

# CPC COOPERATIVE PATENT CLASSIFICATION

## B PERFORMING OPERATIONS; TRANSPORTING

(NOTES omitted)

### SHAPING

#### B21 MECHANICAL METAL-WORKING WITHOUT ESSENTIALLY REMOVING MATERIAL; PUNCHING METAL

(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

		9/02	. by tools adapted also for making connections
<b>1/00</b>	<b>Bending wire other than coiling; Straightening wire</b>	<b>11/00</b>	<b>Cutting wire</b> (hand cutting tools <a href="#">B26B</a> )
1/002	. {by means of manually operated devices, e.g. pliers}	11/005	. {springs}
1/004	. {by means of press-type tooling}	<b>13/00</b>	<b>Splitting wire</b>
1/006	. {in 3D with means to rotate the tools about the wire axis}	<b>15/00</b>	<b>Connecting wire to wire or other metallic material or objects; Connecting parts by means of wire</b> (tools for both straining and connecting <a href="#">B21F 9/00</a> ; jacketing or reinforcing <a href="#">B21F 17/00</a> ; manufacture of wire network <a href="#">B21F 27/00</a> ; in making bands <a href="#">B21F 43/00</a> {; bundling machines or tools <a href="#">B65B 13/00</a> ; for semiconductors <a href="#">H01L 24/85</a> )
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 {( <a href="#">B21F 27/08</a> takes precedence)}
1/026	. . {Straightening and cutting}	15/08	. . . making use of soldering or welding {( <a href="#">B21F 27/10</a> takes precedence)}
1/04	. Undulating	15/10	. wire with sheet metal
1/06	. Bending wire-eyes	<b>17/00</b>	<b>Jacketing or reinforcing articles with wire</b> (by winding <a href="#">B65H 54/00</a> , <a href="#">B65H 81/00</a> ; by braiding <a href="#">D04C</a> )
<b>3/00</b>	<b>Coiling wire into particular forms</b>	<b>19/00</b>	<b>Metallic coating of wire</b> (by extruding <a href="#">B21C 23/24</a> ; by soldering or welding, e.g. cladding or plating <a href="#">B23K</a> ; by other non-mechanical means <a href="#">C23</a> ; electroplating <a href="#">C25D</a> )
3/02	. helically	<b>23/00</b>	<b>Feeding wire in wire-working machines or apparatus</b> (applicable also to feeding rods or strips <a href="#">B21D 43/00</a> )
3/027	. . with extended ends formed in a special shape, e.g. for clothes-pegs	23/002	. {Feeding means specially adapted for handling various diameters of wire or rod}
3/04	. . externally on a mandrel or the like	23/005	. {Feeding discrete lengths of wire or rod}
3/06	. . internally on a hollow form	23/007	. . {using pick-up means, e.g. for isolating a predefined number of wires from a bundle}
3/08	. to flat spiral		
3/10	. to spirals other than flat, e.g. conical		
3/12	. of interconnected helical springs		
<b>5/00</b>	<b>Upsetting wire {or pressing operations affecting the wire cross-section}(in the manufacture of nails or pins <a href="#">B21G 3/12</a>)</b>		
5/005	. {Upsetting wire}		
<b>7/00</b>	<b>Twisting wire; Twisting wire together</b> (for connections of limited size <a href="#">B21F 15/04</a> )		
<b>9/00</b>	<b>Straining wire</b> (straining prestressing wires for concrete <a href="#">E04G 21/12</a> ; connections or attachments adapted for straining <a href="#">F16G 11/00</a> ; {bundling machines or tools <a href="#">B65B 13/00</a> })		
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}		

**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**