

**CPC****COOPERATIVE PATENT CLASSIFICATION****B24B****MACHINES, DEVICES, OR PROCESSES FOR GRINDING OR**

**POLISHING** ( grinding of gear teeth [B23F](#), of screw-threads [B23G 1/36](#); by electro-erosion [B23H](#); abrasive or related blasting [B24C](#); tools for grinding, buffing or sharpening [B24D](#); polishing compositions [C09G 1/00](#); abrasives [C09K 3/14](#); electrolytic etching or polishing [C25F 3/00](#); grinding arrangements for use on assembled railway tracks [E01B 31/17](#) ); **DRESSING OR CONDITIONING OF ABRADING SURFACES; FEEDING OF GRINDING, POLISHING, OR LAPPING AGENTS**

**NOTE**

In this subclass, the following term is used with the meaning indicated:  
 "polishing" means the smoothing of a surface, i.e. a surface improvement but no improvement of the dimensional accuracy as would occur in a "grinding" operation.

Attention is drawn to Notes (1) and (2) following the title of subclass [B23F](#).

In groups [B24B 1/00](#) to [B24B 27/00](#), in connection with glass the terms "grinding" and "polishing" are treated as being equivalent.

**B24B 1/00**

**Processes of grinding or polishing; Use of auxiliary equipment in connection with such processes** ( processes characterised by the use of special machines or devices, see the relevant places for those machines or devices )

[B24B 1/002](#)

- { using electric current ( [B24B 37/046](#) and [B23H 5/08](#) take precedence ) }

[B24B 1/005](#)

- { using a magnetic polishing agent }

[B24B 1/007](#)

- { abrasive treatment to obtain an aged or worn-out appearance }

[B24B 1/04](#)

- subjecting the grinding or polishing tools, the abrading or polishing medium or work to vibration, e.g. grinding with ultrasonic frequency ( polishing or abrading surfaces on work by means of tumbling apparatus [B24B 31/00](#), involving oscillating or vibrating containers [B24B 31/06](#); superfinishing surfaces on work, e.g. by means of abrading blocks reciprocating with high frequency, [B24B 35/00](#) )

**B24B 3/00**

**Sharpening cutting edges, e.g. of tools; Accessories therefor, e.g. for holding the tools** ( non-abrasive sharpening devices for scythes, sickles, or the like [A01D 3/00](#); sharpening devices designed as components of machines with cutters, see the relevant places for the machines, e.g. [A01D 75/08](#), { [B23F 23/1225](#), } [B26D 7/12](#); sharpening of saw teeth [B23D 63/12](#); sharpening of files or rasps [B23D 73/00](#); grinding of die-stocks or chasers [B23G 1/36](#) )

[B24B 3/003](#)

- { for skate blades }

[B24B 3/006](#)

- { for edges of skis, snowboards or the like }

[B24B 3/02](#)

- of milling cutters

- B24B 3/021 .. { of milling cutters with helical cutting edges }
- B24B 3/022 .. { relief grinding of milling cutters }
- B24B 3/024 .. { Indexing equipment }
- B24B 3/025 .. { Tooth rests; Supporting means for milling-cutter grinding machines }
- B24B 3/027 .. { of milling cutters with embedded cutters }
- B24B 3/028 .. { of tapered milling cutters }
- B24B 3/04 .. of plain milling cutters
- B24B 3/045 ... { of milling cutters with helical cutting edges }
- B24B 3/06 .. of face or end milling cutters or cutter heads, e.g. of shank type
- B24B 3/065 ... { end milling cutters with rounded ends }
- B24B 3/08 .. of profile milling cutters, e.g. of disc type
- B24B 3/085 ... { using a template }
- B24B 3/10 .. of routers or engraving needles
- B24B 3/12 .. of hobs
- B24B 3/14 .. of mortise chain cutters
  
- B24B 3/16 . of broaches
  
- B24B 3/18 . of taps or reamers
- B24B 3/20 .. Tapering or chamfering taps or reamers
- B24B 3/22 .. Relief cutting of taps or reamers
  
- B24B 3/24 . of drills ( [by fluting the shank B24B 19/04](#) )
- B24B 3/242 .. { of step drills }
- B24B 3/245 .. { for simultaneously sharpening several drills; Supports therefor }
- B24B 3/247 .. { Supports for drills ( [B24B 3/245 takes precedence](#) ) }
- B24B 3/26 .. of the point of twist drills
- B24B 3/265 ... { using devices specially adapted for domestic use }
- B24B 3/28 ... by swivelling the drill around an axis angularly to the drill axis
- B24B 3/30 .... and rotating the drill about its own axis
- B24B 3/32 ... for thinning the point
- B24B 3/33 .. of drills for stone
  
- B24B 3/34 . of turning or planing tools or tool bits, e.g. gear cutters ( [B24B 3/36 takes precedence](#) )
- B24B 3/343 .. { of throw-away cutting bits }
- B24B 3/346 .. { of gear shaper cutter }
  
- B24B 3/36 . of cutting blades ( [B24B 3/58 takes precedence](#) )
- B24B 3/361 .. { of reciprocating blades }
- B24B 3/363 .. { of blades mounted on a turning drum }
- B24B 3/365 .. { of rotary mower blades }
- B24B 3/366 .. { of meat mincing or meat grinding machines }
- B24B 3/368 .. { installed as an accessory on another machine ( [B26D 7/12 takes precedence](#) ) }
- B24B 3/38 .. for planing wood, e.g. cutter blades

- B24B 3/40 . . Processes or apparatus specially adapted for sharpening curved edges
- B24B 3/42 . . helically bent, e.g. for lawn mowers
- B24B 3/44 . . of scythes or sickles
- B24B 3/46 . . of disc blades
- B24B 3/463 . . . { of slicing machine disc blades }
- B24B 3/466 . . . { of cultivator disc blades }
- B24B 3/48 . . of razor blades or razors ( by an abrasive block without mechanisms [B24D](#) )
- B24B 3/485 . . . { for travelling razor blades, in the form of a band or fitted on a transfer means }
- B24B 3/50 . . . operated manually
- B24B 3/52 . . of shear blades or scissors
- B24B 3/54 . . of hand or table knives
- B24B 3/543 . . . { using hand or foot driven tools }
- B24B 3/546 . . . { the tool being driven in a non-rotary motion, e.g. oscillatory, gyratory }
  
- B24B 3/55 . of knife bars for harvesting machines
  
- B24B 3/56 . of slicing bands ( [B24B 3/58](#) takes precedence )
  
- B24B 3/58 . of tools having scalloped cutting edges
- B24B 3/583 . . { of bands }
- B24B 3/586 . . { of serrated edges, e.g. triangular shaped ( [B24B 3/583](#) takes precedence ) }
  
- B24B 3/60 . of tools not covered by the preceding subgroups
- B24B 3/602 . . { of thread cutting tools }
- B24B 3/605 . . { of surgical or dental instruments }
- B24B 3/607 . . { of files }

**Guidance heading: Grinding surfaces of particular forms**

**B24B 5/00** **Machines or devices designed for grinding surfaces of revolution on work, including those which also grind adjacent plane surfaces; Accessories therefor** ( [B24B 11/00](#) to [B24B 21/00](#) take precedence; honing machines or devices using abrading blocks performing axial and rotary movements superimposed on one another [B24B 33/00](#) )

- B24B 5/01 . for combined grinding of surfaces of revolution and of adjacent plane surfaces on work
  
- B24B 5/02 . involving centres or chucks for holding work
- B24B 5/025 . . { involving indexable work supporting means carrying several work pieces to be operated on in succession }
- B24B 5/04 . . for grinding cylindrical surfaces externally ( grinding combined cylindrical and conical surfaces [B24B 5/14](#) )
- B24B 5/042 . . . { for grinding several workpieces at once using one grinding wheel }
- B24B 5/045 . . . { with the grinding wheel axis perpendicular to the workpiece axis }
- B24B 5/047 . . . { of workpieces turning about a vertical axis }
- B24B 5/06 . . for grinding cylindrical surfaces internally ( [B24B 5/40](#) takes precedence )

- B24B 5/065 . . . { for brake drums }
- B24B 5/08 . . . involving a vertical tool spindle
- B24B 5/10 . . . involving a horizontal tool spindle
- B24B 5/12 . . for grinding cylindrical surfaces both externally and internally with several grinding wheels
- B24B 5/14 . . for grinding conical surfaces, e.g. of centres
- B24B 5/16 . . for grinding peculiarly surfaces, e.g. bulged
- B24B 5/162 . . . { controlled by a template ( [B24B 5/167](#) takes precedence ) }
- B24B 5/165 . . . { controlled by gearing ( [B24B 5/167](#) takes precedence ) }
- B24B 5/167 . . . { for rolls with large curvature radius, e.g. mill rolls }
  
- B24B 5/18 . involving centreless means for supporting, guiding, floating or rotating work ( [centreless turning B23B 5/08](#); [centreless grinding of threads B23G 1/42](#) )
- B24B 5/185 . . { for internal surfaces }
- B24B 5/20 . . involving grooved abrading blocks
- B24B 5/22 . . for grinding cylindrical surfaces, e.g. on bolts
- B24B 5/225 . . . { for mass articles }
- B24B 5/24 . . for grinding conical surfaces
- B24B 5/245 . . . { for mass articles }
- B24B 5/26 . . for grinding peculiarly profiled surfaces, e.g. bulged
- B24B 5/28 . . for grinding outer surfaces concentrically to bores, involving additional centering means
- B24B 5/30 . . Regulating-wheels; Equipment therefor
- B24B 5/307 . . Means for supporting work
  
- B24B 5/313 . involving work-supporting means carrying several workpieces to be operated on in succession
- B24B 5/32 . . the work-supporting means being indexable
  
- B24B 5/35 . Accessories
- B24B 5/355 . . { Feeding means }
  
- B24B 5/36 . Single-purpose machines or devices
- B24B 5/363 . . { for grinding surfaces of revolution in situ }
- B24B 5/366 . . { for grinding tyres }
- B24B 5/37 . . for grinding rolls, e.g. barrel-shaped rolls
- B24B 5/38 . . for externally grinding travelling elongated stock, e.g. wire
- B24B 5/40 . . for grinding tubes internally
- B24B 5/42 . . for grinding crankshafts or crankpins
- B24B 5/421 . . . { Supports therefor }
- B24B 5/423 . . . { having a grinding wheel turning around the workpiece }
- B24B 5/425 . . . { in situ }
- B24B 5/426 . . . { Portable devices therefor }
- B24B 5/428 . . . { Balancing means }
- B24B 5/44 . . for grinding rims of vehicle wheels, e.g. for bicycles

- B24B 5/46 . . . for grinding railway car wheels
- B24B 5/48 . . . for grinding walls of very fine holes, e.g. in drawing-dies
- B24B 5/485 . . . { using grinding wires or ropes }
- B24B 5/50 . characterised by a special design with respect to properties of the material of non-metallic articles to be ground, e.g. strings ( [cutting profiles into the treads of tyres B29D 30/68](#) )
- B24B 7/00** **Machines or devices designed for grinding plane surfaces on work, including polishing plane glass surfaces; Accessories therefor** ( [B24B 21/00](#) takes precedence; honing of plane surfaces on work [B24B 33/055](#) )
- B24B 7/005 . { [Portal grinding machines](#) }
- B24B 7/02 . involving a reciprocatingly-moved work-table ( [involving a reciprocatingly-moved grinding wheel in combination with a stationary work-table B24B 7/07](#) )
- B24B 7/04 . involving a rotary work-table
- B24B 7/06 . involving conveyer belts, a sequence of travelling work-tables or the like
- B24B 7/07 . involving a stationary work-table
- B24B 7/075 . . { [using a reciprocating grinding head mounted on a movable carriage](#) }
- B24B 7/08 . . having an abrasive wheel built in
- B24B 7/10 . Single-purpose machines or devices ( [grinding tools or machines specially designed for use on assembled railway track E01B 31/17](#) )
- B24B 7/12 . . for grinding travelling elongated stock, e.g. strip-shaped work
- B24B 7/13 . . . grinding while stock moves from coil to coil
- B24B 7/14 . . for grinding slideways ( [portable grinding machines designed for fastening on workpieces B24B 23/08](#) )
- B24B 7/16 . . for grinding end-faces, e.g. of gauges, rollers, nuts, piston rings ( [for combined grinding of surfaces of revolution and adjacent plane surfaces on work B24B 5/01](#); [for grinding edges of bevels on work B24B 9/00](#) )
- B24B 7/162 . . . { [for mass articles](#) }
- B24B 7/165 . . . { [end faces of piston rings](#) }
- B24B 7/167 . . . { [end faces coil springs](#) }
- B24B 7/17 . . . for simultaneously grinding opposite and parallel end faces, e.g. double disc grinders
- B24B 7/18 . . for grinding floorings, walls, ceilings or the like ( [machines or devices for cleaning floorings A47L 11/00](#), [A47L 13/00](#) )
- B24B 7/182 . . . { [for walls and ceilings](#) }
- B24B 7/184 . . . . { [pole sanders](#) }
- B24B 7/186 . . . { [with disc-type tools](#) }
- B24B 7/188 . . . { [with cylinder- or belt-type tools](#) }
- B24B 7/19 . . for grinding plane decorative patterns
- B24B 7/20 . characterised by a special design with respect to properties of the material of non-metallic articles to be ground

B24B 7/22	..	for grinding inorganic material, e.g. stone, ceramics, porcelain
B24B 7/222	...	{ for grinding vertical surfaces ( <a href="#">B24B 7/265</a> takes precedence ) }
B24B 7/224	...	{ Portal grinding machines; Machines having a tool movable in a plane }
B24B 7/226	...	{ in which the tool is supported by the workpiece }
B24B 7/228	...	{ for grinding thin, brittle parts, e.g. semiconductors, wafers ( grinding edges of thin, brittle parts <a href="#">B24B 9/065</a> ) }
B24B 7/24	...	for grinding or polishing glass
B24B 7/241	....	{ Methods }
B24B 7/242	....	{ for plate glass }
B24B 7/244	.....	{ continuous }
B24B 7/245	.....	{ discontinuous }
B24B 7/247	....	{ using reciprocating grinding tools }
B24B 7/248	.....	{ high-frequency reciprocating tools, e.g. magnetically driven }
B24B 7/26	....	for simultaneously grinding or polishing opposite faces of continuously travelling sheets or bands
B24B 7/265	.....	{ of vertical surfaces }
B24B 7/28	..	for grinding wood
B24B 7/30	..	for grinding plastics
<b>B24B 9/00</b>		<b>Machines or devices designed for grinding edges or bevels on work or for removing burrs; Accessories therefor ( <a href="#">B24B 21/00</a> takes precedence ; for sharpening cutting edges on tools <a href="#">B24B 3/00</a>; removing burrs by loose abrasive material <a href="#">B24B 31/00</a> )</b>
B24B 9/002	.	{ for travelling workpieces }
B24B 9/005	.	{ for mass articles }
B24B 9/007	.	{ for end faces of tubes ( cleaning pipe ends or pipe fittings, e.g. before soldering <a href="#">B08B 9/021</a> ) }
B24B 9/02	.	characterised by a special design with respect to properties of materials specific to articles to be ground
B24B 9/04	..	of metal, e.g. skate blades {( <a href="#">B24B 3/003</a> takes precedence ) }
B24B 9/06	..	of non-metallic inorganic material, e.g. stone, ceramics, porcelain
B24B 9/065	...	{ of thin, brittle parts, e.g. semiconductors, wafers }
B24B 9/08	...	of glass
B24B 9/085	....	{ for watch glasses }
B24B 9/10	....	of plate glass
B24B 9/102	.....	{ for travelling sheets }
B24B 9/105	.....	{ using a template }
B24B 9/107	.....	{ for glass plates while they are turning }
B24B 9/12	....	of hollow glassware, e.g. drinking glasses, preserve jars, television picture tube viewing panels
B24B 9/14	....	of optical work, e.g. lenses, prisms {( control of the position of the tool for bevelling optical work <a href="#">B24B 47/225</a> ) }

B24B 9/142	.....	{ for contact lenses }
B24B 9/144	.....	{ the spectacles being used as a template }
B24B 9/146	.....	{ Accessories, e.g. lens mounting devices }
B24B 9/148	.....	{ electrically, e.g. numerically, controlled }
B24B 9/16	...	of diamonds; of jewels or the like; Diamond grinders` dops; Dop holders or tongs ( for grinding sharp pointed diamonds or sapphires <a href="#">B24B 19/16</a> )
B24B 9/161	....	{ Dops, dop holders }
B24B 9/162	....	{ by bruting, i.e. rubbing two precious stones against each other }
B24B 9/163	....	{ of gem stones or convex surfaces, cabochons }
B24B 9/164	....	{ of diamond tools }
B24B 9/165	....	{ for grinding cavities in gem stones }
B24B 9/166	....	{ using heat }
B24B 9/167	....	{ with means for turning and positioning the gem stones }
B24B 9/168	....	{ grinding peripheral, e.g. conical or cylindrical, surfaces }
B24B 9/169	.....	{ using templates }
B24B 9/18	..	of wood
B24B 9/20	..	of plastics
<b>B24B 11/00</b>		<b>Machines or devices designed for grinding spherical surfaces or parts of spherical surfaces on work; Accessories therefor</b> ( <a href="#">specially designed for optical surfaces B24B 13/00</a> , for seat surfaces <a href="#">B24B 15/00</a> )
B24B 11/02	.	for grinding balls
B24B 11/04	..	involving grinding wheels
B24B 11/06	...	acting by the front faces, e.g. of plane, grooved or bevelled shape
B24B 11/08	...	acting by the circumference
B24B 11/10	...	of cup type
<b>B24B 13/00</b>		<b>Machines or devices designed for grinding or polishing optical surfaces on lenses or surfaces of similar shape on other work; Accessories therefor</b> ( <a href="#">edging optical work, e.g. lenses, prisms B24B 9/14</a> )
B24B 13/0006	.	{ for intraocular lenses }
B24B 13/0012	.	{ for multifocal lenses }
B24B 13/0018	.	{ for plane optical surfaces }
B24B 13/0025	.	{ for contact lenses }
B24B 13/0031	.	{ Machines having several working posts; Feeding and manipulating devices }
B24B 13/0037	..	{ the lenses being worked by different tools, e.g. for rough-grinding, fine-grinding, polishing }
B24B 13/0043	.	{ the workpieces being deformed during the grinding operation }
B24B 13/005	.	Blocking means, chucks or the like; Alignment devices

- B24B 13/0052 . . { Lens block moulding devices }
- B24B 13/0055 . . { Positioning of lenses; Marking of lenses }
- B24B 13/0057 . . { Deblocking of lenses }
  
- B24B 13/01 . Specific tools, e.g. bowl-like; Production, dressing or fastening of these tools
- B24B 13/012 . . { conformable in shape to the optical surface, e.g. by fluid pressure acting on an elastic membrane }
  
- B24B 13/015 . of television picture tube viewing panels, headlight reflectors or the like
  
- B24B 13/02 . by means of tools with abrading surfaces corresponding in shape with the lenses to be made
- B24B 13/023 . . { for grinding several lenses simultaneously }
- B24B 13/026 . . { the contact between tool and workpiece being a line }
  
- B24B 13/04 . grinding of lenses involving grinding wheels controlled by gearing ( [B24B 13/06](#) takes precedence )
- B24B 13/043 . . { using cup-type grinding wheels }
- B24B 13/046 . . { using a pointed tool or scraper-like tool ( [B24B 13/015](#) and [B24B 13/065](#) take precedence ) }
  
- B24B 13/06 . grinding of lenses, the tool or work being controlled by information-carrying means, e.g. patterns, punched tapes, magnetic tapes
- B24B 13/065 . . { using a template }
  
- B24B 15/00** **Machines or devices designed for grinding seat surfaces; Accessories therefor ( for spherical surfaces in general [B24B 11/00](#) )**
  
- B24B 15/02 . in valve housings
- B24B 15/03 . . using portable or mobile machines
  
- B24B 15/04 . on valve members
  
- B24B 15/06 . on openings of bottles; on bottle stoppers or the like
  
- B24B 15/08 . for grinding co-operating seat surfaces by moving one over the other
  
- B24B 17/00** **Special adaptations of machines or devices for grinding controlled by patterns, drawings, magnetic tapes or the like ( machines or devices so-controlled for grinding the edges of lenses [B24B 9/14](#); for grinding or polishing optical lens surfaces [B24B 13/06](#); for grinding non-circular cross-sections [B24B 19/08](#); for grinding trochoidal surfaces [B24B 19/09](#); for grinding cams [B24B 19/12](#); for grinding turbine blades or the like [B24B 19/14](#); such control means per se [B23Q 33/00](#), [B23Q 35/00](#), [G05](#) ); Accessories therefor**
  
- B24B 17/02 . involving mechanical transmission means only
- B24B 17/021 . . { using a pantograph }
- B24B 17/023 . . { using two or more templates }
- B24B 17/025 . . { for grinding rotating workpieces ( three dimensional ) }



B24B 17/026	. . . { for the periphery of plane workpieces, e.g. cams, lenses }
B24B 17/028	. . { using an abrasive belt }
B24B 17/04	. involving optical auxiliary means, e.g. optical projection form grinding machines
B24B 17/06	. . combined with electrical transmission means, e.g. controlled by photoelectric cells
B24B 17/08	. involving fluid transmission means only
B24B 17/10	. involving electrical transmission means only, e.g. controlled by magnetic tape
<b>B24B 19/00</b>	<b>Single-purpose machines or devices for particular grinding operations not covered by any other main group ( tapering, chamfering, or relief cutting of taps or reamers <a href="#">B24B 3/20</a>, <a href="#">B24B 3/22</a>, grinding screw threads <a href="#">B23G</a> )</b>
B24B 19/001	. { for table cutlery }
B24B 19/002	. . { for knife blades ( sharpening table knife blades <a href="#">B24B 3/54</a> ) }
B24B 19/003	. { for the underframes of locomotives }
B24B 19/004	. { for grinding rails, T, I, H or other similar profiles }
B24B 19/005	. { for grinding skins or similar sheets }
B24B 19/006	. { for grinding hollow glassware, bottles }
B24B 19/007	. { for grinding buttons, nail heads, screw heads, bottle capsules or the like }
B24B 19/008	. { for grinding ceramics, pottery, table ware }
B24B 19/009	. { for grinding profiled workpieces using a profiled grinding tool }
B24B 19/02	. for grinding grooves, e.g. on shafts, in casings, in tubes, homokinetic joint elements
B24B 19/022	. . { for helicoidal grooves ( <a href="#">B24B 19/04</a> takes precedence ) }
B24B 19/024	. . . { on electrical resistances }
B24B 19/026	. . { for checks for pilger rolls }
B24B 19/028	. . { for microgrooves or oil spots }
B24B 19/03	. . for grinding grooves in glass workpieces, e.g. decorative grooves
B24B 19/04	. . for fluting drill shanks
B24B 19/06	. . for grinding races, e.g. roller races
B24B 19/08	. for grinding non-circular cross-sections, e.g. shafts of elliptical or polygonal cross-section
B24B 19/09	. . for grinding trochoidal surfaces, e.g. in rotor housings of Wankel engines
B24B 19/095	. . . { using templates }
B24B 19/10	. . for grinding pistons
B24B 19/11	. . for grinding the circumferential surface of rings, e.g. piston rings ( grinding end faces <a href="#">B24B 7/16</a> , <a href="#">B24B 7/17</a> )
B24B 19/12	. . for grinding cams or camshafts

- B24B 19/125 . . . { electrically controlled, e.g. numerically controlled }
- B24B 19/14 . for grinding turbine blades, propeller blades or the like ( using grinding belts [B24B 21/16](#) )
- B24B 19/16 . for grinding sharp-pointed workpieces, e.g. needles, pens, fish hooks, tweezers or record player styli ( grinding bevels on diamonds or sapphires [B24B 9/16](#); polishing of needles [B24B 29/08](#) )
- B24B 19/165 . . { Phonograph needles and the like }
- B24B 19/18 . . for grinding carding equipment, e.g. card-clothings ( devices for sharpening card-clothings built in or attachable to carding machines [D01G](#) )
- B24B 19/20 . for grinding dies ( for grinding walls of very fine holes [B24B 5/48](#) )
- B24B 19/22 . characterised by a special design with respect to properties of the material of non-metallic articles to be ground
- B24B 19/223 . . { of paper or similar sheet material, e.g. perforating, cutting by means of a grinding wheel }
- B24B 19/226 . . { of the ends of optical fibres }
- B24B 19/24 . . of wood, e.g. furniture
- B24B 19/26 . for grinding workpieces with arcuate surfaces, e.g. parts of car bodies, bumpers or magnetic recording heads ( grinding of spherical surfaces in general [B24B 11/00](#), of optical surfaces on lenses or surfaces of similar shape on other work [B24B 13/00](#) )
- B24B 19/265 . . { for bumpers }
- B24B 19/28 . . for grinding shoes or linings of drum brakes ( of brake drum hubs [B24B 5/06](#), of brake discs [B24B 7/17](#) )
- B24B 21/00** **Machines or devices using grinding or polishing belts ( for sharpening cutting edges of tools [B24B 3/00](#); portable belt-grinding machines [B24B 23/06](#) ); Accessories therefor**
- B24B 21/002 . { for grinding edges or bevels }
- B24B 21/004 . { using abrasive rolled strips }
- B24B 21/006 . { for special purposes, e.g. for television tubes, car bumpers }
- B24B 21/008 . { Machines comprising two or more tools or having several working posts ( [B24B 21/006](#) takes precedence ) }
- B24B 21/02 . for grinding rotationally symmetrical surfaces
- B24B 21/025 . . { for travelling elongated stock, e.g. wire }
- B24B 21/04 . for grinding plane surfaces
- B24B 21/06 . . involving members with limited contact area pressing the belt against the work, e.g. shoes sweeping across the whole area to be ground ( [B24B 21/12](#) takes precedence )
- B24B 21/08 . . . Pressure shoes; { Pressure members, e.g. } backing belts
- B24B 21/10 . . involving a rigid member, e.g. pressure bar, table, pressing or supporting the belt over substantially its whole span

B24B 21/12	..	involving a contact wheel or roller pressing the belt against the work
B24B 21/14	...	Contact wheels; Contact rollers; Belt supporting rolls
B24B 21/16	.	for grinding other surfaces of particular shape ( <a href="#">single purpose machines for grinding cams or camshafts B24B 19/12</a> )
B24B 21/165	..	{ <a href="#">for vanes or blades of turbines, propellers, impellers, compressors and the like</a> }
B24B 21/18	.	Accessories
B24B 21/20	..	for controlling or adjusting the tracking or the tension of the grinding belt
B24B 21/22	..	for producing a reciprocation of the grinding belt normal to its direction of movement
<b>B24B 23/00</b>		<b>Portable grinding machines, e.g. hand-guided; Accessories therefor</b> ( <a href="#">B24B 7/18</a> takes precedence; for grinding seat surfaces <a href="#">B24B 15/00</a> ; having a flexible shaft <a href="#">B24B 27/027</a> ; grinders for cutting-off <a href="#">B24B 27/08</a> ; dust extraction equipment <a href="#">B24B 55/10</a> ; details or components, e.g. casings, bodies of portable power-driven tools not particularly related to the operation performed <a href="#">B25F 5/00</a> )
B24B 23/005	.	{ <a href="#">Auxiliary devices used in connection with portable grinding machines, e.g. holders</a> }
B24B 23/02	.	with rotating grinding tools; Accessories therefor
B24B 23/022	..	{ <a href="#">Spindle-locking devices, e.g. for mounting or removing the tool</a> }
B24B 23/024	..	{ <a href="#">driven by hands or feet</a> }
B24B 23/026	..	{ <a href="#">Fluid driven</a> }
B24B 23/028	..	{ <a href="#">Angle tools</a> }
B24B 23/03	..	the tool being driven in a combined movement
B24B 23/04	.	with oscillating grinding tools; Accessories therefor
B24B 23/043	..	{ <a href="#">reciprocatingly driven by a pneumatic or hydraulic piston</a> }
B24B 23/046	..	{ <a href="#">Clamping or tensioning means for abrasive sheets</a> }
B24B 23/06	.	with abrasive belts, e.g. with endless travelling belts; Accessories therefor
B24B 23/08	.	Portable grinding machines designed for fastening on work-pieces or other parts of particular section, e.g. for grinding commutators
<b>B24B 25/00</b>		<b>Grinding machines of universal type</b>
<b>B24B 27/00</b>		<b>Other grinding machines or devices</b>
B24B 27/0007	.	{ <a href="#">Movable machines</a> }
B24B 27/0015	.	{ <a href="#">Hanging grinding machines</a> }
B24B 27/0023	.	{ <a href="#">grinding machines with a plurality of working posts</a> }
B24B 27/003	.	{ <a href="#">using a tool turning around the work-piece</a> }
B24B 27/0038	.	{ <a href="#">with the grinding tool mounted at the end of a set of bars</a> }

- B24B 27/0046 . { Column grinding machines }
- B24B 27/0053 . { Radial grinding machines }
- B24B 27/0061 . { having several tools on a revolving tools box }
- B24B 27/0069 . { with means for feeding the work-pieces to the grinding tool, e.g. turntables, transfer means ( see also [B24B 27/0023](#), [B24B 7/16](#) ) }
- B24B 27/0076 . { grinding machines comprising two or more grinding tools }
- B24B 27/0084 . { the grinding wheel support being angularly adjustable }
- B24B 27/0092 . { Grinding attachments for lathes or the like }
- B24B 27/02 . Bench grinders
- B24B 27/027 . having a flexible shaft
- B24B 27/033 . for grinding a surface for cleaning purposes, e.g. for descaling or for grinding off flaws in the surface
- B24B 27/04 . . Grinding machines or devices in which the grinding tool is supported on a swinging arm
- B24B 27/06 . Grinders for cutting-off
- B24B 27/0608 . . { using a saw movable on slideways }
- B24B 27/0616 . . { using a tool turning around the workpiece }
- B24B 27/0625 . . { whereby the workpieces are radially fed by means of a turning drum }
- B24B 27/0633 . . { using a cutting wire }
- B24B 27/0641 . . { for grinding holes }
- B24B 27/065 . . { the saw being mounted on a pivoting arm }
- B24B 27/0658 . . { for cutting workpieces while they are turning about their longitudinal axis }
- B24B 27/0666 . . { the saw blade being arranged underneath a work-table }
- B24B 27/0675 . . { methods therefor }
- B24B 27/0683 . . { Accessories therefor }
- B24B 27/0691 . . . { for controlling the feeding or return movement of the saw }
- B24B 27/08 . . being portable
- B24B 27/085 . . . { Stands therefor }

**Guidance heading:** **Polishing surfaces** ( machines or devices for grinding or polishing glass [B24B 7/24](#), [B24B 9/00](#), [B24B 13/00](#); for grinding or polishing using belts [B24B 21/00](#) ); **Finishing surfaces** ( [B24B 3/00](#) takes precedence )

**B24B 29/00** **Machines or devices for polishing surfaces on work by means of tools made of soft or flexible material with or without the application of solid or liquid polishing agents** ( [polishing tools in general B24D 13/00](#) )

- B24B 29/005 . { using brushes }

- B24B 29/02 . designed for particular workpieces
- B24B 29/04 . . for rotationally symmetrical workpieces, e.g. ball-, cylinder- or cone-shaped workpieces
- B24B 29/06 . . for elongated workpieces having uniform cross-section in one main direction
- B24B 29/08 . . . the cross-section being circular, e.g. tubes, wires, needles
- B24B 29/10 . . for table cutlery
  
- B24B 31/00** **Machines or devices designed for polishing or abrading surfaces on work by means of tumbling apparatus or other apparatus in which the work and/or the abrasive material is loose; Accessories therefor ( [abrasive blasting machines](#) [B24C 3/26](#) )**
  
- B24B 31/003 . { whereby the workpieces are mounted on a holder and are immersed in the abrasive material }
- B24B 31/006 . { for grinding the interior surfaces of hollow workpieces }
- B24B 31/02 . involving rotary barrels
- B24B 31/0206 . . { for descaling wires travelling through the rotating drum }
- B24B 31/0212 . . { the barrels being submitted to a composite rotary movement }
- B24B 31/0218 . . . { the barrels are moving around two parallel axes, e.g. gyratory, planetary movement ( [B24B 31/033](#) takes precedence ) }
- B24B 31/0224 . . { the workpieces being fitted on a support }
- B24B 31/023 . . with tiltable axis
- B24B 31/027 . . with additional oscillating movement
- B24B 31/03 . . the workpieces being continuously-travelling
- B24B 31/033 . . having several rotating or tumbling drums with parallel axes
- B24B 31/037 . . having several rotating or tumbling drums with non-parallel axes {( [B24B 31/0212](#), [B24B 31/0218](#) take precedence ) }
  
- B24B 31/05 . involving a container formed as a conveyer belt
  
- B24B 31/06 . involving oscillating or vibrating containers
- B24B 31/062 . . { the workpieces travelling through the containers ( [B24B 31/067](#), [B24B 31/073](#) take precedence ) }
- B24B 31/064 . . { the workpieces being fitted on a support }
- B24B 31/067 . . involving a bowl formed as a straight through
- B24B 31/073 . . involving a bowl being ring- or spiral-shaped
  
- B24B 31/10 . involving other means for tumbling of work
- B24B 31/102 . . { using an alternating magnetic field }
- B24B 31/104 . . involving a rotating bowl, in which a ring zone of abrasive powder is formed by centrifugal force
- B24B 31/108 . . involving a sectioned bowl, one part of which, e.g. its wall, is stationary and the other part of which is moved, e.g. rotated
- B24B 31/112 . . using magnetically consolidated grinding powder, moved relatively to the workpiece under the influence of pressure

- B24B 31/116 . . using plastically deformable grinding compound, moved relatively to the workpiece under the influence of pressure
- B24B 31/12 . Accessories; Protective equipment or safety devices; Installations for exhaustion of dust or for sound absorption specially adapted for machines covered by group [B24B 31/00](#) ( in general [B24B 55/00](#) )
- B24B 31/14 . . Abrading-bodies specially designed for tumbling apparatus, e.g. abrading-balls
- B24B 31/16 . . Means for separating the workpiece from the abrasive medium at the end of operation

## **B24B 33/00 Honing machines or devices; Accessories therefor**

- B24B 33/02 . designed for working internal surfaces of revolution, e.g. of cylindrical or conical shapes
- B24B 33/022 . . { Horizontal honing machines }
- B24B 33/025 . . { Internal surface of conical shape }
- B24B 33/027 . . { using an unexpandable tool }
- B24B 33/04 . designed for working external surfaces of revolution
- B24B 33/05 . designed for working grooves, e.g. in gun barrels
- B24B 33/055 . designed for working plane surfaces
- B24B 33/06 . with controlling or gauging equipment ( [gauging in general G01B](#); [controlling in general G05](#) )
- B24B 33/08 . Honing tools {( [for manufacturing gear teeth B23F 21/03](#) )}
- B24B 33/081 . . { for external surfaces }
- B24B 33/082 . . { having only one honing stone }
- B24B 33/083 . . { with different sets of honing stones }
- B24B 33/084 . . { having honing stones at the end of bars }
- B24B 33/085 . . { in which the honing element consists of a deformable body }
- B24B 33/086 . . { Abrading blocks for honing tools }
- B24B 33/087 . . { provided with measuring equipment }
- B24B 33/088 . . { for holes having a shape other than cylindrical }
- B24B 33/089 . . { with a rack-and-pinion mechanism for expanding the honing segments }
- B24B 33/10 . Accessories
- B24B 33/105 . . { Honing spindles; Devices for expanding the honing elements ( [B24B 33/04](#) takes precedence )}

## **B24B 35/00 Machines or devices designed for superfinishing surfaces on work, i.e. by means of abrading blocks reciprocating with high frequency**

- B24B 35/005 . { for making three-dimensional objects ( [by electroerosion B23H 5/04](#) )}

## **B24B 37/00 Lapping machines or devices; Accessories ( [B24B 3/00](#) takes precedence )**

- B24B 37/005 . Control means for lapping machines or devices
- B24B 37/0053 .. { detecting loss or breakage of a workpiece during lapping }
- B24B 37/0056 .. { taking regard of the pH-value of lapping agents }
- B24B 37/013 .. Devices or means for detecting lapping completion
- B24B 37/015 .. Temperature control
  
- B24B 37/02 . designed for working surfaces of revolution
- B24B 37/022 .. { characterised by the movement of the work between two lapping plates }
- B24B 37/025 .. designed for working spherical surfaces
  
- B24B 37/04 . designed for working plane surfaces
- B24B 37/042 .. { operating processes therefor }
- B24B 37/044 ... { characterised by the composition of the lapping agent }
- B24B 37/046 .. { using electric current }
- B24B 37/048 .. { of sliders and magnetic heads of hard disc drives or the like }
- B24B 37/07 .. characterised by the movement of the work or lapping tool
- B24B 37/08 ... for double side lapping
- B24B 37/10 ... for single side lapping
- B24B 37/102 .... { the workpieces or work carriers being able to rotate freely due to a frictional contact with the lapping tool }
- B24B 37/105 .... { the workpieces or work carriers being actively moved by a drive, e.g. in a combined rotary and translatory movement }
- B24B 37/107 ..... { in a rotary movement only, about an axis being stationary during lapping }
  
- B24B 37/11 . Lapping tools
- B24B 37/12 .. Lapping plates for working plane surfaces
- B24B 37/14 ... characterised by the composition or properties of the plate materials
- B24B 37/16 ... characterised by the shape of the lapping plate surface, e.g. grooved
- B24B 37/20 .. Lapping pads for working plane surfaces
- B24B 37/205 ... { provided with a window for inspecting the surface of the work being lapped }
- B24B 37/22 ... characterised by a multi-layered structure
- B24B 37/24 ... characterised by the composition or properties of the pad materials
- B24B 37/245 .... { Pads with fixed abrasives }
- B24B 37/26 ... characterised by the shape of the lapping pad surface, e.g. grooved
  
- B24B 37/27 . Work carriers
- B24B 37/28 .. for double side lapping of plane surfaces
- B24B 37/30 .. for single side lapping of plane surfaces
- B24B 37/32 ... Retaining rings
  
- B24B 37/34 . Accessories
- B24B 37/345 .. { Feeding, loading or unloading work specially adapted to lapping }
  
- B24B 39/00** **Burnishing machines or devices, i.e. requiring pressure members for compacting the surface zone ( modifying the physical properties or structure of metal by burnishing**



C21D 7/08, C22F 1/00 ); **Accessories therefor**

- B24B 39/003 . { the working tool being composed of a plurality of working rolls or balls ( see also [B24B 39/023](#), [B24B 39/045](#) ) }
- B24B 39/006 . { Peening and tools therefor }
- B24B 39/02 . designed for working internal surfaces of revolution
- B24B 39/023 .. { the working tool being composed of a plurality of working rolls or balls ( see also [B24B 39/003](#), [B24B 39/045](#) ) }
- B24B 39/026 .. { Impact burnishing }
- B24B 39/04 . designed for working external surfaces of revolution
- B24B 39/045 .. { the working tool being composed of a plurality of working rolls or balls ( see also [B24B 39/003](#), [B24B 39/045](#) ) }
- B24B 39/06 . designed for working plane surfaces
- B24B 39/065 .. { Graining of metal plates, e.g. printing or lithographic plates }

**Guidance heading:** **Component parts of grinding machines or devices so far as specially adapted to grinding** ( if applicable to other machine tools, [B23Q](#) takes precedence; if peculiar to a particular type of machine or device, see the relevant group therefor )

**B24B 41/00**      **Component parts such as frames, beds, carriages, headstocks**

- B24B 41/002 . { Grinding heads }
- B24B 41/005 . { Feeding or manipulating devices specially adapted to grinding machines ( feeding, loading or unloading work specially adapted to lapping machines [B24B 37/345](#) ) }
- B24B 41/007 . { Weight compensation; Temperature compensation; Vibration damping }
- B24B 41/02 . Frames; Beds; Carriages
- B24B 41/04 . Headstocks; Working-spindles; Features relating thereto
- B24B 41/042 .. { Balancing mechanisms }
- B24B 41/044 .. { Grinding spindles with magnetic or electromagnetic bearings; Features related thereto ( electric motors with magnetic bearings [H02K 7/09](#) ) }
- B24B 41/047 .. Grinding heads for working on plane surfaces
- B24B 41/0475 ... { equipped with oscillating abrasive blocks, e.g. mounted on a rotating head }
- B24B 41/053 ... for grinding or polishing glass {( [B24B 41/0475](#) takes precedence ) }
- B24B 41/06 . Work supports, e.g. adjustable steadies ( [B24B 37/27](#) takes precedence )
- B24B 41/061 .. { axially supporting turning workpieces, e.g. magnetically, pneumatically }
- B24B 41/062 ... { between centres; Dogs }
- B24B 41/063 .... { Lubrication of centres }
- B24B 41/065 .. { Steady rests }



- B24B 41/066 . . { adapted for supporting work in the form of tools, e.g. drills }
- B24B 41/067 . . { radially supporting workpieces }
- B24B 41/068 . . { Table-like supports for panels, sheets or the like }

**B24B 45/00** **Means for securing grinding wheels on rotary arbors** ( suppression of vibrations in systems [F16F 15/00](#); testing static or dynamic balancing of machines [G01M 1/00](#) )

- B24B 45/003 . { Accessories therefor }
- B24B 45/006 . { Quick mount and release means for disc-like wheels, e.g. on power tools }

**B24B 47/00** **Drives or gearings; Equipment therefor**

- B24B 47/02 . for performing a reciprocating movement of carriages or work- tables
- B24B 47/04 . . by mechanical gearing only
- B24B 47/06 . . by liquid or gas pressure only
- B24B 47/08 . . by mechanical gearing combined with fluid systems
- B24B 47/10 . for rotating or reciprocating working-spindles carrying grinding wheels or workpieces
- B24B 47/12 . . by mechanical gearing or electric power ( [B24B 47/16](#) takes precedence )
- B24B 47/14 . . by liquid or gas pressure ( [B24B 47/16](#) takes precedence )
- B24B 47/16 . . performing a reciprocating movement, e.g. during which the sense of rotation of the working-spindle is reversed
- B24B 47/18 . . for rotating the spindle at a speed adaptable to wear of the grinding wheel
- B24B 47/20 . relating to feed movement
- B24B 47/203 . . { driven by hand }
- B24B 47/206 . . { for centreless grinding machines; for machines comprising work supports, e.g. steady rests }
- B24B 47/22 . Equipment for exact control of the position of the grinding tool or work at the start of the grinding operation
- B24B 47/225 . . { for bevelling optical work, e.g. lenses }
- B24B 47/25 . for compensating grinding wheel abrasion resulting from dressing
- B24B 47/26 . Accessories, e.g. stops
- B24B 47/28 . Equipment for preventing backlash

**Guidance heading: Measuring; Indicating; Controlling**

**B24B 49/00** **Measuring or gauging equipment for controlling the feed movement of the grinding tool or work; Arrangements of indicating or measuring equipment, e.g. for indicating the start of the grinding operation** ( [B24B 33/06](#), [B24B 37/005](#) take precedence; if applicable to other machine tools, [B23Q 15/00](#) - [B23Q 17/00](#) take precedence )

- B24B 49/003 . { involving acoustic means }
- B24B 49/006 . { taking regard of the speed }
- B24B 49/02 . according to the instantaneous size and required size of the workpiece acted upon, the measuring or gauging being continuous or intermittent ( [B24B 49/12 takes precedence](#) )
- B24B 49/03 . . according to the final size of the previously ground workpiece
- B24B 49/04 . . involving measurement of the workpiece at the place of grinding during grinding operation
- B24B 49/045 . . . { Specially adapted gauging instruments }
- B24B 49/05 . . . including the measurement of a first workpiece already machined and of another workpiece being machined and to be matched with the first one
- B24B 49/06 . . requiring comparison of the workpiece with standard gauging plugs, rings or the like
- B24B 49/08 . involving liquid or pneumatic means
- B24B 49/10 . involving electrical means ( [B24B 49/02](#), [B24B 49/08 take precedence](#) )
- B24B 49/105 . . { using eddy currents }
- B24B 49/12 . involving optical means
- B24B 49/14 . taking regard of the temperature during grinding
- B24B 49/16 . taking regard of the load
- B24B 49/165 . . { for grinding tyres }
- B24B 49/18 . taking regard of the presence of dressing tools
- B24B 49/183 . . { Wear compensation without the presence of dressing tools }
- B24B 49/186 . . { taking regard of the wear of the dressing tools }
- B24B 51/00** **Arrangements for automatic control of a series of individual steps in grinding a workpiece** ( if applicable to other machine tools, [G05B](#) takes precedence )
- B24B 53/00** **Devices or means for dressing or conditioning abrasive surfaces** ( compensation for grinding wheel abrasion resulting from dressing [B24B 47/25](#) )
- B24B 53/001 . { involving the use of electric current }
- B24B 53/003 . { using at least two conditioning tools }
- B24B 53/005 . { Positioning devices for conditioning tools }
- B24B 53/007 . Cleaning of grinding wheels
- B24B 53/013 . Application of loose grinding agent as auxiliary tool during truing operation
- B24B 53/017 . Devices or means for dressing, cleaning or otherwise conditioning lapping tools

- B24B 53/02 . of plane surfaces on abrasive tools ( [B24B 53/017](#) takes precedence )
- B24B 53/04 . of cylindrical or conical surfaces on abrasive tools or wheels ( [B24B 53/017](#) takes precedence )
- B24B 53/047 .. equipped with one or more diamonds
- B24B 53/053 .. using a rotary dressing tool
- B24B 53/06 . of profiled abrasive wheels
- B24B 53/062 .. { using rotary dressing tools ( [B24B 53/07](#) takes precedence ) }
- B24B 53/065 .. having other than straight profiles, e.g. crowned ( [B24B 53/07](#) takes precedence )
- B24B 53/07 .. by means of forming tools having a shape complementary to that to be produced, e.g. blocks, profile rolls
- B24B 53/075 .. for workpieces having a grooved profile, e.g. gears, splined shafts, threads, worms ( [B24B 53/07](#) takes precedence )
- B24B 53/08 .. controlled by information means, e.g. patterns, templets, punched tapes or the like
- B24B 53/081 ... { by means of a template }
- B24B 53/082 .... { for tools having a screw-thread profile }
- B24B 53/083 ... { for tools having a screw-thread profile ( [B24B 53/081](#) takes precedence ) }
- B24B 53/085 ... for workpieces having a grooved profile, e.g. gears, splined shafts, threads, worms { ( [B24B 53/082](#) , [B24B 53/083](#) , [B24B 53/09](#) take precedence ) }
- B24B 53/09 ... having transfer elements formed as pantograph mechanism
- B24B 53/095 . Cooling or lubricating during dressing operation ( [cooling the grinding surfaces B24B 55/02](#) )
- B24B 53/10 . of travelling flexible backings coated with abrasives; Cleaning of abrasive belts
- B24B 53/12 . Dressing tools; Holders therefor
- B24B 53/14 .. Dressing tools equipped with rotary rollers or cutters; Holders therefor
- B24B 55/00** **Safety devices for grinding or polishing machines; Accessories fitted to grinding or polishing machines for keeping tools or parts of the machine in good working condition ( of general applicability for machine tools [B23Q 11/00](#); in general [F16P](#) )**
- B24B 55/02 . Equipment for cooling the grinding surfaces, e.g. devices for feeding coolant ( [cooling or lubricating during dressing operation B24B 53/095](#) ; incorporated in grinding wheels [B24D](#) )
- B24B 55/03 .. designed as a complete equipment for feeding or clarifying coolant
- B24B 55/04 . Protective covers for the grinding wheel
- B24B 55/045 .. { with cooling means incorporated }
- B24B 55/05 .. specially designed for portable grinding machines
- B24B 55/052 ... { with rotating tools }
- B24B 55/055 ... { with oscillating tools }
- B24B 55/057 ... { with belt-like tools }
- B24B 55/06 . Dust extraction equipment on grinding or polishing machines ( [B24B 31/12](#) takes precedence )

- B24B 55/08 . . specially designed for belt grinding machines
- B24B 55/10 . . specially designed for portable grinding machines, e.g. hand-guided
- B24B 55/102 . . . { with rotating tools }
- B24B 55/105 . . . { with oscillating tools }
- B24B 55/107 . . . { with belt-like tools }
  
- B24B 55/12 . Devices for exhausting mist of oil or coolant; Devices for collecting or recovering materials resulting from grinding or polishing, e.g. of precious metals, precious stones, diamonds or the like
  
- B24B 57/00** **Devices for feeding, applying, grading or recovering grinding, polishing or lapping agents ( for abrasive blasting [B24C 1/00](#), [B24C 7/00](#) )**
  
- B24B 57/02 . for feeding of fluid, sprayed, pulverised, or liquefied grinding, polishing or lapping agents
  
- B24B 57/04 . for feeding of solid grinding, polishing or lapping agents