

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](#))

Wire working characterised by operations performed

		9/007	. {to induce a plastic deformation of the wire}
		9/02	. by tools adapted also for making connections
1/00	Bending wire other than coiling; Straightening wire	11/00	Cutting wire (hand cutting tools B26B)
1/002	. {by means of manually operated devices, e.g. pliers}	11/005	. {springs}
1/004	. {by means of press-type tooling}	13/00	Splitting wire
1/006	. {in 3D with means to rotate the tools about the wire axis}	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 })
1/008	. {in 3D with means to rotate the wire about its axis}	15/02	. wire with wire
1/02	. Straightening	15/04	. . without additional connecting elements or material, e.g. by twisting
1/023	. . {in a device rotating about the wire axis}	15/06	. . with additional connecting elements or material { (B21F 27/08 takes precedence) }
1/026	. . {Straightening and cutting}	15/08	. . . making use of soldering or welding { (B21F 27/10 takes precedence) }
1/04	. Undulating	15/10	. wire with sheet metal
1/06	. Bending wire-eyes	17/00	Jacketing or reinforcing articles with wire (by winding B65H 54/00 , B65H 81/00 ; by braiding D04C)
3/00	Coiling wire into particular forms	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)
3/02	. helically		
3/027	. . with extended ends formed in a special shape, e.g. for clothes-pegs	23/00	Feeding wire in wire-working machines or apparatus (applicable also to feeding rods or strips B21D 43/00)
3/04	. . externally on a mandrel or the like	23/002	. {Feeding means specially adapted for handling various diameters of wire or rod}
3/06	. . internally on a hollow form	23/005	. {Feeding discrete lengths of wire or rod}
3/08	. to flat spiral	23/007	. . {using pick-up means, e.g. for isolating a predefined number of wires from a bundle}
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}		

Wire working characterised by the particular articles produced

- 25/00 Making barbed wire**
- 27/00 Making wire network, i.e. wire nets** ([meshed-ring network B21F 31/00](#); in making bands [B21F 43/00](#); using looms [D03D](#))
- 27/005 . {Wire network [per se](#)}
 - 27/02 . without additional connecting elements or material at crossings, e.g. connected by knitting
 - 27/04 . . Manufacturing on machines with rotating blades or formers
 - 27/06 . . Manufacturing on twister-gear machines
 - 27/08 . with additional connecting elements or material at crossings
 - 27/10 . . with soldered or welded crossings {(resistance spot welding machines for manufacturing of metallic grids or mats [B23K 11/008](#))}
 - 27/12 . Making special types or portions of network by methods or means specially adapted therefor
 - 27/121 . . {of tubular form, e.g. as reinforcements for pipes or pillars}
 - 27/122 . . . {by attaching a continuous stirrup to longitudinal wires}
 - 27/124 {applied by rotation}
 - 27/125 . . . {by attaching individual stirrups to longitudinal wires}
 - 27/127 . . . {by bending preformed mesh}
 - 27/128 . . {of three-dimensional form by connecting wire networks, e.g. by projecting wires through an insulating layer}
 - 27/14 . . Specially bending or deforming free wire ends
 - 27/16 . . for spring mattresses
 - 27/18 . . of meshed work for filters or sieves
 - 27/20 . . of plaster-carrying network
 - 27/22 . . of network for wire-reinforced glass or the like
- 29/00 Making fencing or like material made partly of wire** ([B21F 25/00](#), [B21F 27/00](#) take precedence)
- 29/02 . comprising bars or the like connected by wires
- 31/00 Making meshed-ring network from wire**
- 33/00 Tools or devices specially designed for handling or processing wire fabrics or the like**
- 33/002 . {Coiling or packing wire network}
 - 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
- 35/00 Making springs from wire** (by coiling wire [B21F 3/00](#); making resilient rings [B21F 37/02](#))
- 35/003 . {Multi-filament springs, e.g. made of stranded, braided, cable or multi-filament material}
 - 35/006 . {Double twist coil springs}
 - 35/02 . Bending or deforming ends of coil springs to special shape
 - 35/04 . Making flat springs, e.g. sinus springs
- 37/00 Manufacture of rings from wire** (in chain making [B21L](#); making of tyre beads [B29D 30/48](#))
- 37/02 . of resilient rings, e.g. key-rings
 - 37/04 . of washers ([B21F 37/02](#) takes precedence)

- 39/00 Making wheel spokes from wire**
- 41/00 Making umbrella frames or members from wire**
- 43/00 Making bands, e.g. bracelets, or wire** (making chains [B21L](#); using looms [D03D](#))
- 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](#)})
- 45/002 . {of frames for spectacles}
 - 45/004 . {Mounting bails on containers}
 - 45/006 . {of concrete reinforcement fibres}
 - 45/008 . {of medical instruments, e.g. stents, corneal rings ([medical science A61](#))}
 - 45/02 . of clothes hangers
 - 45/04 . of elements, e.g. levers or links, for bottle stoppers
 - 45/06 . of flexible shafts or hollow conduits, e.g. for Bowden mechanisms
 - 45/08 . of loom heddles
 - 45/10 . of cards for fabric-napping machines
 - 45/12 . of fishing hooks
 - 45/14 . of end-pieces for laces or ropes
 - 45/16 . of devices for fastening or securing purposes
 - 45/18 . . of slide fastener elements
 - 45/20 . . of springs hooks; of spring safety hooks
 - 45/22 . . of paper fasteners or clips ([staples B21F 45/24](#))
 - 45/24 . . of staples; of belt-fastening elements
 - 45/26 . . of buttons
 - 45/28 . . . of "patent-fastener" or press-button type
- 99/00 Subject matter not provided for in other groups of this subclass**