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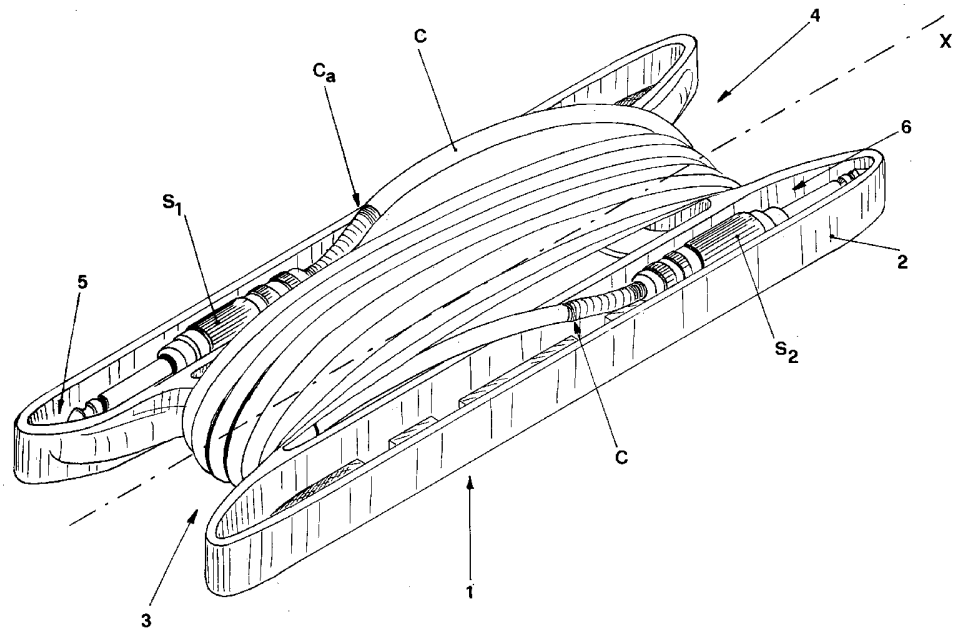
(54) Title: WINDING DEVICE FOR CABLES CONNECTING ELECTRIC OR ELECTRONIC EQUIPMENTS WITH INSTRUMENTS



(57) Abstract: A winding device (1; 100) for the connecting cables (C) of electric and/or electronic equipment and/or instruments comprising a frame (2; 101) which mainly extends according to a longitudinal axis of symmetry (X) and in which there is a pair of first housings (3, 4; 120, 121) positioned opposite one another, which hold the cable (C), and second housings (5, 6; 118, 119) which hold the jacks (S1, S2) connected to the ends (Ca, Cb) of the cable (C).

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WINDING DEVICE FOR CABLES CONNECTING ELECTRIC OR ELECTRONIC EQUIPMENTS WITH INSTRUMENTS.

The present invention relates to a winding device for the connecting cables of electric and/or electronic equipment and/or instruments, in particular for those coaxial electric cables used by musicians to connect an electric musical instrument, for example an electric guitar, to an amplificatión system.

As is known, musicians, whether soloists or members of a band, use cables to connect their instruments, for example an electric or acoustic guitar, to a system which amplifies the sound produced by the vibration of parts of the musical instruments impressed by the musicians.

The ends of such cables have special connectors or plugs, commonly known as "jacks" in English, with two or more coaxial wires.

The jacks are coupled to suitable sockets present both on the musical instrument and on an electric or electronic device belonging to the amplification system.

When musicians have finished using the musical instrument, for example after a concert, they disconnect the cables from the instrument and from the amplification system and wind them until they take on a configuration which occupies the minimum space possible and makes them easy to move.

Various techniques are currently used to wind said cables, some of them well known and normally adopted for winding a generic electric cable.

The most classic but also the most empirical method consists in manually winding the cable in a number of irregular concentric rings to form a sort of coil, which remains free of any constraints for holding it stable in any way in that position.

For this purpose, other known solutions involve the use of elastic bands, having coupling means on the ends so that they can be closed in a loop and secured around the cable just wound.

Obviously, the techniques described above lead to the acknowledged disadvantage of keeping the cable wound in a configuration that is almost always untidy, with all of the disadvantages that this brings, linked on one hand to its effective repositioning and on the other hand to the possibility that accidental impacts of various types may seriously or irreparably damage the jacks at the ends, which as is known is quite a delicate matter due to their cost.

These disadvantages were partly overcome by introducing more professional

cable winding systems based on the use of a metal frame, with wheels for its movement, and a drum, whose rotation is driven by a handle for the user, and around which one or more cables are wound, even very long cables, for example around 500 m and more.

More typically, the above-mentioned frames are used by more famous musicians or bands, with a certain number of members or who use a moderate number of electric or electronic musical instruments.

However, even these do not overcome the disadvantage of having to protect the jacks at the ends of the cables wound around the drum and, therefore, it remains possible that their sudden movement may result in accidental impacts against other bodies or objects that will damage the cables.

On the other hand, there are cable winding devices available on the market which comprise a drum around which one or more cables are wound, a grip for the operator for lifting and moving, and a shaped base for practical standing on any surface, for example the floor or the stage on which bands or individual musicians perform during their concerts.

The drum is located between a pair of flanges on the outer surface of which there is a plurality of sockets suitable to hold the jacks present at the ends of the above-mentioned cables.

This at least partly overcomes the above-mentioned disadvantages, deriving from the free position of the cable jacks when the cables are wound in any way.

However, in this case too, the jacks remain partly projecting from the flanges connected to the drum on which the cable is wound, and therefore, the possibility that accidental impacts against bodies or objects during the movement causes damage on them is not completely avoided.

Moreover, said device, like the one previously described, has considerable dimensions which are a negative factor above all where there is a high density of electric or electronic instruments or equipment, for example on a stage where a band is playing, constituting an unwanted obstacle.

In addition to this, to justify the use of such a device more than one cable needs to be wound around the drum, having a negative consequence because the weight that the user must support when moving the device is considerable.

Another disadvantage derives from the fact that such devices for winding cables are not suitable for use by private users, such as youngsters who play

an electric guitar as a hobby, for example in rooms in their own homes, therefore leaving the problem of safely storing the cables when not in use.

The present invention aims to overcome the above-mentioned disadvantages in the prior art.

In particular, the main aim of the invention is to provide a winding device for the connecting cables of electric and/or electronic equipment and/or instruments which allows the jacks connected at the ends of the cables to be protected more effectively than by known equivalent devices.

A second aim of the invention is to make connecting cable winding and unwinding more rapid and easier for the musician than with the prior art.

Another aim of the invention is to provide a winding device that is simpler to produce than known winding devices.

Yet another aim of the invention is to provide a winding device which is easier to transport than known winding devices.

A further aim of the invention is to allow any musician, even a youngster who as a hobby plays a musical instrument at home, for example an electric guitar, to wind the connecting cable in an efficient and practical way, safeguarding the integrity of the jacks at the ends of the cable, without the need to purchase a professional device, more suitable for professional musicians or bands and, as already indicated, large and designed to support a plurality of cables.

These aims are achieved by a winding device for the connecting cables of electric and/or electronic equipment and/or instruments which, in accordance with the main claim, is characterised by comprising a frame which mainly extends according to a longitudinal axis of symmetry and in which there is a pair of first housings located opposite one another, suitable to hold said cable, and one or more second housings, suitable to hold the jacks connected to at least one of the ends of said cable.

Advantageously, the invention provides a protection for the jacks at the ends of the cables which is more suitable and effective than the equivalent prior art.

Also advantageously, the invention offers any musician, even a youngster who, privately or with a group of friends, plays a musical instrument as a hobby, the possibility of appropriately winding the cable which connects their musical instrument to an amplification system.

Equally advantageously, the winding device disclosed has a simpler design than the winding devices used for the same purposes in the prior art.

Moreover, the winding device can be moved in an extremely practical and easy way even when the cable is wound on it, thanks to its lightness in particular resulting from the fact that it is preferably made of plastic.

The above-mentioned aims and advantages, and others described in detail in this patent, are more apparent in the description of the preferred embodiments of the invention without limiting the scope of its application, with reference to the accompanying drawings, in which:

- Figure 1 is an axonometric view of the winding device according to the invention complete with connecting cable;
- Figure 2 is a view of the winding device illustrated in Figure 1 without the cable;
- Figure 3 is a side view of Figure 2;
- Figure 4 is an axonometric view of an alternative embodiment of Figure 2;
- Figure 5 is an exploded view of Figure 4;
- Figure 6 is a side view of Figure 5;
- Figure 7 is an enlarged view of a detail illustrated in Figure 4 in a possible operating condition.

The winding device disclosed is illustrated in Figure 1, and indicated by **1** as a whole, to which a connecting cable **C** for electric and/or electronic equipment and/or instruments is connected, for example a cable for connecting a musical stringed instruments, such as an electric guitar, to an amplification system.

According to the invention, the winding device **1** comprises a frame **2** which extends mainly according to a longitudinal axis of symmetry **X** and in which there is a pair of first housings **3**, **4** located opposite one another, which hold the cable **C**, and two second housings **5**, **6** which hold the jacks S_1, S_2 connected to each of the ends C_a, C_b of the cable **C**.

The special nature of the winding device **1** disclosed can be seen from Figure 1.

It consists of the creation of the first housings **3**, **4** and, above all, the second housings **5**, **6** which allow the cable **C** to be suitably supported and also effectively protect the jacks S_1, S_2 connected to it, since each jack is completely held by snapping into one of the second housings **5**, **6**, as described in more detail below.

When the cable **C** is in the conditions illustrated in Figure 1, wound around the winding device **1**, the jacks S_1, S_2, indeed, are protected by the frame **2** inside

the housings **5**, **6**, and, therefore, any accidental impact, caused by sudden winding device **1** movements, is absorbed by the frame **2** without causing any damage to the jacks S_1, S_2, as occurs with the known type of winding device.

Figure 2 shows how the frame **2**, made of plastic, preferably with fibreglass, substantially extends according to a plane containing the longitudinal axis of symmetry **X**.

Moreover, the frame **2** consists of two ribs **7**, **8** set opposite one another and with respective longitudinal axes **X'**, **X"** parallel with one another and with the axis of symmetry **X** of the frame **2**.

The two ribs **7**, **8** are positioned symmetrically relative to the longitudinal axis of symmetry **X** of the frame **2** and are connected to one another close to the intermediate zone by transversal elements **9**, **10** set opposite one another, forming for the frame **2** an essentially H-shaped profile, better illustrated in Figure 3.

The transversal elements **9**, **10** are in turn positioned symmetrically relative to the central axis **Y** of the frame **2**, orthogonal to the longitudinal axis of symmetry **X**, giving the frame **2** a shape with double symmetry.

It should be noticed that each of the first housings **3**, **4** has a substantially U-shaped profile **3'**, **4'**.

Hereinafter and unless otherwise indicated, for the sake of clarity reference is only made to the first housing indicated by **3**, although what is said also applies to the first housing indicated by **4**.

The profile **3'** is formed by the inner surfaces **7b**, **8b**, positioned opposite one another, of the ribs **7**, **8**, comprised between the ends **7c**, **8c** of the ribs **7**, **8** themselves and the transversal element **9** and constituting the sides of the U-shaped profile, as well as by the outer surface **9a** of the transversal element **9**, which forms the base of the U-shaped profile.

Each of the inner surfaces **7b**, **8b** of the ribs **7**, **8** is tapered according to a direction incident upon the longitudinal axis **X'**, **X"** of each of the ribs **7**, **8**.

As regards the second housings **5**, **6**, Figure 2 and Figure 3 show that they consist of a lowered zone **11**, **12** made on the lateral wall **7a**, **8a** of each of the ribs **7**, **8**.

Obviously, in other embodiments of the invention, not illustrated, the lowered zones which form the second housings may be made on both of the lateral walls of the ribs, offering the possibility of coupling the cable jacks

irrespectively on one face or the other of the winding device frame.

The lowered zone **11**, **12** has a main section **11a**, **12a** with a constant profile and tapered ends **11b** and **11c**, **12b** and **12c**.

The construction device described for the lowered zones **11**, **12** substantially reproduces the shape of the jacks S_1, S_2 which they must hold, typically consisting of more coaxial wires, the innermost projecting from the one immediately outside it.

Figure 4 illustrates an example of an alternative embodiment of the invention, in which the winding device, indicated by **100** as a whole, differs from that described with reference to Figures 1 to 3 because it comprises rotation and support means, indicated by **104** as a whole, available to the operator and consisting of:

- a plastic shaft **105**, removably inserted in through-holes **106**, **107** coaxial with one another according to the central axis **Y'** of the frame **101** and made in each of the ribs **102**, **103**;
- a handle **108**, also made of plastic, preferably but not necessarily in a single body with the shaft **105**, connected to a first end **105a** of the shaft **105** itself.

As illustrated in Figures 5 and 6, at the lateral edge **102a**, **103a**, the ribs **102**, **103** have a pair of recesses **109**, **110**, each suitable to hold a projection **111**, **112** present at the ends **108a**, **108b** of the handle **108** to prevent frame **101** rotation around the central axis **Y'** in rest conditions or when not used.

In other embodiments of the winding device disclosed, not illustrated, the recesses may be made only at the lateral edge of one of the two ribs forming the frame.

In such a case, the rotation and support means may be connected to the frame only on one side, unlike the winding device **100** in which the rotation and support means **104** may be connected to the frame **101** both on the side of the rib **102** and on the side of the rib **103**.

Moreover, alternative embodiments of the invention, not illustrated, may have a single recess on the lateral edge of at least one of the ribs and obviously a single corresponding projection at one end of the handle.

Figures 4 and 5 also illustrate how the shaft **105** has, on the lateral surface **105c**, at a second end **105b** opposite the first end **105a**, a pair of ring-shaped prominences **113**, **114** projecting from the lateral edge **102a** of the rib **102**

when the frame **101** supports the cable in rest conditions.

As is described in more detail below, the innermost of the ring-shaped prominences **113**, **114**, in the case in question the one indicated by **114**, is positioned close to a shoulder **115**, visible in Figures 5 and 6, made in the through-hole **106**, to allow the frame **101** to turn around the central axis **Y'** and, for example, to unwind the cable, releasing it from the frame **101**.

The through-hole **107** of the rib **103** also has a similar shoulder **116**, close to which the ring-shaped prominence **113** is positioned when the shaft **105** is coupled to the frame **101** on the side opposite that illustrated in the accompanying drawings, that is with the handle **108** facing the lateral edge **102a** of the rib **102**.

Figure 5 shows how the second end **105b** of the shaft **105** has a diametral cut **117** which makes it elastically yielding, an extremely important detail when the frame **101** has to be turned around the central axis **Y'**.

It should be noticed that in other embodiments of the invention, not illustrated, the lateral surface of the shaft of the rotation and support means may have contrast means which, when already coupled to the frame, prevent its accidental separation while it is in the user's hands.

In operating conditions, the musician transports the cable **C** on the winding device **1** in a practical and easy way, with the guarantee that the jacks S_1, S_2 are fixed in position inside the second housings **5**, **6** and protected from any accidental impacts.

When he wants to use the cable **C**, the musician releases the jack S_1, connected to the end C_a of the cable **C**, from the second housing **5** and snaps it in the respective socket, present, for example, in the musical instrument or in a device belonging to the amplification system.

Then, gripping the frame **1** with one hand, he uses the other hand to unwind the entire cable **C** until the jack S_2, connected to the end C_b of the cable **C**, is released from the second housing **6** in order to be plugged into the appropriate socket, that of the device belonging to the amplification system or that of the musical instrument.

When the musician has finished using the cable **C**, he removes the jacks S_1, S_2 from the relative instruments and devices and snaps one of the two jacks in one of the second housings **5**, **6**, then winding the cable **C** on the frame **2**, arranging it in the first housings **3**, **4** until one of the ends C_a, C_b of the cable **C**

remains free, the other jack S_1, S_2 being connected to the cable **C** and being thus snapped into the other second housings **5**, **6**.

For the winding device **100**, the musician or other authorised person acts similarly to wind the cable around the frame **101**.

A first jack, connected to one end of the cable, is inserted by snapping in the second housing **118**, then the user with one hand winds the cable around the frame **101** so that it is held in the first housings **120**, **121** until the opposite end of the cable with the corresponding jack remains free and said jack is inserted by snapping in the second housing **119**.

However, in this case, cable unwinding is rather different to that of the winding device **1** due to the presence of the rotation and support means **104** that can be accessed by the musician or by the authorised user, which make it extremely easy.

These rotation and support means **104** are arranged according to the configuration illustrated in Figure 4 when the cable is wound on the winding device **100** or when the latter is in conditions in which it is not used.

In this operating condition, the projection **111**, **112** at the ends **108a**, **108b** of the handle **108** is coupled to the corresponding recesses **109**, **110** in the lateral edge **103a** of the rib **103**, the shaft **105** is inserted in the through-holes **106**, **107** and the end **105b** of the shaft projects from the lateral edge **102a** of the rib **102** so that the ring-shaped prominences **113**, **114** are outside the rib **102** itself.

To unwind the cable from the winding device **100**, the musician or user pulls the handle **108**, releasing the projection **111**, **112** from the recesses **109**, **110** and positioning only the ring-shaped prominence **114** close to the shoulder **115** present in the through-hole **106** of the rib **102**.

The other ring-shaped prominence **113** projects from the lateral edge **102a** of the rib **102**, according to the configuration illustrated in Figure 7.

In this way, the frame **101** is free to turn around the central axis **Y'**, allowing the practical and rapid cable unwinding from the winding device.

When the user pulls the handle **108**, the diametral cut **117** at the second end **105b** of the shaft **105** makes it elastically yielding and allows fluid sliding of the shaft **105** along the central axis **Y** in the through-holes **106**, **107** and, at the same time, creation of an effective seal between the shaft **105** and the frame **101** as soon as the desired position is reached.

When the shaft **105** is positioned in the operating condition as illustrated in Figure 7, the user removes the jack connected to a first end of the cable, unwinds the cable by turning the frame **101** around the central axis **Y'**, said movement resulting from simply pulling the cable and, finally, also releases the jack present at the second end of the cable.

Obviously, in other use situations, the musician may couple the shaft **105** to the frame **101** on the side opposite that illustrated in the accompanying drawings, positioning the handle **108** close to the lateral edge **102a** of the rib **102** and the second end **105b** of the shaft **105** projecting from the lateral edge **103a** of the rib **103**.

Therefore, the winding device disclosed allows improved and more effective protection than known equivalent winding devices for the jacks connected to the connecting cables of electric and/or electronic equipment and/or instruments.

It is suitable for winding preferably one cable and, therefore, it is also suitable for purchasing by private users, for example a youngster who plays a musical instrument as a hobby, such as an electric guitar, this fact distinguishing it from the winding devices in the prior art which, due to their construction, are aimed at bands or musicians who have a considerable number of musical instruments.

The winding device disclosed is produced by simply injection moulding of plastic material and, as a result, has a production and marketing cost which makes it attractive on the market.

Therefore, based on the above description, it is evident that the winding device for the connecting cables of electric and/or electronic equipment and/or instruments disclosed achieves all of the afore-mentioned aims and provides all of the advantages mentioned.

During production, modifications may be made to the winding device disclosed, for example consisting of a different frame shape.

In addition, there may be alternative embodiments in which the frame material is different from that mentioned above, without invalidating the advantage brought by the present patent.

All of the embodiments described and referred to, but not illustrated in the accompanying drawings, where they do not depart from the inventive concept described in the claims herein, must be considered protected by this patent.

CLAIMS

1) A winding device (1; 100) for the connecting cables (C) of electric and/or electronic equipment and/or instruments **characterised by** comprising a frame (2; 101) which mainly extends according to a longitudinal axis of symmetry (X) and in which there is a pair of first housings (3, 4; 120, 121) positioned opposite one another, being suitable to hold the cable (C), and one or more second housings (5, 6; 118, 119) suitable to hold the jacks (S_1, S_2) connected to at least one of the ends (C_a, C_b) of said cable (C).

2) The winding device (1; 100) according to claim 1), **characterised in that** said frame (2; 101) extends mainly according to a plane containing said longitudinal axis of symmetry (X).

3) The winding device (1; 100) according to claim 1), **characterised in that** said frame (2; 101) consists of two ribs (7, 8; 102, 103) set opposite one another with longitudinal axes (X', X") which are parallel with one another and with said longitudinal axis of symmetry (X) of said frame (2; 101), the ribs being positioned symmetrically relative to said longitudinal axis of symmetry (X) of said frame (2; 101) and connected to one another close to the intermediate zone by transversal elements (9, 10) positioned opposite one another and giving said frame (2; 101) an essentially H-shaped profile.

4) The winding device (1; 100) according to claim 3), **characterised in that** said transversal elements (9, 10) are positioned symmetrically relative to the central axis (Y; Y') of said frame (2; 101), orthogonal to said longitudinal axis of symmetry (X), giving said frame (2; 101) a shape with double symmetry.

5) The winding device (1; 100) according to claim 3), **characterised in that** each of said first housings (3, 4; 120, 121) has a substantially U-shaped profile (3', 4') formed by the opposite inner surfaces (7b, 8b) of said ribs (7, 8; 102, 103), comprised between the ends (7c, 8c) of said ribs (7, 8; 102, 103) and one of said transversal elements (9, 10) and constituting the sides of said U-shaped profile, and by the outer surface (9a) of one of said transversal elements (9, 10), forming the base of said U-shaped profile.

6) The winding device (1; 100) according to claim 5), **characterised in that** each of said inner surfaces (7b, 8b) of said ribs (7, 8; 102, 103) is tapered according to a direction incident upon said longitudinal axis (X', X") of each of said ribs (7, 8; 102, 103).

7) The winding device (1; 100) according to claim 3), **characterised in that** each of said second housings (5, 6; 118, 119) consists of a lowered zone (11, 12) created on at least one lateral wall (7a, 8a) of each of said ribs (7, 8; 102, 103).

8) The winding device (1; 100) according to claim 7), **characterised in that** said lowered zone (11, 12) has a main section (11a, 12a) with a constant profile and tapered ends (11b, 11c, 12b, 12c).

9) The winding device (100) according to claim 4), **characterised by** comprising rotation and support means (104) for the user, consisting of:

- a shaft (105) removably inserted in through-holes (106, 107) coaxial with one another according to said central axis (Y') of said frame (101) and made in each of said ribs (102, 103);
- a handle (108) connected to a first end (105a) of said shaft (105).

10) The winding device (100) according to claim 9), **characterised in that** at least one of said ribs (102, 103) has, at its lateral edge (102a, 103a), at least one recess (109, 110) suitable to hold a projection (111, 112) present at least at one end (108a, 108b) of said handle (108) for preventing rotation of said frame (101) around said central axis (Y') in rest conditions.

11) The winding device (100) according to claim 10), **characterised in that** said shaft (105) has, on its lateral surface (105c), at a second end (105b) opposite said first end (105a), a pair of ring-shaped prominences (113, 114) projecting from said lateral edge (102a; 103a) of one of said ribs (102, 103) when said frame (101) supports said cable in rest conditions, the innermost prominence (114) being positioned close to a shoulder (115; 116), made in each of said through-holes (106, 107), to allow said frame (101) to turn around said central axis (Y').

12) The winding device (100) according to claim 11), **characterised in that** said second end (105b) of said shaft (105) has a diametral cut (117) suitable to make it elastically yielding.

13) The winding device (100) according to claim 9), **characterised in that** said shaft (105) and said handle (108) are made as a single body.

14) The winding device (1; 100) according to claim 1), **characterised in that** said frame (2; 101) is made of plastic material.

15) The winding device (1; 100) according to claim 14), **characterised in that** said plastic material contains fibreglass.

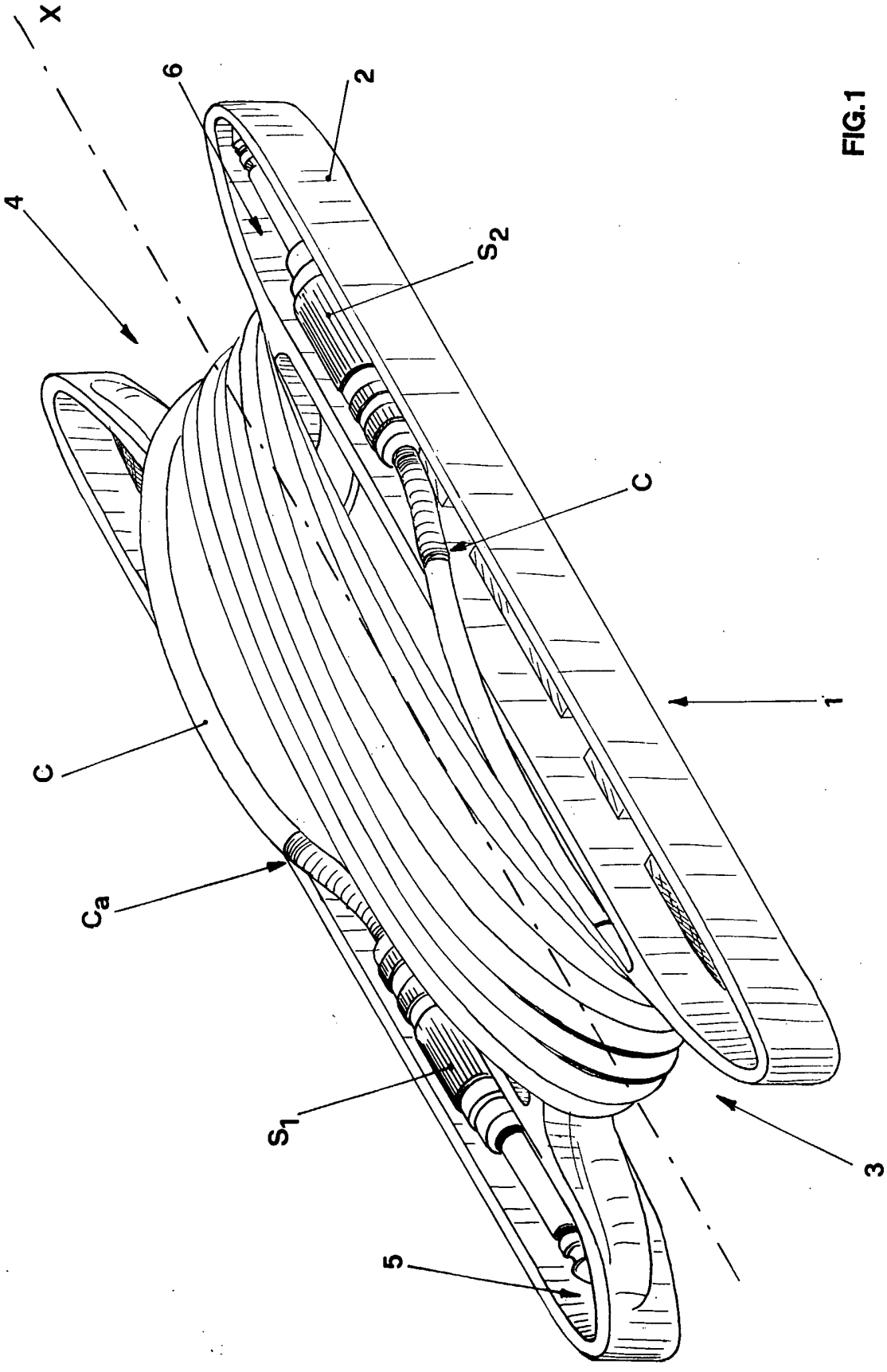


FIG.1

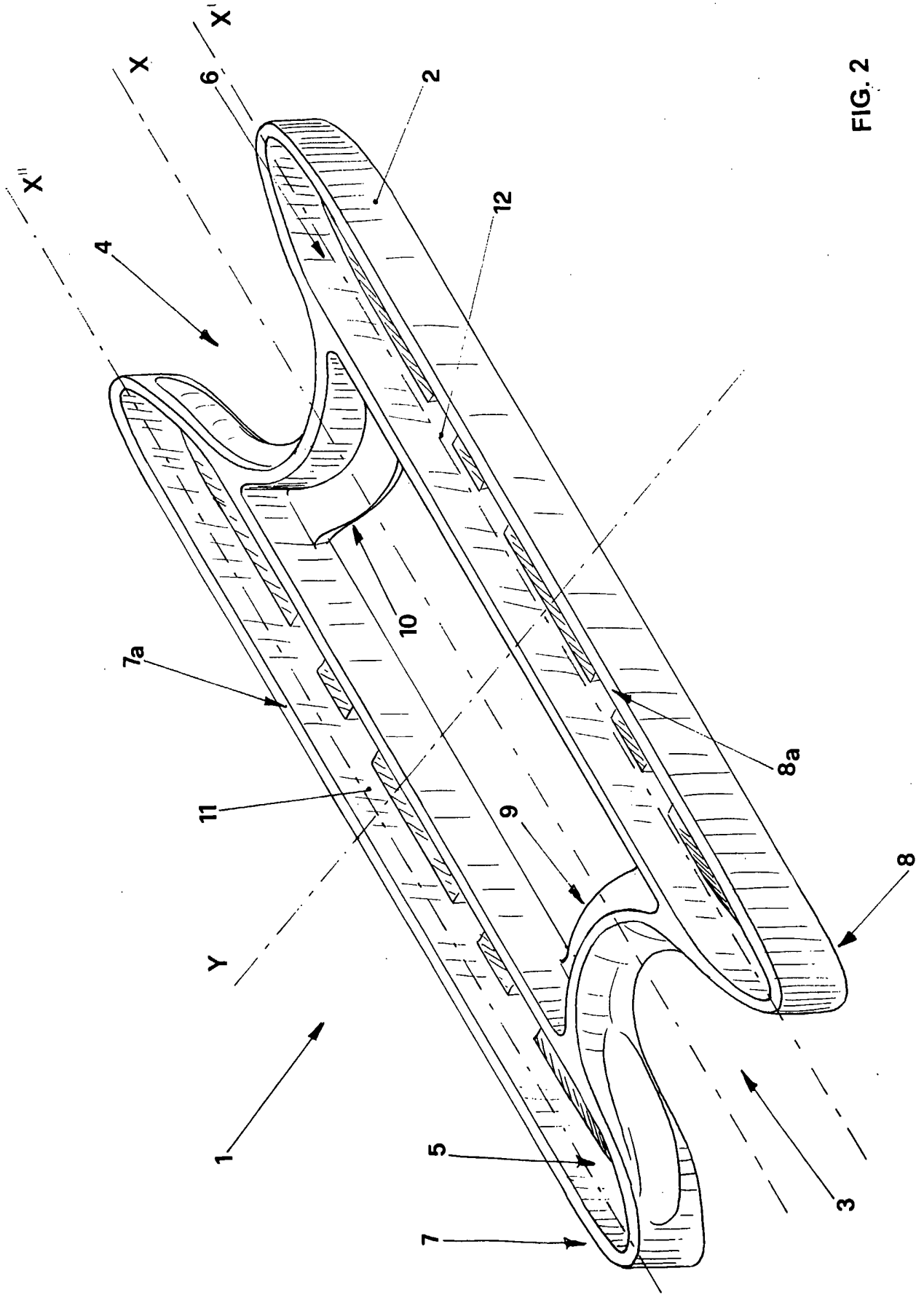
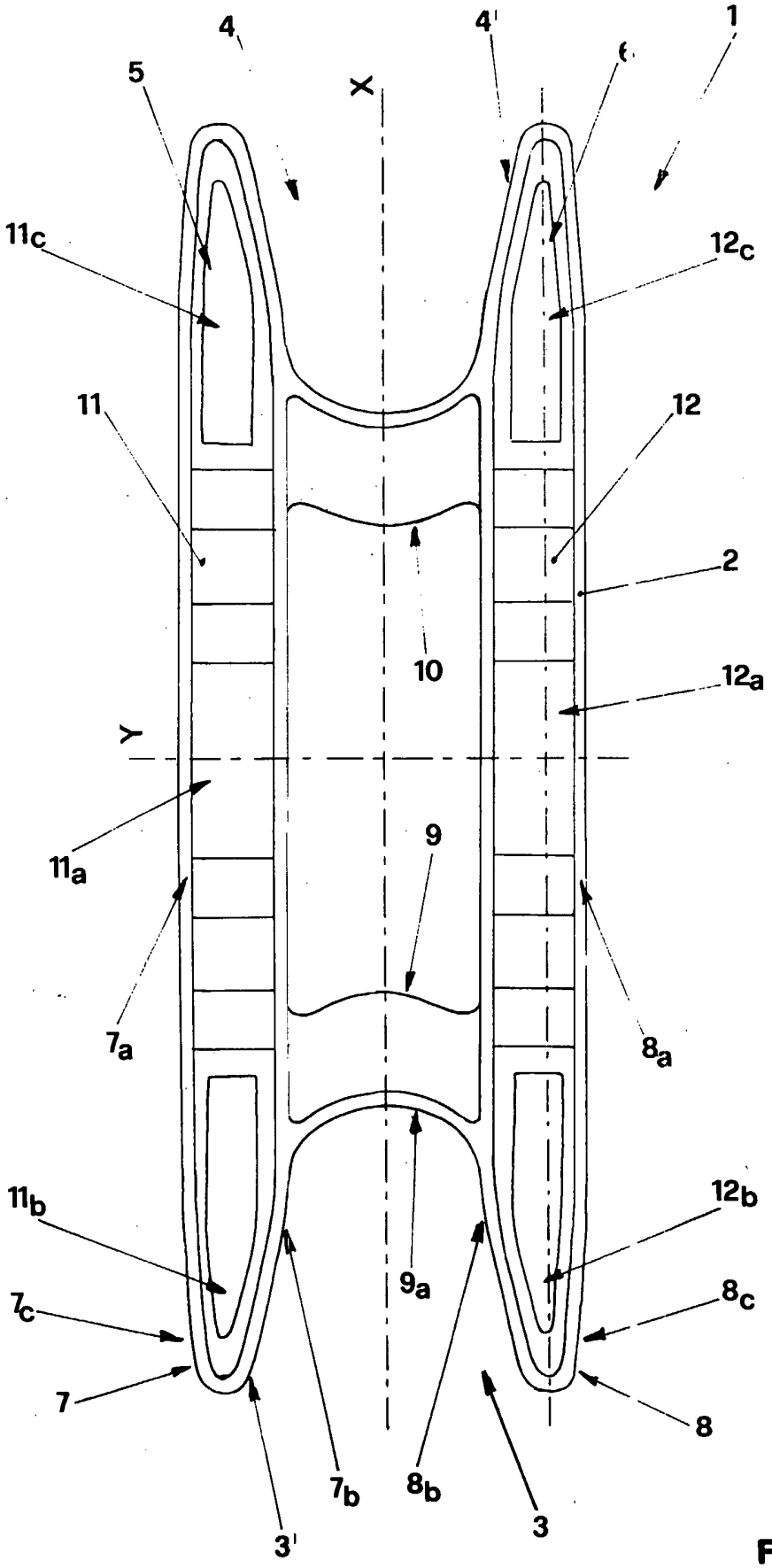


FIG. 2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4'
1
5
X
11c
12c
11
12
2
10
12a
Y
11a
9
7a
8a
11b
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9a
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8c
7
8
7b
8b
3
3'

FIG.3

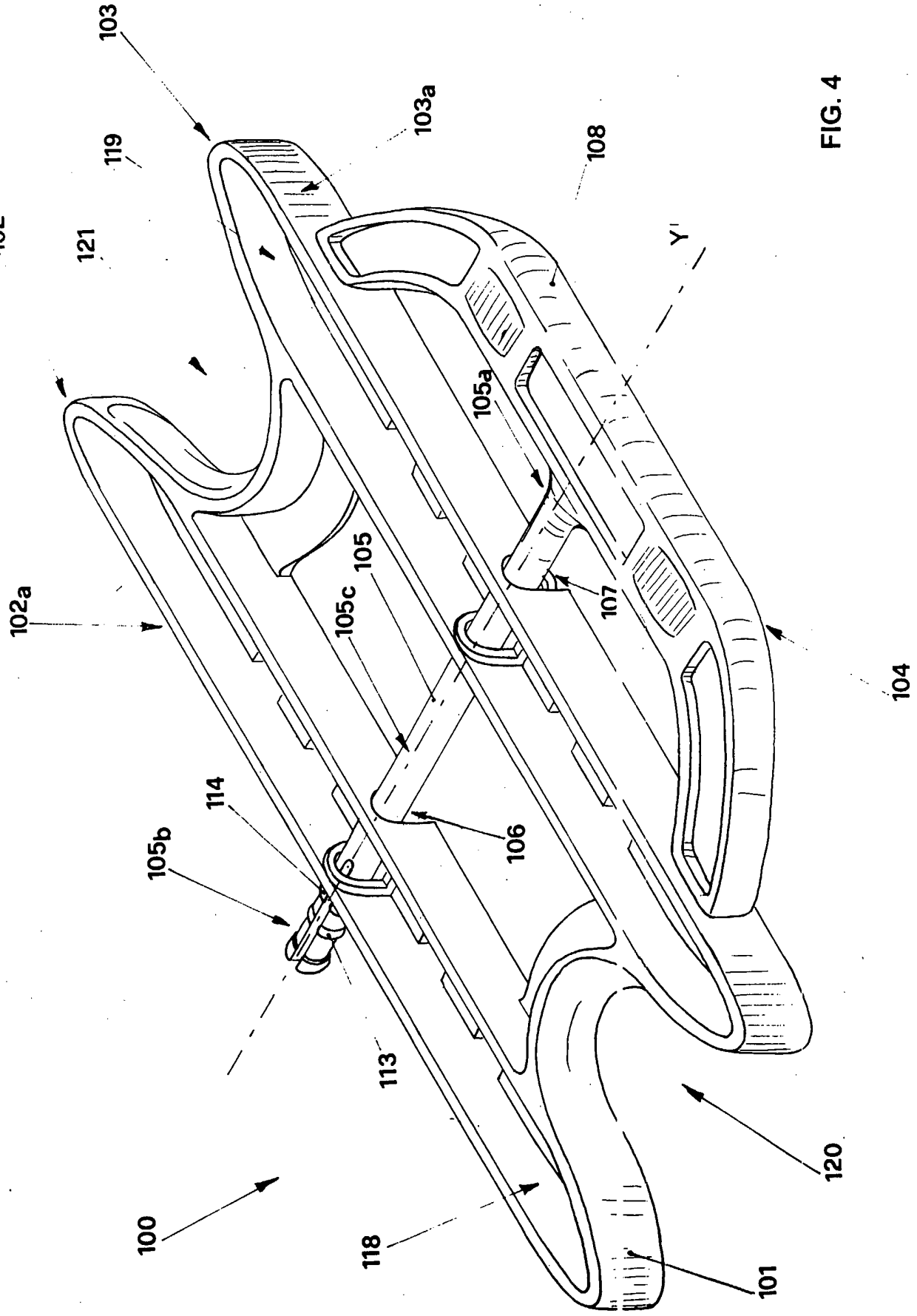
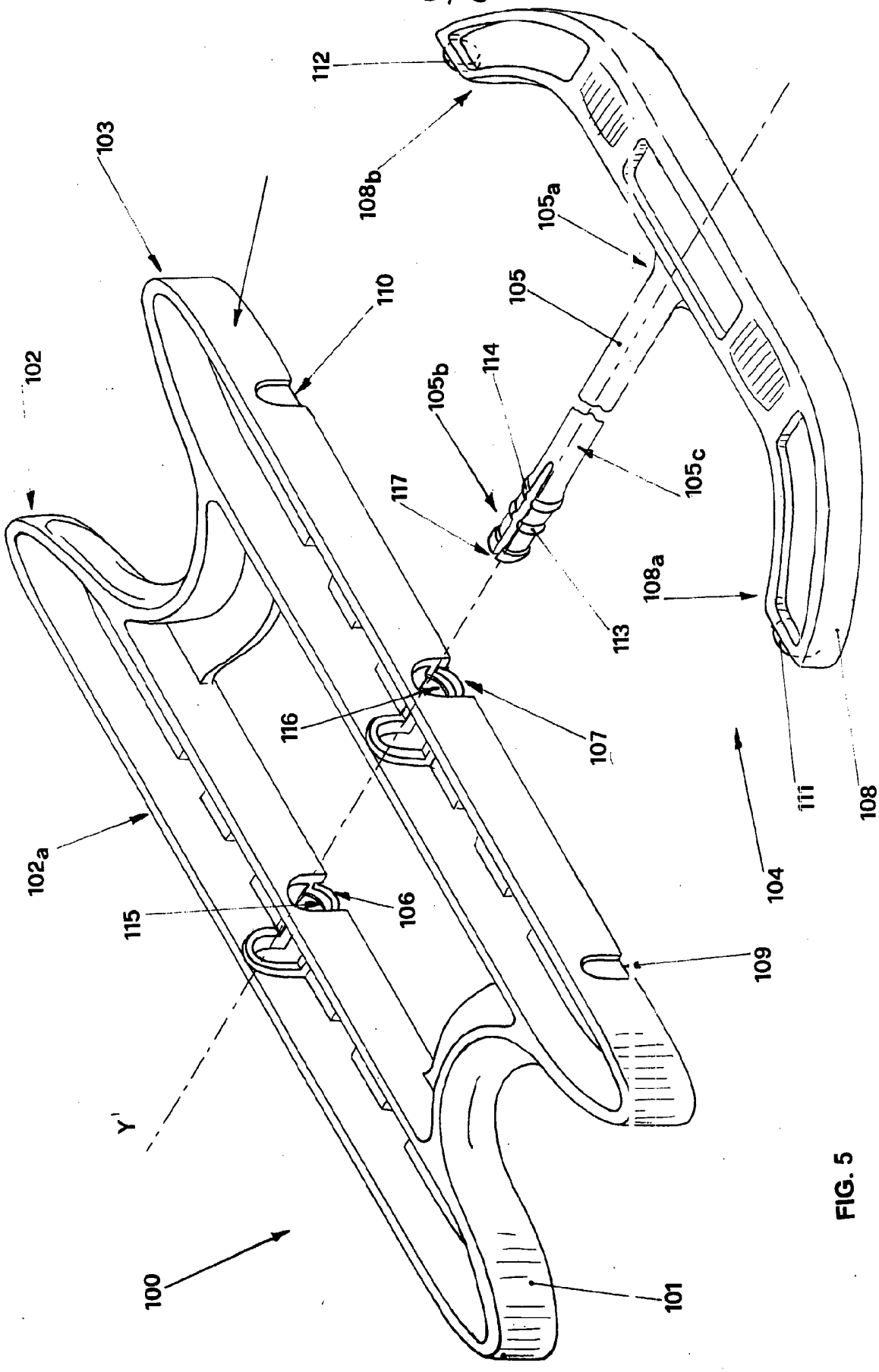

103
103a
119
108
102
121
Y'
105a
105
105c
107
102a
104
114
105b
106
113
120
100
118
101

FIG. 4


112
103
108b
105a
110
105
102
114
105b
105c
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108a
113
116
107
111
108
102a
104
115
106
109
Y'
100
101

FIG. 5

FIG.6

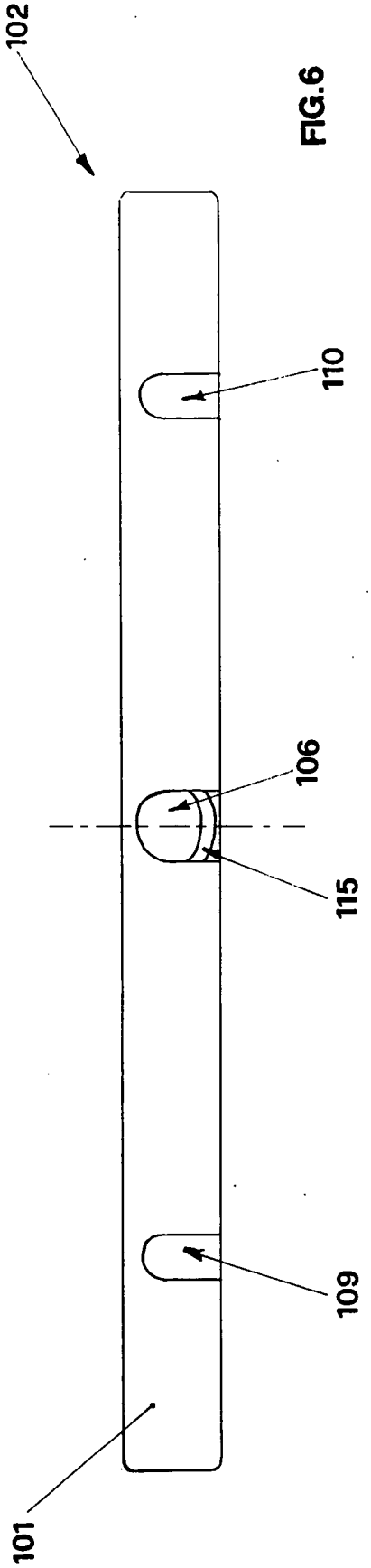
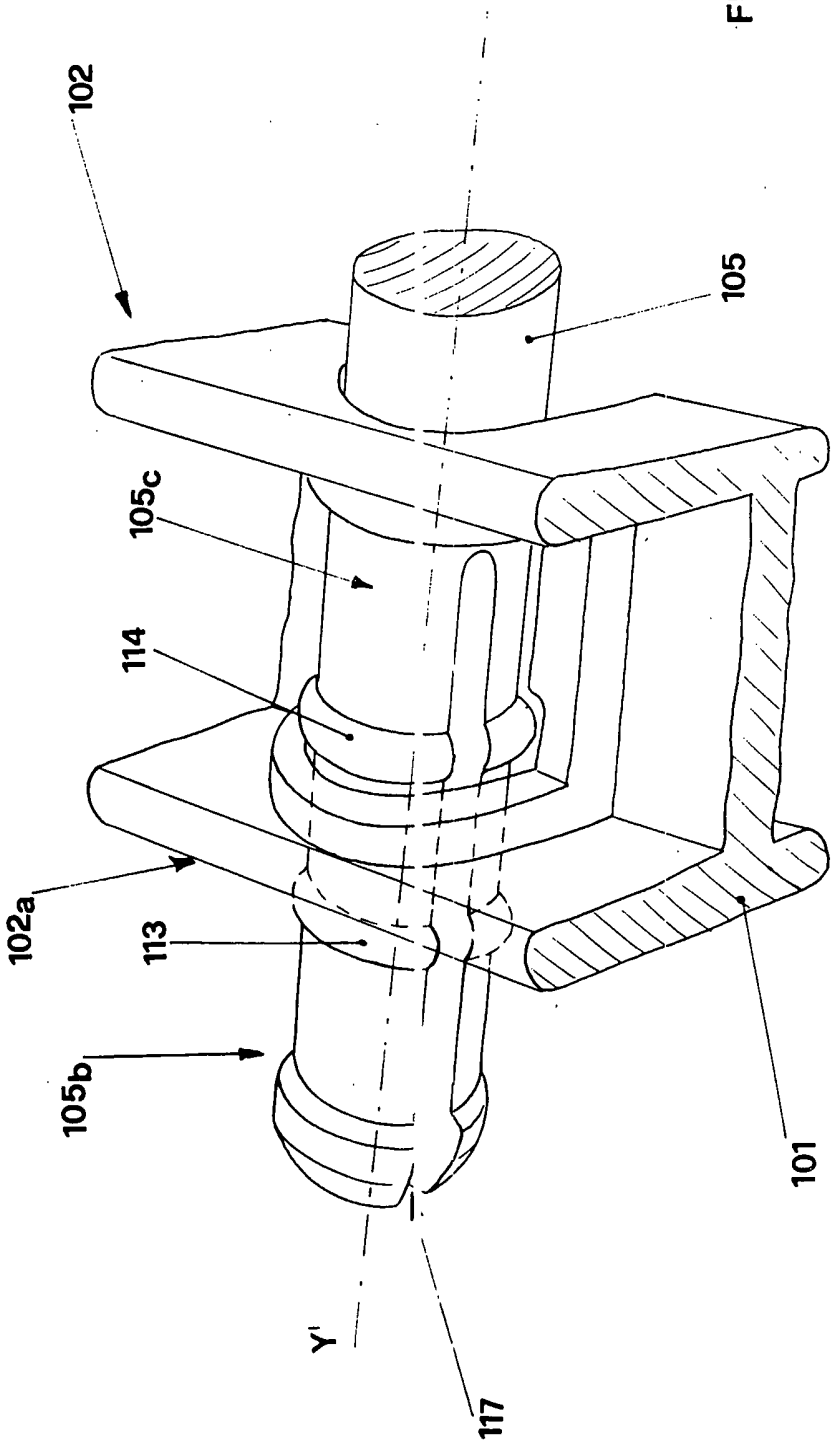


FIG. 7



INTERNATIONAL SEARCH REPORT

International Application No
PCT/IT2005/000183

A. CLASSIFICATION OF SUBJECT MATTER
B65H75/06 B65H75/40 H02G11/02

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
B65H H02G H01R

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2004/203277 A1 (CHIEN CHAO CHUAN) 14 October 2004 (2004-10-14) paragraphs '0005!, '0010!, '0011!, '0013!; figures	1-5
X	US 6 428 348 B1 (BEAN HEATHER N) 6 August 2002 (2002-08-06) column 1, line 21 - line 40; figures	1-5
X	GB 2 270 513 A (GRAND * LIN) 16 March 1994 (1994-03-16) page 1 - page 2; figures	1,2
X	US 4 101 089 A (CULBERTSON ET AL) 18 July 1978 (1978-07-18) figures 5,6	1,2

-/--

[X] Further documents are listed in the continuation of box C.

[X] Patent family members are listed in annex.

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Date of the actual completion of the international search	Date of mailing of the international search report
7 December 2005	20/12/2005

Name and mailing address of the ISA	Authorized officer
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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

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