

861	<b>OTHER THAN COMPLETELY THROUGH WORK THICKNESS OR THROUGH WORK PRESENTED</b>	23	.With subsequent handling (i.e., of product)
862	.Combined types of cutting	24	..By fluid application
863	..Including use of rotary scoring blade	25	..By retaining or reinserting product in workpiece
864	...Plural independent rotary scoring blades	26	..By accelerating travel
865	..With infeeding of work	27	..By separating products from each other
866	.Pricking	28	..By moving work support to which a tacky product is adhered
867	..Including use of orbiting tool carrier	29	.Including stacking of plural workpieces
868	..With infeeding of tool	30	.Puncturing
869	.Edge trimming (e.g., chamfering, etc.)	31	.With manipulation of tool protective strip (e.g., backing strip)
870	.Splitting	32	.Cutting of interdigitating products
871	..By use of endless band or chain knife	33	.Making and using a registration cut
872	..By use of rotary blade	34	.With reorientation of tool between cuts
873	...Plural independent rotary blades	35	.With reorientation of work between cuts
874	..With infeeding of work	36	..Relative to same tool
875	.Grooving	37	.During movement of work past flying cutter
876	..By use of plural independent rotary blades	38	..Cyclically varying rate of tool or work movement
877	...Forming common groove	39	.Plural cutting steps
878	...Blades turning about perpendicular axes	40	..Blanking and cutting
879	.Scoring	41	...Cutting to join blanked holes
880	..Processes	42	..Repetitive transverse severing from leading edge of work
881	..Active means to control depth of score	43	...Alternately forming products of less than total width of work
882	..Serially	44	...With longitudinal severing
883	..Plural independent scoring blades	45	...Effected by plural steps
884	...Rotary scoring blades	46	...Along zigzag or undulant line or cut
885	...On opposite sides of work	47	...Prior to transverse severing
886	..Rotary scoring blade	48	...Nonrectilinear cutting
887	...With means to rotate blade	49	..Plural cutting steps effect progressive cut
13	<b>PROCESSES</b>	50	..Repetitive blanking
14	.With preparatory or simultaneous ancillary treatment of work	51	.Cutting part way through from opposite sides of work
15	..By heating or cooling	52	.Effecting diverse or sequential cuts in same cutting step
16	...At localized area (e.g., line of separation)	53	.Cutting by direct application of fluent pressure to work
17	..By distorting within elastic limit	54	.Cutting wall of hollow work
18	...By stretching		
19	...By compressing		
20	...By flexing around or by tool		
21	....To conform to shape of tool		
22	..By fluid application		

55	.Blanking	76.6	.Arithmetically determined program
56	.Cut advances across work surface	76.7	..With condition sensor
57	<b>WITH MANUALLY ACTUATED MEANS TO DISTURB CYCLIC OPERATION</b>	76.8	...Responsive to work
58	<b>WITH RANDOMLY ACTUATED STOPPING MEANS</b>	76.9	..With operator input means
59	.With means to permit subsequent hand operation	77	<b>WITH MEANS TO WEIGH PRODUCT</b>
60	.With stop-signal-responsive means to actuate auxiliary cutter	78	<b>WITH PRODUCT HANDLING MEANS</b>
61	.With sensing of product or product handling means	79	.Initiated by means responsive to product or work
62	.Responsive to tool detector or work-feed-means detector	80	..Responsive to work
62.1	..Responsive to tool characteristic	81	.Initiated by means directly responsive to tool movement
63	.Responsive to work sensing means	82	..In return motion of tool
64	..Of buckled work	83	.Including means to drape the product
65	...Running loop	84	.Including means to form or hold pile of product pieces
66	..Detector supported on or urged against work	85	..In nested relation
67	...Resiliently biased	86	..In stacked or packed relation
68	.Manually operated	87	...Stacker sweeps along product support
69	<b>WITH STOPPING MEANS EFFECTIVE ON COMPLETION OF PREDETERMINED NUMBER OF TOOL CYCLES</b>	88	...Including cut pieces overlapped on delivery means
70	<b>WITH MEANS TO ACCOMPLISH DELAYED STOPPING AFTER CESSATION OF CYCLIC OPERATION</b>	89	...And means to separate product portions
72	<b>WITH MEANS TO MONITOR AND CONTROL OPERATION (E.G., SELF-REGULATING MEANS)</b>	90	...Including means to move stack bodily
73	.Including means to monitor product	91	....By movement of stack holder
74	.Including means to correct the sensed operation	92	.....By timed relocation of holder along path of stack growth
75	..And modify another operation	92.1	.....Interrelated adjustment of holder movement and work-feeder
75.5	..Optimizing product from unique workpiece	93	..And means to resist stack movement
76	.Including means to compensate tool speed for work-feed variations	94	...Including means to deliver individual pieces to a stack holder
76.1	<b>WITH CONTROL MEANS RESPONSIVE TO REPLACEABLE OR SELECTABLE INFORMATION PROGRAM</b>	95	...With spindle to enter a hole or to make hole in product
76.2	.For cutting component of animal; e.g., hair clipper	96	...By face-engaging means to push product broadside into stacked relation
76.3	.Removable element carries program	97	...Upon emergence from hollow cutter
76.4	..Indeterminate length, web or strand	98	.By fluid current
76.5	...Magnetic	99	..Plural blasts directed against plural product pieces
		100	..By suction means
		101	.By brush means
		102	.Including means to divert one portion of product from another

102.1	..By kerf entering guide	135	....Linkage actuated
103	..Remaining or re-inserted product portion from base material	136	....Carried by moving tool element or its support
104	..Gravity type	137	.....Fluid pressure actuated stripper
105	..Deflecting guide	138	.....Stripper biased against product
106	...Positionable gate in product flow path	139	.....Elastomeric stripper contacting product
107	..Diverging product movers	140	.....By spring means
108	..Including means to replace product in base material after cutting	141	.....By free weight of stripper
109	..Means to move, guide, or permit free fall or flight of product	142	...Stripper biased against product
110	..Means to move product at speed different from work speed	143	....Spring biased stripper
111	..Means to move product out of contact with tool	144	...Manually operated stripper
112	...With means to effect subsequent conveying or guiding	145	...Stationary stripper
113	...Out of contact with a rotary tool	146	...Stripper encircles moving tool
114	....Mover surrounds axis of tool rotation	147	..Blockable exit port
115	....Mover mounted on rotary tool	148	..Tool conforming member interposed between tool and work
116	.....For radial movement of product	149	..Including means to move, or resist movement of, cut pieces along delivery chute
117	.....Resiliently mounted	150	..Active delivery means mounted on tool support
118	....Mover is resiliently mounted	151	..Product mover including gripper means
119	....Pivoted mover	152	...Suction gripper
120	.....And plural rotating tools	153	...Reciprocating product handler
121	....Stationary mover	154	...Rotating or oscillating product handler
122	.....And plural rotating tools	155	..Endless conveyor
123	..By ejector within a hollow cutter	155.1	...And means to remove product therefrom
124	....And means to strip the outer surface of a cutter	156	..Roller(s)
125	....Ejector operated with return stroke of cutter	157	..Tiltable or withdrawable support
126	....By means carried by cooperating cutter	158	..Means to move product laterally
127	....By cam-operated ejector	159	...Oscillating means
128	....By resiliently biased ejector	160	...Reciprocating means
129	...Moving stripper timed with tool stroke	161	..Means to move product in a nonrectilinear path
130	....And alternatively movable to or from operating position	162	..Guide
131	....Latched stripper released by tool return	163	...Abutment in path of product being moved by work feeder
132	....Plural strippers operative upon plural tools	164	...Product-diverting conduit in or from hollow tool
133	....Single stripper operative upon plural tools	165	...Inclined conduit, chute or plane
134	....Spring arm stripper	166	...Abutment interposed in path of free fall or flight of product
		167	<b>WITH RECEPTACLE OR SUPPORT FOR CUT PRODUCT</b>

168	<b>WITH MEANS TO CLEAN WORK OR TOOL</b>	198	.Rectilinear relative movement only
169	<b>WITH MEANS TO APPLY TRANSIENT NONPROPELLANT FLUENT MATERIAL TO TOOL OR WORK</b>	199	.Rotary relative movement solely about a single pivot
170	<b>WITH MEANS TO CONTROL OR MODIFY TEMPERATURE OF APPARATUS OR WORK</b>	200	..With plural apertures in one or both carriers
171	.Of tool	200.1	<b>BY INCREASED TENSIONING OF WORK-ENCLOSING WIRE</b>
174	<b>WITH TOOL SHARPENER OR SMOOTHER</b>	202	<b>TOOL ENGAGES WORK DURING DWELL OF INTERMITTENT WORKFEED</b>
174.1	.Spatially fixed tool	203	.Unicyclic
175	<b>WITH MEANS TO STRETCH WORK TEMPORARILY</b>	204	..Convertible to and from unicyclic
176	<b>WITH MEANS TO DEFORM WORK TEMPORARILY</b>	205	..Controlled by mechanical means
177	<b>BY FLUID BLAST AND/OR SUCTION</b>	206	.With work-moving clamp jaw
178	<b>BY TOOL INSIDE HOLLOW WORK</b>	207	.Work moved solely by movable abutment
179	.Work pre-packed with internal tool(s)	208	.Operation initiated by work-driven detector means to measure work length
180	.With expanding mandrel	209	.Work-sensing means to control work-moving or work-stopping means
181	.Interrelated tool feed means and means to actuate work immobilizer	210	..With means to initiate tool feed by same control impulse
182	..Actuated clamp element and work holder coact to position work	211	.Work-sensing means to initiate tool feed
183	.Synchronized tool and work feeding means	212	..With work-stopping abutment in sensing means
184	.With means to position tool(s) for cutting	212.1	.Plural tools at same station, one positioned for continuous engagement with work
185	.One tool (either internal or external) having compound motion	213	.Plural tools successively actuated at same station
186	..Annulus and disc-type tool pair	214	..During one dwell period
187	.One tool having unidirectional rotary motion	215	.Tool has motion additional to cutting stroke during tool cycle
188	.One tool having only rectilinear motion(s)	216	..Tool has additional motion during work dwell
189	..Annulus and disc-type tool pair	217	...Included in plural cutting cycles
190	...A tool has a sequence of motion in plural paths	218	..Tool has work-feeding motion
191	..Internal tool is an active cutter	219	.With variable direction of work-feed from cycle to cycle
192	..Multiple external active tools	220	..In one of certain selected directions
193	...Tools operate in a substantially common transverse plane of cut	221	.Interlock between tool actuating and work feed means
194	...With tool actuating cams on a common support	222	.Tool motion initiates work feed and vice versa
195	.With manually actuated means to position or facilitate positioning of work	223	.Stored energy means for moving work or tool, loaded by tool or work
196	<b>BY MEANS TO MISALIGN ALIGNED APERTURED TOOLS</b>		
197	.Combined with another type tool of the class		

224	..Work feed means actuates energy storage device for tool	250	.With means to produce plurality of work-feed increments per tool cycle
225	.Work feed means controlled by means mounted on tool or tool support	251	..Including supplemental work-feed means
226	..Such means drives the work feed means	252	...Manual
227	...Work feed means carried by tool or tool support	253	...With stop adapted to engage abutment surface on work
228	..With supplemental work feed means	254	...Plurality of work stops successively effective
229	...On return stroke of tool	255	.Work fed successively to plural tools
230	..Work feed means halted by means on tool or tool support	256	..With change of direction between tools
231	.Work-feed mechanism in nonfeed motion effects or initiates tool actuation	257	.Work advance occurs during return stroke of tool
232	..By striking tool actuator	258	.Dwell defined only by "dead-center" of rotating crank
233	..Nonfeed motion is reverse to feed motion	259	.Dwell initiated by disengagement of surface of moving frictional feed means from work
234	.With means to vary number of work-feed increments between tool strokes	260	..Feed means has interrupted frictional surface
235	.Dwell caused by imposing reverse motion on portion of flexible moving work	261	..Feed means has rotary motion
236	.With uninterrupted flow of work from supply source	262	.Dwell caused by clamping or blocking work during continuous operation of feed means
237	.Work feed increment shorter than longitudinal tool field	263	.With means to control magnitude of work-feed increment or work acceleration
238	.Unequal work feed increments in recurring series	264	..Means to prevent random or excessive work feeds
239	..Work carriage carries ratchet means to determine increments	265	..Full stroke required of feed means
240	.Means to change tool position, or length or datum position of work- or tool-feed increment	266	.Work feed functions as tool support
241	..With means to vary magnitude of work-feed increment	267	.With rotary work-carrier
242	...Multi-increment type (e.g., ticket issuing)	268	.With abutment to position work being fed with respect to cutter
243	...Length selector initiates machine operation	269	..With slip between positioned work and feed means
244	...By change in length of one member of feed-driving linkage	270	.Work guide and feed means have open side
245	...Rotating member	271	.Work feed means modified to maintain clearance from tool
246	..By change of effective shape of driving or driven surface of element of work-feed mechanism	272	.Plurality of work feed means in separate paths
247	...By adjustment of fixed stop	273	.Intermittent drive type of gearing for work-feed means
248	..With means to vary magnitude or base position of tool stroke	274	..Gearing modified to lock the work-feed means
249	.With means to facilitate manual repositioning (shift) of work		

275	..Mutilated gear in mesh with gear driving work-feed means	301	.Combined with other type cutter
276	.Work-feed element contacts and moves with work	302	..With slitter
277	..Comprises a work-moving gripper	303	.Plural separately mounted flying cutters
278	..Comprises element entering aperture in, or engaging abutment surface on, work	304	.With means to render cutter pass(es) ineffective
279	.With means to guide, position, or present work to work-feed means	305	..With means to produce "mis-cut"
280	..Means to transport work to work-feed means	306	.Oscillating work shifter adjacent cutter
281	...Including means to pick articles from pack or stack	307	..Work actuated senser initiates shifter
282	.With means to clamp work during dwell	307.1	.Wire tool
283	.One-revolution clutch in tool drive	307.2	..On tool support having reciprocation parallel to direction of work-feed
284	<b>CUTTING MOTION OF TOOL HAS COMPONENT IN DIRECTION OF MOVING WORK</b>	307.3	...And rotation about axis parallel to direction of work-feed
285	.With means to initiate intermittent tool action	308	.Tool flies by engagement with the work
286	..Tool moved in response to work-sensing means	309	..Tool merely flexes with moving work
287	...With means to vary "length" of product	310	.Flying support or guide for work
288	....To vary an end-product "length" (e.g., "crop cut")	311	.With tool speed regulator
289	..With photo-electric work-sensing means	312	.With work feed speed regulator
290	..With trip-switch work-sensing means	313	..With means to vary cyclically speed of work
291	....To initiate feed movement of tool	314	.Spring return of tool in counterfly direction
292	....And to initiate flying movement of tool	315	.Tool mounted on oscillating standard
293	...With work-responsive means to initiate flying movement of tool	316	..Both tools of couple on single standard
294	...With flying work-gripper means related to tool carrier	317	...One tool swings out of work path on return stroke
295	...With means controlling flying speed dependent on work speed	318	.Tool carrier shuttles rectilinearly parallel to direction of work feed
296	..With means to vary frequency of initiation	319	..Including means to secure work to carrier
297	..By orbitally traveling trigger pin(s)	320	..Both members of cutting pair on same carrier
298	.Interrelated control of tool and work-feed drives	321	.Orbital motion of cutting blade
299	.With means to concurrently adjust flying frequency and retain flying speed of tool	322	..Work feeder mounted on tool support
300	.Plural diverse flying cutters	323	...Gripper-type feeder
		324	..Tool speed varied within each orbital cycle
		325	..Work feed gripper carried on endless belt
		326	..Endless belt or chain tool carrier
		327	..Constantly oriented tool with arcuate cutting path
		328	...Cutting couple type

329	..Rotatable disc-type tool on orbiting axis	360	<b>OPERATION CONTROLLED BY DETECTOR MEANS RESPONSIVE TO WORK</b>
330	...Idling disc	361	.With means to control work-responsive signal system
331	..Rotary tool	362	..To delay response to work-senser
332	...Segmented disc slitting or slotting tool	363	..To change length of product
333	...With undulant cutting edge (e.g., "pinking" tool)	364	.With plural work-sensing means
334	...Single tool action drive	365	.With photo-electric work-sensing means
335	...With one-revolution drive	366	.Release of interlock controlled
336	...With loop former preceding tool	367	.Movement of work controlled
337	...Compound movement of tool during tool cycle	368	.Positioning of tool controlled
338	...Axial reciprocation of tool	369	.Actuation of tool controlled by work-driven means to measure work length
339	...Interconnected work feeder and tool driver	370	.Actuation of tool controlled in response to work-sensing means
340	...Side cutting helical blade	371	..Sensing means responsive to work indicium or irregularity
341	...With means to cause progressive transverse cutting	372	..With trip-switch in work-sensing mechanism
342	...With helical cutter blade	373	<b>INTERRELATED TOOL ACTUATING AND WORK GUIDE MOVING MEANS</b>
343	...With cooperating rotary cutter or backup	374	<b>INTERRELATED TOOL ACTUATING MEANS AND MEANS TO ACTUATE WORK IMMOBILIZER</b>
344	...Cooperating tool axes adjustable relative to each other	375	.Work clamp
345	...With radial overlap of the cutting members	376	..Tool deflected by guide on tightened clamp
346	...With anvil backup	377	...With means to control clamping force
347	....With resilient anvil surface	378	..Clamp driven by reaction from tool force
348	...Resiliently urged cutter or anvil member	379	..With means providing for plural steps in clamping stroke
349	...With cooperating stationary tool	380	..With sequencing means
350	<b>CUTTER WITH TIMED STROKE RELATIVE TO MOVING WORK</b>	381	..With provision for manual control of clamp
351	.Work swings about progressively cutting tool during tool stroke	382	..Tool or tool support on movable clamp jaw
352	.Tool actuated by movable work support	383	..Clamp moved by direct impact of tool or tool support
353	.Traveling cutter	384	...Clamp retracted by impact of tool or tool support
354	.With means to vary timing of tool feed	385	..Clamp actuating means driven by tool or tool support
355	.Uniform periodic tool actuation	386	...Clamp yieldably driven by tool or tool support
356	..With periodic lateral feed of tool or work	387	...With resilient drive element
356.1	..With plural tool stations	388	..Clamp driven by yieldable means
356.2	..Reciprocating tool	389	...Drive means is resilient
356.3	..With plural tools on a single tool support	390	...Fluid pressure yieldable drive means
357	.With plural tool stations	391	.Work-stop abutment
358	<b>OPERATION CONTROLLED BY MEANS RESPONSIVE TO PRODUCT</b>		
359	.Actuation of tool controlled		

392	..Oppositely effective abutments	708	...With means to cause or permit angular re-orientation of work about axis parallel to plane of cut
393	..With cyclic means to alter work-stopping position		
394	..Stop partakes of tool motion		
395	...Carried by tool or tool support	709	...By endless member having work-engaging teeth
396	<b>INTERRELATED TOOL ACTUATING MEANS AND MEANS TO ACTUATE WORK-MOVER STOP</b>	710	...By member having work-engaging tooth
397	<b>INTERRELATED TOOL ACTUATING MEANS AND GUARD MEANS</b>	711	....Including plural work-engaging teeth
397.1	.Work guard	712	.....Fluid operated
398	.Cutter guide slot closer	713	...With means to cause movement of work transversely toward plane of cut
399	<b>OPERATION OF MEMBER CONTROLLED BY MEANS RESPONSIVE TO POSITION OF ELEMENT REMOTE FROM MEMBER (E.G., INTERLOCK)</b>	714	...By means to cause movement toward and away from plane of cut
400	.With means to initiate operation of member	715	....Actuated by movement of a member on reciprocating means
401	<b>WITH MEANS TO CONVEY WORK RELATIVE TO TOOL STATION</b>	716	....Actuated by passive means which is external to reciprocating means
402	.By fluid current		
403	.Centrifugal feed to tangential tool (e.g., "Beria" type)	717	...By means to define increment of movement toward plane of cut
403.1	.With means to regulate work-feed speed	718	....Interrelated with movement of reciprocating means
404	.Including means to move work from one tool station to another	719	....By pusher mechanism
404.1	..Tool stations angularly related	720	.....With additional work holding or positioning means
404.2	..Work manipulated between tool stations	721	.....Work holding means includes actuator
404.3	..With static tool	722	.....Including plural, simultaneously acting pusher elements
404.4	..Tool stations staggered relative to one another		
405	..Punch or die station	723	.....Independently adjustable
406	..Notcher or pinker station	724	.....With additional means to retract elements
406.1	..Work reciprocated past double-edged knife	725	.....Power derived from movement of reciprocating means
407	..Slitter station		
408	...And transverse cutter station	726	.....Power derived from fluid pressure means
703	.Plural passes of diminishing work piece through tool station	727	.....Movement by screw means
704	..Work alternately, angularly re-oriented relative to tool station	728	.....Movement by rack and pinion or pawl
705	...By additional means to engage work and orient it relative to tool station	729	.....With handle
706	...By roller or roll-like element	730	....By carriage
707	..Work rectilinearly reciprocated through tool station	731	...By cable or belt drive
		732	.With means for transverse positioning of work on a moving conveyor
		409	.With work-constraining means on work conveyer (i.e., "work-carrier")



- 409.1 ..Plural means to constrain plural work pieces
- 409.2 ...End of work protrudes through aperture in carrier
- 410 ..With means to guide work-carrier in nonrectilinear path
- 410.7 ...About axis fixed relative to tool station
- 410.8 ....Infeed
- 410.9 .....About vertical axis
- 411.1 .....Cut normal to axis
- 411.2 .....Work-guide tube
- 411.3 .....Cut normal to axis
- 411.4 .....Oscillating work-carrier
- 411.5 .....Multiple cutters
- 411.6 .....Coaxial rotary cutters
- 411.7 ...Work stationary during cut
- 412 ..With means to orient or position work carrier relative to tool station
- 413 ...By pattern or templet
- 414 ...By indexing means
- 415 ..With additional work-locating means on work-carrier
- 416 ..With means to stop work conveyor
- 417 ..With means to store work articles
- 418 ..With additional means to engage work and orient it relative to tool station
- 419 ..By work-stopping abutment
- 420 ..By opposed lateral guide means
- 421 ..With means to adjust additional means
- 422 ..With means to press work to work-carrier
- 423 ..With projections on work-carrier (e.g., pin wheel)
- 424 ..Tool between tandem arranged work carrying means
- 425 ..Cut made parallel to direction of and during work movement
- 425.1 ..Including nonconcurrently acting tool
- 425.2 ..Including plural, laterally spaced tools
- 425.3 ...Tools mounted on common tool support
- 425.4 ....Tools axially shiftable on support
- 426 ..Interrelated work-conveying and tool-moving means
- 427 ..With reciprocating tool (e.g., "jigsaw" type)
- 428 ...With means to move tool laterally of feed direction during cutting
- 429 ...With means to effect difference between work speed and tool speed
- 430 ...Tool co-axial with work-conveying means
- 431 ..With means to press work to tool
- 432 ..Bevel cutting tool
- 433 ..Tool shiftable relative to work-conveying means
- 434 ..Tool in contact with surface of work-conveying means
- 435 ..Tool between laterally spaced work-conveying means
- 435.11 ..By rectilinearly moving work carriage
- 435.12 ...Angularly adjustable
- 435.13 ...Having positive adjustment stop; e.g., link
- 435.14 ...Having position indicating means
- 435.15 ...Pusher engaging rear surface of work
- 435.16 ...Having means to actuate pusher
- 435.17 .....Hydraulic or pneumatic means
- 435.18 .....Gear or pulley actuated pusher
- 435.19 .....Lever, cam, or link actuated pusher
- 435.21 ...Having means to actuate carriage
- 435.22 .....Hydraulic or pneumatic means
- 435.23 .....Gear or pulley
- 435.24 .....Adapted to place tension on flacid member
- 435.25 ...Lever, cam, or link means
- 435.26 ...On or attached to vehicle
- 435.27 ...Supported for movement at one side of tool only
- 435.2 ..By work moving flexible chain or conveyor
- 436.1 ..By feed roller
- 436.15 ...Pinch rollers
- 436.2 ..Unattached manual work pusher
- 436.3 ..Roller
- 436.4 ..Plural independent rollers for feed of plural distinct work
- 436.45 ..Shaped to conform to work
- 436.5 ..With work-supplying reel
- 436.55 ...And provision for selecting feed length

436.6	..Continuous conveying during , cutting; e.g., straw cutting	761	..With passive means to guide tool directly
436.7	..Supporting work at cutting station	762	...By plural opposed guide surfaces
436.75	...Comprising part of cutting station	763	...Having relative adjustment between guide surfaces
436.8	..Tool and feed roller actuated by common handle	764	...With relative adjustment between guide and work or work-support
436.9	..Tool and roller on common movable support	765	....By or with additional movable work-support portion
437.1	.Rectilinear movement only	766	....By rotation about an axis parallel to the work-support surface
437.2	..Tool opposing pusher	767	....By rotation about an axis perpendicular to the work- support surface
437.3	..Hydraulically or pneumatically actuated	768	..Including means to cause nonrectilinear tool infeed
437.4	...Screw actuated	769	..Of arcuately oscillating tool
437.5	...Gear or pulley actuated	771	..Of tool carrier on single moving pivot
437.6	...Lever, cam, or link actuated	772	...Pivot moves in closed loop
437.7	...Spring or gravity urged	773	...Pivot moves to and fro in arcuate path
733	.Work carrier rotates about axis fixed relative to tool station	774	...Axis of arcuate path moves during cutting
734	.Interrelated work-feeding means and tool-moving means	775	...Pivot moves to and fro in rectilinear path
743	<b>TOOL CARRIER OR GUIDE AFFIXED TO WORK DURING CUTTING</b>	776	.Having uniplanar compound motion
744	.By flexible work-engaging member	777	..By plural arcuately oscillating carrier
745	.Entirely work supported	778	..Constantly oriented tool travelling in orbit
746	<b>BY TOOL RECIPROCABLE ALONG ELONGATED EDGE</b>	779	..Tool rocks cutting reciprocations
747	.With means permitting tool to be rotatably adjusted about its cutting edge during cutting	780	...One tool reciprocates along fixed guide element
748	.With dynamic balancing or shock absorbing means	781	.With work-support and means to vary relationship between tool and work support
749	.With tool of another type	782	.Arcuately oscillating tool carried on single pivot
750	.With means to change to other type tool	783	.With means to support tool at opposite ends
751	.Plural reciprocable tools	784	..And apply drive force to both ends of tool
752	.Stored energy furnishes drive in one direction	785	...By flexible drive means
753	.With tool in-feed	786	...By reciprocating rigid support
754	..And auxiliary means for promoting or retarding tool in-feed	788	<b>BY ENDLESS BAND OR CHAIN KNIFE</b>
755	...By yieldable means	789	.With programming means
756	...And means to vary tool in-feed speed	790	.With cutter other than endlessly orbiting type
757	...With interrelated tool actuating and in-feed means	792	.Including contiguous oppositely moving knife portions
758	..Of rectilinearly reciprocating tool		
759	...With in-feed by pivoting carrier		
760	..And means to prevent tool in- feed		

793	.With means to change to non- endlessly orbiting cutter	441.1	.With attachment or operative connection to passive tool guide
794	.With tool in-feed	442	.Guide cooperates with template or straight edge secured to work
795	..Including ground-traversing vehicle	443	.Curved or deflecting guide
796	..Including means to permit arcuate in-feed motion	444	.Positively confines or otherwise determines path of work
797	...Including means to relocate path of in-feed motion	445	.Adapted to permit maneuvering of work at tool zone
798	...Angular relative previous path	446	.With movable or yieldable guide element
799	..By gravity	447	..Opposed to work-supporting surface
800	..With fluid in-feed regulating means	448	.Plural guide elements
801	..By motor-driven mechanism	449	..Opposed
802	.With scale or indicator	450	.Opposed to work-supporting surface
803	.Including plural cutting zones	451	<b>WITH WORK IMMOBILIZER</b>
804	.With adjustment of separation between zones	452	.Means to clamp work
805	...By lever means	453	..Combined with, peculiarly related to, other element
806	...By screw-threaded means	454	...With or to tool guide
807	..Including "figure-8" band	455	...Guide for traveling cutter
808	..Comprising plural bands	456	...Tool or tool support on movable clamp jaw
809	.Including means to adjust relationship between band and work-support surface	457	..With means providing for plural steps in clamping stroke
810	..By varying angle between band and work-support surface	458	..With equalizer or self-aligning jaw
811	...By tilting band carrier	459	..With biasing or counterbalancing means
812	...About point of intersection of cutting span and work- support surface	460	..Clamp driven by yieldable means
813	..By varying distance between band and work-support surface	461	..Liquid pressure actuating means
814	.With means to guard the tension	462	..Including means to retain clamp jaw in position
815	..Including means to retard undriven pulley or sprocket	463	..Self-locking drive means
816	..With means to vary distance between pulley or sprocket axes	464	..Manually actuated drive means
817	...And angular relationship of axes	465	..Including clamping face of specific structure
818	...Including means to yieldably bias pulley	466	..With means to adjust clamp position or stroke
819	...By fluid means	466.1	.Gapped work-constrainer
820	.With special blade guide means	467.1	.Work-stop abutment
438	<b>WITH MEANS TO GUIDE MOVING WORK</b>	468	..With scale or indicator
439	.In pivotal or arcuate movement	468.1	..Normal to plane of cut
440	.Guide fixed to or integral with stationary tool element	468.2	...Adjustable
440.1	..Tool element cooperates with a second tool	468.3	...Angularly relative to plane of cut; e.g., miter
440.2	.With guard	468.4	...With traversing cutter guide; e.g., cut-off saw
441	.With attachment or operative connection to tool carrier	468.5	..Collapsible
		468.6	..Retractable
		468.7	..Adjustable

468.8	...Having curved cutting edge to make arcuate cut, plural nonaligned intersecting cutting edges, or spaced punches	487	...With means to reciprocate carrier
468.9	...Spaced edges	488	...And means to rotate tool
468.93	..Having curved cutting edge to make arcuate cut, plural nonaligned intersecting cutting edges, or spaced punches	489	...With means to rotate tool
468.94	...Spaced edges	490	..Tool carrier oscillated or rotated
469	<b>ROTATABLE DISC TOOL PAIR OR TOOL AND CARRIER</b>	491	.Means to rotate or oscillate tool
471	.With means to support work relative to tool(s)	492	..Including means to rotate both elements of tool pair
471.1	..Plural tool elements successively actuated at same station	493	...Including means to rotate both elements at different speeds
471.2	..Tool moved relative to work-support during cutting	494	...And means to change speed of rotation
471.3	...Tool angularly adjustable relative to work-support	495	.Tool pair comprises rotatable tools
472	..Supporting surface and tool axis angularly related	496	..Tool pair elements angularly related
473	...Adjustable angular relationship	497	...Elements of tool pair angularly adjustable relative to each other
474	..Unidirectionally movable work support	498	..Tool pair axially shiftable
475	...With opposed work-presser	499	...With shifting mechanism for at least one element of tool pair
476	...Presser co-axial with tool	500	..Tool pair comprises contacting overlapped discs
477	..Support and tool relatively adjustable	501	...With means to effect axial pressure on pair
477.1	...By movement of the tool	502	...With means to change axial pressure
477.2	..Work-support includes passageway for tool (e.g., slotted table)	503	...With means to change overlap of discs
478	.With guard for tool	504	..Tool element axially shiftable
479	.Optional tool pairs alternatively operative	505	..Tool pair comprises disc and cylindrical anvil
480	..One element of tool pairs common to all pairs	506	...With adjustable means to urge tool elements together
481	.With means to permit replacement of tool	507	..Elements of tool pair adjustably spaced
482	.Means to separate elements of tool pair	508	.Tool pair comprises rotatable tool and nonrotatable tool
483	.Carrier for rotatable tool movable during cutting	508.1	.Tool element selectively operative
484	..Unicyclic movement	508.2	.Tool element mounted for adjustment
485	..Tool carrier reciprocable rectilinearly	508.3	..Plural, axially spaced tool elements
486	...With means to adjust path of reciprocation	509	<b>TOOL PAIR COMPRISES ROTATABLE ANVIL AND FIXED-TYPE TOOL</b>
486.1	...Angular relative to previous path	510	.Anvil has motion in addition to rotation (i.e., traveling anvil)
		511	..Additional motion is along fixed arcuate path
		512	..With plural anvils

513	<b>TWO TOOL PAIRS, DRIVER FOR ONE PAIR MOVES RELATIVE TO DRIVER FOR OTHER PAIR</b>	535	....Pivotal or revolving only
514	.One tool support acts as driver for other	536	....With means to impart, limit, or control pivotal motion of presser
515	..Punch and shear	537	.....Interrelated with presser reciprocating means
516	.With variable spacing between tool pairs	538	....With means to mount presser for oscillation about column
517	..With intermediate work support	539	..With adjustable bed block
518	.Punch and shear	540	...Including presser member reinforcing, or flexure compensating, means
519	.Successively acting	541	...With manually actuated control apparatus for reciprocation of presser member
520	<b>WITH ILLUMINATING OR VIEWING MEANS FOR WORK</b>	542	.By deforming resilient tool or tool support
521	.Mirror or lens	543	.With transmission yieldable on overload
522.11	<b>WITH SIGNAL, SCALE, OR INDICATOR</b>	544	.With guard means
522.12	.Signal; e.g., alarm	545	..Static
522.13	.Indicator comprising work or product	546	...Adjustable
522.14	.Responsive to force	547	.Including movable, tool protecting, cushioning sheet
522.15	.Indicates tool position	548	.Single tool with plural selective driving means
522.16	..Relative to another element	549	.Plural tools selectively engageable with single drive
522.17	...To work-engaging member	550	..Predetermined sequence of selection
522.18	....Calibrated scale or indicator	551	...Of paired tools
522.19	.....Indicates dimension of work being cut	552	..Turret of tools
522.21	.....Dynamic indicator	553	.Tool movable to cooperate selectively with one of a plurality of mating tools
522.22	...To another tool assembly	554	.With means providing for plural steps in tool stroke
522.23	...To cooperating tool	555	.Sequential cutting motions
522.24	...To another component of tool assembly	556	.With tool positioning means synchronized with cutting stroke
522.25	...Adjustable guide for traversing tool; e.g., radial saw guide or miter saw guide	557	..Anvil moves into and out of operative position
522.26	.Indicates work characteristic	558	..Straight line positioning
522.27	.Indicates wear	559	.Tool pair positionable as a unit
522.28	.Bubble level	560	..Straight line positioning
522.29	.Counter	561	.Tool and anvil relatively positionable
523	<b>MEANS TO DRIVE OR TO GUIDE TOOL</b>	562	..Straight line
524	.Unicyclic	563	.Tool displaceable to inactive position (e.g., for work loading)
525	..With adjustable stopping point or tool	564	..By pivotal motion
526	..With brake or blocking means	565	.With templet surface following tool
527	.Means to change datum plane of tool or tool presser stroke		
528	..For disabling of continuously actuated cutter		
529	..With adjustable stop		
530	..By varying length of tool stroke		
531	.Clicker die press		
532	..With die handling attachment		
533	..With reciprocating presser		
534	...Laterally movable to selective operative positions		

566	..Tool moves work to and against cooperating tool	594	..Revolving tool moves through recess in work holder or cooperating tool
567	..With means to clamp or bind work to moving tool	595	...Progressively cutting
568	..One tool resiliently mounted or biased	596	..Progressively cutting
569	..Work forced through tool aperture or between spaced cooperating tools	597	..With simple oscillating motion only
570	..Manually actuated work-moving tool	598	..Plural tool pairs
571	..With means to connect or disconnect tool and its drive	599	...Plural tools on single oscillating arm (i.e., tool holder)
572	..Continuously moving drive means (e.g., "gag")	600	..And means to move cooperating cutter member
573	...Hand actuated connecting means	601	..Tool driver movable relative to tool support
574	..Convertible from tool path to another or from implement to machine	602	...Cam or eccentric revolving about fixed axis
575	..Magnet- or solenoid-actuated tool	603	...Gear or ratchet pawl drives toothed tool support
576	..Tool movement modifies actuating circuit	604	...Toggle links, one link pivoted to tool support
577	..Solenoid core is tool or tool support	605	...Fixed axis lever
578	..Cutting tool operative in opposite directions of travel	606	...Adjustable mechanical advantage
579	..Motion direction of tool influenced by resistance of work	607	..Cutting edge in radial plane
580	..One tool edge of tool pair encompasses work (e.g., wire cutter)	608	...Adjustable
581	..Bevel or miter cut	609	...With guide means for the cutting member
581.1	..With tool tensioning means	610	..Axially extending cutting edge
582	..Constantly urged tool or tool support (e.g., spring biased)	611	...Axially progressing cut
583	..Ledger blade	612	...Adjustable
584	..Oscillating tool urged axially	613	..With simple rectilinear reciprocating motion only
585	...And urged about pivotal axis	614	..Edge-to-edge of sheet or web (e.g., traveling cutter)
586	..Stored energy furnishes cutting force	615	..With provision for dynamic balance
587	...With reset	616	..With lost motion in tool drive
588	..Through return (noncutting) stroke	617	..Means to vary force on, or speed of, tool during stroke
589	...Oscillating tool	618	..Plural tools with same drive means
590	..Tool return mechanism separate from tool advance mechanism	619	...Tools positioned by template
591	..With simple revolving motion only	620	...Plural distinct cutting edges on same support
592	..Tool mounted on radial face of rotor	621	...Concentrically mounted
593	..Variable speed during one revolution (e.g., intermittent)	622	...Successively acting
		623	..And means to move cooperating cutting member
		624	..With application of force to opposite ends of tool supporting crosshead
		625	...By relatively movable fixed axis levers

626	...By connecting rod articulated with tool support	649	.Rotatable wound package supply
627	..Tool driver movable relative to tool support	650	..Plural supply sources
628	...Cam or eccentric revolving about fixed axis	830	<b>CUTTER ASSEMBLAGE OR CUTTER ELEMENT THEREFOR (E.G., CHAIN SAW CHAIN)</b>
629	...Gear actuated tool support	831	.With means permitting removal of cutter element
630	...Toggle links, one link pivoted to tool support	832	.Having diverse cutting elements
631	...Screw actuated tool support	833	..And noncutting depth gauge
632	...Connecting rod articulated with tool support	834	.Having noncutting depth gauge
633	...Fixed axis lever	651	<b>TOOL OR TOOL WITH SUPPORT</b>
634	...Adjustable mechanical advantage	651.1	.Wire tool
635	...Including details of guide for tool or tool support	652	.Work supported tool (e.g., clicker die)
636	..Progressively cutting	653	..With product ejection facilitator
637	..With spaced guide pins (e.g., die set leader pins)	654	..With tool manipulating portion
638	..With inclined guides	655	..With tool positioning abutment
639.1	..Fluid pressure actuated	656	..To sever article from work and cut within article
639.2	...Utilizing fluid amplifier	657	..With tool contour adjusting means
639.3	...Diaphragm	658	.Anvil
639.4	...Explosive fluid	659	..Rotatable type
639.5	...Plural cylinders	660	.Pointed perforators
639.7	...Offset cutter	661	.Endless band or belt type
640	..With means to adjust tool position on tool holder	835	.Toothed blade or tooth therefor
641	...Adjustably mounted cooperating tool	836	..With means to vary tooth position
642	..Parallel draw-cut (e.g., translatory)	837	..With additional cutting means
643	..Link suspension	838	..Plural separable sections
644	..Straight line motion combined with tilting in plane of stroke	839	...Tooth separable from blade
646	..Uniplanar compound motion	840	...By independent connecting element
647	..Reciprocating plus work approach (e.g., saw type)	841	.....Transversely movable
647.5	..With gyratory drive	842	.....Arcuately movable
821	..Guide	843	.....With additional element to prevent movement of connecting element
823	..With nonrigidly positioned member	844	.....Rectilinearly movable
824	..With anti-friction means	845	...By deformation
825	...Roller with peripheral flange or groove	846	..Uniformly varying teeth or tooth spacing
826	...Disc	847	..Undulating tooth arrangement
827	..With means to vary space between opposed members	848	..Plural tooth groups
828	...By rectilinear movement of member	849	...Including raker tooth group
829	..With means to adjust position	850	..Including intermediate raker tooth
648	<b>TOOL WITH EITHER WORK HOLDER OR MEANS TO HOLD WORK SUPPLY</b>	851	..Series of dissimilar teeth
		852	..Series of allochiral teeth
		853	..Teeth having transversely curved cutting edge
		854	..Teeth having cutting edge parallel to blade surface

- 855 ..Teeth having cutting edge perpendicular to blade surface
- 662 ..Tool mounted by and between spaced arms
- 663 ..Rotatable type
- 664 ..With spacer interposed between shaft-mounted tools
- 665 ..Mounting of tool about rod-type shaft
- 666 ...At end of shaft
- 667 ..Punching plus nonpunching tool
- 668 ..Notching plus nonnotching tool
- 669 ..Punching tool
- 670 ...Shear type
- 671 ..Notching tool
- 672 ..Helical tool
- 673 ..Shear type
- 674 ...Cutting edge wholly parallel to axis of rotation
- 675 ...Cutting edge wholly normal to axis of rotation
- 676 ..Disc type
- 677 ..Radially adjustable tool
- 678 ..Spaced cut forming tool
- 679 ..Cutting couple type
- 680 ..Spiral type cutter
- 681 ..To punch and cut punched article
- 682 ..Punching plus nonpunching tool
- 683 ..Notching plus nonnotching tool
- 684 ..Punching tool
- 685 ...Tool pair
- 686 ...Shear-type male tool
- 687 ...Multiple punchings
- 688 ...Plural spaced successively operative shearing portions
- 689 ...Progressive cutting
- 690 ...Shear-type female tool
- 691 ..Multiple punchings
- 692 ..Notching tool
- 693 ..Shear type
- 694 ..Shear type
- 695 ..Spaced cut forming tool
- 696 ..With tool contour adjusting means
- 697 ..Reciprocable type
- 698.11 ..Joint or connection
- 698.21 ..Magnetic connection
- 698.31 ..Resiliently biased connection
- 698.41 ..For rotary tool
- 698.42 ...Flexible sleeve-like tool
- 698.51 ...Adjustable
- 698.61 ....Rectilinearly

- 698.71 ..For rectilinearly reciprocating tool
- 698.91 ...Tool is single element with continuous cutting edge (e.g., punch, etc.)
- 699.11 ...Tool is single element reciprocable generally perpendicularly to elongate cutting edge (e.g., shear, etc.)
- 699.21 ...Tool is single element reciprocable along elongate cutting edge (e.g., saw blade, etc.)
- 699.31 ...Adjustable
- 699.41 ...Rectilinearly
- 699.51 ..Adjustable
- 699.61 ...Rectilinearly
- 856 ..Stationary cutter
- 857 ..Nonparallel cutting edges
- 858 ..Parallel cutting edges
- 859 **MACHINE FRAME**
- 860 ..Guard
- 701 **MISCELLANEOUS**

**CROSS-REFERENCE ART COLLECTIONS**

- 901 **APPAREL COLLAR MAKING**
- 902 **ATTACHMENTS FOR OTHER TYPES OF MACHINE**
- 903 **BATTERY GRID TRIMMING**
- 904 **BOOK INDEX CUTTING**
- 905 **BUTTONHOLE MAKING**
- 906 **CHIP MAKING**
- 907 **COILED WIRE CUTTING**
- 908 **COMB, RAKE, OR OTHER TOOTHED ARTICLE MAKING**
- 909 **CUTTING STRAND EXTENDING FROM OR LYING ON STRAND OR PACKAGE SUPPORT**
- 910 **EMBROIDERY TRIMMING OR CUTTING**
- 911 **ENVELOPE BLANK FORMING**
- 912 **ENVELOPE OPENERS**
- 913 **FILAMENT TO STAPLE FIBER CUTTING**
- 914 **FLASH TRIMMING**
- 915 **FUR CUTTING**
- 915.3 **ICE CUTTING MACHINES**
- 915.5 **MICROTOME**
- 916 **NIBBLING**
- 917 **NOTCHING**
- 918 **PINKING**
- 919 **SAMPLE TAKING**



920 **SHINGLE MAKING**  
 921 **SLIDE FASTENER CUTTING**  
 922 **TACKY WEB CUTTING**  
 923 **WASTE PRODUCT CUTTING**  
 924 **WORK WRAPPED OR COATED AROUND A  
 CORE (NOT PART OF THE MACHINE)**  
 927 **PRINTER'S RULE CUTTING**  
 928 **VEHICLE-MOUNTED TOOL**  
 929 **PARTICULAR NATURE OF WORK OR  
 PRODUCT**  
 929.1 .Printed circuit board  
 929.2 .Electrical component lead  
 trimming  
 930 .Radioactive  
 931 .Tobacco  
 932 .Edible  
 933 .Book, being destroyed; e.g.,  
 cover being cut away  
 934 .Book, being made; e.g., trimming  
 a signature  
 935 .Endless band  
 936 .Cloth or leather  
 937 ..From continuous or wound supply  
 938 ..Moving cloth or leather  
 939 ..With work support  
 940 ...Cutter moves along bar, bar  
 moves perpendicularly  
 941 ....Work support comprising  
 penetratable bed  
 942 .Contact pin of electrical  
 component  
 943 .Pallet  
 944 .Syringe needle  
 945 .Separating connected articles  
 946 .Container  
 947 .Insulation about wire  
 948 .Having "memory"; e.g.,  
 photographic or magnetic film  
 949 .Continuous or wound supply  
 950 ..Strandlike  
 951 .Rubber tire  
 952 .Moving work  
 953 .With work support  
 954 **KNIFE CHANGING**  
 955 **CUTTER EDGE SHIFTABLE TO PRESENT  
 DIFFERENT PORTION OF EDGE**  
 956 **ULTRASONIC**

Any foreign patents or non-patent litera-  
 ture from subclasses that have been  
 reclassified have been transferred  
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 These Collections contain ONLY foreign  
 patents or non-patent literature. The par-  
 enthetical references in the Collection  
 titles refer to the abolished subclasses  
 from which these Collections were derived.

**WITH MEANS TO CONVEY WORK  
 RELATIVE TO TOOL STATION (83/  
 401)**

.Cut made parallel to direction  
 of and during work movement  
 (83/425)  
 FOR 100 ..By work moving carriage (83/  
 435.1)  
 FOR 101 .By feed roller (83/436)  
 FOR 102 .Rectilinear movement only (83/  
 437)

**DIGESTS**

DIG 1 **SAFETY DEVICES**  
 DIG 2 **I-SHAPED BEAM CUTTER**  
 DIG 3 **INFLATABLE TUBE**

**FOREIGN ART COLLECTIONS**

FOR 000 CLASS-RELATED FOREIGN DOCUMENTS

