

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 24 series

24/00 Buckles, buttons, clasps, etc.

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|---------|---|---------|--|
| 24/10 | . Miscellaneous | 24/1397 | . . Article held by flexible connector [e.g., chain] |
| 24/11 | . Album fasteners | 24/14 | . Bale and package ties, hose clamps |
| 24/12 | . Gun band type | 24/1402 | . . Packet holders |
| 24/13 | . Article holder attachable to apparel or body | 24/1404 | . . . Cord |
| 24/1303 | . . Chatelaine safety hooks | 24/1406 | . . . Adjustable bands |
| 24/1306 | . . Flower | 24/1408 | . . . Closed loops |
| 24/1309 | . . . Pin attached | 24/141 | . . . Plastic bands |
| 24/1312 | . . Napkin | 24/1412 | . . with tighteners |
| 24/1315 | . . . Hook | 24/1414 | . . . Wedge |
| 24/1318 | . . . Neck enclosing | 24/1416 | . . . Winder |
| 24/1321 | . . Pencil | 24/1418 | . . . Self-locking [dead center or snap action] |
| 24/1324 | . . . Clasp attached | 24/142 | Adjustable girth |
| 24/1326 | Finger ear, belt attached pencil holder | 24/1422 | Rack bar |
| 24/1329 | Pencil holder with paper clip | 24/1424 | Lever |
| 24/1332 | Combined and convertible pencil holder | 24/1427 | Worm and tooth |
| 24/1335 | Container type pencil holder | 24/1429 | Pivotal worm band clamp |
| 24/1338 | Separate pencil holder and pocket engaging clip | 24/1431 | Radial worm band clamp |
| 24/1341 | Sliding jaw pencil holding clip | 24/1433 | Integral thread |
| 24/1344 | Wire pencil holder | 24/1435 | External thread |
| 24/1347 | Flexible shank pencil holder | 24/1437 | Both ends threaded |
| 24/135 | with movable catch [e.g., pin pivoted lever, roller, etc.] | 24/1439 | Radial screw |
| 24/1353 | Pivoted jaw pencil holder | 24/1441 | Tangential screw |
| 24/1356 | . . . Pin attached | 24/1443 | Adjustable girth |
| 24/1359 | . . . Rule holder | 24/1445 | Step adjustment |
| 24/1362 | . . Sleeve holder [e.g., for inner coat] | 24/1447 | Plural separable parts |
| 24/1365 | . . Pin attached | 24/1449 | Wire |
| 24/1368 | . . Arm or leg carried holder | 24/1451 | Plural separable parts |
| 24/1371 | . . Eyeglass holder including retaining means | 24/1453 | Pivotal strap parts |
| 24/1374 | . . Neck supported holder | 24/1455 | Plural wrap |
| 24/1376 | . . Holder contains pocket engager [e.g., antitheft device, wallet protector] | 24/1457 | . . Metal bands |
| 24/1379 | . . Key ring holder | 24/1459 | . . . Separate connections |
| 24/1382 | . . Receptacle type holder | 24/1461 | One piece |
| 24/1385 | . . . Eyeglass or spectacle case | 24/1463 | Sheet metal |
| 24/1388 | . . Open-ended holster type holder | 24/1465 | Buckle band connection |
| 24/1391 | . . Article held by clip with spring [e.g., leaf, coil] member | 24/1467 | Swedged sheet metal band connection |
| 24/1394 | . . Article held by clip | 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	24/1938	. . . Pin attached
24/1484	. . . Spring closed band clamp	24/1941	. . Collar button combined
24/1486	. . . Screw locked band clamp	24/1945	. . . Clasp attached
24/1488	. . . Swedged to lock band ends	24/1948	. . . Pin attached
24/149	. . Wire	24/1952	. . . Separable fastener
24/1492	. . . Separate connections	24/1955	. . Tie, attached hook
24/1494	. . . . Wire	24/1959	. . Magnetic, adhesive, or snap type fastener connects tie to shirt
24/1496	. . Wooden bands	24/1962	. . Tie engaging loop with shirt engaging fastener
24/1498	. . Plastic band	24/1966	. . Tie knot engaging and collar attaching
24/15	. Bag fasteners	24/1969	. . Tie clip and shirt clasp attaching
24/152	. . Swedged bag tie	24/1972	. . Tie clip and fastening pin
24/153	. . Plastic band bag tie	24/1976	. . Tie pin with shirt fastener
24/155	. . Resilient slot bag tie	24/1979	. . Tie stiffener with shirt fastener
24/157	. . Twist-to-close bag tie	24/1983	. . with pivotal jaws having spring means
24/158	. . Slides to lock bag end within housing	24/1986	. . Slider
24/16	. Belt fasteners	24/199	. . Ornamental
24/1604	. . Tighteners	24/1993	. . . Key shaped
24/1608	. . Hinged	24/1997	. . Resilient clasp
24/1612	. . . Ring connected belt ends	24/20	. Paper fastener
24/1616	. . . Bent over flanged ends	24/201	. . with screw threaded or notch engaging securing means
24/162	. . . Pintle pin connected belt ends	24/202	. . Resiliently biased
24/1624	. . . V and round belts	24/203	. . . including means to open or close fastener
24/1628	. . . Overlapped belt ends	24/204	. . . . Pivotally mounted on pintle
24/1632	. . . Sheet metal knuckles, common pintle	24/205	. . . One piece
24/1636	. . . Wire knuckles, common pintle	24/206	. . . . Mounted on support means
24/164	. . . Knuckle integral with belt material	24/207	. . Adhesive
24/1644	. . . Multiple pintles interconnected V-belt type	24/208	. . Corner fastened
24/1648	. . Lacing	24/209	. . Paper-penetrating
24/1652	. . One piece	24/21	. Strap tighteners
24/1656	. . . Deflecting prong	24/2102	. . Cam lever and loop
24/166	. . Screw clamp	24/2104	. . . Step adjusted
24/1664	. . Splices	24/2106	. . . . Ski boot and garment fasteners
24/1668	. . Wire	24/2108	. . . . Split ring tightener
24/1672	. . Butt connected belt ends	24/2109	. . . . Chain and rope tighteners
24/1676	. . V, round, trapezoidal belts	24/2111	. . . . Tire chain tighteners
24/168	. . Flanged belt ends, connector hold ends	24/2113	. . . . Strap tighteners
24/1684	. . Lapped ends of endless belts	24/2115	. . . . Jewelry
24/1688	. . Hinged ends of endless belts	24/2117	. . . Strap tighteners
24/1692	. . Wire strands reinforce belts	24/2119	. . . Tie chain tighteners
24/1696	. . Hook and loop type fastener and zipper belt end connection	24/2121	. . . Cargo tie down
24/17	. Buttoners	24/2123	. . . Cover fasteners
24/18	. Cuff holder	24/2125	. . . Chain tighteners
24/181	. . Adjustable	24/2126	. . . Strap tightener machine
24/183	. . Sleeve clasp and button for cuff	24/2128	. . . toggle actuated sliding jaw
24/184	. . Sleeve clasp and clasp for cuff	24/213	. . . Jewelry
24/185	. . Sleeve clasp and hook for cuff	24/2132	. . . Split ring with tightener
24/186	. . Sleeve clasp and pin for cuff	24/2134	. . . Concrete form panels
24/188	. . Sleeve pin and button for cuff	24/2136	. . . Seat belt buckles
24/189	. . Pin fastener	24/2138	. . . Chain, cable, wire tighteners, and anchors
24/19	. Necktie fastener	24/214	. . . Envelope fasteners
24/1903	. . Bands	24/2142	. . . Ski boot and garment fasteners
24/1907	. . . End-securing pin	24/2143	. . Strap-attached folding lever
24/191	. . . Gripping	24/2145	. . . toggle latch
24/1914	. . . Depressors	24/2147	. . . Strap tightener
24/1917	. . . . Button engaging	24/2149	. . . Tire antiskid strap tightener
24/1921	. . . . Pin or spur	24/2151	. . . Seat belts
24/1924	. . Button engaging	24/2153	. . . Split ring fasteners
24/1928	. . . Adjustable	24/2155	. . . Jewelry-watch straps
24/1931	. . . Cord loop	24/2157	. . . Tie downs [covers, articles]
24/1934	. . . Pivoted or sliding jaw		

24/2158	. . . Cable, wire, rope tightener	24/2541	. . . having either noninterlocking element in, interrupted, or unequal length series
24/216	. . . Ski boot and garment fasteners	24/2543	. . . with element structural feature unrelated to interlocking or securing portion
24/2162	. . . Dress hem raisers	24/2545	. . . Dissimilar opposed elements
24/2164	. . Midline	24/2546	. . . Wire element
24/2166	. . Jewelry	24/2548	. . . Preattached to mounting cord
24/2168	. . Seat belt	24/255	. . . having interlocking portion with specific shape
24/217	. . Accordion straps	24/2552	. . . . including symmetrical formations on opposite walls for engaging mating elements
24/2172	. . Parallel poles clamp	24/2554	. . . . including complementary formations on opposite walls for engaging mating elements
24/2174	. . form panels for walls	24/2555	. . . . Mating elements having reversed orientation of formations
24/2175	. . Cargo tie down	24/2557	. . . having mounting portion with specific shape or structure
24/2177	. . Chain tighteners	24/2559	. . . . including embracing jaws
24/2179	. . Split band with tightener	24/2561	. . Slider having specific configuration, construction, adaptation, or material
24/2181	. . Tire chain tighteners	24/2563	. . . including relatively movable spaced wings [i.e., restraining walls]
24/2183	. . Ski, boot, and shoe fasteners	24/2564	. . . including converging channel and relatively movable separator island
24/2185	. . Fixed jaw with sliding or pivoted jaw	24/2566	. . . including position locking-means attached thereto
24/2187	. . Rack and pinion and circular tighteners	24/2568	. . . . Protrusion on pull tab directly engaging interlocking surfaces
24/2189	. . Circular flange container clamp	24/257	. . . . having surface engaging element shifted by reorientation of pull tab
24/2191	. . Strap stretching tools, tighteners, and sealers	24/2571	. . . . Resilient or spring biased element
24/2192	. . Buckle type	24/2573	. . . . . Selectively shifted by either of two pull tabs
24/2194	. . Integral piece	24/2575	. . . . . with relatively movable link
24/2196	. . toggle	24/2577	. . . . . Biased by distinct spring
24/2198	. . Stocking top	24/2579	. . . . . having aperture cooperating with guide post
24/22	. Trouser guards, clips, straps [e.g., above shoetops]	24/258	. . . including means preventing bunching of structure-to-be-secured or stringer
24/23	. Bedclothes holders	24/2582	. . . having specific contour or arrangement of converging channel, separator island, or wing
24/24	. T-head nongripping, fabric engaging type	24/2584	. . . . Spaced segments of each wall of channel supported by different wings
24/25	. Zipper or required component thereof	24/2586	. . . including pull tab attaching means
24/2502	. . Plural zippers	24/2588	. . . including means for attaching components of slider together
24/2504	. . . Zipper chain	24/2589	. . . with ornamental slider
24/2505	. . . having surface sealing structure	24/2591	. . with means for concealing surfaces
24/2507	. . having slider or interconnected sliders with access opening for diverse-art member	24/2593	. . including complementary, aligning means attached to ends of interlocking surfaces
24/2509	. . Plural independently movable sliders	24/2595	. . . having specific mounting connection or reinforcing structure at connection
24/2511	. . with distinct, stationary means for anchoring slider	24/2596	. . including means attaching interlocking surfaces together
24/2513	. . . and for aligning surfaces or obstructing slider movement	24/2598	. . including means for obstructing movement of slider
24/2514	. . with distinct member for sealing surfaces	24/26	. Slit closing means including guides on opposite edges of slit and slidable bridging component
24/2516	. . with distinct separable-fastener	24/262	. . with hand-actuated lever for shifting bridging component
24/2518	. . having coiled or bent continuous wire interlocking surface	24/264	. . including structure linking and allowing variations in separation between opposite-guide-contacting portions of component
24/252	. . . with stringer tape interwoven or knitted therewith	24/266	. . having bridging components attached in series along carrying element
24/2521	. . . with stringer tape having specific weave or knit pattern		
24/2523	. . . with core encircled by coils or bends		
24/2525	. . . with mounting portion having structural formations complementary to stitching		
24/2527	. . . Attached by stitching		
24/2529	. . . . String or stringer tape having distinctive property [e.g., heat sensitive]		
24/253	. . . with stringer tape having distinctive property [e.g., heat sensitive]		
24/2532	. . having interlocking surface with continuous cross section		
24/2534	. . . Opposed interlocking surface having dissimilar cross section		
24/2536	. . having interlocking surface formed from single member with varying cross section		
24/2538	. . . Opposed surface having dissimilar cross section		
24/2539	. . Interlocking surface constructed from plural elements in series		

24/268	. . having separate, independently movable, bridging components	24/342	. . . . Buckle having plural receiving slots
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]	24/3421	. . . including a button fastening element
24/2708	. . Combined with diverse fastener	24/3423	. . . and separable fastening means for attached fastener
24/2717	. . with distinct structure for sealing securement joint	24/3424	. . . . Snap fastener
24/2725	. . with feature facilitating, enhancing, or causing attachment of filament mounting surface to support therefor	24/3425	. . . having roller means
24/2733	. . having filaments formed from continuous element interwoven or knitted into distinct, mounting surface fabric	24/3427	. . Clasp
24/2742	. . having filaments of varied shape or size on same mounting surface	24/3428	. . . having pivoted members
24/275	. . with feature facilitating or causing attachment of filaments to mounting surface	24/3429	. . . . Cam type member
24/2758	. . . Thermal or adhesive	24/3431	. . . . Plural clasps
24/2767	. . having several, repeating, interlocking formations along length of filaments	24/3432	. . . . and toggle operator
24/2775	. . having opposed structure formed from distinct filaments of diverse shape to those mating therewith	24/3433	. . . . Spring biased
24/2783	. . having filaments constructed from coated, laminated, or composite material	24/3435	. . . . . Coil
24/2792	. . having mounting surface and filaments constructed from common piece of material	24/3436	. . . . . and cam
24/28	. Freight container to freight container fastener	24/3437	. . . . Coil spring biased
24/29	. Drum or can spacer fastener	24/3439	. . . Plural clasps
24/30	. Trim molding fastener	24/344	. . . . Resilient type clasp
24/301	. . having externally threaded attaching means	24/3441	. . . . . and cam
24/302	. . . and laterally extending biasing appendage	24/3443	. . . . . Spring biased jaw
24/303	. . having laterally extending biasing appendage	24/3444	. . . . . Circular work engageable
24/304	. . Resilient metal type	24/3445	. . . . . and pin attachment
24/306	. . . Strip formed	24/3447	. . . . . and disconnect means
24/307	. . . Sheet metal formed	24/3448	. . . including a button fastening element
24/308	. . . Wire formed	24/3449	. . . and hook
24/309	. . Plastic type	24/3451	. . . . having intermediate connector allowing movement
24/31	. Plural fasteners having intermediate flaccid connector	24/3452	. . . . . and adjustment means
24/312	. . Chain connector	24/3453	. . . . having gripping configuration on clasp jaw
24/314	. . Elastic connector	24/3455	. . . . . Penetrating type
24/316	. . . Strap connector	24/3456	. . . . having cam
24/318	. . Strap connector	24/3457	. . . . having separable jaws
24/32	. having magnetic fastener	24/3459	. . . and penetrating prong
24/33	. having adhesive fastener	24/346	. . . and pin
24/34	. Combined diverse multipart fasteners	24/3461	. . . . having separate pin loss prevention means
24/3401	. . Buckle	24/3463	. . . . . Pin coextensive, coplanar, and contiguous with clasp jaw
24/3403	. . . and buckles	24/3464	. . . . Pin coextensive, coplanar, and contiguous with clasp jaw
24/3404	. . . . having separate material adjustment means	24/3465	. . . . Pin forms part of clasp jaw
24/3405	. . . . having separate disconnect means	24/3467	. . Pin
24/3407	. . . . . Pivotal lever type	24/3468	. . . and pin
24/3408	. . . . having disconnect structure	24/3469	. . . . and disconnect means
24/3409	. . . . . Resilient cooperating means	24/3471	. . . . . Hook and eye type
24/3411	. . . . and pin	24/3472	. . . . and hook
24/3412	. . . . Crossed belt accommodating	24/3473	. . . . . having connector allowing movement
24/3413	. . . and clasp	24/3475	. . . . having intermediate connector allowing movement
24/3415	. . . and pin	24/3476	. . . and hook
24/3416	. . . and hook	24/3477	. . . . having intermediate connector allowing movement
24/3417	. . . . having disconnect means	24/3479	. . . . . and adjustment means
24/3419	. . . . having penetrating prong	24/348	. . . . Hook having locking means
		24/3481	. . . including a button fastening element
		24/3483	. . . and penetrating prong
		24/3484	. . Hook
		24/3485	. . . and hook
		24/3487	. . . . having biasing spring
		24/3488	. . . . Separately connected
		24/3489	. . . . having securing means
		24/3491	. . . . . Sliding
		24/3492	. . . . . Snap type
		24/3493	. . . . . Pivoted

24/3495	. . . having penetrating prong	24/3716	. . . . with pivotal connection therebetween
24/3496	. . . including a button fastening element	24/3718	. . . . with integral resilient linking structure therebetween
24/3497	. . Button fastening element including another fastener element	24/3721	. . . . . formed from wire
24/3499	. . Penetrating prong	24/3724	. . . having lacing wound thereabout or wedged therein
24/35	. Interchangeable button loop and pin	24/3726	. . with holding means fixedly mounted on lacing
24/36	. Button with fastener	24/3729	. . . and forming lacing tips
24/3602	. . Loss-preventing devices	24/3732	. . Includes lacing holding structure within directing means therefor
24/3604	. . Adjustable	24/3734	. . having diverse shaped directing means for lacing
24/3606	. . Cloth shanks and covers	24/3737	. . having lacing directing means in particular pattern
24/3609	. . Multiple attachment	24/3739	. . Includes lacing guiding roller within directing means
24/3611	. . Deflecting prong or rivet	24/3742	. . having eyelet type directing means
24/3613	. . . Anvil or plate	24/3745	. . . with permanently deformed mounting structure
24/3615	. . . Integral	24/3747	. . . . Mounting structure formed from different material than directing passage
24/3617	. . Hinged leaf	24/375	. . having hook shaped directing means
24/3619	. . . Axially rotating	24/3753	. . . and movable component or surface for closing throat
24/3621	. . . Double	24/3755	. . . Mounted by structure allowing bodily movement thereof
24/3623	. . . Sliding	24/3758	. . . formed from wire
24/3626	. . Sliding bar	24/3761	. . . with mounting structure formed from different material
24/3628	. . Integral or rigid stud	24/3763	. . . with permanently deformed mounting structure
24/363	. . . Bent sheet metal [integral]	24/3766	. . . . Expanding stud
24/3632	. . Link	24/3768	. . having loop or sleeve shaped directing means
24/3634	. . . Integral rubber button, extendable shank	24/3771	. . . Entirely formed from flaccid material
24/3636	. . . Extendably connected	24/3774	. . . Mounted by structure allowing bodily movement thereof
24/3638	. . . Pivoted leaf	24/3776	. . . formed from wire
24/364	. . . Releasably locked	24/3779	. . . with permanently deformed mounting structure
24/3643	. . . French cuff	24/3782	. . . . Loop or sleeve closed when mounted
24/3645	. . . Tufting	24/3784	. . . . Expanding stud
24/3647	. . . Integral piece	24/3787	. . having elastic segment in lacing
24/3649	. . Pin attached	24/3789	. . having means covering tip of lacing
24/3651	. . Separable	24/3792	. . . Tasseled
24/3653	. . . Screw	24/3795	. . . with plural components
24/3655	. . . Spring	24/3797	. . . with permanently deformed mounting structure
24/3657	. . . . Resilient head	24/38	. Strap cable or pipe button
24/366	. . . . Resilient socket	24/39	. Cord and rope holders
24/3662	. . . . Rotating head	24/3902	. . Chain
24/3664	. . . . with operating devices	24/3904	. . . Bead chain fasteners
24/3666	. . Separate thread bar	24/3907	. . Sheathed strand
24/3668	. . Spiral fastener	24/3909	. . Plural-strand cord or rope
24/367	. . Covers	24/3911	. . Friction disk
24/3672	. . . Metal or plastic caps	24/3913	. . Knot engaging
24/3674	. . Pads	24/3916	. . One-piece
24/3677	. . Flexible button	24/3918	. . . Wedge slot
24/3679	. . Swivel button	24/392	. . . Wire
24/3681	. . Tufting type	24/3922	. . . . Cord runs through center of coil
24/3683	. . Button with cavity for friction grip fastener	24/3924	. . . Sheet material
24/3685	. . Button with shank for friction grip fastener	24/3927	. . . Slack adjuster
24/3687	. . Heat or adhesive secured type	24/3929	. . . Rubber
24/3689	. . Thread or wire through apertured button	24/3931	. . . Wire
24/3691	. . Eye shank type button	24/3933	. . . Swagged, deformable
24/3694	. . Ornamental type	24/3936	. . Pivoted part
24/3696	. . for cuff or collar	24/3938	. . . Lever tension
24/3698	. . Fabric embracing	24/394	. . . Cam lever
24/37	. Drawstring, laced-fastener, or separate essential cooperating device therefor		
24/3703	. . Includes separate device for holding drawn portion of lacing		
24/3705	. . . Device engages tie in lacing		
24/3708	. . . . and fully covers tie		
24/3711	. . . Device engages element or formation on lacing		
24/3713	. . . having relatively movable holding components or surfaces		

24/3942	. . . . Laterally shifted rope	24/4077	. . . . Looped strap
24/3944	. . . . Cam engaging or disengaging	24/4079	. . Sliding part of wedge
24/3947	. . . . Fixed and movable jaws, movable jaw pulled	24/4081	. . . . Hook attached
24/3949	. . . . Link-connected parallel jaws	24/4084	. . . . Looped strap
24/3951	. . . . Dual cam	24/4086	. . Looped strap
24/3953	. . . Pivotal means with plate aperture	24/4088	. . One-piece
24/3956	. . . Jaws locked together by cam, wedge, lever, or screw	24/4091	. . . . Hook attached
24/3958	. . Screw clamp	24/4093	. . . . Looped strap
24/396	. . . . Screw clamp with snubber	24/4095	. . Fabric covered
24/3962	. . . . Tangential bolt	24/4098	. . Ornamental and/or object supported
24/3964	. . . . J-shaped bolt	24/41	. Pierced earring fastener
24/3967	. . . . Bolt perpendicular to cable axis	24/42	. Independent, headed, aperture pass-through fastener
24/3969	. . Sliding part or wedge	24/43	. Fastener with revolving component wrapping structure-to-be-secured about fastener
24/3971	. . . . Rope looped about movable member	24/44	. Clasp, clip, support-clamp, or required component thereof
24/3973	. . . . Rope clamped between cone and socket	24/44009	. . Gripping member adapted for tool actuation or release
24/3976	. . . . Sliding ball	24/44017	. . with specific mounting means for attaching to rigid or semirigid supporting structure or structure-to-be-secured
24/3978	. . . . Screw actuated	24/44026	. . . . for cooperating with aperture in supporting structure or structure-to-be-secured
24/398	. . Bendable, ductible	24/44034	. . Dissociable gripping members
24/3982	. . Safety release	24/44043	. . . . Channel and inserted bar
24/3984	. . Alignable aperture and spring pressed moving element	24/44051	. . . . having operator or locking means
24/3987	. . Loop, adjustable	24/4406	. . . . Resilient channel or bar
24/3989	. . Snubbers, cleats by dielectric loss	24/44068	. . having gripping member actuated by fluid force
24/3991	. . Loop engaging	24/44077	. . having inserted and receiving interlocking members connected by bendable, nonbiasing strap
24/3993	. . Ball or roller	24/44085	. . . . Discrete flaccid strap
24/3996	. . Sliding wedge	24/44094	. . . . with distinct means for preventing separation of members
24/3998	. . Helical preform	24/44103	. . . . . Slidably mounted
24/40	. Buckles	24/44111	. . . . with separate flaccid flap or pocket for protecting structure-to-be-secured
24/4002	. . Harness	24/4412	. . . . with separate, cavity-blocking gate on receiving member
24/4005	. . . . Combined buckles and snap hooks	24/44128	. . . . Resilient inserted or receiving member
24/4007	. . . . Lock	24/44137	. . . . . Inserted or receiving member substantially covered or coated for protection or to promote gripping
24/4009	. . . . . Key	24/44145	. . . . . Resilient inserted member
24/4012	. . . . Clamping	24/44154	. . . . . having engaging face formed from nonmetallic material
24/4014	. . . . . One-piece	24/44162	. . . . . having head and neck type engaging face
24/4016	. . . . . Pivoted part or lever	24/44171	. . . . . having internal supporting or reinforcing element
24/4019	. . . . . Sliding part or wedge	24/44179	. . . . . . Circular head or neck
24/4021	. . . . Cross bails	24/44188	. . . . . having wedge shaped, inserted and receiving members
24/4023	. . . . . Pivoted stud plate	24/44197	. . . . . with specific means for attaching to flaccid strap or supporting strap
24/4026	. . . . . Rigid stud	24/44205	. . . . . . On the inserted member
24/4028	. . . . Penetrating tongue	24/44214	. . . . . having necked button sliding along length of closed, variable width loop
24/403	. . . . . Guarded	24/44222	. . having flaccid gripping member
24/4033	. . . . . One-piece	24/44231	. . . . formed from elastic material
24/4035	. . . . . Multiple	24/44239	. . Encircling gripping member including semirigid band and operator for tightening
24/4037	. . . . . Pivoted		
24/404	. . . . . Lever actuated		
24/4042	. . . . . Stud		
24/4044	. . . . . Sliding part or wedge		
24/4047	. . . . Strap loops and attaching devices		
24/4049	. . . . Loop shields		
24/4051	. . Garment shielded		
24/4053	. . Combined pressure bar and guard		
24/4056	. . . . Hook attached		
24/4058	. . Penetrating prong		
24/406	. . . . One-piece		
24/4063	. . . . . Hook attached		
24/4065	. . . . Pivoted		
24/4067	. . . . . Hook attached		
24/407	. . . . Slide		
24/4072	. . Pivoted lever		
24/4074	. . . . Hook attached		

24/44248	. .	Encircling gripping member including semirigid band and means for adjusting girth	24/44607	. . .	Track or way oblique to path of gripping member
24/44256	. .	with specifically shaped, nongripping, rigid structure for connecting independently operable clasps, clips, or support-clamps	24/44615	. . .	with position locking-means for gripping members
24/44265	. .	Gripping member face integral with or rigidly affixed to screw-driving portion	24/44624	. . . .	Integral locking-means
24/44274	. .	having either discrete flaccid or thin, nonbiasing, integral, connecting hinge	24/44632	. . .	with specific mounting means for attaching to flaccid supporting structure or structure-to-be-secured
24/44282	. .	having equally spaced or continual gripping faces revolving about central axis	24/44641	. .	having gripping member formed from, biased by, or mounted on resilient member
24/44291	. .	including pivoted gripping member	24/4465	. . .	Integrally combined, independently operable, diverse clasps, clips, or support-clamps
24/44299	. . .	Pivoted member also slides	24/44658	. . .	with specific means for mounting to flaccid supporting structure or structure-to-be-secured
24/44308	. . . .	Tapered face	24/44667	. . . .	Mounting means made entirely from integral wire portion of resilient gripping member
24/44316	. . .	Pivoting gripping member either supports or coacts with sliding engaging face	24/44675	. . . . .	Wire coiled about flaccid supporting structure
24/44325	. . .	having three or more pivotally connected gripping members	24/44684	. . .	with operator for moving biased engaging face
24/44333	. . .	having toggle operator for moving	24/44692	. . . .	Camming or wedging element
24/44342	. . .	having rigid linking arm pivotally connected to each gripping member	24/44701	. . . . .	Encircling sleeve type element
24/4435	. . . .	with extended lever portion	24/44709	. . . . .	Pivoted or rotated element
24/44359	. . . . .	having lever end modified for attachment to support	24/44718	. . . . .	Element pivots or rotates in plane parallel to plane bisecting opposed engaging faces
24/44368	. . .	Pivoted gripping member applies camming force	24/44726	. . . . .	Elongated element with pivot between cam and handle portions
24/44376	. . .	Spring or resiliently biased about pivot	24/44735	. . . . .	for moving engaging face of U-shaped gripping member
24/44385	. . . .	Distinct spring	24/44744	. . .	with position locking-means for engaging faces
24/44393	. . . . .	Attached solely by spring	24/44752	. . . .	Integral locking-means
24/44402	. . . . .	with operator for moving pivoted member	24/44761	. . . .	Pivoted lock member
24/4441	. . . . .	Camming or wedging element	24/44769	. . .	Opposed engaging faces on gripping member formed from single piece of resilient material
24/44419	. . . . .	Pivoted or rotated element	24/44778	. . . .	Piece totally forms clasp, clip, or support-clamp and has shaped, wirelike, or bandlike configuration with uniform cross section throughout its length
24/44427	. . . . .	with position locking-means for gripping members	24/44786	. . . . .	Opposed faces located in and bias towards common plane in nonuse position
24/44436	. . . . .	including pivoted arm	24/44795	. . . . .	Resilient gripping member having tightly twisted portion
24/44444	. . . . .	having specific surface material or irregularity on or along engaging face	24/44803	. . . . .	Resilient gripping member having coiled portion
24/44453	. . . . .	having specific handle structure	24/44812	. . . . .	Convolutions of coil form faces
24/44462	. . . . .	Coil spring	24/44821	. . . . .	Relatively movable segments of resilient gripping member contact and cross in nonuse position
24/4447	. . . . .	having coil portion coaxial or parallel with pivotal axis	24/44829	. . . . .	Segments form opposed engaging faces
24/44479	. . . . .	Flat or leaf spring	24/44838	. . . . .	having specific handle structure
24/44487	. . .	Closed by gravity or weight of structure-to-be-secured	24/44846	. . . . .	having specific handle structure
24/44496	. . .	with operator means for moving pivoted member	24/44855	. . . . .	Terminal end of resilient member having engagement or disengagement enhancing structural modifications
24/44504	. . . .	Threaded cylindrical rod and mating cavity	24/44863	. . . . .	having specific surface irregularity on or along engaging face
24/44513	. . . .	Camming or wedging element	24/44872	. . . .	having specific handle structure
24/44521	. . . . .	Pivoted or rotated element	24/4488	. . . . .	Movably attached to gripping member
24/4453	. . .	with position locking-means for gripping members	24/44889	. . . .	Interlocking faces
24/44538	. . . .	Integral locking-means	24/44897	. . . .	with reinforcing member
24/44547	. . .	having inserted and receiving interlocking engaging faces	24/44906	. . . .	having specific surface irregularity on or along engaging face
24/44556	. . . .	Resilient gripping member	24/44915	. . . . .	Corrugated or toothed face
24/44564	. . .	having specific surface material or irregularity on or along engaging face			
24/44573	. .	including track or way guided and retained gripping member			
24/44581	. . .	Biased by distinct spring			
24/4459	. . .	with operator for moving guided member			
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	24/45204	. . . . for belt, strap, etc. [e.g., with pivoted gate locking member]
24/44932	. . . having specific surface material or irregularity on or along engaging face	24/45209	. . . . for apparel
24/4494	. . . having specific handle structure	24/45215	. . . Slot and tab or tongue
24/44949	. . . including resilient biasing wire	24/4522	. . . Sliding or rotating element
24/44957	. . . . Coiled wire	24/45225	. . including member having distinct formations and mating member selectively interlocking therewith
24/44966	. . having gripping member shifted by operator	24/4523	. . . Hook
24/44974	. . . Threaded cylindrical rod and mating cavity	24/45236	. . . . Multiple catch [e.g., with pivoted gate]
24/44983	. . formed from single rigid piece of material	24/45241	. . . Slot and tab or tongue
24/44991	. . . having specific surface irregularity on or along engaging face	24/45246	. . . . having teeth or serrations [e.g., sliding with respect to each other]
24/45	. Separable-fastener or required component thereof [e.g., projection and cavity to complete interlock]	24/45251	. . . Resilient element [e.g., with spring]
24/45005	. . with third detached member completing interlock [e.g., hook type]	24/45257	. . . . Snap with cavity
24/4501	. . . Quick connect or release [e.g., spring and detent]	24/45262	. . . Pin, post and receiver
24/45016	. . . for jewelry	24/45267	. . . Notched clasp [e.g., with receiving slot]
24/45021	. . . including eyelet [e.g., shoes]	24/45461	. . . Interlocking portion actuated or released responsive to preselected condition [e.g., heat, pressure]
24/45026	. . . for key holder	24/45466	. . . having electric or fluid powered, actuation or release, of interlock
24/45031	. . . for tire chain, strap, etc. [e.g., rotatable or sliding spring gate]	24/45471	. . . Projection having movable connection between components thereof or variable configuration
24/45037	. . . for apparel and related accessories	24/45476	. . . . with additional, similar projection for engaging different cavity
24/45042	. . . . Button, button related	24/45482	. . . . and operator therefor
24/45047	. . . . Snap [e.g., key hole type]	24/45487	. . . . including camming or wedging element on projection member
24/45052	. . . . Post and receiver [e.g., pin and slot]	24/45492	. . . . . Pivotaly attached element
24/45058	. . . . Hook [e.g., within cavity]	24/45497	. . . . including pivotal connection between projection components
24/45063	. . . . Belt, strap, etc. [e.g., buckle or snap fastener]	24/45503	. . . . . Component slides relative to connection
24/45068	. . . . Glove	24/45508	. . . . . and spring or resilient extension biasing about pivot
24/45073	. . . . Purse, wallet, etc.	24/45513	. . . . including slidably guided connection between nonself-biasing projection components
24/45079	. . . Belt, strap, harness, etc.	24/45518	. . . . . and distinct spring biasing component
24/45084	. . . . for safety belt buckle, strap, harness, etc.	24/45524	. . . . including resiliently biased projection component or surface segment
24/45089	. . . Sliding or rotating element	24/45529	. . . . . Requiring manual force applied against bias to interlock or disengage
24/45094	. . . . Element having key slot	24/45534	. . . . . having connected leading edge and separated trailing arms
24/45099	. . . Resilient element [e.g., snap type]	24/45539	. . . . . Cooperating with cavity having side walls and axially biased component capping end
24/45105	. . . . for upholstery, panel, trim strip, etc. [e.g., spring biased]	24/45545	. . . . . forming total external surface of projection
24/4511	. . . . Link with pivoted gate	24/4555	. . . . . and encircling hollow central area
24/45115	. . . Hook	24/45555	. . . . . having separate mounting means inserted into area
24/4512	. . . . Snap with spring bias [e.g., gate]	24/4556	. . . . . Plastic deformation of means or surface required for mounting
24/45126	. . . . for connecting chains [e.g., opposed pivoted hook]	24/45565	. . . . . having separate mounting means encompassing cross section of projection
24/45131	. . . . for heavy load bearing device [e.g., chain, rope, cable, etc.]	24/45571	. . . . . having dome-shaped head and expansion slit along side
24/45136	. . . . . Haim, harness, whiffletree, rein, etc.	24/45576	. . . . . and connected surface at tip of head
24/45141	. . . for chain, rope, cable, etc.	24/45581	. . . . . having inserted end formed by oppositely biased surface segments
24/45147	. . . . Coupler with sliding socket to complete interlock	24/45586	. . . . . Constructed from wire
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		

24/45592	having both resiliently biased and rigid components forming external surface of projection	24/45749	Plural, oppositely shifting, similar interlocking components
24/45597	Projection member including noninserted spring for engaging and pushing against receiving member	24/45754	having closed aperture therethrough alignable with parallel access opening
24/45602	Receiving member includes either movable connection between interlocking components or variable configuration cavity	24/45759	having flaccid component defining access opening of cavity
24/45607	with additional cavity for engaging different projection	24/45764	Component formed solely by flaccid cord
24/45613	having common means actuating or releasing interlocking components or surfaces	24/4577	with nonflaccid component
24/45618	and interlocking with independently associated or dissociated projection members	24/45775	having resiliently biased interlocking component or segment
24/45623	and operator therefor	24/4578	Cavity or projection rotates about axis of cavity to dissociate
24/45628	for plural, oppositely shifting, similar interlocking components or segments	24/45785	Requiring manual force applied against bias to interlock or disengage
24/45634	Operator includes camming or wedging element	24/45791	and partially blocking separate, nonresilient access opening of cavity
24/45639	including pivotally connected element on receiving member	24/45796	and closed elongated access opening for guiding transverse projection travel after insertion
24/45644	for shifting pivotally connected interlocking component	24/45801	Nonresilient walls define opening
24/45649	Element and component pivot about same axis	24/45806	formed from wire
24/45654	for shifting slidably connected and guided, nonself-biasing interlocking component	24/45812	and access opening with gapped perimeter for allowing movement of noninserted projection support therepast
24/4566	including slidably connected and guided element on receiving member	24/45817	Cavity constructed solely from wire
24/45665	for shifting pivotally connected interlocking component	24/45822	Partially blocking separate, nonresilient, access opening of cavity
24/4567	for shifting slidably connected and guided, nonself-biasing, interlocking component	24/45827	and bodily shifted into or out of interlock location by manual force thereon
24/45675	having pivotally connected interlocking component	24/45832	formed from wire
24/45681	Blocking removal of formation on projection from complementary formation on side wall of cavity	24/45838	having curved or bent engaging section conforming to contour of projection
24/45686	and position locking-means therefor	24/45843	Similar, distinct sections
24/45691	and relatively movable handle therefor	24/45848	having distinct sections engaging projection at spaced points
24/45696	Requiring manual force thereon to interlock or disengage	24/45853	including separate, nonprojection-engaging spring for biasing
24/45702	Plural, oppositely shifting, similar interlocking components	24/45859	Biased component or segment entirely formed from wire
24/45707	having aperture therein alignable with parallel access opening	24/45864	having portion of cavity deformed during mounting
24/45712	having interlocking portion thereof housed continuously within cavity	24/45869	and cooperating with separate mounting component
24/45717	having cavity with side walls and axially biased component capping end	24/45874	having axially extending expansion slit along side of cavity
24/45723	having slidably connected, nonself-biasing interlocking component	24/4588	Means for mounting projection or cavity portion
24/45728	Blocking removal of formation on projection from complementary formation on side wall of cavity	24/45885	Allows bodily movement facilitating interlock
24/45733	and position locking-means therefor	24/4589	About pivotal connection
24/45738	and relatively movable handle therefor	24/45895	Includes resilient component separate from portion
24/45743	Requiring manual force thereon to interlock or disengage	24/45901	Allows relocation of portion
		24/45906	having component of means permanently deformed during mounting operation
		24/45911	and formed from or fixedly attached to projection or cavity portion
		24/45916	Cooperates with detached component of means
		24/45921	having shape facilitating impaling of mounting surface

24/45927	. . . . . and inserted into or through cavity or projection	24/4639	. . . . . having position locking means therefor
24/45932	. . . . . and encircling cavity or projection	24/4641	. . . . . Spring or resiliently biased
24/45937	. . . . . Consisting of thermally fusible substance	24/4643	. . . . . with slidable connection between nonself-biasing components
24/45942	. . . . . having threaded formation	24/4645	. . . . . Component slides parallel to axis of held penetrating portion
24/45948	. . . . . having specific structure for cooperating with stitching	24/4646	. . . . . Means engages formation formed on penetrating portion
24/45953	. . . . . having shape facilitating impaling of mounting surface	24/4648	. . . . . having nonresilient and resilient components
24/45958	. . . . . Plural distinct cavities or projections	24/465	. . . . . Means formed from single resilient wire
24/45963	. . . . . Hook type	24/4652	. . . . . Means formed from resilient sheet metal
24/45969	. . . . . Hook-shaped projection member passing through cavity	24/4654	. . . . . with independent, spaced, intermediate connections, or formations [e.g., coils], about which portion or means move
24/45974	. . . . . formed from single piece of sheet metal	24/4655	. . . . . Includes slidable connection
24/45979	. . . . . formed solely from wire	24/4657	. . . . . with pivotal connection between penetrating portion and means
24/45984	. . . . . Cavity having specific shape	24/4659	. . . . . Connection also permits sliding movement
24/4599	. . . . . including closed elongated access opening for guiding transverse projection travel after insertion	24/4661	. . . . . Resiliently biased about connection
24/45995	. . . . . having access opening with gapped perimeter for allowing movement of noninserted projection support therepast	24/4663	. . . . . with slidable connection intermediate penetrating portion and means
24/46	. . . . . Pin or separate essential cooperating device therefor	24/4664	. . . . . having resilient bridging structure between portion and means
24/4602	. . . . . with separately operable, manually releasable, nonpenetrating means for mounting [e.g., drapery hook]	24/4666	. . . . . Means includes structure for cooperating with formation [e.g., cavity] formed on portion
24/4604	. . . . . having distinct guiding, holding, or protecting means for penetrated portion	24/4668	. . . . . and penetrating portion formed from wire
24/4605	. . . . . Means detachable from or flaccidly connected to pin [e.g., hatpin type]	24/467	. . . . . Bridging structure includes elongated nonwire element
24/4607	. . . . . for pin having plural penetrating portions	24/4671	. . . . . Wire also forms coiled bridging structure about which portion moves
24/4609	. . . . . including relatively movable guiding, holding, or protecting components or surfaces	24/4673	. . . . . including distinct device for cooperating with coil
24/4611	. . . . . having operator for moving holding component or surface	24/4675	. . . . . having means also formed from same wire
24/4613	. . . . . Moves pivoting holding component	24/4677	. . . . . with cavity for guiding structure-to-be-secured towards penetrating portion [e.g., stocking support]
24/4614	. . . . . Moves slidably guided, nonself-biasing, holding component	24/4679	. . . . . having penetrating portion retractable or of changeable length
24/4616	. . . . . having pierceable [e.g., cork] or naturally resilient [e.g., rubber] surfaces	24/468	. . . . . having interconnected distinct penetrating portions
24/4618	. . . . . with pivotal connection therebetween	24/4682	. . . . . Connection allows movement therebetween
24/462	. . . . . with slidable connection between nonself-biasing components	24/4684	. . . . . Slidable connection
24/4621	. . . . . having resiliently biased component or surface	24/4686	. . . . . Resilient connection
24/4623	. . . . . Coiled about longitudinal axis of held portion	24/4688	. . . . . formed from common wire
24/4625	. . . . . and aperture therein alignable with another spaced aperture of means	24/4689	. . . . . and pointing in same direction
24/4627	. . . . . and nonresilient structure for guiding portion thereto	24/4691	. . . . . Penetrating portion includes relatively movable structure for resisting extraction
24/4629	. . . . . including structure for cooperating with formation [e.g., cavity] formed on penetrating portion	24/4693	. . . . . having specific wire penetrating portion
24/463	. . . . . for pin having plural penetrating portions	24/4695	. . . . . Wire curved or bent
24/4632	. . . . . Each independently movable towards and into cooperation with means	24/4696	. . . . . having distinct head structure
24/4634	. . . . . including relatively movable guiding, holding, or protecting components or surfaces	24/4698	. . . . . Movably connected to penetrating portion
24/4636	. . . . . with connection allowing component to revolve about axis of held penetrating portion	24/47	. . . . . Strap-end-attaching devices
24/4638	. . . . . with pivotal connection therebetween	24/4709	. . . . . Bendable sheet material
		24/4718	. . . . . Watch pintle connected
		24/4727	. . . . . Webbing to tube [lawn chair]
		24/4736	. . . . . Buckle connected
		24/4745	. . . . . End clasp
		24/4755	. . . . . Hook
		24/4764	. . . . . Ring-loop
		24/4773	. . . . . Cargo tiedown
		24/4782	. . . . . Watch strap

- 24/4791 . . Enlarged end epoxy
- 24/48 . Pivoted edge stays
- 24/49 . Fastener destructively secured by reshaping distortion force [e.g., ductile fastener]
- 24/492 . . Distorted structure having shape facilitating impaling
- 24/493 . . . and distinct fastener structure cooperating with impaled structure
- 24/495 Detached cooperating structure
- 24/497 . . . including plural impaling elements
- 24/498 Elements form single aperture [e.g., split shank type]
- 24/50 . Readily interlocking, two-part fastener requiring either destructive or tool disengagement
- 24/505 . . including additional fastener structure linking parts
- 24/51 . Hanger on portable article support for manual attachment thereof to overhead support [e.g., drapery hook]

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

- 29/10 . Battery-grid making
- 29/11 . Bias [i.e., helically] cutting of tubular stock
- 29/1106 . . including orbital cutter
- 29/1113 . . . within stock support
- 29/1119 . . . with orbiting strip accumulator
- 29/1125 . . including means to inflate stock
- 29/1131 . . with means to feed stock along support or mandrel
- 29/1138 . . . Single means produces compound motion
- 29/1144 Endless belt drive means
- 29/115 . . . Axially
- 29/1156 . . . Rotatably
- 29/1163 . . with means to rotate and store stock supply
- 29/1169 . . . Axis of rotation parallel to support or mandrel
- 29/1175 . . with means for arcuate shift of mandrel
- 29/1181 . . including means to handle produced strip or web
- 29/1188 . . . with common adjustment for cutter
- 29/1194 . . Method
- 29/12 . Buckle making
- 29/13 . Button-fastener making
- 29/14 . Shredding metal or metal wool article making
- 29/142 . . Metal wool making
- 29/143 . . . Shaving or longitudinal cutting
- 29/145 Soap-pad making
- 29/147 . . Metal wool bundling
- 29/148 . . . Soap-pad making
- 29/15 . Cord heddle making
- 29/16 . Cotter-pin making
- 29/17 . Crankshaft making apparatus
- 29/18 . Expanded metal making
- 29/185 . . by use of reciprocating perforator
- 29/19 . Eyebolt or hook making
- 29/20 . Fence barb making
- 29/203 . . by use of reciprocating cutter or die
- 29/207 . . by use of rotary cutter or die
- 29/21 . Finger-ring forming or sizing
- 29/22 . Fishhook making
- 29/23 . Gem and jewel setting
- 29/24 . Hinge making or assembling
- 29/25 . Lacing-stud making
- 29/26 . Paper-fastener making
- 29/27 . Plow or cultivator iron making
- 29/28 . Puddlers balls making
- 29/29 . Railway-chair making
- 29/30 . Foil or other thin sheet-metal making or treating
- 29/301 . . Method
- 29/302 . . . Clad or other composite foil or thin metal making
- 29/303 . . . with assembling or disassembling of a pack
- 29/304 Using transitory solid cover material
- 29/305 including bond prevention treatment
- 29/306 Disassembling of a pack
- 29/307 . . . by shaving or longitudinal cutting
- 29/308 . . . Using transitory material
- 29/309 . . Means for opening or separating a pack
- 29/31 . Spectacle-frame making
- 29/32 . Spiral cutting of flat stock
- 29/33 . Stereotype-plate finishing
- 29/34 . Means for forming clench-tongue [eg, for tieband]
- 29/35 . Tire upsetting, with cutting, punching, etc.
- 29/36 . toothed-cylinder making apparatus [e.g., texture working cylinder]
- 29/37 . Impeller making apparatus
- 29/38 . Type finishing and grooving
- 29/39 . Venetian blind assembling
- 29/40 . Umbrella-frame making
- 29/42 . Piezoelectric device making
- 29/43 . Electric condenser making
- 29/435 . . Solid dielectric type
- 29/44 . Filing
- 29/442 . . of key article
- 29/444 . . Continuous band type
- 29/446 . . Reciprocating type
- 29/448 . . File-blank stripper
- 29/45 . Scale remover or preventor
- 29/4506 . . for hollow workpiece
- 29/4511 . . . Interior surface
- 29/4517 . . Rolling deformation or deflection
- 29/4522 . . . for wire or rod
- 29/4528 . . with rotary head
- 29/4533 . . Fluid impingement
- 29/4539 . . . with heater
- 29/4544 . . . Liquid jet
- 29/455 . . . Airblast
- 29/4556 . . Chainer
- 29/4561 . . Scraper or scalper
- 29/4567 . . Brush type
- 29/4572 . . Mechanically powered operator
- 29/4578 . . . Tack or needle type
- 29/4583 . . . Hammer
- 29/4589 . . . Blade or chisel
- 29/4594 . . Hand tool
- 29/46 . Burning in, wearing in, or oil burnishing
- 29/47 . Burnishing
- 29/471 . . of water laid fibrous article [e.g., paper]
- 29/473 . . . Heated burnishing member
- 29/474 Burnishing tool reciprocates across work surface
- 29/476 . . Continuous feed
- 29/477 . . of gear article
- 29/479 . . by shot peening or blasting

29/48	. Upholstered article making	29/49076	. . . . . From comminuted material
29/481	. . Method	29/49078	. . . . . Laminated
29/482	. . Tufting	29/4908	. . . . . Acoustic transducer
29/483	. . . with means to clench fastener	29/49082	. . . Resistor making
29/484	. . . with means to insert guide pin or fastener	29/49083	. . . . . Heater type
29/486	. . Cover stretching	29/49085	. . . . . Thermally variable
29/487	. . Edge-roll forming	29/49087	. . . . . with envelope or housing
29/488	. . form or holder	29/49089	. . . . . Filling with powdered insulation
29/489	. . . with follower	29/49091	. . . . . with direct compression of powdered insulation
29/49	. Method of mechanical manufacture	29/49092	. . . . . Powdering the insulation
29/49002	. . Electrical device making	29/49094	. . . . . by oxidation
29/49004	. . . including measuring or testing of device or component part	29/49096	. . . . . with winding
29/49005	. . . Acoustic transducer	29/49098	. . . . . Applying terminal
29/49007	. . . Indicating transducer	29/49099	. . . . . Coating resistive material on a base
29/49009	. . . Dynamoelectric machine	29/49101	. . . . . Applying terminal
29/49011	. . . . Commutator or slip ring assembly	29/49103	. . . . . Strain gauge making
29/49012	. . . . Rotor	29/49105	. . . Switch making
29/49014	. . . Superconductor	29/49107	. . . Fuse making
29/49016	. . . Antenna or wave energy "plumbing" making	29/49108	. . . Electric battery cell making
29/49018	. . . . with other electrical component	29/4911	. . . . including sealing
29/4902	. . . Electromagnet, transformer or inductor	29/49112	. . . . including laminating of indefinite length material
29/49021	. . . . Magnetic recording reproducing transducer [e.g., tape head, core, etc.]	29/49114	. . . . including adhesively bonding
29/49023	. . . . . including disassembly step	29/49115	. . . . including coating or impregnating
29/49025	. . . . . Making disc drive	29/49117	. . . Conductor or circuit manufacturing
29/49027	. . . . . Mounting preformed head/core onto other structure	29/49119	. . . . Brush
29/49028	. . . . . Mounting multitrack head	29/49121	. . . . Beam lead frame or beam lead device
29/4903	. . . . . with bonding	29/49123	. . . . Co-axial cable
29/49032	. . . . . Fabricating head structure or component thereof	29/49124	. . . . On flat or curved insulated base, e.g., printed circuit, etc.
29/49034	. . . . . Treating to affect magnetic properties	29/49126	. . . . . Assembling bases
29/49036	. . . . . including measuring or testing	29/49128	. . . . . Assembling formed circuit to base
29/49037	. . . . . Using reference point/surface to facilitate measuring	29/4913	. . . . . Assembling to base an electrical component, e.g., capacitor, etc.
29/49039	. . . . . with dual gap materials	29/49131	. . . . . by utilizing optical sighting device
29/49041	. . . . . with significant slider/housing shaping or treating	29/49133	. . . . . with component orienting
29/49043	. . . . . Depositing magnetic layer or coating	29/49135	. . . . . and shaping, e.g., cutting or bending, etc.
29/49044	. . . . . Plural magnetic deposition layers	29/49137	. . . . . Different components
29/49046	. . . . . with etching or machining of magnetic material	29/49139	. . . . . by inserting component lead or terminal into base aperture
29/49048	. . . . . Machining magnetic material [e.g., grinding, etching, polishing]	29/4914	. . . . . with deforming of lead or terminal
29/4905	. . . . . Employing workholding means	29/49142	. . . . . including metal fusion
29/49052	. . . . . by etching	29/49144	. . . . . by metal fusion
29/49053	. . . . . Multitrack heads having integral holding means	29/49146	. . . . . with encapsulating, e.g., potting, etc.
29/49055	. . . . . with bond/laminating preformed parts, at least two magnetic	29/49147	. . . . . Assembling terminal to base
29/49057	. . . . . Using glass bonding material	29/49149	. . . . . by metal fusion bonding
29/49059	. . . . . with work positioning means	29/49151	. . . . . by deforming or shaping
29/4906	. . . . . Providing winding	29/49153	. . . . . with shaping or forcing terminal into base aperture
29/49062	. . . . . Multilayered winding	29/49155	. . . . . Manufacturing circuit on or in base
29/49064	. . . . . by coating	29/49156	. . . . . with selective destruction of conductive paths
29/49066	. . . . . Preformed winding	29/49158	. . . . . with molding of insulated base
29/49067	. . . . . Specified diverse magnetic materials	29/4916	. . . . . Simultaneous circuit manufacturing
29/49069	. . . . Data storage inductor or core	29/49162	. . . . . by using wire as conductive path
29/49071	. . . . by winding or coiling	29/49163	. . . . . with sintering of base
29/49073	. . . . by assembling coil and core	29/49165	. . . . . by forming conductive walled aperture in base
29/49075	. . . . including permanent magnet or core	29/49167	. . . . . with deforming of conductive path

29/49169	Assembling electrical component directly to terminal or elongated conductor	29/49266	Gudgeon pin, wrist pin, piston pin, or boss therefor
29/49171	with encapsulating	29/49268	with other attaching provision for connecting rod
29/49172	by molding of insulating material	29/4927	Cylinder, cylinder head or engine valve sleeve making
29/49174	Assembling terminal to elongated conductor	29/49272	with liner, coating, or sleeve
29/49176	with molding of electrically insulating material	29/49274	Piston ring or piston packing making
29/49178	by shrinking of cover	29/49275	including forging or hammering
29/49179	by metal fusion bonding	29/49277	including casting or molding
29/49181	by deforming	29/49279	including rolling or die forming, e.g., drawing, punching
29/49183	of ferrule about conductor and terminal	29/49281	including coating or plating
29/49185	of terminal	29/49282	including grinding or honing
29/49187	with forming eyelet from elongated conductor	29/49284	including machining or angular cutting
29/49188	with penetrating portion	29/49286	Crankshaft making
29/4919	Through insulation	29/49288	Connecting rod making
29/49192	with insulation removal	29/4929	including metallurgical bonding
29/49194	Assembling elongated conductors, e.g., splicing, etc.	29/49291	including metal forging or die shaping
29/49195	with end-to-end orienting	29/49293	Camshaft making
29/49197	including fluid evacuating or pressurizing	29/49295	Push rod or rocker arm making
29/49199	including deforming of joining bridge	29/49297	Seal or packing making
29/49201	with overlapping orienting	29/49298	Poppet or I.C. engine valve or valve seat making
29/49202	including oppositely facing end orienting	29/493	Valve guide making
29/49204	Contact or terminal manufacturing	29/49302	Repairing, converting, servicing or salvaging
29/49206	by powder metallurgy	29/49304	Valve tappet making
29/49208	by assembling plural parts	29/49306	Valve seat making
29/4921	with bonding	29/49307	Composite or hollow valve stem or head making
29/49211	of fused material	29/49309	including forging
29/49213	Metal	29/49311	including extruding
29/49215	by impregnating a porous mass	29/49313	including casting
29/49217	by elastic joining	29/49314	with assembly or composite article making
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		
29/49263	by coating or cladding		
29/49265	Ring groove forming or finishing		

29/49359 . . . Cooling apparatus making, e.g., air conditioner, refrigerator	29/49458 . . . Disc splitting to form pulley rim groove
29/49361 . . . Tube inside tube	29/4946 . . . Groove forming in sheet metal pulley rim
29/49362 . . . Tube wound about tube	29/49462 . . . Gear making
29/49364 . . . Tube joined to flat sheet longitudinally, i.e., tube sheet	29/49464 . . . Assembling of gear into force transmitting device
29/49366 . . . Sheet joined to sheet	29/49465 . . . Gear mounting
29/49368 with inserted tubes	29/49467 . . . Gear shaping
29/49369 Utilizing bond inhibiting material	29/49469 Worm gear
29/49371 with subsequent fluid expansion	29/49471 Roll forming
29/49373 . . . Tube joint and tube plate structure	29/49472 Punching or stamping
29/49375 including conduit expansion or inflation	29/49474 Die-press shaping
29/49377 . . . Tube with heat transfer means	29/49476 Gear tooth cutting
29/49378 Finned tube	29/49478 Gear blank making
29/4938 Common fin traverses plurality of tubes	29/4948 with specific gear material
29/49382 Helically finned	29/49481 . . . Wheel making
29/49384 Internally finned	29/49483 . . . Railway or trolley wheel making
29/49385 Made from unitary workpiece, i.e., no assembly	29/49485 Multiple part or composite
29/49387 . . . Boiler making	29/49487 with axle or hub
29/49389 . . . Header or manifold making	29/49488 . . . Steering wheel
29/49391 . . . Tube making or reforming	29/4949 . . . Material winding, e.g., reel, spool
29/49393 . . . with metallurgical bonding	29/49492 . . . Land wheel
29/49394 . . Accumulator making	29/49494 Assembling tire to wheel body
29/49396 . . Condenser, evaporator or vaporizer making	29/49496 Disc type wheel
29/49398 . . Muffler, manifold or exhaust pipe making	29/49497 Assembling wheel disc to rim and hub
29/494 . . Fluidic or fluid actuated device making	29/49499 Assembling wheel disc to rim
29/49401 . . Fluid pattern dispersing device making, e.g., ink jet	29/49501 with disc shaping
29/49403 . . Tapping device making	29/49503 Integral rim and disc making
29/49405 . . Valve or choke making	29/49504 Disc shaping
29/49407 . . . Repairing, converting, servicing or salvaging	29/49506 Tensioned spoke type wheel making
29/49409 . . . Valve seat forming	29/49508 Tensioning all spokes simultaneously
29/4941 . . . Valve stem or tire valve making	29/4951 Tensioning spokes in series
29/49412 . . . with assembly, disassembly or composite article making	29/49512 Tensioning spokes individually
29/49414 Joining plural semi-circular components	29/49513 Compression, e.g., nontension, spoke type wheel making
29/49416 with material shaping or cutting	29/49515 Joining spokes to rim and hub
29/49417 including molding or casting	29/49517 Joining spokes to rim
29/49419 including machining or drilling	29/49519 Joining spokes to hub
29/49421 including metallurgical bonding	29/4952 Making plural spokes from a single blank
29/49423 including metal deforming	29/49522 Individual spoke making
29/49425 including metallurgical bonding	29/49524 Rim making
29/49426 . . . including metal shaping and diverse operation	29/49526 with assembling
29/49428 . . Gas and water specific plumbing component making	29/49528 Demountable rim making
29/4943 . . . Plumbing fixture making	29/49529 Die-press shaping
29/49432 . . . Nozzle making	29/49531 Roller forming
29/49433 Sprayer	29/49533 Hub making
29/49435 . . . Flexible conduit or fitting therefor	29/49535 with assembling
29/49437 . . . Flue connector device making	29/49536 Hub shaping
29/49439 . . . Trap making	29/49538 Tyre making
29/4944 . . . Return connector device making	29/4954 Wheel trim making, e.g., wheel cover, hubcap
29/49442 . . . T-shaped fitting making	29/49542 with means for retaining trim member on wheel
29/49444 . . . Elbow or L-shaped fitting making	29/49544 . . . Roller making
29/49446 . . . Ferrule making or reforming	29/49545 . . . Repairing or servicing
29/49448 . . Agricultural device making	29/49547 . . . Assembling preformed components
29/49449 . . . Traction apparatus, e.g., for tractor	29/49549 Work contacting surface element assembled to core
29/49451 . . . Harvester guard	29/49551 Work contacting surface wound about core
29/49453 . . Pulley making	29/49552 with prestressing of component by heat differential, e.g., shrink, fit
29/49455 . . . Assembly	29/49554 Work contacting surface having annular axial sections
29/49456 with shaping	

29/49556	Work contacting surface element assembled to end support members	29/49654	having liner
29/49558	Includes securing removable cover on roller	29/49655	having liner
29/4956 . . .	Fabricating and shaping roller work contacting surface element	29/49657	Socket making
29/49561	toothed roller	29/49659	by molding or casting
29/49563	with coating or casting about a core	29/49661	Nonmetallic socket
29/49565 . . .	One-piece roller making	29/49663	by assembling
29/49567 . .	Dental appliance making	29/49664	Ball making
29/49568 . . .	Orthodontic device making	29/49666	with metallurgical bonding
29/4957 . .	Sound device making	29/49668	Sleeve or bushing making
29/49572 . . .	Hearing aid component making	29/4967	Nonmetallic
29/49574 . . .	Musical instrument or tuning fork making	29/49671	Strip or blank material shaping
29/49575 . . .	including diaphragm or support therefor	29/49673	Die-press shaping
29/49577 . . .	Phonograph component making	29/49675	having inner lining layer
29/49579 . .	Watch or clock making	29/49677	having liner
29/49581 . . .	having arbor, pinion, or balance	29/49679	Anti-friction bearing or component thereof
29/49583 . . .	having indicia, face, or dial	29/4968	Assembling of race, cage, and rolling anti-friction members
29/49584 . . .	having case, cover, or back	29/49682	Assembling of race and rolling anti-friction members
29/49586 . . .	having crown, stem, or pendent	29/49684	with race making
29/49588 . .	Jewelry or locket making	29/49686	Assembling of cage and rolling anti-friction members
29/4959 . . .	Human adornment device making	29/49687	with cage making
29/49591	Bracelet making	29/49689	Race making
29/49593	Finger ring making	29/49691	Cage making
29/49595 . . .	Latch, clasp, or fastener component making	29/49693	Roller making
29/49597 . . .	Ornamental stock making	29/49694	Ball making
29/49599 . .	Knob or knob shank making	29/49696 . . .	Mounting
29/496 . . .	Multiperforated metal article making	29/49698 . . .	Demounting
29/49602 . . .	Coil wound wall screen	29/497	Pre-usage process, e.g., preloading, aligning
29/49604 . . .	Filter	29/49702 . . .	Lubricating
29/49606 . .	Turnbuckle making	29/49703 . . .	Sealing
29/49607 . .	Spring-head clip making	29/49705 . . .	Coating or casting
29/49609 . .	Spring making	29/49707 . . .	Bearing surface treatment
29/49611 . . .	for vehicle or clutch	29/49709 . . .	Specific metallic composition
29/49613 . . .	for human comfort	29/4971	Nonmetallic bearing element
29/49615 . . .	Resilient shock or vibration absorber utility	29/49712 . .	Ball making
29/49616 . .	Structural member making	29/49714 . . .	Hollow ball
29/49618 . . .	Restoring existing member, e.g., reinforcing, repairing	29/49716 . .	Converting
29/4962 . . .	Grille making	29/49718 . .	Repairing
29/49622 . . .	Vehicular structural member making	29/49719 . . .	Seal or element thereof
29/49623 . . .	Static structure, e.g., a building component	29/49721 . . .	with disassembling
29/49625	Openwork, e.g., a truss, joist, frame, lattice-type or box beam	29/49723	including reconditioning of part
29/49627	Frame component	29/49725	by shaping
29/49629	Panel	29/49726	Removing material
29/49631	Columnar member	29/49728	and by a metallurgical operation, e.g., welding, diffusion bonding, casting
29/49632	Metal reinforcement member for nonmetallic, e.g., concrete, structural element	29/4973	Replacing of defective part
29/49634	Beam or girder	29/49732	by attaching repair preform, e.g., remaking, restoring, or patching
29/49636 . .	Process for making bearing or component thereof	29/49734	and removing damaged material
29/49638 . . .	Repairing	29/49735	Mechanically attaching preform with separate fastener
29/49639 . . .	Fluid bearing	29/49737	Metallurgically attaching preform
29/49641 . . .	Linear bearing	29/49739	Mechanically attaching preform by separate fastener
29/49643 . . .	Rotary bearing	29/49741	Screw threaded fastener
29/49645	Thrust bearing	29/49742	Metallurgically attaching preform
29/49647	Plain bearing	29/49744	Screw threaded preform
29/49648	Self-adjusting or self-aligning, including ball and socket type, bearing and component making	29/49746 . . .	by applying fluent material, e.g., coating, casting
29/4965	Deforming socket to secure ball		
29/49652	Die-press shaping		

29/49748 . . . by shaping, e.g., bending, extruding, turning, etc.	29/49831 Advancing station
29/4975 including heating	29/49833 . . . Punching, piercing or reaming part by surface of second part
29/49751 . . Scrap recovering or utilizing	29/49835 with shaping
29/49753 . . . Metalworking to consolidate scrap	29/49837 of first part
29/49755 . . . Separating one material from another	29/49838 . . . by stringing
29/49757 by burning or heating	29/4984 . . . Retaining clearance for motion between assembled parts
29/49758 . . During simulated operation or operating conditions	29/49842 Between tube-forming helical coils
29/4976 . . . Temperature	29/49844 Through resilient media
29/49762 . . Center locating and shaping	29/49845 by deforming interlock
29/49764 . . with testing or indicating	29/49847 by folding part into plural ears
29/49766 . . . torquing threaded assemblage or determining torque herein	29/49849 by wrapping around
29/49767 Determining relative number of threaded member rotations	29/49851 of link closure
29/49769 . . . Using optical instrument [excludes mere human eyeballing]	29/49853 of sphere, i.e., ball, in socket
29/49771 . . . Quantitative measuring or gauging	29/49854 Ball point pen making
29/49773 by radioactive tracing	29/49856 Allowing assembled sphere to move in single plane only
29/49774 by vibratory or oscillatory movement	29/49858 of flange into tubular socket
29/49776 Pressure, force, or weight determining	29/4986 Outwardly deforming internally fitted rod
29/49778 . . . with aligning, guiding, or instruction	29/49861 . . . Sizing mating parts during final positional association
29/4978 Assisting assembly or disassembly	29/49863 . . . with prestressing of part
29/49782 . . of a slide fastener	29/49865 by temperature differential [e.g., shrink fit]
29/49783 . . . of slider	29/49867 of skin on frame member
29/49785 . . . of interlocking element	29/49869 by flexing
29/49787 . . Obtaining plural composite product pieces from preassembled workpieces	29/4987 Elastic joining of parts
29/49789 . . Obtaining plural product pieces from unitary workpiece	29/49872 Confining elastic part in socket
29/4979 . . . Breaking through weakened portion	29/49874 Prestressing rod, filament or strand
29/49792 . . . Dividing through modified portion	29/49876 by snap fit
29/49794 . . . Dividing on common outline	29/49877 . . . of flexible wall, expansible chamber devices [e.g., bellows]
29/49796 . . . Coacting pieces	29/49879 . . . Spaced wall tube or receptacle
29/49798 . . . Dividing sequentially from leading end, e.g., by cutting or breaking	29/49881 . . . of separate helix [e.g., screw thread]
29/49799 . . Providing transitory integral holding or handling portion	29/49883 . . . Ribbing
29/49801 . . Shaping fiber or fibered material	29/49885 . . . with coating before or during assembling
29/49803 . . Magnetically shaping	29/49886 to roughen surface
29/49805 . . Shaping by direct application of fluent pressure	29/49888 . . . Subsequently coating
29/49806 . . . Explosively shaping	29/4989 . . . with spreading of cable strands
29/49808 . . Shaping container end to encapsulate material	29/49892 . . . Joining plate edge perpendicularly to frame
29/4981 . . Utilizing transitory attached element or associated separate material	29/49893 . . . Peripheral joining of opposed mirror image parts to form a hollow body
29/49812 . . . Temporary protective coating, impregnation, or cast layer	29/49895 . . . Associating parts by use of aligning means [e.g., use of a drift pin or a "fixture"]
29/49813 . . Shaping mating parts for reassembly in different positions	29/49897 Registering mating opposed tool parts [e.g., registering a punch and a cooperating die]
29/49815 . . Disassembling	29/49899 by multiple cooperating aligning means
29/49817 . . . with other than ancillary treating or assembling	29/49901 Sequentially associating parts on stationary aligning means
29/49819 . . . with conveying of work or disassembled work part	29/49902 by manipulating aligning means
29/49821 . . . by altering or destroying work part or connector	29/49904 . . . Assembling a subassembly, then assembling with a second subassembly
29/49822 . . . by applying force	29/49906 . . . Metal deforming with nonmetallic bonding
29/49824 to elastically deform work part or connector	29/49908 . . . Joining by deforming
29/49826 . . Assembling or joining	29/49909 Securing cup or tube between axially extending concentric annuli
29/49828 . . . Progressively advancing of work assembly station or assembled portion of work	29/49911 by expanding inner annulus
29/49829 Advancing work to successive stations [i.e., assembly line]	29/49913 by constricting outer annulus
	29/49915 Overedge assembling of seated part
	29/49917 by necking in cup or tube wall
	29/49918 At cup or tube end
	29/4992 by flaring inserted cup or tube end

29/49922	. . . . .	by bending over projecting prongs	29/511	. . . . .	Grinding attachment
29/49924	. . . . .	of parallel side-by-side elongated members	29/5111	. . . . .	Pulley or wheel
29/49925	. . . . .	Inward deformation of aperture or hollow body wall	29/5112	. . . . .	Convertible
29/49927	. . . . .	Hollow body is axially joined cup or tube	29/5113	. . . . .	Commutator
29/49929	. . . . .	Joined to rod	29/5114	. . . . .	Lathe and tool
29/49931	. . . . .	Joined to overlapping ends of plural rods	29/5115	. . . . .	Planer
29/49933	. . . . .	After thinning	29/5116	. . . . .	forging and bending, cutting or punching
29/49934	. . . . .	by axially applying force	29/5117	. . . . .	Fastener [zipper]
29/49936	. . . . .	Surface interlocking	29/5118	. . . . .	Riveting
29/49938	. . . . .	Radially expanding part in cavity, aperture, or hollow body	29/512	. . . . .	Ball making
29/4994	. . . . .	Radially expanding internal tube	29/5121	. . . . .	Wire working
29/49941	. . . . .	Peripheral edge joining of abutting plates	29/5122	. . . . .	with means to feed work during tool contact
29/49943	. . . . .	Riveting	29/5123	. . . . .	including nonrotary flying tool
29/49945	. . . . .	by driven force fit	29/5124	. . . . .	with means to feed work intermittently from one tool station to another
29/49947	. . . . .	by applying separate fastener	29/5125	. . . . .	Stock turret
29/49948	. . . . .	Multipart cooperating fastener [e.g., bolt and nut]	29/5126	. . . . .	Swiss type
29/4995	. . . . .	Nonthreaded	29/5127	. . . . .	Blank turret
29/49952	. . . . .	At least one part is nonmetallic	29/5128	. . . . .	Rotary work - vertical axis
29/49954	. . . . .	Fastener deformed after application	29/5129	. . . . .	Rotary work - horizontal axis
29/49956	. . . . .	Riveting	29/513	. . . . .	Stationary work
29/49957	. . . . .	At least one part nonmetallic	29/5132	. . . . .	Belt drive
29/49959	. . . . .	Nonresilient fastener	29/5133	. . . . .	Crankshaft
29/49961	. . . . .	At least one part nonmetallic	29/5134	. . . . .	Collapsible tube
29/49963	. . . . .	Threaded fastener	29/5135	. . . . .	Endless belt
29/49964	. . . . .	At least one part nonmetallic	29/5136	. . . . .	Separate tool stations for selective or successive operation on work
29/49966	. . . . .	with supplemental joining	29/5137	. . . . .	including assembling or disassembling station
29/49968	. . . . .	Metal fusion joining	29/5138	. . . . .	and means to machine work part to fit cooperating work part
29/4997	. . . . .	At least one part nonmetallic	29/5139	. . . . .	and means to sever work prior to disassembling
29/49972	. . . . .	with separating, localizing, or eliminating of as-cast defects from a metal casting [e.g., anti-pipe]	29/514	. . . . .	comprising means to strip insulation from wire
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	29/531	. . Nuclear device
29/517	. . . Laterally movable stock holder	29/53104	. . Roller or ball bearing
29/5171	. . . Axial tool and transversely movable slide rest	29/53109	. . . including deforming means
29/5172	. . . . Rotary tool spindle	29/53113	. . Heat exchanger
29/5173	. . . Longitudinally and transversely movable	29/53117	. . . including means to manipulate heat exchanger tube bundle
29/5174	. . . . Rotary tool spindle	29/53122	. . . including deforming means
29/5175	. . . Oscillating tool	29/53126	. . Means to place sheath on running-length core
29/5176	. . including machining means	29/5313	. . Means to assemble electrical device
29/5177	. . . and work-holder for assembly	29/53135	. . . Storage cell or battery
29/5178	. . Attachment	29/53139	. . . . including deforming means
29/5179	. . Speed controller	29/53143	. . . Motor or generator
29/518	. . Carriage stop mechanism	29/53148	. . . . Means to assemble commutator
29/5182	. . Flash remover	29/53152	. . . . Means to position insulation
29/5183	. . Welding strip ends	29/53157	. . . . Means to stake wire to commutator or armature
29/5184	. . Casting and working	29/53161	. . . . including deforming means
29/5185	. . Tube making	29/53165	. . . Magnetic memory device
29/5186	. . Covering	29/5317	. . . Laminated device
29/5187	. . Wire working	29/53174	. . . Means to fasten electrical component to wiring board, base, or substrate
29/5188	. . Radiator making	29/53178	. . . . Chip component
29/5189	. . Printing plate	29/53183	. . . . Multilead component
29/519	. . Turret	29/53187	. . . Multiple station assembly apparatus
29/5191	. . Assembly	29/53191	. . . Means to apply vacuum directly to position or hold work part
29/5192	. . Armature	29/53196	. . . Means to apply magnetic force directly to position or hold work part
29/5193	. . Electrical connector or terminal	29/532	. . . Conductor
29/5195	. . Tire valve or spark plug	29/53204	. . . . Electrode
29/5196	. . Multiple station with conveyor	29/53209	. . . . Terminal or connector
29/5197	. . Multiple stations working strip material	29/53213	. . . . . Assembled to wire-type conductor
29/5198	. . Continuous strip	29/53217	. . . . . Means to simultaneously assemble multiple, independent conductors to terminal
29/5199	. . Work on tubes	29/53222	. . . . . Means comprising hand-manipulatable implement
29/52	. Plural diverse manufacturing apparatus	29/53226	. . . . . Fastening by deformation
29/53	. Means to assemble or disassemble	29/5323	. . . . . Fastening by elastic joining
29/53004	. . with means to regulate operation by use of templet, tape, card or other replaceable information supply	29/53235	. . . . . Means to fasten by deformation
29/53009	. . . with comparator	29/53239	. . . . . Means to fasten by elastic joining
29/53013	. . . . Computer input	29/53243	. . . . Multiple, independent conductors
29/53017	. . . Web or strand-carried information supply	29/53248	. . . . Switch or fuse
29/53022	. . with means to test work or product	29/53252	. . . Means to simultaneously fasten three or more parts
29/53026	. . with randomly actuated stopping or disabling means	29/53257	. . . Means comprising hand-manipulatable implement
29/5303	. . . Responsive to condition of work or product	29/53261	. . . Means to align and advance work part
29/53035	. . . Responsive to operative [e.g., safety device, etc.]	29/53265	. . . with work-holder for assembly
29/53039	. . with control means energized in response to activator stimulated by condition sensor	29/5327	. . . Means to fasten by deforming
29/53043	. . . including means to divert defective work part	29/53274	. . Means to disassemble electrical device
29/53048	. . . Multiple station assembly or disassembly apparatus	29/53278	. . . Storage cell or battery
29/53052	. . . . including position sensor	29/53283	. . . Means comprising hand-manipulatable implement
29/53057	. . . Responsive to timer	29/53287	. . Means to place traveler on ring or ring on bobbin of a textile machine
29/53061	. . . Responsive to work or work-related machine element	29/53291	. . Slide fastener
29/53065	. . . . with means to fasten by deformation	29/53296	. . . Means to assemble stop onto stringer
29/5307	. . . . . Self-piercing work part	29/533	. . . Means to assemble slider onto stringer
29/53074	. . . . with means to fasten by elastic joining	29/53304	. . . Means to assemble teeth onto stringer
29/53078	. . . . with means to fasten by frictional fitting	29/53309	. . . Disassembly means
29/53083	. . . . including means to apply magnetic force directly to position or hold work		
29/53087	. . with signal, scale, illuminator, or optical viewer		
29/53091	. . . for work-holder for assembly or disassembly		
29/53096	. . including means to provide a controlled environment		

29/53313 . . . Means to interrelatedly feed plural work parts from plural sources without manual intervention	29/53552 . . . Valve applying or removing
29/53317 Box or pallet assembly means	29/53557 Engine valve unit puller or applier
29/53322 Means to assemble container	29/53561 Engine valve spring compressor [only]
29/53326 Handle to container	29/53565 Plural spring engagement
29/5333 Label to container	29/5357 Screw operated
29/53335 Pressurized dispensing container	29/53574 Parallel or tong type, side entrance
29/53339 Hypodermic syringe	29/53578 Lever operated
29/53343 including fluid component	29/53583 Single jaw or valve engagement
29/53348 Running-length work	29/53587 Plier type
29/53352 Means including orbiting running-length work supply	29/53591 to or from wheel rim of resilient tire or tube
29/53357 Pipe section	29/53596 Removal tool
29/53361 Assembled to article	29/536 Piston ring inserter or remover
29/53365 Multiple station assembly apparatus	29/53604 Plier-type operation
29/5337 including assembly pallet	29/53609 with ring encirclement
29/53374 including turret-type conveyor	29/53613 Spring applier or remover
29/53378 including converging conveyors	29/53617 Transmission spring
29/53383 and means to fasten work parts together	29/53622 Helical spring
29/53387 by deforming	29/53626 Flat spiral spring [e.g., watch or clock type]
29/53391 by elastic joining	29/5363 Circular spring
29/53396 by friction fit	29/53635 Leaf spring
29/534 Multiple station assembly or disassembly apparatus	29/53639 Means to stake watch or clock
29/53404 including turret-type conveyor	29/53643 Plier type
29/53409 including converging conveyors	29/53648 Brake lining to brake shoe
29/53413 and primary central conveyor	29/53652 Tube and coextensive core
29/53417 Means to fasten work parts together	29/53657 to apply or remove a resilient article [e.g., tube, sleeve, etc.]
29/53422 by deforming	29/53661 Nipple to nursing bottle
29/53426 by elastic joining	29/53665 Well protector to sucker rod
29/5343 Means to drive self-piercing work part	29/5367 Coupling to conduit
29/53435 including assembly pallet	29/53674 Loose-leaf sheet binder
29/53439 including provision to utilize thermal expansion of work	29/53678 Compressing parts together face to face
29/53443 Means to assemble or disassemble container and fluid component	29/53683 Spreading parts apart or separating them from face to face engagement
29/53448 Vehicle wheel	29/53687 by rotation of work part
29/53452 Railway wheel	29/53691 Means to insert or remove helix
29/53457 Tumbler lock	29/53696 Means to string
29/53461 toy doll	29/537 tool handle and tool
29/53465 Film or tape cartridge	29/53704 tool chuck and tool
29/5347 Crystal to watch or clock	29/53709 Overedge assembling means
29/53474 Means to insert or extract pen point	29/53713 Belt-hook attacher
29/53478 with magazine supply	29/53717 Annular work
29/53483 and magnetic work-holder or positioner	29/53722 with radially acting tool inside annular work
29/53487 Assembling means comprising hand-manipulatable implement	29/53726 with second workpiece inside annular work one workpiece moved to shape the other
29/53491 One work part comprising living tissue	29/5373 comprising driver for snap-off-mandrel fastener; e.g., Pop [TM] riveter
29/53496 comprising driver for snap-off-mandrel fastener; e.g., Pop [TM] riveter	29/53735 including near side fastener shaping tool
29/535 One work part comprising nut or screw	29/53739 Pneumatic- or fluid-actuated tool
29/53504 One work part comprising paper clip	29/53743 Liquid
29/53509 Means to assemble tyre stud into tyre tread	29/53748 and gas
29/53513 Means to fasten by deforming	29/53752 having rotary drive mechanism
29/53517 Fastening sinker to fishing line	29/53757 having allochiral actuating handles
29/53522 Means to fasten by deforming	29/53761 having repositionable annulus engaging tool
29/53526 Running-length work	29/53765 including near side fastener shaping tool
29/5353 Assembled on core	29/5377 Riveter
29/53535 including means to vibrate work	29/53774 Single header
29/53539 including work conveyor	29/53778 Pipe joiner
29/53543 including transporting track	29/53783 Clip applier
29/53548 and work carrying vehicle	29/53787 Binding or covering
	29/53791 Edge binding

29/53796	. . Puller or pusher means, contained force multiplying operator	70/308	. . Combination lock
29/538	. . . Hubcap and hub	70/317	. . . Hasp-carried
29/53804	. . . Battery post and terminal	70/325	. . . Keeper-carried
29/53809	. . . Cotter pin and cooperating member	70/333	. . Key lock
29/53813	. . . . Plier type means	70/342	. . . Hasp-carried
29/53817	. . . Valve stem pin or key and another member	70/35	. . . . Keeper-encasing
29/53822	. . . Machine key and another member	70/358	. . . . . Dead bolt
29/53826	. . . Arbor-type press means	70/367	. . . . . Latching bolt
29/5383	. . . having fluid operator	70/375	. . . . . Dead bolt
29/53835	. . . having wedge operator	70/383	. . . . . Latching bolt
29/53839	. . . having percussion or explosive operator	70/392	. . . Keeper-carried
29/53843	. . . . Tube, sleeve, or ferrule inserting or removing	70/40	. Portable
29/53848	. . . having screw operator	70/402	. . Fetters
29/53852	. . . . C-frame	70/404	. . . Manacles and cuffs
29/53857	. . . . Central screw, work-engagers around screw	70/407	. . . . Nippers
29/53861	. . . . . Work-engager arms along or parallel to screw	70/409	. . . Shackles
29/53865	. . . . . with arm connecting engaging means	70/411	. . Clamps
29/5387	. . . . . Pivotal arms	70/413	. . Padlocks
29/53874	. . . . . Pivotal grippers on screw	70/415	. . . Combination and/or key-controlled
29/53878	. . . . . Tubular or tube segment forms work-engager	70/417	. . . Combination-controlled
29/53883	. . . . . Screw threaded work-engager	70/42	. . . . Non-shackle type
29/53887	. . . . . Movable grippers on screw	70/422	. . . . Rigid shackle
29/53891	. . . . . Plate or bar forms work-engager	70/424	. . . . . Sliding
29/53896	. . . having lever operator	70/426	. . . . . Removable
29/539	. . . . Plier type means	70/428	. . . . . Pivoted
29/53904	. . Means comprising piston ring group contractor or holder	70/43	. . . . . Sliding detent
29/53909	. . Means comprising hand manipulatable tool	70/433	. . . . . Swinging detent
29/53913	. . . Aligner or center	70/435	. . . . Flexible shackle
29/53917	. . . Tube with tube	70/437	. . . Key-controlled
29/53922	. . . Auto wheel with auto chassis	70/439	. . . . Non-shackle type
29/53926	. . . Clutch plates	70/441	. . . . . Housing extension and cooperating detent
29/5393	. . . Means comprising impact receiving tool	70/443	. . . . . Single stem or shank
29/53935	. . . . C-frame	70/446	. . . . Rigid shackle
29/53939	. . . . Thread protector [e.g., wheel axle type]	70/448	. . . . . Divided shackle
29/53943	. . . Hand gripper for direct push or pull	70/45	. . . . . Divided jaw type
29/53948	. . . . Centrifugal separator	70/452	. . . . . Sliding
29/53952	. . . . Tube sleeve or ferrule applying or removing	70/454	. . . . . Removable
29/53957	. . . . . Thread-tapping grip	70/457	. . . . . Arcuate locus
29/53961	. . with work-holder for assembly	70/459	. . . . . Both legs engaged
29/53965	. . . for assembling a luminescent mantle	70/461	. . . . . Short leg engaged
29/5397	. . . and assembling press [e.g., truss assembling means, etc.]	70/463	. . . . . Long leg engaged
29/53974	. . . having means to permit support movement while work is thereon	70/465	. . . . . Pivoted
29/53978	. . including means to relatively position plural work parts	70/467	. . . . . Sliding detent
29/53983	. . Work-supported apparatus	70/47	. . . . . Free end only engaged
29/53987	. . Tube, sleeve or ferrule	70/472	. . . . . Pivoted end only engaged
29/53991	. . Work gripper, anvil, or element	70/474	. . . . . Swinging detent
29/53996	. . by deforming	70/476	. . . . . Free end only engaged
29/54	. Miscellaneous apparatus	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

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

70/5018	. . . Robes	70/5283	. . . . . Swinging
70/5022	. . . Tools	70/5288	. . . . . Combination operable only
70/5027	. . . Supporting stands	70/5292	. . . . . Key operable only
70/5031	. . . Receptacle	70/5296	. . . . . Single
70/5035	. . . . Bag	70/5301	. . . . . Sliding and swinging
70/504	. . . . Collapsible throat	70/5305	. . . . . Combination operable only
70/5044	. . . . Pivoted rigid jaw	70/531	. . . . . Key operable only
70/5049	. . . . Attache or briefcase, portfolio	70/5314	. . . . . Sliding and rotary
70/5053	. . . . . Interengageable slide fastener type	70/5319	. . . . . Sliding
70/5058	. . . . Trunk and/or suitcase	70/5323	. . . . . Multidirectional displacement
70/5062	. . . . . Projecting fixed or movable lug type	70/5327	. . . . . Keeper interlocking
70/5066	. . . . . Bolt type	70/5332	. . . . . Curved
70/5071	. . . . . Hasp controlled	70/5336	. . . . . Combination operable only
70/5075	. . . . . Link and lever of hasp type	70/5341	. . . . . Key operable only
70/508	. . . . . Hasp type	70/5345	. . . . . Swinging
70/5084	. . . . . Hasp-carried lock	70/535	. . . . . Keeper and housing interlocking
70/5089	. . . . . Loop type	70/5354	. . . . . With hooked end
70/5093	. . For closures	70/5358	. . . . . Combination operable only
70/5097	. . . Cabinet	70/5363	. . . . . Key operable only
70/5102	. . . . Projecting lug type	70/5367	. . . . . Screw
70/5106	. . . . . External catch	70/5372	. . . . . Locking latch bolts, biased
70/5111	. . . . Projectable bolt	70/5376	. . . . . Keeper interlocking
70/5115	. . . . . Multiple bolts	70/5381	. . . . . Projectable beyond normal biased position
70/5119	. . . . . Multidirectional displacement	70/5385	. . . . . Spring projected
70/5124	. . . . . Swinging and hooked end	70/5389	. . . . . Manually operable
70/5128	. . . Drawer	70/5394	. . . . . Directly acting dog for exterior, manual, bolt manipulator
70/5133	. . . . Dead bolt	70/5398	. . . . . Related dog for interior, manual, bolt manipulator
70/5137	. . . . Till	70/5403	. . . . . Dog having a dog
70/5142	. . . . . Combination	70/5407	. . . . . Related dogging means for latch-bolt
70/5146	. . . Window	70/5412	. . . . . Dog and dog actuator always interconnected
70/515	. . . . Sliding sash	70/5416	. . . . . Exterior manipulator declutched from bolt when dogged
70/5155	. . . Door	70/542	. . . . . Manual dog-controller concentric with bolt manipulator
70/5159	. . . . Emergency exit	70/5425	. . . . . Shiftable rollback serves as dog
70/5164	. . . . Links to limit opening	70/5429	. . . . . Additional dog-controller key actuated for dogging and undogging
70/5168	. . . . Braces	70/5434	. . . . . Dog-controller axially slidable and axially rotatable
70/5173	. . . . Sliding door	70/5438	. . . . . Dog-controller rotatable
70/5177	. . . . . Extending keeper	70/5442	. . . . . Key-actuated lock releases dog
70/5181	. . . . . Rigid or fixed	70/5447	. . . . . Manual bolt-manipulator operation releases dog
70/5186	. . . . . Extensible	70/5451	. . . . . Manual bolt-manipulator operation releases dog
70/519	. . . . . Projecting or extending bolt	70/5456	. . . . . Interior manual bolt-manipulator serves as dog-controller
70/5195	. . . . . Projectable bolt	70/546	. . . . . For both dogging and undogging
70/5199	. . . . Sliding door	70/5465	. . . . . Manual dog-controller
70/5204	. . . . . Interfitting lock housing and keeper	70/5469	. . . . . With additional lock actuated dog-controller
70/5208	. . . . . Multiple dead bolts	70/5473	. . . . . Additional dog-controller controls both dogging and undogging
70/5212	. . . . . Sliding dead bolt	70/5478	. . . . . Accessible at door edge
70/5217	. . . . . Swinging dead bolt		
70/5221	. . . . . Locking latch bolt, biased		
70/5226	. . . . . Combined dead bolt and latching bolt		
70/523	. . . . . Multiple dead bolts		
70/5235	. . . . . Multiple latch bolts		
70/5239	. . . . . Dead bolt, dogged latch bolt		
70/5243	. . . . . Manually dogged latch bolt		
70/5246	. . . . . Dead bolts		
70/5248	. . . . . Multiple		
70/5252	. . . . . Sliding and swinging		
70/5257	. . . . . Combination operable only		
70/5261	. . . . . Key operable only		
70/5265	. . . . . Sliding and rotary		
70/527	. . . . . Sliding		
70/5274	. . . . . Combination operable only		
70/5279	. . . . . Key operable only		

70/5482	. . . . . Slidable only	70/5739	. . . . . With padlock
70/5487	. . . . . Manual bolt-manipulator is slidable only	70/5743	. . . . . Disconnectable
70/5491	. . . . . Manual bolt-manipulator is lever	70/5748	. . . . . Foldable
70/5496	. . . . . Freely movable external manipulator	70/5752	. . . . . Universal mounting
70/55	. . . . . Dogged bolt or connections	70/5757	. . . . . Handle, handwheel or knob
70/5504	. . . . . Automatic	70/5761	. . . . . Retractable or flush handle
70/5509	. . . . . Snub bolt	70/5765	. . . . . Rotary or swinging
70/5513	. . . . . By manipulator	70/577	. . . . . Locked stationary
70/5518	. . . . . Connections only	70/5774	. . . . . Externally mounted locking device
70/5522	. . . . . Gravity projected	70/5779	. . . . . With padlock
70/5527	. . . . . Projecting mechanism is lock controlled	70/5783	. . . . . Combination lock
70/5531	. . . . . Combination and/or key operable	70/5788	. . . . . Push pin or button
70/5535	. . . . . Trip release	70/5792	. . . . . Handle-carried key lock
70/554	. . . . . Cover, lid, cap, encasing shield	70/5796	. . . . . Coaxially mounted
70/5544	. . . . . Pivoted	70/5801	. . . . . Axially movable bolt
70/5549	. . . . . Cover-carried lock	70/5805	. . . . . Freely movable when locked
70/5553	. . . . . Dead bolt	70/581	. . . . . Combination lock
70/5558	. . . . . Latching bolt	70/5814	. . . . . Push pin or button
70/5562	. . . . . Removable	70/5819	. . . . . Handle-carried key lock
70/5566	. . . . . External locking devices	70/5823	. . . . . Coaxial clutch connection
70/5571	. . . . . Freely movable when locked	70/5827	. . . . . Axially movable clutch
70/5575	. . . . . Directly seating	70/5832	. . . . . Lock and handle assembly
70/558	. . . . . Cover-carried lock	70/5836	. . . . . Wheel
70/5584	. . . . . Dead bolt	70/5841	. . . . . Rotation blocking
70/5589	. . . . . Latching bolt	70/5845	. . . . . Spoke gap traversing type
70/5593	. . . . . Movably seating	70/585	. . . . . Brake type
70/5597	. . . . . Cover-carried lock	70/5854	. . . . . Bolt, nut, stud, stud-cap
70/5602	. . . . . Dead bolt	70/5858	. . . . . Locked stationary
70/5606	. . . . . Latching bolt	70/5863	. . . . . Freely movable when locked
70/5611	. . . . . For control and machine elements	70/5867	. . . . . Encased
70/5615	. . . . . Valve	70/5872	. . . . . For cycles
70/5619	. . . . . Locked stationary	70/5876	. . . . . Anchors
70/5624	. . . . . Externally mounted locking device	70/5881	. . . . . Stands
70/5628	. . . . . Valve encasing	70/5885	. . . . . Drive
70/5633	. . . . . Housing-carried lock	70/5889	. . . . . For automotive vehicles
70/5637	. . . . . With padlock	70/5894	. . . . . Plural point
70/5642	. . . . . Rod	70/5898	. . . . . With switch
70/5646	. . . . . Rotary shaft	70/5903	. . . . . Hood
70/565	. . . . . Locked stationary	70/5907	. . . . . With switch
70/5655	. . . . . Housing-carried lock	70/5912	. . . . . Fuel valve
70/5659	. . . . . Dead bolt	70/5916	. . . . . With switch
70/5664	. . . . . Latching bolt	70/592	. . . . . Cap combined
70/5668	. . . . . Shaft-carried lock	70/5925	. . . . . Transmission
70/5673	. . . . . Freely movable when locked	70/5929	. . . . . Cover combined
70/5677	. . . . . Shaft-carried clutch	70/5934	. . . . . Selective-type shift rod, fork or block
70/5681	. . . . . Gear	70/5938	. . . . . With switch
70/5686	. . . . . Planetary	70/5942	. . . . . Planetary type
70/569	. . . . . Lever	70/5947	. . . . . With switch
70/5695	. . . . . Guide	70/5951	. . . . . With switch
70/5699	. . . . . Quadrant	70/5956	. . . . . Steering mechanism with switch
70/5704	. . . . . Lever-carried lock	70/596	. . . . . Pilot wheel control or linkage
70/5708	. . . . . Fixed lever-receiving keeper	70/5965	. . . . . Control levers with switch
70/5712	. . . . . Lever-carried lock	70/5969	. . . . . Other element with switch
70/5717	. . . . . Multiple	70/5973	. . . . . Remote control
70/5721	. . . . . Externally mounted locking device	70/5978	. . . . . With switch
70/5726	. . . . . With padlock	70/5982	. . . . . Accessories
70/573	. . . . . Single	70/5987	. . . . . Spare or mounted wheel or tire
70/5735	. . . . . Externally mounted locking device	70/5991	. . . . . Tire or rim only
		70/5996	. . . . . For seats
		70/60	. . . . . Systems
		70/625	. . . . . Operation and control

70/65	. . . Central control	70/7299	. . . . . Axially shiftable spindle
70/675	. . . Serially operable	70/7305	. . . . . Manually operable
70/70	. Operating mechanism	70/7311	. . . Step-by-step
70/7006	. . Predetermined time interval controlled	70/7316	. . . Combination upsetting
70/7011	. . . Positively initiated delay interval	70/7322	. . . Permutation
70/7017	. . . . Interval terminating	70/7328	. . . . Compound tumblers
70/7023	. . . . Repeating interval	70/7333	. . . . . With fastener or holder
70/7028	. . . Electric	70/7339	. . . . . Pin and socket
70/7034	. . . Clockwork control	70/7345	. . . . . Removable change element
70/704	. . . . Continuously operating once initiated	70/735	. . . Operating elements
70/7045	. . . . . Emergency release	70/7356	. . . . Fences
70/7051	. . Using a powered device [e.g., motor]	70/7362	. . . . . Bolt or lock housing supported
70/7057	. . . Permanent magnet	70/7367	. . . . . Tumbler structure and position
70/7062	. . . Electrical type [e.g., solenoid]	70/7373	. . . . . Nested
70/7068	. . . . Actuated after correct combination recognized [e.g., numerical, alphabetical, or magnet[s] pattern]	70/7379	. . . . . Variant diameter
70/7073	. . . . . Including use of a key	70/7384	. . . . . Mounts
70/7079	. . . . . Key rotated [e.g., Eurocylinder]	70/739	. . . . . Motion-restraining means
70/7085	. . . . . Using a dial having indicia or pointer and indicia	70/7395	. . . . . Friction holder
70/709	. . . . . Plural interdependent or plural independently operable tumbler sets	70/7401	. . . . Spindles
70/7096	. . . . . With mechanism having rocker arm or linked bars	70/7407	. . . . Operating indicators
70/7102	. . . . And details of blocking system [e.g., linkage, latch, pawl, spring]	70/7412	. . . . . Portable combination setting guide
70/7107	. . . . And alternately mechanically actuated by a key, dial, etc.	70/7418	. . . . . Dials
70/7113	. . . . Projected and retracted electrically	70/7424	. . . Tampering prevention or attach defeating
70/7119	. . . . Projected electrically only	70/7429	. . . . Resonance type
70/7124	. . . . Retracted electrically only	70/7435	. . . . Hidden or covered dial
70/713	. . . . Dogging manual operator	70/7441	. . Key
70/7136	. . . . Key initiated actuation of device	70/7446	. . . Multiple keys
70/7141	. . Combination and key	70/7452	. . . . Selective shutout type
70/7147	. . Combination or key	70/7458	. . . . Interdependent
70/7153	. . Combination	70/7463	. . . . Master- and change-key
70/7158	. . . Individual blocking elements	70/7469	. . . . . Change-key shutout
70/7164	. . . . Selectively operable	70/7475	. . . . . Submaster- and change-key
70/7169	. . . Complex movement or puzzle type	70/748	. . . . . Change-key shutout
70/7175	. . . . Labyrinthian passage	70/7486	. . . Single key
70/7181	. . . Tumbler type	70/7492	. . . . Tumblerless push or pull key
70/7186	. . . . Plural interdependent sets	70/7497	. . . . Tumblerless warded
70/7192	. . . . Plural independently operable sets	70/7503	. . . . Tumbler and ward type
70/7198	. . . . Single tumbler set	70/7508	. . . . Tumbler type
70/7203	. . . . . With ball or roller	70/7514	. . . . . Sliding and rotary or swinging tumblers
70/7209	. . . . . Intersect sliding tumblers	70/752	. . . . . Sliding tumblers
70/7215	. . . . . Individually set sliding tumblers	70/7525	. . . . . Longitudinal
70/722	. . . . . Manually operable	70/7531	. . . . . Transverse
70/7226	. . . . . Associated movable operator	70/7537	. . . . . Rotary or swinging tumblers
70/7232	. . . . . Removable	70/7542	. . . . . Single set
70/7237	. . . . . Rotary or swinging tumblers	70/7548	. . . . . Directly key engaged
70/7243	. . . . . Intersect tumblers	70/7554	. . . . . Cylinder type with auxiliary tumblers or wards
70/7249	. . . . . Tumblers released	70/7559	. . . . . Cylinder type
70/7254	. . . . . Fence held spaced from tumblers	70/7565	. . . . . Plural tumbler sets
70/726	. . . . . Individually set	70/7571	. . . . . Concentric tumblers
70/7266	. . . . . Movable selector	70/7576	. . . . . Sliding and rotary plug
70/7271	. . . . . Associated movable operator	70/7582	. . . . . Sliding plug
70/7277	. . . . . Removable	70/7588	. . . . . Rotary plug
70/7282	. . . . . Pin or rod and slot	70/7593	. . . . . Sliding tumblers
70/7288	. . . . . Spindle operator	70/7599	. . . . . Transverse of plug
70/7294	. . . . . Concentric spindles	70/7605	. . . . . Pin tumblers
		70/761	. . . . . Rotatable pins [e.g., MEDECO lock]
		70/7616	. . . . . Including sidebar
		70/7621	. . . . . Including sidebar
		70/7627	. . . . . Rotary or swinging tumblers

70/7633 Transverse of plug
 70/7638 Cylinder and plug assembly
 70/7644 Key- and tool-controlled
 70/765 Key only controlled
 70/7655 Cylinder attaching or mounting means
 70/7661 Detachable or removable cylinder
 70/7667 Operating elements, parts and adjuncts
 70/7672 Cylinder
 70/7678 Adjustable
 70/7684 Plug
 70/7689 Tumblers
 70/7695 Plate
 70/7701 Pin
 70/7706 Operating connections
 70/7712 Rollbacks
 70/7718 Intermediate
 70/7723 Cylinder rings
 70/7729 Permutation
 70/7734 Automatically key set combinations
 70/774 Adjustable tumblers
 70/7746 Removable change element
 70/7751 With ball or roller
 70/7757 Push or pull key operation
 70/7763 Key ejecting
 70/7768 Key-removal preventing
 70/7774 False or picking key trapping
 70/778 Operating elements
 70/7785 Tumblers
 70/7791 Keys
 70/7797 Picking
 70/7802 Multi-part structures
 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	74/1518	. . . . Rotary cam drive
74/1225	. . . with rotor drives	74/1519	. . . . Adjustable throw
74/1229	. . Gyroscope control	74/1521	. . . . Radial cam
74/1232	. . . Erecting	74/1523	. . . . Radial cam
74/1236	. . . . by plural diverse forces	74/1524	. . . Intermittently engaged clutch
74/1239	. . . . by jet	74/1526	. . Oscillation or reciprocation to intermittent unidirectional motion
74/1243	. . . . by weight	74/1527	. . . Screw and nut devices
74/1246	. . . . by friction	74/1529	. . . Slide actuator
74/125	. . . . by magnetic field	74/1531	. . . . Multiple acting
74/1254	. . . . by motor torque	74/1532	. . . Rack actuator
74/1257	. . . Damping	74/1534	. . . . Multiple acting
74/1261	. . with pick off	74/1535	. . . . Inwardly facing racks
74/1264	. . . Optical	74/1537	. . . . Oscillating
74/1268	. . . Pneumatic	74/1539	. . . . Multiple acting
74/1271	. . . Conducting liquid	74/154	. . . . Inwardly facing racks
74/1275	. . . Electrical	74/1542	. . . Strap actuator
74/1279	. . . Electrical and magnetic	74/1544	. . . . Multiple acting
74/1282	. . with rotor drive	74/1545	. . . . Spring or weight return
74/1286	. . Vertical gyroscopes	74/1547	. . . . Single acting
74/1289	. . Horizontal gyroscopes	74/1548	. . . . Engine starter type
74/1293	. . Flexure hinges for gyros	74/155	. . . . Spring or weight return
74/1296	. . Flywheel structure	74/1552	. . . . Spring or weight return
74/13	. Machine starters	74/1553	. . . Lever actuator
74/131	. . Automatic	74/1555	. . . . Rotary driven element
74/132	. . . Separate power mesher	74/1556	. . . . Multiple acting
74/133	. . . Holders	74/1558	. . Grip units and features
74/134	. . . Clutch connection	74/156	. . . Compound movement handle
74/136	. . . Worm and wheel	74/1561	. . . . Reversible
74/137	. . . Reduction gearing	74/1563	. . . . Transverse pivots
74/138	. . Radial meshing	74/1565	. . . Gripper releasing devices
74/139	. . Cam operated	74/1566	. . . . Power pawl lifter
74/14	. Rotary member or shaft indexing, e.g., tool or work turret	74/1568	. . . . Automatic
74/1406	. . with safety device or drive disconnect	74/1569	. . . . Idle stroke
74/1412	. . with locating point adjusting	74/1571	. . . . Cooperating holding pawl
74/1418	. . Preselected indexed position	74/1573	. . . . Power stroke
74/1424	. . . Sequential	74/1574	. . . . Cooperating holding pawl
74/1429	. . . . Skip position	74/1576	. . . . Holding pawl lifter
74/1435	. . . . Held by torque	74/1577	. . . Gripper mountings, lever
74/1441	. . . . Geneva or mutilated gear drive	74/1579	. . . . Reversible
74/1447	. . . . Velocity control	74/1581	. . . . Multiple acting
74/1453	. . . . Interlocked rotator and brake	74/1582	. . . . Single ratchet or clutch
74/1459	. . . . Diverse-type brakes	74/1584	. . . Gripper mountings, slide
74/1465	. . . . with axially acting friction brake	74/1585	. . . . Multiple acting
74/1471	. . Plural operators or input drives	74/1587	. . . Grip features
74/1476	. . with means to axially shift shaft	74/1589	. . . . Driving band
74/1482	. . Single revolution input effects desired fractional output	74/159	. . . . Clamping
74/1488	. . Control means	74/1592	. . . . Driven band and gripper
74/1494	. . Locking means	74/1594	. . . . Positive grip
74/15	. Intermittent grip type mechanical movement	74/1595	. . . . Driving ratchet-bar or rack
74/1502	. . Escapement	74/1597	. . . . Multiple acting
74/1503	. . Rotary to intermittent unidirectional motion	74/1598	. . . . Driven ratchet-bar and power dog
74/1505	. . . Automatically controlled	74/16	. Alternating-motion driven device with means during operation to adjust stroke
74/1506	. . . . Speed	74/1608	. . Constant length stroke with means to displace end limits
74/1508	. . . Rotary crank or eccentric drive	74/1616	. . . Cyclical displacement responsive to the alternating-motion
74/151	. . . . Adjustable	74/1625	. . Stroke adjustable to zero and/or reversible in phasing
74/1511	. . . . Lever transmitter	74/1633	. . . Plural driving means to jointly drive the driven device
74/1513	. . . . Adjustable leverage		
74/1515	. . . . Rack and pinion transmitter		
74/1516	. . . . Adjustable throw		

74/1642	. . . Device driven from selected points on oscillating link	74/18384	. . . Crank, lever, and crank
74/165	. . . Driving lever with adjustable pivot point	74/18392	. . . Crank, pitman, and crank
74/1658	. . . Eccentric and strap drive, shiftable eccentric	74/184	. . . Cranks, link connected
74/1667	. . . . Changing the extent of eccentricity	74/18408	. . . Cranks, slidable connections
74/1675	. . . Crank pin drive, shiftable pin	74/18416	. . Rotary to alternating rotary
74/1683	. . . Cam and follower drive	74/18424	. . . Mangle connections
74/1692	. . . . Axial-type cam [e.g., wabblers type]	74/18432	. . . . Shiftable driven gear
74/17	. Rotary driven device adjustable during operation relative to its supporting structure	74/1844	. . . . . Central teeth
74/173	. . Screw and nut adjusting means	74/18448	. . . . Mutilated gearing connections
74/177	. . Rack and pinion adjusting means	74/18456	. . . Crank, pitman, and lever
74/18	. Mechanical movements	74/18464	. . . Reciprocating rack connections
74/18008	. . Oscillating to reciprocating and alternating rotary	74/18472	. . . . Crank and pitman actuator
74/18016	. . Oscillating to reciprocating and intermittent rotary	74/1848	. . . . Simple crank actuator
74/18024	. . Rotary to reciprocating and rotary	74/18488	. . . Oscillating rack connections
74/18032	. . . Rotary to reciprocating or rotary	74/18496	. . . . Mangle actuated
74/1804	. . Rotary to reciprocating and alternating rotary	74/18504	. . . . Crank and pitman actuator
74/18048	. . Rotary to reciprocating and intermittent rotary	74/18512	. . . Flexible connector type
74/18056	. . Rotary to or from reciprocating or oscillating	74/1852	. . . Associated inertia devices
74/18064	. . . Head motions	74/18528	. . Rotary to intermittent unidirectional motion
74/18072	. . . Reciprocating carriage motions	74/18536	. . . Space machines
74/1808	. . . . Phonograph type	74/18544	. . Rotary to gyratory
74/18088	. . . Rack and pinion type	74/18552	. . . Unbalanced weight
74/18096	. . . . Shifting rack	74/1856	. . Reciprocating or oscillating to intermittent unidirectional motion
74/18104	. . . . Shiftable pinion	74/18568	. . Reciprocating or oscillating to or from alternating rotary
74/18112	. . . . Segmental pinion	74/18576	. . . including screw and nut
74/1812	. . . . Alternately rotated pinion	74/18584	. . . . Shaft shorter than nut
74/18128	. . . . Clutchable gears	74/18592	. . . . Auxiliary drive [e.g., fluid piston, etc.] for load
74/18136	. . . . . Bevel	74/186	. . . . Alternate power path operable on failure of primary
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		
74/1832	. . . . . Multiple screw		
74/18328	. . . . . Alternately rotated screw		
74/18336	. . . . . Wabblers type		
74/18344	. . . Unbalanced weights		
74/18352	. . . Trammel-pitman		
74/1836	. . Rotary to rotary		
74/18368	. . Inertia or centrifugal transmitters		
74/18376	. . . Crank, pitman, lever, and crank		

74/18776	Rectilinear rack	74/1914	Alternate drivers and driven
74/18784	including bevel gears	74/19144	Miscellaneous [plural power paths]
74/18792	including worm	74/19149	with fluid drive
74/188	including spur gear	74/19153	Condition responsive control
74/18808	with rack	74/19158	with one or more controllers for gearing, fluid drive, or clutch
74/18816	Curvilinear rack	74/19163	with interrelated controls
74/18824	with biasing means	74/19167	In series plural interchangeably locked nonplanetary units
74/18832	including flexible drive connector [e.g., belt, chain, strand, etc.]	74/19172	Reversal of direction of power flow changes power transmission to alternate path
74/1884	with sprocket wheel	74/19177	Input and output exchange functions
74/18848	with pulley	74/19181	toothed gear and recirculated unconnected elements
74/18856	Oscillating to oscillating	74/19186	Alternating rotary or continuous
74/18864	Snap action	74/19191	Alternating rotary
74/18872	Plate spring	74/19195	Progressive
74/1888	Geared connections	74/192	Shiftable and/or slidable gears
74/18888	Reciprocating to or from oscillating	74/19205	Clutchable gears
74/18896	Snap action	74/1921	On single driven member
74/18904	Plate spring	74/19214	On single driving member
74/18912	Compound lever and slide	74/19219	Interchangeably locked
74/1892	Lever and slide	74/19223	Disconnectable counter shaft
74/18928	Straight line motions	74/19228	Multiple concentric clutch shafts
74/18936	Slidable connections	74/19233	Plurality of counter shafts
74/18944	Link connections	74/19237	Internal-external gears
74/18952	toggle transmissions	74/19242	Combined gear and clutch
74/1896	Cam connections	74/19247	Preselector
74/18968	Flexible connections	74/19251	Control mechanism
74/18976	Rack and pinion	74/19256	Automatic
74/18984	Inclined ramp	74/1926	Speed responsive
74/18992	Reciprocating to reciprocating	74/19265	Governor
74/19	Gearing	74/1927	with belt gearing
74/19005	Nonplanetary gearing differential type [e.g., gearless differentials]	74/19274	torque responsive
74/19009	Single gearing unit includes fluid drive	74/19279	Cam operated
74/19014	Plural prime movers selectively coupled to common output	74/19284	Meshing assisters
74/19019	Plural power paths from prime mover	74/19288	Double clutch and interposed transmission
74/19023	Plural power paths to and/or from gearing	74/19293	Longitudinally slidable
74/19028	Alternate input connections single hand crank	74/19298	Multiple spur gears
74/19033	Fluid drive divides or combines alternate paths	74/19302	with tumbler gear
74/19037	One path includes fluid drive	74/19307	Selective
74/19042	Friction-type gearing	74/19312	Direct clutch and drive
74/19047	Worm-type gearing	74/19316	Progressive
74/19051	Single driven plural drives	74/19321	Direct clutch and drive
74/19056	Parallel	74/19326	Fluid operated
74/1906	Nonparallel	74/1933	Multiple bevel gears
74/19065	Aligned	74/19335	Single spur gear
74/1907	Parallel and aligned	74/1934	Tumbler and cone
74/19074	Single drive plural driven	74/19344	Multiple cone
74/19079	Parallel	74/19349	Single bevel gear
74/19084	Spur	74/19353	Pin or crown gears
74/19088	Bevel	74/19358	Laterally slidable gears
74/19093	Spur and bevel	74/19363	Rotary carriage
74/19098	Helical	74/19367	Swinging carriage
74/19102	Belt or chain	74/19372	Single forward and reverse speeds
74/19107	Nonparallel	74/19377	Slidable keys or clutches
74/19112	Aligned	74/19381	Alternative clutch shaft
74/19116	Vehicle	74/19386	Multiple clutch shafts
74/19121	Concentric	74/19391	Progressive
74/19126	Plural drivers plural driven	74/19395	Keys simultaneously slidable
74/1913	Bevel	74/194	Selective
74/19135	Spur	74/19405	Multiple forward and reverse

74/19409	Single forward and reverse	74/19698	Spiral
74/19414	Single clutch shaft	74/19702	Screw and nut
74/19419	Progressive	74/19707	Plural longitudinally variably spaced nuts
74/19423	Multiple key	74/19712	Threadless
74/19428	Spur	74/19716	Non-linear screw
74/19433	Fluid operated	74/19721	Thread geometry
74/19437	Electrically operated	74/19726	Thread pitch varies over axial length
74/19442	Single key	74/1973	Shaft thread is spirally wound wire
74/19447	Clutch and ratchet	74/19735	Nut disengageable from screw
74/19451	Spur gears	74/1974	Nut segments hinged parallel to shaft [e.g., clam shell-type, etc.]
74/19456	Intermediate clutch	74/19744	Rolling element engaging thread
74/1946	Sliding clutch carrier	74/19749	Recirculating rolling elements
74/19465	Sliding clutch operator	74/19753	Plural independent recirculating element paths
74/1947	Selective	74/19758	Single thread common to plural paths
74/19474	Multiple key	74/19763	Roller return path in shaft
74/19479	Spur gears	74/19767	Return path geometry
74/19484	Single speed forward and reverse	74/19772	Rolling element deflector
74/19488	Spur gears	74/19777	Interconnected or cooperating rollers or roller structure
74/19493	Bevel gears	74/19781	Non-recirculating rolling elements
74/19498	Bevel and idler gears	74/19786	Captured sphere
74/19502	Pivotally supported	74/19791	Cylindrical or quasi-cylindrical roller element [e.g., inclined roller, etc.]
74/19507	Windmill turntable	74/19795	Parallel to shaft
74/19512	Screw	74/198	Perpendicular to shaft
74/19516	Spur	74/19805	Less than 360 degrees of contact between nut and screw
74/19521	Bevel	74/19809	Independent nut segments
74/19526	Wheel type	74/19814	Integral deformable tangs engaging screw
74/1953	Wringer type	74/19819	Driven rack or shaft
74/19535	Follow-up mechanism	74/19823	Screw
74/1954	Eccentric driving shaft and axle	74/19828	Worm
74/19545	Central driving shaft in axle	74/19833	Variable speed
74/1955	Parallel shafts, adjustable gear mesh	74/19837	Intermittent motion
74/19555	Varying speed ratio	74/19842	Distribution of pressure
74/1956	Adjustable	74/19847	torque actuated safety devices
74/19565	Relative movable axes	74/19851	Gear and rotary bodies
74/1957	Parallel shafts	74/19856	Laterally-spaced wheels
74/19575	Automatic control	74/1986	Radially-spaced wheels
74/1958	Parallel shafts	74/19865	with flywheel
74/19585	Fixed axes	74/1987	Rotary bodies
74/1959	Parallel shafts	74/19874	Mutilated
74/19595	Automatic control	74/19879	Geneva
74/196	Parallel shafts	74/19884	Irregular teeth and bodies
74/19605	Reversing means	74/19888	External and internal teeth
74/19609	Governor control	74/19893	Sectional
74/19614	Disconnecting means	74/19898	Backlash take-up
74/19619	Displaceable elements	74/19902	Screw and nut
74/19623	Backlash take-up	74/19907	Sound deadening
74/19628	Pressure distributing	74/19912	Differential disks
74/19633	Yieldability in gear trains	74/19916	Multiple disks
74/19637	with brake means for gearing	74/19921	Separate rim
74/19642	Directly cooperating gears	74/19926	Detachable
74/19647	Parallel axes or shafts	74/1993	Segmental rim
74/19651	External type	74/19935	Sheet metal
74/19656	Pin teeth	74/1994	Diametrically split
74/1966	Intersecting axes	74/19944	Shaft-admitting insert
74/19665	Bevel gear type	74/19949	Teeth
74/1967	Rack and pinion	74/19953	Worm and helical
74/19674	Spur and bevel		
74/19679	Spur		
74/19684	Motor and gearing		
74/19688	Bevel		
74/19693	Motor vehicle drive		

74/19958 . . . Bevel	74/20262 Rotary control shaft
74/19963 . . . Spur	74/20268 Reciprocating control elements
74/19967 Yieldable	74/20274 Flexible
74/19972 form	74/2028 Handle bar type
74/19977 Antifriction	74/20287 Flexible control element
74/19981 Roller	74/20293 with horn control
74/19986 Twisted	74/20299 . . . Antirattling elements
74/19991 . . Lubrication	74/20305 . . . Robotic arm
74/19995 . . . Teeth	74/20311 including power cable or connector
74/20 . . Control lever and linkage systems	74/20317 including electric motor
74/20006 . . Resilient connections	74/20323 including flaccid drive element
74/20012 . . Multiple controlled elements	74/20329 Joint between elements
74/20018 . . . Transmission control	74/20335 Wrist
74/20024 Fluid actuator	74/20341 . . . Power elements as controlling elements
74/2003 Electrical actuator	74/20348 Planar surface with orthogonal movement and rotation
74/20037 Occupant propelled vehicle	74/20354 Planar surface with orthogonal movement only
74/20043 Transmission controlled by flexible cable	74/2036 Pair of power elements
74/20049 Transmission controlled by flexible cable	74/20366 . . . Power and manual controlling elements
74/20055 Foot operated	74/20372 . . . Manual controlling elements
74/20061 Multiple foot-operated controls	74/20378 Planar surface with orthogonal movement or rotation
74/20067 Control convertible between automatic and manual operation	74/20384 Levers
74/20073 Control of plural mechanisms [e.g., control of transmission and control of 4 - wheel drive]	74/2039 Pair of levers
74/20079 Separate control levers	74/20396 . . Hand operated
74/20085 Restriction of shift, gear selection, or gear engagement	74/20402 . . . Flexible transmitter [e.g., Bowden cable]
74/20091 Prevention of reverse shift	74/20408 Constant tension sustaining
74/20098 Separate actuator to disengage restrictor	74/20414 Hydraulic control
74/20104 Shift element interlock	74/2042 and hand operator
74/2011 with detent, recess, notch, or groove	74/20426 Slidable
74/20116 Resiliently biased interlock	74/20432 for moving a mirror
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
	74/20576 . . Elements
	74/20582 . . . Levers
	74/20588 toggle
	74/20594 Lazy tongs
	74/206 Adjustable
	74/20606 Swing posts

74/20612	Hand	74/2109 . .	Balancing for drum, e.g., washing machine or arm-type structure, etc., centrifuge, etc.
74/20618	Jointed	74/211 . .	Eccentric
74/20624	Adjustable	74/2111 . . .	Plural, movable relative to each other [including ball[s]]
74/2063	Stops	74/2112	Concentric
74/20636 . . .	Detents	74/2114 . . .	Adjustable
74/20642	Hand crank	74/2115	Radially
74/20648	Interrelated lever release	74/2116 . . .	having anti-friction means, e.g., roller bearing, lubrication, etc.
74/20654	Gear	74/2117 . .	Power generating-type flywheel
74/2066	Friction	74/2119 . . .	Structural detail, e.g., material, configuration, superconductor, discs, laminated, etc.
74/20666	Lever engaging	74/212	Containing fiber or filament
74/20672	Lever engaging rack	74/2121 . .	Flywheel, motion smoothing-type
74/20678	Pivoted	74/2122 . . .	with fluid balancing means
74/20684	Lever carried pawl	74/2123	and pressure compensation
74/2069	Handle release	74/2125	and elastic device
74/20696	Finger lever release	74/2126	and bearings
74/20702	Slidable	74/2127 . . .	with electrical or magnetic damping
74/20708	Pedal controlled	74/2128 . . .	Damping using swinging masses, e.g., pendulum type, etc.
74/20714	Lever carried rack	74/213 . . .	Damping by increasing frictional force
74/2072	Pivoted	74/2131 . . .	Damping by absorbing vibration force [via rubber, elastomeric material, etc.]
74/20726	Pedal controlled	74/2132 . . .	Structural detail, e.g., fiber, held by magnet, etc.
74/20732 . . .	Handles	74/2133 . .	Pawls and ratchets
74/20738	Extension	74/2135 . . .	Noiseless
74/20744	Hand crank	74/2136 . . .	Pivoted pawls
74/2075	Extensible	74/2137	Single tooth
74/20756	Collapsible	74/2138	Flexible single tooth
74/20762	Shaft connections	74/214	Multiple tooth
74/20768	Engine starter type	74/2141 . . .	Sliding pawls
74/20774	Holders	74/2142 . .	Pitmans and connecting rods
74/2078	Handle bars	74/2143 . . .	Radial
74/20786	Spring biased or supported	74/2144 . . .	Yieldable
74/20792	Folding or adjustable	74/2146	Longitudinal springs
74/20798	Sectional	74/2147	Fluid cushion
74/20804	Simultaneously movable	74/2148	Automatic release
74/2081	Continuous	74/2149	toggle link type
74/20816	with handle latch	74/2151 . . .	Longitudinally adjustable
74/20822	Attachments and accessories	74/2152 . . .	Hollow rod, lubricated
74/20828	Handholds and grips	74/2153 . . .	Sheet metal type
74/20834	Hand wheels	74/2154 . . .	Counterbalanced
74/2084	Knob or dial	74/2156	Weight type
74/20846	Slidable	74/2157	Rotating
74/20852	Pivoted	74/2158	Spring
74/20858	Releasable	74/2159 . . .	Section coupled
74/20864	Handles	74/216 . . .	Bearings, adjustable
74/2087	Rim grips and covers	74/2162 . . .	Engine type
74/20876	Caps and covers	74/2163 . . .	Idler arm
74/20882 . . .	Rocker arms	74/2164 . .	Cranks and pedals
74/20888 . . .	Pedals	74/2165 . . .	with attached gear
74/20894	Treadles	74/2167 . . .	Variable
74/209	Extension	74/2168	Pedals
74/20906	Offset	74/2169	Counterbalanced
74/20912	Pads and covers	74/217	with toe or shoe clips
74/20918 . . .	Foot rests	74/2172	Adjustable or folding
74/20924 . . .	Controller checks	74/2173 . .	Cranks and wrist pins
74/2093 . . .	Slot closers and lever guards	74/2174 . . .	Multiple throw
74/21 . .	Elements	74/2175	Sectional
74/2101 . . .	Cams		
74/2102 . . .	Adjustable		
74/2104	Flexible strip		
74/2105	Memory devices		
74/2106	Timer devices		
74/2107 . . .	Follower		

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
 82/141 . . having transverse tool and templet guide
 82/142 . . . with workpiece gauge
 82/143 . . . having electrical actuator
 82/145 And hydraulic actuator
 82/147 . . . having hydraulic actuator
 82/148 . . Pivoted tool rest
 82/149 . . Profiled cutter
 82/15 . . Tapers
 82/152 . . Offset work axis
 82/154 . . Transversely shifted cutter
 82/156 . . . Templet controlled
 82/158 . . . Gear controlled
 82/16 . . Severing or cut-off
 82/16016 . . Processes
 82/16032 . . Automatic and/or triggered control
 82/16049 . . Combined with means to sharpen tool[s]
 82/16065 . . Combined with means to apply fluid
 82/16081 . . Combined with means to heat tool and/or work
 82/16098 . . with dust or chip handling
 82/16114 . . including scrap cutting means
 82/16131 . . Flying cutter type
 82/16147 . . Cutting couple straddling work
 82/16163 . . . with pattern, guide or cam means [noncircular product]
 82/16181 . . . Plural cutting means [pairs, or pair, plus single]
 82/16196 . . . Rotary shear pair
 82/16213 Tool axes parallel to axis of work rotation
 82/16229 . . Interrelated means for tool infeed and circumrotation

82/16245 . . . Dependent upon reaction to work
 82/16262 . . . Infeed cam disk rotation geared to tool holder rotation
 82/16278 Axial infeed cam
 82/16295 including centrifugal balancing means
 82/16311 Scroll plate infeed cam
 82/16327 . . . Infeed cam plate braked with respect to tool[s] carrier plate
 82/16344 . . . Orbital cogwheel and fixed detent
 82/16361 . . . Common gear means
 82/16377 including adjustable means to vary gear speed
 82/16393 with manual disconnect lever
 82/16409 . . . with means to feed work
 82/16426 . . Infeed means
 82/16442 . . . with means to circumrotate tool[s] about work
 82/16459 Fluid means for relative tool actuation
 82/16475 Gear means for tool actuation
 82/16491 including axial cam
 82/16508 with indicator
 82/16524 Bell crank linkage for tool[s] holder
 82/16541 Resilient means for tool actuation
 82/16557 with means for manual retraction
 82/16573 . . . Hand crank for tool holder
 82/16591 . . . Power driven eccentric
 82/16606 Fluid motor
 82/16622 Plural tools
 82/16639 . . . Tool within work
 82/16655 . . . with means to rotate tool[s]
 82/16672 including rotatable cutters supporting work
 82/16688 Planetating work mandrels
 82/16704 Pivoted tool carriage
 82/16721 with adjustable work stops
 82/16737 Eccentric periphery rotary tool
 82/16754 Means to feed work axially
 82/16771 Translatable work support carriage
 82/16786 with tool groove in support roll[s]
 82/16803 . . . Rotatable tool[s] driven by contact with work
 82/16819 Axially movable tool support
 82/16836 Freely floating parallel to axis
 82/16852 with supplemental nonrotative tool
 82/16868 including clutch control for work rotation
 82/16885 including resilient means urging work against rotary support
 82/16901 . . . Separate means for plural tools
 82/16918 . . . Spring urged
 82/16934 For window shade
 82/16951 . . . Tool adjustment and/or stop
 82/16967 . . . with means to support and/or rotate work
 82/16983 . . . with means to feed work
 82/17 . . Lathe for pulley
 82/18 . . Lathe for wheel or axle
 82/185 . . In situ lathe for railroad wheel
 82/19 . . Lathe for crank or crank pin
 82/192 . . Portable lathe for crank pin
 82/195 . . having work oscillator
 82/198 . . . having work driver
 82/20 . . Lathe for screw cutting
 82/205 . . having swinging feed nut and tool bar
 82/21 . . Portable lathe for brake drum, disc, or shoe
 82/22 . . Portable lathe for pipe turning
 82/23 . . Portable lathe for piston grooving

82/24	. Bench lathe
82/245	. . Watchmaker's lathe
82/25	. Lathe
82/2502	. . with program control
82/2504	. . . And transmission
82/2506	. . . And tool turret
82/2508	. . with tool turret
82/2511	. . Vertical
82/2512	. . having facing tool fed transverse to work
82/2514	. . with work feeder or remover
82/2516	. . . Magazine type
82/2518	. . . . Bar feeder
82/2521	. . . Bar feeder
82/2522	. . Portable
82/2524	. . Multiple
82/2527	. . having hollow cutter head
82/2529	. . Revolvable cutter heads
82/2531	. . Carriage feed
82/2533	. . . Control
82/2535	. . . . Electrical type
82/2537	. . . Apron mechanism
82/2539	. . . . Feednut control
82/2541	. . . Slide rest
82/2543	. . . . Multiple tool support
82/2545	. . . . Tool relief
82/2547	. . . Change gears
82/2549	. . . Feedscrews and rods
82/2552	. . Headstock
82/2554	. . . Speed changing gear
82/2556	. . . . Speed change gears for maintaining constant cutting speed
82/2558	. . . Spindle reverser
82/2561	. . . Spindle or work angler
82/2562	. . . Spindle and bearings
82/2564	. . Tailstock
82/2566	. . Bed
82/2568	. . Center
82/2571	. . . Alignment adjuster
82/2572	. . Attachment
82/2574	. . . Stop [e.g., carriage, tool, work, etc.]
82/2577	. . . . Tool slide
82/2579	. . . . Collet or spindle
82/2581	. . . . Indexible [e.g., roll type, etc.]
82/2583	. . Tool and work rest
82/2585	. . Tool rest
82/2587	. . . Turret type holder [e.g., multiple tools, etc.]
82/2589	. . . Quick release tool or holder clamp
82/2591	. . . Tool post
82/2593	. . Work rest
82/2595	. . . with noise or vibration dampener
82/2597	. . . Center rest
82/26	. Work driver
82/262	. . Lathe dog
82/264	. . . Cam grip
82/266	. . Mandrel
82/268	. . . Expansible
82/27	. Centerer
82/28	. Drill press attachment for turning
82/29	. Attachment for cutting a valve
82/30	. Miscellaneous

Former US Class 83 series**83/00 Cutting**

83/02	. Other than completely through work thickness
83/0207	. . or through work presented
83/0215	. . . Including use of rotary scoring blade
83/0222	. . . . Plural independent rotary scoring blades
83/023	. . . With infeeding of work
83/0237	. . Pricking
83/0244	. . . Including use of orbiting tool carrier
83/0252	. . . With infeeding of tool
83/0259	. . Edge trimming [e.g., chamfering, etc.]
83/0267	. . Splitting
83/0274	. . . By use of endless band or chain knife
83/0281	. . . By use of rotary blade
83/0289	. . . . Plural independent rotary blades
83/0296	. . . With infeeding of work
83/0304	. . Grooving
83/0311	. . . By use of plural independent rotary blades
83/0319	. . . . Forming common groove
83/0326	. . . . Blades turning about perpendicular axes
83/0333	. . Scoring
83/0341	. . . Processes
83/0348	. . . Active means to control depth of score
83/0356	. . . Serially
83/0363	. . . Plural independent scoring blades
83/037	. . . . Rotary scoring blades
83/0378	. . . . . On opposite sides of work
83/0385	. . . Rotary scoring blade
83/0393	. . . . With means to rotate blade
83/04	. Processes
83/0405	. . With preparatory or simultaneous ancillary treatment of work
83/041	. . . By heating or cooling
83/0414	. . . . At localized area [e.g., line of separation]
83/0419	. . . By distorting within elastic limit
83/0424	. . . . By stretching
83/0429	. . . . By compressing
83/0433	. . . . By flexing around or by tool
83/0438	. . . . . To conform to shape of tool
83/0443	. . . By fluid application
83/0448	. . With subsequent handling [i.e., of product]
83/0453	. . . By fluid application
83/0457	. . . 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	83/202	. With product handling means
83/0534	. . . . Cutting to join blanked holes	83/2022	. . Initiated by means responsive to product or work
83/0538	. . . Repetitive transverse severing from leading edge of work	83/2024	. . . Responsive to work
83/0543	. . . . Alternately forming products of less than total width of work	83/2027	. . Initiated by means directly responsive to tool movement
83/0548	. . . . With longitudinal severing	83/2029	. . . In return motion of tool
83/0553	. . . . . Effected by plural steps	83/2031	. . Including means to drape the product
83/0558	. . . . . Along zigzag or undulant line or cut	83/2033	. . Including means to form or hold pile of product pieces
83/0562	. . . . . Prior to transverse severing	83/2035	. . . In nested relation
83/0567	. . . . Nonrectilinear cutting	83/2037	. . . In stacked or packed relation
83/0572	. . . Plural cutting steps effect progressive cut	83/204	. . . . Stacker sweeps along product support
83/0577	. . . Repetitive blanking	83/2042	. . . . Including cut pieces overlapped on delivery means
83/0581	. . Cutting part way through from opposite sides of work	83/2044	. . . . And means to separate product portions
83/0586	. . Effecting diverse or sequential cuts in same cutting step	83/2046	. . . . Including means to move stack bodily
83/0591	. . Cutting by direct application of fluent pressure to work	83/2048	. . . . . By movement of stack holder
83/0596	. . Cutting wall of hollow work	83/205	. . . . . . By timed relocation of holder along path of stack gscheme-change-itemth
83/06	. . Blanking	83/2053	. . . . . . Interrelated adjustment of holder movement and work-feeder
83/0605	. . Cut advances across work surface	83/2055	. . . . . And means to resist stack movement
83/061	. With manually actuated means to disturb cyclic operation	83/2057	. . . . . Including means to deliver individual pieces to a stack holder
83/081	. With randomly actuated stopping means	83/2059	. . . . . With spindle to enter a hole or to make hole in product
83/083	. . With means to permit subsequent hand operation	83/2061	. . . . . By face-engaging means to push product broadside into stacked relation
83/084	. . With stop-signal-responsive means to actuate auxiliary cutter	83/2063	. . . . . Upon emergence from hollow cutter
83/086	. . With sensing of product or product handling means	83/2066	. . By fluid current
83/088	. . Responsive to tool detector or work-feed-means detector	83/2068	. . . Plural blasts directed against plural product pieces
83/089	. . . Responsive to tool characteristic	83/207	. . . By suction means
83/091	. . Responsive to work sensing means	83/2072	. . By brush means
83/093	. . . Of buckled work	83/2074	. . Including means to divert one portion of product from another
83/094	. . . . Running loop	83/2077	. . . By kerf entering guide
83/096	. . . Detector supported on or urged against work	83/2079	. . . Remaining or re-inserted product portion from base material
83/098	. . . . Resiliently biased	83/2081	. . . Gravity type
83/099	. . Manually operated	83/2083	. . . Deflecting guide
83/101	. With stopping means effective on completion of predetermined number of tool cycles	83/2085	. . . . Positionable gate in product flow path
83/121	. With means to accomplish delayed stopping after cessation of cyclic operation	83/2087	. . . Diverging product movers
83/141	. 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

83/2124	. . . . .	And means to strip the outer surface of a cutter	83/313	. .	Spatially fixed tool
83/2127	. . . . .	Ejector operated with return stroke of cutter	83/323	. .	With means to stretch work temporarily
83/2129	. . . . .	By means carried by cooperating cutter	83/343	. .	With means to deform work temporarily
83/2131	. . . . .	By cam-operated ejector	83/364	. .	By fluid blast and/or suction
83/2133	. . . . .	By resiliently biased ejector	83/384	. .	By tool inside hollow work
83/2135	. . . . .	Moving stripper timed with tool stroke	83/385	. .	Work pre-packed with internal tool[s]
83/2137	. . . . .	And alternatively movable to or from operating position	83/386	. .	With expanding mandrel
83/214	. . . . .	Latched stripper released by tool return	83/387	. .	Interrelated tool feed means and means to actuate work immobilizer
83/2142	. . . . .	Plural strippers operative upon plural tools	83/388	. . .	Actuated clamp element and work holder coact to position work
83/2144	. . . . .	Single stripper operative upon plural tools	83/39	. .	Synchronized tool and work feeding means
83/2146	. . . . .	Spring arm stripper	83/391	. .	With means to position tool[s] for cutting
83/2148	. . . . .	Linkage actuated	83/392	. .	One tool [either internal or external] having compound motion
83/215	. . . . .	Carried by moving tool element or its support	83/393	. . .	Annulus and disc-type tool pair
83/2153	. . . . .	Fluid pressure actuated stripper	83/394	. .	One tool having unidirectional rotary motion
83/2155	. . . . .	Stripper biased against product	83/395	. .	One tool having only rectilinear motion[s]
83/2157	. . . . .	Elastomeric stripper contacting product	83/396	. . .	Annulus and disc-type tool pair
83/2159	. . . . .	By spring means	83/397	. . . .	A tool has a sequence of motion in plural paths
83/2161	. . . . .	By free weight of stripper	83/398	. . .	Internal tool is an active cutter
83/2163	. . . . .	Stripper biased against product	83/40	. . .	Multiple external active tools
83/2166	. . . . .	Spring biased stripper	83/401	. . . .	Tools operate in a substantially common transverse plane of cut
83/2168	. . . . .	Manually operated stripper	83/402	. . . . .	With tool actuating cams on a common support
83/217	. . . . .	Stationary stripper	83/403	. .	With manually actuated means to position or facilitate positioning of work
83/2172	. . . . .	Stripper encircles moving tool	83/404	. .	By means to misalign aligned apertured tools
83/2174	. . .	Blockable exit port	83/408	. .	Combined with another type tool of the class
83/2177	. . .	Tool conforming member interposed between tool and work	83/412	. .	Rectilinear relative movement only
83/2179	. . .	Including means to move, or resist movement of, cut pieces along delivery chute	83/416	. .	Rotary relative movement solely about a single pivot
83/2181	. . .	Active delivery means mounted on tool support	83/42	. . .	With plural apertures in one or both carriers
83/2183	. . .	Product mover including gripper means	83/424	. .	By increased tensioning of work-enclosing wire
83/2185	. . . . .	Suction gripper	83/444	. .	Tool engages work during dwell of intermittent workfeed
83/2187	. . . . .	Reciprocating product handler	83/4443	. .	Unicyclic
83/219	. . . . .	Rotating or oscillating product handler	83/4445	. . .	Convertible to and from unicyclic
83/2192	. . .	Endless conveyor	83/4448	. . .	Controlled by mechanical means
83/2194	. . . . .	And means to remove product therefrom	83/445	. .	With work-moving clamp jaw
83/2196	. . .	Roller[s]	83/4453	. .	Work moved solely by movable abutment
83/2198	. . .	Tiltable or withdrawable support	83/4455	. .	Operation initiated by work-driven detector means to measure work length
83/22	. . .	Means to move product laterally	83/4458	. .	Work-sensing means to control work-moving or work-stopping means
83/2203	. . . . .	Oscillating means	83/446	. . .	With means to initiate tool feed by same control impulse
83/2205	. . . . .	Reciprocating means	83/4463	. .	Work-sensing means to initiate tool feed
83/2207	. . .	Means to move product in a nonrectilinear path	83/4465	. . .	With work-stopping abutment in sensing means
83/2209	. . .	Guide	83/4468	. .	Plural tools at same station, one positioned for continuous engagement with work
83/2211	. . . . .	Abutment in path of product being moved by work feeder	83/447	. .	Plural tools successively actuated at same station
83/2213	. . . . .	Product-diverting conduit in or from hollow tool	83/4473	. . .	During one dwell period
83/2216	. . . . .	Inclined conduit, chute or plane	83/4475	. .	Tool has motion additional to cutting stroke during tool cycle
83/2218	. . . . .	Abutment interposed in path of free fall or flight of product	83/4478	. . .	Tool has additional motion during work dwell
83/222	. .	With receptacle or support for cut product	83/448	. . . .	Included in plural cutting cycles
83/242	. .	With means to clean work or tool	83/4483	. . .	Tool has work-feeding motion
83/263	. .	With means to apply transient nonpropellant fluent material to tool or work	83/4486	. .	With variable direction of work-feed from cycle to cycle
83/283	. .	With means to control or modify temperature of apparatus or work	83/4488	. . .	In one of certain selected directions
83/293	. .	Of tool			
83/303	. .	With tool sharpener or smoother			

- 83/4491 . . Interlock between tool actuating and work feed means
- 83/4493 . . Tool motion initiates work feed and vice versa
- 83/4496 . . Stored energy means for moving work or tool, loaded by tool or work
- 83/4498 . . . Work feed means actuates energy storage device for tool
- 83/4501 . . Work feed means controlled by means mounted on tool or tool support
- 83/4503 . . . Such means drives the work feed means
- 83/4506 Work feed means carried by tool or tool support
- 83/4508 With supplemental work feed means
- 83/4511 On return stroke of tool
- 83/4513 . . . Work feed means halted by means on tool or tool support
- 83/4516 . . Work-feed mechanism in nonfeed motion effects or initiates tool actuation
- 83/4518 . . . By striking tool actuator
- 83/4521 Nonfeed motion is reverse to feed motion
- 83/4523 . . With means to vary number of work-feed increments between tool strokes
- 83/4526 . . Dwell caused by imposing reverse motion on portion of flexible moving work
- 83/4529 . . With uninterrupted flow of work from supply source
- 83/4531 . . Work feed increment shorter than longitudinal tool field
- 83/4534 . . Unequal work feed increments in recurring series
- 83/4536 . . . Work carriage carries ratchet means to determine increments
- 83/4539 . . Means to change tool position, or length or datum position of work- or tool-feed increment
- 83/4541 . . . With means to vary magnitude of work-feed increment
- 83/4544 Multi-increment type [e.g., ticket issuing]
- 83/4546 Length selector initiates machine operation
- 83/4549 By change in length of one member of feed-driving linkage
- 83/4551 Rotating member
- 83/4554 By change of effective shape of driving or driven surface of element of work-feed mechanism
- 83/4556 By adjustment of fixed stop
- 83/4559 . . . With means to vary magnitude or base position of tool stroke
- 83/4561 . . With means to facilitate manual repositioning [shift] of work
- 83/4564 . . With means to produce plurality of work-feed increments per tool cycle
- 83/4567 . . . Including supplemental work-feed means
- 83/4569 Manual
- 83/4572 With stop adapted to engage abutment surface on work
- 83/4574 Plurality of work stops successively effective
- 83/4577 . . Work fed successively to plural tools
- 83/4579 . . . With change of direction between tools
- 83/4582 . . Work advance occurs during return stroke of tool
- 83/4584 . . Dwell defined only by "dead-center" of rotating crank
- 83/4587 . . Dwell initiated by disengagement of surface of moving frictional feed means from work
- 83/4589 . . . Feed means has interrupted frictional surface
- 83/4592 . . . Feed means has rotary motion
- 83/4594 . . Dwell caused by clamping or blocking work during continuous operation of feed means
- 83/4597 . . With means to control magnitude of work-feed increment or work acceleration
- 83/4599 . . . Means to prevent random or excessive work feeds
- 83/4602 . . . Full stroke required of feed means
- 83/4604 . . Work feed functions as tool support
- 83/4607 . . With rotary work-carrier
- 83/461 . . With abutment to position work being fed with respect to cutter
- 83/4612 . . . With slip between positioned work and feed means
- 83/4615 . . Work guide and feed means have open side
- 83/4617 . . Work feed means modified to maintain clearance from tool
- 83/462 . . Plurality of work feed means in separate paths
- 83/4622 . . Intermittent drive type of gearing for work-feed means
- 83/4625 . . . Gearing modified to lock the work-feed means
- 83/4627 . . . Mutilated gear in mesh with gear driving work-feed means
- 83/463 . . Work-feed element contacts and moves with work
- 83/4632 . . . Comprises a work-moving gripper
- 83/4635 . . . Comprises element entering aperture in, or engaging abutment surface on, work
- 83/4637 . . With means to guide, position, or present work to work-feed means
- 83/464 . . . Means to transport work to work-feed means
- 83/4642 Including means to pick articles from pack or stack
- 83/4645 . . With means to clamp work during dwell
- 83/4647 . . One-revolution clutch in tool drive
- 83/465 . Cutting motion of tool has component in direction of moving work
- 83/4653 . . With means to initiate intermittent tool action
- 83/4656 . . . Tool moved in response to work-sensing means
- 83/4659 With means to vary "length" of product
- 83/4662 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"	83/492	. . With means to vary timing of tool feed
83/4714	. . Oscillating work shifter adjacent cutter	83/494	. . Uniform periodic tool actuation
83/4717	. . . Work actuated senser initiates shifter	83/496	. . . With periodic lateral feed of tool or work
83/472	. . Wire tool	83/498	. . . With plural tool stations
83/4722	. . . On tool support having reciprocation parallel to direction of work-feed	83/50	. . . Reciprocating tool
83/4725	. . . . And rotation about axis parallel to direction of work-feed	83/501	. . . With plural tools on a single tool support
83/4728	. . Tool flies by engagement with the work	83/503	. . With plural tool stations
83/4731	. . . Tool merely flexes with moving work	83/505	. Operation controlled by means responsive to product
83/4734	. . Flying support or guide for work	83/515	. . Actuation of tool controlled
83/4737	. . With tool speed regulator	83/525	. Operation controlled by detector means responsive to work
83/474	. . With work feed speed regulator	83/527	. . With means to control work-responsive signal system
83/4743	. . . With means to vary cyclically speed of work	83/528	. . . To delay response to work-senser
83/4746	. . Spring return of tool in counterfly direction	83/53	. . . To change length of product
83/4749	. . Tool mounted on oscillating standard	83/531	. . With plural work-sensing means
83/4751	. . . Both tools of couple on single standard	83/533	. . With photo-electric work-sensing means
83/4754	. . . . One tool swings out of work path on return stroke	83/535	. . Release of interlock controlled
83/4757	. . Tool carrier shuttles rectilinearly parallel to direction of work feed	83/536	. . Movement of work controlled
83/476	. . . Including means to secure work to carrier	83/538	. . Positioning of tool controlled
83/4763	. . . Both members of cutting pair on same carrier	83/54	. . Actuation of tool controlled by work-driven means to measure work length
83/4766	. . Orbital motion of cutting blade	83/541	. . Actuation of tool controlled in response to work-sensing means
83/4769	. . . Work feeder mounted on tool support	83/543	. . . Sensing means responsive to work indicium or irregularity
83/4772	. . . . Gripper-type feeder	83/544	. . . With trip-switch in work-sensing mechanism
83/4775	. . . Tool speed varied within each orbital cycle	83/546	. Interrelated tool actuating and work guide moving means
83/4778	. . . Work feed gripper carried on endless belt	83/566	. Interrelated tool actuating means and means to actuate work immobilizer
83/478	. . . Endless belt or chain tool carrier	83/5669	. . Work clamp
83/4783	. . . Constantly oriented tool with arcuate cutting path	83/5678	. . . Tool deflected by guide on tightened clamp
83/4786	. . . . Cutting couple type	83/5687	. . . . With means to control clamping force
83/4789	. . . Rotatable disc-type tool on orbiting axis	83/5696	. . . Clamp driven by reaction from tool force
83/4792	. . . . Idling disc	83/5705	. . . With means providing for plural steps in clamping stroke
83/4795	. . . Rotary tool	83/5715	. . . With sequencing means
83/4798	. . . . Segmented disc slitting or slotting tool	83/5724	. . . With provision for manual control of clamp
83/4801	. . . . With undulant cutting edge [e.g., "pinking" tool]	83/5733	. . . Tool or tool support on movable clamp jaw
83/4804	. . . . Single tool action drive	83/5742	. . . Clamp moved by direct impact of tool or tool support
83/4807	. . . . . With one-revolution drive	83/5751	. . . . Clamp retracted by impact of tool or tool support
83/4809	. . . . With loop former preceding tool	83/576	. . . Clamp actuating means driven by tool or tool support
83/4812	. . . . Compound movement of tool during tool cycle	83/5769	. . . . Clamp yieldably driven by tool or tool support
83/4815	. . . . . Axial reciprocation of tool	83/5778	. . . . . With resilient drive element
83/4818	. . . . Interconnected work feeder and tool driver	83/5787	. . . Clamp driven by yieldable means
83/4821	. . . . Side cutting helical blade	83/5796	. . . . Drive means is resilient
83/4824	. . . . With means to cause progressive transverse cutting	83/5805	. . . . Fluid pressure yieldable drive means
83/4827	. . . . . With helical cutter blade	83/5815	. . Work-stop abutment
83/483	. . . . With cooperating rotary cutter or backup	83/5824	. . . Oppositely effective abutments
83/4833	. . . . . Cooperating tool axes adjustable relative to each other	83/5833	. . . With cyclic means to alter work-stopping position
83/4836	. . . . . With radial overlap of the cutting members	83/5842	. . . Stop partakes of tool motion
83/4838	. . . . . With anvil backup	83/5851	. . . . Carried by tool or tool support
83/4841	. . . . . With resilient anvil surface	83/586	. Interrelated tool actuating means and means to actuate work-mover stop
83/4844	. . . . . Resiliently urged cutter or anvil member	83/606	. Interrelated tool actuating means and guard means
83/4847	. . . . With cooperating stationary tool	83/613	. . Work guard
83/485	. Cutter with timed stroke relative to moving work		
83/487	. . Work swings about progressively cutting tool during tool stroke		
83/489	. . Tool actuated by movable work support		
83/49	. . Traveling cutter		

83/619	. . Cutter guide slot closer	83/6529	. . . . . Power derived from fluid pressure means
83/626	. Operation of member controlled by means responsive to position of element remote from member [e.g., interlock]	83/6531	. . . . . Movement by screw means
83/637	. . With means to initiate operation of member	83/6532	. . . . . Movement by rack and pinion or pawl
83/647	. With means to convey work relative to tool station	83/6534	. . . . . With handle
83/6472	. . By fluid current	83/6536	. . . . . By carriage
83/6473	. . Centrifugal feed to tangential tool [e.g., "Beria" type]	83/6537	. . . . By cable or belt drive
83/6475	. . With means to regulate work-feed speed	83/6539	. . With means for transverse positioning of work on a moving conveyor
83/6476	. . Including means to move work from one tool station to another	83/654	. . With work-constraining means on work conveyor [i.e., "work-carrier"]
83/6478	. . . Tool stations angularly related	83/6542	. . . Plural means to constrain plural work pieces
83/648	. . . . Work manipulated between tool stations	83/6544	. . . . End of work protrudes through aperture in carrier
83/6481	. . . . With static tool	83/6545	. . . With means to guide work-carrier in nonrectilinear path
83/6483	. . . Tool stations staggered relative to one another	83/6547	. . . . About axis fixed relative to tool station
83/6484	. . . Punch or die station	83/6548	. . . . Infeed
83/6486	. . . Notcher or pinker station	83/655	. . . . . About vertical axis
83/6488	. . . Work reciprocated past double-edged knife	83/6552	. . . . . Cut normal to axis
83/6489	. . . Slitter station	83/6553	. . . . . Work-guide tube
83/6491	. . . . And transverse cutter station	83/6555	. . . . . Cut normal to axis
83/6492	. . Plural passes of diminishing work piece through tool station	83/6556	. . . . . Oscillating work-carrier
83/6494	. . . Work alternately, angularly re-oriented relative to tool station	83/6558	. . . . . Multiple cutters
83/6496	. . . . By additional means to engage work and orient it relative to tool station	83/656	. . . . . Coaxial rotary cutters
83/6497	. . . . By roller or roll-like element	83/6561	. . . . . Work stationary during cut
83/6499	. . . Work rectilinearly reciprocated through tool station	83/6563	. . . With means to orient or position work carrier relative to tool station
83/65	. . . . With means to cause or permit angular re-orientation of work about axis parallel to plane of cut	83/6564	. . . . By pattern or templet
83/6502	. . . . . By endless member having work-engaging teeth	83/6566	. . . . By indexing means
83/6504	. . . . . By member having work-engaging tooth	83/6568	. . . With additional work-locating means on work-carrier
83/6505	. . . . . Including plural work-engaging teeth	83/6569	. . With means to stop work conveyor
83/6507	. . . . . Fluid operated	83/6571	. . With means to store work articles
83/6508	. . . . With means to cause movement of work transversely toward plane of cut	83/6572	. . With additional means to engage work and orient it relative to tool station
83/651	. . . . . By means to cause movement toward and away from plane of cut	83/6574	. . . By work-stopping abutment
83/6512	. . . . . Actuated by movement of a member on reciprocating means	83/6576	. . . By opposed lateral guide means
83/6513	. . . . . Actuated by passive means which is external to reciprocating means	83/6577	. . . With means to adjust additional means
83/6515	. . . . . By means to define increment of movement toward plane of cut	83/6579	. . With means to press work to work-carrier
83/6516	. . . . . Interrelated with movement of reciprocating means	83/658	. . With projections on work-carrier [e.g., pin wheel]
83/6518	. . . . . By pusher mechanism	83/6582	. . Tool between tandem arranged work carrying means
83/652	. . . . . With additional work holding or positioning means	83/6584	. . Cut made parallel to direction of and during work movement
83/6521	. . . . . Work holding means includes actuator	83/6585	. . . Including nonconcurrently acting tool
83/6523	. . . . . Including plural, simultaneously acting pusher elements	83/6587	. . . Including plural, laterally spaced tools
83/6524	. . . . . Independently adjustable	83/6588	. . . . Tools mounted on common tool support
83/6526	. . . . . With additional means to retract elements	83/659	. . . . Tools axially shiftable on support
83/6528	. . . . . Power derived from movement of reciprocating means	83/6592	. . . Interrelated work-conveying and tool-moving means
		83/6593	. . . . With reciprocating tool [e.g., "jigsaw" type]
		83/6595	. . . . With means to move tool laterally of feed direction during cutting
		83/6596	. . . . With means to effect difference between work speed and tool speed
		83/6598	. . . . Tool co-axial with work-conveying means
		83/66	. . . With means to press work to tool
		83/6601	. . . Bevel cutting tool
		83/6603	. . . Tool shiftable relative to work-conveying means

- 83/6604 . . . Tool in contact with surface of work-conveying means
- 83/6606 . . . Tool between laterally spaced work-conveying means
- 83/6608 . . . By rectilinearly moving work carriage
- 83/6609 Angularly adjustable
- 83/6611 Having positive adjustment stop; e.g., link
- 83/6612 Having position indicating means
- 83/6614 Pusher engaging rear surface of work
- 83/6616 Having means to actuate pusher
- 83/6617 Hydraulic or pneumatic means
- 83/6619 Gear or pulley actuated pusher
- 83/662 Lever, cam, or link actuated pusher
- 83/6622 Having means to actuate carriage
- 83/6624 Hydraulic or pneumatic means
- 83/6625 Gear or pulley
- 83/6627 Adapted to place tension on flacid member
- 83/6628 Lever, cam, or link means
- 83/663 On or attached to vehicle
- 83/6632 Supported for movement at one side of tool only
- 83/6633 . . . By work moving flexible chain or conveyor
- 83/6635 . . . By feed roller
- 83/6636 Pinch rollers
- 83/6638 . . . Unattached manual work pusher
- 83/664 . . Roller
- 83/6641 . . . Plural independent rollers for feed of plural distinct work
- 83/6643 . . . Shaped to conform to work
- 83/6644 . . . With work-supplying reel
- 83/6646 And provision for selecting feed length
- 83/6648 . . . Continuous conveying during, cutting; e.g., straw cutting
- 83/6649 . . . Supporting work at cutting station
- 83/6651 Comprising part of cutting station
- 83/6652 . . . Tool and feed roller actuated by common handle
- 83/6654 . . . Tool and roller on common movable support
- 83/6656 . . Rectilinear movement only
- 83/6657 . . . Tool opposing pusher
- 83/6659 Hydraulically or pneumatically actuated
- 83/666 Screw actuated
- 83/6662 Gear or pulley actuated
- 83/6664 Lever, cam, or link actuated
- 83/6665 Spring or gravity urged
- 83/6667 . . Work carrier rotates about axis fixed relative to tool station
- 83/6668 . . Interrelated work-feeding means and tool-moving means
- 83/667 . . Tool carrier or guide affixed to work during cutting
- 83/674 . . By flexible work-engaging member
- 83/68 . . Entirely work supported
- 83/687 . . By tool reciprocable along elongated edge
- 83/6875 . . With means permitting tool to be rotatably adjusted about its cutting edge during cutting
- 83/688 . . With dynamic balancing or shock absorbing means
- 83/6885 . . With tool of another type
- 83/689 . . With means to change to other type tool
- 83/6895 . . Plural reciprocable tools
- 83/69 . . Stored energy furnishes drive in one direction
- 83/6905 . . With tool in-feed
- 83/691 . . . And auxiliary means for promoting or retarding tool in-feed
- 83/6915 By yieldable means
- 83/692 And means to vary tool in-feed speed
- 83/6925 With interrelated tool actuating and in-feed means
- 83/693 . . . Of rectilinearly reciprocating tool
- 83/6935 With in-feed by pivoting carrier
- 83/694 . . . And means to prevent tool in-feed
- 83/6945 . . . With passive means to guide tool directly
- 83/695 By plural opposed guide surfaces
- 83/6955 Having relative adjustment between guide surfaces
- 83/696 With relative adjustment between guide and work or work-support
- 83/6965 By or with additional movable work-support portion
- 83/697 By rotation about an axis parallel to the work-support surface
- 83/6975 By rotation about an axis perpendicular to the work-support surface
- 83/698 . . . Including means to cause nonrectilinear tool infeed
- 83/6985 . . . Of arcuately oscillating tool
- 83/699 . . . Of tool carrier on single moving pivot
- 83/6995 Pivot moves in closed loop
- 83/70 Pivot moves to and fro in arcuate path
- 83/7005 Axis of arcuate path moves during cutting
- 83/701 Pivot moves to and fro in rectilinear path
- 83/7015 . . Having uniplanar compound motion
- 83/702 . . . By plural arcuately oscillating carrier
- 83/7025 . . . Constantly oriented tool travelling in orbit
- 83/703 . . . Tool rocks cutting reciprocations
- 83/7035 One tool reciprocates along fixed guide element
- 83/704 . . With work-support and means to vary relationship between tool and work support
- 83/7045 . . Arcuately oscillating tool carried on single pivot
- 83/705 . . With means to support tool at opposite ends
- 83/7055 . . . And apply drive force to both ends of tool
- 83/706 By flexible drive means
- 83/7065 By reciprocating rigid support
- 83/707 . By endless band or chain knife
- 83/7076 . . With programming means
- 83/7083 . . With cutter other than endlessly orbiting type
- 83/7089 . . Including contiguous oppositely moving knife portions
- 83/7095 . . With means to change to non-endlessly orbiting cutter
- 83/7101 . . With tool in-feed
- 83/7108 . . . Including ground-traversing vehicle
- 83/7114 . . . Including means to permit arcuate in-feed motion
- 83/712 Including means to relocate path of in-feed motion
- 83/7126 Angular relative previous path
- 83/7133 . . . By gravity
- 83/7139 With fluid in-feed regulating means
- 83/7145 . . . By motor-driven mechanism
- 83/7151 . . With scale or indicator
- 83/7158 . . Including plural cutting zones

83/7164	. . . With adjustment of separation between zones	83/758	. . . With means to adjust clamp position or stroke
83/717	. . . . By lever means	83/7587	. . Gapped work-constrainer
83/7176	. . . . By screw-threaded means	83/7593	. . Work-stop abutment
83/7183	. . . Including "figure-8" band	83/76	. . . With scale or indicator
83/7189	. . . Comprising plural bands	83/7607	. . . Normal to plane of cut
83/7195	. . Including means to adjust relationship between band and work-support surface	83/7613	. . . . Adjustable
83/7201	. . . By varying angle between band and work-support surface	83/762	. . . . . Angularly relative to plane of cut; e.g., miter
83/7208	. . . . By tilting band carrier	83/7627	. . . . With traversing cutter guide; e.g., cut-off saw
83/7214	. . . . . About point of intersection of cutting span and work-support surface	83/7633	. . . Collapsible
83/722	. . . By varying distance between band and work-support surface	83/764	. . . Retractable
83/7226	. . With means to guard the tension	83/7647	. . . Adjustable
83/7233	. . . Including means to retard undriven pulley or sprocket	83/7653	. . . . Having curved cutting edge to make arcuate cut, plural nonaligned intersecting cutting edges, or spaced punches
83/7239	. . . With means to vary distance between pulley or sprocket axes	83/766	. . . . . Spaced edges
83/7245	. . . . And angular relationship of axes	83/7667	. . . Having curved cutting edge to make arcuate cut, plural nonaligned intersecting cutting edges, or spaced punches
83/7251	. . . . Including means to yieldably bias pulley	83/7673	. . . . . Spaced edges
83/7258	. . . . . By fluid means	83/768	. Rotatable disc tool pair or tool and carrier
83/7264	. . With special blade guide means	83/7684	. . With means to support work relative to tool[s]
83/727	. With means to guide moving work	83/7688	. . . Plural tool elements successively actuated at same station
83/728	. . In pivotal or arcuate movement	83/7693	. . . Tool moved relative to work-support during cutting
83/73	. . Guide fixed to or integral with stationary tool element	83/7697	. . . . Tool angularly adjustable relative to work-support
83/731	. . . Tool element cooperates with a second tool	83/7701	. . . Supporting surface and tool axis angularly related
83/732	. . With guard	83/7705	. . . . Adjustable angular relationship
83/734	. . With attachment or operative connection to tool carrier	83/7709	. . . Unidirectionally movable work support
83/735	. . With attachment or operative connection to passive tool guide	83/7713	. . . . With opposed work-presser
83/736	. . Guide cooperates with template or straight edge secured to work	83/7718	. . . . . Presser co-axial with tool
83/738	. . Curved or deflecting guide	83/7722	. . . Support and tool relatively adjustable
83/739	. . Positively confines or otherwise determines path of work	83/7726	. . . . By movement of the tool
83/74	. . Adapted to permit maneuvering of work at tool zone	83/773	. . . Work-support includes passageway for tool [e.g., slotted table]
83/741	. . With movable or yieldable guide element	83/7734	. . With guard for tool
83/743	. . . Opposed to work-supporting surface	83/7738	. . Optional tool pairs alternatively operative
83/744	. . Plural guide elements	83/7743	. . . One element of tool pairs common to all pairs
83/745	. . . Opposed	83/7747	. . With means to permit replacement of tool
83/747	. . Opposed to work-supporting surface	83/7751	. . Means to separate elements of tool pair
83/748	. With work immobilizer	83/7755	. . Carrier for rotatable tool movable during cutting
83/7487	. . Means to clamp work	83/7759	. . . Unicyclic movement
83/7493	. . . Combined with, peculiarly related to, other element	83/7763	. . . Tool carrier reciprocable rectilinearly
83/75	. . . . With or to tool guide	83/7768	. . . . With means to adjust path of reciprocation
83/7507	. . . . Guide for traveling cutter	83/7772	. . . . . Angular relative to previous path
83/7513	. . . . Tool or tool support on movable clamp jaw	83/7776	. . . . . With means to reciprocate carrier
83/752	. . . With means providing for plural steps in clamping stroke	83/778	. . . . . And means to rotate tool
83/7527	. . . With equalizer or self-aligning jaw	83/7784	. . . . . With means to rotate tool
83/7533	. . . With biasing or counterbalancing means	83/7788	. . . Tool carrier oscillated or rotated
83/754	. . . Clamp driven by yieldable means	83/7793	. . Means to rotate or oscillate tool
83/7547	. . . Liquid pressure actuating means	83/7797	. . . Including means to rotate both elements of tool pair
83/7553	. . . Including means to retain clamp jaw in position	83/7801	. . . . Including means to rotate both elements at different speeds
83/756	. . . Self-locking drive means	83/7805	. . . . And means to change speed of rotation
83/7567	. . . Manually actuated drive means	83/7809	. . Tool pair comprises rotatable tools
83/7573	. . . Including clamping face of specific structure	83/7813	. . . Tool pair elements angularly related
		83/7818	. . . . Elements of tool pair angularly adjustable relative to each other

83/7822	. . . Tool pair axially shiftable	83/8702	. . Clicker die press
83/7826	. . . . With shifting mechanism for at least one element of tool pair	83/8703	. . . With die handling attachment
83/783	. . . Tool pair comprises contacting overlapped discs	83/8704	. . . With reciprocating presser
83/7834	. . . . With means to effect axial pressure on pair	83/8706	. . . . Laterally movable to selective operative positions
83/7838	. . . . . With means to change axial pressure	83/8707	. . . . . Pivotal or revolving only
83/7843	. . . . With means to change overlap of discs	83/8709	. . . . . With means to impart, limit, or control pivotal motion of presser
83/7847	. . . Tool element axially shiftable	83/871	. . . . . Interrelated with presser reciprocating means
83/7851	. . . Tool pair comprises disc and cylindrical anvil	83/8712	. . . . . With means to mount presser for oscillation about column
83/7855	. . . . With adjustable means to urge tool elements together	83/8713	. . . . With adjustable bed block
83/7859	. . . Elements of tool pair adjustably spaced	83/8714	. . . . Including presser member reinforcing, or flexure compensating, means
83/7863	. . Tool pair comprises rotatable tool and nonrotatable tool	83/8716	. . . . With manually actuated control apparatus for reciprocation of presser member
83/7868	. . Tool element selectively operative	83/8717	. . By deforming resilient tool or tool support
83/7872	. . Tool element mounted for adjustment	83/8719	. . With transmission yieldable on overload
83/7876	. . . Plural, axially spaced tool elements	83/872	. . With guard means
83/788	. Tool pair comprises rotatable anvil and fixed-type tool	83/8722	. . . Static
83/793	. . Anvil has motion in addition to rotation [i.e., traveling anvil]	83/8723	. . . . Adjustable
83/798	. . . Additional motion is along fixed arcuate path	83/8725	. . Including movable, tool protecting, cushioning sheet
83/803	. . . With plural anvils	83/8726	. . Single tool with plural selective driving means
83/808	. Two tool pairs, driver for one pair moves relative to driver for other pair	83/8727	. . Plural tools selectively engageable with single drive
83/811	. . One tool support acts as driver for other	83/8729	. . . Predetermined sequence of selection
83/814	. . . Punch and shear	83/873	. . . . Of paired tools
83/817	. . With variable spacing between tool pairs	83/8732	. . . Turret of tools
83/819	. . . With intermediate work support	83/8733	. . Tool movable to cooperate selectively with one of a plurality of mating tools
83/822	. . Punch and shear	83/8735	. . With means providing for plural steps in tool stroke
83/825	. . Successively acting	83/8736	. . Sequential cutting motions
83/828	. With illuminating or viewing means for work	83/8737	. . With tool positioning means synchronized with cutting stroke
83/839	. . Mirror or lens	83/8739	. . . Anvil moves into and out of operative position
83/849	. With signal, scale, or indicator	83/874	. . . Straight line positioning
83/85	. . Signal; e.g., alarm	83/8742	. . Tool pair positionable as a unit
83/851	. . Indicator comprising work or product	83/8743	. . . Straight line positioning
83/852	. . Responsive to force	83/8745	. . Tool and anvil relatively positionable
83/853	. . Indicates tool position	83/8746	. . . Straight line
83/855	. . . Relative to another element	83/8748	. . Tool displaceable to inactive position [e.g., for work loading]
83/856	. . . . To work-engaging member	83/8749	. . . By pivotal motion
83/857	. . . . . Calibrated scale or indicator	83/875	. . With templet surface following tool
83/858	. . . . . Indicates dimension of work being cut	83/8752	. . Tool moves work to and against cooperating tool
83/859	. . . . . Dynamic indicator	83/8753	. . . With means to clamp or bind work to moving tool
83/86	. . . . To another tool assembly	83/8755	. . . One tool resiliently mounted or biased
83/861	. . . . To cooperating tool	83/8756	. . . Work forced through tool aperture or between spaced cooperating tools
83/862	. . . . To another component of tool assembly	83/8758	. . . Manually actuated work-moving tool
83/863	. . . . Adjustable guide for traversing tool; e.g., radial saw guide or miter saw guide	83/8759	. . With means to connect or disconnect tool and its drive
83/865	. . Indicates work characteristic	83/8761	. . . Continuously moving drive means [e.g., "gag"]
83/866	. . Indicates wear	83/8762	. . . . Hand actuated connecting means
83/867	. . Bubble level	83/8763	. . Convertible from tool path to another or from implement to machine
83/868	. . Counter	83/8765	. . Magnet- or solenoid-actuated tool
83/869	. Means to drive or to guide tool	83/8766	. . . Tool movement modifies actuating circuit
83/8691	. . Unicyclic	83/8768	. . . Solenoid core is tool or tool support
83/8693	. . . With adjustable stopping point or tool		
83/8694	. . . With brake or blocking means		
83/8696	. . Means to change datum plane of tool or tool presser stroke		
83/8697	. . . For disabling of continuously actuated cutter		
83/8699	. . . With adjustable stop		
83/87	. . . By varying length of tool stroke		

83/8769	. . Cutting tool operative in opposite directions of travel	83/884	. . . . By connecting rod articulated with tool support
83/8771	. . Motion direction of tool influenced by resistance of work	83/8841	. . . Tool driver movable relative to tool support
83/8772	. . One tool edge of tool pair encompasses work [e.g., wire cutter]	83/8843	. . . . Cam or eccentric revolving about fixed axis
83/8773	. . Bevel or miter cut	83/8844	. . . . Gear actuated tool support
83/8775	. . With tool tensioning means	83/8845	. . . . Toggle links, one link pivoted to tool support
83/8776	. . Constantly urged tool or tool support [e.g., spring biased]	83/8847	. . . . Screw actuated tool support
83/8778	. . . Ledger blade	83/8848	. . . . Connecting rod articulated with tool support
83/8779	. . . Oscillating tool urged axially	83/885	. . . . Fixed axis lever
83/8781	. . . . And urged about pivotal axis	83/8851	. . . . Adjustable mechanical advantage
83/8782	. . . Stored energy furnishes cutting force	83/8853	. . . . Including details of guide for tool or tool support
83/8784	. . . . With reset	83/8854	. . . Progressively cutting
83/8785	. . . Through return [noncutting] stroke	83/8855	. . . With spaced guide pins [e.g., die set leader pins]
83/8786	. . . . Oscillating tool	83/8857	. . . With inclined guides
83/8788	. . Tool return mechanism separate from tool advance mechanism	83/8858	. . . Fluid pressure actuated
83/8789	. . With simple revolving motion only	83/886	. . . . Utilizing fluid amplifier
83/8791	. . . Tool mounted on radial face of rotor	83/8861	. . . . Diaphragm
83/8792	. . . Variable speed during one revolution [e.g., intermittent]	83/8863	. . . . Explosive fluid
83/8794	. . . Revolving tool moves through recess in work holder or cooperating tool	83/8864	. . . . Plural cylinders
83/8795	. . . . Progressively cutting	83/8866	. . . . Offset cutter
83/8796	. . . Progressively cutting	83/8867	. . . With means to adjust tool position on tool holder
83/8798	. . With simple oscillating motion only	83/8868	. . . . Adjustably mounted cooperating tool
83/8799	. . . Plural tool pairs	83/887	. . Parallel draw-cut [e.g., translatory]
83/8801	. . . . Plural tools on single oscillating arm [i.e., tool holder]	83/8871	. . . Link suspension
83/8802	. . . And means to move cooperating cutter member	83/8873	. . Straight line motion combined with tilting in plane of stroke
83/8804	. . . Tool driver movable relative to tool support	83/8874	. . Uniplanar compound motion
83/8805	. . . . Cam or eccentric revolving about fixed axis	83/8876	. . . Reciprocating plus work approach [e.g., saw type]
83/8807	. . . . Gear or ratchet pawl drives toothed tool support	83/8877	. . . With gyratory drive
83/8808	. . . . Toggle links, one link pivoted to tool support	83/8878	. . Guide
83/8809	. . . . Fixed axis lever	83/888	. . . With nonrigidly positioned member
83/8811	. . . . Adjustable mechanical advantage	83/8881	. . . With anti-friction means
83/8812	. . . Cutting edge in radial plane	83/8883	. . . . Roller with peripheral flange or groove
83/8814	. . . . Adjustable	83/8884	. . . . Disc
83/8815	. . . . With guide means for the cutting member	83/8886	. . . With means to vary space between opposed members
83/8817	. . . Axially extending cutting edge	83/8887	. . . . By rectilinear movement of member
83/8818	. . . . Axially progressing cut	83/8889	. . . With means to adjust position
83/882	. . . . Adjustable	83/889	. Tool with either work holder or means to hold work supply
83/8821	. . With simple rectilinear reciprocating motion only	83/896	. . Rotatable wound package supply
83/8822	. . . Edge-to-edge of sheet or web [e.g., traveling cutter]	83/902	. . . Plural supply sources
83/8824	. . . With provision for dynamic balance	83/909	. Cutter assemblage or cutter element therefor [e.g., chain saw chain]
83/8825	. . . With lost motion in tool drive	83/913	. . With means permitting removal of cutter element
83/8827	. . . Means to vary force on, or speed of, tool during stroke	83/917	. . Having diverse cutting elements
83/8828	. . . Plural tools with same drive means	83/921	. . . And noncutting depth gauge
83/883	. . . . Tools positioned by template	83/925	. . Having noncutting depth gauge
83/8831	. . . . Plural distinct cutting edges on same support	83/929	. Tool or tool with support
83/8832	. . . . . Concentrically mounted	83/9292	. . Wire tool
83/8834	. . . . . Successively acting	83/9295	. . Work supported tool [e.g., clicker die]
83/8835	. . . And means to move cooperating cutting member	83/9297	. . . With product ejection facilitator
83/8837	. . . With application of force to opposite ends of tool supporting crosshead	83/93	. . . With tool manipulating portion
83/8838	. . . . By relatively movable fixed axis levers	83/9302	. . . With tool positioning abutment
		83/9304	. . . To sever article from work and cut within article
		83/9307	. . . With tool contour adjusting means
		83/9309	. . Anvil

83/9312	. . . Rotatable type	83/9444	. . . . Shear type
83/9314	. . Pointed perforators	83/9447	. . . Shear type
83/9317	. . Endless band or belt type	83/9449	. . . Spaced cut forming tool
83/9319	. . Toothed blade or tooth therefor	83/9452	. . . With tool contour adjusting means
83/9321	. . . With means to vary tooth position	83/9454	. . Reciprocable type
83/9324	. . . With additional cutting means	83/9457	. . Joint or connection
83/9326	. . . Plural separable sections	83/9459	. . . Magnetic connection
83/9329	. . . . Tooth separable from blade	83/9461	. . . Resiliently biased connection
83/9331	. . . . . By independent connecting element	83/9464	. . . For rotary tool
83/9333	. . . . . Transversely movable	83/9466	. . . . Flexible sleeve-like tool
83/9336	. . . . . Arcuately movable	83/9469	. . . . Adjustable
83/9338	. . . . . With additional element to prevent movement of connecting element	83/9471	. . . . Rectilinearly
83/9341	. . . . . Rectilinearly movable	83/9473	. . . For rectilinearly reciprocating tool
83/9343	. . . . . By deformation	83/9476	. . . . Tool is single element with continuous cutting edge [e.g., punch, etc.]
83/9346	. . . Uniformly varying teeth or tooth spacing	83/9478	. . . . Tool is single element reciprocable generally perpendicularly to elongate cutting edge [e.g., shear, etc.]
83/9348	. . . Undulating tooth arrangement	83/9481	. . . . Tool is single element reciprocable along elongate cutting edge [e.g., saw blade, etc.]
83/935	. . . Plural tooth groups	83/9483	. . . . Adjustable
83/9353	. . . . Including raker tooth group	83/9486	. . . . . Rectilinearly
83/9355	. . . . Including intermediate raker tooth	83/9488	. . . . Adjustable
83/9358	. . . Series of dissimilar teeth	83/949	. . . . Rectilinearly
83/936	. . . Series of allochiral teeth	83/9493	. . Stationary cutter
83/9362	. . . Teeth having transversely curved cutting edge	83/9495	. . . Nonparallel cutting edges
83/9365	. . . Teeth having cutting edge parallel to blade surface	83/9498	. . . Parallel cutting edges
83/9367	. . . Teeth having cutting edge perpendicular to blade surface	83/95	. Machine frame
83/937	. . Tool mounted by and between spaced arms	83/96	. . Guard
83/9372	. . Rotatable type	83/97	. Miscellaneous
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		

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]
- 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

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

- 137/1789 . . . Having pressure responsive valve
- 137/1797 . . Heat destructible or fusible
- 137/1804 . . . With second sensing means
- 137/1812 . . . In fluid flow path
- 137/1819 . . . Safety cut-off
- 137/1827 With heater for destructible or fusible element
- 137/1834 With external closing means
- 137/1842 . Ambient condition change responsive
- 137/1866 . . For controlling soil irrigation
- 137/189 . . . Soil moisture sensing
- 137/1915 . . Burner gas cutoff
- 137/1939 . . Atmospheric
- 137/1963 . . . Temperature
- 137/1987 With additional diverse control
- 137/2012 . . . Pressure
- 137/2036 . . Underwater
- 137/206 . Flow affected by fluid contact, energy field or coanda effect [e.g., pure fluid device or system]
- 137/2065 . . Responsive to condition external of system
- 137/2071 . . . And causing change or correction of sensed condition
- 137/2076 . . Utilizing diverse fluids
- 137/2082 . . Utilizing particular fluid
- 137/2087 . . Means to cause rotational flow of fluid [e.g., vortex generator]
- 137/2093 . . . Plural vortex generators
- 137/2098 . . . Vortex generator as control for system
- 137/2104 . . . Vortex generator in interaction chamber of device
- 137/2109 . . . By tangential input to axial output [e.g., vortex amplifier]
- 137/2115 With means to vary input or output of device
- 137/212 . . System comprising plural fluidic devices or stages
- 137/2125 . . . Plural power inputs [e.g., parallel inputs]
- 137/2131 Variable or different-value power inputs
- 137/2136 Pulsating power input and continuous-flow power input
- 137/2142 With variable or selectable source of control-input signal
- 137/2147 To cascaded plural devices
- 137/2153 With feedback passage[s] between devices of cascade
- 137/2158 With pulsed control-input signal
- 137/2164 . . Plural power inputs to single device
- 137/2169 . . . Intersecting at interaction region [e.g., comparator]
- 137/2174 Co-linear, oppositely-directed power inputs [e.g., impact modulator]
- 137/218 . . Means to regulate or vary operation of device
- 137/2185 . . . To vary frequency of pulses or oscillations
- 137/2191 . . . By non-fluid energy field affecting input [e.g., transducer]
- 137/2196 Acoustical or thermal energy
- 137/2202 . . . By movable element
- 137/2207 Operating at timed intervals [e.g., to produce pulses]
- 137/2213 Electrically-actuated element [e.g., electro-mechanical transducer]
- 137/2218 Means [e.g., valve] in control input
- 137/2224 . . Structure of body of device
- 137/2229 . . Device including passages having V over T configuration
- 137/2234 . . . And feedback passage[s] or path[s]
- 137/224 . . . With particular characteristics of control input
- 137/2245 Multiple control-input passages
- 137/2251 . . . And multiple or joined power-outlet passages
- 137/2256 . . . And enlarged interaction chamber
- 137/2262 . . . And vent passage[s]
- 137/2267 . . Device including passages having V over gamma configuration
- 137/2273 . . Device including linearly-aligned power stream emitter and power stream collector
- 137/2278 . Pressure modulating relays or followers
- 137/2322 . . Jet control type
- 137/2365 . . Plural series units
- 137/2409 . . With counter-balancing pressure feedback to the modulating device
- 137/2452 . . . With counter-counter balancing pressure feedback
- 137/2496 . Self-proportioning or correlating systems
- 137/2499 . . Mixture condition maintaining or sensing
- 137/2501 . . . Dividing and recombining flow
- 137/2504 . . . By specific gravity
- 137/2506 . . . By viscosity or consistency
- 137/2509 . . . By optical or chemical property
- 137/2511 . . Fuel controlled by boiler or water system condition
- 137/2514 . . Self-proportioning flow systems
- 137/2516 . . . Interconnected flow displacement elements
- 137/2519 Movable trap chamber
- 137/2521 . . . Flow comparison or differential response
- 137/2524 Flow dividers [e.g., reversely acting controls]
- 137/2526 Main line flow displaces or entrains material from reservoir
- 137/2529 With electrical controller
- 137/2531 . . . Flow displacement element actuates electrical controller
- 137/2534 . . . Liquid level response
- 137/2536 Float controlled weir or valve
- 137/2539 Swinging outlet pipe controller
- 137/2541 . . . With measuring type discharge assistant
- 137/2544 . . Supply and exhaust type
- 137/2546 . . . Vacuum or suction pulsator type [e.g., milking machine]
- 137/2549 With trip linkage or snap action
- 137/2552 With pulsation responsive pilot valve
- 137/2554 . . . Reversing or 4-way valve systems
- 137/2557 . . . Waste responsive to flow stoppage
- 137/2559 . . Self-controlled branched flow systems
- 137/2562 . . . Dividing and recombining
- 137/2564 . . . Plural inflows
- 137/2567 Alternate or successive inflows
- 137/2569 Control by depletion of source
- 137/2572 One inflow supplements another
- 137/2574 . . . Bypass or relief controlled by main line fluid condition
- 137/2577 Liquid level responsive
- 137/2579 Flow rate responsive
- 137/2582 Including controlling main line flow
- 137/2584 Relief or bypass closes as main opens
- 137/2587 Bypass or relief valve biased open
- 137/2589 Pilot valve operated

137/2592	. . . . .	Carried choke	137/271	. . .	For single valve
137/2594	. . . . .	Choke	137/2713	.	Siphons
137/2597	. . . . .	Variable choke resistance	137/272	. .	Plural
137/2599	. . . . .	Venturi	137/2727	. . .	Tank truck mounted
137/2602	. . . . .	Flapper	137/2733	. . .	Sequentially discharging in parallel
137/2605	. . . . .	Pressure responsive	137/274	. . . .	From plural tanks
137/2607	. . . . .	With pressure reducing inlet valve	137/2747	. . .	Main siphon with auxiliary starting, stopping or resetting siphon
137/261	. . . . .	Relief port through common sensing means	137/2754	. . . .	Sinking or bucket-type float operated main siphon, float emptying auxiliary siphon
137/2612	. . . . .	Common sensor for both bypass or relief valve and other branch valve	137/2761	. .	With discharge-controlling receiver
137/2615	. . . . .	Bypass or relief valve opens as other branch valve closes	137/2768	. . .	With float
137/2617	. . . . .	Bypass or relief valve biased open	137/2774	. .	Periodic or accumulation responsive discharge
137/262	. . . . .	Increasing pressure progressively closes then reopens by-pass or relief valve	137/2781	. . .	With manual control
137/2622	. . . . .	Bypass or relief valve responsive to pressure downstream of outlet valve	137/2788	. . .	Control by filling auxiliary tank
137/2625	. . . . .	Pilot valve	137/2795	. . .	Float-operated inlet to siphon
137/2627	. . . . .	Outlet valve carried by bypass or relief valve	137/2802	. . .	Release of trapped air
137/263	. . . . .	Plural sensors for single bypass or relief valve	137/2808	. . . .	Through float-operated vent
137/2632	. . . . .	Sensors interconnected by timing or restrictive orifice	137/2815	. . . .	Through liquid trap seal
137/2635	. . . . .	Pilot valve operated	137/2822	. . . . .	Auxiliary liquid trap seal
137/2637	. . . . .	Mechanical movement between sensor and valve	137/2829	. .	With strainer, filter, separator or sediment trap
137/264	. . . . .	Electrical control	137/2836	. .	With recorder, register, signal, indicator or inspection window
137/2642	. . . . .	Sensor rigid with valve	137/2842	. .	With flow starting, stopping or maintaining means
137/2645	. . . . .	Flexible sensor	137/2849	. . .	Siphon venting or breaking
137/2647	. . . . .	Pressure responsive outlet valve	137/2856	. . .	With leakage or entrained air removal
137/265	. . .	Plural outflows	137/2863	. . .	Pressure applied to liquid in supply chamber
137/2652	. . . .	Single actuator operates plural outlets simultaneously	137/287	. . .	Plunge or immersion starting
137/2655	. . . .	Biased open isolation valve	137/2877	. . .	Pump or liquid displacement device for flow passage
137/2657	. . . .	Flow rate responsive	137/2883	. . . .	Piston
137/266	. . . . .	Primer valve	137/289	. . . . .	Co-axial within flow passage
137/2663	. . . . .	Pressure responsive	137/2897	. . . .	Collapsible bulb
137/2665	. . . . .	With external control for correlating valve [e.g., manual]	137/2904	. . .	Siphon inlet movable to and from seat
137/2668	. . . .	Alternately or successively substituted outflow	137/2911	. . .	With valve or closure in-flow passage
137/267	. . . . .	Control by filling auxiliary gravitating or float operating tank	137/2917	. .	With means for mounting and/or positioning relative to siphon chamber
137/2673	. . . . .	Control by filling outlet tank or receiver	137/2924	. .	Elements
137/2675	. . . . .	Float controlled	137/2931	. .	Diverse fluid containing pressure systems
137/2678	. . . . .	Four port reversing valve	137/2934	. .	Gas lift valves for wells
137/268	. . . . .	Responsive to pressure or flow interruption	137/2937	. .	Gas pressure discharge of liquids feed traps [e.g., to boiler]
137/2683	. . . . .	Plural outlets control with automatic reset	137/294	. . .	Gas pressure controlled by amount of liquids in boiler or discharge receiver
137/2685	. . . . .	Manually set to a single outflow position	137/2943	. . . .	Pressure connection at liquid level in boiler or discharge receiver
137/2688	. . . . .	Flow rate responsive	137/2947	. . .	Gas pressure controlled by amount of liquid in trap
137/269	. . . . .	Flow sensing turbine	137/295	. . . .	Plural trap chambers
137/2693	. . . . .	Pressure responsive	137/2953	. . . . .	Gravitating
137/2695	. . . . .	Responsive to outlet pressure	137/2956	. . . .	Gravitating vessel
137/2698	. . . . .	Electrical control	137/2959	. . . . .	Sinking or bucket type float
137/27	. .	Liquid level responsive	137/2962	. . . . .	Pivoted vessel with fluid passage through pivot
137/2703	. .	Flow rate responsive	137/2965	. . . .	Float responsive
137/2705	. . .	Pressure differential	137/2968	. . . . .	Liquid control valve positively actuated
137/2708	. .	Plural sensors	137/2971	. . . . .	Gas condensing type
			137/2975	. . . . .	Gas inlet and outlet valves unitary
			137/2978	. . .	Gas pressure controlled by manual or cyclic means
			137/2981	. . . .	Movable trap chamber

- 137/2984 . . . Foam control in gas charged liquids
- 137/2987 Level or pressure responsive
- 137/299 Separate handling of foam
- 137/2993 With conditioning trap or chamber
- 137/2996 Recarbonation
- 137/30 With trap or chamber by-pass
- 137/3003 . . . Fluid separating traps or vents
- 137/3006 Liquids separated from liquid
- 137/3009 Plural discriminating outlets for diverse fluids
- 137/3012 Common actuator for control valves
- 137/3015 Choke or restricted passage gas bleed
- 137/3018 From above liquid level
- 137/3021 Discriminating outlet for liquid
- 137/3024 With alternately operated inlet and outlet valves
- 137/3028 With non-discriminating gas vent or liquid discharge
- 137/3031 Abnormal pressure responsive liquid blow-off or drain
- 137/3034 Manual control
- 137/3037 With auxiliary inlet or by-pass valve
- 137/304 With fluid responsive valve
- 137/3043 Successively opened valves
- 137/3046 Gas collecting float [e.g., inverted bucket]
- 137/3049 Downstream from valve
- 137/3052 Level responsive
- 137/3056 Weight or pressure
- 137/3059 Gravitating vessel
- 137/3062 Sinking or bucket type float
- 137/3065 Servo-control
- 137/3068 Float
- 137/3071 With main line gas outlet from trap chamber
- 137/3074 With outlet extending above liquid in trap
- 137/3077 Servo-control
- 137/308 With pressure balanced outlet valve
- 137/3084 Discriminating outlet for gas
- 137/3087 With reverse flow stop or pressure regulating valve
- 137/309 Fluid sensing valve
- 137/3093 With vaporized liquid stop
- 137/3096 With separate return for condensate
- 137/3099 Float responsive
- 137/3102 With liquid emptying means
- 137/3105 Self-emptying
- 137/3109 . . . Liquid filling by evacuating container
- 137/3112 . . . Main line flow displaces additive from shunt reservoir
- 137/3115 . . . Gas pressure storage over or displacement of liquid
- 137/3118 Surge suppression
- 137/3121 With return of liquid to supply
- 137/3124 Plural units
- 137/3127 With gas maintenance or application
- 137/313 Gas carried by or evolved from liquid
- 137/3133 Gas injectors
- 137/3137 Gas injected by liquid pressure or flow
- 137/314 Unitary mounting for gas pressure inlet and liquid outlet
- 137/3143 With liquid level responsive gas vent or whistle
- 137/3146 Combined high and low level responsive
- 137/3149 . . . Back flow prevention by vacuum breaking [e.g., anti-siphon devices]
- 137/3185 . . . Air vent in liquid flow line
- 137/3222 With liquid seal in liquid flow line
- 137/3258 Automatic valve in vent line
- 137/3294 Valved
- 137/3331 With co-acting valve in liquid flow path
- 137/3367 Larner-Johnson type valves; i.e., telescoping internal valve in expanded flow line section
- 137/3421 . . . Line condition change responsive
- 137/3476 . . . Internal servo-motor with internal pilot valve
- 137/353 Pilot controlled passage in nose or needle
- 137/3584 . . . Inflatable article [e.g., tire filling chuck and/or stem]
- 137/36 . . . With pressure-responsive pressure-control means
- 137/3615 Pulsating
- 137/3631 Diaphragm, bellows or expansible tube
- 137/3646 Co-axial inflation and relief valves
- 137/3662 With gauge or indicator
- 137/3677 With deflating means
- 137/3693 Selectively connected
- 137/3709 . . . Stem attached relief valve
- 137/3724 . . . With coupling means
- 137/374 . . . With cap
- 137/3755 Valve actuating, assembling or locking means on cap
- 137/3771 Valve manually seated
- 137/3786 . . . Removable valve head and seat unit [valve insides]
- 137/3802 . . . With vehicle guide or support, e.g., service station
- 137/402 . . . Distribution systems involving geographic features
- 137/4238 . . . With cleaner, lubrication added to fluid or liquid sealing at valve interface
- 137/4245 . . . Cleaning or steam sterilizing
- 137/4252 Reverse fluid flow
- 137/4259 With separate material addition
- 137/4266 Steam sterilizing
- 137/4273 Mechanical cleaning
- 137/428 Valve grinding motion of valve on seat
- 137/4287 Concentric stem
- 137/4294 Spring pressed
- 137/4301 Lost motion permits grinding
- 137/4308 With swivel-preventing means
- 137/4315 Nut releasable from body and/or stem
- 137/4322 With independent grinding actuator
- 137/4329 Separable
- 137/4336 Cleaning member reciprocates in passage
- 137/4343 By-pass cleaning
- 137/4351 Independent actuation
- 137/4358 Liquid supplied at valve interface
- 137/4365 Plural feed
- 137/4372 Line pressure feed
- 137/4379 Feed by or with actuation
- 137/4386 Loss control
- 137/4393 Screw feed
- 137/44 With check valve
- 137/4407 Excess relief
- 137/4414 Jacking
- 137/4421 Jacking
- 137/4428 Seating
- 137/4435 Spring biased piston feed
- 137/4442 External pressure
- 137/4449 Gravity or capillary feed

137/4456	. With liquid valves or liquid trap seals	137/5362	. . . Extensible spout
137/4463	. . Liquid seal in liquid flow line; flow liquid forms seal	137/5368	. . . Spout articulated to riser
137/4471	. . . Valves	137/5374	. . Plural riser
137/4478	. . . . Line condition change responsive	137/538	. . Expandable chamber operated by valve actuator for draining riser
137/4486	. . . . . Plural valves or valve seats	137/5386	. . With pump or ejector
137/4493	. . . . . Pivoted valve	137/5392	. . Removable valve and valve seat
137/4501	. . . . . Ball valve	137/5397	. . . With extension to facilitate removal
137/4508	. . . . . Seats vertically up	137/5403	. . Removable valve with supplemental check valve
137/4516	. . . Seal replenishers	137/5409	. . Movable riser actuated valve
137/4523	. . . Plural inlet	137/5415	. . . Reciprocating riser
137/4531	. . . Divided and recombined passages	137/5421	. . . . Piston type valve
137/4538	. . . Tangential inlet flow	137/5427	. . Balanced valve
137/4546	. . . Downward partition encircles projecting outlet	137/5433	. . Valve actuator extends laterally from bottom of riser
137/4553	. . . Submerged inlet pipe end	137/5438	. . Valve actuator outside riser
137/4561	. . . . Hinged seal bowl	137/5444	. . . Lever actuator
137/4568	. . . . Distinct seal bowl in flow line connected casing	137/545	. . . With casing, flush with ground or pavement surface
137/4576	. . . U-seals	137/5456	. . With casing
137/4583	. . . . Topside access beneath cover plate closed floor opening	137/5462	. . . Flush with ground or pavement surface
137/4591	. . . . Enlarged upflow leg	137/5468	. . . Cap, cover or hood
137/4598	. . . . . Topside access opening	137/5474	. . . With heater
137/4606	. . . . Even diameter legs	137/5479	. . With actuator lubricating means
137/4613	. . . . . Access opening	137/5485	. . With valve at outlet
137/4621	. . Seal for relatively movable valving parts	137/5491	. . With supplemental valve
137/4628	. . . Horizontally moving valve	137/5497	. . Protection against freezing
137/4636	. . . . Rotary	137/5503	. . . Stop and waste
137/4643	. . Liquid valves	137/5509	. . . . With disabling means
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		
137/5333	. . Water crane type		
137/5339	. . . Spout operated valve		
137/5345	. . . Rotating riser		
137/535	. . . . Spout articulated to riser		
137/5356	. . . . Vertically movable riser		

137/6017	. . . . Including removable valve head and seat unit	137/6195	. . . . Spring bias
137/6021	. . . . Including mechanical movement actuator	137/6198	. Non-valving motion of the valve or valve seat
137/6024	. . . . Particular handle or handle fastening means	137/6253	. . Rotary motion of a reciprocating valve
137/6028	. . Assembling or disassembling pivoted valve	137/6307	. . . Turbine on valve
137/6031	. . Assembling or disassembling rotary valve	137/6362	. . . Manual rotating means
137/6035	. . . Rotary ball valve	137/6416	. With heating or cooling of the system
137/6038	. . . . Particular valve seat or interface seal	137/6443	. . With burner
137/6041	. . . . . Replaceable	137/647	. . . Flue extending through fluid
137/6045	. . . . . With top entry valve	137/6497	. . Hot and cold water system having a connection from the hot to the cold channel
137/6048	. . . Butterfly valve	137/6525	. . Air heated or cooled [fan, fins, or channels]
137/6052	. . . . Having valve head or seat packing	137/6552	. . With diversion of part of fluid to heat or cool the device or its contents
137/6055	. . . . With head and stem collections	137/6579	. . Circulating fluid in heat exchange relationship
137/6058	. . . Plug valve	137/6606	. . With electric heating element
137/6062	. . . . Having retainer at actuator end	137/6633	. With fluid system support for workman or non-system material
137/6065	. . Assembling or disassembling reciprocating valve	137/6851	. With casing, support, protector or static constructional installations
137/6069	. . . Having particularly packed or sealed mechanical movement actuator	137/6855	. . Vehicle
137/6072	. . . Gate valve	137/6858	. . . Locomotive
137/6075	. . . . Bifaced	137/6862	. . . . Boiler or steam dome
137/6079	. . . . Having particular valve seat	137/6866	. . . Railway car
137/6082	. . . . . Including seal	137/6869	. . . . Car frame
137/6086	. . Assembling or disassembling check valve	137/6873	. . . . End of car
137/6089	. . With mechanical movement between actuator and valve	137/6877	. . . . Roof, wall or floor
137/6092	. . . Plural motions of valve	137/6881	. . . Automotive
137/6096	. . . Lever type	137/6884	. . . . Steering post or wheel
137/6099	. . . Gear type	137/6888	. . . . Dash
137/6103	. . . Cam type	137/6892	. . . . Floor or frame
137/6106	. . . Screw type	137/6895	. . . . Fender or running board
137/6109	. . Tool for applying or removing valve or valve member	137/6899	. . . With hose reel storage means
137/6113	. . . Including sealing feature	137/6903	. . . Guided by means of track or guideway
137/6116	. . With holding means functioning only during transportation assembly or disassembly	137/6906	. . . Aerial or water-supported [e.g., airplane or ship, etc.]
137/612	. . Tapping a pipe, keg, or apertured tank under pressure	137/691	. . . With retractable or nonuse-positionable support wheel
137/6123	. . . With aperture forming means	137/6914	. . . Vehicle supports fluid compressor and compressed fluid storage tank
137/6126	. . . Imperforate closure removing and holding tap	137/6918	. . With hose storage or retrieval means
137/613	. . . With valved closure or bung	137/6921	. . . With means for plural hoses
137/6133	. . . . Combined rotary and longitudinal movement of valve	137/6925	. . . With flow regulation responsive to hose movement
137/6137	. . . . Longitudinal movement of valve	137/6929	. . . . Reel type
137/614	. . . . Rotary movement of valve	137/6932	. . . With retrieval means
137/6144	. . . With core ejectors	137/6936	. . . . Power stop or brake
137/6147	. . . . Impact operated	137/694	. . . . . Responsive to position of hose in casing
137/615	. . Foot valve extraction from top of enclosure	137/6943	. . . . . Biased to retracted position
137/6154	. . With disassembly tool engaging feature	137/6947	. . . . . Boom type
137/6157	. . . Wrench engaging lugs	137/6951	. . . . . Weighted
137/6161	. . With provision of alternate wear parts	137/6954	. . . Reel with support therefor
137/6164	. . . Valve heads and/or seats	137/6958	. . . . Ground supported
137/6167	. . . . Opposite duplicate surfaces of unitary structure	137/6962	. . . Basket or holder for folded coiled hose
137/6171	. . . . . Homogeneous material	137/6966	. . Static constructional installations
137/6174	. . . . . Valve heads	137/6969	. . . Buildings
137/6178	. . . . Different portions of continuous surfaces	137/6973	. . . . Outside access to portions of the system
137/6181	. . . . Successively used adjacent independent elements	137/6977	. . . . Escutcheon type support
137/6184	. . Removable valve with normally disabled supplemental check valve	137/698	. . . . Wall
137/6188	. . . Check valve disabled by normally movable main valve part	137/6984	. . . . . Recessed gas outlet box
137/6191	. . . . Ball check	137/6988	. . . . Floor installation
		137/6991	. . . Ground supporting enclosure
		137/6995	. . . . Valve and meter wells

137/6999	. . . . .	With means to center well on valve	137/7384	. . . . .	Pilot float released
137/7002	. . . . .	Detachable base plate	137/7387	. . . . .	Over center mechanism
137/7006	. . . . .	Vertical casing aligned by valve casing	137/7391	. . . . .	Shifting weight
137/701	. . . . .	Combined with actuator	137/7394	. . . . .	Trip mechanism
137/7014	. . . . .	Telescopic well casing	137/7397	. . . . .	Weight or spring bias
137/7017	. . . . .	Telescopic well casing	137/74	. . . . .	Lost motion mechanism
137/7021	. . . . .	Covers	137/7404	. . . . .	Plural floats
137/7025	. . . . .	Pipe line transport	137/7407	. . . . .	With counter-balance
137/7028	. . . . .	Tapering or tower type	137/741	. . . . .	Within tank
137/7032	. . . . .	Furniture and housing furnishings	137/7413	. . . . .	Level adjustment or selection means
137/7036	. . . . .	Jacketed	137/7417	. . . . .	With float leakage disposal
137/7039	. . . . .	Tank supports	137/742	. . . . .	In separate communicating float chamber
137/7043	. . . . .	Guards and shields	137/7423	. . . . .	Rectilinearly traveling float
137/7047	. . . . .	Resilient abutment for preventing breakage	137/7426	. . . . .	Float co-axial with valve or port
137/7051	. . . . .	Nozzle abutment for scratch or damage prevention	137/743	. . . . .	Float is spreader or anti-splash means
137/7054	. . . . .	Cover for beer cooler aperture for faucet	137/7433	. . . . .	Float surrounds inlet pipe
137/7058	. . . . .	Sanitary covers or shields	137/7436	. . . . .	Float rigid with valve
137/7062	. . . . .	Valve guards	137/7439	. . . . .	Float arm operated valve
137/7065	. . . . .	With means for accommodating a detachable actuator	137/7442	. . . . .	With valve retarder or cushion means
137/7069	. . . . .	With lock or seal	137/7446	. . . . .	With flow guide or restrictor
137/71	. . . . .	With seal	137/7449	. . . . .	External hood or deflector or annular outlet surrounding the inlet pipe
137/7131	. . . . .	Common lock and valve actuator	137/7452	. . . . .	Movable nozzle or inlet terminal
137/7162	. . . . .	Combination lock	137/7455	. . . . .	Valve removable from outside container
137/7194	. . . . .	Biased valve	137/7459	. . . . .	With U-shaped inlet pipe having terminal valve
137/7225	. . . . .	Mechanical movement between lock and valve	137/7462	. . . . .	With refill pipe
137/7256	. . . . .	Locks against rotary motion	137/7465	. . . . .	Assembly mounted on and having reciprocating valve element coaxial with inlet pipe
137/7287	. . . . .	Liquid level responsive or maintaining systems	137/7468	. . . . .	Horizontal or side entering pipe
137/729	. . . . .	Washing machine cycle control	137/7472	. . . . .	Vertical inlet riser
137/7293	. . . . .	Liquid excluding devices for gas inlet or outlets	137/7475	. . . . .	With toggle or second lever connected to valve
137/7297	. . . . .	With second diverse control	137/7478	. . . . .	With interposed cam, gear or threaded connection
137/73	. . . . .	Manual control	137/7481	. . . . .	Rotary valve element
137/7303	. . . . .	Control of both inflow and outflow of tank	137/7485	. . . . .	Pivoted valve
137/7306	. . . . .	Electrical characteristic sensing	137/7488	. . . . .	Ball valves
137/731	. . . . .	With control fluid connection at desired liquid level	137/7491	. . . . .	Balanced valves
137/7313	. . . . .	Control of outflow from tank	137/7494	. . . . .	Flexible valve
137/7316	. . . . .	Self-emptying tanks	137/7498	. . . . .	Barometric
137/7319	. . . . .	By float	137/7501	. . . . .	With shut-off between supply tank and receiver
137/7323	. . . . .	By float	137/7504	. . . . .	Removable valve head and seat unit
137/7326	. . . . .	Low level safety cut-off	137/7559	. . . . .	Pump type
137/7329	. . . . .	With supplemental or safety closing means or bias	137/7613	. . . . .	Threaded into valve casing
137/7332	. . . . .	Sinking or bucket type float	137/7668	. . . . .	Retained by bonnet or closure
137/7336	. . . . .	Gravitating tank	137/7722	. . . . .	Line condition change responsive valves
137/7339	. . . . .	By weight of accumulated fluid	137/7723	. . . . .	Safety cut-off requiring reset
137/7342	. . . . .	In sinking or bucket type float	137/7724	. . . . .	Thermal
137/7345	. . . . .	Oil burner fuel overflow preventing safety cut-offs	137/7725	. . . . .	Responsive to both high and low pressure or velocity
137/7349	. . . . .	In communicating measuring vessel	137/7726	. . . . .	Responsive to change in rate of flow
137/7352	. . . . .	Top and bottom connections	137/7727	. . . . .	Excessive flow cut-off
137/7355	. . . . .	In gravitating tank	137/7728	. . . . .	High pressure cut-off
137/7358	. . . . .	By float controlled valve	137/7729	. . . . .	Reset by pressure equalization valve or by-pass
137/7361	. . . . .	Valve opened by external means, closing or closing control by float	137/773	. . . . .	Fluid released trip
137/7365	. . . . .	Single float controls plural valves	137/7731	. . . . .	Fluid counter-biased or unseated valve
137/7368	. . . . .	Servo relay operation of control	137/7732	. . . . .	With mechanical stop against reopening
137/7371	. . . . .	Fluid pressure	137/7733	. . . . .	With fluid pressure seating of valve
137/7374	. . . . .	Flexible diaphragm valve	137/7734	. . . . .	Fluid opened valve requiring reset
137/7378	. . . . .	From tank	137/7736	. . . . .	Consistency responsive
137/7381	. . . . .	Quick acting			

137/7737	. . Thermal responsive	137/7793	. . . With opening bias [e.g., pressure regulator]
137/7738	. . Pop valves	137/7794	. . . . With relief valve
137/7739	. . . Pop closing valves	137/7795	. . . . Multi-stage
137/774	. . . Pop pressure reactor in inflow to valve	137/7796	. . . . Senses inlet pressure
137/7741	. . . Pop pressure reactor in branched released path	137/7797	. . . . Bias variable during operation
137/7742	. . . . Separate relief valves or valves for each branch	137/7798	. . . . . Ancillary reactor surface responds to inlet pressure
137/7743	. . . Lost motion between pop pressure reactor and valve	137/7799	. . . . . Liquid transfer
137/7744	. . . Adjustable choke	137/78	. . . . . Weight
137/7745	. . . . Annular lip or baffle	137/7801	. . . . Balanced valve
137/7746	. . . . . On movable valve part	137/7802	. . . . Liquid level responsive gas flow control
137/7747	. . . . . Screw threaded	137/7803	. . . . With protective separator
137/7748	. . Combustion engine induction type	137/7804	. . . . Main flow through isolated reactor chamber
137/7749	. . . Valve in auxiliary inlet to induction line	137/7805	. . . . Through external pipe
137/775	. . . With manual modifier	137/7806	. . . . . Modified valve casing
137/7751	. . . With suction compensator	137/7807	. . . . . Adjustable external lever
137/7752	. . . With separate reactor surface	137/7808	. . . . Apertured reactor surface surrounds flow line
137/7753	. . . Unbalanced pivoted valve [e.g., unbalanced butterfly type]	137/7809	. . . . Reactor surface separated by apertured partition
137/7754	. . Line flow effect assisted	137/781	. . . . . In valve stem
137/7755	. . . Reactor surface normal to flow	137/7811	. . . . . Also through reactor surface
137/7756	. . . Reactor surface separated from flow by apertured partition	137/7812	. . . . . Valve stem passes through the aperture
137/7757	. . . . Through separate aperture	137/7813	. . . . . Plural reactor surfaces
137/7758	. . Pilot or servo controlled	137/7814	. . . . . Reactor is an inverted cup having liquid seal
137/7759	. . . Responsive to change in rate of fluid flow	137/7815	. . . . . . With movement dampener
137/776	. . . . Control by pressures across flow line valve	137/7816	. . . . . . Valve head in inlet chamber
137/7761	. . . Electrically actuated valve	137/7818	. . . . . . Valve head in inlet chamber
137/7762	. . . Fluid pressure type	137/7819	. . . . . . Rectilinear valve stem rigid with reactor surface
137/7764	. . . . Choked or throttled pressure type	137/782	. . . . . Reactor surface is diaphragm
137/7765	. . . . . Pilot valve within main valve head	137/7821	. . . . . . With valve closing bias
137/7766	. . . . . Choked passage through main valve head	137/7822	. . . . Reactor surface closes chamber
137/7767	. . . . . Loose fitting piston	137/7823	. . . . . Valve head in inlet chamber
137/7768	. . . . . Pilot controls supply to pressure chamber	137/7824	. . . . . Reactor surface is inverted cup [float]
137/7769	. . . . Single acting fluid servo	137/7825	. . . . . Rectilinear valve stem rigid with reactor surface
137/777	. . . . . Spring biased	137/7826	. . . . . . With valve closing bias
137/7771	. . Bi-directional flow valves	137/7827	. . . . . . In reactor chamber
137/7772	. . . One head and seat carried by head of another	137/7828	. . . . . Valve head on yoke
137/7773	. . . . Supporting valve only spring biased	137/7829	. . . . . Yoke has valve closing bias
137/7774	. . . . Supporting valve spring carried by supporting valve	137/783	. . . . . Reactor operatively connected to valve by mechanical movement
137/7775	. . . . . Spring stop on supported valve stem	137/7831	. . . . With mechanical movement between actuator and valve
137/7776	. . . . . Spring abuts guide for supported valve stem	137/7832	. . . Plural valves biased closed
137/7777	. . . . . Both valves spring biased	137/7833	. . . With means for mounting or connecting to system
137/7778	. . . Axes of ports perpendicular	137/7834	. . . Valve seat or external sleeve moves to open valve
137/7779	. . . Axes of ports parallel	137/7835	. . . Valve seating in direction of flow
137/778	. . . Axes of ports co-axial	137/7836	. . . . Flexible diaphragm or bellows reactor
137/7781	. . With separate connected fluid reactor surface	137/7837	. . Direct response valves [i.e., check valve type]
137/7782	. . . With manual or external control for line valve	137/7838	. . . Plural
137/7783	. . . Valve closes in responses to reverse flow	137/7839	. . . . Dividing and recombining in a single flow path
137/7784	. . . Responsive to change in rate of fluid flow	137/784	. . . . . Integral resilient member forms plural valves
137/7785	. . . . Valve closes in response to excessive flow	137/7841	. . . . One valve carries head and seat for second valve
137/7786	. . . . Turbine or swinging vane type reactor	137/7842	. . . . Diverse types
137/7787	. . . . Expansible chamber subject to differential pressures	137/7843	. . . . Integral resilient member forms plural valves
137/7788	. . . . . Pressures across fixed choke		
137/7789	. . . . . With Venturi tube having a connection to throat		
137/7791	. . . . . Pressures across flow line valve		
137/7792	. . . . Movable deflector or choke		

137/7845	. . . . With common biasing means	137/7907	. . . . Varying effective lever arm
137/7846	. . . . Mechanically interconnected	137/7908	. . . . Weight biased
137/7847	. . . With leak passage	137/7909	. . . . Valve body is the weight
137/7848	. . . . Permits flow at valve interface	137/791	. . . . . Ball valves
137/7849	. . . . Bypass in valve casing	137/7911	. . . . . Removable cage
137/785	. . . With retarder or dashpot	137/7912	. . . . . Separable seat
137/7851	. . . . End of valve forms dashpot chamber	137/7913	. . . . . Guided head
137/7852	. . . . End of valve moves inside dashpot chamber	137/7914	. . . . . Cage
137/7853	. . . . . Enlarged piston on end of valve stem	137/7915	. . . . . Guide stem
137/7854	. . . In couplings for coaxial conduits, e.g., drill pipe check valves	137/7916	. . . . . With closing stop
137/7855	. . . . Valve seat threaded into a coupling element	137/7917	. . . . . Oppositely disposed
137/7856	. . . . Valve seat formed on or carried by a coupling element	137/7918	. . . . . Head slidable on guide rod
137/7857	. . . . Valve seat clamped between coupling elements	137/7919	. . . . . Guide and seat integral unit
137/7858	. . . With means for selecting area of valve or seat	137/792	. . . . . Guide and closure integral unit
137/7859	. . . Single head, plural ports in parallel	137/7921	. . . . . Weight coaxial with valve
137/786	. . . . Concentric ports	137/7922	. . . . Spring biased
137/7861	. . . . Annular head	137/7923	. . . . With means to protect spring from fluid
137/7862	. . . . . Central post on seat	137/7924	. . . . Spring under tension
137/7863	. . . . . Stop	137/7925	. . . . . Piston-type valves
137/7864	. . . . . With guide	137/7927	. . . . . Ball valves
137/7865	. . . . . Guide	137/7928	. . . . . With follower
137/7866	. . . Plural seating	137/7929	. . . . . Spring coaxial with valve
137/7867	. . . . Sequential	137/793	. . . . . Broken valve parts retainer
137/7868	. . . . . Resilient gasket	137/7931	. . . . . Spring in inlet
137/7869	. . . Biased open	137/7932	. . . . . Valve stem extends through fixed spring abutment
137/787	. . . . Oppositely swinging vanes	137/7933	. . . . . Yoke or cage-type support for valve stem
137/7871	. . . . Weight biased	137/7934	. . . . . Spring abuts removable valve stem guide
137/7873	. . . . . Ball valves	137/7935	. . . . . Head slides on guide-rod concentric with spring
137/7874	. . . . . Edge pivoted valve	137/7936	. . . . . Spring guides valve head
137/7875	. . . . Pivoted valves	137/7937	. . . . . Cage-type guide for stemless valves
137/7876	. . . With external means for opposing bias	137/7938	. . . . . Guide means integral and coplanar with valve disk
137/7877	. . . . With means for retaining external means in bias opposing position	137/7939	. . . . . Head between spring and guide
137/7878	. . . With bias adjustment indicator	137/794	. . . With means for separating solid material from the fluid
137/7879	. . . Resilient material valve	137/7976	. . Plural separating elements
137/788	. . . . Having expansible port	137/8013	. . Sediment chamber
137/7881	. . . . . Apertured plate	137/8049	. . Movable strainer
137/7882	. . . . . Having exit lip	137/8085	. . Hollow strainer, fluid inlet and outlet perpendicular to each other
137/7883	. . . . . With biasing means	137/8122	. . Planar strainer normal to flow path
137/7884	. . . . . Side vent	137/8158	. With indicator, register, recorder, alarm or inspection means
137/7885	. . . . . Multiple slit	137/8175	. . Plural
137/7886	. . . . . Internally extending mount	137/8192	. . . Unobvious - "combination lock" type
137/7887	. . . . Center flexing strip	137/8208	. . Time
137/7888	. . . . With valve member flexing about securement	137/8225	. . Position or extent of motion indicator
137/7889	. . . . . Sleeve	137/8242	. . . Electrical
137/789	. . . . . Central mount	137/8259	. . . Selection from plural branches
137/7891	. . . . . Flap or reed	137/8275	. . . Indicator element rigidly carried by the movable element whose position is indicated
137/7892	. . . . . With stop	137/8292	. . . . Movable indicator element is a pointer
137/7897	. . . Vacuum relief type	137/8309	. . . . . Pointer integral with handle
137/7898	. . . Pivoted valves	137/8326	. . Fluid pressure responsive indicator, recorder or alarm
137/79	. . . . Head retained by removable closure	137/8342	. . Liquid level responsive indicator, recorder or alarm
137/7901	. . . . Valve head movably connected for accommodation to seat	137/8359	. . Inspection means
137/7902	. . . . Valve mounted on end of pipe		
137/7903	. . . . Weight biased		
137/7904	. . . Reciprocating valves		
137/7905	. . . . Plural biasing means		
137/7906	. . . . Cam means for adjusting and fixing bias		

137/8376	. Combined	137/86348	. . Tank with internally extending flow guide, pipe or conduit
137/8593	. Systems	137/86356	. . . Nondraining overflow type
137/85938	. . Non-valved flow dividers	137/86364	. . . Inverted "U" passage
137/85946	. . Faucet connected, sink drained	137/86372	. . . Inlet internally extending
137/85954	. . Closed circulating system	137/86381	. . Head-establishing standpipe or expansion chamber [e.g., surge tanks]
137/85962	. . . With thermal circulating means [thermo-siphons]	137/86389	. . Programmer or timer
137/8597	. . Main line as motive fluid for follower-type feeder	137/86397	. . . With independent valve controller
137/85978	. . With pump	137/86405	. . . Repeating cycle
137/85986	. . . Pumped fluid control	137/86413	. . . . Self-cycling
137/85994	. . . . Manual	137/86421	. . . . Variable
137/86002	. . . . Fluid pressure responsive	137/86429	. . . . . Attachable and removable element
137/8601	. . . . . And pilot valve	137/86437	. . . . . Adjustable cam
137/86019	. . . . . Direct response valve	137/86445	. . . Plural, sequential, valve actuations
137/86027	. . . . . Electric	137/86453	. . . . Plural trips or trip actuations
137/86035	. . . Combined with fluid receiver	137/86461	. . . . Variable cycle
137/86043	. . . . Reserve or surge receiver	137/86469	. . . Clock alarm mechanism controlled
137/86051	. . . . Compressed air supply unit	137/86477	. . . Biased latch, cam operated
137/86059	. . . . Hydraulic power unit	137/86485	. . Line condition change responsive release of valve
137/86067	. . . . Fluid sump	137/86493	. . Multi-way valve unit
137/86075	. . . And jet-aspiration type pump	137/86501	. . . Sequential distributor or collector type
137/86083	. . . Vacuum pump	137/86509	. . . Sequentially progressive opening or closing of plural ports
137/86091	. . . Resiliently mounted pump	137/86517	. . . . With subsequent closing of first port
137/86099	. . . Hand pump	137/86525	. . . . . Flow combining with flow dividing
137/86107	. . . Multiple inlet with multiple outlet	137/86533	. . . . . Rotary
137/86115	. . . Downstream cyclic distributor	137/86541	. . . . . Plug
137/86123	. . . . Distributor part unitary with movable pump part	137/86549	. . . Selective reciprocation or rotation
137/86131	. . . Plural	137/86558	. . . Plural noncommunicating flow paths
137/86139	. . . . Serial	137/86566	. . . . Rotary plug
137/86147	. . . . . With single motive input	137/86574	. . . Supply and exhaust
137/86155	. . . . . One pump driven by motive fluid from the other	137/86582	. . . . Pilot-actuated
137/86163	. . . . Parallel	137/8659	. . . . . Variable orifice-type modulator
137/86171	. . . With pump bypass	137/86598	. . . . . Opposed orifices; interposed modulator
137/86179	. . . Drain valve actuator mounted on pump	137/86606	. . . . . Common to plural valve motor chambers
137/86187	. . Plural tanks or compartments connected for serial flow	137/86614	. . . . . Electric
137/86196	. . . Separable with valved-connecting passage	137/86622	. . . . . Motor-operated
137/86204	. . . Fluid progresses by zigzag flow	137/8663	. . . . . Fluid motor
137/86212	. . . Plural compartments formed by baffles	137/86638	. . . . . Rotary valve
137/8622	. . . Plural top-to-bottom connected tanks	137/86646	. . . . . Plug type
137/86228	. . . With communicating opening in common walls of tanks or compartments	137/86654	. . . . . For plural lines
137/86236	. . Tank with movable or adjustable outlet or overflow pipe	137/86662	. . . . . Axial and radial flow
137/86244	. . . Horizontally traversing outlet	137/8667	. . . . . Reciprocating valve
137/86252	. . . Float-supported outlet	137/86678	. . . . . Combined disk or plug and gate or piston
137/8626	. . . Swinging outlet pipe or spout	137/86686	. . . . . Plural disk or plug
137/86268	. . With running joint between movable parts of system	137/86694	. . . . . Piston valve
137/86276	. . Movable tank	137/86702	. . . . . With internal flow passage
137/86284	. . With antisplash means not in flow passage	137/8671	. . . . . With annular passage [e.g., spool]
137/86292	. . System with plural openings, one a gas vent or access opening	137/86718	. . . Dividing into parallel flow paths with recombining
137/863	. . . Access and outlet	137/86726	. . . . Valve with bypass connections
137/86308	. . . . Tank access opening and bottom outlet	137/86734	. . . . With metering feature
137/86316	. . . . . Access opening interlock or telltale on outlet valve actuator	137/86743	. . . . Rotary
137/86324	. . . Tank with gas vent and inlet or outlet	137/86751	. . . . . Plug
137/86332	. . . . Vent and inlet or outlet in unitary mounting	137/86759	. . . . . Reciprocating
137/8634	. . . With vented outlet	137/86767	. . . . . Spool
		137/86775	. . . . . With internal passage
		137/86783	. . . . . Unequal heads
		137/86791	. . . . . Piston
		137/86799	. . . . . With internal flow passage

137/86807	. . . . . Sequential opening or closing of serial ports in single flow line	137/87257	. . Hydraulic brake line [e.g., hill holders]
137/86815	. . . Multiple inlet with single outlet	137/87265	. . Dividing into parallel flow paths with recombining
137/86823	. . . Rotary valve	137/87273	. . . With fluid coupling [e.g., railway car hose coupling, truck-trailer oil system coupling, etc.]
137/86831	. . . Selective opening of plural ports	137/87281	. . . System having plural inlets
137/86839	. . . Four port reversing valves	137/8729	. . . . Having digital flow controller
137/86847	. . . Pivoted valve unit	137/87298	. . . Having digital flow controller
137/86855	. . . . Gate	137/87306	. . . . Having plural branches under common control for separate valve actuators
137/86863	. . . Rotary valve unit	137/87314	. . . . . Electromagnetic or electric control [e.g., digital control, bistable electro control, etc.]
137/86871	. . . . Plug	137/87322	. . . With multi way valve having serial valve in at least one branch
137/86879	. . . Reciprocating valve unit	137/8733	. . . Fluid pressure regulator in at least one branch
137/86887	. . . . Combined disk or plug and gate or piston	137/87338	. . . Flow passage with bypass
137/86895	. . . . Plural disk or plug	137/87346	. . . . Including mixing feature
137/86903	. . Plural petcocks	137/87354	. . . . Including flowmeter
137/86911	. . Sequential distributor or collector type	137/87362	. . . . Including cleaning, treating, or heat transfer feature
137/86919	. . Sequentially closing and opening alternately seating flow controllers	137/8737	. . . . . Water treatment feature
137/86928	. . Sequentially progressive opening or closing of plural valves	137/87378	. . . Second valve assembly carried by first valve head
137/86936	. . . Pressure equalizing or auxiliary shunt flow	137/87386	. . . . With rotary plug having variable restrictor
137/86944	. . . . One valve seats against other valve [e.g., concentric valves]	137/87394	. . . . Carried valve is direct response valve [e.g., check valve, etc.]
137/86952	. . . . . Locomotive throttle	137/87402	. . . With foam controlling means [e.g., beer, soda faucets]
137/8696	. . . . . Gate	137/8741	. . . With common operator
137/86968	. . . . . With balancing chamber	137/87418	. . . . Balanced valve
137/86976	. . . . . First valve moves second valve	137/87426	. . . . Single resilient member actuates or forms plural passages
137/86984	. . . . . Actuator moves both valves	137/87434	. . . . Valves deform to close passage
137/86992	. . . With subsequent closing of first opened port	137/87442	. . . . Rotary valve
137/87	. . . . Simultaneously moved port controllers	137/8745	. . . . . Including rigid plate with flexible or resilient seal
137/87008	. . . Screw-actuated differential valves	137/87458	. . . . . Axes of rotation of valves intersect at point
137/87016	. . . Lost motion	137/87467	. . . . . Axes of rotation parallel
137/87024	. . . . Cam determines sequence	137/87475	. . . . . Adjacent plate valves always parallel
137/87032	. . . . Rotary concentric valves	137/87483	. . . . . Adjacent plate valves counter rotate
137/8704	. . . . First valve actuates second valve	137/87491	. . . . Mechanical movement between actuator and non-rotary valve
137/87048	. . With preselecting means for plural valve actuator	137/87499	. . . Fluid actuated or retarded
137/87056	. . With selective motion for plural valve actuator	137/87507	. . . Electrical actuator
137/87064	. . . Oppositely movable cam surfaces	137/87515	. . . Mechanical movement between actuator and valve
137/87072	. . . Rotation about either of two pivotal axes	137/87523	. . . Rotary valve
137/8708	. . . Rotation of actuator arm about its pivot and its axis	137/87531	. . . . Butterfly valve
137/87088	. . . Reciprocation along and rotation about same axis	137/87539	. . . Having guide or restrictor
137/87096	. . Valves with separate, correlated, actuators	137/87547	. . . . Manually variable
137/87105	. . . Correlated across separable flow path joint	137/87555	. . . Having direct response valve [e.g., check valve, etc.]
137/87113	. . . Interlocked	137/87563	. . . . With reverse flow direction
137/87121	. . . Coaxial stems	137/87571	. . . Multiple inlet with single outlet
137/87129	. . . . Rotary	137/87579	. . . Faucet attachment
137/87137	. . . . . And reciprocating	137/87587	. . . Combining by aspiration
137/87145	. . . . . Concentric, central valve removable	137/87595	. . . . Combining of three or more diverse fluids
137/87153	. . Plural noncommunicating flow paths	137/87603	. . . . Plural motivating fluid jets
137/87161	. . . With common valve operator	137/87611	. . . . Flow control by varying position of a fluid inlet relative to entrainment chamber
137/87169	. . Supply and exhaust	137/87619	. . . . With selectively operated flow control means in inlet
137/87177	. . . With bypass		
137/87185	. . . . Controlled by supply or exhaust valve		
137/87193	. . . Pilot-actuated		
137/87201	. . . . Common to plural valve motor chambers		
137/87209	. . . . Electric		
137/87217	. . . Motor		
137/87225	. . . . Fluid motor		
137/87233	. . . Biased exhaust valve		
137/87241	. . . . Biased closed		
137/87249	. . Multiple inlet with multiple outlet		

137/87627 Flow control means is located in aspirated fluid inlet

137/87635 Single actuator operates flow control means located in both motivating fluid and aspirated fluid inlets

137/87643 With condition responsive valve

137/87652 With means to promote mixing or combining of plural fluids

137/8766 With selectively operated flow control means

137/87668 Single actuator operates plural flow control means

137/87676 With flow control

137/87684 Valve in each inlet

137/87692 With common valve operator

137/877 With flow control means for branched passages

137/87708 With common valve operator

137/87716 For valve having a flexible diaphragm valving member

137/87724 For valve having a ball head

137/87732 With gearing

137/8774 Threaded actuator

137/87748 Pivoted or rotary motion converted to reciprocating valve head motion

137/87756 Spring biased

137/87764 Having fluid actuator

137/87772 With electrical actuation

137/8778 Spring biased

137/87788 With valve or movable deflector at junction

137/87796 Movable deflector spout in lateral port

137/87804 Valve or deflector is tubular passageway

137/87812 Pivoted valve or deflector

137/8782 Rotary valve or deflector

137/87829 Biased valve

137/87837 Spring bias

137/87845 For valve having a ball head

137/87853 With threaded actuator

137/87861 Spring coaxial with valve

137/87869 Biased open

137/87877 Single inlet with multiple distinctly valved outlets

137/87885 Sectional block structure

137/87893 With fluid actuator

137/87901 With threaded actuator

137/87909 Containing rotary valve

137/87917 Flow path with serial valves and/or closures

137/87925 Separable flow path section, valve or closure in each

137/87933 Common joint and valve seat faces, or sections joined by closing members

137/87941 Each valve and/or closure operated by coupling motion

137/87949 Linear motion of flow path sections operates both

137/87957 Valves actuate each other

137/87965 Valve- or closure-operated by coupling motion

137/87973 Coupling interlocked with valve, or closure or actuator

137/87981 Common actuator

137/87989 Delivery cock with terminal valve

137/87997 Alternately seating

137/88005 Biased valve

137/88014 Opposed screw

137/88022 One valve head provides seat for other head

137/8803 Also carries head of other valve

137/88038 One valve head carries other valve head

137/88046 Biased valve with external operator

137/88054 Direct response normally closed valve limits direction of flow

137/88062 Coaxial oppositely directed seats

137/8807 Articulated or swinging flow conduit

137/88078 Actuates valve

137/88086 Plural motions of valve

137/88094 Reciprocating valve

137/88102 Rotary valve

137/8811 Frangible

137/9029 With coupling

137/9138 Flexible

137/9247 With closure

137/9464 Faucets and spouts

137/9682 Miscellaneous

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

152/10 Tires, resilient

152/10009 Emergency

152/10018 with splash guards

152/10027 with wear indicating feature

152/10036 Cushion and pneumatic combined

152/10045 Metallic spring cushion

152/10054 Enclosed cushion

152/10063 Superimposed

152/10072 Plungers

152/10081 Edge-secured cushion

152/1009 Guide flanges

152/10099 Radial stops

152/10108 Bolts or studs

152/10117 Integral

152/10126 with removable inner tube

152/10135 Armored

152/10144 Single tube tires internal

152/10153 Metal

152/10162 Plates

152/10171 Casing construction

152/1018 Embedded

152/10189 Metal

152/10198 Plates

152/10207 Annular

152/10216 Linked mat

152/10225 Woven

152/10234 Interliners

152/10243 Cotton, fabric, or rubber

152/10252 Metal

152/10261 Scale armor

152/1027 Annular

152/10279 Cushion

152/10288 Sectional

152/10297 Annular

152/10306 Superimposed

152/10315 Superimposed

152/10324 with apertured external binders

152/10333 Radial bolt secured

152/10342 Abutting sections

152/10351 with annular internal binders
 152/1036 Interfitting
 152/10369 Indented at joints
 152/10378 Casing enclosed core
 152/10387 Separate core
 152/10396 Removable
 152/10405 Sponge rubber
 152/10414 with core compression
 152/10423 Superimposed rings
 152/10432 Sectional transversely
 152/10441 Balls
 152/1045 Integral structure
 152/10459 Recessed
 152/10468 Chambered
 152/10477 Perforated
 152/10486 Chambered
 152/10495 Pneumatic tire or inner tube
 152/10504 Asymmetric tyre
 152/10513 Tire reinforcement material characterized by short length fibers or the like
 152/10522 Multiple chamber
 152/10531 Cylinder and piston
 152/1054 Mutually free walls
 152/10549 Interfitting
 152/10558 Balls
 152/10567 with simultaneous inflating means
 152/10576 Annular chambers
 152/10585 with simultaneous inflating means
 152/10594 Mutually free walls
 152/10603 with simultaneous inflating means
 152/10612 with simultaneous inflating means
 152/10621 Sectional casings
 152/1063 Circumferential
 152/10639 Rigid inner sections
 152/10648 with means restricting relative movement between tire and inner tube [e.g., anti-creep feature, etc.]
 152/10657 with means to protect inner tube from rim
 152/10666 Automatic sealing of punctures [e.g., self-healing, etc.]
 152/10675 Using flowable coating or composition
 152/10684 On inner surface of tubeless tire
 152/10693 Sealant in plural layers or plural pockets
 152/10702 within or part of construction of inflating inner tube
 152/10711 Sealant in plural layers or plural pockets
 152/1072 by compression
 152/10729 with reinflating means
 152/10738 with means to protect tire from rim
 152/10747 Means other than rim closing the tire opening
 152/10756 Positive casing closure
 152/10765 Characterized by belt or breaker structure
 152/10774 Consisting of only one ply
 152/10783 Reinforcing plies made up from wound narrow ribbons
 152/10792 Structure where each bias angle reinforcing cord ply has no opposingly angled ply
 152/10801 Structure made up of two or more sets of plies wherein the reinforcing cords in one set lie in a different angular position relative to those in other sets

152/1081 Breaker or belt characterized by the chemical composition or physical properties of elastomer or the like
 152/10819 Characterized by the structure of the bead portion of the tire
 152/10828 Chafer or sealing strips
 152/10837 Bead characterized by the radial extent of apex, flipper or chafer into tire sidewall
 152/10846 Bead characterized by the chemical composition and or physical properties of elastomers or the like
 152/10855 Characterized by the carcass, carcass material, or physical arrangement of the carcass materials
 152/10864 Sidewall stiffening or reinforcing means other than main carcass plies or foldups thereof about beads
 152/10873 with two or more differing cord materials
 152/10882 Patches
 152/10891 Mechanically secured
 152/109 Inside and outside, bolt connected
 152/10909 with plugs
 152/10918 Bandages
 152/10927 Mechanically secured
 152/10936 to felly or rim

Former US Class 156 Series

156/00 Adhesive bonding and miscellaneous chemical manufacture
 156/10 Methods of surface bonding and/or assembly therefor
 156/1002 with permanent bending or reshaping or surface deformation of self sustaining lamina
 156/1003 by separating laminae between spaced secured areas [e.g., honeycomb expanding]
 156/1005 by inward collapsing of portion of hollow body
 156/1007 Running or continuous length work
 156/1008 Longitudinal bending
 156/101 Prior to or during assembly with additional lamina
 156/1011 Overedge bending or overedge folding
 156/1013 and edge-joining of one piece blank to form tube
 156/1015 Folding
 156/1016 Transverse corrugating
 156/1018 Subsequent to assembly of laminae
 156/102 with deformation or cutting of corrugated lamina
 156/1021 Treating material of corrugated lamina or dry adhesive thereon to render tacky
 156/1023 Surface deformation only [e.g., embossing]
 156/1025 to form undulated to corrugated sheet and securing to base with parts of shaped areas out of contact
 156/1026 with slitting or removal of material at reshaping area prior to reshaping
 156/1028 by bending, drawing or stretch forming sheet to assume shape of configured lamina while in contact therewith
 156/103 Encasing or enveloping the configured lamina
 156/1031 with preshaping of lamina
 156/1033 Flexible sheet to cylinder lamina

- 156/1034 . . . Overedge bending of lamina about edges of sheetlike base
- 156/1036 . . . Bending of one piece blank and joining edges to form article
- 156/1038 Hollow cylinder article
- 156/1039 . . . Surface deformation only of sandwich or lamina [e.g., embossed panels]
- 156/1041 Subsequent to lamination
- 156/1043 . . . Subsequent to assembly
- 156/1044 of parallel stacked sheets only
- 156/1046 Bending of one lamina only
- 156/1048 to form dished or receptacle-like product
- 156/1049 Folding only
- 156/1051 . . . by folding
- 156/1052 . . with cutting, punching, tearing or severing
- 156/1054 . . . and simultaneously bonding [e.g., cut-seaming]
- 156/1056 . . . Perforating lamina
- 156/1057 Subsequent to assembly of laminae
- 156/1059 . . . Splitting sheet lamina in plane intermediate of faces
- 156/1061 . . . Spiral peeling
- 156/1062 . . . Prior to assembly
- 156/1064 Partial cutting [e.g., grooving or incising]
- 156/1066 Cutting to shape joining edge surfaces only
- 156/1067 Continuous longitudinal slitting
- 156/1069 Bonding face to face of laminae cut from single sheet
- 156/107 Punching and bonding pressure application by punch
- 156/1072 Closure cap liner applying type
- 156/1074 Separate cutting of separate sheets or webs
- 156/1075 of plural laminae from single stock and assembling to each other or to additional lamina
- 156/1077 Applying plural cut laminae to single face of additional lamina
- 156/1079 Joining of cut laminae end-to-end
- 156/108 . . . Flash, trim or excess removal
- 156/1082 . . . Partial cutting bonded sandwich [e.g., grooving or incising]
- 156/1084 . . . of continuous or running length bonded web
- 156/1085 One web only
- 156/1087 Continuous longitudinal slitting
- 156/1089 . . of discrete laminae to single face of additional lamina
- 156/109 . . . Embedding of laminae within face of additional laminae
- 156/1092 . . . All laminae planar and face to face
- 156/1093 with covering of discrete laminae with additional lamina
- 156/1095 Opposed laminae are running length webs
- 156/1097 Lamina is running length web
- 156/1098 Feeding of discrete laminae from separate sources
- 156/11 . . Methods of delaminating, per se; i.e. , separating at bonding face
- 156/1105 . . Delaminating process responsive to feed or shape at delamination
- 156/1111 . . Using solvent during delaminating [e.g., water dissolving adhesive at bonding face during delamination, etc.]
- 156/1116 . . . Using specified organic delamination solvent
- 156/1121 . . Using vibration during delaminating
- 156/1126 . . Using direct fluid current against work during delaminating
- 156/1132 . . . Using vacuum directly against work during delaminating
- 156/1137 Using air blast directly against work during delaminating
- 156/1142 . . Changing dimension during delaminating [e.g., crushing, expanding, warping, etc.]
- 156/1147 . . . Using shrinking or swelling agent during delaminating
- 156/1153 . . Temperature change for delamination [e.g., heating during delaminating, etc.]
- 156/1158 . . . Electromagnetic radiation applied to work for delamination [e.g., microwave, uv, ir, etc.]
- 156/1163 . . . Sintering for delamination
- 156/1168 . . Gripping and pulling work apart during delaminating
- 156/1174 . . . Using roller for delamination [e.g., roller pairs operating at differing speeds or directions, etc.]
- 156/1179 . . . with poking during delaminating [e.g., jabbing, etc.]
- 156/1184 Piercing layer during delaminating [e.g., cutting, etc.]
- 156/1189 . . . with shearing during delaminating
- 156/1195 . . . Delaminating from release surface
- 156/12 . Surface bonding means and/or assembly means with cutting, punching, piercing, severing or tearing
- 156/125 . . Plural severing means each acting on a different work piece
- 156/13 . . Severing followed by associating with part from same source
- 156/1304 . . Means making hole or aperture in part to be laminated
- 156/1309 . . . and securing separate part over hole or aperture
- 156/1313 . . Cutting element simultaneously bonds [e.g., cut seaming]
- 156/1317 . . Means feeding plural workpieces to be joined
- 156/1322 . . . Severing before bonding or assembling of parts
- 156/1326 Severing means or member secured thereto also bonds
- 156/133 Delivering cut part to indefinite or running length web
- 156/1335 Cutter also delivers cut piece
- 156/1339 Delivering cut part in sequence to serially conveyed articles
- 156/1343 . . . Cutting indefinite length web after assembly with discrete article
- 156/1348 . . Work traversing type
- 156/1352 . . . with liquid applying means
- 156/1357 Slitting and severing
- 156/1361 Cutting after bonding
- 156/1365 . . . Fixed cutter
- 156/137 . . Stamp from multiple row sheet type
- 156/1374 . . with means projecting fluid against work
- 156/1378 . . Cutter actuated by or secured to bonding element
- 156/1383 . . . with liquid applicator
- 156/1387 Common actuator for bonding and liquid applying means
- 156/1391 Liquid applied to web before cutting
- 156/1396 Roller applicator
- 156/14 . Surface bonding means and/or assembly means with shaping, scarifying, or cleaning joining surface only

156/15	. Combined or convertible surface bonding means and/or assembly means	156/1793	. . . Grip or clamp for web end
156/16	. Surface bonding means and/or assembly means with bond interfering means [slip sheet, etc.]	156/1795	. . . Implement carried web supply
156/17	. Surface bonding means and/or assembly means with work feeding or handling means	156/1798	. . with liquid adhesive or adhesive activator applying means
156/1702	. . For plural parts or plural areas of single part	156/18	. Surface bonding means and/or assembly means with handle or handgrip
156/1705	. . . Lamina transferred to base from adhered flexible web or sheet type carrier	156/19	. Delaminating means
156/1707	. . . . Discrete spaced laminae on adhered carrier	156/1906	. . Delaminating means responsive to feed or shape at delamination
156/171	. . . . Means serially presenting discrete base articles or separate portions of a single article	156/1911	. . Heating or cooling delaminating means [e.g., melting means, freezing means, etc.]
156/1712	. . . Indefinite or running length work	156/1917	. . . Electromagnetic radiation delaminating means [e.g., microwave, uv, ir, etc.]
156/1715	. . . . Means joining indefinite length work edge to edge	156/1922	. . Vibrating delaminating means
156/1717	. . . . . Means applying adhesively secured tape to seam	156/1928	. . Differential fluid pressure delaminating means
156/172	. . . . . Means applying fluid adhesive to work edge	156/1933	. . . Spraying delaminating means [e.g., atomizer, etc.
156/1722	. . . . Means applying fluent adhesive or adhesive activator material between layers	156/1939	. . . . Air blasting delaminating means]
156/1724	. . . . . At spaced areas	156/1944	. . . Vacuum delaminating means [e.g., vacuum chamber, etc.]
156/1727	. . . . . Plural indefinite length or running length workpieces	156/195	. . Delaminating roller means
156/1729	. . . . . Fluid applied to nip between indefinite length webs	156/1956	. . . Roller pair delaminating means
156/1732	. . . . . Fluid applied to plural workpieces	156/1961	. . Severing delaminating means [e.g., chisel, etc.]
156/1734	. . . . Means bringing articles into association with web	156/1967	. . . Cutting delaminating means
156/1737	. . . . Discontinuous, spaced area, and/or patterned pressing	156/1972	. . . . Shearing delaminating means
156/1739	. . . . Webs of different width, longitudinally aligned	156/1978	. . Delaminating bending means
156/1741	. . . . Progressive continuous bonding press [e.g., roll couples]	156/1983	. . . Poking delaminating means
156/1744	. . . Means bringing discrete articles into assembled relationship	156/1989	. . . Corner edge bending delaminating means
156/1746	. . . . Plural lines and/or separate means assembling separate sandwiches	156/1994	. . Means for delaminating from release surface
156/1749	. . . . All articles from single source only	Former US Class 225 series	
156/1751	. . . . At least three articles	225/00	Severing by tearing or breaking
156/1754	. . . . . At least two applied side by side to common base	225/10	. Methods
156/1756	. . . . . Plural ranks	225/12	. . With preliminary weakening
156/1759	. . . . . Sheet form common base	225/14	. . Longitudinally of direction of feed
156/1761	. . . . . Stacked serially	225/16	. . Transversely of continuously fed work
156/1763	. . . . Magazine stack directly contacting separate work	225/18	. . . Progressively to or from one side edge
156/1766	. . . . . Magazine movable to work	225/20	. Severing by manually forcing against fixed edge
156/1768	. . . . Means simultaneously conveying plural articles from a single source and serially presenting them to an assembly station	225/201	. . With other type severing means
156/1771	. . . . . Turret or rotary drum-type conveyor	225/202	. . With timer-released means for preventing work feed-out
156/1773	. . . . . For flexible sheets	225/203	. . Including means to effect bias cut
156/1776	. . . . Means separating articles from bulk source	225/205	. . With feed-out of predetermined length from work supply
156/1778	. . . . . Stacked sheet source	225/206	. . . Including means to select or adjust feed-out length
156/178	. . . . . Rotary or pivoted picker	225/207	. . . Including feed-out stop for manually pulled work
156/1783	. . . . . Translating picker	225/208	. . . . Stop abuts work edge or work-mounted article
156/1785	. . Magazine stack directly contacting work	225/209	. . . . With feed-out of lead-end to aid initial grasping
156/1788	. . Work traversing type and/or means applying work to wall or static structure	225/21	. . . Merely to provide lead-end for manual grasping
156/179	. . . with liquid applying means	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	225/272	. . . Including stripper to separate lead-end from package
225/221	. . . With means to strip adhering work therefrom	225/274	. . . Weight of bodily movable package contributes to blade-biasing force
225/222	. . With work-immobilizing paster surface	225/275	. . . Blade slidably guided
225/223	. . . With finger-access opening	225/276	. . Blade movable to severing position by moving work
225/224	. . With means to hold pad or stack of individual sheets	225/277	. . . With simultaneous application of brake or clamp
225/225	. . . With means to separate severed end of stub from supply package	225/278	. . . . Applied to running length work
225/226	. . . With changeable blade-edge contour	225/279	. . . . . Opposed movable jaws
225/228	. . . . Slidable notcher	225/28	. . Wound package bodily biased toward fixed blade
225/229	. . . Blade slidable along plane of work surface	225/282	. . With fixed blade and support for wound package
225/23	. . Zigzag-folded supply package	225/283	. . . Body- or belt-attached
225/231	. . Separate blades usable alternatively or sequentially on same work supply	225/284	. . . With brake applied to supply package
225/232	. . Plural supply sources	225/285	. . . With guide spaced from blade edge to provide lead-end therebetween
225/233	. . . On turret-type support with single blade	225/286	. . With work-abutment stop
225/234	. . . With movable blade registrable selectively with each source	225/287	. . With brake or clamp
225/236	. . . With plural blades	225/289	. . . Thread cutter and clamp attachment for sewing machine presser foot
225/237	. . . . With individual blade for each source	225/29	. . . Applied to running length work
225/238	. . With housing for work supply	225/291	. . . . Spaced from blade edge to provide lead-end therebetween
225/239	. . . Liquid-, gas-, or light-tight work passage	225/292	. . . . . Blade manually movable to expose lead-end
225/24	. . . With inspection window or transparent panel	225/293	. . . Manually applied, spring returned
225/241	. . . With mounting means for housing	225/294	. . With guide for running length work
225/243	. . . Blade on pivoted closure for housing	225/295	. . Blade manually movable to or from severing position
225/244	. . . Sectional telescoping housing	225/297	. . With means to facilitate lead-end grasping
225/245	. . . . Including removable cap or sleeve enclosure for spooled work supply	225/298	. . Blades or severing devices
225/246	. . . Including special support for wound supply package	225/299	. . . Adjustable blade-edge contour
225/247	. . . . Bearing or trunnions to engage package core	225/30	. Breaking or tearing apparatus
225/248	. . . Single blank container	225/304	. . Including means to apply thermal shock to work
225/249	. . . . Blade unitary with container	225/307	. . Combined with preliminary weakener or with nonbreaking cutter
225/251	. . . . With closure fastener	225/314	. . . Successively actuated sharp and dull tools
225/252	. . . With brake or tensioner	225/321	. . . Preliminary weakener
225/253	. . . . Restricted or restrictable work outlet	225/325	. . . . With means to apply moment of force to weakened work
225/254	. . . With finger-access opening to facilitate work feed-out	225/329	. . Plural breakers
225/255	. . . With internal guide	225/336	. . Conveyor diverter for moving work
225/256	. . Blade carrier bodily and slidably supported on running length work	225/343	. . . Plural divergent work paths
225/257	. . Blade mounted on hand-held wound package	225/35	. . Work-parting pullers [bursters]
225/259	. . . With lead-end stripper for tacky adhesive work	225/357	. . . Relatively movable clamps
225/26	. . . By resiliently embracing outer circumference of package	225/364	. . Axial twisters
225/261	. . . Work supply nonrotatably wound on flanged spool	225/371	. . Movable breaking tool
225/262	. . . . Circumferentially movable blade radially retained by beaded or grooved flanges	225/379	. . . Breaking tool intermediate spaced work supports
225/263	. . . . Blade carrier supports hollow spool for rotation	225/386	. . . . Clamping supports
225/264	. . . . Flange edge notched to provide or coact with cutter	225/393	. . Web restrainer
225/266	. . . . With clamp for lead-end of strand-type work	Former US Class 279 Series	
225/267	. . . . . Strand clamped against flange	279/00	Chucks or sockets
225/268	. . . By resiliently engaging package ends or interior of core	279/10	. Expanding
225/269	. . . Blade carrier supports package for rotation	279/1004	. . Collet type
225/27	. . Movable blade continually biased toward wound web supply package	279/1008	. . . Fixed jaws and moving cam
225/271	. . . Including temporary bias-disabling means	279/1012	. . . Fixed cam and moving jaws
		279/1016	. . Jaws mounted on flexible member; i.e., diaphragm
		279/1021	. . Fluid-pressure actuator

279/1024	. . . Directly expanding jaws	279/17196	. . . . . Ball or roller
279/1029	. . . . Jaw is expansible chamber; i.e., bladder type	279/17205	. . Conical clamp threaded in socket
279/1033	. . . Expanding jaws via mechanical connection	279/17213	. . Transversely oscillating jaws
279/1037	. . Axially moving actuator	279/17222	. . . Screw actuated
279/1041	. . . Wedge	279/17231	. . Pivoted jaws
279/1045	. . . . Internal cone	279/17239	. . . Moving-cam actuator
279/1049	. . . . with jaw positively interlocked with wedge; e.g., dovetail or T-slot	279/17247	. . . . Threaded cam sleeve
279/1054	. . . . with resilient means contacting nonresilient jaw	279/17256	. . . . Reciprocating cam sleeve
279/1058	. . . . . Constricting band, annulus, or clip	279/17264	. . . Fixed cam and moving jaws
279/1062	. . . Toggle	279/17273	. . . . Axial screw actuator
279/1066	. . . Axially compressible element expands radially	279/17282	. . . . Threaded-sleeve actuator
279/1071	. . . Lever	279/17291	. . Resilient split socket
279/1074	. . Rotary actuator	279/17299	. . . Threaded cam sleeve
279/1079	. . . Clutch or self-actuating type	279/17307	. . . Reciprocating cam sleeve
279/1083	. . Jaw structure	279/17316	. . . Unitary
279/1087	. . . Resilient	279/17324	. . . . Split at one end only
279/1091	. . . Ball or roller	279/17333	. . . . . Transverse screw actuator
279/1095	. . . Pivoted	279/17341	. . . . . Cam actuator
279/11	. Vacuum	279/17351	. . . . . Split end to end
279/12	. with fluid-pressure actuator	279/17358	. . . . with jaw pads or insert
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		
279/17188	. . . . Side detent		

279/17675	. . . Transverse-screw actuated	279/24	. by centrifugal force
279/17683	. . . . Interlaced jaws	279/243	. . to counterbalance jaws
279/17692	. . . Moving-cam actuator	279/247	. . to grip tool or workpiece
279/17701	. . . . Threaded cam sleeve	279/25	. Compensation for eccentricity
279/17709	. . . . Threaded sleeve and wedge	279/26	. with centering means
279/17717	. . . . Rotary eccentric-cam sleeve	279/27	. Separate chuck-actuating power source
279/17726	. . . . . Roller and rocking jaw	279/275	. . Self-contained
279/17735	. . . . . Worm actuated	279/28	. for gear or spline molding
279/17743	. . . . Reciprocating cam sleeve	279/29	. More than one set of gripping means
279/17752	. . . . . Ball or roller jaws	279/30	. Torsion mandrel
279/17761	. . Side detent	279/31	. Jaws mounted on flexible member; i.e. , diaphragm
279/17769	. . . Pivoted or rotary	279/32	. Means to prevent jaw loosening
279/17777	. . . . Sleeved	279/33	. Member applies axial force component
279/17786	. . . Spring	279/34	. Accessory or component
279/17794	. . . . Sleeved	279/3406	. . Adapter
279/17803	. . . Rotary cam sleeve	279/3412	. . . Drive conversion
279/17811	. . . Reciprocating sleeve	279/3418	. . . for particular tool or workpiece
279/17821	. . . Set screw	279/3425	. . Sliding cam chuck actuator
279/17829	. . . U-clamp	279/3431	. . Chuck key
279/17837	. . . Plural bolt	279/3437	. . . Safety feature; e.g., ejector, interlock
279/17846	. . . Single transverse bolt	279/3443	. . . Key holding or attaching means
279/17854	. . . Longitudinal clamping wedge	279/3451	. . . Nonseparable or built-in
279/17863	. . Shouldered-tang holding	279/3456	. . Padded or cushioned jaw
279/17871	. . . Cap	279/3462	. . Jaw insert
279/17881	. . . . Screw	279/3468	. . . Machinable jaw
279/17888	. . Tang offset within socket	279/3475	. . . . Locking or positioning means
279/17897	. . Tang offset without socket	279/3481	. . Tool or workpiece ejector
279/17905	. . Bottomless	279/3487	. . Tool or work stop or locator
279/17914	. . . Friction grip	279/3493	. . Protection means; e.g., cover, seal, overstress prevention, air blast
279/17923	. . Transverse pin	279/35	. Miscellaneous
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		

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	292/0899	. . . . .	Flexible
292/083	. . . . .	Flexible	292/09	. . . . .	Lever
292/0831	. . . . .	Lever	292/0901	. . . . .	Push or pull rod
292/0832	. . . . .	Push or pull rod	292/0902	. . . . .	Rigid
292/0833	. . . . .	Rigid	292/0903	. . . . .	Seal catch
292/0834	. . . . .	Sliding	292/0905	. . . . .	Swinging catch
292/0836	. . . . .	Operating means	292/0906	. . . . .	Screw
292/0837	. . . . .	Cam and lever	292/0907	. . . . .	Multiple head
292/0838	. . . . .	Lever and push or pull rod	292/0908	. . . . .	Emergency operating means
292/0839	. . . . .	Link and lever	292/0909	. . . . .	Panel
292/084	. . . . .	Cam	292/091	. . . . .	Platform
292/0841	. . . . .	Flexible	292/0911	. . . . .	Hooked end
292/0843	. . . . .	Gear	292/0913	. . . . .	Sliding and swinging
292/0844	. . . . .	Lever	292/0914	. . . . .	Operating means
292/0845	. . . . .	Push or pull rod	292/0915	. . . . .	Cam
292/0846	. . . . .	Rigid	292/0916	. . . . .	Gear
292/0847	. . . . .	Screw	292/0917	. . . . .	Lever
292/0848	. . . . .	Swinging	292/0918	. . . . .	Rigid
292/0849	. . . . .	Operating means	292/092	. . . . .	Screw
292/0851	. . . . .	Cam and lever	292/0921	. . . . .	Multiple head
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

292/0969	. . . Spring projected	292/1036	. . . End lever
292/097	. . . . Operating means	292/1037	. . . Pivoted end
292/0971	. . . . . Cam and lever	292/1038	. . . Roller
292/0972	. . . . . Lever and push or pull rod	292/1039	. . Swinging and camming
292/0974	. . . . . Link and lever	292/10395	. . . Spring projected
292/0975	. . . . . Link and push or pull rod	292/104	. . . . Rigid operating means
292/0976	. . . . . Sliding cam	292/1041	. . . Rigid operating means
292/0977	. . . . . Cam	292/1043	. . Swinging
292/0978	. . . . . Specifically related to vehicle closure	292/1044	. . . Multiple head
292/0979	. . . . . . Bolt disabled by contraretracting movement of inside handle	292/1045	. . . . Operating means
292/098	. . . . . . Auxiliary bolt	292/1046	. . . . . Cam
292/0982	. . . . . . Bolt blocking or disabling means	292/1047	. . . . . Closure
292/0983	. . . . . . Involves rollback	292/1048	. . . . . Lever
292/0984	. . . . . . . Rollback members located on separate spindles	292/1049	. . . . . Rigid
292/0985	. . . . . . . Discrete pivotable or rotatable actuator	292/1051	. . . Spring projected
292/0986	. . . . . . . Discrete push or pull actuator	292/1052	. . . . Operating means
292/0987	. . . . . . . Bolt has ancillary projection spring	292/1053	. . . . . Lever and push or pull rod
292/0989	. . . . . . . Plural rollback elements directionally selectively effective	292/1054	. . . . . Link and cam
292/099	. . . . . . . On separate spindles	292/1055	. . . . . Link and lever
292/0991	. . . . . . . On a tubular member	292/1056	. . . . . Cam
292/0992	. . . . . . Flexible	292/1057	. . . . . Flexible
292/0993	. . . . . . Gear	292/1059	. . . . . Lever
292/0994	. . . . . . Lever	292/106	. . . . . Push or pull rod
292/0995	. . . . . . Push or pull rod	292/1061	. . . . . Rigid
292/0997	. . . . . . Rigid	292/1062	. . . Spring retracted
292/0998	. . . . . . Screw	292/1063	. . . Gravity actuated
292/0999	. . . Spring retracted	292/1064	. . . . Operating means
292/10	. . . . Friction catch	292/1066	. . . . . Cam and lever
292/1001	. . . . Sliding catch	292/1067	. . . . . Link and lever
292/1002	. . . . Spring-arm catch	292/1068	. . . . . Cam
292/1003	. . . . Swinging catch	292/1069	. . . . . Flexible
292/1005	. . . . Cam-operating means	292/107	. . . . . Lever
292/1006	. . . Gravity actuated	292/1071	. . . . . Push or pull rod
292/1007	. . . . Operating means	292/1072	. . . . . Rigid
292/1008	. . . . . Cam and lever	292/1074	. . . . . Roller
292/1009	. . . . . Link and lever	292/1075	. . . Operating means
292/101	. . . . . Cam	292/1076	. . . . Link and lever
292/1011	. . . . . Lever	292/1077	. . . . . Cam
292/1013	. . . . . Rigid	292/1078	. . . . . Closure
292/1014	. . . Operating means	292/1079	. . . . . Gear
292/1015	. . . . Link and lever	292/108	. . . . . Lever
292/1016	. . . . . Cam	292/1082	. . . . . Motor
292/1017	. . . . . Flexible	292/1083	. . . . . Rigid
292/1018	. . . . . Gear	292/1084	. . . . . Closure catch
292/102	. . . . . Lever	292/1085	. . . . . Friction catch
292/1021	. . . . . Motor	292/1086	. . . . . Padlock or seal catch
292/1022	. . . . . Rigid	292/1087	. . . . . Screw catch
292/1023	. . . . . Closure catch	292/1089	. . . . . Sliding catch
292/1024	. . . . . Friction catch	292/109	. . . . . . Seal
292/1025	. . . . . Padlock or seal catch	292/1091	. . . . . Spring-arm catch
292/1026	. . . . . Screw catch	292/1092	. . . . . Swinging catch
292/1028	. . . . . Sliding catch	292/1093	. . . . . . Seal
292/1029	. . . . . . Seal	292/1094	. . . . . Screw
292/103	. . . . . Spring-arm catch	292/1095	. . Seal-rupturing devices
292/1031	. . . . . Swinging catch	292/1097	. . Reversible
292/1032	. . . . . . Seal	292/1098	. . . Cam and lever operating means
292/1033	. . . . . Screw	292/1099	. . Screw
292/1034	. . . Curved	292/11	. Magnetic
		292/14	. Ball
		292/17	. Bendable securers
		292/175	. Bolt releasers

292/18	. . Free-end-engaging means	292/432	. . Sliding catch
292/19	. . Foot operated	292/438	. . Spring-arm catch
292/20	. Clamps	292/444	. . Swinging catch
292/202	. . Hatch fastener	292/45	. Rod clamps
292/205	. . Ring	292/47	. . Friction-plate catch
292/207	. . . Permanently deformed	292/48	. Seals
292/209	. . . Resilient wedge	292/481	. . Compressible disk
292/212	. . . With expanding or contracting means	292/483	. . . Reinforced
292/214	. . . . Screw	292/484	. . . Multiple
292/216	. . . . Toggle lever	292/485	. . . . Sheet metal
292/218	. . Screw against closure	292/487	. . . . Hard and soft metal
292/221	. . Screw and nut	292/488	. . . Sheet metal
292/223	. . . Swingable	292/49	. . Compressible rivets and eyelets
292/225	. . Cam-operating means	292/491	. . Distorted shackle
292/228	. . Portable	292/492	. . Driving
292/23	. Cross bars	292/494	. . Interengaging shackle ends, inclosing housing
292/237	. . Screw-operating means	292/4945	. . Rigid shackle ends
292/243	. . Vehicle door latches	292/495	. . . Resilient and rigid engaging means
292/25	. Cylinder	292/496	. . . Resilient engaging means
292/28	. Extension link	292/497	. . Resilient shackle ends
292/282	. . Multiple	292/498	. . . Rigid engaging means
292/283	. . Chain	292/499	. . . Resilient engaging means
292/285	. . Notched bar	292/50	. . Single piece, spring catch
292/286	. . . Sliding catch	292/502	. . Shiftable catch shackle operated
292/288	. . . Swinging catch	292/503	. . Split-ring catch, shackle operated
292/289	. . Slotted bar	292/505	. . Strap-end fasteners
292/291	. . . Sliding catch	292/506	. . Rigid disk, distorted shackle
292/293	. . . Swinging catch	292/507	. . Tag type
292/2935	. . Slotted or notched keeper	292/509	. . Encasing
292/294	. . . Sliding catch	292/51	. Seal bolts
292/296	. . . Swinging catch	292/513	. Shackles
292/297	. . Notched keeper	292/516	. . Sliding catch, seal
292/299	. . 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

292/82 . Knobs
 292/85 . Knob-attaching devices
 292/854 . . Friction
 292/858 . . Screw
 292/861 . . . Guards
 292/865 . . Sliding
 292/869 . . Spring arm
 292/873 . . Swinging
 292/876 . . Wedge
 292/88 . Knob bearings
 292/91 . Knob rose plates
 292/93 . Latch spindles
 292/96 . Latch-spindle catches

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

403/10 . Selectively engageable hub to shaft connection
 403/16 . with adjunctive protector, broken parts retainer, repair, assembly or disassembly feature
 403/1608 . . Holding means or protector functioning only during transportation, assembly or disassembly
 403/1616 . . Position or guide means
 403/1624 . . . Related to joint component
 403/1633 . . Utilizing fluid pressure
 403/20 . with indicator or inspection means
 403/21 . Utilizing thermal characteristic, e.g. , expansion or contraction, etc.
 403/213 . . Interposed material of intermediate coefficient of expansion
 403/217 . . Members having different coefficients of expansion
 403/22 . with fluid pressure responsive component
 403/29 . Rotarily connected, differentially translatable members, e.g. , turn-buckle, etc.
 403/291 . . having tool-engaging means or operating handle
 403/293 . . having operating mechanism
 403/295 . . having locking means
 403/297 . . Differential pitch, similar hand
 403/299 . . Externally threaded actuator
 403/30 . Laterally related members connected by latch means, e.g. , scaffold connectors
 403/32 . Articulated members
 403/32008 . . Plural distinct articulation axes
 403/32016 . . . Three or more parallel axes
 403/32024 . . . Single adjustment for plural axes
 403/32032 . . . Plural ball and socket
 403/32041 . . . Universal
 403/32049 . . . Non-coplanar axes
 403/32057 . . . Angular and linear
 403/32065 . . . Screw and swivel
 403/32073 . . . Pivot stud slidable in elongated opening
 403/32081 . . . Parallel rotary
 403/32091 . . . Plural translating connections
 403/32114 . . including static joint
 403/32122 . . . Trunnion assembly to side of rod
 403/32131 . . . One member is plate or side
 403/32139 . . . Secant, i.e., rod extending through plate
 403/32147 . . . Plate or side forms bearing surface
 403/32155 . . . Bearing component clamped to plate or side, e.g., bolted, etc.
 403/32163 . . . Articulate joint intermediate end joints
 403/32172 . . . Variable angle

403/32181 Universal
 403/32188 . . . Angled or offset members
 403/32196 . . . Articulate joint is ball and socket
 403/32204 with threaded joint
 403/32213 . . . Articulate joint is a swivel
 403/32221 . . . Articulate joint comprises pivoted clevis or channel bar
 403/32229 . . . Articulate joint is a slide
 403/32254 . . Lockable at fixed position
 403/32262 . . . At selected angle
 403/32271 Movable brace between members
 403/32278 Members rotatable about oblique axes
 403/32286 Clamping screw traverses sliding complementary arcuate bearing surfaces
 403/32295 Securing yoke or ring spaced radially from locking means
 403/32303 Eyebolt
 403/32311 Ball and socket
 403/32319 including pivot stud
 403/32327 including radially spaced detent or latch component
 403/32336 Engaging notch or recess in outer periphery of component
 403/32344 Side of rod engages recess in radial face
 403/32352 Pivoted detent
 403/32361 Engaging recess in radial face
 403/32368 including radial interengaging tongue and slot or serrations
 403/32377 Radially spaced arcuate slot engages fastener
 403/32385 Locked by plural motions of one member
 403/32393 including bridging keeper
 403/32401 Locked by nesting parts
 403/32409 Members locked in axial alignment
 403/32418 Plural distinct positions
 403/32426 . . . Plural distinct positions
 403/32434 Unidirectional movement, e.g., ratchet, etc.
 403/32442 At least one discrete position
 403/32451 Step-by-step adjustment
 403/32459 Retainer extends through aligned recesses
 403/32467 . . . Telescoping members
 403/32475 having detent
 403/32483 Spring biased
 403/32491 Threaded
 403/32501 Cam or wedge
 403/32508 having transverse pin
 403/32516 Remotely actuated
 403/32524 Self-locking
 403/32532 . . . Clamped members
 403/32541 . . Rotatable members resiliently biased to one position
 403/32549 . . including limit means
 403/32557 . . . for pivotal motion
 403/32565 Ball and socket with restricted movement about one axis
 403/32573 Ball stud passes through confining opening
 403/32581 Pin and slot
 403/32591 Opposed stops on one member
 403/32606 . . Pivoted
 403/32614 . . . including circumferential biasing or damping means

403/32622	. . .	Rocking or rolling contact	403/36	. .	Three or more serial joints, at least one diverse
403/32631	. . .	Universal ball and socket	403/362	. .	Nonaligned axes
403/32639	. . . .	including internal tie means	403/364	. .	Separable intermediate joint
403/32647	. . . .	Plural concave surfaces with diverse curvature	403/366	. . .	Axially acting connector
403/32655	. . . . .	Interposed concavo-convex component	403/368	. . .	Screw or cam
403/32663	. . . . .	Outer surfaces	403/38	. .	Laterally related rods independently joined to transverse surface
403/32672	. . . .	Swiveled ball parts or seat	403/40	. .	Radially spaced members joined by independent coupling
403/32681	. . . .	Composite ball	403/405	. .	Flexible intermediate member
403/32688	. . . . .	Spring biased segments	403/44	. .	Three or more members connected at single locus
403/32696	. . . . .	Nonmetallic part	403/443	. .	All encompassed
403/32704	. . . . .	Stud extends into ball	403/447	. .	Mutually contacting
403/32713	. . . .	Elastomerically biased or backed components	403/45	. .	Flexibly connected rigid members
403/32721	. . . .	Elastomeric seat	403/451	. .	Rigid sleeve encompasses flexible bushing
403/32729	. . . .	Externally packed	403/452	. . .	Longitudinally divided sleeve
403/32737	. . . .	including liner, shim, or discrete seat	403/453	. .	Flexible sleeve-type coupling
403/32745	. . . . .	Spring acts through wedging surfaces	403/454	. .	Connecting pin traverses radially interposed elastomer
403/32754	. . . . .	Variably preloaded	403/455	. .	Elastomer interposed between radially spaced members
403/32762	. . . . .	Spring-biased seat opposite ball stud	403/456	. . .	Elastomer encompasses shoulder on inner member
403/32771	. . . . .	Porous	403/457	. . .	including axially acting compressing means
403/32778	. . . . .	Completely spacing the members	403/458	. . .	Composite bushing with elastomeric component
403/32786	. . . .	Divided socket-type coupling	403/459	. .	Helical spring type coupling
403/32795	. . . .	Bifurcated socket	403/46	. .	Rod end to transverse side of member
403/32803	. . . .	Separable socket sections	403/4602	. .	Corner joint
403/32811	. . . .	Spring-biased	403/47	. .	Molded joint
403/32819	. . .	including tension or take-up means	403/471	. .	And independent connection
403/32827	. . . .	Interposed spring means coaxial with pivot	403/472	. .	including mechanical interlock
403/32836	. . . .	Acting through tapered surface on bearing component	403/473	. .	Socket or open cup for bonding material
403/32844	. . . .	Manually variable	403/477	. .	Fusion bond, e.g., weld, etc.
403/32852	. . . .	External of bearing assembly, e.g., antirattler, etc.	403/48	. .	Shrunk fit
403/32861	. . .	T-pivot, e.g., wrist pin, etc.	403/49	. .	Member deformed <u>in situ</u>
403/32868	. . . .	Floating pin	403/4916	. .	Interposed deforming element contacts socket bottom
403/32877	. . . .	Pin is integral with or secured to inner member	403/4924	. .	Inner member is expanded by longitudinally inserted element
403/32885	. . . .	Expanded pin or end	403/4933	. .	by separate, deformable element
403/32893	. . . .	including distinct pin retainer	403/4941	. .	Deformation occurs simultaneously with action of separate, diverse function, joint component
403/32901	. . . . .	Unitary clip or plug	403/4949	. .	Deforming component is inserted section
403/32909	. . . . .	Threaded pin end	403/4958	. .	Separate deforming means remains with joint assembly
403/32918	. . . .	fork and tongue	403/4966	. .	Deformation occurs simultaneously with assembly
403/32926	. . . . .	with interposed antifriction means	403/4974	. .	by piercing
403/32934	. . . . .	Oppositely laterally movable tines	403/4983	. .	Diverse resistance to lateral deforming force
403/32942	. . .	On oblique interface	403/4991	. .	Both members deformed
403/32951	. . .	Transverse pin or stud	403/50	. .	Bridged by diverse connector
403/32959	. . . .	Traverses interposed facing component	403/51	. .	including spaced, diverse connections
403/32967	. . . .	Attached to or integral with one member	403/53	. .	Split end with laterally movable opposed portions
403/32975	. .	Rotatable	403/535	. .	with separate force-applying means
403/32983	. . .	Rod in socket	403/54	. .	Flexible member is joint component
403/33	. .	Transverse rod to spaced plate surfaces	403/55	. .	Member ends joined by inserted section
403/335	. .	Retainer utilizes or abuts plural plates	403/551	. .	Externally bridged
403/34	. .	Branched	403/553	. .	Laterally inserted section
403/341	. .	Three or more radiating members	403/555	. .	Angle section
403/342	. . .	Polyhedral	403/556	. .	Section threaded to member
403/343	. . . .	Unilateral of plane	403/557	. .	Expansible section
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			

- 403/559 . . Fluted or splined section
- 403/57 . Distinct end coupler
- 403/5706 . . Diverse serial connections
- 403/5713 . . . Axially cleft coupler
- 403/5721 . . Single actuator for plural connections
- 403/5726 . . . Axially biased end portions
- 403/5733 . . Plural opposed sockets
- 403/5741 . . Separate screw or pin-type connections
- 403/5746 . . Continuous thread
- 403/5753 . . having separable end caps or plugs
- 403/5761 . . Interrupted periphery, e.g., split or segmental, etc.
- 403/5766 . . . Axially divided segments
- 403/5773 . . . Interfitting
- 403/5781 . . . Bolted
- 403/5786 . . . Split
- 403/5793 . . including member wedging or camming means
- 403/59 . Manually releaseable latch type
- 403/591 . . having operating mechanism
- 403/592 . . . Ball detent
- 403/593 . . . Remotely actuated
- 403/595 . . . Lever
- 403/597 . . Swiveled bolt
- 403/598 . . Transversely sliding pin
- 403/599 . . Spring biased manipulator
- 403/60 . Biased catch or latch
- 403/602 . . by separate spring
- 403/604 . . . Radially sliding catch
- 403/606 . . Leaf spring
- 403/608 . . Pivoted
- 403/61 . Side slide: elongated co-linear members
- 403/65 . Scarf
- 403/655 . . Mirror images
- 403/66 . Interfitted members with external bridging piece
- 403/67 . Thimble: screw or cam
- 403/70 . Interfitted members
- 403/7001 . . Crossed rods
- 403/7003 . . . One rod is encompassed by the other
- 403/7005 . . Lugged member, rotary engagement
- 403/7007 . . . Bayonet joint
- 403/7009 . . Rotary binding cam or wedge
- 403/7011 . . . Radially interposed shim or bushing
- 403/7013 Arcuate slip
- 403/7016 . . Diametric end slot is joint component
- 403/7018 . . including separably interposed key
- 403/7021 . . . Axially extending
- 403/7022 Resilient
- 403/7024 Longitudinally stepped or tapered
- 403/7026 . . Longitudinally splined or fluted rod
- 403/7028 . . . Splayed or having a cam surface for anti-backlash
- 403/7031 . . . Rod designed to be manipulable, e.g., twistable, within coupling for quick disconnect
- 403/7032 . . . including a means, e.g., spring biased portion, for misalignment correction
- 403/7033 . . . including a lock or retainer
- 403/7035 . . . Specific angle or shape of rib, key, groove, or shoulder
- 403/7041 . . including set screw
- 403/7045 . . Interdigitated ends
- 403/7047 . . Radially interposed shim or bushing
- 403/7049 . . . Biased by distinct radially acting means
- 403/7051 . . . Wedging or camming
- 403/7052 Engaged by axial movement
- 403/7054 Plural, circumferentially related shims between members
- 403/7056 Threaded actuator
- 403/7058 Split or slotted bushing
- 403/7061 . . . Resilient
- 403/7062 . . Clamped members
- 403/7064 . . . by wedge or cam
- 403/7066 having actuator
- 403/7067 Threaded actuator
- 403/7069 Axially oriented
- 403/7071 Lever actuator
- 403/7075 . . including discrete retainer
- 403/7077 . . . for telescoping members
- 403/7079 Transverse pin
- 403/7081 Multiple retainers
- 403/7083 having means to prevent removal of retainer
- 403/7084 Bolt, rivet, or screw
- 403/7086 Wedge pin
- 403/7088 Sliding pin
- 403/7091 Expansible retainer
- 403/7098 . . Non-circular rod section is joint component
- 403/71 . Rod side to plate or side
- 403/7105 . . Connected by double clamp
- 403/7111 . . Shackle is integral with or independently attached to proximate side of plate or other side
- 403/7117 . . Flanged or grooved rod
- 403/7123 . . Traversed by connector
- 403/7129 . . Laterally spaced rods
- 403/7135 . . . by separable shim or bushing in connector
- 403/7141 . . . Plural channels in connector
- 403/7147 . . Connected by flexible tie
- 403/7152 . . Lapped rod ends
- 403/7158 . . Diagonal connector
- 403/7164 . . One rod held between bight and other rod extending through aperture in leg of connector
- 403/7171 . . Two rods encompassed by single connector
- 403/7176 . . Resilient clip
- 403/7182 . . Yoke or ring-type connector
- 403/7188 . . . Rod received in open channel
- 403/7194 . . Crossed rods
- 403/75 . having a joining piece extending through aligned openings in plural members
- 403/76 . having a cam, wedge, or tapered portion

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	407/1964	. . . . Arcuate cutting edge
407/1614	. . Hollow tool for surrounding workpiece	407/1966	. . . . Helical tooth
407/1628	. . including holder having seat for inserted tool	407/20	. Profiled circular tool
407/1642	. . . Annular tool	407/21	. Arc segment tool
407/1657	. . . including single tooth	407/22	. including holder having seat for inserted tool
407/1671	. . Plural tooth groups	407/2202	. . Plural spaced seats and common holder
407/1685	. . including sequentially acting teeth of stepped cutting width	407/2204	. . . Relatively adjustable seats
407/17	. Gear cutting tool	407/2206	. . . Simultaneously usable
407/1705	. . Face mill gear cutting tool	407/2208	. . Plural simultaneously usable separable tools in common seat or common clamp actuator for plural simultaneously usable tools
407/171	. . . Adjustable teeth	407/221	. . . Adjustable tool
407/1715	. . Hob	407/2212	. . with tool ejector
407/172	. . . Thread cutting	407/2214	. . with separate means to adjust tool to and from relative to holder
407/1725	. . . including holder having seat for inserted tool	407/2216	. . . with indicator
407/173	. . . for cutting involute gear tooth	407/2218	. . . Plural provisions for adjustment
407/1735	. . Rotary, gear shaving cutting tool	407/222	. . . by moving tool seat
407/174	. . Gear generating, revolving shaper cutting tool	407/2222	. . Tool adjustable relative to holder
407/1745	. . Rotary, tooth form cutting tool	407/2224	. . . with indicator
407/18	. File or rasp	407/2226	. . . Plural provisions for adjustment
407/1805	. . Flexible blade or carrier therefor	407/2228	. . . . Plural interfering seats
407/181	. . Tyre rasp	407/223	. . . . including pivotable seat or tool
407/1815	. . Rotary file or round disc	407/2232	. . . . with detent
407/182	. . Composite, diverse sector, or assembled	407/2234	. . . . Pivoted seat
407/1825	. . Handle or holder, <u>per se</u>	407/2236	. . . . . And pivotable tool
407/19	. Rotary cutting tool	407/2238	. . . by adjustable or replaceable stop
407/1902	. . Gang	407/224	. . . . Adjustable
407/1904	. . Composite body of diverse material	407/2242	. . . . . Screw
407/1906	. . including holder [i.e., head] having seat for inserted tool	407/2244	. . . by movement of seat relative to holder
407/1908	. . . Face or end mill	407/2246	. . . . Pivoted seat
407/191	. . . . Plural simultaneously usable separable tools in common seat or common clamp actuator for plural simultaneously usable tools	407/2248	. . . Pivoted tool
407/1912	. . . . Tool adjustable relative to holder	407/225	. . . Resiliently biased tool clamping jaw
407/1914	. . . . . Radially	407/2252	. . . Rectilinearly
407/1916	. . . . . And axially	407/2254	. . . . including rotatable cam clamp element
407/1918	. . . . . Selectively	407/2256	. . . . including wedge clamp element
407/192	. . . . with separate means to fasten tool to holder	407/2258	. . . . . And guide or detent
407/1922	. . . . . Wedge clamp element	407/226	. . . . including detent
407/1924	. . . . . Specified tool shape	407/2262	. . . . Tool gripped directly by set screw
407/1926	. . . Plural simultaneously usable separable tools in common seat or common clamp actuator for plural simultaneously usable tools	407/2264	. . . . Slidable jaw
407/1928	. . . Tool adjustable relative to holder	407/2266	. . Holder adapted for tools of different shape
407/193	. . . . Radially	407/2268	. . with chip breaker, guide or deflector
407/1932	. . . with means to fasten tool seat to holder	407/227	. . with separate means to fasten tool seat to holder
407/1934	. . . with separate means to fasten tool to holder	407/2272	. . with separate means to fasten tool to holder
407/1936	. . . . Apertured tool	407/2274	. . . Apertured tool
407/1938	. . . . Wedge clamp element	407/2276	. . . . with means projecting through aperture to force tool laterally against reaction surface
407/194	. . . . . Resilient clamp jaw	407/2278	. . . . . Tilting clamp element and separate means to tilt same
407/1942	. . . Peripherally spaced tools	407/228	. . . Rotatable cam clamp element
407/1944	. . . . Sectional support	407/2282	. . . including tool holding clamp and clamp actuator
407/1946	. . Face or end mill	407/2284	. . . . Wedge clamp element
407/1948	. . . with cutting edge entirely across end of tool [e.g., router bit, end mill, etc.]	407/2286	. . . . Resiliently biased clamp jaw
407/195	. . Compound tooth arrangement	407/2288	. . . . . Integral with holder
407/1952	. . Having peripherally spaced teeth	407/229	. . . . Pivoted jaw
407/1954	. . . Axially tapering tool	407/2292	. . . . Slidable jaw
407/1956	. . . Circumferentially staggered	407/23	. including tool having plural alternatively usable cutting edges
407/1958	. . . . Plural teeth spaced about a helix	407/235	. . with integral chip breaker, guide or deflector
407/196	. . . Varying in cutting edge profile	407/24	. with chip breaker, guide or deflector
407/1962	. . . Specified tooth shape or spacing	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	409/301736	to make a double curvature foil
409/107791 . . .	Using rotary cutter	409/301792	including means to sense optical or magnetic image
409/10795 . . .	Process	409/301848	with means to support templet above or under work
409/108109 . . .	End mill	409/301904	including tracer adapted to trigger electrical energy
409/108268	Radially faced	409/30196	to actuate electrically driven work or tool moving means
409/108427	Using plural, selectively usable tools	409/302016	to actuate fluid driven work or tool moving means
409/108586 . . .	Plural rotary cutters	409/302072	including tracer adapted to trigger fluid energy
409/108745 . . .	Cutting action along work axis	409/302128	to actuate fluid driven work or tool moving means
409/108904	Cutting action intersecting work axis	409/302184	including cutter and tracer fixed to move laterally together
409/109063 . . .	Using reciprocating or oscillating cutter	409/30224	and provision for circumferential relative movement of cutter and work
409/109222 . . .	Broach	409/302296	including plural cutters
409/109381	including circumferentially disposed cutting edges	409/302352	including plural cutters
409/10954 . . .	Work dividing or checking of work position or division	409/302408	including cross-slide tool carrier
409/109699 . . .	with work clamping	409/302464	including plural cutters
409/20 . . .	with furbishing of cutter	409/30252	including cross-slide tool carrier
409/30 . . .	Milling	409/302576	with means to support templet above or under work
409/300056 . . .	Thread or helix generating	409/302632	with provision for circumferential relative movement of cutter and work
409/300112 . . .	Process	409/302688	with provision for circumferential relative movement of cutter and work
409/300168	with means to regulate operation by use of templet, card, or other replaceable information supply	409/302744	and means for operation without manual intervention
409/300224	Complete cycle	409/3028	including tracer adapted to trigger electrical or fluid energy
409/30028	to regulate cutting depth [e.g., relief, taper, etc.]	409/302856	For using planar templet in cutting profile [e.g., contour map from planar map, etc.]
409/300336	to regulate rate of motion [e.g., stopping, etc.]	409/302912	including means for operation without manual intervention
409/300392	with nonthread or nonhelix generating, milling cutter	409/302968	including means for operation without manual intervention
409/300448	with means to advance work or product	409/303024	including simultaneously usable plural tracers or including tracer adapted to simultaneously use plural templets
409/300504	Plural cutters or work holders	409/30308	to make a double curvature foil
409/30056	with planetary cutter	409/303136	to make a double curvature foil
409/300616	Work means to move work axially and means to interrelate work movement with cutter rotation	409/303192	including cutter and tracer fixed to move together
409/300672	with means to rotate work and means to interrelatedly infeed the work relative to the cutter	409/303248	with provision for circumferential relative movement of cutter and work
409/300728	Means to infeed the cutter	409/303304	and provision for circumferential relative movement of cutter and work
409/300784	with means to circumferentially adjust the position of the cutter with respect to the work	409/30336	including cutter and tracer fixed to move together
409/30084	with regulation of operation by templet, card, or other replaceable information supply	409/303416	Templet, tracer, or cutter
409/300896	with sensing of numerical information and regulation without mechanical connection between sensing means and regulated means [i.e., numerical control]	409/303472	Tracer
409/300952	to cut lock key	409/303528	Adapted to trigger electrical energy
409/301008	Using templet other than a key	409/303584	Photocell
409/301064	Complete cycle	409/30364	Adapted to trigger fluid energy
409/30112	Process	409/303696	Templet
409/301176	Reproducing means	409/303752	Process
409/301232	including pantograph cutter-carrier	409/303808	including infeeding
409/301288	and means to move work at work station	409/303864	with means to weigh or test work or product
409/301344	About work axis		
409/3014	Pivottally supported for vertical movement		
409/301456	and means to counterbalance carrier		
409/301512	including plural cutters		
409/301568	by use of pivottally supported tracer		
409/301624	Duplicating means		
409/30168	with means for operation without manual intervention		

409/30392 . . . with means to protect operative or machine [e.g., guard, safety device, etc.]	409/306664 . . . including means to infeed rotary cutter toward work
409/303976 . . . with means to control temperature or lubricate	409/30672 . . . with means to limit penetration into work
409/304032 . . . Cutter or work	409/306776 . . . Axially
409/304088 . . . with means to remove chip	409/306832 . . . with infeed control means energized in response to activator stimulated by condition sensor
409/304144 . . . Means to trim edge	409/306888 In response to cutter condition
409/3042 . . . Means to remove scale or raised surface imperfection	409/306944 In response to work condition
409/304256 . . . Means to remove flash or burr	409/307 with work holder
409/304312 . . . with means to dampen vibration	409/307056 and laterally
409/304368 . . . Means to mill epitrochoidal shape	409/307112 Simultaneously
409/304424 . . . Means for internal milling	409/307168 Plural cutters
409/30448 . . . with detachable or auxiliary cutter support to convert cutting action	409/307224 . . . with infeed control means energized in response to activator stimulated by condition sensor
409/304536 . . . including means to infeed work to cutter	409/30728 In response to cutter condition
409/304592 . . . with compensation for backlash in drive means	409/307336 In response to work condition
409/304648 . . . with control means energized in response to activator stimulated by condition sensor	409/307392 . . . with means to change rate of infeed
409/304704 In response to cutter or cutter carriage	409/307448 . . . with work holder
409/30476 In response to work or work carriage	409/307504 Indexable
409/304816 to control rate of infeed or return	409/30756 . . . Machining arcuate surface
409/304872 to control limit of infeed	409/307616 with means to move cutter eccentrically
409/304928 Adapted to hydraulically or pneumatically stimulate control	409/307672 . . . Angularly adjustable cutter head
409/304984 Adapted to electrically stimulate control	409/307728 . . . including gantry-type cutter-carrier
409/30504 to control rate of infeed or return	409/307784 . . . Plural cutters
409/305096 to effect stopping of infeed	409/30784 . . . including means to adjustably position cutter
409/305152 . . . with means to change rate of infeed	409/307896 . . . with work holder or guide
409/305208 . . . Means to mill indeterminate length work	409/307952 . . . Linear adjustment
409/305264 . . . Multiple work stations	409/308008 with control for adjustment means responsive to activator stimulated by condition sensor
409/30532 . . . with means to advance work or product	409/308064 Responsive to position of cutter
409/305376 Vertically	409/30812 and means to clamp cutter support in adjusted position
409/305432 Endless or orbital work or product advancing means	409/308176 with position indicator or limit means
409/305488 to reciprocate or oscillate work	409/308232 and angular adjustment
409/305544 . . . with work holder	409/308288 including gantry-type cutter-carrier
409/3056 and means to selectively position work	409/308344 Plural cutters
409/305656 including means to support work for rotation during operation	409/3084 with position indicator or limit means
409/305712 and including means to infeed cutter toward work axis	409/308456 . . . with right angle cutter drive
409/305768 with linear movement of work	409/308512 . . . Compound angular adjustment
409/305824 with angular movement of work	409/308568 . . . Plural cutters
409/30588 . . . including friction gearing drive	409/308624 . . . with limit means to aid in positioning of cutter bit or work [e.g., gauge, stop, etc.]
409/305936 . . . including fluid drive	409/30868 . . . Work support
409/305992 . . . with means to effect stopping upon completion of operation	409/308736 . . . with position indicator or stop
409/306048 . . . with means to advance work or product	409/308792 . . . Indexable
409/306104 . . . Endless or orbital work or product advancing means	409/308848 including dividing head
409/30616 . . . with means to precisely reposition work	409/308904 Multiple row dividing head
409/306216 . . . Randomly manipulated, work supported, or work following device	409/30896 . . . with angular adjustment
409/306272 . . . For machining commutator	409/309016 . . . with work holder or guide
409/306328 . . . For cutting longitudinal groove in shaft [e.g., keyway, etc.]	409/309072 including cutter limited to rotary motion
409/306384 . . . with work supported guide means	409/309128 . . . with means to adjust work support vertically
409/30644 to guide tool to move in arcuate path	409/309184 . . . including cutter limited to rotary motion
409/306496 . . . with work follower	409/30924 . . . Cutter turning about vertical axis
409/306552 . . . Randomly manipulated	409/309296 . . . Detachable or repositionable tool head
409/306608 End mill [e.g., router, etc.]	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	428/12069	. . . . .	Plural nonparticulate metal components
409/50656	. . . . .	with work support and lead screw to reposition work support	428/12076	. . . . .	Next to each other
409/506724	. . . . .	with fluid-powered means to drive cutter	428/12083	. . . . .	Nonmetal in particulate component
409/506888	. . . . .	with pivoting link to drive cutter	428/1209	. . . . .	Plural particulate metal components
409/507052	. . . . .	Link driven by crank	428/12097	. . . . .	Nonparticulate component encloses particles
409/507216	. . . . .	with rack to drive cutter	428/12104	. . . . .	Particles discontinuous
409/50738	. . . . .	with screw to drive cutter	428/12111	. . . . .	Separated by nonmetal matrix or binder [e.g., welding electrode, etc.]
409/507544	. . . . .	with link or cam to drive cutter	428/12118	. . . . .	Nonparticulate component has Ni-, Cu-, or Zn-base
409/507708	. . . . .	with rack to drive cutter	428/12125	. . . . .	Nonparticulate component has Fe-base
409/507872	. . . . .	including means causing return stroke	428/12132	. . . . .	Next to Fe-containing particles
409/508036	. . . . .	Machine frame	428/12139	. . . . .	Nonmetal particles in particulate component
409/5082	. . . . .	Means to permit repositioning of cutter	428/12146	. . . . .	Nonmetal particles in a component
409/508364	. . . . .	Laterally	428/12153	. . . . .	Interconnected void structure [e.g., permeable, etc.]
409/508528	. . . . .	Plural independently positioned cutters	428/1216	. . . . .	Continuous interengaged phases of plural metals, or oriented fiber containing
409/508692	. . . . .	including clutch	428/12167	. . . . .	Nonmetal containing
409/508856	. . . . .	including repositioning means and means to effect stopping thereof	428/12174	. . . . .	Mo or W containing
409/50902	. . . . .	including relatively movable components and means to relatively immobilize these components	428/12181	. . . . .	Composite powder [e.g., coated, etc.]
409/509184	. . . . .	Work table	428/12188	. . . . .	having marginal feature for indexing or weakened portion for severing
409/509348	. . . . .	Tool head	428/12194	. . . . .	For severing perpendicular to longitudinal dimension
409/509512	. . . . .	with selectively usable cutting edges	428/12201	. . . . .	Width or thickness variation or marginal cuts repeating longitudinally
409/509676	. . . . .	with means to permit repositioning of cutting for idle return stroke	428/12208	. . . . .	Variation in both width and thickness
409/50984	. . . . .	comprising pivotable cutter or cutter support	428/12215	. . . . .	Marginal slots [i.e., deeper than wide]
Former US Class 428 Series			428/12222	. . . . .	Shaped configuration for melting [e.g., package, etc.]
428/00	Stock material or miscellaneous articles		428/12229	. . . . .	Intermediate article [e.g., blank, etc.]
428/11	. . . . .	Magnetic recording head	428/12236	. . . . .	Panel having nonrectangular perimeter
428/1107	. . . . .	Magnetoresistive	428/12243	. . . . .	Disk
428/1114	. . . . .	having tunnel junction effect	428/1225	. . . . .	Symmetrical
428/1121	. . . . .	Multilayer	428/12257	. . . . .	Only one plane of symmetry
428/1129	. . . . .	Super lattice [e.g., giant magneto resistance [GMR] or colossal magneto resistance [CMR], etc.]	428/12264	. . . . .	having outward flange, gripping means or interlocking feature
428/1136	. . . . .	Single film	428/12271	. . . . .	having discrete fastener, marginal fastening, taper, or end structure
428/1143	. . . . .	with defined structural feature	428/12278	. . . . .	Same structure at both ends of plural taper
428/115	. . . . .	Magnetic layer composition	428/12285	. . . . .	Single taper [e.g., ingot, etc.]
428/1157	. . . . .	Substrate composition	428/12292	. . . . .	Workpiece with longitudinal passageway or stopweld material [e.g., for tubular stock, etc.]
428/1164	. . . . .	with protective film	428/12299	. . . . .	Workpiece mimicking finished stock having nonrectangular or noncircular cross section
428/1171	. . . . .	with defined laminate structural detail	428/12306	. . . . .	Workpiece of parallel, nonfastened components [e.g., fagot, pile, etc.]
428/1179	. . . . .	Head with slider structure	428/12313	. . . . .	Arranged to avoid lateral displacement
428/1186	. . . . .	with head pole component	428/12319	. . . . .	Composite
428/1193	. . . . .	with interlaminar component [e.g., adhesion layer, etc.]	428/12326	. . . . .	with provision for limited relative movement between components
428/12	. . . . .	All metal or with adjacent metals	428/12333	. . . . .	Helical or with helical component
428/12007	. . . . .	Component of composite having metal continuous phase interengaged with nonmetal continuous phase	428/1234	. . . . .	Honeycomb, or with grain orientation or elongated elements in defined angular relationship in respective components [e.g., parallel, inter- secting, etc.]
428/12014	. . . . .	having metal particles	428/12347	. . . . .	Plural layers discontinuously bonded [e.g., spot-weld, mechanical fastener, etc.]
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			

428/12354	. . . Nonplanar, uniform-thickness material having symmetrical channel shape or reverse fold [e.g., making acute angle, etc.]	428/1266	. . . . O, S, or organic compound in metal component
428/12361	. . . having aperture or cut	428/12667	. . . . Oxide of transition metal or Al
428/12368	. . . Struck-out portion type	428/12674	. . . . Ge- or Si-base component
428/12375	. . . having member which crosses the plane of another member [e.g., T or X cross section, etc.]	428/12681	. . . . Ga-, In-, Tl- or Group VA metal-base component
428/12382	. . . Defined configuration of both thickness and nonthickness surface or angle therebetween [e.g., rounded corners, etc.]	428/12687	. . . . Pb- and Sn-base components: alternative to or next to each other
428/12389	. . . having variation in thickness	428/12694	. . . . and next to Cu- or Fe-base component
428/12396	. . . Discontinuous surface component	428/12701	. . . . Pb-base component
428/12403	. . . Longitudinally smooth and symmetrical	428/12708	. . . . Sn-base component
428/1241	. . . Nonplanar uniform thickness or nonlinear uniform diameter [e.g., L-shape]	428/12715	. . . . Next to Group IB metal-base component
428/12417	. . . Intersecting corrugating or dimples not in a single line [e.g., waffle form, etc.]	428/12722	. . . . Next to Group VIII metal-base component
428/12424	. . . Mass of only fibers	428/12729	. . . . Group IIA metal-base component
428/12431	. . . Foil or filament smaller than 6 mils	428/12736	. . . . Al-base component
428/12438	. . . Composite	428/12743	. . . . Next to refractory [Group IVB, VB, or VIB] metal-base component
428/12444	. . . Embodying fibers interengaged or between layers [e.g., paper, etc.]	428/1275	. . . . Next to Group VIII or IB metal-base component
428/12451	. . . Macroscopically anomalous interface between layers	428/12757	. . . . . Fe
428/12458	. . . having composition, density, or hardness gradient	428/12764	. . . . Next to Al-base component
428/12465	. . . having magnetic properties, or preformed fiber orientation coordinate with shape	428/12771	. . . . Transition metal-base component
428/12472	. . . Microscopic interfacial wave or roughness	428/12778	. . . . Alternative base metals from diverse categories
428/12479	. . . Porous [e.g., foamed, spongy, cracked, etc.]	428/12785	. . . . Group IIB metal-base component
428/12486	. . . Laterally noncoextensive components [e.g., embedded, etc.]	428/12792	. . . . . Zn-base component
428/12493	. . . Composite; i.e., plural, adjacent, spatially distinct metal components [e.g., layers, joint, etc.]	428/12799	. . . . . Next to Fe-base component [e.g., galvanized]
428/125	. . . Deflectable by temperature change [e.g., thermostat element]	428/12806	. . . . Refractory [Group IVB, VB, or VIB] metal-base component
428/12507	. . . . More than two components	428/12812	. . . . . Diverse refractory group metal-base components: alternative to or next to each other
428/12514	. . . . One component Cu-based	428/12819	. . . . . Group VB metal-base component
428/12521	. . . . Both components Fe-based with more than 10% Ni	428/12826	. . . . . Group VIB metal-base component
428/12528	. . . Semiconductor component	428/12833	. . . . . Alternative to or next to each other
428/12535	. . . with additional, spatially distinct nonmetal component	428/1284	. . . . . W-base component
428/12542	. . . . More than one such component	428/12847	. . . . . Cr-base component
428/12549	. . . . . Adjacent to each other	428/12854	. . . . . Next to Co-, Fe-, or Ni-base component
428/12556	. . . . Organic component	428/12861	. . . . . Group VIII or IB metal-base component
428/12562	. . . . Elastomer	428/12868	. . . . . Group IB metal-base component alternative to platinum group metal-base component [e.g., precious metal, etc.]
428/12569	. . . . Synthetic resin	428/12875	. . . . . Platinum group metal-base component
428/12576	. . . . Boride, carbide or nitride component	428/12882	. . . . . Cu-base component alternative to Ag-, Au-, or Ni-base component
428/12583	. . . . Component contains compound of adjacent metal	428/12889	. . . . . Au-base component
428/1259	. . . . Oxide	428/12896	. . . . . Ag-base component
428/12597	. . . . Noncrystalline silica or noncrystalline plural-oxide component [e.g., glass, etc.]	428/12903	. . . . . Cu-base component
428/12604	. . . . . Film [e.g., glaze, etc.]	428/1291	. . . . . Next to Co-, Cu-, or Ni-base component
428/12611	. . . . Oxide-containing component	428/12917	. . . . . Next to Fe-base component
428/12618	. . . . Plural oxides	428/12924	. . . . . Fe-base has 0.01-1.7% carbon [i.e., steel]
428/12625	. . . . Free carbon containing component	428/12931	. . . . . Co-, Fe-, or Ni-base components, alternative to each other
428/12632	. . . Four or more distinct components with alternate recurrence of each type component	428/12937	. . . . . Co- or Ni-base component next to Fe-base component
428/12639	. . . Adjacent, identical composition, components	428/12944	. . . . . Ni-base component
428/12646	. . . . Group VIII or IB metal-base	428/12951	. . . . . Fe-base component
428/12653	. . . . . Fe, containing 0.01-1.7% carbon [i.e., steel]	428/12958	. . . . . Next to Fe-base component
		428/12965	. . . . . Both containing 0.01-1.7% carbon [i.e., steel]
		428/12972	. . . . . Containing 0.01-1.7% carbon [i.e., steel]

- 428/12979 Containing more than 10% nonferrous elements [e.g., high alloy, stainless]
- 428/12986 . . . Adjacent functionally defined components
- 428/12993 . . Surface feature [e.g., rough, mirror]
- 428/13 . . Hollow or container type article [e.g., tube, vase, etc.]
- 428/1303 . . Paper containing [e.g., paperboard, cardboard, fiberboard, etc.]
- 428/1307 . . . Bag or tubular film [e.g., pouch, flexible food casing, envelope, etc.]
- 428/131 . . Glass, ceramic, or sintered, fused, fired, or calcined metal oxide or metal carbide containing [e.g., porcelain, brick, cement, etc.]
- 428/1314 . . . Contains fabric, fiber particle, or filament made of glass, ceramic, or sintered, fused, fired, or calcined metal oxide, or metal carbide or other inorganic compound [e.g., fiber glass, mineral fiber, sand, etc.]
- 428/1317 . . . Multilayer [continuous layer]
- 428/1321 Polymer or resin containing [i.e., natural or synthetic]
- 428/1324 . . Flexible food casing [e.g., sausage type, etc.]
- 428/1328 . . Shrinkable or shrunk [e.g., due to heat, solvent, volatile agent, restraint removal, etc.]
- 428/1331 . . . Single layer [continuous layer]
- 428/1334 . . Nonself-supporting tubular film or bag [e.g., pouch, envelope, packet, etc.]
- 428/1338 . . . Elemental metal containing
- 428/1341 . . . Contains vapor or gas barrier, polymer derived from vinyl chloride or vinylidene chloride, or polymer containing a vinyl alcohol unit
- 428/1345 . . . Single layer [continuous layer]
- 428/1348 . . Cellular material derived from plant or animal source [e.g., wood, cotton, wool, leather, etc.]
- 428/1352 . . Polymer or resin containing [i.e., natural or synthetic]
- 428/1355 . . . Elemental metal containing [e.g., substrate, foil, film, coating, etc.]
- 428/1359 Three or more layers [continuous layer]
- 428/1362 . . . Textile, fabric, cloth, or pile containing [e.g., web, net, woven, knitted, mesh, nonwoven, matted, etc.]
- 428/1366 Textile, fabric, cloth, or pile is sandwiched between two distinct layers of material unlike the textile, fabric, cloth, or pile layer
- 428/1369 . . . Fiber or fibers wound around each other or into a self-sustaining shape [e.g., yarn, braid, fibers shaped around a core, etc.]
- 428/1372 . . . Randomly noninterengaged or randomly contacting fibers, filaments, particles, or flakes
- 428/1376 . . . Foam or porous material containing
- 428/1379 . . . Contains vapor or gas barrier, polymer derived from vinyl chloride or vinylidene chloride, or polymer containing a vinyl alcohol unit
- 428/1383 Vapor or gas barrier, polymer derived from vinyl chloride or vinylidene chloride, or polymer containing a vinyl alcohol unit is sandwiched between layers [continuous layer]
- 428/1386 . . . Natural or synthetic rubber or rubber-like compound containing
- 428/139 . . . Open-ended, self-supporting conduit, cylinder, or tube-type article
- 428/1393 Multilayer [continuous layer]
- 428/1397 . . . Single layer [continuous layer]
- 428/14 . . Layer or component removable to expose adhesive
- 428/1405 . . Capsule or particulate matter containing [e.g., sphere, flake, microballoon, etc.]
- 428/141 . . Bituminous
- 428/1414 . . Ceramic, glass, glasslike, vitreous
- 428/1419 . . Wax containing
- 428/1424 . . Halogen containing compound
- 428/1429 . . . Fluorine
- 428/1433 . . . Coloring agent containing
- 428/1438 . . Metal containing
- 428/1443 . . . Aluminum
- 428/1448 . . . Coloring agent containing
- 428/1452 . . Polymer derived only from ethylenically unsaturated monomer
- 428/1457 . . . Silicon
- 428/1462 . . Polymer derived from material having at least one acrylic or alkacrylic group or the nitrile or amide derivative thereof [e.g., acrylamide, acrylate ester, etc.]
- 428/1467 . . Coloring agent
- 428/1471 . . Protective layer
- 428/1476 . . Release layer
- 428/1481 . . Dissimilar adhesives
- 428/1486 . . Ornamental, decorative, pattern, or indicia
- 428/149 . . Sectional layer removable
- 428/1495 . . . Adhesive is on removable layer
- 428/15 . . Sheet, web, or layer weakened to permit separation through thickness
- 428/16 . . Two dimensionally sectional layer
- 428/161 . . with frame, casing, or perimeter structure
- 428/162 . . Transparent or translucent layer or section
- 428/163 . . Next to unitary web or sheet of equal or greater extent
- 428/164 . . . Continuous two dimensionally sectional layer
- 428/166 Glass, ceramic, or metal sections [e.g., floor or wall tile, etc.]
- 428/167 Cellulosic sections [e.g., parquet floor, etc.]
- 428/168 . . . Nonrectangular
- 428/169 . . Sections connected flexibly with external fastener
- 428/17 . . Three or more coplanar interfitted sections with securing means
- 428/18 . . Longitudinally sectional layer of three or more sections
- 428/183 . . Next to unitary sheet of equal or greater extent
- 428/187 . . . Continuous sectional layer
- 428/19 . . Sheets or webs edge spliced or joined
- 428/192 . . Sheets or webs coplanar
- 428/193 . . . Double faced corrugated sheets or webs connected
- 428/195 . . . Beveled, stepped, or skived in thickness
- 428/197 . . . with noncoplanar reinforcement
- 428/198 Pile or nap surface sheets connected
- 428/20 . . Patched hole or depression
- 428/21 . . Circular sheet or circular blank
- 428/211 . . Gear
- 428/213 . . Frictional
- 428/214 . . End closure
- 428/215 . . Seal, gasket, or packing
- 428/216 . . Ornamental, decorative, pattern, or indicia
- 428/218 . . Aperture containing
- 428/219 . . Edge structure

- 428/22 . Nonparticulate element embedded or inlaid in substrate and visible
- 428/23 . Sheet including cover or casing
- 428/231 . . Filled with gas other than air; or under vacuum
- 428/232 . . Encased layer derived from inorganic settable ingredient
- 428/233 . . Foamed or expanded material encased
- 428/234 . . including elements cooperating to form cells
- 428/236 . . . Honeycomb type cells extend perpendicularly to nonthickness layer
- 428/237 . . Noninterengaged fibered material encased [e.g., mat, batt, etc.]
- 428/238 . . . Metal cover or casing
- 428/239 . . Complete cover or casing
- 428/23907 . Pile or nap type surface or component
- 428/23914 . . Interlaminar
- 428/23921 . . With particles
- 428/23929 . . Edge feature or configured or discontinuous surface
- 428/23936 . . . Differential pile length or surface
- 428/23943 . . Flock surface
- 428/2395 . . Nap type surface
- 428/23957 . . Particular shape or structure of pile
- 428/23964 . . . U-, V-, or W-shaped or continuous strand, filamentary material
- 428/23971 Continuous strand with adhesive bond to backing
- 428/23979 . . Particular backing structure or composition
- 428/23986 . . With coating, impregnation, or bond
- 428/23993 . . Composition of pile or adhesive
- 428/24 . Structurally defined web or sheet [e.g., overall dimension, etc.]
- 428/24008 . . including fastener for attaching to external surface
- 428/24017 . . . Hook or barb
- 428/24025 . . Superposed movable attached layers or components
- 428/24033 . . including stitching and discrete fastener[s], coating or bond
- 428/24041 . . . Discontinuous or differential coating, impregnation, or bond
- 428/2405 Coating, impregnation, or bond in stitching zone only
- 428/24058 . . including grain, strips, or filamentary elements in respective layers or components in angular relation
- 428/24066 . . . Wood grain
- 428/24074 . . . Strand or strand-portions
- 428/24083 Nonlinear strands or strand-portions
- 428/24091 with additional layer[s]
- 428/24099 On each side of strands or strand-portions
- 428/24107 including mechanically interengaged strands, strand-portions or strand-like strips
- 428/24116 Oblique to direction of web
- 428/24124 . . . Fibers
- 428/24132 . . including grain, strips, or filamentary elements in different layers or components parallel
- 428/2414 . . including fringe
- 428/24149 . . Honeycomb-like
- 428/24157 . . . Filled honeycomb cells [e.g., solid substance in cavities, etc.]
- 428/24165 . . . Hexagonally shaped cavities
- 428/24174 . . including sheet or component perpendicular to plane of web or sheet
- 428/24182 . . . Inward from edge of web or sheet
- 428/2419 . . Fold at edge
- 428/24198 . . . Channel-shaped edge component [e.g., binding, etc.]
- 428/24207 . . . with strand[s] or strand-portion[s] between layers [e.g., upholstery trim, etc.]
- 428/24215 . . . Acute or reverse fold of exterior component
- 428/24223 Embedded in body of web
- 428/24231 At opposed marginal edges
- 428/2424 Annular cover
- 428/24248 One piece
- 428/24256 Abutted or lapped seam
- 428/24264 . . . Particular fold structure [e.g., beveled, etc.]
- 428/24273 . . including aperture
- 428/24281 . . . Struck out portion type
- 428/24289 Embedded or interlocked
- 428/24298 . . . Noncircular aperture [e.g., slit, diamond, rectangular, etc.]
- 428/24306 Diamond or hexagonal
- 428/24314 Slit or elongated
- 428/24322 . . . Composite web or sheet
- 428/24331 including nonapertured component
- 428/24339 Keyed
- 428/24347 From both sides
- 428/24355 . . Continuous and nonuniform or irregular surface on layer or component [e.g., roofing, etc.]
- 428/24364 . . . with transparent or protective coating
- 428/24372 . . . Particulate matter
- 428/2438 Coated
- 428/24388 Silicon containing coating
- 428/24397 Carbohydrate
- 428/24405 Polymer or resin [e.g., natural or synthetic rubber, etc.]
- 428/24413 Metal or metal compound
- 428/24421 Silicon containing
- 428/2443 Sand, clay, or crushed rock or slate
- 428/24438 . . . Artificial wood or leather grain surface
- 428/24446 . . . Wrinkled, creased, crinkled or creped
- 428/24455 Paper
- 428/24463 Plural paper components
- 428/24471 . . . Cracked, crazed or slit
- 428/24479 . . including variation in thickness
- 428/24488 . . . Differential nonuniformity at margin
- 428/24496 . . . Foamed or cellular component
- 428/24504 Component comprises a polymer [e.g., rubber, etc.]
- 428/24512 Polyurethane
- 428/24521 . . . with component conforming to contour of nonplanar surface
- 428/24529 and conforming component on an opposite nonplanar surface
- 428/24537 Parallel ribs and/or grooves
- 428/24545 Containing metal or metal compound
- 428/24554 including cellulosic or natural rubber component
- 428/24562 . . . Interlaminar spaces
- 428/2457 . . . Parallel ribs and/or grooves
- 428/24579 with particulate matter
- 428/24587 Oblique to longitudinal axis of web or sheet
- 428/24595 . . . and varying density

- 428/24603 Fiber containing component
- 428/24612 . . . Composite web or sheet
- 428/2462 with partial filling of valleys on outer surface
- 428/24628 . . Nonplanar uniform thickness material
- 428/24636 . . . Embodying mechanically interengaged strand[s], strand-portion[s] or strand-like strip[s] [e.g., weave, knit, etc.]
- 428/24645 with folds in parallel planes
- 428/24653 . . . Differential nonplanarity at margin
- 428/24661 . . . Forming, or cooperating to form cells
- 428/24669 . . . Aligned or parallel nonplanarities
- 428/24678 Waffle-form
- 428/24686 Pleats or otherwise parallel adjacent folds
- 428/24694 Parallel corrugations
- 428/24702 with locally deformed crests or intersecting series of corrugations
- 428/24711 Plural corrugated components
- 428/24719 with corrugations of respective components intersecting in plane projection
- 428/24727 with planar component
- 428/24736 . . . Ornamental design or indicia
- 428/24744 . . Longitudinal or transverse tubular cavity or cell
- 428/24752 . . Laterally noncoextensive components
- 428/2476 . . . Fabric, cloth or textile component
- 428/24769 . . . Cellulosic
- 428/24777 . . Edge feature
- 428/24785 . . . including layer embodying mechanically interengaged strands, strand portions or strand-like strips [e.g., weave, knit, etc.]
- 428/24793 . . . Comprising discontinuous or differential impregnation or bond
- 428/24802 . . Discontinuous or differential coating, impregnation or bond [e.g., artwork, printing, retouched photograph, etc.]
- 428/2481 . . . including layer of mechanically interengaged strands, strand-portions or strand-like strips
- 428/24818 Knitted, with particular or differential bond sites or intersections
- 428/24826 . . . Spot bonds connect components
- 428/24835 . . . including developable image or soluble portion in coating or impregnation [e.g., safety paper, etc.]
- 428/24843 . . . with heat sealable or heat releasable adhesive layer
- 428/24851 . . . Intermediate layer is discontinuous or differential
- 428/2486 with outer strippable or release layer
- 428/24868 Translucent outer layer
- 428/24876 Intermediate layer contains particulate material [e.g., pigment, etc.]
- 428/24884 Translucent layer comprises natural oil, wax, resin, gum, glue, gelatin
- 428/24893 . . . including particulate material
- 428/24901 . . . including coloring matter
- 428/24909 . . . Free metal or mineral containing
- 428/24917 . . . including metal layer
- 428/24926 . . . including ceramic, glass, porcelain or quartz layer
- 428/24934 . . . including paper layer
- 428/24942 . . including components having same physical characteristic in differing degree
- 428/2495 . . . Thickness [relative or absolute]
- 428/24959 of adhesive layers
- 428/24967 Absolute thicknesses specified
- 428/24975 No layer or component greater than 5 mils thick
- 428/24983 . . . Hardness
- 428/24992 . . . Density or compression of components
- 428/249921 . . Web or sheet containing structurally defined element or component
- 428/249922 . . Embodying intertwined or helical component[s]
- 428/249923 . . Including interlaminar mechanical fastener
- 428/249924 . . Noninterengaged fiber-containing paper-free web or sheet which is not of specified porosity
- 428/249925 . . . Fiber-containing wood product [e.g., hardboard, lumber, or wood board, etc.]
- 428/249926 . . . Including paper layer
- 428/249927 . . . Fiber embedded in a metal matrix
- 428/249928 . . . Fiber embedded in a ceramic, glass, or carbon matrix
- 428/249929 Fibers are aligned substantially parallel
- 428/24993 Fiber is precoated
- 428/249931 Free metal or alloy fiber
- 428/249932 . . . Fiber embedded in a layer derived from a water-settable material [e.g., cement, gypsum, etc.]
- 428/249933 . . . Fiber embedded in or on the surface of a natural or synthetic rubber matrix
- 428/249934 Fibers are aligned substantially parallel
- 428/249935 Fiber is nonlinear [e.g., crimped, sinusoidal, etc.]
- 428/249936 Fiber is precoated
- 428/249937 Fiber is precoated
- 428/249938 Composite or conjugate fiber [e.g., fiber contains more than one chemically different material in monofilament or multifilament form, etc.]
- 428/249939 Two or more layers
- 428/24994 . . . Fiber embedded in or on the surface of a polymeric matrix
- 428/249941 Fiber is on the surface of a polymeric matrix having no embedded portion
- 428/249942 Fibers are aligned substantially parallel
- 428/249943 Fiber is nonlinear [e.g., crimped, sinusoidal, etc.]
- 428/249944 Fiber is precoated
- 428/249945 Carbon or carbonaceous fiber
- 428/249946 Glass fiber
- 428/249947 Polymeric fiber
- 428/249948 Fiber is precoated
- 428/249949 Two or more chemically different fibers
- 428/24995 Two or more layers
- 428/249951 Including a free metal or alloy constituent
- 428/249952 At least one thermosetting synthetic polymeric material layer
- 428/249953 . . Composite having voids in a component [e.g., porous, cellular, etc.]
- 428/249954 . . . With chemically effective material or specified gas other than air, N, or carbon dioxide in void-containing component
- 428/249955 . . . Void-containing component partially impregnated with adjacent component
- 428/249956 Void-containing component is inorganic
- 428/249957 Inorganic impregnant

- 428/249958 Void-containing component is synthetic resin or natural rubbers
- 428/249959 Void-containing component is wood or paper
- 428/24996 With internal element bridging layers, nonplanar interface between layers, or intermediate layer of commingled adjacent foam layers
- 428/249961 With gradual property change within a component
- 428/249962 Void-containing component has a continuous matrix of fibers only [e.g., porous paper, etc.]
- 428/249963 And a force disintegratable component [e.g., stencil sheet, etc.]
- 428/249964 Fibers of defined composition
- 428/249965 Cellulosic
- 428/249966 Plural cellulosic components
- 428/249967 Inorganic matrix in void-containing component
- 428/249968 Of hydraulic-setting material
- 428/249969 Of silicon-containing material [e.g., glass, etc.]
- 428/24997 Of metal-containing material
- 428/249971 Preformed hollow element-containing
- 428/249972 Resin or rubber element
- 428/249973 Mineral element
- 428/249974 Metal- or silicon-containing element
- 428/249975 Void shape specified [e.g., crushed, flat, round, etc.]
- 428/249976 Voids specified as closed
- 428/249977 Specified thickness of void-containing component [absolute or relative], numerical cell dimension or density
- 428/249978 Voids specified as micro
- 428/249979 Specified thickness of void-containing component [absolute or relative] or numerical cell dimension
- 428/24998 Composite has more than two layers
- 428/249981 Plural void-containing components
- 428/249982 With component specified as adhesive or bonding agent
- 428/249983 As outermost component
- 428/249984 Adhesive or bonding component contains voids
- 428/249985 Composition of adhesive or bonding component specified
- 428/249986 Void-containing component contains also a solid fiber or solid particle
- 428/249987 With nonvoid component of specified composition
- 428/249988 Of about the same composition as, and adjacent to, the void-containing component
- 428/249989 Integrally formed skin
- 428/24999 Inorganic
- 428/249991 Synthetic resin or natural rubbers
- 428/249992 Linear or thermoplastic
- 428/249993 Hydrocarbon polymer
- 428/249994 Composite having a component wherein a constituent is liquid or is contained within preformed walls [e.g., 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 structurally defined flake, particle, cell, strand, strand portion, rod, filament, macroscopic fiber or mass thereof
- 428/2902 . . Channel shape
- 428/2904 . . Staple length fiber
- 428/2905 . . . Plural and with bonded intersections only
- 428/2907 . . . with coating or impregnation
- 428/2909 . . . Nonlinear [e.g., crimped, coiled, etc.]
- 428/2911 . . Mica flake
- 428/2913 . . Rod, strand, filament or fiber
- 428/2915 . . . including textile, cloth or fabric
- 428/2916 . . . including boron or compound thereof [not as steel]
- 428/2918 . . . including free carbon or carbide or therewith [not as steel]
- 428/292 In coating or impregnation
- 428/2922 . . . Nonlinear [e.g., crimped, coiled, etc.]
- 428/2924 Composite
- 428/2925 Helical or coiled
- 428/2927 . . . including structurally defined particulate matter
- 428/2929 . . . Bicomponent, conjugate, composite or collateral fibers or filaments [i.e., coextruded sheath-core or side-by-side type]
- 428/2931 Fibers or filaments nonconcentric [e.g., side-by-side or eccentric, etc.]
- 428/2933 . . . Coated or with bond, impregnation or core
- 428/2935 Discontinuous or tubular or cellular core
- 428/2936 Wound or wrapped core or coating [i.e., spiral or helical]
- 428/2938 Coating on discrete and individual rods, strands or filaments
- 428/294 including metal or compound thereof [excluding glass, ceramic and asbestos]
- 428/2942 Plural coatings
- 428/2944 Free metal in coating
- 428/2945 Natural rubber in coating
- 428/2947 Synthetic resin or polymer in plural coatings, each of different type
- 428/2949 Glass, ceramic or metal oxide in coating
- 428/2951 Metal with weld modifying or stabilizing coating [e.g., flux, slag, producer, etc.]
- 428/2953 Titanium compound in coating
- 428/2955 Silicic material in coating
- 428/2956 Glass or silicic fiber or filament with metal coating
- 428/2958 Metal or metal compound in coating
- 428/296 Rubber, cellulosic or silicic material in coating
- 428/2962 Silane, silicone or siloxane in coating
- 428/2964 Artificial fiber or filament
- 428/2965 Cellulosic
- 428/2967 Synthetic resin or polymer
- 428/2969 Polyamide, polyimide or polyester
- 428/2971 Impregnation
- 428/2973 . . . Particular cross section
- 428/2975 Tubular or cellular
- 428/2976 Longitudinally varying
- 428/2978 Surface characteristic
- 428/298 . . . Physical dimension
- 428/2982 . . Particulate matter [e.g., sphere, flake, etc.]
- 428/2984 . . . Microcapsule with fluid core [includes liposome]
- 428/2985 Solid-walled microcapsule from synthetic polymer
- 428/2987 Addition polymer from unsaturated monomers only
- 428/2989 . . . Microcapsule with solid core [includes liposome]
- 428/2991 . . . Coated
- 428/2993 Silicic or refractory material containing [e.g., tungsten oxide, glass, cement, etc.]
- 428/2995 Silane, siloxane or silicone coating
- 428/2996 Glass particles or spheres
- 428/2998 including synthetic resin or polymer
- 428/30 . Self-sustaining carbon mass or layer with impregnant or other layer
- 428/31 . Surface property or characteristic of web, sheet or block
- 428/315 . . Surface modified glass [e.g., tempered, strengthened, etc.]
- 428/31504 . Composite [nonstructural laminate]
- 428/31507 . . Of polycarbonate
- 428/31511 . . Of epoxy ether
- 428/31515 . . . As intermediate layer
- 428/31518 Next to glass or quartz
- 428/31522 Next to metal
- 428/31525 . . . Next to glass or quartz
- 428/31529 . . . Next to metal
- 428/31533 . . Of polythioether
- 428/31536 . . Including interfacial reaction product of adjacent layers
- 428/3154 . . Of fluorinated addition polymer from unsaturated monomers
- 428/31544 . . . Addition polymer is perhalogenated
- 428/31547 . . Of polyisocyanurate
- 428/31551 . . Of polyamidoester [polyurethane, polyisocyanate, polycarbamate, etc.]
- 428/31554 . . . Next to second layer of polyamidoester
- 428/31558 . . . Next to animal skin or membrane
- 428/31562 . . . Next to polyamide [nylon, etc.]
- 428/31565 . . . Next to polyester [polyethylene terephthalate, etc.]
- 428/31569 . . . Next to natural rubber
- 428/31573 . . . Next to addition polymer of ethylenically unsaturated monomer
- 428/31576 Ester monomer type [polyvinylacetate, etc.]
- 428/3158 Halide monomer type [polyvinyl chloride, etc.]
- 428/31583 Nitrile monomer type [polyacrylonitrile, etc.]

428/31587	Hydrocarbon polymer [polyethylene, polybutadiene, etc.]	428/31743	Next to addition polymer from unsaturated monomer[s]
428/31591	Next to cellulosic	428/31746	Polymer of monoethylenically unsaturated hydrocarbon
428/31594	Next to aldehyde or ketone condensation product [phenol-aldehyde, etc.]	428/3175	Next to addition polymer from unsaturated monomer[s]
428/31598	Next to silicon-containing [silicone, cement, etc.] layer	428/31754	Natural source-type polyamide
428/31601	Quartz or glass	428/31757	Polymer of monoethylenically unsaturated hydrocarbon
428/31605	Next to free metal	428/31761	Next to aldehyde or ketone condensation product
428/31609	Particulate metal or metal compound-containing	428/31765	Inorganic-containing or next to inorganic-containing
428/31612	As silicone, silane or siloxane	428/31768	Natural source-type polyamide [e.g., casein, gelatin, etc.]
428/31616	Next to polyester [e.g., alkyd]	428/31772	Next to cellulosic
428/3162	Cross-linked polyester [e.g., glycerol maleate-styrene, etc.]	428/31775	Paper
428/31623	Next to polyamide or polyimide	428/31779	Next to cellulosic
428/31627	Next to aldehyde or ketone condensation product	428/31783	Paper or wood
428/3163	Next to acetal of polymerized unsaturated alcohol [e.g., formal butyral, etc.]	428/31786	Of polyester [e.g., alkyd, etc.]
428/31634	Next to cellulosic	428/3179	Next to cellulosic
428/31638	Cellulosic ester	428/31794	Of cross-linked polyester
428/31641	Next to natural rubber, gum, oil, rosin, wax, bituminous or tarry residue	428/31797	Next to addition polymer from unsaturated monomers
428/31645	Next to addition polymer from unsaturated monomers	428/31801	Of wax or waxy material
428/31649	Ester, halide or nitrile of addition polymer	428/31804	Next to cellulosic
428/31652	Of asbestos	428/31808	Cellulosic is paper
428/31656	With metal layer	428/31812	Glassine paper
428/31659	With cellulosic layer	428/31815	Of bituminous or tarry residue
428/31663	As siloxane, silicone or silane	428/31819	Next to cellulosic
428/31667	Next to addition polymer from unsaturated monomers, or aldehyde or ketone condensation product	428/31823	Paper
428/3167	Of cork	428/31826	Of natural rubber
428/31674	Including natural oil or gum or rosin [e.g., linoleum, etc.]	428/3183	Next to second layer of natural rubber
428/31678	Of metal	428/31833	Next to aldehyde or ketone condensation product or addition polymer from unsaturated monomers
428/31681	Next to polyester, polyamide or polyimide [e.g., alkyd, glue, or nylon, etc.]	428/31837	Including polyene monomers
428/31685	Natural source polyamide [e.g., casein, gelatin, etc.]	428/31841	Next to cellulosic
428/31688	Next to aldehyde or ketone condensation product	428/31844	Of natural gum, rosin, natural oil or lac
428/31692	Next to addition polymer from unsaturated monomers	428/31848	Next to cellulosic
428/31696	Including polyene monomers [e.g., butadiene, etc.]	428/31851	Natural oil
428/31699	Ester, halide or nitrile of addition polymer	428/31855	Of addition polymer from unsaturated monomers
428/31703	Next to cellulosic	428/31859	Next to an aldehyde or ketone condensation product
428/31707	Next to natural rubber	428/31862	Melamine-aldehyde
428/3171	With natural rubber next to second layer of natural rubber	428/31866	Impregnated or coated cellulosic material
428/31714	Next to natural gum, natural oil, rosin, lac or wax	428/3187	Amide-aldehyde
428/31717	Next to bituminous or tarry residue	428/31873	Urea or modified urea-aldehyde
428/31721	Of polyimide	428/31877	Phenol-aldehyde
428/31725	Of polyamide	428/3188	Next to cellulosic
428/31728	Next to second layer of polyamide	428/31884	Regenerated or modified cellulose
428/31732	At least one layer is nylon type	428/31888	Addition polymer of hydrocarbon[s] only
428/31736	Next to polyester	428/31891	Where addition polymer is an ester or halide
428/31739	Nylon type	428/31895	Paper or wood
		428/31899	Addition polymer of hydrocarbon[s] only
		428/31902	Monoethylenically unsaturated
		428/31906	Ester, halide or nitrile of addition polymer
		428/31909	Next to second addition polymer from unsaturated monomers
		428/31913	Monoolefin polymer
		428/31917	Next to polyene polymer

428/3192 Next to vinyl or vinylidene chloride polymer
 428/31924 Including polyene monomers
 428/31928 Ester, halide or nitrile of addition polymer
 428/31931 . . . Polyene monomer-containing
 428/31935 . . . Ester, halide or nitrile of addition polymer
 428/31938 . . . Polymer of monoethylenically unsaturated hydrocarbon
 428/31942 . . Of aldehyde or ketone condensation product
 428/31946 . . . Next to second aldehyde or ketone condensation product
 428/31949 . . . Next to cellulosic
 428/31953 Modified or regenerated cellulose
 428/31957 Wood
 428/3196 Phenoplast
 428/31964 Paper
 428/31967 Phenoplast
 428/31971 . . Of carbohydrate
 428/31975 . . . Of cellulosic next to another carbohydrate
 428/31978 Cellulosic next to another cellulosic
 428/31982 Wood or paper
 428/31986 Regenerated or modified
 428/31989 . . . Of wood
 428/31993 . . . Of paper
 428/31996 Next to layer of metal salt [e.g., plasterboard, etc.]
 428/32 . . Composite [nonstructural laminate] of inorganic material having metal-compound-containing layer and having defined magnetic layer
 428/325 . . Magnetic layer next to second metal compound-containing layer
 428/4935 . . Impregnated naturally solid product [e.g., leather, stone, etc.]
 428/662 . . Wood timber product [e.g., piling, post, veneer, etc.]
 428/8305 . . Miscellaneous [e.g., treated surfaces, etc.]

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

436/10 . . Composition for standardization, calibration, simulation, stabilization, preparation or preservation; processes of use in preparation for chemical testing
 436/100833 . . Simulative of a gaseous composition
 436/101666 . . Particle count or volume standard or control [e.g., platelet count standards, etc.]
 436/102499 . . Blood gas standard or control
 436/103332 . . Bilirubin or uric acid standard or control
 436/104165 . . Lipid, cholesterol, or triglyceride standard or control
 436/104998 . . Glucose, ketone, nitrate standard or control
 436/105831 . . Protein or peptide standard or control [e.g., hemoglobin, etc.]
 436/106664 . . Blood serum or blood plasma standard or control
 436/107497 . . Preparation composition [e.g., lysing or precipitation, etc.]
 436/108331 . . Preservative, buffer, anticoagulant or diluent
 436/109163 . . Inorganic standards or controls
 436/11 . . Automated chemical analysis
 436/110833 . . Utilizing a moving indicator strip or tape
 436/111666 . . Utilizing a centrifuge or compartmented rotor
 436/112499 . . with sample on test slide

436/113332 . . with conveyance of sample along a test line in a container or rack
 436/114165 . . . with step of insertion or removal from test line
 436/114998 . . . with treatment or replacement of aspirator element [e.g., cleaning, etc.]
 436/115831 . . Condition or time responsive
 436/116664 . . . with automated titrator
 436/117497 . . with a continuously flowing sample or carrier stream
 436/118339 . . . with formation of a segmented stream
 436/119163 . . with aspirator of claimed structure
 436/12 . . Condition responsive control
 436/13 . . Tracers or tags
 436/14 . . Heterocyclic carbon compound [i.e., O, S, N, Se, Te, as only ring hetero atom]
 436/141111 . . Diverse hetero atoms in same or different rings [e.g., alkaloids, opiates, etc.]
 436/142222 . . Hetero-O [e.g., ascorbic acid, etc.]
 436/143333 . . . Saccharide [e.g., DNA, etc.]
 436/144444 Glucose
 436/145555 . . Hetero-N
 436/146666 . . . Bile pigment
 436/147777 . . . Plural nitrogen in the same ring [e.g., barbituates, creatinine, etc.]
 436/148888 Uric acid
 436/15 . . Inorganic acid or base [e.g., hcl, sulfuric acid, etc.]
 436/153333 . . Halogen containing
 436/156666 . . Sulfur containing
 436/16 . . Phosphorus containing
 436/163333 . . Organic [e.g., chemical warfare agents, insecticides, etc.]
 436/166666 . . of inorganic phosphorus compound in body fluid
 436/17 . . Nitrogen containing
 436/170769 . . N-Nitroso containing [e.g., nitrosamine, etc.]
 436/171538 . . Urea or blood urea nitrogen
 436/172307 . . Cyanide or isocyanide
 436/173076 . . Nitrite or nitrate
 436/173845 . . Amine and quaternary ammonium
 436/174614 . . . Tertiary amine
 436/175383 . . . Ammonia
 436/176152 . . Total nitrogen determined
 436/176921 . . . As part of an elemental analysis
 436/177692 . . Oxides of nitrogen
 436/178459 . . . Only nitrogen dioxide
 436/179228 . . . Both nitrogen oxide and dioxide
 436/18 . . Sulfur containing
 436/182 . . Organic or sulfhydryl containing [e.g., mercaptan, hydrogen, sulfide, etc.]
 436/184 . . . Only hydrogen sulfide
 436/186 . . Sulfur dioxide
 436/188 . . Total or elemental sulfur
 436/19 . . Halogen containing
 436/193333 . . In aqueous solution
 436/196666 . . Carbon containing compound [e.g., vinylchloride, etc.]
 436/20 . . Oxygen containing
 436/200833 . . Carbonyl, ether, aldehyde or ketone containing
 436/201666 . . . Carboxylic acid
 436/202499 . . . Formaldehyde or acetone
 436/203332 . . Hydroxyl containing
 436/204165 . . . Ethanol
 436/204998 . . Inorganic carbon compounds

436/205831 . . . Carbon monoxide only
 436/206664 . . Ozone or peroxide
 436/207497 . . Molecular oxygen
 436/208339 . . . Fuel/air mixture or exhaust gas analysis
 436/209163 . . . Dissolved or trace oxygen or oxygen content of a sealed environment
 436/21 . Hydrocarbon
 436/212 . . Aromatic
 436/214 . . Acyclic [e.g., methane, octane, isoparaffin, etc.]
 436/216 . . . Unsaturated [e.g., ethylene, diene, etc.]
 436/218 . . Total hydrocarbon, flammability, combustibility [e.g., air-fuel mixture, etc.]
 436/22 . Hydrogen, per se
 436/23 . Carbon containing
 436/235 . . In an aqueous solution [e.g., TOC, etc.]
 436/24 . Nuclear magnetic resonance, electron spin resonance or other spin effects or mass spectrometry
 436/25 . including sample preparation
 436/25125 . . Digestion or removing interfering materials
 436/2525 . . Stabilizing or preserving
 436/25375 . . Liberation or purification of sample or separation of material from a sample [e.g., filtering, centrifuging, etc.]
 436/255 . . . including use of a solid sorbent, semipermeable membrane, or liquid extraction
 436/25625 . . Dilution
 436/2575 . . Volumetric liquid transfer
 436/25875 . . Gaseous sample or with change of physical state

Former US Class 442 series

442/00 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
 442/105 . . . Comprising a composite fiber
 442/107 . . . Comprising at least two chemically different fibers
 442/109 . . . Metal or metal-coated fiber-containing scrim
 442/11 Including an additional free metal or alloy constituent
 442/112 Particulate free metal or alloy constituent
 442/114 Including a foam layer
 442/116 Including a woven fabric which is not a scrim
 442/117 Including a nonwoven fabric which is not a scrim
 442/119 Including a paper layer
 442/121 Including a nonwoven fabric which is not a scrim
 442/122 Two or more nonwoven fabric layers
 442/124 Including a natural or synthetic rubber layer
 442/126 Including a preformed film, foil, or sheet
 442/128 Including a layer derived from a water-settable material [e.g., cement, gypsum, etc.]
 442/129 Including a ceramic or glass layer
 442/131 Including a coating or impregnation of synthetic polymeric material
 442/133 . . . Inorganic fiber-containing scrim
 442/134 Including a carbon or carbonized fiber

442/136 Including a foam layer
 442/138 Including a metal layer
 442/14 Including an additional scrim layer
 442/141 Including a woven fabric which is not a scrim
 442/143 Including a nonwoven fabric which is not a scrim
 442/145 Including a preformed film, foil, or sheet
 442/147 Including a mica layer
 442/148 Including a coating or impregnation containing particulate material other than fiber
 442/15 . . . Including a foam layer
 442/152 . . . Including a free metal or alloy constituent
 442/153 . . . Including an additional scrim layer
 442/155 . . . Including a paper layer
 442/157 Two or more paper layers
 442/159 . . . Including a nonwoven fabric which is not a scrim
 442/16 Two or more nonwoven layers
 442/162 . . . Including a natural or synthetic rubber layer
 442/164 . . . Including a preformed film, foil, or sheet
 442/166 Cellulose acetate film or sheet
 442/167 Fluorinated polyolefin film or sheet
 442/169 Polyolefin film or sheet
 442/171 . . . Including a layer derived from a water-settable material [e.g., cement, gypsum, etc.]
 442/172 . . . Coated or impregnated
 442/174 Including particulate material other than fiber in coating or impregnation
 442/176 Three or more layers
 442/178 Synthetic polymeric fiber
 442/179 Nylon fiber
 442/181 Bitumen coating or impregnation
 442/183 . . . Synthetic polymeric fiber
 442/184 . . Nonwoven scrim
 442/186 . . . Comprising a composite fiber
 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	442/2336	. . . Natural oil or wax containing
442/2057	. . . . At least two coatings or impregnations of different chemical composition	442/2344	. . Coating or impregnation is anti-slip or friction-increasing other than specified as an abrasive
442/2066	. . . . . Different coatings or impregnations on opposite faces of the fabric	442/2352	. . Coating or impregnation functions to soften the feel of or improve the "hand" of the fabric
442/2074	. . . . . At least one coating or impregnation contains particulate material	442/2361	. . Coating or impregnation improves stiffness of the fabric other than specified as a size
442/2082	. . . . . At least one coating or impregnation functions to fix pigments or particles on the surface of a coating or impregnation	442/2369	. . Coating or impregnation improves elasticity, bendability, resiliency, flexibility, or shape retention of the fabric
442/209	. . . . At least one coating or impregnation contains particulate material	442/2377	. . . Improves elasticity
442/2098	. . . At least two coatings or impregnations of different chemical composition	442/2385	. . . Improves shrink resistance
442/2107	. . . . At least one coating or impregnation contains particulate material	442/2393	. . . Coating or impregnation provides crease-resistance or wash and wear characteristics
442/2115	. . . . . At least one coating or impregnation functions to fix pigments or particles on the surface of a coating or impregnation	442/2402	. . Coating or impregnation specified as a size
442/2123	. . . At least one coating or impregnation contains particulate material	442/241	. . Coating or impregnation improves snag or pull resistance of the fabric
442/2131	. . . . At least one coating or impregnation functions to fix pigments or particles on the surface of a coating or impregnation	442/2418	. . Coating or impregnation increases electrical conductivity or anti-static quality
442/2139	. . Coating or impregnation specified as porous or permeable to a specific substance [e.g., water vapor, air, etc.]	442/2426	. . . Elemental carbon containing
442/2148	. . . Coating or impregnation is specified as microporous but is not a foam	442/2434	. . . Linear polyether group chain containing
442/2156	. . Coating or impregnation collects radionuclide or heavy metal	442/2443	. . . Nitrogen and phosphorus containing
442/2164	. . Coating or impregnation specified as water repellent	442/2451	. . . Phosphorus containing
442/2172	. . . Also specified as oil repellent	442/2459	. . . Nitrogen containing
442/218	. . . Organosilicon containing	442/2467	. . . Sulphur containing
442/2189	. . . Fluorocarbon containing	442/2475	. . Coating or impregnation is electrical insulation-providing, -improving, or -increasing, or conductivity-reducing
442/2197	. . . Nitrogen containing	442/2484	. . Coating or impregnation is water absorbency-increasing or hydrophilicity-increasing or hydrophilicity-imparting
442/2205	. . . Natural oil or wax containing	442/2492	. . . Polyether group containing
442/2213	. . Coating or impregnation is specified as weather proof, water vapor resistant, or moisture resistant	442/25	. . Coating or impregnation absorbs sound
442/2221	. . Coating or impregnation is specified as water proof	442/2508	. . Coating or impregnation absorbs chemical material other than water
442/223	. . . Organosilicon containing	442/2516	. . . Chemical material is one used in biological or chemical warfare
442/2238	. . . Fluorocarbon containing	442/2525	. . Coating or impregnation functions biologically [e.g., insect repellent, antiseptic, insecticide, bactericide, etc.]
442/2246	. . . Nitrogen containing	442/2533	. . . Inhibits mildew
442/2254	. . . Natural oil or wax containing	442/2541	. . . Insect repellent
442/2262	. . Coating or impregnation is oil repellent but not oil or stain release	442/2549	. . Coating or impregnation is chemically inert or of stated nonreactance
442/227	. . . Fluorocarbon containing	442/2557	. . . Oxygen or ozone resistant
442/2279	. . Coating or impregnation improves soil repellency, soil release, or anti- soil redeposition qualities of fabric	442/2566	. . . Organic solvent resistant [e.g., dry cleaning fluid, etc.]
442/2287	. . . Fluorocarbon containing	442/2574	. . . Acid or alkali resistant
442/2295	. . . Linear polyether group chain containing	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.]
442/2303	. . Coating or impregnation provides a fragrance or releases an odor intended to be perceptible to humans	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
442/2311	. . 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	442/2598	. . . Radiation reflective
442/232	. . . Fluorocarbon containing	442/2607	. . . Radiation absorptive
442/2328	. . . Organosilicon containing	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	442/2959	. . . Coating or impregnation contains aldehyde or ketone condensation product
442/2648	. . . Coating or impregnation is specified as an intumescent material	442/2967	. . . . Amide-aldehyde condensate
442/2656	. . . Antimony containing	442/2975	. . . Coated or impregnated ceramic fiber fabric
442/2664	. . . Boron containing	442/2984	. . . Coated or impregnated carbon or carbonaceous fiber fabric
442/2672	. . . Phosphorus containing	442/2992	. . . Coated or impregnated glass fiber fabric
442/268	. . . . Phosphorus and nitrogen containing compound	442/30	. Woven fabric [i.e., woven strand or strip material]
442/2689	. . . . A phosphorus containing compound and a nitrogen containing compound	442/3008	. . Woven fabric has an elastic quality
442/2697	. . . . Phosphorus and halogen containing compound	442/3016	. . . Including a preformed layer other than the elastic woven fabric [e.g., fabric or film or foil or sheet layer, etc.]
442/2705	. . . . A phosphorus containing compound and a halogen containing compound	442/3024	. . . Including elastic strand or strip
442/2713	. . . Halogen containing	442/3033	. . Including a strip or ribbon
442/2721	. . . Nitrogen containing	442/3041	. . . Woven fabric comprises strips or ribbons only
442/273	. . Coating or impregnation provides wear or abrasion resistance	442/3049	. . Including strand precoated with other than free metal or alloy
442/2738	. . Coating or impregnation intended to function as an adhesive to solid surfaces subsequently associated therewith	442/3057	. . . Multiple coatings
442/2746	. . . Heat-activatable adhesive	442/3065	. . Including strand which is of specific structural definition
442/2754	. . . Pressure-sensitive adhesive	442/3073	. . . Strand material is core-spun [not sheath-core bicomponent strand]
442/2762	. . Coated or impregnated natural fiber fabric [e.g., cotton, wool, silk, linen, etc.]	442/3081	. . . . Core is synthetic polymeric material
442/277	. . . Coated or impregnated cellulosic fiber fabric	442/3089	. . . Cross-sectional configuration of strand material is specified
442/2779	. . . . Coating or impregnation contains an acrylic polymer or copolymer [e.g., polyacrylonitrile, polyacrylic acid, etc.]	442/3098	. . . . Cross-sectional configuration varies longitudinally along the strand
442/2787	. . . . Coating or impregnation contains a vinyl polymer or copolymer	442/3106	. . . . Hollow strand material
442/2795	. . . . Coating or impregnation contains an epoxy polymer or copolymer or polyether	442/3114	. . . . Cross-sectional configuration of the strand material is other than circular
442/2803	. . . . Polymeric coating or impregnation from a silane or siloxane not specified as lubricant or water repellent	442/3122	. . . . . Cross-sectional configuration is multi-lobal
442/2811	. . . . Coating or impregnation contains polyimide or polyamide	442/313	. . . Strand material formed of individual filaments having different chemical compositions
442/282	. . . . Coating or impregnation contains natural gum, rosin, natural oil, or wax	442/3138	. . . . Including inorganic filament
442/2828	. . . . Coating or impregnation contains aldehyde or ketone condensation product	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
442/2836	. . . . . Phenol-aldehyde condensate	442/3154	. . . Sheath-core multicomponent strand material
442/2844	. . . . . Melamine-aldehyde condensate	442/3163	. . . Islands-in-sea multicomponent strand material
442/2852	. . . . . Amide-aldehyde condensate [e.g., modified urea-aldehyde condensate, etc.]	442/3171	. . . Strand material is a blend of polymeric material and a filler material
442/2861	. . Coated or impregnated synthetic organic fiber fabric	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
442/2869	. . . Coated or impregnated regenerated cellulose fiber fabric	442/3187	. . . Triaxially woven fabric
442/2877	. . . Coated or impregnated polyvinyl alcohol fiber fabric	442/3195	. . . Three-dimensional weave [e.g., x-y-z planes, multi-planar warps and/or wefts, etc.]
442/2885	. . . Coated or impregnated acrylic fiber fabric	442/3203	. . . . Multi-planar warp layers
442/2893	. . . Coated or impregnated polyamide fiber fabric	442/3211	. . . . Multi-planar weft layers
442/2902	. . . . Aromatic polyamide fiber fabric	442/322	. . . Warp differs from weft
442/291	. . . Coated or impregnated polyolefin fiber fabric	442/3228	. . . . Materials differ
442/2918	. . . . Polypropylene fiber fabric	442/3236	. . . . . Including inorganic strand material
442/2926	. . Coated or impregnated inorganic fiber fabric	442/3244	. . . . . Including natural strand material [e.g., cotton, wool, etc.]
442/2934	. . . Coating or impregnation contains vinyl polymer or copolymer	442/3252	. . . . . Including synthetic polymeric strand material
442/2943	. . . . Vinyl acetate polymer or copolymer	442/326	. . . . . Including synthetic polymeric strand material
442/2951	. . . Coating or impregnation contains epoxy polymer or copolymer or polyether		

442/3268	. . . . .	Including natural strand material	442/361	. . . .	At least one layer is derived from water-settable material [e.g., cement, gypsum, etc.]
442/3276	. . . . .	Including polyamide strand material	442/3618	. . . .	At least one layer contains wood or cork
442/3285	. . . . .	Including polyester strand material	442/3626	. . . .	At least one layer contains bituminous material [e.g., tar, pitch, asphalt, etc.]
442/3293	. . .	Warp and weft are identical and contain at least two chemically different strand materials	442/3634	. . . .	At least one layer comprises paper
442/3301	. . .	Coated, impregnated, or autogenous bonded	442/3642	. . . .	At least one layer contains natural or synthetic rubber
442/3309	. . . .	Woven fabric contains inorganic strand material	442/365	. . . .	At least one layer is a preformed synthetic polymeric film or sheet
442/3317	. . . .	Woven fabric contains synthetic polymeric strand material	442/3659	. . . .	At least one layer comprises ceramic or glass material in other than particulate form
442/3325	. .	Including a foamed layer or component	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]
442/3333	. . .	Including a free metal or alloy constituent	442/3675	. . . .	Fabric layer contains natural strand material
442/3341	. . .	Plural foam layers	442/3683	. . . .	Fabric layer contains carbon or carbonaceous strand material
442/335	. . .	Plural fabric layers	442/3691	. . . .	Fabric layer contains glass strand material
442/3358	. . . .	Including a nonwoven fabric layer	442/3699	. . . .	Including particulate material other than fiber
442/3366	. . .	Woven fabric is coated, impregnated, or autogenously bonded	442/3707	. .	Woven fabric including a nonwoven fabric layer other than paper
442/3374	. . . .	Coating or impregnation includes particulate material other than fiber	442/3715	. . .	Nonwoven fabric layer comprises parallel arrays of strand material
442/3382	. .	Including a free metal or alloy constituent	442/3724	. . .	Needled
442/339	. . .	Metal or metal-coated strand	442/3732	. . . .	Including an additional nonwoven fabric
442/3398	. . .	Vapor or sputter deposited metal layer	442/374	. . . .	Additional nonwoven fabric comprises chemically different strand material than the first nonwoven fabric
442/3407	. . .	Chemically deposited metal layer [e.g., chemical precipitation or electrochemical deposition or plating, etc.]	442/3748	. . . .	Including inorganic strand material
442/3415	. . .	Preformed metallic film or foil or sheet [film or foil or sheet had structural integrity prior to association with the woven fabric]	442/3756	. . . .	Nonwoven fabric layer comprises at least two chemically different fibers
442/3423	. . . .	Plural metallic films or foils or sheets	442/3764	. . . .	Coated, impregnated, or autogenously bonded
442/3431	. . . .	Plural fabric layers	442/3772	. . .	Hydroentangled
442/3439	. . . .	Including a nonwoven fabric layer	442/378	. . .	Coated, impregnated, or autogenously bonded
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]	442/3789	. . . .	Plural nonwoven fabric layers
442/3455	. . . .	Including particulate material other than fiber	442/3797	. . . .	Coating or impregnation is derived from a water-settable material [e.g., cement, gypsum, etc.]
442/3463	. . .	Plural fabric layers	442/3805	. . . .	Coating or impregnation contains natural or synthetic rubber
442/3472	. .	Woven fabric including an additional woven fabric layer	442/3813	. . . .	Coating or impregnation contains synthetic polymeric material
442/348	. . .	Mechanically needled or hydroentangled	442/3821	. . . .	Coating or impregnation contains bituminous material
442/3488	. . . .	Four or more layers	442/3829	. . . .	Four or more layers
442/3496	. . . .	Coated, impregnated, or autogenously bonded	442/3837	. . . .	Including particulate material other than fiber
442/3504	. . .	Woven fabric layers comprise chemically different strand material	442/3846	. . . .	Including particulate material other than fiber
442/3512	. . . .	Three or more fabric layers	442/3854	. .	Woven fabric with a preformed polymeric film or sheet
442/352	. . . .	One of which is a nonwoven fabric layer	442/3862	. . .	Ester condensation polymer sheet or film [e.g., polyethylene terephthalate, etc.]
442/3528	. . .	Three or more fabric layers	442/387	. . .	Vinyl polymer or copolymer sheet or film [e.g., polyvinyl chloride, polyvinylidene chloride, polyvinyl acetate, etc.]
442/3537	. . . .	One of which is a nonwoven fabric layer	442/3878	. . .	Fluorinated olefin polymer or copolymer sheet or film [e.g., Teflon®, etc.]
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			

442/3886	. . . Olefin polymer or copolymer sheet or film [e.g., polypropylene, polyethylene, ethylene-butylene copolymer, etc.]	442/601	. . Nonwoven fabric has an elastic quality
442/3894	. . . Amide condensation polymer sheet or film [e.g., nylon 6, etc.]	442/602	. . . Nonwoven fabric comprises an elastic strand or fiber material
442/3902	. . . Polyimide sheet or film	442/603	. . Including strand or fiber material precoated with other than free metal or alloy
442/3911	. . . Natural or synthetic rubber sheet or film	442/604	. . . Strand or fiber material is glass
442/3919	. . . Including particulate material other than fiber	442/605	. . . Strand or fiber material is inorganic
442/3927	. . Including a paper or wood pulp layer	442/607	. . . Strand or fiber material is synthetic polymer
442/3935	. . . Mica paper layer	442/608	. . Including strand or fiber material which is of specific structural definition
442/3943	. . . Plural paper or wood pulp layers	442/609	. . . Cross-sectional configuration of strand or fiber material is specified
442/3951	. . . Including a bituminous layer	442/61	. . . . Cross-sectional configuration varies longitudinally along strand or fiber material
442/3959	. . . Including an outermost adhesive layer	442/611	. . . . Cross-sectional configuration of strand or fiber material is other than circular
442/3967	. . . Including a natural or synthetic rubber layer	442/612	. . . . Hollow strand or fiber material
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.]	442/613	. . . . Microcellular strand or fiber material
442/3984	. . . Strand is other than glass and is heat or fire resistant	442/614	. . . Strand or fiber material specified as having microdimensions [i.e., microfiber]
442/3992	. . . Strand is heat shrinkable	442/615	. . . . Strand or fiber material is blended with another chemically different microfiber in the same layer
442/40	. Knit fabric [i.e., knit strand or strip material]	442/616	. . . . . Blend of synthetic polymeric and inorganic microfibers
442/406	. . Including parallel strips	442/618	. . . . . Blend of chemically different inorganic microfibers
442/413	. . Including an elastic strand	442/619	. . . . . Including other strand or fiber material in the same layer not specified as having microdimensions
442/419	. . Including strand precoated with other than free metal or alloy	442/62	. . . . . Including another chemically different microfiber in a separate layer
442/425	. . Including strand which is of specific structural definition	442/621	. . . . . Including other strand or fiber material in a different layer not specified as having microdimensions
442/431	. . . Cross-sectional configuration of strand material is specified	442/622	. . . . . Microfiber is a composite fiber
442/438	. . . Strand material formed of individual filaments having different chemical compositions	442/623	. . . . . Microfiber is glass
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	442/624	. . . . . Microfiber is carbon or carbonaceous
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	442/625	. . . . . Autogenously bonded
442/456	. . . Including additional strand inserted within knit fabric	442/626	. . . . . Microfiber is synthetic polymer
442/463	. . . . Warp knit insert strand	442/627	. . . Strand or fiber material is specified as non-linear [e.g., crimped, coiled, etc.]
442/469	. . Including a foamed layer or component	442/629	. . . . Composite strand or fiber material
442/475	. . Including a free metal or alloy constituent	442/63	. . . . Carbon or carbonaceous strand or fiber material
442/481	. . . Chemically deposited metal layer [e.g., chemical precipitation or electrochemical deposition or plating, etc.]	442/631	. . . . Glass strand or fiber material
442/488	. . Including an additional knit fabric layer	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
442/494	. . Including a nonwoven fabric layer other than paper	442/633	. . . . . Synthetic polymeric strand or fiber material is of staple length
442/50	. FELT FABRIC	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
442/51	. . From natural organic fiber [e.g., wool, etc.]	442/635	. . . . . Synthetic polymeric strand or fiber material
442/53	. . . Including particulate material other than fiber	442/636	. . . . . Synthetic polymeric strand or fiber material is of staple length
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]		

- 442/637 . . Including strand or fiber material which is a monofilament composed of two or more polymeric materials in physically distinct relationship [e.g., sheath-core, side-by-side, islands-in-sea, fibrils-in-matrix, etc.] or composed of physical blend of chemically different polymeric materials or a physical blend of a polymeric material and a filler material
- 442/638 . . . Side-by-side multicomponent strand or fiber material
- 442/64 . . . Islands-in-sea multicomponent strand or fiber material
- 442/641 . . . Sheath-core multicomponent strand or fiber material
- 442/642 . . . Strand or fiber material is a blend of polymeric material and a filler material
- 442/643 . . Including parallel strand or fiber material within the nonwoven fabric
- 442/644 . . . Parallel strand or fiber material is glass
- 442/645 . . . Parallel strand or fiber material is inorganic [e.g., rock wool, mineral wool, etc.]
- 442/646 . . . Parallel strand or fiber material is naturally occurring [e.g., cotton, wool, etc.]
- 442/647 . . Including a foamed layer or component
- 442/648 . . . Including a free metal or alloy constituent
- 442/649 . . . Plural foamed layers
- 442/651 . . . Plural fabric layers
- 442/652 . . . Nonwoven fabric is coated, impregnated, or autogenously bonded
- 442/653 Including particulate material other than fiber
- 442/654 . . Including a free metal or alloy constituent
- 442/655 . . . Metal or metal-coated strand or fiber material
- 442/656 . . . Preformed metallic film or foil or sheet [film or foil or sheet had structural integrity prior to association with the nonwoven fabric]
- 442/657 . . . Vapor, chemical, or spray deposited metal layer
- 442/658 . . . Particulate free metal or alloy constituent
- 442/659 . . Including an additional nonwoven fabric
- 442/66 . . . Additional nonwoven fabric is a spun-bonded fabric
- 442/662 Needled
- 442/663 Hydroentangled
- 442/664 . . . Including a wood fiber containing layer
- 442/665 . . . Including a layer derived from a water-settable material [e.g., cement, gypsum, etc.]
- 442/666 . . . Mechanically interengaged by needling or impingement of fluid [e.g., gas or liquid stream, etc.]
- 442/667 Needled
- 442/668 . . . Separate nonwoven fabric layers comprise chemically different strand or fiber material
- 442/669 At least one layer of inorganic strand or fiber material and at least one layer of synthetic polymeric strand or fiber material
- 442/67 . . . Multiple nonwoven fabric layers composed of the same inorganic strand or fiber material
- 442/671 . . . Multiple nonwoven fabric layers composed of the same polymeric strand or fiber material
- 442/673 . . . Including particulate material other than fiber
- 442/674 . . Nonwoven fabric with a preformed polymeric film or sheet
- 442/675 . . . Ester condensation polymer sheet or film [e.g., polyethylene terephthalate, etc.]
- 442/676 . . . Vinyl polymer or copolymer sheet or film [e.g., polyvinyl chloride, polyvinylidene chloride, polyvinyl acetate, etc.]
- 442/677 . . . Fluorinated olefin polymer or copolymer sheet or film [e.g., TeflonR, etc.]
- 442/678 . . . Olefin polymer or copolymer sheet or film [e.g., polypropylene, polyethylene, ethylene-butylene copolymer, etc.]
- 442/679 . . . Natural or synthetic rubber sheet or film
- 442/68 . . Melt-blown nonwoven fabric
- 442/681 . . Spun-bonded nonwoven fabric
- 442/682 . . Needled nonwoven fabric
- 442/684 . . . Containing at least two chemically different strand or fiber materials
- 442/685 Containing inorganic and polymeric strand or fiber materials
- 442/686 Containing polymeric and natural strand or fiber materials
- 442/687 Containing inorganic strand or fiber material
- 442/688 Containing polymeric strand or fiber material
- 442/689 . . Hydroentangled nonwoven fabric
- 442/69 . . Autogenously bonded nonwoven fabric
- 442/691 . . . Inorganic strand or fiber material only
- 442/692 . . . Containing at least two chemically different strand or fiber materials
- 442/693 . . Including a paper layer
- 442/695 . . Including a wood containing layer
- 442/696 . . Including strand or fiber material which is stated to have specific attributes [e.g., heat or fire resistance, chemical or solvent resistance, high absorption for aqueous compositions, water solubility, heat shrinkability, etc.]
- 442/697 . . Containing at least two chemically different strand or fiber materials
- 442/698 . . . Containing polymeric and natural strand or fiber materials
- 442/699 . . Including particulate material other than strand or fiber material

Former US Class 464 Series

464/00 Rotary shafts, gudgeons, housings, and flexible couplings for rotary shafts

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