B23F

MAKING GEARS OR TOOTHED RACKS (by stamping B21D; by rolling B21H; by forging or pressing B21K; by casting B22; arrangements for copying or controlling B23Q; machines or devices for grinding or polishing, in general B24B)

NOTES

1. This subclass covers:
   • the use of methods or apparatus specially designed to produce accurately the shapes of gear teeth which are essential for proper intermeshing of toothed gearing elements to ensure the required relative motions;
   • the use of similar methods or apparatus in the production of other articles of toothed or like form, e.g. dog clutches, splined shafts, milling cutters.

2. This subclass does not cover the production of such other articles of toothed or like form using methods or apparatus other than those mentioned under Note (1) above.

3. In this subclass, the following terms or expressions are used with the meanings indicated:
   • “gear teeth” covers the teeth or lobes of other accurately-intermeshing members having relative movement of a similar kind, such as rotors of rotary pumps and blowers;
   • “profile” may include the outline of both faces or only one face of a tooth, or the opposing faces of adjacent teeth;
   • “straight” means that a tooth as a whole (ignoring any curvature of the tooth-face alone, e.g. crowning) is straight in the direction of its length, for example as seen in the direction of a radius of a spur wheel. It accordingly includes the teeth of helical gears and of the normal type of bevel gear;
   • “broach-milling” means milling with a rotary cutter having a number of teeth of progressively increasing depth or width.

WARNING

In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.
Finishing gear teeth by other tools than those used for manufacturing gear teeth

19/00

19/002 [Modifying the theoretical tooth flank form, e.g. crowning (B23F 19/10 takes precedence)]
19/005 [using a face-mill-type tool, e.g. a milling or a grinding tool]
19/007 [using a gear-shaped tool]
19/002 [Lapping gear teeth]
19/025 [Lapping bevel gears by making use of a correspondingly shaped counterpart]
19/04 [Lapping spur gears by making use of a correspondingly shaped counterpart]
19/045 [the counterpart having internal toothing]
19/05 [Honing gear teeth]
19/052 [by making use of a tool in the shape of a worm]
19/055 [by making use of a tool in the shape of a bevel gear or a crown gear]
19/057 [by making use of a tool in the shape of an internal gear]
19/06 [Shaving the faces of gear teeth]
19/063 [by making use of a tool in the shape of an internal gear]
19/066 [with plural tools]
19/10 [Chamfering the end edges of gear teeth]
19/101 [by planing]
19/102 [by milling]
19/104 [the tool being a hob]
19/105 [the tool being an end mill]
19/107 [the tool being a fly cutter]
19/108 [by brushing]
19/12 [by grinding]
19/125 [the tool being a grinding worm]

21/00

21/005 [with plural tools on a common axis]
21/02 [Grinding discs; Grinding worms (truing grinding tools B23F 21/04; grinding tools in general B24D)]
21/023 [Face-mill-type, i.e. cup-shaped, grinding wheels]
21/026 [Grinding worms]
21/03 [Honing tools]
21/035 [Honing worms]
21/04 [Planing or slotting tools]
21/043 [with inserted cutting elements]
21/046 [in exchangeable arrangement]
21/06 [having a profile which matches a gear tooth profile]
21/063 [with inserted cutting elements]
21/066 [in exchangeable arrangement]
21/08 [having the same profile as a tooth or teeth of a rack]
21/083 [with inserted cutting elements]
21/086 [in exchangeable arrangement]
21/10 Gear-shaper cutters having a shape similar to a spur wheel or part thereof
21/103 [with inserted cutting elements]
21/106 [in exchangeable arrangement]
21/12 Milling tools
21/122 [having a shape similar to that of a gear or part thereof, with cutting edges situated on the tooth contour lines]
21/124 [with cutting teeth disposed on the inner periphery of a ring]
21/126 [with inserted cutting elements]
21/128 [in exchangeable arrangement]
21/14 Profile cutters of disc type
21/143 [with inserted cutting elements]
21/146 [in exchangeable arrangement]
21/16 Hobs
21/163 [with inserted cutting elements]
21/166 [in exchangeable arrangement]
21/18 Taper hobs, e.g. for bevel gears
21/183 [with inserted cutting elements]
21/186 [in exchangeable arrangement]
21/20 Fly cutters
21/203 [with inserted cutting elements]
21/206 [in exchangeable arrangement]
21/22 Face-mills for longitudinally-curved gear teeth
21/223 [with inserted cutting elements]
21/226 [in exchangeable arrangement]
21/23 with cutter teeth arranged on a spiral curve for continuous generating processes
21/233 [with inserted cutting elements]
21/236 [in exchangeable arrangement]
21/24 Broach-milling tools
21/241 [with inserted cutting elements]
21/243 [in exchangeable arrangement]
21/245 [Face broach mills]
21/246 [with inserted cutting elements]
21/248 [in exchangeable arrangement]
21/26 Broaching tools
21/262 [with inserted cutting elements (B23F 21/266 and B23F 21/268 take precedence)]
21/264 [in exchangeable arrangement]
21/266 [mounted on an endless chain or belt]
21/268 [Pot broaches]
21/28 Shaving cutters
21/282 [with inserted cutting elements]
21/284 [in exchangeable arrangement]
21/286 [having the shape of an internal gear]
21/288 [the cutting edges on consecutive teeth being helically arranged]

23/00 Accessories or equipment combined with or arranged in, or specially designed to form part of, gear-cutting machines (tool-guiding mechanisms, see the relevant groups for making gear teeth; accessories or equipment not restricted to gear-cutting machines B23Q)
23/003 [Generating mechanisms]
23/006 [Equipment for synchronising movement of cutting tool and workpiece, the cutting tool and workpiece not being mechanically coupled]
23/02 Loading, [unloading] or chucking arrangements for workpieces
23/04 Loading [or unloading] arrangements