

# 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.

- |         |   |         |  |
|---------|---|---------|--|
| 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			

<p>24/44923 . . . . Clasp, clip, or support-clamp cut or shaped from a single sheet of resilient, uniformly thick, planar material</p> <p>24/44932 . . . having specific surface material or irregularity on or along engaging face</p> <p>24/4494 . . . having specific handle structure</p> <p>24/44949 . . . including resilient biasing wire</p> <p>24/44957 . . . . Coiled wire</p> <p>24/44966 . . having gripping member shifted by operator</p> <p>24/44974 . . . Threaded cylindrical rod and mating cavity</p> <p>24/44983 . . formed from single rigid piece of material</p> <p>24/44991 . . . having specific surface irregularity on or along engaging face</p> <p>24/45 . Separable-fastener or required component thereof [e.g., projection and cavity to complete interlock]</p> <p>24/45005 . . with third detached member completing interlock [e.g., hook type]</p> <p>24/4501 . . . Quick connect or release [e.g., spring and detent]</p> <p>24/45016 . . . for jewelry</p> <p>24/45021 . . . including eyelet [e.g., shoes]</p> <p>24/45026 . . . for key holder</p> <p>24/45031 . . . for tire chain, strap, etc. [e.g., rotatable or sliding spring gate]</p> <p>24/45037 . . . for apparel and related accessories</p> <p>24/45042 . . . . Button, button related</p> <p>24/45047 . . . . Snap [e.g., key hole type]</p> <p>24/45052 . . . . Post and receiver [e.g., pin and slot]</p> <p>24/45058 . . . . Hook [e.g., within cavity]</p> <p>24/45063 . . . . Belt, strap, etc. [e.g., buckle or snap fastener]</p> <p>24/45068 . . . . Glove</p> <p>24/45073 . . . . Purse, wallet, etc.</p> <p>24/45079 . . . Belt, strap, harness, etc.</p> <p>24/45084 . . . . for safety belt buckle, strap, harness, etc.</p> <p>24/45089 . . . Sliding or rotating element</p> <p>24/45094 . . . . Element having key slot</p> <p>24/45099 . . . Resilient element [e.g., snap type]</p> <p>24/45105 . . . . for upholstery, panel, trim strip, etc. [e.g., spring biased]</p> <p>24/4511 . . . . Link with pivoted gate</p> <p>24/45115 . . . Hook</p> <p>24/4512 . . . . Snap with spring bias [e.g., gate]</p> <p>24/45126 . . . . for connecting chains [e.g., opposed pivoted hook]</p> <p>24/45131 . . . . for heavy load bearing device [e.g., chain, rope, cable, etc.]</p> <p>24/45136 . . . . Haim, harness, whiffletree, rein, etc.</p> <p>24/45141 . . . for chain, rope, cable, etc.</p> <p>24/45147 . . . . Coupler with sliding socket to complete interlock</p> <p>24/45152 . . Each mating member having similarly shaped, sized, and operated interlocking or intermeshable face</p> <p>24/45157 . . . Zipper-type [e.g., slider]</p> <p>24/45162 . . . . for garment [e.g., with ribs and grooves interlocking elements]</p> <p>24/45168 . . . . for container [e.g., bag]</p> <p>24/45173 . . . Resilient element</p> <p>24/45178 . . . . Snap [e.g., identical elements]</p> <p>24/45183 . . . Clasp [e.g., spring type]</p> <p>24/45188 . . . . for jewelry [e.g., buckle type]</p> <p>24/45194 . . . . for belt or strap</p> <p>24/45199 . . . Hook</p>	<p>24/45204 . . . . for belt, strap, etc. [e.g., with pivoted gate locking member]</p> <p>24/45209 . . . . for apparel</p> <p>24/45215 . . . Slot and tab or tongue</p> <p>24/4522 . . . Sliding or rotating element</p> <p>24/45225 . . including member having distinct formations and mating member selectively interlocking therewith</p> <p>24/4523 . . . Hook</p> <p>24/45236 . . . . Multiple catch [e.g., with pivoted gate]</p> <p>24/45241 . . . Slot and tab or tongue</p> <p>24/45246 . . . . having teeth or serrations [e.g., sliding with respect to each other]</p> <p>24/45251 . . . Resilient element [e.g., with spring]</p> <p>24/45257 . . . . Snap with cavity</p> <p>24/45262 . . . Pin, post and receiver</p> <p>24/45267 . . . Notched clasp [e.g., with receiving slot]</p> <p>24/45272 . . . Projection passes through cavity then moves toward noninserted portion of its member to complete interlock [e.g., snap hook] <i>(Frozen)</i></p> <p><b><u>WARNING</u></b></p> <p>Groups <a href="#">Y10T 24/45272</a> - <a href="#">Y10T 24/45455</a> are no longer used for the classification of documents as of May 1, 2021.</p> <p>The content of this group is being reclassified into groups <a href="#">F16B 45/00</a>, <a href="#">F16B 45/002</a>, <a href="#">F16B 45/005</a>, <a href="#">F16B 45/008</a>, <a href="#">F16B 45/012</a>, <a href="#">F16B 45/015</a>, <a href="#">F16B 45/02</a>, <a href="#">F16B 45/021</a>, <a href="#">F16B 45/022</a>, <a href="#">F16B 45/023</a>, <a href="#">F16B 45/024</a>, <a href="#">F16B 45/026</a>, <a href="#">F16B 45/027</a>, <a href="#">F16B 45/028</a>, <a href="#">F16B 45/029</a>, <a href="#">F16B 45/031</a>, <a href="#">F16B 45/032</a>, <a href="#">F16B 45/033</a>, <a href="#">F16B 45/034</a>, <a href="#">F16B 45/035</a>, <a href="#">F16B 45/036</a>, <a href="#">F16B 45/037</a>, <a href="#">F16B 45/04</a>, <a href="#">F16B 45/043</a>, <a href="#">F16B 45/045</a>, <a href="#">F16B 45/047</a>, <a href="#">F16B 45/049</a>, <a href="#">F16B 45/051</a>, <a href="#">F16B 45/053</a>, <a href="#">F16B 45/055</a>, <a href="#">F16B 45/057</a>, <a href="#">F16B 45/059</a> and <a href="#">F16B 45/06</a>.</p> <p>All groups listed in this Warning should be considered in order to perform a complete search.</p> <p>24/45277 . . . . Entire projection member forms loop or ring when interlocked <i>(Frozen)</i></p> <p>24/45283 . . . . Includes slidable gate closing entrance throat <i>(Frozen)</i></p> <p>24/45288 . . . . Hook type projection member <i>(Frozen)</i></p> <p>24/45293 . . . . Plural hooks entering opposite sides of same cavity <i>(Frozen)</i></p> <p>24/45298 . . . . Hooks formed solely from wire <i>(Frozen)</i></p> <p>24/45304 . . . . Noninserted portion of projection member includes movably connected gate for closing access throat <i>(Frozen)</i></p> <p>24/45309 . . . . Threaded gate <i>(Frozen)</i></p> <p>24/45314 . . . . Revolvably mounted disc shaped gate <i>(Frozen)</i></p> <p>24/45319 . . . . Pivotally connected gate <i>(Frozen)</i></p> <p>24/45325 . . . . Gate swings transversely to plane of hook <i>(Frozen)</i></p> <p>24/4533 . . . . Gate also slides relative to pivot <i>(Frozen)</i></p>
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**WARNING**

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

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

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

24/45277	. . . .	Entire projection member forms loop or ring
(Frozen)		when interlocked
24/45283	. . . .	Includes slidable gate closing entrance
(Frozen)		throat
24/45288	. . . .	Hook type projection member
(Frozen)		
24/45293	. . . .	Plural hooks entering opposite sides of
(Frozen)		same cavity
24/45298	. . . . .	Hooks formed solely from wire
(Frozen)		
24/45304	. . . . .	Noninserted portion of projection member
(Frozen)		includes movably connected gate for
		closing access throat
24/45309	. . . . .	Threaded gate
(Frozen)		
24/45314	. . . . .	Revolvably mounted disc shaped gate
(Frozen)		
24/45319	. . . . .	Pivotally connected gate
(Frozen)		
24/45325	. . . . .	Gate swings transversely to plane of
(Frozen)		hook
24/4533	. . . . .	Gate also slides relative to pivot
(Frozen)		

24/45335 . . . . .	having means biasing gate about pivot (Frozen)	24/45508 . . . . .	and spring or resilient extension biasing about pivot
24/4534 . . . . .	and position locking-means for gate (Frozen)	24/45513 . . . . .	including slidably guided connection between nonself-biasing projection components
24/45346 . . . . .	Includes distinct biasing spring (Frozen)	24/45518 . . . . .	and distinct spring biasing component
24/45351 . . . . .	Coil type spring (Frozen)	24/45524 . . . . .	including resiliently biased projection component or surface segment
24/45356 . . . . .	Coiled about pivotal axis of gate (Frozen)	24/45529 . . . . .	Requiring manual force applied against bias to interlock or disengage
24/45361 . . . . .	having position locking-means for gate (Frozen)	24/45534 . . . . .	having connected leading edge and separated trailing arms
24/45366 . . . . .	Locking-means pivotally connected (Frozen)	24/45539 . . . . .	Cooperating with cavity having side walls and axially biased component capping end
24/45372 . . . . .	Locking-means slidably mounted (Frozen)	24/45545 . . . . .	forming total external surface of projection
24/45377 . . . . .	Gate closes when structure-to-be- secured is tensioned (Frozen)	24/4555 . . . . .	and encircling hollow central area
24/45382 . . . . .	Track or way guided gate (Frozen)	24/45555 . . . . .	having separate mounting means inserted into area
24/45387 . . . . .	having means biasing gate (Frozen)	24/4556 . . . . .	Plastic deformation of means or surface required for mounting
24/45393 . . . . .	Guide of gate encircles shank (Frozen)	24/45565 . . . . .	having separate mounting means encompassing cross section of projection
24/45398 . . . . .	Cavity in shank forms track or way (Frozen)	24/45571 . . . . .	having dome-shaped head and expansion slit along side
24/45403 . . . . .	with position locking-means for gate (Frozen)	24/45576 . . . . .	and connected surface at tip of head
24/45408 . . . . .	Resilient, self-biased gate (Frozen)	24/45581 . . . . .	having inserted end formed by oppositely biased surface segments
24/45414 . . . . .	with position locking-means for gate (Frozen)	24/45586 . . . . .	Constructed from wire
24/45419 . . . . .	Gate and hook formed from plastic (Frozen)	24/45592 . . . . .	having both resiliently biased and rigid components forming external surface of projection
24/45424 . . . . .	Gate and hook formed solely from wire (Frozen)	24/45597 . . . . .	Projection member including noninserted spring for engaging and pushing against receiving member
24/45429 . . . . .	Gate and hook formed from single piece of sheet metal (Frozen)	24/45602 . . . . .	Receiving member includes either movable connection between interlocking components or variable configuration cavity
24/45435 . . . . .	Projection pivotally attached to shank or mounting structure (Frozen)	24/45607 . . . . .	with additional cavity for engaging different projection
24/4544 . . . . .	Projection slidably mounted to shank or mounting structure (Frozen)	24/45613 . . . . .	having common means actuating or releasing interlocking components or surfaces
24/45445 . . . . .	Projection self-biased towards shank or mounting structure (Frozen)	24/45618 . . . . .	and interlocking with independently associated or dissociated projection members
24/4545 . . . . .	and formed solely from wire (Frozen)	24/45623 . . . . .	and operator therefor
24/45455 . . . . .	Cooperating with relatively stationary wire gate (Frozen)	24/45628 . . . . .	for plural, oppositely shifting, similar interlocking components or segments
24/45461 . . . . .	Interlocking portion actuated or released responsive to preselected condition [e.g., heat, pressure]	24/45634 . . . . .	Operator includes camming or wedging element
24/45466 . . . . .	having electric or fluid powered, actuation or release, of interlock	24/45639 . . . . .	including pivotally connected element on receiving member
24/45471 . . . . .	Projection having movable connection between components thereof or variable configuration	24/45644 . . . . .	for shifting pivotally connected interlocking component
24/45476 . . . . .	with additional, similar projection for engaging different cavity	24/45649 . . . . .	Element and component pivot about same axis
24/45482 . . . . .	and operator therefor	24/45654 . . . . .	for shifting slidably connected and guided, nonself-biasing interlocking component
24/45487 . . . . .	including camming or wedging element on projection member	24/4566 . . . . .	including slidably connected and guided element on receiving member
24/45492 . . . . .	Pivotally attached element	24/45665 . . . . .	for shifting pivotally connected interlocking component
24/45497 . . . . .	including pivotal connection between projection components		
24/45503 . . . . .	Component slides relative to connection		

24/4567	. . . . .	for shifting slidably connected and guided, nonself-biasing, interlocking component	24/45848	. . . . .	having distinct sections engaging projection at spaced points
24/45675	. . . .	having pivotally connected interlocking component	24/45853	. . . . .	including separate, nonprojection-engaging spring for biasing
24/45681	. . . . .	Blocking removal of formation on projection from complementary formation on side wall of cavity	24/45859	. . . . .	Biased component or segment entirely formed from wire
24/45686	. . . . .	and position locking-means therefor	24/45864	. . . . .	having portion of cavity deformed during mounting
24/45691	. . . . .	and relatively movable handle therefor	24/45869	. . . . .	and cooperating with separate mounting component
24/45696	. . . . .	Requiring manual force thereon to interlock or disengage	24/45874	. . . . .	having axially extending expansion slit along side of cavity
24/45702	. . . . .	Plural, oppositely shifting, similar interlocking components	24/4588	. . .	Means for mounting projection or cavity portion
24/45707	. . . . .	having aperture therein alignable with parallel access opening	24/45885	. . . .	Allows bodily movement facilitating interlock
24/45712	. . . . .	having interlocking portion thereof housed continuously within cavity	24/4589	. . . . .	About pivotal connection
24/45717	. . . .	having cavity with side walls and axially biased component capping end	24/45895	. . . . .	Includes resilient component separate from portion
24/45723	. . . .	having slidably connected, nonself-biasing interlocking component	24/45901	. . . .	Allows relocation of portion
24/45728	. . . . .	Blocking removal of formation on projection from complementary formation on side wall of cavity	24/45906	. . . .	having component of means permanently deformed during mounting operation
24/45733	. . . . .	and position locking-means therefor	24/45911	. . . . .	and formed from or fixedly attached to projection or cavity portion
24/45738	. . . . .	and relatively movable handle therefor	24/45916	. . . . .	Cooperates with detached component of means
24/45743	. . . . .	Requiring manual force thereon to interlock or disengage	24/45921	. . . . .	having shape facilitating impaling of mounting surface
24/45749	. . . . .	Plural, oppositely shifting, similar interlocking components	24/45927	. . . . .	and inserted into or through cavity or projection
24/45754	. . . . .	having closed aperture therethrough alignable with parallel access opening	24/45932	. . . . .	and encircling cavity or projection
24/45759	. . . .	having flaccid component defining access opening of cavity	24/45937	. . . .	Consisting of thermally fusible substance
24/45764	. . . . .	Component formed solely by flaccid cord	24/45942	. . . .	having threaded formation
24/4577	. . . . .	with nonflaccid component	24/45948	. . . .	having specific structure for cooperating with stitching
24/45775	. . . .	having resiliently biased interlocking component or segment	24/45953	. . . .	having shape facilitating impaling of mounting surface
24/4578	. . . . .	Cavity or projection rotates about axis of cavity to dissociate	24/45958	. . .	Plural distinct cavities or projections
24/45785	. . . . .	Requiring manual force applied against bias to interlock or disengage	24/45963	. . . .	Hook type
24/45791	. . . . .	and partially blocking separate, nonresilient access opening of cavity	24/45969	. . .	Hook-shaped projection member passing through cavity
24/45796	. . . . .	and closed elongated access opening for guiding transverse projection travel after insertion	24/45974	. . . .	formed from single piece of sheet metal
24/45801	. . . . .	Nonresilient walls define opening	24/45979	. . . .	formed solely from wire
24/45806	. . . . .	formed from wire	24/45984	. . .	Cavity having specific shape
24/45812	. . . . .	and access opening with gapped perimeter for allowing movement of noninserted projection support therepast	24/4599	. . . .	including closed elongated access opening for guiding transverse projection travel after insertion
24/45817	. . . . .	Cavity constructed solely from wire	24/45995	. . . .	having access opening with gapped perimeter for allowing movement of noninserted projection support therepast
24/45822	. . . . .	Partially blocking separate, nonresilient, access opening of cavity	24/46	. .	Pin or separate essential cooperating device therefor
24/45827	. . . . .	and bodily shifted into or out of interlock location by manual force thereon	24/4602	. .	with separately operable, manually releasable, nonpenetrating means for mounting [e.g., drapery hook]
24/45832	. . . . .	formed from wire	24/4604	. .	having distinct guiding, holding, or protecting means for penetrated portion
24/45838	. . . . .	having curved or bent engaging section conforming to contour of projection	24/4605	. . .	Means detachable from or flaccidly connected to pin [e.g., hatpin type]
24/45843	. . . . .	Similar, distinct sections	24/4607	. . . .	for pin having plural penetrating portions
			24/4609	. . . .	including relatively movable guiding, holding, or protecting components or surfaces
			24/4611	. . . .	having operator for moving holding component or surface

- 24/4613 . . . . . Moves pivoting holding component
  - 24/4614 . . . . . Moves slidably guided, nonself-biasing, holding component
  - 24/4616 . . . . . having pierceable [e.g., cork] or naturally resilient [e.g., rubber] surfaces
  - 24/4618 . . . . . with pivotal connection therebetween
  - 24/462 . . . . . with slidable connection between nonself-biasing components
  - 24/4621 . . . . . having resiliently biased component or surface
  - 24/4623 . . . . . Coiled about longitudinal axis of held portion
  - 24/4625 . . . . . and aperture therein alignable with another spaced aperture of means
  - 24/4627 . . . . . and nonresilient structure for guiding portion thereto
  - 24/4629 . . . . . including structure for cooperating with formation [e.g., cavity] formed on penetrating portion
  - 24/463 . . . . . for pin having plural penetrating portions
  - 24/4632 . . . . . Each independently movable towards and into cooperation with means
  - 24/4634 . . . . . including relatively movable guiding, holding, or protecting components or surfaces
  - 24/4636 . . . . . with connection allowing component to revolve about axis of held penetrating portion
  - 24/4638 . . . . . with pivotal connection therebetween
  - 24/4639 . . . . . having position locking means therefor
  - 24/4641 . . . . . Spring or resiliently biased
  - 24/4643 . . . . . with slidable connection between nonself-biasing components
  - 24/4645 . . . . . Component slides parallel to axis of held penetrating portion
  - 24/4646 . . . . . Means engages formation formed on penetrating portion
  - 24/4648 . . . . . having nonresilient and resilient components
  - 24/465 . . . . . Means formed from single resilient wire
  - 24/4652 . . . . . Means formed from resilient sheet metal
  - 24/4654 . . . . . with independent, spaced, intermediate connections, or formations [e.g., coils], about which portion or means move
  - 24/4655 . . . . . Includes slidable connection
  - 24/4657 . . . . . with pivotal connection between penetrating portion and means
  - 24/4659 . . . . . Connection also permits sliding movement
  - 24/4661 . . . . . Resiliently biased about connection
  - 24/4663 . . . . . with slidable connection intermediate penetrating portion and means
  - 24/4664 . . . . . having resilient bridging structure between portion and means
  - 24/4666 . . . . . Means includes structure for cooperating with formation [e.g., cavity] formed on portion
  - 24/4668 . . . . . and penetrating portion formed from wire
  - 24/467 . . . . . Bridging structure includes elongated nonwire element
  - 24/4671 . . . . . Wire also forms coiled bridging structure about which portion moves
  - 24/4673 . . . . . including distinct device for cooperating with coil
  - 24/4675 . . . . . having means also formed from same wire
  - 24/4677 . . . . . with cavity for guiding structure-to-be-secured towards penetrating portion [e.g., stocking support]
  - 24/4679 . . . . . having penetrating portion retractable or of changeable length
  - 24/468 . . . . . having interconnected distinct penetrating portions
  - 24/4682 . . . . . Connection allows movement therebetween
  - 24/4684 . . . . . Slidable connection
  - 24/4686 . . . . . Resilient connection
  - 24/4688 . . . . . formed from common wire
  - 24/4689 . . . . . and pointing in same direction
  - 24/4691 . . . . . Penetrating portion includes relatively movable structure for resisting extraction
  - 24/4693 . . . . . having specific wire penetrating portion
  - 24/4695 . . . . . Wire curved or bent
  - 24/4696 . . . . . having distinct head structure
  - 24/4698 . . . . . Movably connected to penetrating portion
  - 24/47 . . . . . Strap-end-attaching devices
  - 24/4709 . . . . . Bendable sheet material
  - 24/4718 . . . . . Watch pintle connected
  - 24/4727 . . . . . Webbing to tube [lawn chair]
  - 24/4736 . . . . . Buckle connected
  - 24/4745 . . . . . End clasp
  - 24/4755 . . . . . Hook
  - 24/4764 . . . . . Ring-loop
- WARNING**
- Group [Y10T 24/4764](#) is impacted by reclassification into groups [F16B 45/00](#), [F16B 45/002](#), [F16B 45/005](#), [F16B 45/008](#), [F16B 45/012](#), [F16B 45/015](#), [F16B 45/02](#), [F16B 45/021](#), [F16B 45/022](#), [F16B 45/023](#), [F16B 45/024](#), [F16B 45/026](#), [F16B 45/027](#), [F16B 45/028](#), [F16B 45/029](#), [F16B 45/031](#), [F16B 45/032](#), [F16B 45/033](#), [F16B 45/034](#), [F16B 45/035](#), [F16B 45/036](#), [F16B 45/037](#), [F16B 45/04](#), [F16B 45/043](#), [F16B 45/045](#), [F16B 45/047](#), [F16B 45/049](#), [F16B 45/051](#), [F16B 45/053](#), [F16B 45/055](#), [F16B 45/057](#), [F16B 45/059](#) and [F16B 45/06](#).
- All groups listed in this Warning should be considered in order to perform a complete search.
- 24/4773 . . . . . Cargo tiedown
  - 24/4782 . . . . . Watch strap
  - 24/4791 . . . . . Enlarged end epoxy
  - 24/48 . . . . . Pivoted edge stays
  - 24/49 . . . . . Fastener destructively secured by reshaping distortion force [e.g., ductile fastener]
  - 24/492 . . . . . Distorted structure having shape facilitating impaling
  - 24/493 . . . . . and distinct fastener structure cooperating with impaled structure
  - 24/495 . . . . . Detached cooperating structure
  - 24/497 . . . . . including plural impaling elements
  - 24/498 . . . . . Elements form single aperture [e.g., split shank type]
  - 24/50 . . . . . Readily interlocking, two-part fastener requiring either destructive or tool disengagement
  - 24/505 . . . . . including additional fastener structure linking parts

- 24/51 . Hanger on portable article support for manual attachment thereof to overhead support [e.g., drapery hook]

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

- 29/10 . Battery-grid making  
 29/11 . Bias [i.e., helically] cutting of tubular stock  
 29/1106 . . including orbital cutter  
 29/1113 . . . within stock support  
 29/1119 . . . with orbiting strip accumulator  
 29/1125 . . including means to inflate stock  
 29/1131 . . with means to feed stock along support or mandrel  
 29/1138 . . . Single means produces compound motion  
 29/1144 . . . . Endless belt drive means  
 29/115 . . . Axially  
 29/1156 . . . Rotatably  
 29/1163 . . 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  
 29/481 . . Method  
 29/482 . . Tufting  
 29/483 . . . with means to clench fastener  
 29/484 . . . with means to insert guide pin or fastener  
 29/486 . . Cover stretching  
 29/487 . . Edge-roll forming  
 29/488 . . form or holder  
 29/489 . . . with follower  
 29/49 . Method of mechanical manufacture  
 29/49002 . . Electrical device making  
 29/49004 . . . including measuring or testing of device or component part  
 29/49005 . . . Acoustic transducer  
 29/49007 . . . Indicating transducer

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
29/49076 . . . .	From comminuted material	29/49169 . . . .	Assembling electrical component directly to terminal or elongated conductor
29/49078 . . . .	Laminated	29/49171 . . . .	with encapsulating
29/4908 . . . .	Acoustic transducer	29/49172 . . . .	by molding of insulating material
29/49082 . . . .	Resistor making	29/49174 . . . .	Assembling terminal to elongated conductor
29/49083 . . . .	Heater type	29/49176 . . . .	with molding of electrically insulating material
29/49085 . . . .	Thermally variable	29/49178 . . . .	by shrinking of cover
29/49087 . . . .	with envelope or housing	29/49179 . . . .	by metal fusion bonding
29/49089 . . . .	Filling with powdered insulation	29/49181 . . . .	by deforming
29/49091 . . . .	with direct compression of powdered insulation	29/49183 . . . .	of ferrule about conductor and terminal
29/49092 . . . .	Powdering the insulation	29/49185 . . . .	of terminal
29/49094 . . . .	by oxidation	29/49187 . . . .	with forming eyelet from elongated conductor
29/49096 . . . .	with winding	29/49188 . . . .	with penetrating portion
29/49098 . . . .	Applying terminal	29/4919 . . . .	Through insulation
29/49099 . . . .	Coating resistive material on a base		

29/49192 . . . . .	with insulation removal	29/49288 . . .	Connecting rod making
29/49194 . . . .	Assembling elongated conductors, e.g., splicing, etc.	29/4929 . . . .	including metallurgical bonding
29/49195 . . . . .	with end-to-end orienting	29/49291 . . . .	including metal forging or die shaping
29/49197 . . . . .	including fluid evacuating or pressurizing	29/49293 . . .	Camshaft making
29/49199 . . . . .	including deforming of joining bridge	29/49295 . . .	Push rod or rocker arm making
29/49201 . . . . .	with overlapping orienting	29/49297 . . .	Seal or packing making
29/49202 . . . . .	including oppositely facing end orienting	29/49298 . . .	Poppet or I.C. engine valve or valve seat making
29/49204 . . . .	Contact or terminal manufacturing	29/493 . . . .	Valve guide making
29/49206 . . . . .	by powder metallurgy	29/49302 . . . .	Repairing, converting, servicing or salvaging
29/49208 . . . . .	by assembling plural parts	29/49304 . . . .	Valve tappet making
29/4921 . . . . .	with bonding	29/49306 . . . .	Valve seat making
29/49211 . . . . .	of fused material	29/49307 . . . .	Composite or hollow valve stem or head making
29/49213 . . . . .	Metal	29/49309 . . . . .	including forging
29/49215 . . . . .	by impregnating a porous mass	29/49311 . . . . .	including extruding
29/49217 . . . . .	by elastic joining	29/49313 . . . . .	including casting
29/49218 . . . . .	with deforming	29/49314 . . . .	with assembly or composite article making
29/4922 . . . . .	with molding of insulation	29/49316 . .	Impeller making
29/49222 . . . . .	forming array of contacts or terminals	29/49318 . . .	Repairing or disassembling
29/49224 . . . . .	with coating	29/4932 . . . .	Turbomachine making
29/49226 . . .	Electret making	29/49321 . . . .	Assembling individual fluid flow interacting members, e.g., blades, vanes, buckets, on rotary support member
29/49227 . . .	Insulator making	29/49323 . . . .	Assembling fluid flow directing devices, e.g., stators, diaphragms, nozzles
29/49229 . .	Prime mover or fluid pump making	29/49325 . . . .	Shaping integrally bladed rotor
29/49231 . . .	I.C. [internal combustion] engine making	29/49327 . . .	Axial blower or fan
29/49233 . . . .	Repairing, converting, servicing or salvaging	29/49329 . . .	Centrifugal blower or fan
29/49234 . . . .	Rotary or radial engine making	29/4933 . . . .	Fluid coupling device
29/49236 . . .	Fluid pump or compressor making	29/49332 . . .	Propeller making
29/49238 . . . .	Repairing, converting, servicing or salvaging	29/49334 . . . .	Utilizing hollow tube blank
29/4924 . . . .	Scroll or peristaltic type	29/49336 . . .	Blade making
29/49242 . . . .	Screw or gear type, e.g., Moineau type	29/49337 . . . .	Composite blade
29/49243 . . . .	Centrifugal type	29/49339 . . . .	Hollow blade
29/49245 . . . .	Vane type or other rotary, e.g., fan	29/49341 . . . . .	with cooling passage
29/49247 . . .	Valve lifter making	29/49343 . . . . .	Passage contains tubular insert
29/49249 . . .	Piston making	29/49345 . .	Catalytic device making
29/4925 . . . .	Repairing, converting, servicing or salvaging	29/49346 . .	Rocket or jet device making
29/49252 . . . .	Multi-element piston making	29/49348 . .	Burner, torch or metallurgical lance making
29/49254 . . . . .	Utilizing a high energy beam, e.g., laser, electron beam	29/4935 . .	Heat exchanger or boiler making
29/49256 . . . .	with assembly or composite article making	29/49352 . . .	Repairing, converting, servicing or salvaging
29/49258 . . . . .	with thermal barrier or heat flow provision	29/49353 . . .	Heat pipe device making
29/49259 . . . . .	with fiber reinforced structure	29/49355 . . .	Solar energy device making
29/49261 . . . . .	by composite casting or molding	29/49357 . . .	Regenerator or recuperator making
29/49263 . . . . .	by coating or cladding	29/49359 . . .	Cooling apparatus making, e.g., air conditioner, refrigerator
29/49265 . . . .	Ring groove forming or finishing	29/49361 . . .	Tube inside tube
29/49266 . . . .	Gudgeon pin, wrist pin, piston pin, or boss therefor	29/49362 . . .	Tube wound about tube
29/49268 . . . .	with other attaching provision for connecting rod	29/49364 . . .	Tube joined to flat sheet longitudinally, i.e., tube sheet
29/4927 . . .	Cylinder, cylinder head or engine valve sleeve making	29/49366 . . .	Sheet joined to sheet
29/49272 . . . .	with liner, coating, or sleeve	29/49368 . . . .	with inserted tubes
29/49274 . . .	Piston ring or piston packing making	29/49369 . . . .	Utilizing bond inhibiting material
29/49275 . . . .	including forging or hammering	29/49371 . . . . .	with subsequent fluid expansion
29/49277 . . . .	including casting or molding	29/49373 . . .	Tube joint and tube plate structure
29/49279 . . . .	including rolling or die forming, e.g., drawing, punching	29/49375 . . . .	including conduit expansion or inflation
29/49281 . . . .	including coating or plating	29/49377 . . .	Tube with heat transfer means
29/49282 . . . .	including grinding or honing	29/49378 . . . .	Finned tube
29/49284 . . . .	including machining or angular cutting	29/4938 . . . . .	Common fin traverses plurality of tubes
29/49286 . . .	Crankshaft making	29/49382 . . . . .	Helically finned
		29/49384 . . . . .	Internally finned

29/49385 . . . . .	Made from unitary workpiece, i.e., no assembly	29/49487 . . . . .	with axle or hub
29/49387 . . .	Boiler making	29/49488 . . .	Steering wheel
29/49389 . . .	Header or manifold making	29/4949 . . .	Material winding, e.g., reel, spool
29/49391 . . .	Tube making or reforming	29/49492 . . .	Land wheel
29/49393 . . .	with metallurgical bonding	29/49494 . . . . .	Assembling tire to wheel body
29/49394 . . .	Accumulator making	29/49496 . . . . .	Disc type wheel
29/49396 . . .	Condenser, evaporator or vaporizer making	29/49497 . . . . .	Assembling wheel disc to rim and hub
29/49398 . . .	Muffler, manifold or exhaust pipe making	29/49499 . . . . .	Assembling wheel disc to rim
29/494 . . .	Fluidic or fluid actuated device making	29/49501 . . . . .	with disc shaping
29/49401 . . .	Fluid pattern dispersing device making, e.g., ink jet	29/49503 . . . . .	Integral rim and disc making
29/49403 . . .	Tapping device making	29/49504 . . . . .	Disc shaping
29/49405 . . .	Valve or choke making	29/49506 . . . . .	Tensioned spoke type wheel making
29/49407 . . .	Repairing, converting, servicing or salvaging	29/49508 . . . . .	Tensioning all spokes simultaneously
29/49409 . . .	Valve seat forming	29/4951 . . . . .	Tensioning spokes in series
29/4941 . . .	Valve stem or tire valve making	29/49512 . . . . .	Tensioning spokes individually
29/49412 . . .	with assembly, disassembly or composite article making	29/49513 . . . . .	Compression, e.g., nontension, spoke type wheel making
29/49414 . . . . .	Joining plural semi-circular components	29/49515 . . . . .	Joining spokes to rim and hub
29/49416 . . . . .	with material shaping or cutting	29/49517 . . . . .	Joining spokes to rim
29/49417 . . . . .	including molding or casting	29/49519 . . . . .	Joining spokes to hub
29/49419 . . . . .	including machining or drilling	29/4952 . . . . .	Making plural spokes from a single blank
29/49421 . . . . .	including metallurgical bonding	29/49522 . . . . .	Individual spoke making
29/49423 . . . . .	including metal deforming	29/49524 . . . . .	Rim making
29/49425 . . . . .	including metallurgical bonding	29/49526 . . . . .	with assembling
29/49426 . . .	including metal shaping and diverse operation	29/49528 . . . . .	Demountable rim making
29/49428 . . .	Gas and water specific plumbing component making	29/49529 . . . . .	Die-press shaping
29/4943 . . .	Plumbing fixture making	29/49531 . . . . .	Roller forming
29/49432 . . .	Nozzle making	29/49533 . . . . .	Hub making
29/49433 . . . . .	Sprayer	29/49535 . . . . .	with assembling
29/49435 . . .	Flexible conduit or fitting therefor	29/49536 . . . . .	Hub shaping
29/49437 . . .	Flue connector device making	29/49538 . . . . .	Tire making
29/49439 . . .	Trap making	29/4954 . . . . .	Wheel trim making, e.g., wheel cover, hubcap
29/4944 . . .	Return connector device making	29/49542 . . . . .	with means for retaining trim member on wheel
29/49442 . . .	T-shaped fitting making	29/49544 . . .	Roller making
29/49444 . . .	Elbow or L-shaped fitting making	29/49545 . . .	Repairing or servicing
29/49446 . . .	Ferrule making or reforming	29/49547 . . .	Assembling preformed components
29/49448 . . .	Agricultural device making	29/49549 . . . . .	Work contacting surface element assembled to core
29/49449 . . .	Traction apparatus, e.g., for tractor	29/49551 . . . . .	Work contacting surface wound about core
29/49451 . . .	Harvester guard	29/49552 . . . . .	with prestressing of component by heat differential, e.g., shrink, fit
29/49453 . . .	Pulley making	29/49554 . . . . .	Work contacting surface having annular axial sections
29/49455 . . .	Assembly	29/49556 . . . . .	Work contacting surface element assembled to end support members
29/49456 . . . . .	with shaping	29/49558 . . . . .	Includes securing removable cover on roller
29/49458 . . .	Disc splitting to form pulley rim groove	29/4956 . . . . .	Fabricating and shaping roller work contacting surface element
29/4946 . . .	Groove forming in sheet metal pulley rim	29/49561 . . . . .	toothed roller
29/49462 . . .	Gear making	29/49563 . . . . .	with coating or casting about a core
29/49464 . . .	Assembling of gear into force transmitting device	29/49565 . . .	One-piece roller making
29/49465 . . .	Gear mounting	29/49567 . . .	Dental appliance making
29/49467 . . .	Gear shaping	29/49568 . . .	Orthodontic device making
29/49469 . . . . .	Worm gear	29/4957 . . .	Sound device making
29/49471 . . . . .	Roll forming	29/49572 . . .	Hearing aid component making
29/49472 . . . . .	Punching or stamping	29/49574 . . .	Musical instrument or tuning fork making
29/49474 . . . . .	Die-press shaping	29/49575 . . .	including diaphragm or support therefor
29/49476 . . . . .	Gear tooth cutting	29/49577 . . .	Phonograph component making
29/49478 . . . . .	Gear blank making	29/49579 . . .	Watch or clock making
29/4948 . . . . .	with specific gear material	29/49581 . . .	having arbor, pinion, or balance
29/49481 . . .	Wheel making		
29/49483 . . .	Railway or trolley wheel making		
29/49485 . . . . .	Multiple part or composite		

29/49583 . . . having indicia, face, or dial	29/49682 . . . . . Assembling of race and rolling anti-friction members
29/49584 . . . having case, cover, or back	29/49684 . . . . . with race making
29/49586 . . . having crown, stem, or pendent	29/49686 . . . . . Assembling of cage and rolling anti-friction members
29/49588 . . Jewelry or locket making	29/49687 . . . . . with cage making
29/4959 . . . Human adornment device making	29/49689 . . . . . Race making
29/49591 . . . . Bracelet making	29/49691 . . . . . Cage making
29/49593 . . . . Finger ring making	29/49693 . . . . . Roller making
29/49595 . . . Latch, clasp, or fastener component making	29/49694 . . . . . Ball making
29/49597 . . . Ornamental stock making	29/49696 . . . Mounting
29/49599 . . Knob or knob shank making	29/49698 . . . Demounting
29/496 . . Multiperforated metal article making	29/497 . . . Pre-usage process, e.g., preloading, aligning
29/49602 . . . Coil wound wall screen	29/49702 . . . Lubricating
29/49604 . . . Filter	29/49703 . . . Sealing
29/49606 . . Turnbuckle making	29/49705 . . . Coating or casting
29/49607 . . Spring-head clip making	29/49707 . . . Bearing surface treatment
29/49609 . . Spring making	29/49709 . . . Specific metallic composition
29/49611 . . . for vehicle or clutch	29/4971 . . . Nonmetallic bearing element
29/49613 . . . for human comfort	29/49712 . . Ball making
29/49615 . . . Resilient shock or vibration absorber utility	29/49714 . . . Hollow ball
29/49616 . . Structural member making	29/49716 . . Converting
29/49618 . . . Restoring existing member, e.g., reinforcing, repairing	29/49718 . . Repairing
29/4962 . . . Grille making	29/49719 . . . Seal or element thereof
29/49622 . . . Vehicular structural member making	29/49721 . . . with disassembling
29/49623 . . . Static structure, e.g., a building component	29/49723 . . . . including reconditioning of part
29/49625 . . . . Openwork, e.g., a truss, joist, frame, lattice-type or box beam	29/49725 . . . . . by shaping
29/49627 . . . . . Frame component	29/49726 . . . . . Removing material
29/49629 . . . . Panel	29/49728 . . . . . and by a metallurgical operation, e.g., welding, diffusion bonding, casting
29/49631 . . . . Columnar member	29/4973 . . . . Replacing of defective part
29/49632 . . . . Metal reinforcement member for nonmetallic, e.g., concrete, structural element	29/49732 . . . by attaching repair preform, e.g., remaking, restoring, or patching
29/49634 . . . . Beam or girder	29/49734 . . . . and removing damaged material
29/49636 . . Process for making bearing or component thereof	29/49735 . . . . . Mechanically attaching preform with separate fastener
29/49638 . . . Repairing	29/49737 . . . . . Metallurgically attaching preform
29/49639 . . . Fluid bearing	29/49739 . . . . . Mechanically attaching preform by separate fastener
29/49641 . . . Linear bearing	29/49741 . . . . . Screw threaded fastener
29/49643 . . . Rotary bearing	29/49742 . . . . Metallurgically attaching preform
29/49645 . . . . Thrust bearing	29/49744 . . . . Screw threaded preform
29/49647 . . . . Plain bearing	29/49746 . . . by applying fluent material, e.g., coating, casting
29/49648 . . . . . Self-adjusting or self-aligning, including ball and socket type, bearing and component making	29/49748 . . . by shaping, e.g., bending, extruding, turning, etc.
29/4965 . . . . . Deforming socket to secure ball	29/4975 . . . . including heating
29/49652 . . . . . Die-press shaping	29/49751 . . Scrap recovering or utilizing
29/49654 . . . . . having liner	29/49753 . . . Metalworking to consolidate scrap
29/49655 . . . . . having liner	29/49755 . . . Separating one material from another
29/49657 . . . . . Socket making	29/49757 . . . . by burning or heating
29/49659 . . . . . by molding or casting	29/49758 . . During simulated operation or operating conditions
29/49661 . . . . . Nonmetallic socket	29/4976 . . . Temperature
29/49663 . . . . . by assembling	29/49762 . . Center locating and shaping
29/49664 . . . . . Ball making	29/49764 . . with testing or indicating
29/49666 . . . . . with metallurgical bonding	29/49766 . . . torquing threaded assemblage or determining torque herein
29/49668 . . . . . Sleeve or bushing making	29/49767 . . . . Determining relative number of threaded member rotations
29/4967 . . . . . Nonmetallic	29/49769 . . . Using optical instrument [excludes mere human eyeballing]
29/49671 . . . . . Strip or blank material shaping	
29/49673 . . . . . Die-press shaping	
29/49675 . . . . . having inner lining layer	
29/49677 . . . . . having liner	
29/49679 . . . . Anti-friction bearing or component thereof	
29/4968 . . . . . Assembling of race, cage, and rolling anti-friction members	

29/49771 . . . Quantitative measuring or gauging	29/49856 . . . . . Allowing assembled sphere to move in single plane only
29/49773 . . . . by radioactive tracing	29/49858 . . . . . of flange into tubular socket
29/49774 . . . . by vibratory or oscillatory movement	29/4986 . . . . . Outwardly deforming internally fitted rod
29/49776 . . . . Pressure, force, or weight determining	29/49861 . . . Sizing mating parts during final positional association
29/49778 . . . with aligning, guiding, or instruction	29/49863 . . . with prestressing of part
29/4978 . . . . Assisting assembly or disassembly	29/49865 . . . . by temperature differential [e.g., shrink fit]
29/49782 . . of a slide fastener	29/49867 . . . . of skin on frame member
29/49783 . . . of slider	29/49869 . . . . . by flexing
29/49785 . . . of interlocking element	29/4987 . . . . Elastic joining of parts
29/49787 . . Obtaining plural composite product pieces from preassembled workpieces	29/49872 . . . . . Confining elastic part in socket
29/49789 . . Obtaining plural product pieces from unitary workpiece	29/49874 . . . . Prestressing rod, filament or strand
29/4979 . . . Breaking through weakened portion	29/49876 . . . . by snap fit
29/49792 . . . Dividing through modified portion	29/49877 . . . of flexible wall, expansible chamber devices [e.g., bellows]
29/49794 . . . Dividing on common outline	29/49879 . . . Spaced wall tube or receptacle
29/49796 . . . Coacting pieces	29/49881 . . . of separate helix [e.g., screw thread]
29/49798 . . . Dividing sequentially from leading end, e.g., by cutting or breaking	29/49883 . . . Ribbing
29/49799 . . Providing transitory integral holding or handling portion	29/49885 . . . with coating before or during assembling
29/49801 . . Shaping fiber or fibered material	29/49886 . . . . to roughen surface
29/49803 . . Magnetically shaping	29/49888 . . . Subsequently coating
29/49805 . . Shaping by direct application of fluent pressure	29/4989 . . . with spreading of cable strands
29/49806 . . . Explosively shaping	29/49892 . . . Joining plate edge perpendicularly to frame
29/49808 . . Shaping container end to encapsulate material	29/49893 . . . Peripheral joining of opposed mirror image parts to form a hollow body
29/4981 . . Utilizing transitory attached element or associated separate material	29/49895 . . . Associating parts by use of aligning means [e.g., use of a drift pin or a "fixture"]
29/49812 . . . Temporary protective coating, impregnation, or cast layer	29/49897 . . . . Registering mating opposed tool parts [e.g., registering a punch and a cooperating die]
29/49813 . . Shaping mating parts for reassembly in different positions	29/49899 . . . . by multiple cooperating aligning means
29/49815 . . Disassembling	29/49901 . . . . Sequentially associating parts on stationary aligning means
29/49817 . . . with other than ancillary treating or assembling	29/49902 . . . . by manipulating aligning means
29/49819 . . . with conveying of work or disassembled work part	29/49904 . . . Assembling a subassembly, then assembling with a second subassembly
29/49821 . . . by altering or destroying work part or connector	29/49906 . . . Metal deforming with nonmetallic bonding
29/49822 . . . by applying force	29/49908 . . . Joining by deforming
29/49824 . . . . to elastically deform work part or connector	29/49909 . . . . Securing cup or tube between axially extending concentric annuli
29/49826 . . Assembling or joining	29/49911 . . . . . by expanding inner annulus
29/49828 . . . Progressively advancing of work assembly station or assembled portion of work	29/49913 . . . . . by constricting outer annulus
29/49829 . . . . Advancing work to successive stations [i.e., assembly line]	29/49915 . . . . Overedge assembling of seated part
29/49831 . . . . Advancing station	29/49917 . . . . . by necking in cup or tube wall
29/49833 . . . Punching, piercing or reaming part by surface of second part	29/49918 . . . . . At cup or tube end
29/49835 . . . . with shaping	29/4992 . . . . . by flaring inserted cup or tube end
29/49837 . . . . . of first part	29/49922 . . . . . by bending over projecting prongs
29/49838 . . . by stringing	29/49924 . . . . of parallel side-by-side elongated members
29/4984 . . . Retaining clearance for motion between assembled parts	29/49925 . . . . Inward deformation of aperture or hollow body wall
29/49842 . . . . Between tube-forming helical coils	29/49927 . . . . . Hollow body is axially joined cup or tube
29/49844 . . . . Through resilient media	29/49929 . . . . . Joined to rod
29/49845 . . . . by deforming interlock	29/49931 . . . . . Joined to overlapping ends of plural rods
29/49847 . . . . . by folding part into plural ears	29/49933 . . . . . After thinning
29/49849 . . . . . by wrapping around	29/49934 . . . . . by axially applying force
29/49851 . . . . . of link closure	29/49936 . . . . Surface interlocking
29/49853 . . . . . of sphere, i.e., ball, in socket	29/49938 . . . . Radially expanding part in cavity, aperture, or hollow body
29/49854 . . . . . Ball point pen making	29/4994 . . . . . Radially expanding internal tube
	29/49941 . . . . . Peripheral edge joining of abutting plates
	29/49943 . . . . . Riveting

29/49945	. . . by driven force fit	29/5126	. . . . Swiss type
29/49947	. . . by applying separate fastener	29/5127	. . . Blank turret
29/49948	. . . . Multipart cooperating fastener [e.g., bolt and nut]	29/5128	. . . . Rotary work - vertical axis
29/4995	. . . . . Nonthreaded	29/5129	. . . . Rotary work - horizontal axis
29/49952	. . . . . At least one part is nonmetallic	29/513	. . . . Stationary work
29/49954	. . . . Fastener deformed after application	29/5132	. . . . Belt drive
29/49956	. . . . . Riveting	29/5133	. . . . Crankshaft
29/49957	. . . . . At least one part nonmetallic	29/5134	. . . . Collapsible tube
29/49959	. . . . . Nonresilient fastener	29/5135	. . . Endless belt
29/49961	. . . . . At least one part nonmetallic	29/5136	. . Separate tool stations for selective or successive operation on work
29/49963	. . . . Threaded fastener	29/5137	. . . including assembling or disassembling station
29/49964	. . . . . At least one part nonmetallic	29/5138	. . . . and means to machine work part to fit cooperating work part
29/49966	. . . . with supplemental joining	29/5139	. . . . and means to sever work prior to disassembling
29/49968	. . . . . Metal fusion joining	29/514	. . . . . comprising means to strip insulation from wire
29/4997	. . . . . At least one part nonmetallic	29/5141	. . . . . and means to stake electric wire to commutator or armature in assembling of electric motor or generator
29/49972	. . with separating, localizing, or eliminating of as-cast defects from a metal casting [e.g., anti-pipe]	29/5142	. . . . . and means to sever work from supply
29/49973	. . . Compressing ingot while still partially molten	29/5143	. . . . . and means to machine product
29/49975	. . . Removing defects	29/5145	. . . . . to sever product to length
29/49977	. . . . From center of ingot to leave hollow blank	29/5146	. . Common reciprocating support for spaced tools
29/49979	. . . . After deforming	29/5147	. . including composite tool
29/4998	. . Combined manufacture including applying or shaping of fluent material	29/5148	. . . including severing means
29/49982	. . . Coating	29/5149	. . . . to sever electric terminal from supply strip
29/49984	. . . . and casting	29/515	. . . . to trim electric component
29/49986	. . . . Subsequent to metal working	29/5151	. . . . . Means comprising hand-manipulatable implement
29/49988	. . . Metal casting	29/5152	. . with turret mechanism
29/49989	. . . . Followed by cutting or removing material	29/5153	. . . Multiple turret
29/49991	. . . . Combined with rolling	29/5154	. . . tool turret
29/49993	. . . Filling of opening	29/5155	. . . . Rotary tool holder
29/49995	. . Shaping one-piece blank by removing material	29/5157	. . . . Sliding tool holder
29/49996	. . . Successive distinct removal operations	29/5158	. . . . Fluid operated
29/49998	. . Work holding	29/5159	. . . . Cam operated
29/50	. Convertible metal working machine	29/516	. . . . . Longitudinal turret axis
29/505	. . Vise type	29/5161	. . . . . Transverse turret axis
29/51	. Plural diverse manufacturing apparatus including means for metal shaping or assembling	29/5162	. . . . . Lever operated
29/5101	. . Slide fastener or slide fastener element	29/5163	. . . . . Rack-and-pinion operated
29/5102	. . Binding or covering and cutting	29/5164	. . . . . Screw operated
29/5103	. . . Cutting covering material only	29/5165	. . . including rotating and/or locking means
29/5104	. . Type of machine	29/5166	. . . . Frictional and positive
29/5105	. . . Drill press	29/5167	. . . . Lock means for tool or work turrets
29/5107	. . . . Drilling and other	29/5168	. . Multiple-tool holder
29/5108	. . . . Portable	29/517	. . . Laterally movable stock holder
29/5109	. . . Lathe	29/5171	. . . Axial tool and transversely movable slide rest
29/511	. . . . Grinding attachment	29/5172	. . . . Rotary tool spindle
29/5111	. . . . Pulley or wheel	29/5173	. . . Longitudinally and transversely movable
29/5112	. . . . Convertible	29/5174	. . . . Rotary tool spindle
29/5113	. . . . Commutator	29/5175	. . . Oscillating tool
29/5114	. . . . Lathe and tool	29/5176	. . including machining means
29/5115	. . . Planer	29/5177	. . . and work-holder for assembly
29/5116	. . forging and bending, cutting or punching	29/5178	. . Attachment
29/5117	. . . Fastener [zipper]	29/5179	. . Speed controller
29/5118	. . . Riveting	29/518	. . Carriage stop mechanism
29/512	. . . Ball making	29/5182	. . Flash remover
29/5121	. . . Wire working	29/5183	. . Welding strip ends
29/5122	. . with means to feed work during tool contact	29/5184	. . Casting and working
29/5123	. . . including nonrotary flying tool	29/5185	. . Tube making
29/5124	. . with means to feed work intermittently from one tool station to another		
29/5125	. . . Stock turret		

29/5186	. .	Covering	29/53161	. . . .	including deforming means
29/5187	. .	Wire working	29/53165	. . .	Magnetic memory device
29/5188	. .	Radiator making	29/5317	. . .	Laminated device
29/5189	. .	Printing plate	29/53174	. . .	Means to fasten electrical component to wiring board, base, or substrate
29/519	. .	Turret	29/53178	. . . .	Chip component
29/5191	. .	Assembly	29/53183	. . . .	Multilead component
29/5192	. .	Armature	29/53187	. . .	Multiple station assembly apparatus
29/5193	. .	Electrical connector or terminal	29/53191	. . .	Means to apply vacuum directly to position or hold work part
29/5195	. .	Tire valve or spark plug	29/53196	. . .	Means to apply magnetic force directly to position or hold work part
29/5196	. .	Multiple station with conveyor	29/532	. . .	Conductor
29/5197	. .	Multiple stations working strip material	29/53204	. . . .	Electrode
29/5198	. .	Continuous strip	29/53209	. . . .	Terminal or connector
29/5199	. .	Work on tubes	29/53213	. . . . .	Assembled to wire-type conductor
29/52	. .	Plural diverse manufacturing apparatus	29/53217	. . . . .	Means to simultaneously assemble multiple, independent conductors to terminal
29/53	. .	Means to assemble or disassemble	29/53222	. . . . .	Means comprising hand-manipulatable implement
29/53004	. .	with means to regulate operation by use of templet, tape, card or other replaceable information supply	29/53226	. . . . .	Fastening by deformation
29/53009	. . .	with comparator	29/5323	. . . . .	Fastening by elastic joining
29/53013	. . . .	Computer input	29/53235	. . . . .	Means to fasten by deformation
29/53017	. . .	Web or strand-carried information supply	29/53239	. . . . .	Means to fasten by elastic joining
29/53022	. .	with means to test work or product	29/53243	. . . .	Multiple, independent conductors
29/53026	. .	with randomly actuated stopping or disabling means	29/53248	. . . .	Switch or fuse
29/5303	. . .	Responsive to condition of work or product	29/53252	. . .	Means to simultaneously fasten three or more parts
29/53035	. . .	Responsive to operative [e.g., safety device, etc.]	29/53257	. . .	Means comprising hand-manipulatable implement
29/53039	. .	with control means energized in response to activator stimulated by condition sensor	29/53261	. . .	Means to align and advance work part
29/53043	. . .	including means to divert defective work part	29/53265	. . .	with work-holder for assembly
29/53048	. . .	Multiple station assembly or disassembly apparatus	29/5327	. . .	Means to fasten by deforming
29/53052	. . . .	including position sensor	29/53274	. .	Means to disassemble electrical device
29/53057	. . .	Responsive to timer	29/53278	. . .	Storage cell or battery
29/53061	. . .	Responsive to work or work-related machine element	29/53283	. . .	Means comprising hand-manipulatable implement
29/53065	. . . .	with means to fasten by deformation	29/53287	. .	Means to place traveler on ring or ring on bobbin of a textile machine
29/5307	. . . . .	Self-piercing work part	29/53291	. .	Slide fastener
29/53074	. . . .	with means to fasten by elastic joining	29/53296	. . .	Means to assemble stop onto stringer
29/53078	. . . .	with means to fasten by frictional fitting	29/533	. . .	Means to assemble slider onto stringer
29/53083	. . . .	including means to apply magnetic force directly to position or hold work	29/53304	. . .	Means to assemble teeth onto stringer
29/53087	. .	with signal, scale, illuminator, or optical viewer	29/53309	. . .	Disassembly means
29/53091	. . .	for work-holder for assembly or disassembly	29/53313	. .	Means to interrelatedly feed plural work parts from plural sources without manual intervention
29/53096	. .	including means to provide a controlled environment	29/53317	. . .	Box or pallet assembly means
29/531	. .	Nuclear device	29/53322	. . .	Means to assemble container
29/53104	. .	Roller or ball bearing	29/53326	. . . .	Handle to container
29/53109	. . .	including deforming means	29/5333	. . . .	Label to container
29/53113	. .	Heat exchanger	29/53335	. . . .	Pressurized dispensing container
29/53117	. . .	including means to manipulate heat exchanger tube bundle	29/53339	. . . .	Hypodermic syringe
29/53122	. . .	including deforming means	29/53343	. . . .	including fluid component
29/53126	. .	Means to place sheath on running-length core	29/53348	. . .	Running-length work
29/5313	. .	Means to assemble electrical device	29/53352	. . . .	Means including orbiting running-length work supply
29/53135	. . .	Storage cell or battery	29/53357	. . . .	Pipe section
29/53139	. . . .	including deforming means	29/53361	. . . .	Assembled to article
29/53143	. . .	Motor or generator	29/53365	. . .	Multiple station assembly apparatus
29/53148	. . . .	Means to assemble commutator	29/5337	. . .	including assembly pallet
29/53152	. . . .	Means to position insulation	29/53374	. . .	including turret-type conveyor
29/53157	. . . .	Means to stake wire to commutator or armature			

29/53378 . . . including converging conveyors	29/53626 . . . Flat spiral spring [e.g., watch or clock type]
29/53383 . . . and means to fasten work parts together	29/5363 . . . Circular spring
29/53387 . . . . by deforming	29/53635 . . . Leaf spring
29/53391 . . . . by elastic joining	29/53639 . . Means to stake watch or clock
29/53396 . . . . by friction fit	29/53643 . . . Plier type
29/534 . . Multiple station assembly or disassembly apparatus	29/53648 . . Brake lining to brake shoe
29/53404 . . . including turret-type conveyor	29/53652 . . Tube and coextensive core
29/53409 . . . including converging conveyors	29/53657 . . to apply or remove a resilient article [e.g., tube, sleeve, etc.]
29/53413 . . . . and primary central conveyor	29/53661 . . . Nipple to nursing bottle
29/53417 . . . Means to fasten work parts together	29/53665 . . . Well protector to sucker rod
29/53422 . . . . by deforming	29/5367 . . Coupling to conduit
29/53426 . . . . by elastic joining	29/53674 . . Loose-leaf sheet binder
29/5343 . . Means to drive self-piercing work part	29/53678 . . Compressing parts together face to face
29/53435 . . including assembly pallet	29/53683 . . Spreading parts apart or separating them from face to face engagement
29/53439 . . including provision to utilize thermal expansion of work	29/53687 . . by rotation of work part
29/53443 . . Means to assemble or disassemble container and fluid component	29/53691 . . . Means to insert or remove helix
29/53448 . . Vehicle wheel	29/53696 . . Means to string
29/53452 . . . Railway wheel	29/537 . . tool handle and tool
29/53457 . . Tumbler lock	29/53704 . . tool chuck and tool
29/53461 . . toy doll	29/53709 . . Overedge assembling means
29/53465 . . Film or tape cartridge	29/53713 . . . Belt-hook attacher
29/5347 . . Crystal to watch or clock	29/53717 . . . Annular work
29/53474 . . Means to insert or extract pen point	29/53722 . . . . with radially acting tool inside annular work
29/53478 . . with magazine supply	29/53726 . . . . with second workpiece inside annular work one workpiece moved to shape the other
29/53483 . . . and magnetic work-holder or positioner	29/5373 . . . . comprising driver for snap-off-mandrel fastener; e.g., Pop [TM] riveter
29/53487 . . . Assembling means comprising hand-manipulatable implement	29/53735 . . . . . including near side fastener shaping tool
29/53491 . . . . One work part comprising living tissue	29/53739 . . . . . Pneumatic- or fluid-actuated tool
29/53496 . . . . comprising driver for snap-off-mandrel fastener; e.g., Pop [TM] riveter	29/53743 . . . . . Liquid
29/535 . . . . One work part comprising nut or screw	29/53748 . . . . . and gas
29/53504 . . . . One work part comprising paper clip	29/53752 . . . . . having rotary drive mechanism
29/53509 . . . . Means to assemble tire stud into tire tread	29/53757 . . . . . having allochiral actuating handles
29/53513 . . . . Means to fasten by deforming	29/53761 . . . . . having repositionable annulus engaging tool
29/53517 . . . . . Fastening sinker to fishing line	29/53765 . . . . . including near side fastener shaping tool
29/53522 . . . Means to fasten by deforming	29/5377 . . . Riveter
29/53526 . . Running-length work	29/53774 . . . . Single header
29/5353 . . . Assembled on core	29/53778 . . . . . Pipe joiner
29/53535 . . including means to vibrate work	29/53783 . . . Clip applier
29/53539 . . including work conveyor	29/53787 . . . Binding or covering
29/53543 . . . including transporting track	29/53791 . . . . Edge binding
29/53548 . . . . and work carrying vehicle	29/53796 . . Puller or pusher means, contained force multiplying operator
29/53552 . . Valve applying or removing	29/538 . . . Hubcap and hub
29/53557 . . . Engine valve unit puller or applier	29/53804 . . . Battery post and terminal
29/53561 . . . Engine valve spring compressor [only]	29/53809 . . . Cotter pin and cooperating member
29/53565 . . . . Plural spring engagement	29/53813 . . . . Plier type means
29/5357 . . . . Screw operated	29/53817 . . . Valve stem pin or key and another member
29/53574 . . . . . Parallel or tong type, side entrance	29/53822 . . . Machine key and another member
29/53578 . . . . . Lever operated	29/53826 . . . Arbor-type press means
29/53583 . . . . . Single jaw or valve engagement	29/5383 . . . having fluid operator
29/53587 . . . . . Plier type	29/53835 . . . having wedge operator
29/53591 . . . to or from wheel rim of resilient tire or tube	29/53839 . . . having percussion or explosive operator
29/53596 . . . Removal tool	29/53843 . . . . Tube, sleeve, or ferrule inserting or removing
29/536 . . Piston ring inserter or remover	29/53848 . . . having screw operator
29/53604 . . . Plier-type operation	29/53852 . . . . C-frame
29/53609 . . . . with ring encirclement	29/53857 . . . . Central screw, work-engagers around screw
29/53613 . . Spring applier or remover	29/53861 . . . . . Work-engager arms along or parallel to screw
29/53617 . . . Transmission spring	
29/53622 . . . Helical spring	

29/53865	. . . . . with arm connecting engaging means	70/413	. . . Padlocks
29/5387	. . . . . Pivotal arms	70/415	. . . Combination and/or key-controlled
29/53874	. . . . . Pivotal grippers on screw	70/417	. . . Combination-controlled
29/53878	. . . . . Tubular or tube segment forms work-engager	70/42	. . . . Non-shackle type
29/53883	. . . . . Screw threaded work-engager	70/422	. . . . Rigid shackle
29/53887	. . . . . Movable grippers on screw	70/424	. . . . . Sliding
29/53891	. . . . . Plate or bar forms work-engager	70/426	. . . . . Removable
29/53896	. . . having lever operator	70/428	. . . . . Pivoted
29/539	. . . . Plier type means	70/43	. . . . . Sliding detent
29/53904	. . Means comprising piston ring group contractor or holder	70/433	. . . . . Swinging detent
29/53909	. . Means comprising hand manipulatable tool	70/435	. . . . Flexible shackle
29/53913	. . . Aligner or center	70/437	. . . Key-controlled
29/53917	. . . . Tube with tube	70/439	. . . . Non-shackle type
29/53922	. . . . Auto wheel with auto chassis	70/441	. . . . . Housing extension and cooperating detent
29/53926	. . . . Clutch plates	70/443	. . . . . Single stem or shank
29/5393	. . . Means comprising impact receiving tool	70/446	. . . . . Rigid shackle
29/53935	. . . . C-frame	70/448	. . . . . Divided shackle
29/53939	. . . . Thread protector [e.g., wheel axle type]	70/45	. . . . . Divided jaw type
29/53943	. . . Hand gripper for direct push or pull	70/452	. . . . . Sliding
29/53948	. . . . Centrifugal separator	70/454	. . . . . Removable
29/53952	. . . . Tube sleeve or ferrule applying or removing	70/457	. . . . . Arcuate locus
29/53957	. . . . . Thread-tapping grip	70/459	. . . . . Both legs engaged
29/53961	. . with work-holder for assembly	70/461	. . . . . Short leg engaged
29/53965	. . . for assembling a luminescent mantle	70/463	. . . . . Long leg engaged
29/5397	. . . and assembling press [e.g., truss assembling means, etc.]	70/465	. . . . . Pivoted
29/53974	. . . having means to permit support movement while work is thereon	70/467	. . . . . Sliding detent
29/53978	. . including means to relatively position plural work parts	70/47	. . . . . Free end only engaged
29/53983	. . Work-supported apparatus	70/472	. . . . . Pivoted end only engaged
29/53987	. . Tube, sleeve or ferrule	70/474	. . . . . Swinging detent
29/53991	. . Work gripper, anvil, or element	70/476	. . . . . Free end only engaged
29/53996	. . by deforming	70/478	. . . . . Pivoted end only engaged
29/54	. Miscellaneous apparatus	70/48	. . . . . Arcuate locus
		70/483	. . . . Flexible shackle
		70/485	. . . With seal
		70/487	. . . Parts, accessories, attachments and adjuncts
		70/489	. . . . Housings
		70/491	. . . . Shackles
		70/493	. . . . Protectors
		70/496	. . . . . Sheaths
		70/498	. . . . . Shields or canopies
		70/50	. Special application
		70/5004	. . For antitheft signaling device on protected article
		70/5009	. . For portable articles
		70/5013	. . . Canes, umbrellas, apparel
		70/5018	. . . Robes
		70/5022	. . . Tools
		70/5027	. . . Supporting stands
		70/5031	. . . Receptacle
		70/5035	. . . . Bag
		70/504	. . . . . Collapsible throat
		70/5044	. . . . . Pivoted rigid jaw
		70/5049	. . . . . Attache or briefcase, portfolio
		70/5053	. . . . . Interengageable slide fastener type
		70/5058	. . . . Trunk and/or suitcase
		70/5062	. . . . . Projecting fixed or movable lug type
		70/5066	. . . . . Bolt type
		70/5071	. . . . . Hasp controlled
		70/5075	. . . . . Link and lever of hasp type
		70/508	. . . . . Hasp type
		70/5084	. . . . . Hasp-carried lock
		70/5089	. . . . . Loop type

**Former US Class 70 series**

<b>70/00</b>	<b>Locks</b>		
70/10	. Miscellaneous		
70/20	. Attack-actuated defeating mechanisms		
70/25	. . With reset mechanisms		
70/30	. Hasp		
70/308	. . Combination lock		
70/317	. . . Hasp-carried		
70/325	. . . Keeper-carried		
70/333	. . Key lock		
70/342	. . . Hasp-carried		
70/35	. . . . Keeper-encasing		
70/358	. . . . . Dead bolt		
70/367	. . . . . Latching bolt		
70/375	. . . . . Dead bolt		
70/383	. . . . . Latching bolt		
70/392	. . . Keeper-carried		
70/40	. Portable		
70/402	. . Fetters		
70/404	. . . Manacles and cuffs		
70/407	. . . . Nippers		
70/409	. . . Shackles		
70/411	. . Clamps		

70/5093	. . . 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	. . . . . Swinging 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	70/5482	. . . . . Slidable only
70/5221	. . . . . Locking latch bolt, biased	70/5487	. . . . . Manual bolt-manipulator is slidable only
70/5226	. . . . . Combined dead bolt and latching bolt	70/5491	. . . . . Manual bolt-manipulator is lever
70/523	. . . . . Multiple dead bolts	70/5496	. . . . . Freely movable external manipulator
70/5235	. . . . . Multiple latch bolts	70/55	. . . . . Dogged bolt or connections
70/5239	. . . . . Dead bolt, dogged latch bolt	70/5504	. . . . . Automatic
70/5243	. . . . . Manually dogged latch bolt	70/5509	. . . . . Snub bolt
70/5246	. . . . . Dead bolts	70/5513	. . . . . By manipulator
70/5248	. . . . . Multiple	70/5518	. . . . . Connections only
70/5252	. . . . . Sliding and swinging	70/5522	. . . . . Gravity projected
70/5257	. . . . . Combination operable only	70/5527	. . . . . Projecting mechanism is lock controlled
70/5261	. . . . . Key operable only	70/5531	. . . . . Combination and/or key operable
70/5265	. . . . . Sliding and rotary	70/5535	. . . . . Trip release
70/527	. . . . . Sliding	70/554	. . . . . Cover, lid, cap, encasing shield
70/5274	. . . . . Combination operable only		
70/5279	. . . . . Key operable only		
70/5283	. . . . . Swinging		
70/5288	. . . . . Combination operable only		
70/5292	. . . . . Key operable only		
70/5296	. . . . . Single		
70/5301	. . . . . Sliding and swinging		
70/5305	. . . . . Combination operable only		
70/531	. . . . . Key operable only		
70/5314	. . . . . Sliding and rotary		
70/5319	. . . . . Sliding		
70/5323	. . . . . Multidirectional displacement		
70/5327	. . . . . Keeper interlocking		
70/5332	. . . . . Curved		
70/5336	. . . . . Combination operable only		
70/5341	. . . . . Key operable only		
70/5345	. . . . . Swinging		
70/535	. . . . . Keeper and housing interlocking		
70/5354	. . . . . With hooked end		

70/5544	. . . . Pivoted	70/5814	. . . . . Push pin or button
70/5549	. . . . . Cover-carried lock	70/5819	. . . . . Handle-carried key lock
70/5553	. . . . . Dead bolt	70/5823	. . . . . Coaxial clutch connection
70/5558	. . . . . Latching bolt	70/5827	. . . . . Axially movable clutch
70/5562	. . . . . Removable	70/5832	. . . . Lock and handle assembly
70/5566	. . . . . External locking devices	70/5836	. . . . Wheel
70/5571	. . . . . Freely movable when locked	70/5841	. . . . . Rotation blocking
70/5575	. . . . . Directly seating	70/5845	. . . . . Spoke gap traversing type
70/558	. . . . . Cover-carried lock	70/585	. . . . . Brake type
70/5584	. . . . . Dead bolt	70/5854	. . . . Bolt, nut, stud, stud-cap
70/5589	. . . . . Latching bolt	70/5858	. . . . Locked stationary
70/5593	. . . . . Movably seating	70/5863	. . . . Freely movable when locked
70/5597	. . . . . Cover-carried lock	70/5867	. . . . Encased
70/5602	. . . . . Dead bolt	70/5872	. . . For cycles
70/5606	. . . . . Latching bolt	70/5876	. . . Anchors
70/5611	. . For control and machine elements	70/5881	. . . Stands
70/5615	. . . Valve	70/5885	. . . Drive
70/5619	. . . . Locked stationary	70/5889	. . . For automotive vehicles
70/5624	. . . . . Externally mounted locking device	70/5894	. . . Plural point
70/5628	. . . . . Valve encasing	70/5898	. . . . With switch
70/5633	. . . . . Housing-carried lock	70/5903	. . . Hood
70/5637	. . . . . With padlock	70/5907	. . . . With switch
70/5642	. . . Rod	70/5912	. . . Fuel valve
70/5646	. . . Rotary shaft	70/5916	. . . . With switch
70/565	. . . . Locked stationary	70/592	. . . . Cap combined
70/5655	. . . . . Housing-carried lock	70/5925	. . . Transmission
70/5659	. . . . . Dead bolt	70/5929	. . . . Cover combined
70/5664	. . . . . Latching bolt	70/5934	. . . . Selective-type shift rod, fork or block
70/5668	. . . . . Shaft-carried lock	70/5938	. . . . . With switch
70/5673	. . . . Freely movable when locked	70/5942	. . . . Planetary type
70/5677	. . . . . Shaft-carried clutch	70/5947	. . . . . With switch
70/5681	. . . Gear	70/5951	. . . . With switch
70/5686	. . . . Planetary	70/5956	. . . Steering mechanism with switch
70/569	. . . Lever	70/596	. . . Pilot wheel control or linkage
70/5695	. . . . Guide	70/5965	. . . Control levers with switch
70/5699	. . . . . Quadrant	70/5969	. . . Other element with switch
70/5704	. . . . . Lever-carried lock	70/5973	. . . Remote control
70/5708	. . . . . Fixed lever-receiving keeper	70/5978	. . . . With switch
70/5712	. . . . . Lever-carried lock	70/5982	. . . Accessories
70/5717	. . . . Multiple	70/5987	. . . . Spare or mounted wheel or tire
70/5721	. . . . . Externally mounted locking device	70/5991	. . . . . Tire or rim only
70/5726	. . . . . With padlock	70/5996	. . . For seats
70/573	. . . . Single	70/60	. . Systems
70/5735	. . . . . Externally mounted locking device	70/625	. . . Operation and control
70/5739	. . . . . With padlock	70/65	. . . Central control
70/5743	. . . . . Disconnectable	70/675	. . . Serially operable
70/5748	. . . . . Foldable	70/70	. . Operating mechanism
70/5752	. . . . . Universal mounting	70/7006	. . . Predetermined time interval controlled
70/5757	. . . Handle, handwheel or knob	70/7011	. . . Positively initiated delay interval
70/5761	. . . . Retractable or flush handle	70/7017	. . . . Interval terminating
70/5765	. . . . Rotary or swinging	70/7023	. . . . Repeating interval
70/577	. . . . . Locked stationary	70/7028	. . . Electric
70/5774	. . . . . Externally mounted locking device	70/7034	. . . Clockwork control
70/5779	. . . . . With padlock	70/704	. . . . Continuously operating once initiated
70/5783	. . . . . Combination lock	70/7045	. . . . . Emergency release
70/5788	. . . . . Push pin or button	70/7051	. . . Using a powered device [e.g., motor]
70/5792	. . . . . Handle-carried key lock	70/7057	. . . Permanent magnet
70/5796	. . . . . Coaxially mounted	70/7062	. . . Electrical type [e.g., solenoid]
70/5801	. . . . . Axially movable bolt	70/7068	. . . . Actuated after correct combination recognized [e.g., numerical, alphabetical, or magnet[s] pattern]
70/5805	. . . . . Freely movable when locked		
70/581	. . . . . Combination lock		

70/7073	. . . . .	Including use of a key	70/7395	. . . . .	Friction holder
70/7079	. . . . .	Key rotated [e.g., Eurocylinder]	70/7401	. . . . .	Spindles
70/7085	. . . . .	Using a dial having indicia or pointer and indicia	70/7407	. . . . .	Operating indicators
70/709	. . . . .	Plural interdependent or plural independently operable tumbler sets	70/7412	. . . . .	Portable combination setting guide
70/7096	. . . . .	With mechanism having rocker arm or linked bars	70/7418	. . . . .	Dials
70/7102	. . . . .	And details of blocking system [e.g., linkage, latch, pawl, spring]	70/7424	. . . . .	Tampering prevention or attach defeating
70/7107	. . . . .	And alternately mechanically actuated by a key, dial, etc.	70/7429	. . . . .	Resonance type
70/7113	. . . . .	Projected and retracted electrically	70/7435	. . . . .	Hidden or covered dial
70/7119	. . . . .	Projected electrically only	70/7441	. . . . .	Key
70/7124	. . . . .	Retracted electrically only	70/7446	. . . . .	Multiple keys
70/713	. . . . .	Dogging manual operator	70/7452	. . . . .	Selective shutout type
70/7136	. . . . .	Key initiated actuation of device	70/7458	. . . . .	Interdependent
70/7141	. . . . .	Combination and key	70/7463	. . . . .	Master- and change-key
70/7147	. . . . .	Combination or key	70/7469	. . . . .	Change-key shutout
70/7153	. . . . .	Combination	70/7475	. . . . .	Submaster- and change-key
70/7158	. . . . .	Individual blocking elements	70/748	. . . . .	Change-key shutout
70/7164	. . . . .	Selectively operable	70/7486	. . . . .	Single key
70/7169	. . . . .	Complex movement or puzzle type	70/7492	. . . . .	Tumblerless push or pull key
70/7175	. . . . .	Labyrinthian passage	70/7497	. . . . .	Tumblerless warded
70/7181	. . . . .	Tumbler type	70/7503	. . . . .	Tumbler and ward type
70/7186	. . . . .	Plural interdependent sets	70/7508	. . . . .	Tumbler type
70/7192	. . . . .	Plural independently operable sets	70/7514	. . . . .	Sliding and rotary or swinging tumblers
70/7198	. . . . .	Single tumbler set	70/752	. . . . .	Sliding tumblers
70/7203	. . . . .	With ball or roller	70/7525	. . . . .	Longitudinal
70/7209	. . . . .	Intersect sliding tumblers	70/7531	. . . . .	Transverse
70/7215	. . . . .	Individually set sliding tumblers	70/7537	. . . . .	Rotary or swinging tumblers
70/722	. . . . .	Manually operable	70/7542	. . . . .	Single set
70/7226	. . . . .	Associated movable operator	70/7548	. . . . .	Directly key engaged
70/7232	. . . . .	Removable	70/7554	. . . . .	Cylinder type with auxiliary tumblers or wards
70/7237	. . . . .	Rotary or swinging tumblers	70/7559	. . . . .	Cylinder type
70/7243	. . . . .	Intersect tumblers	70/7565	. . . . .	Plural tumbler sets
70/7249	. . . . .	Tumblers released	70/7571	. . . . .	Concentric tumblers
70/7254	. . . . .	Fence held spaced from tumblers	70/7576	. . . . .	Sliding and rotary plug
70/726	. . . . .	Individually set	70/7582	. . . . .	Sliding plug
70/7266	. . . . .	Movable selector	70/7588	. . . . .	Rotary plug
70/7271	. . . . .	Associated movable operator	70/7593	. . . . .	Sliding tumblers
70/7277	. . . . .	Removable	70/7599	. . . . .	Transverse of plug
70/7282	. . . . .	Pin or rod and slot	70/7605	. . . . .	Pin tumblers
70/7288	. . . . .	Spindle operator	70/761	. . . . .	Rotatable pins [e.g., MEDECO lock]
70/7294	. . . . .	Concentric spindles	70/7616	. . . . .	Including sidebar
70/7299	. . . . .	Axially shiftable spindle	70/7621	. . . . .	Including sidebar
70/7305	. . . . .	Manually operable	70/7627	. . . . .	Rotary or swinging tumblers
70/7311	. . . . .	Step-by-step	70/7633	. . . . .	Transverse of plug
70/7316	. . . . .	Combination upsetting	70/7638	. . . . .	Cylinder and plug assembly
70/7322	. . . . .	Permutation	70/7644	. . . . .	Key- and tool-controlled
70/7328	. . . . .	Compound tumblers	70/765	. . . . .	Key only controlled
70/7333	. . . . .	With fastener or holder	70/7655	. . . . .	Cylinder attaching or mounting means
70/7339	. . . . .	Pin and socket	70/7661	. . . . .	Detachable or removable cylinder
70/7345	. . . . .	Removable change element	70/7667	. . . . .	Operating elements, parts and adjuncts
70/735	. . . . .	Operating elements	70/7672	. . . . .	Cylinder
70/7356	. . . . .	Fences	70/7678	. . . . .	Adjustable
70/7362	. . . . .	Bolt or lock housing supported	70/7684	. . . . .	Plug
70/7367	. . . . .	Tumbler structure and position	70/7689	. . . . .	Tumblers
70/7373	. . . . .	Nested	70/7695	. . . . .	Plate
70/7379	. . . . .	Variant diameter	70/7701	. . . . .	Pin
70/7384	. . . . .	Mounts	70/7706	. . . . .	Operating connections
70/739	. . . . .	Motion-restraining means	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  
 74/1225 . . . with rotor drives  
 74/1229 . . Gyroscope control  
 74/1232 . . . Erecting  
 74/1236 . . . . by plural diverse forces  
 74/1239 . . . . by jet  
 74/1243 . . . . by weight  
 74/1246 . . . . by friction  
 74/125 . . . . by magnetic field  
 74/1254 . . . . by motor torque  
 74/1257 . . . Damping  
 74/1261 . . with pick off  
 74/1264 . . . Optical  
 74/1268 . . . Pneumatic  
 74/1271 . . . Conducting liquid  
 74/1275 . . . Electrical  
 74/1279 . . . Electrical and magnetic

74/1282	. . with rotor drive	74/1544	. . . . Multiple acting
74/1286	. . Vertical gyroscopes	74/1545	. . . . . Spring or weight return
74/1289	. . Horizontal gyroscopes	74/1547	. . . . . Single acting
74/1293	. . Flexure hinges for gyros	74/1548	. . . . . Engine starter type
74/1296	. . Flywheel structure	74/155	. . . . . Spring or weight return
74/13	. Machine starters	74/1552	. . . . . Spring or weight return
74/131	. . Automatic	74/1553	. . . . . Lever actuator
74/132	. . . Separate power mesher	74/1555	. . . . . Rotary driven element
74/133	. . . Holders	74/1556	. . . . . Multiple acting
74/134	. . . Clutch connection	74/1558	. . . . . Grip units and features
74/136	. . . Worm and wheel	74/156	. . . . . Compound movement handle
74/137	. . . Reduction gearing	74/1561	. . . . . Reversible
74/138	. . Radial meshing	74/1563	. . . . . Transverse pivots
74/139	. . Cam operated	74/1565	. . . . . Gripper releasing devices
74/14	. Rotary member or shaft indexing, e.g., tool or work turret	74/1566	. . . . . Power pawl lifter
74/1406	. . with safety device or drive disconnect	74/1568	. . . . . Automatic
74/1412	. . with locating point adjusting	74/1569	. . . . . Idle stroke
74/1418	. . Preselected indexed position	74/1571	. . . . . Cooperating holding pawl
74/1424	. . . Sequential	74/1573	. . . . . Power stroke
74/1429	. . . . Skip position	74/1574	. . . . . Cooperating holding pawl
74/1435	. . . . Held by torque	74/1576	. . . . . Holding pawl lifter
74/1441	. . . . Geneva or mutilated gear drive	74/1577	. . . . . Gripper mountings, lever
74/1447	. . . . Velocity control	74/1579	. . . . . Reversible
74/1453	. . . . Interlocked rotator and brake	74/1581	. . . . . Multiple acting
74/1459	. . . . . Diverse-type brakes	74/1582	. . . . . Single ratchet or clutch
74/1465	. . . . . with axially acting friction brake	74/1584	. . . . . Gripper mountings, slide
74/1471	. . Plural operators or input drives	74/1585	. . . . . Multiple acting
74/1476	. . with means to axially shift shaft	74/1587	. . . . . Grip features
74/1482	. . Single revolution input effects desired fractional output	74/1589	. . . . . Driving band
74/1488	. . Control means	74/159	. . . . . Clamping
74/1494	. . Locking means	74/1592	. . . . . Driven band and gripper
74/15	. Intermittent grip type mechanical movement	74/1594	. . . . . Positive grip
74/1502	. . Escapement	74/1595	. . . . . Driving ratchet-bar or rack
74/1503	. . Rotary to intermittent unidirectional motion	74/1597	. . . . . Multiple acting
74/1505	. . . Automatically controlled	74/1598	. . . . . Driven ratchet-bar and power dog
74/1506	. . . . Speed	74/16	. . Alternating-motion driven device with means during operation to adjust stroke
74/1508	. . . Rotary crank or eccentric drive	74/1608	. . Constant length stroke with means to displace end limits
74/151	. . . . Adjustable	74/1616	. . . Cyclical displacement responsive to the alternating-motion
74/1511	. . . . Lever transmitter	74/1625	. . Stroke adjustable to zero and/or reversible in phasing
74/1513	. . . . . Adjustable leverage	74/1633	. . . Plural driving means to jointly drive the driven device
74/1515	. . . . . Rack and pinion transmitter	74/1642	. . . Device driven from selected points on oscillating link
74/1516	. . . . . Adjustable throw	74/165	. . . Driving lever with adjustable pivot point
74/1518	. . . . . Rotary cam drive	74/1658	. . . Eccentric and strap drive, shiftable eccentric
74/1519	. . . . . Adjustable throw	74/1667	. . . . Changing the extent of eccentricity
74/1521	. . . . . Radial cam	74/1675	. . . Crank pin drive, shiftable pin
74/1523	. . . . . Radial cam	74/1683	. . . Cam and follower drive
74/1524	. . . Intermittently engaged clutch	74/1692	. . . . Axial-type cam [e.g., wobbler type]
74/1526	. . Oscillation or reciprocation to intermittent unidirectional motion	74/17	. . Rotary driven device adjustable during operation relative to its supporting structure
74/1527	. . . Screw and nut devices	74/173	. . Screw and nut adjusting means
74/1529	. . . Slide actuator	74/177	. . Rack and pinion adjusting means
74/1531	. . . . Multiple acting	74/18	. Mechanical movements
74/1532	. . . . Rack actuator	74/18008	. . Oscillating to reciprocating and alternating rotary
74/1534	. . . . Multiple acting	74/18016	. . Oscillating to reciprocating and intermittent rotary
74/1535	. . . . . Inwardly facing racks	74/18024	. . Rotary to reciprocating and rotary
74/1537	. . . . . Oscillating		
74/1539	. . . . . Multiple acting		
74/154	. . . . . Inwardly facing racks		
74/1542	. . . Strap actuator		

74/18032 . . . Rotary to reciprocating or rotary	74/1852 . . . Associated inertia devices
74/1804 . . Rotary to reciprocating and alternating rotary	74/18528 . . Rotary to intermittent unidirectional motion
74/18048 . . Rotary to reciprocating and intermittent rotary	74/18536 . . . Space machines
74/18056 . . Rotary to or from reciprocating or oscillating	74/18544 . . Rotary to gyratory
74/18064 . . . Head motions	74/18552 . . . Unbalanced weight
74/18072 . . . Reciprocating carriage motions	74/1856 . . Reciprocating or oscillating to intermittent unidirectional motion
74/1808 . . . . Phonograph type	74/18568 . . Reciprocating or oscillating to or from alternating rotary
74/18088 . . . Rack and pinion type	74/18576 . . . including screw and nut
74/18096 . . . . Shifting rack	74/18584 . . . . Shaft shorter than nut
74/18104 . . . . Shiftable pinion	74/18592 . . . . Auxiliary drive [e.g., fluid piston, etc.] for load
74/18112 . . . . Segmental pinion	74/186 . . . . Alternate power path operable on failure of primary
74/1812 . . . . Alternately rotated pinion	74/18608 . . . . Single input split into two intermediate outputs that are subsequently superposed into a single output
74/18128 . . . . Clutchable gears	74/18616 . . . . Single input, plural outputs
74/18136 . . . . Bevel	74/18624 . . . . Plural inputs, single output
74/18144 . . . Overcoming dead center	74/18632 . . . . Plural nuts driving shaft
74/18152 . . . Belt or chain carried member	74/1864 . . . . Shaft and nut driven
74/1816 . . . Crank, lever, toggle, and slide	74/18648 . . . . Carriage surrounding, guided by, and primarily supported by member other than screw [e.g., linear guide, etc.]
74/18168 . . . Crank, lazy-tong, and slide	74/18656 . . . . Carriage surrounded, guided, and primarily supported by member other than screw [e.g., linear guide, etc.]
74/18176 . . . Crank, pitman, lever, and slide	74/18664 . . . . Shaft moves through rotary drive means
74/18182 . . . . Pump jack type	74/18672 . . . . Plural screws in series [e.g., telescoping, etc.]
74/18184 . . . Crank, pitman, and lever	74/1868 . . . . Deflection related
74/182 . . . . Multiple levers	74/18688 . . . . Limit stop
74/18208 . . . Crank, pitman, and slide	74/18696 . . . . including means to selectively transmit power [e.g., clutch, etc.]
74/18216 . . . Crank, lever, and slide	74/18704 . . . . Means to selectively lock or retard screw or nut
74/18224 . . . . Rack connections	74/18712 . . . . Contamination related
74/18232 . . . Crank and lever	74/1872 . . . . Imperforate enclosure
74/1824 . . . . Slidable connections	74/18728 . . . . Backlash
74/18248 . . . Crank and slide	74/18736 . . . . Pressurized fluid introduced between nut and screw
74/18256 . . . . Slidable connections [e.g., scotch yoke]	74/18744 . . . . Lubrication
74/18264 . . . Crank and multiple pitmans	74/18752 . . . . Manually driven
74/18272 . . . Planetary gearing and slide	74/1876 . . . including inertia device
74/1828 . . . Cam, lever, and slide	74/18768 . . . . with rack and pinion
74/18288 . . . Cam and lever	74/18776 . . . . Rectilinear rack
74/18296 . . . Cam and slide	74/18784 . . . including bevel gears
74/18304 . . . . Axial cam	74/18792 . . . including worm
74/18312 . . . . . Grooved	74/188 . . . including spur gear
74/1832 . . . . . Multiple screw	74/18808 . . . . with rack
74/18328 . . . . . Alternately rotated screw	74/18816 . . . . . Curvilinear rack
74/18336 . . . . Wabblers type	74/18824 . . . . . with biasing means
74/18344 . . . Unbalanced weights	74/18832 . . . including flexible drive connector [e.g., belt, chain, strand, etc.]
74/18352 . . . Trammel-pitman	74/1884 . . . . with sprocket wheel
74/1836 . . Rotary to rotary	74/18848 . . . . with pulley
74/18368 . . . Inertia or centrifugal transmitters	74/18856 . . Oscillating to oscillating
74/18376 . . . Crank, pitman, lever, and crank	74/18864 . . . Snap action
74/18384 . . . Crank, lever, and crank	74/18872 . . . . Plate spring
74/18392 . . . Crank, pitman, and crank	74/1888 . . . Geared connections
74/184 . . . Cranks, link connected	74/18888 . . Reciprocating to or from oscillating
74/18408 . . . Cranks, slidable connections	74/18896 . . . Snap action
74/18416 . . Rotary to alternating rotary	
74/18424 . . . Mangle connections	
74/18432 . . . . Shiftable driven gear	
74/1844 . . . . . Central teeth	
74/18448 . . . . Mutilated gearing connections	
74/18456 . . . Crank, pitman, and lever	
74/18464 . . . Reciprocating rack connections	
74/18472 . . . . Crank and pitman actuator	
74/1848 . . . . Simple crank actuator	
74/18488 . . . Oscillating rack connections	
74/18496 . . . . Mangle actuated	
74/18504 . . . . Crank and pitman actuator	
74/18512 . . . Flexible connector type	

74/18904 . . . .	Plate spring	74/19205 . . . .	Clutchable gears
74/18912 . . . .	Compound lever and slide	74/1921 . . . .	On single driven member
74/1892 . . . .	Lever and slide	74/19214 . . . .	On single driving member
74/18928 . . . .	Straight line motions	74/19219 . . . .	Interchangeably locked
74/18936 . . . .	Slidable connections	74/19223 . . . .	Disconnectable counter shaft
74/18944 . . . .	Link connections	74/19228 . . . .	Multiple concentric clutch shafts
74/18952 . . . .	toggle transmissions	74/19233 . . . .	Plurality of counter shafts
74/1896 . . . .	Cam connections	74/19237 . . . .	Internal-external gears
74/18968 . . . .	Flexible connections	74/19242 . . . .	Combined gear and clutch
74/18976 . . . .	Rack and pinion	74/19247 . . . .	Preselector
74/18984 . . . .	Inclined ramp	74/19251 . . . .	Control mechanism
74/18992 . . . .	Reciprocating to reciprocating	74/19256 . . . .	Automatic
74/19 . . . .	Gearing	74/1926 . . . . .	Speed responsive
74/19005 . . . .	Nonplanetary gearing differential type [e.g., gearless differentials]	74/19265 . . . . .	Governor
74/19009 . . . .	Single gearing unit includes fluid drive	74/1927 . . . . .	with belt gearing
74/19014 . . . .	Plural prime movers selectively coupled to common output	74/19274 . . . . .	torque responsive
74/19019 . . . .	Plural power paths from prime mover	74/19279 . . . .	Cam operated
74/19023 . . . .	Plural power paths to and/or from gearing	74/19284 . . . .	Meshing assisters
74/19028 . . . .	Alternate input connections single hand crank	74/19288 . . . .	Double clutch and interposed transmission
74/19033 . . . .	Fluid drive divides or combines alternate paths	74/19293 . . . .	Longitudinally slidable
74/19037 . . . .	One path includes fluid drive	74/19298 . . . .	Multiple spur gears
74/19042 . . . .	Friction-type gearing	74/19302 . . . . .	with tumbler gear
74/19047 . . . .	Worm-type gearing	74/19307 . . . . .	Selective
74/19051 . . . .	Single driven plural drives	74/19312 . . . . .	Direct clutch and drive
74/19056 . . . .	Parallel	74/19316 . . . . .	Progressive
74/1906 . . . .	Nonparallel	74/19321 . . . . .	Direct clutch and drive
74/19065 . . . .	Aligned	74/19326 . . . . .	Fluid operated
74/1907 . . . .	Parallel and aligned	74/1933 . . . . .	Multiple bevel gears
74/19074 . . . .	Single drive plural driven	74/19335 . . . .	Single spur gear
74/19079 . . . .	Parallel	74/1934 . . . . .	Tumbler and cone
74/19084 . . . . .	Spur	74/19344 . . . . .	Multiple cone
74/19088 . . . . .	Bevel	74/19349 . . . .	Single bevel gear
74/19093 . . . . .	Spur and bevel	74/19353 . . . .	Pin or crown gears
74/19098 . . . . .	Helical	74/19358 . . . .	Laterally slidable gears
74/19102 . . . . .	Belt or chain	74/19363 . . . .	Rotary carriage
74/19107 . . . .	Nonparallel	74/19367 . . . .	Swinging carriage
74/19112 . . . .	Aligned	74/19372 . . . .	Single forward and reverse speeds
74/19116 . . . . .	Vehicle	74/19377 . . . .	Slidable keys or clutches
74/19121 . . . .	Concentric	74/19381 . . . .	Alternative clutch shaft
74/19126 . . . .	Plural drivers plural driven	74/19386 . . . .	Multiple clutch shafts
74/1913 . . . .	Bevel	74/19391 . . . . .	Progressive
74/19135 . . . .	Spur	74/19395 . . . . .	Keys simultaneously slidable
74/1914 . . . .	Alternate drivers and driven	74/194 . . . . .	Selective
74/19144 . . . .	Miscellaneous [plural power paths]	74/19405 . . . . .	Multiple forward and reverse
74/19149 . . . .	with fluid drive	74/19409 . . . . .	Single forward and reverse
74/19153 . . . .	Condition responsive control	74/19414 . . . .	Single clutch shaft
74/19158 . . . .	with one or more controllers for gearing, fluid drive, or clutch	74/19419 . . . . .	Progressive
74/19163 . . . .	with interrelated controls	74/19423 . . . . .	Multiple key
74/19167 . . . .	In series plural interchangeably locked nonplanetary units	74/19428 . . . . .	Spur
74/19172 . . . .	Reversal of direction of power flow changes power transmission to alternate path	74/19433 . . . . .	Fluid operated
74/19177 . . . .	Input and output exchange functions	74/19437 . . . . .	Electrically operated
74/19181 . . . .	toothed gear and recirculated unconnected elements	74/19442 . . . . .	Single key
74/19186 . . . .	Alternating rotary or continuous	74/19447 . . . . .	Clutch and ratchet
74/19191 . . . .	Alternating rotary	74/19451 . . . . .	Spur gears
74/19195 . . . .	Progressive	74/19456 . . . . .	Intermediate clutch
74/192 . . . .	Shiftable and/or slidable gears	74/1946 . . . . .	Sliding clutch carrier
		74/19465 . . . . .	Sliding clutch operator
		74/1947 . . . . .	Selective
		74/19474 . . . . .	Multiple key
		74/19479 . . . . .	Spur gears
		74/19484 . . . . .	Single speed forward and reverse

74/19488 . . . . .	Spur gears	74/19767 . . . . .	Return path geometry
74/19493 . . . . .	Bevel gears	74/19772 . . . . .	Rolling element deflector
74/19498 . . . . .	Bevel and idler gears	74/19777 . . . . .	Interconnected or cooperating rollers or roller structure
74/19502 . . . . .	Pivotally supported	74/19781 . . . . .	Non-recirculating rolling elements
74/19507 . . . . .	Windmill turntable	74/19786 . . . . .	Captured sphere
74/19512 . . . . .	Screw	74/19791 . . . . .	Cylindrical or quasi-cylindrical roller element [e.g., inclined roller, etc.]
74/19516 . . . . .	Spur	74/19795 . . . . .	Parallel to shaft
74/19521 . . . . .	Bevel	74/198 . . . . .	Perpendicular to shaft
74/19526 . . . . .	Wheel type	74/19805 . . . . .	Less than 360 degrees of contact between nut and screw
74/1953 . . . . .	Wringer type	74/19809 . . . . .	Independent nut segments
74/19535 . . . . .	Follow-up mechanism	74/19814 . . . . .	Integral deformable tangs engaging screw
74/1954 . . . . .	Eccentric driving shaft and axle	74/19819 . . . . .	Driven rack or shaft
74/19545 . . . . .	Central driving shaft in axle	74/19823 . . . . .	Screw
74/1955 . . . . .	Parallel shafts, adjustable gear mesh	74/19828 . . . . .	Worm
74/19555 . . . . .	Varying speed ratio	74/19833 . . . . .	Variable speed
74/1956 . . . . .	Adjustable	74/19837 . . . . .	Intermittent motion
74/19565 . . . . .	Relative movable axes	74/19842 . . . . .	Distribution of pressure
74/1957 . . . . .	Parallel shafts	74/19847 . . . . .	torque actuated safety devices
74/19575 . . . . .	Automatic control	74/19851 . . . . .	Gear and rotary bodies
74/1958 . . . . .	Parallel shafts	74/19856 . . . . .	Laterally-spaced wheels
74/19585 . . . . .	Fixed axes	74/1986 . . . . .	Radially-spaced wheels
74/1959 . . . . .	Parallel shafts	74/19865 . . . . .	with flywheel
74/19595 . . . . .	Automatic control	74/1987 . . . . .	Rotary bodies
74/196 . . . . .	Parallel shafts	74/19874 . . . . .	Mutilated
74/19605 . . . . .	Reversing means	74/19879 . . . . .	Geneva
74/19609 . . . . .	Governor control	74/19884 . . . . .	Irregular teeth and bodies
74/19614 . . . . .	Disconnecting means	74/19888 . . . . .	External and internal teeth
74/19619 . . . . .	Displaceable elements	74/19893 . . . . .	Sectional
74/19623 . . . . .	Backlash take-up	74/19898 . . . . .	Backlash take-up
74/19628 . . . . .	Pressure distributing	74/19902 . . . . .	Screw and nut
74/19633 . . . . .	Yieldability in gear trains	74/19907 . . . . .	Sound deadening
74/19637 . . . . .	with brake means for gearing	74/19912 . . . . .	Differential disks
74/19642 . . . . .	Directly cooperating gears	74/19916 . . . . .	Multiple disks
74/19647 . . . . .	Parallel axes or shafts	74/19921 . . . . .	Separate rim
74/19651 . . . . .	External type	74/19926 . . . . .	Detachable
74/19656 . . . . .	Pin teeth	74/1993 . . . . .	Segmental rim
74/1966 . . . . .	Intersecting axes	74/19935 . . . . .	Sheet metal
74/19665 . . . . .	Bevel gear type	74/1994 . . . . .	Diametrically split
74/1967 . . . . .	Rack and pinion	74/19944 . . . . .	Shaft-admitting insert
74/19674 . . . . .	Spur and bevel	74/19949 . . . . .	Teeth
74/19679 . . . . .	Spur	74/19953 . . . . .	Worm and helical
74/19684 . . . . .	Motor and gearing	74/19958 . . . . .	Bevel
74/19688 . . . . .	Bevel	74/19963 . . . . .	Spur
74/19693 . . . . .	Motor vehicle drive	74/19967 . . . . .	Yieldable
74/19698 . . . . .	Spiral	74/19972 . . . . .	form
74/19702 . . . . .	Screw and nut	74/19977 . . . . .	Antifriction
74/19707 . . . . .	Plural longitudinally variably spaced nuts	74/19981 . . . . .	Roller
74/19712 . . . . .	Threadless	74/19986 . . . . .	Twisted
74/19716 . . . . .	Non-linear screw	74/19991 . . . . .	Lubrication
74/19721 . . . . .	Thread geometry	74/19995 . . . . .	Teeth
74/19726 . . . . .	Thread pitch varies over axial length	74/20 . . . . .	Control lever and linkage systems
74/1973 . . . . .	Shaft thread is spirally wound wire	74/20006 . . . . .	Resilient connections
74/19735 . . . . .	Nut disengageable from screw	74/20012 . . . . .	Multiple controlled elements
74/1974 . . . . .	Nut segments hinged parallel to shaft [e.g., clam shell-type, etc.]	74/20018 . . . . .	Transmission control
74/19744 . . . . .	Rolling element engaging thread	74/20024 . . . . .	Fluid actuator
74/19749 . . . . .	Recirculating rolling elements	74/2003 . . . . .	Electrical actuator
74/19753 . . . . .	Plural independent recirculating element paths	74/20037 . . . . .	Occupant propelled vehicle
74/19758 . . . . .	Single thread common to plural paths	74/20043 . . . . .	Transmission controlled by flexible cable
74/19763 . . . . .	Roller return path in shaft		

74/20049 . . . .	Transmission controlled by flexible cable	74/20354 . . . .	Planar surface with orthogonal movement only
74/20055 . . . .	Foot operated	74/2036 . . . .	Pair of power elements
74/20061 . . . . .	Multiple foot-operated controls	74/20366 . . . .	Power and manual controlling elements
74/20067 . . . .	Control convertible between automatic and manual operation	74/20372 . . . .	Manual controlling elements
74/20073 . . . .	Control of plural mechanisms [e.g., control of transmission and control of 4 - wheel drive]	74/20378 . . . .	Planar surface with orthogonal movement or rotation
74/20079 . . . . .	Separate control levers	74/20384 . . . .	Levers
74/20085 . . . .	Restriction of shift, gear selection, or gear engagement	74/2039 . . . . .	Pair of levers
74/20091 . . . . .	Prevention of reverse shift	74/20396 . . . .	Hand operated
74/20098 . . . . .	Separate actuator to disengage restrictor	74/20402 . . . .	Flexible transmitter [e.g., Bowden cable]
74/20104 . . . . .	Shift element interlock	74/20408 . . . . .	Constant tension sustaining
74/2011 . . . . .	with detent, recess, notch, or groove	74/20414 . . . . .	Hydraulic control
74/20116 . . . . .	Resiliently biased interlock	74/2042 . . . . .	and hand operator
74/20122 . . . . .	Spherical restrictor	74/20426 . . . . .	Slidable
74/20128 . . . . .	Resiliently biased restrictor	74/20432 . . . . .	for moving a mirror
74/20134 . . . .	having vibration damper	74/20438 . . . . .	Single rotatable lever [e.g., for bicycle brake or derailleur]
74/2014 . . . .	Manually operated selector [e.g., remotely controlled device, lever, push button, rotary dial, etc.]	74/20444 . . . .	including rolling antifriction elements
74/20146 . . . . .	Control lever on steering column	74/2045 . . . .	and sheath support, connector, or anchor
74/20152 . . . . .	Control lever movable through plural planes	74/20456 . . . .	Specific cable or sheath structure
74/20159 . . . . .	Control lever movable through plural planes	74/20462 . . . .	Specific cable connector or guide
74/20165 . . . . .	Spherical mount [e.g., ball and socket]	74/20468 . . . .	Sliding rod
74/20171 . . . . .	Resiliently biased control lever	74/20474 . . . .	Rotatable rod, shaft, or post
74/20177 . . . .	Particular element [e.g., shift fork, template, etc.]	74/2048 . . . . .	Gear, drum, and cable
74/20183 . . . . .	Shift fork structure	74/20486 . . . .	Drum and cable
74/20189 . . . .	Foot operated	74/20492 . . . .	Gear
74/20195 . . . .	Offset extension	74/20498 . . . . .	Variable ratio
74/20201 . . . .	Control moves in two planes	74/20504 . . . . .	Screw and nut
74/20207 . . . .	Multiple controlling elements for single controlled element	74/2051 . . . .	Adjustable
74/20213 . . . .	Interconnected	74/20516 . . . .	Mountings
74/2022 . . . . .	Hand and foot	74/20522 . . . . .	Antenna
74/20226 . . . . .	Accelerator	74/20528 . . . .	Foot operated
74/20232 . . . . .	Marine	74/20534 . . . .	Accelerator
74/20238 . . . .	Interlocked	74/2054 . . . .	Signal
74/20244 . . . . .	Push button	74/20546 . . . .	Knee operated
74/2025 . . . . .	Rod blocks actuation of rotary member	74/20552 . . . .	Elbow
74/20256 . . . .	Steering and controls assemblies	74/20558 . . . .	Variable output force
74/20262 . . . . .	Rotary control shaft	74/20564 . . . .	Flexible
74/20268 . . . . .	Reciprocating control elements	74/2057 . . . .	Variable input leverage
74/20274 . . . . .	Flexible	74/20576 . . . .	Elements
74/2028 . . . . .	Handle bar type	74/20582 . . . .	Levers
74/20287 . . . . .	Flexible control element	74/20588 . . . . .	toggle
74/20293 . . . . .	with horn control	74/20594 . . . . .	Lazy tongs
74/20299 . . . .	Antirattling elements	74/206 . . . . .	Adjustable
74/20305 . . . .	Robotic arm	74/20606 . . . .	Swing posts
74/20311 . . . .	including power cable or connector	74/20612 . . . .	Hand
74/20317 . . . .	including electric motor	74/20618 . . . . .	Jointed
74/20323 . . . .	including flaccid drive element	74/20624 . . . . .	Adjustable
74/20329 . . . .	Joint between elements	74/2063 . . . .	Stops
74/20335 . . . . .	Wrist	74/20636 . . . .	Detents
74/20341 . . . .	Power elements as controlling elements	74/20642 . . . .	Hand crank
74/20348 . . . .	Planar surface with orthogonal movement and rotation	74/20648 . . . .	Interrelated lever release
		74/20654 . . . .	Gear
		74/2066 . . . .	Friction
		74/20666 . . . .	Lever engaging
		74/20672 . . . .	Lever engaging rack
		74/20678 . . . . .	Pivoted
		74/20684 . . . . .	Lever carried pawl
		74/2069 . . . . .	Handle release
		74/20696 . . . . .	Finger lever release

74/20702 . . . . .	Slidable	74/2123 . . . . .	and pressure compensation
74/20708 . . . . .	Pedal controlled	74/2125 . . . . .	and elastic device
74/20714 . . . . .	Lever carried rack	74/2126 . . . . .	and bearings
74/2072 . . . . .	Pivoted	74/2127 . . . . .	with electrical or magnetic damping
74/20726 . . . . .	Pedal controlled	74/2128 . . . . .	Damping using swinging masses, e.g., pendulum type, etc.
74/20732 . . . . .	Handles	74/213 . . . . .	Damping by increasing frictional force
74/20738 . . . . .	Extension	74/2131 . . . . .	Damping by absorbing vibration force [via rubber, elastomeric material, etc.]
74/20744 . . . . .	Hand crank	74/2132 . . . . .	Structural detail, e.g., fiber, held by magnet, etc.
74/2075 . . . . .	Extensible	74/2133 . . . . .	Pawls and ratchets
74/20756 . . . . .	Collapsible	74/2135 . . . . .	Noiseless
74/20762 . . . . .	Shaft connections	74/2136 . . . . .	Pivoted pawls
74/20768 . . . . .	Engine starter type	74/2137 . . . . .	Single tooth
74/20774 . . . . .	Holders	74/2138 . . . . .	Flexible single tooth
74/2078 . . . . .	Handle bars	74/214 . . . . .	Multiple tooth
74/20786 . . . . .	Spring biased or supported	74/2141 . . . . .	Sliding pawls
74/20792 . . . . .	Folding or adjustable	74/2142 . . . . .	Pitmans and connecting rods
74/20798 . . . . .	Sectional	74/2143 . . . . .	Radial
74/20804 . . . . .	Simultaneously movable	74/2144 . . . . .	Yieldable
74/2081 . . . . .	Continuous	74/2146 . . . . .	Longitudinal springs
74/20816 . . . . .	with handle latch	74/2147 . . . . .	Fluid cushion
74/20822 . . . . .	Attachments and accessories	74/2148 . . . . .	Automatic release
74/20828 . . . . .	Handholds and grips	74/2149 . . . . .	toggle link type
74/20834 . . . . .	Hand wheels	74/2151 . . . . .	Longitudinally adjustable
74/2084 . . . . .	Knob or dial	74/2152 . . . . .	Hollow rod, lubricated
74/20846 . . . . .	Slidable	74/2153 . . . . .	Sheet metal type
74/20852 . . . . .	Pivoted	74/2154 . . . . .	Counterbalanced
74/20858 . . . . .	Releasable	74/2156 . . . . .	Weight type
74/20864 . . . . .	Handles	74/2157 . . . . .	Rotating
74/2087 . . . . .	Rim grips and covers	74/2158 . . . . .	Spring
74/20876 . . . . .	Caps and covers	74/2159 . . . . .	Section coupled
74/20882 . . . . .	Rocker arms	74/216 . . . . .	Bearings, adjustable
74/20888 . . . . .	Pedals	74/2162 . . . . .	Engine type
74/20894 . . . . .	Treadles	74/2163 . . . . .	Idler arm
74/209 . . . . .	Extension	74/2164 . . . . .	Cranks and pedals
74/20906 . . . . .	Offset	74/2165 . . . . .	with attached gear
74/20912 . . . . .	Pads and covers	74/2167 . . . . .	Variable
74/20918 . . . . .	Foot rests	74/2168 . . . . .	Pedals
74/20924 . . . . .	Controller checks	74/2169 . . . . .	Counterbalanced
74/2093 . . . . .	Slot closers and lever guards	74/217 . . . . .	with toe or shoe clips
74/21 . . . . .	Elements	74/2172 . . . . .	Adjustable or folding
74/2101 . . . . .	Cams	74/2173 . . . . .	Cranks and wrist pins
74/2102 . . . . .	Adjustable	74/2174 . . . . .	Multiple throw
74/2104 . . . . .	Flexible strip	74/2175 . . . . .	Sectional
74/2105 . . . . .	Memory devices	74/2177 . . . . .	Sectional
74/2106 . . . . .	Timer devices	74/2178 . . . . .	Yieldable
74/2107 . . . . .	Follower	74/2179 . . . . .	Adjustable
74/2109 . . . . .	Balancing for drum, e.g., washing machine or arm-type structure, etc., centrifuge, etc.	74/218 . . . . .	Automatically
74/211 . . . . .	Eccentric	74/2181 . . . . .	Variable
74/2111 . . . . .	Plural, movable relative to each other [including ball[s]]	74/2183 . . . . .	Counterbalanced
74/2112 . . . . .	Concentric	74/2184 . . . . .	Vibration dampers
74/2114 . . . . .	Adjustable	74/2185 . . . . .	Lubricated
74/2115 . . . . .	Radially	74/2186 . . . . .	Gear casings
74/2116 . . . . .	having anti-friction means, e.g., roller bearing, lubrication, etc.	74/2188 . . . . .	Axle and torque tubes
74/2117 . . . . .	Power generating-type flywheel	74/2189 . . . . .	Cooling
74/2119 . . . . .	Structural detail, e.g., material, configuration, superconductor, discs, laminated, etc.	74/219 . . . . .	Guards
74/212 . . . . .	Containing fiber or filament	74/2191 . . . . .	for rotary member
74/2121 . . . . .	Flywheel, motion smoothing-type	74/2193 . . . . .	Guard mechanisms
74/2122 . . . . .	with fluid balancing means	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  
 83/0534 . . . . Cutting to join blanked holes  
 83/0538 . . . Repetitive transverse severing from leading edge of work  
 83/0543 . . . . Alternately forming products of less than total width of work  
 83/0548 . . . . With longitudinal severing  
 83/0553 . . . . . Effected by plural steps  
 83/0558 . . . . . Along zigzag or undulant line or cut  
 83/0562 . . . . . Prior to transverse severing  
 83/0567 . . . . Nonrectilinear cutting  
 83/0572 . . . Plural cutting steps effect progressive cut  
 83/0577 . . . Repetitive blanking  
 83/0581 . . Cutting part way through from opposite sides of work

83/0586	. . Effecting diverse or sequential cuts in same cutting step	83/2046	. . . . 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
83/202	. With product handling means	83/2124	. . . . . And means to strip the outer surface of a cutter
83/2022	. . Initiated by means responsive to product or work	83/2127	. . . . . Ejector operated with return stroke of cutter
83/2024	. . . Responsive to work	83/2129	. . . . . By means carried by cooperating cutter
83/2027	. . Initiated by means directly responsive to tool movement	83/2131	. . . . . By cam-operated ejector
83/2029	. . . In return motion of tool	83/2133	. . . . . By resiliently biased ejector
83/2031	. . Including means to drape the product	83/2135	. . . . Moving stripper timed with tool stroke
83/2033	. . Including means to form or hold pile of product pieces	83/2137	. . . . . And alternatively movable to or from operating position
83/2035	. . . In nested relation	83/214	. . . . . Latched stripper released by tool return
83/2037	. . . In stacked or packed relation	83/2142	. . . . . Plural strippers operative upon plural tools
83/204	. . . . Stacker sweeps along product support	83/2144	. . . . . Single stripper operative upon plural tools
83/2042	. . . . Including cut pieces overlapped on delivery means	83/2146	. . . . . Spring arm stripper
83/2044	. . . . And means to separate product portions	83/2148	. . . . . Linkage actuated

83/215	. . . . . 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	83/4491	. . . . . Interlock between tool actuating and work feed means
83/303	. . . . . With tool sharpener or smoother	83/4493	. . . . . Tool motion initiates work feed and <u>vice versa</u>
83/313	. . . . . Spatially fixed tool	83/4496	. . . . . Stored energy means for moving work or tool, loaded by tool or work
83/323	. . . . . With means to stretch work temporarily	83/4498	. . . . . Work feed means actuates energy storage device for tool
83/343	. . . . . With means to deform work temporarily	83/4501	. . . . . Work feed means controlled by means mounted on tool or tool support
83/364	. . . . . By fluid blast and/or suction	83/4503	. . . . . Such means drives the work feed means
83/384	. . . . . By tool inside hollow work	83/4506	. . . . . Work feed means carried by tool or tool support
83/385	. . . . . Work pre-packed with internal tool[s]	83/4508	. . . . . With supplemental work feed means
83/386	. . . . . With expanding mandrel	83/4511	. . . . . On return stroke of tool
83/387	. . . . . Interrelated tool feed means and means to actuate work immobilizer		
83/388	. . . . . Actuated clamp element and work holder coact to position work		
83/39	. . . . . Synchronized tool and work feeding means		
83/391	. . . . . With means to position tool[s] for cutting		
83/392	. . . . . One tool [either internal or external] having compound motion		

- 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"
- 83/4714 . . Oscillating work shifter adjacent cutter
- 83/4717 . . . Work actuated sensor initiates shifter
- 83/472 . . Wire tool
- 83/4722 . . . On tool support having reciprocation parallel to direction of work-feed
- 83/4725 . . . . And rotation about axis parallel to direction of work-feed
- 83/4728 . . Tool flies by engagement with the work
- 83/4731 . . . Tool merely flexes with moving work
- 83/4734 . . Flying support or guide for work
- 83/4737 . . With tool speed regulator
- 83/474 . . With work feed speed regulator

- 83/4743 . . . With means to vary cyclically speed of work
- 83/4746 . . Spring return of tool in counterfly direction
- 83/4749 . . Tool mounted on oscillating standard
- 83/4751 . . . Both tools of couple on single standard
- 83/4754 . . . . One tool swings out of work path on return stroke
- 83/4757 . . Tool carrier shuttles rectilinearly parallel to direction of work feed
- 83/476 . . . Including means to secure work to carrier
- 83/4763 . . . Both members of cutting pair on same carrier
- 83/4766 . . Orbital motion of cutting blade
- 83/4769 . . . Work feeder mounted on tool support
- 83/4772 . . . . Gripper-type feeder
- 83/4775 . . . Tool speed varied within each orbital cycle
- 83/4778 . . . Work feed gripper carried on endless belt
- 83/478 . . . Endless belt or chain tool carrier
- 83/4783 . . . Constantly oriented tool with arcuate cutting path
- 83/4786 . . . . Cutting couple type
- 83/4789 . . . Rotatable disc-type tool on orbiting axis
- 83/4792 . . . . Idling disc
- 83/4795 . . . Rotary tool
- 83/4798 . . . . Segmented disc slitting or slotting tool
- 83/4801 . . . . With undulant cutting edge [e.g., "pinking" tool]
- 83/4804 . . . . Single tool action drive
- 83/4807 . . . . . With one-revolution drive
- 83/4809 . . . . With loop former preceding tool
- 83/4812 . . . . Compound movement of tool during tool cycle
- 83/4815 . . . . . Axial reciprocation of tool
- 83/4818 . . . . Interconnected work feeder and tool driver
- 83/4821 . . . . Side cutting helical blade
- 83/4824 . . . . With means to cause progressive transverse cutting
- 83/4827 . . . . . With helical cutter blade
- 83/483 . . . . With cooperating rotary cutter or backup
- 83/4833 . . . . . Cooperating tool axes adjustable relative to each other
- 83/4836 . . . . . With radial overlap of the cutting members
- 83/4838 . . . . . With anvil backup
- 83/4841 . . . . . With resilient anvil surface
- 83/4844 . . . . . Resiliently urged cutter or anvil member
- 83/4847 . . . . With cooperating stationary tool
- 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
- 83/492 . . With means to vary timing of tool feed
- 83/494 . . Uniform periodic tool actuation
- 83/496 . . . With periodic lateral feed of tool or work
- 83/498 . . . With plural tool stations
- 83/50 . . . Reciprocating tool
- 83/501 . . . With plural tools on a single tool support
- 83/503 . . With plural tool stations
- 83/505 . Operation controlled by means responsive to product
- 83/515 . . Actuation of tool controlled
- 83/525 . Operation controlled by detector means responsive to work
- 83/527 . . With means to control work-responsive signal system
- 83/528 . . . To delay response to work-senser
- 83/53 . . . To change length of product
- 83/531 . . With plural work-sensing means
- 83/533 . . With photo-electric work-sensing means
- 83/535 . . Release of interlock controlled
- 83/536 . . Movement of work controlled
- 83/538 . . Positioning of tool controlled
- 83/54 . . Actuation of tool controlled by work-driven means to measure work length
- 83/541 . . Actuation of tool controlled in response to work-sensing means
- 83/543 . . . Sensing means responsive to work indicium or irregularity
- 83/544 . . . With trip-switch in work-sensing mechanism
- 83/546 . Interrelated tool actuating and work guide moving means
- 83/566 . Interrelated tool actuating means and means to actuate work immobilizer
- 83/5669 . . Work clamp
- 83/5678 . . . Tool deflected by guide on tightened clamp
- 83/5687 . . . . With means to control clamping force
- 83/5696 . . . Clamp driven by reaction from tool force
- 83/5705 . . . With means providing for plural steps in clamping stroke
- 83/5715 . . . With sequencing means
- 83/5724 . . . With provision for manual control of clamp
- 83/5733 . . . Tool or tool support on movable clamp jaw
- 83/5742 . . . Clamp moved by direct impact of tool or tool support
- 83/5751 . . . . Clamp retracted by impact of tool or tool support
- 83/576 . . . Clamp actuating means driven by tool or tool support
- 83/5769 . . . . Clamp yieldably driven by tool or tool support
- 83/5778 . . . . . With resilient drive element
- 83/5787 . . . Clamp driven by yieldable means
- 83/5796 . . . . Drive means is resilient
- 83/5805 . . . . Fluid pressure yieldable drive means
- 83/5815 . . Work-stop abutment
- 83/5824 . . . Oppositely effective abutments
- 83/5833 . . . With cyclic means to alter work-stopping position
- 83/5842 . . . Stop partakes of tool motion
- 83/5851 . . . . Carried by tool or tool support
- 83/586 . Interrelated tool actuating means and means to actuate work-mover stop
- 83/606 . Interrelated tool actuating means and guard means
- 83/613 . . Work guard
- 83/619 . . Cutter guide slot closer
- 83/626 . Operation of member controlled by means responsive to position of element remote from member [e.g., interlock]
- 83/637 . . With means to initiate operation of member
- 83/647 . With means to convey work relative to tool station
- 83/6472 . . By fluid current
- 83/6473 . . Centrifugal feed to tangential tool [e.g., "Beria" type]
- 83/6475 . . With means to regulate work-feed speed
- 83/6476 . . Including means to move work from one tool station to another

83/6478	. . . Tool stations angularly related	83/6544	. . . . End of work protrudes through aperture in carrier
83/648	. . . . Work manipulated between tool stations	83/6545	. . . With means to guide work-carrier in nonrectilinear path
83/6481	. . . . With static tool	83/6547	. . . . About axis fixed relative to tool station
83/6483	. . . Tool stations staggered relative to one another	83/6548	. . . . . Infeed
83/6484	. . . Punch or die station	83/655	. . . . . About vertical axis
83/6486	. . . Notcher or pinker station	83/6552	. . . . . Cut normal to axis
83/6488	. . . Work reciprocated past double-edged knife	83/6553	. . . . . Work-guide tube
83/6489	. . . Slitter station	83/6555	. . . . . Cut normal to axis
83/6491	. . . . And transverse cutter station	83/6556	. . . . . Oscillating work-carrier
83/6492	. . Plural passes of diminishing work piece through tool station	83/6558	. . . . . Multiple cutters
83/6494	. . . Work alternately, angularly re-oriented relative to tool station	83/656	. . . . . Coaxial rotary cutters
83/6496	. . . . By additional means to engage work and orient it relative to tool station	83/6561	. . . . . Work stationary during cut
83/6497	. . . . By roller or roll-like element	83/6563	. . . With means to orient or position work carrier relative to tool station
83/6499	. . . Work rectilinearly reciprocated through tool station	83/6564	. . . . By pattern or templet
83/65	. . . . With means to cause or permit angular re-orientation of work about axis parallel to plane of cut	83/6566	. . . . By indexing means
83/6502	. . . . . By endless member having work-engaging teeth	83/6568	. . . With additional work-locating means on work-carrier
83/6504	. . . . . By member having work-engaging tooth	83/6569	. . With means to stop work conveyor
83/6505	. . . . . Including plural work-engaging teeth	83/6571	. . With means to store work articles
83/6507	. . . . . Fluid operated	83/6572	. . With additional means to engage work and orient it relative to tool station
83/6508	. . . . With means to cause movement of work transversely toward plane of cut	83/6574	. . . By work-stopping abutment
83/651	. . . . . By means to cause movement toward and away from plane of cut	83/6576	. . . By opposed lateral guide means
83/6512	. . . . . Actuated by movement of a member on reciprocating means	83/6577	. . . With means to adjust additional means
83/6513	. . . . . Actuated by passive means which is external to reciprocating means	83/6579	. . With means to press work to work-carrier
83/6515	. . . . . By means to define increment of movement toward plane of cut	83/658	. . With projections on work-carrier [e.g., pin wheel]
83/6516	. . . . . Interrelated with movement of reciprocating means	83/6582	. . Tool between tandem arranged work carrying means
83/6518	. . . . . By pusher mechanism	83/6584	. . Cut made parallel to direction of and during work movement
83/652	. . . . . With additional work holding or positioning means	83/6585	. . . Including nonconcurrently acting tool
83/6521	. . . . . . Work holding means includes actuator	83/6587	. . . Including plural, laterally spaced tools
83/6523	. . . . . . Including plural, simultaneously acting pusher elements	83/6588	. . . . Tools mounted on common tool support
83/6524	. . . . . . Independently adjustable	83/659	. . . . . Tools axially shiftable on support
83/6526	. . . . . . With additional means to retract elements	83/6592	. . . Interrelated work-conveying and tool-moving means
83/6528	. . . . . . Power derived from movement of reciprocating means	83/6593	. . . . With reciprocating tool [e.g., "jigsaw" type]
83/6529	. . . . . . Power derived from fluid pressure means	83/6595	. . . . With means to move tool laterally of feed direction during cutting
83/6531	. . . . . . Movement by screw means	83/6596	. . . . With means to effect difference between work speed and tool speed
83/6532	. . . . . . Movement by rack and pinion or pawl	83/6598	. . . . Tool co-axial with work-conveying means
83/6534	. . . . . . With handle	83/66	. . . With means to press work to tool
83/6536	. . . . . . By carriage	83/6601	. . . Bevel cutting tool
83/6537	. . . . . By cable or belt drive	83/6603	. . . Tool shiftable relative to work-conveying means
83/6539	. . With means for transverse positioning of work on a moving conveyor	83/6604	. . . Tool in contact with surface of work-conveying means
83/654	. . With work-constraining means on work conveyor [i.e., "work-carrier"]	83/6606	. . . Tool between laterally spaced work-conveying means
83/6542	. . . Plural means to constrain plural work pieces	83/6608	. . . By rectilinearly moving work carriage
		83/6609	. . . . 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	83/6955	. . . . . Having relative adjustment between guide surfaces
83/6624	. . . . . Hydraulic or pneumatic means	83/696	. . . . . With relative adjustment between guide and work or work-support
83/6625	. . . . . Gear or pulley	83/6965	. . . . . By or with additional movable work-support portion
83/6627	. . . . . Adapted to place tension on flacid member	83/697	. . . . . By rotation about an axis parallel to the work-support surface
83/6628	. . . . . Lever, cam, or link means	83/6975	. . . . . By rotation about an axis perpendicular to the work-support surface
83/663	. . . . On or attached to vehicle	83/698	. . . Including means to cause nonrectilinear tool infeed
83/6632	. . . . Supported for movement at one side of tool only	83/6985	. . . Of arcuately oscillating tool
83/6633	. . . By work moving flexible chain or conveyor	83/699	. . . Of tool carrier on single moving pivot
83/6635	. . . By feed roller	83/6995	. . . . Pivot moves in closed loop
83/6636	. . . . Pinch rollers	83/70	. . . . Pivot moves to and fro in arcuate path
83/6638	. . . Unattached manual work pusher	83/7005	. . . . . Axis of arcuate path moves during cutting
83/664	. . Roller	83/701	. . . . Pivot moves to and fro in rectilinear path
83/6641	. . . Plural independent rollers for feed of plural distinct work	83/7015	. . Having uniplanar compound motion
83/6643	. . . Shaped to conform to work	83/702	. . . By plural arcuately oscillating carrier
83/6644	. . . With work-supplying reel	83/7025	. . . Constantly oriented tool travelling in orbit
83/6646	. . . . And provision for selecting feed length	83/703	. . . Tool rocks cutting reciprocations
83/6648	. . . Continuous conveying during, cutting; e.g., straw cutting	83/7035	. . . . One tool reciprocates along fixed guide element
83/6649	. . . Supporting work at cutting station	83/704	. . With work-support and means to vary relationship between tool and work support
83/6651	. . . . Comprising part of cutting station	83/7045	. . Arcuately oscillating tool carried on single pivot
83/6652	. . . Tool and feed roller actuated by common handle	83/705	. . With means to support tool at opposite ends
83/6654	. . . Tool and roller on common movable support	83/7055	. . . And apply drive force to both ends of tool
83/6656	. . Rectilinear movement only	83/706	. . . . By flexible drive means
83/6657	. . . Tool opposing pusher	83/7065	. . . . By reciprocating rigid support
83/6659	. . . . Hydraulically or pneumatically actuated	83/707	. By endless band or chain knife
83/666	. . . . Screw actuated	83/7076	. . With programming means
83/6662	. . . . Gear or pulley actuated	83/7083	. . With cutter other than endlessly orbiting type
83/6664	. . . . Lever, cam, or link actuated	83/7089	. . Including contiguous oppositely moving knife portions
83/6665	. . . . Spring or gravity urged	83/7095	. . With means to change to non-endlessly orbiting cutter
83/6667	. . Work carrier rotates about axis fixed relative to tool station	83/7101	. . With tool in-feed
83/6668	. . Interrelated work-feeding means and tool-moving means	83/7108	. . . Including ground-traversing vehicle
83/667	. Tool carrier or guide affixed to work during cutting	83/7114	. . . Including means to permit arcuate in-feed motion
83/674	. . By flexible work-engaging member	83/712	. . . . Including means to relocate path of in-feed motion
83/68	. . Entirely work supported	83/7126	. . . . . Angular relative previous path
83/687	. By tool reciprocable along elongated edge	83/7133	. . . By gravity
83/6875	. . With means permitting tool to be rotatably adjusted about its cutting edge during cutting	83/7139	. . . . With fluid in-feed regulating means
83/688	. . With dynamic balancing or shock absorbing means	83/7145	. . . By motor-driven mechanism
83/6885	. . With tool of another type	83/7151	. . With scale or indicator
83/689	. . With means to change to other type tool	83/7158	. . Including plural cutting zones
83/6895	. . Plural reciprocable tools	83/7164	. . . With adjustment of separation between zones
83/69	. . Stored energy furnishes drive in one direction	83/717	. . . . By lever means
83/6905	. . With tool in-feed	83/7176	. . . . By screw-threaded means
83/691	. . . And auxiliary means for promoting or retarding tool in-feed	83/7183	. . . Including "figure-8" band
83/6915	. . . . By yieldable means	83/7189	. . . Comprising plural bands
83/692	. . . . And means to vary tool in-feed speed	83/7195	. . Including means to adjust relationship between band and work-support surface
83/6925	. . . . With interrelated tool actuating and in-feed means	83/7201	. . . By varying angle between band and work-support surface
83/693	. . . Of rectilinearly reciprocating tool	83/7208	. . . . By tilting band carrier
83/6935	. . . . With in-feed by pivoting carrier	83/7214	. . . . . About point of intersection of cutting span and work-support surface
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		

83/722	. . . By varying distance between band and work-support surface	83/7653	. . . . Having curved cutting edge to make arcuate cut, plural nonaligned intersecting cutting edges, or spaced punches
83/7226	. . With means to guard the tension	83/766	. . . . Spaced edges
83/7233	. . . Including means to retard undriven pulley or sprocket	83/7667	. . . 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	83/7673	. . . . Spaced edges
83/7245	. . . . And angular relationship of axes	83/768	. Rotatable disc tool pair or tool and carrier
83/7251	. . . . Including means to yieldably bias pulley	83/7684	. . With means to support work relative to tool[s]
83/7258	. . . . . By fluid means	83/7688	. . . Plural tool elements successively actuated at same station
83/7264	. . With special blade guide means	83/7693	. . . Tool moved relative to work-support during cutting
83/727	. With means to guide moving work	83/7697	. . . . Tool angularly adjustable relative to work-support
83/728	. . In pivotal or arcuate movement	83/7701	. . . Supporting surface and tool axis angularly related
83/73	. . Guide fixed to or integral with stationary tool element	83/7705	. . . . Adjustable angular relationship
83/731	. . . Tool element cooperates with a second tool	83/7709	. . . Unidirectionally movable work support
83/732	. . With guard	83/7713	. . . . With opposed work-presser
83/734	. . With attachment or operative connection to tool carrier	83/7718	. . . . . Presser co-axial with tool
83/735	. . With attachment or operative connection to passive tool guide	83/7722	. . . Support and tool relatively adjustable
83/736	. . Guide cooperates with template or straight edge secured to work	83/7726	. . . . By movement of the tool
83/738	. . Curved or deflecting guide	83/773	. . . Work-support includes passageway for tool [e.g., slotted table]
83/739	. . Positively confines or otherwise determines path of work	83/7734	. . With guard for tool
83/74	. . Adapted to permit maneuvering of work at tool zone	83/7738	. . Optional tool pairs alternatively operative
83/741	. . With movable or yieldable guide element	83/7743	. . . One element of tool pairs common to all pairs
83/743	. . . Opposed to work-supporting surface	83/7747	. . With means to permit replacement of tool
83/744	. . Plural guide elements	83/7751	. . Means to separate elements of tool pair
83/745	. . . Opposed	83/7755	. . Carrier for rotatable tool movable during cutting
83/747	. . Opposed to work-supporting surface	83/7759	. . . Unicyclic movement
83/748	. With work immobilizer	83/7763	. . . Tool carrier reciprocable rectilinearly
83/7487	. . Means to clamp work	83/7768	. . . . With means to adjust path of reciprocation
83/7493	. . . Combined with, peculiarly related to, other element	83/7772	. . . . . Angular relative to previous path
83/75	. . . . With or to tool guide	83/7776	. . . . With means to reciprocate carrier
83/7507	. . . . Guide for traveling cutter	83/778	. . . . . And means to rotate tool
83/7513	. . . . Tool or tool support on movable clamp jaw	83/7784	. . . . With means to rotate tool
83/752	. . . With means providing for plural steps in clamping stroke	83/7788	. . . Tool carrier oscillated or rotated
83/7527	. . . With equalizer or self-aligning jaw	83/7793	. . Means to rotate or oscillate tool
83/7533	. . . With biasing or counterbalancing means	83/7797	. . . Including means to rotate both elements of tool pair
83/754	. . . Clamp driven by yieldable means	83/7801	. . . . Including means to rotate both elements at different speeds
83/7547	. . . Liquid pressure actuating means	83/7805	. . . . And means to change speed of rotation
83/7553	. . . Including means to retain clamp jaw in position	83/7809	. . Tool pair comprises rotatable tools
83/756	. . . Self-locking drive means	83/7813	. . . Tool pair elements angularly related
83/7567	. . . Manually actuated drive means	83/7818	. . . . Elements of tool pair angularly adjustable relative to each other
83/7573	. . . Including clamping face of specific structure	83/7822	. . . Tool pair axially shiftable
83/758	. . . With means to adjust clamp position or stroke	83/7826	. . . . With shifting mechanism for at least one element of tool pair
83/7587	. . Gapped work-constrainer	83/783	. . . Tool pair comprises contacting overlapped discs
83/7593	. . Work-stop abutment	83/7834	. . . . With means to effect axial pressure on pair
83/76	. . . With scale or indicator	83/7838	. . . . . With means to change axial pressure
83/7607	. . . Normal to plane of cut	83/7843	. . . . With means to change overlap of discs
83/7613	. . . . Adjustable	83/7847	. . . Tool element axially shiftable
83/762	. . . . . Angularly relative to plane of cut; e.g., miter	83/7851	. . . Tool pair comprises disc and cylindrical anvil
83/7627	. . . . With traversing cutter guide; e.g., cut-off saw	83/7855	. . . . With adjustable means to urge tool elements together
83/7633	. . . Collapsible	83/7859	. . . Elements of tool pair adjustably spaced
83/764	. . . Retractable		
83/7647	. . . Adjustable		

83/7863	. . Tool pair comprises rotatable tool and nonrotatable tool	83/8714	. . . . Including presser member reinforcing, or flexure compensating, means
83/7868	. . Tool element selectively operative	83/8716	. . . . With manually actuated control apparatus for reciprocation of presser member
83/7872	. . Tool element mounted for adjustment	83/8717	. . By deforming resilient tool or tool support
83/7876	. . . Plural, axially spaced tool elements	83/8719	. . With transmission yieldable on overload
83/788	. Tool pair comprises rotatable anvil and fixed-type tool	83/872	. . With guard means
83/793	. . Anvil has motion in addition to rotation [i.e., traveling anvil]	83/8722	. . . Static
83/798	. . . Additional motion is along fixed arcuate path	83/8723	. . . . Adjustable
83/803	. . . With plural anvils	83/8725	. . Including movable, tool protecting, cushioning sheet
83/808	. Two tool pairs, driver for one pair moves relative to driver for other pair	83/8726	. . Single tool with plural selective driving means
83/811	. . One tool support acts as driver for other	83/8727	. . Plural tools selectively engageable with single drive
83/814	. . . Punch and shear	83/8729	. . . Predetermined sequence of selection
83/817	. . With variable spacing between tool pairs	83/873	. . . . Of paired tools
83/819	. . . With intermediate work support	83/8732	. . . Turret of tools
83/822	. . Punch and shear	83/8733	. . Tool movable to cooperate selectively with one of a plurality of mating tools
83/825	. . Successively acting	83/8735	. . With means providing for plural steps in tool stroke
83/828	. With illuminating or viewing means for work	83/8736	. . Sequential cutting motions
83/839	. . Mirror or lens	83/8737	. . With tool positioning means synchronized with cutting stroke
83/849	. With signal, scale, or indicator	83/8739	. . . Anvil moves into and out of operative position
83/85	. . Signal; e.g., alarm	83/874	. . . Straight line positioning
83/851	. . Indicator comprising work or product	83/8742	. . Tool pair positionable as a unit
83/852	. . Responsive to force	83/8743	. . . Straight line positioning
83/853	. . Indicates tool position	83/8745	. . Tool and anvil relatively positionable
83/855	. . . Relative to another element	83/8746	. . . Straight line
83/856	. . . . To work-engaging member	83/8748	. . Tool displaceable to inactive position [e.g., for work loading]
83/857	. . . . . Calibrated scale or indicator	83/8749	. . . By pivotal motion
83/858	. . . . . Indicates dimension of work being cut	83/875	. . With templet surface following tool
83/859	. . . . . Dynamic indicator	83/8752	. . Tool moves work to and against cooperating tool
83/86	. . . . To another tool assembly	83/8753	. . . With means to clamp or bind work to moving tool
83/861	. . . . To cooperating tool	83/8755	. . . One tool resiliently mounted or biased
83/862	. . . . To another component of tool assembly	83/8756	. . . Work forced through tool aperture or between spaced cooperating tools
83/863	. . . . Adjustable guide for traversing tool; e.g., radial saw guide or miter saw guide	83/8758	. . . Manually actuated work-moving tool
83/865	. . Indicates work characteristic	83/8759	. . With means to connect or disconnect tool and its drive
83/866	. . Indicates wear	83/8761	. . . Continuously moving drive means [e.g., "gag"]
83/867	. . Bubble level	83/8762	. . . . Hand actuated connecting means
83/868	. . Counter	83/8763	. . Convertible from tool path to another or from implement to machine
83/869	. Means to drive or to guide tool	83/8765	. . Magnet- or solenoid-actuated tool
83/8691	. . Unicyclic	83/8766	. . . Tool movement modifies actuating circuit
83/8693	. . . With adjustable stopping point or tool	83/8768	. . . Solenoid core is tool or tool support
83/8694	. . . With brake or blocking means	83/8769	. . Cutting tool operative in opposite directions of travel
83/8696	. . Means to change datum plane of tool or tool presser stroke	83/8771	. . Motion direction of tool influenced by resistance of work
83/8697	. . . For disabling of continuously actuated cutter	83/8772	. . One tool edge of tool pair encompasses work [e.g., wire cutter]
83/8699	. . . With adjustable stop	83/8773	. . Bevel or miter cut
83/87	. . . By varying length of tool stroke	83/8775	. . With tool tensioning means
83/8702	. . Clicker die press	83/8776	. . Constantly urged tool or tool support [e.g., spring biased]
83/8703	. . . With die handling attachment	83/8778	. . . Ledger blade
83/8704	. . . With reciprocating presser	83/8779	. . . Oscillating tool urged axially
83/8706	. . . . Laterally movable to selective operative positions	83/8781	. . . . And urged about pivotal axis
83/8707	. . . . . Pivotal or revolving only		
83/8709	. . . . . With means to impart, limit, or control pivotal motion of presser		
83/871	. . . . . Interrelated with presser reciprocating means		
83/8712	. . . . . With means to mount presser for oscillation about column		
83/8713	. . . . With adjustable bed block		

83/8782	. . .	Stored energy furnishes cutting force	83/8855	. . .	With spaced guide pins [e.g., die set leader pins]
83/8784	. . . .	With reset	83/8857	. . .	With inclined guides
83/8785	. . .	Through return [noncutting] stroke	83/8858	. . .	Fluid pressure actuated
83/8786	. . . .	Oscillating tool	83/886	. . . .	Utilizing fluid amplifier
83/8788	. .	Tool return mechanism separate from tool advance mechanism	83/8861	. . . .	Diaphragm
83/8789	. .	With simple revolving motion only	83/8863	. . . .	Explosive fluid
83/8791	. . .	Tool mounted on radial face of rotor	83/8864	. . . .	Plural cylinders
83/8792	. . .	Variable speed during one revolution [e.g., intermittent]	83/8866	. . . .	Offset cutter
83/8794	. . .	Revolving tool moves through recess in work holder or cooperating tool	83/8867	. . .	With means to adjust tool position on tool holder
83/8795	. . . .	Progressively cutting	83/8868	. . . .	Adjustably mounted cooperating tool
83/8796	. . .	Progressively cutting	83/887	. .	Parallel draw-cut [e.g., translatory]
83/8798	. .	With simple oscillating motion only	83/8871	. . .	Link suspension
83/8799	. . .	Plural tool pairs	83/8873	. .	Straight line motion combined with tilting in plane of stroke
83/8801	. . . .	Plural tools on single oscillating arm [i.e., tool holder]	83/8874	. .	Uniplanar compound motion
83/8802	. . .	And means to move cooperating cutter member	83/8876	. . .	Reciprocating plus work approach [e.g., saw type]
83/8804	. . .	Tool driver movable relative to tool support	83/8877	. . .	With gyratory drive
83/8805	. . . .	Cam or eccentric revolving about fixed axis	83/8878	. .	Guide
83/8807	. . . .	Gear or ratchet pawl drives toothed tool support	83/888	. . .	With nonrigidly positioned member
83/8808	. . . .	Toggle links, one link pivoted to tool support	83/8881	. . .	With anti-friction means
83/8809	. . . .	Fixed axis lever	83/8883	. . . .	Roller with peripheral flange or groove
83/8811	. . . . .	Adjustable mechanical advantage	83/8884	. . . .	Disc
83/8812	. . .	Cutting edge in radial plane	83/8886	. . .	With means to vary space between opposed members
83/8814	. . . .	Adjustable	83/8887	. . . .	By rectilinear movement of member
83/8815	. . . .	With guide means for the cutting member	83/8889	. . .	With means to adjust position
83/8817	. . .	Axially extending cutting edge	83/889	. .	Tool with either work holder or means to hold work supply
83/8818	. . . .	Axially progressing cut	83/896	. .	Rotatable wound package supply
83/882	. . . .	Adjustable	83/902	. . .	Plural supply sources
83/8821	. .	With simple rectilinear reciprocating motion only	83/909	. .	Cutter assemblage or cutter element therefor [e.g., chain saw chain]
83/8822	. . .	Edge-to-edge of sheet or web [e.g., traveling cutter]	83/913	. .	With means permitting removal of cutter element
83/8824	. . .	With provision for dynamic balance	83/917	. .	Having diverse cutting elements
83/8825	. . .	With lost motion in tool drive	83/921	. . .	And noncutting depth gauge
83/8827	. . .	Means to vary force on, or speed of, tool during stroke	83/925	. .	Having noncutting depth gauge
83/8828	. . .	Plural tools with same drive means	83/929	. .	Tool or tool with support
83/883	. . . .	Tools positioned by template	83/9292	. .	Wire tool
83/8831	. . . .	Plural distinct cutting edges on same support	83/9295	. .	Work supported tool [e.g., clicker die]
83/8832	. . . . .	Concentrically mounted	83/9297	. . .	With product ejection facilitator
83/8834	. . . . .	Successively acting	83/93	. . .	With tool manipulating portion
83/8835	. . .	And means to move cooperating cutting member	83/9302	. . .	With tool positioning abutment
83/8837	. . .	With application of force to opposite ends of tool supporting crosshead	83/9304	. . .	To sever article from work and cut within article
83/8838	. . . .	By relatively movable fixed axis levers	83/9307	. . .	With tool contour adjusting means
83/884	. . . .	By connecting rod articulated with tool support	83/9309	. .	Anvil
83/8841	. . .	Tool driver movable relative to tool support	83/9312	. . .	Rotatable type
83/8843	. . . .	Cam or eccentric revolving about fixed axis	83/9314	. .	Pointed perforators
83/8844	. . . .	Gear actuated tool support	83/9317	. .	Endless band or belt type
83/8845	. . . .	Toggle links, one link pivoted to tool support	83/9319	. .	Toothed blade or tooth therefor
83/8847	. . . .	Screw actuated tool support	83/9321	. . .	With means to vary tooth position
83/8848	. . . .	Connecting rod articulated with tool support	83/9324	. . .	With additional cutting means
83/885	. . . .	Fixed axis lever	83/9326	. . .	Plural separable sections
83/8851	. . . . .	Adjustable mechanical advantage	83/9329	. . . .	Tooth separable from blade
83/8853	. . . .	Including details of guide for tool or tool support	83/9331	. . . . .	By independent connecting element
83/8854	. . .	Progressively cutting	83/9333	. . . . .	Transversely movable
			83/9336	. . . . .	Arcuately movable
			83/9338	. . . . .	With additional element to prevent movement of connecting element

83/9341 . . . . . Rectilinearly movable  
 83/9343 . . . . . By deformation  
 83/9346 . . . Uniformly varying teeth or tooth spacing  
 83/9348 . . . Undulating tooth arrangement  
 83/935 . . . Plural tooth groups  
 83/9353 . . . . Including raker tooth group  
 83/9355 . . . . Including intermediate raker tooth  
 83/9358 . . . Series of dissimilar teeth  
 83/936 . . . Series of allochiral teeth  
 83/9362 . . . Teeth having transversely curved cutting edge  
 83/9365 . . . Teeth having cutting edge parallel to blade surface  
 83/9367 . . . Teeth having cutting edge perpendicular to blade surface  
 83/937 . . Tool mounted by and between spaced arms  
 83/9372 . . Rotatable type  
 83/9374 . . . With spacer interposed between shaft-mounted tools  
 83/9377 . . . Mounting of tool about rod-type shaft  
 83/9379 . . . . At end of shaft  
 83/9382 . . . Punching plus nonpunching tool  
 83/9384 . . . Notching plus nonnotching tool  
 83/9387 . . . Punching tool  
 83/9389 . . . . Shear type  
 83/9391 . . . Notching tool  
 83/9394 . . . Helical tool  
 83/9396 . . . Shear type  
 83/9399 . . . . Cutting edge wholly parallel to axis of rotation  
 83/9401 . . . . Cutting edge wholly normal to axis of rotation  
 83/9403 . . . Disc type  
 83/9406 . . . Radially adjustable tool  
 83/9408 . . . Spaced cut forming tool  
 83/9411 . . Cutting couple type  
 83/9413 . . . Spiral type cutter  
 83/9416 . . . To punch and cut punched article  
 83/9418 . . . Punching plus nonpunching tool  
 83/942 . . . Notching plus nonnotching tool  
 83/9423 . . . Punching tool  
 83/9425 . . . . Tool pair  
 83/9428 . . . . Shear-type male tool  
 83/943 . . . . Multiple punchings  
 83/9432 . . . . Plural spaced successively operative shearing portions  
 83/9435 . . . . . Progressive cutting  
 83/9437 . . . . Shear-type female tool  
 83/944 . . . . Multiple punchings  
 83/9442 . . . Notching tool  
 83/9444 . . . . Shear type  
 83/9447 . . . Shear type  
 83/9449 . . . Spaced cut forming tool  
 83/9452 . . . With tool contour adjusting means  
 83/9454 . . Reciprocable type  
 83/9457 . . Joint or connection  
 83/9459 . . . Magnetic connection  
 83/9461 . . . Resiliently biased connection  
 83/9464 . . . For rotary tool  
 83/9466 . . . . Flexible sleeve-like tool  
 83/9469 . . . . Adjustable  
 83/9471 . . . . . Rectilinearly  
 83/9473 . . . For rectilinearly reciprocating tool

83/9476 . . . . Tool is single element with continuous cutting edge [e.g., punch, etc.]  
 83/9478 . . . . Tool is single element reciprocable generally perpendicularly to elongate cutting edge [e.g., shear, etc.]  
 83/9481 . . . . Tool is single element reciprocable along elongate cutting edge [e.g., saw blade, etc.]  
 83/9483 . . . . Adjustable  
 83/9486 . . . . . Rectilinearly  
 83/9488 . . . Adjustable  
 83/949 . . . . Rectilinearly  
 83/9493 . . Stationary cutter  
 83/9495 . . . Nonparallel cutting edges  
 83/9498 . . . Parallel cutting edges  
 83/95 . Machine frame  
 83/96 . . Guard  
 83/97 . Miscellaneous

**Former US Class 117 Series**

**117/00 Single-crystal, oriented-crystal, and epitaxy growth processes; non-coating apparatus therefor**  
 117/10 . Apparatus  
 117/1004 . . with means for measuring, testing, or sensing  
 117/1008 . . . with responsive control means  
 117/1012 . . . with a window or port for visual observation or examination  
 117/1016 . . with means for treating single-crystal [e.g., heat treating]  
 117/102 . . for forming a platelet shape or a small diameter, elongate, generally cylindrical shape [e.g., whisker, fiber, needle, filament]  
 117/1024 . . for crystallization from liquid or supercritical state  
 117/1028 . . . Crucibleless apparatus having means providing movement of discrete droplets or solid particles to thin-film precursor [e.g., Verneuil method]  
 117/1032 . . . Seed pulling  
 117/1036 . . . . including solid member shaping means other than seed or product [e.g., EDFG die]  
 117/104 . . . . Means for forming a hollow structure [e.g., tube, polygon]  
 117/1044 . . . . including means forming a flat shape [e.g., ribbon]  
 117/1048 . . . . . Pulling includes a horizontal component  
 117/1052 . . . . including a sectioned crucible [e.g., double crucible, baffle]  
 117/1056 . . . . including details of precursor replenishment  
 117/106 . . . . including sealing means details  
 117/1064 . . . . including a fully-sealed or vacuum-maintained crystallization chamber [e.g., ampoule]  
 117/1068 . . . . including heating or cooling details [e.g., shield configuration]  
 117/1072 . . . . including details of means providing product movement [e.g., shaft guides, servo means]  
 117/1076 . . . having means for producing a moving solid-liquid-solid zone  
 117/108 . . . . Including a solid member other than seed or product contacting the liquid [e.g., crucible, immersed heating element]  
 117/1084 . . . . having details of a stabilizing feature  
 117/1088 . . . . including heating or cooling details

- 117/1092 . . . Shape defined by a solid member other than seed or product [e.g., Bridgman-Stockbarger]
- 117/1096 . . . including pressurized crystallization means [e.g., hydrothermal]

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

- 137/0318 . Processes
- 137/0324 . . With control of flow by a condition or characteristic of a fluid
- 137/0329 . . . Mixing of plural fluids of diverse characteristics or conditions
- 137/0335 . . . . Controlled by consistency of mixture
- 137/034 . . . . Controlled by conductivity of mixture
- 137/0346 . . . . Controlled by heat of combustion of mixture
- 137/0352 . . . . Controlled by pressure
- 137/0357 . . . For producing uniform flow
- 137/0363 . . . For producing proportionate flow
- 137/0368 . . . By speed of fluid
- 137/0374 . . . For regulating boiler feed water level
- 137/0379 . . . By fluid pressure
- 137/0385 . . Carbonated beverage handling processes
- 137/0391 . . Affecting flow by the addition of material or energy
- 137/0396 . . Involving pressure control
- 137/0402 . . Cleaning, repairing, or assembling
- 137/0407 . . . Repairing or assembling hydrant [e.g., fireplug, etc.]
- 137/0413 . . . Gas or water meter repairing or assembling
- 137/0419 . . . Fluid cleaning or flushing
- 137/0424 . . . . Liquid cleaning or flushing
- 137/043 . . . . . Valve or valve seat cleaning
- 137/0435 . . . Mechanical cleaning [e.g., pig, etc.]
- 137/0441 . . . Repairing, securing, replacing, or servicing pipe joint, valve, or tank
- 137/0447 . . . . Including joint or coupling
- 137/0452 . . . . Detecting or repairing leak
- 137/0458 . . . . Tapping pipe, keg, or tank
- 137/0463 . . . . . Particular aperture forming means
- 137/0469 . . . . . Cutter or cutting tool
- 137/0475 . . . . . Having deformable or inflatable means
- 137/048 . . . . With content loading or unloading [e.g., dispensing, discharge assistant, etc.]
- 137/0486 . . . . Specific valve or valve element mounting or repairing
- 137/0491 . . . Valve or valve element assembling, disassembling, or replacing
- 137/0497 . . . . Fluid actuated or retarded
- 137/0502 . . . . Multi way valve
- 137/0508 . . . . Ball valve or rotary ball valve
- 137/0514 . . . . Gate valve
- 137/0519 . . . . Plug valve
- 137/0525 . . . . Butterfly valve
- 137/053 . . . . Float valve
- 137/0536 . Highspeed fluid intake means [e.g., jet engine intake]
- 137/0645 . . With condition responsive control means
- 137/0753 . Control by change of position or inertia of system
- 137/0777 . . With second control
- 137/0801 . . Position relative body of water [e.g., marine governors]
- 137/0826 . . . Float controlled
- 137/085 . . . . Pressure or head controlled
- 137/0874 . . Vent opening or closing on tipping container
- 137/0898 . . By shifting of liquid level
- 137/0923 . . By pendulum or swinging member
- 137/0947 . . . With servo connection to valve
- 137/0971 . Speed responsive valve control
- 137/0989 . . Acceleration responsive valve control
- 137/1007 . . With manual valve control
- 137/1026 . . Speed change and excess speed valve control
- 137/1044 . . With other condition responsive valve control
- 137/1062 . . . Governor drive failure responsive
- 137/108 . . Centrifugal mass type [exclusive of liquid]
- 137/1098 . . . With multiple valves
- 137/1116 . . . Periodically actuated valve
- 137/1135 . . . Rotating valve and rotating governor
- 137/1153 . . . Excess speed responsive
- 137/1171 . . . With fluid servo-motor
- 137/1189 . Freeze condition responsive safety systems
- 137/1244 . . With freeze waste
- 137/1298 . . Stop and waste
- 137/1353 . . Low temperature responsive drains
- 137/1407 . Combustion failure responsive fuel safety cut-off for burners
- 137/1516 . . Thermo-electric
- 137/1624 . Destructible or deformable element controlled
- 137/1632 . . Destructible element
- 137/1639 . . . Combined destructible and fusible element
- 137/1647 . . . Explosive actuation
- 137/1654 . . . Separable valve coupling or conduit
- 137/1662 . . . . Tensile or sheer pin or bolt
- 137/1669 . . . Tensile or sheer pin or bolt
- 137/1677 . . . . Pressure causes pin or bolt to destruct
- 137/1684 . . . With alarm or indicator
- 137/1692 . . . Rupture disc
- 137/1699 . . . . Means for holding entire disc after rupture
- 137/1707 . . . . Disc burst after destruction of additional element
- 137/1714 . . . . Direct pressure causes disc to burst
- 137/1722 . . . . . Two-way rupture disc
- 137/1729 . . . . . Dome shape
- 137/1737 . . . . . Reverse buckling
- 137/1744 . . . . Specific weakening point
- 137/1752 . . . . Integral disc assembly
- 137/1759 . . . . Knife or cutter causes disc to break
- 137/1767 . . . . . Movable knife or cutter
- 137/1774 . . . With counterbalancing element
- 137/1782 . . . Frangible element returns pressure responsive valve
- 137/1789 . . . Having pressure responsive valve
- 137/1797 . . Heat destructible or fusible
- 137/1804 . . . With second sensing means
- 137/1812 . . . In fluid flow path
- 137/1819 . . . Safety cut-off
- 137/1827 . . . . With heater for destructible or fusible element
- 137/1834 . . . . . With external closing means
- 137/1842 . Ambient condition change responsive
- 137/1866 . . For controlling soil irrigation
- 137/189 . . . Soil moisture sensing
- 137/1915 . . Burner gas cutoff
- 137/1939 . . Atmospheric
- 137/1963 . . . Temperature

- 137/1987 . . . . With additional diverse control
- 137/2012 . . . Pressure
- 137/2036 . . Underwater
- 137/206 . . Flow affected by fluid contact, energy field or coanda effect [e.g., pure fluid device or system]
- 137/2065 . . Responsive to condition external of system
- 137/2071 . . . And causing change or correction of sensed condition
- 137/2076 . . Utilizing diverse fluids
- 137/2082 . . Utilizing particular fluid
- 137/2087 . . Means to cause rotational flow of fluid [e.g., vortex generator]
- 137/2093 . . . Plural vortex generators
- 137/2098 . . . Vortex generator as control for system
- 137/2104 . . . Vortex generator in interaction chamber of device
- 137/2109 . . . By tangential input to axial output [e.g., vortex amplifier]
- 137/2115 . . . . 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
- 137/2594 . . . . . Choke
- 137/2597 . . . . . Variable choke resistance
- 137/2599 . . . . . Venturi
- 137/2602 . . . . . Flapper
- 137/2605 . . . . Pressure responsive
- 137/2607 . . . . . With pressure reducing inlet valve
- 137/261 . . . . . Relief port through common sensing means
- 137/2612 . . . . . Common sensor for both bypass or relief valve and other branch valve
- 137/2615 . . . . . Bypass or relief valve opens as other branch valve closes
- 137/2617 . . . . . Bypass or relief valve biased open

137/262	. . . . . Increasing pressure progressively closes then reopens by-pass or relief valve	137/2788	. . . Control by filling auxiliary tank
137/2622	. . . . . Bypass or relief valve responsive to pressure downstream of outlet valve	137/2795	. . . Float-operated inlet to siphon
137/2625	. . . . . Pilot valve	137/2802	. . . Release of trapped air
137/2627	. . . . . Outlet valve carried by bypass or relief valve	137/2808	. . . . Through float-operated vent
137/263	. . . . . Plural sensors for single bypass or relief valve	137/2815	. . . . Through liquid trap seal
137/2632	. . . . . Sensors interconnected by timing or restrictive orifice	137/2822	. . . . . Auxiliary liquid trap seal
137/2635	. . . . . Pilot valve operated	137/2829	. . With strainer, filter, separator or sediment trap
137/2637	. . . . . Mechanical movement between sensor and valve	137/2836	. . With recorder, register, signal, indicator or inspection window
137/264	. . . . . Electrical control	137/2842	. . With flow starting, stopping or maintaining means
137/2642	. . . . . Sensor rigid with valve	137/2849	. . . Siphon venting or breaking
137/2645	. . . . . Flexible sensor	137/2856	. . . With leakage or entrained air removal
137/2647	. . . . . Pressure responsive outlet valve	137/2863	. . . Pressure applied to liquid in supply chamber
137/265	. . . Plural outflows	137/287	. . . Plunge or immersion starting
137/2652	. . . . Single actuator operates plural outlets simultaneously	137/2877	. . . Pump or liquid displacement device for flow passage
137/2655	. . . . Biased open isolation valve	137/2883	. . . . Piston
137/2657	. . . . Flow rate responsive	137/289	. . . . . Co-axial within flow passage
137/266	. . . . . Primer valve	137/2897	. . . . Collapsible bulb
137/2663	. . . . Pressure responsive	137/2904	. . . Siphon inlet movable to and from seat
137/2665	. . . . . With external control for correlating valve [e.g., manual]	137/2911	. . . With valve or closure in-flow passage
137/2668	. . . . Alternately or successively substituted outflow	137/2917	. . With means for mounting and/or positioning relative to siphon chamber
137/267	. . . . . Control by filling auxiliary gravitating or float operating tank	137/2924	. . Elements
137/2673	. . . . . Control by filling outlet tank or receiver	137/2931	. Diverse fluid containing pressure systems
137/2675	. . . . . Float controlled	137/2934	. . Gas lift valves for wells
137/2678	. . . . . Four port reversing valve	137/2937	. . Gas pressure discharge of liquids feed traps [e.g., to boiler]
137/268	. . . . . Responsive to pressure or flow interruption	137/294	. . . Gas pressure controlled by amount of liquids in boiler or discharge receiver
137/2683	. . . . . Plural outlets control with automatic reset	137/2943	. . . . Pressure connection at liquid level in boiler or discharge receiver
137/2685	. . . . . Manually set to a single outflow position	137/2947	. . . Gas pressure controlled by amount of liquid in trap
137/2688	. . . . . Flow rate responsive	137/295	. . . . Plural trap chambers
137/269	. . . . . Flow sensing turbine	137/2953	. . . . . Gravitating
137/2693	. . . . . Pressure responsive	137/2956	. . . . Gravitating vessel
137/2695	. . . . . Responsive to outlet pressure	137/2959	. . . . . Sinking or bucket type float
137/2698	. . . . . Electrical control	137/2962	. . . . . Pivoted vessel with fluid passage through pivot
137/27	. . Liquid level responsive	137/2965	. . . . Float responsive
137/2703	. . Flow rate responsive	137/2968	. . . . . Liquid control valve positively actuated
137/2705	. . . Pressure differential	137/2971	. . . . . Gas condensing type
137/2708	. . Plural sensors	137/2975	. . . . . Gas inlet and outlet valves unitary
137/271	. . . For single valve	137/2978	. . . Gas pressure controlled by manual or cyclic means
137/2713	. Siphons	137/2981	. . . . Movable trap chamber
137/272	. . Plural	137/2984	. . Foam control in gas charged liquids
137/2727	. . . Tank truck mounted	137/2987	. . . Level or pressure responsive
137/2733	. . . Sequentially discharging in parallel	137/299	. . . Separate handling of foam
137/274	. . . . From plural tanks	137/2993	. . . With conditioning trap or chamber
137/2747	. . . Main siphon with auxiliary starting, stopping or resetting siphon	137/2996	. . . . Recarbonation
137/2754	. . . . Sinking or bucket-type float operated main siphon, float emptying auxiliary siphon	137/30	. . . . With trap or chamber by-pass
137/2761	. . With discharge-controlling receiver	137/3003	. . Fluid separating traps or vents
137/2768	. . . With float	137/3006	. . . Liquids separated from liquid
137/2774	. . Periodic or accumulation responsive discharge	137/3009	. . . Plural discriminating outlets for diverse fluids
137/2781	. . . With manual control	137/3012	. . . . Common actuator for control valves
		137/3015	. . . . Choke or restricted passage gas bleed
		137/3018	. . . . . From above liquid level
		137/3021	. . . Discriminating outlet for liquid

- 137/3024 . . . . With alternately operated inlet and outlet valves
- 137/3028 . . . . With non-discriminating gas vent or liquid discharge
- 137/3031 . . . . . Abnormal pressure responsive liquid blow-off or drain
- 137/3034 . . . . . Manual control
- 137/3037 . . . . With auxiliary inlet or by-pass valve
- 137/304 . . . . With fluid responsive valve
- 137/3043 . . . . . Successively opened valves
- 137/3046 . . . . . Gas collecting float [e.g., inverted bucket]
- 137/3049 . . . . . Downstream from valve
- 137/3052 . . . . . Level responsive
- 137/3056 . . . . . Weight or pressure
- 137/3059 . . . . . Gravitating vessel
- 137/3062 . . . . . . Sinking or bucket type float
- 137/3065 . . . . . . . Servo-control
- 137/3068 . . . . . . . Float
- 137/3071 . . . . . . . With main line gas outlet from trap chamber
- 137/3074 . . . . . . . With outlet extending above liquid in trap
- 137/3077 . . . . . . . Servo-control
- 137/308 . . . . . . . With pressure balanced outlet valve
- 137/3084 . . . Discriminating outlet for gas
- 137/3087 . . . . With reverse flow stop or pressure regulating valve
- 137/309 . . . . Fluid sensing valve
- 137/3093 . . . . . With vaporized liquid stop
- 137/3096 . . . . . With separate return for condensate
- 137/3099 . . . . . Float responsive
- 137/3102 . . . With liquid emptying means
- 137/3105 . . . . Self-emptying
- 137/3109 . . Liquid filling by evacuating container
- 137/3112 . . Main line flow displaces additive from shunt reservoir
- 137/3115 . . Gas pressure storage over or displacement of liquid
- 137/3118 . . . Surge suppression
- 137/3121 . . . With return of liquid to supply
- 137/3124 . . . Plural units
- 137/3127 . . . With gas maintenance or application
- 137/313 . . . . Gas carried by or evolved from liquid
- 137/3133 . . . . . Gas injectors
- 137/3137 . . . . Gas injected by liquid pressure or flow
- 137/314 . . . . Unitary mounting for gas pressure inlet and liquid outlet
- 137/3143 . . . With liquid level responsive gas vent or whistle
- 137/3146 . . . . Combined high and low level responsive
- 137/3149 . Back flow prevention by vacuum breaking [e.g., anti-siphon devices]
- 137/3185 . . Air vent in liquid flow line
- 137/3222 . . . With liquid seal in liquid flow line
- 137/3258 . . . . Automatic valve in vent line
- 137/3294 . . . Valved
- 137/3331 . . . . With co-acting valve in liquid flow path
- 137/3367 . Larner-Johnson type valves; i.e., telescoping internal valve in expanded flow line section
- 137/3421 . . Line condition change responsive
- 137/3476 . . Internal servo-motor with internal pilot valve
- 137/353 . . . Pilot controlled passage in nose or needle
- 137/3584 . Inflatable article [e.g., tire filling chuck and/or stem]
- 137/36 . . . With pressure-responsive pressure-control means
- 137/3615 . . . Pulsating
- 137/3631 . . . Diaphragm, bellows or expansible tube
- 137/3646 . . . Co-axial inflation and relief valves
- 137/3662 . . With gauge or indicator
- 137/3677 . . . With deflating means
- 137/3693 . . . Selectively connected
- 137/3709 . . Stem attached relief valve
- 137/3724 . . With coupling means
- 137/374 . . With cap
- 137/3755 . . . Valve actuating, assembling or locking means on cap
- 137/3771 . . . . Valve manually seated
- 137/3786 . . Removable valve head and seat unit [valve insides]
- 137/3802 . With vehicle guide or support, e.g., service station
- 137/402 . Distribution systems involving geographic features
- 137/4238 . With cleaner, lubrication added to fluid or liquid sealing at valve interface
- 137/4245 . . Cleaning or steam sterilizing
- 137/4252 . . . Reverse fluid flow
- 137/4259 . . . With separate material addition
- 137/4266 . . . Steam sterilizing
- 137/4273 . . . Mechanical cleaning
- 137/428 . . . . Valve grinding motion of valve on seat
- 137/4287 . . . . . Concentric stem
- 137/4294 . . . . . Spring pressed
- 137/4301 . . . . . Lost motion permits grinding
- 137/4308 . . . . . With swivel-preventing means
- 137/4315 . . . . . Nut releasable from body and/or stem
- 137/4322 . . . . . With independent grinding actuator
- 137/4329 . . . . . Separable
- 137/4336 . . . . Cleaning member reciprocates in passage
- 137/4343 . . . . . By-pass cleaning
- 137/4351 . . . . . Independent actuation
- 137/4358 . . Liquid supplied at valve interface
- 137/4365 . . . Plural feed
- 137/4372 . . . Line pressure feed
- 137/4379 . . . Feed by or with actuation
- 137/4386 . . . Loss control
- 137/4393 . . . Screw feed
- 137/44 . . . . With check valve
- 137/4407 . . . . . Excess relief
- 137/4414 . . . . . Jacking
- 137/4421 . . . . . Jacking
- 137/4428 . . . . . Seating
- 137/4435 . . . Spring biased piston feed
- 137/4442 . . . External pressure
- 137/4449 . . . Gravity or capillary feed
- 137/4456 . With liquid valves or liquid trap seals
- 137/4463 . . Liquid seal in liquid flow line; flow liquid forms seal
- 137/4471 . . . Valves
- 137/4478 . . . . Line condition change responsive
- 137/4486 . . . . . Plural valves or valve seats
- 137/4493 . . . . . Pivoted valve
- 137/4501 . . . . . Ball valve
- 137/4508 . . . . . Seats vertically up
- 137/4516 . . . Seal replenishers
- 137/4523 . . . Plural inlet
- 137/4531 . . . Divided and recombined passages
- 137/4538 . . . Tangential inlet flow

137/4546	. . . Downward partition encircles projecting outlet	137/5433	. . 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	137/6017	. . . . Including removable valve head and seat unit
137/5333	. . Water crane type	137/6021	. . . . Including mechanical movement actuator
137/5339	. . . Spout operated valve	137/6024	. . . . Particular handle or handle fastening means
137/5345	. . . Rotating riser	137/6028	. . Assembling or disassembling pivoted valve
137/535	. . . . Spout articulated to riser	137/6031	. . Assembling or disassembling rotary valve
137/5356	. . . . Vertically movable riser	137/6035	. . . Rotary ball valve
137/5362	. . . Extensible spout	137/6038	. . . . Particular valve seat or interface seal
137/5368	. . . Spout articulated to riser	137/6041	. . . . . Replaceable
137/5374	. . Plural riser	137/6045	. . . . . With top entry valve
137/538	. . Expansible chamber operated by valve actuator for draining riser	137/6048	. . . Butterfly valve
137/5386	. . With pump or ejector	137/6052	. . . . Having valve head or seat packing
137/5392	. . Removable valve and valve seat	137/6055	. . . . With head and stem collections
137/5397	. . . With extension to facilitate removal	137/6058	. . . Plug valve
137/5403	. . Removable valve with supplemental check valve		
137/5409	. . Movable riser actuated valve		
137/5415	. . . Reciprocating riser		
137/5421	. . . . Piston type valve		
137/5427	. . Balanced valve		

137/6062	. . . . Having retainer at actuator end	137/6579	. . Circulating fluid in heat exchange relationship
137/6065	. . Assembling or disassembling reciprocating valve	137/6606	. . With electric heating element
137/6069	. . . Having particularly packed or sealed mechanical movement actuator	137/6633	. With fluid system support for workman or non-system material
137/6072	. . . Gate valve	137/6851	. With casing, support, protector or static constructional installations
137/6075	. . . . Bifaced	137/6855	. . Vehicle
137/6079	. . . . Having particular valve seat	137/6858	. . . Locomotive
137/6082	. . . . Including seal	137/6862	. . . . Boiler or steam dome
137/6086	. . Assembling or disassembling check valve	137/6866	. . . Railway car
137/6089	. . With mechanical movement between actuator and valve	137/6869	. . . . Car frame
137/6092	. . . Plural motions of valve	137/6873	. . . . End of car
137/6096	. . . Lever type	137/6877	. . . . Roof, wall or floor
137/6099	. . . Gear type	137/6881	. . . Automotive
137/6103	. . . Cam type	137/6884	. . . . Steering post or wheel
137/6106	. . . Screw type	137/6888	. . . . Dash
137/6109	. . Tool for applying or removing valve or valve member	137/6892	. . . . Floor or frame
137/6113	. . . Including sealing feature	137/6895	. . . . Fender or running board
137/6116	. . With holding means functioning only during transportation assembly or disassembly	137/6899	. . . With hose reel storage means
137/612	. . Tapping a pipe, keg, or apertured tank under pressure	137/6903	. . . Guided by means of track or guideway
137/6123	. . . With aperture forming means	137/6906	. . . Aerial or water-supported [e.g., airplane or ship, etc.]
137/6126	. . . Imperforate closure removing and holding tap	137/691	. . . With retractable or nonuse-positionable support wheel
137/613	. . . With valved closure or bung	137/6914	. . . Vehicle supports fluid compressor and compressed fluid storage tank
137/6133	. . . . Combined rotary and longitudinal movement of valve	137/6918	. . With hose storage or retrieval means
137/6137	. . . . Longitudinal movement of valve	137/6921	. . . With means for plural hoses
137/614	. . . . Rotary movement of valve	137/6925	. . . With flow regulation responsive to hose movement
137/6144	. . . With core ejectors	137/6929	. . . . Reel type
137/6147	. . . . Impact operated	137/6932	. . . With retrieval means
137/615	. . Foot valve extraction from top of enclosure	137/6936	. . . . Power stop or brake
137/6154	. . With disassembly tool engaging feature	137/694	. . . . Responsive to position of hose in casing
137/6157	. . . Wrench engaging lugs	137/6943	. . . . Biased to retracted position
137/6161	. . With provision of alternate wear parts	137/6947	. . . . Boom type
137/6164	. . . Valve heads and/or seats	137/6951	. . . . Weighted
137/6167	. . . . Opposite duplicate surfaces of unitary structure	137/6954	. . . Reel with support therefor
137/6171	. . . . . Homogeneous material	137/6958	. . . . Ground supported
137/6174	. . . . . Valve heads	137/6962	. . . Basket or holder for folded coiled hose
137/6178	. . . . Different portions of continuous surfaces	137/6966	. . Static constructional installations
137/6181	. . . . Successively used adjacent independent elements	137/6969	. . . Buildings
137/6184	. . Removable valve with normally disabled supplemental check valve	137/6973	. . . . Outside access to portions of the system
137/6188	. . . Check valve disabled by normally movable main valve part	137/6977	. . . . Escutcheon type support
137/6191	. . . . Ball check	137/698	. . . . Wall
137/6195	. . . . Spring bias	137/6984	. . . . Recessed gas outlet box
137/6198	. Non-valving motion of the valve or valve seat	137/6988	. . . . Floor installation
137/6253	. . Rotary motion of a reciprocating valve	137/6991	. . . Ground supporting enclosure
137/6307	. . . Turbine on valve	137/6995	. . . . Valve and meter wells
137/6362	. . . Manual rotating means	137/6999	. . . . With means to center well on valve
137/6416	. With heating or cooling of the system	137/7002	. . . . . Detachable base plate
137/6443	. . With burner	137/7006	. . . . . Vertical casing aligned by valve casing
137/647	. . . Flue extending through fluid	137/701	. . . . . Combined with actuator
137/6497	. . Hot and cold water system having a connection from the hot to the cold channel	137/7014	. . . . . Telescopic well casing
137/6525	. . Air heated or cooled [fan, fins, or channels]	137/7017	. . . . . Telescopic well casing
137/6552	. . With diversion of part of fluid to heat or cool the device or its contents	137/7021	. . . . . Covers
		137/7025	. . . . . Pipe line transport
		137/7028	. . . Tapering or tower type
		137/7032	. . Furniture and housing furnishings
		137/7036	. . Jacketed
		137/7039	. . Tank supports
		137/7043	. . Guards and shields

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
137/7384	. . . . Pilot float released	137/7738	. . Pop valves
137/7387	. . . . Over center mechanism	137/7739	. . . Pop closing valves
137/7391	. . . . . Shifting weight	137/774	. . . Pop pressure reactor in inflow to valve
137/7394	. . . . . Trip mechanism	137/7741	. . . Pop pressure reactor in branched released path
137/7397	. . . . . Weight or spring bias	137/7742	. . . . Separate relief valves or valves for each branch
137/74	. . . . Lost motion mechanism	137/7743	. . . Lost motion between pop pressure reactor and valve
137/7404	. . . Plural floats	137/7744	. . . Adjustable choke
137/7407	. . . With counter-balance	137/7745	. . . . Annular lip or baffle
137/741	. . . . Within tank	137/7746	. . . . . On movable valve part
137/7413	. . . Level adjustment or selection means	137/7747	. . . . . Screw threaded
137/7417	. . . With float leakage disposal		
137/742	. . . In separate communicating float chamber		
137/7423	. . . Rectilinearly traveling float		

137/7748	. . . . . Combustion engine induction type	137/7805	. . . . . Through external pipe
137/7749	. . . . . Valve in auxiliary inlet to induction line	137/7806	. . . . . Modified valve casing
137/775	. . . . . With manual modifier	137/7807	. . . . . Adjustable external lever
137/7751	. . . . . With suction compensator	137/7808	. . . . . Apertured reactor surface surrounds flow line
137/7752	. . . . . With separate reactor surface	137/7809	. . . . . Reactor surface separated by apertured partition
137/7753	. . . . . Unbalanced pivoted valve [e.g., unbalanced butterfly type]	137/781	. . . . . In valve stem
137/7754	. . . . . Line flow effect assisted	137/7811	. . . . . Also through reactor surface
137/7755	. . . . . Reactor surface normal to flow	137/7812	. . . . . Valve stem passes through the aperture
137/7756	. . . . . Reactor surface separated from flow by apertured partition	137/7813	. . . . . Plural reactor surfaces
137/7757	. . . . . Through separate aperture	137/7814	. . . . . Reactor is an inverted cup having liquid seal
137/7758	. . . . . Pilot or servo controlled	137/7815	. . . . . With movement dampener
137/7759	. . . . . Responsive to change in rate of fluid flow	137/7816	. . . . . Valve head in inlet chamber
137/776	. . . . . Control by pressures across flow line valve	137/7818	. . . . . Valve head in inlet chamber
137/7761	. . . . . Electrically actuated valve	137/7819	. . . . . Rectilinear valve stem rigid with reactor surface
137/7762	. . . . . Fluid pressure type	137/782	. . . . . Reactor surface is diaphragm
137/7764	. . . . . Choked or throttled pressure type	137/7821	. . . . . With valve closing bias
137/7765	. . . . . Pilot valve within main valve head	137/7822	. . . . . Reactor surface closes chamber
137/7766	. . . . . Choked passage through main valve head	137/7823	. . . . . Valve head in inlet chamber
137/7767	. . . . . Loose fitting piston	137/7824	. . . . . Reactor surface is inverted cup [float]
137/7768	. . . . . Pilot controls supply to pressure chamber	137/7825	. . . . . Rectilinear valve stem rigid with reactor surface
137/7769	. . . . . Single acting fluid servo	137/7826	. . . . . With valve closing bias
137/777	. . . . . Spring biased	137/7827	. . . . . In reactor chamber
137/7771	. . . . . Bi-directional flow valves	137/7828	. . . . . Valve head on yoke
137/7772	. . . . . One head and seat carried by head of another	137/7829	. . . . . Yoke has valve closing bias
137/7773	. . . . . Supporting valve only spring biased	137/783	. . . . . Reactor operatively connected to valve by mechanical movement
137/7774	. . . . . Supporting valve spring carried by supporting valve	137/7831	. . . . . With mechanical movement between actuator and valve
137/7775	. . . . . Spring stop on supported valve stem	137/7832	. . . . . Plural valves biased closed
137/7776	. . . . . Spring abuts guide for supported valve stem	137/7833	. . . . . With means for mounting or connecting to system
137/7777	. . . . . Both valves spring biased	137/7834	. . . . . Valve seat or external sleeve moves to open valve
137/7778	. . . . . Axes of ports perpendicular	137/7835	. . . . . Valve seating in direction of flow
137/7779	. . . . . Axes of ports parallel	137/7836	. . . . . Flexible diaphragm or bellows reactor
137/778	. . . . . Axes of ports co-axial	137/7837	. . . . . Direct response valves [i.e., check valve type]
137/7781	. . . . . With separate connected fluid reactor surface	137/7838	. . . . . Plural
137/7782	. . . . . With manual or external control for line valve	137/7839	. . . . . Dividing and recombining in a single flow path
137/7783	. . . . . Valve closes in responses to reverse flow	137/784	. . . . . Integral resilient member forms plural valves
137/7784	. . . . . Responsive to change in rate of fluid flow	137/7841	. . . . . One valve carries head and seat for second valve
137/7785	. . . . . Valve closes in response to excessive flow	137/7842	. . . . . Diverse types
137/7786	. . . . . Turbine or swinging vane type reactor	137/7843	. . . . . Integral resilient member forms plural valves
137/7787	. . . . . Expansive chamber subject to differential pressures	137/7845	. . . . . With common biasing means
137/7788	. . . . . Pressures across fixed choke	137/7846	. . . . . Mechanically interconnected
137/7789	. . . . . With Venturi tube having a connection to throat	137/7847	. . . . . With leak passage
137/7791	. . . . . Pressures across flow line valve	137/7848	. . . . . Permits flow at valve interface
137/7792	. . . . . Movable deflector or choke	137/7849	. . . . . Bypass in valve casing
137/7793	. . . . . With opening bias [e.g., pressure regulator]	137/785	. . . . . With retarder or dashpot
137/7794	. . . . . With relief valve	137/7851	. . . . . End of valve forms dashpot chamber
137/7795	. . . . . Multi-stage	137/7852	. . . . . End of valve moves inside dashpot chamber
137/7796	. . . . . Senses inlet pressure	137/7853	. . . . . Enlarged piston on end of valve stem
137/7797	. . . . . Bias variable during operation	137/7854	. . . . . In couplings for coaxial conduits, e.g., drill pipe check valves
137/7798	. . . . . Ancillary reactor surface responds to inlet pressure	137/7855	. . . . . Valve seat threaded into a coupling element
137/7799	. . . . . Liquid transfer		
137/78	. . . . . Weight		
137/7801	. . . . . Balanced valve		
137/7802	. . . . . Liquid level responsive gas flow control		
137/7803	. . . . . With protective separator		
137/7804	. . . . . Main flow through isolated reactor chamber		

137/7856	. . . . Valve seat formed on or carried by a coupling element	137/7919	. . . . . Guide and seat integral unit
137/7857	. . . . Valve seat clamped between coupling elements	137/792	. . . . . Guide and closure integral unit
137/7858	. . . . With means for selecting area of valve or seat	137/7921	. . . . . Weight coaxial with valve
137/7859	. . . . Single head, plural ports in parallel	137/7922	. . . . . Spring biased
137/786	. . . . Concentric ports	137/7923	. . . . . With means to protect spring from fluid
137/7861	. . . . Annular head	137/7924	. . . . . Spring under tension
137/7862	. . . . . Central post on seat	137/7925	. . . . . Piston-type valves
137/7863	. . . . . Stop	137/7927	. . . . . Ball valves
137/7864	. . . . . With guide	137/7928	. . . . . With follower
137/7865	. . . . . Guide	137/7929	. . . . . Spring coaxial with valve
137/7866	. . . . Plural seating	137/793	. . . . . Broken valve parts retainer
137/7867	. . . . Sequential	137/7931	. . . . . Spring in inlet
137/7868	. . . . . Resilient gasket	137/7932	. . . . . Valve stem extends through fixed spring abutment
137/7869	. . . . Biased open	137/7933	. . . . . Yoke or cage-type support for valve stem
137/787	. . . . Oppositely swinging vanes	137/7934	. . . . . Spring abuts removable valve stem guide
137/7871	. . . . Weight biased	137/7935	. . . . . Head slides on guide-rod concentric with spring
137/7873	. . . . . Ball valves	137/7936	. . . . . Spring guides valve head
137/7874	. . . . . Edge pivoted valve	137/7937	. . . . . Cage-type guide for stemless valves
137/7875	. . . . Pivoted valves	137/7938	. . . . . Guide means integral and coplanar with valve disk
137/7876	. . . . With external means for opposing bias	137/7939	. . . . . Head between spring and guide
137/7877	. . . . With means for retaining external means in bias opposing position	137/794	. . . . . With means for separating solid material from the fluid
137/7878	. . . . With bias adjustment indicator	137/7976	. . . Plural separating elements
137/7879	. . . . Resilient material valve	137/8013	. . . Sediment chamber
137/788	. . . . Having expansible port	137/8049	. . . Movable strainer
137/7881	. . . . . Apertured plate	137/8085	. . . Hollow strainer, fluid inlet and outlet perpendicular to each other
137/7882	. . . . . Having exit lip	137/8122	. . . Planar strainer normal to flow path
137/7883	. . . . . With biasing means	137/8158	. . . With indicator, register, recorder, alarm or inspection means
137/7884	. . . . . Side vent	137/8175	. . . Plural
137/7885	. . . . . Multiple slit	137/8192	. . . Unobvious - "combination lock" type
137/7886	. . . . . Internally extending mount	137/8208	. . . Time
137/7887	. . . . Center flexing strip	137/8225	. . . Position or extent of motion indicator
137/7888	. . . . With valve member flexing about securement	137/8242	. . . Electrical
137/7889	. . . . . Sleeve	137/8259	. . . Selection from plural branches
137/789	. . . . . Central mount	137/8275	. . . Indicator element rigidly carried by the movable element whose position is indicated
137/7891	. . . . . Flap or reed	137/8292	. . . . Movable indicator element is a pointer
137/7892	. . . . . With stop	137/8309	. . . . . Pointer integral with handle
137/7897	. . . . Vacuum relief type	137/8326	. . . Fluid pressure responsive indicator, recorder or alarm
137/7898	. . . . Pivoted valves	137/8342	. . . Liquid level responsive indicator, recorder or alarm
137/79	. . . . Head retained by removable closure	137/8359	. . . Inspection means
137/7901	. . . . Valve head movably connected for accommodation to seat	137/8376	. . . Combined
137/7902	. . . . Valve mounted on end of pipe	137/8593	. . . Systems
137/7903	. . . . Weight biased	137/85938	. . . Non-valved flow dividers
137/7904	. . . . Reciprocating valves	137/85946	. . . Faucet connected, sink drained
137/7905	. . . . Plural biasing means	137/85954	. . . Closed circulating system
137/7906	. . . . Cam means for adjusting and fixing bias	137/85962	. . . With thermal circulating means [thermo-siphons]
137/7907	. . . . Varying effective lever arm	137/8597	. . . Main line as motive fluid for follower-type feeder
137/7908	. . . . Weight biased	137/85978	. . . With pump
137/7909	. . . . Valve body is the weight	137/85986	. . . Pumped fluid control
137/791	. . . . . Ball valves	137/85994	. . . . Manual
137/7911	. . . . . Removable cage	137/86002	. . . . Fluid pressure responsive
137/7912	. . . . . Separable seat		
137/7913	. . . . . Guided head		
137/7914	. . . . . Cage		
137/7915	. . . . . Guide stem		
137/7916	. . . . . With closing stop		
137/7917	. . . . . Oppositely disposed		
137/7918	. . . . . Head slidable on guide rod		

137/8601 . . . . .	And pilot valve	137/86429 . . . . .	Attachable and removable element
137/86019 . . . . .	Direct response valve	137/86437 . . . . .	Adjustable cam
137/86027 . . . . .	Electric	137/86445 . . . . .	Plural, sequential, valve actuations
137/86035 . . . . .	Combined with fluid receiver	137/86453 . . . . .	Plural trips or trip actuations
137/86043 . . . . .	Reserve or surge receiver	137/86461 . . . . .	Variable cycle
137/86051 . . . . .	Compressed air supply unit	137/86469 . . . . .	Clock alarm mechanism controlled
137/86059 . . . . .	Hydraulic power unit	137/86477 . . . . .	Biased latch, cam operated
137/86067 . . . . .	Fluid sump	137/86485 . . . . .	Line condition change responsive release of valve
137/86075 . . . . .	And jet-aspiration type pump	137/86493 . . . . .	Multi-way valve unit
137/86083 . . . . .	Vacuum pump	137/86501 . . . . .	Sequential distributor or collector type
137/86091 . . . . .	Resiliently mounted pump	137/86509 . . . . .	Sequentially progressive opening or closing of plural ports
137/86099 . . . . .	Hand pump	137/86517 . . . . .	With subsequent closing of first port
137/86107 . . . . .	Multiple inlet with multiple outlet	137/86525 . . . . .	Flow combining with flow dividing
137/86115 . . . . .	Downstream cyclic distributor	137/86533 . . . . .	Rotary
137/86123 . . . . .	Distributor part unitary with movable pump part	137/86541 . . . . .	Plug
137/86131 . . . . .	Plural	137/86549 . . . . .	Selective reciprocation or rotation
137/86139 . . . . .	Serial	137/86558 . . . . .	Plural noncommunicating flow paths
137/86147 . . . . .	With single motive input	137/86566 . . . . .	Rotary plug
137/86155 . . . . .	One pump driven by motive fluid from the other	137/86574 . . . . .	Supply and exhaust
137/86163 . . . . .	Parallel	137/86582 . . . . .	Pilot-actuated
137/86171 . . . . .	With pump bypass	137/8659 . . . . .	Variable orifice-type modulator
137/86179 . . . . .	Drain valve actuator mounted on pump	137/86598 . . . . .	Opposed orifices; interposed modulator
137/86187 . . . . .	Plural tanks or compartments connected for serial flow	137/86606 . . . . .	Common to plural valve motor chambers
137/86196 . . . . .	Separable with valved-connecting passage	137/86614 . . . . .	Electric
137/86204 . . . . .	Fluid progresses by zigzag flow	137/86622 . . . . .	Motor-operated
137/86212 . . . . .	Plural compartments formed by baffles	137/8663 . . . . .	Fluid motor
137/8622 . . . . .	Plural top-to-bottom connected tanks	137/86638 . . . . .	Rotary valve
137/86228 . . . . .	With communicating opening in common walls of tanks or compartments	137/86646 . . . . .	Plug type
137/86236 . . . . .	Tank with movable or adjustable outlet or overflow pipe	137/86654 . . . . .	For plural lines
137/86244 . . . . .	Horizontally traversing outlet	137/86662 . . . . .	Axial and radial flow
137/86252 . . . . .	Float-supported outlet	137/8667 . . . . .	Reciprocating valve
137/8626 . . . . .	Swinging outlet pipe or spout	137/86678 . . . . .	Combined disk or plug and gate or piston
137/86268 . . . . .	With running joint between movable parts of system	137/86686 . . . . .	Plural disk or plug
137/86276 . . . . .	Movable tank	137/86694 . . . . .	Piston valve
137/86284 . . . . .	With antisplash means not in flow passage	137/86702 . . . . .	With internal flow passage
137/86292 . . . . .	System with plural openings, one a gas vent or access opening	137/8671 . . . . .	With annular passage [e.g., spool]
137/863 . . . . .	Access and outlet	137/86718 . . . . .	Dividing into parallel flow paths with recombining
137/86308 . . . . .	Tank access opening and bottom outlet	137/86726 . . . . .	Valve with bypass connections
137/86316 . . . . .	Access opening interlock or telltale on outlet valve actuator	137/86734 . . . . .	With metering feature
137/86324 . . . . .	Tank with gas vent and inlet or outlet	137/86743 . . . . .	Rotary
137/86332 . . . . .	Vent and inlet or outlet in unitary mounting	137/86751 . . . . .	Plug
137/8634 . . . . .	With vented outlet	137/86759 . . . . .	Reciprocating
137/86348 . . . . .	Tank with internally extending flow guide, pipe or conduit	137/86767 . . . . .	Spool
137/86356 . . . . .	Nondraining overflow type	137/86775 . . . . .	With internal passage
137/86364 . . . . .	Inverted "U" passage	137/86783 . . . . .	Unequal heads
137/86372 . . . . .	Inlet internally extending	137/86791 . . . . .	Piston
137/86381 . . . . .	Head-establishing standpipe or expansion chamber [e.g., surge tanks]	137/86799 . . . . .	With internal flow passage
137/86389 . . . . .	Programmer or timer	137/86807 . . . . .	Sequential opening or closing of serial ports in single flow line
137/86397 . . . . .	With independent valve controller	137/86815 . . . . .	Multiple inlet with single outlet
137/86405 . . . . .	Repeating cycle	137/86823 . . . . .	Rotary valve
137/86413 . . . . .	Self-cycling	137/86831 . . . . .	Selective opening of plural ports
137/86421 . . . . .	Variable	137/86839 . . . . .	Four port reversing valves
		137/86847 . . . . .	Pivoted valve unit
		137/86855 . . . . .	Gate
		137/86863 . . . . .	Rotary valve unit
		137/86871 . . . . .	Plug
		137/86879 . . . . .	Reciprocating valve unit
		137/86887 . . . . .	Combined disk or plug and gate or piston

137/86895 . . . . Plural disk or plug	137/87314 . . . . . Electromagnetic or electric control [e.g., digital control, bistable electro control, etc.]
137/86903 . . Plural petcocks	
137/86911 . . Sequential distributor or collector type	
137/86919 . . Sequentially closing and opening alternately seating flow controllers	137/87322 . . . With multi way valve having serial valve in at least one branch
137/86928 . . Sequentially progressive opening or closing of plural valves	137/8733 . . . Fluid pressure regulator in at least one branch
137/86936 . . . Pressure equalizing or auxiliary shunt flow	137/87338 . . . Flow passage with bypass
137/86944 . . . . One valve seats against other valve [e.g., concentric valves]	137/87346 . . . . Including mixing feature
	137/87354 . . . . Including flowmeter
137/86952 . . . . . Locomotive throttle	137/87362 . . . . Including cleaning, treating, or heat transfer feature
137/8696 . . . . . Gate	137/8737 . . . . . Water treatment feature
137/86968 . . . . . With balancing chamber	137/87378 . . . Second valve assembly carried by first valve head
137/86976 . . . . . First valve moves second valve	
137/86984 . . . . . Actuator moves both valves	137/87386 . . . . With rotary plug having variable restrictor
137/86992 . . . With subsequent closing of first opened port	137/87394 . . . . Carried valve is direct response valve [e.g., check valve, etc.]
137/87 . . . . Simultaneously moved port controllers	
137/87008 . . . Screw-actuated differential valves	137/87402 . . . With foam controlling means [e.g., beer, soda faucets]
137/87016 . . . Lost motion	
137/87024 . . . . Cam determines sequence	137/8741 . . . With common operator
137/87032 . . . . Rotary concentric valves	137/87418 . . . . Balanced valve
137/8704 . . . . First valve actuates second valve	137/87426 . . . . Single resilient member actuates or forms plural passages
137/87048 . . With preselecting means for plural valve actuator	137/87434 . . . . Valves deform to close passage
137/87056 . . With selective motion for plural valve actuator	137/87442 . . . . Rotary valve
137/87064 . . . Oppositely movable cam surfaces	137/8745 . . . . . Including rigid plate with flexible or resilient seal
137/87072 . . . Rotation about either of two pivotal axes	
137/8708 . . . Rotation of actuator arm about its pivot and its axis	137/87458 . . . . . Axes of rotation of valves intersect at point
137/87088 . . . Reciprocation along and rotation about same axis	137/87467 . . . . . Axes of rotation parallel
	137/87475 . . . . . Adjacent plate valves always parallel
137/87096 . . Valves with separate, correlated, actuators	137/87483 . . . . . Adjacent plate valves counter rotate
137/87105 . . . Correlated across separable flow path joint	137/87491 . . . . Mechanical movement between actuator and non-rotary valve
137/87113 . . . Interlocked	
137/87121 . . . Coaxial stems	137/87499 . . . Fluid actuated or retarded
137/87129 . . . . Rotary	137/87507 . . . Electrical actuator
137/87137 . . . . . And reciprocating	137/87515 . . . Mechanical movement between actuator and valve
137/87145 . . . . . Concentric, central valve removable	
137/87153 . . Plural noncommunicating flow paths	137/87523 . . . Rotary valve
137/87161 . . . With common valve operator	137/87531 . . . . Butterfly valve
137/87169 . . Supply and exhaust	137/87539 . . . Having guide or restrictor
137/87177 . . . With bypass	137/87547 . . . . Manually variable
137/87185 . . . . Controlled by supply or exhaust valve	137/87555 . . . Having direct response valve [e.g., check valve, etc.]
137/87193 . . . Pilot-actuated	
137/87201 . . . . Common to plural valve motor chambers	137/87563 . . . . With reverse flow direction
137/87209 . . . . Electric	137/87571 . . Multiple inlet with single outlet
137/87217 . . . Motor	137/87579 . . . Faucet attachment
137/87225 . . . . Fluid motor	137/87587 . . . Combining by aspiration
137/87233 . . . Biased exhaust valve	137/87595 . . . . Combining of three or more diverse fluids
137/87241 . . . . Biased closed	137/87603 . . . . Plural motivating fluid jets
137/87249 . . Multiple inlet with multiple outlet	137/87611 . . . . Flow control by varying position of a fluid inlet relative to entrainment chamber
137/87257 . . Hydraulic brake line [e.g., hill holders]	
137/87265 . . Dividing into parallel flow paths with recombining	137/87619 . . . . With selectively operated flow control means in inlet
	137/87627 . . . . . Flow control means is located in aspirated fluid inlet
137/87273 . . . With fluid coupling [e.g., railway car hose coupling, truck-trailer oil system coupling, etc.]	
137/87281 . . . System having plural inlets	137/87635 . . . . . Single actuator operates flow control means located in both motivating fluid and aspirated fluid inlets
137/8729 . . . . Having digital flow controller	
137/87298 . . . Having digital flow controller	137/87643 . . . . With condition responsive valve
137/87306 . . . . Having plural branches under common control for separate valve actuators	137/87652 . . . With means to promote mixing or combining of plural fluids
	137/8766 . . . . With selectively operated flow control means

137/87668 . . . . . Single actuator operates plural flow control means

137/87676 . . . . . With flow control

137/87684 . . . . . Valve in each inlet

137/87692 . . . . . With common valve operator

137/877 . . . . . With flow control means for branched passages

137/87708 . . . . . With common valve operator

137/87716 . . . . . For valve having a flexible diaphragm valving member

137/87724 . . . . . For valve having a ball head

137/87732 . . . . . With gearing

137/8774 . . . . . Threaded actuator

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

137/87756 . . . . . Spring biased

137/87764 . . . . . Having fluid actuator

137/87772 . . . . . With electrical actuation

137/8778 . . . . . Spring biased

137/87788 . . . . . With valve or movable deflector at junction

137/87796 . . . . . Movable deflector spout in lateral port

137/87804 . . . . . Valve or deflector is tubular passageway

137/87812 . . . . . Pivoted valve or deflector

137/8782 . . . . . Rotary valve or deflector

137/87829 . . . . . Biased valve

137/87837 . . . . . Spring bias

137/87845 . . . . . For valve having a ball head

137/87853 . . . . . With threaded actuator

137/87861 . . . . . Spring coaxial with valve

137/87869 . . . . . Biased open

137/87877 . . . . . Single inlet with multiple distinctly valved outlets

137/87885 . . . . . Sectional block structure

137/87893 . . . . . With fluid actuator

137/87901 . . . . . With threaded actuator

137/87909 . . . . . Containing rotary valve

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

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

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

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

137/87949 . . . . . Linear motion of flow path sections operates both

137/87957 . . . . . Valves actuate each other

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

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

137/87981 . . . . . Common actuator

137/87989 . . . . . Delivery cock with terminal valve

137/87997 . . . . . Alternately seating

137/88005 . . . . . Biased valve

137/88014 . . . . . Opposed screw

137/88022 . . . . . One valve head provides seat for other head

137/8803 . . . . . Also carries head of other valve

137/88038 . . . . . One valve head carries other valve head

137/88046 . . . . . Biased valve with external operator

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

137/88062 . . . . . Coaxial oppositely directed seats

137/8807 . . . . . Articulated or swinging flow conduit

137/88078 . . . . . Actuates valve

137/88086 . . . . . Plural motions of valve

137/88094 . . . . . Reciprocating valve

137/88102 . . . . . Rotary valve

137/8811 . . . . . Frangible

137/9029 . . . . . With coupling

137/9138 . . . . . Flexible

137/9247 . . . . . With closure

137/9464 . . . . . Faucets and spouts

137/9682 . . . . . Miscellaneous

**Former US Class 152 Series**

**152/00 Resilient tires and wheels**

152/10 . . . . . Tires, resilient

152/10009 . . . . . Emergency

152/10018 . . . . . with splash guards

152/10027 . . . . . with wear indicating feature

152/10036 . . . . . Cushion and pneumatic combined

152/10045 . . . . . Metallic spring cushion

152/10054 . . . . . Enclosed cushion

152/10063 . . . . . Superimposed

152/10072 . . . . . Plungers

152/10081 . . . . . Edge-secured cushion

152/1009 . . . . . Guide flanges

152/10099 . . . . . Radial stops

152/10108 . . . . . Bolts or studs

152/10117 . . . . . Integral

152/10126 . . . . . with removable inner tube

152/10135 . . . . . Armored

152/10144 . . . . . Single tube tires internal

152/10153 . . . . . Metal

152/10162 . . . . . Plates

152/10171 . . . . . Casing construction

152/1018 . . . . . Embedded

152/10189 . . . . . Metal

152/10198 . . . . . Plates

152/10207 . . . . . Annular

152/10216 . . . . . Linked mat

152/10225 . . . . . Woven

152/10234 . . . . . Interliners

152/10243 . . . . . Cotton, fabric, or rubber

152/10252 . . . . . Metal

152/10261 . . . . . Scale armor

152/1027 . . . . . Annular

152/10279 . . . . . Cushion

152/10288 . . . . . Sectional

152/10297 . . . . . Annular

152/10306 . . . . . Superimposed

152/10315 . . . . . Superimposed

152/10324 . . . . . with apertured external binders

152/10333 . . . . . Radial bolt secured

152/10342 . . . . . Abutting sections

152/10351 . . . . . with annular internal binders

152/1036 . . . . . Interfitting

152/10369 . . . . . Indented at joints

152/10378 . . . . . Casing enclosed core

152/10387 . . . . . Separate core

152/10396 . . . . . Removable

152/10405 . . . . . Sponge rubber

152/10414 . . . . . with core compression

152/10423 . . . . . Superimposed rings

152/10432 . . . . . Sectional transversely  
 152/10441 . . . . . Balls  
 152/1045 . . . . . Integral structure  
 152/10459 . . . . . Recessed  
 152/10468 . . . . . Chambered  
 152/10477 . . . . . Perforated  
 152/10486 . . . . . Chambered  
 152/10495 . . Pneumatic tire or inner tube  
 152/10504 . . . Asymmetric tire  
 152/10513 . . . Tire reinforcement material characterized by short length fibers or the like  
 152/10522 . . . Multiple chamber  
 152/10531 . . . Cylinder and piston  
 152/1054 . . . . . Mutually free walls  
 152/10549 . . . . . Interfitting  
 152/10558 . . . . . Balls  
 152/10567 . . . . . with simultaneous inflating means  
 152/10576 . . . . . Annular chambers  
 152/10585 . . . . . with simultaneous inflating means  
 152/10594 . . . . . Mutually free walls  
 152/10603 . . . . . with simultaneous inflating means  
 152/10612 . . . . . with simultaneous inflating means  
 152/10621 . . . Sectional casings  
 152/1063 . . . . . Circumferential  
 152/10639 . . . . . Rigid inner sections  
 152/10648 . . . with means restricting relative movement between tire and inner tube [e.g., anti-creep feature, etc.]  
 152/10657 . . . with means to protect inner tube from rim  
 152/10666 . . . Automatic sealing of punctures [e.g., self-healing, etc.]  
 152/10675 . . . . . Using flowable coating or composition  
 152/10684 . . . . . On inner surface of tubeless tire  
 152/10693 . . . . . Sealant in plural layers or plural pockets  
 152/10702 . . . . . within or part of construction of inflating inner tube  
 152/10711 . . . . . Sealant in plural layers or plural pockets  
 152/1072 . . . . . by compression  
 152/10729 . . . . . with reinflating means  
 152/10738 . . . with means to protect tire from rim  
 152/10747 . . . Means other than rim closing the tire opening  
 152/10756 . . . . . Positive casing closure  
 152/10765 . . . Characterized by belt or breaker structure  
 152/10774 . . . . . Consisting of only one ply  
 152/10783 . . . . . Reinforcing plies made up from wound narrow ribbons  
 152/10792 . . . . . Structure where each bias angle reinforcing cord ply has no opposingly angled ply  
 152/10801 . . . . . Structure made up of two or more sets of plies wherein the reinforcing cords in one set lie in a different angular position relative to those in other sets  
 152/1081 . . . . . Breaker or belt characterized by the chemical composition or physical properties of elastomer or the like  
 152/10819 . . . Characterized by the structure of the bead portion of the tire  
 152/10828 . . . . . Chafer or sealing strips  
 152/10837 . . . . . Bead characterized by the radial extent of apex, flipper or chafer into tire sidewall  
 152/10846 . . . . . Bead characterized by the chemical composition and or physical properties of elastomers or the like

152/10855 . . . Characterized by the carcass, carcass material, or physical arrangement of the carcass materials  
 152/10864 . . . . . Sidewall stiffening or reinforcing means other than main carcass plies or foldups thereof about beads  
 152/10873 . . . . . with two or more differing cord materials  
 152/10882 . . Patches  
 152/10891 . . . Mechanically secured  
 152/109 . . . . . Inside and outside, bolt connected  
 152/10909 . . . with plugs  
 152/10918 . . . Bandages  
 152/10927 . . . . . Mechanically secured  
 152/10936 . . . . . to felly or rim

**Former US Class 156 Series**

**156/00 Adhesive bonding and miscellaneous chemical manufacture**  
 156/10 . . Methods of surface bonding and/or assembly therefor  
 156/1002 . . with permanent bending or reshaping or surface deformation of self sustaining lamina  
 156/1003 . . . by separating laminae between spaced secured areas [e.g., honeycomb expanding]  
 156/1005 . . . by inward collapsing of portion of hollow body  
 156/1007 . . . Running or continuous length work  
 156/1008 . . . . . Longitudinal bending  
 156/101 . . . . . Prior to or during assembly with additional lamina  
 156/1011 . . . . . Overedge bending or overedge folding  
 156/1013 . . . . . and edge-joining of one piece blank to form tube  
 156/1015 . . . . . Folding  
 156/1016 . . . . . Transverse corrugating  
 156/1018 . . . . . Subsequent to assembly of laminae  
 156/102 . . . . . with deformation or cutting of corrugated lamina  
 156/1021 . . . . . Treating material of corrugated lamina or dry adhesive thereon to render tacky  
 156/1023 . . . . . Surface deformation only [e.g., embossing]  
 156/1025 . . . to form undulated to corrugated sheet and securing to base with parts of shaped areas out of contact  
 156/1026 . . . with slitting or removal of material at reshaping area prior to reshaping  
 156/1028 . . . by bending, drawing or stretch forming sheet to assume shape of configured lamina while in contact therewith  
 156/103 . . . . . Encasing or enveloping the configured lamina  
 156/1031 . . . . . with preshaping of lamina  
 156/1033 . . . . . Flexible sheet to cylinder lamina  
 156/1034 . . . Overedge bending of lamina about edges of sheetlike base  
 156/1036 . . . Bending of one piece blank and joining edges to form article  
 156/1038 . . . . . Hollow cylinder article  
 156/1039 . . . Surface deformation only of sandwich or lamina [e.g., embossed panels]  
 156/1041 . . . . . Subsequent to lamination  
 156/1043 . . . Subsequent to assembly  
 156/1044 . . . . . of parallel stacked sheets only  
 156/1046 . . . . . Bending of one lamina only

- 156/1048 . . . . . to form dished or receptacle-like product
- 156/1049 . . . . . Folding only
- 156/1051 . . . . . by folding
- 156/1052 . . . . . with cutting, punching, tearing or severing
- 156/1054 . . . . . and simultaneously bonding [e.g., cut-seaming]
- 156/1056 . . . . . Perforating lamina
- 156/1057 . . . . . Subsequent to assembly of laminae
- 156/1059 . . . . . Splitting sheet lamina in plane intermediate of faces
- 156/1061 . . . . . Spiral peeling
- 156/1062 . . . . . Prior to assembly
- 156/1064 . . . . . Partial cutting [e.g., grooving or incising]
- 156/1066 . . . . . Cutting to shape joining edge surfaces only
- 156/1067 . . . . . Continuous longitudinal slitting
- 156/1069 . . . . . Bonding face to face of laminae cut from single sheet
- 156/107 . . . . . Punching and bonding pressure application by punch
- 156/1072 . . . . . Closure cap liner applying type
- 156/1074 . . . . . Separate cutting of separate sheets or webs
- 156/1075 . . . . . of plural laminae from single stock and assembling to each other or to additional lamina
- 156/1077 . . . . . Applying plural cut laminae to single face of additional lamina
- 156/1079 . . . . . Joining of cut laminae end-to-end
- 156/108 . . . . . Flash, trim or excess removal
- 156/1082 . . . . . Partial cutting bonded sandwich [e.g., grooving or incising]
- 156/1084 . . . . . of continuous or running length bonded web
- 156/1085 . . . . . One web only
- 156/1087 . . . . . Continuous longitudinal slitting
- 156/1089 . . . . . of discrete laminae to single face of additional lamina
- 156/109 . . . . . Embedding of laminae within face of additional laminae
- 156/1092 . . . . . All laminae planar and face to face
- 156/1093 . . . . . with covering of discrete laminae with additional lamina
- 156/1095 . . . . . Opposed laminae are running length webs
- 156/1097 . . . . . Lamina is running length web
- 156/1098 . . . . . Feeding of discrete laminae from separate sources
- 156/11 . . . . . Methods of delaminating, per se; i.e. , separating at bonding face
- 156/1105 . . . . . Delaminating process responsive to feed or shape at delamination
- 156/1111 . . . . . Using solvent during delaminating [e.g., water dissolving adhesive at bonding face during delamination, etc.]
- 156/1116 . . . . . Using specified organic delamination solvent
- 156/1121 . . . . . Using vibration during delaminating
- 156/1126 . . . . . Using direct fluid current against work during delaminating
- 156/1132 . . . . . Using vacuum directly against work during delaminating
- 156/1137 . . . . . Using air blast directly against work during delaminating
- 156/1142 . . . . . Changing dimension during delaminating [e.g., crushing, expanding, warping, etc.]
- 156/1147 . . . . . Using shrinking or swelling agent during delaminating
- 156/1153 . . . . . Temperature change for delamination [e.g., heating during delaminating, etc.]
- 156/1158 . . . . . Electromagnetic radiation applied to work for delamination [e.g., microwave, uv, ir, etc.]
- 156/1163 . . . . . Sintering for delamination
- 156/1168 . . . . . Gripping and pulling work apart during delaminating
- 156/1174 . . . . . Using roller for delamination [e.g., roller pairs operating at differing speeds or directions, etc.]
- 156/1179 . . . . . with poking during delaminating [e.g., jabbing, etc.]
- 156/1184 . . . . . Piercing layer during delaminating [e.g., cutting, etc.]
- 156/1189 . . . . . with shearing during delaminating
- 156/1195 . . . . . Delaminating from release surface
- 156/12 . . . . . Surface bonding means and/or assembly means with cutting, punching, piercing, severing or tearing
- 156/125 . . . . . Plural severing means each acting on a different work piece
- 156/13 . . . . . Severing followed by associating with part from same source
- 156/1304 . . . . . Means making hole or aperture in part to be laminated
- 156/1309 . . . . . and securing separate part over hole or aperture
- 156/1313 . . . . . Cutting element simultaneously bonds [e.g., cut seaming]
- 156/1317 . . . . . Means feeding plural workpieces to be joined
- 156/1322 . . . . . Severing before bonding or assembling of parts
- 156/1326 . . . . . Severing means or member secured thereto also bonds
- 156/133 . . . . . Delivering cut part to indefinite or running length web
- 156/1335 . . . . . Cutter also delivers cut piece
- 156/1339 . . . . . Delivering cut part in sequence to serially conveyed articles
- 156/1343 . . . . . Cutting indefinite length web after assembly with discrete article
- 156/1348 . . . . . Work traversing type
- 156/1352 . . . . . with liquid applying means
- 156/1357 . . . . . Slitting and severing
- 156/1361 . . . . . Cutting after bonding
- 156/1365 . . . . . Fixed cutter
- 156/137 . . . . . Stamp from multiple row sheet type
- 156/1374 . . . . . with means projecting fluid against work
- 156/1378 . . . . . Cutter actuated by or secured to bonding element
- 156/1383 . . . . . with liquid applicator
- 156/1387 . . . . . Common actuator for bonding and liquid applying means
- 156/1391 . . . . . Liquid applied to web before cutting
- 156/1396 . . . . . Roller applicator
- 156/14 . . . . . Surface bonding means and/or assembly means with shaping, scarifying, or cleaning joining surface only
- 156/15 . . . . . Combined or convertible surface bonding means and/or assembly means
- 156/16 . . . . . Surface bonding means and/or assembly means with bond interfering means [slip sheet, etc. ]
- 156/17 . . . . . Surface bonding means and/or assembly means with work feeding or handling means
- 156/1702 . . . . . For plural parts or plural areas of single part
- 156/1705 . . . . . Lamina transferred to base from adhered flexible web or sheet type carrier
- 156/1707 . . . . . Discrete spaced laminae on adhered carrier

156/171 . . . . Means serially presenting discrete base articles or separate portions of a single article

156/1712 . . . Indefinite or running length work

156/1715 . . . . Means joining indefinite length work edge to edge

156/1717 . . . . Means applying adhesively secured tape to seam

156/172 . . . . Means applying fluid adhesive to work edge

156/1722 . . . . Means applying fluent adhesive or adhesive activator material between layers

156/1724 . . . . At spaced areas

156/1727 . . . . Plural indefinite length or running length workpieces

156/1729 . . . . . Fluid applied to nip between indefinite length webs

156/1732 . . . . . Fluid applied to plural workpieces

156/1734 . . . . Means bringing articles into association with web

156/1737 . . . . Discontinuous, spaced area, and/or patterned pressing

156/1739 . . . . Webs of different width, longitudinally aligned

156/1741 . . . . Progressive continuous bonding press [e.g., roll couples]

156/1744 . . . Means bringing discrete articles into assembled relationship

156/1746 . . . . Plural lines and/or separate means assembling separate sandwiches

156/1749 . . . . All articles from single source only

156/1751 . . . . At least three articles

156/1754 . . . . . At least two applied side by side to common base

156/1756 . . . . . Plural ranks

156/1759 . . . . . Sheet form common base

156/1761 . . . . . Stacked serially

156/1763 . . . . Magazine stack directly contacting separate work

156/1766 . . . . . Magazine movable to work

156/1768 . . . . Means simultaneously conveying plural articles from a single source and serially presenting them to an assembly station

156/1771 . . . . . Turret or rotary drum-type conveyor

156/1773 . . . . . For flexible sheets

156/1776 . . . . Means separating articles from bulk source

156/1778 . . . . . Stacked sheet source

156/178 . . . . . Rotary or pivoted picker

156/1783 . . . . . Translating picker

156/1785 . . Magazine stack directly contacting work

156/1788 . . Work traversing type and/or means applying work to wall or static structure

156/179 . . . with liquid applying means

156/1793 . . . Grip or clamp for web end

156/1795 . . . Implement carried web supply

156/1798 . . with liquid adhesive or adhesive activator applying means

156/18 . . Surface bonding means and/or assembly means with handle or handgrip

156/19 . . Delaminating means

156/1906 . . Delaminating means responsive to feed or shape at delamination

156/1911 . . Heating or cooling delaminating means [e.g., melting means, freezing means, etc.]

156/1917 . . . Electromagnetic radiation delaminating means [e.g., microwave, uv, ir, etc.]

156/1922 . . Vibrating delaminating means

156/1928 . . Differential fluid pressure delaminating means

156/1933 . . . Spraying delaminating means [e.g., atomizer, etc.]

156/1939 . . . . Air blasting delaminating means]

156/1944 . . . Vacuum delaminating means [e.g., vacuum chamber, etc.]

156/195 . . Delaminating roller means

156/1956 . . . Roller pair delaminating means

156/1961 . . Severing delaminating means [e.g., chisel, etc.]

156/1967 . . . Cutting delaminating means

156/1972 . . . . Shearing delaminating means

156/1978 . . Delaminating bending means

156/1983 . . . Poking delaminating means

156/1989 . . . Corner edge bending delaminating means

156/1994 . . Means for delaminating from release surface

**Former US Class 225 series****225/00 Severing by tearing or breaking**

225/10 . Methods

225/12 . . With preliminary weakening

225/14 . . Longitudinally of direction of feed

225/16 . . Transversely of continuously fed work

225/18 . . . Progressively to or from one side edge

225/20 . Severing by manually forcing against fixed edge

225/201 . . With other type severing means

225/202 . . With timer-released means for preventing work feed-out

225/203 . . Including means to effect bias cut

225/205 . . With feed-out of predetermined length from work supply

225/206 . . . Including means to select or adjust feed-out length

225/207 . . . Including feed-out stop for manually pulled work

225/208 . . . . Stop abuts work edge or work-mounted article

225/209 . . . . With feed-out of lead-end to aid initial grasping

225/21 . . . Merely to provide lead-end for manual grasping

225/211 . . . Manually operated feed-out mechanism

225/213 . . With indicator

225/214 . . . Indicates length to be severed from supply

225/215 . . With blade-edge guard

225/216 . . . Movable

225/217 . . Work stripped from blade by relatively movable means

225/218 . . . Including movable blade

225/22 . . With means to move work toward or into severing position

225/221 . . . With means to strip adhering work therefrom

225/222 . . With work-immobilizing pasteur surface

225/223 . . . With finger-access opening

225/224 . . With means to hold pad or stack of individual sheets

225/225 . . . With means to separate severed end of stub from supply package

225/226	. . . With changeable blade-edge contour	225/279	. . . . . 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	<b>Former US Class 279 Series</b>	
225/267	. . . . . Strand clamped against flange	<b>279/00</b>	<b>Chucks or sockets</b>
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
225/272	. . . Including stripper to separate lead-end from package	279/1016	. . Jaws mounted on flexible member; i.e., diaphragm
225/274	. . . Weight of bodily movable package contributes to blade-biasing force	279/1021	. . Fluid-pressure actuator
225/275	. . . Blade slidably guided	279/1024	. . . Directly expanding jaws
225/276	. . Blade movable to severing position by moving work	279/1029	. . . . Jaw is expansible chamber; i.e., bladder type
225/277	. . . With simultaneous application of brake or clamp	279/1033	. . . Expanding jaws via mechanical connection
225/278	. . . . Applied to running length work	279/1037	. . Axially moving actuator
		279/1041	. . . Wedge
		279/1045	. . . . Internal cone
		279/1049	. . . . with jaw positively interlocked with wedge; e.g., dovetail or T-slot
		279/1054	. . . . with resilient means contacting nonresilient jaw

279/1058	. . . . . Constricting band, annulus, or clip	279/17273	. . . . . Axial screw actuator
279/1062	. . . Toggle	279/17282	. . . . . Threaded-sleeve actuator
279/1066	. . . Axially compressible element expands radially	279/17291	. . . Resilient split socket
279/1071	. . . Lever	279/17299	. . . Threaded cam sleeve
279/1074	. . Rotary actuator	279/17307	. . . Reciprocating cam sleeve
279/1079	. . . Clutch or self-actuating type	279/17316	. . . Unitary
279/1083	. . Jaw structure	279/17324	. . . . . Split at one end only
279/1087	. . . Resilient	279/17333	. . . . . Transverse screw actuator
279/1091	. . . Ball or roller	279/17341	. . . . . Cam actuator
279/1095	. . . Pivoted	279/17351	. . . . . Split end to end
279/11	. Vacuum	279/17358	. . . . . with jaw pads or insert
279/12	. with fluid-pressure actuator	279/17367	. . . Nonresilient member biased by a resilient member
279/1208	. . with measuring, indicating or control means	279/17376	. . . Resilient member reinforced by another resilient member
279/1216	. . Jaw is expansible chamber; i.e., bladder type	279/17384	. . with means to exclude contaminants; e.g., seal, shield
279/1224	. . Pneumatic type	279/17393	. . One movable side
279/1233	. . Jaws mounted on flexible member; i.e., diaphragm	279/17401	. . . Sleeved
279/1241	. . Socket type	279/17411	. . Spring biased jaws
279/1249	. . . Collet	279/17418	. . . Unitary
279/1258	. . . . . Fixed cam and moving jaws	279/17427	. . . . . Split at one end only
279/1266	. . . . . Moving cam and fixed jaws	279/17435	. . . . . Split at both ends
279/1274	. . Radially reciprocating jaws	279/17444	. . . . . Split end to end
279/1283	. . . Fluid pressure directly moves jaws	279/17452	. . . . . with jaw pads or insert
279/1291	. . . Fluid pressure moves jaws via mechanical connection	279/17461	. . . Nonresilient member biased by a resilient member
279/13	. Angularly adjustable or indexing	279/17471	. . . Resilient member reinforced by another resilient member
279/14	. Eccentric	279/17478	. . . with means to exclude contaminants; e.g., seal, shield
279/15	. Threaded grip	279/17487	. . . Moving-cam actuator
279/16	. Longitudinal screw clamp	279/17495	. . . . . Threaded sleeve and wedge
279/17	. Socket type	279/17504	. . . . . Threaded cam sleeve
279/17008	. . Multiple alternative	279/17512	. . . . . Loose jaws
279/17017	. . Self-centering of floating	279/17521	. . . . . Reciprocating cam sleeve
279/17025	. . . Radially reciprocating jaws	279/17529	. . . Fixed cam and moving jaws
279/17034	. . . Transverse holder and setscrew	279/17538	. . . . . Threaded-sleeve actuator
279/17042	. . Lost motion	279/17547	. . . . . Axial screw actuator
279/17051	. . . Swinging external yoke or detent	279/17555	. . . Loose jaws
279/17059	. . . . . Rotary socket	279/17564	. . Loose jaws
279/17068	. . . Rotary socket	279/17572	. . . Moving-cam actuator
279/17076	. . . Spreading elements	279/17581	. . . . . Threaded cam sleeve
279/17085	. . . Key retainer	279/17589	. . . . . Reciprocating cam sleeve
279/17094	. . . Sleeve type retainer	279/17598	. . . Fixed cam and moving jaws
279/17102	. . . . . Sleeve in socket	279/17606	. . . . . Threaded sleeve and body
279/17111	. . Fluid-conduit drill holding	279/17615	. . Obliquely guided reciprocating jaws
279/17119	. . Feed type	279/17623	. . . Threaded sleeve and jaw
279/17128	. . Self-grasping	279/17632	. . . . . Conical sleeve
279/17136	. . . Yielding grasping jaws	279/17641	. . . Threaded central cone and jaw
279/17145	. . . . . Ball or roller	279/17649	. . . Threaded sleeve and body
279/17153	. . . . . Spring jaws	279/17658	. . . Reciprocating jaw advancing sleeve
279/17162	. . . Yielding detent	279/17666	. . Radially reciprocating jaws
279/17171	. . . One-way-clutch type	279/17675	. . . Transverse-screw actuated
279/17179	. . . . . Wedge	279/17683	. . . . . Interlaced jaws
279/17188	. . . . . Side detent	279/17692	. . . Moving-cam actuator
279/17196	. . . . . Ball or roller	279/17701	. . . . . Threaded cam sleeve
279/17205	. . Conical clamp threaded in socket	279/17709	. . . . . Threaded sleeve and wedge
279/17213	. . Transversely oscillating jaws	279/17717	. . . . . Rotary eccentric-cam sleeve
279/17222	. . . Screw actuated	279/17726	. . . . . Roller and rocking jaw
279/17231	. . Pivoted jaws	279/17735	. . . . . Worm actuated
279/17239	. . . Moving-cam actuator	279/17743	. . . . . Reciprocating cam sleeve
279/17247	. . . . . Threaded cam sleeve		
279/17256	. . . . . Reciprocating cam sleeve		
279/17264	. . . Fixed cam and moving jaws		

279/17752 . . . . Ball or roller jaws  
 279/17761 . . Side detent  
 279/17769 . . . Pivoted or rotary  
 279/17777 . . . . Sleeved  
 279/17786 . . . Spring  
 279/17794 . . . . Sleeved  
 279/17803 . . . Rotary cam sleeve  
 279/17811 . . . Reciprocating sleeve  
 279/17821 . . . Set screw  
 279/17829 . . . U-clamp  
 279/17837 . . . Plural bolt  
 279/17846 . . . Single transverse bolt  
 279/17854 . . . Longitudinal clamping wedge  
 279/17863 . . Shouldered-tang holding  
 279/17871 . . . Cap  
 279/17881 . . . . Screw  
 279/17888 . . Tang offset within socket  
 279/17897 . . Tang offset without socket  
 279/17905 . . Bottomless  
 279/17914 . . . Friction grip  
 279/17923 . . Transverse pin  
 279/17931 . . Screw threaded  
 279/17941 . . . Nut lock  
 279/17948 . . . . Threaded sleeve  
 279/17957 . . Friction grip  
 279/17965 . . . Drill type  
 279/17974 . . Barbed or pronged tang  
 279/17982 . . Molded or cast-in tang  
 279/17991 . . Adjustable length or size  
 279/18 . . Pivoted jaw  
 279/182 . . Cam-sleeve actuated  
 279/185 . . Internal-cone actuated  
 279/188 . . Toggle actuated  
 279/19 . . Radially reciprocating jaws  
 279/1906 . . with indicator  
 279/1913 . . Transverse-screw actuated  
 279/1921 . . . Annular rack  
 279/1926 . . Spiral cam or scroll actuated  
 279/1933 . . . Worm  
 279/1941 . . . Bevel pinion  
 279/1946 . . Rack-and-pinion actuated  
 279/1953 . . Toggle actuated  
 279/1961 . . Lever actuated  
 279/1966 . . . Internal cone  
 279/1973 . . Wedge actuated  
 279/1981 . . External-cone actuated  
 279/1986 . . Jaws  
 279/1993 . . . with means to facilitate jaw removal  
 279/20 . . with safety feature  
 279/21 . . with measuring, indicating or control means  
 279/22 . . Double acting  
 279/23 . . with magnetic or electrostatic means  
 279/24 . . by centrifugal force  
 279/243 . . to counterbalance jaws  
 279/247 . . to grip tool or workpiece  
 279/25 . . Compensation for eccentricity  
 279/26 . . with centering means  
 279/27 . . Separate chuck-actuating power source  
 279/275 . . Self-contained  
 279/28 . . for gear or spline molding  
 279/29 . . More than one set of gripping means

279/30 . . Torsion mandrel  
 279/31 . . Jaws mounted on flexible member; i.e. , diaphragm  
 279/32 . . Means to prevent jaw loosening  
 279/33 . . Member applies axial force component  
 279/34 . . Accessory or component  
 279/3406 . . . Adapter  
 279/3412 . . . Drive conversion  
 279/3418 . . . for particular tool or workpiece  
 279/3425 . . Sliding cam chuck actuator  
 279/3431 . . Chuck key  
 279/3437 . . . Safety feature; e.g., ejector, interlock  
 279/3443 . . . Key holding or attaching means  
 279/3451 . . . Nonseparable or built-in  
 279/3456 . . Padded or cushioned jaw  
 279/3462 . . Jaw insert  
 279/3468 . . . Machinable jaw  
 279/3475 . . . . Locking or positioning means  
 279/3481 . . Tool or workpiece ejector  
 279/3487 . . Tool or work stop or locator  
 279/3493 . . Protection means; e.g., cover, seal, overstress prevention, air blast  
 279/35 . . Miscellaneous

#### **Former US Class 292 series**

**292/00 Closure fasteners**  
 292/03 . . Miscellaneous  
 292/06 . . Adjustable backset  
 292/08 . . Bolts  
 292/0801 . . Multiple  
 292/0802 . . . Sliding and rotary  
 292/0803 . . . Sliding and swinging  
 292/0805 . . . . Combined motion  
 292/0806 . . . . . Lever-operating means  
 292/0807 . . . Sliding and hooked end  
 292/0808 . . . Sliding and roller  
 292/0809 . . . Sliding and spring arm  
 292/081 . . . Swinging and hooked end  
 292/0811 . . . Swinging and roller  
 292/0813 . . . Swinging and spring arm  
 292/0814 . . . Double acting  
 292/0815 . . . . Roller  
 292/0816 . . . . Sliding  
 292/0817 . . . . Spring arm  
 292/0818 . . . . Swinging  
 292/082 . . . Spring arm  
 292/0821 . . . . Combined motion  
 292/0822 . . . Emergency operating means  
 292/0823 . . . Gear  
 292/0824 . . . Roller  
 292/0825 . . . Hooked end  
 292/0826 . . . . Operating means  
 292/0828 . . . . . Link and lever  
 292/0829 . . . . . Cam  
 292/083 . . . . . Flexible  
 292/0831 . . . . . Lever  
 292/0832 . . . . . Push or pull rod  
 292/0833 . . . . . Rigid  
 292/0834 . . . Sliding  
 292/0836 . . . . Operating means  
 292/0837 . . . . . Cam and lever  
 292/0838 . . . . . Lever and push or pull rod

292/0839	. . . . . Link and lever	292/0909	. . . . . 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
292/0899	. . . . . Flexible	292/0969	. . . . . Spring projected
292/09	. . . . . Lever	292/097	. . . . . Operating means
292/0901	. . . . . Push or pull rod	292/0971	. . . . . Cam and lever
292/0902	. . . . . Rigid	292/0972	. . . . . Lever and push or pull rod
292/0903	. . . . . Seal catch	292/0974	. . . . . Link and lever
292/0905	. . . . . Swinging catch	292/0975	. . . . . Link and push or pull rod
292/0906	. . . . . Screw	292/0976	. . . . . Sliding cam
292/0907	. . . . . Multiple head	292/0977	. . . . . Cam
292/0908	. . . . . Emergency operating means	292/0978	. . . . . Specifically related to vehicle closure

292/0979	. . . . . Bolt disabled by contraretractive movement of inside handle	292/1045	. . . . Operating means
292/098	. . . . . Auxiliary bolt	292/1046	. . . . . Cam
292/0982	. . . . . Bolt blocking or disabling means	292/1047	. . . . . Closure
292/0983	. . . . . Involves rollback	292/1048	. . . . . Lever
292/0984	. . . . . Rollback members located on separate spindles	292/1049	. . . . . Rigid
292/0985	. . . . . Discrete pivotable or rotatable actuator	292/1051	. . . Spring projected
292/0986	. . . . . Discrete push or pull actuator	292/1052	. . . . Operating means
292/0987	. . . . . Bolt has ancillary projection spring	292/1053	. . . . . Lever and push or pull rod
292/0989	. . . . . Plural rollback elements directionally selectively effective	292/1054	. . . . . Link and cam
292/099	. . . . . On separate spindles	292/1055	. . . . . Link and lever
292/0991	. . . . . On a tubular member	292/1056	. . . . . Cam
292/0992	. . . . . Flexible	292/1057	. . . . . Flexible
292/0993	. . . . . Gear	292/1059	. . . . . Lever
292/0994	. . . . . Lever	292/106	. . . . . Push or pull rod
292/0995	. . . . . Push or pull rod	292/1061	. . . . . Rigid
292/0997	. . . . . Rigid	292/1062	. . . Spring retracted
292/0998	. . . . . Screw	292/1063	. . . Gravity actuated
292/0999	. . . Spring retracted	292/1064	. . . . Operating means
292/10	. . . . Friction catch	292/1066	. . . . . Cam and lever
292/1001	. . . . Sliding catch	292/1067	. . . . . Link and lever
292/1002	. . . . 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
292/1036	. . . End lever	292/14	. Ball
292/1037	. . . Pivoted end	292/17	. Bendable securers
292/1038	. . . Roller	292/175	. Bolt releasers
292/1039	. . Swinging and camming	292/18	. . Free-end-engaging means
292/10395	. . . Spring projected	292/19	. . Foot operated
292/104	. . . . Rigid operating means	292/20	. Clamps
292/1041	. . . Rigid operating means	292/202	. . Hatch fastener
292/1043	. . Swinging	292/205	. . Ring
292/1044	. . . Multiple head	292/207	. . . Permanently deformed
		292/209	. . . Resilient wedge
		292/212	. . . With expanding or contracting means
		292/214	. . . . Screw

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
292/432	. . Sliding catch	292/82	. Knobs
292/438	. . Spring-arm catch	292/85	. Knob-attaching devices
292/444	. . Swinging catch	292/854	. . Friction
292/45	. Rod clamps	292/858	. . Screw
292/47	. . Friction-plate catch	292/861	. . . Guards
292/48	. Seals	292/865	. . Sliding
292/481	. . Compressible disk	292/869	. . Spring arm
292/483	. . . Reinforced	292/873	. . Swinging
292/484	. . . Multiple	292/876	. . Wedge

- 292/88 . 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
- 403/32631 . . . Universal ball and socket
- 403/32639 . . . . including internal tie means
- 403/32647 . . . . Plural concave surfaces with diverse curvature
- 403/32655 . . . . . Interposed concavo-convex component
- 403/32663 . . . . . Outer surfaces
- 403/32672 . . . . Swiveled ball parts or seat
- 403/32681 . . . . Composite ball

- 403/32688 . . . . . Spring biased segments
- 403/32696 . . . . . Nonmetallic part
- 403/32704 . . . . . Stud extends into ball
- 403/32713 . . . . . Elastomerically biased or backed components
- 403/32721 . . . . . Elastomeric seat
- 403/32729 . . . . . Externally packed
- 403/32737 . . . . . including liner, shim, or discrete seat
- 403/32745 . . . . . Spring acts through wedging surfaces
- 403/32754 . . . . . Variably preloaded
- 403/32762 . . . . . Spring-biased seat opposite ball stud
- 403/32771 . . . . . Porous
- 403/32778 . . . . . Completely spacing the members
- 403/32786 . . . . . Divided socket-type coupling
- 403/32795 . . . . . Bifurcated socket
- 403/32803 . . . . . Separable socket sections
- 403/32811 . . . . . Spring-biased
- 403/32819 . . . . . including tension or take-up means
- 403/32827 . . . . . Interposed spring means coaxial with pivot
- 403/32836 . . . . . Acting through tapered surface on bearing component
- 403/32844 . . . . . Manually variable
- 403/32852 . . . . . External of bearing assembly, e.g., antirattler, etc.
- 403/32861 . . . . . T-pivot, e.g., wrist pin, etc.
- 403/32868 . . . . . Floating pin
- 403/32877 . . . . . Pin is integral with or secured to inner member
- 403/32885 . . . . . Expanded pin or end
- 403/32893 . . . . . including distinct pin retainer
- 403/32901 . . . . . Unitary clip or plug
- 403/32909 . . . . . Threaded pin end
- 403/32918 . . . . . fork and tongue
- 403/32926 . . . . . with interposed antifriction means
- 403/32934 . . . . . Oppositely laterally movable tines
- 403/32942 . . . . . On oblique interface
- 403/32951 . . . . . Transverse pin or stud
- 403/32959 . . . . . Traverses interposed facing component
- 403/32967 . . . . . Attached to or integral with one member
- 403/32975 . . . . . Rotatable
- 403/32983 . . . . . Rod in socket
- 403/33 . . . . . Transverse rod to spaced plate surfaces
- 403/335 . . . . . Retainer utilizes or abuts plural plates
- 403/34 . . . . . Branched
- 403/341 . . . . . Three or more radiating members
- 403/342 . . . . . Polyhedral
- 403/343 . . . . . Unilateral of plane
- 403/344 . . . . . Plural pairs of axially aligned members
- 403/345 . . . . . Coplanar
- 403/346 . . . . . Additional rod held by encompassing means
- 403/347 . . . . . Polyhedral
- 403/348 . . . . . Parallel rods
- 403/349 . . . . . Coplanar
- 403/36 . . . . . Three or more serial joints, at least one diverse
- 403/362 . . . . . Nonaligned axes
- 403/364 . . . . . Separable intermediate joint
- 403/366 . . . . . Axially acting connector
- 403/368 . . . . . Screw or cam
- 403/38 . . . . . Laterally related rods independently joined to transverse surface
- 403/40 . . . . . Radially spaced members joined by independent coupling
- 403/405 . . . . . Flexible intermediate member
- 403/44 . . . . . Three or more members connected at single locus
- 403/443 . . . . . All encompassed
- 403/447 . . . . . Mutually contacting
- 403/45 . . . . . Flexibly connected rigid members
- 403/451 . . . . . Rigid sleeve encompasses flexible bushing
- 403/452 . . . . . Longitudinally divided sleeve
- 403/453 . . . . . Flexible sleeve-type coupling
- 403/454 . . . . . Connecting pin traverses radially interposed elastomer
- 403/455 . . . . . Elastomer interposed between radially spaced members
- 403/456 . . . . . Elastomer encompasses shoulder on inner member
- 403/457 . . . . . including axially acting compressing means
- 403/458 . . . . . Composite bushing with elastomeric component
- 403/459 . . . . . Helical spring type coupling
- 403/46 . . . . . Rod end to transverse side of member
- 403/4602 . . . . . Corner joint
- 403/47 . . . . . Molded joint
- 403/471 . . . . . And independent connection
- 403/472 . . . . . including mechanical interlock
- 403/473 . . . . . Socket or open cup for bonding material
- 403/477 . . . . . Fusion bond, e.g., weld, etc.
- 403/48 . . . . . Shrunk fit
- 403/49 . . . . . Member deformed in situ
- 403/4916 . . . . . Interposed deforming element contacts socket bottom
- 403/4924 . . . . . Inner member is expanded by longitudinally inserted element
- 403/4933 . . . . . by separate, deformable element
- 403/4941 . . . . . Deformation occurs simultaneously with action of separate, diverse function, joint component
- 403/4949 . . . . . Deforming component is inserted section
- 403/4958 . . . . . Separate deforming means remains with joint assembly
- 403/4966 . . . . . Deformation occurs simultaneously with assembly
- 403/4974 . . . . . by piercing
- 403/4983 . . . . . Diverse resistance to lateral deforming force
- 403/4991 . . . . . Both members deformed
- 403/50 . . . . . Bridged by diverse connector
- 403/51 . . . . . including spaced, diverse connections
- 403/53 . . . . . Split end with laterally movable opposed portions
- 403/535 . . . . . with separate force-applying means
- 403/54 . . . . . Flexible member is joint component
- 403/55 . . . . . Member ends joined by inserted section
- 403/551 . . . . . Externally bridged
- 403/553 . . . . . Laterally inserted section
- 403/555 . . . . . Angle section
- 403/556 . . . . . Section threaded to member
- 403/557 . . . . . Expansive section
- 403/559 . . . . . Fluted or splined section
- 403/57 . . . . . 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	403/7067	. . . . . Threaded actuator
403/5761	. . Interrupted periphery, e.g., split or segmental, etc.	403/7069	. . . . . Axially oriented
403/5766	. . . Axially divided segments	403/7071	. . . . . Lever actuator
403/5773	. . . . Interfitting	403/7075	. . including discrete retainer
403/5781	. . . . Bolted	403/7077	. . . for telescoping members
403/5786	. . . Split	403/7079	. . . . Transverse pin
403/5793	. . including member wedging or camming means	403/7081	. . . . . Multiple retainers
403/59	. Manually releaseable latch type	403/7083	. . . . . having means to prevent removal of retainer
403/591	. . having operating mechanism	403/7084	. . . . . Bolt, rivet, or screw
403/592	. . . Ball detent	403/7086	. . . . . Wedge pin
403/593	. . . Remotely actuated	403/7088	. . . . . Sliding pin
403/595	. . . Lever	403/7091	. . . . . Expansible retainer
403/597	. . Swiveled bolt	403/7098	. . Non-circular rod section is joint component
403/598	. . Transversely sliding pin	403/71	. Rod side to plate or side
403/599	. . Spring biased manipulator	403/7105	. . Connected by double clamp
403/60	. Biased catch or latch	403/7111	. . Shackle is integral with or independently attached to proximate side of plate or other side
403/602	. . by separate spring	403/7117	. . Flanged or grooved rod
403/604	. . . Radially sliding catch	403/7123	. . Traversed by connector
403/606	. . Leaf spring	403/7129	. . Laterally spaced rods
403/608	. . Pivoted	403/7135	. . . by separable shim or bushing in connector
403/61	. Side slide: elongated co-linear members	403/7141	. . . Plural channels in connector
403/65	. Scarf	403/7147	. . Connected by flexible tie
403/655	. . Mirror images	403/7152	. . Lapped rod ends
403/66	. Interfitted members with external bridging piece	403/7158	. . Diagonal connector
403/67	. Thimble: screw or cam	403/7164	. . One rod held between bight and other rod extending through aperture in leg of connector
403/70	. Interfitted members	403/7171	. . Two rods encompassed by single connector
403/7001	. . Crossed rods	403/7176	. . Resilient clip
403/7003	. . . One rod is encompassed by the other	403/7182	. . Yoke or ring-type connector
403/7005	. . Lugged member, rotary engagement	403/7188	. . . Rod received in open channel
403/7007	. . . Bayonet joint	403/7194	. . Crossed rods
403/7009	. . Rotary binding cam or wedge	403/75	. having a joining piece extending through aligned openings in plural members
403/7011	. . . Radially interposed shim or bushing	403/76	. having a cam, wedge, or tapered portion
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		

**Former US Class 407 Series****407/00 Cutters, for shaping**

407/10	. including noncutting work modifying means
407/11	. including chip breaker, guide or deflector detachable from tool and tool holder
407/112	. . Adjustable relative to cutting edge
407/114	. . . including adjusting means
407/116	. . Attached to or integral with tool clamping jaw
407/118	. . Chip breaker
407/12	. Freely movable cutting edge
407/13	. Yieldable tool
407/134	. . Resiliently mounted tool
407/137	. . . including yield stress or flexure limit adjusting means
407/14	. with means to apply fluid to cutting tool
407/15	. Rotary broach
407/16	. Rectilinear broach
407/1614	. . Hollow tool for surrounding workpiece
407/1628	. . including holder having seat for inserted tool
407/1642	. . . Annular tool
407/1657	. . . including single tooth
407/1671	. . Plural tooth groups
407/1685	. . including sequentially acting teeth of stepped cutting width
407/17	. Gear cutting tool

407/1705	. . Face mill gear cutting tool	407/2208	. . 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 fro 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	. . Tire 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
407/1964	. . . . Arcuate cutting edge	407/25	. including cut off tool
407/1966	. . . . . Helical tooth	407/26	. comprising cutting edge bonded to tool shank
407/20	. Profiled circular tool	407/27	. comprising tool of specific chemical composition
407/21	. Arc segment tool	407/28	. Miscellaneous
407/22	. including holder having seat for inserted tool		
407/2202	. . Plural spaced seats and common holder		
407/2204	. . . Relatively adjustable seats		
407/2206	. . . Simultaneously usable		

**Former US Class 408 Series**

<b>408/00</b>	<b>Cutting by use of rotating axially moving tool</b>
408/03	. Processes

408/04	. . Bit detachable	408/3828	. . . with work-infeed
408/05	. with means to weigh or test work or product	408/3833	. . . with means to advance work relative to Tool
408/08	. with means to regulate operation by use of templet, tape, card, or other replaceable information supply	408/3839	. . . with presser-foot
408/10	. with interlock between machine elements	408/3844	. . . with tool-opposing, work-engaging surface
408/13	. with randomly-actuated stopping means	408/385	. . Rotatable about parallel axes
408/14	. . Responsive to condition of Tool or tool-drive	408/39	. with radially outer limit of cutting edge moving to define cylinder partially, but not entirely encircled by work
408/15	. . Responsive to condition of work or product	408/42	. Axis of Tool moving with work during operation
408/16	. with control means energized in response to activator stimulated by condition sensor	408/44	. with means to apply transient, fluent medium to work or product
408/165	. . to control Tool rotation	408/45	. . including Tool with duct
408/17	. . to control infeed	408/453	. . . and means to move gaseous fluid by application of vacuum
408/172	. . . Responsive to Tool	408/455	. . . Conducting channel extending to end of Tool
408/173	. . . Responsive to work	408/458	. . . including nozzle
408/175	. . to control relative positioning of Tool and work	408/46	. . including nozzle
408/18	. with stopping upon completion of prescribed operation	408/47	. with work-infeed means
408/20	. . Responsive to condition of work or product	408/476	. . Driven by fluid motor
408/21	. with signal, indicator, illuminator or optical means	408/482	. . Driven by means having sliding engagement therewith
408/23	. including means to cause Tool to progressively vibrate toward work	408/488	. . Driven by lever or connecting link
408/26	. with means to condition tool	408/494	. . and gear to drive infeed means
408/29	. with means to deForm work temporarily	408/50	. with product handling or receiving means
408/31	. Convertible cutting means	408/51	. . Ejector
408/33	. . Utilizing common cutting Tool	408/52	. with work advancing or guiding means
408/34	. Combined cutting means	408/54	. . Means to intermittently advance work
408/344	. . including Tool operating on rotating work	408/545	. . . Rotary, work-supporting means
408/348	. . Plural other type cutting means	408/55	. with work-engaging structure other than Tool or tool-support
408/35	. . . including plural rotating tools	408/551	. . with means actuated by work to release Tool from fixed position in Tool support
408/352	. . including rotating cutter other than rotating, axially moving Tool	408/552	. . . Adapted to engage work at tool-axis
408/353	. . . Crystalline cutter	408/553	. . Centering means adapted to be replaced by Tool
408/355	. . . Utilized in cutting work or product to length	408/554	. . Magnetic or suction means
408/3555	. . . . Adapted to cut entire thickness of work at one pass	408/556	. . Tool supporting wheel
408/356	. . including plunging [single stroke] cutter	408/5565	. . . Wheel-axis parallel to tool-axis
408/36	. Machine including plural tools	408/557	. . Frictionally engaging sides of opening in work
408/365	. . Axes of tools moving with work during operation	408/558	. . . Opening coaxial with Tool
408/367	. . . including means to infeed Tool and means to infeed work or including coaxial tools	408/5583	. . . . Engaging sides of opening being enlarged by Tool
408/368	. . . Plural work stations	408/5584	. . . . . Engaging surface axially advanced of tool-action
408/37	. . Turret of tools	408/5586	. . . . . Engaging surface subsequent to tool-action on that surface
408/375	. . Coaxial tools	408/5587	. . . . . Valve fitting
408/378	. . . Coaxial, opposed tools	408/559	. . Funnel like work-engaging surface cooperating with protuberance on work
408/3784	. . . . with additional, converging Tool	408/56	. . Adapted to "form" recession in work
408/3788	. . . . Plural pairs of coaxial, opposed tools	408/5605	. . . Recession at tool-axis
408/3792	. . . . with means to sequentially feed tools toward work	408/561	. . Having tool-opposing, work-engaging surface
408/3796	. . . . with interconnected means to simultaneously feed tools	408/5612	. . . Tool having shiftable tool-axis
408/38	. . Plural, simultaneously operational tools	408/5614	. . . Angularly adjustable surface
408/3806	. . . with plural simultaneously operational work stations	408/5616	. . . . Adjustable about axis that is parallel to tool-axis
408/3809	. . . . Successively acting on workpiece	408/5617	. . . Laterally adjustable surface
408/381	. . . . . Pivotally mounted, work-advancing, work-supporting means, pivot-axis parallel to tool-axis	408/5619	. . . Flexible or concatenated member
408/3811	. . . with provision for adjustment of relationship of axes	408/5621	. . . Connected to Tool through opening being enlarged by Tool
408/3817	. . . at least one Tool driven by orbiting wrist plate	408/5622	. . . . Plural, coaxially opposing, work-engaging means
408/3822	. . . at least one Tool including flexible drive connection	408/5623	. . . with presser foot

408/56238	. . . . Encompassed by Tool during cut	408/852	. . . with Tool releasing trigger
408/56245	. . . . including tool-guide [or bushing]	408/853	. . . . and separate Tool setting means
408/56253	. . . . Base supported machine	408/854	. . . to move eccentrically mounted Tool
408/5626	. . . with means to move Tool relative to other work-engaging structure along tool-axis	408/855	. . . . Tool-support including plural, adjustable sections
408/5627	. . . . Having sliding engagement therewith	408/856	. . . Moving means including pinion engaging rack-like surface of Tool
408/56275	. . . . . Screw coaxial with Tool	408/858	. . . Moving means including wedge, screw or cam
408/5628	. . . Tool having screw-thread engaging frame to cause infeed	408/8583	. . . . with resiliently urged Tool
408/563	. . Work-gripping clamp	408/85837	. . . . . with spring retainer
408/5633	. . . Adapted to coaxially grip round work	408/85843	. . . . . Resilient Tool or tool-support
408/56337	. . . . Oppositely moving lateral clamps	408/8585	. . . . including oppositely moving, diverging tools
408/5634	. . . . . Three or more moving clamps	408/8588	. . . . Axially slidable moving-means
408/56343	. . . . Base supported clamp	408/85884	. . . . . Tool pivotally mounted on support
408/5635	. . . Oppositely moving lateral clamps	408/85888	. . . . . Having axially spaced shoulders
408/5638	. . . Adjustable relative to tool-axis	408/85892	. . . . . Screw driven wedge or cam
408/564	. . Movable relative to Tool along tool-axis	408/85893	. . . . . . Screw with axis radially spaced from tool-axis
408/5647	. . . including means to move Tool	408/85894	. . . . . . Annular wedge-collar
408/5653	. . . with means to bias Tool away from work	408/858945	. . . . . . Axially spaced tool-retaining collars
408/566	. . Axially fixed to Tool	408/858946	. . . . . . with travelling wedge
408/5665	. . . Work-engaging surface parallel to tool-axis	408/858948	. . . . . . Tool having axially facing, collar-receiving groove
408/567	. . Adjustable, tool-guiding jig	408/858949	. . . . . . including two-piece collar
408/568	. . . Guide bushing	408/85895	. . . . . . Traveling wedge
408/569	. . Bushing	408/858953	. . . . . . Interfitting, tool-retaining wedge
408/57	. Tool-support with means to receive tool-position indicator	408/858955	. . . . . . including separable interfitting element
408/60	. Plural tool-assemblages	408/858957	. . . . . . Having externally threaded shank connected to tool-support
408/62	. . Coaxial	408/85896	. . . . . . Annular wedge-collar
408/625	. . . Spring biased	408/859	. . . . . Rotary cam
408/63	. Tool or tool-support with torque-applying ratchet	408/8591	. . . . . Scroll plate
408/637	. . with thrust applying means	408/85913	. . . . . Volute scroll
408/639	. . . Reversible ratchet	408/85915	. . . . . with means to rotate scroll
408/641	. . . Double-acting ratchet	408/85918	. . . . . with adjustable means to limit scroll movement
408/643	. . Reversible ratchet	408/8592	. . . . . Coaxial with tool-axis
408/65	. Means to drive tool	408/8593	. . . . . Wedge moving perpendicular to tool-axis
408/655	. . with specific Tool structure	408/8595	. . . . . Pivotal tool-support
408/66	. . Friction gearing	408/8598	. . . . . Screw extending perpendicular to tool-axis
408/665	. . Universal or flexible drive connection to rotate Tool	408/85985	. . . . . Plural tools moved by diametrically opposed screws
408/67	. . Belt and pulley	408/85988	. . . . . . Screws mounted on common shaft
408/675	. . including means to move Tool along tool-axis	408/8599	. . . . . Tool having pitch-stabilizing ridge
408/6757	. . . Fluid means	408/85995	. . . . . with tool-holding clamp and clamp actuator
408/6764	. . . Laterally adjustable Tool	408/86	. Tool-support with means to permit positioning of the Tool relative to support
408/6771	. . . with clutch means	408/865	. . Pivotal Tool
408/6774	. . . . including plural speed drive	408/868	. . . with multiple cutting positions
408/6776	. . . . Actuated by Tool movement	408/87	. . Tool having stepped cutting edges
408/6779	. . . Rack and pinion	408/8713	. . . including means to permit both radial and axial positioning of edge
408/6786	. . . Manually moved lever	408/8725	. . . including means to permit relative axial positioning of edges
408/6793	. . . Screw coaxial with Tool	408/8729	. . . . with work-engaging structure other than cutting edge
408/68	. Tool or tool-support with thrust-applying machine-engaging screw	408/8734	. . . . including central Tool axially movable relative to support
408/70	. Tool or tool-support with torque-applying clutch	408/8738	. . . including inverse cutting edge
408/72	. . Friction clutch	408/875	. . including means to "form" depression in work
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		

408/88 . . 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

409/100795 . . with work or product advancing  
 409/100954 . . . Utilizing transfer arm  
 409/101113 . . Gear chamfering or deburring  
 409/101272 . . . Using relatively reciprocating or oscillating cutter  
 409/101431 . . Gear tooth shape generating  
 409/10159 . . . Hobbing  
 409/101749 . . . . Process  
 409/101908 . . . . . Generating tooth for bevel gear  
 409/102067 . . . . including means to shift hob between cutting passes  
 409/102226 . . . . with control means energized in response to activator stimulated by condition sensor  
 409/102385 . . . . Plural hobs  
 409/102544 . . . . including infeed means  
 409/102703 . . . . . to infeed along axis of work rotation  
 409/102862 . . . . . Infeed of cutter  
 409/103021 . . . . . and infeed radially of axis of work rotation  
 409/10318 . . . . . Vertically  
 409/103339 . . . . . to infeed radially of axis of work rotation  
 409/103498 . . . . . Infeed of cutter  
 409/103657 . . . . . and infeed tangentially of work axis  
 409/103816 . . . Milling with radial faced tool  
 409/103975 . . . . Process  
 409/104134 . . . . Adapted to cut bevel gear  
 409/104293 . . . . . with means to continuously rotate work and means to co-form all teeth of gear  
 409/104452 . . . . . Bevel gear having nonparallel opposing tooth flanks  
 409/104611 . . . . . including rotary cutter cradle  
 409/10477 . . . by relative axial movement between synchronously indexing or rotating work and cutter  
 409/104929 . . . . . Crowning  
 409/105088 . . . . . Displacing cutter axially relative to work [e.g., gear shaving, etc.]  
 409/105247 . . . . . Using gear shaper-cutter  
 409/105406 . . . . . Plural distinct cutting edges  
 409/105565 . . . . . Cutting rotating work, the axis of which lies in a plane intersecting the cutter axis  
 409/105724 . . . Gear shaving  
 409/105883 . . . Using rotary cutter  
 409/106042 . . . . having axially directed cutting edge  
 409/106201 . . . . Plural rotary cutters  
 409/10636 . . . . On reciprocating carriage  
 409/106519 . . . Using reciprocating or oscillating cutter  
 409/106678 . . . . Bevel gear cutting  
 409/106837 . . . . . Dual cutters  
 409/106996 . . . . . Double acting cutter  
 409/107155 . . . . Rectilinearly reciprocating cutter  
 409/107314 . . . . . Cutter comprising a rack  
 409/107473 . . . Making a noncircular gear, worm, rotor, or a planar-faced gear  
 409/107632 . . Gear shaving  
 409/107791 . . Using rotary cutter  
 409/10795 . . . Process  
 409/108109 . . . End mill  
 409/108268 . . . . Radially faced  
 409/108427 . . . . . Using plural, selectively usable tools  
 409/108586 . . . Plural rotary cutters  
 409/108745 . . . Cutting action along work axis

#### **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

409/108904 . . . .	Cutting action intersecting work axis	409/30196 . . . . .	to actuate electrically driven work or tool moving means
409/109063 . .	Using reciprocating or oscillating cutter	409/302016 . . . . .	to actuate fluid driven work or tool moving means
409/109222 . . .	Broach	409/302072 . . . . .	including tracer adapted to trigger fluid energy
409/109381 . . .	including circumferentially disposed cutting edges	409/302128 . . . . .	to actuate fluid driven work or tool moving means
409/10954 . .	Work dividing or checking of work position or division	409/302184 . . . . .	including cutter and tracer fixed to move laterally together
409/109699 . .	with work clamping	409/30224 . . . . .	and provision for circumferential relative movement of cutter and work
409/20 .	with furbishing of cutter	409/302296 . . . . .	including plural cutters
409/30 .	Milling	409/302352 . . . . .	including plural cutters
409/300056 . .	Thread or helix generating	409/302408 . . . . .	including cross-slide tool carrier
409/300112 . . .	Process	409/302464 . . . . .	including plural cutters
409/300168 . . .	with means to regulate operation by use of templet, card, or other replaceable information supply	409/30252 . . . . .	including cross-slide tool carrier
409/300224 . . . .	Complete cycle	409/302576 . . . . .	with means to support templet above or under work
409/30028 . . . .	to regulate cutting depth [e.g., relief, taper, etc.]	409/302632 . . . . .	with provision for circumferential relative movement of cutter and work
409/300336 . . . .	to regulate rate of motion [e.g., stopping, etc.]	409/302688 . . . .	with provision for circumferential relative movement of cutter and work
409/300392 . . .	with nonthread or nonhelix generating, milling cutter	409/302744 . . . . .	and means for operation without manual intervention
409/300448 . . .	with means to advance work or product	409/3028 . . . . .	including tracer adapted to trigger electrical or fluid energy
409/300504 . . .	Plural cutters or work holders	409/302856 . . . .	For using planar templet in cutting profile [e.g., contour map from planar map, etc.]
409/30056 . . .	with planetary cutter	409/302912 . . . .	including means for operation without manual intervention
409/300616 . . .	Work means to move work axially and means to interrelate work movement with cutter rotation	409/302968 . . .	including means for operation without manual intervention
409/300672 . . .	with means to rotate work and means to interrelatedly infeed the work relative to the cutter	409/303024 . . . .	including simultaneously usable plural tracers or including tracer adapted to simultaneously use plural templets
409/300728 . . . .	Means to infeed the cutter	409/30308 . . . . .	to make a double curvature foil
409/300784 . . .	with means to circumferentially adjust the position of the cutter with respect to the work	409/303136 . . . .	to make a double curvature foil
409/30084 . .	with regulation of operation by templet, card, or other replaceable information supply	409/303192 . . . .	including cutter and tracer fixed to move together
409/300896 . . .	with sensing of numerical information and regulation without mechanical connection between sensing means and regulated means [i.e., numerical control]	409/303248 . . . .	with provision for circumferential relative movement of cutter and work
409/300952 . . .	to cut lock key	409/303304 . . .	and provision for circumferential relative movement of cutter and work
409/301008 . . . .	Using templet other than a key	409/30336 . . .	including cutter and tracer fixed to move together
409/301064 . . . .	Complete cycle	409/303416 . .	Templet, tracer, or cutter
409/30112 . . .	Process	409/303472 . . .	Tracer
409/301176 . . .	Reproducing means	409/303528 . . . .	Adapted to trigger electrical energy
409/301232 . . . .	including pantograph cutter-carrier	409/303584 . . . .	Photocell
409/301288 . . . . .	and means to move work at work station	409/30364 . . . .	Adapted to trigger fluid energy
409/301344 . . . . .	About work axis	409/303696 . . .	Templet
409/3014 . . . . .	Pivotally supported for vertical movement	409/303752 . .	Process
409/301456 . . . . .	and means to counterbalance carrier	409/303808 . . .	including infeeding
409/301512 . . . . .	including plural cutters	409/303864 . .	with means to weigh or test work or product
409/301568 . . . .	by use of pivotally supported tracer	409/30392 . .	with means to protect operative or machine [e.g., guard, safety device, etc.]
409/301624 . . . .	Duplicating means	409/303976 . .	with means to control temperature or lubricate
409/30168 . . . . .	with means for operation without manual intervention	409/304032 . . .	Cutter or work
409/301736 . . . . .	to make a double curvature foil	409/304088 . .	with means to remove chip
409/301792 . . . . .	including means to sense optical or magnetic image	409/304144 . .	Means to trim edge
409/301848 . . . . .	with means to support templet above or under work	409/3042 . .	Means to remove scale or raised surface imperfection
409/301904 . . . . .	including tracer adapted to trigger electrical energy		

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
409/304448 . . 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
409/306664 . . including means to infeed rotary cutter toward work	409/309408 . . . with cutter holder
409/30672 . . . with means to limit penetration into work	409/309464 . . . . and draw bar
409/306776 . . . Axially	409/30952 . . with cutter holder
409/306832 . . . . with infeed control means energized in response to activator stimulated by condition sensor	409/309576 . . Machine frame
409/306888 . . . . . In response to cutter condition	409/309632 . . . Overarm harness structure
409/306944 . . . . . In response to work condition	409/309688 . . . including counterbalancing means
	409/309744 . . . including means to compensate for deformation
	409/3098 . . . . Deflection of cutter spindle
	409/309856 . . . Convertible from lathe
	409/309912 . . . including relatively movable components and means to relatively immobilize these components
	409/309968 . . Tailstock
	409/40 . Broaching

- 409/400175 . . . Process
- 409/40035 . . . with control means energized in response to activator stimulated by condition sensor
- 409/400525 . . . Responsive to condition of work or product
- 409/4007 . . . with means to distribute cutter infeed force
- 409/400875 . . . with means to select cutter or to select or modify cutter drive
- 409/40105 . . . with means to clean, lubricate, or modify temperature of work or cutter
- 409/401225 . . . with product handling means
- 409/4014 . . . Between plural broaching stations
- 409/401575 . . . Means to eject broached product
- 409/40175 . . . Chip removal means
- 409/401925 . . . with means to protect operative or machine [e.g., guard, safety device, etc.]
- 409/4021 . . . with safety means for overload or safety interlock
- 409/402275 . . . with work immobilizer and means to activate work immobilizer interrelated with cutter infeed, work infeed, or work advance
- 409/40245 . . . with work infeed or advancing means and means to clamp the work thereto, which clamping means is interrelated with work or cutter infeed
- 409/402625 . . . Means to remove flash or burr
- 409/4028 . . . Means for cutting groove
- 409/402975 . . . Arcuate groove in cylindrical surface
- 409/40315 . . . Rifling
- 409/403325 . . . Orbital carrier for cutter
- 409/4035 . . . Orbital carrier for work
- 409/403675 . . . with means to cyclically manipulate cutter or cutter support
- 409/40385 . . . to reorient, introduce, or remove cutter
- 409/404025 . . . Cutter released to interim support at termination of cutting stroke
- 409/4042 . . . to remove and return cutter to cutter support
- 409/404375 . . . with plural cutters
- 409/40455 . . . with means to advance, infeed, or manipulate work
- 409/404725 . . . Interrelated with cutter infeed
- 409/4049 . . . including means supporting work and additional means opposing infeed force
- 409/405075 . . . including work indexing means for sequential cutting of different surfaces of a single workpiece
- 409/40525 . . . including work indexing means for sequential cutting of surfaces of different workpieces
- 409/405425 . . . with means to retract work from path of tool's idle return stroke
- 409/4056 . . . to infeed work past cutter
- 409/405775 . . . with means to hold work during cutting
- 409/40595 . . . including work clamping means
- 409/406125 . . . with means to adjust or facilitate adjustment of work or work holder
- 409/4063 . . . with means on work or work holder to guide cutter during infeed
- 409/406475 . . . Cutter infeed means
- 409/40665 . . . Imparting rectilinear motion to cutter
- 409/406825 . . . and rotary motion to cutter
- 409/407 . . . Fluid powered means
- 409/407175 . . . Rack means
- 409/40735 . . . Screw means
- 409/407525 . . . Machine frame
- 409/4077 . . . Cutter support or guide
- 409/50 . . . Planing
- 409/500164 . . . with regulation of operation by templet, card, or other replaceable information supply
- 409/500328 . . . including use of tracer adapted to trigger electrical or fluid energy
- 409/500492 . . . including provision for circumferential relative movement of cutter and work
- 409/500656 . . . including provision for circumferential relative movement of cutter and work
- 409/50082 . . . Process
- 409/500984 . . . with means to lubricate
- 409/501148 . . . with product handling means
- 409/501312 . . . Randomly manipulated, work supported, or work following device
- 409/501476 . . . Means to remove flash or burr
- 409/50164 . . . Elongated work
- 409/501804 . . . Flash or burr inside hollow work
- 409/501968 . . . Transverse burr
- 409/502132 . . . Flat work
- 409/502296 . . . of commutator
- 409/50246 . . . Means for trimming edge [e.g., chamfering, scarfing, etc.]
- 409/502624 . . . Means for cutting groove
- 409/502788 . . . Arcuate groove
- 409/502952 . . . For rifling
- 409/503116 . . . Inside hollow work
- 409/50328 . . . Means for shaving by blade spanning work surface
- 409/503444 . . . Concave work surface [e.g., bearing, stereotype printing plate, etc.]
- 409/503608 . . . Circumferential surface
- 409/503772 . . . including rack driven infeed means
- 409/503936 . . . including roller infeed means
- 409/5041 . . . Means for cutting arcuate surface
- 409/504264 . . . Cycloidal surface
- 409/504428 . . . with work infeed and means to arcuately reposition the cutter
- 409/504592 . . . with work infeed and means to arcuately reposition the work
- 409/504756 . . . with means to relatively infeed cutter and work
- 409/50492 . . . and means to rotate work and cutter at same rate about converging axes
- 409/505084 . . . with plural sequentially acting cutters or with double acting cutter
- 409/505248 . . . and means to vary rate of infeed
- 409/505412 . . . Reciprocating work infeed means
- 409/505576 . . . with fluid-driven bed
- 409/50574 . . . with rack-driven bed
- 409/505904 . . . with screw-driven bed
- 409/506068 . . . and means to permit repositioning of cutter laterally
- 409/506232 . . . Reciprocating cutter infeed means
- 409/506396 . . . Reciprocating cutter horizontally
- 409/50656 . . . with work support and lead screw to reposition work support
- 409/506724 . . . with fluid-powered means to drive cutter
- 409/506888 . . . with pivoting link to drive cutter
- 409/507052 . . . Link driven by crank
- 409/507216 . . . with rack to drive cutter
- 409/50738 . . . with screw to drive cutter
- 409/507544 . . . with link or cam to drive cutter

409/507708 . . . . with rack to drive cutter  
 409/507872 . . . including means causing return stroke  
 409/508036 . . Machine frame  
 409/5082 . . . Means to permit repositioning of cutter  
 409/508364 . . . . Laterally  
 409/508528 . . . . Plural independently positioned cutters  
 409/508692 . . . . including clutch  
 409/508856 . . . . including repositioning means and means to effect stopping thereof  
 409/50902 . . . including relatively movable components and means to relatively immobilize these components  
 409/509184 . . . Work table  
 409/509348 . . Tool head  
 409/509512 . . . with selectively usable cutting edges  
 409/509676 . . . with means to permit repositioning of cutting for idle return stroke  
 409/50984 . . . . comprising pivotable cutter or cutter support

**Former US Class 428 Series****428/00 Stock material or miscellaneous articles**

428/11 . Magnetic recording head  
 428/1107 . . Magnetoresistive  
 428/1114 . . . having tunnel junction effect  
 428/1121 . . . Multilayer  
 428/1129 . . . . Super lattice [e.g., giant magneto resistance [GMR] or colossal magneto resistance [CMR], etc.]  
 428/1136 . . . Single film  
 428/1143 . . . with defined structural feature  
 428/115 . . Magnetic layer composition  
 428/1157 . . Substrate composition  
 428/1164 . . with protective film  
 428/1171 . . with defined laminate structural detail  
 428/1179 . . . Head with slider structure  
 428/1186 . . . with head pole component  
 428/1193 . . with interlaminar component [e.g., adhesion layer, etc.]  
 428/12 . All metal or with adjacent metals  
 428/12007 . . Component of composite having metal continuous phase interengaged with nonmetal continuous phase  
 428/12014 . . having metal particles  
 428/12021 . . . having composition or density gradient or differential porosity  
 428/12028 . . . Composite; i.e., plural, adjacent, spatially distinct metal components [e.g., layers, etc.]  
 428/12035 . . . . Fiber, asbestos, or cellulose in or next to particulate component  
 428/12042 . . . . Porous component  
 428/12049 . . . . Nonmetal component  
 428/12056 . . . . Entirely inorganic  
 428/12063 . . . . Nonparticulate metal component  
 428/12069 . . . . Plural nonparticulate metal components  
 428/12076 . . . . . Next to each other  
 428/12083 . . . . . Nonmetal in particulate component  
 428/1209 . . . . Plural particulate metal components  
 428/12097 . . . . Nonparticulate component encloses particles  
 428/12104 . . . . Particles discontinuous  
 428/12111 . . . . . Separated by nonmetal matrix or binder [e.g., welding electrode, etc.]

428/12118 . . . . . Nonparticulate component has Ni-, Cu-, or Zn-base  
 428/12125 . . . . . Nonparticulate component has Fe-base  
 428/12132 . . . . . Next to Fe-containing particles  
 428/12139 . . . . . Nonmetal particles in particulate component  
 428/12146 . . . . Nonmetal particles in a component  
 428/12153 . . . Interconnected void structure [e.g., permeable, etc.]  
 428/1216 . . . Continuous interengaged phases of plural metals, or oriented fiber containing  
 428/12167 . . . . Nonmetal containing  
 428/12174 . . . . Mo or W containing  
 428/12181 . . Composite powder [e.g., coated, etc.]  
 428/12188 . . having marginal feature for indexing or weakened portion for severing  
 428/12194 . . . For severing perpendicular to longitudinal dimension  
 428/12201 . . Width or thickness variation or marginal cuts repeating longitudinally  
 428/12208 . . . Variation in both width and thickness  
 428/12215 . . . Marginal slots [i.e., deeper than wide]  
 428/12222 . . Shaped configuration for melting [e.g., package, etc.]  
 428/12229 . . Intermediate article [e.g., blank, etc.]  
 428/12236 . . . Panel having nonrectangular perimeter  
 428/12243 . . . . Disk  
 428/1225 . . . . Symmetrical  
 428/12257 . . . . . Only one plane of symmetry  
 428/12264 . . . having outward flange, gripping means or interlocking feature  
 428/12271 . . . having discrete fastener, marginal fastening, taper, or end structure  
 428/12278 . . . . Same structure at both ends of plural taper  
 428/12285 . . . . Single taper [e.g., ingot, etc.]  
 428/12292 . . Workpiece with longitudinal passageway or stopweld material [e.g., for tubular stock, etc.]  
 428/12299 . . Workpiece mimicking finished stock having nonrectangular or noncircular cross section  
 428/12306 . . Workpiece of parallel, nonfastened components [e.g., fagot, pile, etc.]  
 428/12313 . . . Arranged to avoid lateral displacement  
 428/12319 . . . Composite  
 428/12326 . . with provision for limited relative movement between components  
 428/12333 . . Helical or with helical component  
 428/1234 . . Honeycomb, or with grain orientation or elongated elements in defined angular relationship in respective components [e.g., parallel, inter- secting, etc.]  
 428/12347 . . Plural layers discontinuously bonded [e.g., spot-weld, mechanical fastener, etc.]  
 428/12354 . . Nonplanar, uniform-thickness material having symmetrical channel shape or reverse fold [e.g., making acute angle, etc.]  
 428/12361 . . having aperture or cut  
 428/12368 . . . Struck-out portion type  
 428/12375 . . having member which crosses the plane of another member [e.g., T or X cross section, etc.]  
 428/12382 . . Defined configuration of both thickness and nonthickness surface or angle therebetween [e.g., rounded corners, etc.]

428/12389	. .	having variation in thickness	428/12715	. . . .	Next to Group IB metal-base component
428/12396	. . .	Discontinuous surface component	428/12722	. . . .	Next to Group VIII metal-base component
428/12403	. . .	Longitudinally smooth and symmetrical	428/12729	. . .	Group IIA metal-base component
428/1241	. .	Nonplanar uniform thickness or nonlinear uniform diameter [e.g., L-shape]	428/12736	. . .	Al-base component
428/12417	. . .	Intersecting corrugating or dimples not in a single line [e.g., waffle form, etc.]	428/12743	. . . .	Next to refractory [Group IVB, VB, or VIB] metal-base component
428/12424	. .	Mass of only fibers	428/1275	. . . .	Next to Group VIII or IB metal-base component
428/12431	. .	Foil or filament smaller than 6 mils	428/12757	. . . . .	Fe
428/12438	. . .	Composite	428/12764	. . . .	Next to Al-base component
428/12444	. .	Embodying fibers interengaged or between layers [e.g., paper, etc.]	428/12771	. . .	Transition metal-base component
428/12451	. .	Macroscopically anomalous interface between layers	428/12778	. . . .	Alternative base metals from diverse categories
428/12458	. .	having composition, density, or hardness gradient	428/12785	. . . .	Group IIB metal-base component
428/12465	. .	having magnetic properties, or preformed fiber orientation coordinate with shape	428/12792	. . . . .	Zn-base component
428/12472	. .	Microscopic interfacial wave or roughness	428/12799	. . . . .	Next to Fe-base component [e.g., galvanized]
428/12479	. .	Porous [e.g., foamed, spongy, cracked, etc.]	428/12806	. . . .	Refractory [Group IVB, VB, or VIB] metal-base component
428/12486	. .	Laterally noncoextensive components [e.g., embedded, etc.]	428/12812	. . . . .	Diverse refractory group metal-base components: alternative to or next to each other
428/12493	. .	Composite; i.e., plural, adjacent, spatially distinct metal components [e.g., layers, joint, etc.]	428/12819	. . . . .	Group VB metal-base component
428/125	. . .	Deflectable by temperature change [e.g., thermostat element]	428/12826	. . . . .	Group VIB metal-base component
428/12507	. . . .	More than two components	428/12833	. . . . .	Alternative to or next to each other
428/12514	. . . .	One component Cu-based	428/1284	. . . . .	W-base component
428/12521	. . . .	Both components Fe-based with more than 10% Ni	428/12847	. . . . .	Cr-base component
428/12528	. . .	Semiconductor component	428/12854	. . . . .	Next to Co-, Fe-, or Ni-base component
428/12535	. . .	with additional, spatially distinct nonmetal component	428/12861	. . . .	Group VIII or IB metal-base component
428/12542	. . . .	More than one such component	428/12868	. . . . .	Group IB metal-base component alternative to platinum group metal-base component [e.g., precious metal, etc.]
428/12549	. . . . .	Adjacent to each other	428/12875	. . . . .	Platinum group metal-base component
428/12556	. . . .	Organic component	428/12882	. . . . .	Cu-base component alternative to Ag-, Au-, or Ni-base component
428/12562	. . . . .	Elastomer	428/12889	. . . . .	Au-base component
428/12569	. . . . .	Synthetic resin	428/12896	. . . . .	Ag-base component
428/12576	. . . .	Boride, carbide or nitride component	428/12903	. . . . .	Cu-base component
428/12583	. . . .	Component contains compound of adjacent metal	428/1291	. . . . .	Next to Co-, Cu-, or Ni-base component
428/1259	. . . . .	Oxide	428/12917	. . . . .	Next to Fe-base component
428/12597	. . . .	Noncrystalline silica or noncrystalline plural-oxide component [e.g., glass, etc.]	428/12924	. . . . .	Fe-base has 0.01-1.7% carbon [i.e., steel]
428/12604	. . . . .	Film [e.g., glaze, etc.]	428/12931	. . . . .	Co-, Fe-, or Ni-base components, alternative to each other
428/12611	. . . .	Oxide-containing component	428/12937	. . . . .	Co- or Ni-base component next to Fe-base component
428/12618	. . . . .	Plural oxides	428/12944	. . . . .	Ni-base component
428/12625	. . . .	Free carbon containing component	428/12951	. . . . .	Fe-base component
428/12632	. . .	Four or more distinct components with alternate recurrence of each type component	428/12958	. . . . .	Next to Fe-base component
428/12639	. . .	Adjacent, identical composition, components	428/12965	. . . . .	Both containing 0.01-1.7% carbon [i.e., steel]
428/12646	. . . .	Group VIII or IB metal-base	428/12972	. . . . .	Containing 0.01-1.7% carbon [i.e., steel]
428/12653	. . . . .	Fe, containing 0.01-1.7% carbon [i.e., steel]	428/12979	. . . . .	Containing more than 10% nonferrous elements [e.g., high alloy, stainless]
428/1266	. . .	O, S, or organic compound in metal component	428/12986	. . .	Adjacent functionally defined components
428/12667	. . . .	Oxide of transition metal or Al	428/12993	. .	Surface feature [e.g., rough, mirror]
428/12674	. . .	Ge- or Si-base component	428/13	. .	Hollow or container type article [e.g., tube, vase, etc.]
428/12681	. . .	Ga-, In-, Tl- or Group VA metal-base component	428/1303	. .	Paper containing [e.g., paperboard, cardboard, fiberboard, etc.]
428/12687	. . .	Pb- and Sn-base components: alternative to or next to each other	428/1307	. . .	Bag or tubular film [e.g., pouch, flexible food casing, envelope, etc.]
428/12694	. . . .	and next to Cu- or Fe-base component			
428/12701	. . .	Pb-base component			
428/12708	. . .	Sn-base component			

- 428/131 . . . Glass, ceramic, or sintered, fused, fired, or calcined metal oxide or metal carbide containing [e.g., porcelain, brick, cement, etc.]
- 428/1314 . . . Contains fabric, fiber particle, or filament made of glass, ceramic, or sintered, fused, fired, or calcined metal oxide, or metal carbide or other inorganic compound [e.g., fiber glass, mineral fiber, sand, etc.]
- 428/1317 . . . Multilayer [continuous layer]
- 428/1321 . . . . Polymer or resin containing [i.e., natural or synthetic]
- 428/1324 . . Flexible food casing [e.g., sausage type, etc.]
- 428/1328 . . Shrinkable or shrunk [e.g., due to heat, solvent, volatile agent, restraint removal, etc.]
- 428/1331 . . . Single layer [continuous layer]
- 428/1334 . . Nonself-supporting tubular film or bag [e.g., pouch, envelope, packet, etc.]
- 428/1338 . . . Elemental metal containing
- 428/1341 . . . Contains vapor or gas barrier, polymer derived from vinyl chloride or vinylidene chloride, or polymer containing a vinyl alcohol unit
- 428/1345 . . . Single layer [continuous layer]
- 428/1348 . . Cellular material derived from plant or animal source [e.g., wood, cotton, wool, leather, etc.]
- 428/1352 . . Polymer or resin containing [i.e., natural or synthetic]
- 428/1355 . . . Elemental metal containing [e.g., substrate, foil, film, coating, etc.]
- 428/1359 . . . . Three or more layers [continuous layer]
- 428/1362 . . . Textile, fabric, cloth, or pile containing [e.g., web, net, woven, knitted, mesh, nonwoven, matted, etc.]
- 428/1366 . . . . Textile, fabric, cloth, or pile is sandwiched between two distinct layers of material unlike the textile, fabric, cloth, or pile layer
- 428/1369 . . . Fiber or fibers wound around each other or into a self-sustaining shape [e.g., yarn, braid, fibers shaped around a core, etc.]
- 428/1372 . . . Randomly noninterengaged or randomly contacting fibers, filaments, particles, or flakes
- 428/1376 . . . Foam or porous material containing
- 428/1379 . . . Contains vapor or gas barrier, polymer derived from vinyl chloride or vinylidene chloride, or polymer containing a vinyl alcohol unit
- 428/1383 . . . . Vapor or gas barrier, polymer derived from vinyl chloride or vinylidene chloride, or polymer containing a vinyl alcohol unit is sandwiched between layers [continuous layer]
- 428/1386 . . . Natural or synthetic rubber or rubber-like compound containing
- 428/139 . . . Open-ended, self-supporting conduit, cylinder, or tube-type article
- 428/1393 . . . . Multilayer [continuous layer]
- 428/1397 . . . Single layer [continuous layer]
- 428/14 . Layer or component removable to expose adhesive
- 428/1405 . . Capsule or particulate matter containing [e.g., sphere, flake, microballoon, etc.]
- 428/141 . . Bituminous
- 428/1414 . . Ceramic, glass, glasslike, vitreous
- 428/1419 . . Wax containing
- 428/1424 . . Halogen containing compound
- 428/1429 . . . Fluorine
- 428/1433 . . . Coloring agent containing
- 428/1438 . . Metal containing
- 428/1443 . . . Aluminum
- 428/1448 . . . Coloring agent containing
- 428/1452 . . Polymer derived only from ethylenically unsaturated monomer
- 428/1457 . . . Silicon
- 428/1462 . . Polymer derived from material having at least one acrylic or alkacrylic group or the nitrile or amide derivative thereof [e.g., acrylamide, acrylate ester, etc.]
- 428/1467 . . Coloring agent
- 428/1471 . . Protective layer
- 428/1476 . . Release layer
- 428/1481 . . Dissimilar adhesives
- 428/1486 . . Ornamental, decorative, pattern, or indicia
- 428/149 . . Sectional layer removable
- 428/1495 . . . Adhesive is on removable layer
- 428/15 . Sheet, web, or layer weakened to permit separation through thickness
- 428/16 . Two dimensionally sectional layer
- 428/161 . . with frame, casing, or perimeter structure
- 428/162 . . Transparent or translucent layer or section
- 428/163 . . Next to unitary web or sheet of equal or greater extent
- 428/164 . . . Continuous two dimensionally sectional layer
- 428/166 . . . . Glass, ceramic, or metal sections [e.g., floor or wall tile, etc.]
- 428/167 . . . . Cellulosic sections [e.g., parquet floor, etc.]
- 428/168 . . . Nonrectangular
- 428/169 . . Sections connected flexibly with external fastener
- 428/17 . Three or more coplanar interfitted sections with securing means
- 428/18 . Longitudinally sectional layer of three or more sections
- 428/183 . . Next to unitary sheet of equal or greater extent
- 428/187 . . . Continuous sectional layer
- 428/19 . Sheets or webs edge spliced or joined
- 428/192 . . Sheets or webs coplanar
- 428/193 . . . Double faced corrugated sheets or webs connected
- 428/195 . . . Beveled, stepped, or skived in thickness
- 428/197 . . . with noncoplanar reinforcement
- 428/198 . . . . Pile or nap surface sheets connected
- 428/20 . Patched hole or depression
- 428/21 . Circular sheet or circular blank
- 428/211 . . Gear
- 428/213 . . Frictional
- 428/214 . . End closure
- 428/215 . . Seal, gasket, or packing
- 428/216 . . Ornamental, decorative, pattern, or indicia
- 428/218 . . Aperture containing
- 428/219 . . Edge structure
- 428/22 . Nonparticulate element embedded or inlaid in substrate and visible
- 428/23 . Sheet including cover or casing
- 428/231 . . Filled with gas other than air; or under vacuum
- 428/232 . . Encased layer derived from inorganic settable ingredient
- 428/233 . . Foamed or expanded material encased
- 428/234 . . including elements cooperating to form cells
- 428/236 . . . Honeycomb type cells extend perpendicularly to nonthickness layer

- 428/237 . . Noninterengaged fibered material encased [e.g., mat, batt, etc.]
- 428/238 . . . Metal cover or casing
- 428/239 . . Complete cover or casing
- 428/23907 . Pile or nap type surface or component
- 428/23914 . . Interlaminar
- 428/23921 . . With particles
- 428/23929 . . Edge feature or configured or discontinuous surface
- 428/23936 . . . Differential pile length or surface
- 428/23943 . . Flock surface
- 428/2395 . . Nap type surface
- 428/23957 . . Particular shape or structure of pile
- 428/23964 . . . U-, V-, or W-shaped or continuous strand, filamentary material
- 428/23971 . . . . Continuous strand with adhesive bond to backing
- 428/23979 . . Particular backing structure or composition
- 428/23986 . . With coating, impregnation, or bond
- 428/23993 . . Composition of pile or adhesive
- 428/24 . Structurally defined web or sheet [e.g., overall dimension, etc.]
- 428/24008 . . including fastener for attaching to external surface
- 428/24017 . . . Hook or barb
- 428/24025 . . Superposed movable attached layers or components
- 428/24033 . . including stitching and discrete fastener[s], coating or bond
- 428/24041 . . . Discontinuous or differential coating, impregnation, or bond
- 428/2405 . . . . Coating, impregnation, or bond in stitching zone only
- 428/24058 . . including grain, strips, or filamentary elements in respective layers or components in angular relation
- 428/24066 . . . Wood grain
- 428/24074 . . . Strand or strand-portions
- 428/24083 . . . . Nonlinear strands or strand-portions
- 428/24091 . . . . with additional layer[s]
- 428/24099 . . . . . On each side of strands or strand-portions
- 428/24107 . . . . . including mechanically interengaged strands, strand-portions or strand-like strips
- 428/24116 . . . . Oblique to direction of web
- 428/24124 . . . Fibers
- 428/24132 . . including grain, strips, or filamentary elements in different layers or components parallel
- 428/2414 . . including fringe
- 428/24149 . . Honeycomb-like
- 428/24157 . . . Filled honeycomb cells [e.g., solid substance in cavities, etc.]
- 428/24165 . . . Hexagonally shaped cavities
- 428/24174 . . including sheet or component perpendicular to plane of web or sheet
- 428/24182 . . . Inward from edge of web or sheet
- 428/2419 . . Fold at edge
- 428/24198 . . . Channel-shaped edge component [e.g., binding, etc.]
- 428/24207 . . . with strand[s] or strand-portion[s] between layers [e.g., upholstery trim, etc.]
- 428/24215 . . . Acute or reverse fold of exterior component
- 428/24223 . . . . Embedded in body of web
- 428/24231 . . . . At opposed marginal edges
- 428/2424 . . . . . Annular cover
- 428/24248 . . . . . One piece
- 428/24256 . . . . . Abutted or lapped seam
- 428/24264 . . . Particular fold structure [e.g., beveled, etc.]
- 428/24273 . . including aperture
- 428/24281 . . . Struck out portion type
- 428/24289 . . . . Embedded or interlocked
- 428/24298 . . . Noncircular aperture [e.g., slit, diamond, rectangular, etc.]
- 428/24306 . . . . Diamond or hexagonal
- 428/24314 . . . . Slit or elongated
- 428/24322 . . . Composite web or sheet
- 428/24331 . . . . including nonapertured component
- 428/24339 . . . . . Keyed
- 428/24347 . . . . . From both sides
- 428/24355 . . Continuous and nonuniform or irregular surface on layer or component [e.g., roofing, etc.]
- 428/24364 . . . with transparent or protective coating
- 428/24372 . . . Particulate matter
- 428/2438 . . . . Coated
- 428/24388 . . . . . Silicon containing coating
- 428/24397 . . . . Carbohydrate
- 428/24405 . . . . Polymer or resin [e.g., natural or synthetic rubber, etc.]
- 428/24413 . . . . Metal or metal compound
- 428/24421 . . . . Silicon containing
- 428/2443 . . . . . Sand, clay, or crushed rock or slate
- 428/24438 . . . Artificial wood or leather grain surface
- 428/24446 . . . Wrinkled, creased, crinkled or creped
- 428/24455 . . . . Paper
- 428/24463 . . . . . Plural paper components
- 428/24471 . . . Crackled, crazed or slit
- 428/24479 . . including variation in thickness
- 428/24488 . . . Differential nonuniformity at margin
- 428/24496 . . . Foamed or cellular component
- 428/24504 . . . . Component comprises a polymer [e.g., rubber, etc.]
- 428/24512 . . . . . Polyurethane
- 428/24521 . . . with component conforming to contour of nonplanar surface
- 428/24529 . . . . and conforming component on an opposite nonplanar surface
- 428/24537 . . . . Parallel ribs and/or grooves
- 428/24545 . . . . Containing metal or metal compound
- 428/24554 . . . . including cellulosic or natural rubber component
- 428/24562 . . . Interlaminar spaces
- 428/2457 . . . Parallel ribs and/or grooves
- 428/24579 . . . . with particulate matter
- 428/24587 . . . . Oblique to longitudinal axis of web or sheet
- 428/24595 . . . and varying density
- 428/24603 . . . . Fiber containing component
- 428/24612 . . . Composite web or sheet
- 428/2462 . . . . with partial filling of valleys on outer surface
- 428/24628 . . Nonplanar uniform thickness material
- 428/24636 . . . 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.]
- 428/31591 . . . Next to cellulosic
- 428/31594 . . . Next to aldehyde or ketone condensation product [phenol-aldehyde, etc.]
- 428/31598 . . . Next to silicon-containing [silicone, cement, etc.] layer
- 428/31601 . . . . Quartz or glass
- 428/31605 . . . Next to free metal
- 428/31609 . . . Particulate metal or metal compound-containing
- 428/31612 . . . . As silicone, silane or siloxane
- 428/31616 . . . Next to polyester [e.g., alkyd]

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

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| <ul style="list-style-type: none"> <li><b>442/00</b> <b>Fabric [woven, knitted, or nonwoven textile or cloth, etc.]</b></li> <li>442/10 . Scrim [e.g., open net or mesh, gauze, loose or open weave or knit, etc.]</li> <li>442/102 . . Woven scrim</li> <li>442/103 . . . Including a multifilament fiber precoated with other than free metal or alloy prior to weaving</li> <li>442/105 . . . Comprising a composite fiber</li> <li>442/107 . . . Comprising at least two chemically different fibers</li> <li>442/109 . . . Metal or metal-coated fiber-containing scrim</li> <li>442/11 . . . . Including an additional free metal or alloy constituent</li> <li>442/112 . . . . . Particulate free metal or alloy constituent</li> <li>442/114 . . . . Including a foam layer</li> <li>442/116 . . . . Including a woven fabric which is not a scrim</li> <li>442/117 . . . . . Including a nonwoven fabric which is not a scrim</li> <li>442/119 . . . . Including a paper layer</li> <li>442/121 . . . . Including a nonwoven fabric which is not a scrim</li> <li>442/122 . . . . . Two or more nonwoven fabric layers</li> <li>442/124 . . . . Including a natural or synthetic rubber layer</li> <li>442/126 . . . . Including a preformed film, foil, or sheet</li> <li>442/128 . . . . Including a layer derived from a water-settable material [e.g., cement, gypsum, etc.]</li> <li>442/129 . . . . Including a ceramic or glass layer</li> <li>442/131 . . . . Including a coating or impregnation of synthetic polymeric material</li> <li>442/133 . . . Inorganic fiber-containing scrim</li> <li>442/134 . . . . Including a carbon or carbonized fiber</li> <li>442/136 . . . . Including a foam layer</li> <li>442/138 . . . . Including a metal layer</li> <li>442/14 . . . . Including an additional scrim layer</li> <li>442/141 . . . . Including a woven fabric which is not a scrim</li> <li>442/143 . . . . Including a nonwoven fabric which is not a scrim</li> <li>442/145 . . . . Including a preformed film, foil, or sheet</li> <li>442/147 . . . . Including a mica layer</li> <li>442/148 . . . . Including a coating or impregnation containing particulate material other than fiber</li> <li>442/15 . . . Including a foam layer</li> </ul> | <ul style="list-style-type: none"> <li>442/152 . . . Including a free metal or alloy constituent</li> <li>442/153 . . . Including an additional scrim layer</li> <li>442/155 . . . Including a paper layer</li> <li>442/157 . . . . Two or more paper layers</li> <li>442/159 . . . Including a nonwoven fabric which is not a scrim</li> <li>442/16 . . . . Two or more nonwoven layers</li> <li>442/162 . . . Including a natural or synthetic rubber layer</li> <li>442/164 . . . Including a preformed film, foil, or sheet</li> <li>442/166 . . . . Cellulose acetate film or sheet</li> <li>442/167 . . . . Fluorinated polyolefin film or sheet</li> <li>442/169 . . . . Polyolefin film or sheet</li> <li>442/171 . . . Including a layer derived from a water-settable material [e.g., cement, gypsum, etc.]</li> <li>442/172 . . . Coated or impregnated</li> <li>442/174 . . . . Including particulate material other than fiber in coating or impregnation</li> <li>442/176 . . . . Three or more layers</li> <li>442/178 . . . . Synthetic polymeric fiber</li> <li>442/179 . . . . . Nylon fiber</li> <li>442/181 . . . . Bitumen coating or impregnation</li> <li>442/183 . . . Synthetic polymeric fiber</li> <li>442/184 . . Nonwoven scrim</li> <li>442/186 . . . Comprising a composite fiber</li> <li>442/188 . . . Metal or metal-coated fiber-containing scrim</li> <li>442/19 . . . . Including a paper layer</li> <li>442/191 . . . Inorganic fiber-containing scrim</li> <li>442/193 . . . . Including a foam layer</li> <li>442/195 . . . Including a foam layer</li> <li>442/197 . . . Including a nonwoven fabric which is not a scrim</li> <li>442/198 . . . Coated or impregnated</li> <li>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</li> <li>442/2008 . . Fabric composed of a fiber or strand which is of specific structural definition</li> <li>442/2016 . . Impregnation is confined to a plane disposed between both major fabric surfaces which are essentially free of impregnating material</li> <li>442/2025 . . Coating produced by extrusion</li> <li>442/2033 . . Coating or impregnation formed <i>in situ</i> [e.g., by interfacial condensation, coagulation, precipitation, etc.]</li> <li>442/2041 . . Two or more non-extruded coatings or impregnations</li> <li>442/2049 . . . Each major face of the fabric has at least one coating or impregnation</li> <li>442/2057 . . . . At least two coatings or impregnations of different chemical composition</li> <li>442/2066 . . . . . Different coatings or impregnations on opposite faces of the fabric</li> <li>442/2074 . . . . . At least one coating or impregnation contains particulate material</li> <li>442/2082 . . . . . At least one coating or impregnation functions to fix pigments or particles on the surface of a coating or impregnation</li> <li>442/209 . . . . At least one coating or impregnation contains particulate material</li> </ul> |
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442/2098	. . . At least two coatings or impregnations of different chemical composition	442/2393	. . . Coating or impregnation provides crease-resistance or wash and wear characteristics
442/2107	. . . . At least one coating or impregnation contains particulate material	442/2402	. . Coating or impregnation specified as a size
442/2115	. . . . . At least one coating or impregnation functions to fix pigments or particles on the surface of a coating or impregnation	442/241	. . Coating or impregnation improves snag or pull resistance of the fabric
442/2123	. . . At least one coating or impregnation contains particulate material	442/2418	. . Coating or impregnation increases electrical conductivity or anti-static quality
442/2131	. . . . At least one coating or impregnation functions to fix pigments or particles on the surface of a coating or impregnation	442/2426	. . . Elemental carbon containing
442/2139	. . Coating or impregnation specified as porous or permeable to a specific substance [e.g., water vapor, air, etc.]	442/2434	. . . Linear polyether group chain containing
442/2148	. . . Coating or impregnation is specified as microporous but is not a foam	442/2443	. . . Nitrogen and phosphorus containing
442/2156	. . Coating or impregnation collects radionuclide or heavy metal	442/2451	. . . Phosphorus containing
442/2164	. . Coating or impregnation specified as water repellent	442/2459	. . . Nitrogen containing
442/2172	. . . Also specified as oil repellent	442/2467	. . . Sulphur containing
442/218	. . . Organosilicon containing	442/2475	. . Coating or impregnation is electrical insulation-providing, -improving, or -increasing, or conductivity-reducing
442/2189	. . . Fluorocarbon containing	442/2484	. . Coating or impregnation is water absorbency-increasing or hydrophilicity-increasing or hydrophilicity-imparting
442/2197	. . . Nitrogen containing	442/2492	. . . Polyether group containing
442/2205	. . . Natural oil or wax containing	442/25	. . Coating or impregnation absorbs sound
442/2213	. . Coating or impregnation is specified as weather proof, water vapor resistant, or moisture resistant	442/2508	. . Coating or impregnation absorbs chemical material other than water
442/2221	. . Coating or impregnation is specified as water proof	442/2516	. . . Chemical material is one used in biological or chemical warfare
442/223	. . . Organosilicon containing	442/2525	. . Coating or impregnation functions biologically [e.g., insect repellent, antiseptic, insecticide, bactericide, etc.]
442/2238	. . . Fluorocarbon containing	442/2533	. . . Inhibits mildew
442/2246	. . . Nitrogen containing	442/2541	. . . Insect repellent
442/2254	. . . Natural oil or wax containing	442/2549	. . Coating or impregnation is chemically inert or of stated nonreactance
442/2262	. . Coating or impregnation is oil repellent but not oil or stain release	442/2557	. . . Oxygen or ozone resistant
442/227	. . . Fluorocarbon containing	442/2566	. . . Organic solvent resistant [e.g., dry cleaning fluid, etc.]
442/2279	. . Coating or impregnation improves soil repellency, soil release, or anti- soil redeposition qualities of fabric	442/2574	. . . Acid or alkali resistant
442/2287	. . . Fluorocarbon 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.]
442/2295	. . . Linear polyether group chain containing	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
442/2303	. . Coating or impregnation provides a fragrance or releases an odor intended to be perceptible to humans	442/2598	. . . Radiation reflective
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	442/2607	. . . Radiation absorptive
442/232	. . . Fluorocarbon containing	442/2615	. . Coating or impregnation is resistant to penetration by solid implements
442/2328	. . . Organosilicon containing	442/2623	. . . Ballistic resistant
442/2336	. . . Natural oil or wax containing	442/2631	. . Coating or impregnation provides heat or fire protection
442/2344	. . Coating or impregnation is anti-slip or friction-increasing other than specified as an abrasive	442/2639	. . . Coated or impregnated asbestos fabric
442/2352	. . Coating or impregnation functions to soften the feel of or improve the "hand" of the fabric	442/2648	. . . Coating or impregnation is specified as an intumescent material
442/2361	. . Coating or impregnation improves stiffness of the fabric other than specified as a size	442/2656	. . . Antimony containing
442/2369	. . Coating or impregnation improves elasticity, bendability, resiliency, flexibility, or shape retention of the fabric	442/2664	. . . Boron containing
442/2377	. . . Improves elasticity	442/2672	. . . Phosphorus containing
442/2385	. . . Improves shrink resistance	442/268	. . . . Phosphorus and nitrogen containing compound
		442/2689	. . . . A phosphorus containing compound and a nitrogen containing compound
		442/2697	. . . . Phosphorus and halogen containing compound

- 442/2705 . . . . A phosphorus containing compound and a halogen containing compound
- 442/2713 . . . Halogen containing
- 442/2721 . . . Nitrogen containing
- 442/273 . . Coating or impregnation provides wear or abrasion resistance
- 442/2738 . . Coating or impregnation intended to function as an adhesive to solid surfaces subsequently associated therewith
- 442/2746 . . . Heat-activatable adhesive
- 442/2754 . . . Pressure-sensitive adhesive
- 442/2762 . . Coated or impregnated natural fiber fabric [e.g., cotton, wool, silk, linen, etc.]
- 442/277 . . . Coated or impregnated cellulosic fiber fabric
- 442/2779 . . . . Coating or impregnation contains an acrylic polymer or copolymer [e.g., polyacrylonitrile, polyacrylic acid, etc.]
- 442/2787 . . . . Coating or impregnation contains a vinyl polymer or copolymer
- 442/2795 . . . . Coating or impregnation contains an epoxy polymer or copolymer or polyether
- 442/2803 . . . . Polymeric coating or impregnation from a silane or siloxane not specified as lubricant or water repellent
- 442/2811 . . . . Coating or impregnation contains polyimide or polyamide
- 442/282 . . . . Coating or impregnation contains natural gum, rosin, natural oil, or wax
- 442/2828 . . . . Coating or impregnation contains aldehyde or ketone condensation product
- 442/2836 . . . . . Phenol-aldehyde condensate
- 442/2844 . . . . . Melamine-aldehyde condensate
- 442/2852 . . . . . Amide-aldehyde condensate [e.g., modified urea-aldehyde condensate, etc.]
- 442/2861 . . Coated or impregnated synthetic organic fiber fabric
- 442/2869 . . . Coated or impregnated regenerated cellulose fiber fabric
- 442/2877 . . . Coated or impregnated polyvinyl alcohol fiber fabric
- 442/2885 . . . Coated or impregnated acrylic fiber fabric
- 442/2893 . . . Coated or impregnated polyamide fiber fabric
- 442/2902 . . . . Aromatic polyamide fiber fabric
- 442/291 . . . Coated or impregnated polyolefin fiber fabric
- 442/2918 . . . . Polypropylene fiber fabric
- 442/2926 . . Coated or impregnated inorganic fiber fabric
- 442/2934 . . . Coating or impregnation contains vinyl polymer or copolymer
- 442/2943 . . . . Vinyl acetate polymer or copolymer
- 442/2951 . . . Coating or impregnation contains epoxy polymer or copolymer or polyether
- 442/2959 . . . Coating or impregnation contains aldehyde or ketone condensation product
- 442/2967 . . . . Amide-aldehyde condensate
- 442/2975 . . . Coated or impregnated ceramic fiber fabric
- 442/2984 . . . Coated or impregnated carbon or carbonaceous fiber fabric
- 442/2992 . . . Coated or impregnated glass fiber fabric
- 442/30 . . Woven fabric [i.e., woven strand or strip material]
- 442/3008 . . Woven fabric has an elastic quality
- 442/3016 . . . Including a preformed layer other than the elastic woven fabric [e.g., fabric or film or foil or sheet layer, etc.]
- 442/3024 . . . Including elastic strand or strip
- 442/3033 . . Including a strip or ribbon
- 442/3041 . . . Woven fabric comprises strips or ribbons only
- 442/3049 . . Including strand precoated with other than free metal or alloy
- 442/3057 . . . Multiple coatings
- 442/3065 . . Including strand which is of specific structural definition
- 442/3073 . . . Strand material is core-spun [not sheath-core bicomponent strand]
- 442/3081 . . . . Core is synthetic polymeric material
- 442/3089 . . . Cross-sectional configuration of strand material is specified
- 442/3098 . . . . Cross-sectional configuration varies longitudinally along the strand
- 442/3106 . . . . Hollow strand material
- 442/3114 . . . . Cross-sectional configuration of the strand material is other than circular
- 442/3122 . . . . . Cross-sectional configuration is multi-lobal
- 442/313 . . . Strand material formed of individual filaments having different chemical compositions
- 442/3138 . . . . Including inorganic filament
- 442/3146 . . Strand material is composed of two or more polymeric materials in physically distinct relationship [e.g., sheath-core, side-by-side, islands-in-sea, fibrils-in-matrix, etc.] or composed of physical blend of chemically different polymeric materials or a physical blend of a polymeric material and a filler material
- 442/3154 . . . Sheath-core multicomponent strand material
- 442/3163 . . . Islands-in-sea multicomponent strand material
- 442/3171 . . . Strand material is a blend of polymeric material and a filler material
- 442/3179 . . Woven fabric is characterized by a particular or differential weave other than fabric in which the strand denier or warp/weft pick count is specified
- 442/3187 . . . Triaxially woven fabric
- 442/3195 . . . Three-dimensional weave [e.g., x-y-z planes, multi-planar warps and/or wefts, etc.]
- 442/3203 . . . . Multi-planar warp layers
- 442/3211 . . . . Multi-planar weft layers
- 442/322 . . . Warp differs from weft
- 442/3228 . . . . Materials differ
- 442/3236 . . . . . Including inorganic strand material
- 442/3244 . . . . . Including natural strand material [e.g., cotton, wool, etc.]
- 442/3252 . . . . . Including synthetic polymeric strand material
- 442/326 . . . . . Including synthetic polymeric strand material
- 442/3268 . . . . . Including natural strand material
- 442/3276 . . . . . Including polyamide strand material
- 442/3285 . . . . . Including polyester strand material
- 442/3293 . . . Warp and weft are identical and contain at least two chemically different strand materials
- 442/3301 . . . Coated, impregnated, or autogenous bonded
- 442/3309 . . . . Woven fabric contains inorganic strand material
- 442/3317 . . . . Woven fabric contains synthetic polymeric strand material
- 442/3325 . . Including a foamed layer or component
- 442/3333 . . . Including a free metal or alloy constituent

442/3341	. . . Plural foam layers	442/3667	. . . . 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]
442/335	. . . Plural fabric layers		
442/3358	. . . . Including a nonwoven fabric layer		
442/3366	. . . Woven fabric is coated, impregnated, or autogenously bonded		
442/3374	. . . . Coating or impregnation includes particulate material other than fiber	442/3675	. . . . . Fabric layer contains natural strand material
442/3382	. . Including a free metal or alloy constituent	442/3683	. . . . . Fabric layer contains carbon or carbonaceous strand material
442/339	. . . Metal or metal-coated strand	442/3691	. . . . . Fabric layer contains glass strand material
442/3398	. . . Vapor or sputter deposited metal layer	442/3699	. . . . . Including particulate material other than fiber
442/3407	. . . Chemically deposited metal layer [e.g., chemical precipitation or electrochemical deposition or plating, etc.]	442/3707	. . Woven fabric including a nonwoven fabric layer other than paper
442/3415	. . . Preformed metallic film or foil or sheet [film or foil or sheet had structural integrity prior to association with the woven fabric]	442/3715	. . . Nonwoven fabric layer comprises parallel arrays of strand material
442/3423	. . . . Plural metallic films or foils or sheets	442/3724	. . . Needled
442/3431	. . . . Plural fabric layers	442/3732	. . . . Including an additional nonwoven fabric
442/3439	. . . . . Including a nonwoven fabric layer	442/374	. . . . . Additional nonwoven fabric comprises chemically different strand material than the first nonwoven fabric
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]	442/3748	. . . . . Including inorganic strand material
442/3455	. . . . Including particulate material other than fiber	442/3756	. . . . Nonwoven fabric layer comprises at least two chemically different fibers
442/3463	. . . Plural fabric layers	442/3764	. . . . Coated, impregnated, or autogenously bonded
442/3472	. . Woven fabric including an additional woven fabric layer	442/3772	. . . Hydroentangled
442/348	. . . Mechanically needled or hydroentangled	442/378	. . . Coated, impregnated, or autogenously bonded
442/3488	. . . . Four or more layers	442/3789	. . . . Plural nonwoven fabric layers
442/3496	. . . . Coated, impregnated, or autogenously bonded	442/3797	. . . . Coating or impregnation is derived from a water-settable material [e.g., cement, gypsum, etc.]
442/3504	. . . Woven fabric layers comprise chemically different strand material	442/3805	. . . . Coating or impregnation contains natural or synthetic rubber
442/3512	. . . . Three or more fabric layers	442/3813	. . . . Coating or impregnation contains synthetic polymeric material
442/352	. . . . . One of which is a nonwoven fabric layer	442/3821	. . . . Coating or impregnation contains bituminous material
442/3528	. . . Three or more fabric layers	442/3829	. . . . Four or more layers
442/3537	. . . . One of which is a nonwoven fabric layer	442/3837	. . . . . Including particulate material other than fiber
442/3545	. . . . Woven fabric layers impregnated with a blend of thermosetting and thermoplastic resins	442/3846	. . . . Including particulate material other than fiber
442/3553	. . . . Woven fabric layers impregnated with an organosilicon resin	442/3854	. . Woven fabric with a preformed polymeric film or sheet
442/3561	. . . . Woven fabric layers impregnated with a natural or synthetic rubber	442/3862	. . . Ester condensation polymer sheet or film [e.g., polyethylene terephthalate, etc.]
442/3569	. . . . Woven fabric layers impregnated with a thermosetting resin	442/387	. . . Vinyl polymer or copolymer sheet or film [e.g., polyvinyl chloride, polyvinylidene chloride, polyvinyl acetate, etc.]
442/3577	. . . . . Phenolic resin	442/3878	. . . Fluorinated olefin polymer or copolymer sheet or film [e.g., Teflon®, etc.]
442/3585	. . . . . Epoxy resin	442/3886	. . . Olefin polymer or copolymer sheet or film [e.g., polypropylene, polyethylene, ethylene-butylene copolymer, etc.]
442/3594	. . . . Woven fabric layers impregnated with a thermoplastic resin [e.g., vinyl polymer, etc.]	442/3894	. . . Amide condensation polymer sheet or film [e.g., nylon 6, etc.]
442/3602	. . . Three or more distinct layers	442/3902	. . . Polyimide sheet or film
442/361	. . . . At least one layer is derived from water-settable material [e.g., cement, gypsum, etc.]	442/3911	. . . Natural or synthetic rubber sheet or film
442/3618	. . . . At least one layer contains wood or cork	442/3919	. . . Including particulate material other than fiber
442/3626	. . . . At least one layer contains bituminous material [e.g., tar, pitch, asphalt, etc.]	442/3927	. . Including a paper or wood pulp layer
442/3634	. . . . At least one layer comprises paper	442/3935	. . . Mica paper layer
442/3642	. . . . At least one layer contains natural or synthetic rubber	442/3943	. . . Plural paper or wood pulp layers
442/365	. . . . At least one layer is a preformed synthetic polymeric film or sheet	442/3951	. . . Including a bituminous layer
442/3659	. . . . At least one layer comprises ceramic or glass material in other than particulate form	442/3959	. . . Including an outermost adhesive layer

442/3967	. . . Including a natural or synthetic rubber layer	442/611	. . . . Cross-sectional configuration of strand or fiber material is other than circular
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.]	442/612	. . . . Hollow strand or fiber material
		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
		442/625	. . . . . Autogenously bonded
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	442/626	. . . . . Microfiber is synthetic polymer
442/456	. . . Including additional strand inserted within knit fabric	442/627	. . . Strand or fiber material is specified as non-linear [e.g., crimped, coiled, etc.]
442/463	. . . . Warp knit insert strand	442/629	. . . . . Composite strand or fiber material
442/469	. . Including a foamed layer or component	442/63	. . . . . Carbon or carbonaceous strand or fiber material
442/475	. . Including a free metal or alloy constituent	442/631	. . . . . Glass strand or fiber material
442/481	. . . Chemically deposited metal layer [e.g., chemical precipitation or electrochemical deposition or plating, etc.]	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
442/488	. . Including an additional knit fabric layer	442/633	. . . . . Synthetic polymeric strand or fiber material is of staple length
442/494	. . Including a nonwoven fabric layer other than paper	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
442/50	. FELT FABRIC	442/635	. . . . . Synthetic polymeric strand or fiber material
442/51	. . From natural organic fiber [e.g., wool, etc.]	442/636	. . . . . Synthetic polymeric strand or fiber material is of staple length
442/53	. . . Including particulate material other than fiber	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
442/54	. . . At least three layers		
442/56	. . From synthetic organic fiber	442/638	. . . Side-by-side multicomponent strand or fiber material
442/57	. . Including particulate material other than fiber	442/64	. . . Islands-in-sea multicomponent strand or fiber material
442/59	. . At least three layers	442/641	. . . Sheath-core multicomponent strand or fiber material
442/60	. Nonwoven fabric [i.e., nonwoven strand or fiber material]	442/642	. . . Strand or fiber material is a blend of polymeric material and a filler material
442/601	. . Nonwoven fabric has an elastic quality	442/643	. . Including parallel strand or fiber material within the nonwoven fabric
442/602	. . . Nonwoven fabric comprises an elastic strand or fiber material		
442/603	. . Including strand or fiber material precoated with other than free metal or alloy		
442/604	. . . Strand or fiber material is glass		
442/605	. . . Strand or fiber material is inorganic		
442/607	. . . Strand or fiber material is synthetic polymer		
442/608	. . Including strand or fiber material which is of specific structural definition		
442/609	. . . Cross-sectional configuration of strand or fiber material is specified		
442/61	. . . . Cross-sectional configuration varies longitudinally along strand or fiber material		

- 442/644 . . . 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