

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.	24/1397	. . . Article held by flexible connector [e.g., chain]
24/10	. Miscellaneous	24/14	. Bale and package ties, hose clamps
24/11	. Album fasteners	24/1402	. . . Packet holders
24/12	. Gun band type	24/1404	. . . . Cord
24/13	. Article holder attachable to apparel or body	24/1406	. . . . Adjustable bands
24/1303	. . Chatelaine safety hooks	24/1408	. . . . Closed loops
24/1306	. . Flower	24/141	. . . . Plastic bands
24/1309	. . . Pin attached	24/1412	. . with tighteners
24/1312	. . Napkin	24/1414	. . . . Wedge
24/1315	. . . Hook	24/1416	. . . . Winder
24/1318	. . . Neck enclosing	24/1418	. . . . Self-locking [dead center or snap action]
24/1321	. . Pencil	24/142	. . . . Adjustable girth
24/1324	. . . Clasp attached	24/1422	. . . . . Rack bar
24/1326	. . . . Finger ear, belt attached pencil holder	24/1424	. . . . Lever
24/1329	. . . . Pencil holder with paper clip	24/1427	. . . . Worm and tooth
24/1332	. . . . Combined and convertible pencil holder	24/1429	. . . . Pivotal worm band clamp
24/1335	. . . . Container type pencil holder	24/1431	. . . . Radial worm band clamp
24/1338	. . . . Separate pencil holder and pocket engaging clip	24/1433	. . . . Integral thread
24/1341	. . . . Sliding jaw pencil holding clip	24/1435	. . . . . External thread
24/1344	. . . . Wire pencil holder	24/1437	. . . . . Both ends threaded
24/1347	. . . . Flexible shank pencil holder	24/1439	. . . . Radial screw
24/135	. . . . with movable catch [e.g., pin pivoted lever, roller, etc.]	24/1441	. . . . Tangential screw
24/1353	. . . . Pivoted jaw pencil holder	24/1443	. . . . . Adjustable girth
24/1356	. . . Pin attached	24/1445	. . . . . Step adjustment
24/1359	. . . Rule holder	24/1447	. . . . . . Plural separable parts
24/1362	. . Sleeve holder [e.g., for inner coat]	24/1449	. . . . . Wire
24/1365	. . Pin attached	24/1451	. . . . . Plural separable parts
24/1368	. . Arm or leg carried holder	24/1453	. . . . . Pivotal strap parts
24/1371	. . Eyeglass holder including retaining means	24/1455	. . . . . Plural wrap
24/1374	. . Neck supported holder	24/1457	. . Metal bands
24/1376	. . Holder contains pocket engager [e.g., antitheft device, wallet protector]	24/1459	. . . Separate connections
24/1379	. . Key ring holder	24/1461	. . . . One piece
24/1382	. . Receptacle type holder	24/1463	. . . . . Sheet metal
24/1385	. . . Eyeglass or spectacle case	24/1465	. . . . . . Buckle band connection
24/1388	. . Open-ended holster type holder	24/1467	. . . . . . Swedged sheet metal band connection
24/1391	. . Article held by clip with spring [e.g., leaf, coil] member	24/1469	. . . . . . End-to-end integral with band connecting means
24/1394	. . Article held by clip	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	. . . . Pivotaly mounted on pintle
24/1632	. . . Sheet metal knuckles, common pintle	24/205	. . . One piece
24/1636	. . . Wire knuckles, common pintle	24/206	. . . . Mounted on support means
24/164	. . . Knuckle integral with belt material	24/207	. . Adhesive
24/1644	. . . Multiple pintles interconnected V-belt type	24/208	. . Corner fastened
24/1648	. . Lacing	24/209	. . Paper-penetrating
24/1652	. . One piece	24/21	. Strap tighteners
24/1656	. . . Deflecting prong	24/2102	. . Cam lever and loop
24/166	. . Screw clamp	24/2104	. . . Step adjusted
24/1664	. . Splices	24/2106	. . . . Ski boot and garment fasteners
24/1668	. . Wire	24/2108	. . . . Split ring tightener
24/1672	. . Butt connected belt ends	24/2109	. . . . Chain and rope tighteners
24/1676	. . V, round, trapezoidal belts	24/2111	. . . . Tire chain tighteners
24/168	. . Flanged belt ends, connector hold ends	24/2113	. . . . Strap tighteners
24/1684	. . Lapped ends of endless belts	24/2115	. . . . Jewelry
24/1688	. . Hinged ends of endless belts	24/2117	. . . Strap tighteners
24/1692	. . Wire strands reinforce belts	24/2119	. . . Tie chain tighteners
24/1696	. . Hook and loop type fastener and zipper belt end connection	24/2121	. . . Cargo tie down
24/17	. Buttoners	24/2123	. . . Cover fasteners
24/18	. Cuff holder	24/2125	. . . Chain tighteners
24/181	. . Adjustable	24/2126	. . . Strap tightener machine
24/183	. . Sleeve clasp and button for cuff	24/2128	. . . toggle actuated sliding jaw
24/184	. . Sleeve clasp and clasp for cuff	24/213	. . . Jewelry
24/185	. . Sleeve clasp and hook for cuff	24/2132	. . . Split ring with tightener
24/186	. . Sleeve clasp and pin for cuff	24/2134	. . . Concrete form panels
24/188	. . Sleeve pin and button for cuff	24/2136	. . . Seat belt buckles
24/189	. . Pin fastener	24/2138	. . . Chain, cable, wire tighteners, and anchors
24/19	. Necktie fastener	24/214	. . . Envelope fasteners
24/1903	. . Bands	24/2142	. . . Ski boot and garment fasteners
24/1907	. . . End-securing pin	24/2143	. . Strap-attached folding lever
24/191	. . . Gripping	24/2145	. . . toggle latch
24/1914	. . . Depressors	24/2147	. . . Strap tightener
24/1917	. . . . Button engaging	24/2149	. . . Tire antiskid strap tightener
24/1921	. . . . Pin or spur	24/2151	. . . Seat belts
24/1924	. . Button engaging	24/2153	. . . Split ring fasteners
24/1928	. . . Adjustable	24/2155	. . . Jewelry-watch straps
24/1931	. . . Cord loop	24/2157	. . . Tie downs [covers, articles]
24/1934	. . . Pivoted or sliding jaw		

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

24/268	. . having separate, independently movable, bridging components	24/342	. . . . Buckle having plural receiving slots
24/27	. including readily dissociable fastener having numerous, protruding, unitary filaments randomly interlocking with, and simultaneously moving towards, mating structure [e.g., hook-loop type fastener]	24/3421	. . . including a button fastening element
24/2708	. . Combined with diverse fastener	24/3423	. . . and separable fastening means for attached fastener
24/2717	. . with distinct structure for sealing securement joint	24/3424	. . . . Snap fastener
24/2725	. . with feature facilitating, enhancing, or causing attachment of filament mounting surface to support therefor	24/3425	. . . having roller means
24/2733	. . having filaments formed from continuous element interwoven or knitted into distinct, mounting surface fabric	24/3427	. . Clasp
24/2742	. . having filaments of varied shape or size on same mounting surface	24/3428	. . . having pivoted members
24/275	. . with feature facilitating or causing attachment of filaments to mounting surface	24/3429	. . . . Cam type member
24/2758	. . . Thermal or adhesive	24/3431	. . . . Plural clasps
24/2767	. . having several, repeating, interlocking formations along length of filaments	24/3432	. . . . . and toggle operator
24/2775	. . having opposed structure formed from distinct filaments of diverse shape to those mating therewith	24/3433	. . . . . Spring biased
24/2783	. . having filaments constructed from coated, laminated, or composite material	24/3435	. . . . . . Coil
24/2792	. . having mounting surface and filaments constructed from common piece of material	24/3436	. . . . . and cam
24/28	. Freight container to freight container fastener	24/3437	. . . . . Coil spring biased
24/29	. Drum or can spacer fastener	24/3439	. . . Plural clasps
24/30	. Trim molding fastener	24/344	. . . . Resilient type clasp
24/301	. . having externally threaded attaching means	24/3441	. . . . . and cam
24/302	. . . and laterally extending biasing appendage	24/3443	. . . . . Spring biased jaw
24/303	. . having laterally extending biasing appendage	24/3444	. . . . . Circular work engageable
24/304	. . Resilient metal type	24/3445	. . . . . and pin attachment
24/306	. . . Strip formed	24/3447	. . . . . and disconnect means
24/307	. . . Sheet metal formed	24/3448	. . . including a button fastening element
24/308	. . . Wire formed	24/3449	. . . and hook
24/309	. . Plastic type	24/3451	. . . . having intermediate connector allowing movement
24/31	. Plural fasteners having intermediate flaccid connector	24/3452	. . . . . and adjustment means
24/312	. . Chain connector	24/3453	. . . . . having gripping configuration on clasp jaw
24/314	. . Elastic connector	24/3455	. . . . . Penetrating type
24/316	. . . Strap connector	24/3456	. . . . . having cam
24/318	. . Strap connector	24/3457	. . . . . having separable jaws
24/32	. having magnetic fastener	24/3459	. . . and penetrating prong
24/33	. having adhesive fastener	24/346	. . . and pin
24/34	. Combined diverse multipart fasteners	24/3461	. . . . having separate pin loss prevention means
24/3401	. . Buckle	24/3463	. . . . . Pin coextensive, coplanar, and contiguous with clasp jaw
24/3403	. . . and buckles	24/3464	. . . . . Pin coextensive, coplanar, and contiguous with clasp jaw
24/3404	. . . . having separate material adjustment means	24/3465	. . . . . Pin forms part of clasp jaw
24/3405	. . . . having separate disconnect means	24/3467	. . Pin
24/3407	. . . . . Pivotal lever type	24/3468	. . . and pin
24/3408	. . . . having disconnect structure	24/3469	. . . . and disconnect means
24/3409	. . . . . Resilient cooperating means	24/3471	. . . . . Hook and eye type
24/3411	. . . . and pin	24/3472	. . . . and hook
24/3412	. . . . Crossed belt accommodating	24/3473	. . . . . having connector allowing movement
24/3413	. . . and clasp	24/3475	. . . . . having intermediate connector allowing movement
24/3415	. . . and pin	24/3476	. . . and hook
24/3416	. . . and hook	24/3477	. . . . having intermediate connector allowing movement
24/3417	. . . . having disconnect means	24/3479	. . . . . and adjustment means
24/3419	. . . . having penetrating prong	24/348	. . . . Hook having locking means
		24/3481	. . . including a button fastening element
		24/3483	. . . and penetrating prong
		24/3484	. . Hook
		24/3485	. . . and hook
		24/3487	. . . . having biasing spring
		24/3488	. . . . Separately connected
		24/3489	. . . . having securing means
		24/3491	. . . . . Sliding
		24/3492	. . . . . Snap type
		24/3493	. . . . . Pivoted

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

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

24/44248 . . .	Encircling gripping member including semirigid band and means for adjusting girth	24/44607 . . .	Track or way oblique to path of gripping member
24/44256 . . .	with specifically shaped, nongripping, rigid structure for connecting independently operable clasps, clips, or support-clamps	24/44615 . . .	with position locking-means for gripping members
24/44265 . . .	Gripping member face integral with or rigidly affixed to screw-driving portion	24/44624	Integral locking-means
24/44274 . . .	having either discrete flaccid or thin, nonbiasing, integral, connecting hinge	24/44632 . . .	with specific mounting means for attaching to flaccid supporting structure or structure-to-be-secured
24/44282 . . .	having equally spaced or continual gripping faces revolving about central axis	24/44641 . . .	having gripping member formed from, biased by, or mounted on resilient member
24/44291 . . .	including pivoted gripping member	24/4465 . . .	Integrally combined, independently operable, diverse clasps, clips, or support-clamps
24/44299 . . .	Pivoted member also slides	24/44658 . . .	with specific means for mounting to flaccid supporting structure or structure-to-be-secured
24/44308	Tapered face	24/44667	Mounting means made entirely from integral wire portion of resilient gripping member
24/44316 . . .	Pivoting gripping member either supports or coacts with sliding engaging face	24/44675	Wire coiled about flaccid supporting structure
24/44325 . . .	having three or more pivotally connected gripping members	24/44684 . . .	with operator for moving biased engaging face
24/44333 . . .	having toggle operator for moving	24/44692	Camming or wedging element
24/44342 . . .	having rigid linking arm pivotally connected to each gripping member	24/44701	Encircling sleeve type element
24/4435	with extended lever portion	24/44709	Pivoted or rotated element
24/44359	having lever end modified for attachment to support	24/44718	Element pivots or rotates in plane parallel to plane bisecting opposed engaging faces
24/44368 . . .	Pivoted gripping member applies camming force	24/44726	Elongated element with pivot between cam and handle portions
24/44376 . . .	Spring or resiliently biased about pivot	24/44735	for moving engaging face of U-shaped gripping member
24/44385	Distinct spring	24/44744 . . .	with position locking-means for engaging faces
24/44393	Attached solely by spring	24/44752	Integral locking-means
24/44402	with operator for moving pivoted member	24/44761	Pivoted lock member
24/4441	Camming or wedging element	24/44769 . . .	Opposed engaging faces on gripping member formed from single piece of resilient material
24/44419	Pivoted or rotated element	24/44778	Piece totally forms clasp, clip, or support-clamp and has shaped, wirelike, or bandlike configuration with uniform cross section throughout its length
24/44427	with position locking-means for gripping members	24/44786	Opposed faces located in and bias towards common plane in nonuse position
24/44436	including pivoted arm	24/44795	Resilient gripping member having tightly twisted portion
24/44444	having specific surface material or irregularity on or along engaging face	24/44803	Resilient gripping member having coiled portion
24/44453	having specific handle structure	24/44812	Convolutions of coil form faces
24/44462	Coil spring	24/44821	Relatively movable segments of resilient gripping member contact and cross in nonuse position
24/4447	having coil portion coaxial or parallel with pivotal axis	24/44829	Segments form opposed engaging faces
24/44479	Flat or leaf spring	24/44838	having specific handle structure
24/44487 . . .	Closed by gravity or weight of structure-to-be-secured	24/44846	having specific handle structure
24/44496 . . .	with operator means for moving pivoted member	24/44855	Terminal end of resilient member having engagement or disengagement enhancing structural modifications
24/44504	Threaded cylindrical rod and mating cavity	24/44863	having specific surface irregularity on or along engaging face
24/44513	Camming or wedging element	24/44872	having specific handle structure
24/44521	Pivoted or rotated element	24/4488	Movably attached to gripping member
24/4453	with position locking-means for gripping members	24/44889	Interlocking faces
24/44538	Integral locking-means	24/44897	with reinforcing member
24/44547 . . .	having inserted and receiving interlocking engaging faces	24/44906	having specific surface irregularity on or along engaging face
24/44556	Resilient gripping member	24/44915	Corrugated or toothed face
24/44564 . . .	having specific surface material or irregularity on or along engaging face		
24/44573 . . .	including track or way guided and retained gripping member		
24/44581 . . .	Biased by distinct spring		
24/4459 . . .	with operator for moving guided member		
24/44598	Threaded cylindrical rod and mating cavity		

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

24/45335 having means biasing gate about pivot (Frozen)	24/45508 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
- 24/45675 having pivotally connected interlocking component
- 24/45681 Blocking removal of formation on projection from complementary formation on side wall of cavity
- 24/45686 and position locking-means therefor
- 24/45691 and relatively movable handle therefor
- 24/45696 Requiring manual force thereon to interlock or disengage
- 24/45702 Plural, oppositely shifting, similar interlocking components
- 24/45707 having aperture therein alignable with parallel access opening
- 24/45712 having interlocking portion thereof housed continuously within cavity
- 24/45717 having cavity with side walls and axially biased component capping end
- 24/45723 having slidably connected, nonself-biasing interlocking component
- 24/45728 Blocking removal of formation on projection from complementary formation on side wall of cavity
- 24/45733 and position locking-means therefor
- 24/45738 and relatively movable handle therefor
- 24/45743 Requiring manual force thereon to interlock or disengage
- 24/45749 Plural, oppositely shifting, similar interlocking components
- 24/45754 having closed aperture therethrough alignable with parallel access opening
- 24/45759 having flaccid component defining access opening of cavity
- 24/45764 Component formed solely by flaccid cord
- 24/4577 with nonflaccid component
- 24/45775 having resiliently biased interlocking component or segment
- 24/4578 Cavity or projection rotates about axis of cavity to dissociate
- 24/45785 Requiring manual force applied against bias to interlock or disengage
- 24/45791 and partially blocking separate, nonresilient access opening of cavity
- 24/45796 and closed elongated access opening for guiding transverse projection travel after insertion
- 24/45801 Nonresilient walls define opening
- 24/45806 formed from wire
- 24/45812 and access opening with gapped perimeter for allowing movement of noninserted projection support therepast
- 24/45817 Cavity constructed solely from wire
- 24/45822 Partially blocking separate, nonresilient, access opening of cavity
- 24/45827 and bodily shifted into or out of interlock location by manual force thereon
- 24/45832 formed from wire
- 24/45838 having curved or bent engaging section conforming to contour of projection
- 24/45843 Similar, distinct sections
- 24/45848 having distinct sections engaging projection at spaced points
- 24/45853 including separate, nonprojection-engaging spring for biasing
- 24/45859 Biased component or segment entirely formed from wire
- 24/45864 having portion of cavity deformed during mounting
- 24/45869 and cooperating with separate mounting component
- 24/45874 having axially extending expansion slit along side of cavity
- 24/4588 Means for mounting projection or cavity portion
- 24/45885 Allows bodily movement facilitating interlock
- 24/4589 About pivotal connection
- 24/45895 Includes resilient component separate from portion
- 24/45901 Allows relocation of portion
- 24/45906 having component of means permanently deformed during mounting operation
- 24/45911 and formed from or fixedly attached to projection or cavity portion
- 24/45916 Cooperates with detached component of means
- 24/45921 having shape facilitating impaling of mounting surface
- 24/45927 and inserted into or through cavity or projection
- 24/45932 and encircling cavity or projection
- 24/45937 Consisting of thermally fusible substance
- 24/45942 having threaded formation
- 24/45948 having specific structure for cooperating with stitching
- 24/45953 having shape facilitating impaling of mounting surface
- 24/45958 Plural distinct cavities or projections
- 24/45963 Hook type
- 24/45969 Hook-shaped projection member passing through cavity
- 24/45974 formed from single piece of sheet metal
- 24/45979 formed solely from wire
- 24/45984 Cavity having specific shape
- 24/4599 including closed elongated access opening for guiding transverse projection travel after insertion
- 24/45995 having access opening with gapped perimeter for allowing movement of noninserted projection support therepast
- 24/46 Pin or separate essential cooperating device therefor
- 24/4602 with separately operable, manually releasable, nonpenetrating means for mounting [e.g., drapery hook]
- 24/4604 having distinct guiding, holding, or protecting means for penetrated portion
- 24/4605 Means detachable from or flaccidly connected to pin [e.g., hatpin type]
- 24/4607 for pin having plural penetrating portions
- 24/4609 including relatively movable guiding, holding, or protecting components or surfaces
- 24/4611 having operator for moving holding component or surface

- 24/4613 Moves pivoting holding component
- 24/4614 Moves slidably guided, nonself-biasing, holding component
- 24/4616 having pierceable [e.g., cork] or naturally resilient [e.g., rubber] surfaces
- 24/4618 with pivotal connection therebetween
- 24/462 with slidable connection between nonself-biasing components
- 24/4621 having resiliently biased component or surface
- 24/4623 Coiled about longitudinal axis of held portion
- 24/4625 and aperture therein alignable with another spaced aperture of means
- 24/4627 and nonresilient structure for guiding portion thereto
- 24/4629 including structure for cooperating with formation [e.g., cavity] formed on penetrating portion
- 24/463 for pin having plural penetrating portions
- 24/4632 Each independently movable towards and into cooperation with means
- 24/4634 including relatively movable guiding, holding, or protecting components or surfaces
- 24/4636 with connection allowing component to revolve about axis of held penetrating portion
- 24/4638 with pivotal connection therebetween
- 24/4639 having position locking means therefor
- 24/4641 Spring or resiliently biased
- 24/4643 with slidable connection between nonself-biasing components
- 24/4645 Component slides parallel to axis of held penetrating portion
- 24/4646 Means engages formation formed on penetrating portion
- 24/4648 having nonresilient and resilient components
- 24/465 Means formed from single resilient wire
- 24/4652 Means formed from resilient sheet metal
- 24/4654 with independent, spaced, intermediate connections, or formations [e.g., coils], about which portion or means move
- 24/4655 Includes slidable connection
- 24/4657 with pivotal connection between penetrating portion and means
- 24/4659 Connection also permits sliding movement
- 24/4661 Resiliently biased about connection
- 24/4663 with slidable connection intermediate penetrating portion and means
- 24/4664 having resilient bridging structure between portion and means
- 24/4666 Means includes structure for cooperating with formation [e.g., cavity] formed on portion
- 24/4668 and penetrating portion formed from wire
- 24/467 Bridging structure includes elongated nonwire element
- 24/4671 Wire also forms coiled bridging structure about which portion moves
- 24/4673 including distinct device for cooperating with coil
- 24/4675 having means also formed from same wire
- 24/4677 with cavity for guiding structure-to-be-secured towards penetrating portion [e.g., stocking support]
- 24/4679 having penetrating portion retractable or of changeable length
- 24/468 having interconnected distinct penetrating portions
- 24/4682 Connection allows movement therebetween
- 24/4684 Slidable connection
- 24/4686 Resilient connection
- 24/4688 formed from common wire
- 24/4689 and pointing in same direction
- 24/4691 Penetrating portion includes relatively movable structure for resisting extraction
- 24/4693 having specific wire penetrating portion
- 24/4695 Wire curved or bent
- 24/4696 having distinct head structure
- 24/4698 Movably connected to penetrating portion
- 24/47 Strap-end-attaching devices
- 24/4709 Bendable sheet material
- 24/4718 Watch pintle connected
- 24/4727 Webbing to tube [lawn chair]
- 24/4736 Buckle connected
- 24/4745 End clasp
- 24/4755 Hook
- 24/4764 Ring-loop
- 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	Dynamolectric 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	29/49111	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
- 29/49773 by radioactive tracing
- 29/49774 by vibratory or oscillatory movement
- 29/49776 Pressure, force, or weight determining
- 29/49778 . . . with aligning, guiding, or instruction
- 29/4978 Assisting assembly or disassembly
- 29/49782 . . of a slide fastener
- 29/49783 . . . of slider
- 29/49785 . . . of interlocking element
- 29/49787 . . Obtaining plural composite product pieces from preassembled workpieces
- 29/49789 . . Obtaining plural product pieces from unitary workpiece
- 29/4979 . . . Breaking through weakened portion
- 29/49792 . . . Dividing through modified portion
- 29/49794 . . . Dividing on common outline
- 29/49796 . . . Coacting pieces
- 29/49798 . . . Dividing sequentially from leading end, e.g., by cutting or breaking
- 29/49799 . . Providing transitory integral holding or handling portion
- 29/49801 . . Shaping fiber or fibered material
- 29/49803 . . Magnetically shaping
- 29/49805 . . Shaping by direct application of fluent pressure
- 29/49806 . . . Explosively shaping
- 29/49808 . . Shaping container end to encapsulate material
- 29/4981 . . Utilizing transitory attached element or associated separate material
- 29/49812 . . . Temporary protective coating, impregnation, or cast layer
- 29/49813 . . Shaping mating parts for reassembly in different positions
- 29/49815 . . Disassembling
- 29/49817 . . . with other than ancillary treating or assembling
- 29/49819 . . . with conveying of work or disassembled work part
- 29/49821 . . . by altering or destroying work part or connector
- 29/49822 . . . by applying force
- 29/49824 to elastically deform work part or connector
- 29/49826 . . Assembling or joining
- 29/49828 . . . Progressively advancing of work assembly station or assembled portion of work
- 29/49829 Advancing work to successive stations [i.e., assembly line]
- 29/49831 Advancing station
- 29/49833 . . . Punching, piercing or reaming part by surface of second part
- 29/49835 with shaping
- 29/49837 of first part
- 29/49838 . . . by stringing
- 29/4984 . . . Retaining clearance for motion between assembled parts
- 29/49842 Between tube-forming helical coils
- 29/49844 Through resilient media
- 29/49845 by deforming interlock
- 29/49847 by folding part into plural ears
- 29/49849 by wrapping around
- 29/49851 of link closure
- 29/49853 of sphere, i.e., ball, in socket
- 29/49854 Ball point pen making
- 29/49856 Allowing assembled sphere to move in single plane only
- 29/49858 of flange into tubular socket
- 29/4986 Outwardly deforming internally fitted rod
- 29/49861 . . . Sizing mating parts during final positional association
- 29/49863 . . . with prestressing of part
- 29/49865 by temperature differential [e.g., shrink fit]
- 29/49867 of skin on frame member
- 29/49869 by flexing
- 29/4987 Elastic joining of parts
- 29/49872 Confining elastic part in socket
- 29/49874 Prestressing rod, filament or strand
- 29/49876 by snap fit
- 29/49877 . . . of flexible wall, expansible chamber devices [e.g., bellows]
- 29/49879 . . . Spaced wall tube or receptacle
- 29/49881 . . . of separate helix [e.g., screw thread]
- 29/49883 . . . Ribbing
- 29/49885 . . . with coating before or during assembling
- 29/49886 to roughen surface
- 29/49888 . . . Subsequently coating
- 29/4989 . . . with spreading of cable strands
- 29/49892 . . . Joining plate edge perpendicularly to frame
- 29/49893 . . . Peripheral joining of opposed mirror image parts to form a hollow body
- 29/49895 . . . Associating parts by use of aligning means [e.g., use of a drift pin or a "fixture"]
- 29/49897 Registering mating opposed tool parts [e.g., registering a punch and a cooperating die]
- 29/49899 by multiple cooperating aligning means
- 29/49901 Sequentially associating parts on stationary aligning means
- 29/49902 by manipulating aligning means
- 29/49904 . . . Assembling a subassembly, then assembling with a second subassembly
- 29/49906 . . . Metal deforming with nonmetallic bonding
- 29/49908 . . . Joining by deforming
- 29/49909 Securing cup or tube between axially extending concentric annuli
- 29/49911 by expanding inner annulus
- 29/49913 by constricting outer annulus
- 29/49915 Overedge assembling of seated part
- 29/49917 by necking in cup or tube wall
- 29/49918 At cup or tube end
- 29/4992 by flaring inserted cup or tube end
- 29/49922 by bending over projecting prongs
- 29/49924 of parallel side-by-side elongated members
- 29/49925 Inward deformation of aperture or hollow body wall
- 29/49927 Hollow body is axially joined cup or tube
- 29/49929 Joined to rod
- 29/49931 Joined to overlapping ends of plural rods
- 29/49933 After thinning
- 29/49934 by axially applying force
- 29/49936 Surface interlocking
- 29/49938 Radially expanding part in cavity, aperture, or hollow body
- 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
- 29/53383 . . . and means to fasten work parts together
- 29/53387 by deforming
- 29/53391 by elastic joining
- 29/53396 by friction fit
- 29/534 . . Multiple station assembly or disassembly apparatus
- 29/53404 . . . including turret-type conveyor
- 29/53409 . . . including converging conveyors
- 29/53413 and primary central conveyor
- 29/53417 . . . Means to fasten work parts together
- 29/53422 by deforming
- 29/53426 by elastic joining
- 29/5343 . . Means to drive self-piercing work part
- 29/53435 . . including assembly pallet
- 29/53439 . . including provision to utilize thermal expansion of work
- 29/53443 . . Means to assemble or disassemble container and fluid component
- 29/53448 . . Vehicle wheel
- 29/53452 . . . Railway wheel
- 29/53457 . . Tumbler lock
- 29/53461 . . toy doll
- 29/53465 . . Film or tape cartridge
- 29/5347 . . Crystal to watch or clock
- 29/53474 . . Means to insert or extract pen point
- 29/53478 . . with magazine supply
- 29/53483 . . . and magnetic work-holder or positioner
- 29/53487 . . . Assembling means comprising hand-manipulatable implement
- 29/53491 One work part comprising living tissue
- 29/53496 comprising driver for snap-off-mandrel fastener; e.g., Pop [TM] riveter
- 29/535 One work part comprising nut or screw
- 29/53504 One work part comprising paper clip
- 29/53509 Means to assemble tire stud into tire tread
- 29/53513 Means to fasten by deforming
- 29/53517 Fastening sinker to fishing line
- 29/53522 . . . Means to fasten by deforming
- 29/53526 . . Running-length work
- 29/5353 . . . Assembled on core
- 29/53535 . . including means to vibrate work
- 29/53539 . . including work conveyor
- 29/53543 . . . including transporting track
- 29/53548 and work carrying vehicle
- 29/53552 . . Valve applying or removing
- 29/53557 . . . Engine valve unit puller or applier
- 29/53561 . . . Engine valve spring compressor [only]
- 29/53565 Plural spring engagement
- 29/5357 Screw operated
- 29/53574 Parallel or tong type, side entrance
- 29/53578 Lever operated
- 29/53583 Single jaw or valve engagement
- 29/53587 Plier type
- 29/53591 . . . to or from wheel rim of resilient tire or tube
- 29/53596 . . . Removal tool
- 29/536 . . Piston ring inserter or remover
- 29/53604 . . . Plier-type operation
- 29/53609 with ring encirclement
- 29/53613 . . Spring applier or remover
- 29/53617 . . . Transmission spring
- 29/53622 . . . Helical spring
- 29/53626 . . . Flat spiral spring [e.g., watch or clock type]
- 29/5363 . . . Circular spring
- 29/53635 . . . Leaf spring
- 29/53639 . . Means to stake watch or clock
- 29/53643 . . . Plier type
- 29/53648 . . Brake lining to brake shoe
- 29/53652 . . Tube and coextensive core
- 29/53657 . . to apply or remove a resilient article [e.g., tube, sleeve, etc.]
- 29/53661 . . . Nipple to nursing bottle
- 29/53665 . . . Well protector to sucker rod
- 29/5367 . . Coupling to conduit
- 29/53674 . . Loose-leaf sheet binder
- 29/53678 . . Compressing parts together face to face
- 29/53683 . . Spreading parts apart or separating them from face to face engagement
- 29/53687 . . by rotation of work part
- 29/53691 . . . Means to insert or remove helix
- 29/53696 . . Means to string
- 29/537 . . tool handle and tool
- 29/53704 . . tool chuck and tool
- 29/53709 . . Overedge assembling means
- 29/53713 . . . Belt-hook attacher
- 29/53717 . . . Annular work
- 29/53722 with radially acting tool inside annular work
- 29/53726 with second workpiece inside annular work one workpiece moved to shape the other
- 29/5373 comprising driver for snap-off-mandrel fastener; e.g., Pop [TM] riveter
- 29/53735 including near side fastener shaping tool
- 29/53739 Pneumatic- or fluid-actuated tool
- 29/53743 Liquid
- 29/53748 and gas
- 29/53752 having rotary drive mechanism
- 29/53757 having allochiral actuating handles
- 29/53761 having repositionable annulus engaging tool
- 29/53765 including near side fastener shaping tool
- 29/5377 . . . Riveter
- 29/53774 Single header
- 29/53778 Pipe joiner
- 29/53783 . . . Clip applier
- 29/53787 . . . Binding or covering
- 29/53791 Edge binding
- 29/53796 . . Puller or pusher means, contained force multiplying operator
- 29/538 . . . Hubcap and hub
- 29/53804 . . . Battery post and terminal
- 29/53809 . . . Cotter pin and cooperating member
- 29/53813 Plier type means
- 29/53817 . . . Valve stem pin or key and another member
- 29/53822 . . . Machine key and another member
- 29/53826 . . . Arbor-type press means
- 29/5383 . . . having fluid operator
- 29/53835 . . . having wedge operator
- 29/53839 . . . having percussion or explosive operator
- 29/53843 Tube, sleeve, or ferrule inserting or removing
- 29/53848 . . . having screw operator
- 29/53852 C-frame
- 29/53857 Central screw, work-engagers around screw
- 29/53861 Work-engager arms along or parallel to screw

29/53865	. . . . . with arm connecting engaging means	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

Former US Class 70 series

70/00	Locks	70/483	. . . . . Flexible shackle
70/10	. . Miscellaneous	70/485	. . . . . With seal
70/20	. . Attack-actuated defeating mechanisms	70/487	. . . . . Parts, accessories, attachments and adjuncts
70/25	. . With reset mechanisms	70/489	. . . . . Housings
70/30	. . Hasp	70/491	. . . . . Shackles
70/308	. . Combination lock	70/493	. . . . . Protectors
70/317	. . . Hasp-carried	70/496	. . . . . Sheaths
70/325	. . . Keeper-carried	70/498	. . . . . Shields or canopies
70/333	. . Key lock	70/50	. . Special application
70/342	. . . Hasp-carried	70/5004	. . For antitheft signaling device on protected article
70/35	. . . . . Keeper-encasing	70/5009	. . For portable articles
70/358	. . . . . Dead bolt	70/5013	. . . Canes, umbrellas, apparel
70/367	. . . . . Latching bolt	70/5018	. . . Robes
70/375	. . . . . Dead bolt	70/5022	. . . Tools
70/383	. . . . . Latching bolt	70/5027	. . . Supporting stands
70/392	. . . Keeper-carried	70/5031	. . . Receptacle
70/40	. . Portable	70/5035	. . . . . Bag
70/402	. . Fetters	70/504	. . . . . Collapsible throat
70/404	. . . Manacles and cuffs	70/5044	. . . . . Pivoted rigid jaw
70/407	. . . . . Nippers	70/5049	. . . . . Attache or briefcase, portfolio
70/409	. . . Shackles	70/5053	. . . . . Interengageable slide fastener type
70/411	. . Clamps	70/5058	. . . . . Trunk and/or suitcase
		70/5062	. . . . . Projecting fixed or movable lug type
		70/5066	. . . . . Bolt type
		70/5071	. . . . . Hasp controlled
		70/5075	. . . . . Link and lever of hasp type
		70/508	. . . . . Hasp type
		70/5084	. . . . . Hasp-carried lock
		70/5089	. . . . . Loop type

70/5093	. . . . .	For closures	70/5358	. . . . .	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

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., wabblor 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	Lever
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	Lever
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	Holdings	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	82/16442	. . . with means to circumrotate tool[s] about work
74/2196	. . . . Reciprocating member actuator	82/16459	. . . . Fluid means for relative tool actuation
74/2198	. . . Operator controlled	82/16475	. . . . Gear means for tool actuation
74/2199	. . . Set screw	82/16491	. . . . including axial cam
74/22	. Miscellaneous	82/16508	. . . . with indicator

Former US Class 82 Series**82/00 Turning**

82/10	. Process of turning	82/16557	. . . . with means for manual retraction
82/11	. Talking machine tablet	82/16573	. . . Hand crank for tool holder
82/12	. Radially moving rotating tool inside bore	82/16591	. . . Power driven eccentric
82/122	. . Forming non-circular bore	82/16606	. . . . Fluid motor
82/125	. . Tool simultaneously moving axially	82/16622	. . . . Plural tools
82/128	. . . Pivoted to tool-carrier	82/16639	. . . Tool within work
82/13	. Pattern section	82/16655	. . . with means to rotate tool[s]
82/135	. . Cam-controlled cutter	82/16672	. . . . including rotatable cutters supporting work
82/14	. Axial pattern	82/16688	. . . . Planetating work mandrels
82/141	. . having transverse tool and templet guide	82/16704	. . . . Pivoted tool carriage
82/142	. . . with workpiece gauge	82/16721	. . . . with adjustable work stops
82/143	. . . having electrical actuator	82/16737	. . . . Eccentric periphery rotary tool
82/145	. . . . And hydraulic actuator	82/16754	. . . . Means to feed work axially
82/147	. . . having hydraulic actuator	82/16771	. . . . Translatable work support carriage
82/148	. . Pivoted tool rest	82/16786	. . . . with tool groove in support roll[s]
82/149	. . Profiled cutter	82/16803	. . . Rotatable tool[s] driven by contact with work
82/15	. Tapers	82/16819	. . . . Axially movable tool support
82/152	. . Offset work axis	82/16836	. . . . Freely floating parallel to axis
82/154	. . Transversely shifted cutter	82/16852	. . . . with supplemental nonrotative tool
82/156	. . . Templet controlled	82/16868	. . . . including clutch control for work rotation
82/158	. . . Gear controlled	82/16885	. . . . including resilient means urging work against rotary support
82/16	. Severing or cut-off	82/16901	. . . Separate means for plural tools
82/16016	. . Processes	82/16918	. . . Spring urged
82/16032	. . Automatic and/or triggered control	82/16934	. . . . For window shade
82/16049	. . Combined with means to sharpen tool[s]	82/16951	. . . Tool adjustment and/or stop
82/16065	. . Combined with means to apply fluid	82/16967	. . . with means to support and/or rotate work
82/16081	. . Combined with means to heat tool and/or work	82/16983	. . . with means to feed work
82/16098	. . with dust or chip handling	82/17	. Lathe for pulley
82/16114	. . including scrap cutting means	82/18	. Lathe for wheel or axle
82/16131	. . Flying cutter type	82/185	. . <u>In situ</u> lathe for railroad wheel
82/16147	. . Cutting couple straddling work	82/19	. Lathe for crank or crank pin
82/16163	. . . with pattern, guide or cam means [noncircular product]	82/192	. . Portable lathe for crank pin
82/16181	. . . Plural cutting means [pairs, or pair, plus single]	82/195	. . having work oscillator
82/16196	. . . Rotary shear pair	82/198	. . . having work driver
82/16213	. . . . Tool axes parallel to axis of work rotation	82/20	. Lathe for screw cutting
82/16229	. . Interrelated means for tool infeed and circumrotation	82/205	. . having swinging feed nut and tool bar
82/16245	. . . Dependent upon reaction to work	82/21	. Portable lathe for brake drum, disc, or shoe
82/16262	. . . Infeed cam disk rotation geared to tool holder rotation	82/22	. Portable lathe for pipe turning
82/16278	. . . . Axial infeed cam	82/23	. Portable lathe for piston grooving
82/16295	. . . . including centrifugal balancing means	82/24	. Bench lathe
82/16311	. . . . Scroll plate infeed cam	82/245	. . Watchmaker's lathe
82/16327	. . . Infeed cam plate braked with respect to tool[s] carrier plate	82/25	. Lathe
82/16344	. . . Orbital cogwheel and fixed detent	82/2502	. . with program control
82/16361	. . . Common gear means	82/2504	. . . And transmission
82/16377	. . . . including adjustable means to vary gear speed	82/2506	. . . And tool turret
82/16393	. . . . with manual disconnect lever	82/2508	. . with tool turret
82/16409	. . . with means to feed work	82/2511	. . Vertical
82/16426	. . Infeed means	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	83/0289	. . . . Plural independent rotary blades
82/2527	. . having hollow cutter head	83/0296	. . . With infeeding of work
82/2529	. . Revolvable cutter heads	83/0304	. . Grooving
82/2531	. . Carriage feed	83/0311	. . . By use of plural independent rotary blades
82/2533	. . . Control	83/0319	. . . . Forming common groove
82/2535	. . . . Electrical type	83/0326	. . . . Blades turning about perpendicular axes
82/2537	. . . Apron mechanism	83/0333	. . Scoring
82/2539	. . . . Feednut control	83/0341	. . . Processes
82/2541	. . . Slide rest	83/0348	. . . Active means to control depth of score
82/2543	. . . . Multiple tool support	83/0356	. . . Serially
82/2545	. . . . Tool relief	83/0363	. . . Plural independent scoring blades
82/2547	. . . Change gears	83/037	. . . . Rotary scoring blades
82/2549	. . . Feedscrews and rods	83/0378	. . . . . On opposite sides of work
82/2552	. . Headstock	83/0385	. . . Rotary scoring blade
82/2554	. . . Speed changing gear	83/0393	. . . . With means to rotate blade
82/2556	. . . . Speed change gears for maintaining constant cutting speed	83/04	. Processes
82/2558	. . . Spindle reverser	83/0405	. . With preparatory or simultaneous ancillary treatment of work
82/2561	. . . Spindle or work angler	83/041	. . . By heating or cooling
82/2562	. . . Spindle and bearings	83/0414	. . . . At localized area [e.g., line of separation]
82/2564	. . Tailstock	83/0419	. . . By distorting within elastic limit
82/2566	. . Bed	83/0424	. . . . By stretching
82/2568	. . Center	83/0429	. . . . By compressing
82/2571	. . . Alignment adjuster	83/0433	. . . . By flexing around or by tool
82/2572	. . Attachment	83/0438	. . . . . To conform to shape of tool
82/2574	. . . Stop [e.g., carriage, tool, work, etc.]	83/0443	. . . By fluid application
82/2577	. . . . Tool slide	83/0448	. . With subsequent handling [i.e., of product]
82/2579	. . . . Collet or spindle	83/0453	. . . By fluid application
82/2581	. . . . Indexible [e.g., roll type, etc.]	83/0457	. . . By retaining or reinserting product in workpiece
82/2583	. . Tool and work rest	83/0462	. . . By accelerating travel
82/2585	. . Tool rest	83/0467	. . . By separating products from each other
82/2587	. . . Turret type holder [e.g., multiple tools, etc.]	83/0472	. . . By moving work support to which a tacky product is adhered
82/2589	. . . Quick release tool or holder clamp	83/0476	. . Including stacking of plural workpieces
82/2591	. . . Tool post	83/0481	. . Puncturing
82/2593	. . Work rest	83/0486	. . With manipulation of tool protective strip [e.g., backing strip]
82/2595	. . . with noise or vibration dampener	83/0491	. . Cutting of interdigitating products
82/2597	. . . Center rest	83/0495	. . Making and using a registration cut
82/26	. Work driver	83/05	. . With reorientation of tool between cuts
82/262	. . Lathe dog	83/0505	. . With reorientation of work between cuts
82/264	. . . Cam grip	83/051	. . . Relative to same tool
82/266	. . Mandrel	83/0515	. . During movement of work past flying cutter
82/268	. . . Expansible	83/0519	. . . Cyclically varying rate of tool or work movement
82/27	. Centerer	83/0524	. . Plural cutting steps
82/28	. Drill press attachment for turning	83/0529	. . . Blanking and cutting
82/29	. Attachment for cutting a valve	83/0534	. . . . Cutting to join blanked holes
82/30	. Miscellaneous	83/0538	. . . Repetitive transverse severing from leading edge of work

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		
		83/0543	. . . . 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 <i>vice versa</i>
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 senser initiates shifter
- 83/472 . . Wire tool
- 83/4722 . . . On tool support having reciprocation parallel to direction of work-feed
- 83/4725 And rotation about axis parallel to direction of work-feed
- 83/4728 . . Tool flies by engagement with the work
- 83/4731 . . . Tool merely flexes with moving work
- 83/4734 . . Flying support or guide for work
- 83/4737 . . With tool speed regulator
- 83/474 . . With work feed speed regulator

- 83/4743 . . . With means to vary cyclically speed of work
- 83/4746 . . Spring return of tool in counterfly direction
- 83/4749 . . Tool mounted on oscillating standard
- 83/4751 . . . Both tools of couple on single standard
- 83/4754 One tool swings out of work path on return stroke
- 83/4757 . . Tool carrier shuttles rectilinearly parallel to direction of work feed
- 83/476 . . . Including means to secure work to carrier
- 83/4763 . . . Both members of cutting pair on same carrier
- 83/4766 . . Orbital motion of cutting blade
- 83/4769 . . . Work feeder mounted on tool support
- 83/4772 Gripper-type feeder
- 83/4775 . . . Tool speed varied within each orbital cycle
- 83/4778 . . . Work feed gripper carried on endless belt
- 83/478 . . . Endless belt or chain tool carrier
- 83/4783 . . . 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
- 83/648 Work manipulated between tool stations
- 83/6481 With static tool
- 83/6483 . . . Tool stations staggered relative to one another
- 83/6484 . . . Punch or die station
- 83/6486 . . . Notcher or pinker station
- 83/6488 . . . Work reciprocated past double-edged knife
- 83/6489 . . . Slitter station
- 83/6491 And transverse cutter station
- 83/6492 . . Plural passes of diminishing work piece through tool station
- 83/6494 . . . Work alternately, angularly re-oriented relative to tool station
- 83/6496 By additional means to engage work and orient it relative to tool station
- 83/6497 By roller or roll-like element
- 83/6499 . . . Work rectilinearly reciprocated through tool station
- 83/65 With means to cause or permit angular re-orientation of work about axis parallel to plane of cut
- 83/6502 By endless member having work-engaging teeth
- 83/6504 By member having work-engaging tooth
- 83/6505 Including plural work-engaging teeth
- 83/6507 Fluid operated
- 83/6508 With means to cause movement of work transversely toward plane of cut
- 83/651 By means to cause movement toward and away from plane of cut
- 83/6512 Actuated by movement of a member on reciprocating means
- 83/6513 Actuated by passive means which is external to reciprocating means
- 83/6515 By means to define increment of movement toward plane of cut
- 83/6516 Interrelated with movement of reciprocating means
- 83/6518 By pusher mechanism
- 83/652 With additional work holding or positioning means
- 83/6521 Work holding means includes actuator
- 83/6523 Including plural, simultaneously acting pusher elements
- 83/6524 Independently adjustable
- 83/6526 With additional means to retract elements
- 83/6528 Power derived from movement of reciprocating means
- 83/6529 Power derived from fluid pressure means
- 83/6531 Movement by screw means
- 83/6532 Movement by rack and pinion or pawl
- 83/6534 With handle
- 83/6536 By carriage
- 83/6537 By cable or belt drive
- 83/6539 . . With means for transverse positioning of work on a moving conveyor
- 83/654 . . With work-constraining means on work conveyor [i.e., "work-carrier"]
- 83/6542 . . . Plural means to constrain plural work pieces
- 83/6544 End of work protrudes through aperture in carrier
- 83/6545 . . . With means to guide work-carrier in nonrectilinear path
- 83/6547 About axis fixed relative to tool station
- 83/6548 Infeed
- 83/655 About vertical axis
- 83/6552 Cut normal to axis
- 83/6553 Work-guide tube
- 83/6555 Cut normal to axis
- 83/6556 Oscillating work-carrier
- 83/6558 Multiple cutters
- 83/656 Coaxial rotary cutters
- 83/6561 Work stationary during cut
- 83/6563 . . . With means to orient or position work carrier relative to tool station
- 83/6564 By pattern or templet
- 83/6566 By indexing means
- 83/6568 . . . With additional work-locating means on work-carrier
- 83/6569 . . With means to stop work conveyor
- 83/6571 . . With means to store work articles
- 83/6572 . . With additional means to engage work and orient it relative to tool station
- 83/6574 . . . By work-stopping abutment
- 83/6576 . . . By opposed lateral guide means
- 83/6577 . . . With means to adjust additional means
- 83/6579 . . With means to press work to work-carrier
- 83/658 . . With projections on work-carrier [e.g., pin wheel]
- 83/6582 . . Tool between tandem arranged work carrying means
- 83/6584 . . Cut made parallel to direction of and during work movement
- 83/6585 . . . Including nonconcurrently acting tool
- 83/6587 . . . Including plural, laterally spaced tools
- 83/6588 . . . Tools mounted on common tool support
- 83/659 Tools axially shiftable on support
- 83/6592 . . . Interrelated work-conveying and tool-moving means
- 83/6593 With reciprocating tool [e.g., "jigsaw" type]
- 83/6595 With means to move tool laterally of feed direction during cutting
- 83/6596 With means to effect difference between work speed and tool speed
- 83/6598 Tool co-axial with work-conveying means
- 83/66 . . . With means to press work to tool
- 83/6601 . . . Bevel cutting tool
- 83/6603 . . . Tool shiftable relative to work-conveying means
- 83/6604 . . . Tool in contact with surface of work-conveying means
- 83/6606 . . . Tool between laterally spaced work-conveying means
- 83/6608 . . . By rectilinearly moving work carriage
- 83/6609 Angularly adjustable
- 83/6611 Having positive adjustment stop; e.g., link
- 83/6612 Having position indicating means
- 83/6614 Pusher engaging rear surface of work
- 83/6616 Having means to actuate pusher
- 83/6617 Hydraulic or pneumatic means
- 83/6619 Gear or pulley actuated pusher
- 83/662 Lever, cam, or link actuated pusher

- 83/6622 Having means to actuate carriage
- 83/6624 Hydraulic or pneumatic means
- 83/6625 Gear or pulley
- 83/6627 Adapted to place tension on flacid member
- 83/6628 Lever, cam, or link means
- 83/663 On or attached to vehicle
- 83/6632 Supported for movement at one side of tool only
- 83/6633 . . . By work moving flexible chain or conveyor
- 83/6635 . . . By feed roller
- 83/6636 Pinch rollers
- 83/6638 . . . Unattached manual work pusher
- 83/664 . . . Roller
- 83/6641 . . . Plural independent rollers for feed of plural distinct work
- 83/6643 . . . Shaped to conform to work
- 83/6644 . . . With work-supplying reel
- 83/6646 And provision for selecting feed length
- 83/6648 . . . Continuous conveying during, cutting; e.g., straw cutting
- 83/6649 . . . Supporting work at cutting station
- 83/6651 Comprising part of cutting station
- 83/6652 . . . Tool and feed roller actuated by common handle
- 83/6654 . . . Tool and roller on common movable support
- 83/6656 . . . Rectilinear movement only
- 83/6657 . . . Tool opposing pusher
- 83/6659 Hydraulically or pneumatically actuated
- 83/666 Screw actuated
- 83/6662 Gear or pulley actuated
- 83/6664 Lever, cam, or link actuated
- 83/6665 Spring or gravity urged
- 83/6667 . . . Work carrier rotates about axis fixed relative to tool station
- 83/6668 . . . Interrelated work-feeding means and tool-moving means
- 83/667 . . . Tool carrier or guide affixed to work during cutting
- 83/674 . . . By flexible work-engaging member
- 83/68 . . . Entirely work supported
- 83/687 . . . By tool reciprocable along elongated edge
- 83/6875 . . . With means permitting tool to be rotatably adjusted about its cutting edge during cutting
- 83/688 . . . With dynamic balancing or shock absorbing means
- 83/6885 . . . With tool of another type
- 83/689 . . . With means to change to other type tool
- 83/6895 . . . Plural reciprocable tools
- 83/69 . . . Stored energy furnishes drive in one direction
- 83/6905 . . . With tool in-feed
- 83/691 And auxiliary means for promoting or retarding tool in-feed
- 83/6915 By yieldable means
- 83/692 And means to vary tool in-feed speed
- 83/6925 With interrelated tool actuating and in-feed means
- 83/693 . . . Of rectilinearly reciprocating tool
- 83/6935 With in-feed by pivoting carrier
- 83/694 . . . And means to prevent tool in-feed
- 83/6945 . . . With passive means to guide tool directly
- 83/695 By plural opposed guide surfaces
- 83/6955 Having relative adjustment between guide surfaces
- 83/696 With relative adjustment between guide and work or work-support
- 83/6965 By or with additional movable work-support portion
- 83/697 By rotation about an axis parallel to the work-support surface
- 83/6975 By rotation about an axis perpendicular to the work-support surface
- 83/698 . . . Including means to cause nonrectilinear tool infeed
- 83/6985 . . . Of arcuately oscillating tool
- 83/699 . . . Of tool carrier on single moving pivot
- 83/6995 Pivot moves in closed loop
- 83/70 Pivot moves to and fro in arcuate path
- 83/7005 Axis of arcuate path moves during cutting
- 83/701 Pivot moves to and fro in rectilinear path
- 83/7015 . . . Having uniplanar compound motion
- 83/702 By plural arcuately oscillating carrier
- 83/7025 . . . Constantly oriented tool travelling in orbit
- 83/703 . . . Tool rocks cutting reciprocations
- 83/7035 One tool reciprocates along fixed guide element
- 83/704 . . . With work-support and means to vary relationship between tool and work support
- 83/7045 . . . Arcuately oscillating tool carried on single pivot
- 83/705 . . . With means to support tool at opposite ends
- 83/7055 And apply drive force to both ends of tool
- 83/706 By flexible drive means
- 83/7065 By reciprocating rigid support
- 83/707 By endless band or chain knife
- 83/7076 With programming means
- 83/7083 With cutter other than endlessly orbiting type
- 83/7089 . . . Including contiguous oppositely moving knife portions
- 83/7095 . . . With means to change to non-endlessly orbiting cutter
- 83/7101 . . . With tool in-feed
- 83/7108 Including ground-traversing vehicle
- 83/7114 Including means to permit arcuate in-feed motion
- 83/712 Including means to relocate path of in-feed motion
- 83/7126 Angular relative previous path
- 83/7133 By gravity
- 83/7139 With fluid in-feed regulating means
- 83/7145 By motor-driven mechanism
- 83/7151 With scale or indicator
- 83/7158 Including plural cutting zones
- 83/7164 With adjustment of separation between zones
- 83/717 By lever means
- 83/7176 By screw-threaded means
- 83/7183 Including "figure-8" band
- 83/7189 Comprising plural bands
- 83/7195 Including means to adjust relationship between band and work-support surface
- 83/7201 By varying angle between band and work-support surface
- 83/7208 By tilting band carrier
- 83/7214 About point of intersection of cutting span and work-support surface

83/722	. . .	By varying distance between band and work-support surface	83/7653	. . . .	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
- 137/4553 . . . Submerged inlet pipe end
- 137/4561 Hinged seal bowl
- 137/4568 Distinct seal bowl in flow line connected casing
- 137/4576 . . . U-seals
- 137/4583 Topside access beneath cover plate closed floor opening
- 137/4591 Enlarged upflow leg
- 137/4598 Topside access opening
- 137/4606 Even diameter legs
- 137/4613 Access opening
- 137/4621 . . Seal for relatively movable valving parts
- 137/4628 . . . Horizontally moving valve
- 137/4636 Rotary
- 137/4643 . . Liquid valves
- 137/4651 . . . Branched passage for sealing liquid
- 137/4658 . . . With auxiliary means for varying liquid level
- 137/4666 . . . With baffle
- 137/4673 . Plural tanks or compartments with parallel flow
- 137/469 . . Sequentially filled and emptied [e.g., holding type]
- 137/4707 . . . With relative rotation of tank group and filling head
- 137/4723 With rotary filling and emptying head
- 137/474 . . With housings, supports or stacking arrangements
- 137/4757 . . Battery or electrolytic cell replenishment
- 137/4774 . . . Barometric supply
- 137/479 . . Flow dividing compartments
- 137/4807 . . Tank type manifold [i.e., one tank supplies or receives from at least two others]
- 137/4824 . . Tank within tank
- 137/4841 . . With cross connecting passage
- 137/4857 . . With manifold or grouped outlets
- 137/4874 . . . Tank truck type
- 137/4891 . . With holder for solid, flaky or pulverized material to be dissolved or entrained
- 137/5109 . Convertible
- 137/5153 . . Reversible check
- 137/5196 . . Unit orientable in a single location between plural positions
- 137/524 . . . Reversible stop and vent or waste
- 137/5283 . . Units interchangeable between alternate locations
- 137/5327 . Hydrant type
- 137/5333 . . Water crane type
- 137/5339 . . . Spout operated valve
- 137/5345 . . . Rotating riser
- 137/535 Spout articulated to riser
- 137/5356 Vertically movable riser
- 137/5362 . . . Extensible spout
- 137/5368 . . . Spout articulated to riser
- 137/5374 . . Plural riser
- 137/538 . . Expansible chamber operated by valve actuator for draining riser
- 137/5386 . . With pump or ejector
- 137/5392 . . Removable valve and valve seat
- 137/5397 . . . With extension to facilitate removal
- 137/5403 . . Removable valve with supplemental check valve
- 137/5409 . . Movable riser actuated valve
- 137/5415 . . . Reciprocating riser
- 137/5421 Piston type valve
- 137/5427 . . Balanced valve
- 137/5433 . . Valve actuator extends laterally from bottom of riser
- 137/5438 . . Valve actuator outside riser
- 137/5444 . . . Lever actuator
- 137/545 . . . With casing, flush with ground or pavement surface
- 137/5456 . . With casing
- 137/5462 . . . Flush with ground or pavement surface
- 137/5468 . . . Cap, cover or hood
- 137/5474 . . . With heater
- 137/5479 . . With actuator lubricating means
- 137/5485 . . With valve at outlet
- 137/5491 . . With supplemental valve
- 137/5497 . . Protection against freezing
- 137/5503 . . . Stop and waste
- 137/5509 With disabling means
- 137/5515 Separate relatively movable valves with single actuator
- 137/5521 Unidirectional abutting connection between main valve or actuator and waste valve
- 137/5526 With screw or gear in actuating mechanism
- 137/5532 Reciprocating relatively fixed valves
- 137/5538 Waste through lower valve guide
- 137/5544 . Reversing valves - regenerative furnace type
- 137/5617 . . With cooling
- 137/5689 . . Rotary reversing valve
- 137/5762 . With leakage or drip collecting
- 137/5835 . . Relatively movable receptacle or drain pipe and outlet
- 137/5907 . . Collector for waste liquid derived from solid, gas or vapor
- 137/598 . . With repair, tapping, assembly, or disassembly means
- 137/5983 . . Blow out preventer or choke valve device [e.g., oil well flow controlling device, etc.]
- 137/5987 . . Solenoid or electromagnetically operated valve
- 137/599 . . Pressure regulating type valve
- 137/5994 . . . Diaphragm type
- 137/5997 . . Gas or water meter replacing
- 137/60 . . Assembling or disassembling flexible tube or sleeve type valve
- 137/6004 . . Assembling or disassembling float or float valve
- 137/6007 . . Assembling or disassembling multi way valve
- 137/6011 . . Assembling, disassembling, or removing cartridge type valve [e.g., insertable and removable as a unit, etc.]
- 137/6014 . . . Faucet type [e.g., domestic water use, etc.]
- 137/6017 Including removable valve head and seat unit
- 137/6021 Including mechanical movement actuator
- 137/6024 Particular handle or handle fastening means
- 137/6028 . . Assembling or disassembling pivoted valve
- 137/6031 . . Assembling or disassembling rotary valve
- 137/6035 . . . Rotary ball valve
- 137/6038 Particular valve seat or interface seal
- 137/6041 Replaceable
- 137/6045 With top entry valve
- 137/6048 . . . Butterfly valve
- 137/6052 Having valve head or seat packing
- 137/6055 With head and stem collections
- 137/6058 . . . Plug valve

- 137/6062 Having retainer at actuator end
- 137/6065 . . Assembling or disassembling reciprocating valve
- 137/6069 . . . Having particularly packed or sealed mechanical movement actuator
- 137/6072 . . . Gate valve
- 137/6075 Bifaced
- 137/6079 Having particular valve seat
- 137/6082 Including seal
- 137/6086 . . Assembling or disassembling check valve
- 137/6089 . . With mechanical movement between actuator and valve
- 137/6092 . . . Plural motions of valve
- 137/6096 . . . Lever type
- 137/6099 . . . Gear type
- 137/6103 . . . Cam type
- 137/6106 . . . Screw type
- 137/6109 . . Tool for applying or removing valve or valve member
- 137/6113 . . . Including sealing feature
- 137/6116 . . With holding means functioning only during transportation assembly or disassembly
- 137/612 . . Tapping a pipe, keg, or apertured tank under pressure
- 137/6123 . . . With aperture forming means
- 137/6126 . . . Imperforate closure removing and holding tap
- 137/613 . . . With valved closure or bung
- 137/6133 Combined rotary and longitudinal movement of valve
- 137/6137 Longitudinal movement of valve
- 137/614 Rotary movement of valve
- 137/6144 . . . With core ejectors
- 137/6147 Impact operated
- 137/615 . . Foot valve extraction from top of enclosure
- 137/6154 . . With disassembly tool engaging feature
- 137/6157 . . . Wrench engaging lugs
- 137/6161 . . With provision of alternate wear parts
- 137/6164 . . . Valve heads and/or seats
- 137/6167 Opposite duplicate surfaces of unitary structure
- 137/6171 Homogeneous material
- 137/6174 Valve heads
- 137/6178 Different portions of continuous surfaces
- 137/6181 Successively used adjacent independent elements
- 137/6184 . . Removable valve with normally disabled supplemental check valve
- 137/6188 . . . Check valve disabled by normally movable main valve part
- 137/6191 Ball check
- 137/6195 Spring bias
- 137/6198 . Non-valving motion of the valve or valve seat
- 137/6253 . . Rotary motion of a reciprocating valve
- 137/6307 . . . Turbine on valve
- 137/6362 . . . Manual rotating means
- 137/6416 . With heating or cooling of the system
- 137/6443 . . With burner
- 137/647 . . . Flue extending through fluid
- 137/6497 . . Hot and cold water system having a connection from the hot to the cold channel
- 137/6525 . . Air heated or cooled [fan, fins, or channels]
- 137/6552 . . With diversion of part of fluid to heat or cool the device or its contents
- 137/6579 . . Circulating fluid in heat exchange relationship
- 137/6606 . . With electric heating element
- 137/6633 . . With fluid system support for workman or non-system material
- 137/6851 . . With casing, support, protector or static constructional installations
- 137/6855 . . Vehicle
- 137/6858 . . . Locomotive
- 137/6862 Boiler or steam dome
- 137/6866 . . . Railway car
- 137/6869 Car frame
- 137/6873 End of car
- 137/6877 Roof, wall or floor
- 137/6881 . . . Automotive
- 137/6884 Steering post or wheel
- 137/6888 Dash
- 137/6892 Floor or frame
- 137/6895 Fender or running board
- 137/6899 . . . With hose reel storage means
- 137/6903 . . . Guided by means of track or guideway
- 137/6906 . . . Aerial or water-supported [e.g., airplane or ship, etc.]
- 137/691 . . . With retractable or nonuse-positionable support wheel
- 137/6914 . . . Vehicle supports fluid compressor and compressed fluid storage tank
- 137/6918 . . With hose storage or retrieval means
- 137/6921 . . . With means for plural hoses
- 137/6925 . . . With flow regulation responsive to hose movement
- 137/6929 Reel type
- 137/6932 . . . With retrieval means
- 137/6936 Power stop or brake
- 137/694 Responsive to position of hose in casing
- 137/6943 Biased to retracted position
- 137/6947 Boom type
- 137/6951 Weighted
- 137/6954 . . . Reel with support therefor
- 137/6958 Ground supported
- 137/6962 . . . Basket or holder for folded coiled hose
- 137/6966 . . Static constructional installations
- 137/6969 . . . Buildings
- 137/6973 Outside access to portions of the system
- 137/6977 Escutcheon type support
- 137/698 Wall
- 137/6984 Recessed gas outlet box
- 137/6988 Floor installation
- 137/6991 . . . Ground supporting enclosure
- 137/6995 Valve and meter wells
- 137/6999 With means to center well on valve
- 137/7002 Detachable base plate
- 137/7006 Vertical casing aligned by valve casing
- 137/701 Combined with actuator
- 137/7014 Telescopic well casing
- 137/7017 Telescopic well casing
- 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	. . . . .	Expansible chamber subject to differential pressures	137/7845	. . . . .	With common biasing means
137/7788	. . . . .	Pressures across fixed choke	137/7846	. . . . .	Mechanically interconnected
137/7789	. . . . .	With Venturi tube having a connection to throat	137/7847	. . . . .	With leak passage
137/7791	. . . . .	Pressures across flow line valve	137/7848	. . . . .	Permits flow at valve interface
137/7792	. . . . .	Movable deflector or choke	137/7849	. . . . .	Bypass in valve casing
137/7793	. . . . .	With opening bias [e.g., pressure regulator]	137/785	. . . . .	With retarder or dashpot
137/7794	. . . . .	With relief valve	137/7851	. . . . .	End of valve forms dashpot chamber
137/7795	. . . . .	Multi-stage	137/7852	. . . . .	End of valve moves inside dashpot chamber
137/7796	. . . . .	Senses inlet pressure	137/7853	. . . . .	Enlarged piston on end of valve stem
137/7797	. . . . .	Bias variable during operation	137/7854	. . . . .	In couplings for coaxial conduits, e.g., drill pipe check valves
137/7798	. . . . .	Ancillary reactor surface responds to inlet pressure	137/7855	. . . . .	Valve seat threaded into a coupling element
137/7799	. . . . .	Liquid transfer			
137/78	. . . . .	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 antispash 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
- 137/86903 . . Plural petcocks
- 137/86911 . . Sequential distributor or collector type
- 137/86919 . . Sequentially closing and opening alternately seating flow controllers
- 137/86928 . . Sequentially progressive opening or closing of plural valves
- 137/86936 . . . Pressure equalizing or auxiliary shunt flow
- 137/86944 One valve seats against other valve [e.g., concentric valves]
- 137/86952 Locomotive throttle
- 137/8696 Gate
- 137/86968 With balancing chamber
- 137/86976 First valve moves second valve
- 137/86984 Actuator moves both valves
- 137/86992 . . . With subsequent closing of first opened port
- 137/87 Simultaneously moved port controllers
- 137/87008 . . . Screw-actuated differential valves
- 137/87016 . . . Lost motion
- 137/87024 Cam determines sequence
- 137/87032 Rotary concentric valves
- 137/8704 First valve actuates second valve
- 137/87048 . . With preselecting means for plural valve actuator
- 137/87056 . . With selective motion for plural valve actuator
- 137/87064 . . . Oppositely movable cam surfaces
- 137/87072 . . . Rotation about either of two pivotal axes
- 137/8708 . . . Rotation of actuator arm about its pivot and its axis
- 137/87088 . . . Reciprocation along and rotation about same axis
- 137/87096 . . Valves with separate, correlated, actuators
- 137/87105 . . . Correlated across separable flow path joint
- 137/87113 . . . Interlocked
- 137/87121 . . . Coaxial stems
- 137/87129 Rotary
- 137/87137 And reciprocating
- 137/87145 Concentric, central valve removable
- 137/87153 . . Plural noncommunicating flow paths
- 137/87161 . . . With common valve operator
- 137/87169 . . Supply and exhaust
- 137/87177 . . . With bypass
- 137/87185 Controlled by supply or exhaust valve
- 137/87193 . . . Pilot-actuated
- 137/87201 Common to plural valve motor chambers
- 137/87209 Electric
- 137/87217 . . . Motor
- 137/87225 Fluid motor
- 137/87233 . . . Biased exhaust valve
- 137/87241 Biased closed
- 137/87249 . . Multiple inlet with multiple outlet
- 137/87257 . . Hydraulic brake line [e.g., hill holders]
- 137/87265 . . Dividing into parallel flow paths with recombining
- 137/87273 . . . With fluid coupling [e.g., railway car hose coupling, truck-trailer oil system coupling, etc.]
- 137/87281 . . . System having plural inlets
- 137/8729 Having digital flow controller
- 137/87298 . . . Having digital flow controller
- 137/87306 Having plural branches under common control for separate valve actuators
- 137/87314 Electromagnetic or electric control [e.g., digital control, bistable electro control, etc.]
- 137/87322 . . . With multi way valve having serial valve in at least one branch
- 137/8733 . . . Fluid pressure regulator in at least one branch
- 137/87338 . . . Flow passage with bypass
- 137/87346 Including mixing feature
- 137/87354 Including flowmeter
- 137/87362 Including cleaning, treating, or heat transfer feature
- 137/8737 Water treatment feature
- 137/87378 . . . Second valve assembly carried by first valve head
- 137/87386 With rotary plug having variable restrictor
- 137/87394 Carried valve is direct response valve [e.g., check valve, etc.]
- 137/87402 . . . With foam controlling means [e.g., beer, soda faucets]
- 137/8741 . . . With common operator
- 137/87418 Balanced valve
- 137/87426 Single resilient member actuates or forms plural passages
- 137/87434 Valves deform to close passage
- 137/87442 Rotary valve
- 137/8745 Including rigid plate with flexible or resilient seal
- 137/87458 Axes of rotation of valves intersect at point
- 137/87467 Axes of rotation parallel
- 137/87475 Adjacent plate valves always parallel
- 137/87483 Adjacent plate valves counter rotate
- 137/87491 Mechanical movement between actuator and non-rotary valve
- 137/87499 . . . Fluid actuated or retarded
- 137/87507 . . . Electrical actuator
- 137/87515 . . . Mechanical movement between actuator and valve
- 137/87523 . . . Rotary valve
- 137/87531 Butterfly valve
- 137/87539 . . . Having guide or restrictor
- 137/87547 Manually variable
- 137/87555 . . . Having direct response valve [e.g., check valve, etc.]
- 137/87563 With reverse flow direction
- 137/87571 . . Multiple inlet with single outlet
- 137/87579 . . . Faucet attachment
- 137/87587 . . . Combining by aspiration
- 137/87595 Combining of three or more diverse fluids
- 137/87603 Plural motivating fluid jets
- 137/87611 Flow control by varying position of a fluid inlet relative to entrainment chamber
- 137/87619 With selectively operated flow control means in inlet
- 137/87627 Flow control means is located in aspirated fluid inlet
- 137/87635 Single actuator operates flow control means located in both motivating fluid and aspirated fluid inlets
- 137/87643 With condition responsive valve
- 137/87652 . . . With means to promote mixing or combining of plural fluids
- 137/8766 With selectively operated flow control means

137/87668 Single actuator operates plural flow control means
 137/87676 With flow control
 137/87684 Valve in each inlet
 137/87692 With common valve operator
 137/877 With flow control means for branched passages
 137/87708 With common valve operator
 137/87716 For valve having a flexible diaphragm valving member
 137/87724 For valve having a ball head
 137/87732 With gearing
 137/8774 Threaded actuator
 137/87748 Pivoted or rotary motion converted to reciprocating valve head motion
 137/87756 Spring biased
 137/87764 Having fluid actuator
 137/87772 With electrical actuation
 137/8778 Spring biased
 137/87788 With valve or movable deflector at junction
 137/87796 Movable deflector spout in lateral port
 137/87804 Valve or deflector is tubular passageway
 137/87812 Pivoted valve or deflector
 137/8782 Rotary valve or deflector
 137/87829 Biased valve
 137/87837 Spring bias
 137/87845 For valve having a ball head
 137/87853 With threaded actuator
 137/87861 Spring coaxial with valve
 137/87869 Biased open
 137/87877 Single inlet with multiple distinctly valved outlets
 137/87885 Sectional block structure
 137/87893 With fluid actuator
 137/87901 With threaded actuator
 137/87909 Containing rotary valve
 137/87917 Flow path with serial valves and/or closures
 137/87925 Separable flow path section, valve or closure in each
 137/87933 Common joint and valve seat faces, or sections joined by closing members
 137/87941 Each valve and/or closure operated by coupling motion
 137/87949 Linear motion of flow path sections operates both
 137/87957 Valves actuate each other
 137/87965 Valve- or closure-operated by coupling motion
 137/87973 Coupling interlocked with valve, or closure or actuator
 137/87981 Common actuator
 137/87989 Delivery cock with terminal valve
 137/87997 Alternately seating
 137/88005 Biased valve
 137/88014 Opposed screw
 137/88022 One valve head provides seat for other head
 137/8803 Also carries head of other valve
 137/88038 One valve head carries other valve head
 137/88046 Biased valve with external operator
 137/88054 Direct response normally closed valve limits direction of flow
 137/88062 Coaxial oppositely directed seats
 137/8807 Articulated or swinging flow conduit

137/88078 Actuates valve
 137/88086 Plural motions of valve
 137/88094 Reciprocating valve
 137/88102 Rotary valve
 137/8811 Frangible
 137/9029 With coupling
 137/9138 Flexible
 137/9247 With closure
 137/9464 Faucets and spouts
 137/9682 Miscellaneous

Former US Class 152 Series

152/00 Resilient tires and wheels
 152/10 Tires, resilient
 152/10009 Emergency
 152/10018 with splash guards
 152/10027 with wear indicating feature
 152/10036 Cushion and pneumatic combined
 152/10045 Metallic spring cushion
 152/10054 Enclosed cushion
 152/10063 Superimposed
 152/10072 Plungers
 152/10081 Edge-secured cushion
 152/1009 Guide flanges
 152/10099 Radial stops
 152/10108 Bolts or studs
 152/10117 Integral
 152/10126 with removable inner tube
 152/10135 Armored
 152/10144 Single tube tires internal
 152/10153 Metal
 152/10162 Plates
 152/10171 Casing construction
 152/1018 Embedded
 152/10189 Metal
 152/10198 Plates
 152/10207 Annular
 152/10216 Linked mat
 152/10225 Woven
 152/10234 Interliners
 152/10243 Cotton, fabric, or rubber
 152/10252 Metal
 152/10261 Scale armor
 152/1027 Annular
 152/10279 Cushion
 152/10288 Sectional
 152/10297 Annular
 152/10306 Superimposed
 152/10315 Superimposed
 152/10324 with apertured external binders
 152/10333 Radial bolt secured
 152/10342 Abutting sections
 152/10351 with annular internal binders
 152/1036 Interfitting
 152/10369 Indented at joints
 152/10378 Casing enclosed core
 152/10387 Separate core
 152/10396 Removable
 152/10405 Sponge rubber
 152/10414 with core compression
 152/10423 Superimposed rings

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

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

Former US Class 156 Series

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

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

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			

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	403/32262	. . . . At selected angle
292/91	. Knob rose plates	403/32271	. . . . Movable brace between members
292/93	. Latch spindles	403/32278	. . . . Members rotatable about oblique axes
292/96	. Latch-spindle catches	403/32286	. . . . Clamping screw traverses sliding complementary arcuate bearing surfaces
Former US Class 403 Series		403/32295	. . . . Securing yoke or ring spaced radially from locking means
403/00	Joints and connections	403/32303	. . . . . Eyebolt
403/10	. Selectively engageable hub to shaft connection	403/32311	. . . . . Ball and socket
403/16	. with adjunctive protector, broken parts retainer, repair, assembly or disassembly feature	403/32319	. . . . . including pivot stud
403/1608	. . Holding means or protector functioning only during transportation, assembly or disassembly	403/32327	. . . . . including radially spaced detent or latch component
403/1616	. . Position or guide means	403/32336	. . . . . Engaging notch or recess in outer periphery of component
403/1624	. . . Related to joint component	403/32344	. . . . . Side of rod engages recess in radial face
403/1633	. . Utilizing fluid pressure	403/32352	. . . . . Pivoted detent
403/20	. with indicator or inspection means	403/32361	. . . . . Engaging recess in radial face
403/21	. Utilizing thermal characteristic, e.g. , expansion or contraction, etc.	403/32368	. . . . . including radial interengaging tongue and slot or serrations
403/213	. . Interposed material of intermediate coefficient of expansion	403/32377	. . . . . Radially spaced arcuate slot engages fastener
403/217	. . Members having different coefficients of expansion	403/32385	. . . . . Locked by plural motions of one member
403/22	. with fluid pressure responsive component	403/32393	. . . . . including bridging keeper
403/29	. Rotarily connected, differentially translatable members, e.g. , turn-buckle, etc.	403/32401	. . . . . Locked by nesting parts
403/291	. . having tool-engaging means or operating handle	403/32409	. . . . . Members locked in axial alignment
403/293	. . having operating mechanism	403/32418	. . . . . Plural distinct positions
403/295	. . having locking means	403/32426	. . . . . Plural distinct positions
403/297	. . Differential pitch, similar hand	403/32434	. . . . . Unidirectional movement, e.g., ratchet, etc.
403/299	. . Externally threaded actuator	403/32442	. . . . . At least one discrete position
403/30	. Laterally related members connected by latch means, e.g. , scaffold connectors	403/32451	. . . . . Step-by-step adjustment
403/32	. Articulated members	403/32459	. . . . . Retainer extends through aligned recesses
403/32008	. . Plural distinct articulation axes	403/32467	. . . . . Telescoping members
403/32016	. . . Three or more parallel axes	403/32475	. . . . . having detent
403/32024	. . . Single adjustment for plural axes	403/32483	. . . . . Spring biased
403/32032	. . . Plural ball and socket	403/32491	. . . . . Threaded
403/32041	. . . Universal	403/32501	. . . . . Cam or wedge
403/32049	. . . . Non-coplanar axes	403/32508	. . . . . having transverse pin
403/32057	. . . Angular and linear	403/32516	. . . . . Remotely actuated
403/32065	. . . . Screw and swivel	403/32524	. . . . . Self-locking
403/32073	. . . . Pivot stud slidable in elongated opening	403/32532	. . . . . Clamped members
403/32081	. . . Parallel rotary	403/32541	. . . Rotatable members resiliently biased to one position
403/32091	. . . Plural translating connections	403/32549	. . . including limit means
403/32114	. . including static joint	403/32557	. . . for pivotal motion
403/32122	. . . Trunnion assembly to side of rod	403/32565	. . . . . Ball and socket with restricted movement about one axis
403/32131	. . . One member is plate or side	403/32573	. . . . . Ball stud passes through confining opening
403/32139	. . . . Secant, i.e., rod extending through plate	403/32581	. . . . . Pin and slot
403/32147	. . . . Plate or side forms bearing surface	403/32591	. . . . . Opposed stops on one member
403/32155	. . . . Bearing component clamped to plate or side, e.g., bolted, etc.	403/32606	. . . Pivoted
403/32163	. . . Articulate joint intermediate end joints	403/32614	. . . including circumferential biasing or damping means
403/32172	. . . . Variable angle	403/32622	. . . Rocking or rolling contact
403/32181	. . . . . Universal	403/32631	. . . Universal ball and socket
403/32188	. . . Angled or offset members	403/32639	. . . . . including internal tie means
403/32196	. . . Articulate joint is ball and socket	403/32647	. . . . . Plural concave surfaces with diverse curvature
403/32204	. . . . with threaded joint	403/32655	. . . . . Interposed concavo-convex component
403/32213	. . . Articulate joint is a swivel	403/32663	. . . . . Outer surfaces
403/32221	. . . Articulate joint comprises pivoted clevis or channel bar	403/32672	. . . . . Swiveled ball parts or seat
403/32229	. . . Articulate joint is a slide	403/32681	. . . . . Composite ball
403/32254	. . Lockable at fixed position		

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

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

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

- 407/1705 . . Face mill gear cutting tool
- 407/171 . . . Adjustable teeth
- 407/1715 . . Hob
- 407/172 . . . Thread cutting
- 407/1725 . . . including holder having seat for inserted tool
- 407/173 . . . for cutting involute gear tooth
- 407/1735 . . Rotary, gear shaving cutting tool
- 407/174 . . Gear generating, revolving shaper cutting tool
- 407/1745 . . Rotary, tooth form cutting tool
- 407/18 . . File or rasp
- 407/1805 . . Flexible blade or carrier therefor
- 407/181 . . Tire rasp
- 407/1815 . . Rotary file or round disc
- 407/182 . . Composite, diverse sector, or assembled
- 407/1825 . . Handle or holder, per se
- 407/19 . . Rotary cutting tool
- 407/1902 . . Gang
- 407/1904 . . Composite body of diverse material
- 407/1906 . . including holder [i.e., head] having seat for inserted tool
- 407/1908 . . . Face or end mill
- 407/191 Plural simultaneously usable separable tools in common seat or common clamp actuator for plural simultaneously usable tools
- 407/1912 Tool adjustable relative to holder
- 407/1914 Radially
- 407/1916 And axially
- 407/1918 Selectively
- 407/192 with separate means to fasten tool to holder
- 407/1922 Wedge clamp element
- 407/1924 Specified tool shape
- 407/1926 . . . Plural simultaneously usable separable tools in common seat or common clamp actuator for plural simultaneously usable tools
- 407/1928 . . . Tool adjustable relative to holder
- 407/193 Radially
- 407/1932 . . . with means to fasten tool seat to holder
- 407/1934 . . . with separate means to fasten tool to holder
- 407/1936 Apertured tool
- 407/1938 Wedge clamp element
- 407/194 Resilient clamp jaw
- 407/1942 . . . Peripherally spaced tools
- 407/1944 Sectional support
- 407/1946 . . Face or end mill
- 407/1948 . . . with cutting edge entirely across end of tool [e.g., router bit, end mill, etc.]
- 407/195 . . Compound tooth arrangement
- 407/1952 . . Having peripherally spaced teeth
- 407/1954 . . . Axially tapering tool
- 407/1956 . . . Circumferentially staggered
- 407/1958 Plural teeth spaced about a helix
- 407/196 . . . Varying in cutting edge profile
- 407/1962 . . . Specified tooth shape or spacing
- 407/1964 Arcuate cutting edge
- 407/1966 Helical tooth
- 407/20 . . Profiled circular tool
- 407/21 . . Arc segment tool
- 407/22 . . including holder having seat for inserted tool
- 407/2202 . . Plural spaced seats and common holder
- 407/2204 . . . Relatively adjustable seats
- 407/2206 . . . Simultaneously usable
- 407/2208 . . Plural simultaneously usable separable tools in common seat or common clamp actuator for plural simultaneously usable tools
- 407/221 Adjustable tool
- 407/2212 . . . with tool ejector
- 407/2214 . . . with separate means to adjust tool to and fro relative to holder
- 407/2216 with indicator
- 407/2218 Plural provisions for adjustment
- 407/222 by moving tool seat
- 407/2222 . . . Tool adjustable relative to holder
- 407/2224 with indicator
- 407/2226 Plural provisions for adjustment
- 407/2228 Plural interfering seats
- 407/223 including pivotable seat or tool
- 407/2232 with detent
- 407/2234 Pivoted seat
- 407/2236 And pivotable tool
- 407/2238 by adjustable or replaceable stop
- 407/224 Adjustable
- 407/2242 Screw
- 407/2244 by movement of seat relative to holder
- 407/2246 Pivoted seat
- 407/2248 Pivoted tool
- 407/225 Resiliently biased tool clamping jaw
- 407/2252 Rectilinearly
- 407/2254 including rotatable cam clamp element
- 407/2256 including wedge clamp element
- 407/2258 And guide or detent
- 407/226 including detent
- 407/2262 Tool gripped directly by set screw
- 407/2264 Slidable jaw
- 407/2266 . . . Holder adapted for tools of different shape
- 407/2268 . . . with chip breaker, guide or deflector
- 407/227 . . . with separate means to fasten tool seat to holder
- 407/2272 . . . with separate means to fasten tool to holder
- 407/2274 Apertured tool
- 407/2276 with means projecting through aperture to force tool laterally against reaction surface
- 407/2278 Tilting clamp element and separate means to tilt same
- 407/228 Rotatable cam clamp element
- 407/2282 including tool holding clamp and clamp actuator
- 407/2284 Wedge clamp element
- 407/2286 Resiliently biased clamp jaw
- 407/2288 Integral with holder
- 407/229 Pivoted jaw
- 407/2292 Slidable jaw
- 407/23 . . including tool having plural alternatively usable cutting edges
- 407/235 . . . with integral chip breaker, guide or deflector
- 407/24 . . . with chip breaker, guide or deflector
- 407/245 . . . comprising concave surface in cutting face of tool
- 407/25 . . including cut off tool
- 407/26 . . comprising cutting edge bonded to tool shank
- 407/27 . . comprising tool of specific chemical composition
- 407/28 . . Miscellaneous

Former US Class 408 Series

- 408/00** . . **Cutting by use of rotating axially moving tool**
- 408/03 . . Processes

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

- 408/56238 Encompassed by Tool during cut
- 408/56245 including tool-guide [or bushing]
- 408/56253 Base supported machine
- 408/5626 . . . with means to move Tool relative to other work-engaging structure along tool-axis
- 408/5627 Having sliding engagement therewith
- 408/56275 Screw coaxial with Tool
- 408/5628 . . . Tool having screw-thread engaging frame to cause infeed
- 408/563 . . Work-gripping clamp
- 408/5633 . . . Adapted to coaxially grip round work
- 408/56337 Oppositely moving lateral clamps
- 408/5634 Three or more moving clamps
- 408/56343 Base supported clamp
- 408/5635 . . . Oppositely moving lateral clamps
- 408/5638 . . . Adjustable relative to tool-axis
- 408/564 . . Movable relative to Tool along tool-axis
- 408/5647 . . . including means to move Tool
- 408/5653 . . . with means to bias Tool away from work
- 408/566 . . Axially fixed to Tool
- 408/5665 . . . Work-engaging surface parallel to tool-axis
- 408/567 . . Adjustable, tool-guiding jig
- 408/568 . . . Guide bushing
- 408/569 . . Bushing
- 408/57 . . Tool-support with means to receive tool-position indicator
- 408/60 . . Plural tool-assemblages
- 408/62 . . Coaxial
- 408/625 . . . Spring biased
- 408/63 . . Tool or tool-support with torque-applying ratchet
- 408/637 . . with thrust applying means
- 408/639 . . . Reversible ratchet
- 408/641 . . . Double-acting ratchet
- 408/643 . . Reversible ratchet
- 408/65 . . Means to drive tool
- 408/655 . . with specific Tool structure
- 408/66 . . Friction gearing
- 408/665 . . Universal or flexible drive connection to rotate Tool
- 408/67 . . Belt and pulley
- 408/675 . . including means to move Tool along tool-axis
- 408/6757 . . . Fluid means
- 408/6764 . . . Laterally adjustable Tool
- 408/6771 . . . with clutch means
- 408/6774 including plural speed drive
- 408/6776 Actuated by Tool movement
- 408/6779 . . . Rack and pinion
- 408/6786 . . . Manually moved lever
- 408/6793 . . . Screw coaxial with Tool
- 408/68 . . Tool or tool-support with thrust-applying machine-engaging screw
- 408/70 . . Tool or tool-support with torque-applying clutch
- 408/72 . . Friction clutch
- 408/73 . . Tool or tool-support with torque-applying spline
- 408/75 . . Relative motion of splined shaft and tool-support causing release of Tool from operating position
- 408/76 . . Tool-carrier with vibration-damping means
- 408/78 . . Tool of specific diverse material
- 408/81 . . Tool having crystalline cutting edge
- 408/83 . . Tool-support with means to move Tool relative to tool-support
- 408/85 . . to move radially
- 408/852 . . . with Tool releasing trigger
- 408/853 and separate Tool setting means
- 408/854 . . . to move eccentrically mounted Tool
- 408/855 Tool-support including plural, adjustable sections
- 408/856 . . . Moving means including pinion engaging rack-like surface of Tool
- 408/858 . . . Moving means including wedge, screw or cam
- 408/8583 with resiliently urged Tool
- 408/85837 with spring retainer
- 408/85843 Resilient Tool or tool-support
- 408/8585 including oppositely moving, diverging tools
- 408/8588 Axially slidable moving-means
- 408/85884 Tool pivotally mounted on support
- 408/85888 Having axially spaced shoulders
- 408/85892 Screw driven wedge or cam
- 408/85893 Screw with axis radially spaced from tool-axis
- 408/85894 Annular wedge-collar
- 408/858945 Axially spaced tool-retaining collars
- 408/858946 with travelling wedge
- 408/858948 Tool having axially facing, collar-receiving groove
- 408/858949 including two-piece collar
- 408/85895 Traveling wedge
- 408/858953 Interfitting, tool-retaining wedge
- 408/858955 including separable interfitting element
- 408/858957 Having externally threaded shank connected to tool-support
- 408/85896 Annular wedge-collar
- 408/859 Rotary cam
- 408/8591 Scroll plate
- 408/85913 Volute scroll
- 408/85915 with means to rotate scroll
- 408/85918 with adjustable means to limit scroll movement
- 408/8592 Coaxial with tool-axis
- 408/8593 Wedge moving perpendicular to tool-axis
- 408/8595 Pivotal tool-support
- 408/8598 Screw extending perpendicular to tool-axis
- 408/85985 Plural tools moved by diametrically opposed screws
- 408/85988 Screws mounted on common shaft
- 408/8599 Tool having pitch-stabilizing ridge
- 408/85995 with tool-holding clamp and clamp actuator
- 408/86 . . Tool-support with means to permit positioning of the Tool relative to support
- 408/865 . . Pivotal Tool
- 408/868 . . . with multiple cutting positions
- 408/87 . . Tool having stepped cutting edges
- 408/8713 . . . including means to permit both radial and axial positioning of edge
- 408/8725 . . . including means to permit relative axial positioning of edges
- 408/8729 with work-engaging structure other than cutting edge
- 408/8734 including central Tool axially movable relative to support
- 408/8738 . . . including inverse cutting edge
- 408/875 . . including means to "form" depression in work

- 408/88 . . including central-lead
- 408/885 . . including tool-holding clamp and clamp actuator
- 408/888 . . . Movable along tool-axis
- 408/89 . Tool or Tool with support
- 408/892 . . with work-engaging structure detachable from cutting edge
- 408/8923 . . . Removable central lead
- 408/8925 . . . Depth-limiting member
- 408/8928 . . . Adjustable
- 408/893 . . Hollow milling Tool
- 408/895 . . Having axial, core-receiving central portion
- 408/8953 . . . with lateral outlet
- 408/8957 . . . and having stepped cutting edges
- 408/896 . . Having product-receiving chamber
- 408/8967 . . . and central lead-screw
- 408/8973 . . . and central lead
- 408/898 . . Helical ribbon Tool
- 408/899 . . Having inversely angled cutting edge
- 408/90 . . . and axially extending peripheral cutting spur
- 408/901 . . Having axially extending peripheral cutting spur
- 408/902 . . Having central lead-screw
- 408/904 . . with pitch-stabilizing ridge
- 408/9042 . . . and radially spaced cutting edge
- 408/9044 . . . including cutting teeth of different width
- 408/9045 and different root circles
- 408/9046 . . . including tapered section
- 408/90467 and relieved cutting edge
- 408/90473 including work-embracing cutting edges
- 408/9048 . . . Extending outwardly from tool-axis
- 408/905 . . Having stepped cutting edges
- 408/906 . . . Axially spaced
- 408/9065 with central lead
- 408/907 . . including detailed shank
- 408/909 . . Having peripherally spaced cutting edges
- 408/9093 . . . Each formed by a pair of axially facing facets
- 408/9095 . . . with axially extending relief channel
- 408/9097 Spiral channel
- 408/9098 . . . with means to retain Tool to support
- 408/90987 Wedge means
- 408/90993 Screw driven means
- 408/91 . Machine frame
- 408/92 . . with counterweight mechanism
- 408/93 . . including pivotally mounted tool-carrier
- 408/935 . . . including laterally movable tool-carrier
- 408/94 . Tool-support
- 408/95 . . with tool-retaining means
- 408/953 . . . Clamping jaws
- 408/957 . . . Tool adapter
- 408/96 . Miscellaneous
- 408/97 . . Drill bushings
- 408/98 . . Drill guide
- 408/99 . . Adjustable stop
- 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

- 409/107632 . . Gear shaving
- 409/107791 . . Using rotary cutter
- 409/10795 . . . Process
- 409/108109 . . . End mill
- 409/108268 Radially faced
- 409/108427 Using plural, selectively usable tools
- 409/108586 . . . Plural rotary cutters
- 409/108745 . . . Cutting action along work axis

409/108904	Cutting action intersecting work axis	409/30196	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 refurbishing 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
- 409/304312 . . . with means to dampen vibration
- 409/304368 . . . Means to mill epitrochoidal shape
- 409/304424 . . . Means for internal milling
- 409/304448 . . . with detachable or auxiliary cutter support to convert cutting action
- 409/304536 . . . including means to infeed work to cutter
- 409/304592 . . . with compensation for backlash in drive means
- 409/304648 . . . with control means energized in response to activator stimulated by condition sensor
- 409/304704 In response to cutter or cutter carriage
- 409/30476 In response to work or work carriage
- 409/304816 to control rate of infeed or return
- 409/304872 to control limit of infeed
- 409/304928 Adapted to hydraulically or pneumatically stimulate control
- 409/304984 Adapted to electrically stimulate control
- 409/30504 to control rate of infeed or return
- 409/305096 to effect stopping of infeed
- 409/305152 . . . with means to change rate of infeed
- 409/305208 . . . Means to mill indeterminate length work
- 409/305264 . . . Multiple work stations
- 409/30532 . . . with means to advance work or product
- 409/305376 Vertically
- 409/305432 Endless or orbital work or product advancing means
- 409/305488 . . . to reciprocate or oscillate work
- 409/305544 . . . with work holder
- 409/3056 and means to selectively position work
- 409/305656 including means to support work for rotation during operation
- 409/305712 and including means to infeed cutter toward work axis
- 409/305768 with linear movement of work
- 409/305824 with angular movement of work
- 409/30588 . . . including friction gearing drive
- 409/305936 . . . including fluid drive
- 409/305992 . . . with means to effect stopping upon completion of operation
- 409/306048 . . . with means to advance work or product
- 409/306104 . . . Endless or orbital work or product advancing means
- 409/30616 . . . with means to precisely reposition work
- 409/306216 . . . Randomly manipulated, work supported, or work following device
- 409/306272 . . . For machining commutator
- 409/306328 . . . For cutting longitudinal groove in shaft [e.g., keyway, etc.]
- 409/306384 . . . with work supported guide means
- 409/30644 to guide tool to move in arcuate path
- 409/306496 . . . with work follower
- 409/306552 . . . Randomly manipulated
- 409/306608 End mill [e.g., router, etc.]
- 409/306664 . . . including means to infeed rotary cutter toward work
- 409/30672 . . . with means to limit penetration into work
- 409/306776 . . . Axially
- 409/306832 . . . with infeed control means energized in response to activator stimulated by condition sensor
- 409/306888 In response to cutter condition
- 409/306944 In response to work condition
- 409/307 with work holder
- 409/307056 and laterally
- 409/307112 Simultaneously
- 409/307168 Plural cutters
- 409/307224 with infeed control means energized in response to activator stimulated by condition sensor
- 409/30728 In response to cutter condition
- 409/307336 In response to work condition
- 409/307392 with means to change rate of infeed
- 409/307448 with work holder
- 409/307504 Indexable
- 409/30756 Machining arcuate surface
- 409/307616 with means to move cutter eccentrically
- 409/307672 Angularly adjustable cutter head
- 409/307728 including gantry-type cutter-carrier
- 409/307784 Plural cutters
- 409/30784 . . . including means to adjustably position cutter
- 409/307896 . . . with work holder or guide
- 409/307952 Linear adjustment
- 409/308008 with control for adjustment means responsive to activator stimulated by condition sensor
- 409/308064 Responsive to position of cutter
- 409/30812 and means to clamp cutter support in adjusted position
- 409/308176 with position indicator or limit means
- 409/308232 and angular adjustment
- 409/308288 including gantry-type cutter-carrier
- 409/308344 Plural cutters
- 409/3084 with position indicator or limit means
- 409/308456 with right angle cutter drive
- 409/308512 Compound angular adjustment
- 409/308568 Plural cutters
- 409/308624 . . . with limit means to aid in positioning of cutter bit or work [e.g., gauge, stop, etc.]
- 409/30868 . . . Work support
- 409/308736 . . . with position indicator or stop
- 409/308792 Indexable
- 409/308848 including dividing head
- 409/308904 Multiple row dividing head
- 409/30896 with angular adjustment
- 409/309016 with work holder or guide
- 409/309072 including cutter limited to rotary motion
- 409/309128 with means to adjust work support vertically
- 409/309184 . . . including cutter limited to rotary motion
- 409/30924 Cutter turning about vertical axis
- 409/309296 . . . Detachable or repositionable tool head
- 409/309352 . . . Cutter spindle or spindle support
- 409/309408 with cutter holder
- 409/309464 and draw bar
- 409/30952 . . . with cutter holder
- 409/309576 . . . Machine frame
- 409/309632 Overarm harness structure
- 409/309688 including counterbalancing means
- 409/309744 including means to compensate for deformation
- 409/3098 Deflection of cutter spindle
- 409/309856 Convertible from lathe
- 409/309912 including relatively movable components and means to relatively immobilize these components
- 409/309968 . . . Tailstock
- 409/40 . . . Broaching

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

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

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

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

428/11 . . Magnetic recording head
 428/1107 . . Magneto resistive
 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.]

428/12201 . . 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 elongate
- 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.]
- 428/31623 Next to polyamide or polyimide
- 428/31627 Next to aldehyde or ketone condensation product
- 428/3163 Next to acetal of polymerized unsaturated alcohol [e.g., formal butyral, etc.]
- 428/31634 Next to cellulosic
- 428/31638 Cellulosic ester
- 428/31641 Next to natural rubber, gum, oil, rosin, wax, bituminous or tarry residue
- 428/31645 Next to addition polymer from unsaturated monomers
- 428/31649 Ester, halide or nitrile of addition polymer
- 428/31652 Of asbestos
- 428/31656 With metal layer
- 428/31659 With cellulosic layer
- 428/31663 As siloxane, silicone or silane
- 428/31667 Next to addition polymer from unsaturated monomers, or aldehyde or ketone condensation product
- 428/3167 Of cork
- 428/31674 Including natural oil or gum or rosin [e.g., linoleum, etc.]
- 428/31678 Of metal
- 428/31681 Next to polyester, polyamide or polyimide [e.g., alkyd, glue, or nylon, etc.]
- 428/31685 Natural source polyamide [e.g., casein, gelatin, etc.]
- 428/31688 Next to aldehyde or ketone condensation product
- 428/31692 Next to addition polymer from unsaturated monomers
- 428/31696 Including polyene monomers [e.g., butadiene, etc.]
- 428/31699 Ester, halide or nitrile of addition polymer
- 428/31703 Next to cellulosic
- 428/31707 Next to natural rubber
- 428/3171 With natural rubber next to second layer of natural rubber
- 428/31714 Next to natural gum, natural oil, rosin, lac or wax
- 428/31717 Next to bituminous or tarry residue
- 428/31721 Of polyimide
- 428/31725 Of polyamide
- 428/31728 Next to second layer of polyamide
- 428/31732 At least one layer is nylon type
- 428/31736 Next to polyester
- 428/31739 Nylon type
- 428/31743 Next to addition polymer from unsaturated monomer[s]
- 428/31746 Polymer of monoethylenically unsaturated hydrocarbon
- 428/3175 Next to addition polymer from unsaturated monomer[s]
- 428/31754 Natural source-type polyamide
- 428/31757 Polymer of monoethylenically unsaturated hydrocarbon
- 428/31761 Next to aldehyde or ketone condensation product
- 428/31765 Inorganic-containing or next to inorganic-containing
- 428/31768 Natural source-type polyamide [e.g., casein, gelatin, etc.]
- 428/31772 Next to cellulosic
- 428/31775 Paper
- 428/31779 Next to cellulosic
- 428/31783 Paper or wood
- 428/31786 Of polyester [e.g., alkyd, etc.]
- 428/3179 Next to cellulosic
- 428/31794 Of cross-linked polyester
- 428/31797 Next to addition polymer from unsaturated monomers
- 428/31801 Of wax or waxy material
- 428/31804 Next to cellulosic
- 428/31808 Cellulosic is paper
- 428/31812 Glassine paper
- 428/31815 Of bituminous or tarry residue
- 428/31819 Next to cellulosic
- 428/31823 Paper
- 428/31826 Of natural rubber
- 428/3183 Next to second layer of natural rubber
- 428/31833 Next to aldehyde or ketone condensation product or addition polymer from unsaturated monomers
- 428/31837 Including polyene monomers
- 428/31841 Next to cellulosic
- 428/31844 Of natural gum, rosin, natural oil or lac
- 428/31848 Next to cellulosic
- 428/31851 Natural oil
- 428/31855 Of addition polymer from unsaturated monomers
- 428/31859 Next to an aldehyde or ketone condensation product
- 428/31862 Melamine-aldehyde
- 428/31866 Impregnated or coated cellulosic material
- 428/3187 Amide-aldehyde
- 428/31873 Urea or modified urea-aldehyde
- 428/31877 Phenol-aldehyde
- 428/3188 Next to cellulosic
- 428/31884 Regenerated or modified cellulose
- 428/31888 Addition polymer of hydrocarbon[s] only
- 428/31891 Where addition polymer is an ester or halide
- 428/31895 Paper or wood
- 428/31899 Addition polymer of hydrocarbon[s] only
- 428/31902 Monoethylenically unsaturated
- 428/31906 Ester, halide or nitrile of addition polymer
- 428/31909 Next to second addition polymer from unsaturated monomers
- 428/31913 Monoolefin polymer
- 428/31917 Next to polyene polymer
- 428/3192 Next to vinyl or vinylidene chloride polymer
- 428/31924 Including polyene monomers
- 428/31928 Ester, halide or nitrile of addition polymer
- 428/31931 Polyene monomer-containing
- 428/31935 Ester, halide or nitrile of addition polymer
- 428/31938 Polymer of monoethylenically unsaturated hydrocarbon
- 428/31942 Of aldehyde or ketone condensation product
- 428/31946 Next to second aldehyde or ketone condensation product
- 428/31949 Next to cellulosic
- 428/31953 Modified or regenerated cellulose

- 428/31957 Wood
- 428/3196 Phenoplast
- 428/31964 Paper
- 428/31967 Phenoplast
- 428/31971 Of carbohydrate
- 428/31975 Of cellulosic next to another carbohydrate
- 428/31978 Cellulosic next to another cellulosic
- 428/31982 Wood or paper
- 428/31986 Regenerated or modified
- 428/31989 Of wood
- 428/31993 Of paper
- 428/31996 Next to layer of metal salt [e.g., plasterboard, etc.]
- 428/32 . . . Composite [nonstructural laminate] of inorganic material having metal-compound-containing layer and having defined magnetic layer
- 428/325 . . . Magnetic layer next to second metal compound-containing layer
- 428/4935 . . . Impregnated naturally solid product [e.g., leather, stone, etc.]
- 428/662 . . . Wood timber product [e.g., piling, post, veneer, etc.]
- 428/8305 . . . Miscellaneous [e.g., treated surfaces, etc.]

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

- 436/10 . . . Composition for standardization, calibration, simulation, stabilization, preparation or preservation; processes of use in preparation for chemical testing
- 436/100833 . . . Simulative of a gaseous composition
- 436/101666 . . . Particle count or volume standard or control [e.g., platelet count standards, etc.]
- 436/102499 . . . Blood gas standard or control
- 436/103332 . . . Bilirubin or uric acid standard or control
- 436/104165 . . . Lipid, cholesterol, or triglyceride standard or control
- 436/104998 . . . Glucose, ketone, nitrate standard or control
- 436/105831 . . . Protein or peptide standard or control [e.g., hemoglobin, etc.]
- 436/106664 . . . Blood serum or blood plasma standard or control
- 436/107497 . . . Preparation composition [e.g., lysing or precipitation, etc.]
- 436/108331 . . . Preservative, buffer, anticoagulant or diluent
- 436/109163 . . . Inorganic standards or controls
- 436/11 . . . Automated chemical analysis
- 436/110833 . . . Utilizing a moving indicator strip or tape
- 436/111666 . . . Utilizing a centrifuge or compartmented rotor
- 436/112499 . . . with sample on test slide
- 436/113332 . . . with conveyance of sample along a test line in a container or rack
- 436/114165 . . . with step of insertion or removal from test line
- 436/114998 . . . with treatment or replacement of aspirator element [e.g., cleaning, etc.]
- 436/115831 . . . Condition or time responsive
- 436/116664 . . . with automated titrator
- 436/117497 . . . with a continuously flowing sample or carrier stream
- 436/118339 . . . with formation of a segmented stream
- 436/119163 . . . with aspirator of claimed structure
- 436/12 . . . Condition responsive control
- 436/13 . . . Tracers or tags

- 436/14 . . . Heterocyclic carbon compound [i.e., O, S, N, Se, Te, as only ring hetero atom]
- 436/141111 . . . Diverse hetero atoms in same or different rings [e.g., alkaloids, opiates, etc.]
- 436/142222 . . . Hetero-O [e.g., ascorbic acid, etc.]
- 436/143333 . . . Saccharide [e.g., DNA, etc.]
- 436/144444 Glucose
- 436/145555 . . . Hetero-N
- 436/146666 . . . Bile pigment
- 436/147777 . . . Plural nitrogen in the same ring [e.g., barbituates, creatinine, etc.]
- 436/148888 Uric acid
- 436/15 . . . Inorganic acid or base [e.g., hcl, sulfuric acid, etc.]
- 436/153333 . . . Halogen containing
- 436/156666 . . . Sulfur containing
- 436/16 . . . Phosphorus containing
- 436/163333 . . . Organic [e.g., chemical warfare agents, insecticides, etc.]
- 436/166666 . . . of inorganic phosphorus compound in body fluid
- 436/17 . . . Nitrogen containing
- 436/170769 . . . N-Nitroso containing [e.g., nitrosamine, etc.]
- 436/171538 . . . Urea or blood urea nitrogen
- 436/172307 . . . Cyanide or isocyanide
- 436/173076 . . . Nitrite or nitrate
- 436/173845 . . . Amine and quaternary ammonium
- 436/174614 . . . Tertiary amine
- 436/175383 . . . Ammonia
- 436/176152 . . . Total nitrogen determined
- 436/176921 . . . As part of an elemental analysis
- 436/177692 . . . Oxides of nitrogen
- 436/178459 . . . Only nitrogen dioxide
- 436/179228 . . . Both nitrogen oxide and dioxide
- 436/18 . . . Sulfur containing
- 436/182 . . . Organic or sulfhydryl containing [e.g., mercaptan, hydrogen, sulfide, etc.]
- 436/184 . . . Only hydrogen sulfide
- 436/186 . . . Sulfur dioxide
- 436/188 . . . Total or elemental sulfur
- 436/19 . . . Halogen containing
- 436/193333 . . . In aqueous solution
- 436/196666 . . . Carbon containing compound [e.g., vinylchloride, etc.]
- 436/20 . . . Oxygen containing
- 436/200833 . . . Carbonyl, ether, aldehyde or ketone containing
- 436/201666 . . . Carboxylic acid
- 436/202499 . . . Formaldehyde or acetone
- 436/203332 . . . Hydroxyl containing
- 436/204165 . . . Ethanol
- 436/204998 . . . Inorganic carbon compounds
- 436/205831 . . . Carbon monoxide only
- 436/206664 . . . Ozone or peroxide
- 436/207497 . . . Molecular oxygen
- 436/208339 . . . Fuel/air mixture or exhaust gas analysis
- 436/209163 . . . Dissolved or trace oxygen or oxygen content of a sealed environment
- 436/21 . . . Hydrocarbon
- 436/212 . . . Aromatic
- 436/214 . . . Acyclic [e.g., methane, octane, isoparaffin, etc.]
- 436/216 . . . Unsaturated [e.g., ethylene, diene, etc.]
- 436/218 . . . Total hydrocarbon, flammability, combustibility [e.g., air-fuel mixture, etc.]
- 436/22 . . . Hydrogen, per se

- 436/23 . Carbon containing
- 436/235 . . In an aqueous solution [e.g., TOC, etc.]
- 436/24 . Nuclear magnetic resonance, electron spin resonance or other spin effects or mass spectrometry
- 436/25 . including sample preparation
- 436/25125 . . Digestion or removing interfering materials
- 436/2525 . . Stabilizing or preserving
- 436/25375 . . Liberation or purification of sample or separation of material from a sample [e.g., filtering, centrifuging, etc.]
- 436/255 . . . including use of a solid sorbent, semipermeable membrane, or liquid extraction
- 436/25625 . . Dilution
- 436/2575 . . Volumetric liquid transfer
- 436/25875 . . Gaseous sample or with change of physical state

Former US Class 442 series

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

442/2098	. . . At least two coatings or impregnations of different chemical composition	442/2393	. . . 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	442/3675	. . . . . Fabric layer contains natural strand material
442/3358	. . . . Including a nonwoven fabric layer	442/3683	. . . . . Fabric layer contains carbon or carbonaceous strand material
442/3366	. . . Woven fabric is coated, impregnated, or autogenously bonded	442/3691	. . . . . Fabric layer contains glass strand material
442/3374	. . . . Coating or impregnation includes particulate material other than fiber	442/3699	. . . . . Including particulate material other than fiber
442/3382	. . Including a free metal or alloy constituent	442/3707	. . Woven fabric including a nonwoven fabric layer other than paper
442/339	. . . Metal or metal-coated strand	442/3715	. . . Nonwoven fabric layer comprises parallel arrays of strand material
442/3398	. . . Vapor or sputter deposited metal layer	442/3724	. . . Needled
442/3407	. . . Chemically deposited metal layer [e.g., chemical precipitation or electrochemical deposition or plating, etc.]	442/3732	. . . . Including an additional nonwoven fabric
442/3415	. . . Preformed metallic film or foil or sheet [film or foil or sheet had structural integrity prior to association with the woven fabric]	442/374	. . . . . Additional nonwoven fabric comprises chemically different strand material than the first nonwoven fabric
442/3423	. . . . Plural metallic films or foils or sheets	442/3748	. . . . . Including inorganic strand material
442/3431	. . . . Plural fabric layers	442/3756	. . . . Nonwoven fabric layer comprises at least two chemically different fibers
442/3439	. . . . . Including a nonwoven fabric layer	442/3764	. . . . Coated, impregnated, or autogenously bonded
442/3447	. . . . Including a preformed synthetic polymeric film or sheet [i.e., film or sheet having structural integrity prior to association with the woven fabric]	442/3772	. . . Hydroentangled
442/3455	. . . . Including particulate material other than fiber	442/378	. . . Coated, impregnated, or autogenously bonded
442/3463	. . . Plural fabric layers	442/3789	. . . . Plural nonwoven fabric layers
442/3472	. . Woven fabric including an additional woven fabric layer	442/3797	. . . . Coating or impregnation is derived from a water-settable material [e.g., cement, gypsum, etc.]
442/348	. . . Mechanically needled or hydroentangled	442/3805	. . . . Coating or impregnation contains natural or synthetic rubber
442/3488	. . . . Four or more layers	442/3813	. . . . Coating or impregnation contains synthetic polymeric material
442/3496	. . . . Coated, impregnated, or autogenously bonded	442/3821	. . . . Coating or impregnation contains bituminous material
442/3504	. . . Woven fabric layers comprise chemically different strand material	442/3829	. . . . Four or more layers
442/3512	. . . . Three or more fabric layers	442/3837	. . . . . Including particulate material other than fiber
442/352	. . . . . One of which is a nonwoven fabric layer	442/3846	. . . . Including particulate material other than fiber
442/3528	. . . Three or more fabric layers	442/3854	. . Woven fabric with a preformed polymeric film or sheet
442/3537	. . . . One of which is a nonwoven fabric layer	442/3862	. . . Ester condensation polymer sheet or film [e.g., polyethylene terephthalate, etc.]
442/3545	. . . . Woven fabric layers impregnated with a blend of thermosetting and thermoplastic resins	442/387	. . . Vinyl polymer or copolymer sheet or film [e.g., polyvinyl chloride, polyvinylidene chloride, polyvinyl acetate, etc.]
442/3553	. . . . Woven fabric layers impregnated with an organosilicon resin	442/3878	. . . Fluorinated olefin polymer or copolymer sheet or film [e.g., Teflon®, etc.]
442/3561	. . . . Woven fabric layers impregnated with a natural or synthetic rubber	442/3886	. . . Olefin polymer or copolymer sheet or film [e.g., polypropylene, polyethylene, ethylene-butylene copolymer, etc.]
442/3569	. . . . Woven fabric layers impregnated with a thermosetting resin	442/3894	. . . Amide condensation polymer sheet or film [e.g., nylon 6, etc.]
442/3577	. . . . . Phenolic resin	442/3902	. . . Polyimide sheet or film
442/3585	. . . . . Epoxy resin	442/3911	. . . Natural or synthetic rubber sheet or film
442/3594	. . . . Woven fabric layers impregnated with a thermoplastic resin [e.g., vinyl polymer, etc.]	442/3919	. . . Including particulate material other than fiber
442/3602	. . . Three or more distinct layers	442/3927	. . Including a paper or wood pulp layer
442/361	. . . . At least one layer is derived from water-settable material [e.g., cement, gypsum, etc.]	442/3935	. . . Mica paper layer
442/3618	. . . . At least one layer contains wood or cork	442/3943	. . . Plural paper or wood pulp layers
442/3626	. . . . At least one layer contains bituminous material [e.g., tar, pitch, asphalt, etc.]	442/3951	. . . Including a bituminous layer
442/3634	. . . . At least one layer comprises paper	442/3959	. . . Including an outermost adhesive layer
442/3642	. . . . At least one layer contains natural or synthetic rubber		
442/365	. . . . At least one layer is a preformed synthetic polymeric film or sheet		
442/3659	. . . . At least one layer comprises ceramic or glass material in other than particulate form		

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

442/644	. . . Parallel strand or fiber material is glass	442/687	. . . . Containing inorganic strand or fiber material
442/645	. . . Parallel strand or fiber material is inorganic [e.g., rock wool, mineral wool, etc.]	442/688	. . . . Containing polymeric strand or fiber material
442/646	. . . Parallel strand or fiber material is naturally occurring [e.g., cotton, wool, etc.]	442/689	. . Hydroentangled nonwoven fabric
442/647	. . Including a foamed layer or component	442/69	. . Autogenously bonded nonwoven fabric
442/648	. . . Including a free metal or alloy constituent	442/691	. . . Inorganic strand or fiber material only
442/649	. . . Plural foamed layers	442/692	. . . Containing at least two chemically different strand or fiber materials
442/651	. . . Plural fabric layers	442/693	. . Including a paper layer
442/652	. . . Nonwoven fabric is coated, impregnated, or autogenously bonded	442/695	. . Including a wood containing layer
442/653	. . . . Including particulate material other than fiber	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.]
442/654	. . Including a free metal or alloy constituent	442/697	. . Containing at least two chemically different strand or fiber materials
442/655	. . . Metal or metal-coated strand or fiber material	442/698	. . . Containing polymeric and natural strand or fiber materials
442/656	. . . Preformed metallic film or foil or sheet [film or foil or sheet had structural integrity prior to association with the nonwoven fabric]	442/699	. . Including particulate material other than strand or fiber material
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		
		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