

CPC COOPERATIVE PATENT CLASSIFICATION

B PERFORMING OPERATIONS; TRANSPORTING

(NOTES omitted)

SHAPING

B21 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](#))

(NOTES omitted)

B21F WORKING OR PROCESSING OF METAL WIRE ({reducing diameter by} rolling of metal [B21B](#); by drawing, auxiliary operations used in connection with metal-working without essentially removing material [B21C](#); bundling articles [B65B 13/00](#))

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.

Wire working characterised by operations performed

1/00 Bending wire other than coiling; Straightening wire

- 1/002 . {by means of manually operated devices, e.g. pliers}
- 1/004 . {by means of press-type tooling}
- 1/006 . {in 3D with means to rotate the tools about the wire axis}
- 1/008 . {in 3D with means to rotate the wire about its axis}
- 1/02 . Straightening
- 1/023 . . {in a device rotating about the wire axis}
- 1/026 . . {Straightening and cutting}
- 1/04 . Undulating
- 1/06 . Bending wire-eyes

3/00 Coiling wire into particular forms

- 3/02 . helically
- 3/027 . . with extended ends formed in a special shape, e.g. for clothes-pegs
- 3/04 . . externally on a mandrel or the like
- 3/06 . . internally on a hollow form
- 3/08 . to flat spiral
- 3/10 . to spirals other than flat, e.g. conical
- 3/12 . of interconnected helical springs

5/00 Upsetting wire {or pressing operations affecting the wire cross-section} (in the manufacture of nails or pins [B21G 3/12](#))

- 5/005 . {Upsetting wire}

7/00 Twisting wire; Twisting wire together (for connections of limited size [B21F 15/04](#))

9/00

Straining wire (straining prestressing wires for concrete [E04G 21/12](#); connections or attachments adapted for straining [F16G 11/00](#); {bundling machines or tools [B65B 13/00](#)})

- 9/002 . {to maintain tension in the wire, e.g. to pull the wire taut}
- 9/005 . {to affect the material properties of the wire}
- 9/007 . {to induce a plastic deformation of the wire}
- 9/02 . by tools adapted also for making connections

11/00 Cutting wire (hand cutting tools [B26B](#))

- 11/005 . {springs}

13/00 Splitting wire

15/00 Connecting wire to wire or other metallic material or objects; Connecting parts by means of wire (tools for both straining and connecting [B21F 9/00](#); jacketing or reinforcing [B21F 17/00](#); manufacture of wire network [B21F 27/00](#); in making bands [B21F 43/00](#) ; bundling machines or tools [B65B 13/00](#); for semiconductors [H01L 24/85](#))

- 15/02 . wire with wire
- 15/04 . . without additional connecting elements or material, e.g. by twisting
- 15/06 . . with additional connecting elements or material {[\(B21F 27/08 takes precedence\)](#)}
- 15/08 . . . making use of soldering or welding {[\(B21F 27/10 takes precedence\)](#)}
- 15/10 . wire with sheet metal

17/00 Jacketing or reinforcing articles with wire (by winding [B65H 54/00](#), [B65H 81/00](#); by braiding [D04C](#))

19/00	Metallic coating of wire (by extruding B21C 23/24 ; by soldering or welding, e.g. cladding or plating B23K ; by other non-mechanical means C23 ; electroplating C25D)	35/00	Making springs from wire (by coiling wire B21F 3/00 ; making resilient rings B21F 37/02)
23/00	Feeding wire in wire-working machines or apparatus (applicable also to feeding rods or strips B21D 43/00)	35/003	• {Multi-filament springs, e.g. made of stranded, braided, cable or multi-filament material}
23/002	• {Feeding means specially adapted for handling various diameters of wire or rod}	35/006	• {Double twist coil springs}
23/005	• {Feeding discrete lengths of wire or rod}	35/02	• Bending or deforming ends of coil springs to special shape
23/007	• • {using pick-up means, e.g. for isolating a predefined number of wires from a bundle}	35/04	• Making flat springs, e.g. sinus springs
Wire working characterised by the particular articles produced		37/00	Manufacture of rings from wire (in chain making B21L ; making of tyre beads B29D 30/48)
25/00	Making barbed wire	37/02	• of resilient rings, e.g. key-rings
27/00	Making wire network, i.e. wire nets (meshed-ring network B21F 31/00 ; in making bands B21F 43/00 ; using looms D03D)	37/04	• of washers (B21F 37/02 takes precedence)
27/005	• {Wire network <i>per se</i> }	39/00	Making wheel spokes from wire
27/02	• without additional connecting elements or material at crossings, e.g. connected by knitting	41/00	Making umbrella frames or members from wire
27/04	• • Manufacturing on machines with rotating blades or formers	43/00	Making bands, e.g. bracelets, or wire (making chains B21L ; using looms D03D)
27/06	• • Manufacturing on twister-gear machines	45/00	Wire-working in the manufacture of other particular articles (of pins, needles, nails, hairpins B21G ; of chains B21L {; for semiconductor devices H01L 24/42 })
27/08	• with additional connecting elements or material at crossings	45/002	• {of frames for spectacles}
27/10	• • with soldered or welded crossings { (resistance spot welding machines for manufacturing of metallic grids or mats B23K 11/008) }	45/004	• {Mounting bails on containers}
27/12	• Making special types or portions of network by methods or means specially adapted therefor	45/006	• {of concrete reinforcement fibres}
27/121	• • {of tubular form, e.g. as reinforcements for pipes or pillars}	45/008	• {of medical instruments, e.g. stents, corneal rings (medical science A61)}
27/122	• • • {by attaching a continuous stirrup to longitudinal wires}	45/02	• of clothes hangers
27/124	• • • • {applied by rotation}	45/04	• of elements, e.g. levers or links, for bottle stoppers
27/125	• • • {by attaching individual stirrups to longitudinal wires}	45/06	• of flexible shafts or hollow conduits, e.g. for Bowden mechanisms
27/127	• • • {by bending preformed mesh}	45/08	• of loom heddles
27/128	• • {of three-dimensional form by connecting wire networks, e.g. by projecting wires through an insulating layer}	45/10	• of cards for fabric-napping machines
27/14	• • Specially bending or deforming free wire ends	45/12	• of fishing hooks
27/16	• • for spring mattresses	45/14	• of end-pieces for laces or ropes
27/18	• • of meshed work for filters or sieves	45/16	• of devices for fastening or securing purposes
27/20	• • of plaster-carrying network	45/18	• • of slide fastener elements
27/22	• • of network for wire-reinforced glass or the like	45/20	• • of springs hooks; of spring safety hooks
29/00	Making fencing or like material made partly of wire (B21F 25/00 , B21F 27/00 take precedence)	45/22	• • of paper fasteners or clips (staples B21F 45/24)
29/02	• comprising bars or the like connected by wires	45/24	• • of staples; of belt-fastening elements
31/00	Making meshed-ring network from wire	45/26	• • of buttons
33/00	Tools or devices specially designed for handling or processing wire fabrics or the like	45/28	• • • of "patent-fastener" or press-button type
33/002	• {Coiling or packing wire network}	99/00	Subject matter not provided for in other groups of this subclass
33/005	• {Cutting wire network}		
33/007	• {Connecting wire network}		
33/02	• Mounting of wire network on frames		
33/025	• • {Mounting of mattress innersprings on borderframes}		
33/04	• Connecting ends of helical springs for mattresses		