B21F

WORKING OR PROCESSING OF METAL WIRE (rolling of metal wire B21B 1/16; by drawing, auxiliary operations used in connection with metal-working without essentially removing material B21C)

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 characterised by their technology, e.g. bending or coiling. These aspects are covered by main groups B21F 1/00 - B21F 23/00.
- Wire working methods characterised by the product made, e.g. barbed wire or wire network. These aspects are covered by main groups B21F 25/00 - B21F 45/00.
- Miscellaneous wire working and processing. These aspects are covered by main group B21F 99/00.

References

Limiting references

This place does not cover:

Metal rolling methods of mills for making semi-finished products of solid or profiled cross-section, for rolling wire or material of like small cross-section	B21B 1/16
Manufacture of metal sheets, wire, rods, tubes, profiles or like semi-manufactured products otherwise than by rolling; Auxiliary operations used in connection with metal-working without essentially removing material	B21C
Manufacture of metal sheets, wire, rods, tubes or like semi-manufactured products 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 rods or wire by metal working	B21C 37/04
Devices for cleaning metal products combined with or specially adapted for use with machines or apparatus provided in B21C	B21C 43/00
Winding-up, coiling or winding-off metal wire, metal band or other flexible metal material characterised by features relevant to metal processing only	B21C 47/00

Application-oriented references

Examples of places where the subject matter of this place is covered when specially adapted, used for a particular purpose, or incorporated in a larger system:

Processes for changing of physical properties of metals	C21D, C22F

Informative references

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

Personal adornments, e.g. jewellery; Coins	A44C
Working or processing of sheet metal or metal tubes, rods or profiles without essentially removing material; Punching metal	B21D
Making needles, pins or nails of metal	B21G
Making metal chains	B21L
Bundling articles	B65B 13/00
Making alloys containing metallic or non-metallic fibres or filaments	C22C 47/00
Building	E04
Semiconductor devices; Electric solid-state devices not otherwise provided for	H10

B21F 1/00

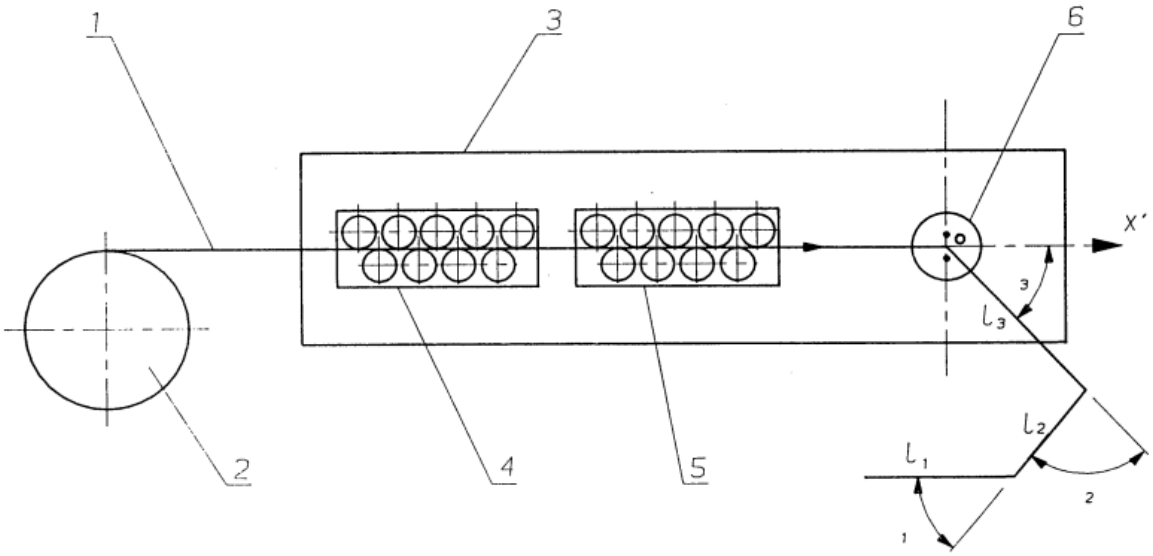
Bending wire other than coiling; Straightening wire

Definition statement

This place covers:

Methods or devices for bending wire, e.g. forming discrete angles or straightening to remove distortions.

Illustrative example of subject matter classified in this place:



B21F 3/00

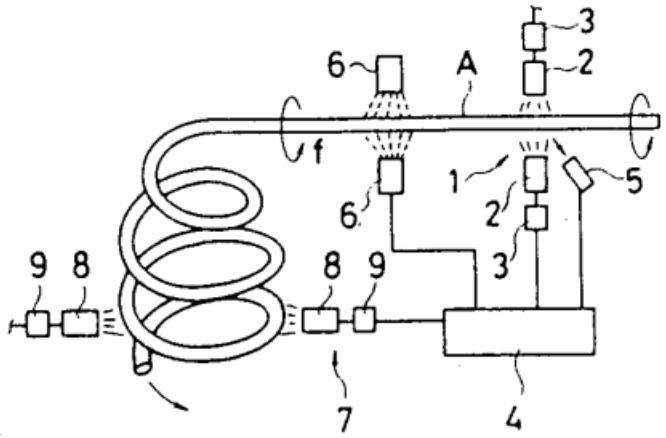
Coiling wire into particular forms

Definition statement

This place covers:

Methods or devices for coiling wire, e.g. forming a continuous angle along the wire length.

Illustrative example of subject matter classified in this place:



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

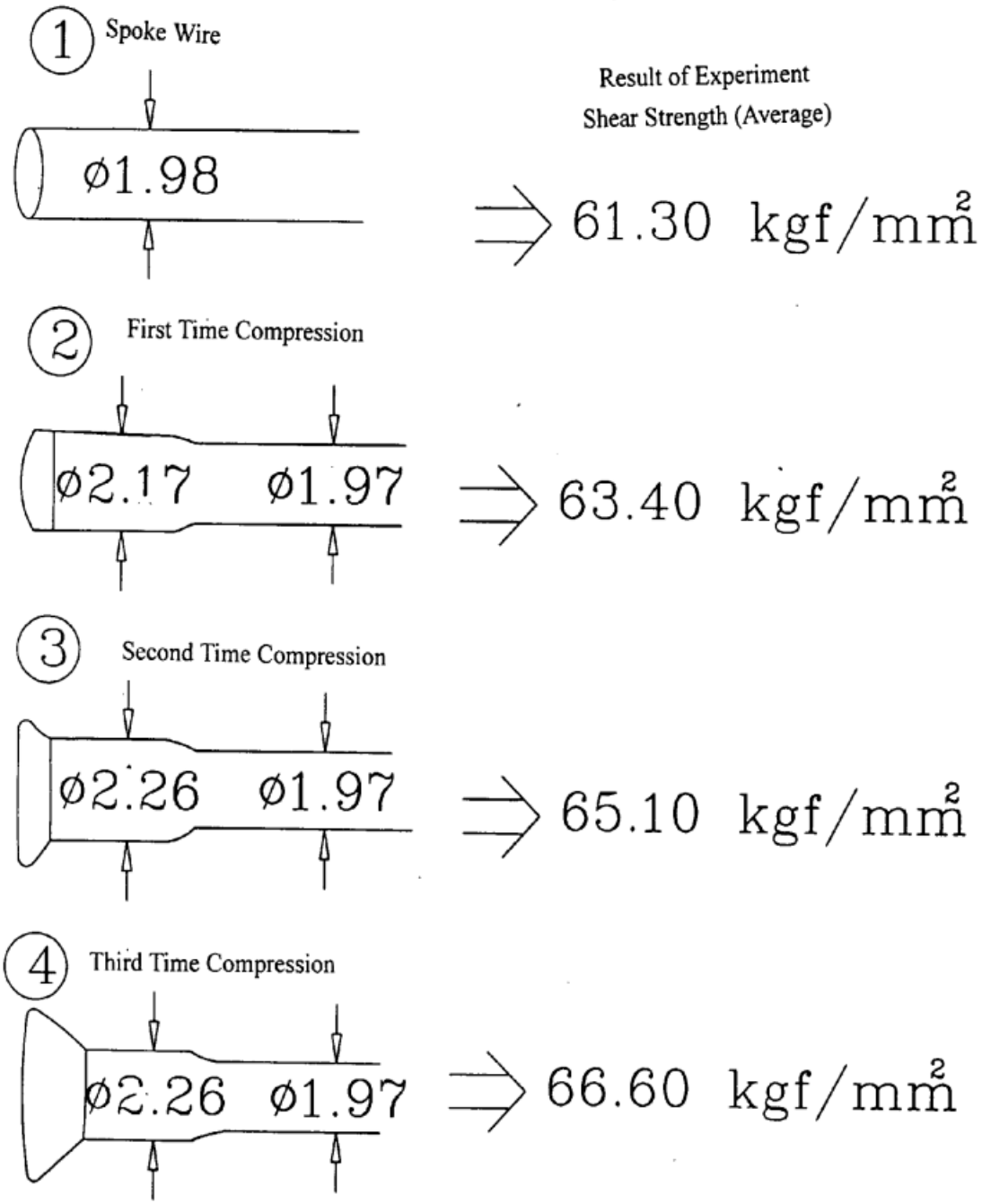
Upsetting wire

Definition statement

This place covers:

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

Illustrative example of subject matter classified in this place:



References

Application-oriented references

Examples of places where the subject matter of this place is covered when specially adapted, used for a particular purpose, or incorporated in a larger system:

Upsetting or forming heads in the making of pins, nails or the like	B21G 3/12

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

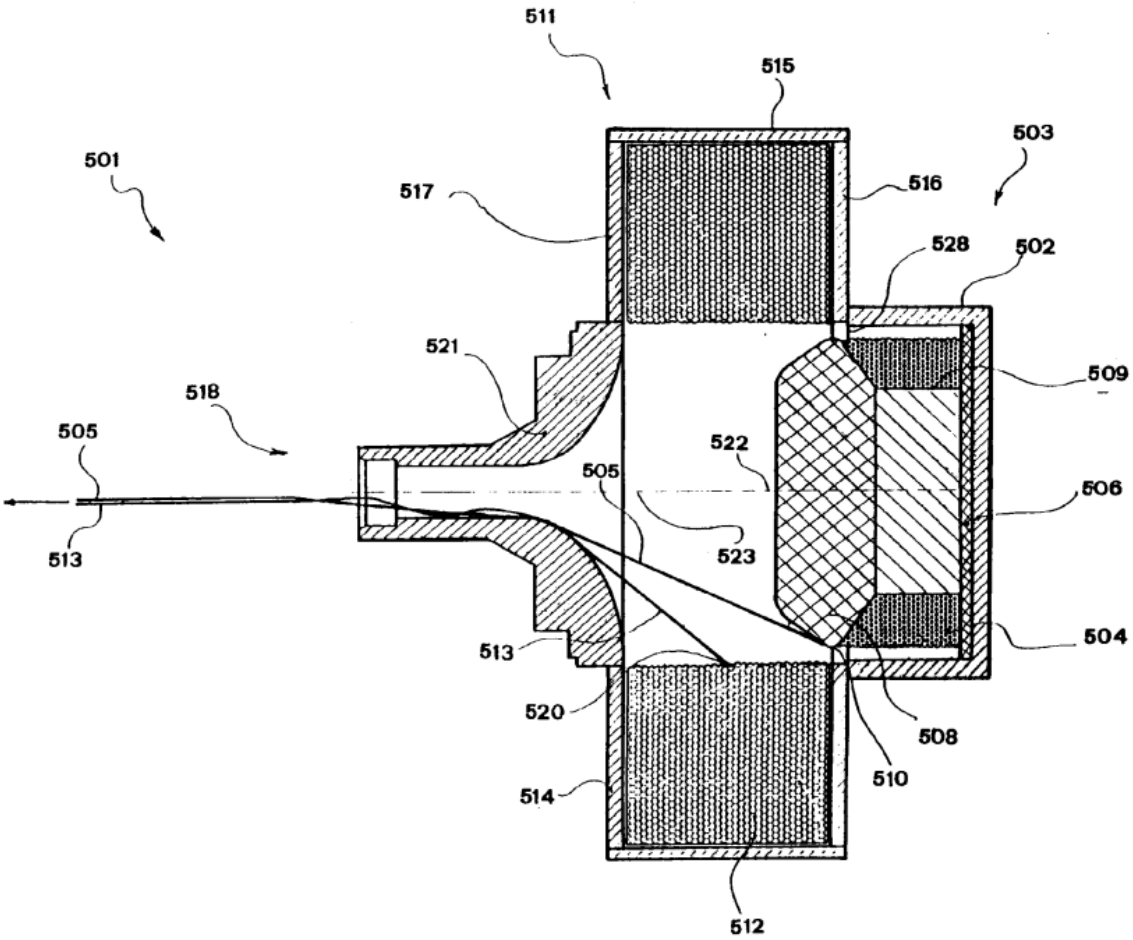
Twisting wire; Twisting wire together (for connections of limited size B21F 15/04)

Definition statement

This place covers:

Methods or devices for continuously twisting of wire, i.e. twisting of a wire of theoretically unlimited length.

Illustrative example of subject matter classified in this place:



References

Limiting references

This place does not cover:

Connecting wire with wire without additional connecting element or material, e.g. by twisting	B21F 15/04

Informative references

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

Jacketing or reinforcing articles with wire	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 from plastics or from substances in a plastic state	B29D 30/48
Electrically-conductive connections between two or more conductive members in direct contact effected solely by twisting	H01R 4/12
Processes or apparatus specially adapted for manufacturing, assembling, maintaining or repairing dynamo-electric machines	H02K 15/00

B21F 9/00

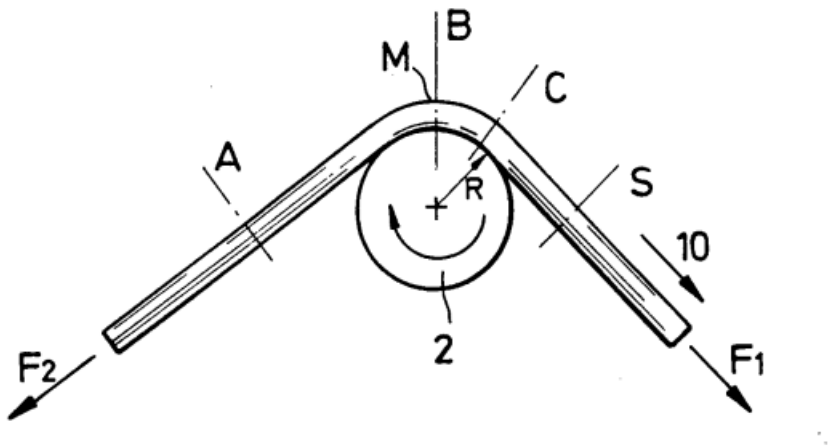
Straining wire

Definition statement

This place covers:

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

Illustrative example of subject matter classified in this place:



References

Application-oriented references

Examples of places where the subject matter of this place is covered when specially adapted, used for a particular purpose, or incorporated in a larger system:

Straining or prestressing wires for concrete	E04G 21/12

Informative references

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

Straightening wire	B21F 1/02
Hand-held tools for applying straps having preformed connecting means, e.g. cable ties	B65B 13/027
Connections or attachments, e.g. turnbuckles, adapted for straining of cables, ropes or wire	F16G 11/12

B21F 11/00

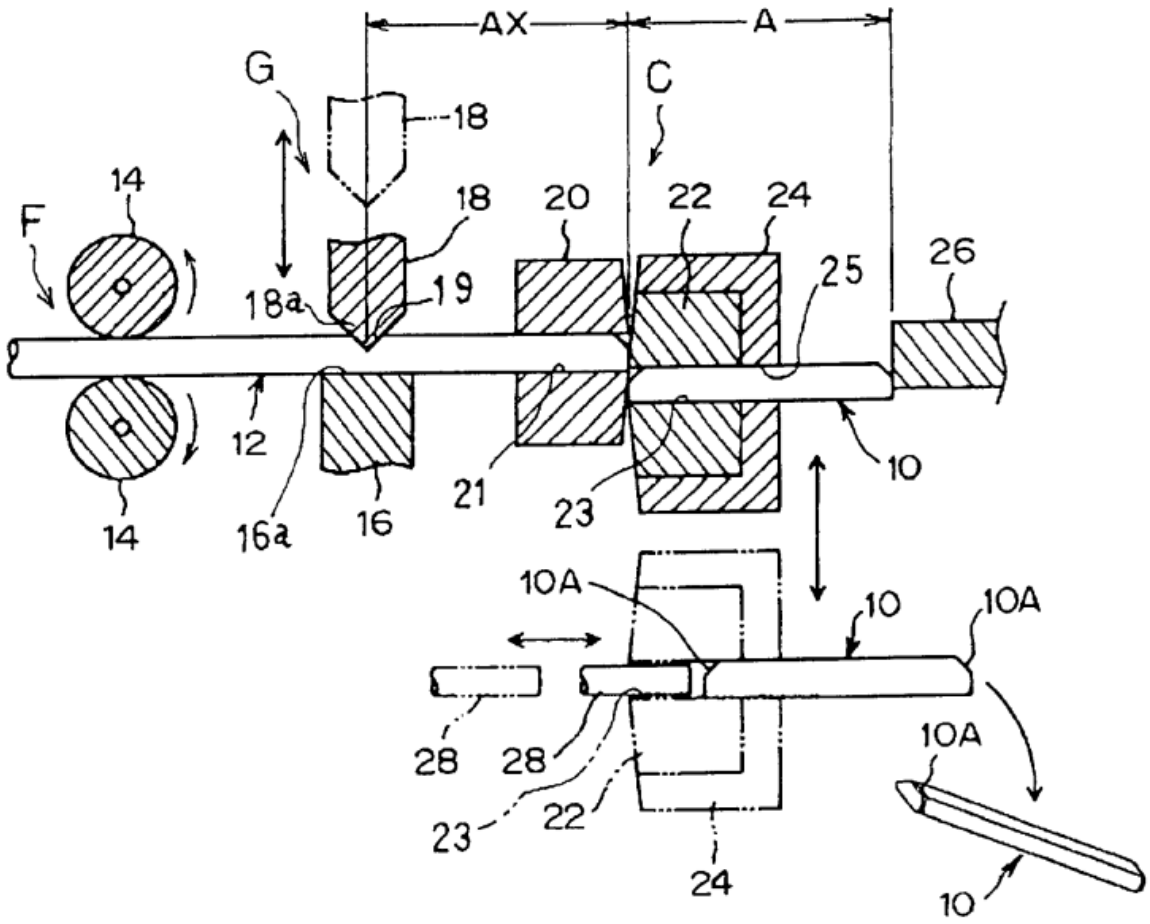
Cutting wire

Definition statement

This place covers:

Methods or devices for cutting wire.

Illustrative example of subject matter classified in this place:



References

Informative references

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

Cutting wire networks	B21F 33/005
Machines or devices for shearing or cutting profiled stock	B23D 23/00
Hand-held metal-shearing or metal-cutting devices	B23D 29/00
Hand-operated metal-shearing devices for cutting wires	B23D 29/023
Hand-held cutting tools not otherwise provided for	B26B
Hand cutting tools with two jaws which come into abutting contact	B26B 17/00
Hand-held cutting tools using wires as cutting means	B26B 27/002
Cutting	B26D

B21F 13/00

Splitting wire

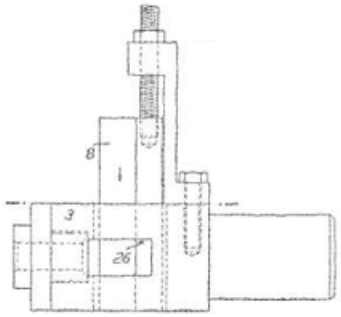
Definition statement

This place covers:

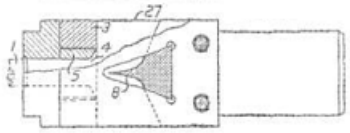
Methods or devices for splitting wire, i.e. separating wire portions lengthwise.

Illustrative example of subject matter classified in this place:

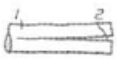
1a.



1b.



1c.



B21F 15/00

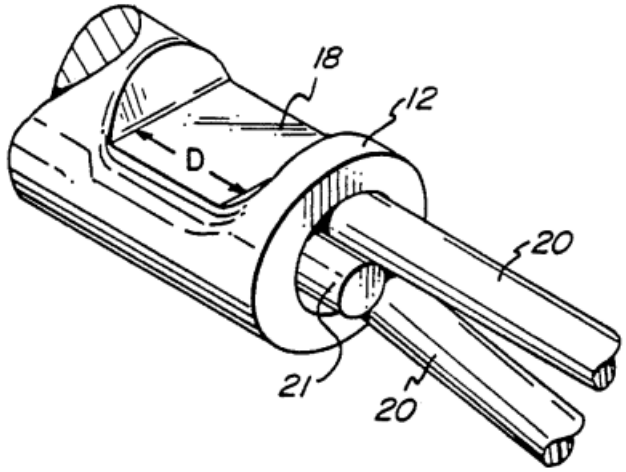
Connecting wire to wire or other metallic material or objects; Connecting parts by means of wire (tools for both straining and connecting B21F 9/02; jacketing or reinforcing B21F 17/00; manufacture of wire network B21F 27/00; in making bands B21F 43/00)

Definition statement

This place covers:

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

Illustrative example of subject matter classified in this place:



References

Limiting references

This place does not cover:

Straining wire by tools adapted also for making connections	B21F 9/02
Jacketing or reinforcing articles with wire	B21F 17/00
Making wire network, i.e. wire nets	B21F 27/00
Making bands, e.g. bracelets, from wire	B21F 43/00

Application-oriented references

Examples of places where the subject matter of this place is covered when specially adapted, used for a particular purpose, or incorporated in a larger system:

Connecting or disconnecting of bond wires in semiconductors packages	H10W 72/075

Informative references

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

Soldering or unsoldering; Welding; Cladding or plating by soldering or welding; Cutting by applying heat locally, e.g. flame cutting; Working by laser beam	B23K
Applying and securing binding material around articles or groups of articles, e.g. using strings, wires, strips, bands or tapes	B65B 13/02

B21F 17/00

Jacketing or reinforcing articles with wire

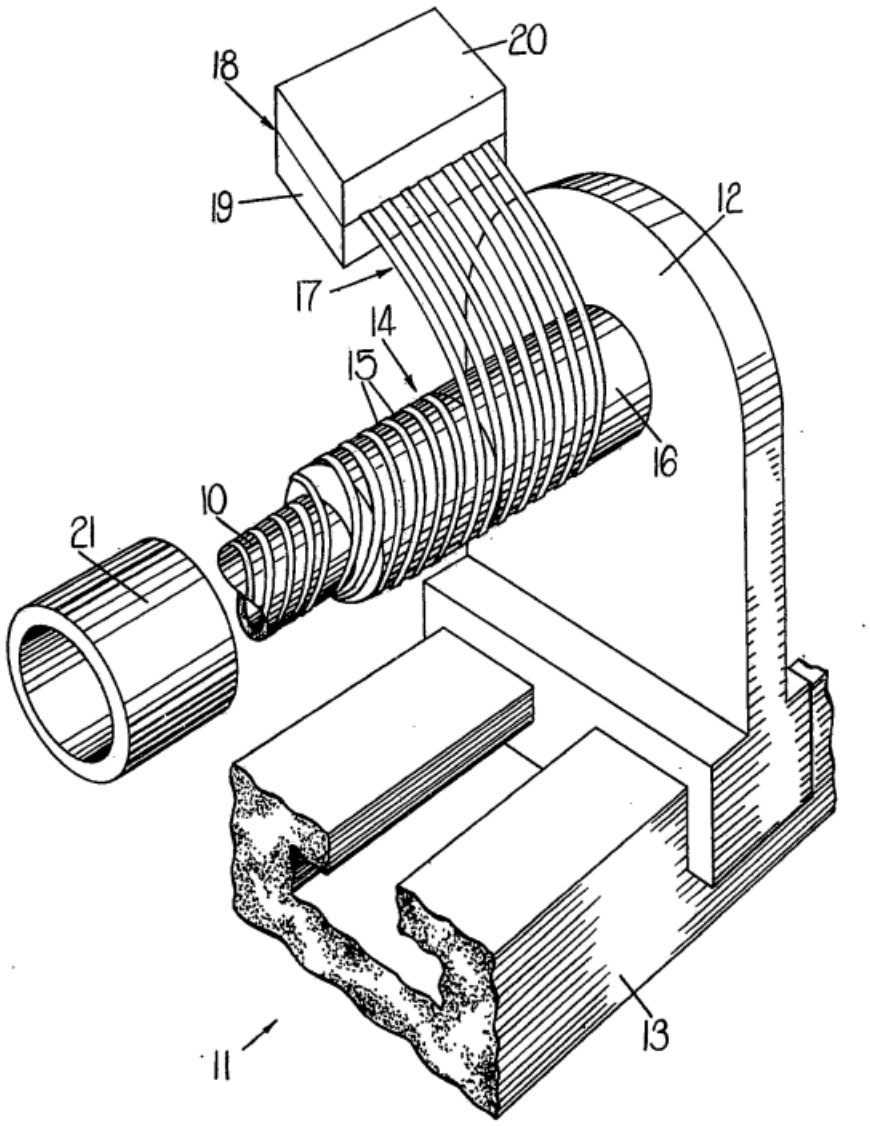
Definition statement

This place covers:

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

- Reinforcing articles with wire, e.g. reinforcing paper with wire.

Illustrative example of subject matter classified in this place:



References

Informative references

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

Winding, coiling or depositing filamentary material	B65H 54/00
Methods, apparatus or devices for covering or wrapping cores by winding webs, tapes or filamentary material, not otherwise provided for	B65H 81/00
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	C22C 47/062
Braiding or manufacture of lace, including bobbin-net or carbonised lace; Braiding machines; Braid; Lace	D04C

B21F 19/00

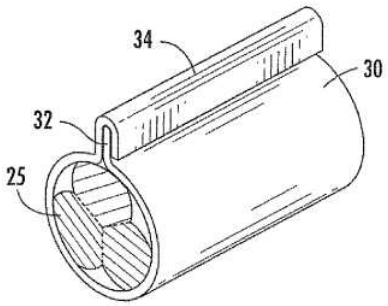
Metallic coating of wire (by extruding B21C 23/24; by soldering or welding, e.g. cladding or plating, B23K)

Definition statement

This place covers:

Methods or devices for coating metal wires, e.g. by using a metal band.

Illustrative example of subject matter classified in this place:



References

Limiting references

This place does not cover:

Coating indefinite lengths of metal or non-metal material with a metal coating	B21C 23/24
Soldering or unsoldering; Welding; Cladding or plating by soldering or welding; Cutting by applying heat locally, e.g. flame cutting; Working by laser beam	B23K

Informative references

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

Coating metallic material; Coating material with metallic material; Chemical surface treatment; Diffusion treatment of metallic material; Coating by vacuum evaporation, by sputtering, by ion implantation or by chemical vapour deposition, in general; Inhibiting corrosion of metallic material or incrustation in general	C23
Electroplating	C25D

B21F 23/00

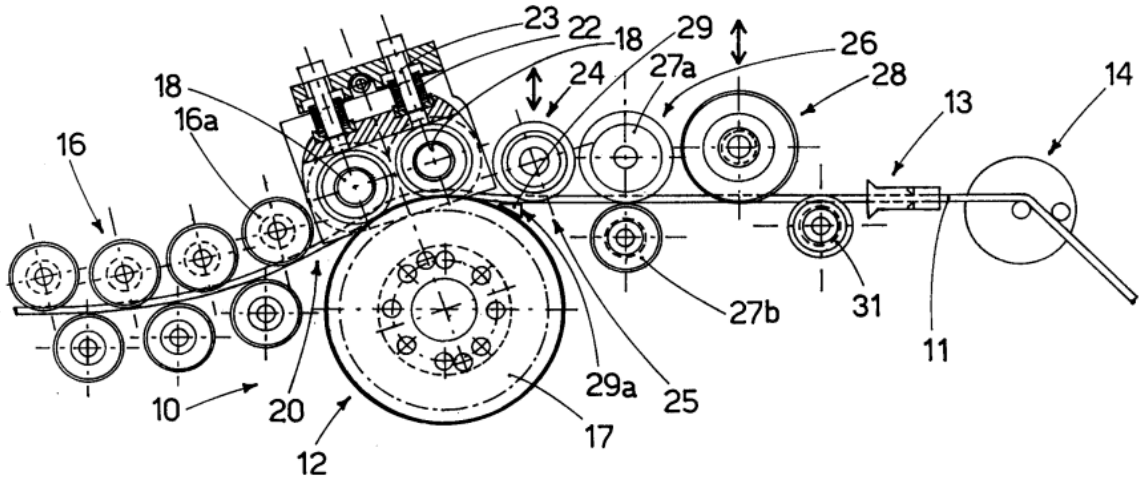
Feeding wire in wire-working machines or apparatus

Definition statement

This place covers:

Methods or devices for feeding wire.

Illustrative example of subject matter classified in this place:



References

Informative references

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

Guiding wire	B21F 99/00
Arrangements for moving, supporting or positioning work specially adapted for metal rolling mills	B21B 39/00
Pinch roll sets for moving, supporting or positioning work specially adapted for metal rolling mills	B21B 39/006
Feeding, positioning or storing devices combined with, or arranged in, or specially adapted for use in connection with, apparatus for working or processing sheet metal, metal tubes or metal profiles; Associations therewith of cutting devices	B21D 43/00
Forwarding filamentary material	B65H 51/00

B21F 25/00

Making barbed wire

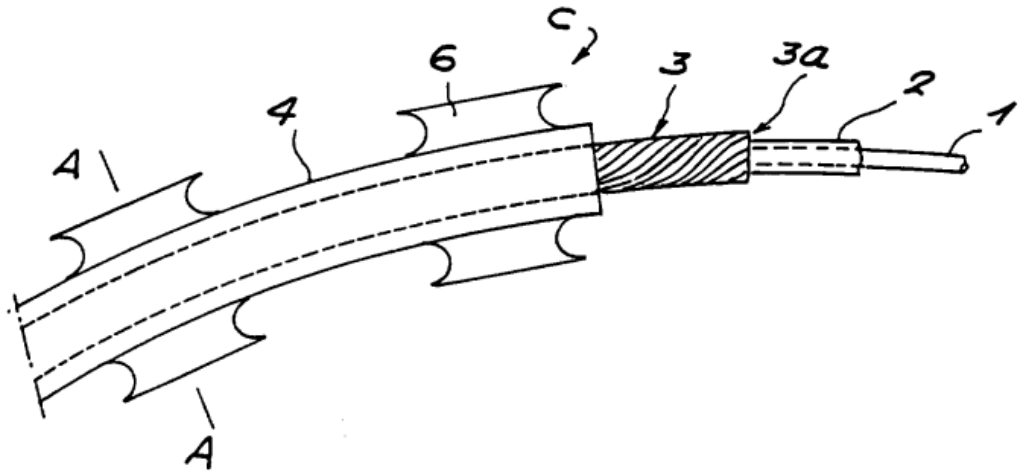
Definition statement

This place covers:

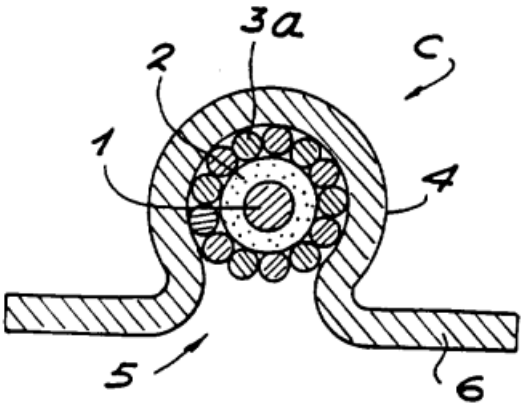
Methods or devices for making barbed wires or barbed tapes.

Illustrative example of subject matter classified in this place:

1a.



1b.



References

Informative references

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

Barbed-wire obstacles	F41H 11/08

B21F 27/00

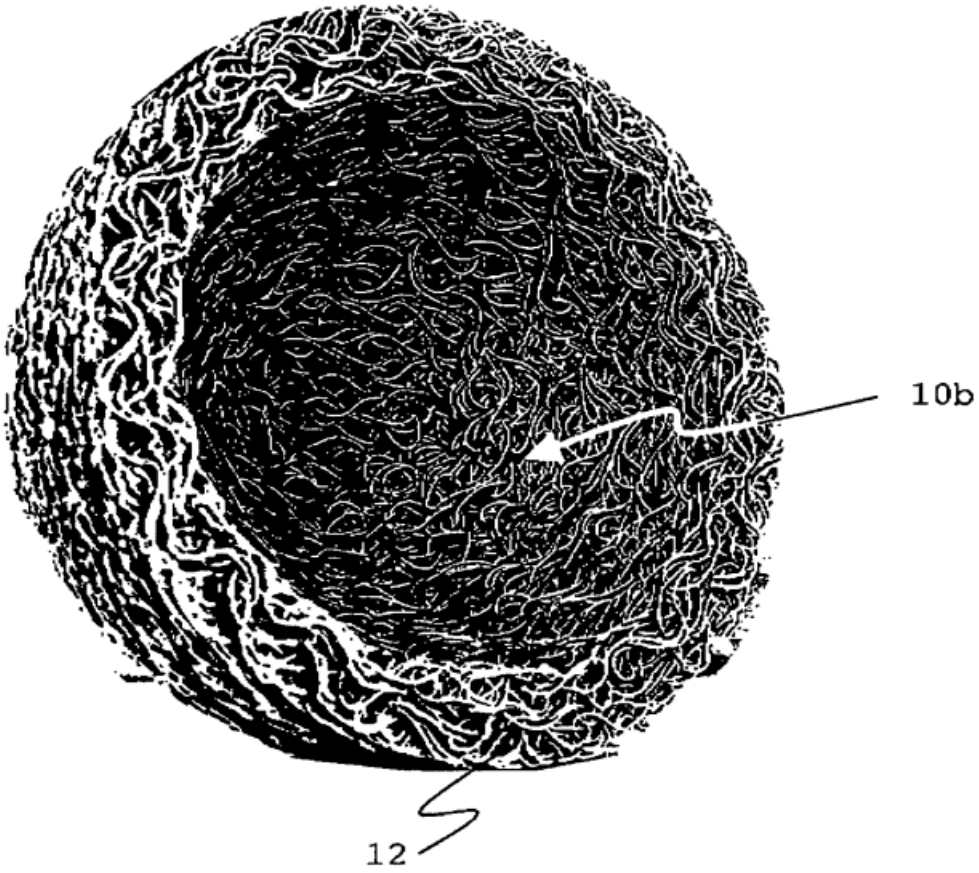
Making wire network, i.e. wire nets (making meshed-ring network from wire B21F 31/00; in making bands B21F 43/00)

Definition statement

This place covers:

Methods or devices for making wire networks, e.g. fences or reinforcements for concrete.

Illustrative example of subject matter classified in this place:



References

Limiting references

This place does not cover:

Making meshed-ring network from wire	B21F 31/00
Making bands, e.g. bracelets, from wire	B21F 43/00

Informative references

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

Connecting wire to wire or other metallic material or objects	B21F 15/00
Making fencing or like material made partly of wire	B21F 29/00
Wire-working in the manufacture of other particular articles	B21F 45/00
Bending wire nets	B21D 11/125
Soldering or unsoldering; Welding; Cladding or plating by soldering or welding; Cutting by applying heat locally, e.g. flame cutting; Working by laser beam	B23K
Woven fabrics; Methods of weaving; Looms	D03D
Reinforcing elements, e.g. for concrete	E04C 5/00
Fencing	E04H 17/00

B21F 27/10

with soldered or welded crossings

References

Informative references

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

Manufacturing of metallic grids or mats by resistance spot welding	B23K 11/008

B21F 29/00

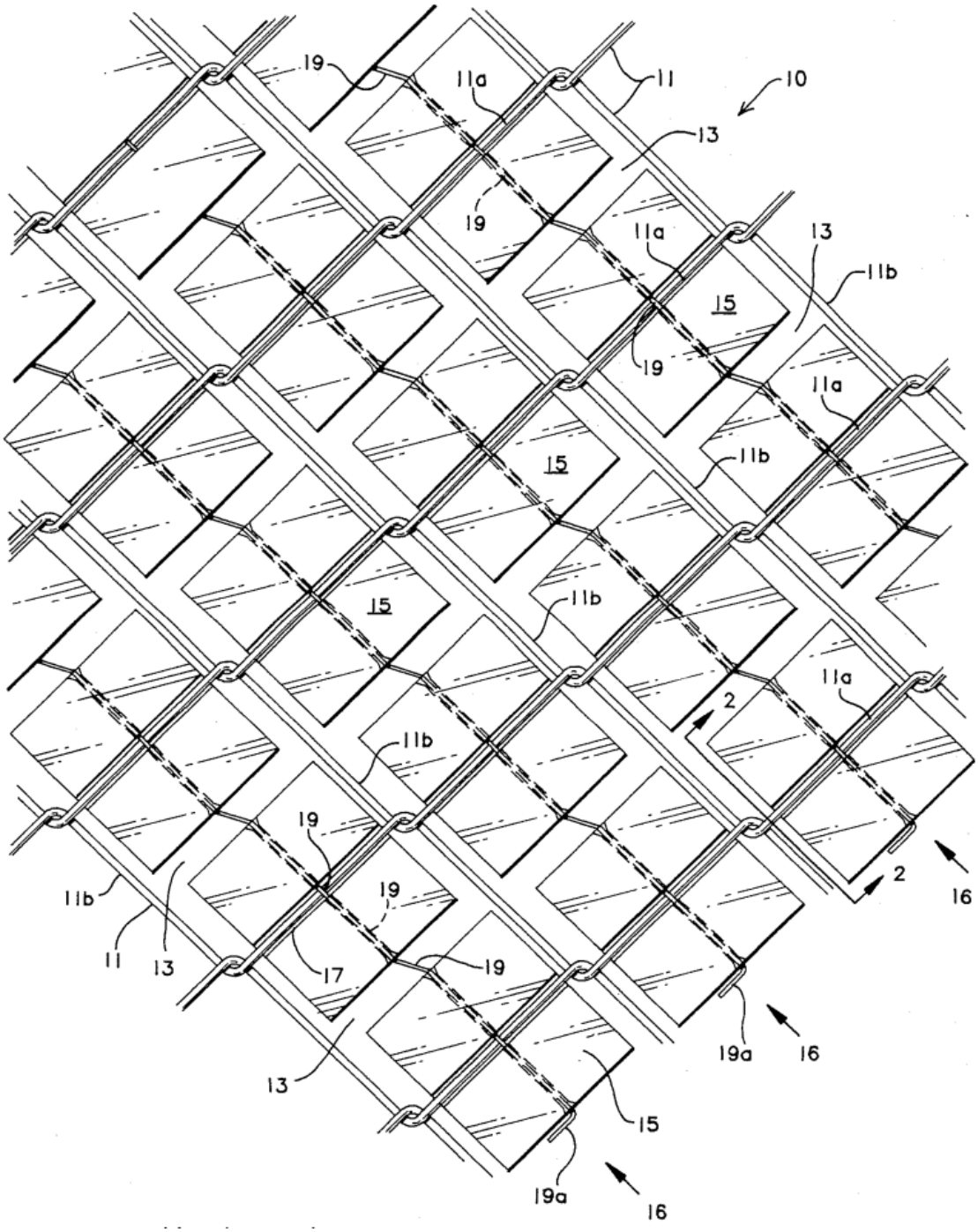
Making fencing or like material made partly of wire (B21F 25/00 takes precedence)

Definition statement

This place covers:

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

Illustrative example of subject matter classified in this place:



References

Limiting references

This place does not cover:

Making barbed wire	B21F 25/00

Informative references

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

Making wire network, i.e. wire nets	B21F 27/00

B21F 31/00

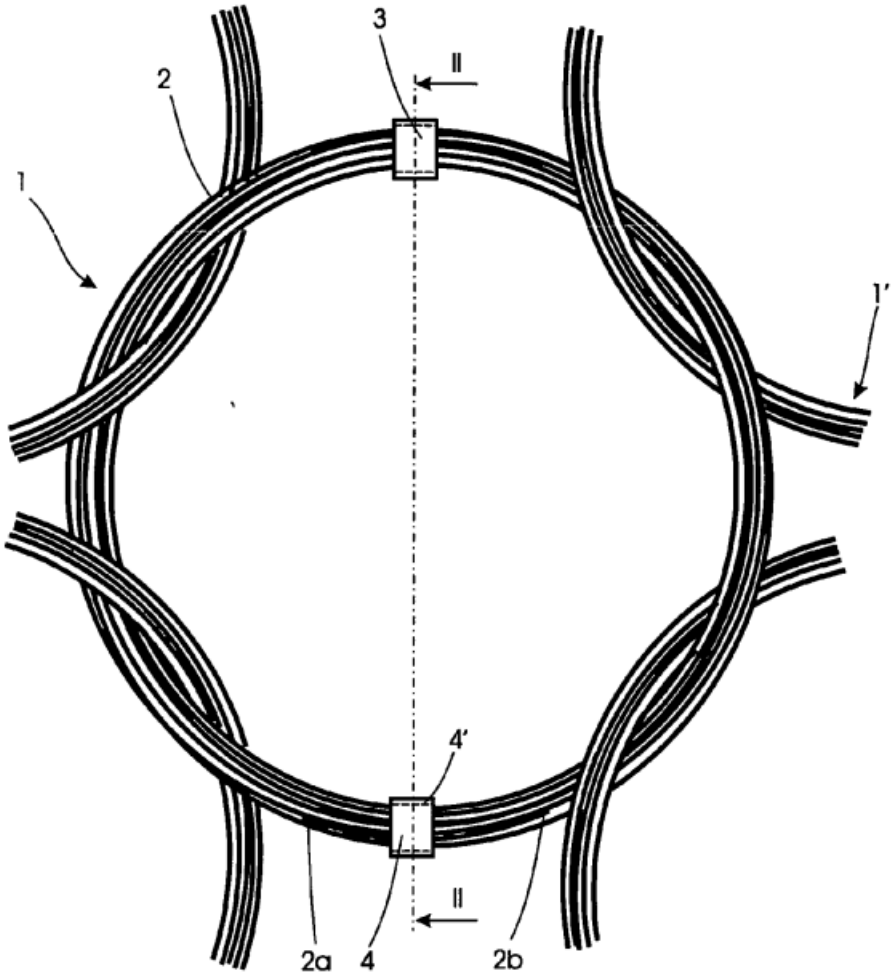
Making meshed-ring network from wire

Definition statement

This place covers:

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

Illustrative example of subject matter classified in this place:



Special rules of classification

Interlaced rings can be of non-circular shape.

B21F 33/00

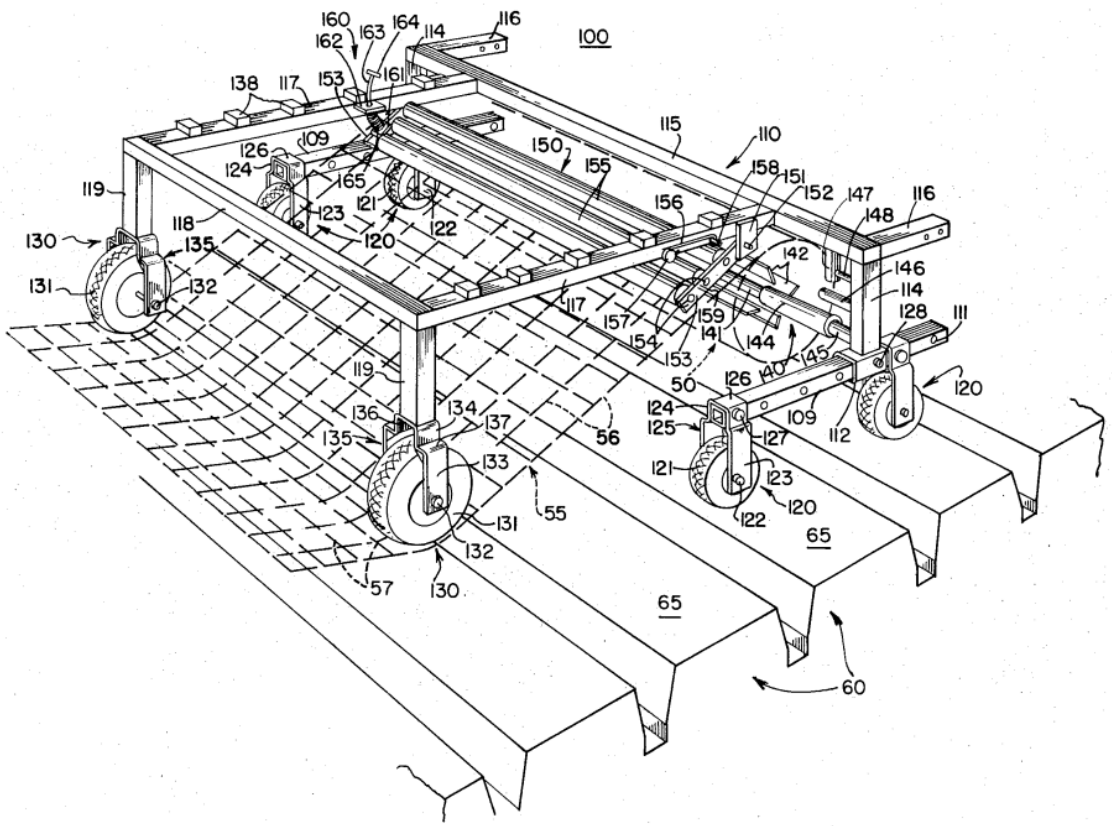
Tools or devices specially designed for handling or processing wire fabrics or the like

Definition statement

This place covers:

Methods or devices for handling or processing wire fabrics, e.g. connecting or coiling wire products.

Illustrative example of subject matter classified in this place:



References

Informative references

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

Bending wire nets	B21D 11/125
Upholstery	B68

B21F 35/00

Making springs from wire

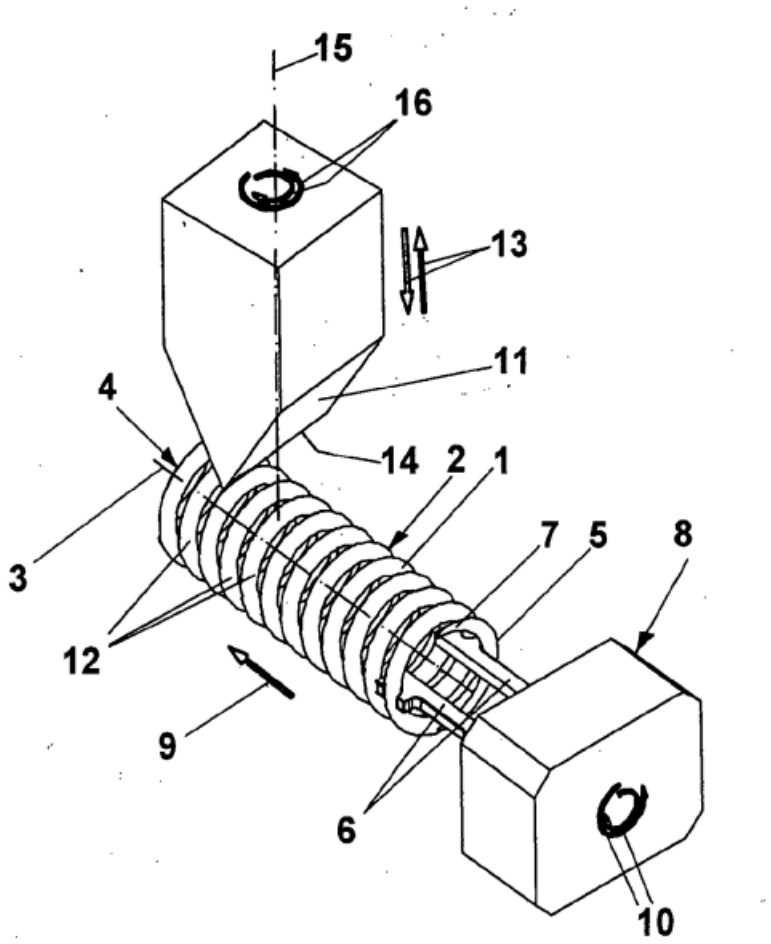
Definition statement

This place covers:

- Methods or devices for making springs from wire;

- Miscellaneous spring manufacturing processes, not necessarily starting from wire, not otherwise provided for.

Illustrative example of subject matter classified in this place:



References

Informative references

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

Coiling wire into particular forms	B21F 3/00
Manufacture of resilient rings from wire	B21F 37/02
Springs	F16F 1/00

B21F 37/00

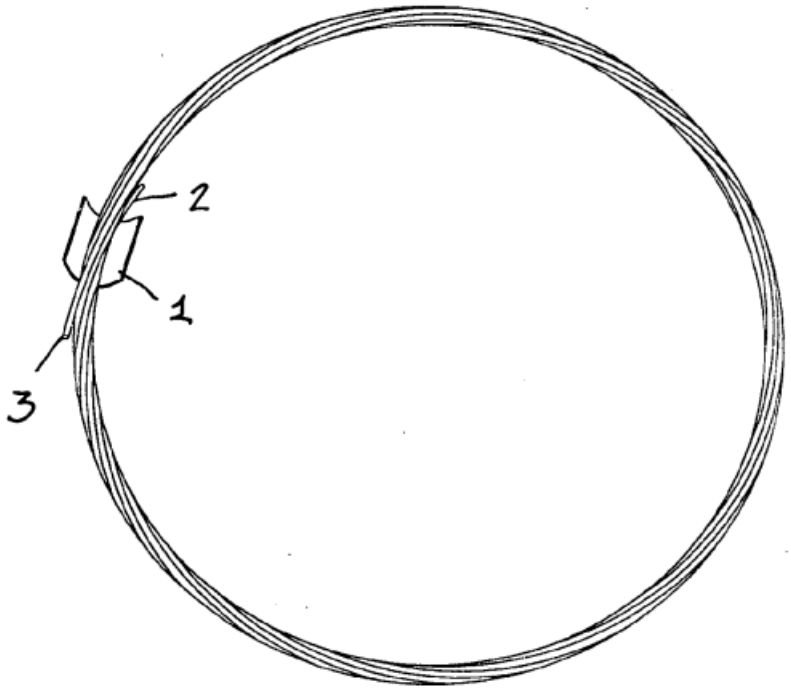
Manufacture of rings from wire

Definition statement

This place covers:

Methods or devices for the manufacture of rings from wire.

Illustrative example of subject matter classified in this place:



References

Application-oriented references

Examples of places where the subject matter of this place is covered when specially adapted, used for a particular purpose, or incorporated in a larger system:

Making metal chains	B21L
Producing bead-rings or bead-cores for tyres	B29D 30/48

B21F 39/00

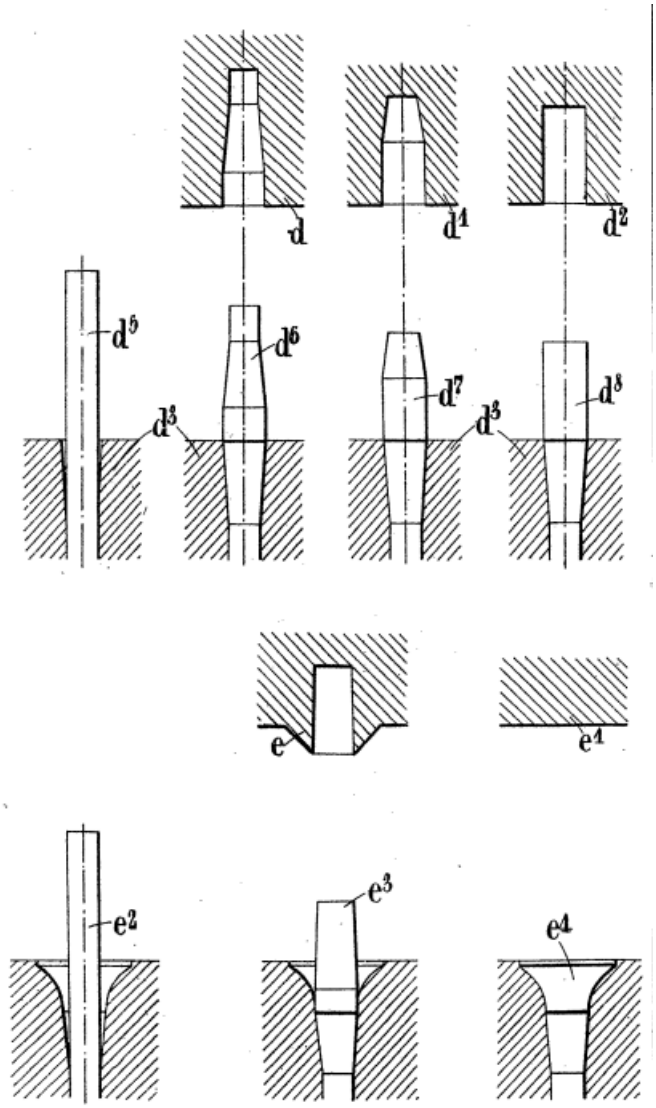
Making wheel spokes from wire

Definition statement

This place covers:

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

Illustrative example of subject matter classified in this place:



B21F 41/00

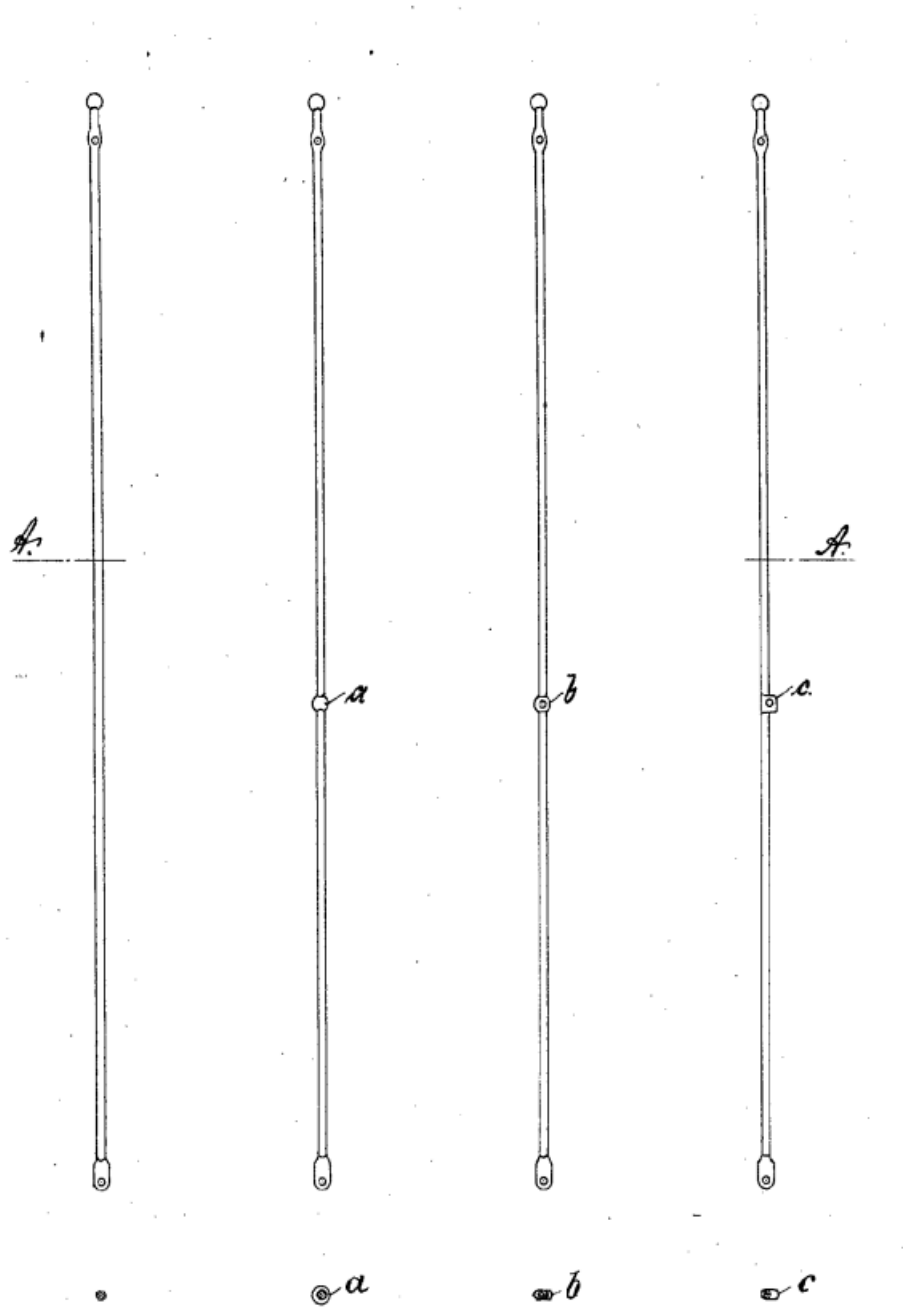
Making umbrella frames or members from wire

Definition statement

This place covers:

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

Illustrative example of subject matter classified in this place:



B21F 43/00

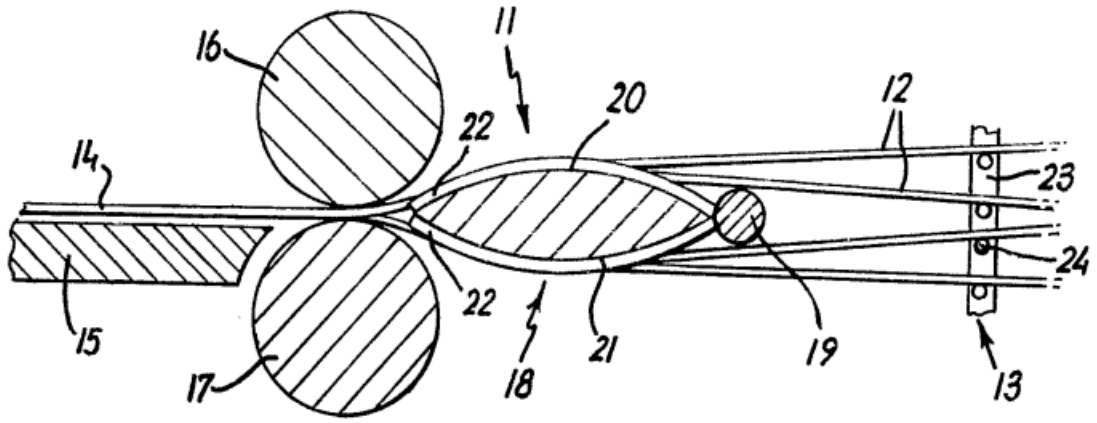
Making bands, e.g. bracelets, from wire

Definition statement

This place covers:

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

Illustrative example of subject matter classified in this place:



References

Application-oriented references

Examples of places where the subject matter of this place is covered when specially adapted, used for a particular purpose, or incorporated in a larger system:

Making metal chains	B21L

Informative references

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

Bracelets	A44C 5/00
Woven fabrics; Methods of weaving; Looms	D03D

B21F 45/00

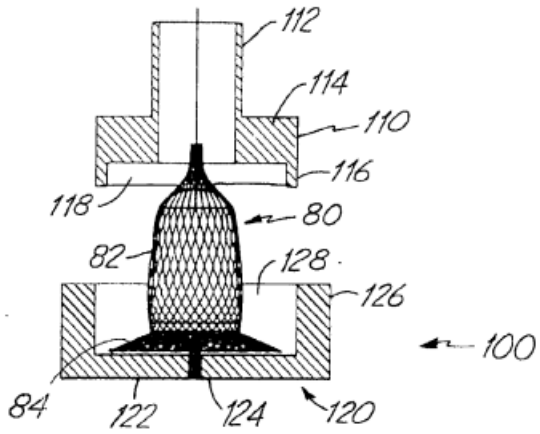
Wire-working in the manufacture of other particular articles (of pins, needles, nails, hairpins B21G; of chains B21L)

Definition statement

This place covers:

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

Illustrative example of subject matter classified in this place:



References

Limiting references

This place does not cover:

Wire working in the manufacture of pins, needles, nails, hairpins	B21G
Wire working in the manufacture of chains	B21L

Application-oriented references

Examples of places where the subject matter of this place is covered when specially adapted, used for a particular purpose, or incorporated in a larger system:

Bond wires as interconnections or connections in semiconductor packages	H10W 72/50

B21F 45/008

{of medical instruments, e.g. stents or corneal rings}

References

Informative references

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

Corneal implants	A61F 2/14
Stents	A61F 2/82

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 or processing of wire, e.g. heat treatments specially adapted for wires.