(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) Publication number: **0 294 618 A1**

(12) EUROPEAN PATENT APPLICATION

(21) Application number: **88107810.9**

(51) Int. Cl.4: **B65H 75/20**

(22) Date of filing: **16.05.88**

(30) Priority: **12.06.87 IT 6038587 U**

(43) Date of publication of application:
14.12.88 Bulletin 88/50

(84) Designated Contracting States:
AT BE CH DE ES FR GB GR LI LU NL SE

(71) Applicant: **IMPIANTI INDUSTRIALI Spa**
Zona Industriale - Rivoli
I-33010 Osoppo (UD)(IT)

(72) Inventor: **Saro, Giancarlo**
Via Cavalieri di Vittorio Veneto 44
I-33035 Ceresetto Di Martignacco (UD)(IT)

(74) Representative: **Petraz, Gilberto Luigi**
G.L.P. S.a.s. di Gilberto Petraz P.le Cavedalis 6/2
I-33100 Udine(IT)

(54) Reels for metallic wire.

(57) Reel for metallic wire, which is suitable to wind rolls of metallic wire having a round, oval, three-lobed, hexagonal, rectangular or square, etc. section, the wire being obtained by drawing and/or rolling and being hot or cold processed, a hub (12) and spokes (20) of lateral disks (11) being made of tubular elements comprising two plane-parallel sides.

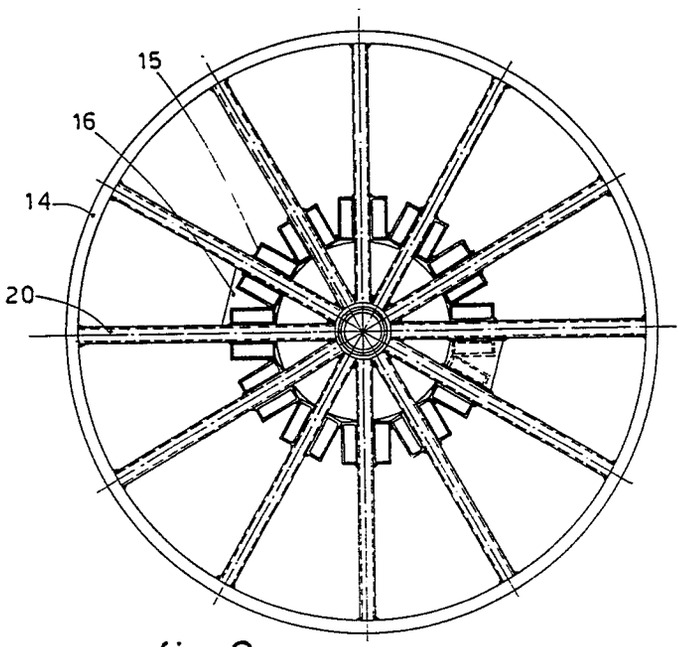

fig. 2

EP 0 294 618 A1

"REELS FOR METALLIC WIRE"

This invention concerns an improved reel for metallic wire. To be more exact, the invention concerns a reel element suitable to hold rolls of metallic wire which may be round or otherwise shaped, drawn or rolled and hot or cold processed.

The word "wire" in this invention is meant as covering a very wide range including products having a round, oval, three-lobed, square, rectangular or hexagonal, etc. section.

Such reel must be able to cooperate with machines which produce, and with machines which use, the material of which the roll consists.

The winding of wire, whether round or otherwise shaped, on and the unwinding of the same from a reel entail many problems.

A first problem is the required stiffness of the reel for the purpose of transferring to the wire the necessary pulling force in full without jolting.

A second problem is linked to the need to avoid lengthwise yielding in the reel, so that the coils lying in a successive layer do not become introduced between the coils of a previous layer with resulting dangers of tearing, jamming, deformations, etc. during the unwinding step.

A further problem concerning the winding of hot wire, which normally has a temperature between about 100° C up to 200-250°, relates to the shrinkage of the wire during cooling. Such shrinkage creates on the hub of the reel a circumferential force which deforms the hub itself and the two lateral disks.

Moreover, the geometric position of the two lateral disks has to remain constant to permit easy handling, on the one hand, and correct storage, on the other hand, and to prevent, furthermore, the coils interfering with the coils of the lower layers.

Many types of reel have been designed and tested but none of these has been found satisfactory. In particular, the necessary stiffness and solidity have been obtained so far to the detriment of the weight, which is thus very great.

Moreover, in any event the known reels comprise a too weak hub, which cannot withstand the circumferential pulling force exerted by the wire as it cools.

A further shortcoming of the known reels is that the lateral retaining disks tend to open apart with modern pulling systems, which exert a high pulling force during winding.

Besides, the known reels are not sufficiently suitable to ensure good dispersion of the heat of the wire being wound.

According to the invention a reel is embodied with tubular elements cooperating with an alignment and guide body and with a stiffening ring for the lateral disks.

The lateral disks are embodied with spokes made of tubular elements and secured to the hub by components of the hub.

The invention is therefore embodied with a reel for metallic wire, which is suitable to wind rolls of metallic wire having a round, oval, three-lobed, hexagonal, rectangular or square, etc. section, the wire being obtained by drawing and/or rolling and being hot or cold processed, the reel being characterized in that a hub and spokes of lateral disks are made of tubular elements comprising two plane-parallel sides.

The attached figures, which are given as a non-restrictive example, show the following:-

Fig.1 shows a lengthwise section of a reel according to the invention;

Fig.2 shows a front view of the reel of Fig.1;

Fig.3 shows a detail of the reel of Fig.1.

A reel 10 comprises a hub 12 and two lateral disks 11, which consist of spokes 20 that radiate from an alignment and guide body 13.

The spokes 20 are positioned and fastened by an outer stiffening ring 14.

The spokes 20 radiate from a stiffening sleeve 17 solidly fixed to a connector tube 19, within which is positioned an alignment sleeve 21 solidly fixed to the tube 19.

The alignment and guide body 13 consists of the connector tube 19, stiffening sleeve 17 and the alignment sleeve 21.

The alignment sleeve 21 can advantageously be of a replaceable type for maintenance purposes and so that it can be adapted to the machines which produce or use the wire.

At least two toric disks 18 are solidly fixed to the connector tube 19 and lodged thereupon.

Lengthwise elements 15, two for each spoke 20, are arranged on the toric disks 18 and are solidly fixed to the sides of their respective spokes 20.

Between every two spokes 20 are included struts 16 on which the respective lengthwise elements 15 are rested and secured. These struts 16 serve to anchor drawing clamps when the reel 10 is fitted to a winding machine.

The spokes 20 and lengthwise elements 15 are made of tubular portions which are advantageously rectangular, their section depending on the dimensions of the reel 10. For instance, in the case of a reel having a usable width of about 700-750 mm., a hub diameter ranging between 480 and 550 mm. and lateral disks of a diameter ranging between 900 and 1300 mm., the tubular portions may have a rectangular section with a shorter side of about

30 mm. and a thickness of 4 mm.

The spokes 20 will have a height of about 60 mm., whereas the lengthwise elements 15 will have a height of about 80 mm.

Rectangular elements or elements having their shorter side rounded may be employed.

The spokes 20 may include locally some reinforcement elements in the areas of greatest stress without increasing the weight of the reel appreciably.

In the case of a reel 10 of the type described the toric disks 18 will advantageously be three in number; given equal stiffness, it is possible to reduce the weight by about 15% to 20%; good cooling is obtained owing to circulation of the air between the lengthwise elements 15, along their line of contact and along the interspace coinciding with the spokes.

Claims

1 - Reel for metallic wire, which is suitable to wind rolls of metallic wire having a round, oval, three-lobed, hexagonal, rectangular or square, etc. section, the wire being obtained by drawing and/or rolling and being hot or cold processed, the reel being characterized in that a hub (12) and spokes (20) of lateral disks (11) are made of tubular elements comprising two plane-parallel sides.

2 - Reel as claimed in Claim 1, in which lengthwise elements (15) of the hub (12) are anchored to the sides of the spokes (20) and are rested on toric disks (18) at an intermediate position.

3 - Reel as claimed in Claim 1 or 2, in which the spokes (20) are connected peripherally by a stiffening ring (14).

4 - Reel as claimed in any claim hereinbefore, in which the spokes (20) cooperate at a central position with, and are solidly fixed to, an alignment and guide body (13) to which the toric disks (18) are secured.

5 - Reel as claimed in any claim hereinbefore, in which the alignment and guide body (13) comprises a stiffening sleeve (17) between the spokes (20) and a connector tube (19).

6 - Reel as claimed in any claim hereinbefore, in which the alignment and guide body (13) comprises alignment sleeves (21) which can advantageously be replaced.

7 - Reel as claimed in any claim hereinbefore, in which at least between two spokes (20) is included a strut (16) for fixture of entraining clamps, the strut (16) supporting two lengthwise elements (15).

1/1

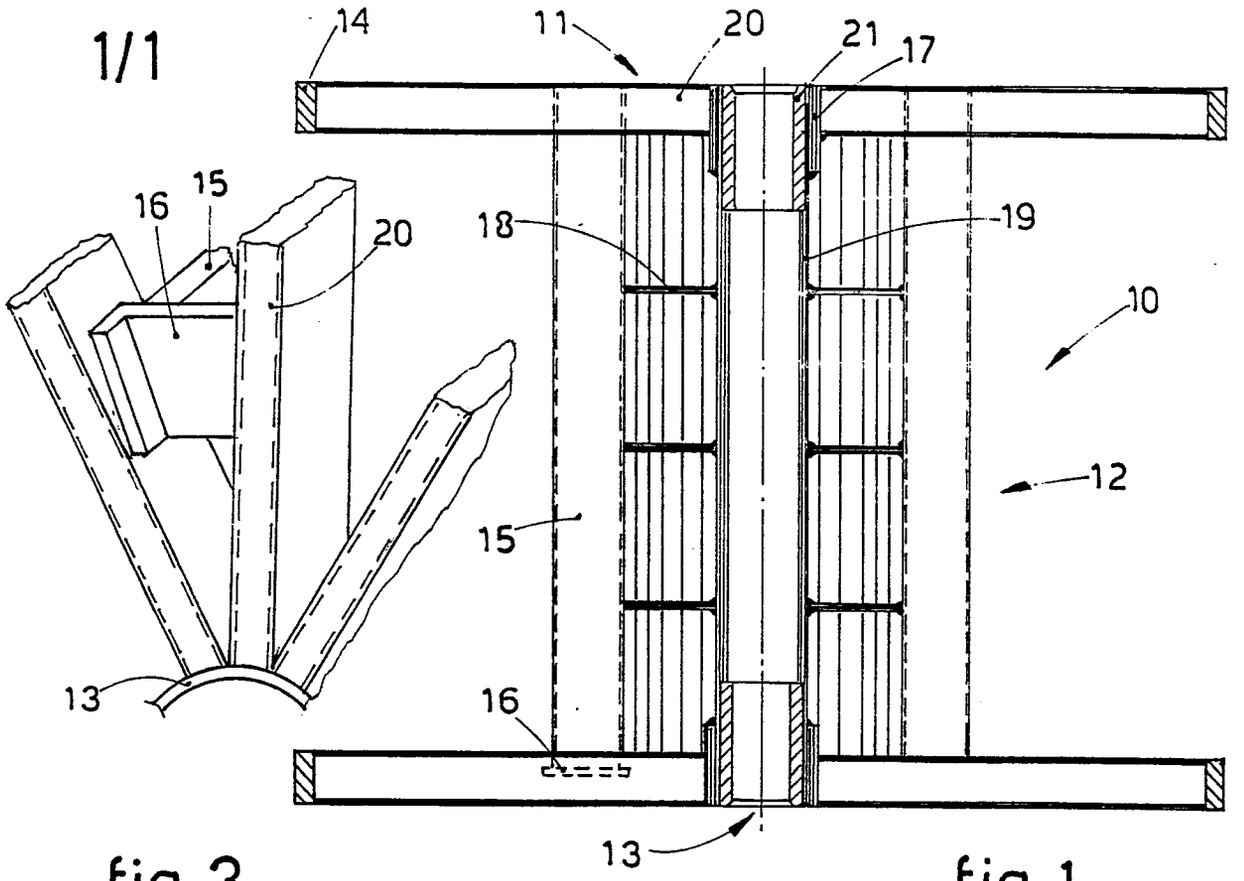

fig.3

fig.1

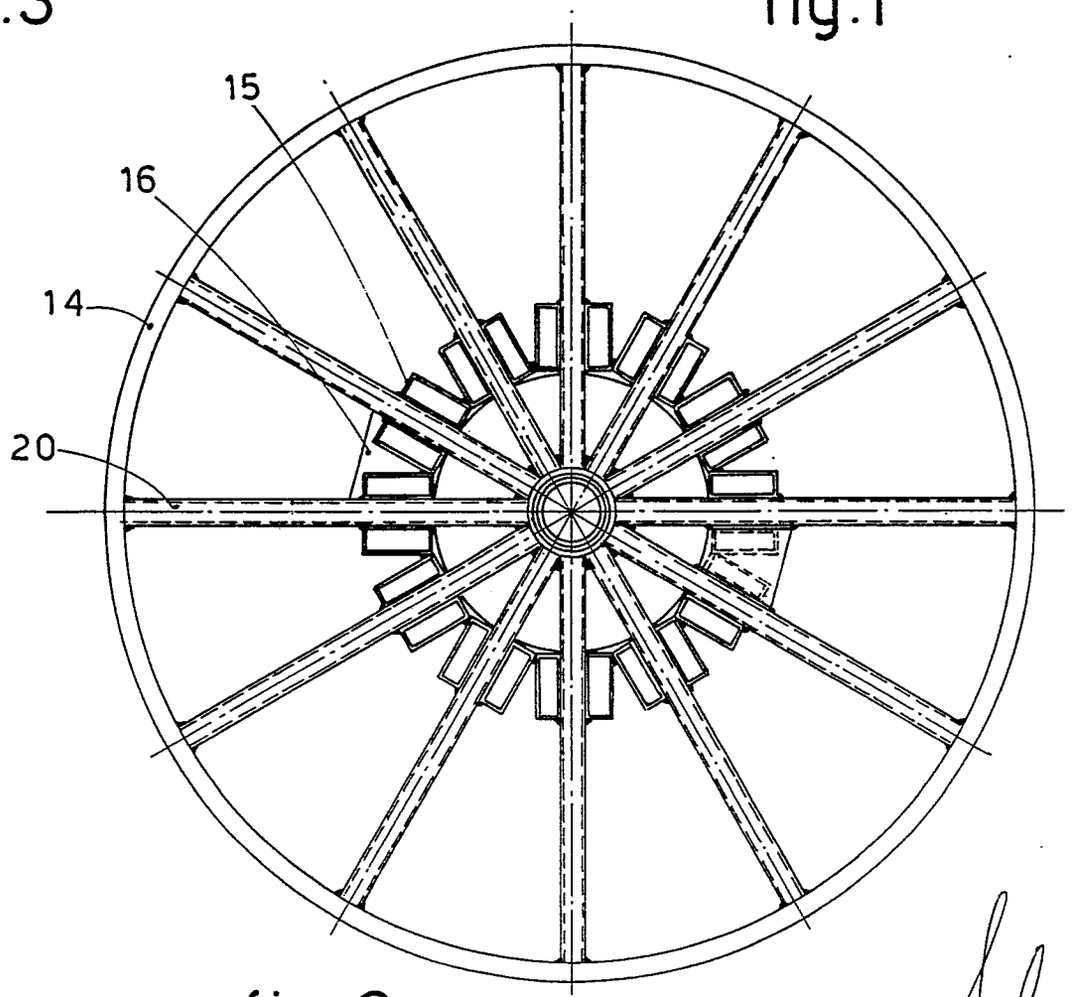

fig.2

European Patent Office

EUROPEAN SEARCH REPORT

Application Number

EP 88 10 7810

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.4)
A	GB-A-2 030 959 (ITALRAME S.p.A.)		B 65 H 75/20
A	US-A-2 092 731 (A. FOUKAL)		
A	US-A-2 589 048 (A.A. BUREAU)		
A	FR-A-2 409 221 (CECCHI)		

TECHNICAL FIELDS SEARCHED (Int. Cl.4)

B 65 H
B 21 C

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	15-07-1988	D HULSTER E.W.F.

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
O : non-written disclosure
P : intermediate document

T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
L : document cited for other reasons

& : member of the same patent family, corresponding document

EPO FORM 1503 03.82 (P0401)