. . . Reciprocating carriage motions	74/18504	. . . . Crank and pitman actuator
74/1808	. . . . Phonograph type	74/18512	. . . Flexible connector type
74/18088	. . . Rack and pinion type	74/1852	. . . Associated inertia devices
74/18096	. . . . Shifting rack	74/18528	. . Rotary to intermittent unidirectional motion
74/18104	. . . . Shiftable pinion	74/18536	. . . Space machines
74/18112	. . . . Segmental pinion	74/18544	. . Rotary to gyratory
74/1812	. . . . Alternately rotated pinion	74/18552	. . . Unbalanced weight
74/18128	. . . . Clutchable gears	74/1856	. . Reciprocating or oscillating to intermittent unidirectional motion
74/18136	. . . . . Bevel	74/18568	. . Reciprocating or oscillating to or from alternating rotary
74/18144	. . . Overcoming dead center	74/18576	. . . including screw and nut
74/18152	. . . Belt or chain carried member	74/18584	. . . . Shaft shorter than nut
74/1816	. . . Crank, lever, toggle, and slide	74/18592	. . . . Auxiliary drive [e.g., fluid piston, etc.] for load
74/18168	. . . Crank, lazy-tong, and slide	74/186	. . . . Alternate power path operable on failure of primary
74/18176	. . . Crank, pitman, lever, and slide	74/18608	. . . . Single input split into two intermediate outputs that are subsequently superposed into a single output
74/18182	. . . . Pump jack type	74/18616	. . . . Single input, plural outputs
74/18184	. . . Crank, pitman, and lever	74/18624	. . . . Plural inputs, single output
74/182	. . . . Multiple levers	74/18632	. . . . . Plural nuts driving shaft
74/18208	. . . Crank, pitman, and slide	74/1864	. . . . . Shaft and nut driven
74/18216	. . . Crank, lever, and slide	74/18648	. . . . Carriage surrounding, guided by, and primarily supported by member other than screw [e.g., linear guide, etc.]
74/18224	. . . . Rack connections		
74/18232	. . . Crank and lever		

- 74/18656 . . . . Carriage surrounded, guided, and primarily supported by member other than screw [e.g., linear guide, etc.]
- 74/18664 . . . . Shaft moves through rotary drive means
- 74/18672 . . . . Plural screws in series [e.g., telescoping, etc.]
- 74/1868 . . . . Deflection related
- 74/18688 . . . . Limit stop
- 74/18696 . . . . including means to selectively transmit power [e.g., clutch, etc.]
- 74/18704 . . . . Means to selectively lock or retard screw or nut
- 74/18712 . . . . Contamination related
- 74/1872 . . . . Imperforate enclosure
- 74/18728 . . . . Backlash
- 74/18736 . . . . Pressurized fluid introduced between nut and screw
- 74/18744 . . . . Lubrication
- 74/18752 . . . . Manually driven
- 74/1876 . . . including inertia device
- 74/18768 . . . . with rack and pinion
- 74/18776 . . . . Rectilinear rack
- 74/18784 . . . including bevel gears
- 74/18792 . . . including worm
- 74/188 . . . including spur gear
- 74/18808 . . . . with rack
- 74/18816 . . . . Curvilinear rack
- 74/18824 . . . . with biasing means
- 74/18832 . . . including flexible drive connector [e.g., belt, chain, strand, etc.]
- 74/1884 . . . . with sprocket wheel
- 74/18848 . . . . with pulley
- 74/18856 . . Oscillating to oscillating
- 74/18864 . . . Snap action
- 74/18872 . . . . Plate spring
- 74/1888 . . . Geared connections
- 74/18888 . . Reciprocating to or from oscillating
- 74/18896 . . . Snap action
- 74/18904 . . . . Plate spring
- 74/18912 . . . Compound lever and slide
- 74/1892 . . . Lever and slide
- 74/18928 . . . . Straight line motions
- 74/18936 . . . . Slidable connections
- 74/18944 . . . . Link connections
- 74/18952 . . . . toggle transmissions
- 74/1896 . . . . Cam connections
- 74/18968 . . . . Flexible connections
- 74/18976 . . . Rack and pinion
- 74/18984 . . . Inclined ramp
- 74/18992 . . Reciprocating to reciprocating
- 74/19 . . Gearing
- 74/19005 . . Nonplanetary gearing differential type [e.g., gearless differentials]
- 74/19009 . . Single gearing unit includes fluid drive
- 74/19014 . . Plural prime movers selectively coupled to common output
- 74/19019 . . Plural power paths from prime mover
- 74/19023 . . Plural power paths to and/or from gearing
- 74/19028 . . . Alternate input connections single hand crank
- 74/19033 . . . Fluid drive divides or combines alternate paths
- 74/19037 . . . One path includes fluid drive
- 74/19042 . . . Friction-type gearing
- 74/19047 . . . Worm-type gearing
- 74/19051 . . . Single driven plural drives
- 74/19056 . . . . Parallel
- 74/1906 . . . . Nonparallel
- 74/19065 . . . . Aligned
- 74/1907 . . . . Parallel and aligned
- 74/19074 . . . Single drive plural driven
- 74/19079 . . . . Parallel
- 74/19084 . . . . Spur
- 74/19088 . . . . Bevel
- 74/19093 . . . . Spur and bevel
- 74/19098 . . . . Helical
- 74/19102 . . . . Belt or chain
- 74/19107 . . . . Nonparallel
- 74/19112 . . . . Aligned
- 74/19116 . . . . Vehicle
- 74/19121 . . . . Concentric
- 74/19126 . . . Plural drivers plural driven
- 74/1913 . . . . Bevel
- 74/19135 . . . . Spur
- 74/1914 . . . Alternate drivers and driven
- 74/19144 . . . Miscellaneous [plural power paths]
- 74/19149 . . with fluid drive
- 74/19153 . . . Condition responsive control
- 74/19158 . . . with one or more controllers for gearing, fluid drive, or clutch
- 74/19163 . . . . with interrelated controls
- 74/19167 . . In series plural interchangeably locked nonplanetary units
- 74/19172 . . Reversal of direction of power flow changes power transmission to alternate path
- 74/19177 . . . Input and output exchange functions
- 74/19181 . . toothed gear and recirculated unconnected elements
- 74/19186 . . Alternating rotary or continuous
- 74/19191 . . Alternating rotary
- 74/19195 . . . Progressive
- 74/192 . . . Shiftable and/or slidable gears
- 74/19205 . . . Clutchable gears
- 74/1921 . . . . On single driven member
- 74/19214 . . . . On single driving member
- 74/19219 . . Interchangeably locked
- 74/19223 . . . Disconnectable counter shaft
- 74/19228 . . . Multiple concentric clutch shafts
- 74/19233 . . . Plurality of counter shafts
- 74/19237 . . . Internal-external gears
- 74/19242 . . . Combined gear and clutch
- 74/19247 . . . . Preselector
- 74/19251 . . . Control mechanism
- 74/19256 . . . . Automatic
- 74/1926 . . . . Speed responsive
- 74/19265 . . . . Governor
- 74/1927 . . . . with belt gearing
- 74/19274 . . . . torque responsive
- 74/19279 . . . . Cam operated
- 74/19284 . . . Meshing assisters
- 74/19288 . . . . Double clutch and interposed transmission
- 74/19293 . . . Longitudinally slidable
- 74/19298 . . . . Multiple spur gears
- 74/19302 . . . . with tumbler gear
- 74/19307 . . . . Selective
- 74/19312 . . . . Direct clutch and drive
- 74/19316 . . . . Progressive

74/19321 . . . . .	Direct clutch and drive	74/19609 . . . . .	Governor control
74/19326 . . . . .	Fluid operated	74/19614 . . . . .	Disconnecting means
74/1933 . . . . .	Multiple bevel gears	74/19619 . . . . .	Displaceable elements
74/19335 . . . . .	Single spur gear	74/19623 . . . . .	Backlash take-up
74/1934 . . . . .	Tumbler and cone	74/19628 . . . . .	Pressure distributing
74/19344 . . . . .	Multiple cone	74/19633 . . . . .	Yieldability in gear trains
74/19349 . . . . .	Single bevel gear	74/19637 . . . . .	with brake means for gearing
74/19353 . . . . .	Pin or crown gears	74/19642 . . . . .	Directly cooperating gears
74/19358 . . . . .	Laterally slidable gears	74/19647 . . . . .	Parallel axes or shafts
74/19363 . . . . .	Rotary carriage	74/19651 . . . . .	External type
74/19367 . . . . .	Swinging carriage	74/19656 . . . . .	Pin teeth
74/19372 . . . . .	Single forward and reverse speeds	74/1966 . . . . .	Intersecting axes
74/19377 . . . . .	Slidable keys or clutches	74/19665 . . . . .	Bevel gear type
74/19381 . . . . .	Alternative clutch shaft	74/1967 . . . . .	Rack and pinion
74/19386 . . . . .	Multiple clutch shafts	74/19674 . . . . .	Spur and bevel
74/19391 . . . . .	Progressive	74/19679 . . . . .	Spur
74/19395 . . . . .	Keys simultaneously slidable	74/19684 . . . . .	Motor and gearing
74/194 . . . . .	Selective	74/19688 . . . . .	Bevel
74/19405 . . . . .	Multiple forward and reverse	74/19693 . . . . .	Motor vehicle drive
74/19409 . . . . .	Single forward and reverse	74/19698 . . . . .	Spiral
74/19414 . . . . .	Single clutch shaft	74/19702 . . . . .	Screw and nut
74/19419 . . . . .	Progressive	74/19707 . . . . .	Plural longitudinally variably spaced nuts
74/19423 . . . . .	Multiple key	74/19712 . . . . .	Threadless
74/19428 . . . . .	Spur	74/19716 . . . . .	Non-linear screw
74/19433 . . . . .	Fluid operated	74/19721 . . . . .	Thread geometry
74/19437 . . . . .	Electrically operated	74/19726 . . . . .	Thread pitch varies over axial length
74/19442 . . . . .	Single key	74/1973 . . . . .	Shaft thread is spirally wound wire
74/19447 . . . . .	Clutch and ratchet	74/19735 . . . . .	Nut disengageable from screw
74/19451 . . . . .	Spur gears	74/1974 . . . . .	Nut segments hinged parallel to shaft [e.g., clam shell-type, etc.]
74/19456 . . . . .	Intermediate clutch	74/19744 . . . . .	Rolling element engaging thread
74/1946 . . . . .	Sliding clutch carrier	74/19749 . . . . .	Recirculating rolling elements
74/19465 . . . . .	Sliding clutch operator	74/19753 . . . . .	Plural independent recirculating element paths
74/1947 . . . . .	Selective	74/19758 . . . . .	Single thread common to plural paths
74/19474 . . . . .	Multiple key	74/19763 . . . . .	Roller return path in shaft
74/19479 . . . . .	Spur gears	74/19767 . . . . .	Return path geometry
74/19484 . . . . .	Single speed forward and reverse	74/19772 . . . . .	Rolling element deflector
74/19488 . . . . .	Spur gears	74/19777 . . . . .	Interconnected or cooperating rollers or roller structure
74/19493 . . . . .	Bevel gears	74/19781 . . . . .	Non-recirculating rolling elements
74/19498 . . . . .	Bevel and idler gears	74/19786 . . . . .	Captured sphere
74/19502 . . . . .	Pivotally supported	74/19791 . . . . .	Cylindrical or quasi-cylindrical roller element [e.g., inclined roller, etc.]
74/19507 . . . . .	Windmill turntable	74/19795 . . . . .	Parallel to shaft
74/19512 . . . . .	Screw	74/198 . . . . .	Perpendicular to shaft
74/19516 . . . . .	Spur	74/19805 . . . . .	Less than 360 degrees of contact between nut and screw
74/19521 . . . . .	Bevel	74/19809 . . . . .	Independent nut segments
74/19526 . . . . .	Wheel type	74/19814 . . . . .	Integral deformable tangs engaging screw
74/1953 . . . . .	Wringer type	74/19819 . . . . .	Driven rack or shaft
74/19535 . . . . .	Follow-up mechanism	74/19823 . . . . .	Screw
74/1954 . . . . .	Eccentric driving shaft and axle	74/19828 . . . . .	Worm
74/19545 . . . . .	Central driving shaft in axle	74/19833 . . . . .	Variable speed
74/1955 . . . . .	Parallel shafts, adjustable gear mesh	74/19837 . . . . .	Intermittent motion
74/19555 . . . . .	Varying speed ratio	74/19842 . . . . .	Distribution of pressure
74/1956 . . . . .	Adjustable	74/19847 . . . . .	torque actuated safety devices
74/19565 . . . . .	Relative movable axes	74/19851 . . . . .	Gear and rotary bodies
74/1957 . . . . .	Parallel shafts	74/19856 . . . . .	Laterally-spaced wheels
74/19575 . . . . .	Automatic control	74/1986 . . . . .	Radially-spaced wheels
74/1958 . . . . .	Parallel shafts	74/19865 . . . . .	with flywheel
74/19585 . . . . .	Fixed axes		
74/1959 . . . . .	Parallel shafts		
74/19595 . . . . .	Automatic control		
74/196 . . . . .	Parallel shafts		
74/19605 . . . . .	Reversing means		



74/1987 . . . Rotary bodies	74/20159 . . . . . Control lever movable through plural planes
74/19874 . . . Mutilated	74/20165 . . . . . Spherical mount [e.g., ball and socket]
74/19879 . . . Geneva	74/20171 . . . . . Resiliently biased control lever
74/19884 . . . Irregular teeth and bodies	74/20177 . . . . . Particular element [e.g., shift fork, template, etc.]
74/19888 . . . External and internal teeth	74/20183 . . . . . Shift fork structure
74/19893 . . . Sectional	74/20189 . . . Foot operated
74/19898 . . . . Backlash take-up	74/20195 . . . . . Offset extension
74/19902 . . . . . Screw and nut	74/20201 . . . Control moves in two planes
74/19907 . . . . . Sound deadening	74/20207 . . Multiple controlling elements for single controlled element
74/19912 . . . . . Differential disks	74/20213 . . . Interconnected
74/19916 . . . . . Multiple disks	74/2022 . . . . . Hand and foot
74/19921 . . . . . Separate rim	74/20226 . . . . . Accelerator
74/19926 . . . . . Detachable	74/20232 . . . . . Marine
74/1993 . . . . . Segmental rim	74/20238 . . . Interlocked
74/19935 . . . . . Sheet metal	74/20244 . . . . . Push button
74/1994 . . . . . Diametrically split	74/2025 . . . . . Rod blocks actuation of rotary member
74/19944 . . . . . Shaft-admitting insert	74/20256 . . . Steering and controls assemblies
74/19949 . . Teeth	74/20262 . . . . . Rotary control shaft
74/19953 . . . Worm and helical	74/20268 . . . . . Reciprocating control elements
74/19958 . . . Bevel	74/20274 . . . . . Flexible
74/19963 . . . Spur	74/2028 . . . . . Handle bar type
74/19967 . . . . . Yieldable	74/20287 . . . . . Flexible control element
74/19972 . . . . . form	74/20293 . . . . . with horn control
74/19977 . . . . . Antifriction	74/20299 . . . Antirattling elements
74/19981 . . . . . Roller	74/20305 . . . Robotic arm
74/19986 . . . . . Twisted	74/20311 . . . . . including power cable or connector
74/19991 . . Lubrication	74/20317 . . . . . including electric motor
74/19995 . . . Teeth	74/20323 . . . . . including flaccid drive element
74/20 . . Control lever and linkage systems	74/20329 . . . . . Joint between elements
74/20006 . . Resilient connections	74/20335 . . . . . Wrist
74/20012 . . Multiple controlled elements	74/20341 . . . Power elements as controlling elements
74/20018 . . . Transmission control	74/20348 . . . . . Planar surface with orthogonal movement and rotation
74/20024 . . . . . Fluid actuator	74/20354 . . . . . Planar surface with orthogonal movement only
74/2003 . . . . . Electrical actuator	74/2036 . . . . . Pair of power elements
74/20037 . . . . . Occupant propelled vehicle	74/20366 . . . Power and manual controlling elements
74/20043 . . . . . Transmission controlled by flexible cable	74/20372 . . . Manual controlling elements
74/20049 . . . . . Transmission controlled by flexible cable	74/20378 . . . . . Planar surface with orthogonal movement or rotation
74/20055 . . . . . Foot operated	74/20384 . . . . . Levers
74/20061 . . . . . Multiple foot-operated controls	74/2039 . . . . . Pair of levers
74/20067 . . . . . Control convertible between automatic and manual operation	74/20396 . . Hand operated
74/20073 . . . . . Control of plural mechanisms [e.g., control of transmission and control of 4 - wheel drive]	74/20402 . . . Flexible transmitter [e.g., Bowden cable]
74/20079 . . . . . Separate control levers	74/20408 . . . . . Constant tension sustaining
74/20085 . . . . . Restriction of shift, gear selection, or gear engagement	74/20414 . . . . . Hydraulic control
74/20091 . . . . . Prevention of reverse shift	74/2042 . . . . . and hand operator
74/20098 . . . . . Separate actuator to disengage restrictor	74/20426 . . . . . Slidable
74/20104 . . . . . Shift element interlock	74/20432 . . . . . for moving a mirror
74/2011 . . . . . with detent, recess, notch, or groove	74/20438 . . . . . Single rotatable lever [e.g., for bicycle brake or derailleur]
74/20116 . . . . . Resiliently biased interlock	74/20444 . . . . . including rolling antifriction elements
74/20122 . . . . . Spherical restrictor	74/2045 . . . . . and sheath support, connector, or anchor
74/20128 . . . . . Resiliently biased restrictor	74/20456 . . . . . Specific cable or sheath structure
74/20134 . . . . . having vibration damper	74/20462 . . . . . Specific cable connector or guide
74/2014 . . . . . Manually operated selector [e.g., remotely controlled device, lever, push button, rotary dial, etc.]	74/20468 . . . Sliding rod
74/20146 . . . . . Control lever on steering column	74/20474 . . . Rotatable rod, shaft, or post
74/20152 . . . . . Control lever movable through plural planes	74/2048 . . . . . Gear, drum, and cable
	74/20486 . . . . . Drum and cable

74/20492 . . . . .	Gear	74/20858 . . . . .	Releasable
74/20498 . . . . .	Variable ratio	74/20864 . . . . .	Handles
74/20504 . . . . .	Screw and nut	74/2087 . . . . .	Rim grips and covers
74/2051 . . . . .	Adjustable	74/20876 . . . . .	Caps and covers
74/20516 . . . . .	Mountings	74/20882 . . . . .	Rocker arms
74/20522 . . . . .	Antenna	74/20888 . . . . .	Pedals
74/20528 . . . . .	Foot operated	74/20894 . . . . .	Treadles
74/20534 . . . . .	Accelerator	74/209 . . . . .	Extension
74/2054 . . . . .	Signal	74/20906 . . . . .	Offset
74/20546 . . . . .	Knee operated	74/20912 . . . . .	Pads and covers
74/20552 . . . . .	Elbow	74/20918 . . . . .	Foot rests
74/20558 . . . . .	Variable output force	74/20924 . . . . .	Controller checks
74/20564 . . . . .	Flexible	74/2093 . . . . .	Slot closers and lever guards
74/2057 . . . . .	Variable input leverage	74/21 . . . . .	Elements
74/20576 . . . . .	Elements	74/2101 . . . . .	Cams
74/20582 . . . . .	Levers	74/2102 . . . . .	Adjustable
74/20588 . . . . .	toggle	74/2104 . . . . .	Flexible strip
74/20594 . . . . .	Lazy tongs	74/2105 . . . . .	Memory devices
74/206 . . . . .	Adjustable	74/2106 . . . . .	Timer devices
74/20606 . . . . .	Swing posts	74/2107 . . . . .	Follower
74/20612 . . . . .	Hand	74/2109 . . . . .	Balancing for drum, e.g., washing machine or arm-type structure, etc., centrifuge, etc.
74/20618 . . . . .	Jointed	74/211 . . . . .	Eccentric
74/20624 . . . . .	Adjustable	74/2111 . . . . .	Plural, movable relative to each other [including ball[s]]
74/2063 . . . . .	Stops	74/2112 . . . . .	Concentric
74/20636 . . . . .	Detents	74/2114 . . . . .	Adjustable
74/20642 . . . . .	Hand crank	74/2115 . . . . .	Radially
74/20648 . . . . .	Interrelated lever release	74/2116 . . . . .	having anti-friction means, e.g., roller bearing, lubrication, etc.
74/20654 . . . . .	Gear	74/2117 . . . . .	Power generating-type flywheel
74/2066 . . . . .	Friction	74/2119 . . . . .	Structural detail, e.g., material, configuration, superconductor, discs, laminated, etc.
74/20666 . . . . .	Lever engaging	74/212 . . . . .	Containing fiber or filament
74/20672 . . . . .	Lever engaging rack	74/2121 . . . . .	Flywheel, motion smoothing-type
74/20678 . . . . .	Pivoted	74/2122 . . . . .	with fluid balancing means
74/20684 . . . . .	Lever carried pawl	74/2123 . . . . .	and pressure compensation
74/2069 . . . . .	Handle release	74/2125 . . . . .	and elastic device
74/20696 . . . . .	Finger lever release	74/2126 . . . . .	and bearings
74/20702 . . . . .	Slidable	74/2127 . . . . .	with electrical or magnetic damping
74/20708 . . . . .	Pedal controlled	74/2128 . . . . .	Damping using swinging masses, e.g., pendulum type, etc.
74/20714 . . . . .	Lever carried rack	74/213 . . . . .	Damping by increasing frictional force
74/2072 . . . . .	Pivoted	74/2131 . . . . .	Damping by absorbing vibration force [via rubber, elastomeric material, etc.]
74/20726 . . . . .	Pedal controlled	74/2132 . . . . .	Structural detail, e.g., fiber, held by magnet, etc.
74/20732 . . . . .	Handles	74/2133 . . . . .	Pawls and ratchets
74/20738 . . . . .	Extension	74/2135 . . . . .	Noiseless
74/20744 . . . . .	Hand crank	74/2136 . . . . .	Pivoted pawls
74/2075 . . . . .	Extensible	74/2137 . . . . .	Single tooth
74/20756 . . . . .	Collapsible	74/2138 . . . . .	Flexible single tooth
74/20762 . . . . .	Shaft connections	74/214 . . . . .	Multiple tooth
74/20768 . . . . .	Engine starter type	74/2141 . . . . .	Sliding pawls
74/20774 . . . . .	Holder	74/2142 . . . . .	Pitmans and connecting rods
74/2078 . . . . .	Handle bars	74/2143 . . . . .	Radial
74/20786 . . . . .	Spring biased or supported	74/2144 . . . . .	Yieldable
74/20792 . . . . .	Folding or adjustable	74/2146 . . . . .	Longitudinal springs
74/20798 . . . . .	Sectional	74/2147 . . . . .	Fluid cushion
74/20804 . . . . .	Simultaneously movable	74/2148 . . . . .	Automatic release
74/2081 . . . . .	Continuous	74/2149 . . . . .	toggle link type
74/20816 . . . . .	with handle latch	74/2151 . . . . .	Longitudinally adjustable
74/20822 . . . . .	Attachments and accessories		
74/20828 . . . . .	Handholds and grips		
74/20834 . . . . .	Hand wheels		
74/2084 . . . . .	Knob or dial		
74/20846 . . . . .	Slidable		
74/20852 . . . . .	Pivoted		

74/2152	. . .	Hollow rod, lubricated	82/154	. . .	Transversely shifted cutter
74/2153	. . .	Sheet metal type	82/156	. . .	Templet controlled
74/2154	. . .	Counterbalanced	82/158	. . .	Gear controlled
74/2156	. . . .	Weight type	82/16	.	Severing or cut-off
74/2157	. . . . .	Rotating	82/16016	. . .	Processes
74/2158	. . . . .	Spring	82/16032	. . .	Automatic and/or triggered control
74/2159	. . .	Section coupled	82/16049	. . .	Combined with means to sharpen tool[s]
74/216	. . .	Bearings, adjustable	82/16065	. . .	Combined with means to apply fluid
74/2162	. . .	Engine type	82/16081	. . .	Combined with means to heat tool and/or work
74/2163	. . .	Idler arm	82/16098	. . .	with dust or chip handling
74/2164	. . .	Cranks and pedals	82/16114	. . .	including scrap cutting means
74/2165	. . .	with attached gear	82/16131	. . .	Flying cutter type
74/2167	. . .	Variable	82/16147	. . .	Cutting couple straddling work
74/2168	. . .	Pedals	82/16163	. . .	with pattern, guide or cam means [noncircular product]
74/2169	. . . . .	Counterbalanced	82/16181	. . .	Plural cutting means [pairs, or pair, plus single]
74/217	. . . . .	with toe or shoe clips	82/16196	. . .	Rotary shear pair
74/2172	. . . . .	Adjustable or folding	82/16213	. . . . .	Tool axes parallel to axis of work rotation
74/2173	. . .	Cranks and wrist pins	82/16229	. . .	Interrelated means for tool infeed and circumrotation
74/2174	. . .	Multiple throw	82/16245	. . .	Dependent upon reaction to work
74/2175	. . . . .	Sectional	82/16262	. . .	Infeed cam disk rotation geared to tool holder rotation
74/2177	. . .	Sectional	82/16278	. . . . .	Axial infeed cam
74/2178	. . .	Yieldable	82/16295	. . . . .	including centrifugal balancing means
74/2179	. . .	Adjustable	82/16311	. . . . .	Scroll plate infeed cam
74/218	. . . . .	Automatically	82/16327	. . .	Infeed cam plate braked with respect to tool[s] carrier plate
74/2181	. . .	Variable	82/16344	. . .	Orbital cogwheel and fixed detent
74/2183	. . .	Counterbalanced	82/16361	. . .	Common gear means
74/2184	. . . . .	Vibration dampers	82/16377	. . . . .	including adjustable means to vary gear speed
74/2185	. . .	Lubricated	82/16393	. . . . .	with manual disconnect lever
74/2186	. . .	Gear casings	82/16409	. . .	with means to feed work
74/2188	. . .	Axle and torque tubes	82/16426	. . .	Infeed means
74/2189	. . .	Cooling	82/16442	. . .	with means to circumrotate tool[s] about work
74/219	. . .	Guards	82/16459	. . . . .	Fluid means for relative tool actuation
74/2191	. . .	for rotary member	82/16475	. . . . .	Gear means for tool actuation
74/2193	. . .	Guard mechanisms	82/16491	. . . . .	including axial cam
74/2194	. . .	Automatic	82/16508	. . . . . . .	with indicator
74/2195	. . . . .	Oscillating member actuator	82/16524	. . . . .	Bell crank linkage for tool[s] holder
74/2196	. . . . .	Reciprocating member actuator	82/16541	. . . . .	Resilient means for tool actuation
74/2198	. . .	Operator controlled	82/16557	. . . . .	with means for manual retraction
74/2199	. . .	Set screw	82/16573	. . .	Hand crank for tool holder
74/22	. . .	Miscellaneous	82/16591	. . .	Power driven eccentric

**Former US Class 82 Series**

<b>82/00</b>	<b>Turning</b>		82/16606	. . . . .	Fluid motor
82/10	. . .	Process of turning	82/16622	. . . . .	Plural tools
82/11	. . .	Talking machine tablet	82/16639	. . .	Tool within work
82/12	. . .	Radially moving rotating tool inside bore	82/16655	. . .	with means to rotate tool[s]
82/122	. . .	Forming non-circular bore	82/16672	. . . . .	including rotatable cutters supporting work
82/125	. . .	Tool simultaneously moving axially	82/16688	. . . . .	Planetating work mandrels
82/128	. . .	Pivoted to tool-carrier	82/16704	. . . . .	Pivoted tool carriage
82/13	. . .	Pattern section	82/16721	. . . . .	with adjustable work stops
82/135	. . .	Cam-controlled cutter	82/16737	. . . . .	Eccentric periphery rotary tool
82/14	. . .	Axial pattern	82/16754	. . . . .	Means to feed work axially
82/141	. . .	having transverse tool and templet guide	82/16771	. . . . .	Translatable work support carriage
82/142	. . .	with workpiece gauge	82/16786	. . . . .	with tool groove in support roll[s]
82/143	. . .	having electrical actuator	82/16803	. . .	Rotatable tool[s] driven by contact with work
82/145	. . . . .	And hydraulic actuator	82/16819	. . . . .	Axially movable tool support
82/147	. . .	having hydraulic actuator	82/16836	. . . . .	Freely floating parallel to axis
82/148	. . .	Pivoted tool rest	82/16852	. . . . . . .	with supplemental nonrotative tool
82/149	. . .	Profiled cutter	82/16868	. . . . .	including clutch control for work rotation
82/15	. . .	Tapers			
82/152	. . .	Offset work axis			

- 82/16885 . . . . including resilient means urging work against rotary support
- 82/16901 . . . Separate means for plural tools
- 82/16918 . . . Spring urged
- 82/16934 . . . . For window shade
- 82/16951 . . . Tool adjustment and/or stop
- 82/16967 . . . with means to support and/or rotate work
- 82/16983 . . . with means to feed work
- 82/17 . Lathe for pulley
- 82/18 . Lathe for wheel or axle
- 82/185 . . In situ lathe for railroad wheel
- 82/19 . Lathe for crank or crank pin
- 82/192 . . Portable lathe for crank pin
- 82/195 . . having work oscillator
- 82/198 . . . having work driver
- 82/20 . Lathe for screw cutting
- 82/205 . . having swinging feed nut and tool bar
- 82/21 . Portable lathe for brake drum, disc, or shoe
- 82/22 . Portable lathe for pipe turning
- 82/23 . Portable lathe for piston grooving
- 82/24 . Bench lathe
- 82/245 . . Watchmaker's lathe
- 82/25 . Lathe
- 82/2502 . . with program control
- 82/2504 . . . And transmission
- 82/2506 . . . And tool turret
- 82/2508 . . with tool turret
- 82/2511 . . Vertical
- 82/2512 . . having facing tool fed transverse to work
- 82/2514 . . with work feeder or remover
- 82/2516 . . . Magazine type
- 82/2518 . . . . Bar feeder
- 82/2521 . . . Bar feeder
- 82/2522 . . Portable
- 82/2524 . . Multiple
- 82/2527 . . having hollow cutter head
- 82/2529 . . Revolvable cutter heads
- 82/2531 . . Carriage feed
- 82/2533 . . . Control
- 82/2535 . . . . Electrical type
- 82/2537 . . . Apron mechanism
- 82/2539 . . . . Feednut control
- 82/2541 . . . Slide rest
- 82/2543 . . . . Multiple tool support
- 82/2545 . . . . Tool relief
- 82/2547 . . . Change gears
- 82/2549 . . . Feedscrews and rods
- 82/2552 . . Headstock
- 82/2554 . . . Speed changing gear
- 82/2556 . . . . Speed change gears for maintaining constant cutting speed
- 82/2558 . . . Spindle reverser
- 82/2561 . . . Spindle or work angler
- 82/2562 . . . Spindle and bearings
- 82/2564 . . Tailstock
- 82/2566 . . Bed
- 82/2568 . . Center
- 82/2571 . . . Alignment adjuster
- 82/2572 . . Attachment
- 82/2574 . . . Stop [e.g., carriage, tool, work, etc.]
- 82/2577 . . . . Tool slide
- 82/2579 . . . . Collet or spindle
- 82/2581 . . . . Indexible [e.g., roll type, etc.]
- 82/2583 . . Tool and work rest
- 82/2585 . . Tool rest
- 82/2587 . . . Turret type holder [e.g., multiple tools, etc.]
- 82/2589 . . . Quick release tool or holder clamp
- 82/2591 . . . Tool post
- 82/2593 . . Work rest
- 82/2595 . . . with noise or vibration dampener
- 82/2597 . . . Center rest
- 82/26 . Work driver
- 82/262 . . Lathe dog
- 82/264 . . . Cam grip
- 82/266 . . Mandrel
- 82/268 . . . Expansible
- 82/27 . Centerer
- 82/28 . Drill press attachment for turning
- 82/29 . Attachment for cutting a valve
- 82/30 . Miscellaneous

**Former US Class 83 series**

- 83/00 Cutting**
- 83/02 . Other than completely through work thickness
- 83/0207 . . or through work presented
- 83/0215 . . . Including use of rotary scoring blade
- 83/0222 . . . . Plural independent rotary scoring blades
- 83/023 . . . With infeeding of work
- 83/0237 . . Pricking
- 83/0244 . . . Including use of orbiting tool carrier
- 83/0252 . . . With infeeding of tool
- 83/0259 . . Edge trimming [e.g., chamfering, etc.]
- 83/0267 . . Splitting
- 83/0274 . . . By use of endless band or chain knife
- 83/0281 . . . By use of rotary blade
- 83/0289 . . . . Plural independent rotary blades
- 83/0296 . . . With infeeding of work
- 83/0304 . . Grooving
- 83/0311 . . . By use of plural independent rotary blades
- 83/0319 . . . . Forming common groove
- 83/0326 . . . . Blades turning about perpendicular axes
- 83/0333 . . Scoring
- 83/0341 . . . Processes
- 83/0348 . . . Active means to control depth of score
- 83/0356 . . . Serially
- 83/0363 . . . Plural independent scoring blades
- 83/037 . . . . Rotary scoring blades
- 83/0378 . . . . . On opposite sides of work
- 83/0385 . . . Rotary scoring blade
- 83/0393 . . . . With means to rotate blade
- 83/04 . Processes
- 83/0405 . . With preparatory or simultaneous ancillary treatment of work
- 83/041 . . . By heating or cooling
- 83/0414 . . . . At localized area [e.g., line of separation]
- 83/0419 . . . By distorting within elastic limit
- 83/0424 . . . . By stretching
- 83/0429 . . . . By compressing
- 83/0433 . . . . By flexing around or by tool
- 83/0438 . . . . . To conform to shape of tool
- 83/0443 . . . By fluid application
- 83/0448 . . With subsequent handling [i.e., of product]

83/0453	. . . By fluid application	83/141	. With means to monitor and control operation [e.g., self-regulating means]
83/0457	. . . By retaining or reinserting product in workpiece	83/145	. . Including means to monitor product
83/0462	. . . By accelerating travel	83/148	. . Including means to correct the sensed operation
83/0467	. . . By separating products from each other	83/152	. . . And modify another operation
83/0472	. . . By moving work support to which a tacky product is adhered	83/155	. . . Optimizing product from unique workpiece
83/0476	. . Including stacking of plural workpieces	83/159	. . Including means to compensate tool speed for work-feed variations
83/0481	. . Puncturing	83/162	. With control means responsive to replaceable or selectable information program
83/0486	. . With manipulation of tool protective strip [e.g., backing strip]	83/164	. . For cutting component of animal; e.g., hair clipper
83/0491	. . Cutting of interdigitating products	83/166	. . Removable element carries program
83/0495	. . Making and using a registration cut	83/169	. . . Indeterminate length, web or strand
83/05	. . With reorientation of tool between cuts	83/171	. . . . Magnetic
83/0505	. . With reorientation of work between cuts	83/173	. . Arithmetically determined program
83/051	. . . Relative to same tool	83/175	. . . With condition sensor
83/0515	. . During movement of work past flying cutter	83/178	. . . . Responsive to work
83/0519	. . . Cyclically varying rate of tool or work movement	83/18	. . . With operator input means
83/0524	. . Plural cutting steps	83/182	. With means to weigh product
83/0529	. . . Blanking and cutting	83/202	. With product handling means
83/0534	. . . . Cutting to join blanked holes	83/2022	. . Initiated by means responsive to product or work
83/0538	. . . Repetitive transverse severing from leading edge of work	83/2024	. . . Responsive to work
83/0543	. . . . Alternately forming products of less than total width of work	83/2027	. . Initiated by means directly responsive to tool movement
83/0548	. . . . With longitudinal severing	83/2029	. . . In return motion of tool
83/0553	. . . . . Effected by plural steps	83/2031	. . Including means to drape the product
83/0558	. . . . . Along zigzag or undulant line or cut	83/2033	. . Including means to form or hold pile of product pieces
83/0562	. . . . . Prior to transverse severing	83/2035	. . . In nested relation
83/0567	. . . . . Nonrectilinear cutting	83/2037	. . . In stacked or packed relation
83/0572	. . . Plural cutting steps effect progressive cut	83/204	. . . . Stacker sweeps along product support
83/0577	. . . Repetitive blanking	83/2042	. . . . Including cut pieces overlapped on delivery means
83/0581	. . Cutting part way through from opposite sides of work	83/2044	. . . . And means to separate product portions
83/0586	. . Effecting diverse or sequential cuts in same cutting step	83/2046	. . . . Including means to move stack bodily
83/0591	. . Cutting by direct application of fluent pressure to work	83/2048	. . . . . By movement of stack holder
83/0596	. . Cutting wall of hollow work	83/205	. . . . . By timed relocation of holder along path of stack gscheme-change-itemth
83/06	. . Blanking	83/2053	. . . . . . Interrelated adjustment of holder movement and work-feeder
83/0605	. . Cut advances across work surface	83/2055	. . . . . And means to resist stack movement
83/061	. With manually actuated means to disturb cyclic operation	83/2057	. . . . . Including means to deliver individual pieces to a stack holder
83/081	. With randomly actuated stopping means	83/2059	. . . . . With spindle to enter a hole or to make hole in product
83/083	. . With means to permit subsequent hand operation	83/2061	. . . . . By face-engaging means to push product broadside into stacked relation
83/084	. . With stop-signal-responsive means to actuate auxiliary cutter	83/2063	. . . . . Upon emergence from hollow cutter
83/086	. . With sensing of product or product handling means	83/2066	. . By fluid current
83/088	. . Responsive to tool detector or work-feed-means detector	83/2068	. . . Plural blasts directed against plural product pieces
83/089	. . . Responsive to tool characteristic	83/207	. . . By suction means
83/091	. . Responsive to work sensing means	83/2072	. . By brush means
83/093	. . . Of buckled work	83/2074	. . Including means to divert one portion of product from another
83/094	. . . . Running loop	83/2077	. . . By kerf entering guide
83/096	. . . Detector supported on or urged against work	83/2079	. . . Remaining or re-inserted product portion from base material
83/098	. . . . Resiliently biased	83/2081	. . . Gravity type
83/099	. . Manually operated	83/2083	. . . Deflecting guide
83/101	. With stopping means effective on completion of predetermined number of tool cycles	83/2085	. . . . Positionable gate in product flow path
83/121	. With means to accomplish delayed stopping after cessation of cyclic operation	83/2087	. . . Diverging product movers

83/209	. . Including means to replace product in base material after cutting	83/22	. . . Means to move product laterally
83/2092	. . Means to move, guide, or permit free fall or flight of product	83/2203	. . . . Oscillating means
83/2094	. . . Means to move product at speed different from work speed	83/2205	. . . . Reciprocating means
83/2096	. . . Means to move product out of contact with tool	83/2207	. . . Means to move product in a nonrectilinear path
83/2098	. . . . With means to effect subsequent conveying or guiding	83/2209	. . . Guide
83/21	. . . . Out of contact with a rotary tool	83/2211	. . . . Abutment in path of product being moved by work feeder
83/2103	. . . . . Mover surrounds axis of tool rotation	83/2213	. . . . Product-diverting conduit in or from hollow tool
83/2105	. . . . . Mover mounted on rotary tool	83/2216	. . . . Inclined conduit, chute or plane
83/2107	. . . . . For radial movement of product	83/2218	. . . . Abutment interposed in path of free fall or flight of product
83/2109	. . . . . Resiliently mounted	83/222	. With receptacle or support for cut product
83/2111	. . . . . Mover is resiliently mounted	83/242	. With means to clean work or tool
83/2113	. . . . . Pivoted mover	83/263	. With means to apply transient nonpropellant fluent material to tool or work
83/2116	. . . . . And plural rotating tools	83/283	. With means to control or modify temperature of apparatus or work
83/2118	. . . . . Stationary mover	83/293	. . Of tool
83/212	. . . . . And plural rotating tools	83/303	. With tool sharpener or smoother
83/2122	. . . . . By ejector within a hollow cutter	83/313	. . Spatially fixed tool
83/2124	. . . . . And means to strip the outer surface of a cutter	83/323	. With means to stretch work temporarily
83/2127	. . . . . Ejector operated with return stroke of cutter	83/343	. With means to deform work temporarily
83/2129	. . . . . By means carried by cooperating cutter	83/364	. By fluid blast and/or suction
83/2131	. . . . . By cam-operated ejector	83/384	. By tool inside hollow work
83/2133	. . . . . By resiliently biased ejector	83/385	. . Work pre-packed with internal tool[s]
83/2135	. . . . . Moving stripper timed with tool stroke	83/386	. . With expanding mandrel
83/2137	. . . . . And alternatively movable to or from operating position	83/387	. . Interrelated tool feed means and means to actuate work immobilizer
83/214	. . . . . Latched stripper released by tool return	83/388	. . . Actuated clamp element and work holder coact to position work
83/2142	. . . . . Plural strippers operative upon plural tools	83/39	. . Synchronized tool and work feeding means
83/2144	. . . . . Single stripper operative upon plural tools	83/391	. . With means to position tool[s] for cutting
83/2146	. . . . . Spring arm stripper	83/392	. . One tool [either internal or external] having compound motion
83/2148	. . . . . Linkage actuated	83/393	. . . Annulus and disc-type tool pair
83/215	. . . . . Carried by moving tool element or its support	83/394	. . One tool having unidirectional rotary motion
83/2153	. . . . . Fluid pressure actuated stripper	83/395	. . One tool having only rectilinear motion[s]
83/2155	. . . . . Stripper biased against product	83/396	. . . Annulus and disc-type tool pair
83/2157	. . . . . Elastomeric stripper contacting product	83/397	. . . . A tool has a sequence of motion in plural paths
83/2159	. . . . . By spring means	83/398	. . . Internal tool is an active cutter
83/2161	. . . . . By free weight of stripper	83/40	. . . Multiple external active tools
83/2163	. . . . . Stripper biased against product	83/401	. . . . Tools operate in a substantially common transverse plane of cut
83/2166	. . . . . Spring biased stripper	83/402	. . . . . With tool actuating cams on a common support
83/2168	. . . . . Manually operated stripper	83/403	. . With manually actuated means to position or facilitate positioning of work
83/217	. . . . . Stationary stripper	83/404	. By means to misalign aligned apertured tools
83/2172	. . . . . Stripper encircles moving tool	83/408	. . Combined with another type tool of the class
83/2174	. . . Blockable exit port	83/412	. . Rectilinear relative movement only
83/2177	. . . Tool conforming member interposed between tool and work	83/416	. . Rotary relative movement solely about a single pivot
83/2179	. . . Including means to move, or resist movement of, cut pieces along delivery chute	83/42	. . . With plural apertures in one or both carriers
83/2181	. . . Active delivery means mounted on tool support	83/424	. By increased tensioning of work-enclosing wire
83/2183	. . . Product mover including gripper means	83/444	. Tool engages work during dwell of intermittent workfeed
83/2185	. . . Suction gripper	83/4443	. . Unicyclic
83/2187	. . . Reciprocating product handler	83/4445	. . . Convertible to and from unicyclic
83/219	. . . Rotating or oscillating product handler	83/4448	. . . Controlled by mechanical means
83/2192	. . . Endless conveyor	83/445	. . With work-moving clamp jaw
83/2194	. . . . And means to remove product therefrom		
83/2196	. . . Roller[s]		
83/2198	. . . Tilttable or withdrawable support		

- 83/4453 . . Work moved solely by movable abutment
- 83/4455 . . Operation initiated by work-driven detector means to measure work length
- 83/4458 . . Work-sensing means to control work-moving or work-stopping means
- 83/446 . . . With means to initiate tool feed by same control impulse
- 83/4463 . . Work-sensing means to initiate tool feed
- 83/4465 . . . With work-stopping abutment in sensing means
- 83/4468 . . Plural tools at same station, one positioned for continuous engagement with work
- 83/447 . . Plural tools successively actuated at same station
- 83/4473 . . . During one dwell period
- 83/4475 . . Tool has motion additional to cutting stroke during tool cycle
- 83/4478 . . . Tool has additional motion during work dwell
- 83/448 . . . . Included in plural cutting cycles
- 83/4483 . . . Tool has work-feeding motion
- 83/4486 . . With variable direction of work-feed from cycle to cycle
- 83/4488 . . . In one of certain selected directions
- 83/4491 . . Interlock between tool actuating and work feed means
- 83/4493 . . Tool motion initiates work feed and vice versa
- 83/4496 . . Stored energy means for moving work or tool, loaded by tool or work
- 83/4498 . . . Work feed means actuates energy storage device for tool
- 83/4501 . . Work feed means controlled by means mounted on tool or tool support
- 83/4503 . . . Such means drives the work feed means
- 83/4506 . . . . Work feed means carried by tool or tool support
- 83/4508 . . . . With supplemental work feed means
- 83/4511 . . . . On return stroke of tool
- 83/4513 . . . Work feed means halted by means on tool or tool support
- 83/4516 . . Work-feed mechanism in nonfeed motion effects or initiates tool actuation
- 83/4518 . . . By striking tool actuator
- 83/4521 . . . . Nonfeed motion is reverse to feed motion
- 83/4523 . . With means to vary number of work-feed increments between tool strokes
- 83/4526 . . Dwell caused by imposing reverse motion on portion of flexible moving work
- 83/4529 . . With uninterrupted flow of work from supply source
- 83/4531 . . Work feed increment shorter than longitudinal tool field
- 83/4534 . . Unequal work feed increments in recurring series
- 83/4536 . . . Work carriage carries ratchet means to determine increments
- 83/4539 . . Means to change tool position, or length or datum position of work- or tool-feed increment
- 83/4541 . . . With means to vary magnitude of work-feed increment
- 83/4544 . . . . Multi-increment type [e.g., ticket issuing]
- 83/4546 . . . . . Length selector initiates machine operation
- 83/4549 . . . . By change in length of one member of feed-driving linkage
- 83/4551 . . . . . Rotating member
- 83/4554 . . . . By change of effective shape of driving or driven surface of element of work-feed mechanism
- 83/4556 . . . . By adjustment of fixed stop
- 83/4559 . . . . With means to vary magnitude or base position of tool stroke
- 83/4561 . . With means to facilitate manual repositioning [shift] of work
- 83/4564 . . With means to produce plurality of work-feed increments per tool cycle
- 83/4567 . . . Including supplemental work-feed means
- 83/4569 . . . . Manual
- 83/4572 . . . . With stop adapted to engage abutment surface on work
- 83/4574 . . . . . Plurality of work stops successively effective
- 83/4577 . . Work fed successively to plural tools
- 83/4579 . . . With change of direction between tools
- 83/4582 . . Work advance occurs during return stroke of tool
- 83/4584 . . Dwell defined only by "dead-center" of rotating crank
- 83/4587 . . Dwell initiated by disengagement of surface of moving frictional feed means from work
- 83/4589 . . . Feed means has interrupted frictional surface
- 83/4592 . . . Feed means has rotary motion
- 83/4594 . . Dwell caused by clamping or blocking work during continuous operation of feed means
- 83/4597 . . With means to control magnitude of work-feed increment or work acceleration
- 83/4599 . . . Means to prevent random or excessive work feeds
- 83/4602 . . . Full stroke required of feed means
- 83/4604 . . Work feed functions as tool support
- 83/4607 . . With rotary work-carrier
- 83/461 . . With abutment to position work being fed with respect to cutter
- 83/4612 . . . With slip between positioned work and feed means
- 83/4615 . . Work guide and feed means have open side
- 83/4617 . . Work feed means modified to maintain clearance from tool
- 83/462 . . Plurality of work feed means in separate paths
- 83/4622 . . Intermittent drive type of gearing for work-feed means
- 83/4625 . . . Gearing modified to lock the work-feed means
- 83/4627 . . . Mutilated gear in mesh with gear driving work-feed means
- 83/463 . . Work-feed element contacts and moves with work
- 83/4632 . . . Comprises a work-moving gripper
- 83/4635 . . . Comprises element entering aperture in, or engaging abutment surface on, work
- 83/4637 . . With means to guide, position, or present work to work-feed means
- 83/464 . . . Means to transport work to work-feed means
- 83/4642 . . . . Including means to pick articles from pack or stack
- 83/4645 . . With means to clamp work during dwell
- 83/4647 . . One-revolution clutch in tool drive
- 83/465 . . Cutting motion of tool has component in direction of moving work
- 83/4653 . . With means to initiate intermittent tool action
- 83/4656 . . . Tool moved in response to work-sensing means

83/4659	. . . . With means to vary "length" of product	83/4807	. . . . . With one-revolution drive
83/4662	. . . . . To vary an end-product "length" [e.g., "crop cut"]	83/4809	. . . . With loop former preceding tool
83/4664	. . . . With photo-electric work-sensing means	83/4812	. . . . Compound movement of tool during tool cycle
83/4667	. . . . With trip-switch work-sensing means	83/4815	. . . . . Axial reciprocation of tool
83/467	. . . . . To initiate feed movement of tool	83/4818	. . . . Interconnected work feeder and tool driver
83/4673	. . . . . And to initiate flying movement of tool	83/4821	. . . . Side cutting helical blade
83/4676	. . . . With work-responsive means to initiate flying movement of tool	83/4824	. . . . With means to cause progressive transverse cutting
83/4679	. . . . . With flying work-gripper means related to tool carrier	83/4827	. . . . . With helical cutter blade
83/4682	. . . . . With means controlling flying speed dependent on work speed	83/483	. . . . With cooperating rotary cutter or backup
83/4685	. . . With means to vary frequency of initiation	83/4833	. . . . . Cooperating tool axes adjustable relative to each other
83/4688	. . . . By orbitally traveling trigger pin[s]	83/4836	. . . . . With radial overlap of the cutting members
83/4691	. . Interrelated control of tool and work-feed drives	83/4838	. . . . . With anvil backup
83/4693	. . With means to concurrently adjust flying frequency and retain flying speed of tool	83/4841	. . . . . With resilient anvil surface
83/4696	. . Plural diverse flying cutters	83/4844	. . . . . Resiliently urged cutter or anvil member
83/4699	. . Combined with other type cutter	83/4847	. . . . With cooperating stationary tool
83/4702	. . . With slitter	83/485	. Cutter with timed stroke relative to moving work
83/4705	. . Plural separately mounted flying cutters	83/487	. . Work swings about progressively cutting tool during tool stroke
83/4708	. . With means to render cutter pass[es] ineffective	83/489	. . Tool actuated by movable work support
83/4711	. . . With means to produce "mis-cut"	83/49	. . Traveling cutter
83/4714	. . Oscillating work shifter adjacent cutter	83/492	. . With means to vary timing of tool feed
83/4717	. . . Work actuated senser initiates shifter	83/494	. . Uniform periodic tool actuation
83/472	. . Wire tool	83/496	. . . With periodic lateral feed of tool or work
83/4722	. . . On tool support having reciprocation parallel to direction of work-feed	83/498	. . . With plural tool stations
83/4725	. . . . And rotation about axis parallel to direction of work-feed	83/50	. . . Reciprocating tool
83/4728	. . Tool flies by engagement with the work	83/501	. . . With plural tools on a single tool support
83/4731	. . . Tool merely flexes with moving work	83/503	. . With plural tool stations
83/4734	. . Flying support or guide for work	83/505	. Operation controlled by means responsive to product
83/4737	. . With tool speed regulator	83/515	. . Actuation of tool controlled
83/474	. . With work feed speed regulator	83/525	. Operation controlled by detector means responsive to work
83/4743	. . . With means to vary cyclically speed of work	83/527	. . With means to control work-responsive signal system
83/4746	. . Spring return of tool in counterfly direction	83/528	. . . To delay response to work-senser
83/4749	. . Tool mounted on oscillating standard	83/53	. . . To change length of product
83/4751	. . . Both tools of couple on single standard	83/531	. . With plural work-sensing means
83/4754	. . . . One tool swings out of work path on return stroke	83/533	. . With photo-electric work-sensing means
83/4757	. . Tool carrier shuttles rectilinearly parallel to direction of work feed	83/535	. . Release of interlock controlled
83/476	. . . Including means to secure work to carrier	83/536	. . Movement of work controlled
83/4763	. . . Both members of cutting pair on same carrier	83/538	. . Positioning of tool controlled
83/4766	. . Orbital motion of cutting blade	83/54	. . Actuation of tool controlled by work-driven means to measure work length
83/4769	. . . Work feeder mounted on tool support	83/541	. . Actuation of tool controlled in response to work-sensing means
83/4772	. . . . Gripper-type feeder	83/543	. . . Sensing means responsive to work indicium or irregularity
83/4775	. . . Tool speed varied within each orbital cycle	83/544	. . . With trip-switch in work-sensing mechanism
83/4778	. . . Work feed gripper carried on endless belt	83/546	. Interrelated tool actuating and work guide moving means
83/478	. . . Endless belt or chain tool carrier	83/566	. Interrelated tool actuating means and means to actuate work immobilizer
83/4783	. . . Constantly oriented tool with arcuate cutting path	83/569	. . Work clamp
83/4786	. . . . Cutting couple type	83/5678	. . . Tool deflected by guide on tightened clamp
83/4789	. . . Rotatable disc-type tool on orbiting axis	83/5687	. . . . With means to control clamping force
83/4792	. . . . Idling disc	83/5696	. . . Clamp driven by reaction from tool force
83/4795	. . . Rotary tool	83/5705	. . . With means providing for plural steps in clamping stroke
83/4798	. . . . Segmented disc slitting or slotting tool	83/5715	. . . With sequencing means
83/4801	. . . . With undulant cutting edge [e.g., "pinking" tool]		
83/4804	. . . . Single tool action drive		



83/5724	. . . With provision for manual control of clamp	83/6508	. . . . With means to cause movement of work transversely toward plane of cut
83/5733	. . . Tool or tool support on movable clamp jaw		
83/5742	. . . Clamp moved by direct impact of tool or tool support	83/651	. . . . . By means to cause movement toward and away from plane of cut
83/5751	. . . . Clamp retracted by impact of tool or tool support	83/6512	. . . . . Actuated by movement of a member on reciprocating means
83/576	. . . Clamp actuating means driven by tool or tool support	83/6513	. . . . . Actuated by passive means which is external to reciprocating means
83/5769	. . . . Clamp yieldably driven by tool or tool support	83/6515	. . . . . By means to define increment of movement toward plane of cut
83/5778	. . . . . With resilient drive element	83/6516	. . . . . Interrelated with movement of reciprocating means
83/5787	. . . Clamp driven by yieldable means	83/6518	. . . . . By pusher mechanism
83/5796	. . . . Drive means is resilient	83/652	. . . . . With additional work holding or positioning means
83/5805	. . . . Fluid pressure yieldable drive means	83/6521	. . . . . Work holding means includes actuator
83/5815	. . Work-stop abutment	83/6523	. . . . . Including plural, simultaneously acting pusher elements
83/5824	. . . Oppositely effective abutments	83/6524	. . . . . Independently adjustable
83/5833	. . . With cyclic means to alter work-stopping position	83/6526	. . . . . With additional means to retract elements
83/5842	. . . Stop partakes of tool motion	83/6528	. . . . . Power derived from movement of reciprocating means
83/5851	. . . . Carried by tool or tool support	83/6529	. . . . . Power derived from fluid pressure means
83/586	. Interrelated tool actuating means and means to actuate work-mover stop	83/6531	. . . . . Movement by screw means
83/606	. Interrelated tool actuating means and guard means	83/6532	. . . . . Movement by rack and pinion or pawl
83/613	. . Work guard	83/6534	. . . . . With handle
83/619	. . Cutter guide slot closer	83/6536	. . . . . By carriage
83/626	. Operation of member controlled by means responsive to position of element remote from member [e.g., interlock]	83/6537	. . . . . By cable or belt drive
83/637	. . With means to initiate operation of member	83/6539	. . With means for transverse positioning of work on a moving conveyor
83/647	. With means to convey work relative to tool station	83/654	. . With work-constraining means on work conveyor [i.e., "work-carrier"]
83/6472	. . By fluid current	83/6542	. . . Plural means to constrain plural work pieces
83/6473	. . Centrifugal feed to tangential tool [e.g., "Beria" type]	83/6544	. . . . End of work protrudes through aperture in carrier
83/6475	. . With means to regulate work-feed speed	83/6545	. . . With means to guide work-carrier in nonrectilinear path
83/6476	. . Including means to move work from one tool station to another	83/6547	. . . . About axis fixed relative to tool station
83/6478	. . . Tool stations angularly related	83/6548	. . . . . Infeed
83/648	. . . . Work manipulated between tool stations	83/655	. . . . . About vertical axis
83/6481	. . . . With static tool	83/6552	. . . . . Cut normal to axis
83/6483	. . . Tool stations staggered relative to one another	83/6553	. . . . . Work-guide tube
83/6484	. . . Punch or die station	83/6555	. . . . . Cut normal to axis
83/6486	. . . Notcher or pinker station	83/6556	. . . . . Oscillating work-carrier
83/6488	. . . Work reciprocated past double-edged knife	83/6558	. . . . . Multiple cutters
83/6489	. . . Slitter station	83/656	. . . . . Coaxial rotary cutters
83/6491	. . . . And transverse cutter station	83/6561	. . . . . Work stationary during cut
83/6492	. . Plural passes of diminishing work piece through tool station	83/6563	. . . With means to orient or position work carrier relative to tool station
83/6494	. . . Work alternately, angularly re-oriented relative to tool station	83/6564	. . . . By pattern or templet
83/6496	. . . . By additional means to engage work and orient it relative to tool station	83/6566	. . . . By indexing means
83/6497	. . . . By roller or roll-like element	83/6568	. . . With additional work-locating means on work-carrier
83/6499	. . . Work rectilinearly reciprocated through tool station	83/6569	. . With means to stop work conveyor
83/65	. . . . With means to cause or permit angular re-orientation of work about axis parallel to plane of cut	83/6571	. . With means to store work articles
83/6502	. . . . . By endless member having work-engaging teeth	83/6572	. . With additional mans to engage work and orient it relative to tool station
83/6504	. . . . . By member having work-engaging tooth		
83/6505	. . . . . Including plural work-engaging teeth	83/6574	. . . By work-stopping abutment
83/6507	. . . . . Fluid operated	83/6576	. . . By opposed lateral guide means

- 83/6577 . . . With means to adjust additional means
- 83/6579 . . With means to press work to work-carrier
- 83/658 . . With projections on work-carrier [e.g., pin wheel]
- 83/6582 . . Tool between tandem arranged work carrying means
- 83/6584 . . Cut made parallel to direction of and during work movement
- 83/6585 . . . Including nonconcurrently acting tool
- 83/6587 . . . Including plural, laterally spaced tools
- 83/6588 . . . . Tools mounted on common tool support
- 83/659 . . . . . Tools axially shiftable on support
- 83/6592 . . . Interrelated work-conveying and tool-moving means
- 83/6593 . . . . With reciprocating tool [e.g., "jigsaw" type]
- 83/6595 . . . . With means to move tool laterally of feed direction during cutting
- 83/6596 . . . . With means to effect difference between work speed and tool speed
- 83/6598 . . . . Tool co-axial with work-conveying means
- 83/66 . . . With means to press work to tool
- 83/6601 . . . Bevel cutting tool
- 83/6603 . . . Tool shiftable relative to work-conveying means
- 83/6604 . . . Tool in contact with surface of work-conveying means
- 83/6606 . . . Tool between laterally spaced work-conveying means
- 83/6608 . . . By rectilinearly moving work carriage
- 83/6609 . . . . Angularly adjustable
- 83/6611 . . . . . Having positive adjustment stop; e.g., link
- 83/6612 . . . . . Having position indicating means
- 83/6614 . . . . . Pusher engaging rear surface of work
- 83/6616 . . . . . Having means to actuate pusher
- 83/6617 . . . . . Hydraulic or pneumatic means
- 83/6619 . . . . . Gear or pulley actuated pusher
- 83/662 . . . . . Lever, cam, or link actuated pusher
- 83/6622 . . . . . Having means to actuate carriage
- 83/6624 . . . . . Hydraulic or pneumatic means
- 83/6625 . . . . . Gear or pulley
- 83/6627 . . . . . Adapted to place tension on flacid member
- 83/6628 . . . . . Lever, cam, or link means
- 83/663 . . . . On or attached to vehicle
- 83/6632 . . . . Supported for movement at one side of tool only
- 83/6633 . . . By work moving flexible chain or conveyor
- 83/6635 . . . By feed roller
- 83/6636 . . . . Pinch rollers
- 83/6638 . . . Unattached manual work pusher
- 83/664 . . Roller
- 83/6641 . . . Plural independent rollers for feed of plural distinct work
- 83/6643 . . . Shaped to conform to work
- 83/6644 . . . With work-supplying reel
- 83/6646 . . . . And provision for selecting feed length
- 83/6648 . . . Continuous conveying during, cutting; e.g., straw cutting
- 83/6649 . . . Supporting work at cutting station
- 83/6651 . . . . Comprising part of cutting station
- 83/6652 . . . Tool and feed roller actuated by common handle
- 83/6654 . . . Tool and roller on common movable support
- 83/6656 . . Rectilinear movement only
- 83/6657 . . . . Tool opposing pusher
- 83/6659 . . . . . Hydraulically or pneumatically actuated
- 83/666 . . . . . Screw actuated
- 83/6662 . . . . . Gear or pulley actuated
- 83/6664 . . . . . Lever, cam, or link actuated
- 83/6665 . . . . . Spring or gravity urged
- 83/6667 . . Work carrier rotates about axis fixed relative to tool station
- 83/6668 . . Interrelated work-feeding means and tool-moving means
- 83/667 . . Tool carrier or guide affixed to work during cutting
- 83/674 . . By flexible work-engaging member
- 83/68 . . Entirely work supported
- 83/687 . . By tool reciprocable along elongated edge
- 83/6875 . . With means permitting tool to be rotatably adjusted about its cutting edge during cutting
- 83/688 . . With dynamic balancing or shock absorbing means
- 83/6885 . . With tool of another type
- 83/689 . . With means to change to other type tool
- 83/6895 . . Plural reciprocable tools
- 83/69 . . Stored energy furnishes drive in one direction
- 83/6905 . . With tool in-feed
- 83/691 . . . . And auxiliary means for promoting or retarding tool in-feed
- 83/6915 . . . . . By yieldable means
- 83/692 . . . . . And means to vary tool in-feed speed
- 83/6925 . . . . . With interrelated tool actuating and in-feed means
- 83/693 . . . Of rectilinearly reciprocating tool
- 83/6935 . . . . With in-feed by pivoting carrier
- 83/694 . . . And means to prevent tool in-feed
- 83/6945 . . . With passive means to guide tool directly
- 83/695 . . . . By plural opposed guide surfaces
- 83/6955 . . . . . Having relative adjustment between guide surfaces
- 83/696 . . . . . With relative adjustment between guide and work or work-support
- 83/6965 . . . . . By or with additional movable work-support portion
- 83/697 . . . . . By rotation about an axis parallel to the work-support surface
- 83/6975 . . . . . By rotation about an axis perpendicular to the work-support surface
- 83/698 . . . Including means to cause nonrectilinear tool infeed
- 83/6985 . . . Of arcuately oscillating tool
- 83/699 . . . Of tool carrier on single moving pivot
- 83/6995 . . . . Pivot moves in closed loop
- 83/70 . . . . Pivot moves to and fro in arcuate path
- 83/7005 . . . . . Axis of arcuate path moves during cutting
- 83/701 . . . . Pivot moves to and fro in rectilinear path
- 83/7015 . . Having uniplanar compound motion
- 83/702 . . . By plural arcuately oscillating carrier
- 83/7025 . . . Constantly oriented tool travelling in orbit
- 83/703 . . . Tool rocks cutting reciprocations
- 83/7035 . . . . One tool reciprocates along fixed guide element
- 83/704 . . With work-support and means to vary relationship between tool and work support
- 83/7045 . . Arcuately oscillating tool carried on single pivot

- 83/705 . . With means to support tool at opposite ends
- 83/7055 . . . And apply drive force to both ends of tool
- 83/706 . . . . By flexible drive means
- 83/7065 . . . . By reciprocating rigid support
- 83/707 . By endless band or chain knife
- 83/7076 . . With programming means
- 83/7083 . . With cutter other than endlessly orbiting type
- 83/7089 . . Including contiguous oppositely moving knife portions
- 83/7095 . . With means to change to non-endlessly orbiting cutter
- 83/7101 . . With tool in-feed
- 83/7108 . . . Including ground-traversing vehicle
- 83/7114 . . . Including means to permit arcuate in-feed motion
- 83/712 . . . . Including means to relocate path of in-feed motion
- 83/7126 . . . . . Angular relative previous path
- 83/7133 . . . By gravity
- 83/7139 . . . . With fluid in-feed regulating means
- 83/7145 . . . By motor-driven mechanism
- 83/7151 . . With scale or indicator
- 83/7158 . . Including plural cutting zones
- 83/7164 . . . With adjustment of separation between zones
- 83/717 . . . . By lever means
- 83/7176 . . . . By screw-threaded means
- 83/7183 . . . Including "figure-8" band
- 83/7189 . . . Comprising plural bands
- 83/7195 . . Including means to adjust relationship between band and work-support surface
- 83/7201 . . . By varying angle between band and work-support surface
- 83/7208 . . . . By tilting band carrier
- 83/7214 . . . . . About point of intersection of cutting span and work-support surface
- 83/722 . . . By varying distance between band and work-support surface
- 83/7226 . . With means to guard the tension
- 83/7233 . . . Including means to retard undriven pulley or sprocket
- 83/7239 . . . With means to vary distance between pulley or sprocket axes
- 83/7245 . . . . And angular relationship of axes
- 83/7251 . . . . Including means to yieldably bias pulley
- 83/7258 . . . . . By fluid means
- 83/7264 . . With special blade guide means
- 83/727 . With means to guide moving work
- 83/728 . . In pivotal or arcuate movement
- 83/73 . . Guide fixed to or integral with stationary tool element
- 83/731 . . . Tool element cooperates with a second tool
- 83/732 . . With guard
- 83/734 . . With attachment or operative connection to tool carrier
- 83/735 . . With attachment or operative connection to passive tool guide
- 83/736 . . Guide cooperates with template or straight edge secured to work
- 83/738 . . Curved or deflecting guide
- 83/739 . . Positively confines or otherwise determines path of work
- 83/74 . . Adapted to permit maneuvering of work at tool zone
- 83/741 . . With movable or yieldable guide element
- 83/743 . . . Opposed to work-supporting surface
- 83/744 . . Plural guide elements
- 83/745 . . . Opposed
- 83/747 . . Opposed to work-supporting surface
- 83/748 . With work immobilizer
- 83/7487 . . Means to clamp work
- 83/7493 . . . Combined with, peculiarly related to, other element
- 83/75 . . . . With or to tool guide
- 83/7507 . . . . Guide for traveling cutter
- 83/7513 . . . . Tool or tool support on movable clamp jaw
- 83/752 . . . With means providing for plural steps in clamping stroke
- 83/7527 . . . With equalizer or self-aligning jaw
- 83/7533 . . . With biasing or counterbalancing means
- 83/754 . . . Clamp driven by yieldable means
- 83/7547 . . . Liquid pressure actuating means
- 83/7553 . . . Including means to retain clamp jaw in position
- 83/756 . . . Self-locking drive means
- 83/7567 . . . Manually actuated drive means
- 83/7573 . . . Including clamping face of specific structure
- 83/758 . . . With means to adjust clamp position or stroke
- 83/7587 . . Gapped work-constrainer
- 83/7593 . . Work-stop abutment
- 83/76 . . . With scale or indicator
- 83/7607 . . . Normal to plane of cut
- 83/7613 . . . . Adjustable
- 83/762 . . . . . Angularly relative to plane of cut; e.g., miter
- 83/7627 . . . . With traversing cutter guide; e.g., cut-off saw
- 83/7633 . . . Collapsible
- 83/764 . . . Retractable
- 83/7647 . . . Adjustable
- 83/7653 . . . . Having curved cutting edge to make arcuate cut, plural nonaligned intersecting cutting edges, or spaced punches
- 83/766 . . . . . Spaced edges
- 83/7667 . . . Having curved cutting edge to make arcuate cut, plural nonaligned intersecting cutting edges, or spaced punches
- 83/7673 . . . . Spaced edges
- 83/768 . Rotatable disc tool pair or tool and carrier
- 83/7684 . . With means to support work relative to tool[s]
- 83/7688 . . . Plural tool elements successively actuated at same station
- 83/7693 . . . Tool moved relative to work-support during cutting
- 83/7697 . . . . Tool angularly adjustable relative to work-support
- 83/7701 . . . Supporting surface and tool axis angularly related
- 83/7705 . . . . Adjustable angular relationship
- 83/7709 . . . Unidirectionally movable work support
- 83/7713 . . . . With opposed work-presser
- 83/7718 . . . . . Presser co-axial with tool
- 83/7722 . . . Support and tool relatively adjustable
- 83/7726 . . . . By movement of the tool
- 83/773 . . . Work-support includes passageway for tool [e.g., slotted table]
- 83/7734 . . With guard for tool
- 83/7738 . . Optional tool pairs alternatively operative

83/7743	. . . One element of tool pairs common to all pairs	83/856	. . . . To work-engaging member
83/7747	. . With means to permit replacement of tool	83/857	. . . . . Calibrated scale or indicator
83/7751	. . Means to separate elements of tool pair	83/858	. . . . . Indicates dimension of work being cut
83/7755	. . Carrier for rotatable tool movable during cutting	83/859	. . . . . Dynamic indicator
83/7759	. . . Unicyclic movement	83/86	. . . . To another tool assembly
83/7763	. . . Tool carrier reciprocable rectilinearly	83/861	. . . . To cooperating tool
83/7768	. . . . With means to adjust path of reciprocation	83/862	. . . . To another component of tool assembly
83/7772	. . . . . Angular relative to previous path	83/863	. . . . Adjustable guide for traversing tool; e.g., radial saw guide or miter saw guide
83/7776	. . . . . With means to reciprocate carrier	83/865	. . Indicates work characteristic
83/778	. . . . . And means to rotate tool	83/866	. . Indicates wear
83/7784	. . . . . With means to rotate tool	83/867	. . Bubble level
83/7788	. . . Tool carrier oscillated or rotated	83/868	. . Counter
83/7793	. . Means to rotate or oscillate tool	83/869	. Means to drive or to guide tool
83/7797	. . . Including means to rotate both elements of tool pair	83/8691	. . Unicyclic
83/7801	. . . . Including means to rotate both elements at different speeds	83/8693	. . . With adjustable stopping point or tool
83/7805	. . . . And means to change speed of rotation	83/8694	. . . With brake or blocking means
83/7809	. . Tool pair comprises rotatable tools	83/8696	. . Means to change datum plane of tool or tool presser stroke
83/7813	. . . Tool pair elements angularly related	83/8697	. . . For disabling of continuously actuated cutter
83/7818	. . . . Elements of tool pair angularly adjustable relative to each other	83/8699	. . . With adjustable stop
83/7822	. . . Tool pair axially shiftable	83/87	. . . By varying length of tool stroke
83/7826	. . . . With shifting mechanism for at least one element of tool pair	83/8702	. . Clicker die press
83/783	. . . Tool pair comprises contacting overlapped discs	83/8703	. . . With die handling attachment
83/7834	. . . . With means to effect axial pressure on pair	83/8704	. . . . With reciprocating presser
83/7838	. . . . . With means to change axial pressure	83/8706	. . . . Laterally movable to selective operative positions
83/7843	. . . . With means to change overlap of discs	83/8707	. . . . . Pivotal or revolving only
83/7847	. . . Tool element axially shiftable	83/8709	. . . . . With means to impart, limit, or control pivotal motion of presser
83/7851	. . . Tool pair comprises disc and cylindrical anvil	83/871	. . . . . Interrelated with presser reciprocating means
83/7855	. . . . With adjustable means to urge tool elements together	83/8712	. . . . . With means to mount presser for oscillation about column
83/7859	. . . Elements of tool pair adjustably spaced	83/8713	. . . . With adjustable bed block
83/7863	. . Tool pair comprises rotatable tool and nonrotatable tool	83/8714	. . . . Including presser member reinforcing, or flexure compensating, means
83/7868	. . Tool element selectively operative	83/8716	. . . . With manually actuated control apparatus for reciprocation of presser member
83/7872	. . Tool element mounted for adjustment	83/8717	. . By deforming resilient tool or tool support
83/7876	. . . Plural, axially spaced tool elements	83/8719	. . With transmission yieldable on overload
83/788	. Tool pair comprises rotatable anvil and fixed-type tool	83/872	. . With guard means
83/793	. . Anvil has motion in addition to rotation [i.e., traveling anvil]	83/8722	. . . Static
83/798	. . . Additional motion is along fixed arcuate path	83/8723	. . . . Adjustable
83/803	. . . With plural anvils	83/8725	. . Including movable, tool protecting, cushioning sheet
83/808	. Two tool pairs, driver for one pair moves relative to driver for other pair	83/8726	. . Single tool with plural selective driving means
83/811	. . One tool support acts as driver for other	83/8727	. . Plural tools selectively engageable with single drive
83/814	. . . Punch and shear	83/8729	. . . Predetermined sequence of selection
83/817	. . With variable spacing between tool pairs	83/873	. . . . Of paired tools
83/819	. . . With intermediate work support	83/8732	. . . Turret of tools
83/822	. . Punch and shear	83/8733	. . Tool movable to cooperate selectively with one of a plurality of mating tools
83/825	. . Successively acting	83/8735	. . With means providing for plural steps in tool stroke
83/828	. With illuminating or viewing means for work	83/8736	. . Sequential cutting motions
83/839	. . Mirror or lens	83/8737	. . With tool positioning means synchronized with cutting stroke
83/849	. With signal, scale, or indicator	83/8739	. . . Anvil moves into and out of operative position
83/85	. . Signal; e.g., alarm	83/874	. . . Straight line positioning
83/851	. . Indicator comprising work or product	83/8742	. . Tool pair positionable as a unit
83/852	. . Responsive to force		
83/853	. . Indicates tool position		
83/855	. . . Relative to another element		

83/8743	. . . Straight line positioning	83/8812	. . . Cutting edge in radial plane
83/8745	. . Tool and anvil relatively positionable	83/8814	. . . . Adjustable
83/8746	. . . Straight line	83/8815	. . . . With guide means for the cutting member
83/8748	. . Tool displaceable to inactive position [e.g., for work loading]	83/8817	. . . Axially extending cutting edge
83/8749	. . . By pivotal motion	83/8818	. . . . Axially progressing cut
83/875	. . With templet surface following tool	83/882	. . . . Adjustable
83/8752	. . Tool moves work to and against cooperating tool	83/8821	. . With simple rectilinear reciprocating motion only
83/8753	. . . With means to clamp or bind work to moving tool	83/8822	. . . Edge-to-edge of sheet or web [e.g., traveling cutter]
83/8755	. . . One tool resiliently mounted or biased	83/8824	. . . With provision for dynamic balance
83/8756	. . . Work forced through tool aperture or between spaced cooperating tools	83/8825	. . . With lost motion in tool drive
83/8758	. . . Manually actuated work-moving tool	83/8827	. . . Means to vary force on, or speed of, tool during stroke
83/8759	. . With means to connect or disconnect tool and its drive	83/8828	. . . Plural tools with same drive means
83/8761	. . . Continuously moving drive means [e.g., "gag"]	83/883	. . . . Tools positioned by template
83/8762	. . . . Hand actuated connecting means	83/8831	. . . . Plural distinct cutting edges on same support
83/8763	. . Convertible from tool path to another or from implement to machine	83/8832	. . . . . Concentrically mounted
83/8765	. . Magnet- or solenoid-actuated tool	83/8834	. . . . . Successively acting
83/8766	. . . Tool movement modifies actuating circuit	83/8835	. . . And means to move cooperating cutting member
83/8768	. . . Solenoid core is tool or tool support	83/8837	. . . With application of force to opposite ends of tool supporting crosshead
83/8769	. . Cutting tool operative in opposite directions of travel	83/8838	. . . . By relatively movable fixed axis levers
83/8771	. . Motion direction of tool influenced by resistance of work	83/884	. . . . By connecting rod articulated with tool support
83/8772	. . One tool edge of tool pair encompasses work [e.g., wire cutter]	83/8841	. . . Tool driver movable relative to tool support
83/8773	. . Bevel or miter cut	83/8843	. . . . Cam or eccentric revolving about fixed axis
83/8775	. . With tool tensioning means	83/8844	. . . . Gear actuated tool support
83/8776	. . Constantly urged tool or tool support [e.g., spring biased]	83/8845	. . . . Toggle links, one link pivoted to tool support
83/8778	. . . Ledger blade	83/8847	. . . . Screw actuated tool support
83/8779	. . . Oscillating tool urged axially	83/8848	. . . . Connecting rod articulated with tool support
83/8781	. . . . And urged about pivotal axis	83/885	. . . . Fixed axis lever
83/8782	. . . Stored energy furnishes cutting force	83/8851	. . . . . Adjustable mechanical advantage
83/8784	. . . . With reset	83/8853	. . . . Including details of guide for tool or tool support
83/8785	. . . Through return [noncutting] stroke	83/8854	. . . Progressively cutting
83/8786	. . . . Oscillating tool	83/8855	. . . With spaced guide pins [e.g., die set leader pins]
83/8788	. . Tool return mechanism separate from tool advance mechanism	83/8857	. . . With inclined guides
83/8789	. . With simple revolving motion only	83/8858	. . . Fluid pressure actuated
83/8791	. . . Tool mounted on radial face of rotor	83/886	. . . . Utilizing fluid amplifier
83/8792	. . . Variable speed during one revolution [e.g., intermittent]	83/8861	. . . . Diaphragm
83/8794	. . . Revolving tool moves through recess in work holder or cooperating tool	83/8863	. . . . Explosive fluid
83/8795	. . . . Progressively cutting	83/8864	. . . . Plural cylinders
83/8796	. . . Progressively cutting	83/8866	. . . . Offset cutter
83/8798	. . With simple oscillating motion only	83/8867	. . . With means to adjust tool position on tool holder
83/8799	. . . Plural tool pairs	83/8868	. . . . Adjustably mounted cooperating tool
83/8801	. . . . Plural tools on single oscillating arm [i.e., tool holder]	83/887	. . Parallel draw-cut [e.g., translatory]
83/8802	. . . And means to move cooperating cutter member	83/8871	. . . Link suspension
83/8804	. . . Tool driver movable relative to tool support	83/8873	. . Straight line motion combined with tilting in plane of stroke
83/8805	. . . . Cam or eccentric revolving about fixed axis	83/8874	. . Uniplanar compound motion
83/8807	. . . . Gear or ratchet pawl drives toothed tool support	83/8876	. . . Reciprocating plus work approach [e.g., saw type]
83/8808	. . . . Toggle links, one link pivoted to tool support	83/8877	. . . With gyratory drive
83/8809	. . . . Fixed axis lever	83/8878	. . Guide
83/8811	. . . . . Adjustable mechanical advantage	83/888	. . . With nonrigidly positioned member
		83/8881	. . . With anti-friction means
		83/8883	. . . . Roller with peripheral flange or groove
		83/8884	. . . . Disc

83/8886	. . . With means to vary space between opposed members	83/9394	. . . Helical tool
83/8887	. . . . By rectilinear movement of member	83/9396	. . . Shear type
83/8889	. . . With means to adjust position	83/9399	. . . . Cutting edge wholly parallel to axis of rotation
83/889	. Tool with either work holder or means to hold work supply	83/9401	. . . . Cutting edge wholly normal to axis of rotation
83/896	. . Rotatable wound package supply	83/9403	. . . Disc type
83/902	. . . Plural supply sources	83/9406	. . . Radially adjustable tool
83/909	. Cutter assemblage or cutter element therefor [e.g., chain saw chain]	83/9408	. . . Spaced cut forming tool
83/913	. . With means permitting removal of cutter element	83/9411	. . Cutting couple type
83/917	. . Having diverse cutting elements	83/9413	. . . Spiral type cutter
83/921	. . . And noncutting depth gauge	83/9416	. . . To punch and cut punched article
83/925	. . Having noncutting depth gauge	83/9418	. . . Punching plus nonpunching tool
83/929	. Tool or tool with support	83/942	. . . Notching plus nonnotching tool
83/9292	. . Wire tool	83/9423	. . . Punching tool
83/9295	. . Work supported tool [e.g., clicker die]	83/9425	. . . . Tool pair
83/9297	. . . With product ejection facilitator	83/9428	. . . . Shear-type male tool
83/93	. . . With tool manipulating portion	83/943	. . . . . Multiple punchings
83/9302	. . . With tool positioning abutment	83/9432	. . . . . Plural spaced successively operative shearing portions
83/9304	. . . To sever article from work and cut within article	83/9435	. . . . . Progressive cutting
83/9307	. . . With tool contour adjusting means	83/9437	. . . . . Shear-type female tool
83/9309	. . Anvil	83/944	. . . . . Multiple punchings
83/9312	. . . Rotatable type	83/9442	. . . Notching tool
83/9314	. . Pointed perforators	83/9444	. . . . Shear type
83/9317	. . Endless band or belt type	83/9447	. . . Shear type
83/9319	. . Toothed blade or tooth therefor	83/9449	. . . Spaced cut forming tool
83/9321	. . . With means to vary tooth position	83/9452	. . . With tool contour adjusting means
83/9324	. . . With additional cutting means	83/9454	. . Reciprocable type
83/9326	. . . Plural separable sections	83/9457	. . Joint or connection
83/9329	. . . . Tooth separable from blade	83/9459	. . . Magnetic connection
83/9331	. . . . . By independent connecting element	83/9461	. . . Resiliently biased connection
83/9333	. . . . . Transversely movable	83/9464	. . . For rotary tool
83/9336	. . . . . Arcuately movable	83/9466	. . . . Flexible sleeve-like tool
83/9338	. . . . . With additional element to prevent movement of connecting element	83/9469	. . . . Adjustable
83/9341	. . . . . Rectilinearly movable	83/9471	. . . . . Rectilinearly
83/9343	. . . . . By deformation	83/9473	. . . For rectilinearly reciprocating tool
83/9346	. . . Uniformly varying teeth or tooth spacing	83/9476	. . . . Tool is single element with continuous cutting edge [e.g., punch, etc.]
83/9348	. . . Undulating tooth arrangement	83/9478	. . . . Tool is single element reciprocable generally perpendicularly to elongate cutting edge [e.g., shear, etc.]
83/935	. . . Plural tooth groups	83/9481	. . . . . Tool is single element reciprocable along elongate cutting edge [e.g., saw blade, etc.]
83/9353	. . . . Including raker tooth group	83/9483	. . . . . Adjustable
83/9355	. . . . Including intermediate raker tooth	83/9486	. . . . . Rectilinearly
83/9358	. . . Series of dissimilar teeth	83/9488	. . . Adjustable
83/936	. . . Series of allochiral teeth	83/949	. . . . Rectilinearly
83/9362	. . . Teeth having transversely curved cutting edge	83/9493	. . Stationary cutter
83/9365	. . . Teeth having cutting edge parallel to blade surface	83/9495	. . . Nonparallel cutting edges
83/9367	. . . Teeth having cutting edge perpendicular to blade surface	83/9498	. . . Parallel cutting edges
83/937	. . Tool mounted by and between spaced arms	83/95	. Machine frame
83/9372	. . Rotatable type	83/96	. . Guard
83/9374	. . . With spacer interposed between shaft-mounted tools	83/97	. Miscellaneous
83/9377	. . . Mounting of tool about rod-type shaft		
83/9379	. . . . At end of shaft		
83/9382	. . . Punching plus nonpunching tool		
83/9384	. . . Notching plus nonnotching tool		
83/9387	. . . Punching tool		
83/9389	. . . . Shear type		
83/9391	. . . Notching tool		

**Former US Class 117 Series**

<b>117/00</b>	<b>Single-crystal, oriented-crystal, and epitaxy growth processes; non-coating apparatus therefor</b>
117/10	. Apparatus
117/1004	. . with means for measuring, testing, or sensing
117/1008	. . . with responsive control means

117/1012	. . . with a window or port for visual observation or examination	137/0402	. . . Cleaning, repairing, or assembling
117/1016	. . with means for treating single-crystal [e.g., heat treating]	137/0407	. . . Repairing or assembling hydrant [e.g., fireplug, etc.]
117/102	. . for forming a platelet shape or a small diameter, elongate, generally cylindrical shape [e.g., whisker, fiber, needle, filament]	137/0413	. . . Gas or water meter repairing or assembling
117/1024	. . for crystallization from liquid or supercritical state	137/0419	. . . Fluid cleaning or flushing
117/1028	. . . Crucibleless apparatus having means providing movement of discrete droplets or solid particles to thin-film precursor [e.g., Verneuil method]	137/0424	. . . . Liquid cleaning or flushing
117/1032	. . . Seed pulling	137/043	. . . . . Valve or valve seat cleaning
117/1036	. . . . including solid member shaping means other than seed or product [e.g., EDFG die]	137/0435	. . . Mechanical cleaning [e.g., pig, etc.]
117/104	. . . . . Means for forming a hollow structure [e.g., tube, polygon]	137/0441	. . . Repairing, securing, replacing, or servicing pipe joint, valve, or tank
117/1044	. . . . . including means forming a flat shape [e.g., ribbon]	137/0447	. . . . . Including joint or coupling
117/1048	. . . . . Pulling includes a horizontal component	137/0452	. . . . . Detecting or repairing leak
117/1052	. . . . including a sectioned crucible [e.g., double crucible, baffle]	137/0458	. . . . . Tapping pipe, keg, or tank
117/1056	. . . . including details of precursor replenishment	137/0463	. . . . . Particular aperture forming means
117/106	. . . . including sealing means details	137/0469	. . . . . Cutter or cutting tool
117/1064	. . . . including a fully-sealed or vacuum-maintained crystallization chamber [e.g., ampoule]	137/0475	. . . . . Having deformable or inflatable means
117/1068	. . . . including heating or cooling details [e.g., shield configuration]	137/048	. . . . . With content loading or unloading [e.g., dispensing, discharge assistant, etc.]
117/1072	. . . . including details of means providing product movement [e.g., shaft guides, servo means]	137/0486	. . . . . Specific valve or valve element mounting or repairing
117/1076	. . . having means for producing a moving solid-liquid-solid zone	137/0491	. . . Valve or valve element assembling, disassembling, or replacing
117/108	. . . . Including a solid member other than seed or product contacting the liquid [e.g., crucible, immersed heating element]	137/0497	. . . . Fluid actuated or retarded
117/1084	. . . . having details of a stabilizing feature	137/0502	. . . . Multi way valve
117/1088	. . . . including heating or cooling details	137/0508	. . . . Ball valve or rotary ball valve
117/1092	. . . Shape defined by a solid member other than seed or product [e.g., Bridgman-Stockbarger]	137/0514	. . . . Gate valve
117/1096	. . . including pressurized crystallization means [e.g., hydrothermal]	137/0519	. . . . Plug valve
		137/0525	. . . . Butterfly valve
		137/053	. . . . Float valve
		137/0536	. Highspeed fluid intake means [e.g., jet engine intake]
		137/0645	. . With condition responsive control means
		137/0753	. Control by change of position or inertia of system
		137/0777	. . With second control
		137/0801	. . Position relative body of water [e.g., marine governors]
		137/0826	. . . Float controlled
		137/085	. . . Pressure or head controlled
		137/0874	. . Vent opening or closing on tipping container
		137/0898	. . By shifting of liquid level
		137/0923	. . By pendulum or swinging member
		137/0947	. . . With servo connection to valve
		137/0971	. Speed responsive valve control
		137/0989	. . Acceleration responsive valve control
		137/1007	. . With manual valve control
		137/1026	. . Speed change and excess speed valve control
		137/1044	. . With other condition responsive valve control
		137/1062	. . . Governor drive failure responsive
		137/108	. . Centrifugal mass type [exclusive of liquid]
		137/1098	. . . With multiple valves
		137/1116	. . . Periodically actuated valve
		137/1135	. . . Rotating valve and rotating governor
		137/1153	. . . Excess speed responsive
		137/1171	. . . With fluid servo-motor
		137/1189	. Freeze condition responsive safety systems
		137/1244	. . With freeze waste
		137/1298	. . Stop and waste
		137/1353	. . Low temperature responsive drains
		137/1407	. Combustion failure responsive fuel safety cut-off for burners
		137/1516	. . Thermo-electric
		137/1624	. Destructible or deformable element controlled

**Former US Class 137 series****137/00 Fluid handling**

137/0318	. Processes
137/0324	. . With control of flow by a condition or characteristic of a fluid
137/0329	. . . Mixing of plural fluids of diverse characteristics or conditions
137/0335	. . . . Controlled by consistency of mixture
137/034	. . . . Controlled by conductivity of mixture
137/0346	. . . . Controlled by heat of combustion of mixture
137/0352	. . . . Controlled by pressure
137/0357	. . . For producing uniform flow
137/0363	. . . For producing proportionate flow
137/0368	. . . By speed of fluid
137/0374	. . . For regulating boiler feed water level
137/0379	. . . By fluid pressure
137/0385	. . Carbonated beverage handling processes
137/0391	. . Affecting flow by the addition of material or energy
137/0396	. . Involving pressure control

- 137/1632 . . Destructible element
- 137/1639 . . . Combined destructible and fusible element
- 137/1647 . . . Explosive actuation
- 137/1654 . . . Separable valve coupling or conduit
- 137/1662 . . . . Tensile or sheer pin or bolt
- 137/1669 . . . Tensile or sheer pin or bolt
- 137/1677 . . . . Pressure causes pin or bolt to destruct
- 137/1684 . . . With alarm or indicator
- 137/1692 . . . Rupture disc
- 137/1699 . . . . Means for holding entire disc after rupture
- 137/1707 . . . . Disc burst after destruction of additional element
- 137/1714 . . . . Direct pressure causes disc to burst
- 137/1722 . . . . . Two-way rupture disc
- 137/1729 . . . . . Dome shape
- 137/1737 . . . . . Reverse buckling
- 137/1744 . . . . Specific weakening point
- 137/1752 . . . . Integral disc assembly
- 137/1759 . . . . Knife or cutter causes disc to break
- 137/1767 . . . . . Movable knife or cutter
- 137/1774 . . . With counterbalancing element
- 137/1782 . . . Frangible element returns pressure responsive valve
- 137/1789 . . . Having pressure responsive valve
- 137/1797 . . Heat destructible or fusible
- 137/1804 . . . With second sensing means
- 137/1812 . . . In fluid flow path
- 137/1819 . . . Safety cut-off
- 137/1827 . . . . With heater for destructible or fusible element
- 137/1834 . . . . With external closing means
- 137/1842 . Ambient condition change responsive
- 137/1866 . . For controlling soil irrigation
- 137/189 . . . Soil moisture sensing
- 137/1915 . . Burner gas cutoff
- 137/1939 . . Atmospheric
- 137/1963 . . . Temperature
- 137/1987 . . . . With additional diverse control
- 137/2012 . . . Pressure
- 137/2036 . . Underwater
- 137/206 . Flow affected by fluid contact, energy field or coanda effect [e.g., pure fluid device or system]
- 137/2065 . . Responsive to condition external of system
- 137/2071 . . . And causing change or correction of sensed condition
- 137/2076 . . Utilizing diverse fluids
- 137/2082 . . Utilizing particular fluid
- 137/2087 . . Means to cause rotational flow of fluid [e.g., vortex generator]
- 137/2093 . . . Plural vortex generators
- 137/2098 . . . Vortex generator as control for system
- 137/2104 . . . Vortex generator in interaction chamber of device
- 137/2109 . . . By tangential input to axial output [e.g., vortex amplifier]
- 137/2115 . . . . With means to vary input or output of device
- 137/212 . . System comprising plural fluidic devices or stages
- 137/2125 . . . Plural power inputs [e.g., parallel inputs]
- 137/2131 . . . . Variable or different-value power inputs
- 137/2136 . . . . . Pulsating power input and continuous-flow power input
- 137/2142 . . . . With variable or selectable source of control-input signal
- 137/2147 . . . . To cascaded plural devices
- 137/2153 . . . . . With feedback passage[s] between devices of cascade
- 137/2158 . . . . . With pulsed control-input signal
- 137/2164 . . Plural power inputs to single device
- 137/2169 . . . Intersecting at interaction region [e.g., comparator]
- 137/2174 . . . . Co-linear, oppositely-directed power inputs [e.g., impact modulator]
- 137/218 . . Means to regulate or vary operation of device
- 137/2185 . . . To vary frequency of pulses or oscillations
- 137/2191 . . . By non-fluid energy field affecting input [e.g., transducer]
- 137/2196 . . . . Acoustical or thermal energy
- 137/2202 . . . By movable element
- 137/2207 . . . . Operating at timed intervals [e.g., to produce pulses]
- 137/2213 . . . . Electrically-actuated element [e.g., electro-mechanical transducer]
- 137/2218 . . . . Means [e.g., valve] in control input
- 137/2224 . . Structure of body of device
- 137/2229 . . Device including passages having V over T configuration
- 137/2234 . . . And feedback passage[s] or path[s]
- 137/224 . . . With particular characteristics of control input
- 137/2245 . . . . Multiple control-input passages
- 137/2251 . . . And multiple or joined power-outlet passages
- 137/2256 . . . And enlarged interaction chamber
- 137/2262 . . . And vent passage[s]
- 137/2267 . . Device including passages having V over gamma configuration
- 137/2273 . . Device including linearly-aligned power stream emitter and power stream collector
- 137/2278 . Pressure modulating relays or followers
- 137/2322 . . Jet control type
- 137/2365 . . Plural series units
- 137/2409 . . With counter-balancing pressure feedback to the modulating device
- 137/2452 . . . With counter-counter balancing pressure feedback
- 137/2496 . Self-proportioning or correlating systems
- 137/2499 . . Mixture condition maintaining or sensing
- 137/2501 . . . Dividing and recombining flow
- 137/2504 . . . By specific gravity
- 137/2506 . . . By viscosity or consistency
- 137/2509 . . . By optical or chemical property
- 137/2511 . . Fuel controlled by boiler or water system condition
- 137/2514 . . Self-proportioning flow systems
- 137/2516 . . . Interconnected flow displacement elements
- 137/2519 . . . . Movable trap chamber
- 137/2521 . . . Flow comparison or differential response
- 137/2524 . . . . Flow dividers [e.g., reversely acting controls]
- 137/2526 . . . . Main line flow displaces or entrains material from reservoir
- 137/2529 . . . . With electrical controller
- 137/2531 . . . Flow displacement element actuates electrical controller
- 137/2534 . . . Liquid level response
- 137/2536 . . . . Float controlled weir or valve
- 137/2539 . . . . Swinging outlet pipe controller



137/2541	. . . With measuring type discharge assistant	137/2665	. . . . . With external control for correlating valve [e.g., manual]
137/2544	. . Supply and exhaust type	137/2668	. . . . Alternately or successively substituted outflow
137/2546	. . . Vacuum or suction pulsator type [e.g., milking machine]	137/267	. . . . . Control by filling auxiliary gravitating or float operating tank
137/2549	. . . . With trip linkage or snap action	137/2673	. . . . . Control by filling outlet tank or receiver
137/2552	. . . . With pulsation responsive pilot valve	137/2675	. . . . . Float controlled
137/2554	. . . Reversing or 4-way valve systems	137/2678	. . . . . Four port reversing valve
137/2557	. . . Waste responsive to flow stoppage	137/268	. . . . . Responsive to pressure or flow interruption
137/2559	. . Self-controlled branched flow systems	137/2683	. . . . . Plural outlets control with automatic reset
137/2562	. . . Dividing and recombining	137/2685	. . . . . Manually set to a single outflow position
137/2564	. . . Plural inflows	137/2688	. . . . . Flow rate responsive
137/2567	. . . . Alternate or successive inflows	137/269	. . . . . Flow sensing turbine
137/2569	. . . . . Control by depletion of source	137/2693	. . . . . Pressure responsive
137/2572	. . . . One inflow supplements another	137/2695	. . . . . Responsive to outlet pressure
137/2574	. . . Bypass or relief controlled by main line fluid condition	137/2698	. . . . . Electrical control
137/2577	. . . . Liquid level responsive	137/27	. . Liquid level responsive
137/2579	. . . . Flow rate responsive	137/2703	. . Flow rate responsive
137/2582	. . . . . Including controlling main line flow	137/2705	. . . Pressure differential
137/2584	. . . . . Relief or bypass closes as main opens	137/2708	. . Plural sensors
137/2587	. . . . . Bypass or relief valve biased open	137/271	. . . For single valve
137/2589	. . . . . Pilot valve operated	137/2713	. Siphons
137/2592	. . . . . Carried choke	137/272	. . Plural
137/2594	. . . . . Choke	137/2727	. . . Tank truck mounted
137/2597	. . . . . Variable choke resistance	137/2733	. . . Sequentially discharging in parallel
137/2599	. . . . . Venturi	137/274	. . . . From plural tanks
137/2602	. . . . . Flapper	137/2747	. . . Main siphon with auxiliary starting, stopping or resetting siphon
137/2605	. . . . Pressure responsive	137/2754	. . . . Sinking or bucket-type float operated main siphon, float emptying auxiliary siphon
137/2607	. . . . . With pressure reducing inlet valve	137/2761	. . With discharge-controlling receiver
137/261	. . . . . Relief port through common sensing means	137/2768	. . . With float
137/2612	. . . . . Common sensor for both bypass or relief valve and other branch valve	137/2774	. . Periodic or accumulation responsive discharge
137/2615	. . . . . Bypass or relief valve opens as other branch valve closes	137/2781	. . . With manual control
137/2617	. . . . . Bypass or relief valve biased open	137/2788	. . . Control by filling auxiliary tank
137/262	. . . . . Increasing pressure progressively closes then reopens by-pass or relief valve	137/2795	. . . Float-operated inlet to siphon
137/2622	. . . . . Bypass or relief valve responsive to pressure downstream of outlet valve	137/2802	. . . Release of trapped air
137/2625	. . . . . Pilot valve	137/2808	. . . . Through float-operated vent
137/2627	. . . . . Outlet valve carried by bypass or relief valve	137/2815	. . . . Through liquid trap seal
137/263	. . . . . Plural sensors for single bypass or relief valve	137/2822	. . . . . Auxiliary liquid trap seal
137/2632	. . . . . Sensors interconnected by timing or restrictive orifice	137/2829	. . With strainer, filter, separator or sediment trap
137/2635	. . . . . Pilot valve operated	137/2836	. . With recorder, register, signal, indicator or inspection window
137/2637	. . . . . Mechanical movement between sensor and valve	137/2842	. . With flow starting, stopping or maintaining means
137/264	. . . . . Electrical control	137/2849	. . . Siphon venting or breaking
137/2642	. . . . . Sensor rigid with valve	137/2856	. . . With leakage or entrained air removal
137/2645	. . . . . Flexible sensor	137/2863	. . . Pressure applied to liquid in supply chamber
137/2647	. . . . . Pressure responsive outlet valve	137/287	. . . Plunge or immersion starting
137/265	. . . Plural outflows	137/2877	. . . Pump or liquid displacement device for flow passage
137/2652	. . . . Single actuator operates plural outlets simultaneously	137/2883	. . . . Piston
137/2655	. . . . Biased open isolation valve	137/289	. . . . . Co-axial within flow passage
137/2657	. . . . Flow rate responsive	137/2897	. . . . Collapsible bulb
137/266	. . . . . Primer valve	137/2904	. . . Siphon inlet movable to and from seat
137/2663	. . . . Pressure responsive	137/2911	. . . With valve or closure in-flow passage
		137/2917	. . With means for mounting and/or positioning relative to siphon chamber

- 137/2924 . . Elements
- 137/2931 . Diverse fluid containing pressure systems
- 137/2934 . . Gas lift valves for wells
- 137/2937 . . Gas pressure discharge of liquids feed traps [e.g., to boiler]
- 137/294 . . . Gas pressure controlled by amount of liquids in boiler or discharge receiver
- 137/2943 . . . . Pressure connection at liquid level in boiler or discharge receiver
- 137/2947 . . . Gas pressure controlled by amount of liquid in trap
- 137/295 . . . . Plural trap chambers
- 137/2953 . . . . . Gravitating
- 137/2956 . . . . Gravitating vessel
- 137/2959 . . . . . Sinking or bucket type float
- 137/2962 . . . . . Pivoted vessel with fluid passage through pivot
- 137/2965 . . . . Float responsive
- 137/2968 . . . . . Liquid control valve positively actuated
- 137/2971 . . . . . Gas condensing type
- 137/2975 . . . . . Gas inlet and outlet valves unitary
- 137/2978 . . . Gas pressure controlled by manual or cyclic means
- 137/2981 . . . . Movable trap chamber
- 137/2984 . . Foam control in gas charged liquids
- 137/2987 . . . Level or pressure responsive
- 137/299 . . . Separate handling of foam
- 137/2993 . . . With conditioning trap or chamber
- 137/2996 . . . . Recarbonation
- 137/30 . . . . With trap or chamber by-pass
- 137/3003 . . Fluid separating traps or vents
- 137/3006 . . . Liquids separated from liquid
- 137/3009 . . . Plural discriminating outlets for diverse fluids
- 137/3012 . . . . Common actuator for control valves
- 137/3015 . . . . . Choke or restricted passage gas bleed
- 137/3018 . . . . . From above liquid level
- 137/3021 . . . Discriminating outlet for liquid
- 137/3024 . . . . With alternately operated inlet and outlet valves
- 137/3028 . . . . With non-discriminating gas vent or liquid discharge
- 137/3031 . . . . . Abnormal pressure responsive liquid blow-off or drain
- 137/3034 . . . . . Manual control
- 137/3037 . . . . . With auxiliary inlet or by-pass valve
- 137/304 . . . . With fluid responsive valve
- 137/3043 . . . . . Successively opened valves
- 137/3046 . . . . . Gas collecting float [e.g., inverted bucket]
- 137/3049 . . . . . Downstream from valve
- 137/3052 . . . . . Level responsive
- 137/3056 . . . . . Weight or pressure
- 137/3059 . . . . . . Gravitating vessel
- 137/3062 . . . . . . Sinking or bucket type float
- 137/3065 . . . . . . . Servo-control
- 137/3068 . . . . . . Float
- 137/3071 . . . . . . With main line gas outlet from trap chamber
- 137/3074 . . . . . . With outlet extending above liquid in trap
- 137/3077 . . . . . . Servo-control
- 137/308 . . . . . . With pressure balanced outlet valve
- 137/3084 . . . Discriminating outlet for gas
- 137/3087 . . . . With reverse flow stop or pressure regulating valve
- 137/309 . . . . Fluid sensing valve
- 137/3093 . . . . . With vaporized liquid stop
- 137/3096 . . . . . . With separate return for condensate
- 137/3099 . . . . . Float responsive
- 137/3102 . . . With liquid emptying means
- 137/3105 . . . . Self-emptying
- 137/3109 . . Liquid filling by evacuating container
- 137/3112 . . Main line flow displaces additive from shunt reservoir
- 137/3115 . . Gas pressure storage over or displacement of liquid
- 137/3118 . . . Surge suppression
- 137/3121 . . . With return of liquid to supply
- 137/3124 . . . Plural units
- 137/3127 . . . With gas maintenance or application
- 137/313 . . . . Gas carried by or evolved from liquid
- 137/3133 . . . . . Gas injectors
- 137/3137 . . . . Gas injected by liquid pressure or flow
- 137/314 . . . . Unitary mounting for gas pressure inlet and liquid outlet
- 137/3143 . . . With liquid level responsive gas vent or whistle
- 137/3146 . . . . Combined high and low level responsive
- 137/3149 . Back flow prevention by vacuum breaking [e.g., anti-siphon devices]
- 137/3185 . . Air vent in liquid flow line
- 137/3222 . . . With liquid seal in liquid flow line
- 137/3258 . . . . Automatic valve in vent line
- 137/3294 . . . Valved
- 137/3331 . . . . With co-acting valve in liquid flow path
- 137/3367 . Larner-Johnson type valves; i.e., telescoping internal valve in expanded flow line section
- 137/3421 . . Line condition change responsive
- 137/3476 . . Internal servo-motor with internal pilot valve
- 137/353 . . . Pilot controlled passage in nose or needle
- 137/3584 . Inflatable article [e.g., tire filling chuck and/or stem]
- 137/36 . . With pressure-responsive pressure-control means
- 137/3615 . . . Pulsating
- 137/3631 . . . Diaphragm, bellows or expansible tube
- 137/3646 . . . Co-axial inflation and relief valves
- 137/3662 . . With gauge or indicator
- 137/3677 . . . With deflating means
- 137/3693 . . . Selectively connected
- 137/3709 . . Stem attached relief valve
- 137/3724 . . With coupling means
- 137/374 . . With cap
- 137/3755 . . . Valve actuating, assembling or locking means on cap
- 137/3771 . . . . Valve manually seated
- 137/3786 . . Removable valve head and seat unit [valve insides]
- 137/3802 . With vehicle guide or support, e.g., service station
- 137/402 . Distribution systems involving geographic features
- 137/4238 . With cleaner, lubrication added to fluid or liquid sealing at valve interface
- 137/4245 . . Cleaning or steam sterilizing
- 137/4252 . . . Reverse fluid flow
- 137/4259 . . . With separate material addition
- 137/4266 . . . Steam sterilizing
- 137/4273 . . . Mechanical cleaning
- 137/428 . . . . Valve grinding motion of valve on seat

- 137/4287 . . . . . Concentric stem
- 137/4294 . . . . . Spring pressed
- 137/4301 . . . . . Lost motion permits grinding
- 137/4308 . . . . . With swivel-preventing means
- 137/4315 . . . . . Nut releasable from body and/or stem
- 137/4322 . . . . . With independent grinding actuator
- 137/4329 . . . . . Separable
- 137/4336 . . . . . Cleaning member reciprocates in passage
- 137/4343 . . . . . By-pass cleaning
- 137/4351 . . . . . Independent actuation
- 137/4358 . . . . . Liquid supplied at valve interface
- 137/4365 . . . . . Plural feed
- 137/4372 . . . . . Line pressure feed
- 137/4379 . . . . . Feed by or with actuation
- 137/4386 . . . . . Loss control
- 137/4393 . . . . . Screw feed
- 137/44 . . . . . With check valve
- 137/4407 . . . . . Excess relief
- 137/4414 . . . . . Jacking
- 137/4421 . . . . . Jacking
- 137/4428 . . . . . Seating
- 137/4435 . . . . . Spring biased piston feed
- 137/4442 . . . . . External pressure
- 137/4449 . . . . . Gravity or capillary feed
- 137/4456 . . . . . With liquid valves or liquid trap seals
- 137/4463 . . . . . Liquid seal in liquid flow line; flow liquid forms seal
- 137/4471 . . . . . Valves
- 137/4478 . . . . . Line condition change responsive
- 137/4486 . . . . . Plural valves or valve seats
- 137/4493 . . . . . Pivoted valve
- 137/4501 . . . . . Ball valve
- 137/4508 . . . . . Seats vertically up
- 137/4516 . . . . . Seal replenishers
- 137/4523 . . . . . Plural inlet
- 137/4531 . . . . . Divided and recombined passages
- 137/4538 . . . . . Tangential inlet flow
- 137/4546 . . . . . Downward partition encircles projecting outlet
- 137/4553 . . . . . Submerged inlet pipe end
- 137/4561 . . . . . Hinged seal bowl
- 137/4568 . . . . . Distinct seal bowl in flow line connected casing
- 137/4576 . . . . . U-seals
- 137/4583 . . . . . Topside access beneath cover plate closed floor opening
- 137/4591 . . . . . Enlarged upflow leg
- 137/4598 . . . . . Topside access opening
- 137/4606 . . . . . Even diameter legs
- 137/4613 . . . . . Access opening
- 137/4621 . . . . . Seal for relatively movable valving parts
- 137/4628 . . . . . Horizontally moving valve
- 137/4636 . . . . . Rotary
- 137/4643 . . . . . Liquid valves
- 137/4651 . . . . . Branched passage for sealing liquid
- 137/4658 . . . . . With auxiliary means for varying liquid level
- 137/4666 . . . . . With baffle
- 137/4673 . . . . . Plural tanks or compartments with parallel flow
- 137/469 . . . . . Sequentially filled and emptied [e.g., holding type]
- 137/4707 . . . . . With relative rotation of tank group and filling head
- 137/4723 . . . . . With rotary filling and emptying head
- 137/474 . . . . . With housings, supports or stacking arrangements
- 137/4757 . . . . . Battery or electrolytic cell replenishment
- 137/4774 . . . . . Barometric supply
- 137/479 . . . . . Flow dividing compartments
- 137/4807 . . . . . Tank type manifold [i.e., one tank supplies or receives from at least two others]
- 137/4824 . . . . . Tank within tank
- 137/4841 . . . . . With cross connecting passage
- 137/4857 . . . . . With manifold or grouped outlets
- 137/4874 . . . . . Tank truck type
- 137/4891 . . . . . With holder for solid, flaky or pulverized material to be dissolved or entrained
- 137/5109 . . . . . Convertible
- 137/5153 . . . . . Reversible check
- 137/5196 . . . . . Unit orientable in a single location between plural positions
- 137/524 . . . . . Reversible stop and vent or waste
- 137/5283 . . . . . Units interchangeable between alternate locations
- 137/5327 . . . . . Hydrant type
- 137/5333 . . . . . Water crane type
- 137/5339 . . . . . Spout operated valve
- 137/5345 . . . . . Rotating riser
- 137/535 . . . . . Spout articulated to riser
- 137/5356 . . . . . Vertically movable riser
- 137/5362 . . . . . Extensible spout
- 137/5368 . . . . . Spout articulated to riser
- 137/5374 . . . . . Plural riser
- 137/538 . . . . . Expansible chamber operated by valve actuator for draining riser
- 137/5386 . . . . . With pump or ejector
- 137/5392 . . . . . Removable valve and valve seat
- 137/5397 . . . . . With extension to facilitate removal
- 137/5403 . . . . . Removable valve with supplemental check valve
- 137/5409 . . . . . Movable riser actuated valve
- 137/5415 . . . . . Reciprocating riser
- 137/5421 . . . . . Piston type valve
- 137/5427 . . . . . Balanced valve
- 137/5433 . . . . . Valve actuator extends laterally from bottom of riser
- 137/5438 . . . . . Valve actuator outside riser
- 137/5444 . . . . . Lever actuator
- 137/545 . . . . . With casing, flush with ground or pavement surface
- 137/5456 . . . . . With casing
- 137/5462 . . . . . Flush with ground or pavement surface
- 137/5468 . . . . . Cap, cover or hood
- 137/5474 . . . . . With heater
- 137/5479 . . . . . With actuator lubricating means
- 137/5485 . . . . . With valve at outlet
- 137/5491 . . . . . With supplemental valve
- 137/5497 . . . . . Protection against freezing
- 137/5503 . . . . . Stop and waste
- 137/5509 . . . . . With disabling means
- 137/5515 . . . . . Separate relatively movable valves with single actuator
- 137/5521 . . . . . Unidirectional abutting connection between main valve or actuator and waste valve
- 137/5526 . . . . . With screw or gear in actuating mechanism
- 137/5532 . . . . . Reciprocating relatively fixed valves
- 137/5538 . . . . . Waste through lower valve guide

137/5544	. Reversing valves - regenerative furnace type	137/613	. . . With valved closure or bung
137/5617	. . With cooling	137/6133	. . . . Combined rotary and longitudinal movement of valve
137/5689	. . Rotary reversing valve	137/6137	. . . . Longitudinal movement of valve
137/5762	. With leakage or drip collecting	137/614	. . . . Rotary movement of valve
137/5835	. . Relatively movable receptacle or drain pipe and outlet	137/6144	. . . With core ejectors
137/5907	. . Collector for waste liquid derived from solid, gas or vapor	137/6147	. . . . Impact operated
137/598	. With repair, tapping, assembly, or disassembly means	137/615	. . Foot valve extraction from top of enclosure
137/5983	. . Blow out preventer or choke valve device [e.g., oil well flow controlling device, etc.]	137/6154	. . With disassembly tool engaging feature
137/5987	. . Solenoid or electromagnetically operated valve	137/6157	. . . Wrench engaging lugs
137/599	. . Pressure regulating type valve	137/6161	. . With provision of alternate wear parts
137/5994	. . . Diaphragm type	137/6164	. . . Valve heads and/or seats
137/5997	. . Gas or water meter replacing	137/6167	. . . . Opposite duplicate surfaces of unitary structure
137/60	. . Assembling or disassembling flexible tube or sleeve type valve	137/6171	. . . . . Homogeneous material
137/6004	. . Assembling or disassembling float or float valve	137/6174	. . . . . Valve heads
137/6007	. . Assembling or disassembling multi way valve	137/6178	. . . . Different portions of continuous surfaces
137/6011	. . Assembling, disassembling, or removing cartridge type valve [e.g., insertable and removable as a unit, etc.]	137/6181	. . . . Successively used adjacent independent elements
137/6014	. . . Faucet type [e.g., domestic water use, etc.]	137/6184	. . Removable valve with normally disabled supplemental check valve
137/6017	. . . . Including removable valve head and seat unit	137/6188	. . . Check valve disabled by normally movable main valve part
137/6021	. . . . Including mechanical movement actuator	137/6191	. . . . Ball check
137/6024	. . . . Particular handle or handle fastening means	137/6195	. . . . Spring bias
137/6028	. . Assembling or disassembling pivoted valve	137/6198	. Non-valving motion of the valve or valve seat
137/6031	. . Assembling or disassembling rotary valve	137/6253	. . Rotary motion of a reciprocating valve
137/6035	. . . Rotary ball valve	137/6307	. . . Turbine on valve
137/6038	. . . . Particular valve seat or interface seal	137/6362	. . . Manual rotating means
137/6041	. . . . . Replaceable	137/6416	. With heating or cooling of the system
137/6045	. . . . . With top entry valve	137/6443	. . With burner
137/6048	. . . Butterfly valve	137/647	. . . Flue extending through fluid
137/6052	. . . . Having valve head or seat packing	137/6497	. . Hot and cold water system having a connection from the hot to the cold channel
137/6055	. . . . With head and stem collections	137/6525	. . Air heated or cooled [fan, fins, or channels]
137/6058	. . . Plug valve	137/6552	. . With diversion of part of fluid to heat or cool the device or its contents
137/6062	. . . . Having retainer at actuator end	137/6579	. . Circulating fluid in heat exchange relationship
137/6065	. . Assembling or disassembling reciprocating valve	137/6606	. . With electric heating element
137/6069	. . . Having particularly packed or sealed mechanical movement actuator	137/6633	. With fluid system support for workman or non-system material
137/6072	. . . Gate valve	137/6851	. With casing, support, protector or static constructional installations
137/6075	. . . . Bifaced	137/6855	. . Vehicle
137/6079	. . . . Having particular valve seat	137/6858	. . . Locomotive
137/6082	. . . . . Including seal	137/6862	. . . . Boiler or steam dome
137/6086	. . Assembling or disassembling check valve	137/6866	. . . Railway car
137/6089	. . With mechanical movement between actuator and valve	137/6869	. . . . Car frame
137/6092	. . . Plural motions of valve	137/6873	. . . . End of car
137/6096	. . . Lever type	137/6877	. . . . Roof, wall or floor
137/6099	. . . Gear type	137/6881	. . . Automotive
137/6103	. . . Cam type	137/6884	. . . . Steering post or wheel
137/6106	. . . Screw type	137/6888	. . . . Dash
137/6109	. . Tool for applying or removing valve or valve member	137/6892	. . . . Floor or frame
137/6113	. . . Including sealing feature	137/6895	. . . . Fender or running board
137/6116	. . With holding means functioning only during transportation assembly or disassembly	137/6899	. . . With hose reel storage means
137/612	. . Tapping a pipe, keg, or apertured tank under pressure	137/6903	. . . Guided by means of track or guideway
137/6123	. . . With aperture forming means	137/6906	. . . Aerial or water-supported [e.g., airplane or ship, etc.]
137/6126	. . . Imperforate closure removing and holding tap	137/691	. . . With retractable or nonuse-positionable support wheel

137/6914	. . . Vehicle supports fluid compressor and compressed fluid storage tank	137/7313	. . . Control of outflow from tank
137/6918	. . With hose storage or retrieval means	137/7316	. . . Self-emptying tanks
137/6921	. . . With means for plural hoses	137/7319	. . . . By float
137/6925	. . . With flow regulation responsive to hose movement	137/7323	. . . . By float
137/6929	. . . . Reel type	137/7326	. . . . Low level safety cut-off
137/6932	. . . With retrieval means	137/7329	. . With supplemental or safety closing means or bias
137/6936	. . . . Power stop or brake	137/7332	. . . Sinking or bucket type float
137/694	. . . . Responsive to position of hose in casing	137/7336	. . . Gravitating tank
137/6943	. . . . Biased to retracted position	137/7339	. . By weight of accumulated fluid
137/6947	. . . . Boom type	137/7342	. . . In sinking or bucket type float
137/6951	. . . . Weighted	137/7345	. . . Oil burner fuel overflow preventing safety cut-offs
137/6954	. . . Reel with support therefor	137/7349	. . . In communicating measuring vessel
137/6958	. . . . Ground supported	137/7352	. . . . Top and bottom connections
137/6962	. . . Basket or holder for folded coiled hose	137/7355	. . . In gravitating tank
137/6966	. . Static constructional installations	137/7358	. . By float controlled valve
137/6969	. . . Buildings	137/7361	. . . Valve opened by external means, closing or closing control by float
137/6973	. . . . Outside access to portions of the system	137/7365	. . . Single float controls plural valves
137/6977	. . . . Escutcheon type support	137/7368	. . . Servo relay operation of control
137/698	. . . . Wall	137/7371	. . . . Fluid pressure
137/6984	. . . . Recessed gas outlet box	137/7374	. . . . Flexible diaphragm valve
137/6988	. . . . Floor installation	137/7378	. . . . From tank
137/6991	. . . Ground supporting enclosure	137/7381	. . . Quick acting
137/6995	. . . . Valve and meter wells	137/7384	. . . . Pilot float released
137/6999	. . . . With means to center well on valve	137/7387	. . . . Over center mechanism
137/7002	. . . . . Detachable base plate	137/7391	. . . . Shifting weight
137/7006	. . . . . Vertical casing aligned by valve casing	137/7394	. . . . Trip mechanism
137/701	. . . . . Combined with actuator	137/7397	. . . . Weight or spring bias
137/7014	. . . . . Telescopic well casing	137/74	. . . . Lost motion mechanism
137/7017	. . . . . Telescopic well casing	137/7404	. . . Plural floats
137/7021	. . . . . Covers	137/7407	. . . With counter-balance
137/7025	. . . . Pipe line transport	137/741	. . . . Within tank
137/7028	. . . Tapering or tower type	137/7413	. . . Level adjustment or selection means
137/7032	. . Furniture and housing furnishings	137/7417	. . . With float leakage disposal
137/7036	. . Jacketed	137/742	. . . In separate communicating float chamber
137/7039	. . Tank supports	137/7423	. . . Rectilinearly traveling float
137/7043	. . Guards and shields	137/7426	. . . . Float co-axial with valve or port
137/7047	. . . Resilient abutment for preventing breakage	137/743	. . . . Float is spreader or anti-splash means
137/7051	. . . Nozzle abutment for scratch or damage prevention	137/7433	. . . . Float surrounds inlet pipe
137/7054	. . . Cover for beer cooler aperture for faucet	137/7436	. . . . Float rigid with valve
137/7058	. . . Sanitary covers or shields	137/7439	. . . Float arm operated valve
137/7062	. . . Valve guards	137/7442	. . . . With valve retarder or cushion means
137/7065	. . . . With means for accommodating a detachable actuator	137/7446	. . . . With flow guide or restrictor
137/7069	. With lock or seal	137/7449	. . . . External hood or deflector or annular outlet surrounding the inlet pipe
137/71	. . With seal	137/7452	. . . . Movable nozzle or inlet terminal
137/7131	. . Common lock and valve actuator	137/7455	. . . . Valve removable from outside container
137/7162	. . . Combination lock	137/7459	. . . . With U-shaped inlet pipe having terminal valve
137/7194	. . . Biased valve	137/7462	. . . . With refill pipe
137/7225	. . . Mechanical movement between lock and valve	137/7465	. . . . Assembly mounted on and having reciprocating valve element coaxial with inlet pipe
137/7256	. . Locks against rotary motion	137/7468	. . . . Horizontal or side entering pipe
137/7287	. Liquid level responsive or maintaining systems	137/7472	. . . . Vertical inlet riser
137/729	. . Washing machine cycle control	137/7475	. . . . With toggle or second lever connected to valve
137/7293	. . Liquid excluding devices for gas inlet or outlets	137/7478	. . . . With interposed cam, gear or threaded connection
137/7297	. . With second diverse control	137/7481	. . . . Rotary valve element
137/73	. . . Manual control		
137/7303	. . Control of both inflow and outflow of tank		
137/7306	. . Electrical characteristic sensing		
137/731	. . With control fluid connection at desired liquid level		

137/7485	. . . . Pivoted valve	137/7771	. . Bi-directional flow valves
137/7488	. . . . Ball valves	137/7772	. . . One head and seat carried by head of another
137/7491	. . . . Balanced valves	137/7773	. . . . Supporting valve only spring biased
137/7494	. . . . Flexible valve	137/7774	. . . . Supporting valve spring carried by supporting valve
137/7498	. . Barometric		
137/7501	. . . With shut-off between supply tank and receiver	137/7775	. . . . Spring stop on supported valve stem
137/7504	. Removable valve head and seat unit	137/7776	. . . . Spring abuts guide for supported valve stem
137/7559	. . Pump type		
137/7613	. . Threaded into valve casing	137/7777	. . . . Both valves spring biased
137/7668	. . Retained by bonnet or closure	137/7778	. . . Axes of ports perpendicular
137/7722	. Line condition change responsive valves	137/7779	. . . Axes of ports parallel
137/7723	. . Safety cut-off requiring reset	137/778	. . . Axes of ports co-axial
137/7724	. . . Thermal	137/7781	. . With separate connected fluid reactor surface
137/7725	. . . Responsive to both high and low pressure or velocity	137/7782	. . . With manual or external control for line valve
		137/7783	. . . Valve closes in responses to reverse flow
137/7726	. . . Responsive to change in rate of flow	137/7784	. . . Responsive to change in rate of fluid flow
137/7727	. . . . Excessive flow cut-off	137/7785	. . . . Valve closes in response to excessive flow
137/7728	. . . High pressure cut-off	137/7786	. . . . Turbine or swinging vane type reactor
137/7729	. . . Reset by pressure equalization valve or by-pass	137/7787	. . . . Expansible chamber subject to differential pressures
137/773	. . . Fluid released trip		
137/7731	. . . Fluid counter-biased or unseated valve	137/7788	. . . . Pressures across fixed choke
137/7732	. . . . With mechanical stop against reopening	137/7789	. . . . With Venturi tube having a connection to throat
137/7733	. . . . With fluid pressure seating of valve		
137/7734	. . Fluid opened valve requiring reset	137/7791	. . . . Pressures across flow line valve
137/7736	. . Consistency responsive	137/7792	. . . . Movable deflector or choke
137/7737	. . Thermal responsive	137/7793	. . . With opening bias [e.g., pressure regulator]
137/7738	. . Pop valves	137/7794	. . . . With relief valve
137/7739	. . . Pop closing valves	137/7795	. . . . Multi-stage
137/774	. . . Pop pressure reactor in inflow to valve	137/7796	. . . . Senses inlet pressure
137/7741	. . . Pop pressure reactor in branched released path	137/7797	. . . . Bias variable during operation
137/7742	. . . . Separate relief valves or valves for each branch	137/7798	. . . . Ancillary reactor surface responds to inlet pressure
137/7743	. . . Lost motion between pop pressure reactor and valve	137/7799	. . . . Liquid transfer
		137/78	. . . . Weight
137/7744	. . . Adjustable choke	137/7801	. . . . Balanced valve
137/7745	. . . . Annular lip or baffle	137/7802	. . . . Liquid level responsive gas flow control
137/7746	. . . . . On movable valve part	137/7803	. . . . With protective separator
137/7747	. . . . . Screw threaded	137/7804	. . . . Main flow through isolated reactor chamber
137/7748	. . Combustion engine induction type	137/7805	. . . . Through external pipe
137/7749	. . . Valve in auxiliary inlet to induction line	137/7806	. . . . . Modified valve casing
137/775	. . . With manual modifier	137/7807	. . . . . Adjustable external lever
137/7751	. . . With suction compensator	137/7808	. . . . Apertured reactor surface surrounds flow line
137/7752	. . . With separate reactor surface	137/7809	. . . . Reactor surface separated by apertured partition
137/7753	. . . Unbalanced pivoted valve [e.g., unbalanced butterfly type]		
		137/781	. . . . . In valve stem
137/7754	. . Line flow effect assisted	137/7811	. . . . . Also through reactor surface
137/7755	. . . Reactor surface normal to flow	137/7812	. . . . . Valve stem passes through the aperture
137/7756	. . . Reactor surface separated from flow by apertured partition	137/7813	. . . . . Plural reactor surfaces
		137/7814	. . . . . Reactor is an inverted cup having liquid seal
137/7757	. . . . Through separate aperture		
137/7758	. . Pilot or servo controlled	137/7815	. . . . . With movement dampener
137/7759	. . . Responsive to change in rate of fluid flow	137/7816	. . . . . Valve head in inlet chamber
137/776	. . . . Control by pressures across flow line valve	137/7818	. . . . . Valve head in inlet chamber
137/7761	. . . Electrically actuated valve	137/7819	. . . . . Rectilinear valve stem rigid with reactor surface
137/7762	. . . Fluid pressure type		
137/7764	. . . . Choked or throttled pressure type	137/782	. . . . . Reactor surface is diaphragm
137/7765	. . . . . Pilot valve within main valve head	137/7821	. . . . . With valve closing bias
137/7766	. . . . . Choked passage through main valve head	137/7822	. . . . Reactor surface closes chamber
137/7767	. . . . . Loose fitting piston	137/7823	. . . . . Valve head in inlet chamber
137/7768	. . . . . Pilot controls supply to pressure chamber	137/7824	. . . . . Reactor surface is inverted cup [float]
137/7769	. . . . Single acting fluid servo	137/7825	. . . . . Rectilinear valve stem rigid with reactor surface
137/777	. . . . . Spring biased		

137/7826	. . . . .	With valve closing bias	137/7879	. . .	Resilient material valve
137/7827	. . . . .	In reactor chamber	137/788	. . . .	Having expansible port
137/7828	. . . . .	Valve head on yoke	137/7881	. . . . .	Apertured plate
137/7829	. . . . .	Yoke has valve closing bias	137/7882	. . . . .	Having exit lip
137/783	. . . . .	Reactor operatively connected to valve by mechanical movement	137/7883	. . . . .	With biasing means
137/7831	. . . .	With mechanical movement between actuator and valve	137/7884	. . . . .	Side vent
137/7832	. . . .	Plural valves biased closed	137/7885	. . . . .	Multiple slit
137/7833	. . . .	With means for mounting or connecting to system	137/7886	. . . . .	Internally extending mount
137/7834	. . . .	Valve seat or external sleeve moves to open valve	137/7887	. . . . .	Center flexing strip
137/7835	. . . .	Valve seating in direction of flow	137/7888	. . . . .	With valve member flexing about securement
137/7836	. . . . .	Flexible diaphragm or bellows reactor	137/7889	. . . . .	Sleeve
137/7837	. . .	Direct response valves [i.e., check valve type]	137/789	. . . . .	Central mount
137/7838	. . . .	Plural	137/7891	. . . . .	Flap or reed
137/7839	. . . . .	Dividing and recombining in a single flow path	137/7892	. . . . .	With stop
137/784	. . . . .	Integral resilient member forms plural valves	137/7893	. . . . .	With spring
137/7841	. . . . .	One valve carries head and seat for second valve	137/7894	. . . . .	With weight
137/7842	. . . . .	Diverse types	137/7895	. . . . .	Peripherally secured diaphragm
137/7843	. . . . .	Integral resilient member forms plural valves	137/7896	. . . . .	Annulus
137/7845	. . . . .	With common biasing means	137/7897	. . . .	Vacuum relief type
137/7846	. . . . .	Mechanically interconnected	137/7898	. . . .	Pivoted valves
137/7847	. . . .	With leak passage	137/79	. . . . .	Head retained by removable closure
137/7848	. . . . .	Permits flow at valve interface	137/7901	. . . . .	Valve head movably connected for accommodation to seat
137/7849	. . . . .	Bypass in valve casing	137/7902	. . . . .	Valve mounted on end of pipe
137/785	. . . .	With retarder or dashpot	137/7903	. . . . .	Weight biased
137/7851	. . . . .	End of valve forms dashpot chamber	137/7904	. . . .	Reciprocating valves
137/7852	. . . . .	End of valve moves inside dashpot chamber	137/7905	. . . . .	Plural biasing means
137/7853	. . . . .	Enlarged piston on end of valve stem	137/7906	. . . . .	Cam means for adjusting and fixing bias
137/7854	. . . .	In couplings for coaxial conduits, e.g., drill pipe check valves	137/7907	. . . . .	Varying effective lever arm
137/7855	. . . . .	Valve seat threaded into a coupling element	137/7908	. . . . .	Weight biased
137/7856	. . . . .	Valve seat formed on or carried by a coupling element	137/7909	. . . . .	Valve body is the weight
137/7857	. . . . .	Valve seat clamped between coupling elements	137/791	. . . . .	Ball valves
137/7858	. . . .	With means for selecting area of valve or seat	137/7911	. . . . .	Removable cage
137/7859	. . . .	Single head, plural ports in parallel	137/7912	. . . . .	Separable seat
137/786	. . . . .	Concentric ports	137/7913	. . . . .	Guided head
137/7861	. . . . .	Annular head	137/7914	. . . . .	Cage
137/7862	. . . . .	Central post on seat	137/7915	. . . . .	Guide stem
137/7863	. . . . .	Stop	137/7916	. . . . .	With closing stop
137/7864	. . . . .	With guide	137/7917	. . . . .	Oppositely disposed
137/7865	. . . . .	Guide	137/7918	. . . . .	Head slidable on guide rod
137/7866	. . . .	Plural seating	137/7919	. . . . .	Guide and seat integral unit
137/7867	. . . . .	Sequential	137/792	. . . . .	Guide and closure integral unit
137/7868	. . . . .	Resilient gasket	137/7921	. . . . .	Weight coaxial with valve
137/7869	. . . .	Biased open	137/7922	. . . . .	Spring biased
137/787	. . . . .	Oppositely swinging vanes	137/7923	. . . . .	With means to protect spring from fluid
137/7871	. . . . .	Weight biased	137/7924	. . . . .	Spring under tension
137/7873	. . . . .	Ball valves	137/7925	. . . . .	Piston-type valves
137/7874	. . . . .	Edge pivoted valve	137/7927	. . . . .	Ball valves
137/7875	. . . . .	Pivoted valves	137/7928	. . . . .	With follower
137/7876	. . . .	With external means for opposing bias	137/7929	. . . . .	Spring coaxial with valve
137/7877	. . . . .	With means for retaining external means in bias opposing position	137/793	. . . . .	Broken valve parts retainer
137/7878	. . . .	With bias adjustment indicator	137/7931	. . . . .	Spring in inlet
			137/7932	. . . . .	Valve stem extends through fixed spring abutment
			137/7933	. . . . .	Yoke or cage-type support for valve stem
			137/7934	. . . . .	Spring abuts removable valve stem guide
			137/7935	. . . . .	Head slides on guide-rod concentric with spring
			137/7936	. . . . .	Spring guides valve head

137/7937	. . . . .	Cage-type guide for stemless valves	137/86163	. . . .	Parallel
137/7938	. . . . .	Guide means integral and coplanar with valve disk	137/86171	. . .	With pump bypass
137/7939	. . . . .	Head between spring and guide	137/86179	. . .	Drain valve actuator mounted on pump
137/794	.	With means for separating solid material from the fluid	137/86187	. .	Plural tanks or compartments connected for serial flow
137/7976	. .	Plural separating elements	137/86196	. . .	Separable with valved-connecting passage
137/8013	. .	Sediment chamber	137/86204	. . .	Fluid progresses by zigzag flow
137/8049	. .	Movable strainer	137/86212	. . .	Plural compartments formed by baffles
137/8085	. .	Hollow strainer, fluid inlet and outlet perpendicular to each other	137/8622	. . .	Plural top-to-bottom connected tanks
137/8122	. .	Planar strainer normal to flow path	137/86228	. . .	With communicating opening in common walls of tanks or compartments
137/8158	.	With indicator, register, recorder, alarm or inspection means	137/86236	. .	Tank with movable or adjustable outlet or overflow pipe
137/8175	. .	Plural	137/86244	. . .	Horizontally traversing outlet
137/8192	. . .	Unobvious - "combination lock" type	137/86252	. . .	Float-supported outlet
137/8208	. .	Time	137/8626	. . .	Swinging outlet pipe or spout
137/8225	. .	Position or extent of motion indicator	137/86268	. .	With running joint between movable parts of system
137/8242	. . .	Electrical	137/86276	. .	Movable tank
137/8259	. . .	Selection from plural branches	137/86284	. .	With antisplash means not in flow passage
137/8275	. . .	Indicator element rigidly carried by the movable element whose position is indicated	137/86292	. .	System with plural openings, one a gas vent or access opening
137/8292	. . . .	Movable indicator element is a pointer	137/863	. . .	Access and outlet
137/8309	. . . . .	Pointer integral with handle	137/86308	. . . .	Tank access opening and bottom outlet
137/8326	. .	Fluid pressure responsive indicator, recorder or alarm	137/86316	. . . . .	Access opening interlock or telltale on outlet valve actuator
137/8342	. .	Liquid level responsive indicator, recorder or alarm	137/86324	. . .	Tank with gas vent and inlet or outlet
137/8359	. .	Inspection means	137/86332	. . . .	Vent and inlet or outlet in unitary mounting
137/8376	.	Combined	137/8634	. . .	With vented outlet
137/8593	.	Systems	137/86348	. .	Tank with internally extending flow guide, pipe or conduit
137/85938	. .	Non-valved flow dividers	137/86356	. . .	Nondraining overflow type
137/85946	. .	Faucet connected, sink drained	137/86364	. . .	Inverted "U" passage
137/85954	. .	Closed circulating system	137/86372	. . .	Inlet internally extending
137/85962	. . .	With thermal circulating means [thermo-siphons]	137/86381	. .	Head-establishing standpipe or expansion chamber [e.g., surge tanks]
137/8597	. .	Main line as motive fluid for follower-type feeder	137/86389	. .	Programmer or timer
137/85978	. .	With pump	137/86397	. . .	With independent valve controller
137/85986	. . .	Pumped fluid control	137/86405	. . .	Repeating cycle
137/85994	. . . .	Manual	137/86413	. . . .	Self-cycling
137/86002	. . . .	Fluid pressure responsive	137/86421	. . . .	Variable
137/8601	. . . . .	And pilot valve	137/86429	. . . . .	Attachable and removable element
137/86019	. . . . .	Direct response valve	137/86437	. . . . .	Adjustable cam
137/86027	. . . .	Electric	137/86445	. . .	Plural, sequential, valve actuations
137/86035	. . .	Combined with fluid receiver	137/86453	. . . .	Plural trips or trip actuations
137/86043	. . . .	Reserve or surge receiver	137/86461	. . . .	Variable cycle
137/86051	. . . .	Compressed air supply unit	137/86469	. . .	Clock alarm mechanism controlled
137/86059	. . . .	Hydraulic power unit	137/86477	. . .	Biased latch, cam operated
137/86067	. . . .	Fluid sump	137/86485	. .	Line condition change responsive release of valve
137/86075	. . .	And jet-aspiration type pump	137/86493	. .	Multi-way valve unit
137/86083	. . .	Vacuum pump	137/86501	. . .	Sequential distributor or collector type
137/86091	. . .	Resiliently mounted pump	137/86509	. . .	Sequentially progressive opening or closing of plural ports
137/86099	. . .	Hand pump	137/86517	. . . .	With subsequent closing of first port
137/86107	. . .	Multiple inlet with multiple outlet	137/86525	. . . . .	Flow combining with flow dividing
137/86115	. . .	Downstream cyclic distributor	137/86533	. . . . .	Rotary
137/86123	. . . .	Distributor part unitary with movable pump part	137/86541	. . . . .	Plug
137/86131	. . .	Plural	137/86549	. . .	Selective reciprocation or rotation
137/86139	. . . .	Serial	137/86558	. . .	Plural noncommunicating flow paths
137/86147	. . . . .	With single motive input	137/86566	. . . .	Rotary plug
137/86155	. . . . .	One pump driven by motive fluid from the other	137/86574	. . .	Supply and exhaust
			137/86582	. . . .	Pilot-actuated



- 137/8659 . . . . . Variable orifice-type modulator
- 137/86598 . . . . . Opposed orifices; interposed modulator
- 137/86606 . . . . . Common to plural valve motor chambers
- 137/86614 . . . . . Electric
- 137/86622 . . . . . Motor-operated
- 137/8663 . . . . . Fluid motor
- 137/86638 . . . . . Rotary valve
- 137/86646 . . . . . Plug type
- 137/86654 . . . . . For plural lines
- 137/86662 . . . . . Axial and radial flow
- 137/8667 . . . . . Reciprocating valve
- 137/86678 . . . . . Combined disk or plug and gate or piston
- 137/86686 . . . . . Plural disk or plug
- 137/86694 . . . . . Piston valve
- 137/86702 . . . . . With internal flow passage
- 137/8671 . . . . . With annular passage [e.g., spool]
- 137/86718 . . . . . Dividing into parallel flow paths with recombining
- 137/86726 . . . . . Valve with bypass connections
- 137/86734 . . . . . With metering feature
- 137/86743 . . . . . Rotary
- 137/86751 . . . . . Plug
- 137/86759 . . . . . Reciprocating
- 137/86767 . . . . . Spool
- 137/86775 . . . . . With internal passage
- 137/86783 . . . . . Unequal heads
- 137/86791 . . . . . Piston
- 137/86799 . . . . . With internal flow passage
- 137/86807 . . . . . Sequential opening or closing of serial ports in single flow line
- 137/86815 . . . . . Multiple inlet with single outlet
- 137/86823 . . . . . Rotary valve
- 137/86831 . . . . . Selective opening of plural ports
- 137/86839 . . . . . Four port reversing valves
- 137/86847 . . . . . Pivoted valve unit
- 137/86855 . . . . . Gate
- 137/86863 . . . . . Rotary valve unit
- 137/86871 . . . . . Plug
- 137/86879 . . . . . Reciprocating valve unit
- 137/86887 . . . . . Combined disk or plug and gate or piston
- 137/86895 . . . . . Plural disk or plug
- 137/86903 . . . . . Plural petcocks
- 137/86911 . . . . . Sequential distributor or collector type
- 137/86919 . . . . . Sequentially closing and opening alternately seating flow controllers
- 137/86928 . . . . . Sequentially progressive opening or closing of plural valves
- 137/86936 . . . . . Pressure equalizing or auxiliary shunt flow
- 137/86944 . . . . . One valve seats against other valve [e.g., concentric valves]
- 137/86952 . . . . . Locomotive throttle
- 137/8696 . . . . . Gate
- 137/86968 . . . . . With balancing chamber
- 137/86976 . . . . . First valve moves second valve
- 137/86984 . . . . . Actuator moves both valves
- 137/86992 . . . . . With subsequent closing of first opened port
- 137/87 . . . . . Simultaneously moved port controllers
- 137/87008 . . . . . Screw-actuated differential valves
- 137/87016 . . . . . Lost motion
- 137/87024 . . . . . Cam determines sequence
- 137/87032 . . . . . Rotary concentric valves
- 137/8704 . . . . . First valve actuates second valve
- 137/87048 . . . . . With preselecting means for plural valve actuator
- 137/87056 . . . . . With selective motion for plural valve actuator
- 137/87064 . . . . . Oppositely movable cam surfaces
- 137/87072 . . . . . Rotation about either of two pivotal axes
- 137/8708 . . . . . Rotation of actuator arm about its pivot and its axis
- 137/87088 . . . . . Reciprocation along and rotation about same axis
- 137/87096 . . . . . Valves with separate, correlated, actuators
- 137/87105 . . . . . Correlated across separable flow path joint
- 137/87113 . . . . . Interlocked
- 137/87121 . . . . . Coaxial stems
- 137/87129 . . . . . Rotary
- 137/87137 . . . . . And reciprocating
- 137/87145 . . . . . Concentric, central valve removable
- 137/87153 . . . . . Plural noncommunicating flow paths
- 137/87161 . . . . . With common valve operator
- 137/87169 . . . . . Supply and exhaust
- 137/87177 . . . . . With bypass
- 137/87185 . . . . . Controlled by supply or exhaust valve
- 137/87193 . . . . . Pilot-actuated
- 137/87201 . . . . . Common to plural valve motor chambers
- 137/87209 . . . . . Electric
- 137/87217 . . . . . Motor
- 137/87225 . . . . . Fluid motor
- 137/87233 . . . . . Biased exhaust valve
- 137/87241 . . . . . Biased closed
- 137/87249 . . . . . Multiple inlet with multiple outlet
- 137/87257 . . . . . Hydraulic brake line [e.g., hill holders]
- 137/87265 . . . . . Dividing into parallel flow paths with recombining
- 137/87273 . . . . . With fluid coupling [e.g., railway car hose coupling, truck-trailer oil system coupling, etc.]
- 137/87281 . . . . . System having plural inlets
- 137/8729 . . . . . Having digital flow controller
- 137/87298 . . . . . Having digital flow controller
- 137/87306 . . . . . Having plural branches under common control for separate valve actuators
- 137/87314 . . . . . Electromagnetic or electric control [e.g., digital control, bistable electro control, etc.]
- 137/87322 . . . . . With multi way valve having serial valve in at least one branch
- 137/8733 . . . . . Fluid pressure regulator in at least one branch
- 137/87338 . . . . . Flow passage with bypass
- 137/87346 . . . . . Including mixing feature
- 137/87354 . . . . . Including flowmeter
- 137/87362 . . . . . Including cleaning, treating, or heat transfer feature
- 137/8737 . . . . . Water treatment feature
- 137/87378 . . . . . Second valve assembly carried by first valve head
- 137/87386 . . . . . With rotary plug having variable restrictor
- 137/87394 . . . . . Carried valve is direct response valve [e.g., check valve, etc.]
- 137/87402 . . . . . With foam controlling means [e.g., beer, soda faucets]
- 137/8741 . . . . . With common operator
- 137/87418 . . . . . Balanced valve
- 137/87426 . . . . . Single resilient member actuates or forms plural passages
- 137/87434 . . . . . Valves deform to close passage

- 137/87442 . . . . Rotary valve
- 137/8745 . . . . Including rigid plate with flexible or resilient seal
- 137/87458 . . . . Axes of rotation of valves intersect at point
- 137/87467 . . . . Axes of rotation parallel
- 137/87475 . . . . Adjacent plate valves always parallel
- 137/87483 . . . . Adjacent plate valves counter rotate
- 137/87491 . . . . Mechanical movement between actuator and non-rotary valve
- 137/87499 . . . Fluid actuated or retarded
- 137/87507 . . . Electrical actuator
- 137/87515 . . . Mechanical movement between actuator and valve
- 137/87523 . . . Rotary valve
- 137/87531 . . . Butterfly valve
- 137/87539 . . . Having guide or restrictor
- 137/87547 . . . Manually variable
- 137/87555 . . . Having direct response valve [e.g., check valve, etc.]
- 137/87563 . . . With reverse flow direction
- 137/87571 . . Multiple inlet with single outlet
- 137/87579 . . . Faucet attachment
- 137/87587 . . . Combining by aspiration
- 137/87595 . . . Combining of three or more diverse fluids
- 137/87603 . . . Plural motivating fluid jets
- 137/87611 . . . Flow control by varying position of a fluid inlet relative to entrainment chamber
- 137/87619 . . . With selectively operated flow control means in inlet
- 137/87627 . . . Flow control means is located in aspirated fluid inlet
- 137/87635 . . . Single actuator operates flow control means located in both motivating fluid and aspirated fluid inlets
- 137/87643 . . . With condition responsive valve
- 137/87652 . . . With means to promote mixing or combining of plural fluids
- 137/8766 . . . With selectively operated flow control means
- 137/87668 . . . Single actuator operates plural flow control means
- 137/87676 . . . With flow control
- 137/87684 . . . Valve in each inlet
- 137/87692 . . . With common valve operator
- 137/877 . . . With flow control means for branched passages
- 137/87708 . . . With common valve operator
- 137/87716 . . . For valve having a flexible diaphragm valving member
- 137/87724 . . . For valve having a ball head
- 137/87732 . . . With gearing
- 137/8774 . . . Threaded actuator
- 137/87748 . . . Pivoted or rotary motion converted to reciprocating valve head motion
- 137/87756 . . . Spring biased
- 137/87764 . . . Having fluid actuator
- 137/87772 . . . With electrical actuation
- 137/8778 . . . Spring biased
- 137/87788 . . . With valve or movable deflector at junction
- 137/87796 . . . Movable deflector spout in lateral port
- 137/87804 . . . Valve or deflector is tubular passageway
- 137/87812 . . . Pivoted valve or deflector
- 137/8782 . . . Rotary valve or deflector
- 137/87829 . . . Biased valve
- 137/87837 . . . Spring bias
- 137/87845 . . . For valve having a ball head
- 137/87853 . . . With threaded actuator
- 137/87861 . . . Spring coaxial with valve
- 137/87869 . . . Biased open
- 137/87877 . . . Single inlet with multiple distinctly valved outlets
- 137/87885 . . . Sectional block structure
- 137/87893 . . . With fluid actuator
- 137/87901 . . . With threaded actuator
- 137/87909 . . . Containing rotary valve
- 137/87917 . . Flow path with serial valves and/or closures
- 137/87925 . . . Separable flow path section, valve or closure in each
- 137/87933 . . . Common joint and valve seat faces, or sections joined by closing members
- 137/87941 . . . Each valve and/or closure operated by coupling motion
- 137/87949 . . . Linear motion of flow path sections operates both
- 137/87957 . . . Valves actuate each other
- 137/87965 . . . Valve- or closure-operated by coupling motion
- 137/87973 . . . Coupling interlocked with valve, or closure or actuator
- 137/87981 . . . Common actuator
- 137/87989 . . . Delivery cock with terminal valve
- 137/87997 . . . Alternately seating
- 137/88005 . . . Biased valve
- 137/88014 . . . Opposed screw
- 137/88022 . . . One valve head provides seat for other head
- 137/8803 . . . Also carries head of other valve
- 137/88038 . . . One valve head carries other valve head
- 137/88046 . . . Biased valve with external operator
- 137/88054 . . . Direct response normally closed valve limits direction of flow
- 137/88062 . . . Coaxial oppositely directed seats
- 137/8807 . . . Articulated or swinging flow conduit
- 137/88078 . . . Actuates valve
- 137/88086 . . . Plural motions of valve
- 137/88094 . . . Reciprocating valve
- 137/88102 . . . Rotary valve
- 137/8811 . . Frangible
- 137/9029 . . . With coupling
- 137/9138 . . . Flexible
- 137/9247 . . . With closure
- 137/9464 . . . Faucets and spouts
- 137/9682 . . . Miscellaneous

**Former US Class 152 Series****152/00 Resilient tires and wheels**

- 152/10 . . . Tires, resilient
- 152/10009 . . . Emergency
- 152/10018 . . . with splash guards
- 152/10027 . . . with wear indicating feature
- 152/10036 . . . Cushion and pneumatic combined
- 152/10045 . . . Metallic spring cushion
- 152/10054 . . . Enclosed cushion
- 152/10063 . . . Superimposed
- 152/10072 . . . Plungers
- 152/10081 . . . Edge-secured cushion
- 152/1009 . . . Guide flanges

- 152/10099 . . . . . Radial stops  
 152/10108 . . . . . Bolts or studs  
 152/10117 . . . Integral  
 152/10126 . . . . with removable inner tube  
 152/10135 . . Armored  
 152/10144 . . . Single tube tires internal  
 152/10153 . . . . Metal  
 152/10162 . . . . . Plates  
 152/10171 . . . Casing construction  
 152/1018 . . . . Embedded  
 152/10189 . . . . . Metal  
 152/10198 . . . . . Plates  
 152/10207 . . . . . Annular  
 152/10216 . . . . . Linked mat  
 152/10225 . . . . . Woven  
 152/10234 . . . Interliners  
 152/10243 . . . . Cotton, fabric, or rubber  
 152/10252 . . . . Metal  
 152/10261 . . . . . Scale armor  
 152/1027 . . . . . Annular  
 152/10279 . . Cushion  
 152/10288 . . . Sectional  
 152/10297 . . . . Annular  
 152/10306 . . . . . Superimposed  
 152/10315 . . . . Superimposed  
 152/10324 . . . . with apertured external binders  
 152/10333 . . . . Radial bolt secured  
 152/10342 . . . . Abutting sections  
 152/10351 . . . . . with annular internal binders  
 152/1036 . . . . . Interfitting  
 152/10369 . . . . . Indented at joints  
 152/10378 . . . Casing enclosed core  
 152/10387 . . . . Separate core  
 152/10396 . . . . . Removable  
 152/10405 . . . . . Sponge rubber  
 152/10414 . . . . . with core compression  
 152/10423 . . . . . Superimposed rings  
 152/10432 . . . . . Sectional transversely  
 152/10441 . . . . . Balls  
 152/1045 . . . . . Integral structure  
 152/10459 . . . . . Recessed  
 152/10468 . . . . . Chambered  
 152/10477 . . . . . Perforated  
 152/10486 . . . . . Chambered  
 152/10495 . . Pneumatic tire or inner tube  
 152/10504 . . . Asymmetric tire  
 152/10513 . . . Tire reinforcement material characterized by short length fibers or the like  
 152/10522 . . . Multiple chamber  
 152/10531 . . . . Cylinder and piston  
 152/1054 . . . . . Mutually free walls  
 152/10549 . . . . . Interfitting  
 152/10558 . . . . . Balls  
 152/10567 . . . . . with simultaneous inflating means  
 152/10576 . . . . Annular chambers  
 152/10585 . . . . . with simultaneous inflating means  
 152/10594 . . . . . Mutually free walls  
 152/10603 . . . . . with simultaneous inflating means  
 152/10612 . . . . . with simultaneous inflating means  
 152/10621 . . . Sectional casings  
 152/1063 . . . . Circumferential  
 152/10639 . . . . . Rigid inner sections  
 152/10648 . . . with means restricting relative movement between tire and inner tube [e.g., anti-creep feature, etc.]  
 152/10657 . . . with means to protect inner tube from rim  
 152/10666 . . . Automatic sealing of punctures [e.g., self-healing, etc.]  
 152/10675 . . . . Using flowable coating or composition  
 152/10684 . . . . . On inner surface of tubeless tire  
 152/10693 . . . . . Sealant in plural layers or plural pockets  
 152/10702 . . . . . within or part of construction of inflating inner tube  
 152/10711 . . . . . Sealant in plural layers or plural pockets  
 152/1072 . . . . . by compression  
 152/10729 . . . . with reinflating means  
 152/10738 . . . with means to protect tire from rim  
 152/10747 . . . Means other than rim closing the tire opening  
 152/10756 . . . . Positive casing closure  
 152/10765 . . . Characterized by belt or breaker structure  
 152/10774 . . . . Consisting of only one ply  
 152/10783 . . . . Reinforcing plies made up from wound narrow ribbons  
 152/10792 . . . . Structure where each bias angle reinforcing cord ply has no opposingly angled ply  
 152/10801 . . . . Structure made up of two or more sets of plies wherein the reinforcing cords in one set lie in a different angular position relative to those in other sets  
 152/1081 . . . . Breaker or belt characterized by the chemical composition or physical properties of elastomer or the like  
 152/10819 . . . Characterized by the structure of the bead portion of the tire  
 152/10828 . . . . Chafer or sealing strips  
 152/10837 . . . . Bead characterized by the radial extent of apex, flipper or chafer into tire sidewall  
 152/10846 . . . . Bead characterized by the chemical composition and or physical properties of elastomers or the like  
 152/10855 . . . Characterized by the carcass, carcass material, or physical arrangement of the carcass materials  
 152/10864 . . . . Sidewall stiffening or reinforcing means other than main carcass plies or foldups thereof about beads  
 152/10873 . . . . with two or more differing cord materials  
 152/10882 . . Patches  
 152/10891 . . . Mechanically secured  
 152/109 . . . . Inside and outside, bolt connected  
 152/10909 . . . with plugs  
 152/10918 . . . Bandages  
 152/10927 . . . . Mechanically secured  
 152/10936 . . . . . to felly or rim
- Former US Class 156 Series**
- 156/00 Adhesive bonding and miscellaneous chemical manufacture**  
 156/10 . . Methods of surface bonding and/or assembly therefor  
 156/1002 . . with permanent bending or reshaping or surface deformation of self sustaining lamina  
 156/1003 . . . by separating laminae between spaced secured areas [e.g., honeycomb expanding]

- 156/1005 . . . by inward collapsing of portion of hollow body
- 156/1007 . . . Running or continuous length work
- 156/1008 . . . . Longitudinal bending
- 156/101 . . . . . Prior to or during assembly with additional lamina
- 156/1011 . . . . . Overedge bending or overedge folding
- 156/1013 . . . . . and edge-joining of one piece blank to form tube
- 156/1015 . . . . . Folding
- 156/1016 . . . . . Transverse corrugating
- 156/1018 . . . . . Subsequent to assembly of laminae
- 156/102 . . . . . with deformation or cutting of corrugated lamina
- 156/1021 . . . . . Treating material of corrugated lamina or dry adhesive thereon to render tacky
- 156/1023 . . . . . Surface deformation only [e.g., embossing]
- 156/1025 . . . to form undulated to corrugated sheet and securing to base with parts of shaped areas out of contact
- 156/1026 . . . with slitting or removal of material at reshaping area prior to reshaping
- 156/1028 . . . by bending, drawing or stretch forming sheet to assume shape of configured lamina while in contact therewith
- 156/103 . . . . Encasing or enveloping the configured lamina
- 156/1031 . . . . with preshaping of lamina
- 156/1033 . . . . Flexible sheet to cylinder lamina
- 156/1034 . . . Overedge bending of lamina about edges of sheetlike base
- 156/1036 . . . Bending of one piece blank and joining edges to form article
- 156/1038 . . . . Hollow cylinder article
- 156/1039 . . . Surface deformation only of sandwich or lamina [e.g., embossed panels]
- 156/1041 . . . . Subsequent to lamination
- 156/1043 . . . Subsequent to assembly
- 156/1044 . . . . of parallel stacked sheets only
- 156/1046 . . . . . Bending of one lamina only
- 156/1048 . . . . . to form dished or receptacle-like product
- 156/1049 . . . . . Folding only
- 156/1051 . . . by folding
- 156/1052 . . with cutting, punching, tearing or severing
- 156/1054 . . . and simultaneously bonding [e.g., cut-seaming]
- 156/1056 . . . Perforating lamina
- 156/1057 . . . . Subsequent to assembly of laminae
- 156/1059 . . . Splitting sheet lamina in plane intermediate of faces
- 156/1061 . . . Spiral peeling
- 156/1062 . . . Prior to assembly
- 156/1064 . . . . Partial cutting [e.g., grooving or incising]
- 156/1066 . . . . Cutting to shape joining edge surfaces only
- 156/1067 . . . . Continuous longitudinal slitting
- 156/1069 . . . . . Bonding face to face of laminae cut from single sheet
- 156/107 . . . . . Punching and bonding pressure application by punch
- 156/1072 . . . . . Closure cap liner applying type
- 156/1074 . . . . Separate cutting of separate sheets or webs
- 156/1075 . . . . of plural laminae from single stock and assembling to each other or to additional lamina
- 156/1077 . . . . . Applying plural cut laminae to single face of additional lamina
- 156/1079 . . . . . Joining of cut laminae end-to-end
- 156/108 . . . Flash, trim or excess removal
- 156/1082 . . . Partial cutting bonded sandwich [e.g., grooving or incising]
- 156/1084 . . . of continuous or running length bonded web
- 156/1085 . . . . One web only
- 156/1087 . . . . Continuous longitudinal slitting
- 156/1089 . . of discrete laminae to single face of additional lamina
- 156/109 . . . Embedding of laminae within face of additional laminae
- 156/1092 . . . All laminae planar and face to face
- 156/1093 . . . . with covering of discrete laminae with additional lamina
- 156/1095 . . . . . Opposed laminae are running length webs
- 156/1097 . . . . . Lamina is running length web
- 156/1098 . . . . . Feeding of discrete laminae from separate sources
- 156/11 . . Methods of delaminating, per se; i.e. , separating at bonding face
- 156/1105 . . Delaminating process responsive to feed or shape at delamination
- 156/1111 . . Using solvent during delaminating [e.g., water dissolving adhesive at bonding face during delamination, etc.]
- 156/1116 . . . Using specified organic delamination solvent
- 156/1121 . . Using vibration during delaminating
- 156/1126 . . Using direct fluid current against work during delaminating
- 156/1132 . . . Using vacuum directly against work during delaminating
- 156/1137 . . . Using air blast directly against work during delaminating
- 156/1142 . . Changing dimension during delaminating [e.g., crushing, expanding, warping, etc.]
- 156/1147 . . . Using shrinking or swelling agent during delaminating
- 156/1153 . . Temperature change for delamination [e.g., heating during delaminating, etc.]
- 156/1158 . . . Electromagnetic radiation applied to work for delamination [e.g., microwave, uv, ir, etc.]
- 156/1163 . . . Sintering for delamination
- 156/1168 . . Gripping and pulling work apart during delaminating
- 156/1174 . . . Using roller for delamination [e.g., roller pairs operating at differing speeds or directions, etc.]
- 156/1179 . . . with poking during delaminating [e.g., jabbing, etc.]
- 156/1184 . . . . Piercing layer during delaminating [e.g., cutting, etc.]
- 156/1189 . . . with shearing during delaminating
- 156/1195 . . . Delaminating from release surface
- 156/12 . . Surface bonding means and/or assembly means with cutting, punching, piercing, severing or tearing
- 156/125 . . Plural severing means each acting on a different work piece
- 156/13 . . Severing followed by associating with part from same source
- 156/1304 . . Means making hole or aperture in part to be laminated
- 156/1309 . . . and securing separate part over hole or aperture

- 156/1313 . . Cutting element simultaneously bonds [e.g., cut seaming]
- 156/1317 . . Means feeding plural workpieces to be joined
- 156/1322 . . . Severing before bonding or assembling of parts
- 156/1326 . . . . Severing means or member secured thereto also bonds
- 156/133 . . . . Delivering cut part to indefinite or running length web
- 156/1335 . . . . . Cutter also delivers cut piece
- 156/1339 . . . . Delivering cut part in sequence to serially conveyed articles
- 156/1343 . . . Cutting indefinite length web after assembly with discrete article
- 156/1348 . . Work traversing type
- 156/1352 . . . with liquid applying means
- 156/1357 . . . . Slitting and severing
- 156/1361 . . . . Cutting after bonding
- 156/1365 . . . Fixed cutter
- 156/137 . . Stamp from multiple row sheet type
- 156/1374 . . with means projecting fluid against work
- 156/1378 . . Cutter actuated by or secured to bonding element
- 156/1383 . . . with liquid applicator
- 156/1387 . . . . Common actuator for bonding and liquid applying means
- 156/1391 . . . . . Liquid applied to web before cutting
- 156/1396 . . . . . Roller applicator
- 156/14 . . Surface bonding means and/or assembly means with shaping, scarifying, or cleaning joining surface only
- 156/15 . . Combined or convertible surface bonding means and/or assembly means
- 156/16 . . Surface bonding means and/or assembly means with bond interfering means [slip sheet, etc. ]
- 156/17 . . Surface bonding means and/or assembly means with work feeding or handling means
- 156/1702 . . For plural parts or plural areas of single part
- 156/1705 . . . Lamina transferred to base from adhered flexible web or sheet type carrier
- 156/1707 . . . . Discrete spaced laminae on adhered carrier
- 156/171 . . . . . Means serially presenting discrete base articles or separate portions of a single article
- 156/1712 . . . Indefinite or running length work
- 156/1715 . . . . Means joining indefinite length work edge to edge
- 156/1717 . . . . . Means applying adhesively secured tape to seam
- 156/172 . . . . . Means applying fluid adhesive to work edge
- 156/1722 . . . . Means applying fluent adhesive or adhesive activator material between layers
- 156/1724 . . . . . At spaced areas
- 156/1727 . . . . . Plural indefinite length or running length workpieces
- 156/1729 . . . . . Fluid applied to nip between indefinite length webs
- 156/1732 . . . . . Fluid applied to plural workpieces
- 156/1734 . . . . Means bringing articles into association with web
- 156/1737 . . . . Discontinuous, spaced area, and/or patterned pressing
- 156/1739 . . . . Webs of different width, longitudinally aligned
- 156/1741 . . . . Progressive continuous bonding press [e.g., roll couples]
- 156/1744 . . . Means bringing discrete articles into assembled relationship
- 156/1746 . . . . Plural lines and/or separate means assembling separate sandwiches
- 156/1749 . . . . All articles from single source only
- 156/1751 . . . . At least three articles
- 156/1754 . . . . . At least two applied side by side to common base
- 156/1756 . . . . . Plural ranks
- 156/1759 . . . . . Sheet form common base
- 156/1761 . . . . . Stacked serially
- 156/1763 . . . . Magazine stack directly contacting separate work
- 156/1766 . . . . . Magazine movable to work
- 156/1768 . . . . Means simultaneously conveying plural articles from a single source and serially presenting them to an assembly station
- 156/1771 . . . . . Turret or rotary drum-type conveyor
- 156/1773 . . . . . For flexible sheets
- 156/1776 . . . . Means separating articles from bulk source
- 156/1778 . . . . . Stacked sheet source
- 156/178 . . . . . Rotary or pivoted picker
- 156/1783 . . . . . Translating picker
- 156/1785 . . Magazine stack directly contacting work
- 156/1788 . . Work traversing type and/or means applying work to wall or static structure
- 156/179 . . . with liquid applying means
- 156/1793 . . . Grip or clamp for web end
- 156/1795 . . . Implement carried web supply
- 156/1798 . . with liquid adhesive or adhesive activator applying means
- 156/18 . . Surface bonding means and/or assembly means with handle or handgrip
- 156/19 . . Delaminating means
- 156/1906 . . Delaminating means responsive to feed or shape at delamination
- 156/1911 . . Heating or cooling delaminating means [e.g., melting means, freezing means, etc.]
- 156/1917 . . . Electromagnetic radiation delaminating means [e.g., microwave, uv, ir, etc.]
- 156/1922 . . Vibrating delaminating means
- 156/1928 . . Differential fluid pressure delaminating means
- 156/1933 . . . Spraying delaminating means [e.g., atomizer, etc.
- 156/1939 . . . . Air blasting delaminating means]
- 156/1944 . . . Vacuum delaminating means [e.g., vacuum chamber, etc.]
- 156/195 . . Delaminating roller means
- 156/1956 . . . Roller pair delaminating means
- 156/1961 . . Severing delaminating means [e.g., chisel, etc.]
- 156/1967 . . . Cutting delaminating means
- 156/1972 . . . . Shearing delaminating means
- 156/1978 . . Delaminating bending means
- 156/1983 . . . Poking delaminating means
- 156/1989 . . . Corner edge bending delaminating means
- 156/1994 . . Means for delaminating from release surface
- Former US Class 225 series**
- 225/00 Severing by tearing or breaking**
- 225/10 . Methods

- 225/12 . . . With preliminary weakening
- 225/14 . . . Longitudinally of direction of feed
- 225/16 . . . Transversely of continuously fed work
- 225/18 . . . Progressively to or from one side edge
- 225/20 . . . Severing by manually forcing against fixed edge
- 225/201 . . . With other type severing means
- 225/202 . . . With timer-released means for preventing work feed-out
- 225/203 . . . Including means to effect bias cut
- 225/205 . . . With feed-out of predetermined length from work supply
- 225/206 . . . Including means to select or adjust feed-out length
- 225/207 . . . Including feed-out stop for manually pulled work
- 225/208 . . . . Stop abuts work edge or work-mounted article
- 225/209 . . . . With feed-out of lead-end to aid initial grasping
- 225/21 . . . Merely to provide lead-end for manual grasping
- 225/211 . . . Manually operated feed-out mechanism
- 225/213 . . . With indicator
- 225/214 . . . Indicates length to be severed from supply
- 225/215 . . . With blade-edge guard
- 225/216 . . . Movable
- 225/217 . . . Work stripped from blade by relatively movable means
- 225/218 . . . Including movable blade
- 225/22 . . . With means to move work toward or into severing position
- 225/221 . . . With means to strip adhering work therefrom
- 225/222 . . . With work-immobilizing paster surface
- 225/223 . . . With finger-access opening
- 225/224 . . . With means to hold pad or stack of individual sheets
- 225/225 . . . With means to separate severed end of stub from supply package
- 225/226 . . . With changeable blade-edge contour
- 225/228 . . . . Slidable notcher
- 225/229 . . . Blade slidable along plane of work surface
- 225/23 . . . Zigzag-folded supply package
- 225/231 . . . Separate blades usable alternatively or sequentially on same work supply
- 225/232 . . . Plural supply sources
- 225/233 . . . On turret-type support with single blade
- 225/234 . . . With movable blade registrable selectively with each source
- 225/236 . . . With plural blades
- 225/237 . . . . With individual blade for each source
- 225/238 . . . With housing for work supply
- 225/239 . . . Liquid-, gas-, or light-tight work passage
- 225/24 . . . With inspection window or transparent panel
- 225/241 . . . With mounting means for housing
- 225/243 . . . Blade on pivoted closure for housing
- 225/244 . . . Sectional telescoping housing
- 225/245 . . . . Including removable cap or sleeve enclosure for spooled work supply
- 225/246 . . . Including special support for wound supply package
- 225/247 . . . . Bearing or trunnions to engage package core
- 225/248 . . . Single blank container
- 225/249 . . . . Blade unitary with container
- 225/251 . . . . With closure fastener
- 225/252 . . . . With brake or tensioner
- 225/253 . . . . Restricted or restrictable work outlet
- 225/254 . . . . With finger-access opening to facilitate work feed-out
- 225/255 . . . . With internal guide
- 225/256 . . . Blade carrier bodily and slidably supported on running length work
- 225/257 . . . Blade mounted on hand-held wound package
- 225/259 . . . . With lead-end stripper for tacky adhesive work
- 225/26 . . . . By resiliently embracing outer circumference of package
- 225/261 . . . . Work supply nonrotatably wound on flanged spool
- 225/262 . . . . Circumferentially movable blade radially retained by beaded or grooved flanges
- 225/263 . . . . Blade carrier supports hollow spool for rotation
- 225/264 . . . . Flange edge notched to provide or coax with cutter
- 225/266 . . . . With clamp for lead-end of strand-type work
- 225/267 . . . . . Strand clamped against flange
- 225/268 . . . . By resiliently engaging package ends or interior of core
- 225/269 . . . . Blade carrier supports package for rotation
- 225/27 . . . Movable blade continually biased toward wound web supply package
- 225/271 . . . Including temporary bias-disabling means
- 225/272 . . . Including stripper to separate lead-end from package
- 225/274 . . . Weight of bodily movable package contributes to blade-biasing force
- 225/275 . . . Blade slidably guided
- 225/276 . . . Blade movable to severing position by moving work
- 225/277 . . . . With simultaneous application of brake or clamp
- 225/278 . . . . . Applied to running length work
- 225/279 . . . . . Opposed movable jaws
- 225/28 . . . Wound package bodily biased toward fixed blade
- 225/282 . . . With fixed blade and support for wound package
- 225/283 . . . . Body- or belt-attached
- 225/284 . . . . With brake applied to supply package
- 225/285 . . . . With guide spaced from blade edge to provide lead-end therebetween
- 225/286 . . . With work-abutment stop
- 225/287 . . . With brake or clamp
- 225/289 . . . . Thread cutter and clamp attachment for sewing machine presser foot
- 225/29 . . . Applied to running length work
- 225/291 . . . . Spaced from blade edge to provide lead-end therebetween
- 225/292 . . . . . Blade manually movable to expose lead-end
- 225/293 . . . . Manually applied, spring returned
- 225/294 . . . . With guide for running length work
- 225/295 . . . Blade manually movable to or from severing position
- 225/297 . . . With means to facilitate lead-end grasping
- 225/298 . . . Blades or severing devices
- 225/299 . . . . Adjustable blade-edge contour
- 225/30 . . . Breaking or tearing apparatus
- 225/304 . . . Including means to apply thermal shock to work

- 225/307 . . Combined with preliminary weakener or with nonbreaking cutter
- 225/314 . . . Successively actuated sharp and dull tools
- 225/321 . . . Preliminary weakener
- 225/325 . . . . With means to apply moment of force to weakened work
- 225/329 . . Plural breakers
- 225/336 . . Conveyor diverter for moving work
- 225/343 . . . Plural divergent work paths
- 225/35 . . Work-parting pullers [bursters]
- 225/357 . . . Relatively movable clamps
- 225/364 . . Axial twisters
- 225/371 . . Movable breaking tool
- 225/379 . . . Breaking tool intermediate spaced work supports
- 225/386 . . . . Clamping supports
- 225/393 . . Web restrainer

**Former US Class 279 Series****279/00 Chucks or sockets**

- 279/10 . Expanding
- 279/1004 . . Collet type
- 279/1008 . . . Fixed jaws and moving cam
- 279/1012 . . . Fixed cam and moving jaws
- 279/1016 . . Jaws mounted on flexible member; i.e., diaphragm
- 279/1021 . . Fluid-pressure actuator
- 279/1024 . . . Directly expanding jaws
- 279/1029 . . . . Jaw is expansible chamber; i.e., bladder type
- 279/1033 . . . Expanding jaws via mechanical connection
- 279/1037 . . Axially moving actuator
- 279/1041 . . . Wedge
- 279/1045 . . . . Internal cone
- 279/1049 . . . . with jaw positively interlocked with wedge; e.g., dovetail or T-slot
- 279/1054 . . . . with resilient means contacting nonresilient jaw
- 279/1058 . . . . . Constricting band, annulus, or clip
- 279/1062 . . . Toggle
- 279/1066 . . . Axially compressible element expands radially
- 279/1071 . . . Lever
- 279/1074 . . Rotary actuator
- 279/1079 . . . Clutch or self-actuating type
- 279/1083 . . Jaw structure
- 279/1087 . . . Resilient
- 279/1091 . . . Ball or roller
- 279/1095 . . . Pivoted
- 279/11 . . Vacuum
- 279/12 . . with fluid-pressure actuator
- 279/1208 . . with measuring, indicating or control means
- 279/1216 . . Jaw is expansible chamber; i.e., bladder type
- 279/1224 . . Pneumatic type
- 279/1233 . . Jaws mounted on flexible member; i.e., diaphragm
- 279/1241 . . Socket type
- 279/1249 . . . Collet
- 279/1258 . . . . Fixed cam and moving jaws
- 279/1266 . . . . Moving cam and fixed jaws
- 279/1274 . . Radially reciprocating jaws
- 279/1283 . . . Fluid pressure directly moves jaws
- 279/1291 . . . Fluid pressure moves jaws via mechanical connection
- 279/13 . . Angularly adjustable or indexing
- 279/14 . . Eccentric
- 279/15 . . Threaded grip
- 279/16 . . Longitudinal screw clamp
- 279/17 . . Socket type
- 279/17008 . . Multiple alternative
- 279/17017 . . Self-centering of floating
- 279/17025 . . . Radially reciprocating jaws
- 279/17034 . . . Transverse holder and setscrew
- 279/17042 . . Lost motion
- 279/17051 . . . Swinging external yoke or detent
- 279/17059 . . . . Rotary socket
- 279/17068 . . . Rotary socket
- 279/17076 . . . Spreading elements
- 279/17085 . . . Key retainer
- 279/17094 . . . Sleeve type retainer
- 279/17102 . . . . Sleeve in socket
- 279/17111 . . Fluid-conduit drill holding
- 279/17119 . . Feed type
- 279/17128 . . Self-grasping
- 279/17136 . . . Yielding grasping jaws
- 279/17145 . . . . Ball or roller
- 279/17153 . . . . Spring jaws
- 279/17162 . . . Yielding detent
- 279/17171 . . . One-way-clutch type
- 279/17179 . . . . Wedge
- 279/17188 . . . . Side detent
- 279/17196 . . . . . Ball or roller
- 279/17205 . . Conical clamp threaded in socket
- 279/17213 . . Transversely oscillating jaws
- 279/17222 . . . Screw actuated
- 279/17231 . . Pivoted jaws
- 279/17239 . . . Moving-cam actuator
- 279/17247 . . . . Threaded cam sleeve
- 279/17256 . . . . Reciprocating cam sleeve
- 279/17264 . . . Fixed cam and moving jaws
- 279/17273 . . . . Axial screw actuator
- 279/17282 . . . . Threaded-sleeve actuator
- 279/17291 . . Resilient split socket
- 279/17299 . . . Threaded cam sleeve
- 279/17307 . . . Reciprocating cam sleeve
- 279/17316 . . . Unitary
- 279/17324 . . . . Split at one end only
- 279/17333 . . . . . Transverse screw actuator
- 279/17341 . . . . . Cam actuator
- 279/17351 . . . . . Split end to end
- 279/17358 . . . . with jaw pads or insert
- 279/17367 . . . Nonresilient member biased by a resilient member
- 279/17376 . . . Resilient member reinforced by another resilient member
- 279/17384 . . with means to exclude contaminants; e.g., seal, shield
- 279/17393 . . One movable side
- 279/17401 . . . Sleeved
- 279/17411 . . Spring biased jaws
- 279/17418 . . . Unitary
- 279/17427 . . . . Split at one end only
- 279/17435 . . . . Split at both ends
- 279/17444 . . . . Split end to end
- 279/17452 . . . . with jaw pads or insert

- 279/17461 . . . Nonresilient member biased by a resilient member
- 279/17471 . . . Resilient member reinforced by another resilient member
- 279/17478 . . . with means to exclude contaminants; e.g., seal, shield
- 279/17487 . . . Moving-cam actuator
- 279/17495 . . . . Threaded sleeve and wedge
- 279/17504 . . . . Threaded cam sleeve
- 279/17512 . . . . . Loose jaws
- 279/17521 . . . . . Reciprocating cam sleeve
- 279/17529 . . . Fixed cam and moving jaws
- 279/17538 . . . . Threaded-sleeve actuator
- 279/17547 . . . . Axial screw actuator
- 279/17555 . . . Loose jaws
- 279/17564 . . Loose jaws
- 279/17572 . . . Moving-cam actuator
- 279/17581 . . . . Threaded cam sleeve
- 279/17589 . . . . Reciprocating cam sleeve
- 279/17598 . . . Fixed cam and moving jaws
- 279/17606 . . . . Threaded sleeve and body
- 279/17615 . . Obliquely guided reciprocating jaws
- 279/17623 . . . Threaded sleeve and jaw
- 279/17632 . . . . Conical sleeve
- 279/17641 . . . Threaded central cone and jaw
- 279/17649 . . . Threaded sleeve and body
- 279/17658 . . . Reciprocating jaw advancing sleeve
- 279/17666 . . Radially reciprocating jaws
- 279/17675 . . . Transverse-screw actuated
- 279/17683 . . . . Interlaced jaws
- 279/17692 . . . Moving-cam actuator
- 279/17701 . . . . Threaded cam sleeve
- 279/17709 . . . . Threaded sleeve and wedge
- 279/17717 . . . . Rotary eccentric-cam sleeve
- 279/17726 . . . . . Roller and rocking jaw
- 279/17735 . . . . . Worm actuated
- 279/17743 . . . . Reciprocating cam sleeve
- 279/17752 . . . . . Ball or roller jaws
- 279/17761 . . Side detent
- 279/17769 . . . Pivoted or rotary
- 279/17777 . . . . Sleeved
- 279/17786 . . . Spring
- 279/17794 . . . . Sleeved
- 279/17803 . . . Rotary cam sleeve
- 279/17811 . . . Reciprocating sleeve
- 279/17821 . . . Set screw
- 279/17829 . . . U-clamp
- 279/17837 . . . Plural bolt
- 279/17846 . . . Single transverse bolt
- 279/17854 . . . Longitudinal clamping wedge
- 279/17863 . . Shouldered-tang holding
- 279/17871 . . . Cap
- 279/17881 . . . . Screw
- 279/17888 . . Tang offset within socket
- 279/17897 . . Tang offset without socket
- 279/17905 . . Bottomless
- 279/17914 . . . Friction grip
- 279/17923 . . Transverse pin
- 279/17931 . . Screw threaded
- 279/17941 . . . Nut lock
- 279/17948 . . . . Threaded sleeve
- 279/17957 . . Friction grip
- 279/17965 . . . Drill type
- 279/17974 . . Barbed or pronged tang
- 279/17982 . . Molded or cast-in tang
- 279/17991 . . Adjustable length or size
- 279/18 . . Pivoted jaw
- 279/182 . . Cam-sleeve actuated
- 279/185 . . Internal-cone actuated
- 279/188 . . Toggle actuated
- 279/19 . . Radially reciprocating jaws
- 279/1906 . . . with indicator
- 279/1913 . . Transverse-screw actuated
- 279/1921 . . . Annular rack
- 279/1926 . . Spiral cam or scroll actuated
- 279/1933 . . . Worm
- 279/1941 . . . Bevel pinion
- 279/1946 . . Rack-and-pinion actuated
- 279/1953 . . Toggle actuated
- 279/1961 . . Lever actuated
- 279/1966 . . . Internal cone
- 279/1973 . . Wedge actuated
- 279/1981 . . External-cone actuated
- 279/1986 . . Jaws
- 279/1993 . . . with means to facilitate jaw removal
- 279/20 . . with safety feature
- 279/21 . . with measuring, indicating or control means
- 279/22 . . Double acting
- 279/23 . . with magnetic or electrostatic means
- 279/24 . . by centrifugal force
- 279/243 . . . to counterbalance jaws
- 279/247 . . . to grip tool or workpiece
- 279/25 . . Compensation for eccentricity
- 279/26 . . with centering means
- 279/27 . . Separate chuck-actuating power source
- 279/275 . . Self-contained
- 279/28 . . for gear or spline molding
- 279/29 . . More than one set of gripping means
- 279/30 . . Torsion mandrel
- 279/31 . . Jaws mounted on flexible member; i.e. , diaphragm
- 279/32 . . Means to prevent jaw loosening
- 279/33 . . Member applies axial force component
- 279/34 . . Accessory or component
- 279/3406 . . Adapter
- 279/3412 . . . Drive conversion
- 279/3418 . . . for particular tool or workpiece
- 279/3425 . . Sliding cam chuck actuator
- 279/3431 . . Chuck key
- 279/3437 . . . Safety feature; e.g., ejector, interlock
- 279/3443 . . . Key holding or attaching means
- 279/3451 . . . Nonseparable or built-in
- 279/3456 . . Padded or cushioned jaw
- 279/3462 . . Jaw insert
- 279/3468 . . . Machinable jaw
- 279/3475 . . . . Locking or positioning means
- 279/3481 . . Tool or workpiece ejector
- 279/3487 . . Tool or work stop or locator
- 279/3493 . . Protection means; e.g., cover, seal, overstress prevention, air blast
- 279/35 . . Miscellaneous



**Former US Class 292 series****292/00 Closure fasteners**

292/03	. Miscellaneous	292/0866	. . . Multiple head
292/06	. Adjustable backset	292/0867	. . . Spring projected
292/08	. Bolts	292/0868	. . . . Combined motion
292/0801	. . Multiple	292/0869	. . . Spring retracted
292/0802	. . . Sliding and rotary	292/087	. . Loops
292/0803	. . . Sliding and swinging	292/0871	. . . Sliding and swinging, lever-operating means
292/0805	. . . . Combined motion	292/0872	. . . Sliding catch
292/0806	. . . . . Lever-operating means	292/0874	. . . Spring-arm catch
292/0807	. . . Sliding and hooked end	292/0875	. . . Swinging catch
292/0808	. . . Sliding and roller	292/0876	. . Double acting
292/0809	. . . Sliding and spring arm	292/0877	. . . Sliding and swinging
292/081	. . . Swinging and hooked end	292/0878	. . . Sliding
292/0811	. . . Swinging and roller	292/0879	. . . . Roller
292/0813	. . . Swinging and spring arm	292/088	. . . Spring arm
292/0814	. . . Double acting	292/0882	. . . . Roller
292/0815	. . . . Roller	292/0883	. . . Swinging
292/0816	. . . . Sliding	292/0884	. . . . Roller
292/0817	. . . . Spring arm	292/0885	. . . Roller
292/0818	. . . . Swinging	292/0886	. . Sliding and swinging
292/082	. . . Spring arm	292/0887	. . . Operating means
292/0821	. . . . Combined motion	292/0889	. . . . Cam
292/0822	. . . Emergency operating means	292/089	. . . . Lever
292/0823	. . . Gear	292/0891	. . . . Rigid
292/0824	. . . Roller	292/0892	. . . Multiple head
292/0825	. . . Hooked end	292/0893	. . . Spring retracted
292/0826	. . . . Operating means	292/0894	. . Spring arm
292/0828	. . . . . Link and lever	292/0895	. . . Operating means
292/0829	. . . . . Cam	292/0897	. . . . Link and lever
292/083	. . . . . Flexible	292/0898	. . . . Cam
292/0831	. . . . . Lever	292/0899	. . . . Flexible
292/0832	. . . . . Push or pull rod	292/09	. . . . Lever
292/0833	. . . . . Rigid	292/0901	. . . . Push or pull rod
292/0834	. . . Sliding	292/0902	. . . . Rigid
292/0836	. . . . Operating means	292/0903	. . . . . Seal catch
292/0837	. . . . . Cam and lever	292/0905	. . . . . Swinging catch
292/0838	. . . . . Lever and push or pull rod	292/0906	. . . . Screw
292/0839	. . . . . Link and lever	292/0907	. . . Multiple head
292/084	. . . . . Cam	292/0908	. . Emergency operating means
292/0841	. . . . . Flexible	292/0909	. . . Panel
292/0843	. . . . . Gear	292/091	. . . Platform
292/0844	. . . . . Lever	292/0911	. . Hooked end
292/0845	. . . . . Push or pull rod	292/0913	. . . Sliding and swinging
292/0846	. . . . . Rigid	292/0914	. . . . Operating means
292/0847	. . . . . Screw	292/0915	. . . . . Cam
292/0848	. . . Swinging	292/0916	. . . . . Gear
292/0849	. . . . Operating means	292/0917	. . . . . Lever
292/0851	. . . . . Cam and lever	292/0918	. . . . . Rigid
292/0852	. . . . . Link and cam	292/092	. . . . . Screw
292/0853	. . . . . Link and lever	292/0921	. . . Multiple head
292/0854	. . . . . Cam	292/0922	. . . . Operating means
292/0855	. . . . . Flexible	292/0923	. . . . . Lever
292/0856	. . . . . Gear	292/0924	. . . . . Push or pull rod
292/0857	. . . . . Lever	292/0925	. . . . . Rigid
292/0859	. . . . . Push or pull rod	292/0926	. . . Spring projected
292/086	. . . . . Rigid	292/0928	. . . . Operating means
292/0861	. . . . . Screw	292/0929	. . . . . Link and lever
292/0862	. . Swinging and hooked end, multiple head	292/093	. . . . . Cam
292/0863	. . Sliding and rotary	292/0931	. . . . . Flexible
292/0864	. . . Combined motion	292/0932	. . . . . Lever
		292/0933	. . . . . Push or pull rod
		292/0934	. . . . . Rigid

292/0936	. . . Spring retracted	292/1002	. . . . Spring-arm catch
292/0937	. . . Gravity actuated	292/1003	. . . . Swinging catch
292/0938	. . . . Operating means	292/1005	. . . . Cam-operating means
292/0939	. . . . . Cam	292/1006	. . . Gravity actuated
292/094	. . . . . Flexible	292/1007	. . . . Operating means
292/0941	. . . . . Lever	292/1008	. . . . . Cam and lever
292/0943	. . . . . Push or pull rod	292/1009	. . . . . Link and lever
292/0944	. . . . . Rigid	292/101	. . . . . Cam
292/0945	. . . Operating means	292/1011	. . . . . Lever
292/0946	. . . . Link and lever	292/1013	. . . . . Rigid
292/0947	. . . . Cam	292/1014	. . . Operating means
292/0948	. . . . Closure	292/1015	. . . . Link and lever
292/0949	. . . . Lever	292/1016	. . . . Cam
292/0951	. . . . Rigid	292/1017	. . . . Flexible
292/0952	. . . . . Closure catch	292/1018	. . . . Gear
292/0953	. . . . . Friction catch	292/102	. . . . Lever
292/0954	. . . . . Padlock or seal catch	292/1021	. . . . Motor
292/0955	. . . . . Screw catch	292/1022	. . . . Rigid
292/0956	. . . . . Sliding catch	292/1023	. . . . . Closure catch
292/0957	. . . . . Spring-arm catch	292/1024	. . . . . Friction catch
292/0959	. . . . . Swinging catch	292/1025	. . . . . Padlock or seal catch
292/096	. . Sliding	292/1026	. . . . . Screw catch
292/0961	. . . Multiple head	292/1028	. . . . . Sliding catch
292/0962	. . . . Operating means	292/1029	. . . . . Seal
292/0963	. . . . . Link and lever	292/103	. . . . . Spring-arm catch
292/0964	. . . . . Cam	292/1031	. . . . . Swinging catch
292/0966	. . . . . Gear	292/1032	. . . . . Seal
292/0967	. . . . . Lever	292/1033	. . . . Screw
292/0968	. . . . . Rigid	292/1034	. . . Curved
292/0969	. . . Spring projected	292/1036	. . . End lever
292/097	. . . . Operating means	292/1037	. . . Pivoted end
292/0971	. . . . . Cam and lever	292/1038	. . . Roller
292/0972	. . . . . Lever and push or pull rod	292/1039	. . Swinging and camming
292/0974	. . . . . Link and lever	292/10395	. . . Spring projected
292/0975	. . . . . Link and push or pull rod	292/104	. . . . Rigid operating means
292/0976	. . . . . Sliding cam	292/1041	. . . Rigid operating means
292/0977	. . . . . Cam	292/1043	. . Swinging
292/0978	. . . . . Specifically related to vehicle closure	292/1044	. . . Multiple head
292/0979	. . . . . Bolt disabled by contraretractive movement of inside handle	292/1045	. . . . Operating means
292/098	. . . . . Auxiliary bolt	292/1046	. . . . . Cam
292/0982	. . . . . Bolt blocking or disabling means	292/1047	. . . . . Closure
292/0983	. . . . . Involves rollback	292/1048	. . . . . Lever
292/0984	. . . . . Rollback members located on separate spindles	292/1049	. . . . . Rigid
292/0985	. . . . . Discrete pivotable or rotatable actuator	292/1051	. . . Spring projected
292/0986	. . . . . Discrete push or pull actuator	292/1052	. . . . Operating means
292/0987	. . . . . Bolt has ancillary projection spring	292/1053	. . . . . Lever and push or pull rod
292/0989	. . . . . Plural rollback elements directionally selectively effective	292/1054	. . . . . Link and cam
292/099	. . . . . On separate spindles	292/1055	. . . . . Link and lever
292/0991	. . . . . On a tubular member	292/1056	. . . . . Cam
292/0992	. . . . . Flexible	292/1057	. . . . . Flexible
292/0993	. . . . . Gear	292/1059	. . . . . Lever
292/0994	. . . . . Lever	292/106	. . . . . Push or pull rod
292/0995	. . . . . Push or pull rod	292/1061	. . . . . Rigid
292/0997	. . . . . Rigid	292/1062	. . . Spring retracted
292/0998	. . . . . Screw	292/1063	. . . Gravity actuated
292/0999	. . . Spring retracted	292/1064	. . . . Operating means
292/10	. . . . Friction catch	292/1066	. . . . . Cam and lever
292/1001	. . . . Sliding catch	292/1067	. . . . . Link and lever
		292/1068	. . . . . Cam
		292/1069	. . . . . Flexible
		292/107	. . . . . Lever

292/1071	. . . . . Push or pull rod	292/299	. . Slotted keeper
292/1072	. . . . . Rigid	292/301	. . Friction catch
292/1074	. . . . . Roller	292/302	. . Screw catch
292/1075	. . . Operating means	292/304	. . Sliding catch
292/1076	. . . . . Link and lever	292/305	. . Swinging catch
292/1077	. . . . . Cam	292/306	. Gear
292/1078	. . . . . Closure	292/307	. . Sliding catch
292/1079	. . . . . Gear	292/308	. . Swinging catch
292/108	. . . . . Lever	292/31	. Hasps
292/1082	. . . . . Motor	292/314	. . Sliding catch
292/1083	. . . . . Rigid	292/319	. . . Seal
292/1084	. . . . . Closure catch	292/323	. . Swinging catch
292/1085	. . . . . Friction catch	292/327	. . . Seal
292/1086	. . . . . Padlock or seal catch	292/331	. . Seal catch
292/1087	. . . . . Screw catch	292/336	. . Seal-rupturing devices
292/1089	. . . . . Sliding catch	292/34	. Portable
292/109	. . . . . Seal	292/37	. Portable securer plate or bar
292/1091	. . . . . Spring-arm catch	292/373	. . Sliding and swinging holding member
292/1092	. . . . . Swinging catch	292/376	. . Screw-holding member
292/1093	. . . . . Seal	292/379	. . Sliding holding member
292/1094	. . . . . Screw	292/382	. . . Screw-operating means
292/1095	. . Seal-rupturing devices	292/385	. . . Screw catch
292/1097	. . Reversible	292/388	. . . Sliding catch
292/1098	. . . Cam and lever operating means	292/391	. . . Swinging catch
292/1099	. . Screw	292/394	. . Swinging holding member
292/11	. Magnetic	292/397	. . . Catch devices
292/14	. Ball	292/40	. Rings
292/17	. Bendable securers	292/42	. Rigid engaging means
292/175	. Bolt releasers	292/426	. . Screw catch
292/18	. . Free-end-engaging means	292/432	. . Sliding catch
292/19	. . Foot operated	292/438	. . Spring-arm catch
292/20	. Clamps	292/444	. . Swinging catch
292/202	. . Hatch fastener	292/45	. Rod clamps
292/205	. . Ring	292/47	. . Friction-plate catch
292/207	. . . Permanently deformed	292/48	. Seals
292/209	. . . Resilient wedge	292/481	. . Compressible disk
292/212	. . . With expanding or contracting means	292/483	. . . Reinforced
292/214	. . . . . Screw	292/484	. . . Multiple
292/216	. . . . . Toggle lever	292/485	. . . . Sheet metal
292/218	. . Screw against closure	292/487	. . . . Hard and soft metal
292/221	. . Screw and nut	292/488	. . . Sheet metal
292/223	. . . Swingable	292/49	. . Compressible rivets and eyelets
292/225	. . Cam-operating means	292/491	. . Distorted shackle
292/228	. . Portable	292/492	. . Driving
292/23	. Cross bars	292/494	. . Interengaging shackle ends, inclosing housing
292/237	. . Screw-operating means	292/4945	. . Rigid shackle ends
292/243	. . Vehicle door latches	292/495	. . . Resilient and rigid engaging means
292/25	. Cylinder	292/496	. . . Resilient engaging means
292/28	. Extension link	292/497	. . Resilient shackle ends
292/282	. . Multiple	292/498	. . . Rigid engaging means
292/283	. . Chain	292/499	. . . Resilient engaging means
292/285	. . Notched bar	292/50	. . Single piece, spring catch
292/286	. . . Sliding catch	292/502	. . Shiftable catch shackle operated
292/288	. . . Swinging catch	292/503	. . Split-ring catch, shackle operated
292/289	. . Slotted bar	292/505	. . Strap-end fasteners
292/291	. . . Sliding catch	292/506	. . Rigid disk, distorted shackle
292/293	. . . Swinging catch	292/507	. . Tag type
292/2935	. . Slotted or notched keeper	292/509	. . Encasing
292/294	. . . Sliding catch	292/51	. Seal bolts
292/296	. . . Swinging catch	292/513	. Shackles
292/297	. . Notched keeper	292/516	. . Sliding catch, seal

292/522	. . Swinging catch, seal	307/375	. . . . Different frequencies
292/528	. . Seal catch	307/383	. . . . Different voltages
292/534	. . Seal-rupturing devices	307/391	. . . . Selectively connected loads and/or sources
292/54	. Trippers	307/398	. . Anticoupling of load circuits through same source
292/546	. . Sliding detent	307/406	. . Control of current or power
292/552	. . Spring-arm detent	307/414	. . . . Load current proportioning or dividing
292/558	. . Sliding bolt, swinging detent	307/422	. . . . Constant magnitude control
292/564	. . Swinging bolt, swinging detent	307/43	. . . . By control of one or more load circuits
292/57	. Operators with knobs or handles	307/438	. . . . Limit control
292/59	. Rollback and spindle connection	307/445	. . Serially connected load circuits
292/62	. Bolt casings	307/453	. . . . Selective series-parallel connections
292/65	. Braces	307/461	. . Selectively connected or controlled load circuits
292/67	. . Portable	307/469	. . . . Condition responsive
292/68	. Keepers	307/477	. . . . Code-controlled
292/683	. . Segment	307/484	. . . . Sequential or alternating
292/685	. . With anti-friction means	307/492	. . Circuit arrangements or layouts
292/688	. . With silencing or anti-rattle means	307/50	. Plural supply circuits or sources
292/691	. . . Take-up	307/505	. . One source floats across or compensates for other source
292/694	. . Covers	307/511	. . . . With intervening converter
292/696	. . With movable dog, catch or striker	307/516	. . . . Storage battery or accumulator-type source
292/699	. . . Motor controlled	307/522	. . . . Dynamoelectric-type source
292/702	. . . Pivoted or swinging	307/527	. . . . Storage battery or accumulator-type source
292/705	. . Adjustable	307/533	. . . . With series-connected auxiliary source
292/707	. . . Vertically	307/538	. . . . Tap-changing or variable number of cells
292/71	. Wedges	307/544	. . Circulating- or inter-current control or prevention
292/73	. . Portable	307/549	. . Load current control
292/74	. Weights	307/555	. . . . Load current division
292/76	. Blind-slat holders	307/56	. . . . Serially connected sources
292/79	. Bolt guards	307/565	. . . . Fixed or predetermined ratio
292/82	. Knobs	307/571	. . . . . Diverse-or-unlike-type sources
292/85	. Knob-attaching devices	307/576	. . . . . Plural generators
292/854	. . Friction	307/582	. . . . . Plural converters
292/858	. . Screw	307/587	. . . . . Peak or excess load
292/861	. . . Guards	307/593	. . . . Constant load or current
292/865	. . Sliding	307/598	. . . . . Serially connected sources
292/869	. . Spring arm	307/604	. . . . Load-limiting
292/873	. . Swinging	307/609	. . . . Serially connected sources
292/876	. . Wedge	307/615	. . Substitute or emergency source
292/88	. Knob bearings	307/62	. . . . Plural substitute sources
292/91	. Knob rose plates	307/625	. . . . Storage battery or accumulator
292/93	. Latch spindles	307/631	. . . . . With intervening dynamoelectric machine
292/96	. Latch-spindle catches	307/636	. . . . Dynamoelectric

**Former US Class 307 series**

<b>307/00</b>	<b>Electrical transmission or interconnection systems</b>
307/25	. Plural load circuit systems
307/258	. . Common conductor or return type
307/266	. . . Polyphase
307/273	. . . . Phase balancing
307/281	. . . . Voltage divider type
307/289	. . . . Plural output generators
307/297	. . Transformer connections
307/305	. . Plural sources of supply
307/313	. . . Interconnected for energy transfer
307/32	. . . . With control of magnitude of energy transfer
307/328	. . . . . Diverse sources
307/336	. . . . . AC and DC
307/344	. . . . Substitute or alternate source
307/352	. . . . With control of magnitude of current or power
307/359	. . . . Diverse sources
307/367	. . . . . AC and DC

307/642	. . Sources distributed along load circuit
307/647	. . Load transfer without paralleling sources
307/653	. . Series-parallel connection of sources
307/658	. . Diverse or unlike electrical characteristics
307/664	. . . Differing frequencies
307/669	. . . Differing capacities
307/675	. . . Differing voltages
307/68	. . . . Generator sources
307/685	. . Series-connected sources
307/691	. . . Generator sources
307/696	. . Selective or optional sources
307/702	. . . Predetermined sequence
307/707	. . Plural converters
307/713	. . Plural transformers
307/718	. . Plural generators
307/724	. . Connecting or disconnecting
307/729	. . . Condition responsive

307/735	. . . . Attainment of voltage, frequency or phase relationship	403/1633	. . Utilizing fluid pressure
307/74	. Switching systems	403/1641	. . Back-off means, e.g., separator, etc.
307/747	. . Plural switches	403/1649	. . Handle or handwheel
307/753	. . . Lazy-man switch type	403/1658	. . . Actuates retainer or blocker
307/76	. . . Selectively actuated	403/1666	. . tool-engaging or accommodating means or with tool
307/766	. . Condition responsive	403/1674	. . . for latch or retainer
307/773	. . . Light, heat, vibratory or radiant energy	403/1683	. . Releasably captive nut or bolt
307/779	. . . Fluid pressure, density, level, velocity or humidity	403/1691	. . Means to lock bolt or nut when other is turned
307/786	. . . Mechanical force	403/17	. with adjunctive shield
307/793	. . . . Speed, centrifugal or kinetic force	403/18	. Structurally installed in diverse art device
307/799	. . . . . Inertia or acceleration	403/185	. . Head or base
307/806	. . . . . Direction of rotation	403/19	. Coupling supported by independent bearing
307/812	. . . . . Differential speed between two bodies	403/20	. with indicator or inspection means
307/819	. . . . . Torque	403/21	. Utilizing thermal characteristic, e.g. , expansion or contraction, etc.
307/826	. . . Electrical	403/213	. . Interposed material of intermediate coefficient of expansion
307/832	. . . . Power or energy	403/217	. . Members having different coefficients of expansion
307/839	. . . . Polarity, phase sequence or reverse flow	403/22	. with fluid pressure responsive component
307/845	. . . . AC or DC discriminating	403/23	. with ambient condition responsive control means
307/852	. . . . Frequency	403/24	. with independent handle or operator
307/858	. . . . Voltage	403/25	. with distinct fluid or article handling or directing feature
307/865	. . . . Current	403/251	. . External reservoir
307/872	. . Repetitive make and break	403/253	. . Pressure fitting
307/878	. . . Electronically controlled relay	403/255	. . including port or reservoir communicating with joint
307/885	. . . . Responsive to physical condition	403/257	. . . Articulated member
307/891	. . . Thermal relay	403/259	. . . . At joint interface
307/898	. . . Vibrating relay	403/26	. Non-adhering fluent material at joint
307/904	. . . Miscellaneous	403/27	. with strain-limiting means
307/911	. . With operation facilitating feature	403/28	. Combined
307/918	. . . Preliminary reduction in current or voltage of system	403/29	. Rotarily connected, differentially translatable members, e.g. , turn-buckle, etc.
307/924	. . . Switch contact conditioning	403/291	. . having tool-engaging means or operating handle
307/931	. . . . Polarity reversing	403/293	. . having operating mechanism
307/937	. . Switch actuation	403/295	. . having locking means
307/944	. . . Power circuit controlled	403/297	. . Differential pitch, similar hand
307/951	. . . With time delay or retardation means	403/299	. . Externally threaded actuator
307/957	. . . . Electrically initiated	403/30	. Laterally related members connected by latch means, e.g. , scaffold connectors
307/964	. . . . Series connected switches	403/31	. Flexible diaphragm or bellows
307/97	. . . With locking, holding or braking means	403/315	. . with additional connection or packing
307/977	. . . Electrical actuator	403/32	. Articulated members
307/983	. . . Fluid-pressure actuator	403/32008	. . Plural distinct articulation axes

**Former US Class 403 Series**

<b>403/00</b>	<b>Joints and connections</b>	403/32016	. . . Three or more parallel axes
403/10	. Selectively engageable hub to shaft connection	403/32024	. . . Single adjustment for plural axes
403/11	. including frangible component	403/32032	. . . Plural ball and socket
403/12	. Selectively assembled, e.g. , convertible, etc.	403/32041	. . . Universal
403/125	. . Selective orientation	403/32049	. . . . Non-coplanar axes
403/13	. Inflatable connector	403/32057	. . . Angular and linear
403/14	. with opening for access to connector or operator	403/32065	. . . . Screw and swivel
403/142	. . to threaded component	403/32073	. . . . Pivot stud slidable in elongated opening
403/145	. . . Transverse to thread axis	403/32081	. . . Parallel rotary
403/148	. . to biased component	403/32091	. . . Plural translating connections
403/15	. Closure or plug spaced from joint	403/32098	. . Branched
403/16	. with adjunctive protector, broken parts retainer, repair, assembly or disassembly feature	403/32106	. . Member pivoted at rigid corner
403/1608	. . Holding means or protector functioning only during transportation, assembly or disassembly	403/32114	. . including static joint
403/1616	. . Position or guide means	403/32122	. . . Trunnion assembly to side of rod
403/1624	. . . Related to joint component	403/32131	. . . One member is plate or side

- 403/32139 . . . . Secant, i.e., rod extending through plate
- 403/32147 . . . . Plate or side forms bearing surface
- 403/32155 . . . . Bearing component clamped to plate or side, e.g., bolted, etc.
- 403/32163 . . . . Articulate joint intermediate end joints
- 403/32172 . . . . Variable angle
- 403/32181 . . . . . Universal
- 403/32188 . . . . Angled or offset members
- 403/32196 . . . . Articulate joint is ball and socket
- 403/32204 . . . . with threaded joint
- 403/32213 . . . . Articulate joint is a swivel
- 403/32221 . . . . Articulate joint comprises pivoted clevis or channel bar
- 403/32229 . . . . Articulate joint is a slide
- 403/32237 . . including operator
- 403/32245 . . Arcuate shank moves in complementary guide
- 403/32254 . . Lockable at fixed position
- 403/32262 . . . . At selected angle
- 403/32271 . . . . Movable brace between members
- 403/32278 . . . . Members rotatable about oblique axes
- 403/32286 . . . . Clamping screw traverses sliding complementary arcuate bearing surfaces
- 403/32295 . . . . Securing yoke or ring spaced radially from locking means
- 403/32303 . . . . . Eyebolt
- 403/32311 . . . . . Ball and socket
- 403/32319 . . . . including pivot stud
- 403/32327 . . . . including radially spaced detent or latch component
- 403/32336 . . . . . Engaging notch or recess in outer periphery of component
- 403/32344 . . . . . Side of rod engages recess in radial face
- 403/32352 . . . . . Pivoted detent
- 403/32361 . . . . . Engaging recess in radial face
- 403/32368 . . . . including radial interengaging tongue and slot or serrations
- 403/32377 . . . . . Radially spaced arcuate slot engages fastener
- 403/32385 . . . . . Locked by plural motions of one member
- 403/32393 . . . . including bridging keeper
- 403/32401 . . . . . Locked by nesting parts
- 403/32409 . . . . . Members locked in axial alignment
- 403/32418 . . . . Plural distinct positions
- 403/32426 . . . . Plural distinct positions
- 403/32434 . . . . Unidirectional movement, e.g., ratchet, etc.
- 403/32442 . . . . At least one discrete position
- 403/32451 . . . . . Step-by-step adjustment
- 403/32459 . . . . . Retainer extends through aligned recesses
- 403/32467 . . . . Telescoping members
- 403/32475 . . . . having detent
- 403/32483 . . . . . Spring biased
- 403/32491 . . . . . Threaded
- 403/32501 . . . . . Cam or wedge
- 403/32508 . . . . . having transverse pin
- 403/32516 . . . . . Remotely actuated
- 403/32524 . . . . . Self-locking
- 403/32532 . . . . Clamped members
- 403/32541 . . . . Rotatable members resiliently biased to one position
- 403/32549 . . including limit means
- 403/32557 . . . . for pivotal motion
- 403/32565 . . . . . Ball and socket with restricted movement about one axis
- 403/32573 . . . . . Ball stud passes through confining opening
- 403/32581 . . . . . Pin and slot
- 403/32591 . . . . . Opposed stops on one member
- 403/32598 . . . . Threaded interface
- 403/32606 . . . . Pivoted
- 403/32614 . . . . including circumferential biasing or damping means
- 403/32622 . . . . Rocking or rolling contact
- 403/32631 . . . . Universal ball and socket
- 403/32639 . . . . including internal tie means
- 403/32647 . . . . Plural concave surfaces with diverse curvature
- 403/32655 . . . . . Interposed concavo-convex component
- 403/32663 . . . . . Outer surfaces
- 403/32672 . . . . Swiveled ball parts or seat
- 403/32681 . . . . . Composite ball
- 403/32688 . . . . . Spring biased segments
- 403/32696 . . . . . Nonmetallic part
- 403/32704 . . . . . Stud extends into ball
- 403/32713 . . . . . Elastomerically biased or backed components
- 403/32721 . . . . . Elastomeric seat
- 403/32729 . . . . . Externally packed
- 403/32737 . . . . including liner, shim, or discrete seat
- 403/32745 . . . . . Spring acts through wedging surfaces
- 403/32754 . . . . . Variably preloaded
- 403/32762 . . . . . Spring-biased seat opposite ball stud
- 403/32771 . . . . . Porous
- 403/32778 . . . . . Completely spacing the members
- 403/32786 . . . . Divided socket-type coupling
- 403/32795 . . . . Bifurcated socket
- 403/32803 . . . . Separable socket sections
- 403/32811 . . . . Spring-biased
- 403/32819 . . . including tension or take-up means
- 403/32827 . . . . Interposed spring means coaxial with pivot
- 403/32836 . . . . Acting through tapered surface on bearing component
- 403/32844 . . . . Manually variable
- 403/32852 . . . . External of bearing assembly, e.g., antirattler, etc.
- 403/32861 . . . . T-pivot, e.g., wrist pin, etc.
- 403/32868 . . . . Floating pin
- 403/32877 . . . . Pin is integral with or secured to inner member
- 403/32885 . . . . Expanded pin or end
- 403/32893 . . . . including distinct pin retainer
- 403/32901 . . . . . Unitary clip or plug
- 403/32909 . . . . . Threaded pin end
- 403/32918 . . . . . fork and tongue
- 403/32926 . . . . . with interposed antifriction means
- 403/32934 . . . . . Oppositely laterally movable tines
- 403/32942 . . . . On oblique interface
- 403/32951 . . . . Transverse pin or stud
- 403/32959 . . . . Traverses interposed facing component
- 403/32967 . . . . Attached to or integral with one member
- 403/32975 . . . . Rotatable
- 403/32983 . . . . Rod in socket
- 403/32991 . . . . Axially spring-biased coaxial members
- 403/33 . . . . Transverse rod to spaced plate surfaces
- 403/335 . . . . Retainer utilizes or abuts plural plates

- 403/34 . Branched
- 403/341 . . Three or more radiating members
- 403/342 . . . Polyhedral
- 403/343 . . . . Unilateral of plane
- 403/344 . . . Plural pairs of axially aligned members
- 403/345 . . . Coplanar
- 403/346 . . . . Additional rod held by encompassing means
- 403/347 . . Polyhedral
- 403/348 . . Parallel rods
- 403/349 . . Coplanar
- 403/35 . Diverse material coupling member
- 403/36 . Three or more serial joints, at least one diverse
- 403/362 . . Nonaligned axes
- 403/364 . . Separable intermediate joint
- 403/366 . . . Axially acting connector
- 403/368 . . . Screw or cam
- 403/37 . Joint involving plural layers of single rod
- 403/38 . Laterally related rods independently joined to transverse surface
- 403/39 . Rod to member to side, e.g. , plate, rod side, etc.  
(Frozen)
- WARNING**
- Groups [Y10T 403/39](#) - [Y10T 403/3993](#) are no longer used for the classification of documents as of August 1, 2018.
- The content of these groups is being reclassified into groups [F16B 7/00](#), [F16B 9/00](#), [F16B 17/00](#), [F16B 2200/00](#), other [F16B](#) groups as appropriate and [Y10T 403/46](#).
- All groups listed in this Warning should be considered in order to perform a complete search.
- 403/3906 . . Rod side to member to side  
(Frozen)
- 403/3913 . . Unilateral of side  
(Frozen)
- 403/3921 . . Arcuate or multiplanar side  
(Frozen)
- 403/3926 . . . Encompassed side  
(Frozen)
- 403/3933 . . Intermediate member includes tubular part  
(Frozen)
- 403/3941 . . . Side or tubular part deformed in situ  
(Frozen)
- 403/3946 . . . Intermediate member extends through side  
(Frozen)
- 403/3953 . . . . Split or divided tubular part and coacting compressor  
(Frozen)
- 403/3961 . . . . Transverse clamp secures rod and tubular part  
(Frozen)
- 403/3966 . . . . Rod also extends through side  
(Frozen)
- 403/3981 . . . Intermediate member secured to side by radial flange  
(Frozen)
- 403/3986 . . . Internally threaded tubular part  
(Frozen)
- 403/3993 . . Intermediate member extends completely through side  
(Frozen)
- 403/40 . Radially spaced members joined by independent coupling
- 403/405 . . Flexible intermediate member
- 403/41 . Coacting connection between inner member and plural parts of outer member
- 403/42 . Rigid angle coupling, e.g. , elbow or u, etc.
- 403/43 . Axially curved or bent portion of rod is joint component
- 403/4309 . . Intertwisted crossing rods
- 403/4318 . . Joined to laterally related transverse surface at axially spaced points
- 403/4327 . . Reversely bent portion
- 403/4336 . . . Around eye-forming thimble
- 403/4345 . . . with wedge clamp
- 403/4354 . . . Held by crimped collar
- 403/4363 . . . Open U
- 403/4372 . . Intertwisted ends
- 403/4381 . . End of rod is deflected laterally within connector
- 403/4391 . . Plural rods distorted by single component
- 403/44 . Three or more members connected at single locus
- 403/443 . . All encompassed
- 403/447 . . Mutually contacting
- 403/45 . Flexibly connected rigid members
- 403/451 . . Rigid sleeve encompasses flexible bushing
- 403/452 . . . Longitudinally divided sleeve
- 403/453 . . Flexible sleeve-type coupling
- 403/454 . . Connecting pin traverses radially interposed elastomer
- 403/455 . . Elastomer interposed between radially spaced members
- 403/456 . . . Elastomer encompasses shoulder on inner member
- 403/457 . . . including axially acting compressing means
- 403/458 . . . Composite bushing with elastomeric component
- 403/459 . . Helical spring type coupling
- 403/46 . Rod end to transverse side of member
- 403/4602 . . Corner joint
- 403/4605 . . Stirrup  
(Frozen)
- WARNING**
- Groups [Y10T 403/4605](#) - [Y10T 403/4648](#) are no longer used for the classification of documents as of August 1, 2018.
- The content of these groups is being reclassified into groups [F16B 7/00](#), [F16B 9/00](#), [F16B 17/00](#), [F16B 2200/00](#), other [F16B](#) groups as appropriate and [Y10T 403/46](#).
- All groups listed in this Warning should be considered in order to perform a complete search.
- 403/4608 . . Structure attached to rod end encompasses side  
(Frozen)
- 403/4611 . . . Clamped saddle  
(Frozen)
- 403/4614 . . . Yoke or ring  
(Frozen)
- 403/4617 . . . . having radial screw at bight  
(Frozen)
- 403/4621 . . including saddle  
(Frozen)
- 403/4634 . . Rod and side deformingly interlocked  
(Frozen)
- 403/4637 . . Radially interposed, side-engaging shim or bushing  
(Frozen)
- 403/4641 . . Socket formed by shaping or deforming side  
(Frozen)

- 403/4642 . . Integral transverse projection on side, e.g.,  
(Frozen) necked, etc.
- 403/4645 . . . From rod side  
(Frozen)
- 403/4648 . . Utilizing opposite sides of member  
(Frozen)
- 403/47 . Molded joint
- 403/471 . . And independent connection
- 403/472 . . including mechanical interlock
- 403/473 . . Socket or open cup for bonding material
- 403/475 . . Member cast in situ
- 403/477 . . Fusion bond, e.g., weld, etc.
- 403/478 . . . Metallic fusion material
- 403/479 . . . . Added bonding material, e.g., solder, braze,  
etc.
- 403/48 . Shrunken fit
- 403/49 . Member deformed in situ
- 403/4908 . . Separating element between strands of member
- 403/4916 . . Interposed deforming element contacts socket  
bottom
- 403/4924 . . Inner member is expanded by longitudinally  
inserted element
- 403/4933 . . by separate, deformable element
- 403/4941 . . Deformation occurs simultaneously with action of  
separate, diverse function, joint component
- 403/4949 . . Deforming component is inserted section
- 403/4958 . . Separate deforming means remains with joint  
assembly
- 403/4966 . . Deformation occurs simultaneously with  
assembly
- 403/4974 . . by piercing
- 403/4983 . . Diverse resistance to lateral deforming force
- 403/4991 . . Both members deformed
- 403/50 . Bridged by diverse connector
- 403/51 . including spaced, diverse connections
- 403/52 . including distinct packing
- 403/53 . Split end with laterally movable opposed portions
- 403/535 . . with separate force-applying means
- 403/54 . Flexible member is joint component
- 403/55 . Member ends joined by inserted section
- 403/551 . . Externally bridged
- 403/553 . . Laterally inserted section
- 403/555 . . Angle section
- 403/556 . . Section threaded to member
- 403/557 . . Expansible section
- 403/559 . . Fluted or splined section
- 403/56 . Thread adaptor
- 403/57 . Distinct end coupler
- 403/5706 . . Diverse serial connections
- 403/5713 . . . Axially cleft coupler
- 403/5721 . . Single actuator for plural connections
- 403/5726 . . . Axially biased end portions
- 403/5733 . . Plural opposed sockets
- 403/5741 . . Separate screw or pin-type connections
- 403/5746 . . Continuous thread
- 403/5753 . . having separable end caps or plugs
- 403/5761 . . Interrupted periphery, e.g., split or segmental, etc.
- 403/5766 . . . Axially divided segments
- 403/5773 . . . . Interfitting
- 403/5781 . . . . Bolted
- 403/5786 . . . Split
- 403/5793 . . including member wedging or camming means
- 403/58 . including ancillary means blocking disconnection of  
joint
- 403/581 . . Blocker for assembled joint retainer
- 403/583 . . . Blocker keeper
- 403/585 . . . Blocked key
- 403/587 . . Blocker is catch or key
- 403/589 . . Cam or thread lock
- 403/59 . Manually releaseable latch type
- 403/591 . . having operating mechanism
- 403/592 . . . Ball detent
- 403/593 . . . Remotely actuated
- 403/595 . . . Lever
- 403/597 . . Swiveled bolt
- 403/598 . . Transversely sliding pin
- 403/599 . . Spring biased manipulator
- 403/60 . Biased catch or latch
- 403/602 . . by separate spring
- 403/604 . . . Radially sliding catch
- 403/606 . . Leaf spring
- 403/608 . . Pivoted
- 403/61 . Side slide: elongated co-linear members
- 403/62 . Annular recess is joint component
- 403/63 . Convergent interface
- 403/635 . . Tapered
- 403/65 . Scarf
- 403/655 . . Mirror images
- 403/66 . Interfitted members with external bridging piece
- 403/67 . Thimble: screw or cam
- 403/68 . Screw or cam
- 403/69 . Axially split or separable member
- 403/70 . Interfitted members
- 403/7001 . . Crossed rods
- 403/7003 . . . One rod is encompassed by the other
- 403/7005 . . Lugged member, rotary engagement
- 403/7007 . . . Bayonet joint
- 403/7009 . . Rotary binding cam or wedge
- 403/7011 . . . Radially interposed shim or bushing
- 403/7013 . . . . Arcuate slip
- 403/7015 . . Assembled by plural manipulations of member
- 403/7016 . . Diametric end slot is joint component
- 403/7018 . . including separably interposed key
- 403/7021 . . . Axially extending
- 403/7022 . . . . Resilient
- 403/7024 . . . . Longitudinally stepped or tapered
- 403/7026 . . Longitudinally splined or fluted rod
- 403/7028 . . . Splayed or having a cam surface for anti-  
backlash
- 403/7031 . . . Rod designed to be manipulable, e.g., twistable,  
within coupling for quick disconnect
- 403/7032 . . . including a means, e.g., spring biased portion,  
for misalignment correction
- 403/7033 . . . including a lock or retainer
- 403/7035 . . . Specific angle or shape of rib, key, groove, or  
shoulder
- 403/7037 . . Externally shouldered or headed rod
- 403/7041 . . including set screw
- 403/7043 . . Interfitted angle or channel bars
- 403/7045 . . Interdigitated ends
- 403/7047 . . Radially interposed shim or bushing
- 403/7049 . . . Biased by distinct radially acting means
- 403/7051 . . . Wedging or camming
- 403/7052 . . . . Engaged by axial movement



- 403/7054 . . . . . Plural, circumferentially related shims between members
- 403/7056 . . . . . Threaded actuator
- 403/7058 . . . . . Split or slotted bushing
- 403/7061 . . . Resilient
- 403/7062 . . Clamped members
- 403/7064 . . . by wedge or cam
- 403/7066 . . . . . having actuator
- 403/7067 . . . . . Threaded actuator
- 403/7069 . . . . . Axially oriented
- 403/7071 . . . . . Lever actuator
- 403/7073 . . Peripheral enlargement, depression, or slot on one member is joint component
- 403/7075 . . including discrete retainer
- 403/7077 . . . for telescoping members
- 403/7079 . . . . . Transverse pin
- 403/7081 . . . . . Multiple retainers
- 403/7083 . . . . . having means to prevent removal of retainer
- 403/7084 . . . . . Bolt, rivet, or screw
- 403/7086 . . . . . Wedge pin
- 403/7088 . . . . . Sliding pin
- 403/7091 . . . . . Expansible retainer
- 403/7092 . . . for interfitted side faces
- 403/7096 . . Rigid angle
- 403/7098 . . Non-circular rod section is joint component
- 403/71 . . Rod side to plate or side
- 403/7105 . . Connected by double clamp
- 403/7111 . . Shackle is integral with or independently attached to proximate side of plate or other side
- 403/7117 . . Flanged or grooved rod
- 403/7123 . . Traversed by connector
- 403/7129 . . Laterally spaced rods
- 403/7135 . . . by separable shim or bushing in connector
- 403/7141 . . . Plural channels in connector
- 403/7147 . . Connected by flexible tie
- 403/7152 . . Lapped rod ends
- 403/7158 . . Diagonal connector
- 403/7164 . . One rod held between bight and other rod extending through aperture in leg of connector
- 403/7171 . . Two rods encompassed by single connector
- 403/7176 . . Resilient clip
- 403/7182 . . Yoke or ring-type connector
- 403/7188 . . . Rod received in open channel
- 403/7194 . . Crossed rods
- 403/72 . . Miter joint
- 403/725 . . Connector bridges inner or outer periphery
- 403/73 . . Rigid angle
- 403/74 . . Particular configuration or material of member
- 403/75 . . having a joining piece extending through aligned openings in plural members
- 403/76 . . having a cam, wedge, or tapered portion
- 403/77 . . Miscellaneous
- 407/118 . . Chip breaker
- 407/12 . . Freely movable cutting edge
- 407/13 . . Yieldable tool
- 407/134 . . Resiliently mounted tool
- 407/137 . . . including yield stress or flexure limit adjusting means
- 407/14 . . with means to apply fluid to cutting tool
- 407/15 . . Rotary broach
- 407/16 . . Rectilinear broach
- 407/1614 . . Hollow tool for surrounding workpiece
- 407/1628 . . including holder having seat for inserted tool
- 407/1642 . . . Annular tool
- 407/1657 . . . including single tooth
- 407/1671 . . Plural tooth groups
- 407/1685 . . including sequentially acting teeth of stepped cutting width
- 407/17 . . Gear cutting tool
- 407/1705 . . Face mill gear cutting tool
- 407/171 . . . Adjustable teeth
- 407/1715 . . Hob
- 407/172 . . . Thread cutting
- 407/1725 . . . including holder having seat for inserted tool
- 407/173 . . . for cutting involute gear tooth
- 407/1735 . . Rotary, gear shaving cutting tool
- 407/174 . . Gear generating, revolving shaper cutting tool
- 407/1745 . . Rotary, tooth form cutting tool
- 407/18 . . File or rasp
- 407/1805 . . Flexible blade or carrier therefor
- 407/181 . . Tire rasp
- 407/1815 . . Rotary file or round disc
- 407/182 . . Composite, diverse sector, or assembled
- 407/1825 . . Handle or holder, per se
- 407/19 . . Rotary cutting tool
- 407/1902 . . Gang
- 407/1904 . . Composite body of diverse material
- 407/1906 . . including holder [i.e., head] having seat for inserted tool
- 407/1908 . . . Face or end mill
- 407/191 . . . . . Plural simultaneously usable separable tools in common seat or common clamp actuator for plural simultaneously usable tools
- 407/1912 . . . . . Tool adjustable relative to holder
- 407/1914 . . . . . Radially
- 407/1916 . . . . . And axially
- 407/1918 . . . . . Selectively
- 407/192 . . . . . with separate means to fasten tool to holder
- 407/1922 . . . . . Wedge clamp element
- 407/1924 . . . . . Specified tool shape
- 407/1926 . . . Plural simultaneously usable separable tools in common seat or common clamp actuator for plural simultaneously usable tools
- 407/1928 . . . Tool adjustable relative to holder
- 407/193 . . . . . Radially
- 407/1932 . . . with means to fasten tool seat to holder
- 407/1934 . . . with separate means to fasten tool to holder
- 407/1936 . . . . . Apertured tool
- 407/1938 . . . . . Wedge clamp element
- 407/194 . . . . . Resilient clamp jaw
- 407/1942 . . . Peripherally spaced tools
- 407/1944 . . . . . Sectional support
- 407/1946 . . Face or end mill

**Former US Class 407 Series**

- 407/00 Cutters, for shaping**
- 407/10 . . including noncutting work modifying means
- 407/11 . . including chip breaker, guide or deflector detachable from tool and tool holder
- 407/112 . . Adjustable relative to cutting edge
- 407/114 . . . including adjusting means
- 407/116 . . Attached to or integral with tool clamping jaw

407/1948 . . . with cutting edge entirely across end of tool  
[e.g., router bit, end mill, etc.]

407/195 . . Compound tooth arrangement

407/1952 . . Having peripherally spaced teeth

407/1954 . . . Axially tapering tool

407/1956 . . . Circumferentially staggered

407/1958 . . . . Plural teeth spaced about a helix

407/196 . . . Varying in cutting edge profile

407/1962 . . . Specified tooth shape or spacing

407/1964 . . . . Arcuate cutting edge

407/1966 . . . . . Helical tooth

407/20 . Profiled circular tool

407/21 . Arc segment tool

407/22 . including holder having seat for inserted tool

407/2202 . . Plural spaced seats and common holder

407/2204 . . . Relatively adjustable seats

407/2206 . . . Simultaneously usable

407/2208 . . Plural simultaneously usable separable tools  
in common seat or common clamp actuator for  
plural simultaneously usable tools

407/221 . . . Adjustable tool

407/2212 . . with tool ejector

407/2214 . . with separate means to adjust tool to and fro  
relative to holder

407/2216 . . . with indicator

407/2218 . . . Plural provisions for adjustment

407/222 . . . by moving tool seat

407/2222 . . Tool adjustable relative to holder

407/2224 . . . with indicator

407/2226 . . . Plural provisions for adjustment

407/2228 . . . . Plural interfering seats

407/223 . . . . including pivotable seat or tool

407/2232 . . . . . with detent

407/2234 . . . . . Pivoted seat

407/2236 . . . . . And pivotable tool

407/2238 . . . by adjustable or replaceable stop

407/224 . . . . Adjustable

407/2242 . . . . . Screw

407/2244 . . . by movement of seat relative to holder

407/2246 . . . . Pivoted seat

407/2248 . . . Pivoted tool

407/225 . . . Resiliently biased tool clamping jaw

407/2252 . . . Rectilinearly

407/2254 . . . . including rotatable cam clamp element

407/2256 . . . . including wedge clamp element

407/2258 . . . . . And guide or detent

407/226 . . . . including detent

407/2262 . . . . Tool gripped directly by set screw

407/2264 . . . . Slidable jaw

407/2266 . . Holder adapted for tools of different shape

407/2268 . . with chip breaker, guide or deflector

407/227 . . with separate means to fasten tool seat to holder

407/2272 . . with separate means to fasten tool to holder

407/2274 . . . Apertured tool

407/2276 . . . . with means projecting through aperture to  
force tool laterally against reaction surface

407/2278 . . . . . Tilting clamp element and separate means  
to tilt same

407/228 . . . Rotatable cam clamp element

407/2282 . . . including tool holding clamp and clamp  
actuator

407/2284 . . . . Wedge clamp element

407/2286 . . . . Resiliently biased clamp jaw

407/2288 . . . . . Integral with holder

407/229 . . . . Pivoted jaw

407/2292 . . . . Slidable jaw

407/23 . including tool having plural alternatively usable  
cutting edges

407/235 . . with integral chip breaker, guide or deflector

407/24 . with chip breaker, guide or deflector

407/245 . . comprising concave surface in cutting face of tool

407/25 . including cut off tool

407/26 . comprising cutting edge bonded to tool shank

407/27 . comprising tool of specific chemical composition

407/28 . Miscellaneous

#### **Former US Class 408 Series**

**408/00 Cutting by use of rotating axially moving tool**

408/03 . Processes

408/04 . . Bit detachable

408/05 . with means to weigh or test work or product

408/08 . with means to regulate operation by use of templet,  
tape, card, or other replaceable information supply

408/10 . with interlock between machine elements

408/13 . with randomly-actuated stopping means

408/14 . . Responsive to condition of Tool or tool-drive

408/15 . . Responsive to condition of work or product

408/16 . with control means energized in response to  
activator stimulated by condition sensor

408/165 . . to control Tool rotation

408/17 . . to control infeed

408/172 . . . Responsive to Tool

408/173 . . . Responsive to work

408/175 . . to control relative positioning of Tool and work

408/18 . with stopping upon completion of prescribed  
operation

408/20 . . Responsive to condition of work or product

408/21 . with signal, indicator, illuminator or optical means

408/23 . including means to cause Tool to progressively  
vibrate toward work

408/26 . with means to condition tool

408/29 . with means to deForm work temporarily

408/31 . Convertible cutting means

408/33 . . Utilizing common cutting Tool

408/34 . Combined cutting means

408/344 . . including Tool operating on rotating work

408/348 . . Plural other type cutting means

408/35 . . . including plural rotating tools

408/352 . . including rotating cutter other than rotating,  
axially moving Tool

408/353 . . . Crystalline cutter

408/355 . . . Utilized in cutting work or product to length

408/3555 . . . . Adapted to cut entire thickness of work at  
one pass

408/356 . . including plunging [single stroke] cutter

408/36 . Machine including plural tools

408/365 . . Axes of tools moving with work during operation

408/367 . . . including means to infeed Tool and means to  
infeed work or including coaxial tools

408/368 . . . Plural work stations

408/37 . . Turret of tools

408/375 . . Coaxial tools

408/378 . . . Coaxial, opposed tools

408/3784 . . . . with additional, converging Tool

- 408/3788 . . . . Plural pairs of coaxial, opposed tools
- 408/3792 . . . . with means to sequentially feed tools toward work
- 408/3796 . . . . with interconnected means to simultaneously feed tools
- 408/38 . . Plural, simultaneously operational tools
- 408/3806 . . . . with plural simultaneously operational work stations
- 408/3809 . . . . Successively acting on workpiece
- 408/381 . . . . . Pivotaly mounted, work-advancing, work-supporting means, pivot-axis parallel to tool-axis
- 408/3811 . . . with provision for adjustment of relationship of axes
- 408/3817 . . . at least one Tool driven by orbiting wrist plate
- 408/3822 . . . at least one Tool including flexible drive connection
- 408/3828 . . . with work-infeed
- 408/3833 . . . with means to advance work relative to Tool
- 408/3839 . . . with presser-foot
- 408/3844 . . . with tool-opposing, work-engaging surface
- 408/385 . . Rotatable about parallel axes
- 408/39 . . with radially outer limit of cutting edge moving to define cylinder partially, but not entirely encircled by work
- 408/42 . . Axis of Tool moving with work during operation
- 408/44 . . with means to apply transient, fluent medium to work or product
- 408/45 . . including Tool with duct
- 408/453 . . . and means to move gaseous fluid by application of vacuum
- 408/455 . . . Conducting channel extending to end of Tool
- 408/458 . . . including nozzle
- 408/46 . . including nozzle
- 408/47 . . with work-infeed means
- 408/476 . . Driven by fluid motor
- 408/482 . . Driven by means having sliding engagement therewith
- 408/488 . . Driven by lever or connecting link
- 408/494 . . and gear to drive infeed means
- 408/50 . . with product handling or receiving means
- 408/51 . . Ejector
- 408/52 . . with work advancing or guiding means
- 408/54 . . Means to intermittently advance work
- 408/545 . . . Rotary, work-supporting means
- 408/55 . . with work-engaging structure other than Tool or tool-support
- 408/551 . . with means actuated by work to release Tool from fixed position in Tool support
- 408/552 . . . Adapted to engage work at tool-axis
- 408/553 . . Centering means adapted to be replaced by Tool
- 408/554 . . Magnetic or suction means
- 408/556 . . Tool supporting wheel
- 408/5565 . . . Wheel-axis parallel to tool-axis
- 408/557 . . Frictionally engaging sides of opening in work
- 408/558 . . . Opening coaxial with Tool
- 408/5583 . . . . Engaging sides of opening being enlarged by Tool
- 408/5584 . . . . . Engaging surface axially advanced of tool-action
- 408/5586 . . . . . Engaging surface subsequent to tool-action on that surface
- 408/5587 . . . . Valve fitting
- 408/559 . . Funnel like work-engaging surface cooperating with protuberance on work
- 408/56 . . Adapted to "form" recession in work
- 408/5605 . . . Recession at tool-axis
- 408/561 . . Having tool-opposing, work-engaging surface
- 408/5612 . . . Tool having shiftable tool-axis
- 408/5614 . . . Angularly adjustable surface
- 408/5616 . . . . Adjustable about axis that is parallel to tool-axis
- 408/5617 . . . Laterally adjustable surface
- 408/5619 . . . Flexible or concatenated member
- 408/5621 . . . Connected to Tool through opening being enlarged by Tool
- 408/5622 . . . . Plural, coaxially opposing, work-engaging means
- 408/5623 . . . with presser foot
- 408/56238 . . . . Encompassed by Tool during cut
- 408/56245 . . . . including tool-guide [or bushing]
- 408/56253 . . . . Base supported machine
- 408/5626 . . . with means to move Tool relative to other work-engaging structure along tool-axis
- 408/5627 . . . . Having sliding engagement therewith
- 408/56275 . . . . . Screw coaxial with Tool
- 408/5628 . . . Tool having screw-thread engaging frame to cause infeed
- 408/563 . . Work-gripping clamp
- 408/5633 . . . Adapted to coaxially grip round work
- 408/56337 . . . . Oppositely moving lateral clamps
- 408/5634 . . . . . Three or more moving clamps
- 408/56343 . . . . Base supported clamp
- 408/5635 . . . Oppositely moving lateral clamps
- 408/5638 . . . Adjustable relative to tool-axis
- 408/564 . . Movable relative to Tool along tool-axis
- 408/5647 . . . including means to move Tool
- 408/5653 . . . with means to bias Tool away from work
- 408/566 . . Axially fixed to Tool
- 408/5665 . . . Work-engaging surface parallel to tool-axis
- 408/567 . . Adjustable, tool-guiding jig
- 408/568 . . . Guide bushing
- 408/569 . . Bushing
- 408/57 . . Tool-support with means to receive tool-position indicator
- 408/60 . . Plural tool-assemblages
- 408/62 . . Coaxial
- 408/625 . . . Spring biased
- 408/63 . . Tool or tool-support with torque-applying ratchet
- 408/637 . . with thrust applying means
- 408/639 . . . Reversible ratchet
- 408/641 . . . Double-acting ratchet
- 408/643 . . Reversible ratchet
- 408/65 . . Means to drive tool
- 408/655 . . with specific Tool structure
- 408/66 . . Friction gearing
- 408/665 . . Universal or flexible drive connection to rotate Tool
- 408/67 . . Belt and pulley
- 408/675 . . including means to move Tool along tool-axis
- 408/6757 . . . Fluid means
- 408/6764 . . . Laterally adjustable Tool
- 408/6771 . . . with clutch means
- 408/6774 . . . . including plural speed drive
- 408/6776 . . . . Actuated by Tool movement

- 408/6779 . . . Rack and pinion
- 408/6786 . . . Manually moved lever
- 408/6793 . . . Screw coaxial with Tool
- 408/68 . . . Tool or tool-support with thrust-applying machine-engaging screw
- 408/70 . . . Tool or tool-support with torque-applying clutch
- 408/72 . . . Friction clutch
- 408/73 . . . Tool or tool-support with torque-applying spline
- 408/75 . . . Relative motion of splined shaft and tool-support causing release of Tool from operating position
- 408/76 . . . Tool-carrier with vibration-damping means
- 408/78 . . . Tool of specific diverse material
- 408/81 . . . Tool having crystalline cutting edge
- 408/83 . . . Tool-support with means to move Tool relative to tool-support
- 408/85 . . . to move radially
- 408/852 . . . with Tool releasing trigger
- 408/853 . . . . and separate Tool setting means
- 408/854 . . . to move eccentrically mounted Tool
- 408/855 . . . . Tool-support including plural, adjustable sections
- 408/856 . . . Moving means including pinion engaging rack-like surface of Tool
- 408/858 . . . Moving means including wedge, screw or cam
- 408/8583 . . . . with resiliently urged Tool
- 408/85837 . . . . . with spring retainer
- 408/85843 . . . . . Resilient Tool or tool-support
- 408/8585 . . . . including oppositely moving, diverging tools
- 408/8588 . . . . Axially slidable moving-means
- 408/85884 . . . . . Tool pivotally mounted on support
- 408/85888 . . . . . Having axially spaced shoulders
- 408/85892 . . . . . Screw driven wedge or cam
- 408/85893 . . . . . Screw with axis radially spaced from tool-axis
- 408/85894 . . . . . Annular wedge-collar
- 408/858945 . . . . . Axially spaced tool-retaining collars
- 408/858946 . . . . . with travelling wedge
- 408/858948 . . . . . Tool having axially facing, collar-receiving groove
- 408/858949 . . . . . including two-piece collar
- 408/85895 . . . . . Traveling wedge
- 408/858953 . . . . . Interfitting, tool-retaining wedge
- 408/858955 . . . . . including separable interfitting element
- 408/858957 . . . . . Having externally threaded shank connected to tool-support
- 408/85896 . . . . . Annular wedge-collar
- 408/859 . . . . . Rotary cam
- 408/8591 . . . . . Scroll plate
- 408/85913 . . . . . Volute scroll
- 408/85915 . . . . . with means to rotate scroll
- 408/85918 . . . . . with adjustable means to limit scroll movement
- 408/8592 . . . . . Coaxial with tool-axis
- 408/8593 . . . . . Wedge moving perpendicular to tool-axis
- 408/8595 . . . . . Pivotal tool-support
- 408/8598 . . . . . Screw extending perpendicular to tool-axis
- 408/85985 . . . . . Plural tools moved by diametrically opposed screws
- 408/85988 . . . . . Screws mounted on common shaft
- 408/8599 . . . . . Tool having pitch-stabilizing ridge
- 408/85995 . . . . . with tool-holding clamp and clamp actuator
- 408/86 . . . Tool-support with means to permit positioning of the Tool relative to support
- 408/865 . . . Pivotal Tool
- 408/868 . . . with multiple cutting positions
- 408/87 . . . Tool having stepped cutting edges
- 408/8713 . . . including means to permit both radial and axial positioning of edge
- 408/8725 . . . including means to permit relative axial positioning of edges
- 408/8729 . . . . with work-engaging structure other than cutting edge
- 408/8734 . . . . including central Tool axially movable relative to support
- 408/8738 . . . including inverse cutting edge
- 408/875 . . . including means to "form" depression in work
- 408/88 . . . including central-lead
- 408/885 . . . including tool-holding clamp and clamp actuator
- 408/888 . . . Movable along tool-axis
- 408/89 . . . Tool or Tool with support
- 408/892 . . . with work-engaging structure detachable from cutting edge
- 408/8923 . . . Removable central lead
- 408/8925 . . . Depth-limiting member
- 408/8928 . . . Adjustable
- 408/893 . . . Hollow milling Tool
- 408/895 . . . Having axial, core-receiving central portion
- 408/8953 . . . with lateral outlet
- 408/8957 . . . and having stepped cutting edges
- 408/896 . . . Having product-receiving chamber
- 408/8967 . . . and central lead-screw
- 408/8973 . . . and central lead
- 408/898 . . . Helical ribbon Tool
- 408/899 . . . Having inversely angled cutting edge
- 408/90 . . . and axially extending peripheral cutting spur
- 408/901 . . . Having axially extending peripheral cutting spur
- 408/902 . . . Having central lead-screw
- 408/904 . . . with pitch-stabilizing ridge
- 408/9042 . . . and radially spaced cutting edge
- 408/9044 . . . including cutting teeth of different width
- 408/9045 . . . . and different root circles
- 408/9046 . . . including tapered section
- 408/90467 . . . . and relieved cutting edge
- 408/90473 . . . . including work-embracing cutting edges
- 408/9048 . . . Extending outwardly from tool-axis
- 408/905 . . . Having stepped cutting edges
- 408/906 . . . Axially spaced
- 408/9065 . . . . with central lead
- 408/907 . . . including detailed shank
- 408/909 . . . Having peripherally spaced cutting edges
- 408/9093 . . . Each formed by a pair of axially facing facets
- 408/9095 . . . with axially extending relief channel
- 408/9097 . . . . Spiral channel
- 408/9098 . . . with means to retain Tool to support
- 408/90987 . . . . Wedge means
- 408/90993 . . . . Screw driven means
- 408/91 . . . Machine frame
- 408/92 . . . with counterweight mechanism
- 408/93 . . . including pivotally mounted tool-carrier
- 408/935 . . . including laterally movable tool-carrier
- 408/94 . . . Tool-support

408/95 . . with tool-retaining means  
 408/953 . . . Clamping jaws  
 408/957 . . . Tool adapter  
 408/96 . Miscellaneous  
 408/97 . . Drill bushings  
 408/98 . . Drill guide  
 408/99 . . Adjustable stop

**Former US Class 409 Series****409/00 Gear cutting, milling, or planing**

409/10 . Gear cutting  
 409/100159 . . with regulation of operation by use of templet, card, or other replaceable information supply  
 409/100318 . . . including follower for templet  
 409/100477 . . and burnishing simultaneously  
 409/100636 . . with compensation for backlash in drive means  
 409/100795 . . with work or product advancing  
 409/100954 . . . Utilizing transfer arm  
 409/101113 . . Gear chamfering or deburring  
 409/101272 . . . Using relatively reciprocating or oscillating cutter  
 409/101431 . . Gear tooth shape generating  
 409/10159 . . . Hobbing  
 409/101749 . . . . Process  
 409/101908 . . . . Generating tooth for bevel gear  
 409/102067 . . . . including means to shift hob between cutting passes  
 409/102226 . . . . with control means energized in response to activator stimulated by condition sensor  
 409/102385 . . . . Plural hobs  
 409/102544 . . . . including infeed means  
 409/102703 . . . . to infeed along axis of work rotation  
 409/102862 . . . . . Infeed of cutter  
 409/103021 . . . . . and infeed radially of axis of work rotation  
 409/10318 . . . . . Vertically  
 409/103339 . . . . to infeed radially of axis of work rotation  
 409/103498 . . . . . Infeed of cutter  
 409/103657 . . . . . and infeed tangentially of work axis  
 409/103816 . . . Milling with radial faced tool  
 409/103975 . . . . Process  
 409/104134 . . . . Adapted to cut bevel gear  
 409/104293 . . . . with means to continuously rotate work and means to co-form all teeth of gear  
 409/104452 . . . . . Bevel gear having nonparallel opposing tooth flanks  
 409/104611 . . . . . including rotary cutter cradle  
 409/10477 . . . by relative axial movement between synchronously indexing or rotating work and cutter  
 409/104929 . . . . Crowning  
 409/105088 . . . . Displacing cutter axially relative to work [e.g., gear shaving, etc.]  
 409/105247 . . . . . Using gear shaper-cutter  
 409/105406 . . . . . Plural distinct cutting edges  
 409/105565 . . . . . Cutting rotating work, the axis of which lies in a plane intersecting the cutter axis  
 409/105724 . . . Gear shaving  
 409/105883 . . . Using rotary cutter  
 409/106042 . . . . having axially directed cutting edge  
 409/106201 . . . . Plural rotary cutters  
 409/10636 . . . . On reciprocating carriage

409/106519 . . . . Using reciprocating or oscillating cutter  
 409/106678 . . . . . Bevel gear cutting  
 409/106837 . . . . . Dual cutters  
 409/106996 . . . . . Double acting cutter  
 409/107155 . . . . . Rectilinearly reciprocating cutter  
 409/107314 . . . . . Cutter comprising a rack  
 409/107473 . . . . Making a noncircular gear, worm, rotor, or a planar-faced gear  
 409/107632 . . . Gear shaving  
 409/107791 . . . Using rotary cutter  
 409/10795 . . . . Process  
 409/108109 . . . . End mill  
 409/108268 . . . . . Radially faced  
 409/108427 . . . . . Using plural, selectively usable tools  
 409/108586 . . . . Plural rotary cutters  
 409/108745 . . . . Cutting action along work axis  
 409/108904 . . . . Cutting action intersecting work axis  
 409/109063 . . . Using reciprocating or oscillating cutter  
 409/109222 . . . . Broach  
 409/109381 . . . . including circumferentially disposed cutting edges  
 409/10954 . . . Work dividing or checking of work position or division  
 409/109699 . . . with work clamping  
 409/20 . . with refurbishing of cutter  
 409/30 . Milling  
 409/300056 . . . Thread or helix generating  
 409/300112 . . . . Process  
 409/300168 . . . . with means to regulate operation by use of templet, card, or other replaceable information supply  
 409/300224 . . . . . Complete cycle  
 409/30028 . . . . . to regulate cutting depth [e.g., relief, taper, etc.]  
 409/300336 . . . . . to regulate rate of motion [e.g., stopping, etc.]  
 409/300392 . . . . with nonthread or nonhelix generating, milling cutter  
 409/300448 . . . . with means to advance work or product  
 409/300504 . . . . Plural cutters or work holders  
 409/30056 . . . . with planetary cutter  
 409/300616 . . . . Work means to move work axially and means to interrelate work movement with cutter rotation  
 409/300672 . . . . with means to rotate work and means to interrelatedly infeed the work relative to the cutter  
 409/300728 . . . . . Means to infeed the cutter  
 409/300784 . . . . with means to circumferentially adjust the position of the cutter with respect to the work  
 409/30084 . . . with regulation of operation by templet, card, or other replaceable information supply  
 409/300896 . . . . with sensing of numerical information and regulation without mechanical connection between sensing means and regulated means [i.e., numerical control]  
 409/300952 . . . . to cut lock key  
 409/301008 . . . . . Using templet other than a key  
 409/301064 . . . . . Complete cycle  
 409/30112 . . . . Process  
 409/301176 . . . . Reproducing means  
 409/301232 . . . . . including pantograph cutter-carrier  
 409/301288 . . . . . and means to move work at work station

- 409/301344 . . . . . About work axis
- 409/3014 . . . . . Pivotaly supported for vertical movement
- 409/301456 . . . . . and means to counterbalance carrier
- 409/301512 . . . . . including plural cutters
- 409/301568 . . . . . by use of pivotaly supported tracer
- 409/301624 . . . . . Duplicating means
- 409/30168 . . . . . with means for operation without manual intervention
- 409/301736 . . . . . to make a double curvature foil
- 409/301792 . . . . . including means to sense optical or magnetic image
- 409/301848 . . . . . with means to support templet above or under work
- 409/301904 . . . . . including tracer adapted to trigger electrical energy
- 409/30196 . . . . . to actuate electrically driven work or tool moving means
- 409/302016 . . . . . to actuate fluid driven work or tool moving means
- 409/302072 . . . . . including tracer adapted to trigger fluid energy
- 409/302128 . . . . . to actuate fluid driven work or tool moving means
- 409/302184 . . . . . including cutter and tracer fixed to move laterally together
- 409/30224 . . . . . and provision for circumferential relative movement of cutter and work
- 409/302296 . . . . . including plural cutters
- 409/302352 . . . . . including plural cutters
- 409/302408 . . . . . including cross-slide tool carrier
- 409/302464 . . . . . including plural cutters
- 409/30252 . . . . . including cross-slide tool carrier
- 409/302576 . . . . . with means to support templet above or under work
- 409/302632 . . . . . with provision for circumferential relative movement of cutter and work
- 409/302688 . . . . . with provision for circumferential relative movement of cutter and work
- 409/302744 . . . . . and means for operation without manual intervention
- 409/3028 . . . . . including tracer adapted to trigger electrical or fluid energy
- 409/302856 . . . . . For using planar templet in cutting profile [e.g., contour map from planar map, etc.]
- 409/302912 . . . . . including means for operation without manual intervention
- 409/302968 . . . . . including means for operation without manual intervention
- 409/303024 . . . . . including simultaneously usable plural tracers or including tracer adapted to simultaneously use plural templets
- 409/30308 . . . . . to make a double curvature foil
- 409/303136 . . . . . to make a double curvature foil
- 409/303192 . . . . . including cutter and tracer fixed to move together
- 409/303248 . . . . . with provision for circumferential relative movement of cutter and work
- 409/303304 . . . . . and provision for circumferential relative movement of cutter and work
- 409/30336 . . . . . including cutter and tracer fixed to move together
- 409/303416 . . . . . Templet, tracer, or cutter
- 409/303472 . . . . . Tracer
- 409/303528 . . . . . Adapted to trigger electrical energy
- 409/303584 . . . . . Photocell
- 409/30364 . . . . . Adapted to trigger fluid energy
- 409/303696 . . . . . Templet
- 409/303752 . . . . . Process
- 409/303808 . . . . . including infeeding
- 409/303864 . . . . . with means to weigh or test work or product
- 409/30392 . . . . . with means to protect operative or machine [e.g., guard, safety device, etc.]
- 409/303976 . . . . . with means to control temperature or lubricate
- 409/304032 . . . . . Cutter or work
- 409/304088 . . . . . with means to remove chip
- 409/304144 . . . . . Means to trim edge
- 409/3042 . . . . . Means to remove scale or raised surface imperfection
- 409/304256 . . . . . Means to remove flash or burr
- 409/304312 . . . . . with means to dampen vibration
- 409/304368 . . . . . Means to mill epitrochoidal shape
- 409/304424 . . . . . Means for internal milling
- 409/30448 . . . . . with detachable or auxiliary cutter support to convert cutting action
- 409/304536 . . . . . including means to infeed work to cutter
- 409/304592 . . . . . with compensation for backlash in drive means
- 409/304648 . . . . . with control means energized in response to activator stimulated by condition sensor
- 409/304704 . . . . . In response to cutter or cutter carriage
- 409/30476 . . . . . In response to work or work carriage
- 409/304816 . . . . . to control rate of infeed or return
- 409/304872 . . . . . to control limit of infeed
- 409/304928 . . . . . Adapted to hydraulically or pneumatically stimulate control
- 409/304984 . . . . . Adapted to electrically stimulate control
- 409/30504 . . . . . to control rate of infeed or return
- 409/305096 . . . . . to effect stopping of infeed
- 409/305152 . . . . . with means to change rate of infeed
- 409/305208 . . . . . Means to mill indeterminate length work
- 409/305264 . . . . . Multiple work stations
- 409/30532 . . . . . with means to advance work or product
- 409/305376 . . . . . Vertically
- 409/305432 . . . . . Endless or orbital work or product advancing means
- 409/305488 . . . . . to reciprocate or oscillate work
- 409/305544 . . . . . with work holder
- 409/3056 . . . . . and means to selectively position work
- 409/305656 . . . . . including means to support work for rotation during operation
- 409/305712 . . . . . and including means to infeed cutter toward work axis
- 409/305768 . . . . . with linear movement of work
- 409/305824 . . . . . with angular movement of work
- 409/30588 . . . . . including friction gearing drive
- 409/305936 . . . . . including fluid drive
- 409/305992 . . . . . with means to effect stopping upon completion of operation
- 409/306048 . . . . . with means to advance work or product
- 409/306104 . . . . . Endless or orbital work or product advancing means
- 409/30616 . . . . . with means to precisely reposition work
- 409/306216 . . . . . Randomly manipulated, work supported, or work following device
- 409/306272 . . . . . For machining commutator

- 409/306328 . . . For cutting longitudinal groove in shaft [e.g., keyway, etc.]
- 409/306384 . . . with work supported guide means
- 409/306444 . . . . to guide tool to move in arcuate path
- 409/306496 . . . with work follower
- 409/306552 . . . Randomly manipulated
- 409/306608 . . . . End mill [e.g., router, etc.]
- 409/306664 . . including means to infeed rotary cutter toward work
- 409/30672 . . . with means to limit penetration into work
- 409/306776 . . . Axially
- 409/306832 . . . . with infeed control means energized in response to activator stimulated by condition sensor
- 409/306888 . . . . . In response to cutter condition
- 409/306944 . . . . . In response to work condition
- 409/307 . . . . with work holder
- 409/307056 . . . . and laterally
- 409/307112 . . . . . Simultaneously
- 409/307168 . . . . Plural cutters
- 409/307224 . . . with infeed control means energized in response to activator stimulated by condition sensor
- 409/30728 . . . . . In response to cutter condition
- 409/307336 . . . . . In response to work condition
- 409/307392 . . . with means to change rate of infeed
- 409/307448 . . . with work holder
- 409/307504 . . . . Indexable
- 409/30756 . . . Machining arcuate surface
- 409/307616 . . . . with means to move cutter eccentrically
- 409/307672 . . . Angularly adjustable cutter head
- 409/307728 . . . including gantry-type cutter-carrier
- 409/307784 . . . Plural cutters
- 409/30784 . . including means to adjustably position cutter
- 409/307896 . . . with work holder or guide
- 409/307952 . . . Linear adjustment
- 409/308008 . . . . with control for adjustment means responsive to activator stimulated by condition sensor
- 409/308064 . . . . . Responsive to position of cutter
- 409/30812 . . . . . and means to clamp cutter support in adjusted position
- 409/308176 . . . . with position indicator or limit means
- 409/308232 . . . . and angular adjustment
- 409/308288 . . . . including gantry-type cutter-carrier
- 409/308344 . . . . Plural cutters
- 409/3084 . . . with position indicator or limit means
- 409/308456 . . . with right angle cutter drive
- 409/308512 . . . Compound angular adjustment
- 409/308568 . . . Plural cutters
- 409/308624 . . with limit means to aid in positioning of cutter bit or work [e.g., gauge, stop, etc.]
- 409/30868 . . Work support
- 409/308736 . . . with position indicator or stop
- 409/308792 . . . Indexable
- 409/308848 . . . . including dividing head
- 409/308904 . . . . . Multiple row dividing head
- 409/30896 . . . with angular adjustment
- 409/309016 . . . with work holder or guide
- 409/309072 . . . . including cutter limited to rotary motion
- 409/309128 . . . with means to adjust work support vertically
- 409/309184 . . including cutter limited to rotary motion
- 409/30924 . . . Cutter turning about vertical axis
- 409/309296 . . Detachable or repositionable tool head
- 409/309352 . . Cutter spindle or spindle support
- 409/309408 . . . with cutter holder
- 409/309464 . . . . and draw bar
- 409/30952 . . with cutter holder
- 409/309576 . . Machine frame
- 409/309632 . . . Overarm harness structure
- 409/309688 . . . including counterbalancing means
- 409/309744 . . . including means to compensate for deformation
- 409/3098 . . . . Deflection of cutter spindle
- 409/309856 . . . Convertible from lathe
- 409/309912 . . . including relatively movable components and means to relatively immobilize these components
- 409/309968 . . Tailstock
- 409/40 . Broaching
- 409/400175 . . Process
- 409/40035 . . with control means energized in response to activator stimulated by condition sensor
- 409/400525 . . . Responsive to condition of work or product
- 409/4007 . . with means to distribute cutter infeed force
- 409/400875 . . with means to select cutter or to select or modify cutter drive
- 409/40105 . . with means to clean, lubricate, or modify temperature of work or cutter
- 409/401225 . . with product handling means
- 409/4014 . . . Between plural broaching stations
- 409/401575 . . . Means to eject broached product
- 409/40175 . . . Chip removal means
- 409/401925 . . with means to protect operative or machine [e.g., guard, safety device, etc.]
- 409/4021 . . . with safety means for overload or safety interlock
- 409/402275 . . with work immobilizer and means to activate work immobilizer interrelated with cutter infeed, work infeed, or work advance
- 409/40245 . . with work infeed or advancing means and means to clamp the work thereto, which clamping means is interrelated with work or cutter infeed
- 409/402625 . . Means to remove flash or burr
- 409/4028 . . Means for cutting groove
- 409/402975 . . . Arcuate groove in cylindrical surface
- 409/40315 . . . . Rifling
- 409/403325 . . Orbital carrier for cutter
- 409/4035 . . Orbital carrier for work
- 409/403675 . . with means to cyclically manipulate cutter or cutter support
- 409/40385 . . . to reorient, introduce, or remove cutter
- 409/404025 . . . Cutter released to interim support at termination of cutting stroke
- 409/4042 . . . to remove and return cutter to cutter support
- 409/404375 . . with plural cutters
- 409/40455 . . with means to advance, infeed, or manipulate work
- 409/404725 . . . Interrelated with cutter infeed
- 409/4049 . . . . including means supporting work and additional means opposing infeed force
- 409/405075 . . . . including work indexing means for sequential cutting of different surfaces of a single workpiece
- 409/40525 . . . . including work indexing means for sequential cutting of surfaces of different workpieces

- 409/405425 . . . . with means to retract work from path of tool's idle return stroke
- 409/4056 . . . . to infeed work past cutter
- 409/405775 . . . with means to hold work during cutting
- 409/40595 . . . . including work clamping means
- 409/406125 . . . with means to adjust or facilitate adjustment of work or work holder
- 409/4063 . . . . with means on work or work holder to guide cutter during infeed
- 409/406475 . . . Cutter infeed means
- 409/40665 . . . . Imparting rectilinear motion to cutter
- 409/406825 . . . . and rotary motion to cutter
- 409/407 . . . . Fluid powered means
- 409/407175 . . . . Rack means
- 409/40735 . . . . Screw means
- 409/407525 . . . Machine frame
- 409/4077 . . . . Cutter support or guide
- 409/50 . . . . Planing
- 409/500164 . . . with regulation of operation by templet, card, or other replaceable information supply
- 409/500328 . . . . including use of tracer adapted to trigger electrical or fluid energy
- 409/500492 . . . . including provision for circumferential relative movement of cutter and work
- 409/500656 . . . . including provision for circumferential relative movement of cutter and work
- 409/50082 . . . . Process
- 409/500984 . . . with means to lubricate
- 409/501148 . . . with product handling means
- 409/501312 . . . Randomly manipulated, work supported, or work following device
- 409/501476 . . . Means to remove flash or burr
- 409/50164 . . . . Elongated work
- 409/501804 . . . . Flash or burr inside hollow work
- 409/501968 . . . . Transverse burr
- 409/502132 . . . . Flat work
- 409/502296 . . . of commutator
- 409/50246 . . . Means for trimming edge [e.g., chamfering, scarfing, etc.]
- 409/502624 . . . Means for cutting groove
- 409/502788 . . . . Arcuate groove
- 409/502952 . . . . For rifling
- 409/503116 . . . . Inside hollow work
- 409/50328 . . . Means for shaving by blade spanning work surface
- 409/503444 . . . Concave work surface [e.g., bearing, stereotype printing plate, etc.]
- 409/503608 . . . . Circumferential surface
- 409/503772 . . . . including rack driven infeed means
- 409/503936 . . . . including roller infeed means
- 409/5041 . . . . Means for cutting arcuate surface
- 409/504264 . . . . Cycloidal surface
- 409/504428 . . . with work infeed and means to arcuately reposition the cutter
- 409/504592 . . . with work infeed and means to arcuately reposition the work
- 409/504756 . . . with means to relatively infeed cutter and work
- 409/50492 . . . . and means to rotate work and cutter at same rate about converging axes
- 409/505084 . . . with plural sequentially acting cutters or with double acting cutter
- 409/505248 . . . . and means to vary rate of infeed
- 409/505412 . . . . Reciprocating work infeed means
- 409/505576 . . . . with fluid-driven bed
- 409/50574 . . . . with rack-driven bed
- 409/505904 . . . . with screw-driven bed
- 409/506068 . . . . and means to permit repositioning of cutter laterally
- 409/506232 . . . . Reciprocating cutter infeed means
- 409/506396 . . . . Reciprocating cutter horizontally
- 409/50656 . . . . with work support and lead screw to reposition work support
- 409/506724 . . . . with fluid-powered means to drive cutter
- 409/506888 . . . . with pivoting link to drive cutter
- 409/507052 . . . . . Link driven by crank
- 409/507216 . . . . with rack to drive cutter
- 409/50738 . . . . with screw to drive cutter
- 409/507544 . . . . with link or cam to drive cutter
- 409/507708 . . . . with rack to drive cutter
- 409/507872 . . . . including means causing return stroke
- 409/508036 . . . Machine frame
- 409/5082 . . . . Means to permit repositioning of cutter
- 409/508364 . . . . Laterally
- 409/508528 . . . . Plural independently positioned cutters
- 409/508692 . . . . including clutch
- 409/508856 . . . . including repositioning means and means to effect stopping thereof
- 409/50902 . . . . including relatively movable components and means to relatively immobilize these components
- 409/509184 . . . . Work table
- 409/509348 . . . . Tool head
- 409/509512 . . . . with selectively usable cutting edges
- 409/509676 . . . . with means to permit repositioning of cutting for idle return stroke
- 409/50984 . . . . comprising pivotable cutter or cutter support

**Former US Class 428 Series**

- 428/00** . . . . **Stock material or miscellaneous articles**
- 428/10 . . . . Liquid crystal optical display having layer of specified composition
- 428/1005 . . . . Alignment layer of specified composition
- 428/1009 . . . . Alignment layer is inorganic
- 428/1014 . . . . Silicon compound [i.e., organosilicon]
- 428/1018 . . . . Polyamide
- 428/1023 . . . . Polyimide
- 428/1027 . . . . Polyimidefluoride
- 428/1032 . . . . Polyimide-metallo
- 428/1036 . . . . with viewing layer of specified composition
- 428/1041 . . . . Polarizer or dye containing viewing layer
- 428/1045 . . . . Silicon compound [e.g., glass, organosilicon, etc.]
- 428/105 . . . . Ester [e.g., polycarbonate, polyacrylate, etc.]
- 428/1055 . . . . with charge transferring layer of specified composition
- 428/1059 . . . . with bonding or intermediate layer of specified composition [e.g., sealant, space, etc.]
- 428/1064 . . . . Inorganic layer
- 428/1068 . . . . Silicon compound [i.e., organosilicon]
- 428/1073 . . . . Epoxy
- 428/1077 . . . . Ester
- 428/1082 . . . . Unsaturated aliphatic polymer [e.g., vinyl, etc.]
- 428/1086 . . . . with substrate layer of specified composition
- 428/1091 . . . . Releasable substrate layer to expose adhesive



- 428/1095 . . . Inorganic substrate layer [e.g., ceramic, metallic, glass, etc.]
- 428/11 . . . Magnetic recording head
- 428/1107 . . . Magnetoresistive
- 428/1114 . . . having tunnel junction effect
- 428/1121 . . . Multilayer
- 428/1129 . . . Super lattice [e.g., giant magneto resistance [GMR] or colossal magneto resistance [CMR], etc.]
- 428/1136 . . . Single film
- 428/1143 . . . with defined structural feature
- 428/115 . . . Magnetic layer composition
- 428/1157 . . . Substrate composition
- 428/1164 . . . with protective film
- 428/1171 . . . with defined laminate structural detail
- 428/1179 . . . Head with slider structure
- 428/1186 . . . with head pole component
- 428/1193 . . . with interlaminar component [e.g., adhesion layer, etc.]
- 428/12 . . . All metal or with adjacent metals
- 428/12007 . . . Component of composite having metal continuous phase interengaged with nonmetal continuous phase
- 428/12014 . . . having metal particles
- 428/12021 . . . having composition or density gradient or differential porosity
- 428/12028 . . . Composite; i.e., plural, adjacent, spatially distinct metal components [e.g., layers, etc.]
- 428/12035 . . . Fiber, asbestos, or cellulose in or next to particulate component
- 428/12042 . . . Porous component
- 428/12049 . . . Nonmetal component
- 428/12056 . . . Entirely inorganic
- 428/12063 . . . Nonparticulate metal component
- 428/12069 . . . Plural nonparticulate metal components
- 428/12076 . . . Next to each other
- 428/12083 . . . Nonmetal in particulate component
- 428/1209 . . . Plural particulate metal components
- 428/12097 . . . Nonparticulate component encloses particles
- 428/12104 . . . Particles discontinuous
- 428/12111 . . . Separated by nonmetal matrix or binder [e.g., welding electrode, etc.]
- 428/12118 . . . Nonparticulate component has Ni-, Cu-, or Zn-base
- 428/12125 . . . Nonparticulate component has Fe-base
- 428/12132 . . . Next to Fe-containing particles
- 428/12139 . . . Nonmetal particles in particulate component
- 428/12146 . . . Nonmetal particles in a component
- 428/12153 . . . Interconnected void structure [e.g., permeable, etc.]
- 428/1216 . . . Continuous interengaged phases of plural metals, or oriented fiber containing
- 428/12167 . . . Nonmetal containing
- 428/12174 . . . Mo or W containing
- 428/12181 . . . Composite powder [e.g., coated, etc.]
- 428/12188 . . . having marginal feature for indexing or weakened portion for severing
- 428/12194 . . . For severing perpendicular to longitudinal dimension
- 428/12201 . . . Width or thickness variation or marginal cuts repeating longitudinally
- 428/12208 . . . Variation in both width and thickness
- 428/12215 . . . Marginal slots [i.e., deeper than wide]
- 428/12222 . . . Shaped configuration for melting [e.g., package, etc.]
- 428/12229 . . . Intermediate article [e.g., blank, etc.]
- 428/12236 . . . Panel having nonrectangular perimeter
- 428/12243 . . . Disk
- 428/1225 . . . Symmetrical
- 428/12257 . . . Only one plane of symmetry
- 428/12264 . . . having outward flange, gripping means or interlocking feature
- 428/12271 . . . having discrete fastener, marginal fastening, taper, or end structure
- 428/12278 . . . Same structure at both ends of plural taper
- 428/12285 . . . Single taper [e.g., ingot, etc.]
- 428/12292 . . . Workpiece with longitudinal passageway or stopweld material [e.g., for tubular stock, etc.]
- 428/12299 . . . Workpiece mimicking finished stock having nonrectangular or noncircular cross section
- 428/12306 . . . Workpiece of parallel, nonfastened components [e.g., fagot, pile, etc.]
- 428/12313 . . . Arranged to avoid lateral displacement
- 428/12319 . . . Composite
- 428/12326 . . . with provision for limited relative movement between components
- 428/12333 . . . Helical or with helical component
- 428/1234 . . . Honeycomb, or with grain orientation or elongated elements in defined angular relationship in respective components [e.g., parallel, inter- secting, etc.]
- 428/12347 . . . Plural layers discontinuously bonded [e.g., spot-weld, mechanical fastener, etc.]
- 428/12354 . . . Nonplanar, uniform-thickness material having symmetrical channel shape or reverse fold [e.g., making acute angle, etc.]
- 428/12361 . . . having aperture or cut
- 428/12368 . . . Struck-out portion type
- 428/12375 . . . having member which crosses the plane of another member [e.g., T or X cross section, etc.]
- 428/12382 . . . Defined configuration of both thickness and nonthickness surface or angle therebetween [e.g., rounded corners, etc.]
- 428/12389 . . . having variation in thickness
- 428/12396 . . . Discontinuous surface component
- 428/12403 . . . Longitudinally smooth and symmetrical
- 428/1241 . . . Nonplanar uniform thickness or nonlinear uniform diameter [e.g., L-shape]
- 428/12417 . . . Intersecting corrugating or dimples not in a single line [e.g., waffle form, etc.]
- 428/12424 . . . Mass of only fibers
- 428/12431 . . . Foil or filament smaller than 6 mils
- 428/12438 . . . Composite
- 428/12444 . . . Embodying fibers interengaged or between layers [e.g., paper, etc.]
- 428/12451 . . . Macroscopically anomalous interface between layers
- 428/12458 . . . having composition, density, or hardness gradient
- 428/12465 . . . having magnetic properties, or preformed fiber orientation coordinate with shape
- 428/12472 . . . Microscopic interfacial wave or roughness
- 428/12479 . . . Porous [e.g., foamed, spongy, cracked, etc.]

- 428/12486 . . Laterally noncoextensive components [e.g., embedded, etc.]
- 428/12493 . . Composite; i.e., plural, adjacent, spatially distinct metal components [e.g., layers, joint, etc.]
- 428/125 . . . Deflectable by temperature change [e.g., thermostat element]
- 428/12507 . . . . More than two components
- 428/12514 . . . . One component Cu-based
- 428/12521 . . . . Both components Fe-based with more than 10% Ni
- 428/12528 . . . Semiconductor component
- 428/12535 . . . with additional, spatially distinct nonmetal component
- 428/12542 . . . . More than one such component
- 428/12549 . . . . . Adjacent to each other
- 428/12556 . . . . Organic component
- 428/12562 . . . . . Elastomer
- 428/12569 . . . . . Synthetic resin
- 428/12576 . . . . Boride, carbide or nitride component
- 428/12583 . . . . Component contains compound of adjacent metal
- 428/1259 . . . . . Oxide
- 428/12597 . . . . Noncrystalline silica or noncrystalline plural-oxide component [e.g., glass, etc.]
- 428/12604 . . . . . Film [e.g., glaze, etc.]
- 428/12611 . . . . Oxide-containing component
- 428/12618 . . . . . Plural oxides
- 428/12625 . . . . Free carbon containing component
- 428/12632 . . . Four or more distinct components with alternate recurrence of each type component
- 428/12639 . . . Adjacent, identical composition, components
- 428/12646 . . . . Group VIII or IB metal-base
- 428/12653 . . . . . Fe, containing 0.01-1.7% carbon [i.e., steel]
- 428/1266 . . . O, S, or organic compound in metal component
- 428/12667 . . . . Oxide of transition metal or Al
- 428/12674 . . . Ge- or Si-base component
- 428/12681 . . . Ga-, In-, Tl- or Group VA metal-base component
- 428/12687 . . . Pb- and Sn-base components: alternative to or next to each other
- 428/12694 . . . . and next to Cu- or Fe-base component
- 428/12701 . . . Pb-base component
- 428/12708 . . . Sn-base component
- 428/12715 . . . . Next to Group IB metal-base component
- 428/12722 . . . . Next to Group VIII metal-base component
- 428/12729 . . . Group IIA metal-base component
- 428/12736 . . . Al-base component
- 428/12743 . . . . Next to refractory [Group IVB, VB, or VIB] metal-base component
- 428/1275 . . . . Next to Group VIII or IB metal-base component
- 428/12757 . . . . . Fe
- 428/12764 . . . . Next to Al-base component
- 428/12771 . . . Transition metal-base component
- 428/12778 . . . . Alternative base metals from diverse categories
- 428/12785 . . . . Group IIB metal-base component
- 428/12792 . . . . . Zn-base component
- 428/12799 . . . . . Next to Fe-base component [e.g., galvanized]
- 428/12806 . . . . Refractory [Group IVB, VB, or VIB] metal-base component
- 428/12812 . . . . . Diverse refractory group metal-base components: alternative to or next to each other
- 428/12819 . . . . . Group VB metal-base component
- 428/12826 . . . . . Group VIB metal-base component
- 428/12833 . . . . . Alternative to or next to each other
- 428/1284 . . . . . W-base component
- 428/12847 . . . . . Cr-base component
- 428/12854 . . . . . Next to Co-, Fe-, or Ni-base component
- 428/12861 . . . . Group VIII or IB metal-base component
- 428/12868 . . . . . Group IB metal-base component alternative to platinum group metal-base component [e.g., precious metal, etc.]
- 428/12875 . . . . . Platinum group metal-base component
- 428/12882 . . . . . Cu-base component alternative to Ag-, Au-, or Ni-base component
- 428/12889 . . . . . Au-base component
- 428/12896 . . . . . Ag-base component
- 428/12903 . . . . . Cu-base component
- 428/1291 . . . . . Next to Co-, Cu-, or Ni-base component
- 428/12917 . . . . . Next to Fe-base component
- 428/12924 . . . . . Fe-base has 0.01-1.7% carbon [i.e., steel]
- 428/12931 . . . . . Co-, Fe-, or Ni-base components, alternative to each other
- 428/12937 . . . . . Co- or Ni-base component next to Fe-base component
- 428/12944 . . . . . Ni-base component
- 428/12951 . . . . . Fe-base component
- 428/12958 . . . . . Next to Fe-base component
- 428/12965 . . . . . Both containing 0.01-1.7% carbon [i.e., steel]
- 428/12972 . . . . . Containing 0.01-1.7% carbon [i.e., steel]
- 428/12979 . . . . . Containing more than 10% nonferrous elements [e.g., high alloy, stainless]
- 428/12986 . . . Adjacent functionally defined components
- 428/12993 . . Surface feature [e.g., rough, mirror]
- 428/13 . . Hollow or container type article [e.g., tube, vase, etc.]
- 428/1303 . . Paper containing [e.g., paperboard, cardboard, fiberboard, etc.]
- 428/1307 . . . Bag or tubular film [e.g., pouch, flexible food casing, envelope, etc.]
- 428/131 . . Glass, ceramic, or sintered, fused, fired, or calcined metal oxide or metal carbide containing [e.g., porcelain, brick, cement, etc.]
- 428/1314 . . . Contains fabric, fiber particle, or filament made of glass, ceramic, or sintered, fused, fired, or calcined metal oxide, or metal carbide or other inorganic compound [e.g., fiber glass, mineral fiber, sand, etc.]
- 428/1317 . . . Multilayer [continuous layer]
- 428/1321 . . . . Polymer or resin containing [i.e., natural or synthetic]
- 428/1324 . . Flexible food casing [e.g., sausage type, etc.]
- 428/1328 . . Shrinkable or shrunk [e.g., due to heat, solvent, volatile agent, restraint removal, etc.]
- 428/1331 . . . Single layer [continuous layer]
- 428/1334 . . Nonself-supporting tubular film or bag [e.g., pouch, envelope, packet, etc.]
- 428/1338 . . . Elemental metal containing

- 428/1341 . . . Contains vapor or gas barrier, polymer derived from vinyl chloride or vinylidene chloride, or polymer containing a vinyl alcohol unit
- 428/1345 . . . Single layer [continuous layer]
- 428/1348 . . Cellular material derived from plant or animal source [e.g., wood, cotton, wool, leather, etc.]
- 428/1352 . . Polymer or resin containing [i.e., natural or synthetic]
- 428/1355 . . . Elemental metal containing [e.g., substrate, foil, film, coating, etc.]
- 428/1359 . . . . Three or more layers [continuous layer]
- 428/1362 . . . Textile, fabric, cloth, or pile containing [e.g., web, net, woven, knitted, mesh, nonwoven, matted, etc.]
- 428/1366 . . . . Textile, fabric, cloth, or pile is sandwiched between two distinct layers of material unlike the textile, fabric, cloth, or pile layer
- 428/1369 . . . Fiber or fibers wound around each other or into a self-sustaining shape [e.g., yarn, braid, fibers shaped around a core, etc.]
- 428/1372 . . . Randomly noninterengaged or randomly contacting fibers, filaments, particles, or flakes
- 428/1376 . . . Foam or porous material containing
- 428/1379 . . . Contains vapor or gas barrier, polymer derived from vinyl chloride or vinylidene chloride, or polymer containing a vinyl alcohol unit
- 428/1383 . . . . Vapor or gas barrier, polymer derived from vinyl chloride or vinylidene chloride, or polymer containing a vinyl alcohol unit is sandwiched between layers [continuous layer]
- 428/1386 . . . Natural or synthetic rubber or rubber-like compound containing
- 428/139 . . . Open-ended, self-supporting conduit, cylinder, or tube-type article
- 428/1393 . . . . Multilayer [continuous layer]
- 428/1397 . . . Single layer [continuous layer]
- 428/14 . . Layer or component removable to expose adhesive
- 428/1405 . . Capsule or particulate matter containing [e.g., sphere, flake, microballoon, etc.]
- 428/141 . . Bituminous
- 428/1414 . . Ceramic, glass, glasslike, vitreous
- 428/1419 . . Wax containing
- 428/1424 . . Halogen containing compound
- 428/1429 . . . Fluorine
- 428/1433 . . . Coloring agent containing
- 428/1438 . . Metal containing
- 428/1443 . . . Aluminum
- 428/1448 . . . Coloring agent containing
- 428/1452 . . Polymer derived only from ethylenically unsaturated monomer
- 428/1457 . . . Silicon
- 428/1462 . . Polymer derived from material having at least one acrylic or alkacrylic group or the nitrile or amide derivative thereof [e.g., acrylamide, acrylate ester, etc.]
- 428/1467 . . Coloring agent
- 428/1471 . . Protective layer
- 428/1476 . . Release layer
- 428/1481 . . Dissimilar adhesives
- 428/1486 . . Ornamental, decorative, pattern, or indicia
- 428/149 . . Sectional layer removable
- 428/1495 . . . Adhesive is on removable layer
- 428/15 . . Sheet, web, or layer weakened to permit separation through thickness
- 428/16 . . Two dimensionally sectional layer
- 428/161 . . . with frame, casing, or perimeter structure
- 428/162 . . . Transparent or translucent layer or section
- 428/163 . . . Next to unitary web or sheet of equal or greater extent
- 428/164 . . . . Continuous two dimensionally sectional layer
- 428/166 . . . . . Glass, ceramic, or metal sections [e.g., floor or wall tile, etc.]
- 428/167 . . . . Cellulosic sections [e.g., parquet floor, etc.]
- 428/168 . . . Nonrectangular
- 428/169 . . Sections connected flexibly with external fastener
- 428/17 . . Three or more coplanar interfitted sections with securing means
- 428/18 . . Longitudinally sectional layer of three or more sections
- 428/183 . . Next to unitary sheet of equal or greater extent
- 428/187 . . . Continuous sectional layer
- 428/19 . . Sheets or webs edge spliced or joined
- 428/192 . . Sheets or webs coplanar
- 428/193 . . . Double faced corrugated sheets or webs connected
- 428/195 . . . Beveled, stepped, or skived in thickness
- 428/197 . . . . with noncoplanar reinforcement
- 428/198 . . . . Pile or nap surface sheets connected
- 428/20 . . Patched hole or depression
- 428/21 . . Circular sheet or circular blank
- 428/211 . . Gear
- 428/213 . . Frictional
- 428/214 . . End closure
- 428/215 . . Seal, gasket, or packing
- 428/216 . . Ornamental, decorative, pattern, or indicia
- 428/218 . . Aperture containing
- 428/219 . . Edge structure
- 428/22 . . Nonparticulate element embedded or inlaid in substrate and visible
- 428/23 . . Sheet including cover or casing
- 428/231 . . Filled with gas other than air; or under vacuum
- 428/232 . . Encased layer derived from inorganic settable ingredient
- 428/233 . . Foamed or expanded material encased
- 428/234 . . including elements cooperating to form cells
- 428/236 . . . Honeycomb type cells extend perpendicularly to nonthickness layer
- 428/237 . . Noninterengaged fibered material encased [e.g., mat, batt, etc.]
- 428/238 . . . Metal cover or casing
- 428/239 . . Complete cover or casing
- 428/23907 . . Pile or nap type surface or component
- 428/23914 . . Interlaminar
- 428/23921 . . With particles
- 428/23929 . . Edge feature or configured or discontinuous surface
- 428/23936 . . . Differential pile length or surface
- 428/23943 . . Flock surface
- 428/2395 . . Nap type surface
- 428/23957 . . Particular shape or structure of pile
- 428/23964 . . . U-, V-, or W-shaped or continuous strand, filamentary material
- 428/23971 . . . . Continuous strand with adhesive bond to backing

- 428/23979 . . Particular backing structure or composition  
 428/23986 . . With coating, impregnation, or bond  
 428/23993 . . Composition of pile or adhesive  
 428/24 . . Structurally defined web or sheet [e.g., overall dimension, etc.]  
 428/24008 . . including fastener for attaching to external surface  
 428/24017 . . . Hook or barb  
 428/24025 . . Superposed movable attached layers or components  
 428/24033 . . including stitching and discrete fastener[s], coating or bond  
 428/24041 . . . Discontinuous or differential coating, impregnation, or bond  
 428/2405 . . . . Coating, impregnation, or bond in stitching zone only  
 428/24058 . . including grain, strips, or filamentary elements in respective layers or components in angular relation  
 428/24066 . . . Wood grain  
 428/24074 . . . Strand or strand-portions  
 428/24083 . . . . Nonlinear strands or strand-portions  
 428/24091 . . . . with additional layer[s]  
 428/24099 . . . . . On each side of strands or strand-portions  
 428/24107 . . . . . including mechanically interengaged strands, strand-portions or strand-like strips  
 428/24116 . . . . Oblique to direction of web  
 428/24124 . . . Fibers  
 428/24132 . . including grain, strips, or filamentary elements in different layers or components parallel  
 428/2414 . . including fringe  
 428/24149 . . Honeycomb-like  
 428/24157 . . . Filled honeycomb cells [e.g., solid substance in cavities, etc.]  
 428/24165 . . . Hexagonally shaped cavities  
 428/24174 . . including sheet or component perpendicular to plane of web or sheet  
 428/24182 . . . Inward from edge of web or sheet  
 428/2419 . . Fold at edge  
 428/24198 . . . Channel-shaped edge component [e.g., binding, etc.]  
 428/24207 . . . with strand[s] or strand-portion[s] between layers [e.g., upholstery trim, etc.]  
 428/24215 . . . Acute or reverse fold of exterior component  
 428/24223 . . . . Embedded in body of web  
 428/24231 . . . . At opposed marginal edges  
 428/2424 . . . . . Annular cover  
 428/24248 . . . . . One piece  
 428/24256 . . . . . Abutted or lapped seam  
 428/24264 . . . Particular fold structure [e.g., beveled, etc.]  
 428/24273 . . including aperture  
 428/24281 . . . Struck out portion type  
 428/24289 . . . . Embedded or interlocked  
 428/24298 . . . Noncircular aperture [e.g., slit, diamond, rectangular, etc.]  
 428/24306 . . . . Diamond or hexagonal  
 428/24314 . . . . Slit or elongated  
 428/24322 . . . Composite web or sheet  
 428/24331 . . . . including nonapertured component  
 428/24339 . . . . . Keyed  
 428/24347 . . . . . From both sides  
 428/24355 . . Continuous and nonuniform or irregular surface on layer or component [e.g., roofing, etc.]  
 428/24364 . . . with transparent or protective coating  
 428/24372 . . . . Particulate matter  
 428/2438 . . . . . Coated  
 428/24388 . . . . . Silicon containing coating  
 428/24397 . . . . . Carbohydrate  
 428/24405 . . . . . Polymer or resin [e.g., natural or synthetic rubber, etc.]  
 428/24413 . . . . . Metal or metal compound  
 428/24421 . . . . . Silicon containing  
 428/2443 . . . . . Sand, clay, or crushed rock or slate  
 428/24438 . . . Artificial wood or leather grain surface  
 428/24446 . . . Wrinkled, creased, crinkled or creped  
 428/24455 . . . . Paper  
 428/24463 . . . . . Plural paper components  
 428/24471 . . . Crackled, crazed or slit  
 428/24479 . . including variation in thickness  
 428/24488 . . . Differential nonuniformity at margin  
 428/24496 . . . Foamed or cellular component  
 428/24504 . . . . Component comprises a polymer [e.g., rubber, etc.]  
 428/24512 . . . . . Polyurethane  
 428/24521 . . . with component conforming to contour of nonplanar surface  
 428/24529 . . . . and conforming component on an opposite nonplanar surface  
 428/24537 . . . . Parallel ribs and/or grooves  
 428/24545 . . . . Containing metal or metal compound  
 428/24554 . . . . including cellulosic or natural rubber component  
 428/24562 . . . Interlaminar spaces  
 428/2457 . . . Parallel ribs and/or grooves  
 428/24579 . . . . with particulate matter  
 428/24587 . . . . Oblique to longitudinal axis of web or sheet  
 428/24595 . . . and varying density  
 428/24603 . . . . Fiber containing component  
 428/24612 . . . Composite web or sheet  
 428/2462 . . . . with partial filling of valleys on outer surface  
 428/24628 . . Nonplanar uniform thickness material  
 428/24636 . . . Embodiment mechanically interengaged strand[s], strand-portion[s] or strand-like strip[s] [e.g., weave, knit, etc.]  
 428/24645 . . . . with folds in parallel planes  
 428/24653 . . . Differential nonplanarity at margin  
 428/24661 . . . Forming, or cooperating to form cells  
 428/24669 . . . Aligned or parallel nonplanarities  
 428/24678 . . . . Waffle-form  
 428/24686 . . . . Pleats or otherwise parallel adjacent folds  
 428/24694 . . . . Parallel corrugations  
 428/24702 . . . . . with locally deformed crests or intersecting series of corrugations  
 428/24711 . . . . . Plural corrugated components  
 428/24719 . . . . . with corrugations of respective components intersecting in plane projection  
 428/24727 . . . . . with planar component  
 428/24736 . . . Ornamental design or indicia  
 428/24744 . . Longitudinal or transverse tubular cavity or cell  
 428/24752 . . Laterally noncoextensive components  
 428/2476 . . . Fabric, cloth or textile component  
 428/24769 . . . Cellulosic

- 428/24777 . . . Edge feature
- 428/24785 . . . including layer embodying mechanically interengaged strands, strand portions or strand-like strips [e.g., weave, knit, etc.]
- 428/24793 . . . Comprising discontinuous or differential impregnation or bond
- 428/24802 . . . Discontinuous or differential coating, impregnation or bond [e.g., artwork, printing, retouched photograph, etc.]
- 428/2481 . . . including layer of mechanically interengaged strands, strand-portions or strand-like strips
- 428/24818 . . . Knitted, with particular or differential bond sites or intersections
- 428/24826 . . . Spot bonds connect components
- 428/24835 . . . including developable image or soluble portion in coating or impregnation [e.g., safety paper, etc.]
- 428/24843 . . . with heat sealable or heat releasable adhesive layer
- 428/24851 . . . Intermediate layer is discontinuous or differential
- 428/2486 . . . with outer strippable or release layer
- 428/24868 . . . Translucent outer layer
- 428/24876 . . . Intermediate layer contains particulate material [e.g., pigment, etc.]
- 428/24884 . . . Translucent layer comprises natural oil, wax, resin, gum, glue, gelatin
- 428/24893 . . . including particulate material
- 428/24901 . . . including coloring matter
- 428/24909 . . . Free metal or mineral containing
- 428/24917 . . . including metal layer
- 428/24926 . . . including ceramic, glass, porcelain or quartz layer
- 428/24934 . . . including paper layer
- 428/24942 . . . including components having same physical characteristic in differing degree
- 428/2495 . . . Thickness [relative or absolute]
- 428/24959 . . . of adhesive layers
- 428/24967 . . . Absolute thicknesses specified
- 428/24975 . . . No layer or component greater than 5 mils thick
- 428/24983 . . . Hardness
- 428/24992 . . . Density or compression of components
- 428/249921 . . . Web or sheet containing structurally defined element or component
- 428/249922 . . . Embodying intertwined or helical component[s]
- 428/249923 . . . Including interlaminar mechanical fastener
- 428/249924 . . . Noninterengaged fiber-containing paper-free web or sheet which is not of specified porosity
- 428/249925 . . . Fiber-containing wood product [e.g., hardboard, lumber, or wood board, etc.]
- 428/249926 . . . Including paper layer
- 428/249927 . . . Fiber embedded in a metal matrix
- 428/249928 . . . Fiber embedded in a ceramic, glass, or carbon matrix
- 428/249929 . . . Fibers are aligned substantially parallel
- 428/24993 . . . Fiber is precoated
- 428/249931 . . . Free metal or alloy fiber
- 428/249932 . . . Fiber embedded in a layer derived from a water-settable material [e.g., cement, gypsum, etc.]
- 428/249933 . . . Fiber embedded in or on the surface of a natural or synthetic rubber matrix
- 428/249934 . . . Fibers are aligned substantially parallel
- 428/249935 . . . Fiber is nonlinear [e.g., crimped, sinusoidal, etc.]
- 428/249936 . . . Fiber is precoated
- 428/249937 . . . Fiber is precoated
- 428/249938 . . . Composite or conjugate fiber [e.g., fiber contains more than one chemically different material in monofilament or multifilament form, etc.]
- 428/249939 . . . Two or more layers
- 428/24994 . . . Fiber embedded in or on the surface of a polymeric matrix
- 428/249941 . . . Fiber is on the surface of a polymeric matrix having no embedded portion
- 428/249942 . . . Fibers are aligned substantially parallel
- 428/249943 . . . Fiber is nonlinear [e.g., crimped, sinusoidal, etc.]
- 428/249944 . . . Fiber is precoated
- 428/249945 . . . Carbon or carbonaceous fiber
- 428/249946 . . . Glass fiber
- 428/249947 . . . Polymeric fiber
- 428/249948 . . . Fiber is precoated
- 428/249949 . . . Two or more chemically different fibers
- 428/24995 . . . Two or more layers
- 428/249951 . . . Including a free metal or alloy constituent
- 428/249952 . . . At least one thermosetting synthetic polymeric material layer
- 428/249953 . . . Composite having voids in a component [e.g., porous, cellular, etc.]
- 428/249954 . . . With chemically effective material or specified gas other than air, N, or carbon dioxide in void-containing component
- 428/249955 . . . Void-containing component partially impregnated with adjacent component
- 428/249956 . . . Void-containing component is inorganic
- 428/249957 . . . Inorganic impregnant
- 428/249958 . . . Void-containing component is synthetic resin or natural rubbers
- 428/249959 . . . Void-containing component is wood or paper
- 428/24996 . . . With internal element bridging layers, nonplanar interface between layers, or intermediate layer of commingled adjacent foam layers
- 428/249961 . . . With gradual property change within a component
- 428/249962 . . . Void-containing component has a continuous matrix of fibers only [e.g., porous paper, etc.]
- 428/249963 . . . And a force disintegratable component [e.g., stencil sheet, etc.]
- 428/249964 . . . Fibers of defined composition
- 428/249965 . . . Cellulosic
- 428/249966 . . . Plural cellulosic components
- 428/249967 . . . Inorganic matrix in void-containing component
- 428/249968 . . . Of hydraulic-setting material
- 428/249969 . . . Of silicon-containing material [e.g., glass, etc.]
- 428/24997 . . . Of metal-containing material
- 428/249971 . . . Preformed hollow element-containing
- 428/249972 . . . Resin or rubber element
- 428/249973 . . . Mineral element
- 428/249974 . . . Metal- or silicon-containing element
- 428/249975 . . . Void shape specified [e.g., crushed, flat, round, etc.]

- 428/249976 . . . Voids specified as closed
- 428/249977 . . . . Specified thickness of void-containing component [absolute or relative], numerical cell dimension or density
- 428/249978 . . . Voids specified as micro
- 428/249979 . . . . Specified thickness of void-containing component [absolute or relative] or numerical cell dimension
- 428/24998 . . . . Composite has more than two layers
- 428/249981 . . . Plural void-containing components
- 428/249982 . . . With component specified as adhesive or bonding agent
- 428/249983 . . . . As outermost component
- 428/249984 . . . . Adhesive or bonding component contains voids
- 428/249985 . . . . Composition of adhesive or bonding component specified
- 428/249986 . . . Void-containing component contains also a solid fiber or solid particle
- 428/249987 . . . With nonvoid component of specified composition
- 428/249988 . . . . Of about the same composition as, and adjacent to, the void-containing component
- 428/249989 . . . . . Integrally formed skin
- 428/24999 . . . . . Inorganic
- 428/249991 . . . . . Synthetic resin or natural rubbers
- 428/249992 . . . . . Linear or thermoplastic
- 428/249993 . . . . . Hydrocarbon polymer
- 428/249994 . . Composite having a component wherein a constituent is liquid or is contained within preformed walls [e.g., impregnated-filled, previously void containing component, etc.]
- 428/249995 . . . Constituent is in liquid form
- 428/249996 . . . . Ink in pores
- 428/249997 . . . . Encapsulated liquid
- 428/249998 . . . Indefinite plurality of similar impregnated thin sheets [e.g., "decorative laminate" type, etc.]
- 428/249999 . . . Differentially filled foam, filled plural layers, or filled layer with coat of filling material
- 428/25 . . Web or sheet containing structurally defined element or component and including a second component containing structurally defined particles
- 428/251 . . Mica
- 428/252 . . Glass or ceramic [i.e., fired or glazed clay, cement, etc.] [porcelain, quartz, etc.]
- 428/253 . . Cellulosic [e.g., wood, paper, cork, rayon, etc.]
- 428/254 . . Polymeric or resinous material
- 428/256 . . Heavy metal or aluminum or compound thereof
- 428/257 . . . Iron oxide or aluminum oxide
- 428/258 . . Alkali metal or alkaline earth metal or compound thereof
- 428/259 . . Silicic material
- 428/26 . . Web or sheet containing structurally defined element or component, the element or component having a specified physical dimension
- 428/261 . . In terms of molecular thickness or light wave length
- 428/263 . . Coating layer not in excess of 5 mils thick or equivalent
- 428/264 . . . Up to 3 mils
- 428/265 . . . . 1 mil or less
- 428/266 . . of base or substrate
- 428/268 . . Monolayer with structurally defined element
- 428/269 . . including synthetic resin or polymer layer or component
- 428/27 . . Web or sheet containing structurally defined element or component, the element or component having a specified weight per unit area [e.g., gms/sq cm, lbs/sq ft, etc.]
- 428/273 . . of coating
- 428/277 . . . Cellulosic substrate
- 428/28 . . Web or sheet containing structurally defined element or component and having an adhesive outermost layer
- 428/2804 . . Next to metal
- 428/2809 . . including irradiated or wave energy treated component
- 428/2813 . . Heat or solvent activated or sealable
- 428/2817 . . . Heat sealable
- 428/2822 . . . . Wax containing
- 428/2826 . . . . Synthetic resin or polymer
- 428/283 . . . Water activated
- 428/2835 . . including moisture or waterproof component
- 428/2839 . . with release or antistick coating
- 428/2843 . . including a primer layer
- 428/2848 . . Three or more layers
- 428/2852 . . Adhesive compositions
- 428/2857 . . . including metal or compound thereof or natural rubber
- 428/2861 . . . having readily strippable combined with readily readhearable properties [e.g., stick-ons, etc.]
- 428/2865 . . . including monomer or polymer of carbohydrate [e.g., starch, dextrin, etc.] Or protein [e.g., casein, animal protein, etc.] Or derivative thereof
- 428/287 . . . including epoxy group or epoxy polymer
- 428/2874 . . . including aldehyde or ketone condensation polymer [e.g., urea formaldehyde polymer, melamine formaldehyde polymer, etc.]
- 428/2878 . . . including addition polymer from unsaturated monomer
- 428/2883 . . . . including addition polymer of diene monomer [e.g., SBR, SIS, etc.]
- 428/2887 . . . . including nitrogen containing polymer [e.g., polyacrylonitrile, polymethacrylonitrile, etc.]
- 428/2891 . . . . including addition polymer from alpha-beta unsaturated carboxylic acid [e.g., acrylic acid, methacrylic acid, etc.] Or derivative thereof
- 428/2896 . . . including nitrogen containing condensation polymer [e.g., polyurethane, polyisocyanate, etc.]
- 428/29 . . Coated or structurally defined flake, particle, cell, strand, strand portion, rod, filament, macroscopic fiber or mass thereof
- 428/2902 . . Channel shape
- 428/2904 . . Staple length fiber
- 428/2905 . . . Plural and with bonded intersections only
- 428/2907 . . . with coating or impregnation
- 428/2909 . . . Nonlinear [e.g., crimped, coiled, etc.]
- 428/2911 . . Mica flake
- 428/2913 . . Rod, strand, filament or fiber
- 428/2915 . . . including textile, cloth or fabric
- 428/2916 . . . including boron or compound thereof [not as steel]

- 428/2918 . . . including free carbon or carbide or therewith [not as steel]
- 428/292 . . . . In coating or impregnation
- 428/2922 . . . Nonlinear [e.g., crimped, coiled, etc.]
- 428/2924 . . . . Composite
- 428/2925 . . . . Helical or coiled
- 428/2927 . . . including structurally defined particulate matter
- 428/2929 . . . Bicomponent, conjugate, composite or collateral fibers or filaments [i.e., coextruded sheath-core or side-by-side type]
- 428/2931 . . . . Fibers or filaments nonconcentric [e.g., side-by-side or eccentric, etc.]
- 428/2933 . . . Coated or with bond, impregnation or core
- 428/2935 . . . . Discontinuous or tubular or cellular core
- 428/2936 . . . . Wound or wrapped core or coating [i.e., spiral or helical]
- 428/2938 . . . . Coating on discrete and individual rods, strands or filaments
- 428/294 . . . . including metal or compound thereof [excluding glass, ceramic and asbestos]
- 428/2942 . . . . . Plural coatings
- 428/2944 . . . . . Free metal in coating
- 428/2945 . . . . . Natural rubber in coating
- 428/2947 . . . . . Synthetic resin or polymer in plural coatings, each of different type
- 428/2949 . . . . . Glass, ceramic or metal oxide in coating
- 428/2951 . . . . . Metal with weld modifying or stabilizing coating [e.g., flux, slag, producer, etc.]
- 428/2953 . . . . . Titanium compound in coating
- 428/2955 . . . . . Silicic material in coating
- 428/2956 . . . . . Glass or silicic fiber or filament with metal coating
- 428/2958 . . . . . Metal or metal compound in coating
- 428/296 . . . . . Rubber, cellulosic or silicic material in coating
- 428/2962 . . . . . Silane, silicone or siloxane in coating
- 428/2964 . . . . . Artificial fiber or filament
- 428/2965 . . . . . Cellulosic
- 428/2967 . . . . . Synthetic resin or polymer
- 428/2969 . . . . . Polyamide, polyimide or polyester
- 428/2971 . . . . . Impregnation
- 428/2973 . . . Particular cross section
- 428/2975 . . . . Tubular or cellular
- 428/2976 . . . . Longitudinally varying
- 428/2978 . . . . Surface characteristic
- 428/298 . . . Physical dimension
- 428/2982 . . Particulate matter [e.g., sphere, flake, etc.]
- 428/2984 . . . Microcapsule with fluid core [includes liposome]
- 428/2985 . . . . Solid-walled microcapsule from synthetic polymer
- 428/2987 . . . . . Addition polymer from unsaturated monomers only
- 428/2989 . . . Microcapsule with solid core [includes liposome]
- 428/2991 . . . Coated
- 428/2993 . . . . Silicic or refractory material containing [e.g., tungsten oxide, glass, cement, etc.]
- 428/2995 . . . . . Silane, siloxane or silicone coating
- 428/2996 . . . . . Glass particles or spheres
- 428/2998 . . . . including synthetic resin or polymer
- 428/30 . . Self-sustaining carbon mass or layer with impregnant or other layer
- 428/31 . . Surface property or characteristic of web, sheet or block
- 428/315 . . Surface modified glass [e.g., tempered, strengthened, etc.]
- 428/31504 . Composite [nonstructural laminate]
- 428/31507 . . Of polycarbonate
- 428/31511 . . Of epoxy ether
- 428/31515 . . . As intermediate layer
- 428/31518 . . . . Next to glass or quartz
- 428/31522 . . . . Next to metal
- 428/31525 . . . Next to glass or quartz
- 428/31529 . . . Next to metal
- 428/31533 . . Of polythioether
- 428/31536 . . Including interfacial reaction product of adjacent layers
- 428/3154 . . Of fluorinated addition polymer from unsaturated monomers
- 428/31544 . . . Addition polymer is perhalogenated
- 428/31547 . . Of polyisocyanurate
- 428/31551 . . Of polyamidoester [polyurethane, polyisocyanate, polycarbamate, etc.]
- 428/31554 . . . Next to second layer of polyamidoester
- 428/31558 . . . Next to animal skin or membrane
- 428/31562 . . . Next to polyamide [nylon, etc.]
- 428/31565 . . . Next to polyester [polyethylene terephthalate, etc.]
- 428/31569 . . . Next to natural rubber
- 428/31573 . . . Next to addition polymer of ethylenically unsaturated monomer
- 428/31576 . . . . Ester monomer type [polyvinylacetate, etc.]
- 428/3158 . . . . Halide monomer type [polyvinyl chloride, etc.]
- 428/31583 . . . . Nitrile monomer type [polyacrylonitrile, etc.]
- 428/31587 . . . . Hydrocarbon polymer [polyethylene, polybutadiene, etc.]
- 428/31591 . . . Next to cellulosic
- 428/31594 . . . Next to aldehyde or ketone condensation product [phenol-aldehyde, etc.]
- 428/31598 . . . Next to silicon-containing [silicone, cement, etc.] layer
- 428/31601 . . . . Quartz or glass
- 428/31605 . . . Next to free metal
- 428/31609 . . . Particulate metal or metal compound-containing
- 428/31612 . . . . As silicone, silane or siloxane
- 428/31616 . . . Next to polyester [e.g., alkyd]
- 428/3162 . . . . Cross-linked polyester [e.g., glycerol maleate-styrene, etc.]
- 428/31623 . . . Next to polyamide or polyimide
- 428/31627 . . . Next to aldehyde or ketone condensation product
- 428/3163 . . . . Next to acetal of polymerized unsaturated alcohol [e.g., formal butyral, etc.]
- 428/31634 . . . Next to cellulosic
- 428/31638 . . . . Cellulosic ester
- 428/31641 . . . Next to natural rubber, gum, oil, rosin, wax, bituminous or tarry residue
- 428/31645 . . . Next to addition polymer from unsaturated monomers
- 428/31649 . . . . Ester, halide or nitrile of addition polymer
- 428/31652 . . Of asbestos
- 428/31656 . . . With metal layer
- 428/31659 . . . With cellulosic layer

- 428/31663 . . . As siloxane, silicone or silane
- 428/31667 . . . Next to addition polymer from unsaturated monomers, or aldehyde or ketone condensation product
- 428/3167 . . . Of cork
- 428/31674 . . . Including natural oil or gum or rosin [e.g., linoleum, etc.]
- 428/31678 . . . Of metal
- 428/31681 . . . Next to polyester, polyamide or polyimide [e.g., alkyd, glue, or nylon, etc.]
- 428/31685 . . . . Natural source polyamide [e.g., casein, gelatin, etc.]
- 428/31688 . . . Next to aldehyde or ketone condensation product
- 428/31692 . . . Next to addition polymer from unsaturated monomers
- 428/31696 . . . . Including polyene monomers [e.g., butadiene, etc.]
- 428/31699 . . . . Ester, halide or nitrile of addition polymer
- 428/31703 . . . Next to cellulosic
- 428/31707 . . . Next to natural rubber
- 428/3171 . . . . With natural rubber next to second layer of natural rubber
- 428/31714 . . . Next to natural gum, natural oil, rosin, lac or wax
- 428/31717 . . . Next to bituminous or tarry residue
- 428/31721 . . . Of polyimide
- 428/31725 . . . Of polyamide
- 428/31728 . . . Next to second layer of polyamide
- 428/31732 . . . . At least one layer is nylon type
- 428/31736 . . . Next to polyester
- 428/31739 . . . Nylon type
- 428/31743 . . . . Next to addition polymer from unsaturated monomer[s]
- 428/31746 . . . . . Polymer of monoethylenically unsaturated hydrocarbon
- 428/3175 . . . Next to addition polymer from unsaturated monomer[s]
- 428/31754 . . . . Natural source-type polyamide
- 428/31757 . . . . Polymer of monoethylenically unsaturated hydrocarbon
- 428/31761 . . . Next to aldehyde or ketone condensation product
- 428/31765 . . . Inorganic-containing or next to inorganic-containing
- 428/31768 . . . Natural source-type polyamide [e.g., casein, gelatin, etc.]
- 428/31772 . . . . Next to cellulosic
- 428/31775 . . . . . Paper
- 428/31779 . . . Next to cellulosic
- 428/31783 . . . . Paper or wood
- 428/31786 . . . Of polyester [e.g., alkyd, etc.]
- 428/3179 . . . Next to cellulosic
- 428/31794 . . . Of cross-linked polyester
- 428/31797 . . . Next to addition polymer from unsaturated monomers
- 428/31801 . . . Of wax or waxy material
- 428/31804 . . . Next to cellulosic
- 428/31808 . . . . Cellulosic is paper
- 428/31812 . . . . . Glassine paper
- 428/31815 . . . Of bituminous or tarry residue
- 428/31819 . . . Next to cellulosic
- 428/31823 . . . . Paper
- 428/31826 . . . Of natural rubber
- 428/3183 . . . . Next to second layer of natural rubber
- 428/31833 . . . . Next to aldehyde or ketone condensation product or addition polymer from unsaturated monomers
- 428/31837 . . . . . Including polyene monomers
- 428/31841 . . . . Next to cellulosic
- 428/31844 . . . Of natural gum, rosin, natural oil or lac
- 428/31848 . . . . Next to cellulosic
- 428/31851 . . . . . Natural oil
- 428/31855 . . . Of addition polymer from unsaturated monomers
- 428/31859 . . . . Next to an aldehyde or ketone condensation product
- 428/31862 . . . . . Melamine-aldehyde
- 428/31866 . . . . . Impregnated or coated cellulosic material
- 428/3187 . . . . . Amide-aldehyde
- 428/31873 . . . . . Urea or modified urea-aldehyde
- 428/31877 . . . . . Phenol-aldehyde
- 428/3188 . . . . Next to cellulosic
- 428/31884 . . . . . Regenerated or modified cellulose
- 428/31888 . . . . . Addition polymer of hydrocarbon[s] only
- 428/31891 . . . . . Where addition polymer is an ester or halide
- 428/31895 . . . . . Paper or wood
- 428/31899 . . . . . Addition polymer of hydrocarbon[s] only
- 428/31902 . . . . . Monoethylenically unsaturated
- 428/31906 . . . . . Ester, halide or nitrile of addition polymer
- 428/31909 . . . . Next to second addition polymer from unsaturated monomers
- 428/31913 . . . . . Monoolefin polymer
- 428/31917 . . . . . Next to polyene polymer
- 428/3192 . . . . . Next to vinyl or vinylidene chloride polymer
- 428/31924 . . . . . Including polyene monomers
- 428/31928 . . . . . Ester, halide or nitrile of addition polymer
- 428/31931 . . . . Polyene monomer-containing
- 428/31935 . . . . Ester, halide or nitrile of addition polymer
- 428/31938 . . . . Polymer of monoethylenically unsaturated hydrocarbon
- 428/31942 . . . Of aldehyde or ketone condensation product
- 428/31946 . . . . Next to second aldehyde or ketone condensation product
- 428/31949 . . . . Next to cellulosic
- 428/31953 . . . . . Modified or regenerated cellulose
- 428/31957 . . . . . Wood
- 428/3196 . . . . . Phenoplast
- 428/31964 . . . . . Paper
- 428/31967 . . . . . Phenoplast
- 428/31971 . . . Of carbohydrate
- 428/31975 . . . . Of cellulosic next to another carbohydrate
- 428/31978 . . . . . Cellulosic next to another cellulosic
- 428/31982 . . . . . Wood or paper
- 428/31986 . . . . . Regenerated or modified
- 428/31989 . . . . Of wood
- 428/31993 . . . . Of paper
- 428/31996 . . . . . Next to layer of metal salt [e.g., plasterboard, etc.]
- 428/32 . . . Composite [nonstructural laminate] of inorganic material having metal-compound-containing layer and having defined magnetic layer
- 428/325 . . . Magnetic layer next to second metal compound-containing layer



- 428/4935 . Impregnated naturally solid product [e.g., leather, stone, etc.]
- 428/662 . . Wood timber product [e.g., piling, post, veneer, etc.]
- 428/8305 . Miscellaneous [e.g., treated surfaces, etc.]

**Former US Class 436 Series****436/00 Chemistry: analytical and immunological testing**

- 436/10 . Composition for standardization, calibration, simulation, stabilization, preparation or preservation; processes of use in preparation for chemical testing
- 436/100833 . . Simulative of a gaseous composition
- 436/101666 . . Particle count or volume standard or control [e.g., platelet count standards, etc.]
- 436/102499 . . Blood gas standard or control
- 436/103332 . . Bilirubin or uric acid standard or control
- 436/104165 . . Lipid, cholesterol, or triglyceride standard or control
- 436/104998 . . Glucose, ketone, nitrate standard or control
- 436/105831 . . Protein or peptide standard or control [e.g., hemoglobin, etc.]
- 436/106664 . . Blood serum or blood plasma standard or control
- 436/107497 . . Preparation composition [e.g., lysing or precipitation, etc.]
- 436/108331 . . Preservative, buffer, anticoagulant or diluent
- 436/109163 . . Inorganic standards or controls
- 436/11 . Automated chemical analysis
- 436/110833 . . Utilizing a moving indicator strip or tape
- 436/111666 . . Utilizing a centrifuge or compartmented rotor
- 436/112499 . . with sample on test slide
- 436/113332 . . with conveyance of sample along a test line in a container or rack
- 436/114165 . . . with step of insertion or removal from test line
- 436/114998 . . . with treatment or replacement of aspirator element [e.g., cleaning, etc.]
- 436/115831 . . Condition or time responsive
- 436/116664 . . . with automated titrator
- 436/117497 . . with a continuously flowing sample or carrier stream
- 436/118339 . . . with formation of a segmented stream
- 436/119163 . . with aspirator of claimed structure
- 436/12 . Condition responsive control
- 436/13 . Tracers or tags
- 436/14 . Heterocyclic carbon compound [i.e. , O, S, N, Se, Te, as only ring hetero atom]
- 436/141111 . . Diverse hetero atoms in same or different rings [e.g., alkaloids, opiates, etc.]
- 436/142222 . . Hetero-O [e.g., ascorbic acid, etc.]
- 436/143333 . . . Saccharide [e.g., DNA, etc.]
- 436/144444 . . . . Glucose
- 436/145555 . . Hetero-N
- 436/146666 . . . Bile pigment
- 436/147777 . . . Plural nitrogen in the same ring [e.g., barbituates, creatinine, etc.]
- 436/148888 . . . . Uric acid
- 436/15 . Inorganic acid or base [e.g. , hcl, sulfuric acid, etc. ]
- 436/153333 . . Halogen containing
- 436/156666 . . Sulfur containing
- 436/16 . Phosphorus containing
- 436/163333 . . Organic [e.g., chemical warfare agents, insecticides, etc.]

- 436/166666 . . of inorganic phosphorus compound in body fluid
- 436/17 . Nitrogen containing
- 436/170769 . . N-Nitroso containing [e.g., nitrosamine, etc.]
- 436/171538 . . Urea or blood urea nitrogen
- 436/172307 . . Cyanide or isocyanide
- 436/173076 . . Nitrite or nitrate
- 436/173845 . . Amine and quaternary ammonium
- 436/174614 . . . Tertiary amine
- 436/175383 . . . Ammonia
- 436/176152 . . Total nitrogen determined
- 436/176921 . . . As part of an elemental analysis
- 436/177692 . . Oxides of nitrogen
- 436/178459 . . . Only nitrogen dioxide
- 436/179228 . . . Both nitrogen oxide and dioxide
- 436/18 . Sulfur containing
- 436/182 . . Organic or sulfhydryl containing [e.g., mercaptan, hydrogen, sulfide, etc.]
- 436/184 . . . Only hydrogen sulfide
- 436/186 . . Sulfur dioxide
- 436/188 . . Total or elemental sulfur
- 436/19 . Halogen containing
- 436/193333 . . In aqueous solution
- 436/196666 . . Carbon containing compound [e.g., vinylchloride, etc.]
- 436/20 . Oxygen containing
- 436/200833 . . Carbonyl, ether, aldehyde or ketone containing
- 436/201666 . . . Carboxylic acid
- 436/202499 . . . Formaldehyde or acetone
- 436/203332 . . Hydroxyl containing
- 436/204165 . . . Ethanol
- 436/204998 . . Inorganic carbon compounds
- 436/205831 . . . Carbon monoxide only
- 436/206664 . . Ozone or peroxide
- 436/207497 . . Molecular oxygen
- 436/208339 . . . Fuel/air mixture or exhaust gas analysis
- 436/209163 . . . Dissolved or trace oxygen or oxygen content of a sealed environment
- 436/21 . Hydrocarbon
- 436/212 . . Aromatic
- 436/214 . . Acyclic [e.g., methane, octane, isoparaffin, etc.]
- 436/216 . . . Unsaturated [e.g., ethylene, diene, etc.]
- 436/218 . . Total hydrocarbon, flammability, combustibility [e.g., air-fuel mixture, etc.]
- 436/22 . Hydrogen, per se
- 436/23 . Carbon containing
- 436/235 . . In an aqueous solution [e.g., TOC, etc.]
- 436/24 . Nuclear magnetic resonance, electron spin resonance or other spin effects or mass spectrometry
- 436/25 . including sample preparation
- 436/25125 . . Digestion or removing interfering materials
- 436/2525 . . Stabilizing or preserving
- 436/25375 . . Liberation or purification of sample or separation of material from a sample [e.g., filtering, centrifuging, etc.]
- 436/255 . . . including use of a solid sorbent, semipermeable membrane, or liquid extraction
- 436/25625 . . Dilution
- 436/2575 . . Volumetric liquid transfer
- 436/25875 . . Gaseous sample or with change of physical state

**Former US Class 442 series**

		442/174	. . . . Including particulate material other than fiber in coating or impregnation
<b>442/00</b>	<b>Fabric [woven, knitted, or nonwoven textile or cloth, etc.]</b>	442/176	. . . . Three or more layers
442/10	. Scrim [e.g., open net or mesh, gauze, loose or open weave or knit, etc.]	442/178	. . . . Synthetic polymeric fiber
442/102	. . Woven scrim	442/179	. . . . Nylon fiber
442/103	. . . Including a multifilament fiber precoated with other than free metal or alloy prior to weaving	442/181	. . . . Bitumen coating or impregnation
442/105	. . . Comprising a composite fiber	442/183	. . . Synthetic polymeric fiber
442/107	. . . Comprising at least two chemically different fibers	442/184	. . Nonwoven scrim
442/109	. . . Metal or metal-coated fiber-containing scrim	442/186	. . . Comprising a composite fiber
442/11	. . . . Including an additional free metal or alloy constituent	442/188	. . . Metal or metal-coated fiber-containing scrim
442/112	. . . . . Particulate free metal or alloy constituent	442/19	. . . . Including a paper layer
442/114	. . . . Including a foam layer	442/191	. . . Inorganic fiber-containing scrim
442/116	. . . . Including a woven fabric which is not a scrim	442/193	. . . . Including a foam layer
442/117	. . . . . Including a nonwoven fabric which is not a scrim	442/195	. . . Including a foam layer
442/119	. . . . Including a paper layer	442/197	. . . Including a nonwoven fabric which is not a scrim
442/121	. . . . Including a nonwoven fabric which is not a scrim	442/198	. . . Coated or impregnated
442/122	. . . . . Two or more nonwoven fabric layers	442/20	. Coated or impregnated woven, knit, or nonwoven fabric which is not [a] associated with another preformed layer or fiber layer or, [b] with respect to woven and knit, characterized, respectively, by a particular or differential weave or knit, wherein the coating or impregnation is neither a foamed material nor a free metal or alloy layer
442/124	. . . . Including a natural or synthetic rubber layer	442/2008	. . Fabric composed of a fiber or strand which is of specific structural definition
442/126	. . . . Including a preformed film, foil, or sheet	442/2016	. . Impregnation is confined to a plane disposed between both major fabric surfaces which are essentially free of impregnating material
442/128	. . . . Including a layer derived from a water-settable material [e.g., cement, gypsum, etc.]	442/2025	. . Coating produced by extrusion
442/129	. . . . Including a ceramic or glass layer	442/2033	. . Coating or impregnation formed <i>in situ</i> [e.g., by interfacial condensation, coagulation, precipitation, etc.]
442/131	. . . . Including a coating or impregnation of synthetic polymeric material	442/2041	. . Two or more non-extruded coatings or impregnations
442/133	. . . Inorganic fiber-containing scrim	442/2049	. . . Each major face of the fabric has at least one coating or impregnation
442/134	. . . . Including a carbon or carbonized fiber	442/2057	. . . . At least two coatings or impregnations of different chemical composition
442/136	. . . . Including a foam layer	442/2066	. . . . . Different coatings or impregnations on opposite faces of the fabric
442/138	. . . . Including a metal layer	442/2074	. . . . . At least one coating or impregnation contains particulate material
442/14	. . . . Including an additional scrim layer	442/2082	. . . . . . At least one coating or impregnation functions to fix pigments or particles on the surface of a coating or impregnation
442/141	. . . . Including a woven fabric which is not a scrim	442/209	. . . . . At least one coating or impregnation contains particulate material
442/143	. . . . Including a nonwoven fabric which is not a scrim	442/2098	. . . . At least two coatings or impregnations of different chemical composition
442/145	. . . . Including a preformed film, foil, or sheet	442/2107	. . . . . At least one coating or impregnation contains particulate material
442/147	. . . . Including a mica layer	442/2115	. . . . . . At least one coating or impregnation functions to fix pigments or particles on the surface of a coating or impregnation
442/148	. . . . Including a coating or impregnation containing particulate material other than fiber	442/2123	. . . . At least one coating or impregnation contains particulate material
442/15	. . . Including a foam layer	442/2131	. . . . . At least one coating or impregnation functions to fix pigments or particles on the surface of a coating or impregnation
442/152	. . . Including a free metal or alloy constituent	442/2139	. . Coating or impregnation specified as porous or permeable to a specific substance [e.g., water vapor, air, etc.]
442/153	. . . Including an additional scrim layer		
442/155	. . . Including a paper layer		
442/157	. . . . Two or more paper layers		
442/159	. . . Including a nonwoven fabric which is not a scrim		
442/16	. . . . Two or more nonwoven layers		
442/162	. . . Including a natural or synthetic rubber layer		
442/164	. . . Including a preformed film, foil, or sheet		
442/166	. . . . Cellulose acetate film or sheet		
442/167	. . . . Fluorinated polyolefin film or sheet		
442/169	. . . . Polyolefin film or sheet		
442/171	. . . Including a layer derived from a water-settable material [e.g., cement, gypsum, etc.]		
442/172	. . . Coated or impregnated		

- 442/2148 . . . Coating or impregnation is specified as microporous but is not a foam
- 442/2156 . . Coating or impregnation collects radionuclide or heavy metal
- 442/2164 . . Coating or impregnation specified as water repellent
- 442/2172 . . . Also specified as oil repellent
- 442/218 . . . Organosilicon containing
- 442/2189 . . . Fluorocarbon containing
- 442/2197 . . . Nitrogen containing
- 442/2205 . . . Natural oil or wax containing
- 442/2213 . . Coating or impregnation is specified as weather proof, water vapor resistant, or moisture resistant
- 442/2221 . . Coating or impregnation is specified as water proof
- 442/223 . . . Organosilicon containing
- 442/2238 . . . Fluorocarbon containing
- 442/2246 . . . Nitrogen containing
- 442/2254 . . . Natural oil or wax containing
- 442/2262 . . Coating or impregnation is oil repellent but not oil or stain release
- 442/227 . . . Fluorocarbon containing
- 442/2279 . . Coating or impregnation improves soil repellency, soil release, or anti- soil redeposition qualities of fabric
- 442/2287 . . . Fluorocarbon containing
- 442/2295 . . . Linear polyether group chain containing
- 442/2303 . . Coating or impregnation provides a fragrance or releases an odor intended to be perceptible to humans
- 442/2311 . . Coating or impregnation is a lubricant or a surface friction reducing agent other than specified as improving the "hand" of the fabric or increasing the softness thereof
- 442/232 . . . Fluorocarbon containing
- 442/2328 . . . Organosilicon containing
- 442/2336 . . . Natural oil or wax containing
- 442/2344 . . Coating or impregnation is anti-slip or friction-increasing other than specified as an abrasive
- 442/2352 . . Coating or impregnation functions to soften the feel of or improve the "hand" of the fabric
- 442/2361 . . Coating or impregnation improves stiffness of the fabric other than specified as a size
- 442/2369 . . Coating or impregnation improves elasticity, bendability, resiliency, flexibility, or shape retention of the fabric
- 442/2377 . . . Improves elasticity
- 442/2385 . . . Improves shrink resistance
- 442/2393 . . . Coating or impregnation provides crease-resistance or wash and wear characteristics
- 442/2402 . . Coating or impregnation specified as a size
- 442/241 . . Coating or impregnation improves snag or pull resistance of the fabric
- 442/2418 . . Coating or impregnation increases electrical conductivity or anti-static quality
- 442/2426 . . . Elemental carbon containing
- 442/2434 . . . Linear polyether group chain containing
- 442/2443 . . . Nitrogen and phosphorus containing
- 442/2451 . . . Phosphorus containing
- 442/2459 . . . Nitrogen containing
- 442/2467 . . . Sulphur containing
- 442/2475 . . Coating or impregnation is electrical insulation-providing, -improving, or -increasing, or conductivity-reducing
- 442/2484 . . Coating or impregnation is water absorbency-increasing or hydrophilicity-increasing or hydrophilicity-imparting
- 442/2492 . . . Polyether group containing
- 442/25 . . Coating or impregnation absorbs sound
- 442/2508 . . Coating or impregnation absorbs chemical material other than water
- 442/2516 . . . Chemical material is one used in biological or chemical warfare
- 442/2525 . . Coating or impregnation functions biologically [e.g., insect repellent, antiseptic, insecticide, bactericide, etc.]
- 442/2533 . . . Inhibits mildew
- 442/2541 . . . Insect repellent
- 442/2549 . . Coating or impregnation is chemically inert or of stated nonreactance
- 442/2557 . . . Oxygen or ozone resistant
- 442/2566 . . . Organic solvent resistant [e.g., dry cleaning fluid, etc.]
- 442/2574 . . . Acid or alkali resistant
- 442/2582 . . Coating or impregnation contains an optical bleach or brightener or functions as an optical bleach or brightener [e.g., it masks fabric yellowing, etc.]
- 442/259 . . Coating or impregnation provides protection from radiation [e.g., U.V., visible light, I.R., micscheme-change-itemave, high energy particle, etc.] or heat retention thru radiation absorption
- 442/2598 . . . Radiation reflective
- 442/2607 . . . Radiation absorptive
- 442/2615 . . Coating or impregnation is resistant to penetration by solid implements
- 442/2623 . . . Ballistic resistant
- 442/2631 . . Coating or impregnation provides heat or fire protection
- 442/2639 . . . Coated or impregnated asbestos fabric
- 442/2648 . . . Coating or impregnation is specified as an intumescent material
- 442/2656 . . . Antimony containing
- 442/2664 . . . Boron containing
- 442/2672 . . . Phosphorus containing
- 442/268 . . . . Phosphorus and nitrogen containing compound
- 442/2689 . . . . A phosphorus containing compound and a nitrogen containing compound
- 442/2697 . . . . Phosphorus and halogen containing compound
- 442/2705 . . . . A phosphorus containing compound and a halogen containing compound
- 442/2713 . . . Halogen containing
- 442/2721 . . . Nitrogen containing
- 442/273 . . Coating or impregnation provides wear or abrasion resistance
- 442/2738 . . Coating or impregnation intended to function as an adhesive to solid surfaces subsequently associated therewith
- 442/2746 . . . Heat-activatable adhesive
- 442/2754 . . . Pressure-sensitive adhesive
- 442/2762 . . Coated or impregnated natural fiber fabric [e.g., cotton, wool, silk, linen, etc.]
- 442/277 . . . Coated or impregnated cellulosic fiber fabric

- 442/2779 . . . . Coating or impregnation contains an acrylic polymer or copolymer [e.g., polyacrylonitrile, polyacrylic acid, etc.]
- 442/2787 . . . . Coating or impregnation contains a vinyl polymer or copolymer
- 442/2795 . . . . Coating or impregnation contains an epoxy polymer or copolymer or polyether
- 442/2803 . . . . Polymeric coating or impregnation from a silane or siloxane not specified as lubricant or water repellent
- 442/2811 . . . . Coating or impregnation contains polyimide or polyamide
- 442/282 . . . . Coating or impregnation contains natural gum, rosin, natural oil, or wax
- 442/2828 . . . . Coating or impregnation contains aldehyde or ketone condensation product
- 442/2836 . . . . . Phenol-aldehyde condensate
- 442/2844 . . . . . Melamine-aldehyde condensate
- 442/2852 . . . . . Amide-aldehyde condensate [e.g., modified urea-aldehyde condensate, etc.]
- 442/2861 . . Coated or impregnated synthetic organic fiber fabric
- 442/2869 . . . Coated or impregnated regenerated cellulose fiber fabric
- 442/2877 . . . Coated or impregnated polyvinyl alcohol fiber fabric
- 442/2885 . . . Coated or impregnated acrylic fiber fabric
- 442/2893 . . . Coated or impregnated polyamide fiber fabric
- 442/2902 . . . . Aromatic polyamide fiber fabric
- 442/291 . . . Coated or impregnated polyolefin fiber fabric
- 442/2918 . . . . Polypropylene fiber fabric
- 442/2926 . . Coated or impregnated inorganic fiber fabric
- 442/2934 . . . Coating or impregnation contains vinyl polymer or copolymer
- 442/2943 . . . . Vinyl acetate polymer or copolymer
- 442/2951 . . . Coating or impregnation contains epoxy polymer or copolymer or polyether
- 442/2959 . . . Coating or impregnation contains aldehyde or ketone condensation product
- 442/2967 . . . . Amide-aldehyde condensate
- 442/2975 . . . Coated or impregnated ceramic fiber fabric
- 442/2984 . . . Coated or impregnated carbon or carbonaceous fiber fabric
- 442/2992 . . . Coated or impregnated glass fiber fabric
- 442/30 . . Woven fabric [i.e., woven strand or strip material]
- 442/3008 . . . Woven fabric has an elastic quality
- 442/3016 . . . Including a preformed layer other than the elastic woven fabric [e.g., fabric or film or foil or sheet layer, etc.]
- 442/3024 . . . Including elastic strand or strip
- 442/3033 . . Including a strip or ribbon
- 442/3041 . . . Woven fabric comprises strips or ribbons only
- 442/3049 . . Including strand precoated with other than free metal or alloy
- 442/3057 . . . Multiple coatings
- 442/3065 . . Including strand which is of specific structural definition
- 442/3073 . . . Strand material is core-spun [not sheath-core bicomponent strand]
- 442/3081 . . . . Core is synthetic polymeric material
- 442/3089 . . . Cross-sectional configuration of strand material is specified
- 442/3098 . . . . Cross-sectional configuration varies longitudinally along the strand
- 442/3106 . . . . Hollow strand material
- 442/3114 . . . . Cross-sectional configuration of the strand material is other than circular
- 442/3122 . . . . . Cross-sectional configuration is multi-lobal
- 442/313 . . . Strand material formed of individual filaments having different chemical compositions
- 442/3138 . . . . Including inorganic filament
- 442/3146 . . Strand material is composed of two or more polymeric materials in physically distinct relationship [e.g., sheath-core, side-by-side, islands-in-sea, fibrils-in-matrix, etc.] or composed of physical blend of chemically different polymeric materials or a physical blend of a polymeric material and a filler material
- 442/3154 . . . Sheath-core multicomponent strand material
- 442/3163 . . . Islands-in-sea multicomponent strand material
- 442/3171 . . . Strand material is a blend of polymeric material and a filler material
- 442/3179 . . Woven fabric is characterized by a particular or differential weave other than fabric in which the strand denier or warp/weft pick count is specified
- 442/3187 . . . Triaxially woven fabric
- 442/3195 . . . Three-dimensional weave [e.g., x-y-z planes, multi-planar warps and/or wefts, etc.]
- 442/3203 . . . . Multi-planar warp layers
- 442/3211 . . . . Multi-planar weft layers
- 442/322 . . . Warp differs from weft
- 442/3228 . . . . Materials differ
- 442/3236 . . . . . Including inorganic strand material
- 442/3244 . . . . . Including natural strand material [e.g., cotton, wool, etc.]
- 442/3252 . . . . . Including synthetic polymeric strand material
- 442/326 . . . . . Including synthetic polymeric strand material
- 442/3268 . . . . . Including natural strand material
- 442/3276 . . . . . Including polyamide strand material
- 442/3285 . . . . . Including polyester strand material
- 442/3293 . . . Warp and weft are identical and contain at least two chemically different strand materials
- 442/3301 . . . Coated, impregnated, or autogenous bonded
- 442/3309 . . . . Woven fabric contains inorganic strand material
- 442/3317 . . . . Woven fabric contains synthetic polymeric strand material
- 442/3325 . . Including a foamed layer or component
- 442/3333 . . . Including a free metal or alloy constituent
- 442/3341 . . . Plural foam layers
- 442/335 . . . Plural fabric layers
- 442/3358 . . . . Including a nonwoven fabric layer
- 442/3366 . . . Woven fabric is coated, impregnated, or autogenously bonded
- 442/3374 . . . . Coating or impregnation includes particulate material other than fiber
- 442/3382 . . Including a free metal or alloy constituent
- 442/339 . . . Metal or metal-coated strand
- 442/3398 . . . Vapor or sputter deposited metal layer
- 442/3407 . . . Chemically deposited metal layer [e.g., chemical precipitation or electrochemical deposition or plating, etc.]

- 442/3415 . . . Preformed metallic film or foil or sheet [film or foil or sheet had structural integrity prior to association with the woven fabric]
- 442/3423 . . . . Plural metallic films or foils or sheets
- 442/3431 . . . . Plural fabric layers
- 442/3439 . . . . . Including a nonwoven fabric layer
- 442/3447 . . . . . Including a preformed synthetic polymeric film or sheet [i.e., film or sheet having structural integrity prior to association with the woven fabric]
- 442/3455 . . . . . Including particulate material other than fiber
- 442/3463 . . . . Plural fabric layers
- 442/3472 . . Woven fabric including an additional woven fabric layer
- 442/348 . . . . Mechanically needled or hydroentangled
- 442/3488 . . . . . Four or more layers
- 442/3496 . . . . . Coated, impregnated, or autogenously bonded
- 442/3504 . . . Woven fabric layers comprise chemically different strand material
- 442/3512 . . . . . Three or more fabric layers
- 442/352 . . . . . One of which is a nonwoven fabric layer
- 442/3528 . . . . Three or more fabric layers
- 442/3537 . . . . . One of which is a nonwoven fabric layer
- 442/3545 . . . . . Woven fabric layers impregnated with a blend of thermosetting and thermoplastic resins
- 442/3553 . . . . . Woven fabric layers impregnated with an organosilicon resin
- 442/3561 . . . . . Woven fabric layers impregnated with a natural or synthetic rubber
- 442/3569 . . . . . Woven fabric layers impregnated with a thermosetting resin
- 442/3577 . . . . . . Phenolic resin
- 442/3585 . . . . . . Epoxy resin
- 442/3594 . . . . . Woven fabric layers impregnated with a thermoplastic resin [e.g., vinyl polymer, etc.]
- 442/3602 . . . . Three or more distinct layers
- 442/361 . . . . . At least one layer is derived from water-settable material [e.g., cement, gypsum, etc.]
- 442/3618 . . . . . At least one layer contains wood or cork
- 442/3626 . . . . . At least one layer contains bituminous material [e.g., tar, pitch, asphalt, etc.]
- 442/3634 . . . . . At least one layer comprises paper
- 442/3642 . . . . . At least one layer contains natural or synthetic rubber
- 442/365 . . . . . At least one layer is a preformed synthetic polymeric film or sheet
- 442/3659 . . . . . At least one layer comprises ceramic or glass material in other than particulate form
- 442/3667 . . . . . Composite consisting of at least two woven fabrics bonded by an interposed adhesive layer [but not two woven fabrics bonded together by an impregnation which penetrates through the thickness of at least one of the woven fabric layers]
- 442/3675 . . . . . . Fabric layer contains natural strand material
- 442/3683 . . . . . . Fabric layer contains carbon or carbonaceous strand material
- 442/3691 . . . . . . Fabric layer contains glass strand material
- 442/3699 . . . . . . Including particulate material other than fiber
- 442/3707 . . Woven fabric including a nonwoven fabric layer other than paper
- 442/3715 . . . . Nonwoven fabric layer comprises parallel arrays of strand material
- 442/3724 . . . . Needled
- 442/3732 . . . . . Including an additional nonwoven fabric
- 442/374 . . . . . . Additional nonwoven fabric comprises chemically different strand material than the first nonwoven fabric
- 442/3748 . . . . . . Including inorganic strand material
- 442/3756 . . . . . Nonwoven fabric layer comprises at least two chemically different fibers
- 442/3764 . . . . . Coated, impregnated, or autogenously bonded
- 442/3772 . . . . Hydroentangled
- 442/378 . . . . . Coated, impregnated, or autogenously bonded
- 442/3789 . . . . . Plural nonwoven fabric layers
- 442/3797 . . . . . Coating or impregnation is derived from a water-settable material [e.g., cement, gypsum, etc.]
- 442/3805 . . . . . Coating or impregnation contains natural or synthetic rubber
- 442/3813 . . . . . Coating or impregnation contains synthetic polymeric material
- 442/3821 . . . . . Coating or impregnation contains bituminous material
- 442/3829 . . . . . Four or more layers
- 442/3837 . . . . . . Including particulate material other than fiber
- 442/3846 . . . . . Including particulate material other than fiber
- 442/3854 . . Woven fabric with a preformed polymeric film or sheet
- 442/3862 . . . . Ester condensation polymer sheet or film [e.g., polyethylene terephthalate, etc.]
- 442/387 . . . . Vinyl polymer or copolymer sheet or film [e.g., polyvinyl chloride, polyvinylidene chloride, polyvinyl acetate, etc.]
- 442/3878 . . . . Fluorinated olefin polymer or copolymer sheet or film [e.g., Teflon®, etc.]
- 442/3886 . . . . Olefin polymer or copolymer sheet or film [e.g., polypropylene, polyethylene, ethylene-butylene copolymer, etc.]
- 442/3894 . . . . Amide condensation polymer sheet or film [e.g., nylon 6, etc.]
- 442/3902 . . . . Polyimide sheet or film
- 442/3911 . . . . Natural or synthetic rubber sheet or film
- 442/3919 . . . . . Including particulate material other than fiber
- 442/3927 . . . Including a paper or wood pulp layer
- 442/3935 . . . . Mica paper layer
- 442/3943 . . . . Plural paper or wood pulp layers
- 442/3951 . . . . . Including a bituminous layer
- 442/3959 . . . . . Including an outermost adhesive layer
- 442/3967 . . . . . Including a natural or synthetic rubber layer
- 442/3976 . . . Including strand which is stated to have specific attributes [e.g., heat or fire resistance, chemical or solvent resistance, high absorption for aqueous composition, water solubility, heat shrinkability, etc.]
- 442/3984 . . . . Strand is other than glass and is heat or fire resistant
- 442/3992 . . . . Strand is heat shrinkable
- 442/40 . . Knit fabric [i.e., knit strand or strip material]
- 442/406 . . . Including parallel strips
- 442/413 . . . Including an elastic strand

- 442/419 . . Including strand precoated with other than free metal or alloy
- 442/425 . . Including strand which is of specific structural definition
- 442/431 . . . Cross-sectional configuration of strand material is specified
- 442/438 . . . Strand material formed of individual filaments having different chemical compositions
- 442/444 . . Strand is a monofilament composed of two or more polymeric materials in physically distinct relationship [e.g., sheath-core, side-by-side, islands-in-sea, fibrils-in-matrix, etc.] or composed of physical blend of chemically different polymeric materials or a physical blend of a polymeric material and a filler material
- 442/45 . . Knit fabric is characterized by a particular or differential knit pattern other than open knit fabric or a fabric in which the strand denier is specified
- 442/456 . . . Including additional strand inserted within knit fabric
- 442/463 . . . . Warp knit insert strand
- 442/469 . . Including a foamed layer or component
- 442/475 . . Including a free metal or alloy constituent
- 442/481 . . . Chemically deposited metal layer [e.g., chemical precipitation or electrochemical deposition or plating, etc.]
- 442/488 . . Including an additional knit fabric layer
- 442/494 . . Including a nonwoven fabric layer other than paper
- 442/50 . FELT FABRIC
- 442/51 . . From natural organic fiber [e.g., wool, etc.]
- 442/53 . . . Including particulate material other than fiber
- 442/54 . . . At least three layers
- 442/56 . . From synthetic organic fiber
- 442/57 . . Including particulate material other than fiber
- 442/59 . . At least three layers
- 442/60 . Nonwoven fabric [i.e., nonwoven strand or fiber material]
- 442/601 . . Nonwoven fabric has an elastic quality
- 442/602 . . . Nonwoven fabric comprises an elastic strand or fiber material
- 442/603 . . Including strand or fiber material precoated with other than free metal or alloy
- 442/604 . . . Strand or fiber material is glass
- 442/605 . . . Strand or fiber material is inorganic
- 442/607 . . . Strand or fiber material is synthetic polymer
- 442/608 . . Including strand or fiber material which is of specific structural definition
- 442/609 . . . Cross-sectional configuration of strand or fiber material is specified
- 442/61 . . . . Cross-sectional configuration varies longitudinally along strand or fiber material
- 442/611 . . . . Cross-sectional configuration of strand or fiber material is other than circular
- 442/612 . . . . Hollow strand or fiber material
- 442/613 . . . . Microcellular strand or fiber material
- 442/614 . . . Strand or fiber material specified as having microdimensions [i.e., microfiber]
- 442/615 . . . . Strand or fiber material is blended with another chemically different microfiber in the same layer
- 442/616 . . . . . Blend of synthetic polymeric and inorganic microfibers
- 442/618 . . . . . Blend of chemically different inorganic microfibers
- 442/619 . . . . Including other strand or fiber material in the same layer not specified as having microdimensions
- 442/62 . . . . Including another chemically different microfiber in a separate layer
- 442/621 . . . . Including other strand or fiber material in a different layer not specified as having microdimensions
- 442/622 . . . . Microfiber is a composite fiber
- 442/623 . . . . Microfiber is glass
- 442/624 . . . . Microfiber is carbon or carbonaceous
- 442/625 . . . . Autogenously bonded
- 442/626 . . . . Microfiber is synthetic polymer
- 442/627 . . . Strand or fiber material is specified as non-linear [e.g., crimped, coiled, etc.]
- 442/629 . . . . Composite strand or fiber material
- 442/63 . . . . Carbon or carbonaceous strand or fiber material
- 442/631 . . . . Glass strand or fiber material
- 442/632 . . . . A single nonwoven layer comprising non-linear synthetic polymeric strand or fiber material and strand or fiber material not specified as non-linear
- 442/633 . . . . . Synthetic polymeric strand or fiber material is of staple length
- 442/634 . . . . A nonwoven fabric having a layer comprising non-linear synthetic polymeric strand or fiber material and a separate and distinct layer comprising strand or fiber material which is not specified as non-linear
- 442/635 . . . . Synthetic polymeric strand or fiber material
- 442/636 . . . . . Synthetic polymeric strand or fiber material is of staple length
- 442/637 . . Including strand or fiber material which is a monofilament composed of two or more polymeric materials in physically distinct relationship [e.g., sheath-core, side-by-side, islands-in-sea, fibrils-in-matrix, etc.] or composed of physical blend of chemically different polymeric materials or a physical blend of a polymeric material and a filler material
- 442/638 . . . Side-by-side multicomponent strand or fiber material
- 442/64 . . . Islands-in-sea multicomponent strand or fiber material
- 442/641 . . . Sheath-core multicomponent strand or fiber material
- 442/642 . . . Strand or fiber material is a blend of polymeric material and a filler material
- 442/643 . . Including parallel strand or fiber material within the nonwoven fabric
- 442/644 . . . Parallel strand or fiber material is glass
- 442/645 . . . Parallel strand or fiber material is inorganic [e.g., rock wool, mineral wool, etc.]
- 442/646 . . . Parallel strand or fiber material is naturally occurring [e.g., cotton, wool, etc.]
- 442/647 . . Including a foamed layer or component
- 442/648 . . . Including a free metal or alloy constituent
- 442/649 . . . Plural foamed layers
- 442/651 . . . Plural fabric layers
- 442/652 . . . Nonwoven fabric is coated, impregnated, or autogenously bonded

- 442/653 . . . . Including particulate material other than fiber
- 442/654 . . Including a free metal or alloy constituent
- 442/655 . . . Metal or metal-coated strand or fiber material
- 442/656 . . . Preformed metallic film or foil or sheet [film or foil or sheet had structural integrity prior to association with the nonwoven fabric]
- 442/657 . . . Vapor, chemical, or spray deposited metal layer
- 442/658 . . . Particulate free metal or alloy constituent
- 442/659 . . Including an additional nonwoven fabric
- 442/66 . . . Additional nonwoven fabric is a spun-bonded fabric
- 442/662 . . . . Needled
- 442/663 . . . . Hydroentangled
- 442/664 . . . Including a wood fiber containing layer
- 442/665 . . . Including a layer derived from a water-settable material [e.g., cement, gypsum, etc.]
- 442/666 . . . Mechanically interengaged by needling or impingement of fluid [e.g., gas or liquid stream, etc.]
- 442/667 . . . . Needled
- 442/668 . . . Separate nonwoven fabric layers comprise chemically different strand or fiber material
- 442/669 . . . . At least one layer of inorganic strand or fiber material and at least one layer of synthetic polymeric strand or fiber material
- 442/67 . . . Multiple nonwoven fabric layers composed of the same inorganic strand or fiber material
- 442/671 . . . Multiple nonwoven fabric layers composed of the same polymeric strand or fiber material
- 442/673 . . . Including particulate material other than fiber
- 442/674 . . Nonwoven fabric with a preformed polymeric film or sheet
- 442/675 . . . Ester condensation polymer sheet or film [e.g., polyethylene terephthalate, etc.]
- 442/676 . . . Vinyl polymer or copolymer sheet or film [e.g., polyvinyl chloride, polyvinylidene chloride, polyvinyl acetate, etc.]
- 442/677 . . . Fluorinated olefin polymer or copolymer sheet or film [e.g., TeflonR, etc.]
- 442/678 . . . Olefin polymer or copolymer sheet or film [e.g., polypropylene, polyethylene, ethylene-butylene copolymer, etc.]
- 442/679 . . . Natural or synthetic rubber sheet or film
- 442/68 . . Melt-blown nonwoven fabric
- 442/681 . . Spun-bonded nonwoven fabric
- 442/682 . . Needled nonwoven fabric
- 442/684 . . . Containing at least two chemically different strand or fiber materials
- 442/685 . . . . Containing inorganic and polymeric strand or fiber materials
- 442/686 . . . . Containing polymeric and natural strand or fiber materials
- 442/687 . . . . Containing inorganic strand or fiber material
- 442/688 . . . . Containing polymeric strand or fiber material
- 442/689 . . Hydroentangled nonwoven fabric
- 442/69 . . Autogenously bonded nonwoven fabric
- 442/691 . . . Inorganic strand or fiber material only
- 442/692 . . . Containing at least two chemically different strand or fiber materials
- 442/693 . . Including a paper layer
- 442/695 . . Including a wood containing layer

- 442/696 . . Including strand or fiber material which is stated to have specific attributes [e.g., heat or fire resistance, chemical or solvent resistance, high absorption for aqueous compositions, water solubility, heat shrinkability, etc.]
- 442/697 . . Containing at least two chemically different strand or fiber materials
- 442/698 . . . Containing polymeric and natural strand or fiber materials
- 442/699 . . Including particulate material other than strand or fiber material

#### **Former US Class 464 Series**

- 464/00 Rotary shafts, gudgeons, housings, and flexible couplings for rotary shafts**
- 464/10 . . having heating or cooling means
- 464/20 . . with auxiliary indicator or alarm
- 464/30 . . Electrical or magnetic coupling
- 464/40 . . Coupling accommodates drive between members having misaligned or angularly related axes, transmits torque via radially directed pin, and has particular balancing means
- 464/50 . . Shafting having particular vibration dampening or balancing structure

#### **Former US Class 477 Series**

- 477/00 Interrelated power delivery controls, including engine control**
- 477/10 . . Steering by driving
- 477/20 . . Plural engines
- 477/23 . . . Electric engine
- 477/24 . . . . with brake control
- 477/26 . . . . with clutch control
- 477/27 . . . with clutch control
- 477/30 . . Electric engine
- 477/32 . . . with clutch control
- 477/322 . . . . with brake control
- 477/3225 . . . . Stopped at end of cycle
- 477/323 . . . Engine stopped at end of cycle
- 477/325 . . . Common controller
- 477/327 . . . . Electric clutch
- 477/328 . . . . Speed responsive
- 477/33 . . with transmission control
- 477/333 . . . Load motion limit control
- 477/337 . . . . Transmission change by moving engine
- 477/34 . . . Reversible engine
- 477/343 . . . Engine starting interlock
- 477/347 . . . Condition responsive engine control
- 477/35 . . Brake engaged when engine energy deactivated, brake disengaged when engine energy activated
- 477/357 . . . Cam actuated brake
- 477/363 . . . Electrically actuated brake
- 477/37 . . Brake actuation opens switch to engine
- 477/373 . . . Electrically actuated brake
- 477/377 . . . Fluid actuated brake
- 477/38 . . Control means selectively operates engine energy input and brake
- 477/387 . . . Fluid actuated brake
- 477/393 . . . Electrically actuated brake
- 477/40 . . Gas turbine engine
- 477/45 . . Continuously variable transmission
- 477/50 . . with supercharger

- 477/55 . . Manifold pressure control
- 477/60 . Transmission control
- 477/606 . . Differential transmission
- 477/613 . . Plural outputs
- 477/619 . . Continuously variable friction transmission
- 477/6197 . . . with fluid drive
- 477/6203 . . . with clutch control
- 477/621 . . . with brake control
- 477/6217 . . . Interrelated control of diverse transmissions
- 477/6223 . . . Constant speed output
- 477/623 . . . Controlled by engine map
- 477/6237 . . . Belt-type
- 477/624 . . . . Fluid pressure control
- 477/6242 . . . . . Ratio change controlled
- 477/62423 . . . . . Engine coast braking
- 477/62427 . . . . . with electric valve control
- 477/62429 . . . . . Duty ratio control
- 477/6243 . . . Fluid pressure control
- 477/625 . . Fluid resistance inhibits rotation of planetary transmission element
- 477/631 . . including fluid drive
- 477/633 . . . Impeller-turbine-type
- 477/6333 . . . . Engine controlled
- 477/6337 . . . . with countershaft gearing
- 477/63378 . . . . . and turbine shaft brake
- 477/63385 . . . . . and clutch control
- 477/63393 . . . . . Control of or by fluid drive
- 477/634 . . . . with hydrodynamic braking
- 477/6343 . . . . with nonratio brake
- 477/6347 . . . . Control responsive to fluid drive
- 477/635 . . . . with clutch control
- 477/6351 . . . . . Disengaged during shift
- 477/6352 . . . . . Speed responsive
- 477/63525 . . . . . Electrical
- 477/6353 . . . . with fluid unit vane control
- 477/6357 . . . . Fill and empty-type fluid units
- 477/636 . . . Ratio control
- 477/637 . . . . with planetary transmission control
- 477/638 . . with clutch control
- 477/6388 . . . and brake control
- 477/6389 . . . . Temperature responsive control
- 477/639 . . . . Engine controlled
- 477/6392 . . . . Clutch controlled
- 477/6394 . . . . Gearing controlled
- 477/6395 . . . Temperature responsive control
- 477/6403 . . . Clutch, engine, and transmission controlled
- 477/6407 . . . . Electronic digital control
- 477/641 . . . Clutch and transmission controlled
- 477/6414 . . . . Speed responsive control
- 477/6415 . . . . . with manual override
- 477/6417 . . . . . Vacuum actuated clutch
- 477/6418 . . . Clutch and engine controlled
- 477/6422 . . . . Speed responsive control
- 477/6424 . . . . . Plural speed signals
- 477/6425 . . . Clutch controlled
- 477/6428 . . . . Electric clutch
- 477/643 . . . . Vacuum actuated clutch
- 477/6432 . . . . . Electric control
- 477/6433 . . . Engine controlled
- 477/6437 . . . . Speed responsive
- 477/644 . . with brake control
- 477/646 . . . Anti-creep
- 477/647 . . . Brake controls transmission
- 477/648 . . . . Pressure controlled
- 477/649 . . . One control blocks another
- 477/65 . . Control by sensed ambient condition, pattern indicia, external signal, or temperature
- 477/653 . . . Temperature control
- 477/656 . . Engine starting interlock
- 477/663 . . Exhaust emission control
- 477/669 . . Engine ignition control for transmission change
- 477/67 . . . Ignition advanced or retarded
- 477/671 . . . Ignition intermitting and safety means limiting duration of intermission
- 477/673 . . . Ignition intermitting controlled by manifold pressure
- 477/674 . . . Ignition intermitting initiated by positioning accelerator
- 477/6745 . . . . Initiation inhibited by sensed condition
- 477/675 . . Engine controlled by transmission
- 477/676 . . . Constant output shaft speed
- 477/677 . . . Diminution during transmission change
- 477/679 . . . Responsive to transmission output condition
- 477/68 . . . Transmission setting contingent
- 477/6805 . . . . Change to neutral idles engine
- 477/6808 . . . . . Engine input variable in neutral
- 477/681 . . Anticreep
- 477/688 . . Transmission controlled by engine
- 477/689 . . . Shift from neutral shock control
- 477/6895 . . . . Pressure controlled
- 477/69 . . . Engine [coast] braking
- 477/691 . . . . Electric valve control
- 477/692 . . . by acceleration
- 477/693 . . . by input manifold pressure or engine fuel control
- 477/6931 . . . . Selector-type
- 477/6933 . . . . with positive shift means
- 477/69335 . . . . . with synchronization
- 477/6934 . . . . Prevents unsafe or unintentional shift
- 477/6935 . . . . . Reverse inhibitor
- 477/6936 . . . . Shift valve control
- 477/69362 . . . . . Hysteresis
- 477/693625 . . . . . Electric control
- 477/69363 . . . . . Plural shift valves
- 477/693635 . . . . . Electric control
- 477/693636 . . . . . Downshift control
- 477/693637 . . . . . . Kickdown
- 477/693638 . . . . . Selector valve overrule
- 477/69364 . . . . . Downshift control
- 477/693643 . . . . . . Kickdown
- 477/693645 . . . . . Selector valve overrule
- 477/69365 . . . . . Electric control
- 477/69366 . . . . . Downshift control
- 477/69367 . . . . . Downshift control
- 477/693675 . . . . . . Kickdown
- 477/69368 . . . . . Selector valve overrule
- 477/6937 . . . . Servo motor timing
- 477/69373 . . . . . Downshift
- 477/693738 . . . . . with fluid accumulator
- 477/693742 . . . . . Electric valve control
- 477/693746 . . . . . Double acting servo
- 477/693754 . . . . . Speed responsive control
- 477/693762 . . . . . Electric valve control



477/69377 . . . . .	with fluid accumulator	477/868 . . . . .	Controls brake valve
477/69378 . . . . .	Engine parameter controls back pressure	477/869 . . . . .	Vacuum actuated brake
477/69379 . . . . .	Electric valve control	477/87 . . . . .	Brake condition change modifies engine condition
477/6938 . . . . .	Double acting servo	477/873 . . . . .	Brake actuation interrupts ignition circuit of fluid engine
477/69383 . . . . .	Speed responsive control	477/877 . . . . .	Brake actuation decreases or eliminates fluid energy input to engine
477/69387 . . . . .	Electric valve control	477/878 . . . . .	by closing throttle valve
477/6939 . . . . .	Transmission pressure controlled	477/879 . . . . .	by preventing increasing operation of engine energy control
477/69393 . . . . .	Variable capacity pump	477/88 . . . . .	Decreasing fluid energy input to engine actuates brake
477/69395 . . . . .	Line pressure controlled	477/89 . . . . .	Control means selectively operates engine energy input and brake
477/693958 . . . . .	Responsive to speed	477/893 . . . . .	Foot operated control means
477/693962 . . . . .	Electric valve control	477/8936 . . . . .	Engine and brake control including interconnected elements
477/693964 . . . . .	Duty ratio control	477/8941 . . . . .	Pivots and translates
477/693965 . . . . .	Transmission setting contingent	477/8944 . . . . .	Pivots about intermediate fulcrum
477/693973 . . . . .	Electric valve control	477/8947 . . . . .	Pivots about two fulcrums
477/69398 . . . . .	Electric valve control	477/8953 . . . . .	Pivots about intermediate fulcrum
477/694 . . . . .	Engine control linkage mounted on manual gearshift lever	477/8959 . . . . .	Lever reciprocates on moveable supports at both ends
477/70 . . . . .	Clutch control	477/8964 . . . . .	Pivots for sequential operation
477/71 . . . . .	with starter	477/897 . . . . .	Control means including fluid passage
477/73 . . . . .	with fluid drive		
477/735 . . . . .	Speed responsive control		
477/74 . . . . .	with brake control		
477/743 . . . . .	Clutch controlled		
477/745 . . . . .	and brake controlled		
477/747 . . . . .	Engine controlled		
477/75 . . . . .	Condition responsive control		
477/753 . . . . .	Speed responsive		
477/755 . . . . .	Slip rate control		
477/757 . . . . .	Overload release		
477/759 . . . . .	Engine shut off		
477/76 . . . . .	Electric clutch		
477/78 . . . . .	Regulated clutch engagement		
477/79 . . . . .	Engine controlled by clutch control		
477/80 . . . . .	Brake control		
477/81 . . . . .	Sensed condition responsive control of engine of brake		
477/813 . . . . .	Brake		
477/814 . . . . .	and engine		
477/816 . . . . .	Speed or acceleration responsive		
477/817 . . . . .	Speed or acceleration responsive		
477/82 . . . . .	Plural diverse brake means		
477/83 . . . . .	Engine energy control having adjusting and holding device, with means on brake control to override holding device		
477/833 . . . . .	Holding device engaged by electric means		
477/835 . . . . .	Magnetic holding device		
477/837 . . . . .	Mechanical holding device engaged by mechanical means		
477/839 . . . . .	Device or means including a threaded shaft, rack or ratchet		
477/84 . . . . .	Brake control having holding device, with means on engine control to override holding device		
477/847 . . . . .	Holding device responsive to motion, speed or acceleration		
477/85 . . . . .	Holding device comprising brake valve operated by solenoid		
477/853 . . . . .	Holding device engaged by electric means		
477/857 . . . . .	Holding device comprising brake valve operated by solenoid		
477/86 . . . . .	Brake engaged when engine energy deactivated, brake disengaged when engine energy is activated		
477/865 . . . . .	Internal combustion engine		

**Former US Class 483 Series****483/00 Tool changing**

483/10 . . . . .	Process
483/11 . . . . .	with safety means
483/115 . . . . .	Guard
483/12 . . . . .	with means to regulate operation by means of replaceable information supply [e.g. , templet, tape, card, etc. ]
483/123 . . . . .	Replaceable information comprising tool location
483/127 . . . . .	including determining optimum tool access path
483/13 . . . . .	with control means energized in response to activator stimulated by condition sensor
483/132 . . . . .	Responsive to tool identifying information
483/134 . . . . .	Identifying information on tool or tool holder
483/136 . . . . .	Responsive to tool
483/138 . . . . .	including means to monitor and control, i.e., adaptive machining
483/14 . . . . .	with signal or indicator
483/15 . . . . .	with means to condition or adjust tool or tool support
483/16 . . . . .	with means to transfer work
483/165 . . . . .	Plural machine tools, e.g., flexible manufacturing
483/17 . . . . .	including machine tool or component
483/1702 . . . . .	Rotating work machine tool [e.g., screw machine, lathe, etc.]
483/1705 . . . . .	Tool support comprises rotary spindle
483/1707 . . . . .	Tool having specific mounting or work treating feature
483/171 . . . . .	Workpiece holder [e.g., chuck or chuck jaw, collet, etc.]
483/1712 . . . . .	Turning tool insert changer
483/1714 . . . . .	Tool changer between tool support and matrix
483/1717 . . . . .	Plural matrices
483/1719 . . . . .	Tool support comprises turret

- 483/1721 . . . . . Linearly moveable tool changer
- 483/1724 . . . . . Linearly moveable tool changer
- 483/1726 . . . Direct tool exchange between tool support and matrix
- 483/1729 . . Reciprocating tool machine tool [e.g., broaching machine, shaping machine, etc.]
- 483/1731 . . . including matrix
- 483/1733 . . Rotary spindle machine tool [e.g., milling machine, boring, machine, grinding machine, etc.]
- 483/1736 . . . Tool having specific mounting or work treating feature
- 483/1738 . . . . . Tool head
- 483/174 . . . . . Abrading wheel
- 483/1743 . . . . . including means for angularly orienting tool and spindle
- 483/1745 . . . . . Spindle angularly oriented to align with tool
- 483/1748 . . . Tool changer between spindle and matrix
- 483/175 . . . . . Plural matrices
- 483/1752 . . . . . including tool holder pivotable about axis
- 483/1755 . . . . . Plural tool holders pivotable about common axis
- 483/1757 . . . . . including intermediate tool changer
- 483/176 . . . . . Intermediate tool changer includes tool holder pivotable about axis
- 483/1762 . . . . . Tool holders pivotable with respect to each other
- 483/1764 . . . . . Tool holders pivotable about plural nonparallel axes
- 483/1767 . . . . . Linearly movable tool holders
- 483/1769 . . . . . Extensible tool holders
- 483/1771 . . . . . Translatable axis
- 483/1774 . . . . . Distinct tool changer for each tool
- 483/1776 . . . . . including intermediate tool changer
- 483/1779 . . . . . Linearly movable tool holder
- 483/1781 . . . . . Tool holder pivotable about plural nonparallel axes
- 483/1783 . . . . . including linearly translatable tool changer [e.g., shuttle, ram, etc.]
- 483/1786 . . . . . Plural tool holders
- 483/1788 . . . . . Orthogonally translatable
- 483/179 . . . Direct tool exchange between spindle and matrix
- 483/1793 . . . . . Spindle comprises tool changer
- 483/1795 . . . . . Matrix indexes selected tool to transfer position
- 483/1798 . . . . . including means to project tool from matrix
- 483/18 . . . Tool transfer to or from matrix
- 483/1809 . . Matrix including means to latch tool
- 483/1818 . . Matrix including means to project tool for transfer
- 483/1827 . . . Rectilinear
- 483/1836 . . . Pivoting
- 483/1845 . . Plural matrices
- 483/1855 . . . including tool replenishing
- 483/1864 . . including tool pot or adapter
- 483/1873 . . Indexing matrix
- 483/1882 . . . Rotary disc
- 483/1891 . . . Chain or belt
- 483/19 . . Miscellaneous