| В         | Sektion             | SECTION B — PERFORMING OPERATIONS; TRANSPORTING   |
|-----------|---------------------|---|
| B21       | Untersektion        | SHAPING   |
| B21       | Klasse              | MECHANICAL METAL-WORKING WITHOUT ESSENTIALLY REMOVING MATERIAL; PUNCHING METAL (casting, powder metallurgy B22; shearing B23D; working of metal by the action of a high concentration of electric current B23H; soldering, welding, flame-cutting B23K; other working of metal B23P; punching sheet material in general B26F; processes for changing of physical properties of metals C21D, C22F; electroforming C25D 1/00) |
| B21C      | Unterklasse         | MANUFACTURE OF METAL SHEETS, WIRE, RODS, TUBES OR PROFILES, OTHERWISE THAN BY ROLLING; AUXILIARY OPERATIONS USED IN CONNECTION WITH METAL-WORKING WITHOUT ESSENTIALLY REMOVING MATERIAL   |
|           |                     | Metal drawing (continuous casting B22D 11/00; pressure welding by means of a rolling mill B23K 20/04)   |
| B21C 1/00 | Hauptgruppe         | Manufacture of metal sheets, metal wire, metal rods, metal tubes by drawing   |
| B21C 1/02 | 1-Punkt Untergruppe | . Drawing metal wire or like flexible metallic material by drawing machines or apparatus in which the drawing action is effected by drums   |
| B21C 1/04 | 2-Punkt Untergruppe | with two or more dies operating in series   |
| B21C 1/06 | 3-Punkt Untergruppe | in which the material slips on the drums  |
| B21C 1/08 | 3-Punkt Untergruppe | in which the material does not slip on the drums  |
| B21C 1/10 | 4-Punkt Untergruppe | with accumulation of material between consecutively-arranged dies   |
| B21C 1/12 | 2-Punkt Untergruppe | Regulating or controlling speed of drawing drums, e.g. to influence tension; Drives; Stop or relief   |
|           |                     | mechanisms (couplings for drums B21C 1/14; design or construction of electrical equipment, see the relevant classes)  |
|           |                     | relevant classes)   |
| B21C 1/14 | 2-Punkt Untergruppe | Drums, e.g. capstans (capstans or winches in general B66D); Connection of grippers thereto; Grippers specially adapted for drawing machines or apparatus of the drum type; Couplings specially adapted for these drums  |
| B21C 1/16 | 1-Punkt Untergruppe | . Metal drawing by machines or apparatus in which the drawing action is effected by other means than drums, e.g. by a longitudinally-moved carriage pulling or pushing the work or stock for making metal sheets, bars, or tubes  |
| B21C 1/18 | 2-Punkt Untergruppe | from stock of limited length (B21C 1/22 takes precedence)   |
| B21C 1/20 | 2-Punkt Untergruppe | from stock of essentially unlimited length (B21C 1/22 takes precedence)   |
| B21C 1/22 | 2-Punkt Untergruppe | specially adapted for making tubular articles (bending sheet metal into tubular form by drawing B21D 5/10)  |
| B21C 1/24 | 3-Punkt Untergruppe | by means of mandrels (mandrels B21C 3/16)   |
| B21C 1/26 | 4-Punkt Untergruppe | Push-bench drawing  |
| B21C 1/27 | 2-Punkt Untergruppe | Carriages; Drives   |
| B21C 1/28 | 3-Punkt Untergruppe | Carriages; Connections of grippers thereto; Grippers (for drawing machines of the drum type B21C 1/14)  |
| B21C 1/30 | 3-Punkt Untergruppe | Drives, e.g. carriage-traversing mechanisms; Driving elements, e.g. drawing chains; Controlling the drive   |
| B21C 1/32 | 2-Punkt Untergruppe | Feeding or discharging the material or mandrels   |
| B21C 1/34 | 2-Punkt Untergruppe | Guiding or supporting the material or mandrels  |

| Part   Part   Profiling tools for metal drawing: Combinations of dies and mandrels  | Symbol     | Тур                 | Titel  |
|---|------------|---------------------|--|
| 2-Punkt Untergruppe   with non-adjustable section (121C 3/08 takes precedence)  | B21C 3/00  | Hauptgruppe         | Profiling tools for metal drawing; Combinations of dies and mandrels   |
| ### B21C 3/06   2-Punkt Untergruppe   with adjustable section (#21C 3/08 takes precedence)   ### B21C 3/10   2-Punkt Untergruppe   with section defined by rollers, balls, or the like   ### B21C 3/12   2-Punkt Untergruppe   with section defined by rollers, balls, or the like   ### B21C 3/12   2-Punkt Untergruppe   beholders, Roading dies   ### B21C 3/14   3-Punkt Untergruppe   beholders, Roading dies   ### B21C 3/15   1-Punkt Untergruppe   beholders, Roading dies   beholders from work ### B21C 45/00; Mounting or adjusting same   ### B21C 3/16   1-Punkt Untergruppe   Making tools by operations not covered by a single other subclass. Repairing   ### B21C 5/00   Hauptgruppe   Making tools by operations not covered by a single other subclass. Repairing   ### B21C 5/00   Hauptgruppe   Selection of compositions therefor   ### B21C 5/00   Hauptgruppe   Seating from material of particular form or shape, e.g. mechanically pre-treated (B21C 23/02 takes precedence; healt treatment or combinations thereof with mechanical treatments, see appropriate classes)   #### B21C 23/00   2-Punkt Untergruppe   Making uncoated products   Making uncoated products   Making sheets   Making turbo blades or propellers   Making metal-coated products; Making products from two or more metals  | B21C 3/02  | 1-Punkt Untergruppe | . Dies; Selection of material therefor; Cleaning thereof   |
| ### B21C 3/08   2-Punkt Untergruppe   with section defined by rollers, balls, or the like   ### B21C 3/14   2-Punkt Untergruppe   with hydraulic forces acting immediately on work   ### B21C 3/14   3-Punkt Untergruppe   Die holders; Rotating did   ### B21C 3/14   3-Punkt Untergruppe   Die holders; Rotating did   ### B21C 3/16   1-Punkt Untergruppe   Die holders; Combined with devices for guiding the drawing material or combined with devices for cooling, heating, or flutricating   #### B21C 3/16   1-Punkt Untergruppe   Making tools by operations not covered by a single other subclass; Repairing   #### B21C 3/16   1-Punkt Untergruppe   Making tools by operations not covered by a single other subclass; Repairing   #### B21C 5/00   Hauptgruppe   Polinting; Push-polinting   #### B21C 5/00   Hauptgruppe   Selection of compositions therefor   #### B21C 19/00   Hauptgruppe   Selection of compositions therefor   #### B21C 19/00   Hauptgruppe   Devices for straightening wire or like work combined with or specially adapted for use in connection with drawing or winding machines or apparatus   ####################################   | B21C 3/04  | 2-Punkt Untergruppe | with non-adjustable section (B21C 3/08 takes precedence)   |
| 821C 3/10 2-Punkt Untergruppe with hydraulic forces acting immediately on work 821C 3/12 2-Punkt Untergruppe Die holders; Rotating dies 821C 3/14 3-Punkt Untergruppe Die holders combined with devices for guiding the drawing material or combined with devices for cooling, heating, or lubricating Beating, or lubricating Beating or lubricating drawing material (821C 3/14 takes precedence) 821C 9/00 Hauptgruppe Pointing; Push-pointing Cooling, heating or lubricating drawing material (821C 3/14 takes precedence) 821C 9/00 Hauptgruppe Devices for straightening wire or like work combined with or specially adapted for use in connection with drawing or wilding machines or apparatus Metal activating (continuous casting 822D 11/00) 821C 23/00 Hauptgruppe Extruding metal; Impact extrusion starting from material of particular form or shape, e.g. mechanically pre-treated (821C 23/22 takes precedence; heat treatment or combinations thereof with mechanical treatments, see appropriate classes) 821C 23/02 1-Punkt Untergruppe Making uncoated products 821C 23/04 2-Punkt Untergruppe Making sheets 821C 23/04 3-Punkt Untergruppe Making sheets 821C 23/04 4-Punkt Untergruppe Making sheets 821C 23/04 4-Punkt Untergruppe Making wire, bars, tubes 821C 23/14 3-Punkt Untergruppe Making the biddes or propellers 821C 23/16 4-Punkt Untergruppe Making the products 821C 23/16 4-Punkt Untergruppe by impact extrusion [2] 821C 23/12 4-Punkt Untergruppe Making the products 821C 23/12 4-Punkt Untergruppe by which was destrusion 821C 23/14 3-Punkt Untergruppe by which was destrusion 821C 23/14 3-Punkt Untergruppe Making the products of metal or non-metal material with a metal co  | B21C 3/06  | 2-Punkt Untergruppe | with adjustable section (B21C 3/08 takes precedence)   |
| ### 221C 3/12 2-Punkt Untergruppe . Die holders Rotating dies  ### 221C 3/14 3-Punkt Untergruppe . Die holders combined with devices for guiding the drawing material or combined with devices for cooling. heading, or lubricating  ### 221C 3/16 1-Punkt Untergruppe . Making tools by operations not covered by a single other subclass; Repairing  ### 221C 3/18 1-Punkt Untergruppe Pointing; Push-pointing  ### 221C 3/10 Hauptgruppe Cooling, heating or lubricating drawing material (## 221C 3/14 takes precedence)  ### 221C 3/10 Hauptgruppe Devices for straightening wire or like work combined with or specially adapted for use in connection with drawing or winding machines or apparatus Petal extruding (continuous casting ## 221 11/00)  ### 231C 3/10 Hauptgruppe Extruding (continuous casting ## 221 11/00)  ### 231C 23/00 Hauptgruppe Extruding metal impact extrusion  ### 231C 23/00 1-Punkt Untergruppe . Making uncoated products  ### 231C 23/00 1-Punkt Untergruppe . Waking uncoated products  ### 231C 23/00 2-Punkt Untergruppe . by both direct and backward extrusion  ### 232C 23/00 3-Punkt Untergruppe Making sheets  ### 231C 23/00 3-Punkt Untergruppe Making sheets  ### 231C 23/00 4-Punkt Untergruppe Making sheets  ### 231C 23/00 4-Punkt Untergruppe Making other products  ### 231C 23/00 4-Punkt Untergruppe by backward extrusion  ### 231C 23/00 4-Punkt Untergruppe by waterial countries of metal or non-metal material with a metal coating  ### 231C 23/00 4-Pun  | B21C 3/08  | 2-Punkt Untergruppe | with section defined by rollers, balls, or the like  |
| 821C 3/14 3-Punkt Untergruppe Die holders combined with devices for guiding the drawing material or combined with devices for cooling, heating, or lubricating 821C 3/16 1-Punkt Untergruppe Making tools by operations not covered by a single other subclass; Repairing 821C 5/00 Hauptgruppe Pointing; Push-pointing 821C 9/00 Hauptgruppe Cooling, heating or lubricating drawing material (821C 3/14 takes precedence) 821C 9/02 1-Punkt Untergruppe Selection of compositions therefor 821C 19/00 Hauptgruppe Devices for straightening wire or like work combined with or specially adapted for use in connection with drawing or winding machines or apparatus Metal extrusion (and frawing or winding machines or apparatus Metal extruding (continuous casting 822D 11/00) 821C 23/00 Hauptgruppe Starting from material of particular form or shape, e.g. mechanically pre-treated (821C 23/22 takes precedence; heat treatment or combinations thereof with mechanical treatments, see appropriate classes) 821C 23/03 2-Punkt Untergruppe Making uncoated products 821C 23/04 2-Punkt Untergruppe Making sheets 821C 23/06 3-Punkt Untergruppe Making sheets 821C 23/10 4-Punkt Untergruppe Making sheets 821C 23/10 4-Punkt Untergruppe Making finned tubes 821C 23/10 4-Punkt Untergruppe Making other products Making products from two or more metals 821C 23/20 2-Punkt Untergruppe Making metal-coated produ  | B21C 3/10  | 2-Punkt Untergruppe | with hydraulic forces acting immediately on work   |
| heating, or lubricating  1-Punkt Untergruppe  | B21C 3/12  | 2-Punkt Untergruppe | Die holders; Rotating dies   |
| B21C 3/18   | B21C 3/14  | 3-Punkt Untergruppe |  |
| B21C 5/00 Hauptgruppe Cooling, heating or lubricating drawing material (B21C 3/14 takes precedence)  1-Punkt Untergruppe Cooling, heating or lubricating drawing material (B21C 3/14 takes precedence)  1-Punkt Untergruppe Cooling, heating or lubricating drawing material (B21C 3/14 takes precedence)  1-Punkt Untergruppe Cooling, heating or winding machines or apparatus Metal extruding continuous casting B22D 11/00)  1-Punkt Untergruppe Starting from material of particular form or shape, e.g. mechanically pre-treated (B21C 23/22 takes precedence; heat treatment or combinations thereof with mechanical treatments, see appropriate classes)  1-Punkt Untergruppe Making uncoated products  1-Punkt Untergruppe Making uncoated products  1-Punkt Untergruppe Making sheets  1-Punkt Untergruppe Making sheets  1-Punkt Untergruppe Making wire, bars, tubes  1-Punkt Untergruppe Making wire, bars, tubes  1-Punkt Untergruppe Making wire, bars, tubes  1-Punkt Untergruppe Making wire blades or probellers  1-Punkt Untergruppe Making other products  1-Punkt Untergruppe Making metal-coated products; Making products from two or more metals  1-Punkt Untergruppe Making metal coated products; Making products from two or more metals  1-Punkt | B21C 3/16  | 1-Punkt Untergruppe | . Mandrels (separating mandrels from work B21C 45/00); Mounting or adjusting same                              |
| B21C 9/00  Hauptgruppe Selection of compositions therefor  B21C 19/00  Hauptgruppe Devices for straightening wire or like work combined with or specially adapted for use in connection with drawing or winding machines or apparatus Metal extruding (continuous casting B22D 11/00)  B21C 23/00  Hauptgruppe Extruding metal; Impact extrusion  1-Punkt Untergruppe Starting from material of particular form or shape, e.g. mechanically pre-treated (B21C 23/22 takes precedence; heat treatment or combinations thereof with mechanical treatments, see appropriate classes)  B21C 23/00  1-Punkt Untergruppe Making uncoated products  B21C 23/03  2-Punkt Untergruppe Making sheets  B21C 23/06  3-Punkt Untergruppe Making sheets  B21C 23/06  3-Punkt Untergruppe Making sheets  B21C 23/10  4-Punkt Untergruppe Making sheets  B21C 23/10  4-Punkt Untergruppe Making sheet tubes or rods  B21C 23/14  3-Punkt Untergruppe Making other products  B21C 23/16  4-Punkt Untergruppe Making turbo blades or propellers  B21C 23/16  2-Punkt Untergruppe Making turbo blades or propellers  B21C 23/20  2-Punkt Untergruppe Making turbo blades or propellers  B21C 23/20  2-Punkt Untergruppe Presses specially adapted for extruding metal (extrusion presses in general B308 11/22)  1-Punkt Untergruppe Making metal-coated products; Making products from two or more metals  2-Punkt Untergruppe Making metal-coated products; Making products from two or more metals  | B21C 3/18  | 1-Punkt Untergruppe | . Making tools by operations not covered by a single other subclass; Repairing                                 |
| B21C 19/00  Hauptgruppe Devices for straightening wire or like work combined with or specially adapted for use in connection with drawing or winding machines or apparatus Metal extruding (continuous casting B22D 11/00)  B21C 23/00  Hauptgruppe Extruding metal; Impact extrusion  1-Punkt Untergruppe . starting from material of particular form or shape, e.g. mechanically pre-treated (B21C 23/22 takes precedence; heat treatment or combinations thereof with mechanical treatments, see appropriate classes)  B21C 23/03  2-Punkt Untergruppe . Making uncoated products  B21C 23/04  2-Punkt Untergruppe . by both direct and backward extrusion  B21C 23/06  3-Punkt Untergruppe Making sheets  B21C 23/10  4-Punkt Untergruppe Making sheets  B21C 23/10  4-Punkt Untergruppe Making finned tubes  B21C 23/11  4-Punkt Untergruppe Making other products  B21C 23/12  4-Punkt Untergruppe Making other products  B21C 23/18  2-Punkt Untergruppe Making turbo blades or propellers  B21C 23/18  2-Punkt Untergruppe by impact extrusion [2]  B21C 23/18  2-Punkt Untergruppe by backward extrusion  B21C 23/21  1-Punkt Untergruppe by backward extrusion  B21C 23/22  1-Punkt Untergruppe by backward extrusion  B21C 23/21  1-Punkt Untergruppe by impact extrusion  B21C 23/21  1-Punkt Untergruppe by backward extrusion  B21C 23/22  1-Punkt Untergruppe Making metal-coated products; Making products from two or more metals  B21C 23/24  2-Punkt Untergruppe Making metal-coated products; Making products from two or more metals   | B21C 5/00  | Hauptgruppe         | Pointing; Push-pointing  |
| B21C 23/00 Hauptgruppe Devices for straightening wire or like work combined with or specially adapted for use in connection with drawing or winding machines or apparatus  Metal extruding (continuous casting B22D 11/00)  B21C 23/01 1-Punkt Untergruppe Starting from material of particular form or shape, e.g. mechanically pre-treated (B21C 23/22 takes precedence; heat treatment or combinations thereof with mechanical treatments, see appropriate classes)  B21C 23/02 1-Punkt Untergruppe by both direct and backward extrusion  B21C 23/03 2-Punkt Untergruppe by direct extrusion  B21C 23/06 3-Punkt Untergruppe Making sheets  B21C 23/10 4-Punkt Untergruppe Making wire, bars, tubes  B21C 23/10 4-Punkt Untergruppe Making finned tubes  B21C 23/11 4-Punkt Untergruppe Making finned tubes  B21C 23/12 4-Punkt Untergruppe Making other products  B21C 23/14 3-Punkt Untergruppe Making other products  B21C 23/16 4-Punkt Untergruppe Making other products  B21C 23/18 2-Punkt Untergruppe by impact extrusion [2]  B21C 23/20 2-Punkt Untergruppe by backward extrusion  B21C 23/21 1-Punkt Untergruppe by backward extrusion  B21C 23/22 1-Punkt Untergruppe Making metal-coated products; Making products from two or more metals  B21C 23/22 1-Punkt Untergruppe Making metal-coated products; Making products from two or more metals  B21C 23/24 2-Punkt Untergruppe Covering indefinite lengths of metal or non-metal material with a metal coating   | B21C 9/00  | Hauptgruppe         | Cooling, heating or lubricating drawing material (B21C 3/14 takes precedence)                                  |
| Metal extruding from winding machines or apparatus Metal extruding (continuous casting B22D 11/00)  B21C 23/01  | B21C 9/02  | 1-Punkt Untergruppe | . Selection of compositions therefor   |
| B21C 23/00         Hauptgruppe         Extruding metal; Impact extrusion           B21C 23/01         1-Punkt Untergruppe         . starting from material of particular form or shape, e.g. mechanically pre-treated (B21C 23/22 takes precedence; heat treatment or combinations thereof with mechanical treatments, see appropriate classes)           B21C 23/02         1-Punkt Untergruppe         by both direct and backward extrusion           B21C 23/04         2-Punkt Untergruppe         by direct extrusion           B21C 23/06         3-Punkt Untergruppe         Making sheets           B21C 23/10         3-Punkt Untergruppe         Making finned tubes           B21C 23/10         4-Punkt Untergruppe  | B21C 19/00 | Hauptgruppe         |  |
| 1-Punkt Untergruppe . starting from material of particular form or shape, e.g. mechanically pre-treated (821C 23/22 takes precedence; heat treatment or combinations thereof with mechanical treatments, see appropriate classes)  821C 23/02 1-Punkt Untergruppe . Making uncoated products  821C 23/03 2-Punkt Untergruppe by both direct and backward extrusion  821C 23/04 2-Punkt Untergruppe by direct extrusion  821C 23/06 3-Punkt Untergruppe Making sheets  821C 23/08 3-Punkt Untergruppe Making wire, bars, tubes  821C 23/10 4-Punkt Untergruppe Making finned tubes  821C 23/12 4-Punkt Untergruppe Extruding bent tubes or rods  821C 23/14 3-Punkt Untergruppe Making other products  821C 23/16 4-Punkt Untergruppe Making turbo blades or propellers  821C 23/18 2-Punkt Untergruppe by impact extrusion [2]  821C 23/20 2-Punkt Untergruppe by backward extrusion  821C 23/21 1-Punkt Untergruppe Presses specially adapted for extruding metal (extrusion presses in general B30B 11/22)  821C 23/22 1-Punkt Untergruppe Making metal-coated products; Making products from two or more metals  821C 23/24 2-Punkt Untergruppe Making metal-coated products; Making products from two or more metals  |            |                     | Metal extruding (continuous casting B22D 11/00)  |
| precedence; heat treatment or combinations thereof with mechanical treatments, see appropriate classes)  B21C 23/02   | B21C 23/00 | Hauptgruppe         | Extruding metal; Impact extrusion  |
| 1-Punkt Untergruppe . Making uncoated products  2-Punkt Untergruppe by both direct and backward extrusion  2-Punkt Untergruppe by direct extrusion  2-Punkt Untergruppe by direct extrusion  3-Punkt Untergruppe Making sheets  821C 23/06 3-Punkt Untergruppe Making wire, bars, tubes  821C 23/10 4-Punkt Untergruppe Making finned tubes  821C 23/12 4-Punkt Untergruppe Extruding bent tubes or rods  821C 23/14 3-Punkt Untergruppe Making other products  821C 23/16 4-Punkt Untergruppe Making other products  821C 23/18 2-Punkt Untergruppe by impact extrusion [2]  821C 23/20 2-Punkt Untergruppe by backward extrusion  821C 23/21 1-Punkt Untergruppe Making adapted for extruding metal (extrusion presses in general B30B 11/22)  821C 23/22 1-Punkt Untergruppe Making metal-coated products; Making products from two or more metals  821C 23/24 2-Punkt Untergruppe Covering indefinite lengths of metal or non-metal material with a metal coating   | B21C 23/01 | 1-Punkt Untergruppe | . starting from material of particular form or shape, e.g. mechanically pre-treated (B21C 23/22 takes          |
| B21C 23/04 2-Punkt Untergruppe by both direct and backward extrusion  B21C 23/04 2-Punkt Untergruppe by direct extrusion  B21C 23/06 3-Punkt Untergruppe Making sheets  B21C 23/08 3-Punkt Untergruppe Making wire, bars, tubes  B21C 23/10 4-Punkt Untergruppe Making finned tubes  B21C 23/12 4-Punkt Untergruppe Extruding bent tubes or rods  B21C 23/14 3-Punkt Untergruppe Making other products  B21C 23/16 4-Punkt Untergruppe Making other products  B21C 23/18 2-Punkt Untergruppe by impact extrusion [2]  B21C 23/20 2-Punkt Untergruppe by backward extrusion  B21C 23/21 1-Punkt Untergruppe Presses specially adapted for extruding metal (extrusion presses in general B30B 11/22)  B21C 23/22 1-Punkt Untergruppe Making metal-coated products; Making products from two or more metals  B21C 23/24 2-Punkt Untergruppe Covering indefinite lengths of metal or non-metal material with a metal coating  |            |                     | precedence; heat treatment or combinations thereof with mechanical treatments, <u>see</u> appropriate classes) |
| B21C 23/04 2-Punkt Untergruppe by direct extrusion  B21C 23/06 3-Punkt Untergruppe Making sheets  B21C 23/08 3-Punkt Untergruppe Making wire, bars, tubes  B21C 23/10 4-Punkt Untergruppe Making finned tubes  B21C 23/12 4-Punkt Untergruppe Extruding bent tubes or rods  B21C 23/14 3-Punkt Untergruppe Making other products  B21C 23/16 4-Punkt Untergruppe Making turbo blades or propellers  B21C 23/18 2-Punkt Untergruppe by impact extrusion [2]  B21C 23/20 2-Punkt Untergruppe by backward extrusion  B21C 23/21 1-Punkt Untergruppe Presses specially adapted for extruding metal (extrusion presses in general B30B 11/22)  B21C 23/22 1-Punkt Untergruppe Making metal-coated products; Making products from two or more metals  B21C 23/24 2-Punkt Untergruppe Covering indefinite lengths of metal or non-metal material with a metal coating  | B21C 23/02 | 1-Punkt Untergruppe | . Making uncoated products   |
| B21C 23/08 3-Punkt Untergruppe Making sheets  B21C 23/08 3-Punkt Untergruppe Making wire, bars, tubes  B21C 23/10 4-Punkt Untergruppe Making finned tubes  B21C 23/12 4-Punkt Untergruppe Extruding bent tubes or rods  B21C 23/14 3-Punkt Untergruppe Making other products  B21C 23/16 4-Punkt Untergruppe Making turbo blades or propellers  B21C 23/18 2-Punkt Untergruppe by impact extrusion [2]  B21C 23/20 2-Punkt Untergruppe by backward extrusion  B21C 23/21 1-Punkt Untergruppe by hackward extrusion  B21C 23/22 1-Punkt Untergruppe Making metal-coated products; Making products from two or more metals  B21C 23/24 2-Punkt Untergruppe Covering indefinite lengths of metal or non-metal material with a metal coating  | B21C 23/03 | 2-Punkt Untergruppe | by both direct and backward extrusion  |
| B21C 23/10  3-Punkt Untergruppe Making wire, bars, tubes  B21C 23/10  4-Punkt Untergruppe Making finned tubes  B21C 23/12  4-Punkt Untergruppe Extruding bent tubes or rods  B21C 23/14  3-Punkt Untergruppe Making other products  B21C 23/16  4-Punkt Untergruppe Making turbo blades or propellers  B21C 23/18  2-Punkt Untergruppe by impact extrusion [2]  B21C 23/20  2-Punkt Untergruppe by backward extrusion  B21C 23/21  1-Punkt Untergruppe . Presses specially adapted for extruding metal (extrusion presses in general B30B 11/22)  B21C 23/22  1-Punkt Untergruppe . Making metal-coated products; Making products from two or more metals  B21C 23/24  2-Punkt Untergruppe Covering indefinite lengths of metal or non-metal material with a metal coating  | B21C 23/04 | 2-Punkt Untergruppe | by direct extrusion  |
| B21C 23/12 4-Punkt Untergruppe Making finned tubes  B21C 23/14 3-Punkt Untergruppe Making other products  B21C 23/16 4-Punkt Untergruppe Making turbo blades or propellers  B21C 23/18 2-Punkt Untergruppe by impact extrusion [2]  B21C 23/20 2-Punkt Untergruppe by backward extrusion  B21C 23/21 1-Punkt Untergruppe by hackward extrusion  B21C 23/22 1-Punkt Untergruppe Making metal-coated products; Making products from two or more metals  B21C 23/24 2-Punkt Untergruppe Covering indefinite lengths of metal or non-metal material with a metal coating  | B21C 23/06 | 3-Punkt Untergruppe | Making sheets  |
| B21C 23/12 4-Punkt Untergruppe Extruding bent tubes or rods  B21C 23/14 3-Punkt Untergruppe Making other products  B21C 23/16 4-Punkt Untergruppe Making turbo blades or propellers  B21C 23/18 2-Punkt Untergruppe by impact extrusion [2]  B21C 23/20 2-Punkt Untergruppe by backward extrusion  B21C 23/21 1-Punkt Untergruppe Presses specially adapted for extruding metal (extrusion presses in general B30B 11/22)  B21C 23/22 1-Punkt Untergruppe Making metal-coated products; Making products from two or more metals  B21C 23/24 2-Punkt Untergruppe Covering indefinite lengths of metal or non-metal material with a metal coating   | B21C 23/08 | 3-Punkt Untergruppe | Making wire, bars, tubes   |
| B21C 23/14 3-Punkt Untergruppe Making other products  B21C 23/16 4-Punkt Untergruppe Making turbo blades or propellers  B21C 23/18 2-Punkt Untergruppe by impact extrusion [2]  B21C 23/20 2-Punkt Untergruppe by backward extrusion  B21C 23/21 1-Punkt Untergruppe . Presses specially adapted for extruding metal (extrusion presses in general B30B 11/22)  B21C 23/22 1-Punkt Untergruppe . Making metal-coated products; Making products from two or more metals  B21C 23/24 2-Punkt Untergruppe Covering indefinite lengths of metal or non-metal material with a metal coating  | B21C 23/10 | 4-Punkt Untergruppe | Making finned tubes  |
| B21C 23/16  | B21C 23/12 | 4-Punkt Untergruppe | Extruding bent tubes or rods   |
| B21C 23/20 2-Punkt Untergruppe by impact extrusion [2]  B21C 23/20 2-Punkt Untergruppe by backward extrusion  B21C 23/21 1-Punkt Untergruppe . Presses specially adapted for extruding metal (extrusion presses in general B30B 11/22)  B21C 23/22 1-Punkt Untergruppe . Making metal-coated products; Making products from two or more metals  B21C 23/24 2-Punkt Untergruppe Covering indefinite lengths of metal or non-metal material with a metal coating  | B21C 23/14 | 3-Punkt Untergruppe | Making other products  |
| B21C 23/20 2-Punkt Untergruppe by backward extrusion  B21C 23/21 1-Punkt Untergruppe . Presses specially adapted for extruding metal (extrusion presses in general B30B 11/22)  B21C 23/22 1-Punkt Untergruppe . Making metal-coated products; Making products from two or more metals  B21C 23/24 2-Punkt Untergruppe Covering indefinite lengths of metal or non-metal material with a metal coating  | B21C 23/16 | 4-Punkt Untergruppe | Making turbo blades or propellers  |
| B21C 23/21 1-Punkt Untergruppe . Presses specially adapted for extruding metal (extrusion presses in general B30B 11/22)  B21C 23/22 1-Punkt Untergruppe . Making metal-coated products; Making products from two or more metals  B21C 23/24 2-Punkt Untergruppe Covering indefinite lengths of metal or non-metal material with a metal coating  | B21C 23/18 | 2-Punkt Untergruppe | by impact extrusion [2]  |
| B21C 23/22 1-Punkt Untergruppe . Making metal-coated products; Making products from two or more metals  B21C 23/24 2-Punkt Untergruppe Covering indefinite lengths of metal or non-metal material with a metal coating  | B21C 23/20 | 2-Punkt Untergruppe | by backward extrusion  |
| B21C 23/24 2-Punkt Untergruppe Covering indefinite lengths of metal or non-metal material with a metal coating  | B21C 23/21 | 1-Punkt Untergruppe | . Presses specially adapted for extruding metal (extrusion presses in general B30B 11/22)                      |
|   | B21C 23/22 | 1-Punkt Untergruppe | . Making metal-coated products; Making products from two or more metals  |
| B21C 23/26 3-Punkt Untergruppe Applying metal coats to cables, e.g. to insulated electric cables  | B21C 23/24 | 2-Punkt Untergruppe | Covering indefinite lengths of metal or non-metal material with a metal coating                                |
|   | B21C 23/26 | 3-Punkt Untergruppe | Applying metal coats to cables, e.g. to insulated electric cables  |

| Symbol     | Тур                 | Titel  |
|------------|---------------------|--|
| B21C 23/28 | 4-Punkt Untergruppe | on intermittently-operating extrusion presses  |
| B21C 23/30 | 4-Punkt Untergruppe | on continuously-operating extrusion presses  |
| B21C 23/32 | 1-Punkt Untergruppe | . Lubrication of metal being extruded or of dies, or the like, e.g. physical state of lubricant, location where lubricant is applied (chemical composition, <u>see</u> appropriate classes)  |
| B21C 25/00 | Hauptgruppe         | Profiling tools for metal extruding  |
| B21C 25/02 | 1-Punkt Untergruppe | . Dies   |
| B21C 25/04 | 1-Punkt Untergruppe | . Mandrels   |
| B21C 25/06 | 1-Punkt Untergruppe | . Press heads, dies, or mandrels for coating work  |
| B21C 25/08 | 1-Punkt Untergruppe | . Dies or mandrels with section variable during extruding, e. g for making tapered work; Controlling variation   |
| B21C 25/10 | 1-Punkt Untergruppe | . Making tools by operations not covered by a single other subclass  |
| B21C 26/00 | Hauptgruppe         | Rams or plungers; Discs therefor [2]   |
| B21C 27/00 | Hauptgruppe         | Containers for metal to be extruded (B21C 29/02 takes precedence)  |
| B21C 27/02 | 1-Punkt Untergruppe | . for making coated work   |
| B21C 27/04 | 1-Punkt Untergruppe | . Venting metal-container chamber  |
| B21C 29/00 | Hauptgruppe         | Cooling or heating work or parts of the extrusion press  |
| B21C 29/02 | 1-Punkt Untergruppe | . of containers for metal to be extruded   |
| B21C 29/04 | 1-Punkt Untergruppe | . of press heads, dies, or mandrels  |
| B21C 31/00 | Hauptgruppe         | Control devices, e.g. for regulating the pressing speed or temperature of metal (B21C 25/08 takes precedence); Measuring devices, e.g. for temperature of metal, combined with or specially adapted for use in connection with extrusion presses (measuring devices of more general interest   |
|            |                     | within subclass B21C, <u>see</u> group B21C 51/00)   |
| B21C 33/00 | Hauptgruppe         | Feeding extrusion presses with metal to be extruded  |
| B21C 33/02 | 1-Punkt Untergruppe | . the metal being in liquid form   |
| B21C 35/00 | Hauptgruppe         | Removing work or waste from extruding presses; Drawing-off extruded work (in connection with the extruding of bent tubes or rods B21C 23/12); Cleaning dies, ducts, containers, or mandrels [2]  |
| B21C 35/02 | 1-Punkt Untergruppe | . Removing or drawing-off work   |
| B21C 35/03 | 2-Punkt Untergruppe | Straightening the work (metal straightening in general B21D)   |
| B21C 35/04 | 1-Punkt Untergruppe | . Cutting-off or removing waste  |
| B21C 35/06 | 1-Punkt Untergruppe | . Cleaning dies, ducts, containers or mandrels [2]   |
| B21C 37/00 | Hauptgruppe         | Manufacture of metal sheets, bars, wire, tubes or like semi-manufactured products, not otherwise provided for (by rolling B21B; by working or processing semi-finished sheet metal, profiles, tubes, or wire B21D, B21F; by casting B22; by material-removing machine tools B23; by welding, e.g. cladding or plating, B23K; by grinding or polishing B24; by electroforming C25D 1/00; by drawing |
|            |                     | or extruding, <u>see</u> the relevant groups); Manufacture of tubes of special shape [2]   |
| B21C 37/02 | 1-Punkt Untergruppe | . of sheets  |
| B21C 37/04 | 1-Punkt Untergruppe | . of bars or wire  |
| B21C 37/06 | 1-Punkt Untergruppe | . of tubes or metal hoses; Combined procedures for making tubes, e.g. for making multi-wall tubes (bending sheets for making tubes B21D 5/00; seaming by folding B21D 39/02)   |

| Symbol       | Тур                 | Titel  |
|--------------|---------------------|--|
| B21C 37/08   | 2-Punkt Untergruppe | Making tubes with welded or soldered seams (involving only a soldering or welding operation B23K)  |
| B21C 37/083  | 3-Punkt Untergruppe | Supply, or operations combined with supply, of strip material  |
| B21C 37/087  | 3-Punkt Untergruppe | using rods or strips of soldering material   |
| B21C 37/09   | 3-Punkt Untergruppe | of coated strip material   |
| B21C 37/10   | 2-Punkt Untergruppe | Making tubes with riveted seams  |
| B21C 37/12   | 2-Punkt Untergruppe | Making tubes or metal hoses with helically arranged seams  |
| B21C 37/14   | 2-Punkt Untergruppe | Making tubes from doubled flat material  |
| B21C 37/15   | 2-Punkt Untergruppe | Making tubes of special shape; Making the fittings   |
| B21C 37/16   | 3-Punkt Untergruppe | Making tubes with varying diameter in longitudinal direction   |
| B21C 37/18   | 4-Punkt Untergruppe | conical tubes  |
| B21C 37/20   | 3-Punkt Untergruppe | Making helical or similar guides in or on tubes without removing material, e.g. by drawing same over mandrels, by pushing same through dies  |
| B21C 37/22   | 3-Punkt Untergruppe | Making finned or ribbed tubes by fixing strip or like material to tubes (making heat exchangers B21D 53/02)  |
| B21C 37/24   | 4-Punkt Untergruppe | annularly-ribbed tubes   |
| B21C 37/26   | 4-Punkt Untergruppe | helically-ribbed tubes   |
| B21C 37/28   | 3-Punkt Untergruppe | Making tube fittings for connecting pipes, e.g. U-pieces   |
| B21C 37/29   | 4-Punkt Untergruppe | Making branched pieces, e.g. T-pieces  |
| B21C 37/30   | 2-Punkt Untergruppe | Finishing tubes, e.g. sizing, burnishing   |
| B21C 43/00   | Hauptgruppe         | Devices for cleaning metal products combined with or specially adapted for use with machines or apparatus provided for in this subclass  |
| B21C 43/02   | 1-Punkt Untergruppe | . combined with or specially adapted for use in connection with drawing or winding machines or apparatus   |
| B21C 43/04   | 2-Punkt Untergruppe | Devices for de-scaling wire or like flexible work  |
| DD1 0 45 100 |                     | Auxiliary operations used in connection with metal working without essentially removing material   |
| B21C 45/00   | Hauptgruppe         | Separating mandrels from work or <u>vice versa</u>   |
| B21C 47/00   | Hauptgruppe         | Winding-up, coiling or winding-off metal wire, metal band or other flexible metal material characterised by features relevant to metal processing only (coiling wire into particular forms B21F 3/00; hot coilers in connection with heat-treatment apparatus C21D 9/68) |
| B21C 47/02   | 1-Punkt Untergruppe | . Winding-up or coiling  |
| B21C 47/04   | 2-Punkt Untergruppe | on or in reels or drums, without using a moving guide (reels or drums B21C 47/28)  |
| B21C 47/06   | 3-Punkt Untergruppe | with loaded rollers, bolts, or equivalent means holding the material on the reel or drum   |
| B21C 47/08   | 2-Punkt Untergruppe | without making use of a reel or drum, the first turn being formed by a stationary guide  |
| B21C 47/10   | 2-Punkt Untergruppe | by means of a moving guide   |
| B21C 47/12   | 3-Punkt Untergruppe | the guide moving parallel to the axis of the coil (B21C 47/14 takes precedence)  |
| B21C 47/14   | 3-Punkt Untergruppe | by means of a rotating guide, e.g. laying the material around a stationary reel or drum  |

| Symbol     | Тур                 | Titel  |
|------------|---------------------|--|
| B21C 47/16 | 1-Punkt Untergruppe | . Unwinding or uncoiling   |
| B21C 47/18 | 2-Punkt Untergruppe | from reels or drums  |
| B21C 47/20 | 3-Punkt Untergruppe | the unreeled material moving transversely to the tangent line of the drum, e.g. axially, radially  |
| B21C 47/22 | 2-Punkt Untergruppe | Unwinding coils without reels or drums   |
| B21C 47/24 | 1-Punkt Untergruppe | . Transferring coils to or from winding apparatus or to or from operative position therein; Preventing uncoiling during transfer   |
| B21C 47/26 | 1-Punkt Untergruppe | . Special arrangements with regard to simultaneous or subsequent treatment of the material   |
| B21C 47/28 | 1-Punkt Untergruppe | . Drums or other coil-holders (gripping means B21C 47/32)  |
| B21C 47/30 | 2-Punkt Untergruppe | expansible or contractible   |
| B21C 47/32 | 1-Punkt Untergruppe | . Tongs or gripping means specially adapted for reeling operations   |
| B21C 47/34 | 1-Punkt Untergruppe | . Feeding or guiding devices not specially adapted to a particular type of apparatus   |
| B21C 49/00 | Hauptgruppe         | Devices for temporarily accumulating material  |
| B21C 51/00 | Hauptgruppe         | Measuring, gauging, indicating, counting, or marking devices specially adapted for use in the production or manipulation of material in accordance with subclasses B21B-B21F |