

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

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

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

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

16/54026	Pivoted	16/555 . .	Specified material
16/54028	Plural alternately useable detents	16/557 . .	Specific pintle structure
16/54029	Spring arm	16/558 . .	Specific leaf structure
16/540295	Plural opposed arms	16/559 . .	having prongs or cooperating structure on leaf
16/5403	by friction	16/5595 . . .	Angular leaf sections
16/54033	Screw-threaded adjustment	16/55963	Parallel sections
16/54034	Along or parallel to hinge axis	16/55975	Coplanar sections
16/540345	Threaded pintle	16/55988	including planar section perpendicular to hinge axis
16/54035	Cam or wedge actuator		
16/54038	On hinge pin or between surfaces surrounding hinge axis	16/56 . .	Closers
16/5404	Pivoted	16/568 . .	Spring and flexible link
16/54044	Plural alternately useable detents	16/577 . .	Spring and gear
16/54048	and sliding	16/585 . .	Spring and lever
16/54052	Serially connected pivoted arms between leaves [e.g., brace]	16/593 . .	Spring
16/54056	About axis along or parallel to hinge axis	16/595 . . .	Bow
16/5406	by transversely moving pin in slot	16/597 . . .	Rubber
16/5407	having discrete manipulatable release means [e.g., lever operated]	16/599 . . .	torsional
16/5408	by shifting hinged members	16/5995	Coil
16/54085	Along hinge axis	16/60 . . .	Volute
16/5409	Sliding	16/602 . .	Weight
16/54095	Along or parallel to hinge axis	16/61 . .	Closure checks
16/541	including toothed gear	16/615 . .	Inertia
16/542	comprising nested open curved portions attached to hinged members	16/62 . .	Pneumatic
16/543	including hinge pin	16/625 . .	Spring
16/544	including transversely moving pin in slot	16/628 . . .	Rubber
16/5443	Plural noncollinear pins and slots	16/6285	Rubber cushioned
16/5444	Parallel slots	16/629	Multiple or opposed buffer surfaces
16/5445	having pin fixed to pivoted arm or plate	16/6295	Link type
16/5448	Hinge pin movable along slot	16/6298 . .	Sash balances
16/545	including sliding surfaces to permit relative translation of hinged members	16/63 . .	Cord and counterweight
16/5453	and stop or abutment for pivotal movement	16/635 . .	Sash and cord
16/5457	Movement transverse to hinge axis	16/64 . .	Spring
16/546	Three-hinged members	16/641 . . .	Drum and cord
16/547	having plural hinge axes [e.g., multiple pintle]	16/642 . . .	Friction roller
16/5472	having transverse or skewed axes	16/643 . . .	Lever
16/5474	Connected by serially arranged pivoted links between hinged members	16/644 . . .	Rack and pinion
16/5475	Plural sets of serially arranged pivoted links	16/645 . .	Rack and pinion
16/5476	Four or more axes	16/65 . .	Sash-cord fasteners
16/5478	including stop or latch	16/655 . .	Bendable
16/548	including laminated leaf	16/66 . .	Chain
16/549	Wire hinge	16/665 . .	Clamps
16/551	having stop or abutment	16/67 . .	Hooks
16/5513	Adjustable or resilient	16/675 . .	Knot
16/5515	comprising relieved axially opposed relatively rotating surfaces	16/68 . .	Slack-cord holders
16/5518	comprising platelike bearing portion curved about hinge axis	16/685 . .	Weight
16/552	Hinge axis passes through hinged member [e.g., floor hinge]	16/69 . .	Sash-cord guides
16/5525	Pintle or pivot concealed in hinged member	16/698 . .	Wheel and casing
16/553	including means to retain pintle in hinge [e.g., tamper proof, nonrising pintle, etc.]	16/706 . .	Casings
16/5535	Threaded or slotted pintle or knuckle	16/71 . . .	Sheet metal, single piece
16/554	including means to fasten leaf to member	16/714 . .	Multiple wheel
16/5543	by expandable connector	16/722 . .	Sliding
16/5547	Self-penetrating fastener	16/73 . .	Sash weights
		16/743 . .	Composite
		16/755 . .	Sectional
		16/767 . .	Weight and wheel
		16/78 . .	Window-bead fasteners
		16/82 . .	Counterbalance device, <u>per se</u>
		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**24/00 Buckles, buttons, clasps, etc.**

- 24/10 . Miscellaneous
- 24/11 . Album fasteners
- 24/12 . Gun band type
- 24/13 . Article holder attachable to apparel or body
- 24/1303 . . Chatelaine safety hooks
- 24/1306 . . Flower
- 24/1309 . . . Pin attached
- 24/1312 . . Napkin
- 24/1315 . . . Hook
- 24/1318 . . . Neck enclosing
- 24/1321 . . Pencil
- 24/1324 . . . Clasp attached
- 24/1326 Finger ear, belt attached pencil holder
- 24/1329 Pencil holder with paper clip
- 24/1332 Combined and convertible pencil holder
- 24/1335 Container type pencil holder
- 24/1338 Separate pencil holder and pocket engaging clip
- 24/1341 Sliding jaw pencil holding clip
- 24/1344 Wire pencil holder
- 24/1347 Flexible shank pencil holder
- 24/135 with movable catch [e.g., pin pivoted lever, roller, etc.]
- 24/1353 Pivoted jaw pencil holder
- 24/1356 . . . Pin attached
- 24/1359 . . . Rule holder
- 24/1362 . . Sleeve holder [e.g., for inner coat]
- 24/1365 . . Pin attached
- 24/1368 . . Arm or leg carried holder
- 24/1371 . . Eyeglass holder including retaining means
- 24/1374 . . Neck supported holder
- 24/1376 . . Holder contains pocket engager [e.g., antitheft device, wallet protector]
- 24/1379 . . Key ring holder
- 24/1382 . . Receptacle type holder
- 24/1385 . . . Eyeglass or spectacle case
- 24/1388 . . Open-ended holster type holder
- 24/1391 . . Article held by clip with spring [e.g., leaf, coil] member
- 24/1394 . . Article held by clip
- 24/1397 . . Article held by flexible connector [e.g., chain]
- 24/14 . Bale and package ties, hose clamps
- 24/1402 . . Packet holders
- 24/1404 . . . Cord
- 24/1406 . . . Adjustable bands
- 24/1408 . . . Closed loops
- 24/141 . . . Plastic bands
- 24/1412 . . with tighteners
- 24/1414 . . . Wedge
- 24/1416 . . . Winder
- 24/1418 . . . Self-locking [dead center or snap action]
- 24/142 Adjustable girth
- 24/1422 Rack bar
- 24/1424 . . . Lever
- 24/1427 . . . Worm and tooth
- 24/1429 Pivotal worm band clamp
- 24/1431 Radial worm band clamp
- 24/1433 . . . Integral thread
- 24/1435 External thread
- 24/1437 Both ends threaded
- 24/1439 . . . Radial screw
- 24/1441 . . . Tangential screw
- 24/1443 Adjustable girth
- 24/1445 Step adjustment
- 24/1447 Plural separable parts
- 24/1449 Wire
- 24/1451 Plural separable parts
- 24/1453 Pivotal strap parts
- 24/1455 Plural wrap
- 24/1457 . . Metal bands
- 24/1459 . . . Separate connections
- 24/1461 One piece
- 24/1463 Sheet metal
- 24/1465 Buckle band connection
- 24/1467 Swedged sheet metal band connection
- 24/1469 End-to-end integral with band connecting means
- 24/1471 Pivoted parts
- 24/1473 Wedging parts
- 24/1476 Wire
- 24/1478 . . . Circumferentially swagged band clamp
- 24/148 . . . End-to-end integral band end connection
- 24/1482 . . . Ratchet and tool tightened band clamp
- 24/1484 . . . Spring closed band clamp
- 24/1486 . . . Screw locked band clamp
- 24/1488 . . . Swedged to lock band ends
- 24/149 . . Wire
- 24/1492 . . . Separate connections
- 24/1494 Wire
- 24/1496 . . Wooden bands
- 24/1498 . . Plastic band
- 24/15 . Bag fasteners
- 24/152 . . Swedged bag tie
- 24/153 . . Plastic band bag tie
- 24/155 . . Resilient slot bag tie
- 24/157 . . Twist-to-close bag tie
- 24/158 . . Slides to lock bag end within housing
- 24/16 . Belt fasteners
- 24/1604 . . Tighteners
- 24/1608 . . Hinged
- 24/1612 . . . Ring connected belt ends
- 24/1616 . . . Bent over flanged ends
- 24/162 . . . Pintle pin connected belt ends
- 24/1624 . . . V and round belts
- 24/1628 . . . Overlapped belt ends
- 24/1632 . . . Sheet metal knuckles, common pintle
- 24/1636 . . . Wire knuckles, common pintle
- 24/164 . . . Knuckle integral with belt material
- 24/1644 . . . Multiple pintles interconnected V-belt type
- 24/1648 . . Lacing
- 24/1652 . . One piece
- 24/1656 . . . Deflecting prong
- 24/166 . . Screw clamp
- 24/1664 . . Splices
- 24/1668 . . Wire
- 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	24/2584	. . . . Spaced segments of each wall of channel supported by different wings
24/252	. . . with stringer tape interwoven or knitted therewith	24/2586	. . . including pull tab attaching means
24/2521	. . . with stringer tape having specific weave or knit pattern	24/2588	. . . including means for attaching components of slider together
24/2523	. . . with core encircled by coils or bends	24/2589	. . . with ornamental slider
24/2525	. . . with mounting portion having structural formations complementary to stitching	24/2591	. . with means for concealing surfaces
24/2527	. . . Attached by stitching	24/2593	. . including complementary, aligning means attached to ends of interlocking surfaces
24/2529	. . . . String or stringer tape having distinctive property [e.g., heat sensitive]	24/2595	. . . having specific mounting connection or reinforcing structure at connection
24/253	. . . with stringer tape having distinctive property [e.g., heat sensitive]	24/2596	. . including means attaching interlocking surfaces together
24/2532	. . having interlocking surface with continuous cross section	24/2598	. . including means for obstructing movement of slider
24/2534	. . . Opposed interlocking surface having dissimilar cross section	24/26	. Slit closing means including guides on opposite edges of slit and slidable bridging component
24/2536	. . having interlocking surface formed from single member with varying cross section	24/262	. . with hand-actuated lever for shifting bridging component
24/2538	. . . Opposed surface having dissimilar cross section	24/264	. . including structure linking and allowing variations in separation between opposite-guide-contacting portions of component
24/2539	. . Interlocking surface constructed from plural elements in series	24/266	. . having bridging components attached in series along carrying element
24/2541	. . . having either noninterlocking element in, interrupted, or unequal length series	24/268	. . having separate, independently movable, bridging components
24/2543	. . . with element structural feature unrelated to interlocking or securing portion	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]
24/2545	. . . Dissimilar opposed elements	24/2708	. . Combined with diverse fastener
24/2546	. . . Wire element	24/2717	. . with distinct structure for sealing securement joint
24/2548	. . . Preattached to mounting cord	24/2725	. . with feature facilitating, enhancing, or causing attachment of filament mounting surface to support therefor
24/255	. . . having interlocking portion with specific shape	24/2733	. . having filaments formed from continuous element interwoven or knitted into distinct, mounting surface fabric
24/2552	. . . . including symmetrical formations on opposite walls for engaging mating elements	24/2742	. . having filaments of varied shape or size on same mounting surface
24/2554	. . . . including complementary formations on opposite walls for engaging mating elements	24/275	. . with feature facilitating or causing attachment of filaments to mounting surface
24/2555	. . . . . Mating elements having reversed orientation of formations	24/2758	. . . Thermal or adhesive
24/2557	. . . having mounting portion with specific shape or structure	24/2767	. . having several, repeating, interlocking formations along length of filaments
24/2559	. . . . including embracing jaws	24/2775	. . having opposed structure formed from distinct filaments of diverse shape to those mating therewith
24/2561	. . Slider having specific configuration, construction, adaptation, or material	24/2783	. . having filaments constructed from coated, laminated, or composite material
24/2563	. . . including relatively movable spaced wings [i.e., restraining walls]	24/2792	. . having mounting surface and filaments constructed from common piece of material
24/2564	. . . including converging channel and relatively movable separator island	24/28	. Freight container to freight container fastener
24/2566	. . . including position locking-means attached thereto	24/29	. Drum or can spacer fastener
24/2568	. . . . Protrusion on pull tab directly engaging interlocking surfaces	24/30	. Trim molding fastener
24/257	. . . . having surface engaging element shifted by reorientation of pull tab	24/301	. . having externally threaded attaching means
24/2571	. . . . . Resilient or spring biased element	24/302	. . . and laterally extending biasing appendage
24/2573	. . . . . Selectively shifted by either of two pull tabs	24/303	. . having laterally extending biasing appendage
24/2575	. . . . . with relatively movable link	24/304	. . Resilient metal type
24/2577	. . . . . Biased by distinct spring	24/306	. . . Strip formed
24/2579	. . . . . having aperture cooperating with guide post	24/307	. . . Sheet metal formed
24/258	. . . including means preventing bunching of structure-to-be-secured or stringer	24/308	. . . Wire formed
24/2582	. . . having specific contour or arrangement of converging channel, separator island, or wing	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]
 24/4511 Link with pivoted gate
 24/45115 Hook
 24/4512 Snap with spring bias [e.g., gate]
 24/45126 for connecting chains [e.g., opposed pivoted hook]
 24/45131 for heavy load bearing device [e.g., chain, rope, cable, etc.]
 24/45136 Haim, harness, whiffletree, rein, etc.
 24/45141 for chain, rope, cable, etc.
 24/45147 Coupler with sliding socket to complete interlock
 24/45152 . . . Each mating member having similarly shaped, sized, and operated interlocking or intermeshable face
 24/45157 Zipper-type [e.g., slider]
 24/45162 for garment [e.g., with ribs and grooves interlocking elements]
 24/45168 for container [e.g., bag]
 24/45173 Resilient element
 24/45178 Snap [e.g., identical elements]
 24/45183 Clasp [e.g., spring type]
 24/45188 for jewelry [e.g., buckle type]
 24/45194 for belt or strap
 24/45199 Hook
 24/45204 for belt, strap, etc. [e.g., with pivoted gate locking member]
 24/45209 for apparel
 24/45215 Slot and tab or tongue
 24/4522 Sliding or rotating element
 24/45225 . . . including member having distinct formations and mating member selectively interlocking therewith
 24/4523 Hook
 24/45236 Multiple catch [e.g., with pivoted gate]
 24/45241 Slot and tab or tongue
 24/45246 having teeth or serrations [e.g., sliding with respect to each other]
 24/45251 Resilient element [e.g., with spring]
 24/45257 Snap with cavity
 24/45262 Pin, post and receiver
 24/45267 Notched clasp [e.g., with receiving slot]

24/45272 Projection passes through cavity then moves toward noninserted portion of its member to complete interlock [e.g., snap hook]
 (Frozen)

WARNING

Groups [Y10T 24/45272](#) - [Y10T 24/45455](#) are no longer used for the classification of documents as of May 1, 2021.

The content of this group is being reclassified into groups [F16B 45/00](#), [F16B 45/002](#), [F16B 45/005](#), [F16B 45/008](#), [F16B 45/012](#), [F16B 45/015](#), [F16B 45/02](#), [F16B 45/021](#), [F16B 45/022](#), [F16B 45/023](#), [F16B 45/024](#), [F16B 45/026](#), [F16B 45/027](#), [F16B 45/028](#), [F16B 45/029](#), [F16B 45/031](#), [F16B 45/032](#), [F16B 45/033](#), [F16B 45/034](#), [F16B 45/035](#), [F16B 45/036](#), [F16B 45/037](#), [F16B 45/04](#), [F16B 45/043](#), [F16B 45/045](#), [F16B 45/047](#), [F16B 45/049](#), [F16B 45/051](#), [F16B 45/053](#), [F16B 45/055](#), [F16B 45/057](#), [F16B 45/059](#) and [F16B 45/06](#).

All groups listed in this Warning should be considered in order to perform a complete search.

24/45277 Entire projection member forms loop or ring when interlocked
 (Frozen)
 24/45283 Includes slidable gate closing entrance throat
 (Frozen)
 24/45288 Hook type projection member
 (Frozen)
 24/45293 Plural hooks entering opposite sides of same cavity
 (Frozen)
 24/45298 Hooks formed solely from wire
 (Frozen)
 24/45304 Noninserted portion of projection member includes movably connected gate for closing access throat
 (Frozen)
 24/45309 Threaded gate
 (Frozen)
 24/45314 Revolvably mounted disc shaped gate
 (Frozen)
 24/45319 Pivotally connected gate
 (Frozen)
 24/45325 Gate swings transversely to plane of hook
 (Frozen)
 24/4533 Gate also slides relative to pivot
 (Frozen)
 24/45335 having means biasing gate about pivot
 (Frozen)
 24/4534 and position locking-means for gate
 (Frozen)
 24/45346 Includes distinct biasing spring
 (Frozen)
 24/45351 Coil type spring
 (Frozen)
 24/45356 Coiled about pivotal axis of gate
 (Frozen)
 24/45361 having position locking-means for gate
 (Frozen)
 24/45366 Locking-means pivotally connected
 (Frozen)
 24/45372 Locking-means slidably mounted
 (Frozen)

24/45377	Gate closes when structure-to-be-secured is tensioned (Frozen)	24/45555	having separate mounting means inserted into area
24/45382	Track or way guided gate (Frozen)	24/4556	Plastic deformation of means or surface required for mounting
24/45387	having means biasing gate (Frozen)	24/45565	having separate mounting means encompassing cross section of projection
24/45393	Guide of gate encircles shank (Frozen)	24/45571	having dome-shaped head and expansion slit along side
24/45398	Cavity in shank forms track or way (Frozen)	24/45576	and connected surface at tip of head
24/45403	with position locking-means for gate (Frozen)	24/45581	having inserted end formed by oppositely biased surface segments
24/45408	Resilient, self-biased gate (Frozen)	24/45586	Constructed from wire
24/45414	with position locking-means for gate (Frozen)	24/45592	having both resiliently biased and rigid components forming external surface of projection
24/45419	Gate and hook formed from plastic (Frozen)	24/45597	Projection member including noninserted spring for engaging and pushing against receiving member
24/45424	Gate and hook formed solely from wire (Frozen)	24/45602	Receiving member includes either movable connection between interlocking components or variable configuration cavity
24/45429	Gate and hook formed from single piece of sheet metal (Frozen)	24/45607	with additional cavity for engaging different projection
24/45435	Projection pivotally attached to shank or mounting structure (Frozen)	24/45613	having common means actuating or releasing interlocking components or surfaces
24/4544	Projection slidably mounted to shank or mounting structure (Frozen)	24/45618	and interlocking with independently associated or dissociated projection members
24/45445	Projection self-biased towards shank or mounting structure (Frozen)	24/45623	and operator therefor
24/4545	and formed solely from wire (Frozen)	24/45628	for plural, oppositely shifting, similar interlocking components or segments
24/45455	Cooperating with relatively stationary wire gate (Frozen)	24/45634	Operator includes camming or wedging element
24/45461	Interlocking portion actuated or released responsive to preselected condition [e.g., heat, pressure]	24/45639	including pivotally connected element on receiving member
24/45466	having electric or fluid powered, actuation or release, of interlock	24/45644	for shifting pivotally connected interlocking component
24/45471	Projection having movable connection between components thereof or variable configuration	24/45649	Element and component pivot about same axis
24/45476	with additional, similar projection for engaging different cavity	24/45654	for shifting slidably connected and guided, nonself-biasing interlocking component
24/45482	and operator therefor	24/4566	including slidably connected and guided element on receiving member
24/45487	including camming or wedging element on projection member	24/45665	for shifting pivotally connected interlocking component
24/45492	Pivotally attached element	24/4567	for shifting slidably connected and guided, nonself-biasing, interlocking component
24/45497	including pivotal connection between projection components	24/45675	having pivotally connected interlocking component
24/45503	Component slides relative to connection	24/45681	Blocking removal of formation on projection from complementary formation on side wall of cavity
24/45508	and spring or resilient extension biasing about pivot	24/45686	and position locking-means therefor
24/45513	including slidably guided connection between nonself-biasing projection components	24/45691	and relatively movable handle therefor
24/45518	and distinct spring biasing component	24/45696	Requiring manual force thereon to interlock or disengage
24/45524	including resiliently biased projection component or surface segment	24/45702	Plural, oppositely shifting, similar interlocking components
24/45529	Requiring manual force applied against bias to interlock or disengage	24/45707	having aperture therein alignable with parallel access opening
24/45534	having connected leading edge and separated trailing arms		
24/45539	Cooperating with cavity having side walls and axially biased component capping end		
24/45545	forming total external surface of projection		
24/4555	and encircling hollow central area		

24/45712	having interlocking portion thereof housed continuously within cavity	24/4589	About pivotal connection
24/45717	having cavity with side walls and axially biased component capping end	24/45895	Includes resilient component separate from portion
24/45723	having slidably connected, nonself-biasing interlocking component	24/45901	Allows relocation of portion
24/45728	Blocking removal of formation on projection from complementary formation on side wall of cavity	24/45906	having component of means permanently deformed during mounting operation
24/45733	and position locking-means therefor	24/45911	and formed from or fixedly attached to projection or cavity portion
24/45738	and relatively movable handle therefor	24/45916	Cooperates with detached component of means
24/45743	Requiring manual force thereon to interlock or disengage	24/45921	having shape facilitating impaling of mounting surface
24/45749	Plural, oppositely shifting, similar interlocking components	24/45927	and inserted into or through cavity or projection
24/45754	having closed aperture therethrough alignable with parallel access opening	24/45932	and encircling cavity or projection
24/45759	having flaccid component defining access opening of cavity	24/45937	Consisting of thermally fusible substance
24/45764	Component formed solely by flaccid cord	24/45942	having threaded formation
24/4577	with nonflaccid component	24/45948	having specific structure for cooperating with stitching
24/45775	having resiliently biased interlocking component or segment	24/45953	having shape facilitating impaling of mounting surface
24/4578	Cavity or projection rotates about axis of cavity to dissociate	24/45958	Plural distinct cavities or projections
24/45785	Requiring manual force applied against bias to interlock or disengage	24/45963	Hook type
24/45791	and partially blocking separate, nonresilient access opening of cavity	24/45969	Hook-shaped projection member passing through cavity
24/45796	and closed elongated access opening for guiding transverse projection travel after insertion	24/45974	formed from single piece of sheet metal
24/45801	Nonresilient walls define opening	24/45979	formed solely from wire
24/45806	formed from wire	24/45984	Cavity having specific shape
24/45812	and access opening with gapped perimeter for allowing movement of noninserted projection support therepast	24/4599	including closed elongated access opening for guiding transverse projection travel after insertion
24/45817	Cavity constructed solely from wire	24/45995	having access opening with gapped perimeter for allowing movement of noninserted projection support therepast
24/45822	Partially blocking separate, nonresilient, access opening of cavity	24/46	Pin or separate essential cooperating device therefor
24/45827	and bodily shifted into or out of interlock location by manual force thereon	24/4602	with separately operable, manually releasable, nonpenetrating means for mounting [e.g., drapery hook]
24/45832	formed from wire	24/4604	having distinct guiding, holding, or protecting means for penetrated portion
24/45838	having curved or bent engaging section conforming to contour of projection	24/4605	Means detachable from or flaccidly connected to pin [e.g., hatpin type]
24/45843	Similar, distinct sections	24/4607	for pin having plural penetrating portions
24/45848	having distinct sections engaging projection at spaced points	24/4609	including relatively movable guiding, holding, or protecting components or surfaces
24/45853	including separate, nonprojection-engaging spring for biasing	24/4611	having operator for moving holding component or surface
24/45859	Biased component or segment entirely formed from wire	24/4613	Moves pivoting holding component
24/45864	having portion of cavity deformed during mounting	24/4614	Moves slidably guided, nonself-biasing, holding component
24/45869	and cooperating with separate mounting component	24/4616	having pierceable [e.g., cork] or naturally resilient [e.g., rubber] surfaces
24/45874	having axially extending expansion slit along side of cavity	24/4618	with pivotal connection therebetween
24/4588	Means for mounting projection or cavity portion	24/462	with slidable connection between nonself-biasing components
24/45885	Allows bodily movement facilitating interlock	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

WARNING

Group Y10T 24/4764 is impacted by reclassification into groups [F16B 45/00](#), [F16B 45/002](#), [F16B 45/005](#), [F16B 45/008](#), [F16B 45/012](#), [F16B 45/015](#), [F16B 45/02](#), [F16B 45/021](#), [F16B 45/022](#), [F16B 45/023](#), [F16B 45/024](#), [F16B 45/026](#), [F16B 45/027](#), [F16B 45/028](#), [F16B 45/029](#), [F16B 45/031](#), [F16B 45/032](#), [F16B 45/033](#), [F16B 45/034](#), [F16B 45/035](#), [F16B 45/036](#), [F16B 45/037](#), [F16B 45/04](#), [F16B 45/043](#), [F16B 45/045](#), [F16B 45/047](#), [F16B 45/049](#), [F16B 45/051](#), [F16B 45/053](#), [F16B 45/055](#), [F16B 45/057](#), [F16B 45/059](#) and [F16B 45/06](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- 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]

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	29/446	. . Reciprocating type
29/1163	. . with means to rotate and store stock supply	29/448	. . File-blank stripper
29/1169	. . . Axis of rotation parallel to support or mandrel	29/45	. Scale remover or preventor
29/1175	. . with means for arcuate shift of mandrel	29/4506	. . for hollow workpiece
29/1181	. . including means to handle produced strip or web	29/4511	. . . Interior surface
29/1188	. . . with common adjustment for cutter	29/4517	. . Rolling deformation or deflection
29/1194	. . Method	29/4522	. . . for wire or rod
29/12	. Buckle making	29/4528	. . with rotary head
29/13	. Button-fastener making	29/4533	. . Fluid impingement
29/14	. Shredding metal or metal wool article making	29/4539	. . . with heater
29/142	. . Metal wool making	29/4544	. . . Liquid jet
29/143	. . . Shaving or longitudinal cutting	29/455	. . . Airblast
29/145	. . . . Soap-pad making	29/4556	. . Chainer
29/147	. . Metal wool bundling	29/4561	. . Scraper or scalper
29/148	. . . Soap-pad making	29/4567	. . Brush type
29/15	. Cord heddle making	29/4572	. . Mechanically powered operator
29/16	. Cotter-pin making	29/4578	. . . Tack or needle type
29/17	. Crankshaft making apparatus	29/4583	. . . Hammer
29/18	. Expanded metal making	29/4589	. . . Blade or chisel
29/185	. . by use of reciprocating perforator	29/4594	. . Hand tool
29/19	. Eyebolt or hook making	29/46	. Burning in, wearing in, or oil burnishing
29/20	. Fence barb making	29/47	. Burnishing
29/203	. . by use of reciprocating cutter or die	29/471	. . of water laid fibrous article [e.g., paper]
29/207	. . by use of rotary cutter or die	29/473	. . . Heated burnishing member
29/21	. Finger-ring forming or sizing	29/474	. . . . Burnishing tool reciprocates across work surface
29/22	. Fishhook making	29/476	. . Continuous feed
29/23	. Gem and jewel setting	29/477	. . of gear article
29/24	. Hinge making or assembling	29/479	. . by shot peening or blasting
29/25	. Lacing-stud making	29/48	. Upholstered article making
29/26	. Paper-fastener making	29/481	. . Method
29/27	. Plow or cultivator iron making	29/482	. . Tufting
29/28	. Puddlers balls making	29/483	. . . with means to clench fastener
29/29	. Railway-chair making	29/484	. . . with means to insert guide pin or fastener
29/30	. Foil or other thin sheet-metal making or treating	29/486	. . Cover stretching
29/301	. . Method	29/487	. . Edge-roll forming
29/302	. . . Clad or other composite foil or thin metal making	29/488	. . form or holder
29/303	. . . with assembling or disassembling of a pack	29/489	. . . with follower
29/304	. . . . Using transitory solid cover material	29/49	. Method of mechanical manufacture
29/305	. . . . including bond prevention treatment	29/49002	. . Electrical device making
29/306	. . . . Disassembling of a pack	29/49004	. . . including measuring or testing of device or component part
29/307	. . . by shaving or longitudinal cutting	29/49005	. . . Acoustic transducer
29/308	. . . Using transitory material	29/49007	. . . Indicating transducer
29/309	. . Means for opening or separating a pack	29/49009	. . . Dynamoelectric machine
29/31	. Spectacle-frame making	29/49011	. . . . Commutator or slip ring assembly
29/32	. Spiral cutting of flat stock	29/49012	. . . . Rotor
29/33	. Stereotype-plate finishing	29/49014	. . . Superconductor
29/34	. Means for forming clench-tongue [eg, for tieband]	29/49016	. . . Antenna or wave energy "plumbing" making
29/35	. Tire upsetting, with cutting, punching, etc.	29/49018	. . . . with other electrical component
29/36	. toothed-cylinder making apparatus [e.g., texture working cylinder]	29/4902	. . . Electromagnet, transformer or inductor
29/37	. Impeller making apparatus	29/49021	. . . . Magnetic recording reproducing transducer [e.g., tape head, core, etc.]
29/38	. Type finishing and grooving	29/49023	. . . . including disassembly step
29/39	. Venetian blind assembling	29/49025	. . . . Making disc drive
29/40	. Umbrella-frame making	29/49027	. . . . Mounting preformed head/core onto other structure
29/42	. Piezoelectric device making	29/49028	. . . . . Mounting multitrack head
29/43	. Electric condenser making	29/4903	. . . . . with bonding
29/435	. . Solid dielectric type	29/49032	. . . . . Fabricating head structure or component thereof
29/44	. Filing	29/49034	. . . . . Treating to affect magnetic properties
29/442	. . of key article		
29/444	. . Continuous band type		

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
29/4905	Employing workholding means	29/49144	by metal fusion
29/49052	by etching	29/49146	with encapsulating, e.g., potting, etc.
29/49053	Multitrack heads having integral holding means	29/49147	Assembling terminal to base
29/49055	with bond/laminating preformed parts, at least two magnetic	29/49149	by metal fusion bonding
29/49057	Using glass bonding material	29/49151	by deforming or shaping
29/49059	with work positioning means	29/49153	with shaping or forcing terminal into base aperture
29/4906	Providing winding	29/49155	Manufacturing circuit on or in base
29/49062	Multilayered winding	29/49156	with selective destruction of conductive paths
29/49064	by coating	29/49158	with molding of insulated base
29/49066	Preformed winding	29/4916	Simultaneous circuit manufacturing
29/49067	Specified diverse magnetic materials	29/49162	by using wire as conductive path
29/49069	Data storage inductor or core	29/49163	with sintering of base
29/49071	by winding or coiling	29/49165	by forming conductive walled aperture in base
29/49073	by assembling coil and core	29/49167	with deforming of conductive path
29/49075	including permanent magnet or core	29/49169	Assembling electrical component directly to terminal or elongated conductor
29/49076	From comminuted material	29/49171	with encapsulating
29/49078	Laminated	29/49172	by molding of insulating material
29/4908	Acoustic transducer	29/49174	Assembling terminal to elongated conductor
29/49082	Resistor making	29/49176	with molding of electrically insulating material
29/49083	Heater type	29/49178	by shrinking of cover
29/49085	Thermally variable	29/49179	by metal fusion bonding
29/49087	with envelope or housing	29/49181	by deforming
29/49089	Filling with powdered insulation	29/49183	of ferrule about conductor and terminal
29/49091	with direct compression of powdered insulation	29/49185	of terminal
29/49092	Powdering the insulation	29/49187	with forming eyelet from elongated conductor
29/49094	by oxidation	29/49188	with penetrating portion
29/49096	with winding	29/4919	Through insulation
29/49098	Applying terminal	29/49192	with insulation removal
29/49099	Coating resistive material on a base	29/49194	Assembling elongated conductors, e.g., splicing, etc.
29/49101	Applying terminal	29/49195	with end-to-end orienting
29/49103	Strain gauge making	29/49197	including fluid evacuating or pressurizing
29/49105	Switch making	29/49199	including deforming of joining bridge
29/49107	Fuse making	29/49201	with overlapping orienting
29/49108	Electric battery cell making	29/49202	including oppositely facing end orienting
29/4911	including sealing	29/49204	Contact or terminal manufacturing
29/49112	including laminating of indefinite length material	29/49206	by powder metallurgy
29/49114	including adhesively bonding	29/49208	by assembling plural parts
29/49115	including coating or impregnating	29/4921	with bonding
29/49117	Conductor or circuit manufacturing	29/49211	of fused material
29/49119	Brush	29/49213	Metal
29/49121	Beam lead frame or beam lead device	29/49215	by impregnating a porous mass
29/49123	Co-axial cable	29/49217	by elastic joining
29/49124	On flat or curved insulated base, e.g., printed circuit, etc.		
29/49126	Assembling bases		
29/49128	Assembling formed circuit to base		

29/49218	with deforming	29/49316 . .	Impeller making
29/4922	with molding of insulation	29/49318 . . .	Repairing or disassembling
29/49222	forming array of contacts or terminals	29/4932 . . .	Turbomachine making
29/49224	with coating	29/49321	Assembling individual fluid flow interacting members, e.g., blades, vanes, buckets, on rotary support member
29/49226 . . .	Electret making	29/49323	Assembling fluid flow directing devices, e.g., stators, diaphragms, nozzles
29/49227 . . .	Insulator making	29/49325	Shaping integrally bladed rotor
29/49229 . .	Prime mover or fluid pump making	29/49327 . . .	Axial blower or fan
29/49231 . . .	I.C. [internal combustion] engine making	29/49329 . . .	Centrifugal blower or fan
29/49233	Repairing, converting, servicing or salvaging	29/4933 . . .	Fluid coupling device
29/49234	Rotary or radial engine making	29/49332 . . .	Propeller making
29/49236 . . .	Fluid pump or compressor making	29/49334	Utilizing hollow tube blank
29/49238	Repairing, converting, servicing or salvaging	29/49336 . . .	Blade making
29/4924	Scroll or peristaltic type	29/49337	Composite blade
29/49242	Screw or gear type, e.g., Moineau type	29/49339	Hollow blade
29/49243	Centrifugal type	29/49341	with cooling passage
29/49245	Vane type or other rotary, e.g., fan	29/49343	Passage contains tubular insert
29/49247 . . .	Valve lifter making	29/49345 . .	Catalytic device making
29/49249 . . .	Piston making	29/49346 . .	Rocket or jet device making
29/4925	Repairing, converting, servicing or salvaging	29/49348 . .	Burner, torch or metallurgical lance making
29/49252	Multi-element piston making	29/4935 . .	Heat exchanger or boiler making
29/49254	Utilizing a high energy beam, e.g., laser, electron beam	29/49352 . . .	Repairing, converting, servicing or salvaging
29/49256	with assembly or composite article making	29/49353 . . .	Heat pipe device making
29/49258	with thermal barrier or heat flow provision	29/49355 . . .	Solar energy device making
29/49259	with fiber reinforced structure	29/49357 . . .	Regenerator or recuperator making
29/49261	by composite casting or molding	29/49359 . . .	Cooling apparatus making, e.g., air conditioner, refrigerator
29/49263	by coating or cladding	29/49361 . . .	Tube inside tube
29/49265	Ring groove forming or finishing	29/49362 . . .	Tube wound about tube
29/49266	Gudgeon pin, wrist pin, piston pin, or boss therefor	29/49364 . . .	Tube joined to flat sheet longitudinally, i.e., tube sheet
29/49268	with other attaching provision for connecting rod	29/49366 . . .	Sheet joined to sheet
29/4927 . . .	Cylinder, cylinder head or engine valve sleeve making	29/49368	with inserted tubes
29/49272	with liner, coating, or sleeve	29/49369	Utilizing bond inhibiting material
29/49274 . . .	Piston ring or piston packing making	29/49371	with subsequent fluid expansion
29/49275	including forging or hammering	29/49373 . . .	Tube joint and tube plate structure
29/49277	including casting or molding	29/49375	including conduit expansion or inflation
29/49279	including rolling or die forming, e.g., drawing, punching	29/49377 . . .	Tube with heat transfer means
29/49281	including coating or plating	29/49378	Finned tube
29/49282	including grinding or honing	29/4938	Common fin traverses plurality of tubes
29/49284	including machining or angular cutting	29/49382	Helically finned
29/49286 . . .	Crankshaft making	29/49384	Internally finned
29/49288 . . .	Connecting rod making	29/49385	Made from unitary workpiece, i.e., no assembly
29/4929	including metallurgical bonding	29/49387 . . .	Boiler making
29/49291	including metal forging or die shaping	29/49389 . . .	Header or manifold making
29/49293 . . .	Camshaft making	29/49391 . . .	Tube making or reforming
29/49295 . . .	Push rod or rocker arm making	29/49393 . . .	with metallurgical bonding
29/49297 . . .	Seal or packing making	29/49394 . .	Accumulator making
29/49298 . . .	Poppet or I.C. engine valve or valve seat making	29/49396 . .	Condenser, evaporator or vaporizer making
29/493	Valve guide making	29/49398 . .	Muffler, manifold or exhaust pipe making
29/49302	Repairing, converting, servicing or salvaging	29/494 . .	Fluidic or fluid actuated device making
29/49304	Valve tappet making	29/49401 . .	Fluid pattern dispersing device making, e.g., ink jet
29/49306	Valve seat making	29/49403 . .	Tapping device making
29/49307	Composite or hollow valve stem or head making	29/49405 . .	Valve or choke making
29/49309	including forging	29/49407 . . .	Repairing, converting, servicing or salvaging
29/49311	including extruding	29/49409 . . .	Valve seat forming
29/49313	including casting	29/4941 . . .	Valve stem or tire valve making
29/49314	with assembly or composite article making		

29/49412 . . . with assembly, disassembly or composite article making	29/49515 Joining spokes to rim and hub
29/49414 Joining plural semi-circular components	29/49517 Joining spokes to rim
29/49416 with material shaping or cutting	29/49519 Joining spokes to hub
29/49417 including molding or casting	29/4952 Making plural spokes from a single blank
29/49419 including machining or drilling	29/49522 Individual spoke making
29/49421 including metallurgical bonding	29/49524 Rim making
29/49423 including metal deforming	29/49526 with assembling
29/49425 including metallurgical bonding	29/49528 Demountable rim making
29/49426 . . . including metal shaping and diverse operation	29/49529 Die-press shaping
29/49428 . . Gas and water specific plumbing component making	29/49531 Roller forming
29/4943 . . . Plumbing fixture making	29/49533 Hub making
29/49432 . . . Nozzle making	29/49535 with assembling
29/49433 Sprayer	29/49536 Hub shaping
29/49435 . . . Flexible conduit or fitting therefor	29/49538 Tire making
29/49437 . . . Flue connector device making	29/4954 Wheel trim making, e.g., wheel cover, hubcap
29/49439 . . . Trap making	29/49542 with means for retaining trim member on wheel
29/4944 . . . Return connector device making	29/49544 . . . Roller making
29/49442 . . . T-shaped fitting making	29/49545 . . . Repairing or servicing
29/49444 . . . Elbow or L-shaped fitting making	29/49547 . . . Assembling preformed components
29/49446 . . . Ferrule making or reforming	29/49549 Work contacting surface element assembled to core
29/49448 . . . Agricultural device making	29/49551 Work contacting surface wound about core
29/49449 . . . Traction apparatus, e.g., for tractor	29/49552 with prestressing of component by heat differential, e.g., shrink, fit
29/49451 . . . Harvester guard	29/49554 Work contacting surface having annular axial sections
29/49453 . . . Pulley making	29/49556 Work contacting surface element assembled to end support members
29/49455 . . . Assembly	29/49558 Includes securing removable cover on roller
29/49456 with shaping	29/4956 Fabricating and shaping roller work contacting surface element
29/49458 . . . Disc splitting to form pulley rim groove	29/49561 toothed roller
29/4946 . . . Groove forming in sheet metal pulley rim	29/49563 with coating or casting about a core
29/49462 . . . Gear making	29/49565 One-piece roller making
29/49464 . . . Assembling of gear into force transmitting device	29/49567 . . . Dental appliance making
29/49465 . . . Gear mounting	29/49568 Orthodontic device making
29/49467 . . . Gear shaping	29/4957 . . . Sound device making
29/49469 Worm gear	29/49572 . . . Hearing aid component making
29/49471 Roll forming	29/49574 . . . Musical instrument or tuning fork making
29/49472 Punching or stamping	29/49575 . . . including diaphragm or support therefor
29/49474 Die-press shaping	29/49577 . . . Phonograph component making
29/49476 Gear tooth cutting	29/49579 . . . Watch or clock making
29/49478 Gear blank making	29/49581 . . . having arbor, pinion, or balance
29/4948 with specific gear material	29/49583 . . . having indicia, face, or dial
29/49481 . . . Wheel making	29/49584 . . . having case, cover, or back
29/49483 . . . Railway or trolley wheel making	29/49586 . . . having crown, stem, or pendent
29/49485 Multiple part or composite	29/49588 . . . Jewelry or locket making
29/49487 with axle or hub	29/4959 . . . Human adornment device making
29/49488 . . . Steering wheel	29/49591 Bracelet making
29/4949 . . . Material winding, e.g., reel, spool	29/49593 Finger ring making
29/49492 . . . Land wheel	29/49595 . . . Latch, clasp, or fastener component making
29/49494 Assembling tire to wheel body	29/49597 . . . Ornamental stock making
29/49496 Disc type wheel	29/49599 . . . Knob or knob shank making
29/49497 Assembling wheel disc to rim and hub	29/496 . . . Multiperforated metal article making
29/49499 Assembling wheel disc to rim	29/49602 . . . Coil wound wall screen
29/49501 with disc shaping	29/49604 . . . Filter
29/49503 Integral rim and disc making	29/49606 . . . Turnbuckle making
29/49504 Disc shaping	29/49607 . . . Spring-head clip making
29/49506 Tensioned spoke type wheel making	29/49609 . . . Spring making
29/49508 Tensioning all spokes simultaneously	29/49611 . . . for vehicle or clutch
29/4951 Tensioning spokes in series	
29/49512 Tensioning spokes individually	
29/49513 Compression, e.g., nontension, spoke type wheel making	

29/49613 . . .	for human comfort	29/49709 . . .	Specific metallic composition
29/49615 . . .	Resilient shock or vibration absorber utility	29/4971 . . .	Nonmetallic bearing element
29/49616 . .	Structural member making	29/49712 . .	Ball making
29/49618 . . .	Restoring existing member, e.g., reinforcing, repairing	29/49714 . . .	Hollow ball
29/4962 . . .	Grille making	29/49716 . .	Converting
29/49622 . . .	Vehicular structural member making	29/49718 . .	Repairing
29/49623 . . .	Static structure, e.g., a building component	29/49719 . . .	Seal or element thereof
29/49625	Openwork, e.g., a truss, joist, frame, lattice-type or box beam	29/49721 . . .	with disassembling
29/49627	Frame component	29/49723	including reconditioning of part
29/49629	Panel	29/49725	by shaping
29/49631	Columnar member	29/49726	Removing material
29/49632	Metal reinforcement member for nonmetallic, e.g., concrete, structural element	29/49728	and by a metallurgical operation, e.g., welding, diffusion bonding, casting
29/49634	Beam or girder	29/4973	Replacing of defective part
29/49636 . .	Process for making bearing or component thereof	29/49732 . . .	by attaching repair preform, e.g., remaking, restoring, or patching
29/49638 . . .	Repairing	29/49734	and removing damaged material
29/49639 . . .	Fluid bearing	29/49735	Mechanically attaching preform with separate fastener
29/49641 . . .	Linear bearing	29/49737	Metallurgically attaching preform
29/49643 . . .	Rotary bearing	29/49739	Mechanically attaching preform by separate fastener
29/49645	Thrust bearing	29/49741	Screw threaded fastener
29/49647	Plain bearing	29/49742	Metallurgically attaching preform
29/49648	Self-adjusting or self-aligning, including ball and socket type, bearing and component making	29/49744	Screw threaded preform
29/4965	Deforming socket to secure ball	29/49746 . . .	by applying fluent material, e.g., coating, casting
29/49652	Die-press shaping	29/49748 . . .	by shaping, e.g., bending, extruding, turning, etc.
29/49654	having liner	29/4975	including heating
29/49655	having liner	29/49751 . .	Scrap recovering or utilizing
29/49657	Socket making	29/49753 . . .	Metalworking to consolidate scrap
29/49659	by molding or casting	29/49755 . . .	Separating one material from another
29/49661	Nonmetallic socket	29/49757	by burning or heating
29/49663	by assembling	29/49758 . .	During simulated operation or operating conditions
29/49664	Ball making	29/4976 . . .	Temperature
29/49666	with metallurgical bonding	29/49762 . .	Center locating and shaping
29/49668	Sleeve or bushing making	29/49764 . .	with testing or indicating
29/4967	Nonmetallic	29/49766 . . .	torquing threaded assemblage or determining torque herein
29/49671	Strip or blank material shaping	29/49767	Determining relative number of threaded member rotations
29/49673	Die-press shaping	29/49769 . . .	Using optical instrument [excludes mere human eyeballing]
29/49675	having inner lining layer	29/49771 . . .	Quantitative measuring or gauging
29/49677	having liner	29/49773	by radioactive tracing
29/49679	Anti-friction bearing or component thereof	29/49774	by vibratory or oscillatory movement
29/4968	Assembling of race, cage, and rolling anti-friction members	29/49776	Pressure, force, or weight determining
29/49682	Assembling of race and rolling anti-friction members	29/49778 . . .	with aligning, guiding, or instruction
29/49684	with race making	29/4978	Assisting assembly or disassembly
29/49686	Assembling of cage and rolling anti-friction members	29/49782 . .	of a slide fastener
29/49687	with cage making	29/49783 . . .	of slider
29/49689	Race making	29/49785 . . .	of interlocking element
29/49691	Cage making	29/49787 . .	Obtaining plural composite product pieces from preassembled workpieces
29/49693	Roller making	29/49789 . .	Obtaining plural product pieces from unitary workpiece
29/49694	Ball making	29/4979 . . .	Breaking through weakened portion
29/49696 . . .	Mounting	29/49792 . . .	Dividing through modified portion
29/49698 . . .	Demounting	29/49794 . . .	Dividing on common outline
29/497 . . .	Pre-usage process, e.g., preloading, aligning	29/49796 . . .	Coacting pieces
29/49702 . . .	Lubricating		
29/49703 . . .	Sealing		
29/49705 . . .	Coating or casting		
29/49707 . . .	Bearing surface treatment		

29/49798	. . . Dividing sequentially from leading end, e.g., by cutting or breaking	29/49883	. . . Ribbing
29/49799	. . Providing transitory integral holding or handling portion	29/49885	. . . with coating before or during assembling
29/49801	. . Shaping fiber or fibered material	29/49886	. . . . to roughen surface
29/49803	. . Magnetically shaping	29/49888	. . . Subsequently coating
29/49805	. . Shaping by direct application of fluent pressure	29/4989	. . . with spreading of cable strands
29/49806	. . . Explosively shaping	29/49892	. . . Joining plate edge perpendicularly to frame
29/49808	. . Shaping container end to encapsulate material	29/49893	. . . Peripheral joining of opposed mirror image parts to form a hollow body
29/4981	. . Utilizing transitory attached element or associated separate material	29/49895	. . . Associating parts by use of aligning means [e.g., use of a drift pin or a "fixture"]
29/49812	. . . Temporary protective coating, impregnation, or cast layer	29/49897	. . . . Registering mating opposed tool parts [e.g., registering a punch and a cooperating die]
29/49813	. . Shaping mating parts for reassembly in different positions	29/49899	. . . . by multiple cooperating aligning means
29/49815	. . Disassembling	29/49901	. . . . Sequentially associating parts on stationary aligning means
29/49817	. . . with other than ancillary treating or assembling	29/49902	. . . . by manipulating aligning means
29/49819	. . . with conveying of work or disassembled work part	29/49904	. . . Assembling a subassembly, then assembling with a second subassembly
29/49821	. . . by altering or destroying work part or connector	29/49906	. . . Metal deforming with nonmetallic bonding
29/49822	. . . by applying force	29/49908	. . . Joining by deforming
29/49824	. . . . to elastically deform work part or connector	29/49909	. . . . Securing cup or tube between axially extending concentric annuli
29/49826	. . Assembling or joining	29/49911	. . . . . by expanding inner annulus
29/49828	. . . Progressively advancing of work assembly station or assembled portion of work	29/49913	. . . . . by constricting outer annulus
29/49829	. . . . Advancing work to successive stations [i.e., assembly line]	29/49915	. . . . . Overedge assembling of seated part
29/49831	. . . . Advancing station	29/49917	. . . . . by necking in cup or tube wall
29/49833	. . . Punching, piercing or reaming part by surface of second part	29/49918	. . . . . At cup or tube end
29/49835	. . . . with shaping	29/4992	. . . . . by flaring inserted cup or tube end
29/49837	. . . . . of first part	29/49922	. . . . . by bending over projecting prongs
29/49838	. . . by stringing	29/49924	. . . . . of parallel side-by-side elongated members
29/4984	. . . Retaining clearance for motion between assembled parts	29/49925	. . . . . Inward deformation of aperture or hollow body wall
29/49842	. . . . Between tube-forming helical coils	29/49927	. . . . . Hollow body is axially joined cup or tube
29/49844	. . . . Through resilient media	29/49929	. . . . . Joined to rod
29/49845	. . . . by deforming interlock	29/49931	. . . . . Joined to overlapping ends of plural rods
29/49847	. . . . . by folding part into plural ears	29/49933	. . . . . After thinning
29/49849	. . . . . by wrapping around	29/49934	. . . . . by axially applying force
29/49851	. . . . . of link closure	29/49936	. . . . . Surface interlocking
29/49853	. . . . . of sphere, i.e., ball, in socket	29/49938	. . . . . Radially expanding part in cavity, aperture, or hollow body
29/49854	. . . . . Ball point pen making	29/4994	. . . . . Radially expanding internal tube
29/49856	. . . . . Allowing assembled sphere to move in single plane only	29/49941	. . . . . Peripheral edge joining of abutting plates
29/49858	. . . . . of flange into tubular socket	29/49943	. . . . . Riveting
29/4986	. . . . . Outwardly deforming internally fitted rod	29/49945	. . . by driven force fit
29/49861	. . . Sizing mating parts during final positional association	29/49947	. . . by applying separate fastener
29/49863	. . . with prestressing of part	29/49948	. . . . Multipart cooperating fastener [e.g., bolt and nut]
29/49865	. . . . by temperature differential [e.g., shrink fit]	29/4995	. . . . . Nonthreaded
29/49867	. . . . of skin on frame member	29/49952	. . . . . At least one part is nonmetallic
29/49869	. . . . . by flexing	29/49954	. . . . . Fastener deformed after application
29/4987	. . . . Elastic joining of parts	29/49956	. . . . . Riveting
29/49872	. . . . . Confining elastic part in socket	29/49957	. . . . . At least one part nonmetallic
29/49874	. . . . Prestressing rod, filament or strand	29/49959	. . . . . Nonresilient fastener
29/49876	. . . . by snap fit	29/49961	. . . . . At least one part nonmetallic
29/49877	. . . of flexible wall, expansible chamber devices [e.g., bellows]	29/49963	. . . . . Threaded fastener
29/49879	. . . Spaced wall tube or receptacle	29/49964	. . . . . At least one part nonmetallic
29/49881	. . . of separate helix [e.g., screw thread]	29/49966	. . . . . with supplemental joining
		29/49968	. . . . . Metal fusion joining
		29/4997	. . . . . At least one part nonmetallic
		29/49972	. . with separating, localizing, or eliminating of as-cast defects from a metal casting [e.g., anti-pipe]

29/49973	. . . Compressing ingot while still partially molten	29/5141	. . . . and means to stake electric wire to commutator or armature in assembling of electric motor or generator
29/49975	. . . Removing defects	29/5142	. . . . and means to sever work from supply
29/49977	. . . . From center of ingot to leave hollow blank	29/5143	. . . . and means to machine product
29/49979	. . . . After deforming	29/5145	. . . . . to sever product to length
29/4998	. . Combined manufacture including applying or shaping of fluent material	29/5146	. . Common reciprocating support for spaced tools
29/49982	. . . Coating	29/5147	. . including composite tool
29/49984	. . . . and casting	29/5148	. . . including severing means
29/49986	. . . . Subsequent to metal working	29/5149	. . . . to sever electric terminal from supply strip
29/49988	. . . Metal casting	29/515	. . . . to trim electric component
29/49989	. . . . Followed by cutting or removing material	29/5151	. . . . . Means comprising hand-manipulatable implement
29/49991	. . . . Combined with rolling	29/5152	. . with turret mechanism
29/49993	. . . Filling of opening	29/5153	. . . Multiple turret
29/49995	. . Shaping one-piece blank by removing material	29/5154	. . . tool turret
29/49996	. . . Successive distinct removal operations	29/5155	. . . . Rotary tool holder
29/49998	. . Work holding	29/5157	. . . . Sliding tool holder
29/50	. Convertible metal working machine	29/5158	. . . . Fluid operated
29/505	. . Vise type	29/5159	. . . . Cam operated
29/51	. Plural diverse manufacturing apparatus including means for metal shaping or assembling	29/516	. . . . . Longitudinal turret axis
29/5101	. . Slide fastener or slide fastener element	29/5161	. . . . . Transverse turret axis
29/5102	. . Binding or covering and cutting	29/5162	. . . . Lever operated
29/5103	. . . Cutting covering material only	29/5163	. . . . Rack-and-pinion operated
29/5104	. . Type of machine	29/5164	. . . . Screw operated
29/5105	. . . Drill press	29/5165	. . . including rotating and/or locking means
29/5107	. . . . Drilling and other	29/5166	. . . . Frictional and positive
29/5108	. . . . Portable	29/5167	. . . . Lock means for tool or work turrets
29/5109	. . . Lathe	29/5168	. . Multiple-tool holder
29/511	. . . . Grinding attachment	29/517	. . . Laterally movable stock holder
29/5111	. . . . Pulley or wheel	29/5171	. . . Axial tool and transversely movable slide rest
29/5112	. . . . Convertible	29/5172	. . . . Rotary tool spindle
29/5113	. . . . Commutator	29/5173	. . . Longitudinally and transversely movable
29/5114	. . . . Lathe and tool	29/5174	. . . . Rotary tool spindle
29/5115	. . . Planer	29/5175	. . . Oscillating tool
29/5116	. . forging and bending, cutting or punching	29/5176	. . including machining means
29/5117	. . . Fastener [zipper]	29/5177	. . . and work-holder for assembly
29/5118	. . . Riveting	29/5178	. . Attachment
29/512	. . . Ball making	29/5179	. . Speed controller
29/5121	. . . Wire working	29/518	. . Carriage stop mechanism
29/5122	. . with means to feed work during tool contact	29/5182	. . Flash remover
29/5123	. . . including nonrotary flying tool	29/5183	. . Welding strip ends
29/5124	. . with means to feed work intermittently from one tool station to another	29/5184	. . Casting and working
29/5125	. . . Stock turret	29/5185	. . Tube making
29/5126	. . . . Swiss type	29/5186	. . Covering
29/5127	. . . Blank turret	29/5187	. . Wire working
29/5128	. . . . Rotary work - vertical axis	29/5188	. . Radiator making
29/5129	. . . . Rotary work - horizontal axis	29/5189	. . Printing plate
29/513	. . . . Stationary work	29/519	. . Turret
29/5132	. . . . Belt drive	29/5191	. . Assembly
29/5133	. . . . Crankshaft	29/5192	. . Armature
29/5134	. . . . Collapsible tube	29/5193	. . Electrical connector or terminal
29/5135	. . . Endless belt	29/5195	. . Tire valve or spark plug
29/5136	. . Separate tool stations for selective or successive operation on work	29/5196	. . Multiple station with conveyor
29/5137	. . . including assembling or disassembling station	29/5197	. . Multiple stations working strip material
29/5138	. . . . and means to machine work part to fit cooperating work part	29/5198	. . Continuous strip
29/5139	. . . . and means to sever work prior to disassembling	29/5199	. . Work on tubes
29/514	. . . . . comprising means to strip insulation from wire	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	29/53217 Means to simultaneously assemble multiple, independent conductors to terminal
29/53013 Computer input	29/53222 Means comprising hand-manipulatable implement
29/53017 . . . Web or strand-carried information supply	29/53226 Fastening by deformation
29/53022 . . with means to test work or product	29/5323 Fastening by elastic joining
29/53026 . . with randomly actuated stopping or disabling means	29/53235 Means to fasten by deformation
29/5303 . . . Responsive to condition of work or product	29/53239 Means to fasten by elastic joining
29/53035 . . . Responsive to operative [e.g., safety device, etc.]	29/53243 Multiple, independent conductors
29/53039 . . with control means energized in response to activator stimulated by condition sensor	29/53248 Switch or fuse
29/53043 . . . including means to divert defective work part	29/53252 . . . Means to simultaneously fasten three or more parts
29/53048 . . . Multiple station assembly or disassembly apparatus	29/53257 . . . Means comprising hand-manipulatable implement
29/53052 including position sensor	29/53261 . . . Means to align and advance work part
29/53057 . . . Responsive to timer	29/53265 . . . with work-holder for assembly
29/53061 . . . Responsive to work or work-related machine element	29/5327 . . . Means to fasten by deforming
29/53065 with means to fasten by deformation	29/53274 . . Means to disassemble electrical device
29/5307 Self-piercing work part	29/53278 . . . Storage cell or battery
29/53074 with means to fasten by elastic joining	29/53283 . . . Means comprising hand-manipulatable implement
29/53078 with means to fasten by frictional fitting	29/53287 . . Means to place traveler on ring or ring on bobbin of a textile machine
29/53083 including means to apply magnetic force directly to position or hold work	29/53291 . . Slide fastener
29/53087 . . with signal, scale, illuminator, or optical viewer	29/53296 . . . Means to assemble stop onto stringer
29/53091 . . . for work-holder for assembly or disassembly	29/533 . . . Means to assemble slider onto stringer
29/53096 . . including means to provide a controlled environment	29/53304 . . . Means to assemble teeth onto stringer
29/531 . . Nuclear device	29/53309 . . . Disassembly means
29/53104 . . Roller or ball bearing	29/53313 . . Means to interrelatedly feed plural work parts from plural sources without manual intervention
29/53109 . . . including deforming means	29/53317 . . . Box or pallet assembly means
29/53113 . . Heat exchanger	29/53322 . . . Means to assemble container
29/53117 . . . including means to manipulate heat exchanger tube bundle	29/53326 Handle to container
29/53122 . . . including deforming means	29/5333 Label to container
29/53126 . . Means to place sheath on running-length core	29/53335 Pressurized dispensing container
29/5313 . . Means to assemble electrical device	29/53339 Hypodermic syringe
29/53135 . . . Storage cell or battery	29/53343 including fluid component
29/53139 including deforming means	29/53348 . . . Running-length work
29/53143 . . . Motor or generator	29/53352 Means including orbiting running-length work supply
29/53148 Means to assemble commutator	29/53357 Pipe section
29/53152 Means to position insulation	29/53361 Assembled to article
29/53157 Means to stake wire to commutator or armature	29/53365 . . . Multiple station assembly apparatus
29/53161 including deforming means	29/5337 . . . including assembly pallet
29/53165 . . . Magnetic memory device	29/53374 . . . including turret-type conveyor
29/5317 . . . Laminated device	29/53378 . . . including converging conveyors
29/53174 . . . Means to fasten electrical component to wiring board, base, or substrate	29/53383 . . . and means to fasten work parts together
29/53178 Chip component	29/53387 by deforming
29/53183 Multilead component	29/53391 by elastic joining
29/53187 . . . Multiple station assembly apparatus	29/53396 by friction fit
29/53191 . . . Means to apply vacuum directly to position or hold work part	29/534 . . Multiple station assembly or disassembly apparatus
29/53196 . . . Means to apply magnetic force directly to position or hold work part	29/53404 . . . including turret-type conveyor
29/532 . . . Conductor	29/53409 . . . including converging conveyors
29/53204 Electrode	29/53413 and primary central conveyor
29/53209 Terminal or connector	29/53417 . . . Means to fasten work parts together
29/53213 Assembled to wire-type conductor	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
 70/472 Pivoted end only engaged
 70/474 Swinging detent
 70/476 Free end only engaged
 70/478 Pivoted end only engaged
 70/48 Arcuate locus
 70/483 Flexible shackle
 70/485 . . . With seal
 70/487 . . . Parts, accessories, attachments and adjuncts
 70/489 Housings
 70/491 Shackles
 70/493 Protectors
 70/496 Sheaths
 70/498 Shields or canopies
 70/50 . . Special application
 70/5004 . . For antitheft signaling device on protected article
 70/5009 . . For portable articles
 70/5013 . . . Canes, umbrellas, apparel
 70/5018 . . . Robes
 70/5022 . . . Tools
 70/5027 . . . Supporting stands
 70/5031 . . . Receptacle
 70/5035 Bag
 70/504 Collapsible throat
 70/5044 Pivoted rigid jaw
 70/5049 Attache or briefcase, portfolio
 70/5053 Interengageable slide fastener type
 70/5058 Trunk and/or suitcase
 70/5062 Projecting fixed or movable lug type
 70/5066 Bolt type
 70/5071 Hasp controlled
 70/5075 Link and lever of hasp type
 70/508 Hasp type
 70/5084 Hasp-carried lock
 70/5089 Loop type
 70/5093 . . For closures
 70/5097 . . . Cabinet
 70/5102 Projecting lug type
 70/5106 External catch
 70/5111 Projectable bolt
 70/5115 Multiple bolts
 70/5119 Multidirectional displacement
 70/5124 Swinging and hooked end
 70/5128 . . . Drawer
 70/5133 Dead bolt
 70/5137 Till
 70/5142 Combination
 70/5146 . . . Window
 70/515 Sliding sash

70/5155	. . . . Door	70/5407	. . . . . Related dogging means for latch-bolt
70/5159	. . . . Emergency exit	70/5412	. . . . . Dog and dog actuator always interconnected
70/5164	. . . . Links to limit opening	70/5416	. . . . . Exterior manipulator declutched from bolt when dogged
70/5168	. . . . Braces	70/542	. . . . . Manual dog-controller concentric with bolt manipulator
70/5173	. . . . Sliding door	70/5425	. . . . . Shiftable rollback serves as dog
70/5177	. . . . . Extending keeper	70/5429	. . . . . Additional dog-controller key actuated for dogging and undogging
70/5181	. . . . . Rigid or fixed	70/5434	. . . . . Dog-controller axially slidable and axially rotatable
70/5186	. . . . . Extensible	70/5438	. . . . . Dog-controller rotatable
70/519	. . . . . Projecting or extending bolt	70/5442	. . . . . Key-actuated lock releases dog
70/5195	. . . . . Projectable bolt	70/5447	. . . . . Manual bolt-manipulator operation releases dog
70/5199	. . . . Swinging door	70/5451	. . . . . Manual bolt-manipulator operation releases dog
70/5204	. . . . . Interfitting lock housing and keeper	70/5456	. . . . . Interior manual bolt-manipulator serves as dog-controller
70/5208	. . . . . Multiple dead bolts	70/546	. . . . . For both dogging and undogging
70/5212	. . . . . Sliding dead bolt	70/5465	. . . . . Manual dog-controller
70/5217	. . . . . Swinging dead bolt	70/5469	. . . . . With additional lock actuated dog-controller
70/5221	. . . . . Locking latch bolt, biased	70/5473	. . . . . Additional dog-controller controls both dogging and undogging
70/5226	. . . . . Combined dead bolt and latching bolt	70/5478	. . . . . Accessible at door edge
70/523	. . . . . Multiple dead bolts	70/5482	. . . . . Slidable only
70/5235	. . . . . Multiple latch bolts	70/5487	. . . . . Manual bolt-manipulator is slidable only
70/5239	. . . . . Dead bolt, dogged latch bolt	70/5491	. . . . . Manual bolt-manipulator is lever
70/5243	. . . . . Manually dogged latch bolt	70/5496	. . . . . Freely movable external manipulator
70/5246	. . . . . Dead bolts	70/55	. . . . . Dogged bolt or connections
70/5248	. . . . . Multiple	70/5504	. . . . . Automatic
70/5252	. . . . . Sliding and swinging	70/5509	. . . . . Snub bolt
70/5257	. . . . . Combination operable only	70/5513	. . . . . By manipulator
70/5261	. . . . . Key operable only	70/5518	. . . . . Connections only
70/5265	. . . . . Sliding and rotary	70/5522	. . . . . Gravity projected
70/527	. . . . . Sliding	70/5527	. . . . . Projecting mechanism is lock controlled
70/5274	. . . . . Combination operable only	70/5531	. . . . . Combination and/or key operable
70/5279	. . . . . Key operable only	70/5535	. . . . . Trip release
70/5283	. . . . . Swinging	70/554	. . . . Cover, lid, cap, encasing shield
70/5288	. . . . . Combination operable only	70/5544	. . . . Pivoted
70/5292	. . . . . Key operable only	70/5549	. . . . . Cover-carried lock
70/5296	. . . . . Single	70/5553	. . . . . Dead bolt
70/5301	. . . . . Sliding and swinging	70/5558	. . . . . Latching bolt
70/5305	. . . . . Combination operable only	70/5562	. . . . . Removable
70/531	. . . . . Key operable only	70/5566	. . . . . External locking devices
70/5314	. . . . . Sliding and rotary	70/5571	. . . . . Freely movable when locked
70/5319	. . . . . Sliding	70/5575	. . . . . Directly seating
70/5323	. . . . . Multidirectional displacement	70/558	. . . . . Cover-carried lock
70/5327	. . . . . Keeper interlocking	70/5584	. . . . . Dead bolt
70/5332	. . . . . Curved	70/5589	. . . . . Latching bolt
70/5336	. . . . . Combination operable only	70/5593	. . . . . Movably seating
70/5341	. . . . . Key operable only	70/5597	. . . . . Cover-carried lock
70/5345	. . . . . Swinging	70/5602	. . . . . Dead bolt
70/535	. . . . . Keeper and housing interlocking		
70/5354	. . . . . With hooked end		
70/5358	. . . . . Combination operable only		
70/5363	. . . . . Key operable only		
70/5367	. . . . . Screw		
70/5372	. . . . . Locking latch bolts, biased		
70/5376	. . . . . Keeper interlocking		
70/5381	. . . . . Projectable beyond normal biased position		
70/5385	. . . . . Spring projected		
70/5389	. . . . . Manually operable		
70/5394	. . . . . Directly acting dog for exterior, manual, bolt manipulator		
70/5398	. . . . . Related dog for interior, manual, bolt manipulator		
70/5403	. . . . . Dog having a dog		

70/5606	. . . . . Latching bolt	70/5876	. . . Anchors
70/5611	. . For control and machine elements	70/5881	. . . Stands
70/5615	. . . Valve	70/5885	. . . Drive
70/5619	. . . . Locked stationary	70/5889	. . For automotive vehicles
70/5624	. . . . . Externally mounted locking device	70/5894	. . . Plural point
70/5628	. . . . . Valve encasing	70/5898	. . . . With switch
70/5633	. . . . . Housing-carried lock	70/5903	. . . Hood
70/5637	. . . . . With padlock	70/5907	. . . . With switch
70/5642	. . . Rod	70/5912	. . . Fuel valve
70/5646	. . . Rotary shaft	70/5916	. . . . With switch
70/565	. . . . Locked stationary	70/592	. . . . Cap combined
70/5655	. . . . . Housing-carried lock	70/5925	. . . Transmission
70/5659	. . . . . Dead bolt	70/5929	. . . . Cover combined
70/5664	. . . . . Latching bolt	70/5934	. . . . Selective-type shift rod, fork or block
70/5668	. . . . . Shaft-carried lock	70/5938	. . . . . With switch
70/5673	. . . . Freely movable when locked	70/5942	. . . . Planetary type
70/5677	. . . . . Shaft-carried clutch	70/5947	. . . . . With switch
70/5681	. . . Gear	70/5951	. . . . With switch
70/5686	. . . . Planetary	70/5956	. . . Steering mechanism with switch
70/569	. . . Lever	70/596	. . . Pilot wheel control or linkage
70/5695	. . . . Guide	70/5965	. . . Control levers with switch
70/5699	. . . . . Quadrant	70/5969	. . . Other element with switch
70/5704	. . . . . Lever-carried lock	70/5973	. . . Remote control
70/5708	. . . . . Fixed lever-receiving keeper	70/5978	. . . . With switch
70/5712	. . . . . Lever-carried lock	70/5982	. . . Accessories
70/5717	. . . . Multiple	70/5987	. . . . Spare or mounted wheel or tire
70/5721	. . . . . Externally mounted locking device	70/5991	. . . . . Tire or rim only
70/5726	. . . . . With padlock	70/5996	. . For seats
70/573	. . . . Single	70/60	. Systems
70/5735	. . . . . Externally mounted locking device	70/625	. . Operation and control
70/5739	. . . . . With padlock	70/65	. . . Central control
70/5743	. . . . . Disconnectable	70/675	. . . Serially operable
70/5748	. . . . . Foldable	70/70	. Operating mechanism
70/5752	. . . . . Universal mounting	70/7006	. . Predetermined time interval controlled
70/5757	. . . Handle, handwheel or knob	70/7011	. . . Positively initiated delay interval
70/5761	. . . . Retractable or flush handle	70/7017	. . . . Interval terminating
70/5765	. . . . Rotary or swinging	70/7023	. . . . Repeating interval
70/577	. . . . . Locked stationary	70/7028	. . . Electric
70/5774	. . . . . Externally mounted locking device	70/7034	. . . Clockwork control
70/5779	. . . . . With padlock	70/704	. . . . Continuously operating once initiated
70/5783	. . . . . Combination lock	70/7045	. . . . . Emergency release
70/5788	. . . . . Push pin or button	70/7051	. . Using a powered device [e.g., motor]
70/5792	. . . . . Handle-carried key lock	70/7057	. . . Permanent magnet
70/5796	. . . . . Coaxially mounted	70/7062	. . . Electrical type [e.g., solenoid]
70/5801	. . . . . Axially movable bolt	70/7068	. . . . Actuated after correct combination recognized [e.g., numerical, alphabetical, or magnet[s] pattern]
70/5805	. . . . . Freely movable when locked	70/7073	. . . . . Including use of a key
70/581	. . . . . Combination lock	70/7079	. . . . . Key rotated [e.g., Eurocylinder]
70/5814	. . . . . Push pin or button	70/7085	. . . . . Using a dial having indicia or pointer and indicia
70/5819	. . . . . Handle-carried key lock	70/709	. . . . . Plural interdependent or plural independently operable tumbler sets
70/5823	. . . . . Coaxial clutch connection	70/7096	. . . . . With mechanism having rocker arm or linked bars
70/5827	. . . . . Axially movable clutch	70/7102	. . . . And details of blocking system [e.g., linkage, latch, pawl, spring]
70/5832	. . . . Lock and handle assembly	70/7107	. . . . And alternately mechanically actuated by a key, dial, etc.
70/5836	. . . Wheel	70/7113	. . . . Projected and retracted electrically
70/5841	. . . . Rotation blocking	70/7119	. . . . Projected electrically only
70/5845	. . . . . Spoke gap traversing type	70/7124	. . . . Retracted electrically only
70/585	. . . . . Brake type		
70/5854	. . . Bolt, nut, stud, stud-cap		
70/5858	. . . . Locked stationary		
70/5863	. . . . Freely movable when locked		
70/5867	. . . . Encased		
70/5872	. . For cycles		

70/713	. . . .	Dogging manual operator	70/7475	. . . . .	Submaster- and change-key
70/7136	. . . .	Key initiated actuation of device	70/748	. . . . .	Change-key shutout
70/7141	. .	Combination and key	70/7486	. . .	Single key
70/7147	. .	Combination or key	70/7492	. . . .	Tumblerless push or pull key
70/7153	. .	Combination	70/7497	. . . .	Tumblerless warded
70/7158	. . .	Individual blocking elements	70/7503	. . . .	Tumbler and ward type
70/7164	. . . .	Selectively operable	70/7508	. . . .	Tumbler type
70/7169	. . .	Complex movement or puzzle type	70/7514	. . . . .	Sliding and rotary or swinging tumblers
70/7175	. . . .	Labyrinthian passage	70/752	. . . . .	Sliding tumblers
70/7181	. . .	Tumbler type	70/7525	. . . . .	Longitudinal
70/7186	. . . .	Plural interdependent sets	70/7531	. . . . .	Transverse
70/7192	. . . .	Plural independently operable sets	70/7537	. . . . .	Rotary or swinging tumblers
70/7198	. . . .	Single tumbler set	70/7542	. . . . .	Single set
70/7203	. . . . .	With ball or roller	70/7548	. . . . .	Directly key engaged
70/7209	. . . . .	Intersect sliding tumblers	70/7554	. . . . .	Cylinder type with auxiliary tumblers or wards
70/7215	. . . . .	Individually set sliding tumblers	70/7559	. . . . .	Cylinder type
70/722	. . . . .	Manually operable	70/7565	. . . . .	Plural tumbler sets
70/7226	. . . . .	Associated movable operator	70/7571	. . . . .	Concentric tumblers
70/7232	. . . . .	Removable	70/7576	. . . . .	Sliding and rotary plug
70/7237	. . . . .	Rotary or swinging tumblers	70/7582	. . . . .	Sliding plug
70/7243	. . . . .	Intersect tumblers	70/7588	. . . . .	Rotary plug
70/7249	. . . . .	Tumblers released	70/7593	. . . . .	Sliding tumblers
70/7254	. . . . .	Fence held spaced from tumblers	70/7599	. . . . .	Transverse of plug
70/726	. . . . .	Individually set	70/7605	. . . . .	Pin tumblers
70/7266	. . . . .	Movable selector	70/761	. . . . .	Rotatable pins [e.g., MEDECO lock]
70/7271	. . . . .	Associated movable operator	70/7616	. . . . .	Including sidebar
70/7277	. . . . .	Removable	70/7621	. . . . .	Including sidebar
70/7282	. . . . .	Pin or rod and slot	70/7627	. . . . .	Rotary or swinging tumblers
70/7288	. . . . .	Spindle operator	70/7633	. . . . .	Transverse of plug
70/7294	. . . . .	Concentric spindles	70/7638	. . . . .	Cylinder and plug assembly
70/7299	. . . . .	Axially shiftable spindle	70/7644	. . . . .	Key- and tool-controlled
70/7305	. . . . .	Manually operable	70/765	. . . . .	Key only controlled
70/7311	. . .	Step-by-step	70/7655	. . . . .	Cylinder attaching or mounting means
70/7316	. . .	Combination upsetting	70/7661	. . . . .	Detachable or removable cylinder
70/7322	. . .	Permutation	70/7667	. . . . .	Operating elements, parts and adjuncts
70/7328	. . . .	Compound tumblers	70/7672	. . . . .	Cylinder
70/7333	. . . .	With fastener or holder	70/7678	. . . . .	Adjustable
70/7339	. . . .	Pin and socket	70/7684	. . . . .	Plug
70/7345	. . . .	Removable change element	70/7689	. . . . .	Tumblers
70/735	. . .	Operating elements	70/7695	. . . . .	Plate
70/7356	. . . .	Fences	70/7701	. . . . .	Pin
70/7362	. . . . .	Bolt or lock housing supported	70/7706	. . . . .	Operating connections
70/7367	. . . .	Tumbler structure and position	70/7712	. . . . .	Rollbacks
70/7373	. . . . .	Nested	70/7718	. . . . .	Intermediate
70/7379	. . . . .	Variant diameter	70/7723	. . . . .	Cylinder rings
70/7384	. . . . .	Mounts	70/7729	. . .	Permutation
70/739	. . . . .	Motion-restraining means	70/7734	. . . .	Automatically key set combinations
70/7395	. . . . .	Friction holder	70/774	. . . .	Adjustable tumblers
70/7401	. . . .	Spindles	70/7746	. . . . .	Removable change element
70/7407	. . . .	Operating indicators	70/7751	. . .	With ball or roller
70/7412	. . . . .	Portable combination setting guide	70/7757	. . .	Push or pull key operation
70/7418	. . . . .	Dials	70/7763	. . .	Key ejecting
70/7424	. . .	Tampering prevention or attach defeating	70/7768	. . .	Key-removal preventing
70/7429	. . . .	Resonance type	70/7774	. . .	False or picking key trapping
70/7435	. . . .	Hidden or covered dial	70/778	. . .	Operating elements
70/7441	. .	Key	70/7785	. . . .	Tumblers
70/7446	. . .	Multiple keys	70/7791	. . . .	Keys
70/7452	. . . .	Selective shutout type	70/7797	. . . . .	Picking
70/7458	. . . .	Interdependent	70/7802	. . . . .	Multi-part structures
70/7463	. . . .	Master- and change-key			
70/7469	. . . . .	Change-key shutout			

70/7808 With foldable shank or stem
 70/7814 With extensible shank or stem
 70/7819 With slidable bit portion
 70/7825 With pivoted or swinging bit portion
 70/7831 Nested second key
 70/7836 Plural shanks, stems or bit wings
 70/7842 Single shank or stem
 70/7847 Round rigid
 70/7853 Tubular
 70/7859 Flat rigid
 70/7864 Cylinder lock type
 70/787 Irregular nonplanar or undulated
 70/7876 Bow or head
 70/7881 Bitting
 70/7887 Frangible
 70/7893 Permutation
 70/7898 Threaded
 70/7904 Magnetic features
 70/791 Ejecting feature
 70/7915 Tampering prevention or attack defeating
 70/7921 Armoring
 70/7927 Anti-jimmy
 70/7932 Anti-pick
 70/7938 Guard ward
 70/7944 Guard tumbler
 70/7949 Yielding or frangible connections
 70/7955 Keyhole guards
 70/796 Portable
 70/7966 Combination-controlled
 70/7972 Portable
 70/7977 Key-controlled
 70/7983 Portable
 70/7989 Key securers, fasteners or retainers
 70/7994 Portable
 70/80 Parts, attachments, accessories and adjuncts
 70/8027 Condition indicators
 70/8054 With recorder
 70/8081 Electric
 70/8108 Padlock
 70/8135 With register
 70/8162 Padlock
 70/8189 Contactual feeler
 70/8216 Tampering detector
 70/8243 With seal
 70/827 Attention-directing
 70/8297 For combination-operated mechanism
 70/8324 Housings
 70/8351 Operating attachments
 70/8378 Knobs, hand grips, etc.
 70/8405 Combination finders
 70/8432 For key-operated mechanism
 70/8459 Housings
 70/8486 Cylindrical
 70/8514 Face plate
 70/8541 Mounting arrangements
 70/8568 Escutcheons
 70/8595 Key guides, internal
 70/8622 Key insertion guides
 70/8649 Keyhole covers
 70/8676 Key holders
 70/8703 Flexible

70/873 One-piece
 70/8757 Releasable catches
 70/8784 Parallel key loops, coaxially mounted, individually movable
 70/8811 Key identification
 70/8838 Adjustment provisions
 70/8865 Reversible structures
 70/8892 Silencers or mufflers
 70/8919 Antifriction provisions
 70/8946 Emergency unlocking or release arrangements
 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	74/1566	. . . . Power pawl lifter
74/1406	. . with safety device or drive disconnect	74/1568	. . . . . Automatic
74/1412	. . with locating point adjusting	74/1569	. . . . . Idle stroke
74/1418	. . Preselected indexed position	74/1571	. . . . . Cooperating holding pawl
74/1424	. . . Sequential	74/1573	. . . . . Power stroke
74/1429	. . . . Skip position	74/1574	. . . . . Cooperating holding pawl
74/1435	. . . . Held by torque	74/1576	. . . . Holding pawl lifter
74/1441	. . . . Geneva or mutilated gear drive	74/1577	. . . Gripper mountings, lever
74/1447	. . . . Velocity control	74/1579	. . . . Reversible
74/1453	. . . . Interlocked rotator and brake	74/1581	. . . . Multiple acting
74/1459	. . . . . Diverse-type brakes	74/1582	. . . . . Single ratchet or clutch
74/1465	. . . . . with axially acting friction brake	74/1584	. . . Gripper mountings, slide
74/1471	. . Plural operators or input drives	74/1585	. . . . Multiple acting
74/1476	. . with means to axially shift shaft	74/1587	. . . Grip features
74/1482	. . Single revolution input effects desired fractional output	74/1589	. . . . Driving band
74/1488	. . Control means	74/159	. . . . . Clamping
74/1494	. . Locking means	74/1592	. . . . . Driven band and gripper
74/15	. Intermittent grip type mechanical movement	74/1594	. . . . . Positive grip
74/1502	. . Escapement	74/1595	. . . . . Driving ratchet-bar or rack
74/1503	. . Rotary to intermittent unidirectional motion	74/1597	. . . . . Multiple acting
74/1505	. . . Automatically controlled	74/1598	. . . . . Driven ratchet-bar and power dog
74/1506	. . . . Speed	74/16	. Alternating-motion driven device with means during operation to adjust stroke
74/1508	. . . Rotary crank or eccentric drive	74/1608	. . Constant length stroke with means to displace end limits
74/151	. . . . Adjustable	74/1616	. . . Cyclical displacement responsive to the alternating-motion
74/1511	. . . . Lever transmitter	74/1625	. . Stroke adjustable to zero and/or reversible in phasing
74/1513	. . . . . Adjustable leverage	74/1633	. . . Plural driving means to jointly drive the driven device
74/1515	. . . . Rack and pinion transmitter	74/1642	. . . Device driven from selected points on oscillating link
74/1516	. . . . . Adjustable throw	74/165	. . . Driving lever with adjustable pivot point
74/1518	. . . . Rotary cam drive	74/1658	. . . Eccentric and strap drive, shiftable eccentric
74/1519	. . . . . Adjustable throw	74/1667	. . . . Changing the extent of eccentricity
74/1521	. . . . . Radial cam	74/1675	. . . Crank pin drive, shiftable pin
74/1523	. . . . . Radial cam	74/1683	. . . Cam and follower drive
74/1524	. . . Intermittently engaged clutch	74/1692	. . . . Axial-type cam [e.g., wabblers type]
74/1526	. . Oscillation or reciprocation to intermittent unidirectional motion	74/17	. Rotary driven device adjustable during operation relative to its supporting structure
74/1527	. . . Screw and nut devices	74/173	. . Screw and nut adjusting means
74/1529	. . . Slide actuator	74/177	. . Rack and pinion adjusting means
74/1531	. . . . Multiple acting	74/18	. Mechanical movements
74/1532	. . . Rack actuator	74/18008	. . Oscillating to reciprocating and alternating rotary
74/1534	. . . . Multiple acting	74/18016	. . Oscillating to reciprocating and intermittent rotary
74/1535	. . . . . Inwardly facing racks	74/18024	. . Rotary to reciprocating and rotary
74/1537	. . . . Oscillating	74/18032	. . . Rotary to reciprocating or rotary
74/1539	. . . . . Multiple acting	74/1804	. . Rotary to reciprocating and alternating rotary
74/154	. . . . . Inwardly facing racks	74/18048	. . Rotary to reciprocating and intermittent rotary
74/1542	. . . Strap actuator	74/18056	. . Rotary to or from reciprocating or oscillating
74/1544	. . . . Multiple acting	74/18064	. . . Head motions
74/1545	. . . . . Spring or weight return	74/18072	. . . Reciprocating carriage motions
74/1547	. . . . Single acting	74/1808	. . . . Phonograph type
74/1548	. . . . . Engine starter type	74/18088	. . . Rack and pinion type
74/155	. . . . . Spring or weight return	74/18096	. . . . Shifting rack
74/1552	. . . . . Spring or weight return	74/18104	. . . . Shiftable pinion
74/1553	. . . Lever actuator	74/18112	. . . . Segmental pinion
74/1555	. . . . Rotary driven element	74/1812	. . . . Alternately rotated pinion
74/1556	. . . . . Multiple acting	74/18128	. . . . Clutchable gears
74/1558	. . . Grip units and features	74/18136	. . . . . Bevel
74/156	. . . Compound movement handle		
74/1561	. . . . Reversible		
74/1563	. . . . Transverse pivots		
74/1565	. . . Gripper releasing devices		

74/18144 . . .	Overcoming dead center	74/18608	Single input split into two intermediate outputs that are subsequently superposed into a single output
74/18152 . . .	Belt or chain carried member	74/18616	Single input, plural outputs
74/1816 . . .	Crank, lever, toggle, and slide	74/18624	Plural inputs, single output
74/18168 . . .	Crank, lazy-tong, and slide	74/18632	Plural nuts driving shaft
74/18176 . . .	Crank, pitman, lever, and slide	74/1864	Shaft and nut driven
74/18182	Pump jack type	74/18648	Carriage surrounding, guided by, and primarily supported by member other than screw [e.g., linear guide, etc.]
74/18184 . . .	Crank, pitman, and lever	74/18656	Carriage surrounded, guided, and primarily supported by member other than screw [e.g., linear guide, etc.]
74/182	Multiple levers	74/18664	Shaft moves through rotary drive means
74/18208 . . .	Crank, pitman, and slide	74/18672	Plural screws in series [e.g., telescoping, etc.]
74/18216 . . .	Crank, lever, and slide	74/1868	Deflection related
74/18224	Rack connections	74/18688	Limit stop
74/18232 . . .	Crank and lever	74/18696	including means to selectively transmit power [e.g., clutch, etc.]
74/1824	Slidable connections	74/18704	Means to selectively lock or retard screw or nut
74/18248 . . .	Crank and slide	74/18712	Contamination related
74/18256	Slidable connections [e.g., scotch yoke]	74/1872	Imperforate enclosure
74/18264 . . .	Crank and multiple pitmans	74/18728	Backlash
74/18272 . . .	Planetary gearing and slide	74/18736	Pressurized fluid introduced between nut and screw
74/1828 . . .	Cam, lever, and slide	74/18744	Lubrication
74/18288 . . .	Cam and lever	74/18752	Manually driven
74/18296 . . .	Cam and slide	74/1876	including inertia device
74/18304	Axial cam	74/18768	with rack and pinion
74/18312	Grooved	74/18776	Rectilinear rack
74/1832	Multiple screw	74/18784	including bevel gears
74/18328	Alternately rotated screw	74/18792	including worm
74/18336	Wabblers type	74/188	including spur gear
74/18344 . . .	Unbalanced weights	74/18808	with rack
74/18352 . . .	Trammel-pitman	74/18816	Curvilinear rack
74/1836 . . .	Rotary to rotary	74/18824	with biasing means
74/18368 . . .	Inertia or centrifugal transmitters	74/18832	including flexible drive connector [e.g., belt, chain, strand, etc.]
74/18376 . . .	Crank, pitman, lever, and crank	74/1884	with sprocket wheel
74/18384 . . .	Crank, lever, and crank	74/18848	with pulley
74/18392 . . .	Crank, pitman, and crank	74/18856	Oscillating to oscillating
74/184	Cranks, link connected	74/18864	Snap action
74/18408 . . .	Cranks, slidable connections	74/18872	Plate spring
74/18416 . . .	Rotary to alternating rotary	74/1888	Geared connections
74/18424 . . .	Mangle connections	74/18888	Reciprocating to or from oscillating
74/18432	Shiftable driven gear	74/18896	Snap action
74/1844	Central teeth	74/18904	Plate spring
74/18448	Mutilated gearing connections	74/18912	Compound lever and slide
74/18456 . . .	Crank, pitman, and lever	74/1892	Lever and slide
74/18464 . . .	Reciprocating rack connections	74/18928	Straight line motions
74/18472	Crank and pitman actuator	74/18936	Slidable connections
74/1848	Simple crank actuator	74/18944	Link connections
74/18488 . . .	Oscillating rack connections	74/18952	toggle transmissions
74/18496	Mangle actuated	74/1896	Cam connections
74/18504	Crank and pitman actuator	74/18968	Flexible connections
74/18512 . . .	Flexible connector type	74/18976	Rack and pinion
74/1852	Associated inertia devices	74/18984	Inclined ramp
74/18528 . . .	Rotary to intermittent unidirectional motion	74/18992	Reciprocating to reciprocating
74/18536 . . .	Space machines	74/19	Gearing
74/18544 . . .	Rotary to gyratory	74/19005	Nonplanetary gearing differential type [e.g., gearless differentials]
74/18552 . . .	Unbalanced weight		
74/1856	Reciprocating or oscillating to intermittent unidirectional motion		
74/18568 . . .	Reciprocating or oscillating to or from alternating rotary		
74/18576	including screw and nut		
74/18584	Shaft shorter than nut		
74/18592	Auxiliary drive [e.g., fluid piston, etc.] for load		
74/186	Alternate power path operable on failure of primary		

74/19009	Single gearing unit includes fluid drive	74/19274	torque responsive
74/19014	Plural prime movers selectively coupled to common output	74/19279	Cam operated
74/19019	Plural power paths from prime mover	74/19284	Meshing assisters
74/19023	Plural power paths to and/or from gearing	74/19288	Double clutch and interposed transmission
74/19028	Alternate input connections single hand crank	74/19293	Longitudinally slidable
74/19033	Fluid drive divides or combines alternate paths	74/19298	Multiple spur gears
74/19037	One path includes fluid drive	74/19302	with tumbler gear
74/19042	Friction-type gearing	74/19307	Selective
74/19047	Worm-type gearing	74/19312	Direct clutch and drive
74/19051	Single driven plural drives	74/19316	Progressive
74/19056	Parallel	74/19321	Direct clutch and drive
74/1906	Nonparallel	74/19326	Fluid operated
74/19065	Aligned	74/1933	Multiple bevel gears
74/1907	Parallel and aligned	74/19335	Single spur gear
74/19074	Single drive plural driven	74/1934	Tumbler and cone
74/19079	Parallel	74/19344	Multiple cone
74/19084	Spur	74/19349	Single bevel gear
74/19088	Bevel	74/19353	Pin or crown gears
74/19093	Spur and bevel	74/19358	Laterally slidable gears
74/19098	Helical	74/19363	Rotary carriage
74/19102	Belt or chain	74/19367	Swinging carriage
74/19107	Nonparallel	74/19372	Single forward and reverse speeds
74/19112	Aligned	74/19377	Slidable keys or clutches
74/19116	Vehicle	74/19381	Alternative clutch shaft
74/19121	Concentric	74/19386	Multiple clutch shafts
74/19126	Plural drivers plural driven	74/19391	Progressive
74/1913	Bevel	74/19395	Keys simultaneously slidable
74/19135	Spur	74/194	Selective
74/1914	Alternate drivers and driven	74/19405	Multiple forward and reverse
74/19144	Miscellaneous [plural power paths]	74/19409	Single forward and reverse
74/19149	with fluid drive	74/19414	Single clutch shaft
74/19153	Condition responsive control	74/19419	Progressive
74/19158	with one or more controllers for gearing, fluid drive, or clutch	74/19423	Multiple key
74/19163	with interrelated controls	74/19428	Spur
74/19167	In series plural interchangeably locked nonplanetary units	74/19433	Fluid operated
74/19172	Reversal of direction of power flow changes power transmission to alternate path	74/19437	Electrically operated
74/19177	Input and output exchange functions	74/19442	Single key
74/19181	toothed gear and recirculated unconnected elements	74/19447	Clutch and ratchet
74/19186	Alternating rotary or continuous	74/19451	Spur gears
74/19191	Alternating rotary	74/19456	Intermediate clutch
74/19195	Progressive	74/1946	Sliding clutch carrier
74/192	Shiftable and/or slidable gears	74/19465	Sliding clutch operator
74/19205	Clutchable gears	74/1947	Selective
74/1921	On single driven member	74/19474	Multiple key
74/19214	On single driving member	74/19479	Spur gears
74/19219	Interchangeably locked	74/19484	Single speed forward and reverse
74/19223	Disconnectable counter shaft	74/19488	Spur gears
74/19228	Multiple concentric clutch shafts	74/19493	Bevel gears
74/19233	Plurality of counter shafts	74/19498	Bevel and idler gears
74/19237	Internal-external gears	74/19502	Pivotally supported
74/19242	Combined gear and clutch	74/19507	Windmill turntable
74/19247	Preselector	74/19512	Screw
74/19251	Control mechanism	74/19516	Spur
74/19256	Automatic	74/19521	Bevel
74/1926	Speed responsive	74/19526	Wheel type
74/19265	Governor	74/1953	Wringer type
74/1927	with belt gearing	74/19535	Follow-up mechanism
		74/1954	Eccentric driving shaft and axle
		74/19545	Central driving shaft in axle
		74/1955	Parallel shafts, adjustable gear mesh
		74/19555	Varying speed ratio

74/1956	. . . Adjustable	74/19823	. . . . . Screw
74/19565	. . . Relative movable axes	74/19828	. . . . . Worm
74/1957	. . . . . Parallel shafts	74/19833	. . . . . Variable speed
74/19575	. . . . . Automatic control	74/19837	. . . . . Intermittent motion
74/1958	. . . . . Parallel shafts	74/19842	. . . . . Distribution of pressure
74/19585	. . . Fixed axes	74/19847	. . . torque actuated safety devices
74/1959	. . . . . Parallel shafts	74/19851	. . . Gear and rotary bodies
74/19595	. . . . . Automatic control	74/19856	. . . Laterally-spaced wheels
74/196	. . . . . Parallel shafts	74/1986	. . . Radially-spaced wheels
74/19605	. . . Reversing means	74/19865	. . . with flywheel
74/19609	. . . Governor control	74/1987	. . . Rotary bodies
74/19614	. . . Disconnecting means	74/19874	. . . Mutilated
74/19619	. . . Displaceable elements	74/19879	. . . Geneva
74/19623	. . . Backlash take-up	74/19884	. . . Irregular teeth and bodies
74/19628	. . . Pressure distributing	74/19888	. . . External and internal teeth
74/19633	. . . Yieldability in gear trains	74/19893	. . . Sectional
74/19637	. . . with brake means for gearing	74/19898	. . . . . Backlash take-up
74/19642	. . . Directly cooperating gears	74/19902	. . . . . Screw and nut
74/19647	. . . Parallel axes or shafts	74/19907	. . . . . Sound deadening
74/19651	. . . . . External type	74/19912	. . . . . Differential disks
74/19656	. . . . . Pin teeth	74/19916	. . . . . Multiple disks
74/1966	. . . Intersecting axes	74/19921	. . . . . Separate rim
74/19665	. . . . . Bevel gear type	74/19926	. . . . . Detachable
74/1967	. . . Rack and pinion	74/1993	. . . . . Segmental rim
74/19674	. . . Spur and bevel	74/19935	. . . . . Sheet metal
74/19679	. . . Spur	74/1994	. . . . . Diametrically split
74/19684	. . . . . Motor and gearing	74/19944	. . . . . Shaft-admitting insert
74/19688	. . . Bevel	74/19949	. . . Teeth
74/19693	. . . . . Motor vehicle drive	74/19953	. . . Worm and helical
74/19698	. . . Spiral	74/19958	. . . Bevel
74/19702	. . . . . Screw and nut	74/19963	. . . Spur
74/19707	. . . . . Plural longitudinally variably spaced nuts	74/19967	. . . . . Yieldable
74/19712	. . . . . Threadless	74/19972	. . . . . form
74/19716	. . . . . Non-linear screw	74/19977	. . . . . Antifriction
74/19721	. . . . . Thread geometry	74/19981	. . . . . Roller
74/19726	. . . . . Thread pitch varies over axial length	74/19986	. . . . . Twisted
74/1973	. . . . . Shaft thread is spirally wound wire	74/19991	. . . Lubrication
74/19735	. . . . . Nut disengageable from screw	74/19995	. . . Teeth
74/1974	. . . . . Nut segments hinged parallel to shaft [e.g., clam shell-type, etc.]	74/20	. . . Control lever and linkage systems
74/19744	. . . . . Rolling element engaging thread	74/20006	. . . Resilient connections
74/19749	. . . . . Recirculating rolling elements	74/20012	. . . Multiple controlled elements
74/19753	. . . . . Plural independent recirculating element paths	74/20018	. . . Transmission control
74/19758	. . . . . Single thread common to plural paths	74/20024	. . . . . Fluid actuator
74/19763	. . . . . Roller return path in shaft	74/2003	. . . . . Electrical actuator
74/19767	. . . . . Return path geometry	74/20037	. . . . . Occupant propelled vehicle
74/19772	. . . . . Rolling element deflector	74/20043	. . . . . Transmission controlled by flexible cable
74/19777	. . . . . Interconnected or cooperating rollers or roller structure	74/20049	. . . . . Transmission controlled by flexible cable
74/19781	. . . . . Non-recirculating rolling elements	74/20055	. . . . . Foot operated
74/19786	. . . . . Captured sphere	74/20061	. . . . . Multiple foot-operated controls
74/19791	. . . . . Cylindrical or quasi-cylindrical roller element [e.g., inclined roller, etc.]	74/20067	. . . . . Control convertible between automatic and manual operation
74/19795	. . . . . Parallel to shaft	74/20073	. . . . . Control of plural mechanisms [e.g., control of transmission and control of 4 - wheel drive]
74/198	. . . . . Perpendicular to shaft	74/20079	. . . . . Separate control levers
74/19805	. . . . . Less than 360 degrees of contact between nut and screw	74/20085	. . . . . Restriction of shift, gear selection, or gear engagement
74/19809	. . . . . Independent nut segments	74/20091	. . . . . Prevention of reverse shift
74/19814	. . . . . Integral deformable tangs engaging screw	74/20098	. . . . . Separate actuator to disengage restrictor
74/19819	. . . . . Driven rack or shaft	74/20104	. . . . . Shift element interlock
		74/2011	. . . . . with detent, recess, notch, or groove
		74/20116	. . . . . Resiliently biased interlock

74/20122	Spherical restrictor	74/20438	Single rotatable lever [e.g., for bicycle brake or derailleur]
74/20128	Resiliently biased restrictor	74/20444	including rolling antifriction elements
74/20134	having vibration damper	74/2045	and sheath support, connector, or anchor
74/2014	Manually operated selector [e.g., remotely controlled device, lever, push button, rotary dial, etc.]	74/20456	Specific cable or sheath structure
74/20146	Control lever on steering column	74/20462	Specific cable connector or guide
74/20152	Control lever movable through plural planes	74/20468	Sliding rod
74/20159	Control lever movable through plural planes	74/20474	Rotatable rod, shaft, or post
74/20165	Spherical mount [e.g., ball and socket]	74/2048	Gear, drum, and cable
74/20171	Resiliently biased control lever	74/20486	Drum and cable
74/20177	Particular element [e.g., shift fork, template, etc.]	74/20492	Gear
74/20183	Shift fork structure	74/20498	Variable ratio
74/20189	Foot operated	74/20504	Screw and nut
74/20195	Offset extension	74/2051	Adjustable
74/20201	Control moves in two planes	74/20516	Mountings
74/20207	Multiple controlling elements for single controlled element	74/20522	Antenna
74/20213	Interconnected	74/20528	Foot operated
74/2022	Hand and foot	74/20534	Accelerator
74/20226	Accelerator	74/2054	Signal
74/20232	Marine	74/20546	Knee operated
74/20238	Interlocked	74/20552	Elbow
74/20244	Push button	74/20558	Variable output force
74/2025	Rod blocks actuation of rotary member	74/20564	Flexible
74/20256	Steering and controls assemblies	74/2057	Variable input leverage
74/20262	Rotary control shaft	74/20576	Elements
74/20268	Reciprocating control elements	74/20582	Levers
74/20274	Flexible	74/20588	toggle
74/2028	Handle bar type	74/20594	Lazy tongs
74/20287	Flexible control element	74/206	Adjustable
74/20293	with horn control	74/20606	Swing posts
74/20299	Antirattling elements	74/20612	Hand
74/20305	Robotic arm	74/20618	Jointed
74/20311	including power cable or connector	74/20624	Adjustable
74/20317	including electric motor	74/2063	Stops
74/20323	including flaccid drive element	74/20636	Detents
74/20329	Joint between elements	74/20642	Hand crank
74/20335	Wrist	74/20648	Interrelated lever release
74/20341	Power elements as controlling elements	74/20654	Gear
74/20348	Planar surface with orthogonal movement and rotation	74/2066	Friction
74/20354	Planar surface with orthogonal movement only	74/20666	Lever engaging
74/2036	Pair of power elements	74/20672	Lever engaging rack
74/20366	Power and manual controlling elements	74/20678	Pivoted
74/20372	Manual controlling elements	74/20684	Lever carried pawl
74/20378	Planar surface with orthogonal movement or rotation	74/2069	Handle release
74/20384	Levers	74/20696	Finger lever release
74/2039	Pair of levers	74/20702	Slidable
74/20396	Hand operated	74/20708	Pedal controlled
74/20402	Flexible transmitter [e.g., Bowden cable]	74/20714	Lever carried rack
74/20408	Constant tension sustaining	74/2072	Pivoted
74/20414	Hydraulic control	74/20726	Pedal controlled
74/2042	and hand operator	74/20732	Handles
74/20426	Slidable	74/20738	Extension
74/20432	for moving a mirror	74/20744	Hand crank
		74/2075	Extensible
		74/20756	Collapsible
		74/20762	Shaft connections
		74/20768	Engine starter type
		74/20774	Holders
		74/2078	Handle bars
		74/20786	Spring biased or supported
		74/20792	Folding or adjustable

74/20798 Sectional
 74/20804 Simultaneously movable
 74/2081 Continuous
 74/20816 with handle latch
 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
 74/20858 Releasable
 74/20864 Handles
 74/2087 Rim grips and covers
 74/20876 Caps and covers
 74/20882 Rocker arms
 74/20888 Pedals
 74/20894 Treadles
 74/209 Extension
 74/20906 Offset
 74/20912 Pads and covers
 74/20918 Foot rests
 74/20924 Controller checks
 74/2093 Slot closers and lever guards
 74/21 Elements
 74/2101 Cams
 74/2102 Adjustable
 74/2104 Flexible strip
 74/2105 Memory devices
 74/2106 Timer devices
 74/2107 Follower
 74/2109 Balancing for drum, e.g., washing machine or
 arm-type structure, etc., centrifuge, etc.
 74/211 Eccentric
 74/2111 Plural, movable relative to each other
 [including ball[s]]
 74/2112 Concentric
 74/2114 Adjustable
 74/2115 Radially
 74/2116 having anti-friction means, e.g., roller bearing,
 lubrication, etc.
 74/2117 Power generating-type flywheel
 74/2119 Structural detail, e.g., material, configuration,
 superconductor, discs, laminated, etc.
 74/212 Containing fiber or filament
 74/2121 Flywheel, motion smoothing-type
 74/2122 with fluid balancing means
 74/2123 and pressure compensation
 74/2125 and elastic device
 74/2126 and bearings
 74/2127 with electrical or magnetic damping
 74/2128 Damping using swinging masses, e.g.,
 pendulum type, etc.
 74/213 Damping by increasing frictional force
 74/2131 Damping by absorbing vibration force [via
 rubber, elastomeric material, etc.]
 74/2132 Structural detail, e.g., fiber, held by magnet,
 etc.
 74/2133 Pawls and ratchets
 74/2135 Noiseless
 74/2136 Pivoted pawls
 74/2137 Single tooth
 74/2138 Flexible single tooth

74/214 Multiple tooth
 74/2141 Sliding pawls
 74/2142 Pitmans and connecting rods
 74/2143 Radial
 74/2144 Yieldable
 74/2146 Longitudinal springs
 74/2147 Fluid cushion
 74/2148 Automatic release
 74/2149 toggle link type
 74/2151 Longitudinally adjustable
 74/2152 Hollow rod, lubricated
 74/2153 Sheet metal type
 74/2154 Counterbalanced
 74/2156 Weight type
 74/2157 Rotating
 74/2158 Spring
 74/2159 Section coupled
 74/216 Bearings, adjustable
 74/2162 Engine type
 74/2163 Idler arm
 74/2164 Cranks and pedals
 74/2165 with attached gear
 74/2167 Variable
 74/2168 Pedals
 74/2169 Counterbalanced
 74/217 with toe or shoe clips
 74/2172 Adjustable or folding
 74/2173 Cranks and wrist pins
 74/2174 Multiple throw
 74/2175 Sectional
 74/2177 Sectional
 74/2178 Yieldable
 74/2179 Adjustable
 74/218 Automatically
 74/2181 Variable
 74/2183 Counterbalanced
 74/2184 Vibration dampers
 74/2185 Lubricated
 74/2186 Gear casings
 74/2188 Axle and torque tubes
 74/2189 Cooling
 74/219 Guards
 74/2191 for rotary member
 74/2193 Guard mechanisms
 74/2194 Automatic
 74/2195 Oscillating member actuator
 74/2196 Reciprocating member actuator
 74/2198 Operator controlled
 74/2199 Set screw
 74/22 Miscellaneous

Former US Class 82 Series

82/00 Turning
 82/10 Process of turning
 82/11 Talking machine tablet
 82/12 Radially moving rotating tool inside bore
 82/122 Forming non-circular bore
 82/125 Tool simultaneously moving axially
 82/128 Pivoted to tool-carrier
 82/13 Pattern section
 82/135 Cam-controlled cutter

82/14	. Axial pattern	82/16721	. . . . . with adjustable work stops
82/141	. . having transverse tool and templet guide	82/16737	. . . . Eccentric periphery rotary tool
82/142	. . . with workpiece gauge	82/16754	. . . . Means to feed work axially
82/143	. . . having electrical actuator	82/16771	. . . . Translatable work support carriage
82/145	. . . . And hydraulic actuator	82/16786	. . . . with tool groove in support roll[s]
82/147	. . . having hydraulic actuator	82/16803	. . . Rotatable tool[s] driven by contact with work
82/148	. . Pivoted tool rest	82/16819	. . . . Axially movable tool support
82/149	. . Profiled cutter	82/16836	. . . . . Freely floating parallel to axis
82/15	. Tapers	82/16852	. . . . . with supplemental nonrotative tool
82/152	. . Offset work axis	82/16868	. . . . . including clutch control for work rotation
82/154	. . Transversely shifted cutter	82/16885	. . . . including resilient means urging work against rotary support
82/156	. . . Templet controlled	82/16901	. . . Separate means for plural tools
82/158	. . . Gear controlled	82/16918	. . . Spring urged
82/16	. Severing or cut-off	82/16934	. . . . For window shade
82/16016	. . Processes	82/16951	. . . Tool adjustment and/or stop
82/16032	. . Automatic and/or triggered control	82/16967	. . . with means to support and/or rotate work
82/16049	. . Combined with means to sharpen tool[s]	82/16983	. . . with means to feed work
82/16065	. . Combined with means to apply fluid	82/17	. Lathe for pulley
82/16081	. . Combined with means to heat tool and/or work	82/18	. Lathe for wheel or axle
82/16098	. . with dust or chip handling	82/185	. . <u>In situ</u> lathe for railroad wheel
82/16114	. . including scrap cutting means	82/19	. Lathe for crank or crank pin
82/16131	. . Flying cutter type	82/192	. . Portable lathe for crank pin
82/16147	. . Cutting couple straddling work	82/195	. . having work oscillator
82/16163	. . . with pattern, guide or cam means [noncircular product]	82/198	. . . having work driver
82/16181	. . . Plural cutting means [pairs, or pair, plus single]	82/20	. Lathe for screw cutting
82/16196	. . . Rotary shear pair	82/205	. . having swinging feed nut and tool bar
82/16213	. . . . Tool axes parallel to axis of work rotation	82/21	. Portable lathe for brake drum, disc, or shoe
82/16229	. . Interrelated means for tool infeed and circumrotation	82/22	. Portable lathe for pipe turning
82/16245	. . . Dependent upon reaction to work	82/23	. Portable lathe for piston grooving
82/16262	. . . Infeed cam disk rotation geared to tool holder rotation	82/24	. Bench lathe
82/16278	. . . . Axial infeed cam	82/245	. . Watchmaker's lathe
82/16295	. . . . including centrifugal balancing means	82/25	. Lathe
82/16311	. . . . Scroll plate infeed cam	82/2502	. . with program control
82/16327	. . . Infeed cam plate braked with respect to tool[s] carrier plate	82/2504	. . . And transmission
82/16344	. . . Orbital cogwheel and fixed detent	82/2506	. . . And tool turret
82/16361	. . . Common gear means	82/2508	. . with tool turret
82/16377	. . . . including adjustable means to vary gear speed	82/2511	. . Vertical
82/16393	. . . . with manual disconnect lever	82/2512	. . having facing tool fed transverse to work
82/16409	. . . with means to feed work	82/2514	. . with work feeder or remover
82/16426	. . Infeed means	82/2516	. . . Magazine type
82/16442	. . . with means to circumrotate tool[s] about work	82/2518	. . . . Bar feeder
82/16459	. . . . Fluid means for relative tool actuation	82/2521	. . . Bar feeder
82/16475	. . . . Gear means for tool actuation	82/2522	. . Portable
82/16491	. . . . . including axial cam	82/2524	. . Multiple
82/16508	. . . . . with indicator	82/2527	. . having hollow cutter head
82/16524	. . . . Bell crank linkage for tool[s] holder	82/2529	. . Revolvable cutter heads
82/16541	. . . . Resilient means for tool actuation	82/2531	. . Carriage feed
82/16557	. . . . with means for manual retraction	82/2533	. . . Control
82/16573	. . . Hand crank for tool holder	82/2535	. . . . Electrical type
82/16591	. . . Power driven eccentric	82/2537	. . . Apron mechanism
82/16606	. . . . Fluid motor	82/2539	. . . . Feednut control
82/16622	. . . . Plural tools	82/2541	. . . Slide rest
82/16639	. . . Tool within work	82/2543	. . . . Multiple tool support
82/16655	. . . with means to rotate tool[s]	82/2545	. . . . Tool relief
82/16672	. . . . including rotatable cutters supporting work	82/2547	. . . Change gears
82/16688	. . . . Planetating work mandrels	82/2549	. . . Feedscrews and rods
82/16704	. . . . Pivoted tool carriage	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
 83/0457 . . . By retaining or reinserting product in workpiece
 83/0462 . . . By accelerating travel
 83/0467 . . . By separating products from each other
 83/0472 . . . By moving work support to which a tacky product is adhered
 83/0476 . . Including stacking of plural workpieces
 83/0481 . . Puncturing
 83/0486 . . With manipulation of tool protective strip [e.g., backing strip]
 83/0491 . . Cutting of interdigitating products
 83/0495 . . Making and using a registration cut
 83/05 . . With reorientation of tool between cuts
 83/0505 . . With reorientation of work between cuts
 83/051 . . . Relative to same tool
 83/0515 . . During movement of work past flying cutter
 83/0519 . . . Cyclically varying rate of tool or work movement
 83/0524 . . Plural cutting steps
 83/0529 . . . Blanking and cutting
 83/0534 Cutting to join blanked holes
 83/0538 . . . Repetitive transverse severing from leading edge of work
 83/0543 Alternately forming products of less than total width of work
 83/0548 With longitudinal severing
 83/0553 Effected by plural steps
 83/0558 Along zigzag or undulant line or cut
 83/0562 Prior to transverse severing
 83/0567 Nonrectilinear cutting
 83/0572 . . . Plural cutting steps effect progressive cut
 83/0577 . . . Repetitive blanking
 83/0581 . . Cutting part way through from opposite sides of work
 83/0586 . . Effecting diverse or sequential cuts in same cutting step
 83/0591 . . Cutting by direct application of fluent pressure to work
 83/0596 . . Cutting wall of hollow work
 83/06 . Blanking
 83/0605 . . Cut advances across work surface
 83/061 . With manually actuated means to disturb cyclic operation
 83/081 . With randomly actuated stopping means
 83/083 . . With means to permit subsequent hand operation
 83/084 . . With stop-signal-responsive means to actuate auxiliary cutter
 83/086 . . With sensing of product or product handling means

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
83/141	. With means to monitor and control operation [e.g., self-regulating means]	83/209	. . Including means to replace product in base material after cutting
83/145	. . Including means to monitor product	83/2092	. . Means to move, guide, or permit free fall or flight of product
83/148	. . Including means to correct the sensed operation	83/2094	. . . Means to move product at speed different from work speed
83/152	. . . And modify another operation	83/2096	. . . Means to move product out of contact with tool
83/155	. . . Optimizing product from unique workpiece	83/2098	. . . . With means to effect subsequent conveying or guiding
83/159	. . Including means to compensate tool speed for work-feed variations	83/21	. . . . Out of contact with a rotary tool
83/162	. With control means responsive to replaceable or selectable information program	83/2103	. . . . . Mover surrounds axis of tool rotation
83/164	. . For cutting component of animal; e.g., hair clipper	83/2105	. . . . . Mover mounted on rotary tool
83/166	. . Removable element carries program	83/2107	. . . . . For radial movement of product
83/169	. . . Indeterminate length, web or strand	83/2109	. . . . . Resiliently mounted
83/171	. . . . Magnetic	83/2111	. . . . . Mover is resiliently mounted
83/173	. . Arithmetically determined program	83/2113	. . . . . Pivoted mover
83/175	. . . With condition sensor	83/2116	. . . . . And plural rotating tools
83/178	. . . . Responsive to work	83/2118	. . . . . Stationary mover
83/18	. . . With operator input means	83/212	. . . . . And plural rotating tools
83/182	. With means to weigh product	83/2122	. . . . By ejector within a hollow cutter
83/202	. With product handling means	83/2124	. . . . . And means to strip the outer surface of a cutter
83/2022	. . Initiated by means responsive to product or work	83/2127	. . . . . Ejector operated with return stroke of cutter
83/2024	. . . Responsive to work	83/2129	. . . . . By means carried by cooperating cutter
83/2027	. . Initiated by means directly responsive to tool movement	83/2131	. . . . . By cam-operated ejector
83/2029	. . . In return motion of tool	83/2133	. . . . . By resiliently biased ejector
83/2031	. . Including means to drape the product	83/2135	. . . . Moving stripper timed with tool stroke
83/2033	. . Including means to form or hold pile of product pieces	83/2137	. . . . . And alternatively movable to or from operating position
83/2035	. . . In nested relation	83/214	. . . . . Latched stripper released by tool return
83/2037	. . . In stacked or packed relation	83/2142	. . . . . Plural strippers operative upon plural tools
83/204	. . . . Stacker sweeps along product support	83/2144	. . . . . Single stripper operative upon plural tools
83/2042	. . . . Including cut pieces overlapped on delivery means	83/2146	. . . . . Spring arm stripper
83/2044	. . . . And means to separate product portions	83/2148	. . . . . Linkage actuated
83/2046	. . . . Including means to move stack bodily	83/215	. . . . . Carried by moving tool element or its support
83/2048	. . . . . By movement of stack holder	83/2153	. . . . . Fluid pressure actuated stripper
83/205	. . . . . By timed relocation of holder along path of stack gscheme-change-itemth	83/2155	. . . . . Stripper biased against product
83/2053	. . . . . Interrelated adjustment of holder movement and work-feeder	83/2157	. . . . . Elastomeric stripper contacting product
83/2055	. . . . And means to resist stack movement	83/2159	. . . . . By spring means
83/2057	. . . . Including means to deliver individual pieces to a stack holder	83/2161	. . . . . By free weight of stripper
83/2059	. . . . . With spindle to enter a hole or to make hole in product	83/2163	. . . . . Stripper biased against product
83/2061	. . . . . By face-engaging means to push product broadside into stacked relation	83/2166	. . . . . Spring biased stripper
83/2063	. . . . Upon emergence from hollow cutter	83/2168	. . . . Manually operated stripper
83/2066	. . By fluid current	83/217	. . . . Stationary stripper
		83/2172	. . . . . Stripper encircles moving tool
		83/2174	. . . Blockable exit port

83/2177	. . . Tool conforming member interposed between tool and work	83/404	. By means to misalign aligned apertured tools
83/2179	. . . Including means to move, or resist movement of, cut pieces along delivery chute	83/408	. . Combined with another type tool of the class
83/2181	. . . Active delivery means mounted on tool support	83/412	. . Rectilinear relative movement only
83/2183	. . . Product mover including gripper means	83/416	. . Rotary relative movement solely about a single pivot
83/2185	. . . . Suction gripper	83/42	. . . With plural apertures in one or both carriers
83/2187	. . . . Reciprocating product handler	83/424	. By increased tensioning of work-enclosing wire
83/219	. . . . Rotating or oscillating product handler	83/444	. Tool engages work during dwell of intermittent workfeed
83/2192	. . . Endless conveyor	83/4443	. . Unicyclic
83/2194	. . . . And means to remove product therefrom	83/4445	. . . Convertible to and from unicyclic
83/2196	. . . Roller[s]	83/4448	. . . Controlled by mechanical means
83/2198	. . . Tilttable or withdrawable support	83/445	. . With work-moving clamp jaw
83/22	. . . Means to move product laterally	83/4453	. . Work moved solely by movable abutment
83/2203	. . . . Oscillating means	83/4455	. . Operation initiated by work-driven detector means to measure work length
83/2205	. . . . Reciprocating means	83/4458	. . Work-sensing means to control work-moving or work-stopping means
83/2207	. . . Means to move product in a nonrectilinear path	83/446	. . . With means to initiate tool feed by same control impulse
83/2209	. . . Guide	83/4463	. . Work-sensing means to initiate tool feed
83/2211	. . . . Abutment in path of product being moved by work feeder	83/4465	. . . With work-stopping abutment in sensing means
83/2213	. . . . Product-diverting conduit in or from hollow tool	83/4468	. . Plural tools at same station, one positioned for continuous engagement with work
83/2216	. . . . Inclined conduit, chute or plane	83/447	. . Plural tools successively actuated at same station
83/2218	. . . . Abutment interposed in path of free fall or flight of product	83/4473	. . . During one dwell period
83/222	. With receptacle or support for cut product	83/4475	. . Tool has motion additional to cutting stroke during tool cycle
83/242	. With means to clean work or tool	83/4478	. . . Tool has additional motion during work dwell
83/263	. With means to apply transient nonpropellant fluent material to tool or work	83/448	. . . . Included in plural cutting cycles
83/283	. With means to control or modify temperature of apparatus or work	83/4483	. . . Tool has work-feeding motion
83/293	. . Of tool	83/4486	. . With variable direction of work-feed from cycle to cycle
83/303	. With tool sharpener or smoother	83/4488	. . . In one of certain selected directions
83/313	. . Spatially fixed tool	83/4491	. . Interlock between tool actuating and work feed means
83/323	. With means to stretch work temporarily	83/4493	. . Tool motion initiates work feed and <u>vice versa</u>
83/343	. With means to deform work temporarily	83/4496	. . Stored energy means for moving work or tool, loaded by tool or work
83/364	. By fluid blast and/or suction	83/4498	. . . Work feed means actuates energy storage device for tool
83/384	. By tool inside hollow work	83/4501	. . Work feed means controlled by means mounted on tool or tool support
83/385	. . Work pre-packed with internal tool[s]	83/4503	. . . Such means drives the work feed means
83/386	. . With expanding mandrel	83/4506	. . . . Work feed means carried by tool or tool support
83/387	. . Interrelated tool feed means and means to actuate work immobilizer	83/4508	. . . . With supplemental work feed means
83/388	. . . Actuated clamp element and work holder coact to position work	83/4511	. . . . On return stroke of tool
83/39	. . Synchronized tool and work feeding means	83/4513	. . . Work feed means halted by means on tool or tool support
83/391	. . With means to position tool[s] for cutting	83/4516	. . Work-feed mechanism in nonfeed motion effects or initiates tool actuation
83/392	. . One tool [either internal or external] having compound motion	83/4518	. . . By striking tool actuator
83/393	. . . Annulus and disc-type tool pair	83/4521	. . . . Nonfeed motion is reverse to feed motion
83/394	. . One tool having unidirectional rotary motion	83/4523	. . With means to vary number of work-feed increments between tool strokes
83/395	. . One tool having only rectilinear motion[s]	83/4526	. . Dwell caused by imposing reverse motion on portion of flexible moving work
83/396	. . . Annulus and disc-type tool pair	83/4529	. . With uninterrupted flow of work from supply source
83/397	. . . . A tool has a sequence of motion in plural paths	83/4531	. . Work feed increment shorter than longitudinal tool field
83/398	. . . Internal tool is an active cutter	83/4534	. . Unequal work feed increments in recurring series
83/40	. . . Multiple external active tools		
83/401	. . . . Tools operate in a substantially common transverse plane of cut		
83/402	. . . . . With tool actuating cams on a common support		
83/403	. . With manually actuated means to position or facilitate positioning of work		

- 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
- 83/4662 To vary an end-product "length" [e.g., "crop cut"]
- 83/4664 With photo-electric work-sensing means
- 83/4667 With trip-switch work-sensing means
- 83/467 To initiate feed movement of tool
- 83/4673 And to initiate flying movement of tool
- 83/4676 With work-responsive means to initiate flying movement of tool
- 83/4679 With flying work-gripper means related to tool carrier
- 83/4682 With means controlling flying speed dependent on work speed
- 83/4685 . . . With means to vary frequency of initiation
- 83/4688 By orbitally traveling trigger pin[s]
- 83/4691 . . Interrelated control of tool and work-feed drives
- 83/4693 . . With means to concurrently adjust flying frequency and retain flying speed of tool
- 83/4696 . . Plural diverse flying cutters
- 83/4699 . . Combined with other type cutter
- 83/4702 . . . With slitter
- 83/4705 . . Plural separately mounted flying cutters
- 83/4708 . . With means to render cutter pass[es] ineffective
- 83/4711 . . . With means to produce "mis-cut"
- 83/4714 . . Oscillating work shifter adjacent cutter
- 83/4717 . . . Work actuated senser initiates shifter
- 83/472 . . Wire tool
- 83/4722 . . . On tool support having reciprocation parallel to direction of work-feed
- 83/4725 And rotation about axis parallel to direction of work-feed
- 83/4728 . . Tool flies by engagement with the work
- 83/4731 . . . Tool merely flexes with moving work
- 83/4734 . . Flying support or guide for work
- 83/4737 . . With tool speed regulator
- 83/474 . . With work feed speed regulator
- 83/4743 . . . With means to vary cyclically speed of work
- 83/4746 . . Spring return of tool in counterfly direction
- 83/4749 . . Tool mounted on oscillating standard
- 83/4751 . . . Both tools of couple on single standard
- 83/4754 One tool swings out of work path on return stroke
- 83/4757 . . Tool carrier shuttles rectilinearly parallel to direction of work feed
- 83/476 . . . Including means to secure work to carrier
- 83/4763 . . . Both members of cutting pair on same carrier
- 83/4766 . . Orbital motion of cutting blade
- 83/4769 . . . Work feeder mounted on tool support
- 83/4772 Gripper-type feeder
- 83/4775 . . . Tool speed varied within each orbital cycle
- 83/4778 . . . Work feed gripper carried on endless belt

83/478	. . .	Endless belt or chain tool carrier	83/546	. . .	Interrelated tool actuating and work guide moving means
83/4783	. . .	Constantly oriented tool with arcuate cutting path	83/566	. . .	Interrelated tool actuating means and means to actuate work immobilizer
83/4786	. . . .	Cutting couple type	83/5669	. . .	Work clamp
83/4789	. . .	Rotatable disc-type tool on orbiting axis	83/5678	. . .	Tool deflected by guide on tightened clamp
83/4792	. . . .	Idling disc	83/5687	. . . .	With means to control clamping force
83/4795	. . .	Rotary tool	83/5696	. . .	Clamp driven by reaction from tool force
83/4798	. . . .	Segmented disc slitting or slotting tool	83/5705	. . .	With means providing for plural steps in clamping stroke
83/4801	. . . .	With undulant cutting edge [e.g., "pinking" tool]	83/5715	. . .	With sequencing means
83/4804	. . . .	Single tool action drive	83/5724	. . .	With provision for manual control of clamp
83/4807	. . . . .	With one-revolution drive	83/5733	. . .	Tool or tool support on movable clamp jaw
83/4809	. . . .	With loop former preceding tool	83/5742	. . .	Clamp moved by direct impact of tool or tool support
83/4812	. . . .	Compound movement of tool during tool cycle	83/5751	. . . .	Clamp retracted by impact of tool or tool support
83/4815	. . . . .	Axial reciprocation of tool	83/576	. . .	Clamp actuating means driven by tool or tool support
83/4818	. . . .	Interconnected work feeder and tool driver	83/5769	. . . .	Clamp yieldably driven by tool or tool support
83/4821	. . . .	Side cutting helical blade	83/5778	. . . . .	With resilient drive element
83/4824	. . . .	With means to cause progressive transverse cutting	83/5787	. . .	Clamp driven by yieldable means
83/4827	. . . . .	With helical cutter blade	83/5796	. . . .	Drive means is resilient
83/483	. . . .	With cooperating rotary cutter or backup	83/5805	. . . .	Fluid pressure yieldable drive means
83/4833	. . . . .	Cooperating tool axes adjustable relative to each other	83/5815	. . .	Work-stop abutment
83/4836	. . . . .	With radial overlap of the cutting members	83/5824	. . .	Oppositely effective abutments
83/4838	. . . . .	With anvil backup	83/5833	. . .	With cyclic means to alter work-stopping position
83/4841	. . . . .	With resilient anvil surface	83/5842	. . .	Stop partakes of tool motion
83/4844	. . . . .	Resiliently urged cutter or anvil member	83/5851	. . . .	Carried by tool or tool support
83/4847	. . . .	With cooperating stationary tool	83/586	. . .	Interrelated tool actuating means and means to actuate work-mover stop
83/485	. . .	Cutter with timed stroke relative to moving work	83/606	. . .	Interrelated tool actuating means and guard means
83/487	. . .	Work swings about progressively cutting tool during tool stroke	83/613	. . .	Work guard
83/489	. . .	Tool actuated by movable work support	83/619	. . .	Cutter guide slot closer
83/49	. . .	Traveling cutter	83/626	. . .	Operation of member controlled by means responsive to position of element remote from member [e.g., interlock]
83/492	. . .	With means to vary timing of tool feed	83/637	. . .	With means to initiate operation of member
83/494	. . .	Uniform periodic tool actuation	83/647	. . .	With means to convey work relative to tool station
83/496	. . . .	With periodic lateral feed of tool or work	83/6472	. . .	By fluid current
83/498	. . . .	With plural tool stations	83/6473	. . .	Centrifugal feed to tangential tool [e.g., "Beria" type]
83/50	. . . .	Reciprocating tool	83/6475	. . .	With means to regulate work-feed speed
83/501	. . . .	With plural tools on a single tool support	83/6476	. . .	Including means to move work from one tool station to another
83/503	. . .	With plural tool stations	83/6478	. . . .	Tool stations angularly related
83/505	. . .	Operation controlled by means responsive to product	83/648	. . . . .	Work manipulated between tool stations
83/515	. . .	Actuation of tool controlled	83/6481	. . . . .	With static tool
83/525	. . .	Operation controlled by detector means responsive to work	83/6483	. . . .	Tool stations staggered relative to one another
83/527	. . .	With means to control work-responsive signal system	83/6484	. . . .	Punch or die station
83/528	. . . .	To delay response to work-senser	83/6486	. . . .	Notcher or pinker station
83/53	. . . .	To change length of product	83/6488	. . . .	Work reciprocated past double-edged knife
83/531	. . .	With plural work-sensing means	83/6489	. . . .	Slitter station
83/533	. . .	With photo-electric work-sensing means	83/6491	. . . . .	And transverse cutter station
83/535	. . .	Release of interlock controlled	83/6492	. . .	Plural passes of diminishing work piece through tool station
83/536	. . .	Movement of work controlled	83/6494	. . . .	Work alternately, angularly re-oriented relative to tool station
83/538	. . .	Positioning of tool controlled	83/6496	. . . . .	By additional means to engage work and orient it relative to tool station
83/54	. . .	Actuation of tool controlled by work-driven means to measure work length	83/6497	. . . . .	By roller or roll-like element
83/541	. . .	Actuation of tool controlled in response to work-sensing means			
83/543	. . .	Sensing means responsive to work indicium or irregularity			
83/544	. . .	With trip-switch in work-sensing mechanism			

83/6499	. . . Work rectilinearly reciprocated through tool station	83/6564	. . . . By pattern or templet
83/65	. . . . With means to cause or permit angular re-orientation of work about axis parallel to plane of cut	83/6566	. . . . By indexing means
83/6502	. . . . . By endless member having work-engaging teeth	83/6568	. . . With additional work-locating means on work-carrier
83/6504	. . . . . By member having work-engaging tooth	83/6569	. . With means to stop work conveyor
83/6505	. . . . . Including plural work-engaging teeth	83/6571	. . With means to store work articles
83/6507	. . . . . Fluid operated	83/6572	. . With additional means to engage work and orient it relative to tool station
83/6508	. . . . With means to cause movement of work transversely toward plane of cut	83/6574	. . . By work-stopping abutment
83/651	. . . . . By means to cause movement toward and away from plane of cut	83/6576	. . . By opposed lateral guide means
83/6512	. . . . . Actuated by movement of a member on reciprocating means	83/6577	. . . With means to adjust additional means
83/6513	. . . . . Actuated by passive means which is external to reciprocating means	83/6579	. . With means to press work to work-carrier
83/6515	. . . . . By means to define increment of movement toward plane of cut	83/658	. . With projections on work-carrier [e.g., pin wheel]
83/6516	. . . . . Interrelated with movement of reciprocating means	83/6582	. . Tool between tandem arranged work carrying means
83/6518	. . . . . By pusher mechanism	83/6584	. . Cut made parallel to direction of and during work movement
83/652	. . . . . With additional work holding or positioning means	83/6585	. . . Including nonconcurrently acting tool
83/6521	. . . . . Work holding means includes actuator	83/6587	. . . Including plural, laterally spaced tools
83/6523	. . . . . Including plural, simultaneously acting pusher elements	83/6588	. . . . Tools mounted on common tool support
83/6524	. . . . . Independently adjustable	83/659	. . . . . Tools axially shiftable on support
83/6526	. . . . . With additional means to retract elements	83/6592	. . . Interrelated work-conveying and tool-moving means
83/6528	. . . . . Power derived from movement of reciprocating means	83/6593	. . . . With reciprocating tool [e.g., "jigsaw" type]
83/6529	. . . . . Power derived from fluid pressure means	83/6595	. . . . With means to move tool laterally of feed direction during cutting
83/6531	. . . . . Movement by screw means	83/6596	. . . . With means to effect difference between work speed and tool speed
83/6532	. . . . . Movement by rack and pinion or pawl	83/6598	. . . . Tool co-axial with work-conveying means
83/6534	. . . . . With handle	83/66	. . . With means to press work to tool
83/6536	. . . . . By carriage	83/6601	. . . Bevel cutting tool
83/6537	. . . . By cable or belt drive	83/6603	. . . Tool shiftable relative to work-conveying means
83/6539	. . With means for transverse positioning of work on a moving conveyor	83/6604	. . . Tool in contact with surface of work-conveying means
83/654	. . With work-constraining means on work conveyor [i.e., "work-carrier"]	83/6606	. . . Tool between laterally spaced work-conveying means
83/6542	. . . Plural means to constrain plural work pieces	83/6608	. . . By rectilinearly moving work carriage
83/6544	. . . . End of work protrudes through aperture in carrier	83/6609	. . . . Angularly adjustable
83/6545	. . . With means to guide work-carrier in nonrectilinear path	83/6611	. . . . . Having positive adjustment stop; e.g., link
83/6547	. . . . About axis fixed relative to tool station	83/6612	. . . . . Having position indicating means
83/6548	. . . . Infeed	83/6614	. . . . . Pusher engaging rear surface of work
83/655	. . . . . About vertical axis	83/6616	. . . . . Having means to actuate pusher
83/6552	. . . . . Cut normal to axis	83/6617	. . . . . Hydraulic or pneumatic means
83/6553	. . . . . Work-guide tube	83/6619	. . . . . Gear or pulley actuated pusher
83/6555	. . . . . Cut normal to axis	83/662	. . . . . Lever, cam, or link actuated pusher
83/6556	. . . . . Oscillating work-carrier	83/6622	. . . . Having means to actuate carriage
83/6558	. . . . . Multiple cutters	83/6624	. . . . . Hydraulic or pneumatic means
83/656	. . . . . Coaxial rotary cutters	83/6625	. . . . . Gear or pulley
83/6561	. . . . . Work stationary during cut	83/6627	. . . . . Adapted to place tension on flacid member
83/6563	. . . With means to orient or position work carrier relative to tool station	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	83/701	. . . . Pivot moves to and fro in rectilinear path
83/6644	. . . With work-supplying reel	83/7015	. . Having uniplanar compound motion
83/6646	. . . . And provision for selecting feed length	83/702	. . . By plural arcuately oscillating carrier
83/6648	. . . Continuous conveying during, cutting; e.g., straw cutting	83/7025	. . . Constantly oriented tool travelling in orbit
83/6649	. . . Supporting work at cutting station	83/703	. . . Tool rocks cutting reciprocations
83/6651	. . . . Comprising part of cutting station	83/7035	. . . . One tool reciprocates along fixed guide element
83/6652	. . . Tool and feed roller actuated by common handle	83/704	. . With work-support and means to vary relationship between tool and work support
83/6654	. . . Tool and roller on common movable support	83/7045	. . Arcuately oscillating tool carried on single pivot
83/6656	. . Rectilinear movement only	83/705	. . With means to support tool at opposite ends
83/6657	. . . Tool opposing pusher	83/7055	. . . And apply drive force to both ends of tool
83/6659	. . . . Hydraulically or pneumatically actuated	83/706	. . . . By flexible drive means
83/666	. . . . Screw actuated	83/7065	. . . . By reciprocating rigid support
83/6662	. . . . Gear or pulley actuated	83/707	. By endless band or chain knife
83/6664	. . . . Lever, cam, or link actuated	83/7076	. . With programming means
83/6665	. . . . Spring or gravity urged	83/7083	. . With cutter other than endlessly orbiting type
83/6667	. . Work carrier rotates about axis fixed relative to tool station	83/7089	. . Including contiguous oppositely moving knife portions
83/6668	. . Interrelated work-feeding means and tool-moving means	83/7095	. . With means to change to non-endlessly orbiting cutter
83/667	. Tool carrier or guide affixed to work during cutting	83/7101	. . With tool in-feed
83/674	. . By flexible work-engaging member	83/7108	. . . Including ground-traversing vehicle
83/68	. . Entirely work supported	83/7114	. . . Including means to permit arcuate in-feed motion
83/687	. By tool reciprocable along elongated edge	83/712	. . . . Including means to relocate path of in-feed motion
83/6875	. . With means permitting tool to be rotatably adjusted about its cutting edge during cutting	83/7126	. . . . . Angular relative previous path
83/688	. . With dynamic balancing or shock absorbing means	83/7133	. . . By gravity
83/6885	. . With tool of another type	83/7139	. . . . With fluid in-feed regulating means
83/689	. . With means to change to other type tool	83/7145	. . . By motor-driven mechanism
83/6895	. . Plural reciprocable tools	83/7151	. . With scale or indicator
83/69	. . Stored energy furnishes drive in one direction	83/7158	. . Including plural cutting zones
83/6905	. . With tool in-feed	83/7164	. . . With adjustment of separation between zones
83/691	. . . And auxiliary means for promoting or retarding tool in-feed	83/717	. . . . By lever means
83/6915	. . . . By yieldable means	83/7176	. . . . By screw-threaded means
83/692	. . . . And means to vary tool in-feed speed	83/7183	. . . Including "figure-8" band
83/6925	. . . . With interrelated tool actuating and in-feed means	83/7189	. . . Comprising plural bands
83/693	. . . Of rectilinearly reciprocating tool	83/7195	. . Including means to adjust relationship between band and work-support surface
83/6935	. . . . With in-feed by pivoting carrier	83/7201	. . . By varying angle between band and work-support surface
83/694	. . . And means to prevent tool in-feed	83/7208	. . . . By tilting band carrier
83/6945	. . . With passive means to guide tool directly	83/7214	. . . . . About point of intersection of cutting span and work-support surface
83/695	. . . . By plural opposed guide surfaces	83/722	. . . By varying distance between band and work-support surface
83/6955	. . . . . Having relative adjustment between guide surfaces	83/7226	. . With means to guard the tension
83/696	. . . . . With relative adjustment between guide and work or work-support	83/7233	. . . Including means to retard undriven pulley or sprocket
83/6965	. . . . . By or with additional movable work-support portion	83/7239	. . . With means to vary distance between pulley or sprocket axes
83/697	. . . . . By rotation about an axis parallel to the work-support surface	83/7245	. . . . And angular relationship of axes
83/6975	. . . . . By rotation about an axis perpendicular to the work-support surface	83/7251	. . . . Including means to yieldably bias pulley
83/698	. . . Including means to cause nonrectilinear tool infeed	83/7258	. . . . . By fluid means
83/6985	. . . Of arcuately oscillating tool	83/7264	. . With special blade guide means
83/699	. . . Of tool carrier on single moving pivot	83/727	. With means to guide moving work
83/6995	. . . . Pivot moves in closed loop	83/728	. . In pivotal or arcuate movement
83/70	. . . . Pivot moves to and fro in arcuate path	83/73	. . Guide fixed to or integral with stationary tool element
83/7005	. . . . . Axis of arcuate path moves during cutting	83/731	. . . Tool element cooperates with a second tool
		83/732	. . With guard

83/734	. . With attachment or operative connection to tool carrier	83/7705	. . . . Adjustable angular relationship
83/735	. . With attachment or operative connection to passive tool guide	83/7709	. . . Unidirectionally movable work support
83/736	. . Guide cooperates with template or straight edge secured to work	83/7713	. . . . With opposed work-presser
83/738	. . Curved or deflecting guide	83/7718	. . . . . Presser co-axial with tool
83/739	. . Positively confines or otherwise determines path of work	83/7722	. . . Support and tool relatively adjustable
83/74	. . Adapted to permit maneuvering of work at tool zone	83/7726	. . . . By movement of the tool
83/741	. . With movable or yieldable guide element	83/773	. . . Work-support includes passageway for tool [e.g., slotted table]
83/743	. . . Opposed to work-supporting surface	83/7734	. . With guard for tool
83/744	. . Plural guide elements	83/7738	. . Optional tool pairs alternatively operative
83/745	. . . Opposed	83/7743	. . . One element of tool pairs common to all pairs
83/747	. . Opposed to work-supporting surface	83/7747	. . With means to permit replacement of tool
83/748	. With work immobilizer	83/7751	. . Means to separate elements of tool pair
83/7487	. . Means to clamp work	83/7755	. . Carrier for rotatable tool movable during cutting
83/7493	. . . Combined with, peculiarly related to, other element	83/7759	. . . Unicyclic movement
83/75	. . . . With or to tool guide	83/7763	. . . Tool carrier reciprocable rectilinearly
83/7507	. . . . Guide for traveling cutter	83/7768	. . . . With means to adjust path of reciprocation
83/7513	. . . . Tool or tool support on movable clamp jaw	83/7772	. . . . . Angular relative to previous path
83/752	. . . With means providing for plural steps in clamping stroke	83/7776	. . . . With means to reciprocate carrier
83/7527	. . . With equalizer or self-aligning jaw	83/778	. . . . . And means to rotate tool
83/7533	. . . With biasing or counterbalancing means	83/7784	. . . . With means to rotate tool
83/754	. . . Clamp driven by yieldable means	83/7788	. . . Tool carrier oscillated or rotated
83/7547	. . . Liquid pressure actuating means	83/7793	. . Means to rotate or oscillate tool
83/7553	. . . Including means to retain clamp jaw in position	83/7797	. . . Including means to rotate both elements of tool pair
83/756	. . . Self-locking drive means	83/7801	. . . . Including means to rotate both elements at different speeds
83/7567	. . . Manually actuated drive means	83/7805	. . . . . And means to change speed of rotation
83/7573	. . . Including clamping face of specific structure	83/7809	. . Tool pair comprises rotatable tools
83/758	. . . With means to adjust clamp position or stroke	83/7813	. . . Tool pair elements angularly related
83/7587	. . Gapped work-constrainer	83/7818	. . . . Elements of tool pair angularly adjustable relative to each other
83/7593	. . Work-stop abutment	83/7822	. . . Tool pair axially shiftable
83/76	. . . With scale or indicator	83/7826	. . . . With shifting mechanism for at least one element of tool pair
83/7607	. . . Normal to plane of cut	83/783	. . . Tool pair comprises contacting overlapped discs
83/7613	. . . . Adjustable	83/7834	. . . . With means to effect axial pressure on pair
83/762	. . . . . Angularly relative to plane of cut; e.g., miter	83/7838	. . . . . With means to change axial pressure
83/7627	. . . . With traversing cutter guide; e.g., cut-off saw	83/7843	. . . . With means to change overlap of discs
83/7633	. . . Collapsible	83/7847	. . . Tool element axially shiftable
83/764	. . . Retractable	83/7851	. . . Tool pair comprises disc and cylindrical anvil
83/7647	. . . Adjustable	83/7855	. . . . With adjustable means to urge tool elements together
83/7653	. . . . Having curved cutting edge to make arcuate cut, plural nonaligned intersecting cutting edges, or spaced punches	83/7859	. . . Elements of tool pair adjustably spaced
83/766	. . . . . Spaced edges	83/7863	. . Tool pair comprises rotatable tool and nonrotatable tool
83/7667	. . . Having curved cutting edge to make arcuate cut, plural nonaligned intersecting cutting edges, or spaced punches	83/7868	. . Tool element selectively operative
83/7673	. . . . Spaced edges	83/7872	. . Tool element mounted for adjustment
83/768	. Rotatable disc tool pair or tool and carrier	83/7876	. . . Plural, axially spaced tool elements
83/7684	. . With means to support work relative to tool[s]	83/788	. Tool pair comprises rotatable anvil and fixed-type tool
83/7688	. . . Plural tool elements successively actuated at same station	83/793	. . Anvil has motion in addition to rotation [i.e., traveling anvil]
83/7693	. . . Tool moved relative to work-support during cutting	83/798	. . . Additional motion is along fixed arcuate path
83/7697	. . . . Tool angularly adjustable relative to work-support	83/803	. . . With plural anvils
83/7701	. . . Supporting surface and tool axis angularly related	83/808	. Two tool pairs, driver for one pair moves relative to driver for other pair
		83/811	. . One tool support acts as driver for other
		83/814	. . . Punch and shear
		83/817	. . With variable spacing between tool pairs
		83/819	. . . With intermediate work support

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	83/8743	. . . Straight line positioning
83/853	. . Indicates tool position	83/8745	. . Tool and anvil relatively positionable
83/855	. . . Relative to another element	83/8746	. . . Straight line
83/856	. . . . To work-engaging member	83/8748	. . Tool displaceable to inactive position [e.g., for work loading]
83/857	. . . . . Calibrated scale or indicator	83/8749	. . . By pivotal motion
83/858	. . . . . Indicates dimension of work being cut	83/875	. . With templet surface following tool
83/859	. . . . . Dynamic indicator	83/8752	. . Tool moves work to and against cooperating tool
83/86	. . . . . To another tool assembly	83/8753	. . . With means to clamp or bind work to moving tool
83/861	. . . . . To cooperating tool	83/8755	. . . One tool resiliently mounted or biased
83/862	. . . . . To another component of tool assembly	83/8756	. . . Work forced through tool aperture or between spaced cooperating tools
83/863	. . . . . Adjustable guide for traversing tool; e.g., radial saw guide or miter saw guide	83/8758	. . . Manually actuated work-moving tool
83/865	. . Indicates work characteristic	83/8759	. . With means to connect or disconnect tool and its drive
83/866	. . Indicates wear	83/8761	. . . Continuously moving drive means [e.g., "gag"]
83/867	. . Bubble level	83/8762	. . . . Hand actuated connecting means
83/868	. . Counter	83/8763	. . Convertible from tool path to another or from implement to machine
83/869	. Means to drive or to guide tool	83/8765	. . Magnet- or solenoid-actuated tool
83/8691	. . Unicyclic	83/8766	. . . Tool movement modifies actuating circuit
83/8693	. . . With adjustable stopping point or tool	83/8768	. . . Solenoid core is tool or tool support
83/8694	. . . With brake or blocking means	83/8769	. . Cutting tool operative in opposite directions of travel
83/8696	. . Means to change datum plane of tool or tool presser stroke	83/8771	. . Motion direction of tool influenced by resistance of work
83/8697	. . . For disabling of continuously actuated cutter	83/8772	. . One tool edge of tool pair encompasses work [e.g., wire cutter]
83/8699	. . . With adjustable stop	83/8773	. . Bevel or miter cut
83/87	. . . By varying length of tool stroke	83/8775	. . With tool tensioning means
83/8702	. . Clicker die press	83/8776	. . Constantly urged tool or tool support [e.g., spring biased]
83/8703	. . . With die handling attachment	83/8778	. . . Ledger blade
83/8704	. . . With reciprocating presser	83/8779	. . . Oscillating tool urged axially
83/8706	. . . . Laterally movable to selective operative positions	83/8781	. . . . And urged about pivotal axis
83/8707	. . . . . Pivotal or revolving only	83/8782	. . . Stored energy furnishes cutting force
83/8709	. . . . . With means to impart, limit, or control pivotal motion of presser	83/8784	. . . . With reset
83/871	. . . . . Interrelated with presser reciprocating means	83/8785	. . . Through return [noncutting] stroke
83/8712	. . . . . With means to mount presser for oscillation about column	83/8786	. . . . Oscillating tool
83/8713	. . . . With adjustable bed block	83/8788	. . Tool return mechanism separate from tool advance mechanism
83/8714	. . . . Including presser member reinforcing, or flexure compensating, means	83/8789	. . With simple revolving motion only
83/8716	. . . . With manually actuated control apparatus for reciprocation of presser member	83/8791	. . . Tool mounted on radial face of rotor
83/8717	. . By deforming resilient tool or tool support	83/8792	. . . Variable speed during one revolution [e.g., intermittent]
83/8719	. . With transmission yieldable on overload	83/8794	. . . Revolving tool moves through recess in work holder or cooperating tool
83/872	. . With guard means	83/8795	. . . . Progressively cutting
83/8722	. . . Static	83/8796	. . . Progressively cutting
83/8723	. . . . Adjustable	83/8798	. . With simple oscillating motion only
83/8725	. . Including movable, tool protecting, cushioning sheet	83/8799	. . . Plural tool pairs
83/8726	. . Single tool with plural selective driving means		
83/8727	. . Plural tools selectively engageable with single drive		
83/8729	. . . Predetermined sequence of selection		
83/873	. . . . Of paired tools		
83/8732	. . . Turret of tools		

83/8801	. . . . Plural tools on single oscillating arm [i.e., tool holder]	83/8874	. . Uniplanar compound motion
83/8802	. . . And means to move cooperating cutter member	83/8876	. . . Reciprocating plus work approach [e.g., saw type]
83/8804	. . . Tool driver movable relative to tool support	83/8877	. . . With gyratory drive
83/8805	. . . . Cam or eccentric revolving about fixed axis	83/8878	. . Guide
83/8807	. . . . Gear or ratchet pawl drives toothed tool support	83/888	. . . With nonrigidly positioned member
83/8808	. . . . Toggle links, one link pivoted to tool support	83/8881	. . . With anti-friction means
83/8809	. . . . Fixed axis lever	83/8883	. . . . Roller with peripheral flange or groove
83/8811	. . . . . Adjustable mechanical advantage	83/8884	. . . . Disc
83/8812	. . . Cutting edge in radial plane	83/8886	. . . With means to vary space between opposed members
83/8814	. . . . Adjustable	83/8887	. . . . . By rectilinear movement of member
83/8815	. . . . With guide means for the cutting member	83/8889	. . . With means to adjust position
83/8817	. . . Axially extending cutting edge	83/889	. Tool with either work holder or means to hold work supply
83/8818	. . . . Axially progressing cut	83/896	. . Rotatable wound package supply
83/882	. . . . Adjustable	83/902	. . . Plural supply sources
83/8821	. . With simple rectilinear reciprocating motion only	83/909	. Cutter assemblage or cutter element therefor [e.g., chain saw chain]
83/8822	. . . Edge-to-edge of sheet or web [e.g., traveling cutter]	83/913	. . With means permitting removal of cutter element
83/8824	. . . With provision for dynamic balance	83/917	. . Having diverse cutting elements
83/8825	. . . With lost motion in tool drive	83/921	. . . And noncutting depth gauge
83/8827	. . . Means to vary force on, or speed of, tool during stroke	83/925	. . Having noncutting depth gauge
83/8828	. . . Plural tools with same drive means	83/929	. Tool or tool with support
83/883	. . . . Tools positioned by template	83/9292	. . Wire tool
83/8831	. . . . Plural distinct cutting edges on same support	83/9295	. . Work supported tool [e.g., clicker die]
83/8832	. . . . . Concentrically mounted	83/9297	. . . With product ejection facilitator
83/8834	. . . . . Successively acting	83/93	. . . With tool manipulating portion
83/8835	. . . And means to move cooperating cutting member	83/9302	. . . With tool positioning abutment
83/8837	. . . With application of force to opposite ends of tool supporting crosshead	83/9304	. . . To sever article from work and cut within article
83/8838	. . . . By relatively movable fixed axis levers	83/9307	. . . With tool contour adjusting means
83/884	. . . . By connecting rod articulated with tool support	83/9309	. . Anvil
83/8841	. . . Tool driver movable relative to tool support	83/9312	. . . Rotatable type
83/8843	. . . . Cam or eccentric revolving about fixed axis	83/9314	. . Pointed perforators
83/8844	. . . . Gear actuated tool support	83/9317	. . Endless band or belt type
83/8845	. . . . Toggle links, one link pivoted to tool support	83/9319	. . Toothed blade or tooth therefor
83/8847	. . . . Screw actuated tool support	83/9321	. . . With means to vary tooth position
83/8848	. . . . Connecting rod articulated with tool support	83/9324	. . . With additional cutting means
83/885	. . . . Fixed axis lever	83/9326	. . . Plural separable sections
83/8851	. . . . . Adjustable mechanical advantage	83/9329	. . . . Tooth separable from blade
83/8853	. . . . Including details of guide for tool or tool support	83/9331	. . . . . By independent connecting element
83/8854	. . . Progressively cutting	83/9333	. . . . . Transversely movable
83/8855	. . . With spaced guide pins [e.g., die set leader pins]	83/9336	. . . . . Arcuately movable
83/8857	. . . With inclined guides	83/9338	. . . . . . With additional element to prevent movement of connecting element
83/8858	. . . Fluid pressure actuated	83/9341	. . . . . Rectilinearly movable
83/886	. . . . Utilizing fluid amplifier	83/9343	. . . . . By deformation
83/8861	. . . . Diaphragm	83/9346	. . . Uniformly varying teeth or tooth spacing
83/8863	. . . . Explosive fluid	83/9348	. . . Undulating tooth arrangement
83/8864	. . . . Plural cylinders	83/935	. . . Plural tooth groups
83/8866	. . . . Offset cutter	83/9353	. . . . Including raker tooth group
83/8867	. . . With means to adjust tool position on tool holder	83/9355	. . . . Including intermediate raker tooth
83/8868	. . . . Adjustably mounted cooperating tool	83/9358	. . . Series of dissimilar teeth
83/887	. . Parallel draw-cut [e.g., translatory]	83/936	. . . Series of allochiral teeth
83/8871	. . . Link suspension	83/9362	. . . Teeth having transversely curved cutting edge
83/8873	. . Straight line motion combined with tilting in plane of stroke	83/9365	. . . Teeth having cutting edge parallel to blade surface
		83/9367	. . . Teeth having cutting edge perpendicular to blade surface
		83/937	. . Tool mounted by and between spaced arms
		83/9372	. . Rotatable type

83/9374 . . . With spacer interposed between shaft-mounted tools

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

83/9394 . . . Helical tool

83/9396 . . . Shear type

83/9399 Cutting edge wholly parallel to axis of rotation

83/9401 Cutting edge wholly normal to axis of rotation

83/9403 . . . Disc type

83/9406 . . . Radially adjustable tool

83/9408 . . . Spaced cut forming tool

83/9411 . . Cutting couple type

83/9413 . . . Spiral type cutter

83/9416 . . . To punch and cut punched article

83/9418 . . . Punching plus nonpunching tool

83/942 . . . Notching plus nonnotching tool

83/9423 . . . Punching tool

83/9425 Tool pair

83/9428 Shear-type male tool

83/943 Multiple punchings

83/9432 Plural spaced successively operative shearing portions

83/9435 Progressive cutting

83/9437 Shear-type female tool

83/944 Multiple punchings

83/9442 . . . Notching tool

83/9444 Shear type

83/9447 . . . Shear type

83/9449 . . . Spaced cut forming tool

83/9452 . . . With tool contour adjusting means

83/9454 . . Reciprocable type

83/9457 . . Joint or connection

83/9459 . . . Magnetic connection

83/9461 . . . Resiliently biased connection

83/9464 . . . For rotary tool

83/9466 Flexible sleeve-like tool

83/9469 Adjustable

83/9471 Rectilinearly

83/9473 . . . For rectilinearly reciprocating tool

83/9476 Tool is single element with continuous cutting edge [e.g., punch, etc.]

83/9478 Tool is single element reciprocable generally perpendicularly to elongate cutting edge [e.g., shear, etc.]

83/9481 Tool is single element reciprocable along elongate cutting edge [e.g., saw blade, etc.]

83/9483 Adjustable

83/9486 Rectilinearly

83/9488 . . . Adjustable

83/949 Rectilinearly

83/9493 . . Stationary cutter

83/9495 . . . Nonparallel cutting edges

83/9498 . . . Parallel cutting edges

83/95 . Machine frame

83/96 . . Guard

83/97 . Miscellaneous

Former US Class 117 Series

117/00 Single-crystal, oriented-crystal, and epitaxy growth processes; non-coating apparatus therefor

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

117/1016 . . with means for treating single-crystal [e.g., heat treating]

117/102 . . for forming a platelet shape or a small diameter, elongate, generally cylindrical shape [e.g., whisker, fiber, needle, filament]

117/1024 . . for crystallization from liquid or supercritical state

117/1028 . . . Crucibleless apparatus having means providing movement of discrete droplets or solid particles to thin-film precursor [e.g., Verneuil method]

117/1032 . . . Seed pulling

117/1036 including solid member shaping means other than seed or product [e.g., EDFG die]

117/104 Means for forming a hollow structure [e.g., tube, polygon]

117/1044 including means forming a flat shape [e.g., ribbon]

117/1048 Pulling includes a horizontal component

117/1052 including a sectioned crucible [e.g., double crucible, baffle]

117/1056 including details of precursor replenishment

117/106 including sealing means details

117/1064 including a fully-sealed or vacuum-maintained crystallization chamber [e.g., ampoule]

117/1068 including heating or cooling details [e.g., shield configuration]

117/1072 including details of means providing product movement [e.g., shaft guides, servo means]

117/1076 . . . having means for producing a moving solid-liquid-solid zone

117/108 Including a solid member other than seed or product contacting the liquid [e.g., crucible, immersed heating element]

117/1084 having details of a stabilizing feature

117/1088 including heating or cooling details

117/1092 . . . Shape defined by a solid member other than seed or product [e.g., Bridgman-Stockbarger]

117/1096 . . . including pressurized crystallization means [e.g., hydrothermal]

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
- 137/0402 . . Cleaning, repairing, or assembling
- 137/0407 . . . Repairing or assembling hydrant [e.g., fireplug, etc.]
- 137/0413 . . . Gas or water meter repairing or assembling
- 137/0419 . . . Fluid cleaning or flushing
- 137/0424 Liquid cleaning or flushing
- 137/043 Valve or valve seat cleaning
- 137/0435 . . . Mechanical cleaning [e.g., pig, etc.]
- 137/0441 . . . Repairing, securing, replacing, or servicing pipe joint, valve, or tank
- 137/0447 Including joint or coupling
- 137/0452 Detecting or repairing leak
- 137/0458 Tapping pipe, keg, or tank
- 137/0463 Particular aperture forming means
- 137/0469 Cutter or cutting tool
- 137/0475 Having deformable or inflatable means
- 137/048 With content loading or unloading [e.g., dispensing, discharge assistant, etc.]
- 137/0486 Specific valve or valve element mounting or repairing
- 137/0491 . . . Valve or valve element assembling, disassembling, or replacing
- 137/0497 Fluid actuated or retarded
- 137/0502 Multi way valve
- 137/0508 Ball valve or rotary ball valve
- 137/0514 Gate valve
- 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
- 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]	137/2524	. . . . Flow dividers [e.g., reversely acting controls]
137/2115	. . . . With means to vary input or output of device	137/2526	. . . . Main line flow displaces or entrains material from reservoir
137/212	. . System comprising plural fluidic devices or stages	137/2529	. . . . With electrical controller
137/2125	. . . Plural power inputs [e.g., parallel inputs]	137/2531	. . . Flow displacement element actuates electrical controller
137/2131	. . . . Variable or different-value power inputs	137/2534	. . . Liquid level response
137/2136	. . . . Pulsating power input and continuous-flow power input	137/2536	. . . . Float controlled weir or valve
137/2142	. . . . With variable or selectable source of control-input signal	137/2539	. . . . Swinging outlet pipe controller
137/2147	. . . . To cascaded plural devices	137/2541	. . . With measuring type discharge assistant
137/2153	. . . . With feedback passage[s] between devices of cascade	137/2544	. . Supply and exhaust type
137/2158	. . . . With pulsed control-input signal	137/2546	. . . Vacuum or suction pulsator type [e.g., milking machine]
137/2164	. . Plural power inputs to single device	137/2549	. . . . With trip linkage or snap action
137/2169	. . . Intersecting at interaction region [e.g., comparator]	137/2552	. . . . With pulsation responsive pilot valve
137/2174	. . . . Co-linear, oppositely-directed power inputs [e.g., impact modulator]	137/2554	. . . Reversing or 4-way valve systems
137/218	. . Means to regulate or vary operation of device	137/2557	. . . Waste responsive to flow stoppage
137/2185	. . . To vary frequency of pulses or oscillations	137/2559	. . Self-controlled branched flow systems
137/2191	. . . By non-fluid energy field affecting input [e.g., transducer]	137/2562	. . . Dividing and recombining
137/2196	. . . . Acoustical or thermal energy	137/2564	. . . Plural inflows
137/2202	. . . By movable element	137/2567	. . . . Alternate or successive inflows
137/2207	. . . . Operating at timed intervals [e.g., to produce pulses]	137/2569	. . . . Control by depletion of source
137/2213	. . . . Electrically-actuated element [e.g., electro-mechanical transducer]	137/2572	. . . . One inflow supplements another
137/2218	. . . . Means [e.g., valve] in control input	137/2574	. . . Bypass or relief controlled by main line fluid condition
137/2224	. . Structure of body of device	137/2577	. . . . Liquid level responsive
137/2229	. . Device including passages having V over T configuration	137/2579	. . . . Flow rate responsive
137/2234	. . . And feedback passage[s] or path[s]	137/2582	. . . . Including controlling main line flow
137/224	. . . With particular characteristics of control input	137/2584	. . . . Relief or bypass closes as main opens
137/2245	. . . . Multiple control-input passages	137/2587	. . . . Bypass or relief valve biased open
137/2251	. . . And multiple or joined power-outlet passages	137/2589	. . . . Pilot valve operated
137/2256	. . . And enlarged interaction chamber	137/2592	. . . . Carried choke
137/2262	. . . And vent passage[s]	137/2594	. . . . Choke
137/2267	. . Device including passages having V over gamma configuration	137/2597	. . . . Variable choke resistance
137/2273	. . Device including linearly-aligned power stream emitter and power stream collector	137/2599	. . . . Venturi
137/2278	. Pressure modulating relays or followers	137/2602	. . . . Flapper
137/2322	. . Jet control type	137/2605	. . . . Pressure responsive
137/2365	. . Plural series units	137/2607	. . . . With pressure reducing inlet valve
137/2409	. . With counter-balancing pressure feedback to the modulating device	137/261	. . . . Relief port through common sensing means
137/2452	. . . With counter-counter balancing pressure feedback	137/2612	. . . . Common sensor for both bypass or relief valve and other branch valve
137/2496	. Self-proportioning or correlating systems	137/2615	. . . . Bypass or relief valve opens as other branch valve closes
137/2499	. . Mixture condition maintaining or sensing	137/2617	. . . . Bypass or relief valve biased open
137/2501	. . . Dividing and recombining flow	137/262	. . . . Increasing pressure progressively closes then reopens by-pass or relief valve
137/2504	. . . By specific gravity	137/2622	. . . . Bypass or relief valve responsive to pressure downstream of outlet valve
137/2506	. . . By viscosity or consistency	137/2625	. . . . Pilot valve
137/2509	. . . By optical or chemical property	137/2627	. . . . Outlet valve carried by bypass or relief valve
137/2511	. . Fuel controlled by boiler or water system condition	137/263	. . . . Plural sensors for single bypass or relief valve
137/2514	. . Self-proportioning flow systems	137/2632	. . . . Sensors interconnected by timing or restrictive orifice
137/2516	. . . Interconnected flow displacement elements	137/2635	. . . . Pilot valve operated
137/2519	. . . Movable trap chamber	137/2637	. . . . Mechanical movement between sensor and valve
137/2521	. . . Flow comparison or differential response	137/264	. . . . Electrical control
		137/2642	. . . . Sensor rigid with valve
		137/2645	. . . . Flexible sensor

137/2647	. . . . . Pressure responsive outlet valve	137/2877	. . . Pump or liquid displacement device for flow passage
137/265	. . . Plural outflows	137/2883	. . . . . Piston
137/2652	. . . . . Single actuator operates plural outlets simultaneously	137/289	. . . . . Co-axial within flow passage
137/2655	. . . . . Biased open isolation valve	137/2897	. . . . . Collapsible bulb
137/2657	. . . . . Flow rate responsive	137/2904	. . . Siphon inlet movable to and from seat
137/266	. . . . . Primer valve	137/2911	. . . With valve or closure in-flow passage
137/2663	. . . . . Pressure responsive	137/2917	. . With means for mounting and/or positioning relative to siphon chamber
137/2665	. . . . . With external control for correlating valve [e.g., manual]	137/2924	. . Elements
137/2668	. . . . . Alternately or successively substituted outflow	137/2931	. Diverse fluid containing pressure systems
137/267	. . . . . Control by filling auxiliary gravitating or float operating tank	137/2934	. . Gas lift valves for wells
137/2673	. . . . . Control by filling outlet tank or receiver	137/2937	. . Gas pressure discharge of liquids feed traps [e.g., to boiler]
137/2675	. . . . . Float controlled	137/294	. . . Gas pressure controlled by amount of liquids in boiler or discharge receiver
137/2678	. . . . . Four port reversing valve	137/2943	. . . . . Pressure connection at liquid level in boiler or discharge receiver
137/268	. . . . . Responsive to pressure or flow interruption	137/2947	. . . Gas pressure controlled by amount of liquid in trap
137/2683	. . . . . Plural outlets control with automatic reset	137/295	. . . . . Plural trap chambers
137/2685	. . . . . Manually set to a single outflow position	137/2953	. . . . . Gravitating
137/2688	. . . . . Flow rate responsive	137/2956	. . . . . Gravitating vessel
137/269	. . . . . Flow sensing turbine	137/2959	. . . . . Sinking or bucket type float
137/2693	. . . . . Pressure responsive	137/2962	. . . . . Pivoted vessel with fluid passage through pivot
137/2695	. . . . . Responsive to outlet pressure	137/2965	. . . . . Float responsive
137/2698	. . . . . Electrical control	137/2968	. . . . . Liquid control valve positively actuated
137/27	. . Liquid level responsive	137/2971	. . . . . Gas condensing type
137/2703	. . Flow rate responsive	137/2975	. . . . . Gas inlet and outlet valves unitary
137/2705	. . . Pressure differential	137/2978	. . . Gas pressure controlled by manual or cyclic means
137/2708	. . Plural sensors	137/2981	. . . . . Movable trap chamber
137/271	. . . For single valve	137/2984	. . Foam control in gas charged liquids
137/2713	. Siphons	137/2987	. . . Level or pressure responsive
137/272	. . Plural	137/299	. . . Separate handling of foam
137/2727	. . . Tank truck mounted	137/2993	. . . With conditioning trap or chamber
137/2733	. . . Sequentially discharging in parallel	137/2996	. . . . . Recarbonation
137/274	. . . . . From plural tanks	137/30	. . . . . With trap or chamber by-pass
137/2747	. . . Main siphon with auxiliary starting, stopping or resetting siphon	137/3003	. . Fluid separating traps or vents
137/2754	. . . . . Sinking or bucket-type float operated main siphon, float emptying auxiliary siphon	137/3006	. . . Liquids separated from liquid
137/2761	. . With discharge-controlling receiver	137/3009	. . . Plural discriminating outlets for diverse fluids
137/2768	. . . With float	137/3012	. . . . . Common actuator for control valves
137/2774	. . Periodic or accumulation responsive discharge	137/3015	. . . . . Choke or restricted passage gas bleed
137/2781	. . . With manual control	137/3018	. . . . . From above liquid level
137/2788	. . . Control by filling auxiliary tank	137/3021	. . . Discriminating outlet for liquid
137/2795	. . . Float-operated inlet to siphon	137/3024	. . . . . With alternately operated inlet and outlet valves
137/2802	. . . Release of trapped air	137/3028	. . . . . With non-discriminating gas vent or liquid discharge
137/2808	. . . . . Through float-operated vent	137/3031	. . . . . Abnormal pressure responsive liquid blow-off or drain
137/2815	. . . . . Through liquid trap seal	137/3034	. . . . . Manual control
137/2822	. . . . . Auxiliary liquid trap seal	137/3037	. . . . . With auxiliary inlet or by-pass valve
137/2829	. . With strainer, filter, separator or sediment trap	137/304	. . . . . With fluid responsive valve
137/2836	. . With recorder, register, signal, indicator or inspection window	137/3043	. . . . . Successively opened valves
137/2842	. . With flow starting, stopping or maintaining means	137/3046	. . . . . Gas collecting float [e.g., inverted bucket]
137/2849	. . . Siphon venting or breaking	137/3049	. . . . . Downstream from valve
137/2856	. . . With leakage or entrained air removal	137/3052	. . . . . Level responsive
137/2863	. . . Pressure applied to liquid in supply chamber	137/3056	. . . . . Weight or pressure
137/287	. . . Plunge or immersion starting	137/3059	. . . . . Gravitating vessel
		137/3062	. . . . . Sinking or bucket type float

137/3065	. . . . . Servo-control	137/402	. Distribution systems involving geographic features
137/3068	. . . . . Float	137/4238	. With cleaner, lubrication added to fluid or liquid sealing at valve interface
137/3071	. . . . . With main line gas outlet from trap chamber	137/4245	. . Cleaning or steam sterilizing
137/3074	. . . . . With outlet extending above liquid in trap	137/4252	. . . Reverse fluid flow
137/3077	. . . . . Servo-control	137/4259	. . . With separate material addition
137/308	. . . . . With pressure balanced outlet valve	137/4266	. . . Steam sterilizing
137/3084	. . . Discriminating outlet for gas	137/4273	. . . Mechanical cleaning
137/3087	. . . With reverse flow stop or pressure regulating valve	137/428	. . . . Valve grinding motion of valve on seat
137/309	. . . . Fluid sensing valve	137/4287	. . . . . Concentric stem
137/3093	. . . . With vaporized liquid stop	137/4294	. . . . . Spring pressed
137/3096	. . . . . With separate return for condensate	137/4301	. . . . . Lost motion permits grinding
137/3099	. . . . . Float responsive	137/4308	. . . . . With swivel-preventing means
137/3102	. . . With liquid emptying means	137/4315	. . . . . Nut releasable from body and/or stem
137/3105	. . . . Self-emptying	137/4322	. . . . . With independent grinding actuator
137/3109	. . Liquid filling by evacuating container	137/4329	. . . . . Separable
137/3112	. . Main line flow displaces additive from shunt reservoir	137/4336	. . . . . Cleaning member reciprocates in passage
137/3115	. . Gas pressure storage over or displacement of liquid	137/4343	. . . . . By-pass cleaning
137/3118	. . . Surge suppression	137/4351	. . . . . Independent actuation
137/3121	. . . With return of liquid to supply	137/4358	. . Liquid supplied at valve interface
137/3124	. . . Plural units	137/4365	. . . Plural feed
137/3127	. . . With gas maintenance or application	137/4372	. . . Line pressure feed
137/313	. . . . Gas carried by or evolved from liquid	137/4379	. . . Feed by or with actuation
137/3133	. . . . . Gas injectors	137/4386	. . . Loss control
137/3137	. . . . Gas injected by liquid pressure or flow	137/4393	. . . Screw feed
137/314	. . . . Unitary mounting for gas pressure inlet and liquid outlet	137/44	. . . . With check valve
137/3143	. . . With liquid level responsive gas vent or whistle	137/4407	. . . . . Excess relief
137/3146	. . . . Combined high and low level responsive	137/4414	. . . . . Jacking
137/3149	. Back flow prevention by vacuum breaking [e.g., anti-siphon devices]	137/4421	. . . . . Jacking
137/3185	. . Air vent in liquid flow line	137/4428	. . . . . Seating
137/3222	. . . With liquid seal in liquid flow line	137/4435	. . . Spring biased piston feed
137/3258	. . . . Automatic valve in vent line	137/4442	. . . External pressure
137/3294	. . . Valved	137/4449	. . . Gravity or capillary feed
137/3331	. . . . With co-acting valve in liquid flow path	137/4456	. With liquid valves or liquid trap seals
137/3367	. Larmer-Johnson type valves; i.e., telescoping internal valve in expanded flow line section	137/4463	. . Liquid seal in liquid flow line; flow liquid forms seal
137/3421	. . Line condition change responsive	137/4471	. . . Valves
137/3476	. . Internal servo-motor with internal pilot valve	137/4478	. . . . Line condition change responsive
137/353	. . . Pilot controlled passage in nose or needle	137/4486	. . . . . Plural valves or valve seats
137/3584	. Inflatable article [e.g., tire filling chuck and/or stem]	137/4493	. . . . . Pivoted valve
137/36	. . With pressure-responsive pressure-control means	137/4501	. . . . . Ball valve
137/3615	. . . Pulsating	137/4508	. . . . . Seats vertically up
137/3631	. . . Diaphragm, bellows or expansible tube	137/4516	. . . Seal replenishers
137/3646	. . . Co-axial inflation and relief valves	137/4523	. . . Plural inlet
137/3662	. . With gauge or indicator	137/4531	. . . Divided and recombined passages
137/3677	. . . With deflating means	137/4538	. . . Tangential inlet flow
137/3693	. . . Selectively connected	137/4546	. . . Downward partition encircles projecting outlet
137/3709	. . Stem attached relief valve	137/4553	. . . Submerged inlet pipe end
137/3724	. . With coupling means	137/4561	. . . . Hinged seal bowl
137/374	. . With cap	137/4568	. . . . . Distinct seal bowl in flow line connected casing
137/3755	. . . Valve actuating, assembling or locking means on cap	137/4576	. . . U-seals
137/3771	. . . . Valve manually seated	137/4583	. . . . Topside access beneath cover plate closed floor opening
137/3786	. . Removable valve head and seat unit [valve insides]	137/4591	. . . . . Enlarged upflow leg
137/3802	. With vehicle guide or support, e.g., service station	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	137/5515	. . . . Separate relatively movable valves with single actuator
137/4658	. . . With auxiliary means for varying liquid level	137/5521	. . . . . Unidirectional abutting connection between main valve or actuator and waste valve
137/4666	. . . With baffle	137/5526	. . . . . With screw or gear in actuating mechanism
137/4673	. Plural tanks or compartments with parallel flow	137/5532	. . . . . Reciprocating relatively fixed valves
137/469	. . Sequentially filled and emptied [e.g., holding type]	137/5538	. . . . . Waste through lower valve guide
137/4707	. . . With relative rotation of tank group and filling head	137/5544	. Reversing valves - regenerative furnace type
137/4723	. . . . With rotary filling and emptying head	137/5617	. . With cooling
137/474	. . With housings, supports or stacking arrangements	137/5689	. . Rotary reversing valve
137/4757	. . Battery or electrolytic cell replenishment	137/5762	. With leakage or drip collecting
137/4774	. . . Barometric supply	137/5835	. . Relatively movable receptacle or drain pipe and outlet
137/479	. . Flow dividing compartments	137/5907	. . Collector for waste liquid derived from solid, gas or vapor
137/4807	. . Tank type manifold [i.e., one tank supplies or receives from at least two others]	137/598	. With repair, tapping, assembly, or disassembly means
137/4824	. . Tank within tank	137/5983	. . Blow out preventer or choke valve device [e.g., oil well flow controlling device, etc.]
137/4841	. . With cross connecting passage	137/5987	. . Solenoid or electromagnetically operated valve
137/4857	. . With manifold or grouped outlets	137/599	. . Pressure regulating type valve
137/4874	. . . Tank truck type	137/5994	. . . Diaphragm type
137/4891	. With holder for solid, flaky or pulverized material to be dissolved or entrained	137/5997	. . Gas or water meter replacing
137/5109	. Convertible	137/60	. . Assembling or disassembling flexible tube or sleeve type valve
137/5153	. . Reversible check	137/6004	. . Assembling or disassembling float or float valve
137/5196	. . Unit orientable in a single location between plural positions	137/6007	. . Assembling or disassembling multi way valve
137/524	. . . Reversible stop and vent or waste	137/6011	. . Assembling, disassembling, or removing cartridge type valve [e.g., insertable and removable as a unit, etc.]
137/5283	. . Units interchangeable between alternate locations	137/6014	. . . Faucet type [e.g., domestic water use, etc.]
137/5327	. Hydrant type	137/6017	. . . . Including removable valve head and seat unit
137/5333	. . Water crane type	137/6021	. . . . Including mechanical movement actuator
137/5339	. . . Spout operated valve	137/6024	. . . . Particular handle or handle fastening means
137/5345	. . . Rotating riser	137/6028	. . Assembling or disassembling pivoted valve
137/535	. . . . Spout articulated to riser	137/6031	. . Assembling or disassembling rotary valve
137/5356	. . . . Vertically movable riser	137/6035	. . . Rotary ball valve
137/5362	. . . Extensible spout	137/6038	. . . . Particular valve seat or interface seal
137/5368	. . . Spout articulated to riser	137/6041	. . . . . Replaceable
137/5374	. . Plural riser	137/6045	. . . . . With top entry valve
137/538	. . Expansible chamber operated by valve actuator for draining riser	137/6048	. . . Butterfly valve
137/5386	. . With pump or ejector	137/6052	. . . . Having valve head or seat packing
137/5392	. . Removable valve and valve seat	137/6055	. . . . With head and stem collections
137/5397	. . . With extension to facilitate removal	137/6058	. . . Plug valve
137/5403	. . Removable valve with supplemental check valve	137/6062	. . . . Having retainer at actuator end
137/5409	. . Movable riser actuated valve	137/6065	. . Assembling or disassembling reciprocating valve
137/5415	. . . Reciprocating riser	137/6069	. . . Having particularly packed or sealed mechanical movement actuator
137/5421	. . . . Piston type valve	137/6072	. . . Gate valve
137/5427	. . Balanced valve	137/6075	. . . . Bifaced
137/5433	. . Valve actuator extends laterally from bottom of riser	137/6079	. . . . Having particular valve seat
137/5438	. . Valve actuator outside riser	137/6082	. . . . . Including seal
137/5444	. . . Lever actuator	137/6086	. . Assembling or disassembling check valve
137/545	. . . With casing, flush with ground or pavement surface	137/6089	. . With mechanical movement between actuator and valve
137/5456	. . With casing	137/6092	. . . Plural motions of valve
137/5462	. . . Flush with ground or pavement surface	137/6096	. . . Lever type
137/5468	. . . Cap, cover or hood	137/6099	. . . Gear type
137/5474	. . . With heater	137/6103	. . . Cam type
137/5479	. . With actuator lubricating means	137/6106	. . . Screw type
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		

137/6109	. . 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
137/613	. . . With valved closure or bung	137/6914	. . . Vehicle supports fluid compressor and compressed fluid storage tank
137/6133	. . . . Combined rotary and longitudinal movement of valve	137/6918	. . With hose storage or retrieval means
137/6137	. . . . Longitudinal movement of valve	137/6921	. . . With means for plural hoses
137/614	. . . . Rotary movement of valve	137/6925	. . . With flow regulation responsive to hose movement
137/6144	. . . With core ejectors	137/6929	. . . . Reel type
137/6147	. . . . Impact operated	137/6932	. . . With retrieval means
137/615	. . Foot valve extraction from top of enclosure	137/6936	. . . . Power stop or brake
137/6154	. . With disassembly tool engaging feature	137/694	. . . . . Responsive to position of hose in casing
137/6157	. . . Wrench engaging lugs	137/6943	. . . . . Biased to retracted position
137/6161	. . With provision of alternate wear parts	137/6947	. . . . . Boom type
137/6164	. . . Valve heads and/or seats	137/6951	. . . . . Weighted
137/6167	. . . . Opposite duplicate surfaces of unitary structure	137/6954	. . . Reel with support therefor
137/6171	. . . . . Homogeneous material	137/6958	. . . . Ground supported
137/6174	. . . . . Valve heads	137/6962	. . . Basket or holder for folded coiled hose
137/6178	. . . . Different portions of continuous surfaces	137/6966	. . Static constructional installations
137/6181	. . . . Successively used adjacent independent elements	137/6969	. . . Buildings
137/6184	. . Removable valve with normally disabled supplemental check valve	137/6973	. . . . Outside access to portions of the system
137/6188	. . . Check valve disabled by normally movable main valve part	137/6977	. . . . Escutcheon type support
137/6191	. . . . Ball check	137/698	. . . . Wall
137/6195	. . . . Spring bias	137/6984	. . . . . Recessed gas outlet box
137/6198	. Non-valving motion of the valve or valve seat	137/6988	. . . . Floor installation
137/6253	. . Rotary motion of a reciprocating valve	137/6991	. . . Ground supporting enclosure
137/6307	. . . Turbine on valve	137/6995	. . . . Valve and meter wells
137/6362	. . . Manual rotating means	137/6999	. . . . . With means to center well on valve
137/6416	. With heating or cooling of the system	137/7002	. . . . . Detachable base plate
137/6443	. . With burner	137/7006	. . . . . Vertical casing aligned by valve casing
137/647	. . . Flue extending through fluid	137/701	. . . . . Combined with actuator
137/6497	. . Hot and cold water system having a connection from the hot to the cold channel	137/7014	. . . . . Telescopic well casing
137/6525	. . Air heated or cooled [fan, fins, or channels]	137/7017	. . . . . Telescopic well casing
137/6552	. . With diversion of part of fluid to heat or cool the device or its contents	137/7021	. . . . . Covers
137/6579	. . Circulating fluid in heat exchange relationship	137/7025	. . . . Pipe line transport
137/6606	. . With electric heating element	137/7028	. . . Tapering or tower type
137/6633	. With fluid system support for workman or non-system material	137/7032	. . Furniture and housing furnishings
137/6851	. With casing, support, protector or static constructional installations	137/7036	. . Jacketed
137/6855	. . Vehicle	137/7039	. . Tank supports
137/6858	. . . Locomotive	137/7043	. . Guards and shields
137/6862	. . . . Boiler or steam dome	137/7047	. . . Resilient abutment for preventing breakage
137/6866	. . . Railway car	137/7051	. . . Nozzle abutment for scratch or damage prevention
137/6869	. . . . Car frame	137/7054	. . . Cover for beer cooler aperture for faucet
137/6873	. . . . End of car	137/7058	. . . Sanitary covers or shields
137/6877	. . . . Roof, wall or floor	137/7062	. . . Valve guards
137/6881	. . . Automotive	137/7065	. . . . With means for accommodating a detachable actuator
137/6884	. . . . Steering post or wheel	137/7069	. With lock or seal
137/6888	. . . . Dash	137/71	. . With seal
		137/7131	. . Common lock and valve actuator
		137/7162	. . . Combination lock
		137/7194	. . . Biased valve
		137/7225	. . . Mechanical movement between lock and valve
		137/7256	. . Locks against rotary motion
		137/7287	. Liquid level responsive or maintaining systems

137/729	. . Washing machine cycle control	137/7465	. . . . Assembly mounted on and having reciprocating valve element coaxial with inlet pipe
137/7293	. . Liquid excluding devices for gas inlet or outlets	137/7468	. . . . . Horizontal or side entering pipe
137/7297	. . With second diverse control	137/7472	. . . . . Vertical inlet riser
137/73	. . . Manual control	137/7475	. . . . . With toggle or second lever connected to valve
137/7303	. . Control of both inflow and outflow of tank	137/7478	. . . . . With interposed cam, gear or threaded connection
137/7306	. . Electrical characteristic sensing	137/7481	. . . . . Rotary valve element
137/731	. . With control fluid connection at desired liquid level	137/7485	. . . . . Pivoted valve
137/7313	. . Control of outflow from tank	137/7488	. . . . . Ball valves
137/7316	. . . Self-emptying tanks	137/7491	. . . . . Balanced valves
137/7319	. . . . By float	137/7494	. . . . . Flexible valve
137/7323	. . . . By float	137/7498	. . Barometric
137/7326	. . . . Low level safety cut-off	137/7501	. . . . With shut-off between supply tank and receiver
137/7329	. . With supplemental or safety closing means or bias	137/7504	. Removable valve head and seat unit
137/7332	. . . Sinking or bucket type float	137/7559	. . Pump type
137/7336	. . . Gravitating tank	137/7613	. . Threaded into valve casing
137/7339	. . By weight of accumulated fluid	137/7668	. . Retained by bonnet or closure
137/7342	. . . In sinking or bucket type float	137/7722	. Line condition change responsive valves
137/7345	. . . Oil burner fuel overflow preventing safety cut-offs	137/7723	. . Safety cut-off requiring reset
137/7349	. . . In communicating measuring vessel	137/7724	. . . Thermal
137/7352	. . . . Top and bottom connections	137/7725	. . . Responsive to both high and low pressure or velocity
137/7355	. . . In gravitating tank	137/7726	. . . Responsive to change in rate of flow
137/7358	. . By float controlled valve	137/7727	. . . . Excessive flow cut-off
137/7361	. . . Valve opened by external means, closing or closing control by float	137/7728	. . . High pressure cut-off
137/7365	. . . Single float controls plural valves	137/7729	. . . Reset by pressure equalization valve or by-pass
137/7368	. . . Servo relay operation of control	137/773	. . . Fluid released trip
137/7371	. . . . Fluid pressure	137/7731	. . . Fluid counter-biased or unseated valve
137/7374	. . . . . Flexible diaphragm valve	137/7732	. . . . With mechanical stop against reopening
137/7378	. . . . . From tank	137/7733	. . . . With fluid pressure seating of valve
137/7381	. . . Quick acting	137/7734	. . Fluid opened valve requiring reset
137/7384	. . . . Pilot float released	137/7736	. . Consistency responsive
137/7387	. . . . Over center mechanism	137/7737	. . Thermal responsive
137/7391	. . . . . Shifting weight	137/7738	. . Pop valves
137/7394	. . . . . Trip mechanism	137/7739	. . . Pop closing valves
137/7397	. . . . . Weight or spring bias	137/774	. . . Pop pressure reactor in inflow to valve
137/74	. . . . Lost motion mechanism	137/7741	. . . Pop pressure reactor in branched released path
137/7404	. . . Plural floats	137/7742	. . . . Separate relief valves or valves for each branch
137/7407	. . . With counter-balance	137/7743	. . . Lost motion between pop pressure reactor and valve
137/741	. . . . Within tank	137/7744	. . . Adjustable choke
137/7413	. . . Level adjustment or selection means	137/7745	. . . . Annular lip or baffle
137/7417	. . . With float leakage disposal	137/7746	. . . . . On movable valve part
137/742	. . . In separate communicating float chamber	137/7747	. . . . . Screw threaded
137/7423	. . . Rectilinearly traveling float	137/7748	. . Combustion engine induction type
137/7426	. . . . Float co-axial with valve or port	137/7749	. . Valve in auxiliary inlet to induction line
137/743	. . . . . Float is spreader or anti-splash means	137/775	. . . With manual modifier
137/7433	. . . . . Float surrounds inlet pipe	137/7751	. . . With suction compensator
137/7436	. . . . . Float rigid with valve	137/7752	. . . With separate reactor surface
137/7439	. . . Float arm operated valve	137/7753	. . . Unbalanced pivoted valve [e.g., unbalanced butterfly type]
137/7442	. . . . With valve retarder or cushion means	137/7754	. . Line flow effect assisted
137/7446	. . . . With flow guide or restrictor	137/7755	. . . Reactor surface normal to flow
137/7449	. . . . . External hood or deflector or annular outlet surrounding the inlet pipe	137/7756	. . . Reactor surface separated from flow by apertured partition
137/7452	. . . . Movable nozzle or inlet terminal	137/7757	. . . . Through separate aperture
137/7455	. . . . Valve removable from outside container	137/7758	. . Pilot or servo controlled
137/7459	. . . . With U-shaped inlet pipe having terminal valve	137/7759	. . . Responsive to change in rate of fluid flow
137/7462	. . . . With refill pipe		

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	137/782	. . . . . Reactor surface is diaphragm
137/7764	. . . . Choked or throttled pressure type	137/7821	. . . . . With valve closing bias
137/7765	. . . . . Pilot valve within main valve head	137/7822	. . . . Reactor surface closes chamber
137/7766	. . . . . Choked passage through main valve head	137/7823	. . . . . Valve head in inlet chamber
137/7767	. . . . . Loose fitting piston	137/7824	. . . . . Reactor surface is inverted cup [float]
137/7768	. . . . . Pilot controls supply to pressure chamber	137/7825	. . . . . Rectilinear valve stem rigid with reactor surface
137/7769	. . . . Single acting fluid servo	137/7826	. . . . . With valve closing bias
137/777	. . . . . Spring biased	137/7827	. . . . . In reactor chamber
137/7771	. . Bi-directional flow valves	137/7828	. . . . . Valve head on yoke
137/7772	. . . One head and seat carried by head of another	137/7829	. . . . . Yoke has valve closing bias
137/7773	. . . . Supporting valve only spring biased	137/783	. . . . . Reactor operatively connected to valve by mechanical movement
137/7774	. . . . Supporting valve spring carried by supporting valve	137/7831	. . . . With mechanical movement between actuator and valve
137/7775	. . . . . Spring stop on supported valve stem	137/7832	. . . Plural valves biased closed
137/7776	. . . . . Spring abuts guide for supported valve stem	137/7833	. . . With means for mounting or connecting to system
137/7777	. . . . Both valves spring biased	137/7834	. . . Valve seat or external sleeve moves to open valve
137/7778	. . . Axes of ports perpendicular	137/7835	. . . Valve seating in direction of flow
137/7779	. . . Axes of ports parallel	137/7836	. . . . Flexible diaphragm or bellows reactor
137/778	. . . Axes of ports co-axial	137/7837	. . Direct response valves [i.e., check valve type]
137/7781	. . With separate connected fluid reactor surface	137/7838	. . . Plural
137/7782	. . . With manual or external control for line valve	137/7839	. . . . Dividing and recombining in a single flow path
137/7783	. . . Valve closes in responses to reverse flow	137/784	. . . . . Integral resilient member forms plural valves
137/7784	. . . Responsive to change in rate of fluid flow	137/7841	. . . . One valve carries head and seat for second valve
137/7785	. . . . Valve closes in response to excessive flow	137/7842	. . . . Diverse types
137/7786	. . . . Turbine or swinging vane type reactor	137/7843	. . . . Integral resilient member forms plural valves
137/7787	. . . . Expansible chamber subject to differential pressures	137/7845	. . . . With common biasing means
137/7788	. . . . . Pressures across fixed choke	137/7846	. . . . Mechanically interconnected
137/7789	. . . . . With Venturi tube having a connection to throat	137/7847	. . . With leak passage
137/7791	. . . . . Pressures across flow line valve	137/7848	. . . . Permits flow at valve interface
137/7792	. . . . Movable deflector or choke	137/7849	. . . . Bypass in valve casing
137/7793	. . . With opening bias [e.g., pressure regulator]	137/785	. . . With retarder or dashpot
137/7794	. . . . With relief valve	137/7851	. . . . End of valve forms dashpot chamber
137/7795	. . . . Multi-stage	137/7852	. . . . End of valve moves inside dashpot chamber
137/7796	. . . . Senses inlet pressure	137/7853	. . . . . Enlarged piston on end of valve stem
137/7797	. . . . Bias variable during operation	137/7854	. . . In couplings for coaxial conduits, e.g., drill pipe check valves
137/7798	. . . . . Ancillary reactor surface responds to inlet pressure	137/7855	. . . . Valve seat threaded into a coupling element
137/7799	. . . . . Liquid transfer	137/7856	. . . . Valve seat formed on or carried by a coupling element
137/78	. . . . . Weight	137/7857	. . . . Valve seat clamped between coupling elements
137/7801	. . . . Balanced valve	137/7858	. . . With means for selecting area of valve or seat
137/7802	. . . . Liquid level responsive gas flow control	137/7859	. . . Single head, plural ports in parallel
137/7803	. . . . With protective separator	137/786	. . . . Concentric ports
137/7804	. . . . Main flow through isolated reactor chamber	137/7861	. . . . Annular head
137/7805	. . . . Through external pipe	137/7862	. . . . . Central post on seat
137/7806	. . . . . Modified valve casing	137/7863	. . . . . Stop
137/7807	. . . . . Adjustable external lever	137/7864	. . . . . With guide
137/7808	. . . . Apertured reactor surface surrounds flow line	137/7865	. . . . . Guide
137/7809	. . . . Reactor surface separated by apertured partition	137/7866	. . . Plural seating
137/781	. . . . . In valve stem	137/7867	. . . . Sequential
137/7811	. . . . . Also through reactor surface	137/7868	. . . . . Resilient gasket
137/7812	. . . . . Valve stem passes through the aperture		
137/7813	. . . . . Plural reactor surfaces		
137/7814	. . . . . Reactor is an inverted cup having liquid seal		
137/7815	. . . . . With movement dampener		
137/7816	. . . . . Valve head in inlet chamber		

137/7869	. . . Biased open	137/793	. . . . . Broken valve parts retainer
137/787	. . . . Oppositely swinging vanes	137/7931	. . . . . Spring in inlet
137/7871	. . . . Weight biased	137/7932	. . . . . Valve stem extends through fixed spring abutment
137/7873	. . . . . Ball valves	137/7933	. . . . . Yoke or cage-type support for valve stem
137/7874	. . . . . Edge pivoted valve	137/7934	. . . . . Spring abuts removable valve stem guide
137/7875	. . . . Pivoted valves	137/7935	. . . . . Head slides on guide-rod concentric with spring
137/7876	. . . With external means for opposing bias	137/7936	. . . . . Spring guides valve head
137/7877	. . . . With means for retaining external means in bias opposing position	137/7937	. . . . . Cage-type guide for stemless valves
137/7878	. . . With bias adjustment indicator	137/7938	. . . . . Guide means integral and coplanar with valve disk
137/7879	. . . Resilient material valve	137/7939	. . . . . Head between spring and guide
137/788	. . . . Having expansible port	137/794	. With means for separating solid material from the fluid
137/7881	. . . . . Apertured plate	137/7976	. . Plural separating elements
137/7882	. . . . . Having exit lip	137/8013	. . Sediment chamber
137/7883	. . . . . With biasing means	137/8049	. . Movable strainer
137/7884	. . . . . Side vent	137/8085	. . Hollow strainer, fluid inlet and outlet perpendicular to each other
137/7885	. . . . . Multiple slit	137/8122	. . Planar strainer normal to flow path
137/7886	. . . . . Internally extending mount	137/8158	. With indicator, register, recorder, alarm or inspection means
137/7887	. . . . Center flexing strip	137/8175	. . Plural
137/7888	. . . . With valve member flexing about securement	137/8192	. . . Unobvious - "combination lock" type
137/7889	. . . . . Sleeve	137/8208	. . Time
137/789	. . . . . Central mount	137/8225	. . Position or extent of motion indicator
137/7891	. . . . . Flap or reed	137/8242	. . . Electrical
137/7892	. . . . . With stop	137/8259	. . . Selection from plural branches
137/7893	. . . . . With spring	137/8275	. . . Indicator element rigidly carried by the movable element whose position is indicated
137/7894	. . . . . With weight	137/8292	. . . . Movable indicator element is a pointer
137/7895	. . . . . Peripherally secured diaphragm	137/8309	. . . . . Pointer integral with handle
137/7896	. . . . Annulus	137/8326	. . Fluid pressure responsive indicator, recorder or alarm
137/7897	. . . Vacuum relief type	137/8342	. . Liquid level responsive indicator, recorder or alarm
137/7898	. . . Pivoted valves	137/8359	. . Inspection means
137/79	. . . . Head retained by removable closure	137/8376	. Combined
137/7901	. . . . Valve head movably connected for accommodation to seat	137/8593	. Systems
137/7902	. . . . Valve mounted on end of pipe	137/85938	. . Non-valved flow dividers
137/7903	. . . . Weight biased	137/85946	. . Faucet connected, sink drained
137/7904	. . . Reciprocating valves	137/85954	. . Closed circulating system
137/7905	. . . . Plural biasing means	137/85962	. . . With thermal circulating means [thermo-siphons]
137/7906	. . . . Cam means for adjusting and fixing bias	137/8597	. . Main line as motive fluid for follower-type feeder
137/7907	. . . . Varying effective lever arm	137/85978	. . With pump
137/7908	. . . . Weight biased	137/85986	. . . Pumped fluid control
137/7909	. . . . . Valve body is the weight	137/85994	. . . . Manual
137/791	. . . . . Ball valves	137/86002	. . . . Fluid pressure responsive
137/7911	. . . . . Removable cage	137/8601	. . . . . And pilot valve
137/7912	. . . . . Separable seat	137/86019	. . . . . Direct response valve
137/7913	. . . . . Guided head	137/86027	. . . . . Electric
137/7914	. . . . . Cage	137/86035	. . . Combined with fluid receiver
137/7915	. . . . . Guide stem	137/86043	. . . . Reserve or surge receiver
137/7916	. . . . . With closing stop	137/86051	. . . . Compressed air supply unit
137/7917	. . . . . Oppositely disposed	137/86059	. . . . Hydraulic power unit
137/7918	. . . . . Head slidable on guide rod	137/86067	. . . . Fluid sump
137/7919	. . . . . Guide and seat integral unit	137/86075	. . . And jet-aspiration type pump
137/792	. . . . . Guide and closure integral unit	137/86083	. . . Vacuum pump
137/7921	. . . . . Weight coaxial with valve		
137/7922	. . . . Spring biased		
137/7923	. . . . . With means to protect spring from fluid		
137/7924	. . . . Spring under tension		
137/7925	. . . . . Piston-type valves		
137/7927	. . . . . Ball valves		
137/7928	. . . . . With follower		
137/7929	. . . . Spring coaxial with valve		

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
137/86163 Parallel	137/86582 Pilot-actuated
137/86171 . . . With pump bypass	137/8659 Variable orifice-type modulator
137/86179 . . . Drain valve actuator mounted on pump	137/86598 Opposed orifices; interposed modulator
137/86187 . . Plural tanks or compartments connected for serial flow	137/86606 Common to plural valve motor chambers
137/86196 . . . Separable with valved-connecting passage	137/86614 Electric
137/86204 . . . Fluid progresses by zigzag flow	137/86622 Motor-operated
137/86212 . . . Plural compartments formed by baffles	137/8663 Fluid motor
137/8622 . . . Plural top-to-bottom connected tanks	137/86638 Rotary valve
137/86228 . . . With communicating opening in common walls of tanks or compartments	137/86646 Plug type
137/86236 . . Tank with movable or adjustable outlet or overflow pipe	137/86654 For plural lines
137/86244 . . . Horizontally traversing outlet	137/86662 Axial and radial flow
137/86252 . . . Float-supported outlet	137/8667 Reciprocating valve
137/8626 . . . Swinging outlet pipe or spout	137/86678 Combined disk or plug and gate or piston
137/86268 . . With running joint between movable parts of system	137/86686 Plural disk or plug
137/86276 . . Movable tank	137/86694 Piston valve
137/86284 . . With antisplash means not in flow passage	137/86702 With internal flow passage
137/86292 . . System with plural openings, one a gas vent or access opening	137/8671 With annular passage [e.g., spool]
137/863 . . . Access and outlet	137/86718 . . . Dividing into parallel flow paths with recombining
137/86308 Tank access opening and bottom outlet	137/86726 Valve with bypass connections
137/86316 Access opening interlock or telltale on outlet valve actuator	137/86734 With metering feature
137/86324 . . . Tank with gas vent and inlet or outlet	137/86743 Rotary
137/86332 Vent and inlet or outlet in unitary mounting	137/86751 Plug
137/8634 . . . With vented outlet	137/86759 Reciprocating
137/86348 . . Tank with internally extending flow guide, pipe or conduit	137/86767 Spool
137/86356 . . . Nondraining overflow type	137/86775 With internal passage
137/86364 . . . Inverted "U" passage	137/86783 Unequal heads
137/86372 . . . Inlet internally extending	137/86791 Piston
137/86381 . . Head-establishing standpipe or expansion chamber [e.g., surge tanks]	137/86799 With internal flow passage
137/86389 . . Programmer or timer	137/86807 Sequential opening or closing of serial ports in single flow line
137/86397 . . . With independent valve controller	137/86815 . . . Multiple inlet with single outlet
137/86405 . . . Repeating cycle	137/86823 Rotary valve
137/86413 Self-cycling	137/86831 . . . Selective opening of plural ports
137/86421 Variable	137/86839 . . . Four port reversing valves
137/86429 Attachable and removable element	137/86847 . . . Pivoted valve unit
137/86437 Adjustable cam	137/86855 Gate
137/86445 . . . Plural, sequential, valve actuations	137/86863 . . . Rotary valve unit
137/86453 Plural trips or trip actuations	137/86871 Plug
137/86461 Variable cycle	137/86879 . . . Reciprocating valve unit
137/86469 . . . Clock alarm mechanism controlled	137/86887 Combined disk or plug and gate or piston
137/86477 . . . Biased latch, cam operated	137/86895 Plural disk or plug
137/86485 . . Line condition change responsive release of valve	137/86903 . . Plural petcocks
137/86493 . . Multi-way valve unit	137/86911 . . Sequential distributor or collector type
137/86501 . . . 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	137/87378	. . .	Second valve assembly carried by first valve head
137/86968	. . . . .	With balancing chamber	137/87386	. . . .	With rotary plug having variable restrictor
137/86976	. . . . .	First valve moves second valve	137/87394	. . . .	Carried valve is direct response valve [e.g., check valve, etc.]
137/86984	. . . . .	Actuator moves both valves	137/87402	. . .	With foam controlling means [e.g., beer, soda faucets]
137/86992	. . .	With subsequent closing of first opened port	137/8741	. . .	With common operator
137/87	. . . .	Simultaneously moved port controllers	137/87418	. . . .	Balanced valve
137/87008	. . .	Screw-actuated differential valves	137/87426	. . . .	Single resilient member actuates or forms plural passages
137/87016	. . .	Lost motion	137/87434	. . . .	Valves deform to close passage
137/87024	. . . .	Cam determines sequence	137/87442	. . . .	Rotary valve
137/87032	. . . .	Rotary concentric valves	137/8745	. . . . .	Including rigid plate with flexible or resilient seal
137/8704	. . . .	First valve actuates second valve	137/87458	. . . . .	Axes of rotation of valves intersect at point
137/87048	. .	With preselecting means for plural valve actuator	137/87467	. . . . .	Axes of rotation parallel
137/87056	. .	With selective motion for plural valve actuator	137/87475	. . . . .	Adjacent plate valves always parallel
137/87064	. . .	Oppositely movable cam surfaces	137/87483	. . . . .	Adjacent plate valves counter rotate
137/87072	. . .	Rotation about either of two pivotal axes	137/87491	. . . .	Mechanical movement between actuator and non-rotary valve
137/8708	. . .	Rotation of actuator arm about its pivot and its axis	137/87499	. . .	Fluid actuated or retarded
137/87088	. . .	Reciprocation along and rotation about same axis	137/87507	. . .	Electrical actuator
137/87096	. .	Valves with separate, correlated, actuators	137/87515	. . .	Mechanical movement between actuator and valve
137/87105	. . .	Correlated across separable flow path joint	137/87523	. . .	Rotary valve
137/87113	. . .	Interlocked	137/87531	. . . .	Butterfly valve
137/87121	. . .	Coaxial stems	137/87539	. . .	Having guide or restrictor
137/87129	. . . .	Rotary	137/87547	. . . .	Manually variable
137/87137	. . . . .	And reciprocating	137/87555	. . .	Having direct response valve [e.g., check valve, etc.]
137/87145	. . . . .	Concentric, central valve removable	137/87563	. . . .	With reverse flow direction
137/87153	. .	Plural noncommunicating flow paths	137/87571	. .	Multiple inlet with single outlet
137/87161	. . .	With common valve operator	137/87579	. . .	Faucet attachment
137/87169	. .	Supply and exhaust	137/87587	. . .	Combining by aspiration
137/87177	. . .	With bypass	137/87595	. . . .	Combining of three or more diverse fluids
137/87185	. . . .	Controlled by supply or exhaust valve	137/87603	. . . .	Plural motivating fluid jets
137/87193	. . .	Pilot-actuated	137/87611	. . . .	Flow control by varying position of a fluid inlet relative to entrainment chamber
137/87201	. . . .	Common to plural valve motor chambers	137/87619	. . . .	With selectively operated flow control means in inlet
137/87209	. . . .	Electric	137/87627	. . . . .	Flow control means is located in aspirated fluid inlet
137/87217	. . .	Motor	137/87635	. . . . .	Single actuator operates flow control means located in both motivating fluid and aspirated fluid inlets
137/87225	. . . .	Fluid motor	137/87643	. . . .	With condition responsive valve
137/87233	. . .	Biased exhaust valve	137/87652	. . .	With means to promote mixing or combining of plural fluids
137/87241	. . . .	Biased closed	137/8766	. . . .	With selectively operated flow control means
137/87249	. .	Multiple inlet with multiple outlet	137/87668	. . . . .	Single actuator operates plural flow control means
137/87257	. .	Hydraulic brake line [e.g., hill holders]	137/87676	. . .	With flow control
137/87265	. .	Dividing into parallel flow paths with recombining	137/87684	. . . .	Valve in each inlet
137/87273	. . .	With fluid coupling [e.g., railway car hose coupling, truck-trailer oil system coupling, etc.]	137/87692	. . . . .	With common valve operator
137/87281	. . .	System having plural inlets	137/877	. .	With flow control means for branched passages
137/8729	. . . .	Having digital flow controller	137/87708	. . .	With common valve operator
137/87298	. . .	Having digital flow controller	137/87716	. . . .	For valve having a flexible diaphragm valving member
137/87306	. . . .	Having plural branches under common control for separate valve actuators	137/87724	. . . .	For valve having a ball head
137/87314	. . . . .	Electromagnetic or electric control [e.g., digital control, bistable electro control, etc.]	137/87732	. . . .	With gearing
137/87322	. . .	With multi way valve having serial valve in at least one branch	137/8774	. . . .	Threaded actuator
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			

137/87748 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	156/1184	. . . . Piercing layer during delaminating [e.g., cutting, etc.]
156/1064	. . . . Partial cutting [e.g., grooving or incising]	156/1189	. . . with shearing during delaminating
156/1066	. . . . Cutting to shape joining edge surfaces only	156/1195	. . . Delaminating from release surface
156/1067	. . . . Continuous longitudinal slitting	156/12	. Surface bonding means and/or assembly means with cutting, punching, piercing, severing or tearing
156/1069	. . . . . Bonding face to face of laminae cut from single sheet	156/125	. . Plural severing means each acting on a different work piece
156/107	. . . . Punching and bonding pressure application by punch	156/13	. . Severing followed by associating with part from same source
156/1072	. . . . . Closure cap liner applying type	156/1304	. . Means making hole or aperture in part to be laminated
156/1074	. . . . Separate cutting of separate sheets or webs	156/1309	. . . and securing separate part over hole or aperture
156/1075	. . . . of plural laminae from single stock and assembling to each other or to additional lamina	156/1313	. . Cutting element simultaneously bonds [e.g., cut seaming]
156/1077	. . . . . Applying plural cut laminae to single face of additional lamina	156/1317	. . Means feeding plural workpieces to be joined
156/1079	. . . . . Joining of cut laminae end-to-end	156/1322	. . . Severing before bonding or assembling of parts
156/108	. . . Flash, trim or excess removal	156/1326	. . . . Severing means or member secured thereto also bonds
156/1082	. . . Partial cutting bonded sandwich [e.g., grooving or incising]	156/133	. . . . Delivering cut part to indefinite or running length web
156/1084	. . . of continuous or running length bonded web	156/1335	. . . . . Cutter also delivers cut piece
156/1085	. . . . One web only	156/1339	. . . . Delivering cut part in sequence to serially conveyed articles
156/1087	. . . . Continuous longitudinal slitting	156/1343	. . . Cutting indefinite length web after assembly with discrete article
156/1089	. . of discrete laminae to single face of additional lamina	156/1348	. . Work traversing type
156/109	. . . Embedding of laminae within face of additional laminae	156/1352	. . . with liquid applying means
156/1092	. . . All laminae planar and face to face	156/1357	. . . . Slitting and severing
156/1093	. . . . with covering of discrete laminae with additional lamina	156/1361	. . . . Cutting after bonding
156/1095	. . . . . Opposed laminae are running length webs	156/1365	. . . Fixed cutter
156/1097	. . . . Lamina is running length web	156/137	. . Stamp from multiple row sheet type
156/1098	. . . . . Feeding of discrete laminae from separate sources	156/1374	. . with means projecting fluid against work
156/11	. Methods of delaminating, <u>per se</u> ; i.e. , separating at bonding face	156/1378	. . Cutter actuated by or secured to bonding element
156/1105	. . Delaminating process responsive to feed or shape at delamination	156/1383	. . . with liquid applicator
156/1111	. . Using solvent during delaminating [e.g., water dissolving adhesive at bonding face during delamination, etc.]	156/1387	. . . . Common actuator for bonding and liquid applying means
156/1116	. . . Using specified organic delamination solvent	156/1391	. . . . . Liquid applied to web before cutting
156/1121	. . Using vibration during delaminating	156/1396	. . . . . Roller applicator
156/1126	. . Using direct fluid current against work during delaminating	156/14	. Surface bonding means and/or assembly means with shaping, scarifying, or cleaning joining surface only
156/1132	. . . Using vacuum directly against work during delaminating	156/15	. Combined or convertible surface bonding means and/or assembly means
156/1137	. . . Using air blast directly against work during delaminating	156/16	. Surface bonding means and/or assembly means with bond interfering means [slip sheet, etc.]
156/1142	. . Changing dimension during delaminating [e.g., crushing, expanding, warping, etc.]	156/17	. Surface bonding means and/or assembly means with work feeding or handling means
156/1147	. . . Using shrinking or swelling agent during delaminating	156/1702	. . For plural parts or plural areas of single part
156/1153	. . Temperature change for delamination [e.g., heating during delaminating, etc.]	156/1705	. . . Lamina transferred to base from adhered flexible web or sheet type carrier
156/1158	. . . Electromagnetic radiation applied to work for delamination [e.g., microwave, uv, ir, etc.]	156/1707	. . . . Discrete spaced laminae on adhered carrier
156/1163	. . . Sintering for delamination	156/171	. . . . . Means serially presenting discrete base articles or separate portions of a single article
156/1168	. . Gripping and pulling work apart during delaminating	156/1712	. . . Indefinite or running length work
156/1174	. . . Using roller for delamination [e.g., roller pairs operating at differing speeds or directions, etc.]	156/1715	. . . . Means joining indefinite length work edge to edge
156/1179	. . . with poking during delaminating [e.g., jabbing, etc.]	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	225/291	. . . . Spaced from blade edge to provide lead-end therebetween
225/24	. . . With inspection window or transparent panel	225/292	. . . . . Blade manually movable to expose lead-end
225/241	. . . With mounting means for housing	225/293	. . . . Manually applied, spring returned
225/243	. . . Blade on pivoted closure for housing	225/294	. . . With guide for running length work
225/244	. . . Sectional telescoping housing	225/295	. . . Blade manually movable to or from severing position
225/245	. . . . Including removable cap or sleeve enclosure for spooled work supply	225/297	. . . With means to facilitate lead-end grasping
225/246	. . . Including special support for wound supply package	225/298	. . . Blades or severing devices
225/247	. . . . Bearing or trunnions to engage package core	225/299	. . . Adjustable blade-edge contour
225/248	. . . Single blank container	225/30	. . . Breaking or tearing apparatus
225/249	. . . . Blade unitary with container	225/304	. . . Including means to apply thermal shock to work
225/251	. . . . With closure fastener	225/307	. . . Combined with preliminary weakener or with nonbreaking cutter
225/252	. . . With brake or tensioner	225/314	. . . Successively actuated sharp and dull tools
225/253	. . . . Restricted or restrictable work outlet	225/321	. . . Preliminary weakener
225/254	. . . With finger-access opening to facilitate work feed-out	225/325	. . . . With means to apply moment of force to weakened work
225/255	. . . With internal guide	225/329	. . . Plural breakers
225/256	. . . Blade carrier bodily and slidably supported on running length work	225/336	. . . Conveyor diverter for moving work
225/257	. . . Blade mounted on hand-held wound package	225/343	. . . Plural divergent work paths
225/259	. . . With lead-end stripper for tacky adhesive work	225/35	. . . Work-parting pullers [bursters]
225/26	. . . By resiliently embracing outer circumference of package	225/357	. . . Relatively movable clamps
225/261	. . . Work supply nonrotatably wound on flanged spool	225/364	. . . Axial twisters
225/262	. . . . Circumferentially movable blade radially retained by beaded or grooved flanges	225/371	. . . Movable breaking tool
225/263	. . . . Blade carrier supports hollow spool for rotation	225/379	. . . Breaking tool intermediate spaced work supports
225/264	. . . . Flange edge notched to provide or coact with cutter	225/386	. . . . Clamping supports
225/266	. . . . With clamp for lead-end of strand-type work	225/393	. . . Web restrainer
225/267	. . . . . Strand clamped against flange	Former US Class 279 Series	
225/268	. . . By resiliently engaging package ends or interior of core	279/00	Chucks or sockets
225/269	. . . Blade carrier supports package for rotation	279/10	. . Expanding
225/27	. . Movable blade continually biased toward wound web supply package	279/1004	. . . Collet type
225/271	. . . Including temporary bias-disabling means	279/1008	. . . Fixed jaws and moving cam
225/272	. . . Including stripper to separate lead-end from package	279/1012	. . . Fixed cam and moving jaws
225/274	. . . Weight of bodily movable package contributes to blade-biasing force	279/1016	. . . Jaws mounted on flexible member; i.e., diaphragm
225/275	. . . Blade slidably guided	279/1021	. . . Fluid-pressure actuator
225/276	. . . Blade movable to severing position by moving work	279/1024	. . . Directly expanding jaws
225/277	. . . With simultaneous application of brake or clamp	279/1029	. . . . Jaw is expansible chamber; i.e., bladder type
225/278	. . . . Applied to running length work	279/1033	. . . Expanding jaws via mechanical connection
225/279	. . . . . Opposed movable jaws	279/1037	. . . Axially moving actuator
225/28	. . Wound package bodily biased toward fixed blade	279/1041	. . . Wedge
225/282	. . With fixed blade and support for wound package	279/1045	. . . . Internal cone
225/283	. . . Body- or belt-attached	279/1049	. . . . with jaw positively interlocked with wedge; e.g., dovetail or T-slot
225/284	. . . With brake applied to supply package	279/1054	. . . . with resilient means contacting nonresilient jaw
225/285	. . . With guide spaced from blade edge to provide lead-end therebetween	279/1058	. . . . . Constricting band, annulus, or clip
225/286	. . With work-abutment stop	279/1062	. . . Toggle
225/287	. . With brake or clamp	279/1066	. . . Axially compressible element expands radially
225/289	. . . Thread cutter and clamp attachment for sewing machine presser foot	279/1071	. . . Lever
225/29	. . . Applied to running length work	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	279/17367	. . . Nonresilient member biased by a resilient member
279/1216	. . Jaw is expansible chamber; i.e., bladder type	279/17376	. . . Resilient member reinforced by another resilient member
279/1224	. . Pneumatic type	279/17384	. . with means to exclude contaminants; e.g., seal, shield
279/1233	. . Jaws mounted on flexible member; i.e., diaphragm	279/17393	. . One movable side
279/1241	. . Socket type	279/17401	. . . Sleeved
279/1249	. . . Collet	279/17411	. . Spring biased jaws
279/1258	. . . . Fixed cam and moving jaws	279/17418	. . . Unitary
279/1266	. . . . Moving cam and fixed jaws	279/17427	. . . . Split at one end only
279/1274	. . Radially reciprocating jaws	279/17435	. . . . Split at both ends
279/1283	. . . Fluid pressure directly moves jaws	279/17444	. . . . Split end to end
279/1291	. . . Fluid pressure moves jaws via mechanical connection	279/17452	. . . . with jaw pads or insert
279/13	. Angularly adjustable or indexing	279/17461	. . . Nonresilient member biased by a resilient member
279/14	. Eccentric	279/17471	. . . Resilient member reinforced by another resilient member
279/15	. Threaded grip	279/17478	. . . with means to exclude contaminants; e.g., seal, shield
279/16	. Longitudinal screw clamp	279/17487	. . . Moving-cam actuator
279/17	. Socket type	279/17495	. . . . Threaded sleeve and wedge
279/17008	. . Multiple alternative	279/17504	. . . . Threaded cam sleeve
279/17017	. . Self-centering of floating	279/17512	. . . . . Loose jaws
279/17025	. . . Radially reciprocating jaws	279/17521	. . . . Reciprocating cam sleeve
279/17034	. . . Transverse holder and setscrew	279/17529	. . . Fixed cam and moving jaws
279/17042	. . Lost motion	279/17538	. . . . Threaded-sleeve actuator
279/17051	. . . Swinging external yoke or detent	279/17547	. . . . Axial screw actuator
279/17059	. . . . Rotary socket	279/17555	. . . Loose jaws
279/17068	. . . Rotary socket	279/17564	. . Loose jaws
279/17076	. . . Spreading elements	279/17572	. . . Moving-cam actuator
279/17085	. . . Key retainer	279/17581	. . . . Threaded cam sleeve
279/17094	. . . Sleeve type retainer	279/17589	. . . . Reciprocating cam sleeve
279/17102	. . . . Sleeve in socket	279/17598	. . . Fixed cam and moving jaws
279/17111	. . Fluid-conduit drill holding	279/17606	. . . . Threaded sleeve and body
279/17119	. . Feed type	279/17615	. . Obliquely guided reciprocating jaws
279/17128	. . Self-grasping	279/17623	. . . Threaded sleeve and jaw
279/17136	. . . Yielding grasping jaws	279/17632	. . . . Conical sleeve
279/17145	. . . . Ball or roller	279/17641	. . . Threaded central cone and jaw
279/17153	. . . . Spring jaws	279/17649	. . . Threaded sleeve and body
279/17162	. . . Yielding detent	279/17658	. . . Reciprocating jaw advancing sleeve
279/17171	. . . One-way-clutch type	279/17666	. . Radially reciprocating jaws
279/17179	. . . . Wedge	279/17675	. . . Transverse-screw actuated
279/17188	. . . . Side detent	279/17683	. . . . Interlaced jaws
279/17196	. . . . . Ball or roller	279/17692	. . . Moving-cam actuator
279/17205	. . Conical clamp threaded in socket	279/17701	. . . . Threaded cam sleeve
279/17213	. . Transversely oscillating jaws	279/17709	. . . . Threaded sleeve and wedge
279/17222	. . . Screw actuated	279/17717	. . . . Rotary eccentric-cam sleeve
279/17231	. . Pivoted jaws	279/17726	. . . . . Roller and rocking jaw
279/17239	. . . Moving-cam actuator	279/17735	. . . . . Worm actuated
279/17247	. . . . Threaded cam sleeve	279/17743	. . . . Reciprocating cam sleeve
279/17256	. . . . Reciprocating cam sleeve	279/17752	. . . . . Ball or roller jaws
279/17264	. . . Fixed cam and moving jaws	279/17761	. . Side detent
279/17273	. . . . Axial screw actuator	279/17769	. . . Pivoted or rotary
279/17282	. . . . Threaded-sleeve actuator	279/17777	. . . . Sleeved
279/17291	. . Resilient split socket	279/17786	. . . Spring
279/17299	. . . Threaded cam sleeve	279/17794	. . . . Sleeved
279/17307	. . . Reciprocating cam sleeve	279/17803	. . . Rotary cam sleeve
279/17316	. . . Unitary	279/17811	. . . Reciprocating sleeve
279/17324	. . . . Split at one end only	279/17821	. . . Set screw
279/17333	. . . . . Transverse screw actuator	279/17829	. . . U-clamp
279/17341	. . . . . Cam actuator	279/17837	. . . Plural bolt
279/17351	. . . . Split end to end		
279/17358	. . . . with jaw pads or insert		

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
 292/06 . Adjustable backset
 292/08 . Bolts
 292/0801 . . Multiple
 292/0802 . . . Sliding and rotary
 292/0803 . . . Sliding and swinging
 292/0805 Combined motion
 292/0806 Lever-operating means
 292/0807 . . . Sliding and hooked end
 292/0808 . . . Sliding and roller
 292/0809 . . . Sliding and spring arm
 292/081 . . . Swinging and hooked end
 292/0811 . . . Swinging and roller
 292/0813 . . . Swinging and spring arm
 292/0814 . . . Double acting
 292/0815 Roller
 292/0816 Sliding
 292/0817 Spring arm
 292/0818 Swinging
 292/082 . . . Spring arm
 292/0821 Combined motion
 292/0822 . . . Emergency operating means
 292/0823 . . . Gear
 292/0824 . . . Roller
 292/0825 . . . Hooked end
 292/0826 Operating means
 292/0828 Link and lever
 292/0829 Cam
 292/083 Flexible
 292/0831 Lever
 292/0832 Push or pull rod
 292/0833 Rigid
 292/0834 . . . Sliding
 292/0836 Operating means
 292/0837 Cam and lever
 292/0838 Lever and push or pull rod
 292/0839 Link and lever
 292/084 Cam
 292/0841 Flexible
 292/0843 Gear
 292/0844 Lever
 292/0845 Push or pull rod
 292/0846 Rigid
 292/0847 Screw
 292/0848 . . . Swinging
 292/0849 Operating means
 292/0851 Cam and lever

292/0852	. . . . . Link and cam	292/0922	. . . . . Operating means
292/0853	. . . . . Link and lever	292/0923	. . . . . Lever
292/0854	. . . . . Cam	292/0924	. . . . . Push or pull rod
292/0855	. . . . . Flexible	292/0925	. . . . . Rigid
292/0856	. . . . . Gear	292/0926	. . . . . Spring projected
292/0857	. . . . . Lever	292/0928	. . . . . Operating means
292/0859	. . . . . Push or pull rod	292/0929	. . . . . Link and lever
292/086	. . . . . Rigid	292/093	. . . . . Cam
292/0861	. . . . . Screw	292/0931	. . . . . Flexible
292/0862	. . . . . Swinging and hooked end, multiple head	292/0932	. . . . . Lever
292/0863	. . . . . Sliding and rotary	292/0933	. . . . . Push or pull rod
292/0864	. . . . . Combined motion	292/0934	. . . . . Rigid
292/0866	. . . . . Multiple head	292/0936	. . . . . Spring retracted
292/0867	. . . . . Spring projected	292/0937	. . . . . Gravity actuated
292/0868	. . . . . Combined motion	292/0938	. . . . . Operating means
292/0869	. . . . . Spring retracted	292/0939	. . . . . Cam
292/087	. . . . . Loops	292/094	. . . . . Flexible
292/0871	. . . . . Sliding and swinging, lever-operating means	292/0941	. . . . . Lever
292/0872	. . . . . Sliding catch	292/0943	. . . . . Push or pull rod
292/0874	. . . . . Spring-arm catch	292/0944	. . . . . Rigid
292/0875	. . . . . Swinging catch	292/0945	. . . . . Operating means
292/0876	. . . . . Double acting	292/0946	. . . . . Link and lever
292/0877	. . . . . Sliding and swinging	292/0947	. . . . . Cam
292/0878	. . . . . Sliding	292/0948	. . . . . Closure
292/0879	. . . . . Roller	292/0949	. . . . . Lever
292/088	. . . . . Spring arm	292/0951	. . . . . Rigid
292/0882	. . . . . Roller	292/0952	. . . . . Closure catch
292/0883	. . . . . Swinging	292/0953	. . . . . Friction catch
292/0884	. . . . . Roller	292/0954	. . . . . Padlock or seal catch
292/0885	. . . . . Roller	292/0955	. . . . . Screw catch
292/0886	. . . . . Sliding and swinging	292/0956	. . . . . Sliding catch
292/0887	. . . . . Operating means	292/0957	. . . . . Spring-arm catch
292/0889	. . . . . Cam	292/0959	. . . . . Swinging catch
292/089	. . . . . Lever	292/096	. . . . . Sliding
292/0891	. . . . . Rigid	292/0961	. . . . . Multiple head
292/0892	. . . . . Multiple head	292/0962	. . . . . Operating means
292/0893	. . . . . Spring retracted	292/0963	. . . . . Link and lever
292/0894	. . . . . Spring arm	292/0964	. . . . . Cam
292/0895	. . . . . Operating means	292/0966	. . . . . Gear
292/0897	. . . . . Link and lever	292/0967	. . . . . Lever
292/0898	. . . . . Cam	292/0968	. . . . . Rigid
292/0899	. . . . . Flexible	292/0969	. . . . . Spring projected
292/09	. . . . . Lever	292/097	. . . . . Operating means
292/0901	. . . . . Push or pull rod	292/0971	. . . . . Cam and lever
292/0902	. . . . . Rigid	292/0972	. . . . . Lever and push or pull rod
292/0903	. . . . . Seal catch	292/0974	. . . . . Link and lever
292/0905	. . . . . Swinging catch	292/0975	. . . . . Link and push or pull rod
292/0906	. . . . . Screw	292/0976	. . . . . Sliding cam
292/0907	. . . . . Multiple head	292/0977	. . . . . Cam
292/0908	. . . . . Emergency operating means	292/0978	. . . . . Specifically related to vehicle closure
292/0909	. . . . . Panel	292/0979	. . . . . Bolt disabled by contraretractive movement of inside handle
292/091	. . . . . Platform	292/098	. . . . . Auxiliary bolt
292/0911	. . . . . Hooked end	292/0982	. . . . . Bolt blocking or disabling means
292/0913	. . . . . Sliding and swinging	292/0983	. . . . . Involves rollback
292/0914	. . . . . Operating means	292/0984	. . . . . Rollback members located on separate spindles
292/0915	. . . . . Cam	292/0985	. . . . . Discrete pivotable or rotatable actuator
292/0916	. . . . . Gear	292/0986	. . . . . Discrete push or pull actuator
292/0917	. . . . . Lever	292/0987	. . . . . Bolt has ancillary projection spring
292/0918	. . . . . Rigid		
292/092	. . . . . Screw		
292/0921	. . . . . Multiple head		

292/0989	. . . . . Plural rollback elements directionally selectively effective	292/1056	. . . . . Cam
292/099	. . . . . On separate spindles	292/1057	. . . . . Flexible
292/0991	. . . . . On a tubular member	292/1059	. . . . . Lever
292/0992	. . . . . Flexible	292/106	. . . . . Push or pull rod
292/0993	. . . . . Gear	292/1061	. . . . . Rigid
292/0994	. . . . . Lever	292/1062	. . . Spring retracted
292/0995	. . . . . Push or pull rod	292/1063	. . . Gravity actuated
292/0997	. . . . . Rigid	292/1064	. . . . Operating means
292/0998	. . . . . Screw	292/1066	. . . . . Cam and lever
292/0999	. . . Spring retracted	292/1067	. . . . . Link and lever
292/10	. . . . Friction catch	292/1068	. . . . . Cam
292/1001	. . . . Sliding catch	292/1069	. . . . . Flexible
292/1002	. . . . Spring-arm catch	292/107	. . . . . Lever
292/1003	. . . . Swinging catch	292/1071	. . . . . Push or pull rod
292/1005	. . . . Cam-operating means	292/1072	. . . . . Rigid
292/1006	. . . Gravity actuated	292/1074	. . . . . Roller
292/1007	. . . . Operating means	292/1075	. . . Operating means
292/1008	. . . . . Cam and lever	292/1076	. . . . . Link and lever
292/1009	. . . . . Link and lever	292/1077	. . . . . Cam
292/101	. . . . . Cam	292/1078	. . . . . Closure
292/1011	. . . . . Lever	292/1079	. . . . . Gear
292/1013	. . . . . Rigid	292/108	. . . . . Lever
292/1014	. . . Operating means	292/1082	. . . . . Motor
292/1015	. . . . . Link and lever	292/1083	. . . . . Rigid
292/1016	. . . . . Cam	292/1084	. . . . . Closure catch
292/1017	. . . . . Flexible	292/1085	. . . . . Friction catch
292/1018	. . . . . Gear	292/1086	. . . . . Padlock or seal catch
292/102	. . . . . Lever	292/1087	. . . . . Screw catch
292/1021	. . . . . Motor	292/1089	. . . . . Sliding catch
292/1022	. . . . . Rigid	292/109	. . . . . Seal
292/1023	. . . . . Closure catch	292/1091	. . . . . Spring-arm catch
292/1024	. . . . . Friction catch	292/1092	. . . . . Swinging catch
292/1025	. . . . . Padlock or seal catch	292/1093	. . . . . Seal
292/1026	. . . . . Screw catch	292/1094	. . . . . Screw
292/1028	. . . . . Sliding catch	292/1095	. . Seal-rupturing devices
292/1029	. . . . . Seal	292/1097	. . Reversible
292/103	. . . . . Spring-arm catch	292/1098	. . . Cam and lever operating means
292/1031	. . . . . Swinging catch	292/1099	. . Screw
292/1032	. . . . . Seal	292/11	. Magnetic
292/1033	. . . . . Screw	292/14	. Ball
292/1034	. . . Curved	292/17	. Bendable securers
292/1036	. . . End lever	292/175	. Bolt releasers
292/1037	. . . Pivoted end	292/18	. . Free-end-engaging means
292/1038	. . . Roller	292/19	. . Foot operated
292/1039	. . Swinging and camming	292/20	. Clamps
292/10395	. . . Spring projected	292/202	. . Hatch fastener
292/104	. . . . Rigid operating means	292/205	. . Ring
292/1041	. . . Rigid operating means	292/207	. . . Permanently deformed
292/1043	. . Swinging	292/209	. . . Resilient wedge
292/1044	. . . Multiple head	292/212	. . . With expanding or contracting means
292/1045	. . . . Operating means	292/214	. . . . . Screw
292/1046	. . . . . Cam	292/216	. . . . . Toggle lever
292/1047	. . . . . Closure	292/218	. . Screw against closure
292/1048	. . . . . Lever	292/221	. . Screw and nut
292/1049	. . . . . Rigid	292/223	. . . Swingable
292/1051	. . . Spring projected	292/225	. . Cam-operating means
292/1052	. . . . Operating means	292/228	. . Portable
292/1053	. . . . . Lever and push or pull rod	292/23	. Cross bars
292/1054	. . . . . Link and cam	292/237	. . Screw-operating means
292/1055	. . . . . Link and lever	292/243	. . Vehicle door latches
		292/25	. Cylinder

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
292/299	. . Slotted keeper	292/522	. . Swinging catch, seal
292/301	. . Friction catch	292/528	. . Seal catch
292/302	. . Screw catch	292/534	. . Seal-rupturing devices
292/304	. . Sliding catch	292/54	. Trippers
292/305	. . Swinging catch	292/546	. . Sliding detent
292/306	. Gear	292/552	. . Spring-arm detent
292/307	. . Sliding catch	292/558	. . Sliding bolt, swinging detent
292/308	. . Swinging catch	292/564	. . Swinging bolt, swinging detent
292/31	. Hasps	292/57	. Operators with knobs or handles
292/314	. . Sliding catch	292/59	. Rollback and spindle connection
292/319	. . . Seal	292/62	. Bolt casings
292/323	. . Swinging catch	292/65	. Braces
292/327	. . . Seal	292/67	. . Portable
292/331	. . Seal catch	292/68	. Keepers
292/336	. . Seal-rupturing devices	292/683	. . Segment
292/34	. Portable	292/685	. . With anti-friction means
292/37	. Portable securer plate or bar	292/688	. . With silencing or anti-rattle means
292/373	. . Sliding and swinging holding member	292/691	. . . Take-up
292/376	. . Screw-holding member	292/694	. . Covers
292/379	. . Sliding holding member	292/696	. . With movable dog, catch or striker
292/382	. . . Screw-operating means	292/699	. . . Motor controlled
292/385	. . . Screw catch	292/702	. . . Pivoted or swinging
292/388	. . . Sliding catch	292/705	. . Adjustable
292/391	. . . Swinging catch	292/707	. . . Vertically
292/394	. . Swinging holding member	292/71	. Wedges
292/397	. . . Catch devices	292/73	. . Portable
292/40	. Rings	292/74	. Weights
292/42	. Rigid engaging means	292/76	. Blind-slat holders
292/426	. . Screw catch	292/79	. Bolt guards
292/432	. . Sliding catch	292/82	. Knobs
292/438	. . Spring-arm catch	292/85	. Knob-attaching devices
292/444	. . Swinging catch	292/854	. . Friction
292/45	. Rod clamps	292/858	. . Screw
292/47	. . Friction-plate catch	292/861	. . . Guards
292/48	. Seals	292/865	. . Sliding
292/481	. . Compressible disk	292/869	. . Spring arm
292/483	. . . Reinforced	292/873	. . Swinging
292/484	. . . Multiple	292/876	. . Wedge
292/485	. . . . Sheet metal	292/88	. Knob bearings
292/487	. . . . Hard and soft metal	292/91	. Knob rose plates
292/488	. . . Sheet metal	292/93	. Latch spindles
292/49	. . Compressible rivets and eyelets	292/96	. Latch-spindle catches
292/491	. . Distorted shackle		
292/492	. . Driving		
292/494	. . Interengaging shackle ends, inclosing housing		
292/4945	. . Rigid shackle ends		
292/495	. . . Resilient and rigid engaging means		
292/496	. . . Resilient engaging means		

Former US Class 403 Series**403/00 Joints and connections**

- 403/10 . Selectively engageable hub to shaft connection
- 403/11 . including frangible component
- 403/12 . Selectively assembled, e.g. , convertible, etc.

403/125	. . Selective orientation	403/32032	. . . Plural ball and socket
403/13	. Inflatable connector	403/32041	. . . Universal
403/14	. with opening for access to connector or operator	403/32049	. . . . Non-coplanar axes
403/142	. . to threaded component	403/32057	. . . Angular and linear
403/145	. . . Transverse to thread axis	403/32065	. . . . Screw and swivel
403/148	. . to biased component	403/32073	. . . . Pivot stud slidable in elongated opening
403/15	. Closure or plug spaced from joint	403/32081	. . . Parallel rotary
403/16	. with adjunctive protector, broken parts retainer, repair, assembly or disassembly feature	403/32091	. . . Plural translating connections
403/1608	. . Holding means or protector functioning only during transportation, assembly or disassembly	403/32098	. . Branched
403/1616	. . Position or guide means	403/32106	. . Member pivoted at rigid corner
403/1624	. . . Related to joint component	403/32114	. . including static joint
403/1633	. . Utilizing fluid pressure	403/32122	. . . Trunnion assembly to side of rod
403/1641	. . Back-off means, e.g., separator, etc.	403/32131	. . . One member is plate or side
403/1649	. . Handle or handwheel	403/32139	. . . . Secant, i.e., rod extending through plate
403/1658	. . . Actuates retainer or blocker	403/32147	. . . . Plate or side forms bearing surface
403/1666	. . tool-engaging or accommodating means or with tool	403/32155	. . . . Bearing component clamped to plate or side, e.g., bolted, etc.
403/1674	. . . for latch or retainer	403/32163	. . . Articulate joint intermediate end joints
403/1683	. . Releasably captive nut or bolt	403/32172	. . . . Variable angle
403/1691	. . Means to lock bolt or nut when other is turned	403/32181	. . . . . Universal
403/17	. with adjunctive shield	403/32188	. . . Angled or offset members
403/18	. Structurally installed in diverse art device	403/32196	. . . Articulate joint is ball and socket
403/185	. . Head or base	403/32204	. . . . with threaded joint
403/19	. Coupling supported by independent bearing	403/32213	. . . Articulate joint is a swivel
403/20	. with indicator or inspection means	403/32221	. . . Articulate joint comprises pivoted clevis or channel bar
403/21	. Utilizing thermal characteristic, e.g. , expansion or contraction, etc.	403/32229	. . . Articulate joint is a slide
403/213	. . Interposed material of intermediate coefficient of expansion	403/32237	. . including operator
403/217	. . Members having different coefficients of expansion	403/32245	. . Arcuate shank moves in complementary guide
403/22	. with fluid pressure responsive component	403/32254	. . Lockable at fixed position
403/23	. with ambient condition responsive control means	403/32262	. . . At selected angle
403/24	. with independent handle or operator	403/32271	. . . . Movable brace between members
403/25	. with distinct fluid or article handling or directing feature	403/32278	. . . . Members rotatable about oblique axes
403/251	. . External reservoir	403/32286	. . . . Clamping screw traverses sliding complementary arcuate bearing surfaces
403/253	. . Pressure fitting	403/32295	. . . . Securing yoke or ring spaced radially from locking means
403/255	. . including port or reservoir communicating with joint	403/32303	. . . . . Eyebolt
403/257	. . . Articulated member	403/32311	. . . . Ball and socket
403/259	. . . . At joint interface	403/32319	. . . . including pivot stud
403/26	. Non-adhering fluent material at joint	403/32327	. . . . . including radially spaced detent or latch component
403/27	. with strain-limiting means	403/32336	. . . . . Engaging notch or recess in outer periphery of component
403/28	. Combined	403/32344	. . . . . Side of rod engages recess in radial face
403/29	. Rotarily connected, differentially translatable members, e.g. , turn-buckle, etc.	403/32352	. . . . . Pivoted detent
403/291	. . having tool-engaging means or operating handle	403/32361	. . . . . Engaging recess in radial face
403/293	. . having operating mechanism	403/32368	. . . . . including radial interengaging tongue and slot or serrations
403/295	. . having locking means	403/32377	. . . . . Radially spaced arcuate slot engages fastener
403/297	. . Differential pitch, similar hand	403/32385	. . . . . Locked by plural motions of one member
403/299	. . Externally threaded actuator	403/32393	. . . . . including bridging keeper
403/30	. Laterally related members connected by latch means, e.g. , scaffold connectors	403/32401	. . . . . Locked by nesting parts
403/31	. Flexible diaphragm or bellows	403/32409	. . . . . Members locked in axial alignment
403/315	. . with additional connection or packing	403/32418	. . . . Plural distinct positions
403/32	. Articulated members	403/32426	. . . Plural distinct positions
403/32008	. . Plural distinct articulation axes	403/32434	. . . . Unidirectional movement, e.g., ratchet, etc.
403/32016	. . . Three or more parallel axes	403/32442	. . . . At least one discrete position
403/32024	. . . Single adjustment for plural axes	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 . . Interfitted 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)
- 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., necked, etc.
(Frozen)
- 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 . . Shrunk 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 . . Expansive section
- 403/559 . . Fluted or splined section
- 403/56 . . Thread adaptor

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.

403/57	. Distinct end coupler	403/7028	. . . Splayed or having a cam surface for anti-backlash
403/5706	. . Diverse serial connections	403/7031	. . . Rod designed to be manipulable, e.g., twistable, within coupling for quick disconnect
403/5713	. . . Axially cleft coupler	403/7032	. . . including a means, e.g., spring biased portion, for misalignment correction
403/5721	. . Single actuator for plural connections	403/7033	. . . including a lock or retainer
403/5726	. . . Axially biased end portions	403/7035	. . . Specific angle or shape of rib, key, groove, or shoulder
403/5733	. . Plural opposed sockets	403/7037	. . Externally shouldered or headed rod
403/5741	. . Separate screw or pin-type connections	403/7041	. . including set screw
403/5746	. . Continuous thread	403/7043	. . Interfitted angle or channel bars
403/5753	. . having separable end caps or plugs	403/7045	. . Interdigitated ends
403/5761	. . Interrupted periphery, e.g., split or segmental, etc.	403/7047	. . Radially interposed shim or bushing
403/5766	. . . Axially divided segments	403/7049	. . . Biased by distinct radially acting means
403/5773	. . . . Interfitting	403/7051	. . . Wedging or camming
403/5781	. . . . Bolted	403/7052	. . . . Engaged by axial movement
403/5786	. . . Split	403/7054	. . . . . Plural, circumferentially related shims between members
403/5793	. . including member wedging or camming means	403/7056	. . . . . Threaded actuator
403/58	. including ancillary means blocking disconnection of joint	403/7058	. . . . . Split or slotted bushing
403/581	. . Blocker for assembled joint retainer	403/7061	. . . Resilient
403/583	. . . Blocker keeper	403/7062	. . Clamped members
403/585	. . . Blocked key	403/7064	. . . by wedge or cam
403/587	. . Blocker is catch or key	403/7066	. . . . having actuator
403/589	. . Cam or thread lock	403/7067	. . . . . Threaded actuator
403/59	. Manually releaseable latch type	403/7069	. . . . . Axially oriented
403/591	. . having operating mechanism	403/7071	. . . . . Lever actuator
403/592	. . . Ball detent	403/7073	. . Peripheral enlargement, depression, or slot on one member is joint component
403/593	. . . Remotely actuated	403/7075	. . including discrete retainer
403/595	. . . Lever	403/7077	. . . for telescoping members
403/597	. . Swiveled bolt	403/7079	. . . . Transverse pin
403/598	. . Transversely sliding pin	403/7081	. . . . . Multiple retainers
403/599	. . Spring biased manipulator	403/7083	. . . . . having means to prevent removal of retainer
403/60	. Biased catch or latch	403/7084	. . . . . Bolt, rivet, or screw
403/602	. . by separate spring	403/7086	. . . . . Wedge pin
403/604	. . . Radially sliding catch	403/7088	. . . . . Sliding pin
403/606	. . Leaf spring	403/7091	. . . . . Expansible retainer
403/608	. . Pivoted	403/7092	. . . for interfitted side faces
403/61	. Side slide: elongated co-linear members	403/7096	. . Rigid angle
403/62	. Annular recess is joint component	403/7098	. . Non-circular rod section is joint component
403/63	. Convergent interface	403/71	. Rod side to plate or side
403/635	. . Tapered	403/7105	. . Connected by double clamp
403/65	. Scarf	403/7111	. . Shackle is integral with or independently attached to proximate side of plate or other side
403/655	. . Mirror images	403/7117	. . Flanged or grooved rod
403/66	. Interfitted members with external bridging piece	403/7123	. . Traversed by connector
403/67	. Thimble: screw or cam	403/7129	. . Laterally spaced rods
403/68	. Screw or cam	403/7135	. . . by separable shim or bushing in connector
403/69	. Axially split or separable member	403/7141	. . . Plural channels in connector
403/70	. Interfitted members	403/7147	. . Connected by flexible tie
403/7001	. . Crossed rods	403/7152	. . Lapped rod ends
403/7003	. . . One rod is encompassed by the other	403/7158	. . Diagonal connector
403/7005	. . Lugged member, rotary engagement	403/7164	. . One rod held between bight and other rod extending through aperture in leg of connector
403/7007	. . . Bayonet joint	403/7171	. . Two rods encompassed by single connector
403/7009	. . Rotary binding cam or wedge	403/7176	. . Resilient clip
403/7011	. . . Radially interposed shim or bushing	403/7182	. . Yoke or ring-type connector
403/7013	. . . . Arcuate slip	403/7188	. . . Rod received in open channel
403/7015	. . Assembled by plural manipulations of member	403/7194	. . Crossed rods
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		

- 403/72 . 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

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
- 407/118 . . 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
- 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 Pivotally supported for vertical movement
- 409/301456 and means to counterbalance carrier
- 409/301512 including plural cutters
- 409/301568 by use of pivotally 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 templates	409/305712	and including means to infeed cutter toward work axis
409/30308	to make a double curvature foil	409/305768	with linear movement of work
409/303136	to make a double curvature foil	409/305824	with angular movement of work
409/303192	including cutter and tracer fixed to move together	409/30588 . . .	including friction gearing drive
409/303248	with provision for circumferential relative movement of cutter and work	409/305936 . . .	including fluid drive
409/303304 . . .	and provision for circumferential relative movement of cutter and work	409/305992 . .	with means to effect stopping upon completion of operation
409/30336 . . .	including cutter and tracer fixed to move together	409/306048 . .	with means to advance work or product
409/303416 . .	Templet, tracer, or cutter	409/306104 . . .	Endless or orbital work or product advancing means
409/303472 . . .	Tracer	409/30616 . .	with means to precisely reposition work
409/303528	Adapted to trigger electrical energy	409/306216 . .	Randomly manipulated, work supported, or work following device
409/303584	Photocell	409/306272 . . .	For machining commutator
409/30364	Adapted to trigger fluid energy	409/306328 . . .	For cutting longitudinal groove in shaft [e.g., keyway, etc.]
409/303696 . . .	Templet	409/306384 . . .	with work supported guide means
409/303752 . .	Process	409/30644	to guide tool to move in arcuate path
409/303808 . . .	including infeeding	409/306496 . . .	with work follower
409/303864 . .	with means to weigh or test work or product	409/306552 . . .	Randomly manipulated
409/30392 . .	with means to protect operative or machine [e.g., guard, safety device, etc.]	409/306608	End mill [e.g., router, etc.]
409/303976 . .	with means to control temperature or lubricate	409/306664 . .	including means to infeed rotary cutter toward work
409/304032 . . .	Cutter or work	409/30672 . . .	with means to limit penetration into work
409/304088 . .	with means to remove chip	409/306776 . . .	Axially
409/304144 . .	Means to trim edge	409/306832	with infeed control means energized in response to activator stimulated by condition sensor
409/3042 . .	Means to remove scale or raised surface imperfection	409/306888	In response to cutter condition
409/304256 . . .	Means to remove flash or burr	409/306944	In response to work condition
409/304312 . .	with means to dampen vibration	409/307	with work holder
409/304368 . .	Means to mill epitrochoidal shape	409/307056	and laterally
409/304424 . .	Means for internal milling	409/307112	Simultaneously
409/30448 . .	with detachable or auxiliary cutter support to convert cutting action	409/307168	Plural cutters
409/304536 . .	including means to infeed work to cutter	409/307224 . . .	with infeed control means energized in response to activator stimulated by condition sensor
409/304592 . . .	with compensation for backlash in drive means	409/30728	In response to cutter condition
409/304648 . . .	with control means energized in response to activator stimulated by condition sensor	409/307336	In response to work condition
409/304704	In response to cutter or cutter carriage	409/307392 . . .	with means to change rate of infeed
409/30476	In response to work or work carriage	409/307448 . . .	with work holder
409/304816	to control rate of infeed or return	409/307504	Indexable
409/304872	to control limit of infeed	409/30756 . . .	Machining arcuate surface
409/304928	Adapted to hydraulically or pneumatically stimulate control	409/307616	with means to move cutter eccentrically
409/304984	Adapted to electrically stimulate control	409/307672 . . .	Angularly adjustable cutter head
409/30504	to control rate of infeed or return	409/307728 . . .	including gantry-type cutter-carrier
409/305096	to effect stopping of infeed	409/307784 . . .	Plural cutters
409/305152 . . .	with means to change rate of infeed	409/30784 . .	including means to adjustably position cutter
409/305208 . . .	Means to mill indeterminate length work	409/307896 . . .	with work holder or guide
409/305264 . . .	Multiple work stations	409/307952 . . .	Linear adjustment
409/30532 . . .	with means to advance work or product	409/308008	with control for adjustment means responsive to activator stimulated by condition sensor
409/305376	Vertically	409/308064	Responsive to position of cutter
409/305432	Endless or orbital work or product advancing means	409/30812	and means to clamp cutter support in adjusted position
409/305488 . . .	to reciprocate or oscillate work	409/308176	with position indicator or limit means
409/305544 . . .	with work holder	409/308232	and angular adjustment
409/3056	and means to selectively position work	409/308288	including gantry-type cutter-carrier
409/305656	including means to support work for rotation during operation	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

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

Former US Class 428 Series

428/00 Stock material or miscellaneous articles
 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

428/12271	. . . having discrete fastener, marginal fastening, taper, or end structure	428/12542	. . . . More than one such component
428/12278	. . . . Same structure at both ends of plural taper	428/12549	. . . . . Adjacent to each other
428/12285	. . . . Single taper [e.g., ingot, etc.]	428/12556	. . . . . Organic component
428/12292	. . Workpiece with longitudinal passageway or stopweld material [e.g., for tubular stock, etc.]	428/12562	. . . . . Elastomer
428/12299	. . Workpiece mimicking finished stock having nonrectangular or noncircular cross section	428/12569	. . . . . Synthetic resin
428/12306	. . Workpiece of parallel, nonfastened components [e.g., fagot, pile, etc.]	428/12576	. . . . . Boride, carbide or nitride component
428/12313	. . . Arranged to avoid lateral displacement	428/12583	. . . . . Component contains compound of adjacent metal
428/12319	. . . Composite	428/1259	. . . . . Oxide
428/12326	. . with provision for limited relative movement between components	428/12597	. . . . . Noncrystalline silica or noncrystalline plural-oxide component [e.g., glass, etc.]
428/12333	. . Helical or with helical component	428/12604	. . . . . Film [e.g., glaze, etc.]
428/1234	. . Honeycomb, or with grain orientation or elongated elements in defined angular relationship in respective components [e.g., parallel, inter- secting, etc.]	428/12611	. . . . . Oxide-containing component
428/12347	. . Plural layers discontinuously bonded [e.g., spot-weld, mechanical fastener, etc.]	428/12618	. . . . . Plural oxides
428/12354	. . Nonplanar, uniform-thickness material having symmetrical channel shape or reverse fold [e.g., making acute angle, etc.]	428/12625	. . . . . Free carbon containing component
428/12361	. . having aperture or cut	428/12632	. . . Four or more distinct components with alternate recurrence of each type component
428/12368	. . . Struck-out portion type	428/12639	. . . Adjacent, identical composition, components
428/12375	. . having member which crosses the plane of another member [e.g., T or X cross section, etc.]	428/12646	. . . . . Group VIII or IB metal-base
428/12382	. . Defined configuration of both thickness and nonthickness surface or angle therebetween [e.g., rounded corners, etc.]	428/12653	. . . . . Fe, containing 0.01-1.7% carbon [i.e., steel]
428/12389	. . having variation in thickness	428/1266	. . . . O, S, or organic compound in metal component
428/12396	. . . Discontinuous surface component	428/12667	. . . . . Oxide of transition metal or Al
428/12403	. . . Longitudinally smooth and symmetrical	428/12674	. . . . . Ge- or Si-base component
428/1241	. . Nonplanar uniform thickness or nonlinear uniform diameter [e.g., L-shape]	428/12681	. . . . . Ga-, In-, Tl- or Group VA metal-base component
428/12417	. . . Intersecting corrugating or dimples not in a single line [e.g., waffle form, etc.]	428/12687	. . . Pb- and Sn-base components: alternative to or next to each other
428/12424	. . Mass of only fibers	428/12694	. . . . . and next to Cu- or Fe-base component
428/12431	. . Foil or filament smaller than 6 mils	428/12701	. . . . . Pb-base component
428/12438	. . . Composite	428/12708	. . . . . Sn-base component
428/12444	. . Embodying fibers interengaged or between layers [e.g., paper, etc.]	428/12715	. . . . . Next to Group IB metal-base component
428/12451	. . Macroscopically anomalous interface between layers	428/12722	. . . . . Next to Group VIII metal-base component
428/12458	. . having composition, density, or hardness gradient	428/12729	. . . . . Group IIA metal-base component
428/12465	. . having magnetic properties, or preformed fiber orientation coordinate with shape	428/12736	. . . . . Al-base component
428/12472	. . Microscopic interfacial wave or roughness	428/12743	. . . . . Next to refractory [Group IVB, VB, or VIB] metal-base component
428/12479	. . Porous [e.g., foamed, spongy, cracked, etc.]	428/1275	. . . . . Next to Group VIII or IB metal-base component
428/12486	. . Laterally noncoextensive components [e.g., embedded, etc.]	428/12757	. . . . . Fe
428/12493	. . Composite; i.e., plural, adjacent, spatially distinct metal components [e.g., layers, joint, etc.]	428/12764	. . . . . Next to Al-base component
428/125	. . . Deflectable by temperature change [e.g., thermostat element]	428/12771	. . . . . Transition metal-base component
428/12507	. . . . More than two components	428/12778	. . . . . Alternative base metals from diverse categories
428/12514	. . . . One component Cu-based	428/12785	. . . . . Group IIB metal-base component
428/12521	. . . . Both components Fe-based with more than 10% Ni	428/12792	. . . . . Zn-base component
428/12528	. . . Semiconductor component	428/12799	. . . . . Next to Fe-base component [e.g., galvanized]
428/12535	. . . with additional, spatially distinct nonmetal component	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.]	428/1362	Textile, fabric, cloth, or pile containing [e.g., web, net, woven, knitted, mesh, nonwoven, matted, etc.]
428/12875	Platinum group metal-base component	428/1366	Textile, fabric, cloth, or pile is sandwiched between two distinct layers of material unlike the textile, fabric, cloth, or pile layer
428/12882	Cu-base component alternative to Ag-, Au-, or Ni-base component	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.]
428/12889	Au-base component	428/1372	Randomly noninterengaged or randomly contacting fibers, filaments, particles, or flakes
428/12896	Ag-base component	428/1376	Foam or porous material containing
428/12903	Cu-base component	428/1379	Contains vapor or gas barrier, polymer derived from vinyl chloride or vinylidene chloride, or polymer containing a vinyl alcohol unit
428/1291	Next to Co-, Cu-, or Ni-base component	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]
428/12917	Next to Fe-base component	428/1386	Natural or synthetic rubber or rubber-like compound containing
428/12924	Fe-base has 0.01-1.7% carbon [i.e., steel]	428/139	Open-ended, self-supporting conduit, cylinder, or tube-type article
428/12931	Co-, Fe-, or Ni-base components, alternative to each other	428/1393	Multilayer [continuous layer]
428/12937	Co- or Ni-base component next to Fe-base component	428/1397	Single layer [continuous layer]
428/12944	Ni-base component	428/14	Layer or component removable to expose adhesive
428/12951	Fe-base component	428/1405	Capsule or particulate matter containing [e.g., sphere, flake, microballoon, etc.]
428/12958	Next to Fe-base component	428/141	Bituminous
428/12965	Both containing 0.01-1.7% carbon [i.e., steel]	428/1414	Ceramic, glass, glasslike, vitreous
428/12972	Containing 0.01-1.7% carbon [i.e., steel]	428/1419	Wax containing
428/12979	Containing more than 10% nonferrous elements [e.g., high alloy, stainless]	428/1424	Halogen containing compound
428/12986	Adjacent functionally defined components	428/1429	Fluorine
428/12993	Surface feature [e.g., rough, mirror]	428/1433	Coloring agent containing
428/13	Hollow or container type article [e.g., tube, vase, etc.]	428/1438	Metal containing
428/1303	Paper containing [e.g., paperboard, cardboard, fiberboard, etc.]	428/1443	Aluminum
428/1307	Bag or tubular film [e.g., pouch, flexible food casing, envelope, etc.]	428/1448	Coloring agent containing
428/131	Glass, ceramic, or sintered, fused, fired, or calcined metal oxide or metal carbide containing [e.g., porcelain, brick, cement, etc.]	428/1452	Polymer derived only from ethylenically unsaturated monomer
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.]	428/1457	Silicon
428/1317	Multilayer [continuous layer]	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.]
428/1321	Polymer or resin containing [i.e., natural or synthetic]	428/1467	Coloring agent
428/1324	Flexible food casing [e.g., sausage type, etc.]	428/1471	Protective layer
428/1328	Shrinkable or shrunk [e.g., due to heat, solvent, volatile agent, restraint removal, etc.]	428/1476	Release layer
428/1331	Single layer [continuous layer]	428/1481	Dissimilar adhesives
428/1334	Nonself-supporting tubular film or bag [e.g., pouch, envelope, packet, etc.]	428/1486	Ornamental, decorative, pattern, or indicia
428/1338	Elemental metal containing	428/149	Sectional layer removable
428/1341	Contains vapor or gas barrier, polymer derived from vinyl chloride or vinylidene chloride, or polymer containing a vinyl alcohol unit	428/1495	Adhesive is on removable layer
428/1345	Single layer [continuous layer]	428/15	Sheet, web, or layer weakened to permit separation through thickness
428/1348	Cellular material derived from plant or animal source [e.g., wood, cotton, wool, leather, etc.]	428/16	Two dimensionally sectional layer
428/1352	Polymer or resin containing [i.e., natural or synthetic]	428/161	with frame, casing, or perimeter structure
428/1355	Elemental metal containing [e.g., substrate, foil, film, coating, etc.]	428/162	Transparent or translucent layer or section
428/1359	Three or more layers [continuous layer]	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 settlable 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	428/24818	. . . . . Knitted, with particular or differential bond sites or intersections
428/24438	. . . Artificial wood or leather grain surface	428/24826	. . . Spot bonds connect components
428/24446	. . . Wrinkled, creased, crinkled or creped	428/24835	. . . including developable image or soluble portion in coating or impregnation [e.g., safety paper, etc.]
428/24455	. . . . . Paper	428/24843	. . . with heat sealable or heat releasable adhesive layer
428/24463	. . . . . Plural paper components	428/24851	. . . Intermediate layer is discontinuous or differential
428/24471	. . . Crackled, crazed or slit	428/2486	. . . . . with outer strippable or release layer
428/24479	. . including variation in thickness	428/24868	. . . . . Translucent outer layer
428/24488	. . . Differential nonuniformity at margin	428/24876	. . . . . Intermediate layer contains particulate material [e.g., pigment, etc.]
428/24496	. . . Foamed or cellular component	428/24884	. . . . . Translucent layer comprises natural oil, wax, resin, gum, glue, gelatin
428/24504	. . . . . Component comprises a polymer [e.g., rubber, etc.]	428/24893	. . . including particulate material
428/24512	. . . . . Polyurethane	428/24901	. . . . . including coloring matter
428/24521	. . . with component conforming to contour of nonplanar surface	428/24909	. . . . . Free metal or mineral containing
428/24529	. . . . . and conforming component on an opposite nonplanar surface	428/24917	. . . including metal layer
428/24537	. . . . . Parallel ribs and/or grooves	428/24926	. . . including ceramic, glass, porcelain or quartz layer
428/24545	. . . . . Containing metal or metal compound	428/24934	. . . including paper layer
428/24554	. . . . . including cellulosic or natural rubber component	428/24942	. . including components having same physical characteristic in differing degree
428/24562	. . . Interlaminar spaces	428/2495	. . . Thickness [relative or absolute]
428/2457	. . . Parallel ribs and/or grooves	428/24959	. . . . . of adhesive layers
428/24579	. . . . . with particulate matter	428/24967	. . . . . Absolute thicknesses specified
428/24587	. . . . . Oblique to longitudinal axis of web or sheet	428/24975	. . . . . No layer or component greater than 5 mils thick
428/24595	. . . and varying density	428/24983	. . . Hardness
428/24603	. . . . . Fiber containing component	428/24992	. . . Density or compression of components
428/24612	. . . Composite web or sheet	428/249921	. Web or sheet containing structurally defined element or component
428/2462	. . . . . with partial filling of valleys on outer surface	428/249922	. . Embodying intertwined or helical component[s]
428/24628	. . Nonplanar uniform thickness material	428/249923	. . Including interlaminar mechanical fastener
428/24636	. . . Embodying mechanically interengaged strand[s], strand-portion[s] or strand-like strip[s] [e.g., weave, knit, etc.]	428/249924	. . Noninterengaged fiber-containing paper-free web or sheet which is not of specified porosity
428/24645	. . . . . with folds in parallel planes	428/249925	. . . Fiber-containing wood product [e.g., hardboard, lumber, or wood board, etc.]
428/24653	. . . Differential nonplanarity at margin	428/249926	. . . Including paper layer
428/24661	. . . Forming, or cooperating to form cells	428/249927	. . . Fiber embedded in a metal matrix
428/24669	. . . Aligned or parallel nonplanarities	428/249928	. . . Fiber embedded in a ceramic, glass, or carbon matrix
428/24678	. . . . . Waffle-form	428/249929	. . . . . Fibers are aligned substantially parallel
428/24686	. . . . . Pleats or otherwise parallel adjacent folds	428/24993	. . . . . Fiber is precoated
428/24694	. . . . . Parallel corrugations	428/249931	. . . . . Free metal or alloy fiber
428/24702	. . . . . with locally deformed crests or intersecting series of corrugations	428/249932	. . . Fiber embedded in a layer derived from a water-settable material [e.g., cement, gypsum, etc.]
428/24711	. . . . . Plural corrugated components	428/249933	. . . Fiber embedded in or on the surface of a natural or synthetic rubber matrix
428/24719	. . . . . with corrugations of respective components intersecting in plane projection	428/249934	. . . . . Fibers are aligned substantially parallel
428/24727	. . . . . with planar component	428/249935	. . . . . Fiber is nonlinear [e.g., crimped, sinusoidal, etc.]
428/24736	. . . Ornamental design or indicia	428/249936	. . . . . Fiber is precoated
428/24744	. . Longitudinal or transverse tubular cavity or cell	428/249937	. . . . . Fiber is precoated
428/24752	. . Laterally noncoextensive components	428/249938	. . . . . Composite or conjugate fiber [e.g., fiber contains more than one chemically different material in monofilament or multifilament form, etc.]
428/2476	. . . Fabric, cloth or textile component	428/249939	. . . . . Two or more layers
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		

- 428/24994 . . . 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., impregnant-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 structually 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	428/31678 . . .	Of metal
428/31518	Next to glass or quartz	428/31681 . . .	Next to polyester, polyamide or polyimide [e.g., alkyd, glue, or nylon, etc.]
428/31522	Next to metal	428/31685	Natural source polyamide [e.g., casein, gelatin, etc.]
428/31525 . . .	Next to glass or quartz	428/31688 . . .	Next to aldehyde or ketone condensation product
428/31529 . . .	Next to metal	428/31692 . . .	Next to addition polymer from unsaturated monomers
428/31533 . .	Of polythioether	428/31696	Including polyene monomers [e.g., butadiene, etc.]
428/31536 . .	Including interfacial reaction product of adjacent layers	428/31699	Ester, halide or nitrile of addition polymer
428/3154 . .	Of fluorinated addition polymer from unsaturated monomers	428/31703 . . .	Next to cellulosic
428/31544 . . .	Addition polymer is perhalogenated	428/31707 . . .	Next to natural rubber
428/31547 . .	Of polyisocyanurate	428/3171	With natural rubber next to second layer of natural rubber
428/31551 . .	Of polyamidoester [polyurethane, polyisocyanate, polycarbamate, etc.]	428/31714 . . .	Next to natural gum, natural oil, rosin, lac or wax
428/31554 . . .	Next to second layer of polyamidoester	428/31717 . . .	Next to bituminous or tarry residue
428/31558 . . .	Next to animal skin or membrane	428/31721 . .	Of polyimide
428/31562 . . .	Next to polyamide [nylon, etc.]	428/31725 . .	Of polyamide
428/31565 . . .	Next to polyester [polyethylene terephthalate, etc.]	428/31728 . . .	Next to second layer of polyamide
428/31569 . . .	Next to natural rubber	428/31732	At least one layer is nylon type
428/31573 . . .	Next to addition polymer of ethylenically unsaturated monomer	428/31736 . . .	Next to polyester
428/31576	Ester monomer type [polyvinylacetate, etc.]	428/31739 . . .	Nylon type
428/3158	Halide monomer type [polyvinyl chloride, etc.]	428/31743	Next to addition polymer from unsaturated monomer[s]
428/31583	Nitrile monomer type [polyacrylonitrile, etc.]	428/31746	Polymer of monoethylenically unsaturated hydrocarbon
428/31587	Hydrocarbon polymer [polyethylene, polybutadiene, etc.]	428/3175 . . .	Next to addition polymer from unsaturated monomer[s]
428/31591 . . .	Next to cellulosic	428/31754	Natural source-type polyamide
428/31594 . . .	Next to aldehyde or ketone condensation product [phenol-aldehyde, etc.]	428/31757	Polymer of monoethylenically unsaturated hydrocarbon
428/31598 . . .	Next to silicon-containing [silicone, cement, etc.] layer	428/31761 . . .	Next to aldehyde or ketone condensation product
428/31601	Quartz or glass	428/31765 . . .	Inorganic-containing or next to inorganic-containing
428/31605 . . .	Next to free metal	428/31768 . . .	Natural source-type polyamide [e.g., casein, gelatin, etc.]
428/31609 . . .	Particulate metal or metal compound-containing	428/31772	Next to cellulosic
428/31612	As silicone, silane or siloxane	428/31775	Paper
428/31616 . . .	Next to polyester [e.g., alkyd]	428/31779 . . .	Next to cellulosic
428/3162	Cross-linked polyester [e.g., glycerol maleate-styrene, etc.]	428/31783	Paper or wood
428/31623 . . .	Next to polyamide or polyimide	428/31786 . .	Of polyester [e.g., alkyd, etc.]
428/31627 . . .	Next to aldehyde or ketone condensation product	428/3179 . . .	Next to cellulosic
428/3163	Next to acetal of polymerized unsaturated alcohol [e.g., formal butyral, etc.]	428/31794 . . .	Of cross-linked polyester
428/31634 . . .	Next to cellulosic	428/31797 . . .	Next to addition polymer from unsaturated monomers
428/31638	Cellulosic ester	428/31801 . .	Of wax or waxy material
428/31641 . . .	Next to natural rubber, gum, oil, rosin, wax, bituminous or tarry residue	428/31804 . . .	Next to cellulosic
428/31645 . . .	Next to addition polymer from unsaturated monomers	428/31808	Cellulosic is paper
428/31649	Ester, halide or nitrile of addition polymer	428/31812	Glassine paper
428/31652 . .	Of asbestos	428/31815 . .	Of bituminous or tarry residue
428/31656 . . .	With metal layer	428/31819 . . .	Next to cellulosic
428/31659 . . .	With cellulosic layer	428/31823	Paper
428/31663 . . .	As siloxane, silicone or silane	428/31826 . .	Of natural rubber
428/31667 . . .	Next to addition polymer from unsaturated monomers, or aldehyde or ketone condensation product	428/3183 . . .	Next to second layer of natural rubber
428/3167 . .	Of cork	428/31833 . . .	Next to aldehyde or ketone condensation product or addition polymer from unsaturated monomers
428/31674 . . .	Including natural oil or gum or rosin [e.g., linoleum, etc.]	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	442/105 . . .	Comprising a composite fiber
436/174614 . . .	Tertiary amine	442/107 . . .	Comprising at least two chemically different fibers
436/175383 . . .	Ammonia	442/109 . . .	Metal or metal-coated fiber-containing scrim
436/176152 . . .	Total nitrogen determined	442/11 . . .	Including an additional free metal or alloy constituent
436/176921 . . .	As part of an elemental analysis	442/112 . . .	Particulate free metal or alloy constituent
436/177692 . . .	Oxides of nitrogen	442/114 . . .	Including a foam layer
436/178459 . . .	Only nitrogen dioxide	442/116 . . .	Including a woven fabric which is not a scrim
436/179228 . . .	Both nitrogen oxide and dioxide	442/117 . . .	Including a nonwoven fabric which is not a scrim
436/18 . . .	Sulfur containing	442/119 . . .	Including a paper layer
436/182 . . .	Organic or sulfhydryl containing [e.g., mercaptan, hydrogen, sulfide, etc.]	442/121 . . .	Including a nonwoven fabric which is not a scrim
436/184 . . .	Only hydrogen sulfide	442/122 . . .	Two or more nonwoven fabric layers
436/186 . . .	Sulfur dioxide	442/124 . . .	Including a natural or synthetic rubber layer
436/188 . . .	Total or elemental sulfur	442/126 . . .	Including a preformed film, foil, or sheet
436/19 . . .	Halogen containing	442/128 . . .	Including a layer derived from a water-settable material [e.g., cement, gypsum, etc.]
436/193333 . . .	In aqueous solution	442/129 . . .	Including a ceramic or glass layer
436/196666 . . .	Carbon containing compound [e.g., vinylchloride, etc.]	442/131 . . .	Including a coating or impregnation of synthetic polymeric material
436/20 . . .	Oxygen containing	442/133 . . .	Inorganic fiber-containing scrim
436/200833 . . .	Carbonyl, ether, aldehyde or ketone containing	442/134 . . .	Including a carbon or carbonized fiber
436/201666 . . .	Carboxylic acid	442/136 . . .	Including a foam layer
436/202499 . . .	Formaldehyde or acetone	442/138 . . .	Including a metal layer
436/203332 . . .	Hydroxyl containing	442/14 . . .	Including an additional scrim layer
436/204165 . . .	Ethanol	442/141 . . .	Including a woven fabric which is not a scrim
436/204998 . . .	Inorganic carbon compounds	442/143 . . .	Including a nonwoven fabric which is not a scrim
436/205831 . . .	Carbon monoxide only	442/145 . . .	Including a preformed film, foil, or sheet
436/206664 . . .	Ozone or peroxide	442/147 . . .	Including a mica layer
436/207497 . . .	Molecular oxygen	442/148 . . .	Including a coating or impregnation containing particulate material other than fiber
436/208339 . . .	Fuel/air mixture or exhaust gas analysis	442/15 . . .	Including a foam layer
436/209163 . . .	Dissolved or trace oxygen or oxygen content of a sealed environment	442/152 . . .	Including a free metal or alloy constituent
436/21 . . .	Hydrocarbon	442/153 . . .	Including an additional scrim layer
436/212 . . .	Aromatic	442/155 . . .	Including a paper layer
436/214 . . .	Acyclic [e.g., methane, octane, isoparaffin, etc.]	442/157 . . .	Two or more paper layers
436/216 . . .	Unsaturated [e.g., ethylene, diene, etc.]	442/159 . . .	Including a nonwoven fabric which is not a scrim
436/218 . . .	Total hydrocarbon, flammability, combustibility [e.g., air-fuel mixture, etc.]	442/16 . . .	Two or more nonwoven layers
436/22 . . .	Hydrogen, <u>per se</u>	442/162 . . .	Including a natural or synthetic rubber layer
436/23 . . .	Carbon containing	442/164 . . .	Including a preformed film, foil, or sheet
436/235 . . .	In an aqueous solution [e.g., TOC, etc.]	442/166 . . .	Cellulose acetate film or sheet
436/24 . . .	Nuclear magnetic resonance, electron spin resonance or other spin effects or mass spectrometry	442/167 . . .	Fluorinated polyolefin film or sheet
436/25 . . .	including sample preparation	442/169 . . .	Polyolefin film or sheet
436/25125 . . .	Digestion or removing interfering materials	442/171 . . .	Including a layer derived from a water-settable material [e.g., cement, gypsum, etc.]
436/2525 . . .	Stabilizing or preserving	442/172 . . .	Coated or impregnated
436/25375 . . .	Liberation or purification of sample or separation of material from a sample [e.g., filtering, centrifuging, etc.]	442/174 . . .	Including particulate material other than fiber in coating or impregnation
436/255 . . .	including use of a solid sorbent, semipermeable membrane, or liquid extraction	442/176 . . .	Three or more layers
436/25625 . . .	Dilution	442/178 . . .	Synthetic polymeric fiber
436/2575 . . .	Volumetric liquid transfer	442/179 . . .	Nylon fiber
436/25875 . . .	Gaseous sample or with change of physical state	442/181 . . .	Bitumen coating or impregnation
		442/183 . . .	Synthetic polymeric fiber
		442/184 . . .	Nonwoven scrim
		442/186 . . .	Comprising a composite fiber

Former US Class 442 series

442/00	Fabric [woven, knitted, or nonwoven textile or cloth, etc.]
442/10 . . .	Scrim [e.g., open net or mesh, gauze, loose or open weave or knit, etc.]
442/102 . . .	Woven scrim
442/103 . . .	Including a multifilament fiber precoated with other than free metal or alloy prior to weaving

- 442/188 . . . Metal or metal-coated fiber-containing scrim
- 442/19 . . . Including a paper layer
- 442/191 . . . Inorganic fiber-containing scrim
- 442/193 . . . Including a foam layer
- 442/195 . . . Including a foam layer
- 442/197 . . . Including a nonwoven fabric which is not a scrim
- 442/198 . . . Coated or impregnated
- 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
- 442/2008 . . Fabric composed of a fiber or strand which is of specific structural definition
- 442/2016 . . Impregnation is confined to a plane disposed between both major fabric surfaces which are essentially free of impregnating material
- 442/2025 . . Coating produced by extrusion
- 442/2033 . . Coating or impregnation formed in situ [e.g., by interfacial condensation, coagulation, precipitation, etc.]
- 442/2041 . . Two or more non-extruded coatings or impregnations
- 442/2049 . . . Each major face of the fabric has at least one coating or impregnation
- 442/2057 At least two coatings or impregnations of different chemical composition
- 442/2066 Different coatings or impregnations on opposite faces of the fabric
- 442/2074 At least one coating or impregnation contains particulate material
- 442/2082 At least one coating or impregnation functions to fix pigments or particles on the surface of a coating or impregnation
- 442/209 At least one coating or impregnation contains particulate material
- 442/2098 . . . At least two coatings or impregnations of different chemical composition
- 442/2107 At least one coating or impregnation contains particulate material
- 442/2115 At least one coating or impregnation functions to fix pigments or particles on the surface of a coating or impregnation
- 442/2123 . . . At least one coating or impregnation contains particulate material
- 442/2131 At least one coating or impregnation functions to fix pigments or particles on the surface of a coating or impregnation
- 442/2139 . . Coating or impregnation specified as porous or permeable to a specific substance [e.g., water vapor, air, etc.]
- 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	442/658	. . . . Particulate free metal or alloy constituent
442/622	. . . . Microfiber is a composite fiber	442/659	. . Including an additional nonwoven fabric
442/623	. . . . Microfiber is glass	442/66	. . . . Additional nonwoven fabric is a spun-bonded fabric
442/624	. . . . Microfiber is carbon or carbonaceous	442/662	. . . . Needled
442/625	. . . . Autogenously bonded	442/663	. . . . Hydroentangled
442/626	. . . . Microfiber is synthetic polymer	442/664	. . . . Including a wood fiber containing layer
442/627	. . . . Strand or fiber material is specified as non-linear [e.g., crimped, coiled, etc.]	442/665	. . . . Including a layer derived from a water-settable material [e.g., cement, gypsum, etc.]
442/629	. . . . Composite strand or fiber material	442/666	. . . . Mechanically interengaged by needling or impingement of fluid [e.g., gas or liquid stream, etc.]
442/63	. . . . Carbon or carbonaceous strand or fiber material	442/667	. . . . Needled
442/631	. . . . Glass strand or fiber material	442/668	. . . . Separate nonwoven fabric layers comprise chemically different 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	442/669	. . . . At least one layer of inorganic strand or fiber material and at least one layer of synthetic polymeric strand or fiber material
442/633	. . . . . Synthetic polymeric strand or fiber material is of staple length	442/67	. . . . Multiple nonwoven fabric layers composed of the same inorganic strand or fiber material
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	442/671	. . . . Multiple nonwoven fabric layers composed of the same polymeric strand or fiber material
442/635	. . . . Synthetic polymeric strand or fiber material	442/673	. . . . Including particulate material other than fiber
442/636	. . . . . Synthetic polymeric strand or fiber material is of staple length	442/674	. . . . Nonwoven fabric with a preformed polymeric film or sheet
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	442/675	. . . . Ester condensation polymer sheet or film [e.g., polyethylene terephthalate, etc.]
442/638	. . . . Side-by-side multicomponent strand or fiber material	442/676	. . . . Vinyl polymer or copolymer sheet or film [e.g., polyvinyl chloride, polyvinylidene chloride, polyvinyl acetate, etc.]
442/64	. . . . Islands-in-sea multicomponent strand or fiber material	442/677	. . . . Fluorinated olefin polymer or copolymer sheet or film [e.g., TeflonR, etc.]
442/641	. . . . Sheath-core multicomponent strand or fiber material	442/678	. . . . Olefin polymer or copolymer sheet or film [e.g., polypropylene, polyethylene, ethylene-butylene copolymer, etc.]
442/642	. . . . Strand or fiber material is a blend of polymeric material and a filler material	442/679	. . . . Natural or synthetic rubber sheet or film
442/643	. . Including parallel strand or fiber material within the nonwoven fabric	442/68	. . Melt-blown nonwoven fabric
442/644	. . . . Parallel strand or fiber material is glass	442/681	. . Spun-bonded nonwoven fabric
442/645	. . . . Parallel strand or fiber material is inorganic [e.g., rock wool, mineral wool, etc.]	442/682	. . Needled nonwoven fabric
442/646	. . . . Parallel strand or fiber material is naturally occurring [e.g., cotton, wool, etc.]	442/684	. . . . Containing at least two chemically different strand or fiber materials
442/647	. . Including a foamed layer or component	442/685	. . . . Containing inorganic and polymeric strand or fiber materials
442/648	. . . . Including a free metal or alloy constituent	442/686	. . . . Containing polymeric and natural strand or fiber materials
442/649	. . . . Plural foamed layers	442/687	. . . . Containing inorganic strand or fiber material
442/651	. . . . Plural fabric layers	442/688	. . . . Containing polymeric strand or fiber material
442/652	. . . . Nonwoven fabric is coated, impregnated, or autogenously bonded	442/689	. . Hydroentangled nonwoven fabric
442/653	. . . . . Including particulate material other than fiber	442/69	. . Autogenously bonded nonwoven fabric
442/654	. . Including a free metal or alloy constituent	442/691	. . . . Inorganic strand or fiber material only
442/655	. . . . Metal or metal-coated strand or fiber material	442/692	. . . . Containing at least two chemically different strand or fiber materials
442/656	. . . . Preformed metallic film or foil or sheet [film or foil or sheet had structural integrity prior to association with the nonwoven fabric]	442/693	. . Including a paper layer
442/657	. . . . Vapor, chemical, or spray deposited metal 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
(Frozen)

WARNING

Group [Y10T 464/10](#) is no longer used for the classification of documents as of January 1, 2021.

The content of this group is being reclassified into groups [F16D 2300/02](#), [F16D 2300/021](#), [F16D 2300/0212](#), [F16D 2300/0214](#) and [F16D 2300/04](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- 464/20 . with auxilliary indicator or alarm
(Frozen)

WARNING

Group [Y10T 464/20](#) is no longer used for the classification of documents as of January 1, 2021.

The content of this group is being reclassified into groups [F16D 2300/18](#) and [F16D 2300/20](#).

Groups [Y10T 464/20](#), [F16D 2300/18](#) and [F16D 2300/20](#) should be considered in order to perform a complete search.

- 464/30 . Electrical or magnetic coupling
(Frozen)

WARNING

Group [Y10T 464/30](#) is no longer used for the classification of documents as of January 1, 2021.

The content of this group is being reclassified into groups [H02K 49/10](#), [H02K 49/104](#), [H02K 49/106](#) and [H02K 49/108](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- 464/40 . Coupling accommodates drive between members having misaligned or angularly related axes, transmits torque via radially directed pin, and has particular balancing means
(Frozen)

WARNING

Group [Y10T 464/40](#) is no longer used for the classification of documents as of January 1, 2021.

The content of this group is being reclassified into groups [F16D 2300/22](#) and [F16D 3/38](#).

Groups [Y10T 464/40](#), [F16D 2300/22](#) and [F16D 3/38](#) should be considered in order to perform a complete search.

- 464/50 . Shafting having particular vibration dampening or balancing structure
(Frozen)

WARNING

Group [Y10T 464/50](#) is no longer used for the classification of documents as of January 1, 2021.

The content of this group is being reclassified into groups [F16F 15/10](#), [F16F 15/32](#), [F16F 15/322](#), [F16F 15/264](#), [F16C 1/00](#), [F16C 1/06](#), [F16C 1/08](#) and [F16C 1/108](#).

All groups listed in this Warning should be considered in order to perform a complete search.

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	477/67	. . .	Ignition advanced or retarded
477/6237	. . .	Belt-type	477/671	. . .	Ignition intermitting and safety means limiting duration of intermission
477/624	. . . .	Fluid pressure control	477/673	. . .	Ignition intermitting controlled by manifold pressure
477/6242	. . . . .	Ratio change controlled	477/674	. . .	Ignition intermitting initiated by positioning accelerator
477/62423	. . . . .	Engine coast braking	477/6745	. . . .	Initiation inhibited by sensed condition
477/62427	. . . . .	with electric valve control	477/675	. .	Engine controlled by transmission
477/62429	. . . . .	Duty ratio control	477/676	. . .	Constant output shaft speed
477/6243	. . .	Fluid pressure control	477/677	. . .	Diminution during transmission change
477/625	. .	Fluid resistance inhibits rotation of planetary transmission element	477/679	. . .	Responsive to transmission output condition
477/631	. .	including fluid drive	477/68	. . .	Transmission setting contingent
477/633	. . .	Impeller-turbine-type	477/6805	. . . .	Change to neutral idles engine
477/6333	. . . .	Engine controlled	477/6808	. . . . .	Engine input variable in neutral
477/6337	. . . .	with countershaft gearing	477/681	. .	Anticreep
477/63378	. . . . .	and turbine shaft brake	477/688	. .	Transmission controlled by engine
477/63385	. . . . .	and clutch control	477/689	. . .	Shift from neutral shock control
477/63393	. . . . .	Control of or by fluid drive	477/6895	. . . .	Pressure controlled
477/634	. . . .	with hydrodynamic braking	477/69	. . .	Engine [coast] braking
477/6343	. . . .	with nonratio brake	477/691	. . . .	Electric valve control
477/6347	. . . .	Control responsive to fluid drive	477/692	. . .	by acceleration
477/635	. . . .	with clutch control	477/693	. . .	by input manifold pressure or engine fuel control
477/6351	. . . . .	Disengaged during shift	477/6931	. . . .	Selector-type
477/6352	. . . . .	Speed responsive	477/6933	. . . .	with positive shift means
477/63525	. . . . .	Electrical	477/69335	. . . . .	with synchronization
477/6353	. . . .	with fluid unit vane control	477/6934	. . . .	Prevents unsafe or unintentional shift
477/6357	. . . .	Fill and empty-type fluid units	477/6935	. . . . .	Reverse inhibitor
477/636	. . .	Ratio control	477/6936	. . . .	Shift valve control
477/637	. . . .	with planetary transmission control	477/69362	. . . . .	Hysteresis
477/638	. .	with clutch control	477/693625	. . . . .	Electric control
477/6388	. . .	and brake control	477/69363	. . . . .	Plural shift valves
477/6389	. . . .	Temperature responsive control	477/693635	. . . . .	Electric control
477/639	. . . .	Engine controlled	477/693636	. . . . .	Downshift control
477/6392	. . . .	Clutch controlled	477/693637	. . . . .	Kickdown
477/6394	. . . .	Gearing controlled	477/693638	. . . . .	Selector valve overrule
477/6395	. . .	Temperature responsive control	477/69364	. . . . .	Downshift control
477/6403	. . .	Clutch, engine, and transmission controlled	477/693643	. . . . .	Kickdown
477/6407	. . . .	Electronic digital control	477/693645	. . . . .	Selector valve overrule
477/641	. . .	Clutch and transmission controlled	477/69365	. . . . .	Electric control
477/6414	. . . .	Speed responsive control	477/69366	. . . . .	Downshift control
477/6415	. . . . .	with manual override	477/69367	. . . . .	Downshift control
477/6417	. . . . .	Vacuum actuated clutch	477/693675	. . . . .	Kickdown
477/6418	. . .	Clutch and engine controlled	477/69368	. . . . .	Selector valve overrule
477/6422	. . . .	Speed responsive control	477/6937	. . . .	Servo motor timing
477/6424	. . . . .	Plural speed signals	477/69373	. . . . .	Downshift
477/6425	. . .	Clutch controlled	477/693738	. . . . .	with fluid accumulator
477/6428	. . . .	Electric clutch	477/693742	. . . . .	Electric valve control
477/643	. . . .	Vacuum actuated clutch	477/693746	. . . . .	Double acting servo
477/6432	. . . . .	Electric control	477/693754	. . . . .	Speed responsive control
477/6433	. . .	Engine controlled	477/693762	. . . . .	Electric valve control
477/6437	. . . .	Speed responsive	477/69377	. . . . .	with fluid accumulator
477/644	. .	with brake control	477/69378	. . . . .	Engine parameter controls back pressure
477/646	. . .	Anti-creep	477/69379	. . . . .	Electric valve control
477/647	. . .	Brake controls transmission	477/6938	. . . . .	Double acting servo
477/648	. . . .	Pressure controlled	477/69383	. . . . .	Speed responsive control
477/649	. . .	One control blocks another	477/69387	. . . . .	Electric valve control
477/65	. .	Control by sensed ambient condition, pattern indicia, external signal, or temperature	477/6939	. . . .	Transmission pressure controlled
477/653	. . .	Temperature control	477/69393	. . . . .	Variable capacity pump
477/656	. .	Engine starting interlock	477/69395	. . . . .	Line pressure controlled
477/663	. .	Exhaust emission control	477/693958	. . . . .	Responsive to speed
477/669	. .	Engine ignition control for transmission change			

477/693962 Electric valve control
 477/693964 Duty ratio control
 477/693965 Transmission setting contingent
 477/693973 Electric valve control
 477/69398 Electric valve control
 477/694 . . Engine control linkage mounted on manual
 gearshift lever
 477/70 . Clutch control
 477/71 . . with starter
 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
 477/868 Controls brake valve
 477/869 Vacuum actuated brake
 477/87 . . Brake condition change modifies engine
 condition
 477/873 . . . Brake actuation interrupts ignition circuit of
 fluid engine
 477/877 . . . Brake actuation decreases or eliminates fluid
 energy input to engine
 477/878 by closing throttle valve
 477/879 by preventing increasing operation of engine
 energy control

477/88 . . Decreasing fluid energy input to engine actuates
 brake
 477/89 . . Control means selectively operates engine energy
 input and brake
 477/893 . . . Foot operated control means
 477/8936 Engine and brake control including
 interconnected elements
 477/8941 Pivots and translates
 477/8944 Pivots about intermediate fulcrum
 477/8947 Pivots about two fulcrums
 477/8953 Pivots about intermediate fulcrum
 477/8959 Lever reciprocates on moveable supports at
 both ends
 477/8964 Pivots for sequential operation
 477/897 . . . Control means including fluid passage

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