**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**)

**Definition statement**

This place covers:

Methods as well as devices relating to working or processing of metal wire, i.e. modifying, not manufacturing the wire:

Wire working methods characterized by their technology (e.g. bending, coiling, etc). These aspects are covered by **B21F 1/00-B21F 23/005**

Wire working methods characterized by the product made (e.g. barbed wire, wire network etc). These aspects are covered by **B21F 25/00-B21F 45/28**

Miscellaneous wire working and processing. These aspects are covered by **B21F 99/00**

**References**

**Limiting references**

This place does not cover:

| Metal rolling methods of mills for making wire or material of like small cross-section | B21B 1/16 |
| Manufacture of metal sheets, metal wire, metal rods, metal tubes by drawing | B21C 1/00 |
| Devices for straightening wire or like work combined with or specially adapted for use in connection with drawing or winding machines or apparatus | B21C 19/00 |
| Manufacture of bars or wires by metal working | B21C 37/04 |
| Devices for cleaning metal products, e.g. wires, combined with or specially adapted for use with machines or apparatus provided in **B21C** | B21C 43/00 |
| Winding-up, coiling or winding-off metal wires, metal band or other flexible metal material characterised by features relevant to metal processing only | B21C 47/00 |

**Informative references**

Attention is drawn to the following places, which may be of interest for search:

| Jewellery; Bracelets: Other personal ornaments; coins | A44C |
| Working or processing of sheet metal or metal tubes, rods or profiles without essentially removing material; punching | B21D |
| Making needle, pins or nails | B21G |
| Making chains | B21L |
| Making alloys containing metallic or non-metallic fibres or filaments | C22C 47/00 |
| Building | E04 |
Semi-conductor devices; electric solid state devices not otherwise provided for H01L

**B21F 1/00**

**Bending wire other than coiling; Straightening wire**

**Definition statement**

*This place covers:*

Methods and devices for bending wire, i.e. forming discrete angles, as well as straightening, i.e. removing distortions.

Source: WO9324254

**B21F 3/00**

**Coiling wire into particular forms**

**Definition statement**

*This place covers:*

Methods and devices for coiling wire, i.e. forming a continuous angle along the wire length.

Source: JP58192643
References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Making springs from wire | B21F 35/00 |

**B21F 5/00**

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

**Definition statement**

This place covers:

Methods and devices for enlarging a wire cross-section by applying an axial force.

![Diagram](source: US2004261487)

**References**

**Informative references**

Attention is drawn to the following places, which may be of interest for search:

| Methods for forging, hammering or pressing to perform upsetting | B21J 5/08 |
B21F 7/00
Twisting wire; Twisting wire together (for connections of limited size B21F 15/04)

Definition statement
This place covers:
Methods and devices for continuously twisting of wire, i.e. twisting of a wire of theoretically unlimited length.

References

Limiting references
This place does not cover:

| Connecting wire with wire without additional connecting element or material, e.g. by twisting | B21J 15/04 |
| Electrically-conductive connections between two or more conductive members in direct contact effected by twisting wire | H01R 4/12 |

Informative references
Attention is drawn to the following places, which may be of interest for search:

| Jacketing or reinforcing articles with wires | B21F 17/00 |
| Wire working in the manufacture of flexible shafts or hollow conduits, e.g. for Bowden mechanisms | B21F 45/06 |
| Producing bead-rings or bead-cores | B29D 30/48 |
| Methods or apparatus specially adapted for manufacturing, assembling, maintaining or repairing dynamo-electric machines | H02K 15/0025 |
B21F 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})

Definition statement

This place covers:

Methods and devices for straining wires, i.e. tensioning wires with or without plastic deformation.

References

Limiting references

This place does not cover:

Connections or attachments adapted for straining of cables, ropes or wire F16G 11/12

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Straightening wire                  | B21F 1/02 |
| Bundling machines or tools          | B65B 13/00 |
| Hand tools for cable tie applications | B65B 13/027 |
| Pre-stressing building material    | E04G 21/12 |
B21F 11/00

Cutting wire (hand cutting tools B26B)

Definition statement

This place covers:

Methods and devices for cutting wire

References

Limiting references

This place does not cover:

<table>
<thead>
<tr>
<th>Cutting wire nets</th>
<th>B21F 33/005</th>
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<tbody>
<tr>
<td>Hand operated metal-shearing devices for cutting wires</td>
<td>B23D 29/023</td>
</tr>
</tbody>
</table>

Informative references

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Machines or devices for shearing or cutting profiled stock</th>
<th>B23D 23/00</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hand-held cutting tools not otherwise provided for</td>
<td>B26B</td>
</tr>
<tr>
<td>Hand cutting tools using wires as cutting means</td>
<td>B26B 27/002</td>
</tr>
<tr>
<td>Cutting</td>
<td>B26D</td>
</tr>
</tbody>
</table>
**B21F 13/00**

Splitting wire

**Definition statement**

*This place covers:*

Methods and devices for splitting, i.e. separating wire portions lengthwise.

Source: GB786261

**B21F 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](#))

**Definition statement**

*This place covers:*

Methods and devices for connecting wire to wire or other metallic material; connecting parts by means of wire.

Source: US5224955

**References**

*Limiting references*

*This place does not cover:*

| Straining wire by tools also adapted for making connections | B21F 9/02 |
| Making wire networks with additional connecting elements or material at crossings | B21F 27/08 |
| Making wire networks with welded or soldered crossings | B21F 27/10 |
Applying and securing binding material around articles using strings, wires, strips, bands, tapes  

Attaching or detaching leads of semi-conductors

<table>
<thead>
<tr>
<th>CPC</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>B21F 15/00</td>
<td>Applying and securing binding material around articles using strings, wires, strips, bands, tapes</td>
</tr>
<tr>
<td>H01L 24/80</td>
<td>Attaching or detaching leads of semi-conductors</td>
</tr>
</tbody>
</table>

**Informative references**

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<table>
<thead>
<tr>
<th>CPC</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>B21F 17/00</td>
<td>Jacketing or reinforcing articles with wire</td>
</tr>
<tr>
<td>B21F 43/00</td>
<td>Making bands, e.g. bracelets of wire</td>
</tr>
<tr>
<td>B23K</td>
<td>Soldering or unsoldering; Welding</td>
</tr>
</tbody>
</table>

**B21F 17/00**

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

**Definition statement**

This place covers:

Methods and devices for jacketing articles with wire, i.e. winding one or more wire around an article (which article can be a wire); reinforcing articles with wire (e.g. reinforcing paper with wire).

References

**Limiting references**

This place does not cover:

<table>
<thead>
<tr>
<th>CPC</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>B65H 54/00, B65H 81/00</td>
<td>Jacketing or reinforcing of articles with wires by winding or coiling</td>
</tr>
<tr>
<td>C22C 47/062</td>
<td>Making alloys containing metallic or non-metallic fibres or filaments by forming the fibres or filaments into a preformed structure from wires or filaments only</td>
</tr>
<tr>
<td>D04C</td>
<td>Jacketing or reinforcing of articles with wires by braiding</td>
</tr>
</tbody>
</table>
B21F 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)

Definition statement

This place covers:
Methods and devices for coating metal wires, e.g. by using a metal band.

References

Limiting references

This place does not cover:

<table>
<thead>
<tr>
<th>Coating of wire by extrusion</th>
<th>B21C 23/14</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coating of wire by soldering or welding, e.g. cladding or plating</td>
<td>B23K</td>
</tr>
<tr>
<td>Coating of wire by other non-mechanical means</td>
<td>C23</td>
</tr>
<tr>
<td>Coating of wire by electroplating</td>
<td>C25D</td>
</tr>
</tbody>
</table>

B21F 23/00

Feeding wire in wire-working machines or apparatus (applicable also to feeding rods or strips B21D 43/00)

Definition statement

This place covers:
Methods and devices for feeding wire.
**References**

**Limiting references**

*This place does not cover:*

<table>
<thead>
<tr>
<th>Guiding wire</th>
<th>B21F 99/00</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feeding wire in wire-working machines, said machines also being applicable to feed rods or strips</td>
<td>B21D 43/00</td>
</tr>
</tbody>
</table>

**Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

| Arrangements for moving, supporting or positioning work specially adapted for metal rolling mills | B21B 39/006 |
| Forwarding filamentary material | B65H 51/00 |

**B21F 25/00**

**Making barbed wire**

**Definition statement**

*This place covers:*

Methods and devices for making barbed wires or barbed tapes.

Source: GB2300206

**References**

**Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

| Barbed wires | F41H 11/08 |

Source: GB2300206
B21F 27/00

Making wire network, i.e. wire nets (meshed-ring network B21F 31/00; in making bands B21F 43/00; using looms D03D)

Definition statement

This place covers:
Methods and devices for making wire networks, e.g. fences or reinforcements for concrete.

References

Limiting references

This place does not cover:

<table>
<thead>
<tr>
<th>Method or Device</th>
<th>CPC Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Making fencing or the like partly of wire</td>
<td>B21F 29/00</td>
</tr>
<tr>
<td>Making meshed ring network from wire</td>
<td>B21F 31/00</td>
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<tr>
<td>Making bands from wire</td>
<td>B21F 43/00</td>
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<tr>
<td>Making other particular articles from wire</td>
<td>B21F 45/00</td>
</tr>
<tr>
<td>Making wire network using looms</td>
<td>D03D</td>
</tr>
</tbody>
</table>

Informative references

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Topic</th>
<th>CPC Code</th>
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</thead>
<tbody>
<tr>
<td>Connecting wire to wire or other metallic material</td>
<td>B21F 15/00</td>
</tr>
<tr>
<td>Bending wire networks</td>
<td>B21D 11/125</td>
</tr>
<tr>
<td>Soldering or unsoldering; Welding</td>
<td>B23K</td>
</tr>
<tr>
<td>Reinforcing elements, e.g. for concrete</td>
<td>E04C 5/00</td>
</tr>
<tr>
<td>Fencing</td>
<td>E04H 17/00</td>
</tr>
</tbody>
</table>
**B21F 29/00**

Making fencing or like material made partly of wire (B21F 25/00, B21F 27/00 take precedence)

**Definition statement**

This place covers:

Methods and devices for making structures partly of wire and partly of other elements, e.g. fences reinforced with bars.

Source: US4651975

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**B21F 31/00**

Making meshed-ring network from wire

**Definition statement**

This place covers:

Methods and devices for making networks, e.g. fences, obtained by interlacing rings of metal wires, e.g. fences for securing rocks.

Source: EP1662047

**Special rules of classification**

Interlaced rings can be of non-circular shape.
B21F 33/00
Tools or devices specially designed for handling or processing wire fabrics or the like

Definition statement
This place covers:
Methods and devices for handling or processing wire fabrics, i.e. further handling or processing of products manufactured from wire (e.g. connecting wire products, coiling wire products, etc).

Source: US3814144

References
Informative references
Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Bending of wire networks</th>
<th>B21D 11/125</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upholstery</td>
<td>B68</td>
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</table>

B21F 35/00
Making springs from wire (by coiling wire B21F 3/00; making resilient rings B21F 37/02)

Definition statement
This place covers:
Methods and devices for making springs from wire.
Miscellaneous spring manufacturing processes, not necessarily starting from wire, not otherwise provided for.

Fig. 1 Source: EP1533053
References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Bending wire other than coiling | B21F 3/00 |
| Manufacture of resilient rings | B21F 37/02 |
| Springs                         | F16F 1/00 |

B21F 37/00

Manufacture of rings from wire (in chain making B21L; making of tyre beads B29D 30/48)

Definition statement

This place covers:

Methods and devices for the manufacture of rings from wire.

Source: EP1504828

References

Limiting references

This place does not cover:

| Manufacture of rings in chain making | B21L |
| Manufacture of rings in tyre beads making | B29D 30/48 |
**B21F 39/00**

Making wheel spokes from wire

**Definition statement**

*This place covers:*

Methods and devices for the manufacture of wheel spokes from wire.

Source: GB357081

**B21F 41/00**

Making umbrella frames or members from wire

**Definition statement**

*This place covers:*

Methods and devices for the manufacture of umbrella frames or members from wire.

Source: DE177303
**B21F 43/00**

Making bands, e.g. bracelets, or wire (making chains **B21L**; using looms **D03D**)

**Definition statement**

*This place covers:*

Methods and devices for the manufacture of bands or bracelets from wire.

Source: GB2079336

**References**

**Limiting references**

*This place does not cover:*

| Making bands using looms | **D03D** |

**Informative references**

Attention is drawn to the following places, which may be of interest for search:

| Bracelets | **A44C 5/00** |
| Making chains | **B21L** |

**B21F 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**)

**Definition statement**

*This place covers:*

Methods and devices for the manufacture of all wire products if neither classifiable in a sub-group of **B21F 45/00** nor in a class ranging from **B21F 25/00-B21F 43/00** nor in a specific product class.

Source: US2002198561
### References

#### Limiting references

*This place does not cover:*

<table>
<thead>
<tr>
<th>Subject</th>
<th>Class</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wire working in the manufacture of pins, needles, mails, hairpins</td>
<td>B21G</td>
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<tr>
<td>Wire working in the manufacture of chains</td>
<td>B21L</td>
</tr>
<tr>
<td>Wire working for semi-conductor devices</td>
<td>H01L 24/42</td>
</tr>
</tbody>
</table>

### B21F 99/00

**Subject matter not provided for in other groups of this subclass**

#### Definition statement

*This place covers:*

Subject-matter not provided for in other groups of this subclass concerning the working and processing of wire, such as e.g. heat treatments specifically adapted for wires.