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(54) **CLOSURE**

(57) A dispensing closure (10) for a container is provided. The closure comprises a base (20) which is attachable to a container, and a flip top pourer (15) which is attachable to the base. The pourer comprises a pourer body (25) and a lid (30) which is hingedly attached thereto so as to be movable between a closed position and an open position. The pourer is rotatable relative to the base and its position is axially fixed, the pourer is rotatable between a locked position in which the lid cannot be moved to the open position and an unlocked position in which the lid can be moved to the open position. The pourer body comprises a retention slot (68) and the lid comprises a corresponding retention member (60). In the locked position the retention member cannot escape the slot and in the open position the retention member can escape the slot to allow the lid to be opened.

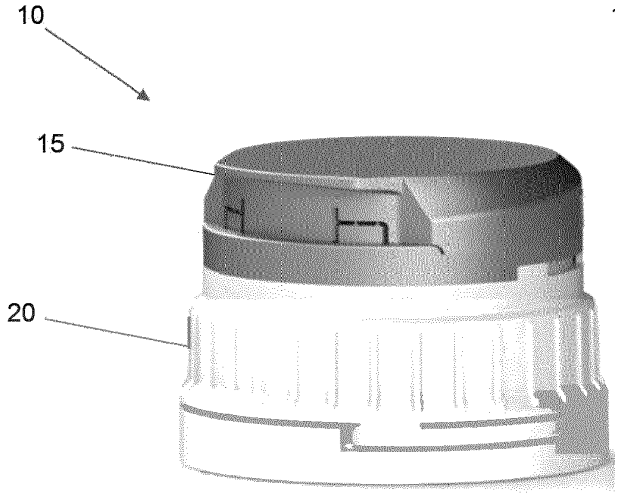

Figure 1A

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Description

[0001] The present invention relates generally to a closure and particularly, although not exclusively, to a flip-top dispensing closure for the industrial market.

[0002] In general, industrial containers with closures are heavy and screwed, with no comfortability for pouring a low precision, a part of the complex three parts closures with telescopic tubes. So, the current products are not design as a pack container plus closure designed to be refilled, recycled and with simple use convenient and comfortable.

[0003] There are different well-known systems to pour with precision by using different parts as tubes or telescopic cannulas. Typically, they are three or more components of different materials, and they are not tethered on the canister, and not refillable systems at all.

[0004] The present invention seeks to provide improvements in or relating to dispensing closures.

[0005] A first aspect provides a dispensing closure for a container, the closure comprises a base which is attachable to a container, and a flip top pourer which is attachable to the base, the pourer comprises a pourer body and a lid which is hingedly attached thereto so as to be movable between a closed position and an open position, the pourer is rotatable relative to the base and its position is axially fixed, the pourer is rotatable between a locked position in which the lid cannot be moved to the open position and an unlocked position in which the lid can be moved to the open position, the pourer body comprises a retention slot and the lid comprises a corresponding retention member, in which in the locked position the retention member cannot escape the slot and in the open position the retention member can escape the slot to allow the lid to be opened.

[0006] In some embodiments the base comprises an upstand, the upstand prevents deflection or movement of the retention member when the pourer is in the locked position so as to prevent escape of the retention member from the slot, and in which the upstand comprises a thinner portion or a recess into which the retention member can deflect or move in order to be able to escape the slot, and with which the retention member is rotationally aligned when the pourer is in the unlocked position.

[0007] The closure may comprise tamper-evident means for indicating if the lid has been opened.

[0008] The tamper-evident means may comprise one or more tamper-evident tabs formed on the lid, in which the or each tab is frangibly attached to the lid and detached from the lid when the lid is first opened, and in which thereafter the or each tab drops and is retained by the closure.

[0009] In some embodiments the lid can be rotated (optionally only) anticlockwise from the locked to the unlocked position and/or the lid can (optionally only) be rotated clockwise from the locked to the unlocked position.

[0010] In some versions the pourer is configured to fit bases of different diameters.

[0011] The closure may be mono-material; for example polyethylene or polypropylene.

[0012] Post-consumer recycled (PCR) material may be used. A mixture of PCR and virgin material may be used.

[0013] The present invention also provides a closure as described herein in combination with a container.

[0014] A further aspect provides a container and a closure for the container, the closure is a flip-top style closure and comprises a base which is connectable to the container and a lid which can be moved between a closed and an open position, the container is provided a retention portion for releasably holding the lid in the open position.

[0015] The container may comprise a handle and the retention portion may be provided on or by the handle.

[0016] In some embodiments the handle comprises a flat and the lid comprises a flat, and the handle flat and the lid flat are together in the same generally flat plane.

[0017] The closure may comprise a pourer body to which the lid is hingedly attached, and the pourer body is attached to the base.

[0018] The pourer body may be rotatable relative to the base but axially restrained relative to the base, and the pourer body may be rotatable between a locked position in which the lid cannot be moved to the open position and an unlocked position in which the lid can be moved to the open position.

[0019] Closure may comprise tamper-evident means for indicating the lid has been opened.

[0020] In some embodiments the closure base is provided with a retention band and the retention band is joined to the remainder of the base by a tether, whereby the closure is tethered to the container.

[0021] The container may be an oblong blown bottle.

[0022] The container may, for example, be an F-style bottle.

[0023] Known for their oblong rectangular shape and handle, F-Style bottles are ideal for industrial uses including lawn and household chemicals, oil, and powders. Their design makes them inherently easy to carry and store.

[0024] F-Style bottles may, for example, be made from HDPE plastic.

[0025] Bottles may range in size from 8 oz to 32 oz, for example.

[0026] Aspects of the present invention may provide or relate to:

1) a lid that be locked on the handle of the container;

2) a lid locking device, where an annular collar has a different thickness, for the open or close position, permitting the passage or not of the tab.

[0027] An aspect of the present invention provides a tethered industrial closure.

[0028] Aspects of the present invention may provide

or relate to industrial packaging such as motor oil, lubricant, window glass cleaners, cooling liquid, homecare, detergents, disinfectants.

[0029] The aim of some embodiments of the invention may be to create a complete refillable pack (e.g. a closure + a canister) for the industrial market.

[0030] The lid may be the same for two different bodies (e.g. 45 and 50 mm).

[0031] It may have a non-removable tamper-evident system very visual.

[0032] The lid after opening can be fixed on the handle canister to have a better vision during the pouring process.

[0033] In some embodiments when the product is finished the base of the closure screwed allows to be opened and fixed by a tethered system in order to do not lose the closure and allow to refill the canister again.

[0034] The canister may have a special geometry on it to fix the unscrew cap, as well.

[0035] Some embodiments of the present invention relate to a two-piece flip-top plastic closure for industrial market with refillable function and designed integral with the canister to be totally recyclable. Handle aligned to the closure and retaining lid system on the handle.

[0036] The flip top may be used in two different bases, one of 45 and the other 50 mm creating a full packaging product range with different volumes and sizes for the market needs.

[0037] The base of the closure may be tethered, so is possible to unscrew and fix in one part of the canister, to refill the packaging when is finished, but is one-piece product, without losable parts.

[0038] The lid may have a very visual tamper evidence system, that after first opening the product shows two small windows for the evidence of manipulation. These two parts are retained to the body and never go out, although the cap is totally unscrewed.

[0039] An aspect of the present invention provides or relates to a combination of the following elements in a refillable pack (closure + canister) for the industrial market:

1. A tamper evident arrangement;

2. A TE band;

3. The lid can, for example, be adapted for two different bodies (45 and 50 mm). This means that the lid remains the same but the base can be adapted for the corresponding body; and

4. A lid retaining feature.

[0040] A further aspect provides a two-piece mono material flip-top plastic closure for industrial market with refillable function and designed integral with the canister to be totally recyclable.

[0041] A handle may be aligned to the closure.

[0042] A retaining lid system may be provided on the handle.

[0043] Some embodiments of the present invention are configured to provide a 2 in 1 model: Same Flip-Top Lid + Tethered screw base Ø 45 or 0 50 mm, for example.

[0044] Some aspects and embodiments comprise one or more of the following features:

☐ Tethered industrial cap, refillable and mono material
☐ One pack system (closure + canister)
☐ Same performance for different canisters volumes and neck finishes
☐ Closure aligned and fix to the handle
☐ Anti-counterfeiting system -security
☐ Non-detachable TE band-security
☐ Flip-Top Blocking system-safety
☐ Tethered system-sustainability
☐ Non-detachable parts with visual external TE - sustainability
☐ Perfect pouring -precision
☐ Anti-drop system-cleanest
☐ Easy to use with one hand- convenient
☐ Two colours- Differentiation
☐ PCR mono material & without liner-sustainability

[0045] Some embodiments of the present invention provide a tethered closure with pourer protected by tamper-evident means. Embodiments may provide or be provided with one or more of the following features:

- Neck Ø45 & Ø50
- TEB on lid and body - no lost elements
- E-commerce friendly
- Tethered
- Pouring clean on 240° with air intake
- Controlled opening force
- Closable lid after 1st opening
- Common lid + pourer for both necks > Ø45 et Ø50

[0046] Clean pouring (smooth flow) is possible with the closure tilted to around 240°, for example.

[0047] Anti gloup (anti-glug) functionality may be provided (e.g. with an air intake / vent).

[0048] The pourer body may be formed (e.g. by injection moulding) with the lid in an open position. In-mould closing (IMC) of the lid onto the pourer body may be used.

[0049] Easy assembly of Front Locking device & TEB is possible.

[0050] An anti-return seal for TEB position may be provided.

[0051] Example Function 45mm version

[0052] Pourer connection on a sealing lip

[0053] TEB + locking lip + stoppers >>> connected to the body shoulders.

[0054] Example Function 50mm version

[0055] Undercut + TEB locking lips >>> Connected to the main sealing lip.

[0056] Different aspects and embodiments of the invention may be used separately or together.

[0057] The present invention is more particularly shown and described, by way of example, in the accompanying drawings.

[0058] Example embodiments are described below in sufficient detail to enable those of ordinary skill in the art to embody and implement the systems and processes herein described. It is important to understand that embodiments can be provided in many alternate forms and should not be construed as limited to the examples set forth herein.

[0059] Accordingly, while embodiments can be modified in various ways and take on various alternative forms, specific embodiments thereof are shown in the drawings and described in detail below as examples. There is no intent to limit to the particular forms disclosed. On the contrary, all modifications, equivalents, and alternatives falling within the scope of the appended claims should be included. Elements of the example embodiments are consistently denoted by the same reference numerals throughout the drawings and detailed description where appropriate.

[0060] The terminology used herein to describe embodiments is not intended to limit the scope. The articles "a," "an," and "the" are singular in that they have a single referent, however the use of the singular form in the present document should not preclude the presence of more than one referent. In other words, elements referred to in the singular can number one or more, unless the context clearly indicates otherwise. It will be further understood that the terms "comprises," "comprising," "includes," and/or "including," when used herein, specify the presence of stated features, items, steps, operations, elements, and/or components, but do not preclude the presence or addition of one or more other features, items, steps, operations, elements, components, and/or groups thereof.

[0061] Unless otherwise defined, all terms (including technical and scientific terms) used herein are to be interpreted as is customary in the art. It will be further understood that terms in common usage should also be interpreted as is customary in the relevant art and not in an idealized or overly formal sense unless expressly so defined herein.

[0062] Referring first to Figures 1A, 1B, 2A, 2B, 3A 3B, 4A and 4B there are shown two versions of a dispensing closure 10, 110.

[0063] The closures 10, 110 comprise a pourer 15, 115 and a base 20, 120.

[0064] As shown best in Figure 3A and 3B, the pourers 15, 115 comprise a pourer body 25, 125 and a lid 30, 130 joined together by a hinge 35, 135 (creating a "flip-top" pourer) that defines a "rear" or "back" of the pourer.

[0065] In these embodiments, the pourer is common (i.e. the same type of component) for both closures. The difference between the closures 10, 110, is the base, with the base 20 being a smaller diameter (e.g. 45mm) and the base 120 being a larger diameter (e.g. 50mm).

[0066] Figure 5 is an exploded view of the closure of Figure 1B and shows the base 120 separated from the pourer 115, with the lid 130 shown in an open position with respect to the pourer body 125.

[0067] As described in more detail below, the pourer 15, 115 is fitted into the base 20, 120 so as to be fixed axially but movable rotationally for (limited) rotational movement between a locked position (Figures 6A, 7A) and an unlocked position (Figures 7A, 7B). Figures 8A and 8B also shown the closure 10 in locked and unlocked positions.

[0068] In the locked position the lid 30, 130 cannot be lifted relative to the pourer body 25, 125. In the unlocked position the lid 30, 130 can be lifted, as illustrated in Figures 3A, 3B, 25 and 37. When the lid is opened for the first time a tamper-evidencing feature is activated (see Figures 3A and 3B), providing visual evidence that the closure has already been opened with the lid is reclosed (illustrated in Figures 4A and 4B).

[0069] Figures 12 and 13 show the closure 10 in a locked and initially unopened configuration. Figures 14 to 19 show the closure 10 in an unlocked and unopened configuration. Figures 20 and 21 illustrate the closure as the lid is lifted. Figures 22 to 24 show the closure once the lid has been reclosed onto the pourer body.

[0070] The base 20 comprises a generally cylindrical sidewall 40. The interior of the sidewall 20 is provided with a screw thread formation 21.

[0071] At one end of the sidewall 20 is a radially outwardly inclined wall portion 41. Depending from the portion 41 is an annular retention band 42. The band is connected to the portion by a first line of frangible bridges 43 and also by a single fixed, non-frangible bridge 44. A second line of frangible bridges is also formed beneath the bridge 44, being a chicane-like continuation of the first line of frangible bridges. This defines a "lasso" type tether 45 between the base sidewall and the retention band 42. The band 42 includes a segmented retention bead 46 so that in use the retention band 42 becomes fixed to a container neck so that the closure can be unscrewed but retained, as illustrated in Figure 38. This means that an associated container 80 could be refilled.

[0072] At the other end of the sidewall 20 is a radially inwardly inclined wall portion 46. A terminal, axial wall portion 47 extends from the portion 46 and an annular top deck 48 extends orthogonally from the portion 47. A pourer retainer 49 depends from the top deck 48 into the interior of the base. An annular collar 50 upstands from the top deck 48.

[0073] The pourer body 25 comprises an annular deck 26 and an annular side skirt 27 which depends from the periphery of the deck 26.

[0074] At the centre of the annular deck 26 is a pouring spout 28. The spout 28 includes an upstanding pouring lip 29.

[0075] The spout 28 continues below the deck 26 with a cylindrical pourer wall 55. The wall 55 includes an ex-

terior recess 56 into which the retainer 49 engages. The wall 55 includes a lower bead 57 so that the retainer 49 clips into the pourer body. The pourer body can rotate relative to the base but is axially restrained by engagement of the body 25 by the retainer 49.

[0076] At the centre of the pourer wall 55 a frusto-conical flow regulator 58 projects through the interior of the wall 55. The regulator 58 includes a flow aperture 59 (also see Figure 3A).

[0077] The lid 30 comprises a flat top plate 31 and a depending lid skirt 32.

[0078] Generally opposite the hinge 35 the lid side skirt 32 provide a retention member 60 and two recess 61, 63 in which (in the initially unopened configuration) house tamper-evident tabs 62, 64. The tabs 62, 64 are connected to the recesses 61, 63 by frangible bridges 65.

[0079] As best shown in Figure 3A, the deck 26 has three arcuate slots 67, 68, 69 which correspond with the member 60 and the tabs 62, 64.

[0080] The tabs 62, 64 include retention hooks 70, 71. The member 60 includes a retention nose 72, which in the embodiment is formed with an undercut 73.

[0081] As illustrated in Figure 9, 10A and 10B, the annular collar 50 includes a thinner portion 75 flanked by thicker portions 76, 77.

[0082] There is one position for opening the lid (a front locking device is thereby provided).

[0083] The "front" of the collar 50 provides a locking area for the tamper-evident tabs and also a front locking area for the retention member.

[0084] In this embodiment an outer arcuate collar 51 is provided and carries a block 52. Correspondingly the lid side skirt 32 is provided with a notch 33. When the closure is assembled the block 52 is positioned in the notch 33 and can be used to indicate if the closure is in the locked or unlocked position (for example c.f. Figures 6A and 6B), as well as functioning as an end stop for the two positions (i.e. preventing further rotation between the pourer and the base).

[0085] Figure 10A shows the lid rotated to the unlocked position and Figure 10B shows the lid rotated to the locked position. In some embodiments the lid can be rotated in either direction (clockwise or anticlockwise) to move from the locked position to the unlocked position.

[0086] In the locked position the retention member 60 is circumferentially aligned with a thicker portion of the collar. This means that if an attempt to lift the lid is made the member 60 cannot deflect radially and so the nose 72 cannot pass through the slot 68 - see Figure 12. When the pourer body is rotated to the unlocked position the member 60 then becomes circumferentially aligned with the thinner portion - see Figures 14 and 16. The member 60 now has a space into which it can be deflected (radially inwards) by pushing it like a button - see Figure 20.

[0087] Once the nose undercut 73 is clear of the slot this allows it to move through the slot 68.

[0088] When the pourer body is in the unlocked position the tabs 62, 64 are circumferentially aligned with thicker portions of the collar - see Figure 17 and 19, for example. When the lid is lifted the tab hooks 70, 71 engage under the front of the slots 67, 69. This causes the bridges 65 to break so that the tabs 62, 64 fall (irreversibly) into the slots - see Figures 3A and 22 to 24. The recesses 61, 63 are now empty, providing visual evidence of opening of the lid.

[0089] Similarly, Figures 26 and 27 show the closure 110 in a locked and initially unopened configuration. Figures 28 to 33 show the closure 110 in an unlocked an unopened configuration. Figures 34 to 36 show the closure 110 once the lid has been reclosed onto the pourer body. The retainer 149 is the same as the retainer 49 and this means that the same pourer body can be used with either size of base. The locking/unlocking mechanism is the same as for the closure 10 and so is the tamper-evidence mechanisms.

[0090] Figures 11A and 11B show a retention member formed according to a further embodiment. In Figure 11A the retention member 260 is circumferentially aligned with a thicker collar portion 276. This means that if an attempt to lift the lid is made the member 260 cannot deflect radially and so the nose 272 cannot pass through the slot 268. When the pourer body is rotated to the unlocked position the member 260 then becomes circumferentially aligned with the thinner portion 275 - see Figure 11B. This means that when the lid is lifted the member 260 now has a space into which it can deflect (radially inwards). In this embodiment the nose 272 presents a curved surface 274 (rather than an undercut) and so it can move through the slot 268 (by sliding over the peripheral wall 269) so that the lid can be moved to the open position i.e. it is not necessary for the retention member 260 to be manually pushed in to allow the retention member to be released from under the slot wall 269 (it automatically deflects and the lid is lifted).

[0091] Figure 39 is a plan view of a container 280 formed in accordance with the present invention. The container 280 includes a neck 282 and a handle 284. The handle 284 includes a retention portion 285.

[0092] Figure 40 shows the container of Figure 39 fitted with a flip-top dispensing closure 210. The closure 210 is shown with a lid 230 in an open position. The lid 230 clips (releasably) under the portion 285. The lid can be released from under the potion when it is to be closed.

[0093] The closure may be a closure generally of the type discussed in relation to Figures 1 to 37.

[0094] Figure 41 shows a container 380 in combination with a closure 310. The closure 310 includes a lid 330 with a flat top plate 331. The handle 384 includes a flat 386. The top plate 331 and the handle flat 386 are in the same plane, meaning that stacking with other such containers is possible, as illustrated in Figure 44 (in this case shown with a dividing layer/sheet 390).

[0095] Figures 45 and 46 and illustrate palletising of multiple container/closure packs 500 formed in accordance with the present invention. In this example of palletising there are the following features:

Pallet layer (1200 x 1000)
6 rows of 8 bottles
48 per layer
4 layers high
192 Bottles per pallet

[0096] Although illustrative embodiments of the invention have been disclosed herein, with reference to the accompanying drawings, it is understood that the invention is not limited to the precise embodiments shown and that various changes and modifications can be effected therein by one skilled in the art without departing from the scope of the invention.

Claims

1. A dispensing closure for a container, the closure comprises a base which is attachable to a container, and a flip top pourer which is attachable to the base, the pourer comprises a pourer body and a lid which is hingedly attached thereto so as to be movable between a closed position and an open position, the pourer is rotatable relative to the base and its position is axially fixed, the pourer is rotatable between a locked position in which the lid cannot be moved to the open position and an unlocked position in which the lid can be moved to the open position, the pourer body comprises a retention slot and the lid comprises a corresponding retention member, in which in the locked position the retention member cannot escape the slot and in the open position the retention member can escape the slot to allow the lid to be opened.

2. A closure as claimed in claim 1, in which the base comprises an upstand, the upstand prevents deflection or movement of the retention member when the pourer is in the locked position so as to prevent escape of the retention member from the slot, and in which the upstand comprises a thinner portion or a recess into which the retention member can deflect or move in order to be able to escape the slot and with which the retention member is rotationally aligned when the pourer is in the unlocked position.

3. A closure as claimed in claim 1 or claim 2, in which the closure comprises tamper-evident means for indicating if the lid has been opened.

4. A closure as claimed in claim 3, in which the tamper-evident means comprises one or more tamper-evident tabs formed on the lid, in which the or each tab is frangibly attached to the lid and detached from the lid when the lid is first opened, and in which thereafter the or each tab drops and is retained by the closure.

5. A closure as claimed in any preceding claim, in which the lid can be rotated anticlockwise between the locked and the unlocked position and/or in which the lid can be rotated clockwise between the locked and the unlocked position.

6. A closure as claimed in any preceding claim, in which the retention member comprises a rounded nose portion which can slide over the edge of the slot when the closure is in the unlocked position.

7. A closure as claimed in any preceding claim in combination with a container.

8. A container and a closure for the container, the closure is a flip-top style closure and comprises a base which is connectable to the container and a lid which can be moved between a closed and an open position, the container is provided a retention portion for releasably holding the lid in the open position.

9. A container and a closure as claimed in claim 8, in which the container comprises a handle and the retention portion is provided on or by the handle.

10. A container and a closure as claimed in claim 9, in which the handle comprises a flat and the lid comprises a flat, and in which the handle flat and the lid flat are together in the same generally flat plane.

11. A container and a closure as claimed in any of claims 8 to 10, in which the closure comprises a pourer body to which the lid is hingedly attached, and in which the pourer body is attached to the base.

12. A container and a closure as claimed in claim 11, in which the pourer body is rotatable relative to the base but axially restrained relative to the base, and in which the pourer body is rotatable between a locked position in which the lid cannot be moved to the open position and an unlocked position in which the lid can be moved to the open position.

13. A container and a closure as claimed in any of claims 8 to 12, comprising tamper-evident means for indicating the lid has been opened.

14. A container and a closure as claimed in any of claims 8 to 13, in which the closure base is provided with a retention band and in which the retention band is joined to the remainder of the base by a tether, whereby the closure is tethered to the container.

15. A container and a closure as claimed in any of claims 8 to 14, in which the container is an F-style bottle.

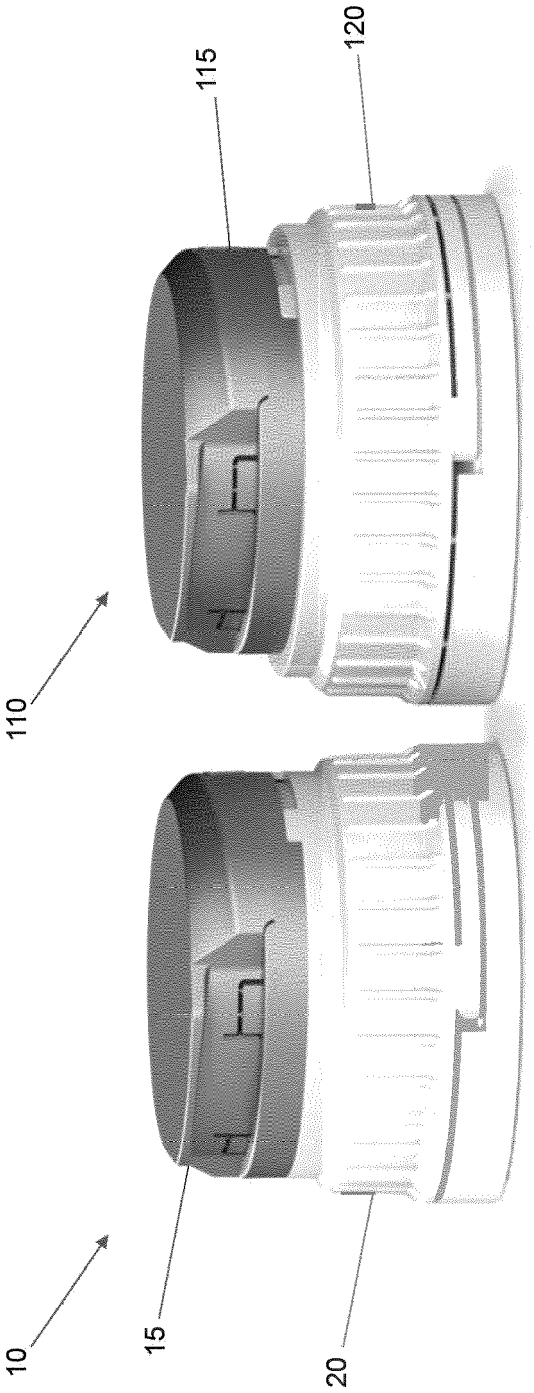


Figure 1B

Figure 1A

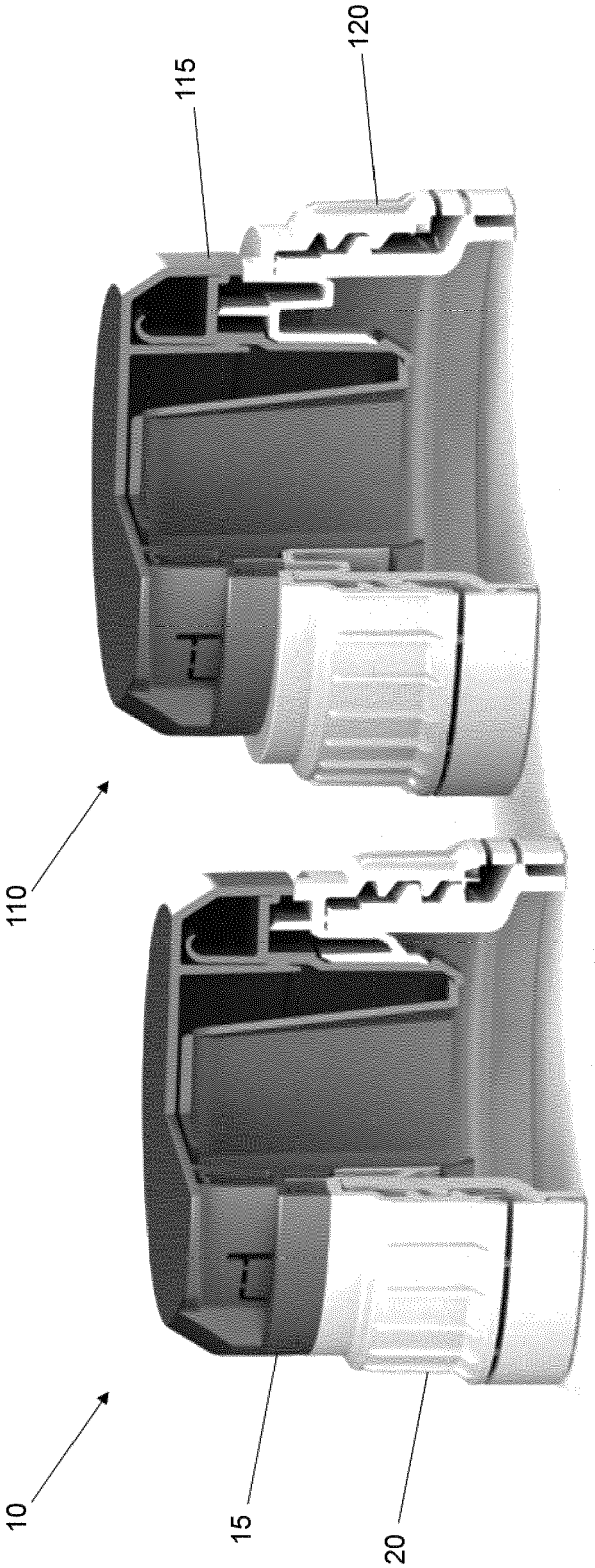


Figure 2B

Figure 2A

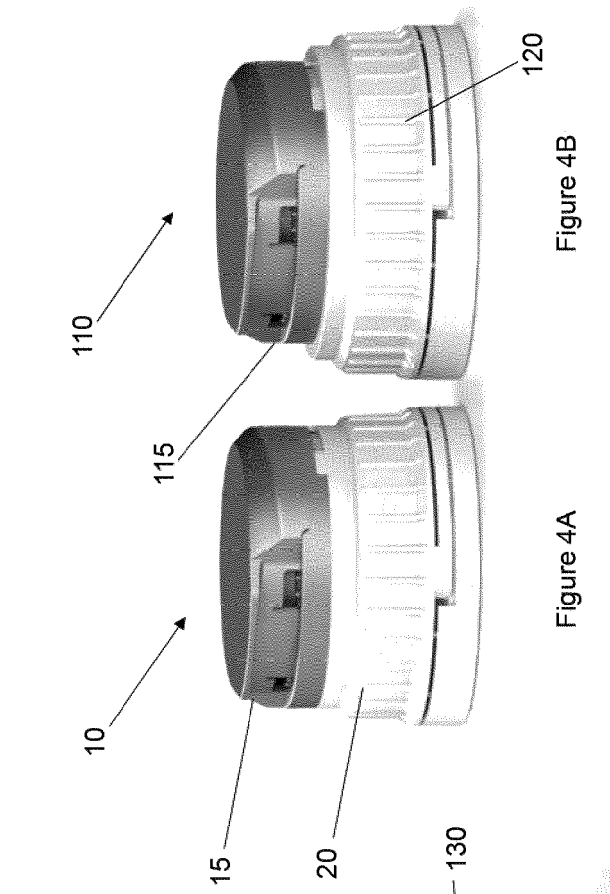


Figure 4B

Figure 4A

Figure 3B

Figure 3A

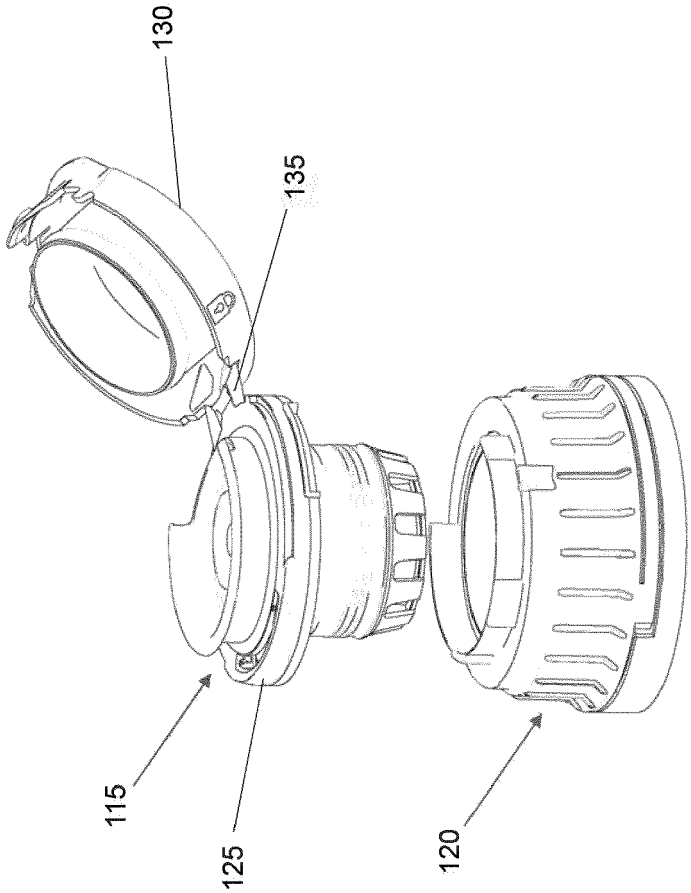


Figure 5

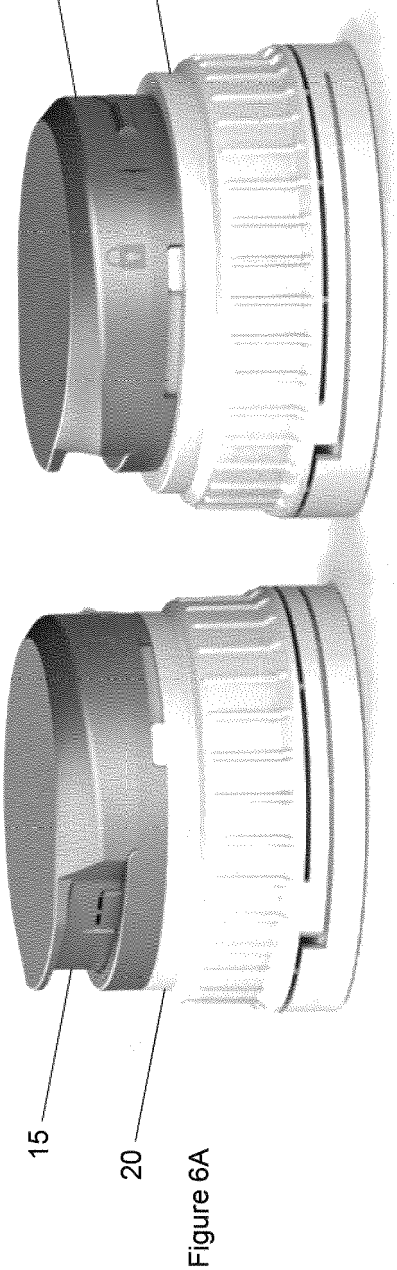


Figure 6A

Figure 7A

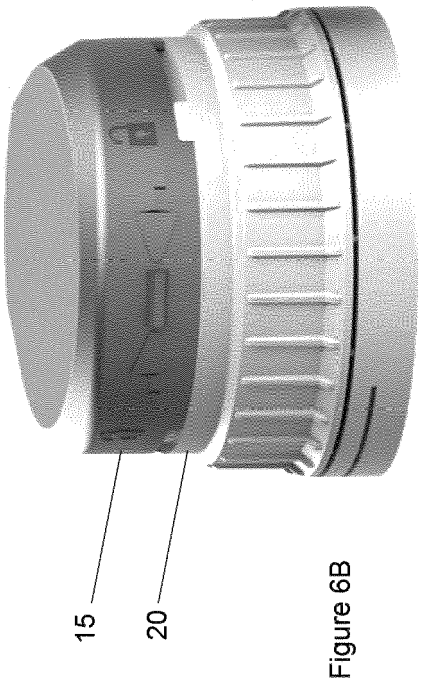


Figure 6B

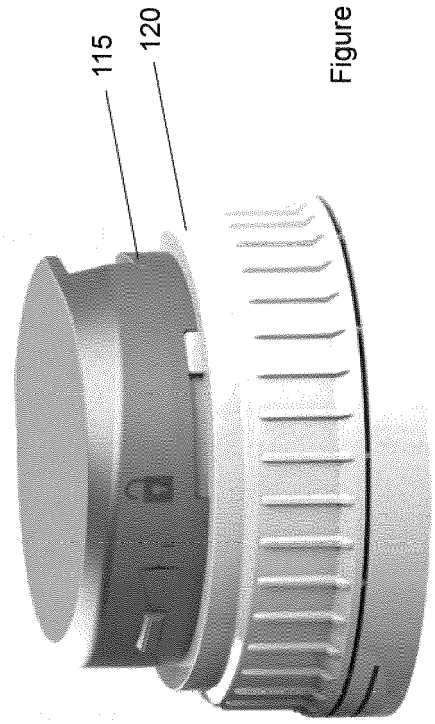


Figure 7B

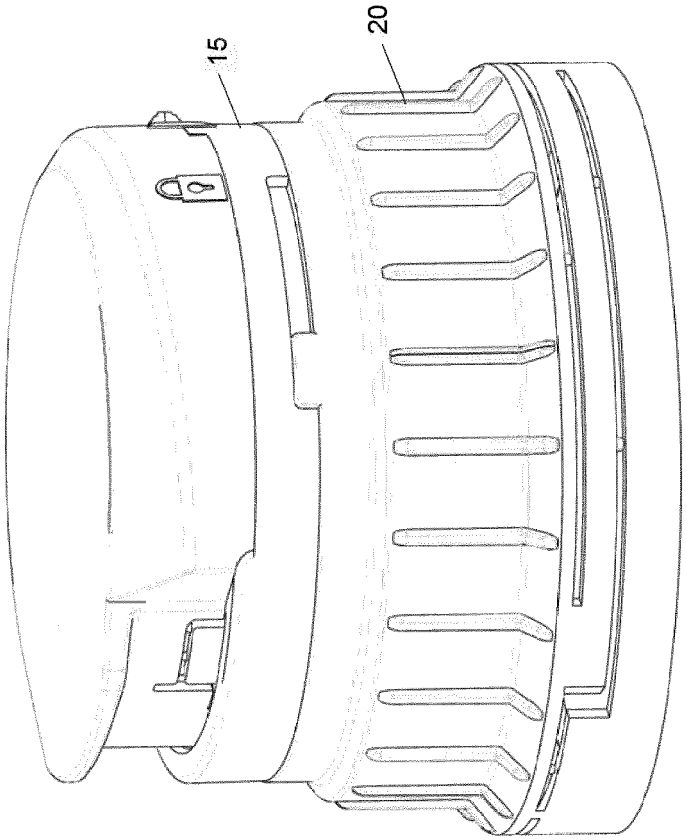


Figure 8B

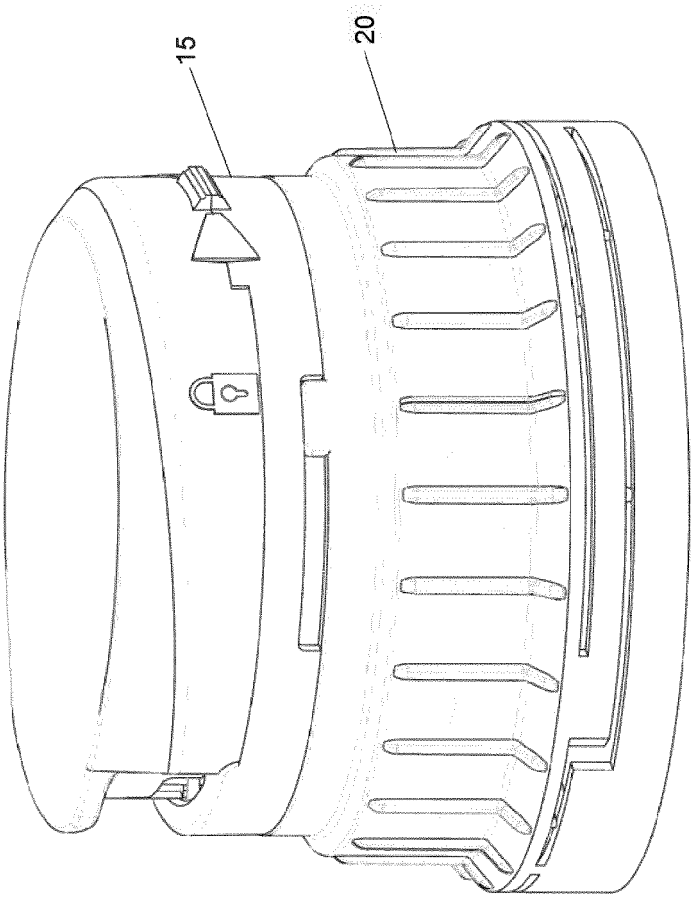


Figure 8A

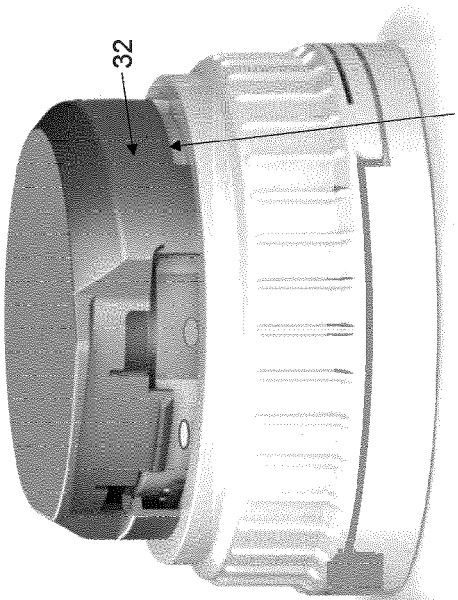


Figure 10B

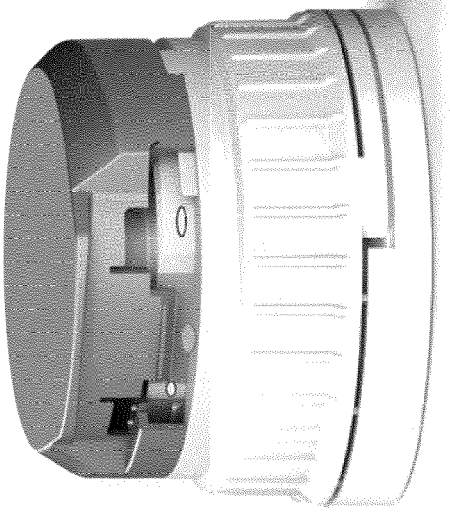


Figure 10A

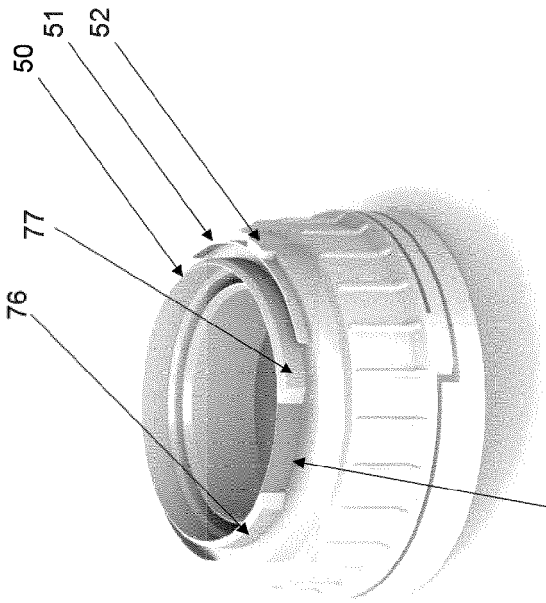


Figure 9

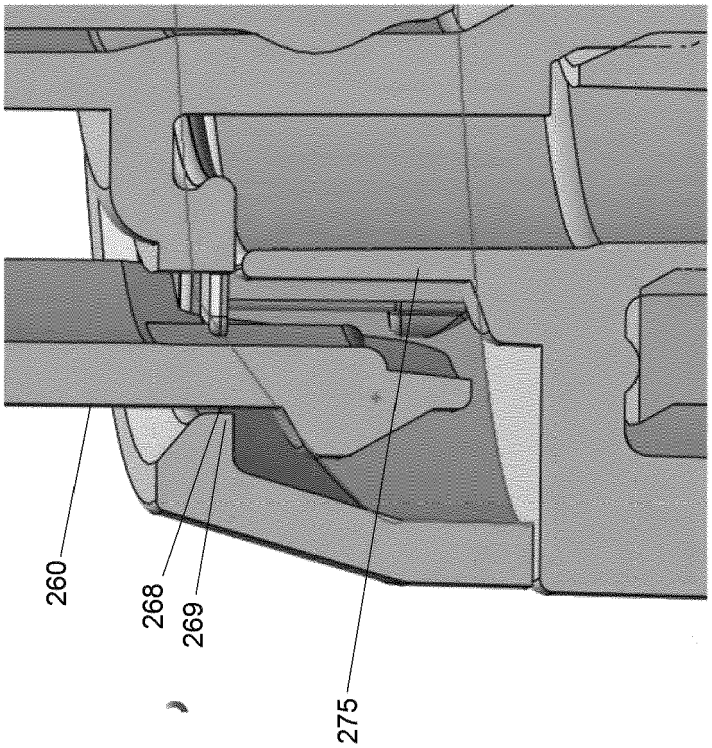


Figure 11B

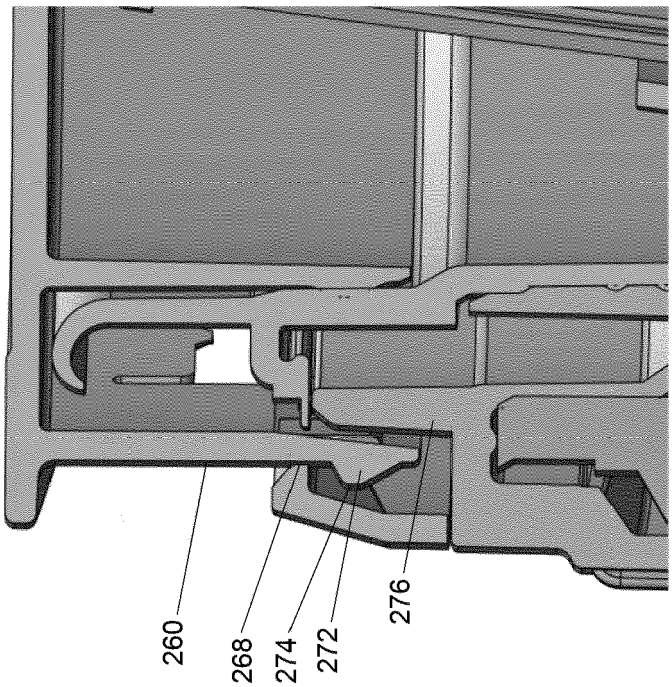


Figure 11A

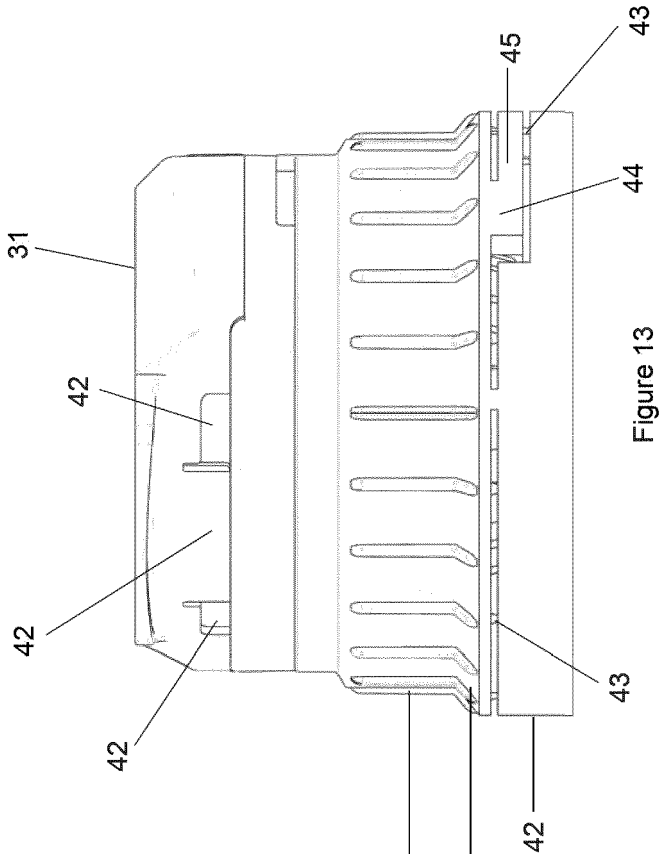


Figure 13

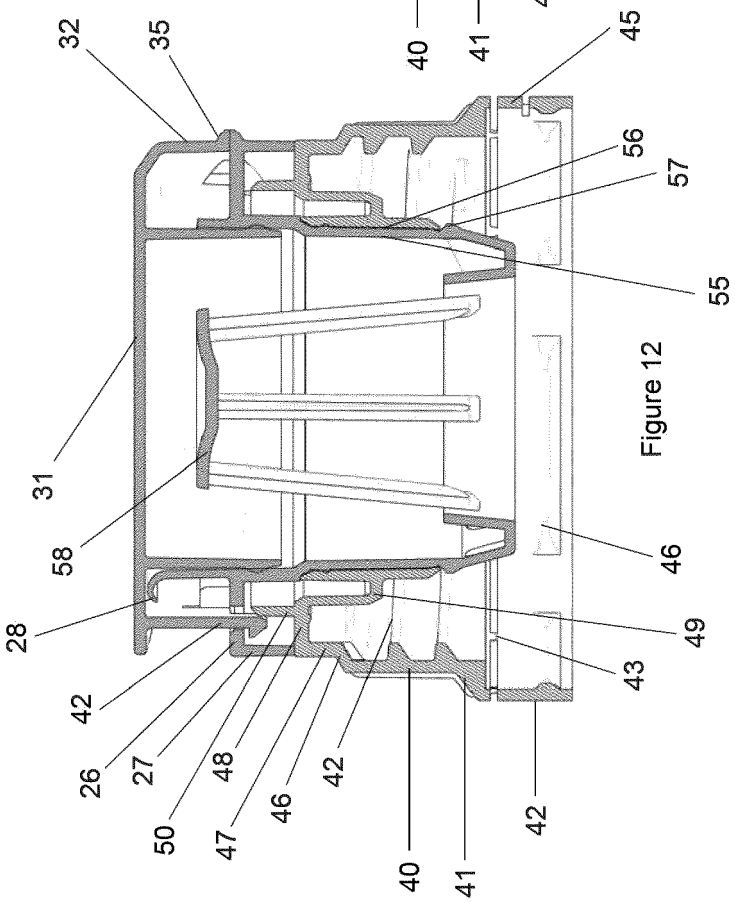


Figure 12

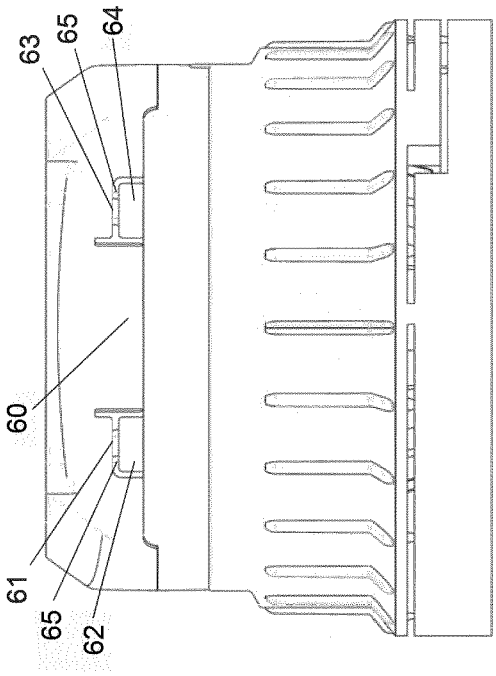


Figure 15

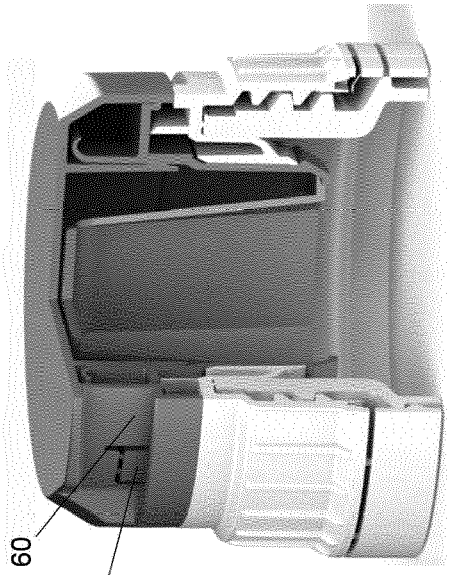


Figure 16

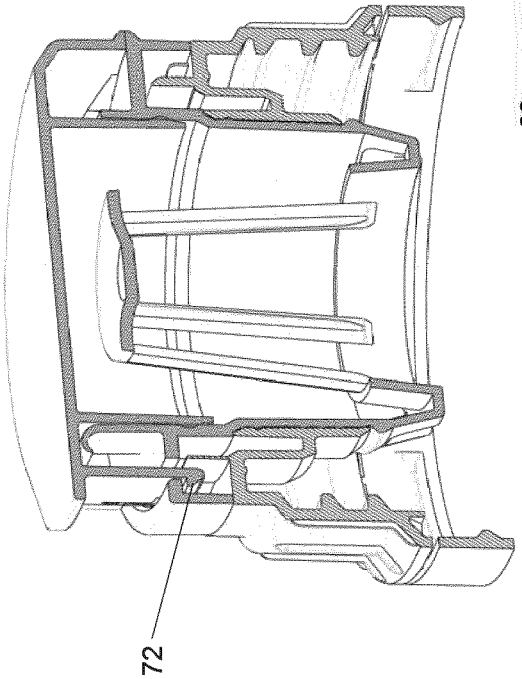
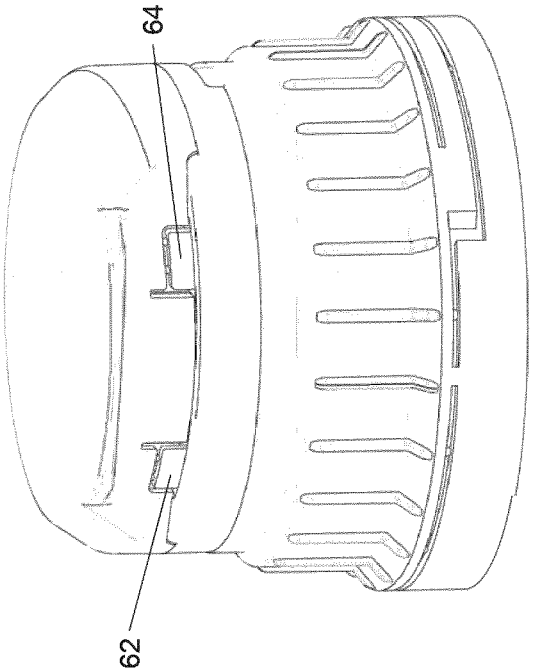


Figure 14



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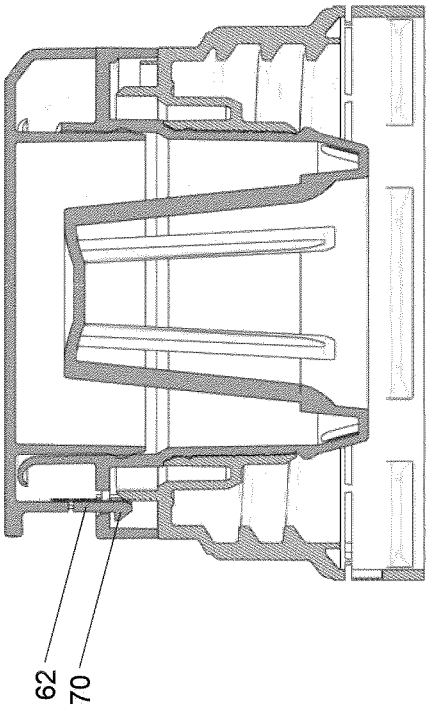

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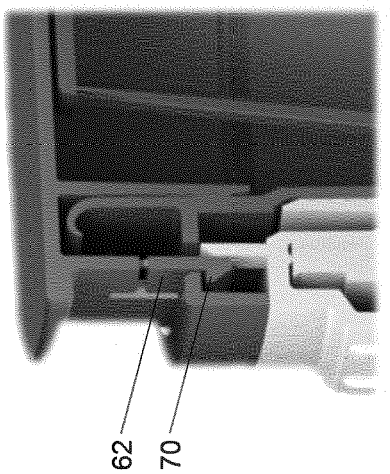

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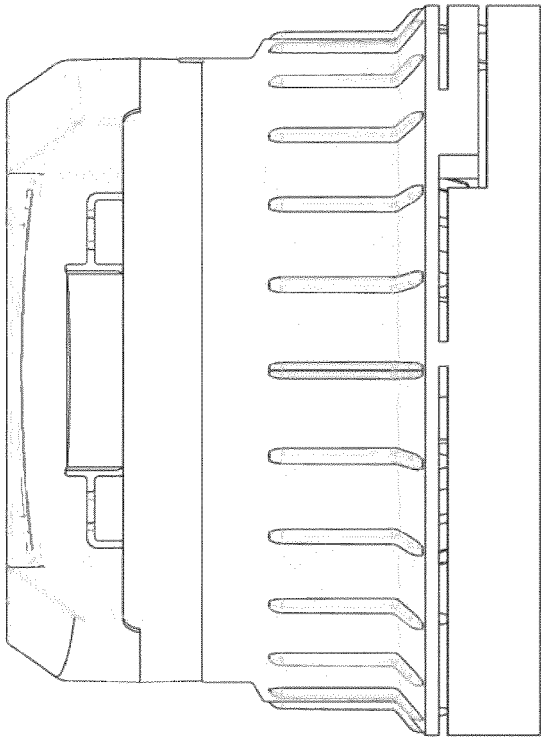

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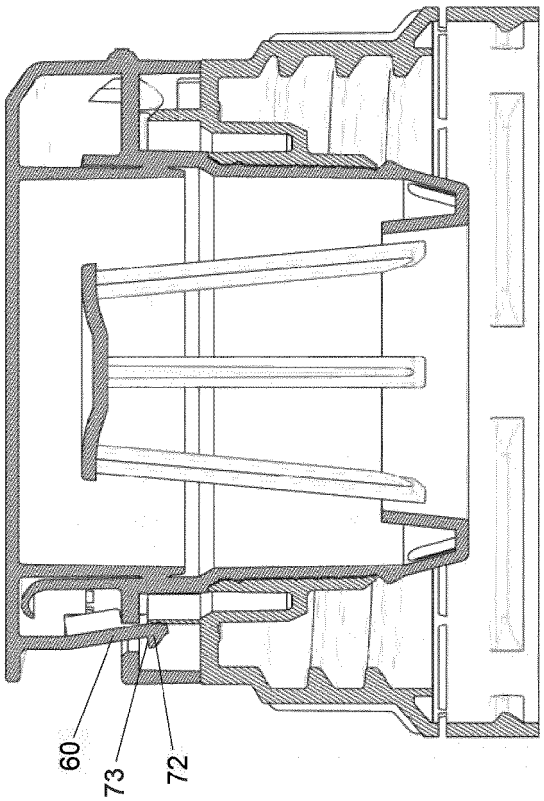

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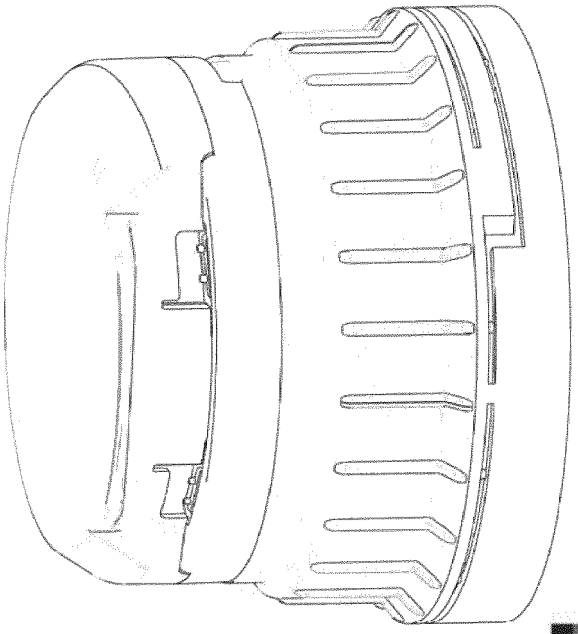
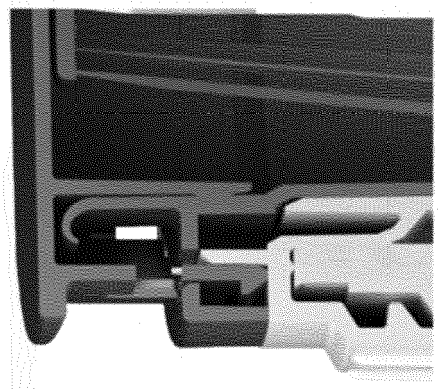


Figure 23



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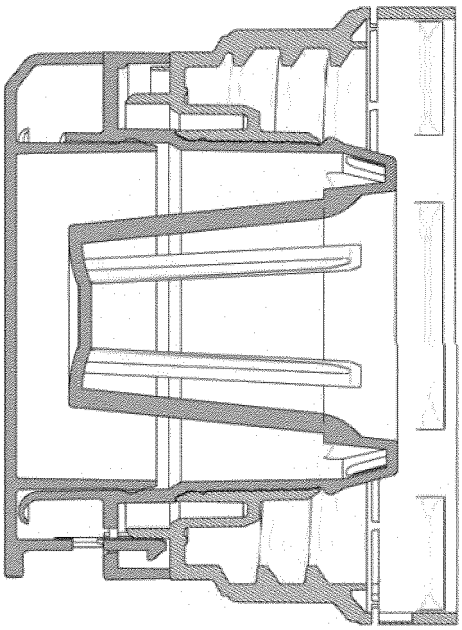

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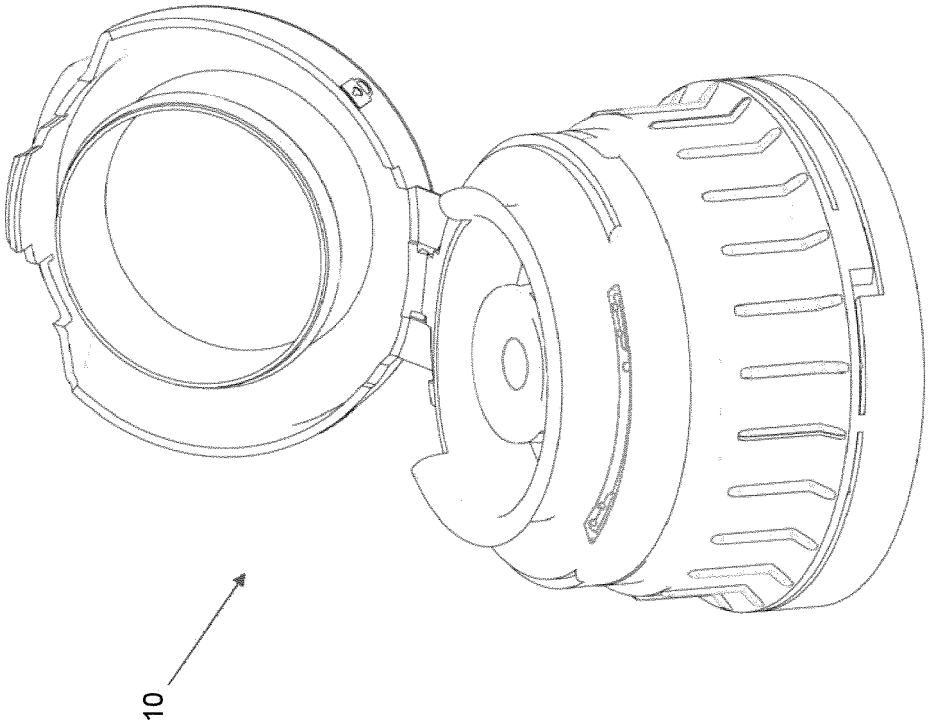

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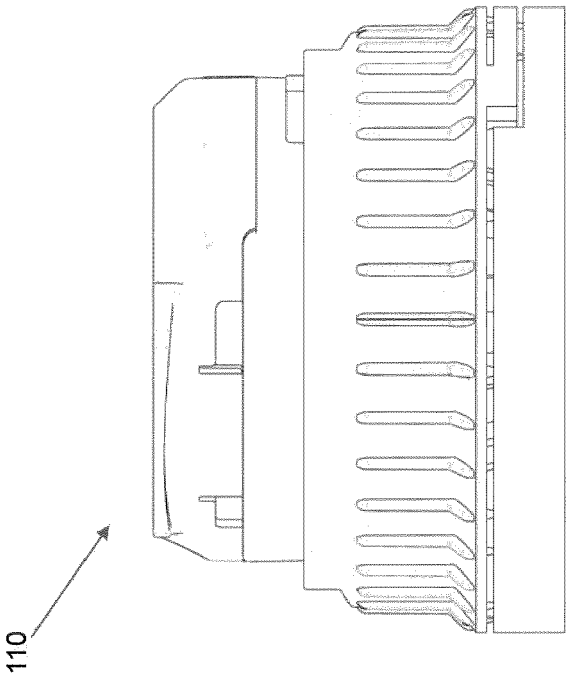

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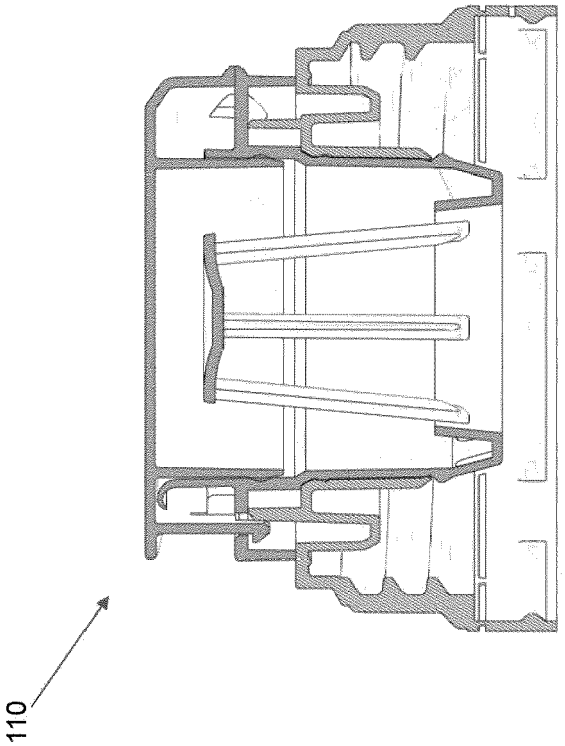

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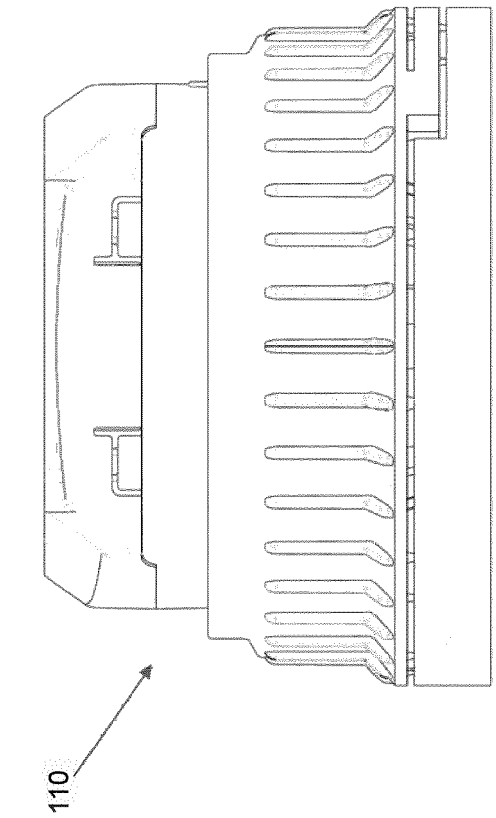

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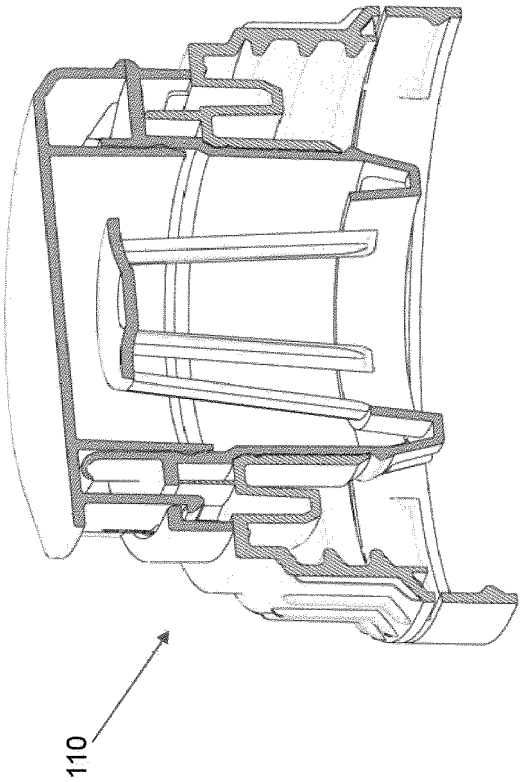

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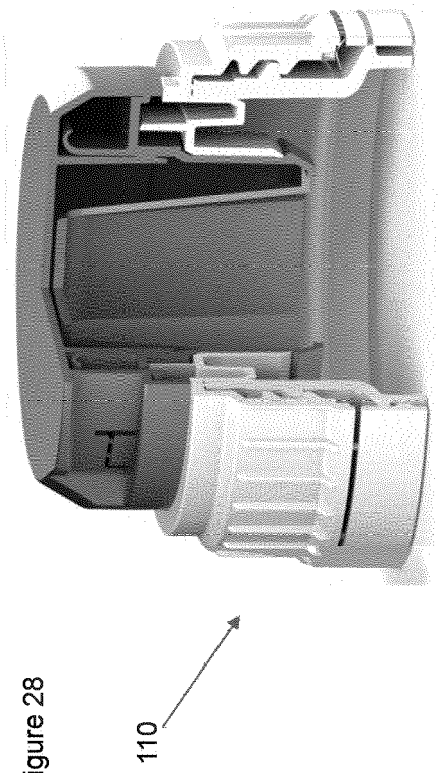

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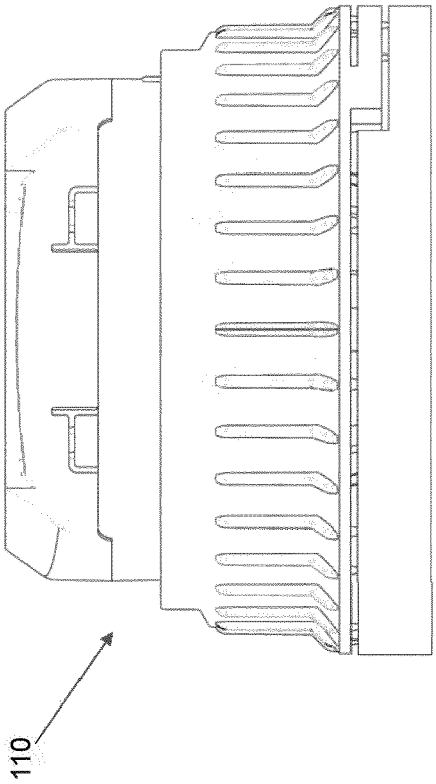

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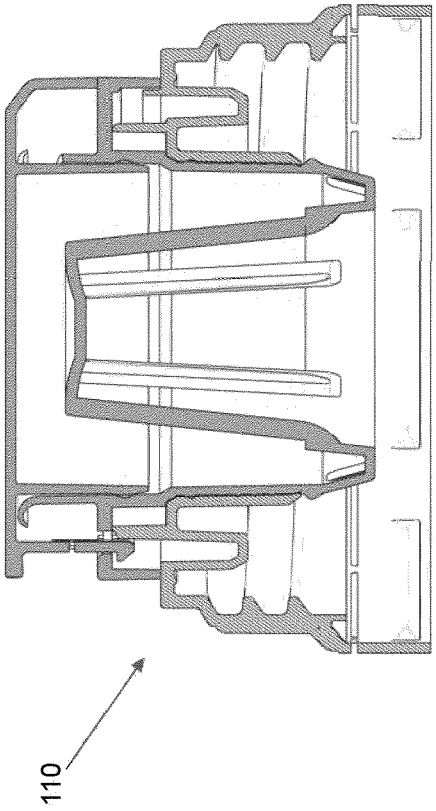

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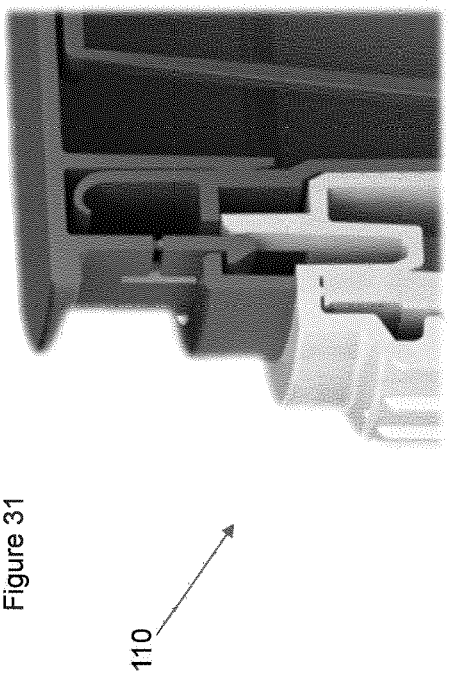

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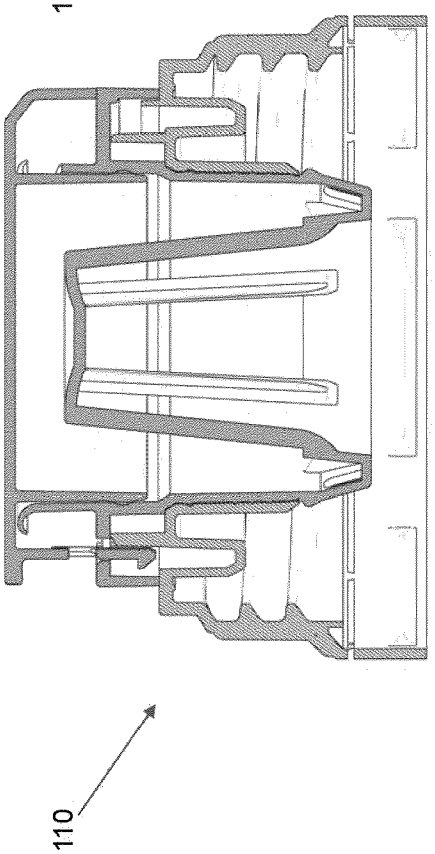

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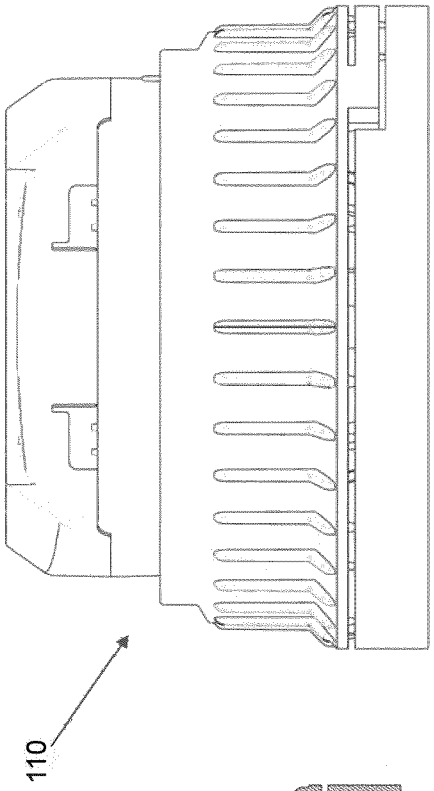

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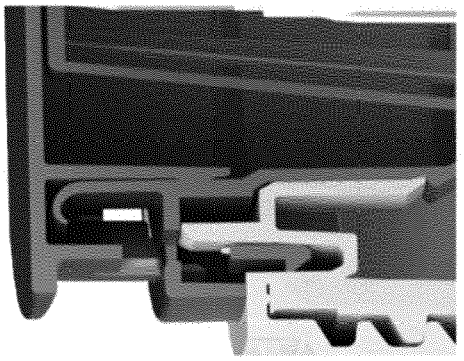

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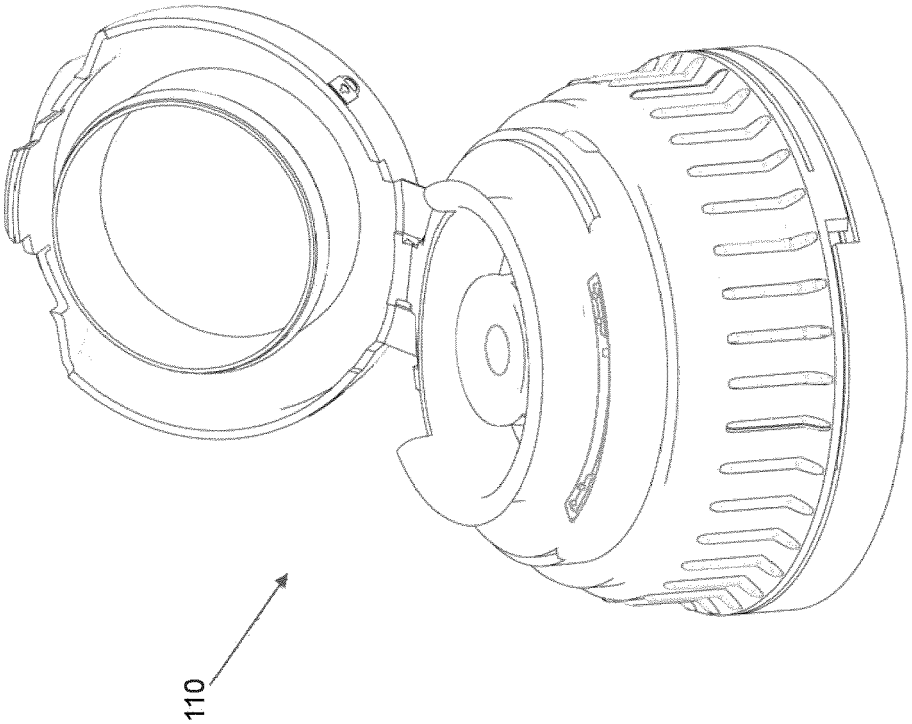

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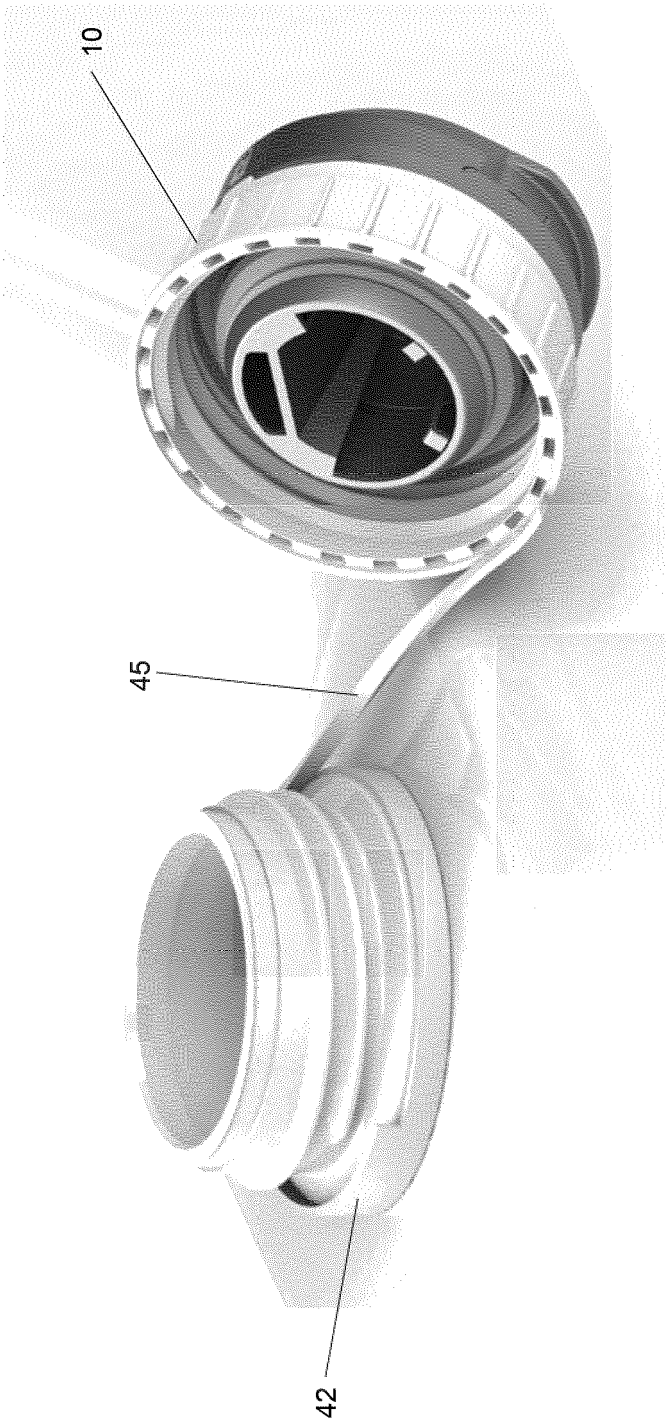

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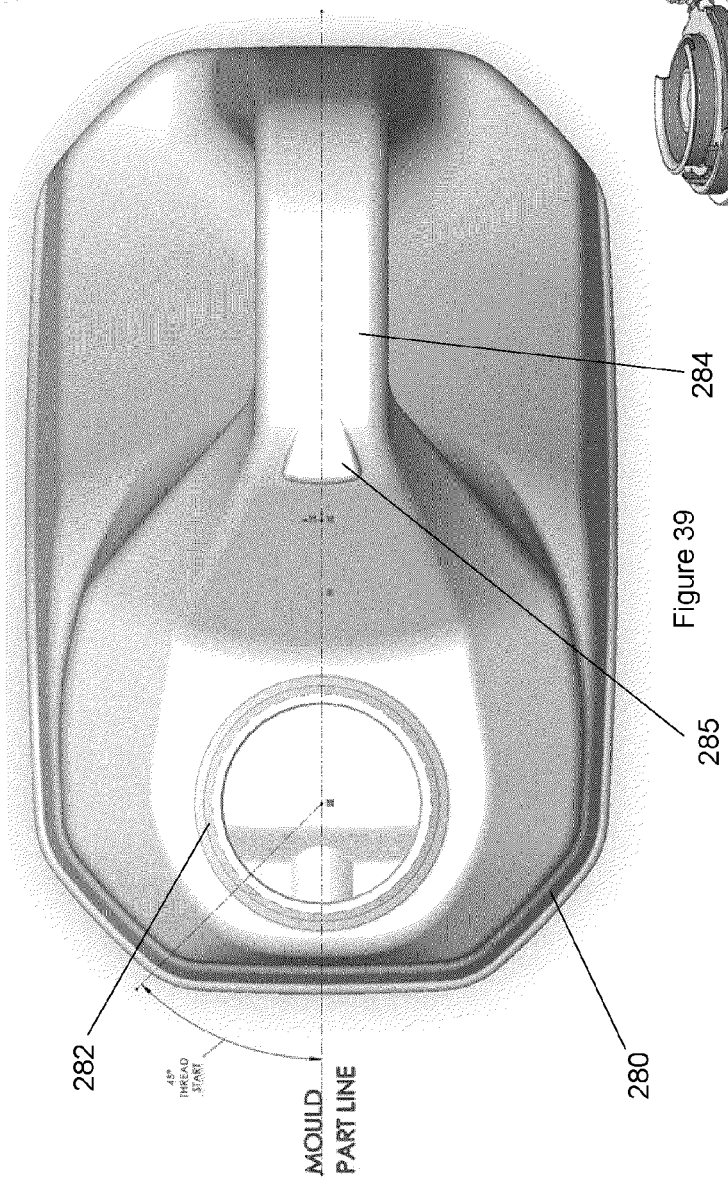

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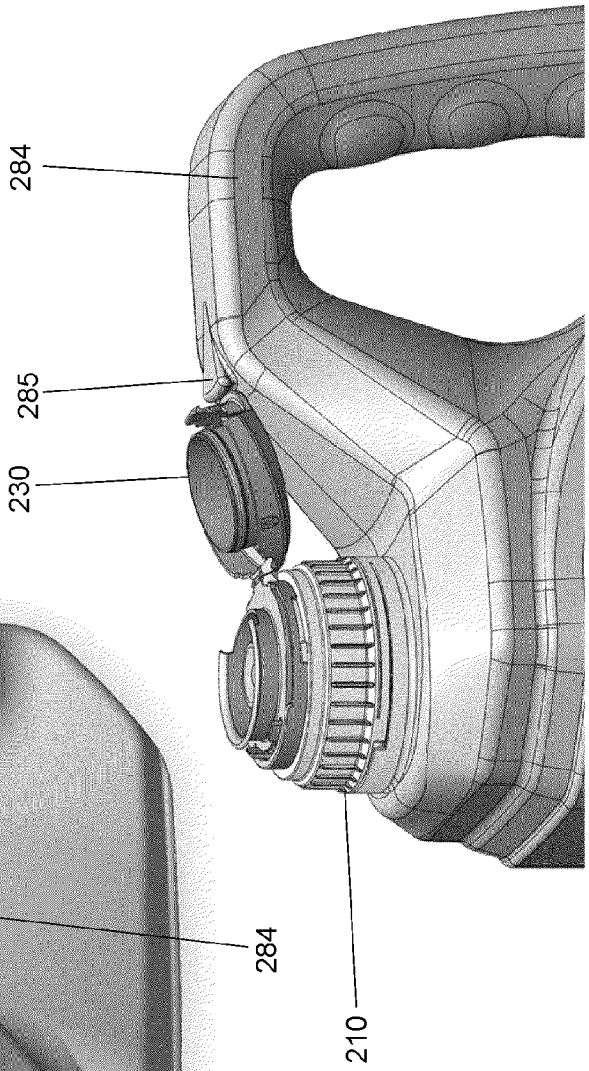

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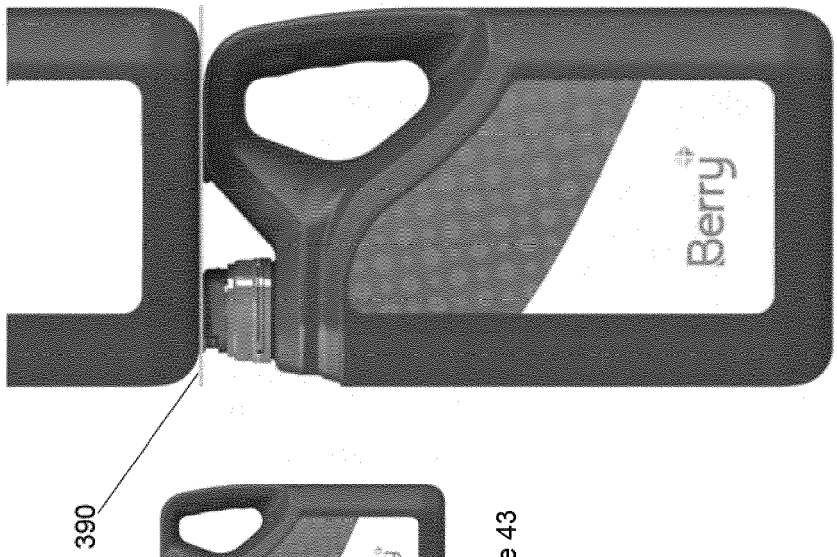

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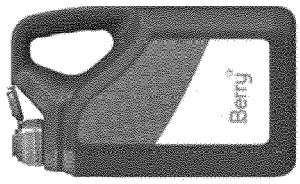

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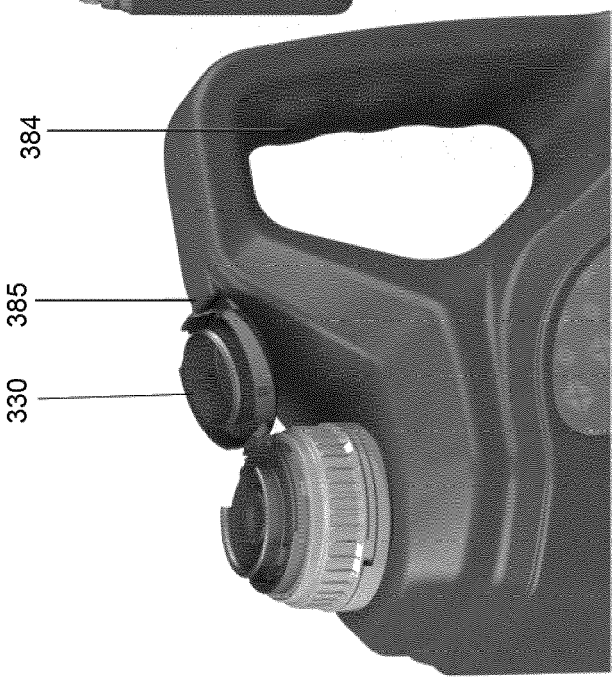

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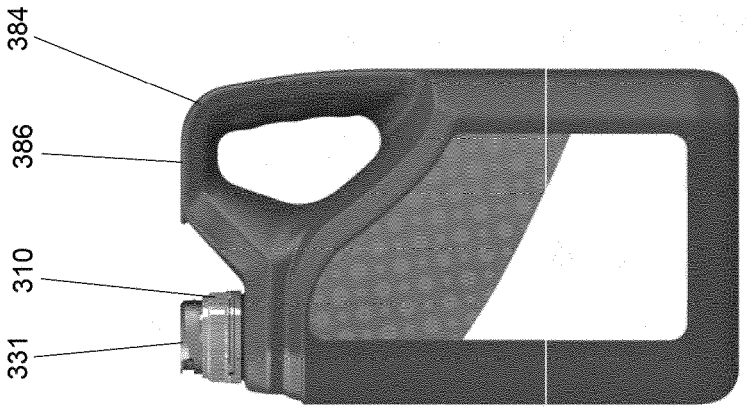

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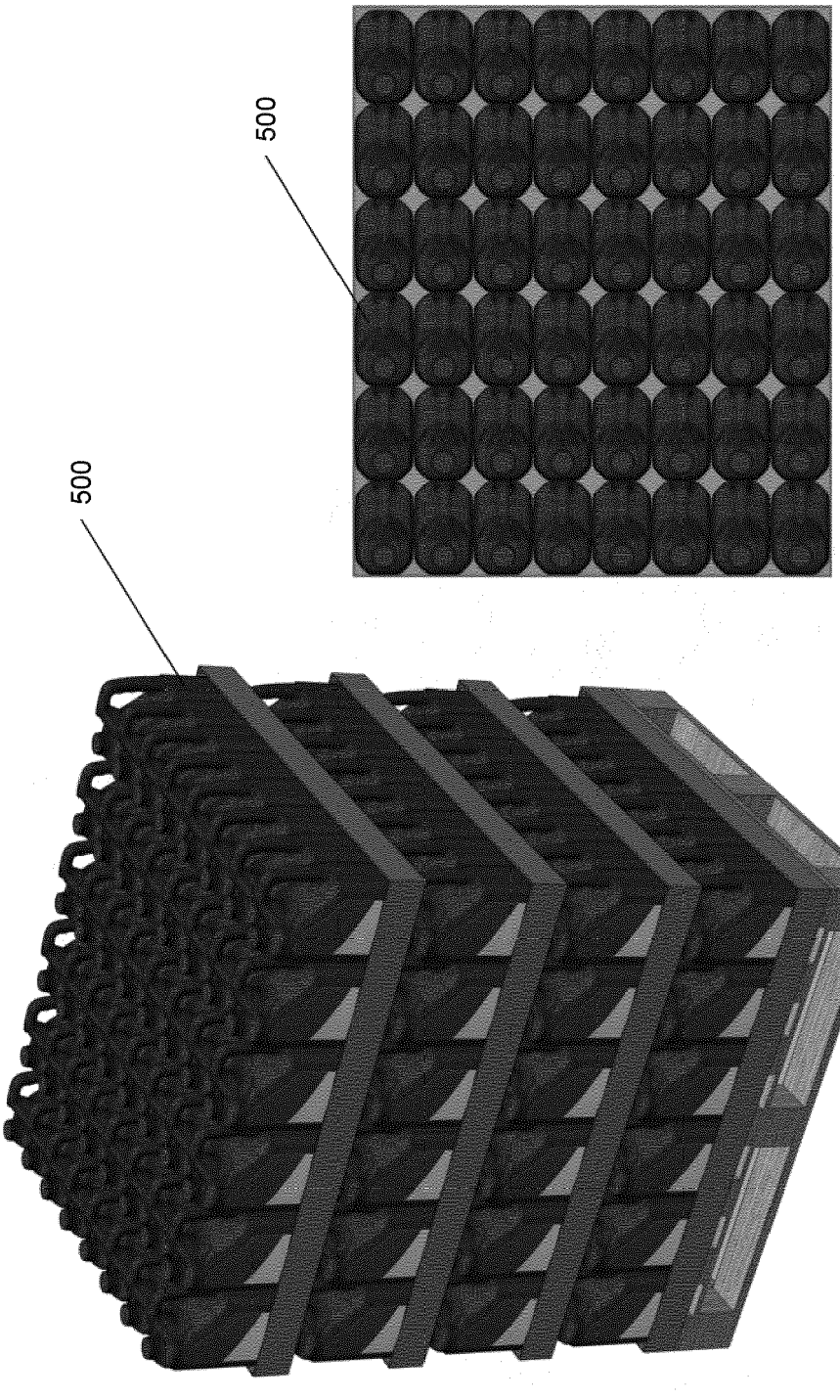

Figure 46

Figure 45