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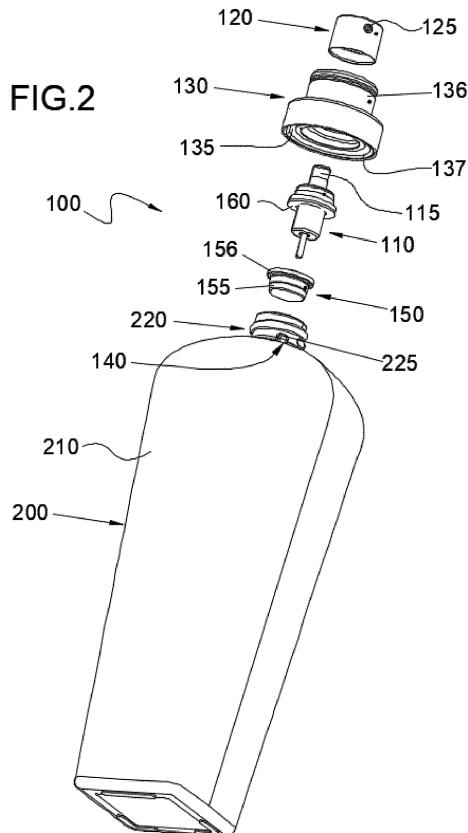
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(54) PUMP DISPENSER ASSEMBLY

(57) The pump dispenser assembly comprises a container (200) having a body (210) and a threaded neck (220), a pump device (110), an actuator (120) for actuating the pump device (110), and a threaded closure collar (130) to be screwed on the threaded neck (220) for attaching the pump device (110) to the container (200), a locking mechanism (140) comprising at least one locking member (135, 225) formed respectively in the closure collar (130) and the container neck (220) capable of interacting with each other such that the closure collar (220) is removably locked to the container neck (220), and a plug seal (150) arranged in a fluid-tight sealing manner between the pump device (110) and the container neck (220).



Description

[0001] The present disclosure relates to pump assemblies to be used in the field of perfumery, cosmetics, pharmacy, etc. for dispensing fluid products such as fragrances, perfumes, creams, alcoholic products, hydroalcoholic products, or personal care products.

BACKGROUND

[0002] Fluid dispensers are known for dispensing fluid products comprising a container and a pump device coupled to a container neck. The pump device is configured to be actuated by manual pressure on an actuator to dispense a fluid product from the container.

[0003] In existing fluid dispensers, the pump device is attached to the container by being screwed on a container threaded neck. They however suffer from a poor sealing between the pump device and the container due to the threading and finish defects. As a result, evaporation of the product occurs over a period of time. Due to such poor sealing, said fluid dispensers can only be used for short runs. Furthermore, the evaporation process is undesirably speeded up when said fluid dispensers are placed next to heat sources or in direct sunlight. In addition, the reservoir may leak out product due to poor sealing specially when the reservoir in a horizontal position or under pressure environments for example in a plane during flight.

[0004] Other fluid dispensers have been provided in which the pump device is fitted over the container neck and crimped therein by a machine around a ridge in the container neck to retain the pump device in position. Although this approach is simple and cost effective, the crimping operation of the pump device to the container requires specialized machinery which is time consuming. Furthermore, the crimping operation should be performed near the filling of the container. In addition, said fluid dispensers do not allow the container to be refilled once the pump device has been crimped.

[0005] In EP1181985 a pump dispenser is disclosed having a head and a closure for connecting to a vial access spike adapter. The vial access spike adapter has a tube body with a threaded end to screw on a threaded collar on the pump dispenser. The tube body is integrally formed with a snap ring for connecting the vial access spike adapter to a vial. Said snap ring is snapped onto a cover of the vial. The vial has a seal insert placed within the mouth thereof that seals off the vial and prevents the contents of the vial from leaking.

[0006] Provision of an intermediate part, i.e. a vial access spike adapter, having a threaded portion for screwing on a corresponding threaded portion in the pump dispenser adds undesirable complexity to the assembly while not improving sealing.

[0007] A need therefore still exists for enhanced pump dispenser assemblies with improved sealing while being simple in use and manufacture.

SUMMARY

[0008] A pump dispenser assembly is disclosed herein with which the above disadvantages are overcome and with which further advantages are obtained.

[0009] The present pump dispenser assembly comprises a container having a container body for containing a fluid product to be dispensed, such as a fragrance, perfume, lotion, cream, cologne, or a personal care product. The container further comprises a container threaded neck. At least the container neck may be made of glass. It may be preferred that the entire container, that is, both the container neck and the container body, is made of glass. Other materials are also possible.

[0010] The present pump dispenser assembly further comprises a pump device. The pump device can be operated by an actuator for dispensing the fluid product that is contained in the container body to the outside. The actuator may be for example a push button having an outlet nozzle.

[0011] A threaded closure collar is also provided. The threaded closure collar is configured to be screwed on the container threaded neck for attaching the pump device to the container. It is preferred that the threaded closure collar comprises an outer body inside of which an inner body is received and attached therein by any suitable means. The threaded closure collar has an interior thread for screwing on the container neck. In this preferred case where the closure collar is made up of two pieces, the outer body may be made of a material different from that of the inner body. For example, the outer body may be made of metal while the inner body may be made of plastics. Other materials are possible. It may be envisaged that the closure collar may be made of a single piece having an interior thread for screwing on the container neck.

[0012] The present pump dispenser assembly further comprises a locking mechanism for removably locking the closure collar to the container neck. The locking mechanism comprises at least one locking member that is formed respectively in the closure collar and the container neck. The locking members in the closure collar and the container neck are capable of interacting with each other such that the closure collar is removably locked to the container neck. This means that there is a reversible locking between the container neck and the closure collar.

[0013] In one example, the locking member of the locking mechanism comprises a projection that is formed extending radially outwardly from one of the container neck and the closure collar. In this example, the locking member of the locking mechanism also comprises a recess that is formed in the other of the container neck and the closure collar. The recess is configured for receiving the projection therein. In a preferred example, the projection is formed extending radially outwardly from the container neck and the recess is formed in the closure collar.

[0014] A plug seal is provided. The plug seal is intend-

ed to be arranged in a fluid-tight sealing manner between the pump device and the container neck, when in use. The plug seal may comprise a tubular body extending radially outwards into a flange portion. It may be preferred that the tubular body extends radially outwards into the flange portion through an inner curved portion. In use, the flange portion of the plug seal is abutted on the top of the neck of the reservoir and the tubular body is in close contact with the inner surface of the neck of the reservoir. It may be preferred that the tubular body is conical. A sealing gasket may be arranged onto the plug seal.

[0015] In some examples, the plug seal may be formed integral with the pump device. In other examples, the plug seal may be formed integral with the container neck. Still in further examples, the plug seal may be formed integral with the closure collar.

[0016] The above described pump dispenser assembly, with the pump device, the actuator, the threaded closure collar to be screwed on the container neck for attaching the pump device thereto, the mechanism for removably locking the closure collar to the container neck, and the plug seal between the pump device and the container neck, has been shown to advantageously provide both an efficient attachment of the pump device and a perfect sealing to the container.

[0017] As a result of the above configuration, the pump device is properly sealed so tightly enough that the product in the container does not evaporate and remains well stored therein without being affected by external environment thus ensuring quality over time.

BRIEF DESCRIPTION OF THE DRAWINGS

[0018] A non-limiting example of the present pump dispenser assembly will be described in the following, with reference to the appended drawings.

[0019] In the drawings:

Figure 1 is a general elevational front view of a pump dispenser assembly;

Figure 2 is a perspective exploded view of the pump dispenser assembly shown in figure 1;

Figure 3 is top sectional view of the pump dispenser assembly shown in figures 1 and 2 showing the locking mechanism; and

Figure 4 is a front sectional view of the pump dispenser assembly.

DETAILED DESCRIPTION OF EXAMPLES

[0020] The pump dispenser assembly 100 of the non-limiting example shown in the figures comprises a container 200 suitable for containing a fluid product to be dispensed, such as a perfume as shown in figures 1 and 2 of the drawings. The container 200 is made of a suitable glass, preferably a recycled glass such as a combination of post-consumer recycled (PCR) glass and post-indus-

trial recycled (PIR) glass.

[0021] The container 200 has a container body 210 and a container threaded neck 220 formed in an upper portion of the container 200. The container neck 220 is also made of glass, as with the container body 210. Other materials are of course possible for any of both parts 210, 220 of the container 200. The container body 210 may include decoration, for example using water-based paints and/or organic screen printing.

[0022] A pump device 110 is provided for dispensing the perfume contained within the container body 210 as shown in figures 2 and 4. The pump device 110 is well known in the art so no further details thereof will be given, as they are not required for a complete description and understanding by those skilled in the art.

[0023] An actuator 120 in the form of a push button is also provided. In one example, the actuator 120 may be made of aluminum with an interior made of polypropylene. Other suitable materials are also possible. The actuator 120 is configured for pushing a stem 115 of the pump device 110, as shown in figures 2 and 4, for operating the pump device 110 by the user's finger.

[0024] The actuator 120 has an outlet nozzle 125 fitted therein as shown in figure 2. The outlet nozzle 125 is configured to provide a spray pattern according to needs. As the actuator 120 is pushed by the user's finger, the stem 115 of the pump device 110 is driven to operate the pump device 110 such that the perfume in the container 200 together with air is pumped passing through the nozzle 125 causing the perfume to break up into small drops mixing with the air as a result of which the perfume is dispersed, i.e. atomized, widely in the open air.

[0025] With continued reference to figure 2 of the drawings, a threaded closure collar 130 is also provided. The threaded closure collar 130 in the example shown in the figures comprises a cylindrical outer body 136 made of metal such as aluminium, and an inner body 137 fitted therein. The inner body 137 is made of plastics such as a high-performance thermoplastic polymer, for example polyketone, glued to the outer body 136. Other different materials may be alternatively used. For example, the outer body 136 could be made of plastics and the inner body 137 could be made of wood. The outer and inner bodies 136, 137 may be made of the same or different materials.

[0026] In use, that is, in the assembled, ready for use condition shown in figure 1, threaded closure collar 130 is provided with the inner body 137 fitted around the pump device 110 and screwed on the container neck 220. The threaded closure collar 130 prevents an axial movement of the pump device 110, that is, along a longitudinal axis of the container 200, while allowing a rotational movement of the pump device 110 to the container 200.

[0027] The threaded closure collar 130 can be screwed on the container neck 220 until a given final rotational position of the threaded closure collar 130 has been reached at which it is removably locked to the container neck 220. Said final rotational position of the threaded

closure collar 130 may be an amount of rotation thereof on the container neck 220 corresponding to near the end of the threading. Removably locking of the threaded closure collar 130 to the container neck 220 is carried out by a locking mechanism 140. As shown in figures 2 and 3, the locking mechanism 140 comprises a first locking member in the form of a projection 225 and a second locking member in the form of a recess 135.

[0028] The projection 225 is formed extending radially outwardly from the container neck 220 and the recess 135 is formed in the threaded closure collar 130. The recess 135 in the threaded closure collar 130, as shown in figure 2, is configured for receiving the projection 225 in the container neck 220 so that it is removably snap fitted therein when the above mentioned final rotational position of the threaded closure collar 130 has been reached in which the threaded closure collar 130 is removably locked to the container neck 220.

[0029] The locking mechanism 140 provides safety fastening of the pump dispenser assembly 100 giving users peace of mind that the container 200 is tightly closed for example when travelling.

[0030] A plug seal 150 is also provided as shown in detail in figure 2. The plug seal 150 comprises a tubular body 155 extending radially outwards into a flange portion 156 through an inner curved portion (not shown). In use, the tubular body 155 is fitted in the container 200 between the pump device 110 and the container neck 220 in close contact with the inner surface of the latter in a fluid-tight sealing manner reliably preventing product leakage.

[0031] Although the plug seal 150 in the non-limiting example is shown as a separate part, it may be envisaged that the plug seal 150 is formed integral with the pump device 110, or formed integral with the container neck 220, or formed integral with the threaded closure collar 130, as required.

[0032] A buna sealing gasket 160 is provided. In use, the sealing gasket 160 is arranged on the plug seal 150, in particular on the flange portion 156 of the plug seal 150. The sealing gasket 160 may be made for example of polyethylene. Other materials are possible.

[0033] With a pump dispenser assembly 100 as described above a number of important benefits are obtained. The few components 110, 120, 136, 137, 150, 160, 200 of the pump dispenser assembly 100 can reversibly disassembled by the user easily, so one or more components can be separated from the rest of the components. This allows components to be replaced as required quickly and easily without special tools being required and the container 200 can be refilled. In addition, the container can be easily recycled and parts such as for example, the actuator 120, may be 100% compostable.

[0034] Although one example of the pump dispenser assembly has been disclosed herein, other alternatives, modifications, uses and/or equivalents thereof are possible. For example, many other different materials can

be used other than those cited therein. Also, many other different shapes of the component part of the pump dispenser assembly disclosed herein can be used other than those shown in the drawings.

[0035] All possible combinations of the example described herein are also covered. Thus, the scope of the present disclosure should not be limited by the examples, but should be determined only by a fair reading of the claims that follow. Reference signs related to drawings in a claim are solely for attempting to increase intelligibility and shall not be construed as limiting the scope of the claim.

15 Claims

1. Pump dispenser assembly (100) comprising:

- a container (200) having a container body (210) and a container threaded neck (220);
- a pump device (110);
- an actuator (120) arranged for actuating the pump device (110) for dispensing a fluid contained in the container body (210); and
- a threaded closure collar (130) to be screwed on the container neck (220) for attaching the pump device (110) to the container (200);
- a locking mechanism (140) comprising at least one locking member (135, 225) formed respectively in the closure collar (130) and the container neck (220) capable of interacting with each other such that the closure collar (220) is removably locked to the container neck (220); and
- a plug seal (150) to be arranged in a fluid-tight sealing manner between the pump device (110) and the container neck (220).

2. The assembly (100) of claim 1, wherein the plug seal (150) comprises a tubular body (155) extending radially outwards into a flange portion (156).

3. The assembly (100) of claim 2, wherein the tubular body (155) extends radially outwards into the flange portion (156) through an inner curved portion.

4. The assembly (100) of any of the preceding claims, wherein the plug seal (150) is formed integral with the pump device (110).

5. The assembly (100) of any of the claims 1-3, wherein the plug seal (150) is formed integral with the container neck (220).

6. The assembly (100) of any of the claims 1-3, wherein the plug seal (150) is formed integral with the closure collar (130).

7. The assembly (100) of any of the preceding claims,

wherein the closure collar (130) comprises an outer body (136) inside of which an inner body (137) is received having an interior thread for screwing on the container neck (220).

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8. The assembly (100) of claim 7, wherein the outer body is made of a material different from that of the inner body (136).
9. The assembly (100) of any of the claims 1-6, wherein the closure collar (130) is made of a single piece having an interior thread for screwing on the container neck (220). 10
10. The assembly (100) of any of the preceding claims, wherein the locking member of the locking mechanism (140) comprises a projection (225) extending radially outwardly from one of the container neck (220) and the closure collar (130), and a recess (135) formed in the other of the container neck (220) and the closure collar (130) into which the projection (225) is to be received. 15
11. The assembly (100) of claim 10, wherein the projection (225) is formed extending radially outwardly from the container neck (220). 20
12. The assembly (100) of any of the preceding claims, wherein at least the container neck (220) is made of glass. 25
13. The assembly (100) of any of the preceding claims, wherein the actuator (100) is a push button (120) having an outlet nozzle (125). 30
14. The assembly (100) of any of the preceding claims, wherein it further comprises a sealing gasket (160) to be arranged onto the plug seal (150). 35

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FIG. 1

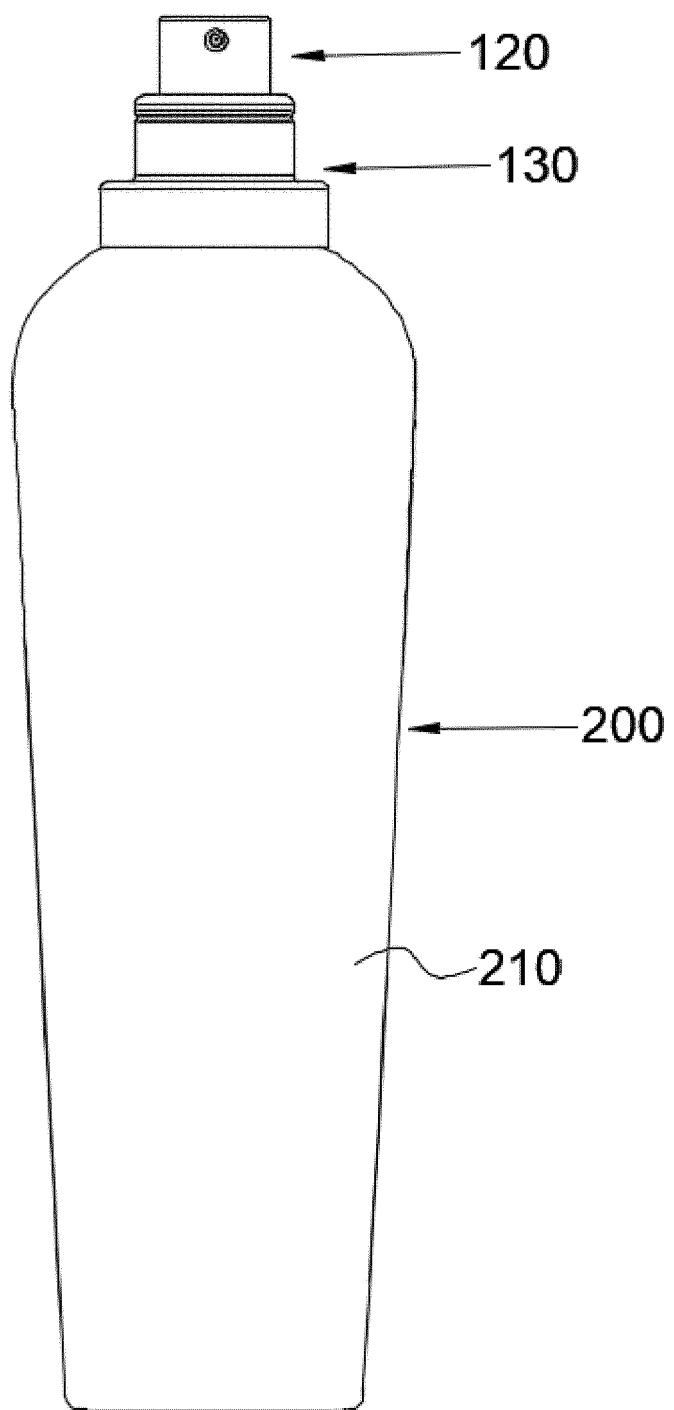


FIG.2

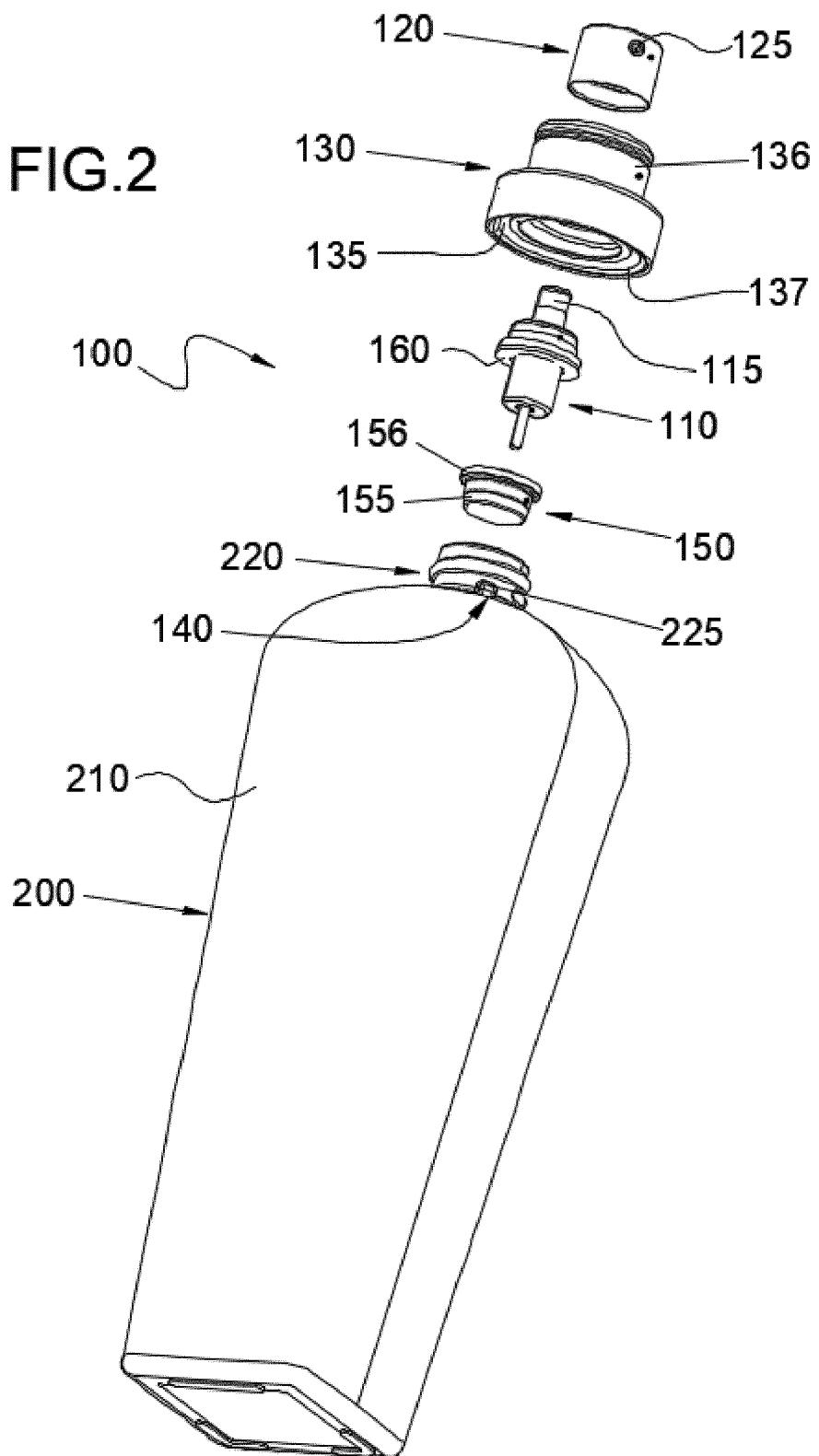


FIG.3

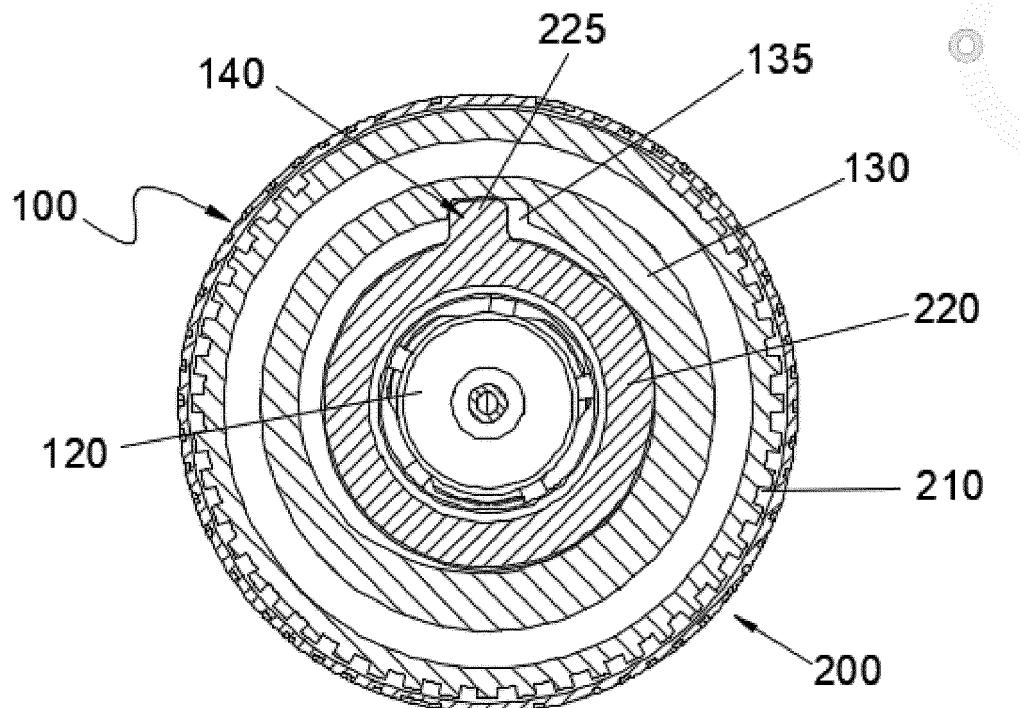
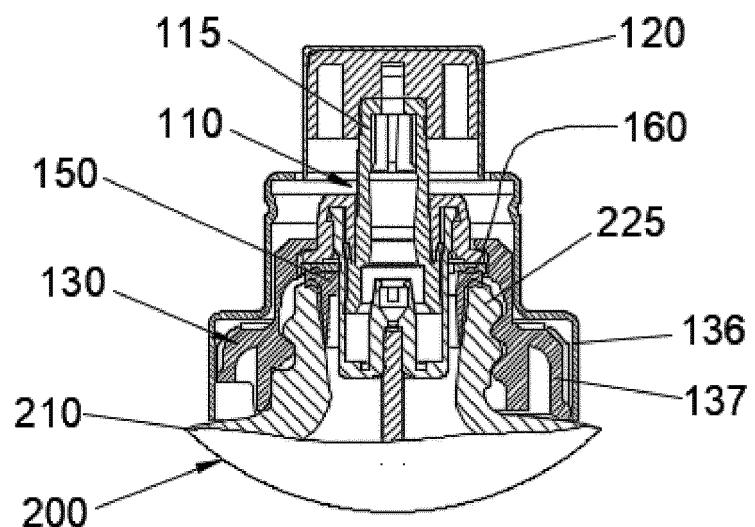


FIG.4





EUROPEAN SEARCH REPORT

Application Number

EP 21 38 2430

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35			TECHNICAL FIELDS SEARCHED (IPC)
40			B05B
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50 1	The present search report has been drawn up for all claims		
55	Place of search Munich	Date of completion of the search 25 October 2021	Examiner Gineste, Bertrand
CATEGORY OF CITED DOCUMENTS		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	
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ANNEX TO THE EUROPEAN SEARCH REPORT
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