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(54) **CHILD RESISTANT CLOSURE**

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Description

[0001] The present invention relates generally to a closure and particularly, although not exclusively, to a child-resistant aerosol cap.

[0002] Known closures include EP3075405, US7100785, GB2213476 and US4576315. Document US3866802 discloses a child-resistant aerosol cap according to the preamble of claim 1.

[0003] In some embodiments the system is designed to protect children in front of dangerous product dispensed with a standard aerosol bottle.

[0004] According to an aspect of the present invention there is provided a child-resistant aerosol cap comprising a base which is attachable onto an aerosol container, and a lid which is attachable to the base, the lid includes locking means for releasably locking the lid onto the base, characterised in that the base is provided with means for preventing rotation relative to the aerosol container.

[0005] In some embodiments the cap is a two-piece cap.

[0006] The base and lid may have cooperating screw thread formations (such as single or multi start threads); for example the base may have an external screw thread and the lid may have an internal screw thread.

[0007] The cap may include a skirt. The skirt may be provided with one or more locking formations such as internal fins, lugs, teeth or the like.

[0008] The base may be a non-removable base.

[0009] The base may be provided with one or more abutments for cooperating with the fins, lugs or the like.

[0010] In some embodiments the skirt must be deformed to move the fins, lugs or the like clear of the abutments.

[0011] In some embodiments the skirt is generally circular in section and is ovalized to move the fins, lugs or the like clear of the abutments.

[0012] The base may be provided with two abutments/locking teeth/lugs or the like and/or the lid may be provided with two fins, teeth lugs or the like.

[0013] In some embodiments the abutments are positioned approximately diametrically opposite to each other and/or the fins, lugs or the like may be positioned approximately diametrically opposite to each other.

[0014] The cap skirt may be provided with one or more pressing pads for squeezing the skirt. In some embodiments the cap skirt is provided with two pads which are approximately diametrically opposite to each other.

[0015] The base may be provided with a snap bead for engaging an aerosol container.

[0016] In some embodiments the base is configured to engage an aerosol valve.

[0017] The cap may be generally dome-shaped. In some embodiments the cap is generally frusto conical with a generally flat top.

[0018] The means for preventing rotation relative to the aerosol container may one or more (radial) ribs.

[0019] In some embodiments the lid has an outer side

skirt and locking means are provided at or towards a free end of the outer side skirt. The lid may also comprise an inner skirt (which may depend from the interior of the outer skirt, for example part way along, such as approximately half way along), and the inner skirt may carry the screw thread formation.

[0020] The present invention also provides an aerosol having a cap as defined herein.

[0021] Examples of aerosols include deodorants, cosmetics, pharmaceuticals, chemicals and the like.

[0022] Different aspects and embodiments of the invention may be used separately or together.

[0023] Further particular and preferred aspects of the present invention are set out in the accompanying independent and dependent claims. Features of the dependent claims may be combined with the features of the independent claims as appropriate, and in combination other than those explicitly set out in the claims. Each aspect can be carried out independently of the other aspects or in combination with one or more of the other aspects.

[0024] The present invention will now be more particularly described, by way of example, with reference to the accompanying drawings.

[0025] The example embodiments are described 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 alternative forms and should not be construed as limited to the examples set forth herein.

[0026] 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.

[0027] 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 idealised or overly formal sense unless expressly so defined herein.

[0028] In the following description, all orientational terms, such as upper, lower, radially and axially, are used in relation to the drawings and should not be interpreted as limiting on the invention.

[0029] Referring first to Figures 1 to 5 there is shown a child-resistant aerosol cap generally indicated 10. The cap 10 comprises a base 15 and a lid 20.

[0030] Referring now also to Figures 6 to 10 the base 15 is further described. The base is intended to be

snapped on an aerosol bottle/can/container (see below).

[0031] The base 15 comprises a generally L-section annular collar 25 which comprises a generally axial leg 26 and a radial leg 27 (it is inclined slightly upwardly) that provides a step. At the centre of the collar a generally L-section neck 30 upstands and comprises an axial leg 31 and a radial leg 32.

[0032] The axial leg 31 is equipped with a thread 33 (the leg effectively comprises external skirt and the threads extend around the skirt) to collaborate with the threads of the lid (see below).

[0033] The radial leg/step 27 is equipped with two anti-rotation teeth 28, 29 which are positioned, in this embodiment, approximately diametrically opposite each other. Each of the teeth 28, 29 comprises a generally flat abutment face 28a, 29a and a curved/inclined face 28b, 29b.

[0034] The interior of the leg 31 is provided with an annular snap bed 34, which in this embodiment is just above the intersection of the leg 31 with the leg 27.

[0035] The underside of the leg 32 is provided with a plurality of radial ribs 35.

[0036] The lid 20 is shown in Figures 11 to 14. The lid 15 comprises a flat top plate 40 from the periphery of which depends a curved outer sidewall/skirt 45.

[0037] Approximately half way down the outer sidewall 45 an axial inner skirt 50 depends from the interior thereof. Towards the free end of the inner skirt 50 an internal screw thread 55 is provided and cooperates with the thread 33 to allow the lid to be screwed onto the base.

[0038] At or towards the free end of the outer skirt 45 the interior is provided with two anti-rotation teeth 65, 70 which are positioned, in this embodiment, approximately diametrically opposite each other. Each of the teeth 65, 70 comprises a generally flat abutment face 65a, 70a and a curved/inclined face 65b, 70b.

[0039] The outer skirt 45 is also provided with two press/squeeze zones/pads 46, 47. The pads 46, 47 are positioned diametrically opposite to each other and circumferentially offset from the teeth 65, 70 so that the pads are between the teeth (the pads and the teeth are therefore a little like the four points on a compass, with approximately 90 degrees spacing as they alternate tooth-pad-tooth-pad). This means that when the pads are moved towards each other the skirt ovalises; in turn this means that the two areas of the skirt which carry the teeth 65, 70 are moved radially outwards, as represented by A.

[0040] In use the cap can be screwed onto the base using the threads 33, 55. In the screwing on direction the inclined faces of the teeth can pass over each other. However, in the unscrewing direction abutment faces of two pairs of the teeth will prevent rotation. To remove the cap the pads must first be pressed to allow the teeth to pass each other in a squeeze-and-turn operation.

[0041] Figures 15 to 18 show the cap 10 attached to an aerosol container 75. The base is snapped on the container without the possibility to be removed. The base is shown fitted onto a valve/mounting cup that receives a valve (not shown) and an actuator/nozzle 82, with the

snap bead 34 clipped under the free end of the roll-top cup wall 81. The valve cup end 81 is therefore sandwiched between the rolled end of the can 83 and the leg 31.

5 [0042] The base leg 26 extends down to the domed end 85 of the metal container/can 90.

[0043] Figure 19 shows a child-resistant aerosol 101.

10 [0044] The aerosol 101 comprises a can 102 and a cap 103. The cap 103 comprises a spout/nozzle 104 and an actuator 105 for dispensing product from the nozzle.

[0045] In the position shown in the left hand image the actuator cannot be depressed, thereby preventing operation.

15 [0046] In order to be able to use the actuator the cap must be rotated/twisted to the position shown in the right hand image, so as to cause the actuator to rise.

[0047] The cap is prevented from rotation by a child-resistant locking mechanism, which in this embodiment uses a similar squeeze-and-turn approach to the cap on Figures 1 to 18. For this purpose a pair of pressing pads 106 (only one is shown) are provided. The skirt of the cap must be pressed in to disengage locking formations (teeth, lugs etc) from corresponding formations provided either on the can itself, or an intermediate piece such as a non-removable base (as used in relation to the cap of Figures 1 to 18).

20 [0048] Although illustrative embodiments of the invention have been disclosed in detail 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 as defined by the appended claims.

Claims

1. A child-resistant aerosol cap (10) comprising a base (15) which is attachable onto an aerosol container, and a lid (20) which is attachable to the base, the lid includes locking means (65, 70) for releasably locking the lid onto the base, **characterised in that** the base is provided with means (35) for preventing rotation relative to the aerosol container.
2. A cap (10) as claimed in claim 1, in which the base and lid have cooperating screw thread formations (55, 33).
3. A cap (10) as claimed in claim 1 or claim 2, in which the lid includes a skirt (45).
4. A cap (10) as claimed in claim 3, in which the skirt (45) is provided with one or more internal fins, lugs or the like (65, 70) and the base is provided with one or more abutments (28, 29) for cooperating with the fins, lugs or the like.

5. A cap (10) as claimed in claim 4, in which the skirt (45) must be deformed to move the fins, lugs or the like (65, 70) clear of the abutments (28, 29).
6. A cap (10) as claimed in claim 5, in which the skirt (45) is generally circular in section and is ovalized to move the fins, lugs or the like (65, 70) clear of the abutments (28, 29).
7. A cap (10) as claimed in any of claims 4 to 6, in which the base (15) is provided with two abutments (28, 29) and the lid is provided with two fins, lugs or the like (65, 70).
8. A cap (10) as claimed in claim 7, in which the abutments (28, 29) are positioned approximately diametrically opposite to each other and the fins, lugs or the like (65, 70) are positioned approximately diametrically opposite to each other.
9. A cap (10) as claimed in any preceding claim, in which a cap skirt (45) is provided with one or more pressing pads (46) for squeezing the skirt.
10. A cap (10) as claimed in any preceding claim, in which the base (15) is provided with a snap bead (34) for engaging an aerosol container.
11. A cap (10) as claimed in any preceding claim, in which the base (15) engages a mounting cup (80) that receives an aerosol valve.
12. A cap (10) as claimed in any preceding claim, in which the cap is generally dome-shaped.
13. A cap (10) as claimed in any preceding claim, in which the base is provided with one or more ribs (35) for preventing rotation relative to the aerosol container.
14. A cap (10) as claimed in any preceding claim, in which the lid has an outer side skirt (45) and locking means are provided at or towards a free end of the outer side skirt.
15. A cap (10) as claimed in claim 14, in which the lid also comprises an inner skirt (50).
16. A cap (10) as claimed in claim 15, in which the inner skirt (50) carries a screw thread formation (55).
17. A cap (10) as claimed in claim 15 or claim 16, in which the inner skirt (50) depends from the interior of the outer skirt (45).
18. A cap (103) as claimed in claim I, the cap (103) comprises a nozzle (104) and an actuator (105) for dispensing product from the nozzle, the cap is rotatable

from a position in which the actuator cannot be depressed, thereby preventing operation, and a position which causes the actuator to rise, and the cap is prevented from rotation by a child-resistant squeeze-and-turn locking mechanism.

19. An aerosol having a cap (10) as claimed in any preceding claim.

Patentansprüche

1. Kindersichere Aerosolkappe (10), umfassend eine Basis (15), die an einen Aerosolbehälter befestigbar ist, und einen Deckel (20), der an der Basis befestigbar ist, wobei der Deckel Verriegelungsmittel (65, 70) zum lösbaren Verriegeln des Deckels an der Basis aufweist, **dadurch gekennzeichnet, dass** die Basis mit Mitteln (35) zum Verhindern einer Drehung bezüglich des Aerosolbehälters versehen ist.
2. Kappe (10) nach Anspruch 1, wobei die Basis und der Deckel zusammenwirkende Schraubgewindeausbildungen (55, 33) aufweisen.
3. Kappe (10) nach Anspruch 1 oder Anspruch 2, wobei der Deckel eine Schürze (45) aufweist.
4. Kappe (10) nach Anspruch 3, wobei die Schürze (45) mit einer oder mehreren inneren Finnen, Ansätzen oder dergleichen (65, 70) versehen ist und die Basis mit einer oder mehreren Anlageflächen (28, 29) zum Zusammenwirken mit den Finnen, Ansätzen oder dergleichen versehen ist.
5. Kappe (10) nach Anspruch 4, wobei die Schürze (45) verformt werden muss, um die Finnen, Ansätze oder dergleichen (65, 70) von den Anlageflächen (28, 29) weg zu bewegen.
6. Kappe (10) nach Anspruch 5, wobei die Schürze (45) im Querschnitt allgemein kreisförmig ist und ovalisiert wird, um die Finnen, Ansätze oder dergleichen (65, 70) von den Anlageflächen (28, 29) weg zu bewegen.
7. Kappe (10) nach einem der Ansprüche 4 bis 6, wobei die Basis (15) mit zwei Anlageflächen (28, 29) versehen ist und der Deckel mit zwei Finnen, Ansätzen oder dergleichen (65, 70) versehen ist.
8. Kappe (10) nach Anspruch 7, wobei die Anlageflächen (28, 29) ungefähr diametral gegenüber einander positioniert sind und die Finnen, Ansätze oder dergleichen (65, 70) ungefähr diametral gegenüber einander positioniert sind.
9. Kappe (10) nach einem vorherigen Anspruch, wobei

eine Kappenschürze (45) mit Presspads (46) zum Zusammendrücken der Schürze versehen ist.

10. Kappe (10) nach einem vorherigen Anspruch, wobei die Basis (15) mit einem Schnappwulst (34) zur In-eingriffnahme des Aerosolbehälters versehen ist. 5
11. Kappe (10) nach einem vorherigen Anspruch, wobei die Basis (15) einen Montagebecher (80) in Eingriff nimmt, der ein Aerosolventil aufnimmt. 10
12. Kappe (10) nach einem vorherigen Anspruch, wobei die Kappe allgemein kuppelförmig ist.
13. Kappe (10) nach einem vorherigen Anspruch, wobei die Basis mit einer oder mehreren Rippen (35) zum Verhindern einer Drehung relativ zum Aerosolbehälter versehen ist. 15
14. Kappe (10) nach einem vorherigen Anspruch, wobei der Deckel eine Außenseitenschürze (45) aufweist und Verriegelungsmittel an oder zu einem freien Ende der Außenseitenschürze vorgesehen sind. 20
15. Kappe (10) nach Anspruch 14, wobei der Deckel auch eine Innenschürze (50) umfasst. 25
16. Kappe (10) nach Anspruch 15, wobei die Innenschürze (50) eine Schraubgewindeausbildung (55) trägt. 30
17. Kappe (10) nach Anspruch 15 oder Anspruch 16, wobei die Innenschürze (50) von dem Inneren der Außenschürze (45) abhängig ist. 35
18. Kappe (103) nach Anspruch 1, wobei die Kappe (103) eine Düse (104) und einen Aktuator (105) zum Abgeben eines Produkts aus der Düse umfasst, wobei die Kappe aus einer Position, in der der Aktuator nicht gedrückt werden kann, wodurch eine Betätigung verhindert wird, und einer Position, die ein Anheben des Aktuators bewirkt, drehbar ist und ein Drehen der Kappe durch einen kindersicheren Zusammendrück-Dreh-Verschlussmechanismus verhindert wird. 40 45
19. Aerosol mit einer Kappe (10) nach einem vorhergehenden Anspruch. 50

Revendications

1. Capuchon d'aérosol à l'épreuve des enfants (10) comprenant une base (15) qui peut être fixée sur un récipient d'aérosol, et un couvercle (20) qui peut être fixé à la base, le couvercle comprenant des moyens de verrouillage (65, 70) pour verrouiller de manière amovible le couvercle sur la base, **caractérisé en** 55

ce que la base est pourvue de moyens (35) pour empêcher la rotation par rapport au récipient d'aérosol.

2. Capuchon (10) selon la revendication 1, la base et le couvercle ayant des formations de filetage de vis (55, 33) coopérantes.
3. Capuchon (10) selon la revendication 1 ou la revendication 2, le couvercle comprenant une jupe (45).
4. Capuchon (10) selon la revendication 3, la jupe (45) étant pourvue d'une ou de plusieurs ailettes internes, ergots ou analogues (65, 70) et la base étant pourvue d'une ou de plusieurs butées (28, 29) pour coopérer avec les ailettes, ergots ou analogues.
5. Capuchon (10) selon la revendication 4, la jupe (45) devant être déformée pour dégager les ailettes, ergots ou analogues (65, 70) des butées (28, 29).
6. Capuchon (10) selon la revendication 5, la jupe (45) étant de section généralement circulaire et étant ovalisée pour dégager les ailettes, ergots ou analogues (65, 70) des butées (28, 29).
7. Capuchon (10) selon l'une quelconque des revendications 4 à 6, la base (15) étant pourvue de deux butées (28, 29) et le couvercle étant pourvu de deux ailettes, ergots ou analogues (65, 70).
8. Capuchon (10) selon la revendication 7, les butées (28, 29) étant positionnées approximativement diamétralement opposées l'une à l'autre et les ailettes, ergots ou analogues (65, 70) étant positionnés approximativement diamétralement opposés l'un à l'autre.
9. Capuchon (10) selon l'une quelconque des revendications précédentes, une jupe de capuchon (45) étant pourvue d'un ou de plusieurs tampons de pression (46) pour presser la jupe.
10. Capuchon (10) selon l'une quelconque des revendications précédentes, la base (15) étant pourvue d'un bourrelet d'encliquetage (34) destiné à venir en prise avec un récipient d'aérosol.
11. Capuchon (10) selon l'une quelconque des revendications précédentes, la base (15) venant en prise avec une coupelle de montage (80) qui reçoit une soupape d'aérosol.
12. Capuchon (10) selon l'une quelconque des revendications précédentes, le capuchon étant généralement en forme de dôme.
13. Capuchon (10) selon l'une quelconque des revendi-

cations précédentes, la base étant pourvue d'une ou de plusieurs nervures (35) pour empêcher la rotation par rapport au récipient d'aérosol.

14. Capuchon (10) selon l'une quelconque des revendications précédentes, le couvercle ayant une jupe latérale extérieure (45) et des moyens de verrouillage étant fournis au niveau de ou vers une extrémité libre de la jupe latérale extérieure. 5
- 10
15. Capuchon (10) selon la revendication 14, le couvercle comprenant également une jupe intérieure (50). 10
16. Capuchon (10) selon la revendication 15, la jupe intérieure (50) portant une formation de filetage de vis (55) . 15
17. Capuchon (10) selon la revendication 15 ou la revendication 16, la jupe intérieure (50) dépendant de l'intérieur de la jupe extérieure (45). 20
18. Capuchon (103) selon la revendication 1, le capuchon (103) comprenant une buse (104) et un actionneur (105) pour distribuer un produit à partir de la buse, le capuchon pouvant tourner à partir d'une position dans laquelle l'actionneur ne peut pas être enfoncé, empêchant ainsi le fonctionnement, et une position qui fait monter l'actionneur, et le capuchon étant empêché de tourner par un mécanisme de verrouillage par pression et rotation à l'épreuve des enfants. 25
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19. Aérosol ayant un capuchon (10) selon l'une quelconque des revendications précédentes. 35

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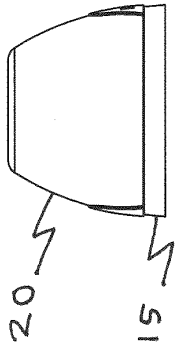


Figure 4

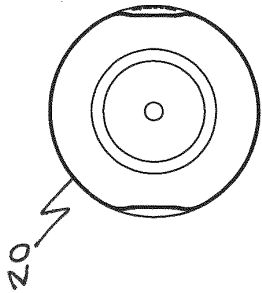


Figure 5

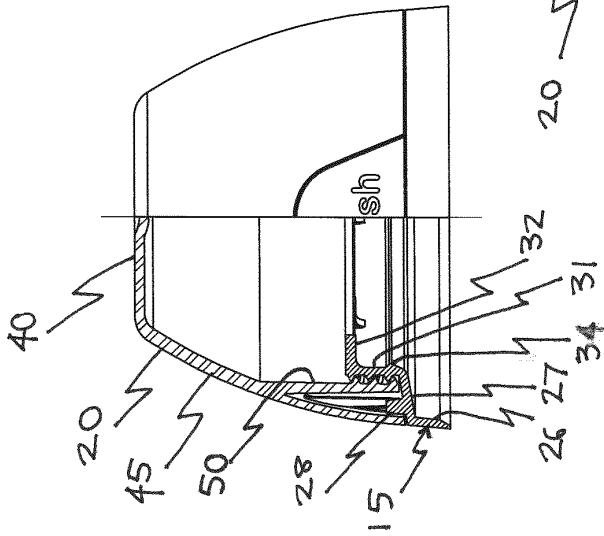


Figure 1

Figure 2

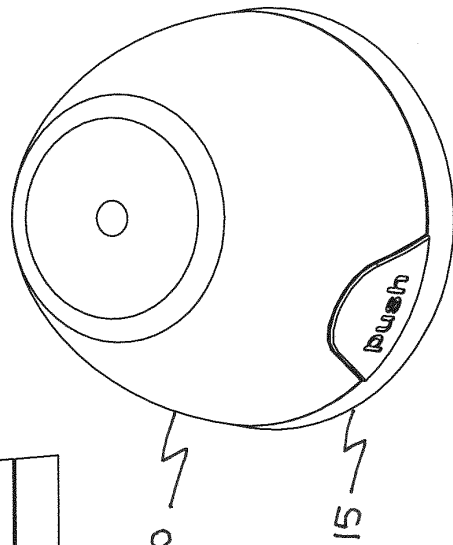
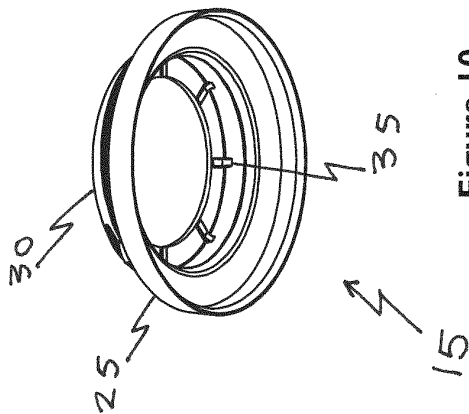
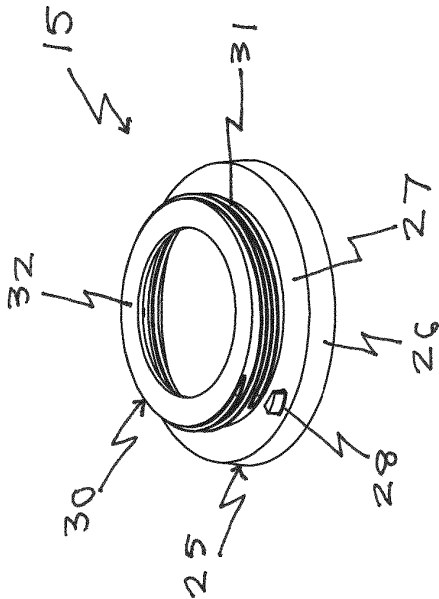
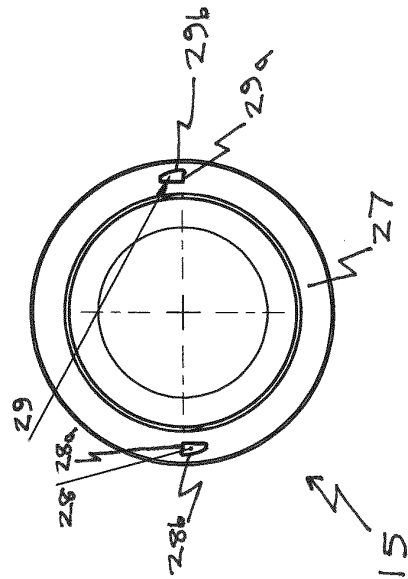
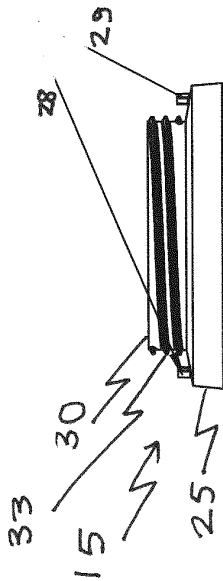
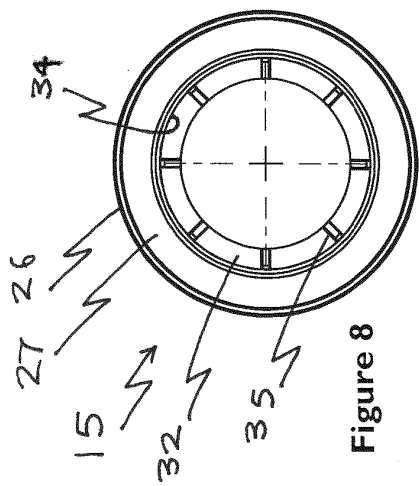


Figure 3



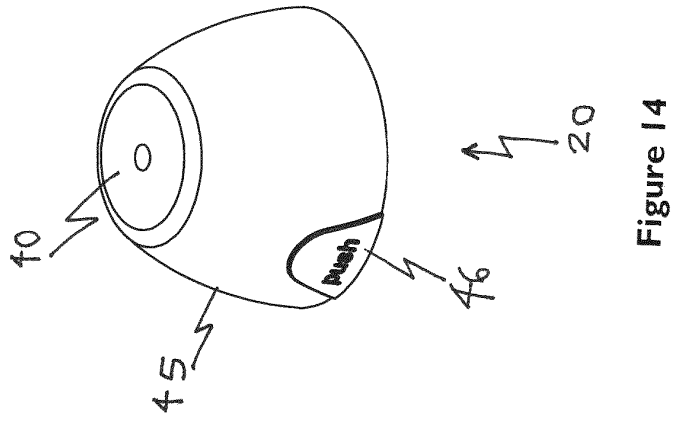


Figure 14

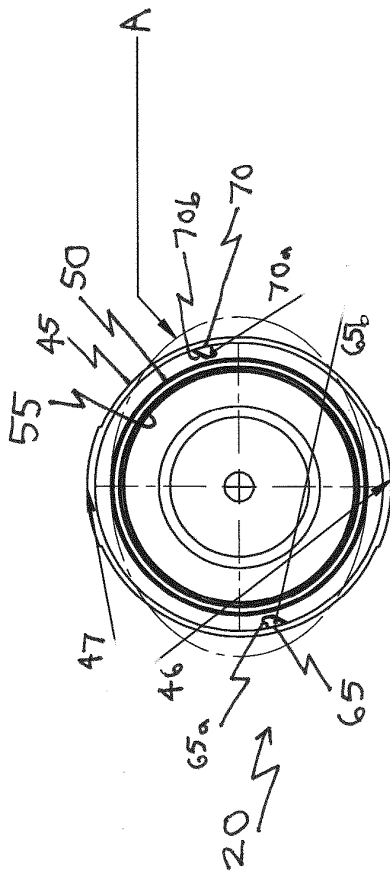


Figure 13

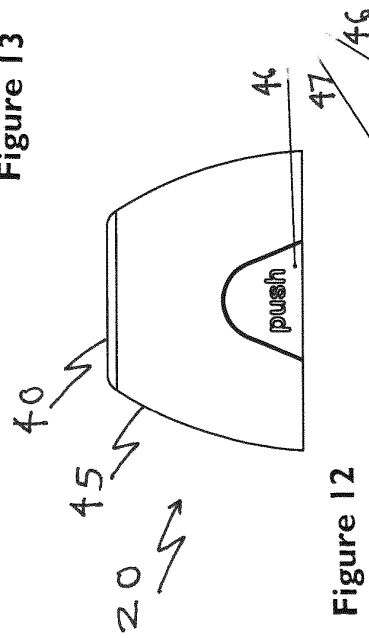


Figure 12

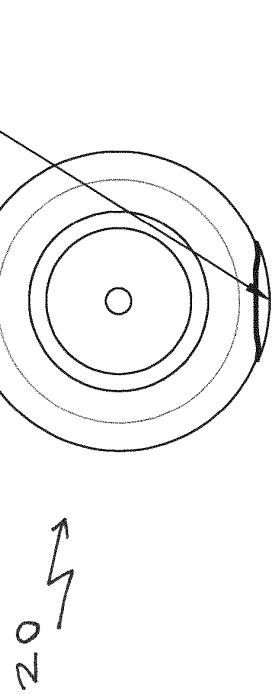


Figure 11

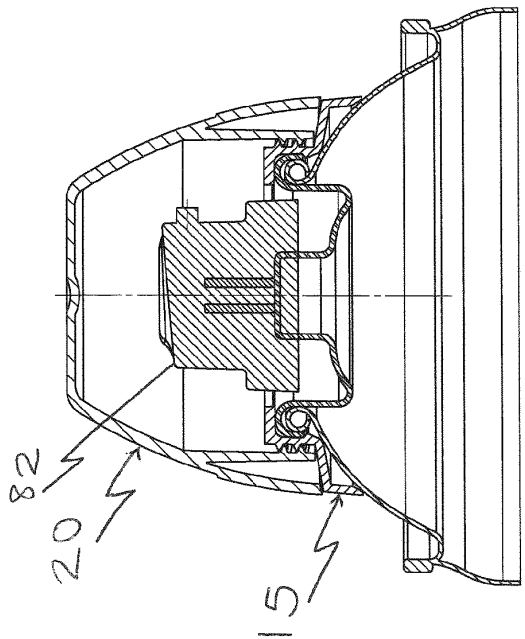


Figure 17

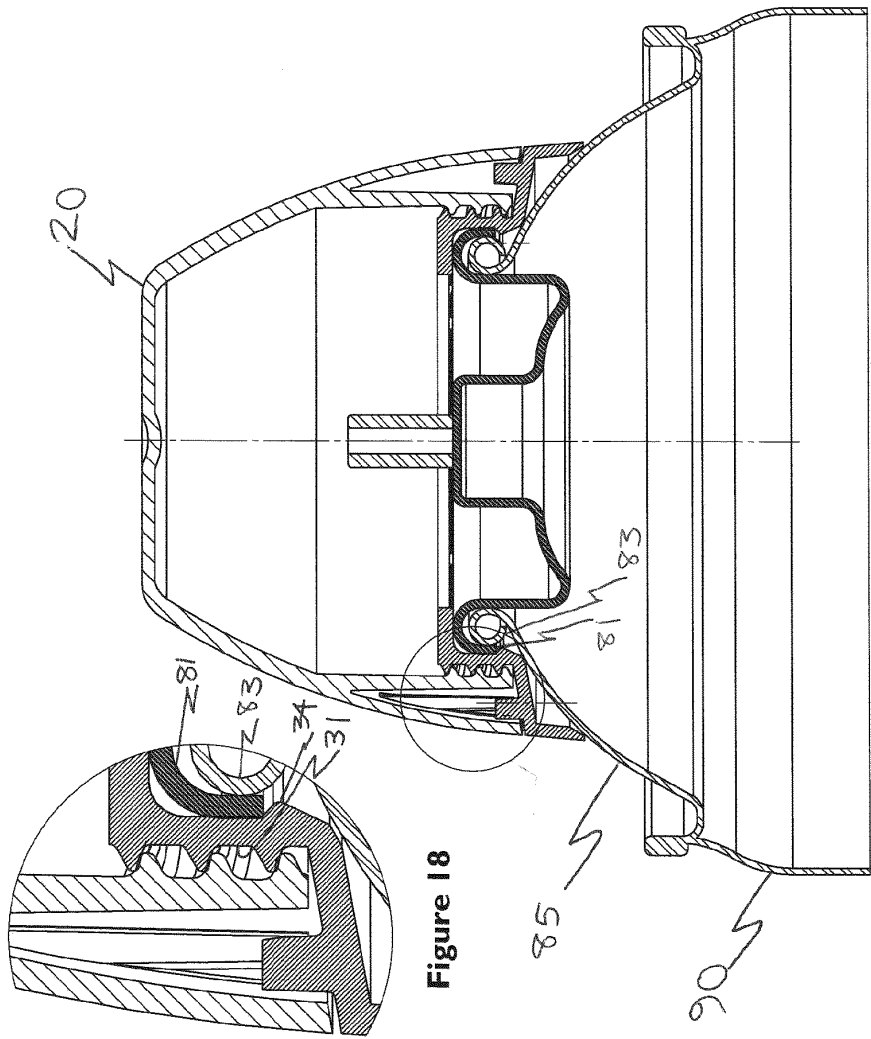


Figure 15

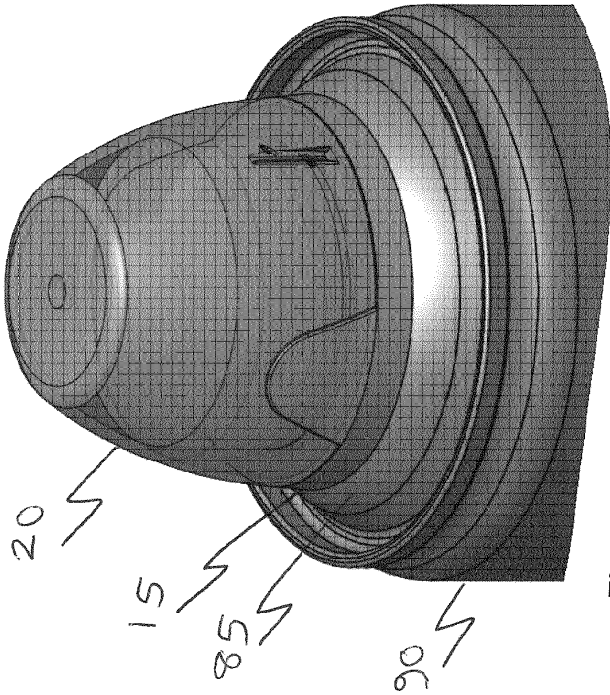


Figure 16

Figure 18

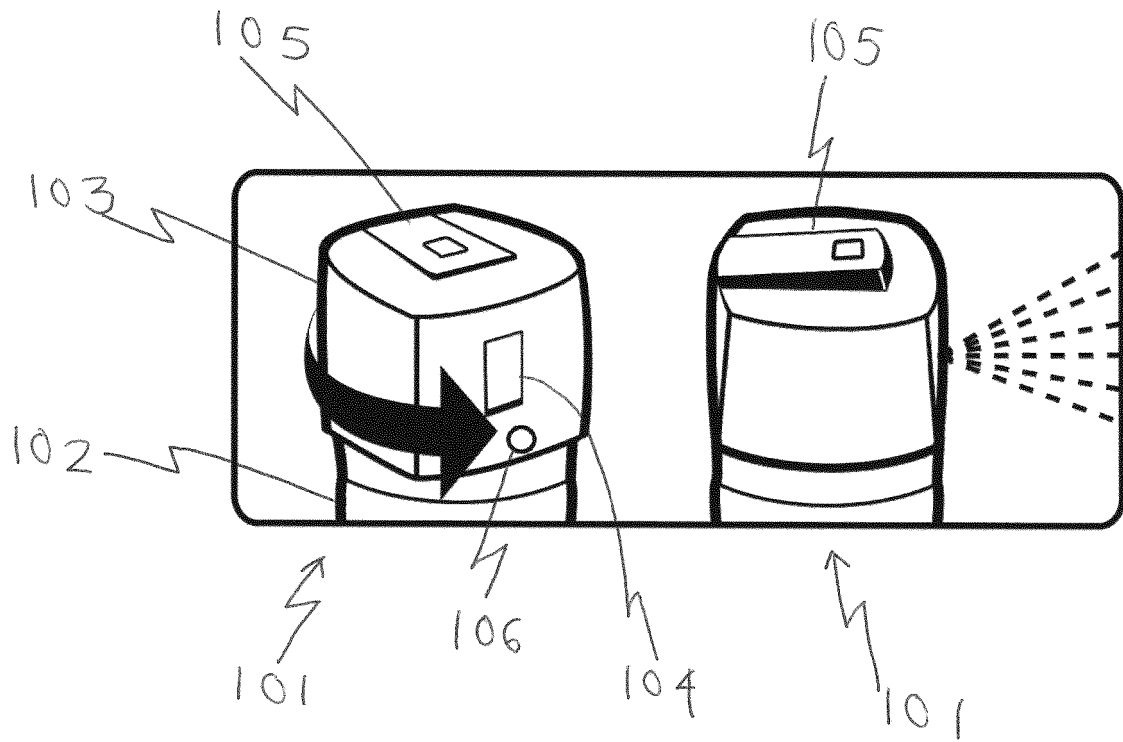


Figure 19

REFERENCES CITED IN THE DESCRIPTION

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