



(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
30.10.2013 Bulletin 2013/44

(51) Int Cl.:
E05B 15/02 (2006.01)

(21) Application number: **13165450.1**

(22) Date of filing: **25.04.2013**

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA ME

(30) Priority: **26.04.2012 GB 201207294**

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(54) **Fixing arrangement for door fitting**

(57) A door furniture assembly comprises an internal, service-side, door plate (114), an external, non-service-side, door plate (118) and at least one fixing (120a/b) to secure the two door plates (114, 118) on service and non-service faces of a door (110) respectively, wherein the

at least one fixing (120a/b) is securable at the non-service side door plate (118) by at least one fixing seat (that is adapted to accommodate relative movement of at least a part of the fixing seat and the remainder of the non-service side plate (118)).

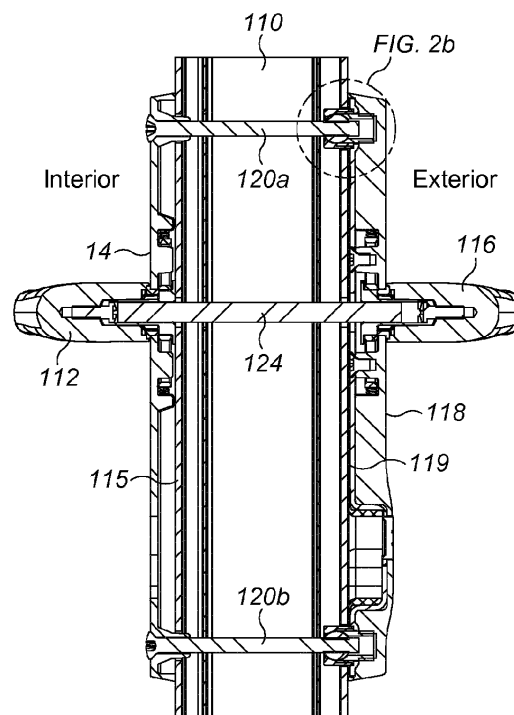


FIG. 2a

Description

[0001] This invention relates to a door furniture fixing and to a method of fixing door furniture to a door.

[0002] Figures 1a-d show a prior art example of a pair of door handles and plates fixed on either side of a door (10). An interior door handle (12) and interior handle plate (14) are secured to an interior side of the door. A corresponding exterior handle (16) and exterior handle plate (18) are secured to an exterior side of the door (10). The exterior handle and plate are secured to the door (10) by means of fixings (20a, 20b) that are received through and bear against the interior door plate (14), extend through the door (10) and into an interior fixing lug (22) on an inner side of the exterior plate (18). The fixings that are used are screws which are received in correspondingly tapped parts of the lugs (22). The interior and exterior handles (12/16) are connected by a spindle (24) in the usual way.

[0003] Disadvantages arise with this type of arrangement when an intruder attempts to break the locking mechanism that is part of the door handles. An intruder will typically lever at an underside of the exterior plate (18) which will inevitably cause stress on the interface between the fixings (20a and 20b) and their respective tapped lugs (22). An area around the lug subject to such stress will eventually fracture due to the stress, allowing the exterior plate (18) and also the handle (16) to be removed so that the locking mechanism can be disabled.

[0004] It is an object of the present invention to address the above-mentioned disadvantage.

[0005] According to the present invention there is provided an apparatus and method as set forth in the appended claims. Other features of the invention will be apparent from the dependent claims, and the description which follows.

[0006] According to an aspect of the present invention there is provided a door furniture assembly comprising an internal, service- side, door plate, an external, non-service- side, door plate and at least one fixing to secure the two door plates on service and non- service faces of a door respectively, wherein the at least one fixing is securable at the non- service side door plate by at least one fixing seat that is adapted to accommodate relative movement of at least a part of the fixing seat and the remainder of the non- service side plate.

[0007] The at least one fixing is preferably adapted to extend from the service-side door plate to an inner side of the non-service side door plate. Preferably at least two fixings with corresponding fixing seats are provided.

[0008] Preferably, the relative movement of the at least a part of the fixing seat and the remainder of the non-service side plate involves a relative movement of two parts of the at least one fixing seat. Preferably a first part of the at least one fixing seat is securable to the non-service- side door plate and a second part is preferably securable to the at least one fixing. Preferably, the first and second parts are adapted for movement relative to

one another. Preferably the relative movement is a relative rotation.

[0009] The at least one fixing seat may be a ball joint. The at least one fixing seat may be adapted to receive the at least one fixing at or in the second part thereof, preferably in an opening thereof. The second part may be a ball of the ball joint.

[0010] The door furniture assembly may include service-side and non-service side door handles. The door furniture assembly may include a locking mechanism.

[0011] The invention extends to a kit of at least one fixing and fixing seat pair as described in the above aspect.

[0012] For a better understanding of the invention, and to show how embodiments of the same may be carried into effect, reference will now be made, by way of example, to the accompanying diagrammatic drawings in which:

Figure 1a is a cross-sectional side view of interior and exterior prior art door handles and plates secured to a door;

Figure 1b is a close-up of the cross-sectional view shown in Figure 1a showing a contact between a fixing and a lug in to which the fixing is secured;

Figure 1c is a cross-sectional view from above of the handles and plates shown in Figure 1a;

Figure 1d is a front view of the interior handle and door plate shown in Figure 1a;

Figure 2a is a cross-sectional side view of interior and exterior door handles and plates according to an embodiment of the invention secured to a door;

Figure 2b is a close-up of the cross-sectional view shown in Figure 2a showing a contact between a fixing and a lug in to which the fixing is secured;

Figure 2c is a cross-sectional view from above of the handles and plates shown in Figure 2a;

Figure 2d is a front view of an exterior handle and door plate shown in Figure 2a;

Figure 3a is an exploded schematic view of a joint fixing for receiving fixing means to secure the door plates of Figures 2a-2d to a door;

Figure 3b is a schematic cross-sectional side view of the fixing shown in Figure 3a;

Figure 3c is a schematic perspective view of the fixing shown in Figure 3a; and

Figure 3d is a pneumatic side view of the fixing shown

in Figure 3a.

[0013] In the following, the terms exterior and interior are used in relation to the faces of a door. The meaning of exterior is that it is the face shown to an intruder or person who may wish to make unauthorised access to a door, whereas the interior is taken to mean the service-side or a face of a door that is presented to a secure side of the doorway.

[0014] Figures 2a-2c show an embodiment of the invention in which the fixings (20a, 20b) shown in Figures 1a-1d are received in a different fitting to that shown in Figures 1a-1d. The fitting for receiving the fixings, which are shown in Figures 2a-2d by reference numerals 120a and 120b, differs in that an internally tapped opening (127) receives the fixing (120a/b), with the internally tapped opening (127) forming part of a ball joint fixing (122) shown in greater detail in Figures 3a-3d.

[0015] An exterior face of a door (110) has an exterior plate (118) with an exterior handle (116). The exterior plate (118) may incorporate a strengthening plate (119).

[0016] Fixings for securing the exterior plate (118) and handle (119) are received from an interior side of the door (110). The fixings (120a, 120b) are received through an interior plate (114) and a wall section of a PVC profile of the door (115). A handle (112) is present on the interior plate, as is usual. The two handles are joined by a spindle (124).

[0017] The fixings (120a, 120b) extend through the interior plate (114) in the usual way to be received in the tapped ball joint fixing (122) as explained below.

[0018] The ball joint fixing consists of 3 parts, which are a threaded base section (128) that is received in an internally tapped opening (142) on an inner part of the exterior door plate (118). The base section (128) has an upper neck section (138) in which is received a ball (126) having the internally tapped opening (127) referred to above. The upper neck section (138) of the base section (128) has flats (130) that are used to secure the base section (128) in position in the tapped opening (142) of the exterior door plate (118). With the ball (126) located in the upper neck section (138) of the lower section (128), a cap section (124) is engaged with the externally threaded neck section (138) by means of an internally threaded section (140) of the cap section. The cap section (124) similarly incorporates flats (132) to allow fitting thereof onto the base section (128). A rim section (125) of the cap section (124) retains the ball (126) in position.

[0019] As shown in Figure 3c the opening (127) of the ball (126) is located to face upwards and away and out of the capped section (124). The location of the ball is chosen so that the length of the opening (127) extends substantially coaxially with the length of the fixings (120a, 120b).

[0020] When the ball joint (122) is located in the opening (142) in the exterior door plate (118) with the opening (127) facing towards the interior door plate (114) the fixings (120a, 120b) can be inserted into position through

the interior door plate (114), through the door (110) and tightened into the internally tapped opening (127) in the ball (126) in the exterior door plate (118).

[0021] In this way, the exterior and interior plates (118, 114) are secured to the door (110).

[0022] In the event of an intruder attempting to lever or otherwise remove the exterior plate (118) from the door (110) to gain access to a lock incorporated in the door (110), levering of the plate (118) would typically result in a stress fracture of the plate (118) around the seat of the fixing (22) as described above in relation to Figures 1a-1d. However, with the ball joint (122) in position, relative movement of the exterior plate (118) as it is levered by an intruder and the fixing (120a) is accommodated by the small movements of the ball (126) within the lower section (128) and capped section (124) of the ball joint (127). This reduces the likelihood of stress fracture of the exterior door plate (118), or the strengthening member (119). Thus the use of the ball joint alleviates the stress exerted on the plate and associated fixings.

[0023] It will be appreciated from the above that significant advantages arise from the use of the ball joint in the locations shown and described above. Stress fracture of the exterior door plate is considerably less likely given that the force of the levering of an intruder is taken up by relative movement of the fixing and the ball joint.

[0024] Attention is directed to all papers and documents which are filed concurrently with or previous to this specification in connection with this application and which are open to public inspection with this specification, and the contents of all such papers and documents are incorporated herein by reference.

[0025] All of the features disclosed in this specification (including any accompanying claims, abstract and drawings), and/or all of the steps of any method or process so disclosed, may be combined in any combination, except combinations where at least some of such features and/or steps are mutually exclusive.

[0026] Each feature disclosed in this specification (including any accompanying claims, abstract and drawings) may be replaced by alternative features serving the same, equivalent or similar purpose, unless expressly stated otherwise. Thus, unless expressly stated otherwise, each feature disclosed is one example only of a generic series of equivalent or similar features.

[0027] The invention is not restricted to the details of the foregoing embodiment(s). The invention extends to any novel one, or any novel combination, of the features disclosed in this specification (including any accompanying claims, abstract and drawings), or to any novel one, or any novel combination, of the steps of any method or process so disclosed.

Claims

1. A door furniture assembly comprises an internal, service-side, door plate, an external, non-service-

side, door plate and at least one fixing to secure the two door plates on service and non- service faces of a door respectively, wherein the at least one fixing is securable at the non- service side door plate by at least one fixing seat that is adapted to accommodate relative movement of at least a part of the fixing seat and the remainder of the non- service side plate.

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2. A door furniture assembly as claimed in claim 1, wherein the at least one fixing is adapted to extend from the service-side door plate to an inner side of the non-service side door plate. 10
3. A door furniture assembly as claimed in claim 1 or claim 2 wherein the relative movement of the at least a part of the fixing seat and the remainder of the non-service side plate involves a relative movement of two parts of the at least one fixing seat. 15
4. A door furniture assembly as claimed in any preceding claim, wherein a first part of the at least one fixing seat is securable to the non-service-side door plate and a second part is securable to the at least one fixing. 20
5. A door furniture assembly as claimed in claim 4, wherein, the first and second parts are adapted for movement relative to one another. 25
6. A door furniture assembly as claimed in any preceding claim, wherein the at least one fixing seat is a ball joint. 30
7. A door furniture assembly as claimed in claim 6, wherein the second part of the at least one fixing seat is a ball of the ball joint. 35
8. A door furniture assembly as claimed in any preceding claim, wherein the at least one fixing seat is adapted to receive the at least one fixing at or in the second part thereof. 40
9. A door furniture assembly as claimed in any preceding claim, wherein the door furniture assembly includes service-side and non-service side door handles. 45
10. A door furniture assembly as claimed in any preceding claim which includes a locking mechanism. 50
11. A kit comprises at least one fixing and fixing seat pair as described in any of the preceding claims. 55

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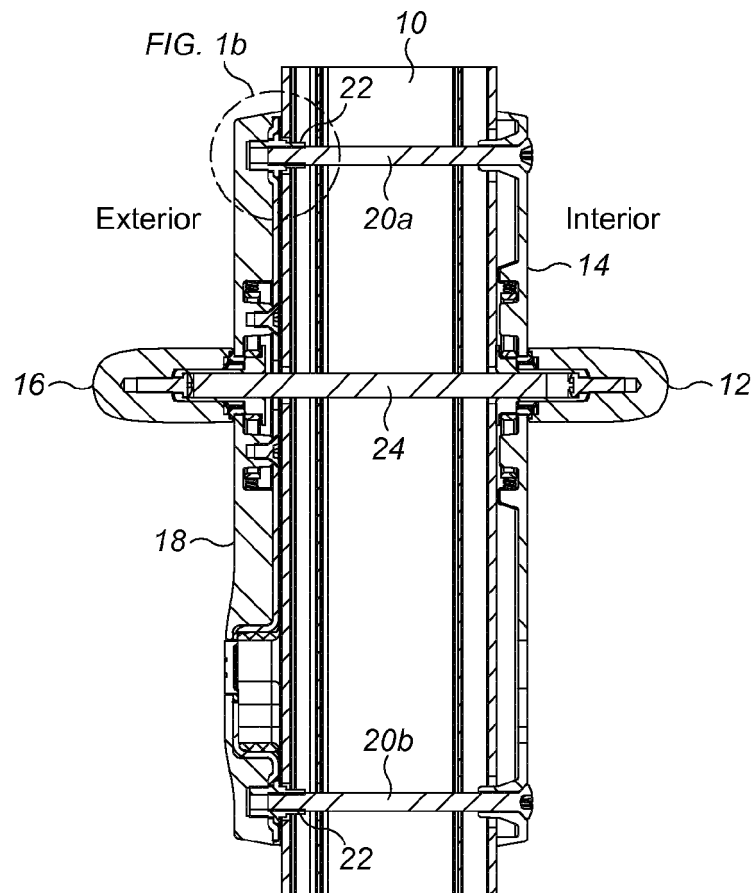


FIG. 1a

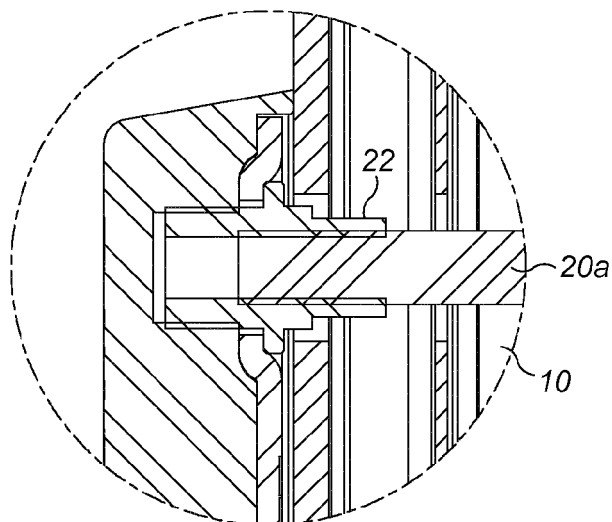


FIG. 1b

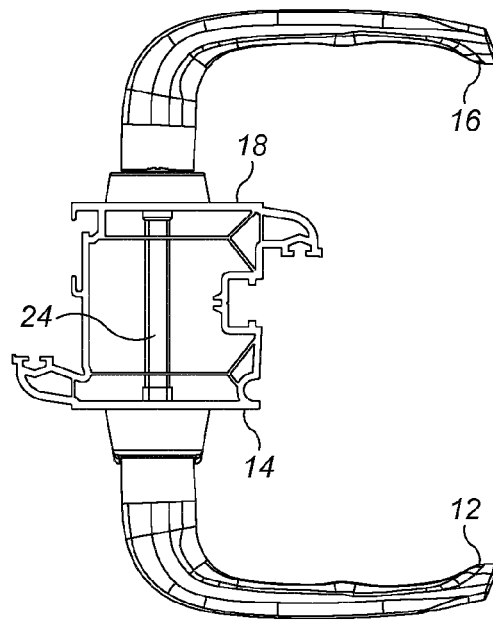


FIG. 1c

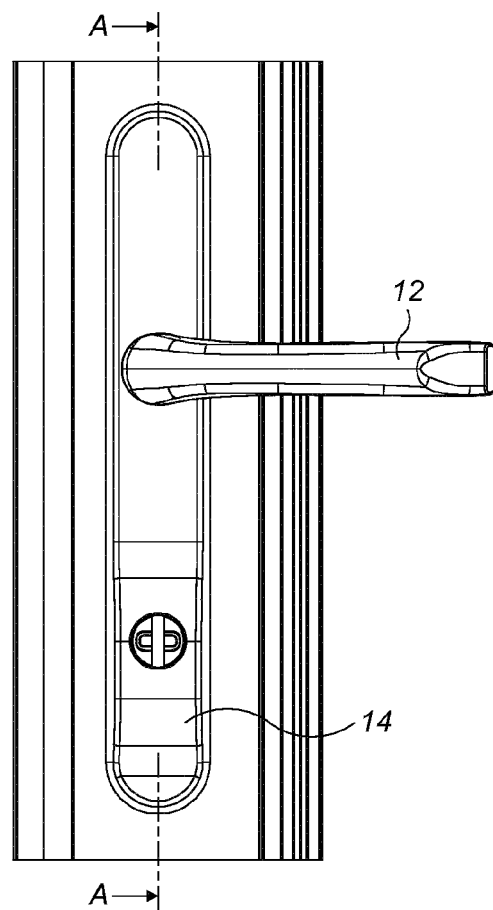


FIG. 1d

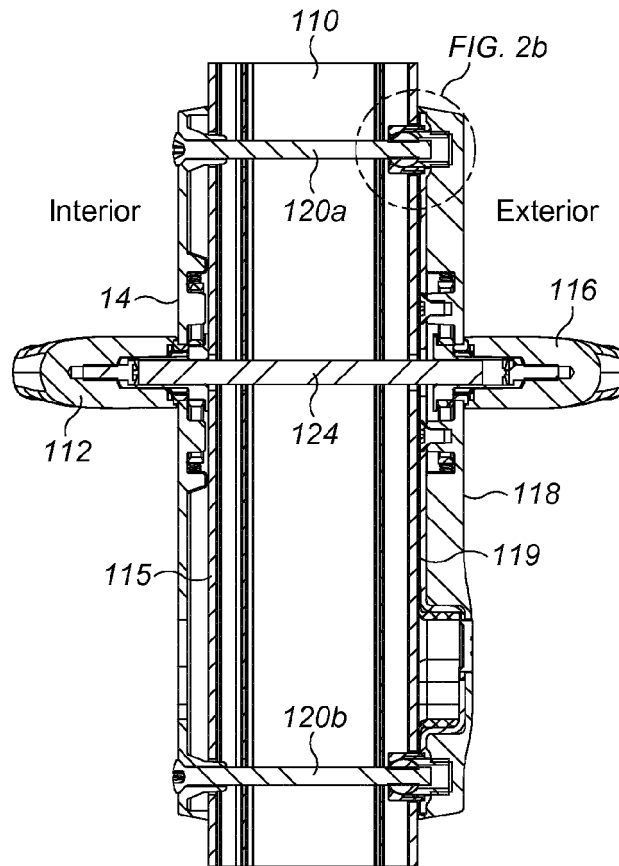


FIG. 2a

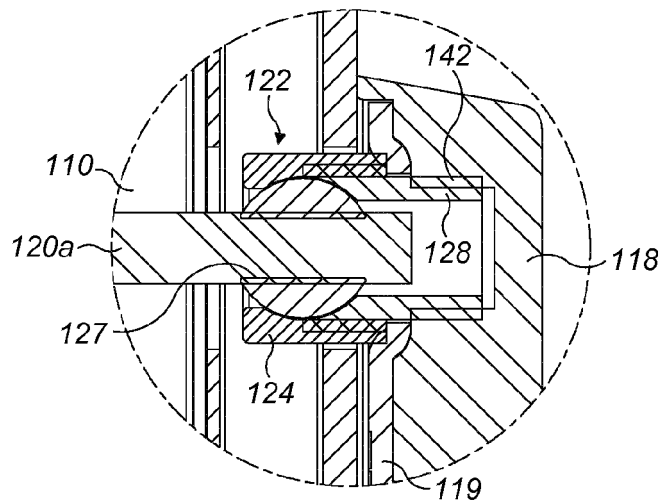


FIG. 2b

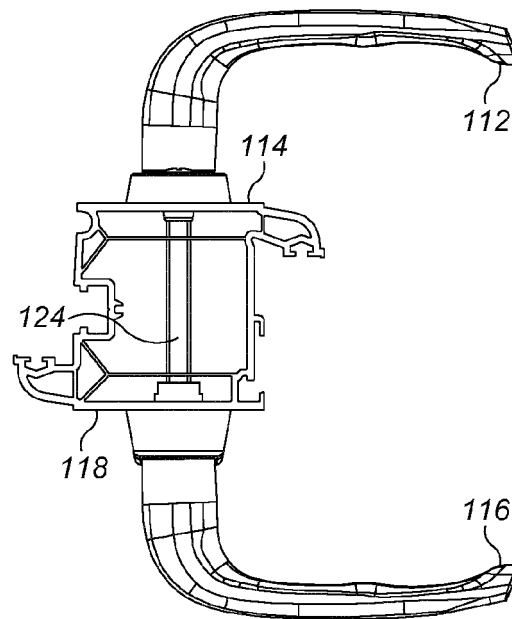


FIG. 2c

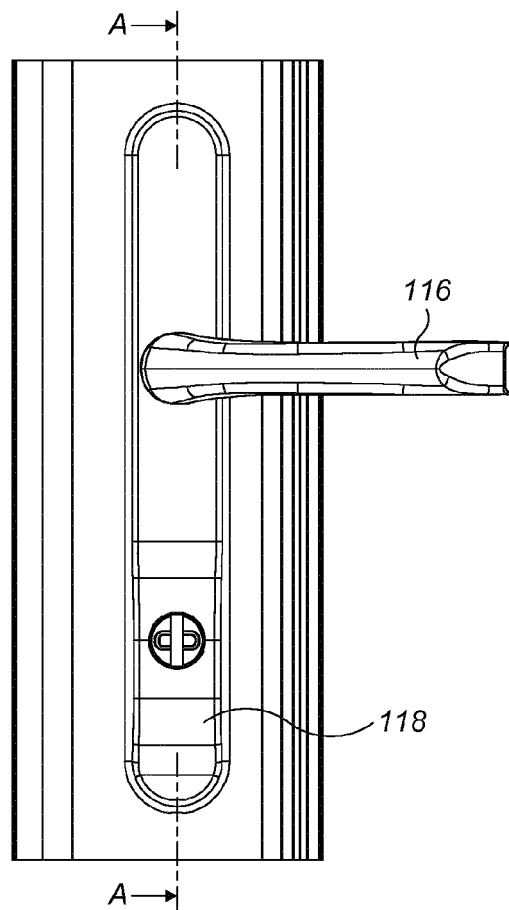


FIG. 2d

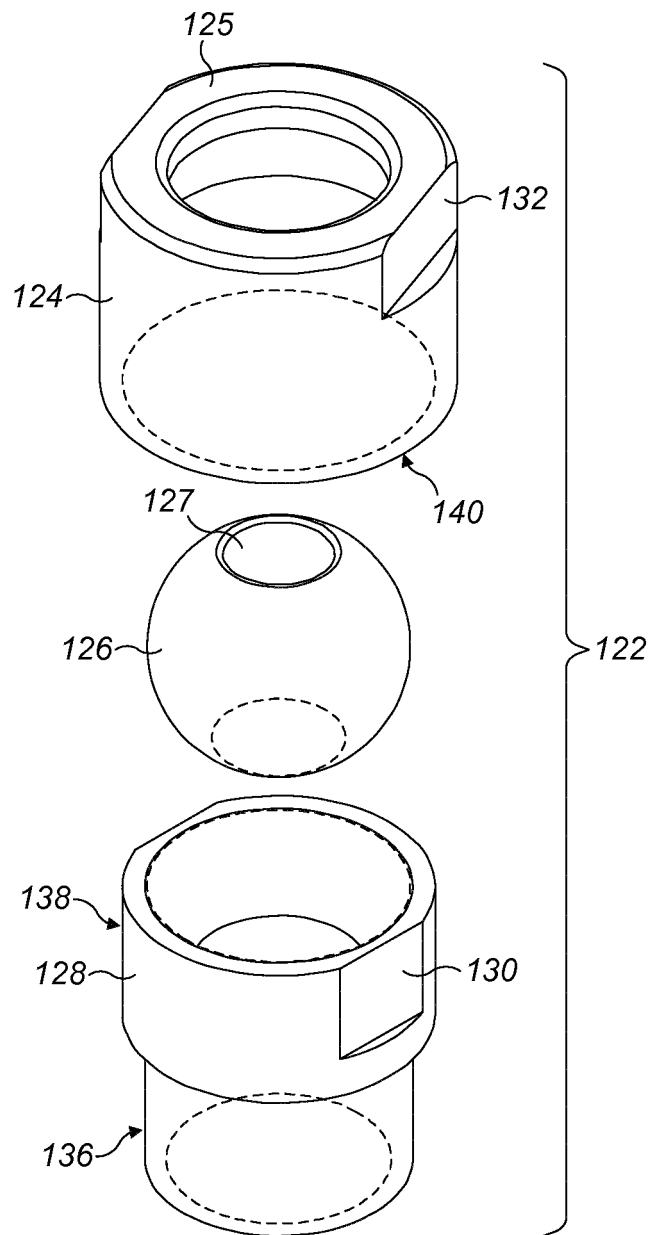


FIG. 3a

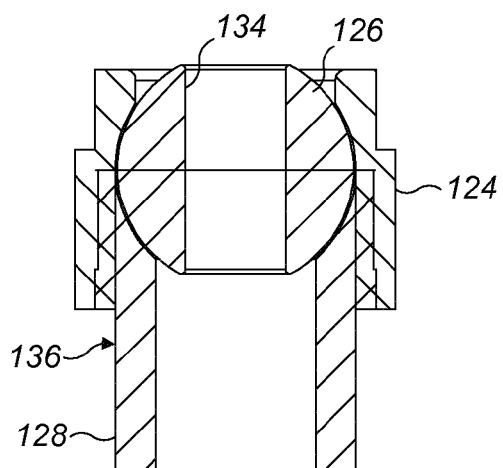


FIG. 3b

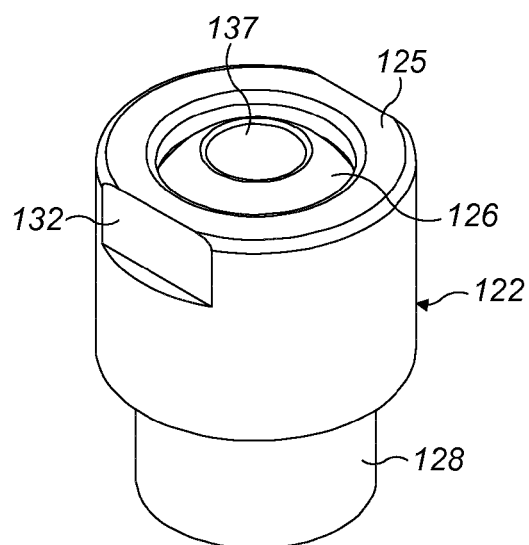


FIG. 3c

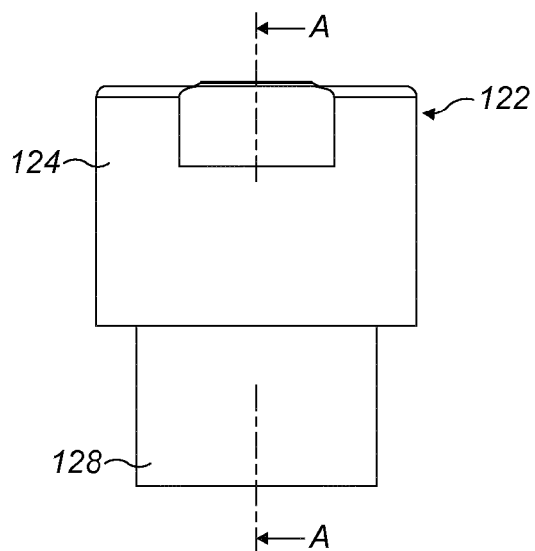


FIG. 3d