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(54) **Supporting framework for sun curtains**

(57) The present invention relates to a supporting framework, specifically designed for sun curtains and the like, comprising a box-like body which can be applied to the fixed structure and supporting a pair of compasses arms for coupling to a front portion.

The main feature of the invention is that it comprises an articulated joint at the central portion of the arms, including a female element and a male element, defining substantially flush outer surfaces, in all of the angular positions of the articulated joint.

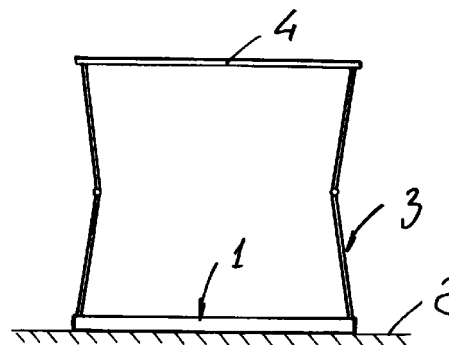


FIG. 1

Description

BACKGROUND OF THE INVENTION

[0001] The present invention relates to a supporting framework, which has been specifically designed for sun curtains and the like.

[0002] Prior commercially available sun curtains conventionally comprise a box-like body, to be fixed to a fixed structure or construction and supporting the curtain cloth winding roller.

[0003] To the box-like body a pair of compasses arms are pivoted for supporting the front coupling portion coupling the curtain end portions and which can be extended for unwinding the curtain and folded again to be coupled to the box-like body and fully withdraw or wind the curtain.

[0004] In this prior approaches, the articulated joint provided in the central portion of the arms is made by a female-male coupling, including projecting elements.

[0005] Thus, at the mutual coupling region gaps are formed which can be dangerous for a user accidentally putting his/her hands in said gaps, and moreover the curtain cloth can be undesirably gripped during the operating steps thereof.

[0006] A further problem of the prior art approaches is that the male and female element of the arm central articulated joint comprises end pieces thereon the tubular arms can be locked by riveting, bolts or the like, which would require both to apply a cumbersome projecting element and a coupling operation which cannot be easily and quickly performed.

SUMMARY OF THE INVENTION

[0007] Accordingly, the aim of the present invention is to overcome the above mentioned drawbacks, by providing a supporting framework specifically designed for sun curtains and the like, which does not require any projecting elements which could be dangerous as the arms are operated for opening and closing.

[0008] Within the scope of the above mentioned aim, a main object of the present invention is to provide such a supporting framework, in which the coupling to the central articulated joint of the tubular element arms can be performed without applying any outer elements such as rivets and the like, while simultaneously providing a firm and accurate connection.

[0009] Another object of the present invention is to provide such a supporting framework which, owing to its peculiar constructional features, is very reliable and safe in operation.

[0010] Yet another object of the present invention is to provide such a supporting framework, specifically designed for sun curtains and the like, which can be easily made starting from easily available elements and materials and which, moreover, is very competitive from a mere economic standpoint.

[0011] According to one aspect of the present invention, the above mentioned aim and objects, as well as yet other objects, which will become more apparent hereinafter, are achieved by a supporting framework, specifically designed for sun curtains and the like, comprising a box-like body to be fixed to a fixed structure and supporting a pair of compasses arms for coupling a front portion, characterized in that said supporting framework comprises moreover an articulated joint at a central portion of said arms, including a female element and a male element defining substantially flush outer surfaces in all the angular positions of said articulated joint.

BRIEF DESCRIPTION OF THE DRAWINGS

[0012] Further characteristics and advantages of the present invention will become more apparent hereinafter from the following detailed disclosure of a preferred, though not exclusive, embodiment of the supporting framework, specifically designed for sun curtains and the like, and being shown, by way of an indicative, but not limitative example, in the figures of the accompanying drawings, where:

Figure 1 is a schematic top plan view of the supporting framework, in an extended condition thereof;

Figure 2 is an exploded view illustrating the articulated joint;

Figure 3 is a further perspective view illustrating the convex portion of the articulated joint;

Figure 4 is a further perspective view illustrating the concave portion of the articulated joint;

Figure 5 is a cross sectional view of the articulated joint as sectioned perpendicularly to an arm;

Figure 6 is a further perspective view illustrating a further embodiment of the articulated joint female element;

Figure 7 is a further perspective view illustrating yet another embodiment of the articulated joint male element;

Figure 8 is a view illustrating the male element and, in an exploded form, the tubular section member; and

Figure 9 illustrates the male element coupled to the tubular section member.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0013] With reference to the number reference of the above mentioned figures, the supporting framework, specifically designed for sun curtains and the like, according to the invention, comprises a box-like body 1 of a per-se known type, which can be coupled to a fixed structure or construction 2 and which supports a pair articulated arms 3 which, at the other end portions thereof, are coupled to a front portion 4.

[0014] The main feature of the invention is that the articulated central joint, arranged on the compasses arms 3, comprises a female element 11 and a male element 12, which are so constructed as to present a flush surface through the overall angular positions assumed by the articulated joint.

[0015] More specifically, the female element 11 is provided with a disc lugs 13, arranged spaced from one another and connected by a throughgoing pin 14.

[0016] The body of the female element 11 comprises a fitting end-piece 20, which will be disclosed in a more detailed manner hereinafter.

[0017] The male element comprises a pair of inner discs 16, which are axially adjoining the disc lugs 13 and which are coupled by a coupling pin 14.

[0018] Moreover, the male element 12 is also provided with an end-piece 20 which will be disclosed hereinafter.

[0019] At the coupling region of the discs 13 and 16 is arranged a contoured casing 17, operating as a supporting and guide element for the tension strip coupled to resilient means for causing the arms to be extended.

[0020] A further important feature of the invention is that the arms 3 are made of tubular section members 30, of a substantially oval configuration, and which are provided, in their inside, with a plurality of tooth element 31 engaging in grooves 32, formed on a respective face of the end-pieces 20 and inside the hollow 33 provided on the other faces of the end-pieces 20.

[0021] The groove 32 and sidewalls of the hollow 33 are made with the engagement walls with the tooth elements, providing a changing of the slanting of the laying plane, thereby, as the section member 30 and end-piece 20 are pressure coupled, the fins are bent to provide a deforming effect.

[0022] Said fins, as it should be apparent, are partially turned thereby to firmly clamp the section member 30 on the end-piece 20, to provide a firm coupling without the need of using screws or rivets.

[0023] In this connection is very important that the mentioned deformation is performed by a continuous variation of the inclinations of the fin and end-piece contacting planes or surfaces, since, in this manner, the mentioned tooth elements or fins 31 would not be subjected to excessively great forces susceptible to break them, but they will be plastically deformed, thereby providing a firm and safe connection.

[0024] As shown in Figures 6 to 9, it is possible to improve the locking of the end-piece 20 and section-member 30 by including disengaging preventing means comprising non-return tooth elements 40 provided in the grooves 32 on the wall thereof opposite to that provided with the inclination changing means.

[0025] Advantageously, the tooth element 40 have a rectangular trapezium configuration, with the raising ramp facing the free end of the end-piece 20.

[0026] Moreover, further side tooth elements 41 arranged on the edge of the end-piece 20 and forcibly engaging at the curved portion of the tubular section member 30 are moreover provided.

[0027] The provision of said tooth elements 40 and 41 provides a further safety element, since said tooth elements would prevent the fins or tooth elements 31 deformed by slanting the wall of the groove 32, from disengaging and causing a labile connection.

[0028] Moreover, the tooth elements 40 and 41 will provide a deformation localized on the section member 30 thereby enhancing the locking of the section member and end-piece.

[0029] From the above disclosure it should be apparent that the invention fully achieves the intended aim and objects.

[0030] In particular, the fact is to be pointed out that a supporting framework has been provided in which the central articulated joint has perfectly flush surfaces, i.e. without any projections or recesses which would be very dangerous.

[0031] Moreover, another important aspect of the invention is that the coupling of the articulated joint to the arms is carried out by plastically deforming tooth elements arranged inside the arm forming section members.

[0032] Such a deformation is carried out by gradually turning the contacting surfaces.

[0033] The invention, as disclosed, is susceptible to several modifications and variation, all of which will come within the scope of the invention.

[0034] Moreover, all of the constructional details can be replaced by other technically equivalent elements.

[0035] In practicing the invention, the used materials, provided that they are compatible to the intended application, as well as the contingent size and shapes, can be suitably changed, without departing from the scope of the invention as defined in the accompanying claims.

Claims

1. A supporting framework, specifically designed for sun curtains and the like, comprising a box-like body to be fixed to a fixed structure and supporting a pair of compasses arms for coupling a front portion, characterized in that said supporting framework comprises moreover an articulated joint at a

central portion of said arms, including a female element and a male element defining substantially flush outer surfaces in all the angular positions of said articulated joint.

2. A supporting framework, according to the preceding claim, characterized in that said female element is provided with outer disc lugs, which can be coupled to disc elements defined by said male element, an axially extending coupling pin being moreover provided. 5 10
3. A supporting framework, according to the preceding claims, characterized in that said framework comprises a casing arranged between the discs of said male element, thereby providing a strip bearing region, for bearing thereon a strip element coupled to resilient means for extending said arms. 15
4. A supporting framework, according to one or more of the preceding claims, characterized in that said female element and male element are provided with pressure fitting end pieces which can be pressure fitted in section members forming said arms. 20 25
5. A supporting framework, according to one or more of the preceding claims, characterized in that said end-pieces are provided, on a face thereof, with longitudinally extending grooves and, on the other face thereof, with hollows the sidewalls whereof operate as engagement elements with tooth elements or fins formed inside said section members. 30
6. A supporting framework, according to one or more of the preceding claims, characterized in that the bearing surfaces of said tooth element and grooves as well as said side walls, define an angular variation for providing, as the section member is coupled to the end-piece, a plastic bending of said tooth element to provide a firm connection. 35 40
7. A supporting framework, according to one or more of the preceding claims, characterized in that said framework comprises, in said grooves, non return tooth element which can be engaged with the tooth element of said section members. 45
8. A supporting framework, according to one or more of the preceding claims, characterized in that said non-return tooth element are arranged on the face of the groove opposite to that providing an inclination variation. 50
9. A supporting framework, according to one or more of the preceding claims, characterized in that said framework comprises side tooth elements arranged on the edges of said end-piece. 55
10. A supporting framework, according to one or more of the preceding claims, characterized in that said tooth elements have a substantial rectangular trapezium configuration, with the raising ramp facing the free end of said end-piece.
11. A supporting framework for sun curtains and the like, according to one or more of the preceding claims, and substantially as broadly disclosed and illustrated and for the intended aim and objects.

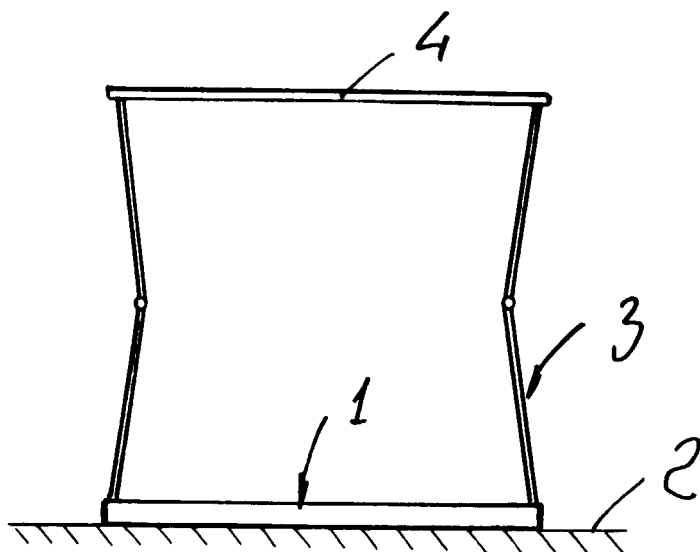


FIG. 1

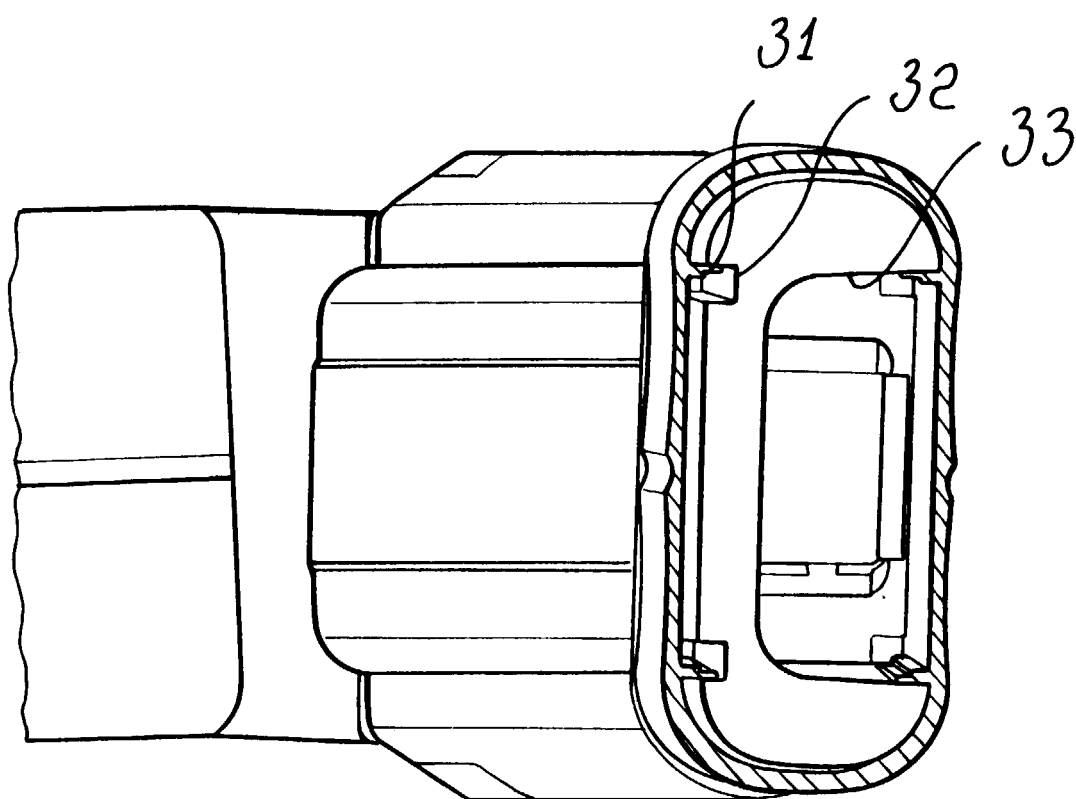


FIG. 5

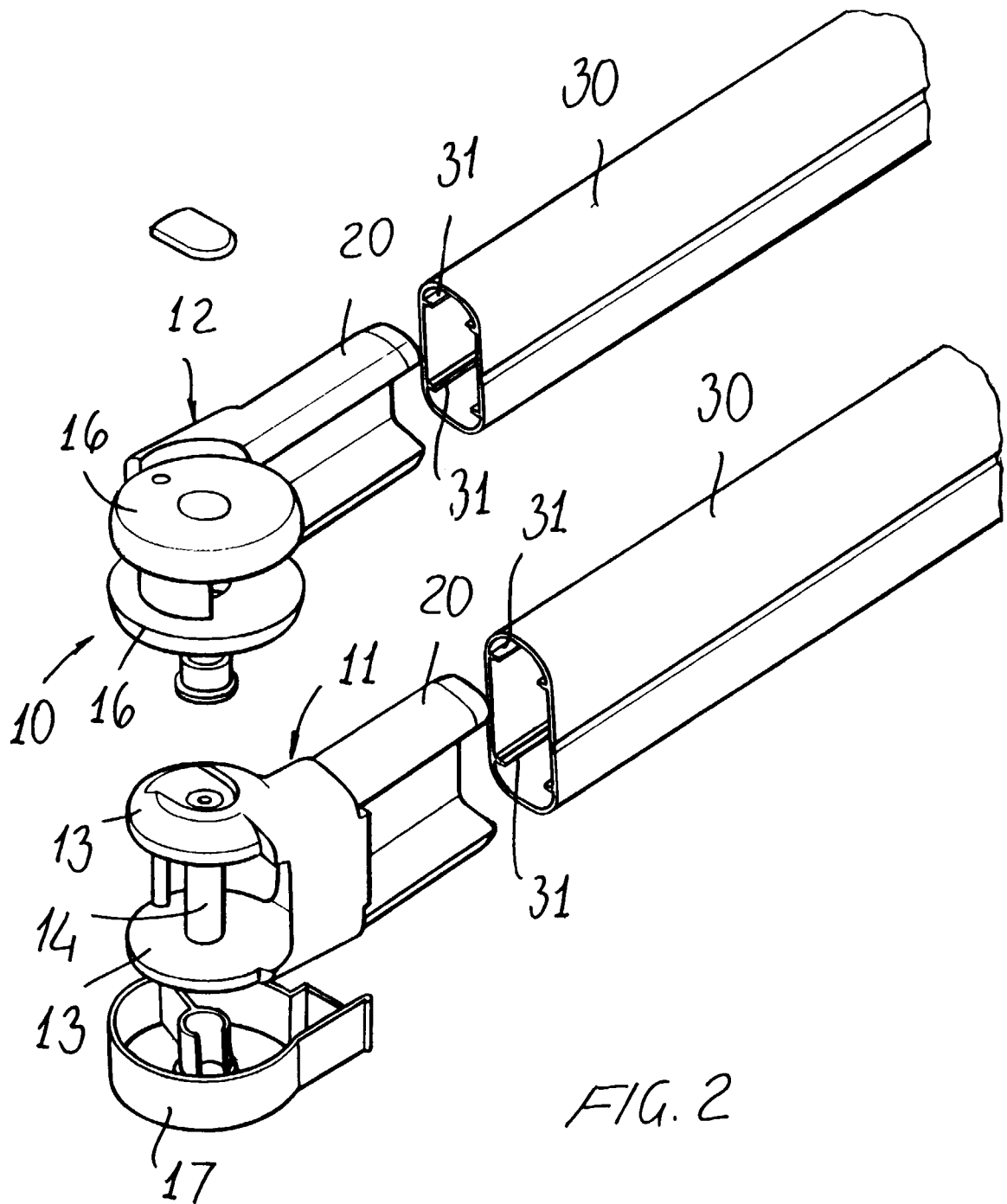
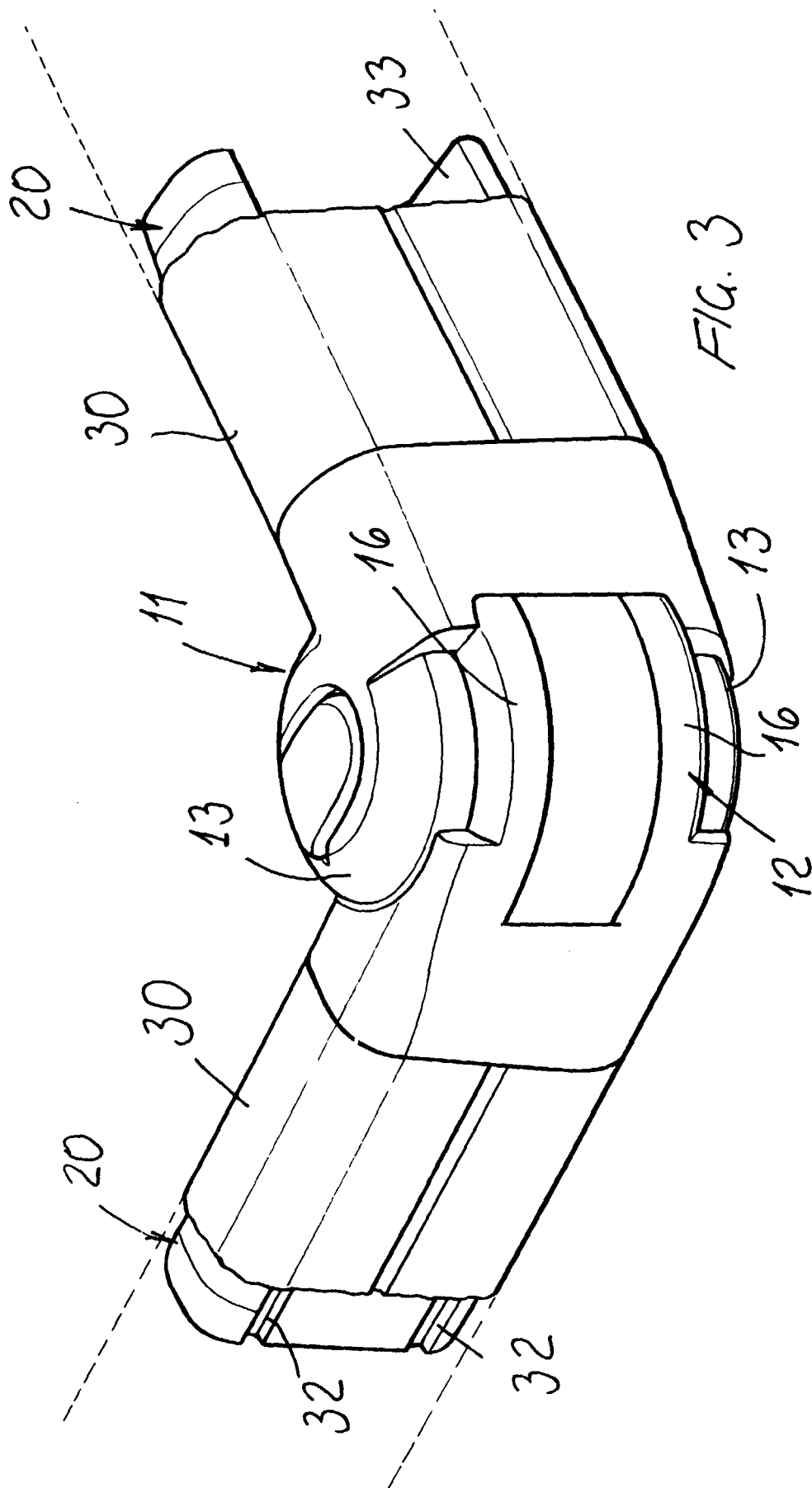


FIG. 2



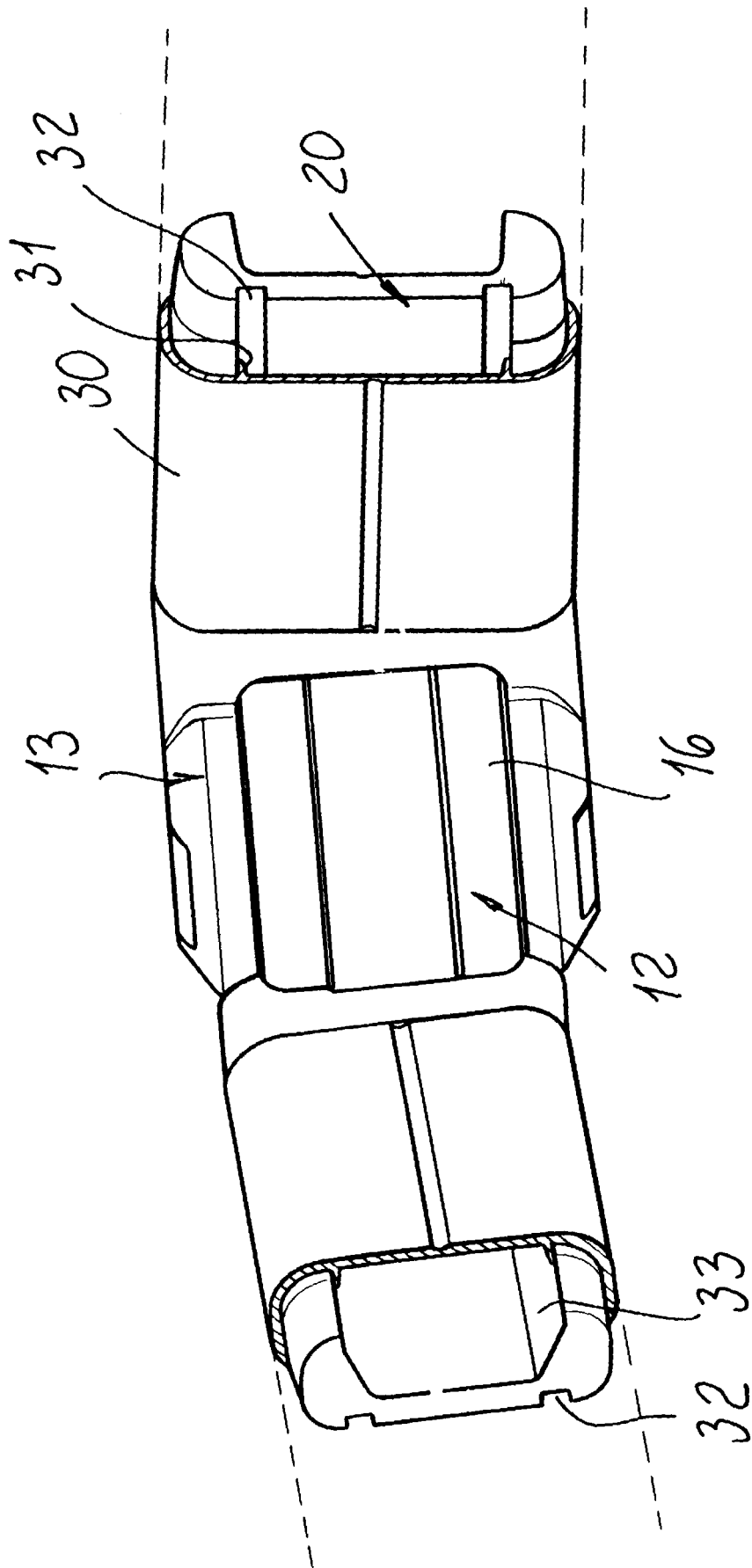


FIG. 4

