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

(11) EP 1 561 887 A2

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
10.08.2005 Bulletin 2005/32

(51) Int Cl.[7]: **E05B 65/16**, E05C 9/08

(21) Application number: **05100583.3**

(22) Date of filing: **28.01.2005**

(84) Designated Contracting States:
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IS IT LI LT LU MC NL PL PT RO SE SI SK TR
Designated Extension States:
AL BA HR LV MK YU

(30) Priority: **03.02.2004 IT BO20040050**

(71) Applicant: **Pastore & Lombardi S.r.l.**
40057 Cadriano di Granarolo Emilia (Bologna) (IT)

(72) Inventor: **HILBE, Riccardo**
40125, Bologna (IT)

(74) Representative: **Modiano, Guido, Dr.-Ing. et al**
Dr. Modiano & Associati SpA
Via Meravigli, 16
20123 Milano (IT)

(54) Support for a rotating bar for actuating a device for opening and closing the door of the body of trucks, trailers and the like

(57) A support for a rotating bar for actuating a device for opening and closing the door of the body of trucks, trailers and the like, comprising a base (2), which forms a longitudinal seat (3) for accommodating and rotatably supporting the bar, which is fixed to the door by means of connecting elements engaged in at least one through hole (14) provided substantially along the centerline; first and second substantially semitubular elements (4, 5), which are detachably associated with the base (2) at the ends, so as to retain the bar in the seat (3); end abutments (6) and at least one central spacer (7), which are adapted to lock the first and second elements (4, 5) at the ends of the base (2), the central spacer (7) being rigidly coupled to the base (2) by way of break-in resistant fixing means (8).

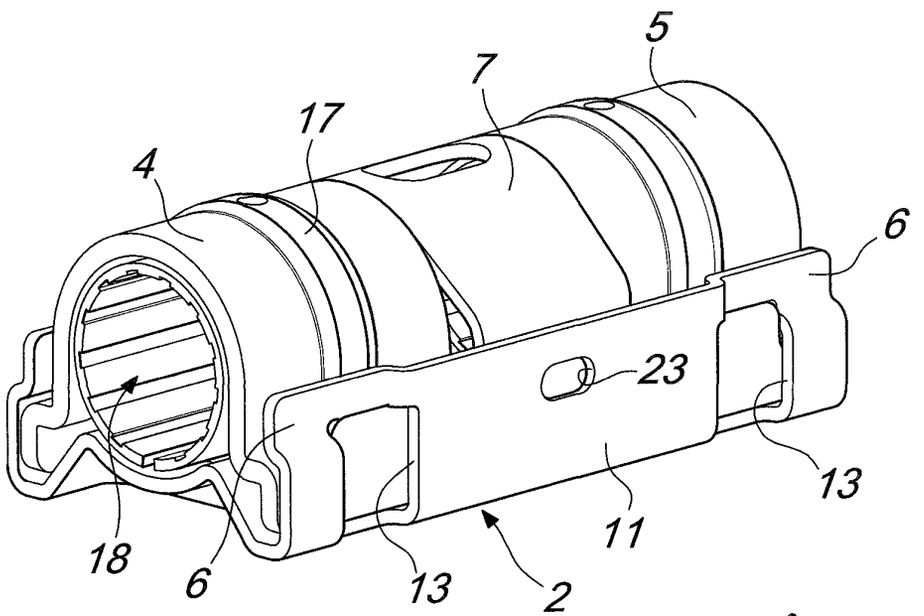

Fig. 2

EP 1 561 887 A2

Description

[0001] The present invention relates to a support for a rotating bar for actuating a device for opening and closing the door of the body of trucks, trailers and the like.

[0002] The bar for actuating devices for opening and closing doors of truck bodies, of the lever or handle type, is traditionally rotatably associated with the door by means of supports that are substantially constituted by two contoured metal plates, which are coupled to each other so as to form a cylindrical longitudinal through seat for the bar. These metal plates are generally fixed to the outer surface of the door by means of four screws, which engage in a corresponding number of through holes provided at the corners.

[0003] Such supports are not free from drawbacks. First of all, fixing to the door is generally provided, due to cost reasons, without using sufficiently precise equipment (for example numeric control drilling machines): accordingly, the drilling references are rather approximate and the centering of the bar with respect to the supports is consequently problematic.

[0004] Secondly, international customs regulations related to the transport of goods with trucks, heavy goods vehicles and the like require, as is known, the external components of the device for opening and closing the door to be fixed to said door with solutions that ensure that any break-in attempts leave visible marks that are evident to customs officers. With particular reference to conventional bar supports, the four screws mentioned above must be properly welded to the metal plates, so that any attempt to remove the supports in order to disengage the bar from the door so as to open it requires cutting the welds, accordingly leaving an evident mark. This clearly entails an excessive expenditure of time as well as laborious and disadvantageous assembly.

[0005] Thirdly, conventional supports are far too bulky and therefore the need is felt to achieve a reduction of the overall dimensions of the item.

[0006] The aim of the present invention is to provide a support for the rotating bar for actuating the device for opening and closing the door of the body of trucks, trailers and the like that obviates the drawbacks mentioned above, i.e., is simple to assemble and allows effective centering and reference of the bar.

[0007] Within this aim, an object of the present invention is to provide a support that has the requirements specified by customs regulations concerning the transport of goods on trucks, heavy goods vehicles and the like, i.e., is built so that it cannot be removed or disassembled without leaving evident tampering marks that are clearly visible to customs officers.

[0008] Another object of the present invention is to provide a support that at the same time has a compact appearance and is extremely versatile, i.e., is adapted to be fitted to any type of car or truck.

[0009] Another object of the present invention is to provide a support that is simple, relatively easy to provide in practice, safe in use, effective in operation, and has a relatively low cost.

[0010] This aim and these and other objects that will become better apparent hereinafter are achieved by the present support for a rotating bar for actuating a device for opening and closing the door of the body of trucks, trailers and the like, characterized in that it comprises a base, which forms a longitudinal seat for accommodating and rotatably supporting the bar, which is fixed to the door by means of connecting elements engaged in at least one through hole provided substantially along the centerline; first and second substantially tubular elements, which are detachably associated with said base at the ends, so as to retain said bar in said seat; end abutments and at least one central spacer, which are suitable to lock said first and second elements at said ends of said base, said central spacer being rigidly coupled to said base by way of break-in resistant fixing means.

[0011] Further characteristics and advantages of the present invention will become better apparent from the following detailed description of a preferred but not exclusive embodiment of a support according to the invention, illustrated by way of non-limiting example in the accompanying drawings, wherein:

Figure 1 is a perspective view of a first embodiment of the support according to the invention;
Figure 2 is a perspective view of the support of Figure 1, from which the protective cover has been removed;
Figure 3 is a top view of the support according to the invention in the position for fitting to the door;
Figure 4 is a partially sectional top view of the support;
Figure 5 is a sectional view of the support, taken along the line V-V of Figure 3;
Figure 6 is a sectional view of the support, taken along the line VI-VI of Figure 4;
Figure 7 is a perspective view of a second embodiment of the support according to the invention;
Figure 8 is a rear view of the support of Figure 7;
Figure 9 is a partially sectional side elevation view of the support of Figure 7.

[0012] In the embodiments that follow, individual characteristics, given in relation to specific examples, may actually be interchanged with other different characteristics that exist in other embodiments.

[0013] Moreover, it is noted that anything found to be already known during the patenting process is understood not to be claimed and to be the subject of a disclaimer.

[0014] With reference to Figure 1, the reference numeral 1 generally designates a support for a rotating bar for actuating a device for opening and closing the door

of the body of trucks, trailers and the like according to the invention.

[0015] Such bar is usually connected to a lever or handle for manual actuation of the door opening and closing device and is provided at its ends with sorts of pawls, which can engage respective abutments rigidly coupled to the frame of the body when the device is in the closure configuration.

[0016] The support comprises a base, generally designated by the reference numeral 2, which can be fixed to the door of the body of the truck, particularly on its outer face, and forms a longitudinal seat 3 for accommodating and rotatably supporting the cylindrical bar, which is not shown in the figures for the sake of simplicity since it is of a known type. First and second substantially semitubular elements 4 and 5 are detachably associated with the opposite ends of the base 2 and are adapted to retain the bar in the longitudinal seat 3.

[0017] End abutments 6 are provided in the base 2 for the first and second semitubular elements 4 and 5 and prevent said elements from disengaging from the base 2, protruding outward; there is also a central spacer 7, which is suitable to prevent the movement of the first and second elements 4 and 5 toward the center of the base 2.

[0018] Advantageously, the spacer 7 is rigidly coupled to the base by way of break-in resistant fixing means, generally designated by the reference numeral 8.

[0019] The first and second semitubular elements 4 and 5 and the spacer 7 are conveniently surmounted by a protective cover 9, which is detachably associated with the base 2.

[0020] The base 2, preferably made of steel plate, is constituted by a substantially flat portion 10, which forms two sides 11, and is open at the remaining sides. The flat portion 10 forms in relief a plurality of substantially concave saddle-shaped surfaces 12 for supporting the lateral surface of the bar. The sides 11 are affected by pairs of substantially rectangular openings 13.

[0021] The flat portion 10 of the base 2 is affected by two holes 14, which are provided along the centerline (Figure 6) and are adapted to fix the support to the door by means of bolts or other equivalent screw elements. Advantageously, said screw elements are in no way accessible from the outside for any break-in attempts, since they are closed within the seat 3. Moreover, the flat portion 10 is affected by four holes 15 (clearly shown in Figure 8, which relates to the second embodiment of the support), the function of which will become better apparent in the continuation of the description.

[0022] The first and second semitubular elements 4 and 5 have edges that form respective flat and parallel lugs 16, shown in Figure 5, each forming a sort of slightly raised circumferential band 17 (Figure 2).

[0023] The first and second semitubular elements 4 and 5 each enclose a respective cylindrical antifriction bush 18, which is keyed along the bar. Each bush 18 is open along a generatrix and has internal and external lateral surfaces that are crossed by respective substantially uniform distributions of longitudinal grooves 19, which form ribs 20 for contact along the outer surface of the bar and the internal surface of the semitubular elements 4 and 5. Each one of the bushes 18 further forms an outer raised portion 21, which is suitable to engage within the circumferential band 17, so as to achieve axial locking of the bush 18.

[0024] The central spacer 7 is made of thin bent metal plate (Figures 2 and 4), so as to be substantially arc-like; the break-in resistant means 8 for fixing the spacer 7 to the base 2 are advantageously constituted by two protruding notches 22, which are provided at the ends of the spacer and are suitable to engage within respective cutouts 23 provided in the sides 10 of the base 2 (Figure 4). The notches 22 are locked in the cutouts 23 by welding, so that any break-in attempt aimed at disassembling the supports in order to remove the bar and open the door of the truck is clearly evident.

[0025] The end abutments 6 for the first and second semitubular elements 4 and 5 are obtained by bending inward the corners of the sides 11 at the openings 13, so as to form sorts of undercuts against which the lugs 16 abut (Figures 2 and 5).

[0026] The protective cover 9 has a substantially arc-like transverse cross-section and is provided internally with two longitudinal parallel ridges 24 (Figure 3), which are inserted between the first and second semitubular elements 4 and 5 and the sides 11. The cover 9 is detachably associated with the base 2 by way of four elastically flexible lower tabs 25, which form respective teeth 26 (Figure 5), which are adapted to engage below the end edges of the first and second semitubular elements 4 and 5 at the openings 13.

[0027] The method of use of the support according to the invention and its assembly on the outer surface of the door occur as follows: since the holes 14 lie along the centerline of the base 2 and therefore below the bar, thus achieving the considerable advantage described above with reference to break-in attempts, the drilling references for providing the holes 14 are advantageously formed by using the four holes 15.

[0028] The bushes 18 are keyed along the bar, which is then rested precisely on the concave surfaces 12; then the first and second semitubular elements 4 and 5 are positioned one after the other, are inserted frontally from the center of the base 2, and are then made to slide toward the ends, so that the lugs 16 abut against the end abutments 6. At this point, the spacer 7 is fitted, again frontally, inserting with a snap action the notches 22 in the cutouts 23 and then performing welding for fixing. Finally, the protective cover 9 is fitted.

[0029] It has thus been shown that the invention achieves the proposed aim and objects. The support, in addition to being particularly compact and lightweight, allows to achieve optimum centering and support of the bar; moreover, it ensures full compliance with customs regulations related to the transport of goods with trucks.

[0030] The invention thus conceived is susceptible of numerous modifications and variations, all of which are within the scope of the appended claims.

[0031] A second embodiment of the support according to the invention is shown in Figures 7, 8 and 9.

[0032] The second embodiment of the support is provided with a second semitubular element 5, which has an upper longitudinal extension 27 that is coupled to a lower longitudinal extension 28 of the base 2: the extensions 27 and 28 are provided on bar supports, which are fitted proximate to the upper or lower edge of the door so as to guide the bar also at the sealing gaskets.

[0033] The upper longitudinal extension 27 forms two substantially L-shaped tabs 29, which are suitable to engage in respective slots 30 provided along the lower longitudinal extension 28, as shown in Figures 7 and 8.

[0034] All the details may be replaced with other technically equivalent elements.

[0035] In practice, the materials used, as well as the shapes and dimensions, may be any according to requirements without thereby abandoning the scope of the protection of the appended claims.

[0036] The disclosures in Italian Patent Application No. BO2004A000050 from which this application claims priority are incorporated herein by reference.

[0037] Where technical features mentioned in any claim are followed by reference signs, those reference signs have been included for the sole purpose of increasing the intelligibility of the claims and accordingly, such reference signs do not have any limiting effect on the interpretation of each element identified by way of example by such reference signs.

Claims

1. A support for a rotating bar for actuating a device for opening and closing the door of the body of trucks, trailers and the like, **characterized in that** it comprises a base (2), which forms a longitudinal seat (3) for accommodating and rotatably supporting the bar, which is fixed to the door by means of connecting elements engaged in at least one through hole (14) provided substantially along the centerline; first and second substantially semitubular elements (4, 5), which are adapted associated with said base (2) at the ends, so as to retain said bar in said seat (3); end abutments (6) and at least one central spacer (7), which are adapted to lock said first and second elements (4, 5) at said ends of said base (2), said central spacer (7) being rigidly coupled to said base (2) by way of break-in resistant fixing means (8).

2. The support according to claim 1, **characterized in that** it comprises at least one anti friction bush (18), which is keyed along the bar.

3. The support according to claims 1 and 2, **characterized in that** said bushes (18) are two, are arranged at the opposite ends of said base (2) and are surmounted and locked by said first and second semitubular elements (4,5).

4. The support according to one or more of the preceding claims, **characterized in that** each one of said bushes (18) is open along a generatrix and has internal and external lateral surfaces that are affected by respective substantially uniform distributions of longitudinal grooves (19), which form ribs (20) for contact along the outer surface of the bar and the inner surface of the first and second semitubular elements (4, 5).

5. The support according to one or more of the preceding claims, **characterized in that** said base (2) has a substantially flat portion (10) for fixing to the door, which forms substantially concave surfaces (12) for supporting the bar and two lateral sides (11) for coupling to said first and second semitubular elements (4, 5), said holes (14) being two and being provided at the ends of said base (2).

6. The support according to one or more of the preceding claims, **characterized in that** said central spacer (7) is substantially arc-shaped, said break-in resistant means (8) being constituted by notches (22) provided at the ends of said spacer (7) and engaged in respective cutouts (23) provided in said sides (11), said notches (22) being locked within said cutouts (23) by welding.

7. The support according to one or more of the preceding claims, **characterized in that** said end abutments (6) are constituted by the opposite corners of said sides (11), which are bent inward at pairs of openings (13) formed in said sides (11) so as to form sorts of undercuts, against which respective lugs (16) abut, said lugs being formed by said first and second substantially semitubular elements (4, 5).

8. The support according to one or more of the preceding claims, **characterized in that** it comprises a protective cover (9), which is detachably coupled to said sides (11) of said base (2).

9. The support according to one or more of the preceding claims, **characterized in that** said base (2) and said second substantially semitubular element (5) are provided respectively with a lower longitudinal extension (28) and with an upper longitudinal extension (27), which are coupled to each other and are adapted to support said bar at the ends of the door, particularly proximate to the perimetric edges with gaskets.

10. The support according to one or more of the preceding claims, **characterized in that** said lower longitudinal extension (28) is affected by a pair of longitudinal slots (30), along which respective tabs (29) are engaged, said tabs being substantially L-shaped and protruding from the lower edges of said upper longitudinal extension (27).

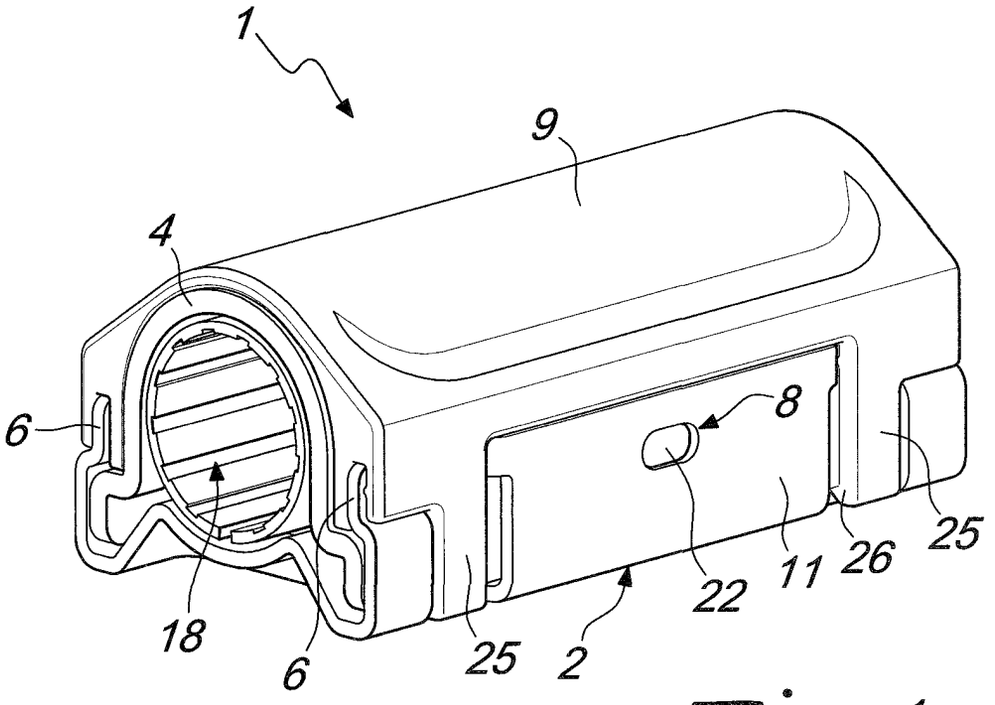

Fig. 1

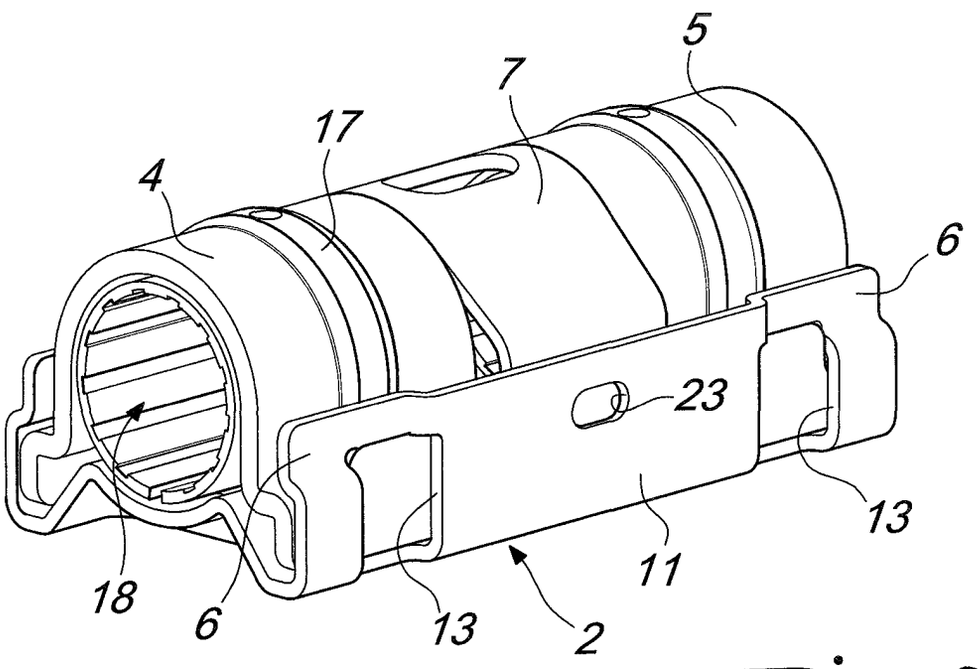

Fig. 2

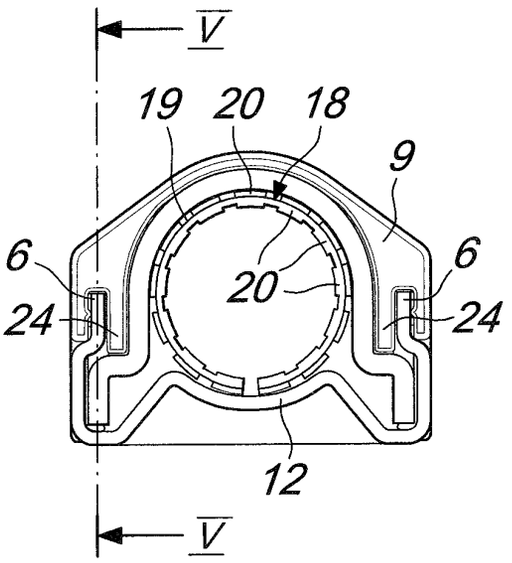

Fig. 3

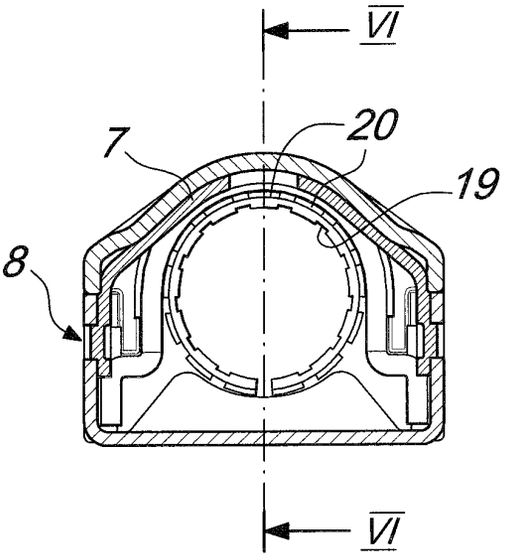

Fig. 4

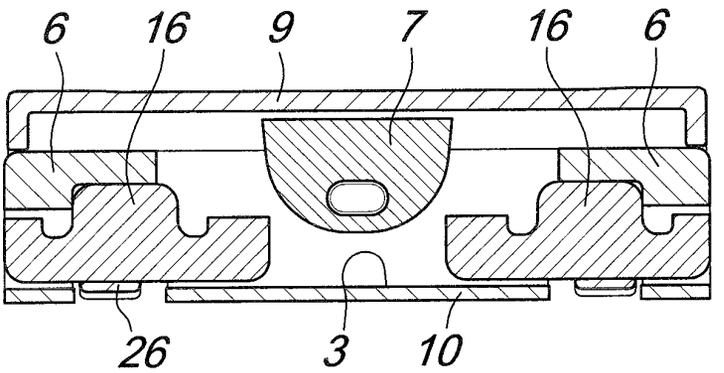

Fig. 5

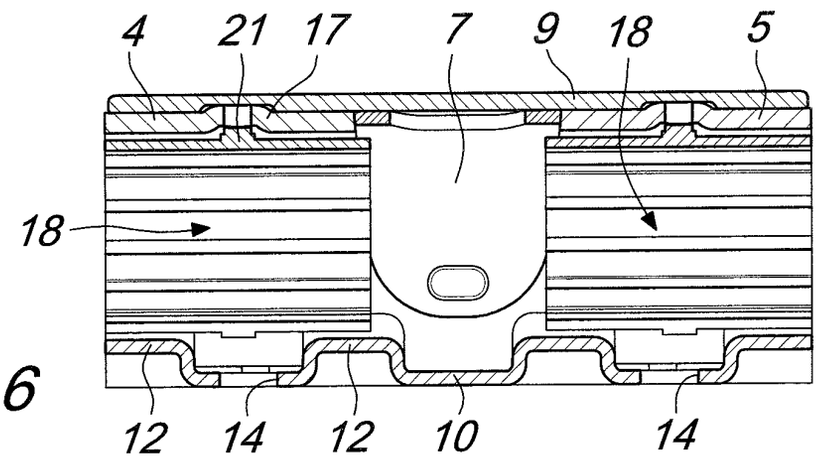

Fig. 6

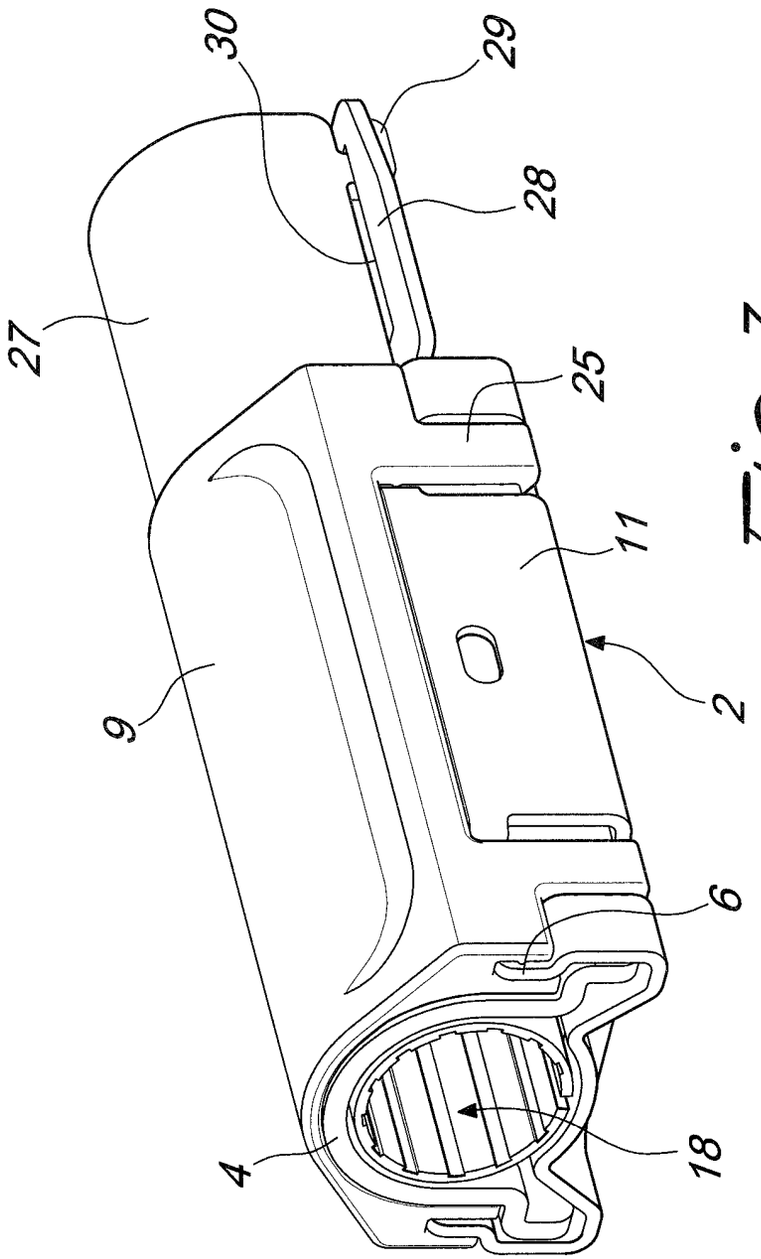

Fig. 7

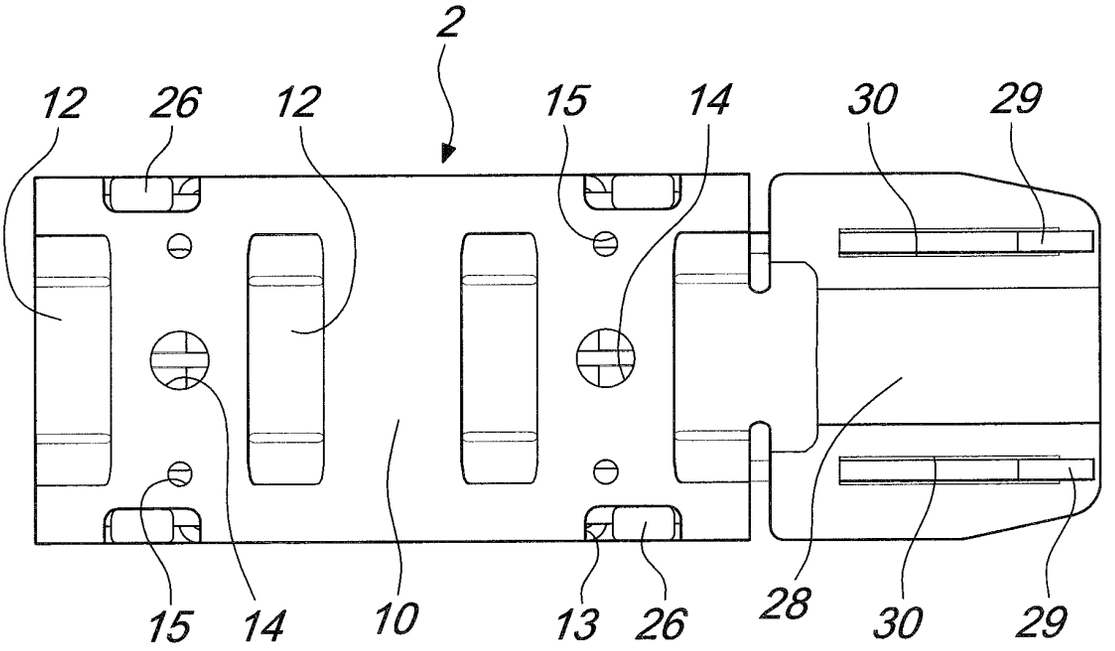

Fig. 8

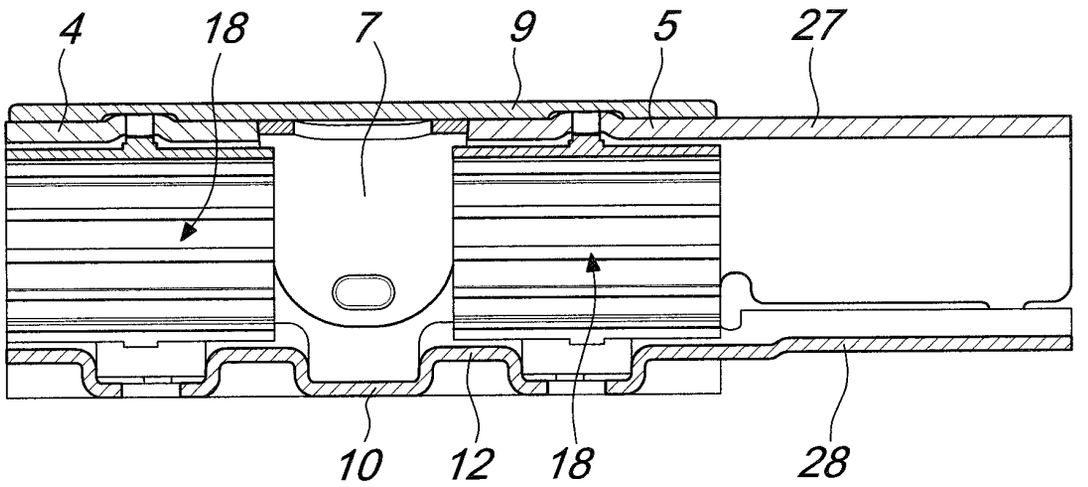

Fig. 9