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(54) **ADJUSTMENT DEVICE FOR ALIGNING AWNING ARMS**

(57) It comprises an articulation shaft (5, 6) as a connecting link articulated to an end section of each arm (3, 4), and a fixed support (1, 2); wherein the articulation shaft (5, 6) is introduced into holes facing each other located in the fixed support (1, 2) and in the end section of the arm (3, 4). The articulation shaft (5, 6) comprises an eccentric recess (9, 10) that is in contact with a contact surface situated in correspondence with a widened area of the outline of the hole of the fixed support (1, 2); wherein the articulation shaft (5, 6) is configured to be able to rotate in order to position said articulation shaft (5, 6) in one of the different stable directions (5', 6') along a plane.

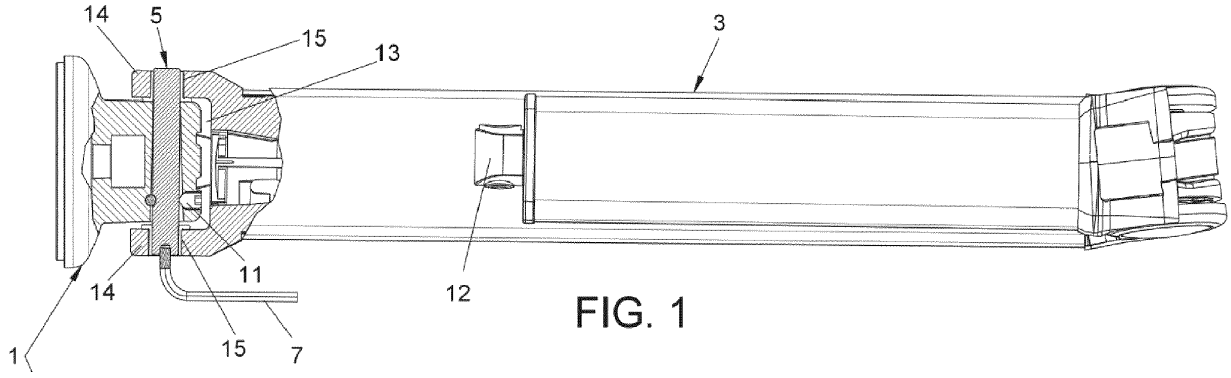

FIG. 1

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Description

OBJECT OF THE INVENTION

[0001] The present invention, as expressed in the title of this specification, relates to an adjustment device for aligning awning arms, wherein the arms include end sections that are articulated to fixed supports by means of articulation shafts that can be positioned in different directions in order to vary the inclination of arm pairs that support an awning. Based on this premise, the aim of the invention is to enable a quick adjustment of the awning in a closed or nearly closed position, noting that the access to be able to adjust the variation in the direction of each articulation shaft does not depend on the type of awning, as is the case of other known adjustment devices. It is also worth noting that to be able to adjust the inclination of each articulation shaft, the articulation shaft itself is acted upon directly.

TECHNICAL PROBLEM TO BE SOLVED AND BACKGROUND OF THE INVENTION

[0002] Currently, adjustment devices to be able to position awnings at different inclinations are known, wherein said devices enable the alignment of arm pairs that support each awning in order to be able to even out or at least minimize the deviation in height between the arm pairs coupled to fixed supports by means of articulation shafts, such that as varying the inclination of said articulation shafts, the inclination of the arms is varied.

[0003] The patent with publication number ES 2342779 T2 and the utility model with publication number ES 1061705 U describe devices that enable the adjustment of the positioning of the arm only when it is in an open position, such that said adjustment is necessarily carried out with the arms open, which must be closed afterwards to check for the correct alignment. This makes it necessary to repeat the operative process as many times as needed until the correct alignment is achieved.

[0004] Another adjustment device, such as that described in the utility model with publication number ES 1048736 U, consists of two concentric studs: one that is arranged on the inner side of the awning and the other that is on the outer side of said awning. This device described enables the adjustment with closed and practically closed arms, but there is a limitation on some awnings in the sense that it is not possible to access the adjustment element from the outside, precisely because of the type of awning that it is.

[0005] Another adjustment device comprises articulation shafts that have eccentric end sections that are secured to the arms, such that the articulation shafts and the arms rotate together with respect to the fixed supports. The fact that the eccentric shafts are secured to the arms causes the arms to move unevenly while the awning is opened. There is also the drawback that it is difficult to even out the linearity of said arms when they are open.

[0006] Said eccentric end sections of the articulation shafts have a larger diameter than the rest of said articulation shafts, such that the diameter of the holes of the arms wherein the eccentric end sections are adjusted is greater than the rest of the holes facing each other of the arms and fixed supports.

[0007] With regard to the previous paragraph, each real articulation shaft is the imaginary shaft between the centers of the two outer diameters of said articulation shaft: on one side, the eccentric end section and on the other side, the end of the rest of the articulation shaft. In this case, once the height between end elbows of the arms is evened out, the movement between the end elbows during the process of unfolding the tarpaulin of the awning is not symmetrical.

DESCRIPTION OF THE INVENTION

[0008] With the object of reaching the objectives and preventing the drawbacks mentioned in the previous sections, the invention proposes an adjustment device for aligning awning arms comprising an articulation shaft that constitutes a connecting link articulated to an end section of each arm, and a fixed support; wherein the direction of the articulation shaft is adjusted by means of the adjustment device; and wherein the articulation shaft is introduced into holes facing each other located in the fixed support and in the end section of the arm.

[0009] The articulation shaft comprises an eccentric recess that is in contact with a contact surface situated in correspondence with a widened area of the outline of the hole of the fixed support; wherein the articulation shaft is configured to be able to rotate in order to position said articulation shaft in one of the different stable directions along a plane.

[0010] The device of the invention further comprises a locking stud as a means to immobilize the articulation shaft; wherein an end of the locking stud in an active position presses against a specific area of the eccentric recess of the articulation shaft; and wherein said specific area of the eccentric recess faces the contact surface of the hole located in the fixed support.

[0011] The articulation shaft includes a hollow in one of the ends thereof as a means to be able to rotate said articulation shaft.

[0012] In one embodiment of the invention, the contact surface of the fixed support comprises a protruding element selected from an independent protruding element and a protruding element secured to the support. In another embodiment of the invention, the contact surface of the fixed support comprises a side portion that forms part of the outline of the hole of the fixed support.

[0013] In one embodiment of the invention, the eccentric recess is located in an intermediate area of the articulation shaft; wherein one part of the fixed support is located inside a mortise end of the arm; and wherein opposite tabs of the arm have first end holes in which end

sections of the articulation shaft are adjusted, which protrude above and below the fixed support.

[0014] With regard to the previous paragraph, the fixed support includes a central hole in which a central part of the articulation shaft is adjusted; wherein said central hole has two curved portions facing each other that diverge downwards; and wherein the contact surface that is in contact with the eccentric recess of the articulation shaft is located on one of said curved portions.

[0015] In another embodiment of the invention, the eccentric recess is situated in a lower end area of the articulation shaft; wherein an end part of the arm is located inside a mortise of the fixed support.

[0016] Said fixed support has opposite upper and lower tabs that are situated above and below the end part of the arm; wherein said opposite upper and lower tabs have second end holes in which end sections of the articulation shaft are adjusted. The second end hole of the opposite lower tab of the fixed support includes the contact surface that is in contact with the eccentric recess of the articulation shaft. The end part of the arm comprises two opposite wings that have central holes wherein a central part of the articulation shaft is adjusted.

[0017] The second end hole of the opposite lower tab of the fixed support includes a recess facing an end portion of the articulation shaft; wherein said end portion is situated under the eccentric recess; and wherein said end portion of the articulation shaft is housed in the recess of the fixed support.

[0018] The device of the invention solves the two problems posed: on one hand, it enables the adjustment of the arm pairs in a closed or folded position in any type of awning, and on the other hand, the arms do not move unevenly during the folding and unfolding of the awnings.

[0019] For the purpose of helping to make this specification more readily understandable, a set of drawings constituting an integral part of the same has been included below, wherein by way of illustration and not limitation the object of the invention has been represented.

BRIEF DESCRIPTION OF THE DRAWINGS

[0020]

Figures 1 to 3 show cross section views of a first embodiment of the adjustment device for aligning awning arms, object of the invention.

Figure 4 shows an elevation view of an articulation shaft that has an eccentric recess; wherein said articulation shaft is incorporated into the first embodiment of the invention.

Figure 5 shows a cross section view according to the A-A cut of Figure 4.

Figure 6 shows a cross-sectional elevation view of a fixed support that forms part of the device of the invention shown in the previous Figures 1 to 3.

Figure 6a shows a lower view according to the indication of arrow A of Figure 6, wherein the plan configuration of a hole of the fixed support is mainly shown.

Figure 7 shows a cross section view of the adjustment device according to a second embodiment of the invention.

Figure 8 shows a view of another articulation shaft incorporated in the second embodiment shown in Figure 7; wherein said articulation element also includes an eccentric recess end.

Figure 9 shows a cross section view according to the B-B cut of Figure 8.

Figure 10 shows a cross-sectional elevation view of another fixed support that forms part of the adjustment device of the second embodiment shown in Figure 7.

Figure 10a shows an upper view according to the indication of arrow B of Figure 10, wherein the plan configuration of a hole of the fixed support is mainly shown.

DESCRIPTION OF AN EXEMPLARY EMBODIMENT OF THE INVENTION

[0021] Considering the numbering used in the figures, the adjustment device for aligning awning arms comprises a fixed support 1,2 to which an end section of each foldable arm 3, 4 is articulated by means of an articulation shaft 5, 6 that is adjusted inside holes facing each other located in the fixed support 1, 2 and in the end section of the arm 3, 4; wherein said articulation shaft 5, 6 can be rotated by means of a tool 7 that is introduced into a hollow 8 located in a lower end of the articulation shaft 5, 6; all of this in order to be able to rotate each articulation shaft 5, 6 and thus be able to position it in one of the various stable directions 5', 6' desired along a plane.

[0022] Each awning (not shown in the figures) comprises a laminar body coupled to a pair of arms that are articulated to respective fixed supports; such that in one embodiment, each arm 3 has a configuration such as that shown in Figures 1, 2 and 3; and in another embodiment, each arm 4 has a configuration such as that shown in Figure 7. Likewise, in Figures 1, 2, 3, 6 and 6a, a configuration of the fixed support 1 is shown that is different from the configuration of the fixed support 2 shown in Figures 7, 10 and 10a.

[0023] Furthermore, in Figures 1, 2, 3 and 4, a configuration of the articulation shaft 5 is shown that is different from the configuration of the articulation shaft 6 shown in Figures 7 and 8.

[0024] Each articulation shaft 5, 6 includes an eccentric recess 9, 10 associated with a locking stud 11 through which said articulation shaft 5, 6 can be immobilized in one of the various stable directions 5', 6'; all of this in order to be able to even out end elbows 12 of each arm pair 3, 4 at the same height by means of rotating the articulation shafts 5, 6 such that by rotating the articulation shafts 5, 6, the height position of the end elbows 12 varies.

[0025] The locking stud 11 is adjusted inside a threaded perforation 1a, 2a of the fixed support 1, 2, such that an end of said locking stud 11 presses against the eccentric recess 9, 10 of the articulation shaft 5, 6 when said articulation shaft 5, 6 is immobilized in one of the various stable directions 5', 6' selected.

[0026] Figures 1 to 6 and 6a show a first embodiment of the invention. In this first embodiment, the eccentric recess 9 is situated in an intermediate area of the articulation shaft 5; wherein one part of the fixed support 1 is located inside a mortise end 13 of the arm 3, such that said arm 3 includes opposite tabs 14 that have first end holes 15 in which the end sections of the articulation shaft 5 are adjusted which protrude above and below the fixed support 1.

[0027] In this first embodiment that is being described, the end sections of the articulation shaft 5 are fitted into bushings 16 embedded into said first end holes 15, although the end sections of the articulation shafts 5 can also be fitted directly into the holes 15 as mentioned previously.

[0028] In this first embodiment, the fixed support 1 has a central hole 17 in which a central part of the articulation shaft 5 is located; wherein said central hole 17 has two curved portions 17a facing each other that diverge downwards to be able to position the articulation shaft 5 in one of the various stable directions 5'. One of these two curved portions 17a is interrupted by a protruding element 18 situated at the height of the eccentric recess 9 of the articulation shaft 5. Said protruding element 18 can form part of the fixed support 1 or can be an independent piece secured to said fixed support 1, such that the eccentric recess 9 of the articulation shaft 5 is in contact with said protruding element 18.

[0029] With regard to the previous paragraph, the inclination of the articulation shaft 5 can vary by means of the adjustment device by rotating said articulation shaft 5 with the help of the tool 7; wherein a specific area of said eccentric recess 9 supports and rests on the respective protruding element 18; such that that variation of the depth of the eccentric recess 9 enables the variation of the inclination of the articulation shaft 5 when it is rotated in order to place it in one of the various stable directions 5'; and therefore be able to thus vary the inclination of the respective arm 1 to achieve the placement of the end elbows 12 of each foldable arm pair 1 at the same height.

[0030] In a second embodiment of the invention shown in Figures 8 to 10 and 10a, the eccentric recess 10 is situated in a lower end area of the articulation shaft 6; wherein an end part of the arm 4 is formed by two opposite wings 4a, and wherein said end part of the arm 4 is located inside a mortise 19 of the fixed support 2. Said opposite wings 4a of the arm 4 have central holes 20 wherein a central part of the articulation shaft 6 is adjusted.

[0031] The fixed support 2 includes opposite upper tabs 21 and lower tabs 22 that are situated above and below the end part (formed by the two opposite wings 4a) of the arm, wherein said opposite upper tabs 21 and lower tabs 22 have second end holes 23, 24 in which end sections of the articulation shaft 6 are adjusted.

[0032] In this second embodiment of the invention, the second end hole 24 of the opposite lower tab 22 of the fixed support 2 has an elongated flow section that enables the variation of the inclination of the articulation shaft 6 in order to be able to place it in one of the various stable directions 6'; wherein the eccentric recess 10 of the articulation shaft 6 supports and rests on a side portion 24a of the outline of the second end hole 24 located in the opposite lower tab 22 of the fixed support 2.

[0033] Said second end hole 24 of the opposite lower tab 22 of the fixed support 2 includes a recess 24b that is facing an end portion 6a of the articulation shaft 6; wherein said end portion 6a is located under the eccentric recess 10 of the articulation shaft 6. The function of the recess 24b is to house the end portion 6a of the articulation shaft with the aim of ensuring the placement of the eccentric recess 10 on the side portion 24a of the second end hole 24.

[0034] In the second embodiment of the invention, the threaded perforation 2a wherein the locking stud 11 is threaded is situated in the opposite lower tab 22 of the fixed support 2; while in the first embodiment of the invention, the threaded perforation 1a wherein the locking stud 11 is threaded is located in a lower part of the fixed support 1.

Claims

1. **An adjustment device for aligning awning arms** comprising an articulation shaft (5, 6) that constitutes a connecting link articulated to an end section of each arm (3, 4), and a fixed support (1, 2); wherein the direction of the articulation shaft (5, 6) is adjusted by means of the adjustment device; and wherein the articulation shaft (5, 6) is introduced into holes facing each other located in the fixed support (1, 2) and in the end section of the arm (3, 4), **characterized in that** the articulation shaft (5, 6) comprises an eccentric recess (9, 10) that is in contact with a contact surface situated in correspondence with a widened area of the outline of the hole of the fixed support (1, 2); wherein the articulation shaft (5, 6) is configured to be able to rotate in order to position said articulation shaft (5, 6) in one of the different stable directions (5', 6') along a plane.

2. **The adjustment device for aligning awning arms** according to claim 1, **characterized in that** it comprises a locking stud (11) as a means to immobilize the articulation shaft (5, 6); wherein an end of the locking stud (11) in an active position presses against a specific area of the eccentric recess (9, 10) of the articulation shaft (5, 6); and wherein said specific area of the eccentric recess (9, 10) faces the

contact surface of the hole located in the fixed support (1, 2).

3. **The adjustment device for aligning awning arms** according to any one of the preceding claims, **characterized in that** the articulation shaft (5, 6) includes a hollow (8) in one of the ends thereof as a means to be able to rotate said articulation shaft (5, 6).

4. **The adjustment device for aligning awning arms** according to any one of the preceding claims 1 or 2, **characterized in that** the contact surface of the fixed support (1) comprises a protruding element (18).

5. **The adjustment device for aligning awning arms** according to any one of the preceding claims 1 or 2, **characterized in that** the contact surface of the fixed support (2) comprises a side portion (24a) that forms part of the outline of the hole of the fixed support (2).

6. **The adjustment device for aligning awning arms** according to any one of the preceding claims 1 or 2, **characterized in that**:

   - the eccentric recess (9) is located in an intermediate area of the articulation shaft (5); wherein one part of the fixed support (1) is located inside a mortise end (13) of the arm (3); and wherein opposite tabs (14) of the arm (3) have first end holes (15) in which end sections of the articulation shaft (5) are adjusted, which protrude above and below the fixed support (1);
   - the fixed support (1) includes a central hole (17) in which a central part of the articulation shaft (5) is adjusted; wherein said central hole (17) has two curved portions (17a) facing each other that diverge downwards; and wherein the contact surface that is in contact with the eccentric recess (9) of the articulation shaft (5) is located on one of said curved portions (17a).

7. **The adjustment device for aligning awning arms** according to any one of the preceding claims 1 or 2, **characterized in that**:

   - the eccentric recess (10) is located in a lower end area of the articulation shaft (6); wherein an end part of the arm (4) is located inside a mortise (19) of the fixed support (2);
   - the fixed support (2) has opposite upper tabs (21) and lower tabs (22) that are situated above and below the end part of the arm (4); wherein said opposite upper tabs (21) and lower tabs (22) have second end holes (23, 24) in which end sections of the articulation shaft (6) are adjusted;
   - the second end hole (24) of the opposite lower tab (22) of the fixed support (2) includes the contact surface that is in contact with the eccentric recess (10) of the articulation shaft (6).

8. **The adjustment device for aligning awning arms** according to claim 7, **characterized in that** the end part of the arm (4) comprises two opposite wings (4a) that have central holes (20) wherein a central part of the articulation shaft (6) is adjusted.

9. **The adjustment device for aligning awning arms** according to claim 7, **characterized in that** the second end hole (24) of the opposite lower tab (22) of the fixed support (2) includes a recess (24b) wherein an end portion (6a) of the articulation shaft (6) is housed.

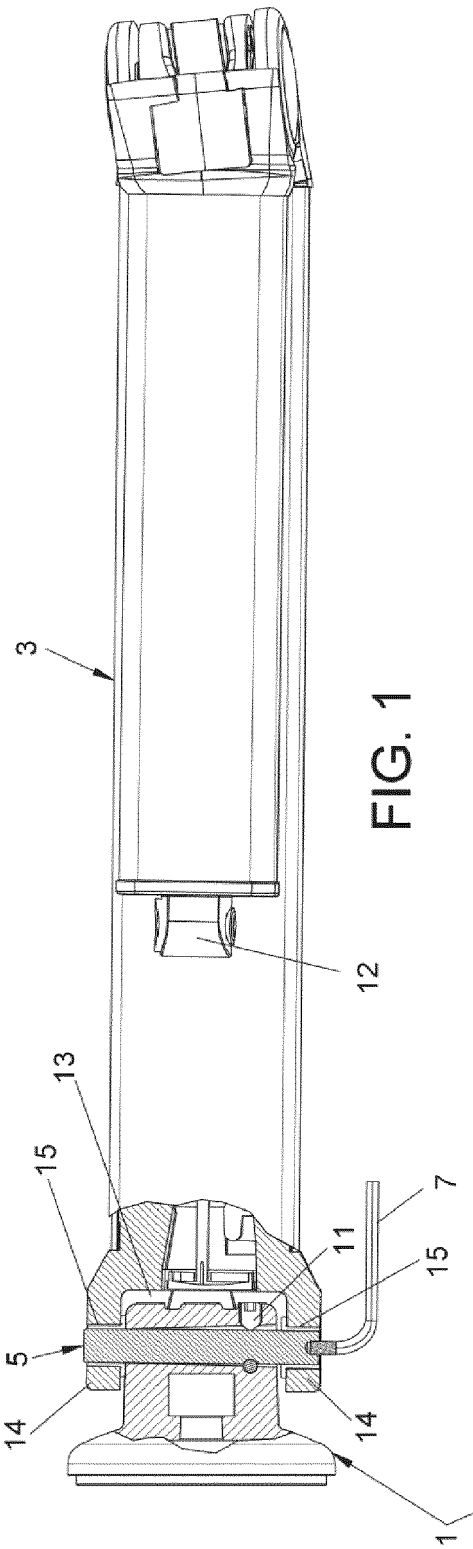

FIG. 1

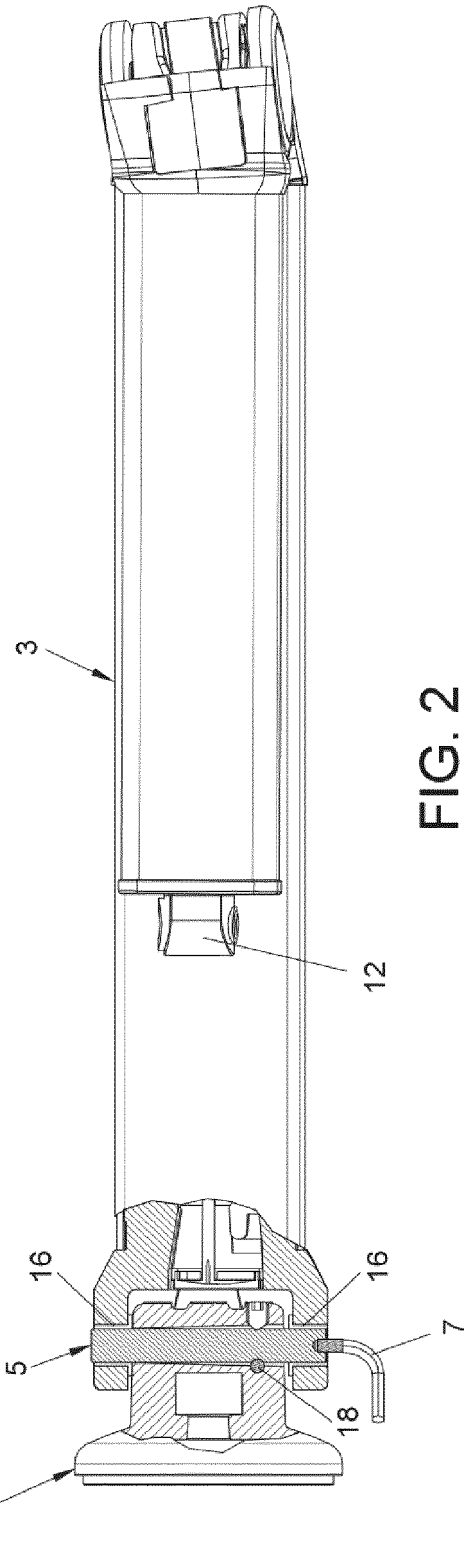

FIG. 2

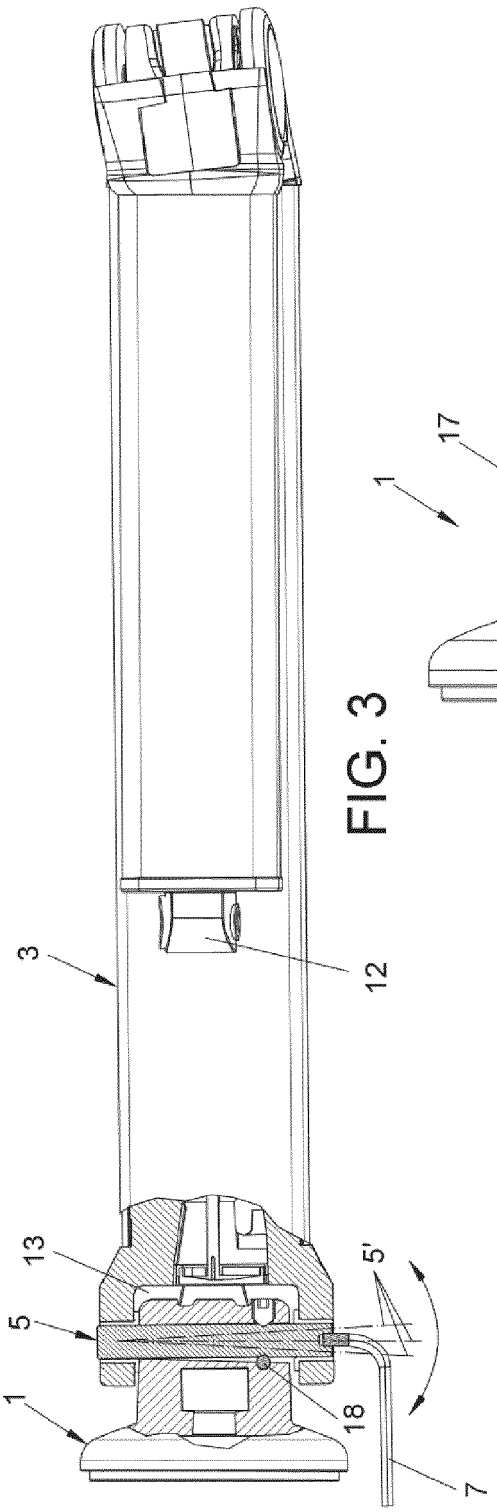

FIG. 3

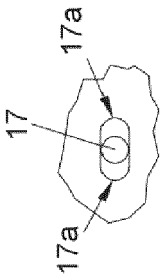

FIG. 6a

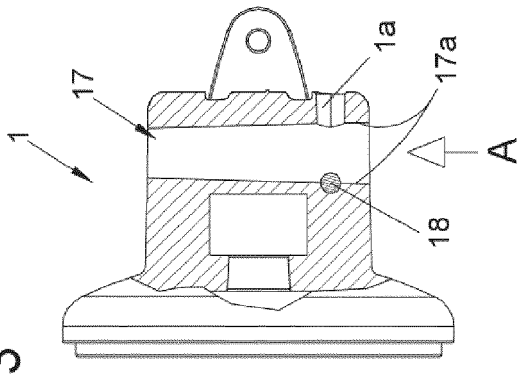

FIG. 6

FIG. 5
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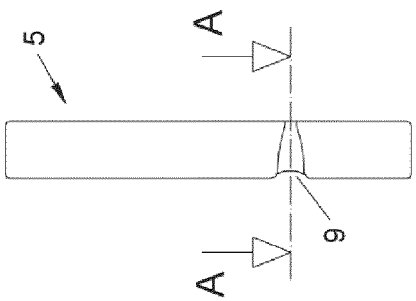

FIG. 4

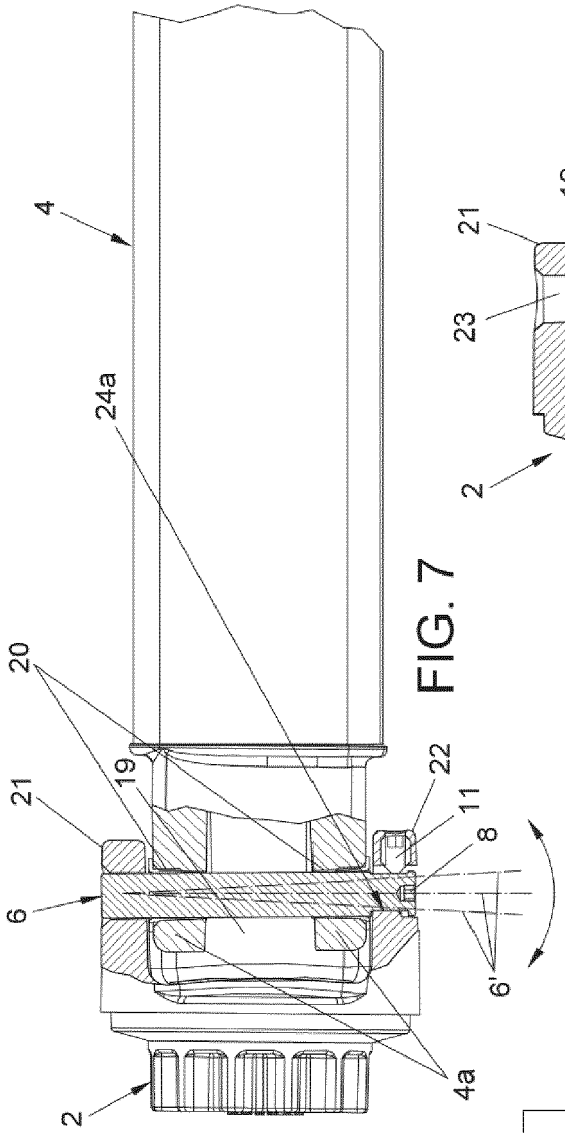

FIG. 7

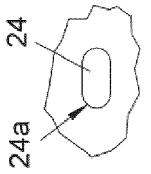

FIG. 10a

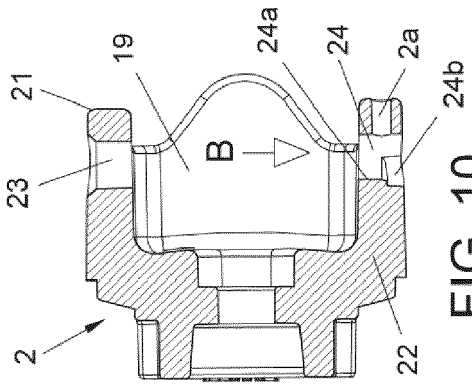

FIG. 10

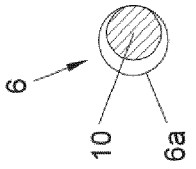

FIG. 9
CUT B-B

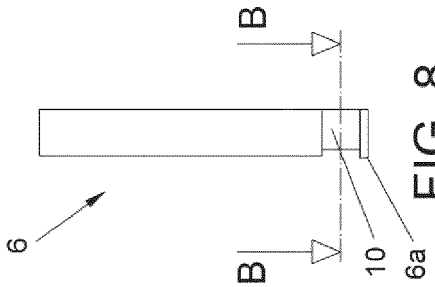

FIG. 8

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EUROPEAN SEARCH REPORT

Application Number
EP 17 19 7069

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X Y	EP 1 609 926 A2 (PRODUCCIONES MITJAVILA SA [FR]) 28 December 2005 (2005-12-28) * paragraphs [0017] - [0026]; claim 1; figures 1-4 *	1,5,7-9 2-4	INV. E04F10/06
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Y	DE 86 29 001 U1 (RODELBRONN, HORST) 2 January 1987 (1987-01-02) * page 3, lines 27-29; claim 5; figure 3 *	3	
Y	EP 1 767 721 A1 (LLAZA SA [ES]) 28 March 2007 (2007-03-28) * paragraphs [0020] - [0021]; figures 2,4 *	4	
A	ES 1 048 736 U (LLAZA SA) 16 September 2001 (2001-09-16) * column 4, lines 1-34; figures 2-4 *	1-9	

TECHNICAL FIELDS SEARCHED (IPC)
E04F

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	27 February 2018	Kofoed, Peter

CATEGORY OF CITED DOCUMENTS

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27-02-2018

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

REFERENCES CITED IN THE DESCRIPTION

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- ES 1061705 U **[0003]**
- ES 1048736 U **[0004]**