Planing: Slotting

1/00 Planing or slotting machines cutting by relative movement of the tool and workpiece in a horizontal straight line only

1/003 . { for planing elongated workpieces }
1/006 . { Rails }
1/02 . by movement of the work-support
1/04 . . with the tool supported only on one side of the bed
1/06 . . with the tool supported on both sides of the bed
1/08 . . by movement of the tool
1/10 . . with means for adjusting the tool-guide vertically
1/12 . . . with the tool supported only on one side of the bed
1/14 . . . with the tool supported on both sides of the bed
1/16 . . . without means for adjusting the tool-guide vertically
1/18 . . cutting on both the forward and the return stroke
1/20 . . with tool-supports or work-supports specially mounted or guided for working in different directions or at different angles; Special purpose machines
1/205 . . . { Planing nuts, bolt heads or other prismatic workpieces }
1/22 . . . for planing ingots or the like (scrubbing or peeling ingots by milling B23C 3/14)
1/24 . . . for planing inner surfaces, e.g. of moulds
1/26 . . . for planing edges or ridges or cutting grooves (cutting helical grooves B23D 5/02)
1/28 . . . in which the tool or workpiece is fed otherwise than in a straight line, e.g. for planing profiled stock
1/30 . . . in which the direction of feed is controlled by a copying device, e.g. by a pattern (features of copying devices B23Q 35/00)
3/00 Planing or slotting machines cutting by relative movement of the tool and workpiece in a vertical or inclined straight line

3/02 . . for cutting grooves (cutting helical grooves B23D 5/02)
3/04 . . in which the tool or workpiece is fed otherwise than in a straight line
3/06 . . . in which the direction of feed is controlled by a copying device, e.g. by a pattern (features of copying devices B23Q 35/00)
5/00 Planing or slotting machines cutting otherwise than by relative movement of the tool and workpiece in a straight line
5/02 . . involving rotary and straight-line movements only, e.g. for cutting helical grooves
5/04 . . controlled by a copying device, e.g. by a pattern (features of copying devices B23Q 35/00)
7/00 Planing or slotting machines characterised only by constructional features of particular parts (constructional features of these parts per se B23Q)
7/02 . . of frames; of work-table beds
7/04 . . of pillars, of cross-beams
7/06 . . of tool-carrying arrangements
7/08 . . of work-tables
7/10 . . of drives for reciprocating parts
7/105 . . . { hydraulically driven }
7/12 . . . of arrangements for impact damping or regenerating energy
9/00 Hand-operated planing devices; Portable planing apparatus
11/00 Planing or slotting devices able to be attached to a machine tool, whether or not replacing an operative portion of the machine tool
13/00 Tools or tool holders specially designed for planing or slotting machines (features applicable also to turning-machines B23B 27/00, B23B 29/00; for cutting gear teeth B23F 21/04)
13/005 . . { Tools or tool holders adapted to operate in both the forward and return stroke }
13/02 . . Pivotedly-mounted holders
13/04 . . Holders for tool sets
Shearing: Similar cutting

15/00 Shearing machines or shearing devices cutting by blades which move parallel to themselves
15/005 (for cutting in more than one direction, e.g. angle cutting)
15/008 (for bias cutting of webs or sheets)

Shearing machines or shearing devices cutting by blades pivoted on a single axis (on an axis parallel to the blade B23D 15/10; hand-held devices B23D 29/00)
17/00 characterised by drives or gearings therefor
17/04 actuated by a rotary shaft
17/06 actuated by fluid or gas pressure
17/08 actuated by hand or foot operated lever mechanism

Shearing machines or shearing devices cutting by rotary discs (by friction saw-discs B23D 45/00)
19/02 having both a fixed shearing blade and a rotary shearing disc
19/04 having rotary shearing discs arranged in cooperating pairs
19/06 with several spaced pairs of shearing discs working simultaneously, e.g. for trimming or making strips
19/065 (for cutting along lines not parallel to the longitudinal direction of the material, e.g. oblique or zig-zag cutting)
19/08 for special use, e.g. for cutting curves, for chamfering edges

Machines or devices for shearing or cutting tubes (by sawing, see the relevant groups for sawing machines or sawing devices; as additional equipment for deep drawing presses B21D 24/16)
21/003 (by tools working in different directions successively)
21/006 (and sealing, crushing or chamfering the tubes)
21/02 otherwise than in a plane perpendicular to the axis of the tube, e.g. for making mitred cuts, for making bicycle frames
21/04 Tube-severing machines with rotating tool-carrier
21/06 Hand-operated tube-cutters
21/08 with cutting wheels
21/10 with other cutting blades or tools
21/12 with provision for hammering on the tool
21/14 cutting inside the tube
21/145 (hand operated)

Machines or devices for shearing or cutting profilled stock (hand-held devices B23D 29/00)
23/00 (for window coverings)
23/02 otherwise than in a plane perpendicular to the axis of the stock
23/04 by means of holding-dies, arranged side by side, subjecting the stock to torsional stress

Machines or arrangements for shearing stock while the latter is travelling otherwise than in the direction of the cut (controlling slack in travelling flexible stock B21C 47/10)
25/02 Flying shearing machines (B23D 25/12 takes precedence)
25/04 in which a cutting unit moves bodily with the work while cutting (B23D 25/06 takes precedence)
25/06 having a cutting device mounted on an oscillating lever
25/08 having two coacting shearing blades mounted independently
25/10 on co-operating beams moving parallel to each other and attached to lever mechanisms
25/12 Shearing machines with blades on coacting rotating drums
25/14 without regard to the exact dimensions of the resulting material, e.g. for cutting-up scrap

Machines or devices for cutting by a nibbling action
27/00 Hand-held devices
27/02 actuated by muscle power B26B 17/003
27/04 actuated by electric power
27/06 actuated by fluid or gas pressure

Hand-held metal-shearing or metal-cutting devices (with nibbling action B23D 27/02; hand-operated devices for metal-cutting otherwise than by shearing B26B)
29/00 (for cutting wire or the like)
29/002 (for cutting sheets)
29/007 (for splitting nuts (hand operated tools with cutting action actuated by muscle power B26B 17/003))
29/02 Hand-operated metal-shearing devices
29/023 (for cutting wires)
29/026 (for cutting sheets)

Shearing machines or shearing devices covered by none or more than one of the groups B23D 15/00 - B23D 29/00; Combinations of shearing machines
31/00 (for trimming deep drawn products (combined with deep-drawing presses B21D 24/16))
31/001 (Breaking machines, i.e. pre-cutting and subsequent breaking)
31/003 (for rings)
31/005 (for gangs)
31/007 (for journals)
31/008 (Cutting-up scrap (disintegrating by knives in general B02C 18/00; cutting-up scrap while the material is travelling otherwise than in the direction of the cut B23D 25/14))
31/02 for performing different cutting operations on travelling stock, e.g. slitting and severing simultaneously
Shearing; Similar cutting

Broaching machines or broaching devices

Accessories for shearing machines or shearing devices (feeding stock to machines or removing stock B23D 43/00)

Accessories for shearing machines or shearing devices (for obtaining pieces of a predetermined weight or volume, e.g. control arrangements (B23D 36/0025 takes precedence))

Arrangements for holding, guiding, and/or feeding work during the operation

Guillotines with holding means behind the knives

for making circular cuts

in which the direction of feed is controlled by a copying device, e.g. by a pattern (features of copying devices B23Q 35/00)

Press-pads; Counter-bases; Hold-down devices

Equipment for indicating where to cut

Tools for shearing machines or shearing devices; Holders or chucks for shearing tools

[cutting members]

[Means for mounting the cutting member(s)]

[for circular cutting members]

[Adjusting the position of the cutting member(s)]

[for circular cutting members]

[Means for changing the cutting member(s) (mounting per se B23D 35/002)]

Control arrangements specially adapted for machines for shearing or similar cutting, or for sawing, stock which the latter is travelling otherwise than in the direction of the cut

[with means to attach the sawing device to the workpiece]

[for obtaining pieces of a predetermined weight or volume]

[for obtaining pieces of a predetermined length]

[the tool moving continuously]

[and taking account of marks, e.g. on the stock]

[the tool stopping for a considerable time after each cutting operation]

[and taking account of marks, e.g. on the stock]

[and taking account of the temperature of the stock]

[for cutting off of the ends of the products, e.g. cropping shears]

[for machines with more than one cutting, shearing, or sawing devices]

NOTE

Broaching

Broaching machines or broaching devices

(for cylindrical workpieces, e.g. crankshafts (takes precedence over other subgroups))

Broaching machines with horizontally-arranged working tools

Broaching machines with vertically-arranged working tools

Broaching machines with rotatably-arranged working tools

Broaching machines with arrangements for working in opposite directions

for special purposes (B23D 37/14 takes precedence)

Accessories for broaching machines or broaching devices

Broaching tools

B23Q

Accessories for broaching machines or broaching devices

B23D

Broaching machines or broaching devices characterised only by constructional features of particular parts (constructional features of these parts per se B23Q)

of frames; of work supports

of tool-carrying arrangements

of devices for feeding, clamping, or ejecting workpieces

of drives; of control devices

[Hydraulic drives]

[Control devices]

Broaching tools (for cutting gear teeth B23F 21/26)

[for cutting helical grooves]

[for cutting by rectilinear movement (B23D 43/08 takes precedence)]

for producing grooves in turbines, e.g. for the insertion of blades

having inserted cutting edges

for cutting by rotational movement

[with cutters mounted externally]

[with cutters mounted internally]

mounted on an endless chain or belt

Sawing (surgical saws A61B 17/14; sawing wood or similar material B27B; sawing stone B28D 1/02)

Sawing machines or sawing devices with circular saw blades or with friction saw discs (sawing machines with rotary discs B23D 19/00 - B23D 25/00)

[for particular purposes]

[with means to attach the sawing device to the workpiece]

[with a circular saw blade or the stock mounted on a carriage]

[with the saw blade mounted on a carriage (B23D 45/06, B23D 45/046 takes precedence)]

[the carriage performing a vertical movement only]

[the saw blade being adjustable according to depth or angle of cut (B23D 45/022 takes precedence)]

[Radial sawing machines]

[the saw carriage being mounted on a carriage, e.g. gantry-type sawing machines]
Sawing

45/028 . . . [the saw carriage being mounted on a pivoted lever]
45/04 . with a circular saw blade or the stock carried by a pivoted lever
45/042 . . . [with the saw blade carried by a pivoted lever (B23D 45/028, B23D 45/065 take precedence)]
45/044 . . . [the saw blade being adjustable according to angle of cut (B23D 45/025 takes precedence)]
45/046 . . . [the pivoted lever being mounted on a carriage]
45/048 . . . . . [the saw blade being adjustable according to angle of cut]
45/06 . with a circular saw blade arranged underneath a stationary work-table
45/061 . . . [the saw blade being mounted on a carriage]
45/062 . . . . [the saw blade being adjustable according to depth or angle of cut]
45/063 . . . . . [the carriage performing a vertical movement only]
45/065 . . . [with the saw blade carried by a pivoted lever]
45/066 . . . . . [the pivoted lever being mounted on a carriage]
45/067 . . . . . [the saw blade being adjustable according to depth or angle of cut]
45/068 . . . . . [the saw blade being adjustable according to depth or angle of cut (B23D 45/061, B23D 45/065 take precedence)]
45/08 . with a ring blade having inside saw teeth
45/10 . with a plurality of circular saw blades (B23D 45/143, B23D 45/165 take precedence)
45/102 . . . [some of which turn about perpendicular axes (B23D 45/143 takes precedence)]
45/105 . . . [operating within the same plane]
45/107 . . . [mounted on a turret]
45/12 . with a circular saw blade for cutting tubes
45/122 . . . [for cutting slots in tubes]
45/124 . . . . . [the workpieces turning about their longitudinal axis during the cutting operations]
45/126 . . . . . [with the tool turning around the workpieces]
45/128 . . . . . [with the tool introduced into the tubes and cutting from the inside outwards]
45/14 . for cutting otherwise than in a plane perpendicular to the axis of the stock, e.g. for making a miter cut
45/143 . . . [with a plurality of circular saw blades]
45/146 . . . . [the saw blades being angularly fixed]
45/16 . Hand-held sawing devices with circular saw blades
45/165 . . . [with a plurality of saw blades or saw blades having plural cutting zones]
45/18 . Machines with circular saw blades for sawing stock while the latter is travelling otherwise than in the direction of the cut (control of such machines B23D 36/00)
45/20 . . . [with wire-type frames]
45/22 . . . [the saw carrier of which is reciprocated in a guide and moves with the travelling stock during sawing]
45/24 . . . [with high-speed cutting discs, performing the cut by frictional heat melting the material (grinders for cutting-off B24B 27/06)]
45/26 . . . [with the tool turning around the workpieces]
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Sawing

53/00 Machines or devices for sawing with strap saw-blades which are effectively endless in use, e.g. for contour cutting

53/001 . . transportable, e.g. fitted with wheels
53/003 . . with means to attach the sawing device to the workpiece
53/005 . . with a plurality of saw blades or band saw blades having plural cutting zones, e.g. contiguous oppositely-moving saw blade portions (for length cutting of trunks B27B 15/00)
53/006 . . Convertible sawing devices
53/008 . . Open-end band saws

53/02 . . with stationarily-mounted wheels, [i.e. during sawing] carrying the strap (B23D 53/06 takes precedence)
53/023 . . [Arrangements for tilting the head carrying the saw wheels]
53/026 . . (the band saw blade being guided in a horizontal plane)
53/04 . . with the wheels carrying the strap mounted shiftably or swingingly [, i.e. during sawing], other than merely for adjustment
53/045 . . with pivotedly mounted head carrying the saw wheels
53/06 . . shiftable or swinging work-table
53/08 . . for cutting profiled stock
53/10 . . Sawing devices working with strap-saw-blades able to be attached to a machine tool, whether or not replacing an operative portion of the machine tool
53/12 . . Hand-held or hand-operated sawing devices working with strap saw blades

55/00 Sawing machines or sawing devices working with strap saw blades, characterised only by constructional features of particular parts (constructional features of these parts per se B23Q)

55/005 . . [Devices for damping vibrations]
55/02 . . of frames; of tables
55/023 . . [of tables (B23D 53/06 takes precedence)]
55/026 . . [the table being adjustable according to depth or angle of cut]
55/04 . . of devices for feeding or clamping work
55/043 . . for conveying work to the sawing machine
55/046 . . for feeding work into engagement with the saw blade, e.g. rotating work while sawing
55/06 . . for stock of indefinite length
55/065 . . [for laterally feeding long workpieces]
55/08 . . of devices for mounting straight saw blades or other tools
55/10 . . for hand-held or hand-operated devices
55/12 . . for use with tools, dealt with in this subclass, which are connected to a carrier at both ends, e.g. bows adjustable in length or height
55/125 . . [Blade tensioning means]
55/14 . . Attachment of the tool
55/16 . . of drives or feed mechanisms for straight tools, e.g. saw blades, or bows
55/163 . . [Vibratory electromagnetic drives therefor]
55/166 . . [Devices for arresting movement of the saw blades (B23D 51/20 takes precedence)]
55/18 . . actuated by fluid or gas pressure (B23D 51/20 takes precedence)
55/20 . . with controlled feed of the tool, or with special arrangements for relieving or lifting the tool on the return stroke

57/00 Sawing machines or sawing devices not covered by one of the preceding groups

57/0007 . . using saw wires
57/0015 . . [hand-held or hand-operated]
57/0023 . . [with a plurality of saw wires or saw wires having plural cutting zones]
57/003 . . Sawing machines or sawing devices working with saw wires, characterised only by constructional features of particular parts (constructional features of these parts per se B23Q)
57/0038 . . [of frames; of tables]
57/0046 . . [of devices for feeding, conveying or clamping work]
57/0053 . . [of drives for saw wires; of wheel mountings; of wheels]
57/0061 . . [of devices for guiding or feeding saw wires]
57/0069 . . [of devices for tensioning saw wires]
Sawing

B23D

57/0076 . . . [Devices for converting any machine for sawing purposes]
57/0084 . . . [specially adapted for sawing under water or at places accessible with difficulty]
57/0092 . . . [dismountable, collapsible or transportable, e.g. by means of a carrying case]
57/02 . . . with chain saws
57/023 . . . [hand-held or hand-operated]
57/026 . . . [with a plurality of saw chains]
59/00 Accessories specially designed for sawing machines or sawing devices (lubricating or cooling machine tools in general B23Q 11/12)
59/001 . . . [Measuring or control devices, e.g. for automatic control of work feed pressure on band saw blade (measuring in general G01; controlling in general G05)]
59/002 . . . [for the position of the saw blade (B27B 5/36 and B27B 9/02 take precedence)]
59/003 . . . [Indicating the cutting plane on the workpiece, e.g. by projecting a laser beam]
59/005 . . . [for preventing collision of saw blades with other machine parts or workpieces]
59/006 . . . [for removing or collecting chips]
59/007 . . . [for mounting a portable sawing device on a frame part]
59/008 . . . [comprising computers]
59/02 . . . Devices for lubricating or cooling circular saw blades
59/025 . . . [the lubricating or cooling medium being applied through the mounting means of the tool, e.g. the tool spindle or hub]
59/04 . . . Devices for lubricating or cooling straight or strap saw blades

61/00 Tools for sawing machines or sawing devices (tools for trepanning B23B 51/04); Clamping devices for these tools
61/003 . . . [Rotary saws comprising an essentially cylindrical body having cutting teeth arranged on its surface]
61/006 . . . [Oscillating saw blades]
61/02 . . . Circular saw blades
61/021 . . . [Types of set; Variable teeth, e.g. variable in height or gullet depth: Varying pitch; Details of gullet]
61/023 . . . [with inserted segments having more than one tooth]
61/025 . . . [Details of saw blade body]
61/026 . . . [Composite body, e.g. laminated, body of diverse material]
61/028 . . . [of special material]
61/04 . . . with inserted saw teeth [the teeth being individually inserted]
61/06 . . . [in exchangeable arrangement]
61/065 . . . [Adjustable teeth]
61/08 . . . Ring saw blades with internal saw teeth
61/10 . . . clamped between hubs; Clamping or aligning devices therefor
61/12 . . . Straight saw blades; Strap saw blades
61/121 . . . [Types of set; Variable teeth, e.g. variable in height or gullet depth: Varying pitch; Details of gullet]
61/122 . . . [with inserted segments having more than one tooth]
61/123 . . . [Details of saw blade body]

61/125 . . . [Composite body, e.g. laminated, body of diverse material]
61/126 . . . [having cutting teeth along both edges]
61/127 . . . [of special material]
61/128 . . . [Sabre saw blades]
61/14 . . . [with inserted saw teeth [, i.e. the teeth being individually inserted]
61/16 . . . in exchangeable arrangement
61/18 . . . Sawing tools of special type, e.g. wire saw strands, saw blades or saw wire equipped with diamonds or other abrasive particles in selected individual positions ([cut-off wheels of bonded abrasive or with inserted abrasive blocks B24D 5/12)]
61/185 . . . [Saw wires; Saw cables; Twisted saw strips]

63/00 Dressing the tools of sawing machines or sawing devices for use in cutting any kind of material, e.g. in the manufacture of sawing tools
63/001 . . . [Devices for positioning the dressing tool with respect to the saw blade]
63/003 . . . [Saw clamping devices]
63/005 . . . [Workpiece indexing equipment specially adapted to form part of sawing tool dressing machines]
63/006 . . . [Saw teeth setting devices working with setting rollers]
63/008 . . . [using computer control means]
63/02 . . . Setting saw teeth by means of hand-operated (or foot-operated) devices ([B23D 63/006 takes precedence])
63/023 . . . [Devices of the portable type carried by one hand and operable by one hand or two hands, e.g. having a pair of tongs]
63/026 . . . [Foot-operated devices]
63/04 . . . Setting saw teeth of circular, straight, or strap saw blades by means of power-operated devices ([B23D 63/006 takes precedence])
63/06 . . . Upsetting the cutting edges of saw teeth, e.g. swaging
63/08 . . . Sharpening the cutting edges of saw teeth
63/10 . . . by filing
63/105 . . . [sharpening circular saw blades]
63/12 . . . by grinding
63/123 . . . [using two or more grinding wheels simultaneously]
63/126 . . . [the tool being a grinding worm]
63/14 . . . Sharpening circular saw blades
63/16 . . . of chain saws (of mortise chain cutters B24B 3/14)
63/162 . . . [by a reciprocating or rotating rod-like sharpening tool, e.g. file, grinding cylinder]
63/164 . . . [with tools that remain stationarily positioned during sharpening]
63/166 . . . [without removal of the saw chain from the guide bar (B23D 63/162 takes precedence)]
63/168 . . . [the saw chain moving around the guide bar]
63/18 . . . Straightening damaged saw blades; Reconditioning the side surface of saw blades, e.g. by grinding
63/20 . . . Combined processes for dressing saw teeth, e.g. both hardening and setting
63/201 . . . [Combined setting and grinding]
63/203 . . . [Combined setting and filing]
63/205 . . . [Combined setting and upsetting]
63/206 . . . [Combined upsetting and grinding]
Sawing

63/208 . . (Combined upsetting and filing)
65/00 Making tools for sawing machines or sawing devices for use in cutting any kind of material
65/02 . . Making saw teeth by punching, cutting, or planing
65/04 . . Making saw teeth by milling

Filling or rasping (sharpening saw teeth thereby B23D 63/10)
67/00 Filing or rasping machines or devices (securing arrangements for files or rasps B23D 71/00)
67/02 . . with reciprocating tools, mounted on a yoke or the like
67/04 . . with reciprocating tools, attached to a carrier at one end only
67/06 . . with rotating tools
67/08 . . with tools mounted on an endless chain or belt
67/10 . . for special use, e.g. for filing keys; Accessories therefor
67/12 . . Hand-held or hand-operated filing or rasping devices (hand files or rasps B23D 71/04)

69/00 Filing or rasping machines or devices, characterised only by constructional features of particular parts, e.g. guiding arrangements, drives (constructional features of these parts per se B23Q); Accessories for filing or rasping (attached to the tool B23D 71/10)
69/02 . . Guiding arrangements for hand tools
71/00 Filing or rasping tools; Securing arrangements therefor (tool holders for machine tools B23Q 3/00; handles for hand implements B25G)
71/005 . . [Rotary files]
71/02 . . for filing or rasping machines or devices
71/025 . . . (for rubber-like material)
71/04 . . Hand files or hand rasps (carrying or attaching means for tools which are connected to a carrier at both ends B23D 51/12; guiding arrangements B23D 69/02)
71/06 . . using a single interchangeable blade
71/08 . . using a plurality of interchangeable cutting elements
71/10 . . Accessories for filing or rasping tools, e.g. for preventing scoring of workpieces by the edges of the tool

73/00 Making files or rasps
73/02 . . Preliminary treatment of blanks, e.g. grinding, polishing, specially adapted for the manufacture of files or rasps
73/04 . . Methods or machines for the manufacture of files or rasps (non-mechanical methods, see the relevant classes)
73/06 . . Cutting the working surfaces by means of chisels
73/08 . . Milling, planing, slotting, knurling, or broaching the working surfaces
73/10 . . Grinding the working surfaces
73/12 . . Peculiar procedures for sharpening or otherwise treating the working surfaces (special treatment by sand-blast B24C 1/02; sharpening files by etching C23F 1/06)
73/14 . . Tools or accessories specially adapted for making files or rasps, e.g. chisels, supporting-frames

Reaming bored holes
75/00 Reaming machines or reaming devices (tool holders for machine tools B23Q 3/00; handles for hand implements B25G)
75/005 . . (Hand-held or hand-operated reaming devices)
77/00 Reaming tools
77/003 . . with means for preventing chatter
77/006 . . with means for lubricating or cooling
77/002 . . Reamers with inserted cutting edges
77/025 . . . [Securing arrangements for cutting inserts]
77/04 . . . with cutting edges adjustable to different diameters along the whole cutting length
77/042 . . . . (by means of oblique planes)
77/044 . . . . (by means of screws)
77/046 . . . . (by means of radial cams)
77/048 . . . . (by means of conical screw threads)
77/06 . . Reaming with means for compensating wear (B23D 77/04 takes precedence)
77/08 . . . by spreading slotted parts of the tool body
77/10 . . . by expanding a tube-like non-slotted part of the tool body
77/12 . . Reamers with cutting edges arranged in tapered form
77/14 . . Reamers for special use, e.g. for working cylinder ridges

79/00 Methods, machines, or devices not covered elsewhere, for working metal by removal of material (by combined operations B23D 81/00; cutting by electron-beam B23K 15/00; by laser beam B23K 26/00; by electro-erosion B23H; tool holders for machine tools B23Q 3/00; handles for hand implements B25G)
79/005 . . (for thermal deburring (B23D 79/025 takes precedence))
79/02 . . Machines or devices for scraping (turning-machines for beveling, chamfering, or deburring the ends of bars or tubes B23B 5/16)
79/021 . . . (for removing welding, brazing or soldering burrs, e.g. flash, on pipes or rods)
79/023 . . . . [internally]
79/025 . . . . . [including other than cutting means, e.g. hot gas]
79/026 . . . . (for removing welding flashes on rails)
79/028 . . . (for removing welding flashes on chain links)
79/04 . . . with rotating cutting-tool, e.g. for smoothing linings of bearings
79/06 . . . with reciprocating cutting-tool
79/08 . . . Hand scraping-implements
79/10 . . . Accessories for holding scraping tools or work to be scraped
79/12 . . Machines or devices for peeling bars or tubes making use of cutting bits arranged around the workpiece, otherwise than by turning (by turning B23B 5/12)

81/00 Methods, machines, or devices for working metal, covered by more than one main group in this subclass (in combination with other metal-working operations B23P 13/00, B23D 23/00)
Chip collectors

Means for breaking chips

Materials of the tool or the intended workpiece, methods of applying these materials

2277/2407 . Applied by chemical vapour deposition [CVD] processes (coating by chemical vapour deposition in general C23C 16/00)

2277/2414 . Applied by physical vapour deposition [PVD] processes (coating by physical vapour deposition in general C23C 14/00)

2277/2421 . Aluminium
2277/2428 . Ceramics, e.g. aluminium oxide or silicone nitride
2277/2435 . Cubic boron nitride [CBN]
2277/2442 . Diamond
2277/245 . polycrystalline [PCD]
2277/2457 . Elastomers, e.g. rubber
2277/2464 . Hard metal, i.e. cemented carbide
2277/2471 . Steel
2277/2478 . high speed steel
2277/2485 . Titanium nitride
2277/2492 . Titanium carbide
2277/26 . Means for breaking chips
2277/28 . Chip collectors

2277/30 . Chip guiding means
2277/32 . Details of the region preceding the axial cutting edge in the direction of feed
2277/34 . comprising cutting inserts made from different materials
2277/36 . with the diameter of the tool decreasing in the direction of the shank from the cutting tip
2277/38 . comprising eccentrics
2277/40 . configured to ream an external surface
2277/42 . comprising floating cutting heads
2277/44 . comprising chip grooves, i.e. flutes, of special form
2277/46 . Guiding pads
2277/48 . Guiding rollers
2277/50 . configured as a hand tool
2277/52 . Details of helices, e.g. helix angles or helices of special form
2277/54 . comprising cutting inserts inclined in the axial plane
2277/56 . comprising an indication scale
2277/58 . Keys, e.g. spanners or allen keys, for assembling or disassembling the reaming tool
2277/60 . comprising means for lubrication or cooling
2277/62 . Margins, i.e. the area on the circumference of the tool immediately behind the axial cutting edge
2277/64 . Markings, letters or numbers
2277/66 . Measurement of the tool or bore
2277/68 . Pilots
2277/70 . Polygonal sections, e.g. for torque transmission between parts able to be uncoupled
2277/72 . comprising a body having a special profile, i.e. having a special cross section
2277/74 . comprising serrations
2277/76 . Shims
2277/78 . for use with holes associated with spark plugs or glow plugs
2277/80 . comprising a spring
2277/82 . for producing a stepped bore
2277/84 . with tangentially mounted cutting inserts
2277/86 . comprising a thread