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(72) Inventor: **Malaus, Andrea**
31046 Oderzo (Treviso) (IT)

(74) Representative: **Citron, Massimiliano et al**
Via primo maggio 6
31020 San Fior (TV) (IT)

(71) Applicant: **NICE S.P.A.**
31046 Oderzo (Treviso) (IT)

(54) **Wall-mounting device for a head of a tubular gearmotor for awnings and the like**

(57) The invention describes a device (20) for wall-mounting (22) a head (26) of a tubular gearmotor for awnings or the like, comprising a first element (50) able to be fixed to the wall and having a carrier seat (53) in which to receive and support the head (26) of the gearmotor,

and a second element (80) suitable for blocking the head (26) to the first element (50). In order to simplify installation, the second element (80) is suitable for rotating between two angular positions and is configured to block or permit axial withdrawal of the head (26) from the seat (53) in one or other of the two positions, respectively.

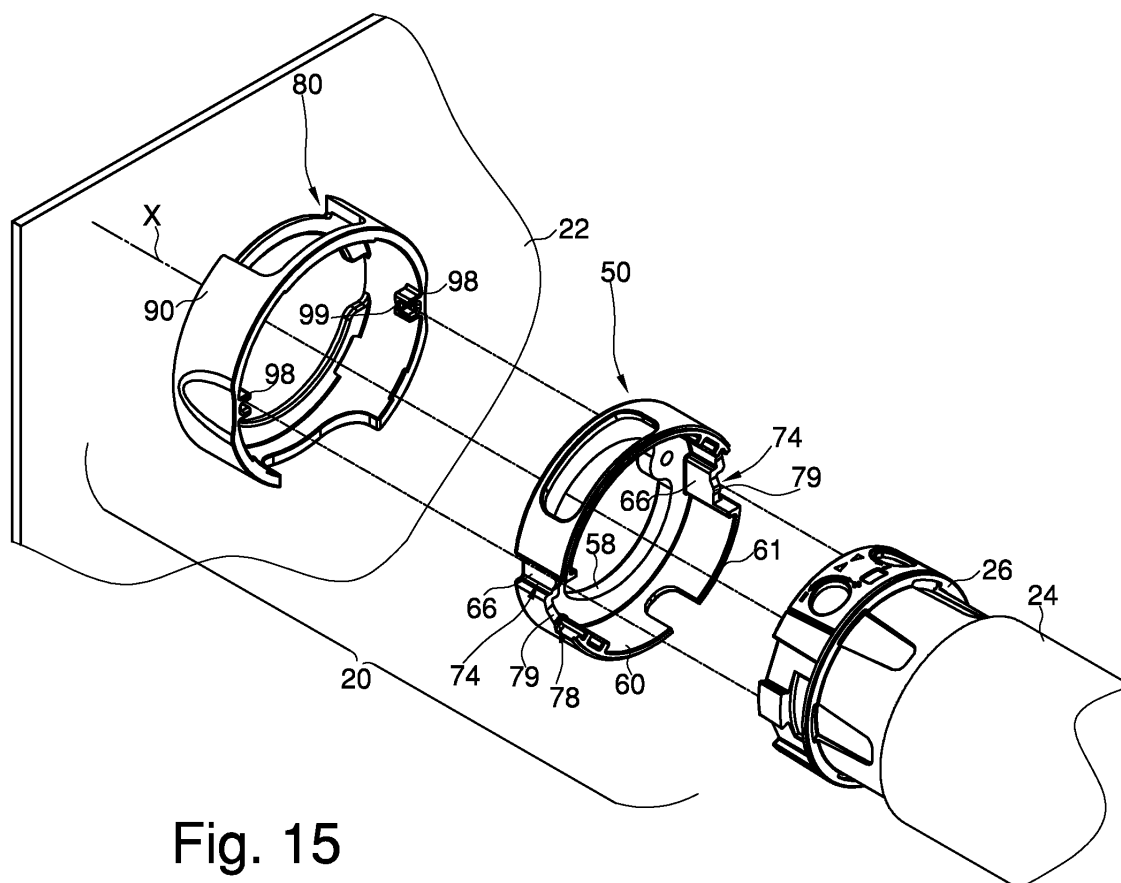


Fig. 15

Description

[0001] The invention refers to a device for mounting/fixing (support), to a wall or to a box, a tubular gearmotor for awnings, blinds, curtains or the like.

[0002] Devices for actuating awnings or the like are usually made up of a tubular gearmotor inserted inside a winding drum. It is fixed to the wall of a recess or cavity formed in the wall or to the wall of a containment box. The gearmotor is connected on one side to a pulley that transmits the motion to the winding drum onto which the awning winds and on the other side to a wall, of the recess or of the box, through attachment means.

[0003] Such means comprise an element able to be fixed to the wall (generally a female element) having a seat in which to receive and support the head of the motor. Examples are described in EP 468 925, EP 1 930 537, EP 1 239 110 and DE 10 2004 057 903.

[0004] The current market trend is to require increasingly small motors, so as to adapt to the ever decreasing size of cavities and/or boxes (to save on costs and less heat dispersions in the building). Then one has to consider the transportation and installation of curtains integrally built-in with their box, in which the transportation costs are proportional to their size. Fixing, mounting and possibly dismounting the head of the motor from the support with known tools or systems, which envisage the manual intervention of the installer on the support, is becoming increasingly complicated, because there is no space to work around the head of the gearmotor. With the current sizes, working inside the recesses/cavities and boxes, for example with a screwdriver, has become almost impossible. Therefore, there is the problem of improving, speeding up and simplifying the installation of the motors.

[0005] The main object of the invention is indeed to improve this scenario through an improved device for wall-mounting of the aforementioned type.

[0006] Another object of the invention is to propose a device for wall-mounting that is simple to use, and that does not require tools.

[0007] Another object of the invention is to ensure the correct degree of blocking of the head even without the use of equipment or tools.

[0008] Such objects are obtained with a device for wall-mounting a head of a tubular gearmotor for awnings or the like, comprising

- a first element able to be fixed to the wall and having a bearing seat in which to receive and support the head of the gearmotor, and
- a second element adapted for blocking the head to the first element, wherein the second element is adapted for rotating between two angular positions and is configured to block or allow an axial withdrawal of the head from the seat in one or other of the two positions, respectively.

[0009] This arrangement forms a fastening system that is simple and easy to use. As well as what will be described hereafter, as second element for example it is possible to use as a variant a pawl or a tongue hinged to the first element.

[0010] In addition to what will be described hereafter, the second element can be rotatably coupled to the head of the gearmotor, for example by mounting with a few modifications the piece 80 (see below) directly onto the head 26 and connecting it to the piece 50 through rotation.

[0011] Preferably, the blocking of the head can take place thanks to the rotation of the second element, the second element being configured to block or allow the axial withdrawal of the head from the first element.

[0012] Other variant of the invention are defined in the dependent claims.

[0013] Further characteristics and advantages of the invention will become clearer from the example description of a device, together with the attached drawings, in which:

figure 1 shows an axonometric view of a tubular motor equipped with the device;

figure 2 shows a vertical side section view of the motor of fig. 1;

figure 3 shows an enlarged view of fig. 2;

figure 4 shows a front view of a first element of the device;

figure 5 shows a vertical section view of the first element of fig. 4 according to the section plane V-V;

figure 6 shows a vertical section view of the first element of fig. 4 according to the section plane VI-VI;

figure 7 shows a vertical side section view of the first element of fig. 4 according to the section plane VII-VII;

figure 8 shows a three-dimensional view from above of the first element of fig. 4;

figure 9 shows a three-dimensional view from below of the first element of fig. 4;

figure 10 shows a view from below of a second element of the device;

figure 11 shows a side section view of the second element of fig. 10 according to the section plane XI-XI;

figure 12 shows a section view of the second element of fig. 10 according to the section plane XII-XII;

figure 13 shows a view from above of the second element of fig. 10;

figure 14 shows a three-dimensional view from above of the second element of fig. 10;

figure 15 shows an exploded three-dimensional view of the device and the head of the motor;

figure 16 shows a side view of the component in fig. 4;

figure 17 shows an enlarged view of a detail of the component of fig. 4 and 10 when associated in a first configuration;

figure 18 shows an enlarged view of a detail of the

component of fig. 4 and 10 when associated in a second configuration;

figure 19 shows a simplified plan view of the components of fig. 4 and fig. 10 in a first configuration, like fig. 18;

figure 20 shows a simplified plan view of the components of fig. 4 and fig. 10 in a second configuration, like fig. 17;

figure 21 shows a front view of a stop protrusion present on the second element.

[0014] Figure 1 shows a tubular motor made up of a tubular body 24 with longitudinal axis X and a head 26, able to be fixed to a surface or wall 22 (of a wall or box) through a fixing device 20.

[0015] The device 20 comprises a first element 50 able to be fixed to the wall 22 and a second element 80 rotatably coupled with it.

[0016] The first element 50 is substantially cup-shaped (roughly a hollow cylinder or disc or cylindrical shell) with circular plan. It has an open base and a partially closed base between which an annular perimeter wall 60 extends that delimits and surrounds a containment seat 53. The seat 53 serves to receive the head 26, whereas the wall 60 is a bearing part and complementary to the head 26 and serves to support it.

[0017] The partially closed base of the element 50 has a notch or circular step 57 formed by two annular surfaces 56, 58, arranged on different planes (for example a few millimetres apart). The most outer annular surface 58 has a pair of holes 62 thanks to which the element 50 is fixable in contact with the wall 22, thanks for example to a pair of screws (not illustrated).

[0018] On the inner surface of the wall 60, facing towards the seat 53, there are abutment ridges 68, useful to interact with the head 26 (or indentations thereof) to avoid the rotation of the latter inside the seat 53.

[0019] On the outer surface of the wall 60 there are recesses or grooves 74, formed either by introflexion of the wall 60 or as cavities. The grooves 74 extend perpendicularly to and from the surface 56 for the entire length of the perimeter wall 60, parallel to the axis X, and they have a bottom 66 that also extends parallel to the axis X.

[0020] The perimeter edge 61 of the wall 60, in an opposite position to the annular surface 56, is not uniform and does not lie on a single plane, but has a recess 78 at each groove 74. The bottom of the recess 78 is not straight but has a shaped profile 79, for example a cam-shaped profile, preferably obtained through two adjacent cusps 79a, 79b (fig. 17 and 18).

[0021] The second element 80 is also substantially cup-shaped with circular plan (roughly a hollow cylinder or disc or cylindrical shell). It can be thought of like a hollow cylinder with a partially closed base 82 and an open base 94 in an opposite position. The base 82 has a flat annular edge surface 96 from which an annular perimeter wall 90 extends perpendicularly, delimiting and

surrounding an inner cavity 93.

[0022] The surface 96 has an inner perimeter edge 97 that delimits a central opening the size or width of which is suitable for housing/containing, with little clearance, the perimeter of the annular surface 58 of the element 50, at the circular step 57.

[0023] Inside the element 80, on the inner surface of the wall 90, there are stop protrusions 98, in diametrically opposite position to one another, made with a roughly cubic shape (fig. 21) or else as teeth or studs.

[0024] The protrusions 98 with respect to the grooves 74 are slightly smaller in size (fig. 19), so as to be able to slide inside them. Moreover, the protrusions 98 preferably have greater prominence than the depth of the grooves 74 (considered as the distance between the outer surface of the perimeter wall 60 and the bottom 66). In other words, the diametral distance between the bottoms 66 is greater than the distance between the ends of the protrusions 98, and therefore it is necessary to slightly force the insertion and sliding of the protrusions 98 in the grooves 74.

[0025] Preferably, the elements 50, 80 are made from plastic material, by moulding. The device 20 works as follows (see fig. 15 and thereafter).

[0026] The first element 50 is inserted in the inner cavity 93 of the second element 80, so that the first element 50 is contained in the second element 80 and is housed in it. In order to do this the protrusions 98 are aligned with the grooves 74 and they are made to slide in the latter thanks to a light pressure (in order to make the wall 90 slightly dilate as well). When the element 50 is fully pushed into the element 80, the protrusions 98 snap beyond and abut upon the profile 79 (see fig. 17 to fig. 20). Specifically, the surface 99 of the protrusions 98 facing towards the surface 96 goes into direct contact with the profile 79. This ensures that the two elements 50, 80 do not slip out from one another.

[0027] The first element 50 is then fixed to the wall 22 through two through-screws in the holes 62. As a result the element 80 stays permanently between the wall 22 and the first element 50, but being able to rotate on the latter thanks to the rotary coupling between the circular step 57 and the perimeter edge 97. The head 26 of the gearmotor is then slotted into the seat 53, which complementarily reproduces the profile thereof. The head cannot rotate in the seat 53 due to the ridges 68 and/or the shape of the head itself and/or of the grooves 74, 66 (see figure 19), but it is not yet blocked longitudinally (movement along the axis X). The relative position of the elements 50, 80 at this moment is shown in fig. 20+17.

[0028] In order to block the head 26 in the seat 53 and avoid it from coming out, the element 80 is rotated manually by an angle α sufficient to move the stop protrusions 98 - moving them in the empty space of the recesses 78 - from a position in which they are opposite the grooves 74 to a position angularly offset with respect to them. In the position of figure 20 for the element 80, the head 26 can be withdrawn, whereas in the blocking position in fig.

19, the head 26 cannot be withdrawn.

[0029] Indeed, by rotating the element 80 the protrusions 98 are brought into a position in which they interfere with the profile of the head 26, because their height with respect to the inner surface of the wall 90 is greater than the thickness of the wall 60 and they can thus interact with the head 26, as retention/blocking means of the head itself in the seat 53. In order to be able to withdraw the head 26 it is necessary and sufficient to rotate the element 80 in the opposite direction to move the protrusions 98 again.

[0030] The element 80 is of comparable size to the head of the motor (for example with a few millimetres of extra clearance), for which reason it is quick and easy to actuate by hand even if it is close to the wall 22. Moreover, in order to block and unblock the head 26 no equipment is required.

[0031] Preferably, stop means are used to block the angular position of the second element 80, so that it cannot accidentally rotate. As stop means it is advantageous to use snap-fastening means, since they are reliable and easy to make. For example, the surface 99 of the protrusions 98, the one that slides on the profile 79, can be configured with a recess to contain by snap-fastening the two identical pointed convexities 79a, 79b of the profile 79 (see fig. 17, 18, 21). With the movement of the protrusion 98 from one extremity to the other of the recesses 78, said recess is occupied each time by one of the convexities 79a, 79b, which snap into it elastically and require a certain amount of momentum on the element 80 to come out. This ensures that only with a voluntary intervention can the motor be connected to or disconnected from the fixed element 80.

Claims

1. Device (20) for wall-mounting (22) a head (26) of a tubular gearmotor for awnings or the like, comprising

- a first element (50) able to be fixed to the wall and having a bearing seat (53) in which to receive and support the head of the gearmotor, and
- a second element (80) adapted for blocking the head to the first element, **characterised in that**

the second element is adapted for rotating between two angular positions and is configured to block or allow axial withdrawal of the head from the seat in one or other of the two positions, respectively.

2. Device according to claim 1, wherein the second element is rotatably coupled with the first element so as to rotate around it.

3. Device according to claim 1, wherein the second el-

ement is rotatably coupled with the head of the gearmotor.

4. Device according to claim 2, wherein the first element has a bearing part (60) for the head that defines said bearing seat, and the second element has a cavity (93) configured so that the first element can be housed in such a cavity.

5. Device according to claim 4, wherein the first and second element substantially have a cup- or glass-shaped structure, which delimits said bearing part and said cavity, respectively, said structure having a substantially circular plan.

6. Device according to claim 4 or 5, wherein the first and second element are substantially hollow cylinder-shaped, with one base open and one base opposite thereto, and they are mounted one inside the other, and wherein the first element has (i) a bearing part formed by one or more perimeter walls (60), perpendicular to its opposite base (58), adapted for surrounding the head of the motor and forming said bearing part, and (ii) an opposite base (58) that has a surface for resting on said wall, and the second element has an opposite base (96) that is partially open and configured to rest on and be able to rotate on the opposite base of the first element.

7. Device according to claim 6, wherein the opposite base of the first element comprises a circular step (57) and the opposite base of the second element comprises a central opening (97) configured to rest on and rotatably surround said step.

8. Device according to claim 6 or 7, wherein at least one of said walls of the first element on the surface facing inwards has abutment projections or seats (68) that are complementary to the shaping of the head and adapted for opposing a rotation of the latter.

9. Device according to one of the previous claims, comprising means (98) for holding the head of the motor in the bearing seat which are adapted for holding or not holding the head according to the angular position of the second element.

10. Device according to claim 9, wherein the holding means comprise one or more stop protrusions (98) present on the second element, so that by rotating the second element the stop protrusions can be moved between two angular positions in which, respectively, they are adapted for blocking or permitting by interference the axial withdrawal of the head from the seat.

11. Device according to claim 6 and 10, wherein the sec-

ond element on the surface of said cavity comprises one or more stop protrusions (98), and the first element on the outer surface of said one or more perimeter walls comprises one or more grooves (74), wherein the grooves extend between its open base and its opposite base and they are of comparable size to one of said stop protrusions so that it can slide guided in the other. 5

12. Device according to claim 11, wherein in the first element the edge (61) of said one or more perimeter walls at the open base has one or more recesses (78) in which a stop protrusion can be confined and move after a rotation of the second element. 10

13. Device according to claim 11 or 12, wherein one or more stop protrusions have a radial length that is greater than the depth of said grooves, so as to be able to position themselves beyond the edge of said one or more perimeter walls of the first element when the latter is inserted in the second and so as to be able to oppose a movement of the head opposite to insertion by contrast. 15 20

14. Device according to claim 12 or 13, comprising non-permanent blocking means (99, 79a, 79b) for maintaining the angular position of the second element. 25

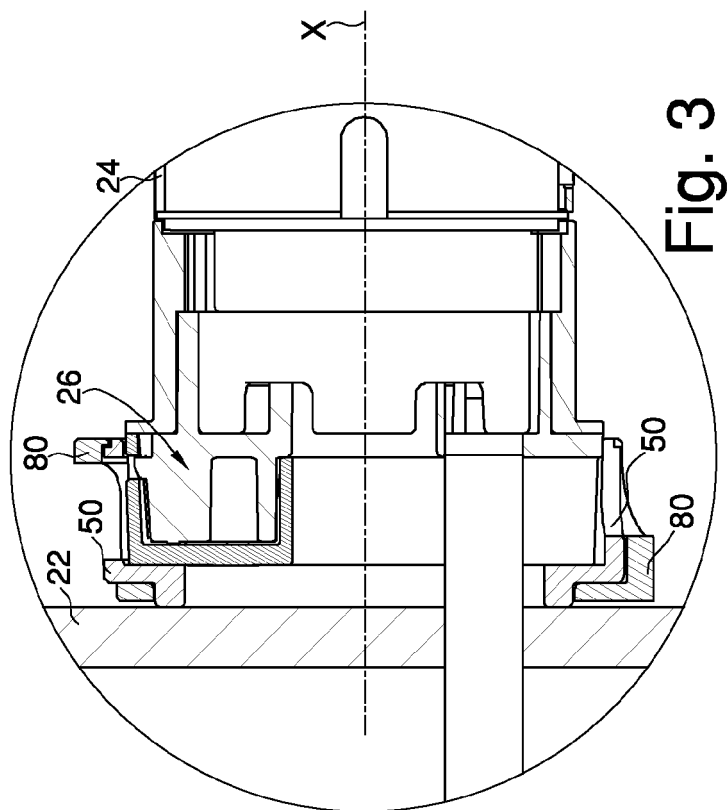
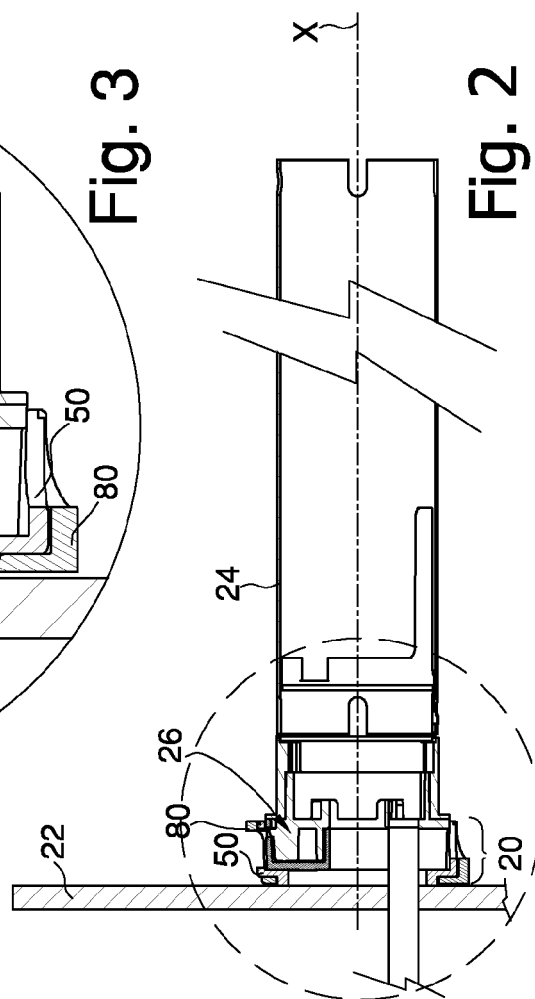
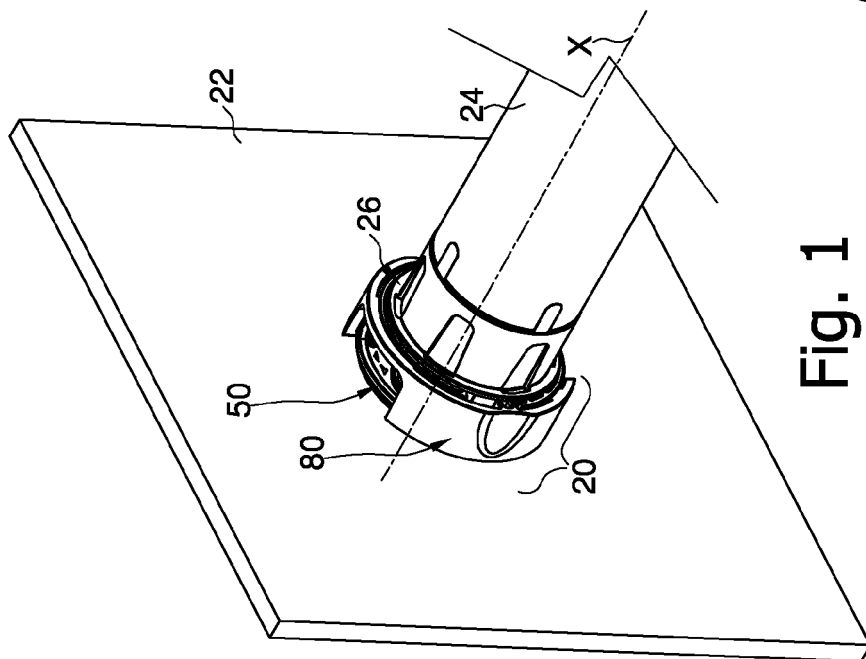
15. Device according to claim 14, wherein said blocking means comprise one of said stop protrusions (98) that has a surface (99) in sliding contact with a bottom (79) of a recess (78), the surface and the bottom having a profile (79a, 79b) that allows the mutual snap-fitting in at least two angular positions of the second element. 30 35

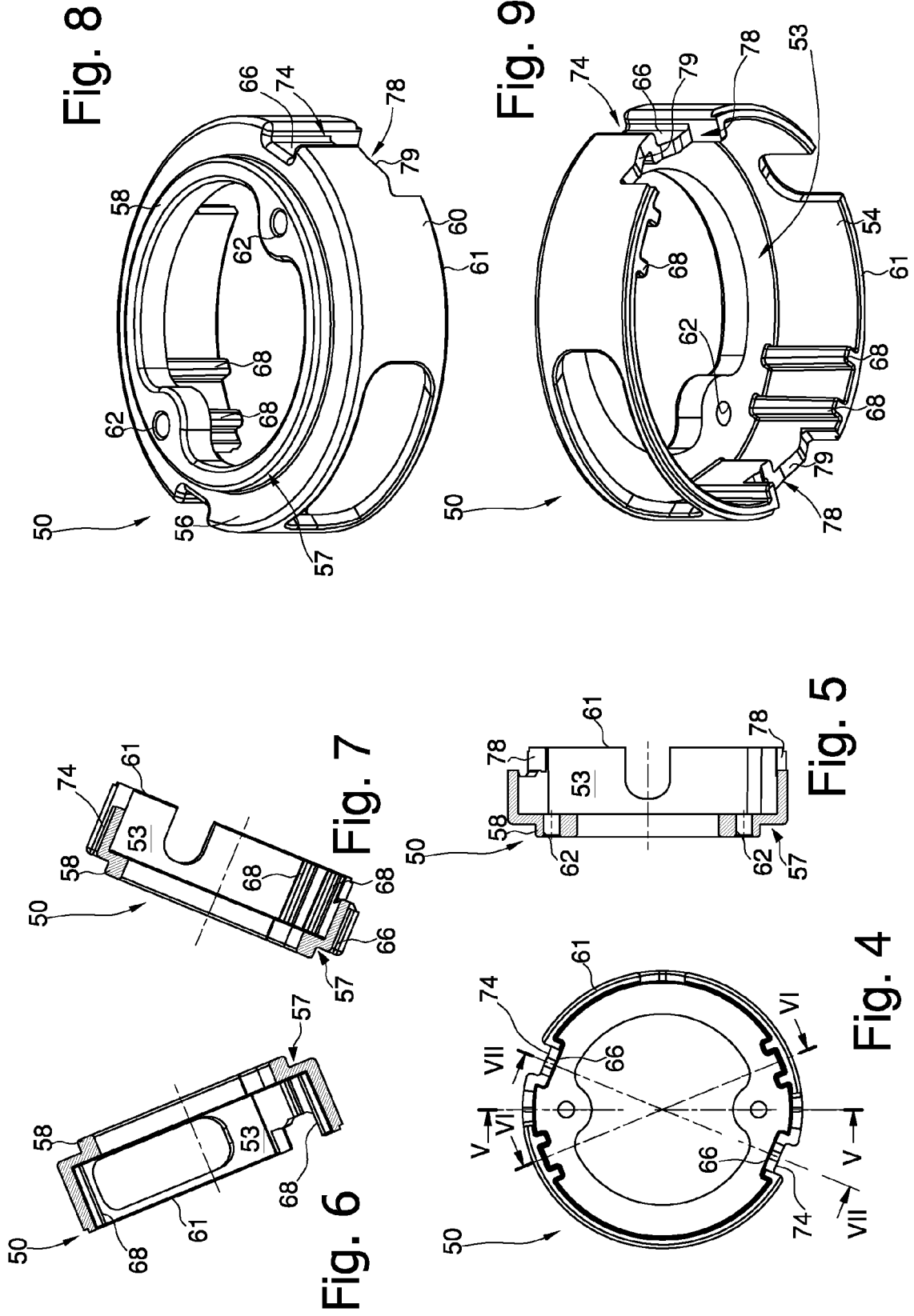
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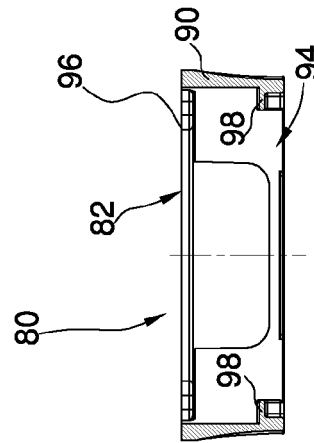
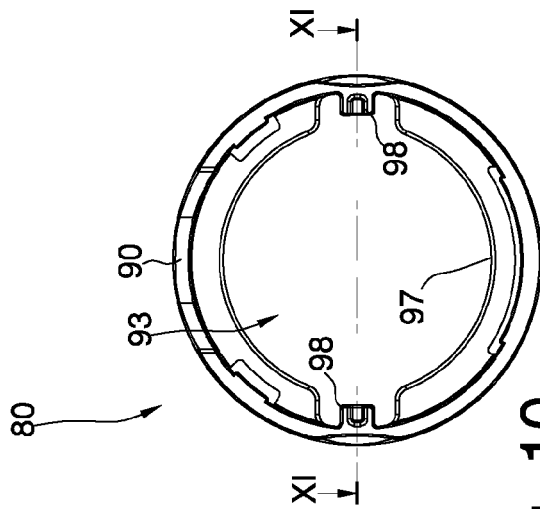
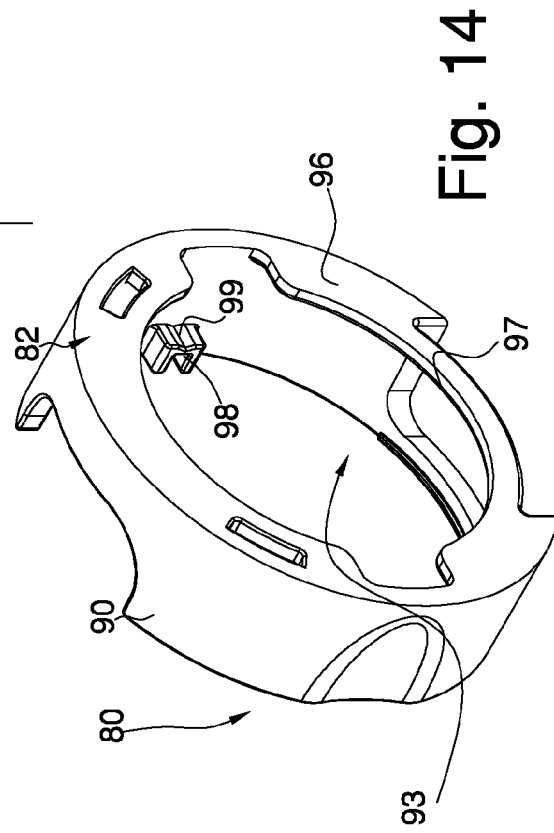
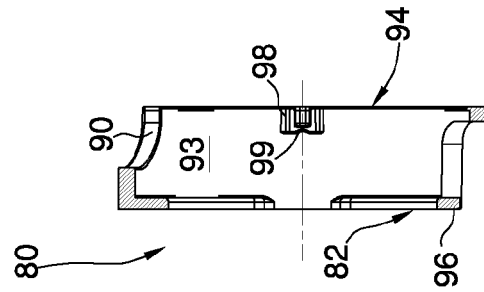
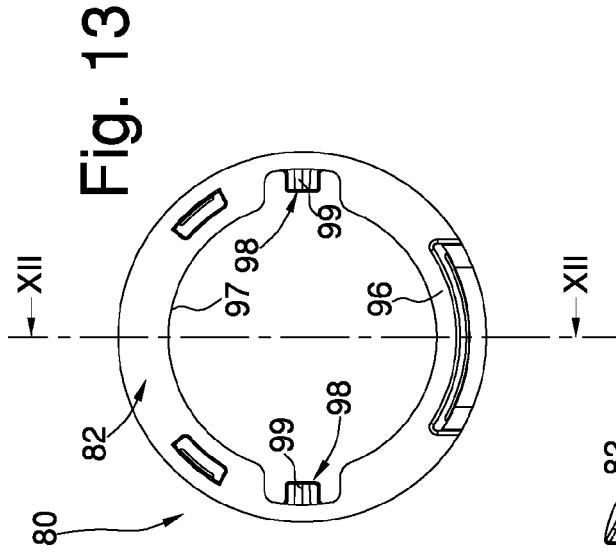
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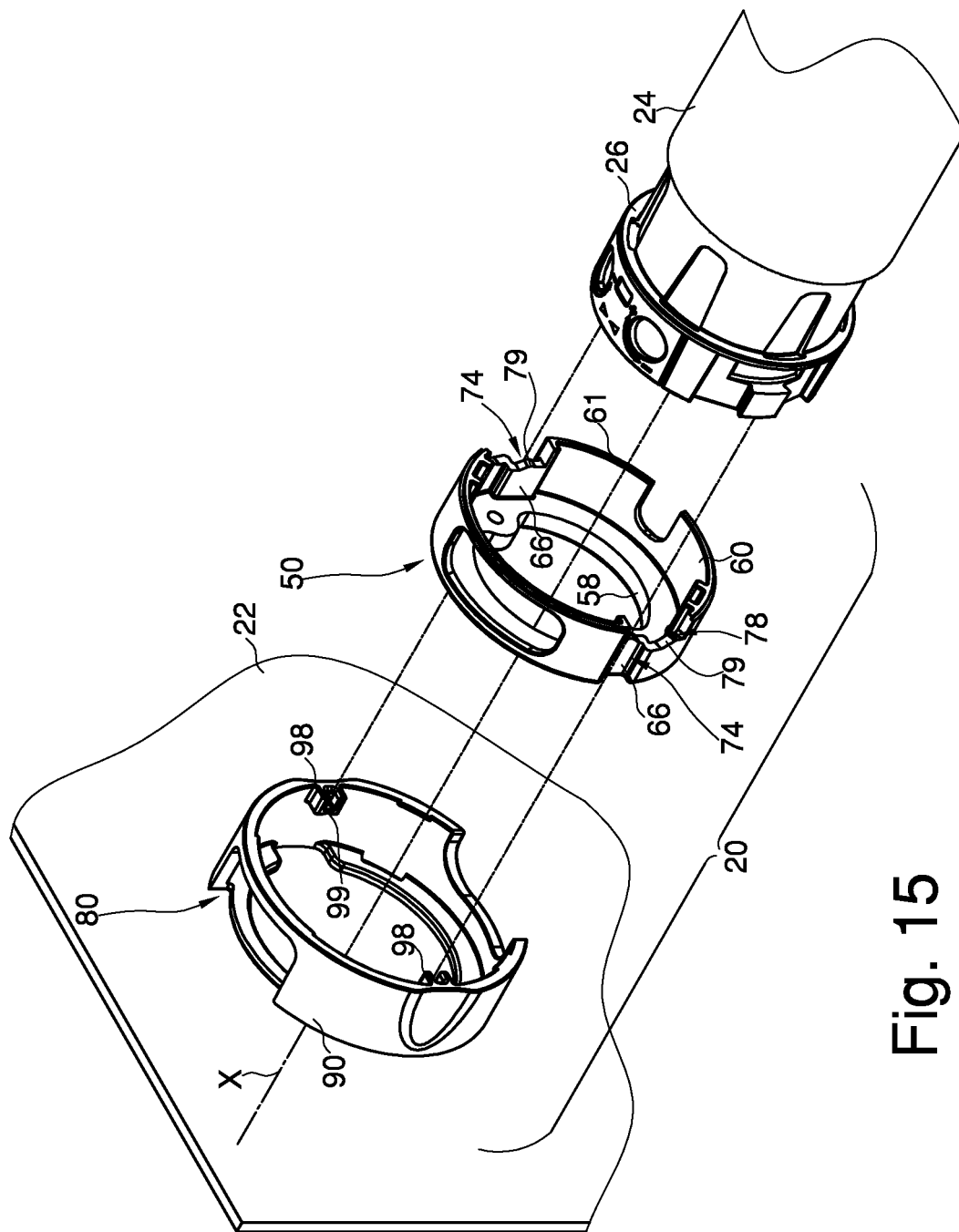


Fig. 15

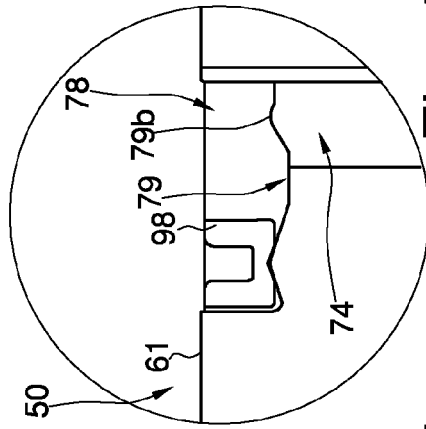
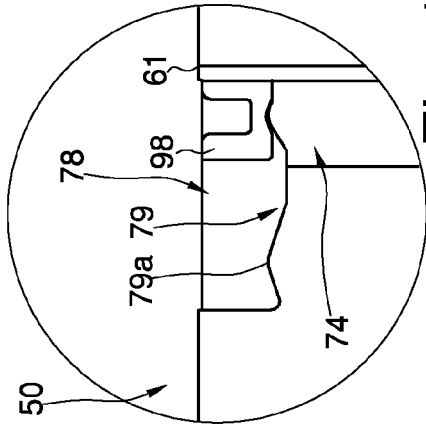
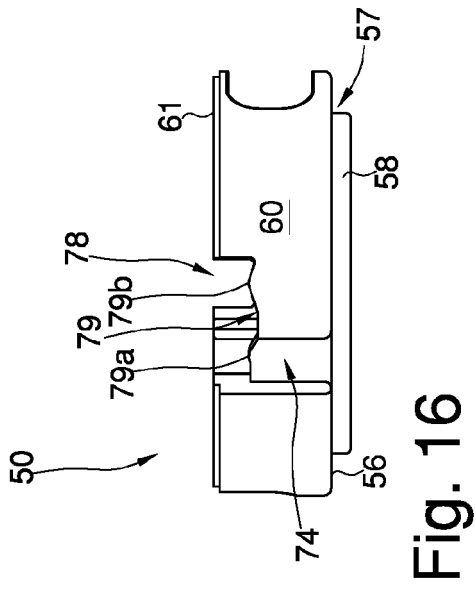
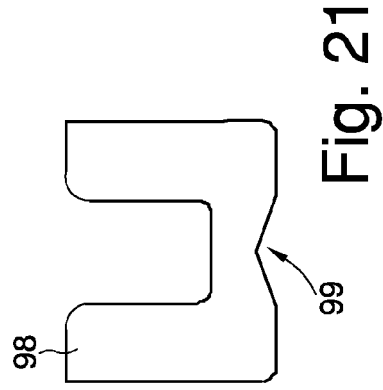
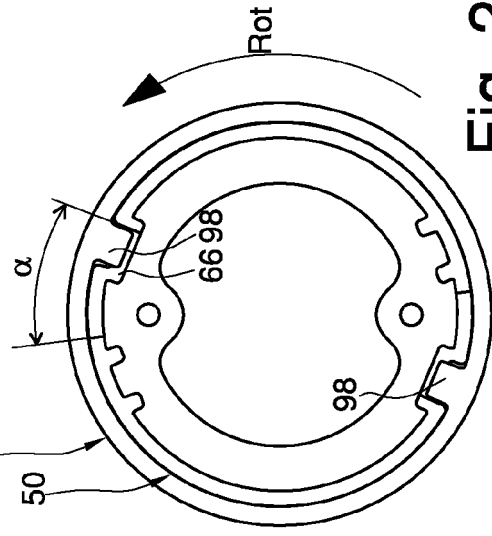
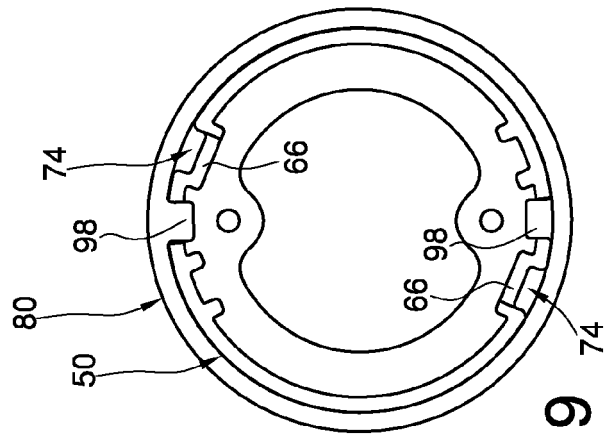


Fig. 17

Fig. 18





EUROPEAN SEARCH REPORT

Application Number
EP 10 15 3564

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A	* figures 1,3,4,5 * * columns 5,6,7,12 - column 14 * * claim 1 *	2,4-8, 11-15	
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The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (IPC)
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2	Place of search Munich	Date of completion of the search 6 August 2010	Examiner Tänzler, Ansgar
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

EPO FORM 1503 03.82 (P04C01)

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