

(19)



(11)

EP 4 069 604 B1

(12)

EUROPEAN PATENT SPECIFICATION

(45) Date of publication and mention of the grant of the patent:
29.01.2025 Bulletin 2025/05

(21) Application number: **20821409.8**

(22) Date of filing: **03.12.2020**

(51) International Patent Classification (IPC):
B65D 47/08 (2006.01) **B65D 55/02** (2006.01)

(52) Cooperative Patent Classification (CPC):
B65D 47/0838; B65D 55/024; B65D 2251/1041;
B65D 2401/15; B65D 2401/20

(86) International application number:
PCT/IB2020/061456

(87) International publication number:
WO 2021/111367 (10.06.2021 Gazette 2021/23)

(54) **TAMPER-PROOF CONTAINER**

FÄLSCHUNGSSICHERER BEHÄLTER

CONTENEUR INVOLABLE

(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**

(30) Priority: **04.12.2019 US 201962943433 P**

(43) Date of publication of application:
12.10.2022 Bulletin 2022/41

(73) Proprietor: **Haleon CH SARL
1197 Prangins (CH)**

(72) Inventors:
• **ATHAY, Bradley Robert
1260 Nyon 1 (CH)**

- **BERNASCONI LECOULTRE, Paola
1260 Nyon 1 (CH)**
- **ROZWADOWSKA, Malgorzata Urszula
1260 Nyon 1 (CH)**
- **SABHERWAL, Amit
Gurgaon, Haryana (IN)**

(74) Representative: **Haleon Patent Department
5 The Heights, Wellington Way
Weybridge, Surrey KT13 0NY (GB)**

(56) References cited:
**EP-A1- 2 691 313 EP-A1- 3 526 131
EP-B1- 2 691 313 EP-B1- 3 526 131
US-A- 5 865 353**

EP 4 069 604 B1

Note: Within nine months of the publication of the mention of the grant of the European patent in the European Patent Bulletin, any person may give notice to the European Patent Office of opposition to that patent, in accordance with the Implementing Regulations. Notice of opposition shall not be deemed to have been filed until the opposition fee has been paid. (Art. 99(1) European Patent Convention).

Description

FIELD OF THE INVENTION

[0001] The present invention relates generally to an easy-to-operate tamper-proof container for storing contents and to a novel cap coupled with the container with an efficient tamper evidence mechanism.

BACKGROUND OF THE INVENTION

[0002] Maintaining the safety and efficacy of products is a major concern for both companies and consumers, especially in the pharmaceutical, healthcare, and wellness industries. Consumers' health may be at risk if defective or contaminated products are used. Also, companies suffer huge losses of revenue and lose the trust of their consumers if inferior or harmful products are sold to consumers. Pharmaceutical and healthcare companies are actively working on their packaging to prevent tampering of the contents in order to protect the integrity of their products.

[0003] One common solution to these problems is to utilize tamper-proof packaging to ensure product safety. Thus, tamper-proof packaging has been an area of significant research over the past several decades. Several types of tamper-proof packaging solutions are available on the market; however, these solutions have often been deficient in enabling the consumer to differentiate between tampered and non-tampered products. Additionally, some tamper-proof packaging is not completely effective at preventing tampering from all sides of the container. Furthermore, in some tamper-proof containers, the inclusion of a tamper-proof mechanism interferes with the proper closure of the product dispensing orifice, thereby leading to leaking or contamination of the contents from the orifice during storage or transport.

[0004] EP 3 526 131 A1 discloses a cap according to the preamble of claim 1.

[0005] Due to the aforementioned issues, it is desirable to have an effective tamper evidence mechanism that also provides a visual confirmation to consumers that a tamper evidence mechanism was present even after it has been broken. It is also preferable that the tamper-proof container be easy to open and close and that the tamper evidence mechanism does not interfere with the operation of the cap.

SUMMARY OF THE INVENTION

[0006] According to the invention, a cap according to claim 1 is provided. Aspects of the present invention are also directed to a tamper-proof container according to claim 9.

[0007] The present invention can further include a plug projecting from the inner surface of the lid, wherein the plug fits into the orifice to seal the orifice so as to provide moisture tight and resealable seal. Additionally, the plug

can enter the orifice prior to the male component of the tamper evidence mechanism completing its engagement with the corresponding female component of the tamper evidence mechanism.

[0008] The invention is further directed to the neck of the cap including a sloped portion located at a front side of the cap and the lid including an extended part extending over the sloped portion, wherein the lid of the cap may be opened by pushing up from under the extended part. The sloped portion is made of a soft material and has an angle between about 35 degrees and about 90 degrees relative to a horizontal axis. The soft material of the sloped portion can be selected from a group comprising, silicon, LDPE, TPE, PE, rubber, or PET.

[0009] According to the invention two tamper evidence mechanisms are provided on opposite sides on the neck of the cap, with a male component of the tamper evidence mechanism which is provided on the rim of the lid and the female component of the tamper evidence mechanism which is provided on the neck of the cap; and a locking member which is provided on the female component and extends in a horizontal direction from one end of the female component to the other end of the female component. Further, in the present invention, the locking member is connected with one point of connection at one end of the female component and two points of connection at the other end of the female component.

[0010] The cap comprises an inner surface containing an orifice, a neck extending around the inner surface and having at least one tamper evidence mechanism, and a lid connected to the cap pivotally via a hinge and moveable between a closed position and an opened position, wherein the tamper evidence mechanism includes a male component, a female component and a locking member.

[0011] The invention further includes an extended part extending over the sloped portion, wherein the lid of the cap may be opened by pushing up from under the extended part, and wherein the sloped portion can be made of a soft material and has an angle between about 35 degrees and about 90 degrees relative to a horizontal axis, wherein the soft material of the sloped portion can be selected from a group comprising, silicon, LDPE, TPE, PE, rubber, or PET.

BRIEF DESCRIPTION OF THE DRAWINGS

[0012]

FIG. 1 is a perspective view of an embodiment of the present invention in a closed position;
FIG. 2 is an exploded view of an embodiment of the present invention in the closed position;
FIG. 3 is a side view of an embodiment of the present invention in the closed position;
FIG. 4 is a perspective view of an embodiment of the present invention in an opened position;
FIG. 5 is a perspective view of a female component of

a tamper evidence mechanism of an embodiment of the present invention;

FIG. 6 is a perspective view of the tamper evidence mechanism of an embodiment of the present invention;

FIGS. 7A-7D illustrates a side view of an exemplary method of securing the tamper evidence mechanism of an embodiment of the present invention;

FIGS. 8A-8D illustrates a cross-sectional view of an exemplary method of securing the tamper evidence mechanism of an embodiment of the present invention;

FIG. 9 is a top view of an embodiment of the present invention in the opened position;

FIGS. 10A-10D illustrates a perspective view of an exemplary method of opening an embodiment of the present invention;

FIG. 11 is a perspective view of a cap of an embodiment present invention; and

FIG. 12 is a perspective view of the tamper evidence mechanism of an embodiment of the present invention in a broken state.

DETAILED DESCRIPTION

[0013] Aspects of the present invention are directed to a novel tamper-proof container 100 including a container 200 to hold contents, a cap 300, and a tamper evidence mechanism 304.

[0014] Figures 1 through 12 are based upon engineering drawings used for the development and representation of a tamper-proof container 100 and represents the various embodiments of the present invention. Hence, the drawings are to scale and representative of the geometry of the tamper-proof container 100 comprising a container 200, a cap 300, and a tamper evidence mechanism 304 according to the present invention.

[0015] Figures 1-3 illustrate an exemplary tamper-proof container 100 of the present invention in a closed position. Figure 2 illustrates an exploded view of the tamper-proof container 100 in the closed position. The tamper-proof container 100 includes a container 200, a cap 300, and at least one tamper evidence mechanism 304. The container 200 includes a bottom portion 201, a side wall 202 and a top portion 203 defining an inner cavity of the container 100 wherein contents may be held. In an embodiment, the container 100 may be rigid and the side wall 202 may maintain its shape. In another embodiment, the container 100 may be flexible and the side wall 202 may be squeezed to move contents out of the container 100. The top portion 203 of the container 200 includes an upright annular neck 206 which is hollow and serves as the sole opening for the passage of contents out of the container 200. The cap 300 may be provided on the neck 206 of the container 200 so as to close the opening to the cavity. The diameter of the container 200 may be between about 25mm and about 50mm. In a preferred embodiment, the diameter of the

container is about 40mm. In another preferred embodiment, the diameter of the container is about 30mm. The diameter of the cap 300 may be between about 24mm and about 50mm. In a preferred embodiment, the diameter of the cap is about 39mm. In another preferred embodiment, the diameter of the cap is about 29mm.

[0016] The present invention may be formed through the combination of the container 200 and cap 300 formed either integrally or non-integrally. If the cap 300 is integrally connected to the container 200, the cap 300 and the container 200 may be formed of a blow-molded material or injection molded using methods known to one skilled in the art. If the cap 300 and container 200 are non-integrally connected, they may be connected, for example, by being screwed on to external or internal threads, friction fitted, snap fitted, or secured onto the container 200 in any other suitable manner known to one skilled in the art. In a preferred embodiment, the container 200 and cap 300 are connected by being snap fitted. In a preferred embodiment, the cap 300 is permanently fixed to the container 200 after or before the container is filled with contents, thereby rendering the container 200 and cap 300 into a connected system.

[0017] Figure 4 illustrates a perspective view showing an exemplary tamper-proof container 100 in an opened position. The cap 300 may be molded as one piece and includes a substantially cylindrical neck 301, an inner surface 318, and a lid 305. The lid 305 further includes, a bottom surface 310, a side surface 208 and a plug 312 protruding from the bottom surface 310. The neck 301 is provided around the inner surface and extends down from the inner surface 318 towards the container 200. A back end of the lid 305 is connected to the neck 301 of the cap 300 via a hinge 302 and pivots about the hinge 302 to move the tamper-proof container 100 between the opened position and the closed position. In a preferred embodiment, the inner surface 318 is stationary and does not move during opening and closing of the tamper-proof container 100. The lid 305 further includes an extended part 307 at a front end of the lid 305. The extended part 307 may consist of a soft material and allows the user to easily and comfortably open and close the lid. In an embodiment, the material of the extended part may be silicon, LDPE, TPE, PE, rubber, PET, or any other suitable soft or rubberized material. In another embodiment, the material of the extended part may be polypropylene, high density polyethylene, low density polyethylene, polycarbonate, or polystyrene. In a preferred embodiment, the material of the extended part 22 is TPE.

[0018] The neck 301 includes a sloped portion 303 at a front end of the cap 300. The sloped portion 303 slopes in an inward direction from the front of the cap 300 towards a back end of the cap 300. The extended part 307 extends over the top of the sloped portion 303 to allow for a convenient and smooth single-handed opening and closing of the lid 305. In an embodiment, the sloped portion 303 has an angle of between about 35 degrees and about 90 degrees relative to a horizontal axis. In a preferred

embodiment, the sloped portion 303 has an angle of about 45 degrees relative to the horizontal axis. A user may place their thumb or other finger on the sloped portion 303 to push the extended part 307 in an upward direction from an underside of the extended part 307. If a user is not able to use their hands or fingers to open the container, another object or an edge of a surface may be placed under the extended part 307 and used to push up on the extended part 307 to open the tamper-proof container 100. In a preferred embodiment, the extended part 307 has a curved shape; however, the shape of the extended part 307 is not limited and can be any suitable shape. In an embodiment, the material of the sloped portion may be silicon, LDPE, TPE, PE, rubber, PET, or any other suitable soft or rubberized material. In another embodiment, the material of the sloped portion may be polypropylene, high density polyethylene, low density polyethylene, polycarbonate, or polystyrene. In a preferred embodiment, the material of the sloped portion is polypropylene.

[0019] The cap 300 further includes an orifice 313 provided on the inner surface 318 of the cap 300 by which contents can be dispensed from the tamper-proof container 100 when the tamper-proof container 100 is in the opened position. In a preferred embodiment, the orifice 313 is a circular shape, but it may be any suitable shape to dispense the contents held in the tamper-proof container 100. The diameter of the orifice 313 may be between about 2mm and about 6mm. In a preferred embodiment, the diameter of the orifice 313 is about 4.2mm. A user may squeeze the side wall 202 of the container to push the containers out of the orifice 313. When contents is dispensed from the orifice 313, a user can flip the tamper-proof container 100 upside down and apply the contents directly to the desired area without having to take the contents on their finger first. There is a smooth transition from the sloped portion 313 to the inner surface 318 of the cap 300 to facilitate the application of the contents directly to the desired area. Thus, the sloped portion 303 can serve as an applicator and provides a smooth surface for direct application of the contents to an area. Further, the slope of the sloped portion 303 allows for easy direct application of the contents to difficult to reach areas with minimal manipulation of the tamper-proof container 100 by the user. This direct application of the contents to the desired area prevents contamination of the contents by avoiding contact with a user's fingers prior to application and prevents waste of the contents.

[0020] In a closed position, the plug 312 extends in a downwards direction from the bottom surface 310 of the lid 305 towards the container 200 and fits into the orifice 313 to create a secure air tight seal to prevent contamination and leaking of the contents. In an embodiment, the tamper-proof container 100 is moisture-tight and is resealable to maintain the moisture tight properties. As used herein, the term "resealable" means that the tamper-proof container 100 can be opened or reopened and closed or reclosed a numerous amount of times (e.g.

more than 5 times) and still retain its moisture-tight properties. As used herein, the term "moisture-tight" means the moisture ingress of the container is less than about 1500 micrograms of water/day, determined by the following test method: (a) place approximately one gram of molecular sieve in the container and record the weight; (b) close the resealable mechanism; (c) place the sealed container in an environment chamber at conditions of 80% relative humidity and 72°F (22.2°C); (d) after one day, weigh the container containing the molecular sieve; (e) after approximately two weeks, weigh the container; and (f) subtract the first day sample from the value obtained and divide by the number of days to calculate the moisture ingress of the container in units of micrograms of water/day.

[0021] The cap 300 further comprises at least one tamper evidence mechanism 304 provided on the cap 300 to prevent tampering with the contents prior to a user opening the tamper-proof container 100 for the first time. There can be any suitable number of tamper evidence mechanisms 304 provided on the cap 300. In an embodiment, there is one tamper evidence mechanism 304. In a preferred embodiment, there are two tamper evidence mechanisms 304 located on either side of the hinge 302 so as to be on opposite sides around the cap 300. Two tamper evidence mechanisms 304 provide the benefit of additional protection by preventing the lid 305 from being lifted or opened from either side of the hinge 302 or the extended part 307 without breaking at least one of the two tamper evidence mechanisms 304 to indicate signs of tampering. In a preferred embodiment, each of the tamper evidence mechanisms 304 have the same structure and function.

[0022] Each tamper evidence mechanism 304 includes a male component 304A, a corresponding female component 304B, and a locking member 304C. The male component 304A is provided on a rim 311 of the side surface 308 of the lid 305. The male component 24A protrudes from the rim 311 of the side surface 308 of the lid 305 in an upwards direction when the tamper-proof container 100 is in the opened position. The shape of the male component 304A can be any suitable shape. In a preferred embodiment, the male component 304A has a substantially rectangular shape. The male component 304A further includes a lip 314 at a top portion of the male component 204A that extends in a substantially perpendicular direction from the remainder of the male component 304A.

[0023] The female component 204B includes a recess provided on a rim 309 of the neck 301 of the cap 300 and extends down onto the neck 301 of the cap 300. In a preferred embodiment, the female component 304B is a substantially rectangular shape, but the present invention is not limited to this shape and the female component can be any suitable shape. The tamper evidence mechanism 304 further includes a locking member 304C. The locking member 304C can be any suitable shape and size. In a preferred embodiment, the locking member

304C is in the form of a band and extends from one end of the female component 304B to the other end in a horizontal direction, thereby connecting the two ends of the female component of the tamper mechanism 304. In an embodiment, the length of the locking member may be between about 3mm and about 8mm. In a preferred embodiment, the length of the locking member is about 6mm. A gap exists between the locking member 304C and the neck 301 of the cap 300.

[0024] Figure 5 depicts an exemplary female component of the tamper evidence mechanism of the present invention. Each end of the locking member 304C is connected to an end of the female component 304B in the horizontal direction. The locking member 304C is connected so as to have a stronger connection at one end as compared to the other end. In a preferred embodiment, the locking member 304C is connected by a single point of connection 317 at one end of a female component 304B, and by two points of connection 315 & 316 at the other end of the female component 304B. The locking member 304C has a stronger connection at the end with two points of connection as compared to the end with the single point of connection. Therefore, when the lid 305 is opened for the first time, the locking member 304C will detach from the female component 304B predictably and consistently at the end with the single point of connection only and remain attached at the opposite end having two points of connection. This provides clear indication of prior opening to the user since the severed locking member 304C is still attached at one end once the lid 305 has been opened for the first time providing visual confirmation that a tamper mechanism was present and has been broken. Additionally, since the locking member 304C remains attached at one end, there is no need to discard the locking member 304C once the tamper-proof container 100 has been opened. In an embodiment, the locking member 304C may be connected with three points of connection at one end and a single point of connection at the other end. In another embodiment, the locking member may be connected with two points of connection at one end and three points of connection at the other end. The present invention may have any combination of connections so long as the connection at one end is stronger than the connection at the opposite end.

[0025] Figure 6 is a view of an exemplary tamper evidence mechanism 304 secured on the tamper-proof container 100 of the present invention. When the tamper-proof container 100 is closed for the first time after being filled with the contents, the tamper evidence mechanism 304 is secured onto the tamper-proof container 100. When the tamper evidence mechanism 304 is attached, the lid 305 is secured in the closed position over the inner surface 318 of the cap 300, thereby preventing access to the contents held in the container 200. In order to secure the tamper proof mechanism 304, the male component 304A engages with the female component 304B and sits in the recess of the female component 304B with the

locking member 304C provided on top of the male component 304A. The bottom of the locking member 304C resists the movement of the lip 314 of the male 304A so as to lock and hold the male component 304A in place. In this configuration, the male component 304A cannot be removed from the female component 304B without detaching the locking member 304C from at least one end indicating tampering. The tamper evidence mechanism 304 remains intact until the lid 305 is opened for the first time. When the user moves the lid 305 in an upward direction to open the tamper-proof container 100 for the first time, the lip 314 of the male component 304B pushes against the locking member 304C causing the locking member 304C to disengage at one end to allow the lid 305 to be lifted and the tamper-proof container 100 to be opened.

[0026] FIGS. 7A to FIG. 7D illustrate a process of securing the tamper evidence mechanism 304 on the present invention. After contents is filled in the container, the lid 305 is closed for the first time, and the tamper evidence mechanism is enabled. The lid 305 is moved in a downward direction to cover the orifice 313 on the inner surface 318 of the cap 300. As can be seen in Figures 7B and 7C, as the lid 305 pivots about the hinge 302 in the downwards direction, the plug 312 substantially enters the orifice 313 to seal the orifice 313 before the male component 304A of the tamper evidence mechanism 304 completes its engagement with the corresponding female component 304B. As can be seen in Figure 7C, while the plug 312 enters the orifice 313, the male component 304A continues to enter the gap in the corresponding female components 304B until the tamper evidence mechanism 304 is secured in place. Only after the plug 312 has entered the orifice 313 completely to seal the orifice 313, does the male component 304A complete its engagement with the corresponding female component 304B.

[0027] Figures 8A-8D illustrate a cross-sectional view of the process of closing the lid 305 of the cap 300 for the first time according to the present invention. Figures 8A-8D further indicate the process in which the plug 312 enters the orifice 313. Additionally, as the lid 305 is moved down into the closed position, the male component 304A of the tamper evidence mechanism 304 provided on the lid 305 engages with the female component 304B. As can be seen in Figure 8C, the plug 312 substantially enters the orifice 313 before the engagement of the tamper evidence mechanism 304 is complete.

[0028] Figure 9 illustrates a top view of the cap of the present invention in an opened position. Line 10 indicates that the center point of the tamper evidence mechanism 304 is closer to the hinge 302 as compared to the center point of the orifice 313. Accordingly, in a typical container with this arrangement, the tamper evidence mechanism 304 would engage and lock before the plug 312 completely enters the orifice 313. However, if the tamper evidence mechanism 304 engages and locks in place prior to the plug 312 entering the orifice 313, the lid 305

will not be closed properly and will not be flat against the inner surface 318 of the cap 300 as desired. Instead, a gap may exist between the lid 305 and the inner surface 318 of the cap 300 causing the contents to spill out, be contaminated, or exposed to harmful environmental factors. In order to address this problem, in the present invention, the length of the male component 304A projecting from the rim 311 of the lid 305 is less than the length of the plug 312 projecting from the inner surface 318 of the cap 300 so as to facilitate entry of the plug 312 into the orifice 313 before the male component 304A of the tamper evidence mechanism 304 is fully locked into the corresponding female component 304B. In an embodiment, the projection length of the plug 312 from an inner surface 310 of the lid 305 to the end of the plug 312 may be between about 3mm and about 7mm. In a preferred embodiment, the projection length of the plug is about 5.51mm. In an embodiment, the length of the male component 304A from the rim 311 of the side surface 308 of the lid 305 to the end of the male component 304A may be between about 1.5mm and about 3.5mm. In a preferred embodiment, the length of the male component 204A is about 2.84mm. In a preferred embodiment, the ratio of the projection length of the male component 204A to the projection length of the plug is 1:9. The distance between the hinge 302 and the center of the orifice 313 is between about 15mm and about 23mm. In a preferred embodiment, the distance between the hinge 302 and the center of the orifice 313 is about 18.55mm. The distance between the hinge 302 and the center of the female component 304B is between about 10mm and about 20mm. In a preferred embodiment, the distance between the hinge 302 and the center of the female component 304B is about 13.25mm.

[0029] Figures 10A to 10D depict the process of opening the tamper-proof container 100 for the first time. As can be seen in Figure 10A, when the user first encounters the tamper-proof container 100, the tamper evidence mechanism 304 is clearly intact on either side of the cap 300 to indicate to the user that there has been no tampering with the contents held in the container 200. As the user begins to lift up the lid 305 by pushing the extended part 307 up from an underside of the extended part 307, the tamper evidence mechanism 304 begins to disengage. A user may open the tamper-proof container 100 in a flip motion with a single hand. The force applied by the user to the lid 305 causes the male component 304A to press against the locking member 304C and put pressure on the locking member 304C until the locking member 304C breaks at one end. In a preferred embodiment, the locking band 304C breaks at the end with the single point of connection and remains connected to the female component 304B at the other end with the two points point of connection. As can be seen in Figure 10D, once the lid 305 is opened, and the tamper evidence mechanism 304 is broken, the locking member 304C remains attached to the female component 304B at one end so as to provide visual confirmation of the tamper

evidence mechanism 304 being broken. Thus, if the contents have been previously accessed, the subsequent user will have clear visual indication via the broken and attached locking member 304C. In a preferred embodiment, two tamper evidence mechanisms 304 are provided on either side of the orifice 313 so as to prevent opening the lid 305 from any point around the lid 305 without breaking one or both tamper evidence mechanisms 304.

[0030] Figure 11 depicts the cap 300 of the present invention in the opened position removed from the container 200. Once the lid 305 has been opened for the first time, the locking member 304C of the tamper evidence mechanism 304 remains attached to the female component 304B. The locking member 304C will remain attached to the female component 304B at the end with the stronger connection, i.e. two points of connection 315 and 316, instead of the end with the weaker connection, i.e. the single point of connection 317. In a preferred embodiment, the end with the stronger connection may be the end of the female component 304B closest to the hinge 302.

[0031] In an embodiment, the material of the tamper evidence mechanism 304, the container 200, the lid 305 and the neck 301 of the cap 300 may be polypropylene, high density polyethylene, low density polyethylene, polycarbonate, or polystyrene. In a preferred embodiment, the material of the tamper evidence mechanism 304, the container 200, the lid 305, and the neck 301 of the cap 300 is polypropylene.

[0032] The contents held in the container tube may be any compound or composition that can be used to cleanse the skin, provide pain relief, or provide overall health and wellness benefits to the user. Non-limiting examples of the contents may include pharmaceutical active ingredients including over the counter actives, behind the counter actives, prescription actives, or any combination thereof.

[0033] In an embodiment of the present invention, the contents may be available in various forms and selected from group comprising gel, lotion, cream, oil, emulsion, ointment and powder. In an embodiment, the contents held in the container is a cream or gel containing diclofenac sodium. In a preferred embodiment, the contents held in the container is a combination of diclofenac sodium, ammonia, carbomer homopolymer type c, cococaprylate/caprate, isopropyl alcohol, mineral oil, polyoxyl 20 cetostearyl ether, propylene glycol, and water.

[0034] The tamper-proof container 100 of the present invention may be compatible with any pump or spray device, including, but not limited to airless pumps.

[0035] While the invention has been described with reference to an exemplary embodiment(s), it will be understood by those skilled in the art that various changes may be made without departing from the scope of the appended claims.

Claims

1. A cap (300) comprising:

an inner surface (318) containing an orifice (313);
 a neck (301) extending around the inner surface and having at least one tamper evidence mechanism (304); and
 a lid (305) connected to the cap pivotally via a hinge (302) and moveable between a closed position and an opened position,
 wherein the tamper evidence mechanism includes a male component (304A), a female component (304B) and a locking member (304C),
 wherein the male component (304A) of the tamper evidence mechanism is provided on a rim (311) of the lid,
 wherein the female component (304B) of the tamper evidence mechanism is provided on the neck (301) of the cap, and
 wherein the locking member (304C) is provided on the female component (304B) and extends in a horizontal direction from one end of the female component to the other end of the female component,
characterized in that the neck (301) of the cap includes a sloped portion (303) located at a front side of the cap and the lid (305) includes an extended part (307) extending over the sloped portion, and wherein the lid of the cap may be opened by pushing up from under the extended part (307).

2. The cap of claim 1, wherein the lid (305) comprises a plug (312) projecting from the inner surface (318) of the lid, and wherein the lid fits into the orifice (313) to seal the orifice when the cap is in the closed position.

3. The cap of claim 2, wherein the seal between the plug (312) and the orifice (313) is moisture tight and resealable.

4. The cap of claim 2, wherein the plug (312) enters the orifice prior to the male component (304A) of the tamper evidence mechanism completing its engagement with the corresponding female component (304B) of the tamper evidence mechanism

5. The cap of claim 1, wherein the sloped portion (303) is made of a soft material and has an angle between about 35 degrees and about 90 degrees relative to a horizontal axis.

6. The cap as claimed in claim 6, wherein the soft material of the sloped portion (303)

can be selected from a group comprising, silicon, LDPE, TPE, PE, rubber, or PET.

7. The cap as claimed in claim 1, wherein two tamper evidence mechanisms (304) are provided on opposite sides on the neck (301) of the cap

8. The cap as claimed in claim 1, wherein the locking member (304C) is connected with one point of connection (317) at one end of the female component (304B) and two points of connection (315, 316) at the other end of the female component

9. A tamper-proof container (100) comprising:

a container (200) having a top portion (203), a bottom portion (201), and a side wall (202), the top portion defining a cavity wherein contents can be held; and

a cap (300) according to any of the preceding claims being provided on the container.

Patentansprüche

1. Aufsatz (300) aufweisend:

eine Innenfläche (318), die eine Öffnung (313) enthält;

einen Hals (301), der sich um die Innenfläche herum erstreckt und mindestens einen Manipulationsnachweismechanismus (304) aufweist; und

einen Deckel (305), der über ein Gelenk (302) schwenkbar mit dem Aufsatz verbunden ist und zwischen einer geschlossenen Position und einer geöffneten Position bewegt werden kann, wobei der Manipulationsnachweismechanismus eine männliche Komponente (304A), eine weibliche Komponente (304B) und ein Verschlusselement (304C) aufweist,

wobei die männliche Komponente (304A) des Manipulationsnachweismechanismus an einem Rand (311) des Deckels vorgesehen ist, wobei die weibliche Komponente (304B) des Manipulationsnachweismechanismus am Hals (301) des Aufsatzes vorgesehen ist, und wobei das Verschlusselement (304C) an der weiblichen Komponente (304B) vorgesehen ist und sich in einer horizontalen Richtung von einem Ende der weiblichen Komponente bis zum anderen Ende der weiblichen Komponente erstreckt,

dadurch gekennzeichnet, dass der Hals (301) des Aufsatzes einen an der Vorderseite des Aufsatzes befindlichen abgeschrägten Abschnitt (303) und der Deckel (305) einen erweiterten Teil (307) aufweist, der sich über den

abgeschrägten Abschnitt erstreckt, und wobei der Deckel des Aufsatzes durch Hochdrücken von unterhalb des erweiterten Teils (307) geöffnet werden kann.

2. Aufsatz nach Anspruch 1, wobei der Deckel (305) einen Stöpsel (312) aufweist, der von der Innenfläche (318) des Deckels hervorsticht, und wobei der Deckel in die Öffnung (313) passt, um die Öffnung abzudichten, wenn sich der Aufsatz in der geschlossenen Position befindet. 10
3. Aufsatz nach Anspruch 2, wobei die Dichtung zwischen dem Stöpsel (312) und der Öffnung (313) feuchtigkeitsdicht und wiederverschließbar ist. 15
4. Aufsatz nach Anspruch 2, wobei der Stöpsel (312) in die Öffnung eintritt, bevor die männliche Komponente (304A) des Manipulationsnachweismechanismus vollständig mit der entsprechenden weiblichen Komponente (304B) des Manipulationsnachweismechanismus in Eingriff ist. 20
5. Aufsatz nach Anspruch 1, wobei der abgeschrägte Abschnitt (303) aus einem weichen Material besteht und einen Winkel zwischen etwa 35 Grad und etwa 90 Grad relativ zu einer horizontalen Achse aufweist. 25
6. Aufsatz nach Anspruch 6, wobei das weiche Material des abgeschrägten Abschnitts (303) aus einer Gruppe umfassend Silikon, LDPE, TPE, PE, Gummi oder PET ausgewählt werden kann. 30
7. Aufsatz nach Anspruch 1, wobei zwei Manipulationsnachweismechanismen (304) an gegenüberliegenden Seiten am Hals (301) des Aufsatzes vorgesehen sind. 35
8. Aufsatz nach Anspruch 1, wobei das Verschlusselement (304C) mit einem Verbindungspunkt (317) an einem Ende der weiblichen Komponente (304B) und zwei Verbindungspunkten (315, 316) am anderen Ende der weiblichen Komponente verbunden ist. 40
9. Manipulationssicherer Behälter (100) aufweisend: 45
 - ein Gefäß (200) mit einem oberen Abschnitt (203), einem unteren Abschnitt (201) und einer Seitenwand (202), wobei der obere Abschnitt einen Hohlraum definiert, in dem Inhalte aufbewahrt werden können; und
 - ein Aufsatz (300) nach einem der vorhergehenden Ansprüche, der auf dem Gefäß vorgesehen ist. 50

Revendications

1. Capuchon (300) comprenant: 5
 - une surface intérieure (318) contenant un orifice (313);
 - un col (301) s'étendant autour de la surface intérieure et ayant au moins un mécanisme d'inviolabilité (304); et
 - un couvercle (305) relié au capuchon de manière pivotante par une charnière (302) et mobile entre une position fermée et une position ouverte,
 - dans lequel le mécanisme d'inviolabilité inclut un composant mâle (304A), un composant femelle (304B) et un élément de verrouillage (304C),
 - dans lequel le composant mâle (304A) du mécanisme d'inviolabilité est disposé sur un bord (311) du couvercle,
 - dans lequel le composant femelle (304B) du mécanisme d'inviolabilité est disposé sur le col (301) du capuchon, et
 - dans lequel l'élément de verrouillage (304C) est disposé sur le composant femelle (304B) et s'étend dans une direction horizontale d'une extrémité du composant femelle à l'autre extrémité du composant femelle,
 - caractérisé en ce que** le col (301) du capuchon inclut une partie inclinée (303) située au niveau d'un côté avant du capuchon et le couvercle (305) inclut une partie prolongée (307) s'étendant sur la partie inclinée, et dans lequel le couvercle du capuchon peut être ouvert en poussant vers le haut depuis le dessous de la partie prolongée (307).
2. Capuchon selon la revendication 1, dans lequel le couvercle (305) comprend un bouchon (312) faisant saillie depuis la surface intérieure (318) du couvercle, et dans lequel le couvercle s'insère dans l'orifice (313) pour fermer hermétiquement l'orifice lorsque le capuchon est en position fermée.
3. Capuchon selon la revendication 2, dans lequel la fermeture hermétique entre le capuchon (312) et l'orifice (313) est étanche à l'humidité et peut être formée de nouveau. 45
4. Capuchon selon la revendication 2, dans lequel le bouchon (312) pénètre dans l'orifice avant que le composant mâle (304A) du mécanisme d'inviolabilité achève son engagement avec le composant femelle (304B) correspondant du mécanisme d'inviolabilité. 50
5. Capuchon selon la revendication 1, dans lequel la partie inclinée (303) est constituée d'un matériau 55

souple et a un angle entre environ 35 degrés et environ 90 degrés par rapport à un axe horizontal.

6. Capuchon selon la revendication 6, dans lequel le matériau souple de la partie inclinée (303) peut être choisi dans un groupe comprenant le silicone, le LDPE, le TPE, le PE, le caoutchouc ou le PET. 5
7. Capuchon selon la revendication 1, dans lequel deux mécanismes d'inviolabilité (304) sont disposés sur des côtés opposés sur le col (301) du capuchon. 10
8. Capuchon selon la revendication 1, dans lequel l'élément de verrouillage (304C) est relié à un point de liaison (317) à une extrémité du composant femelle (304B) et à deux points de liaison (315, 316) à l'autre extrémité du composant femelle. 15
9. Récipient inviolable (100) comprenant: 20
 - un récipient (200) ayant une partie supérieure (203), une partie inférieure (201) et une paroi latérale (202), la partie supérieure définissant une cavité dans laquelle un contenu peut être maintenu; et 25
 - un capuchon (300) selon l'une quelconque des revendications précédentes étant prévu sur le récipient.

20

25

30

35

40

45

50

55

FIG. 1

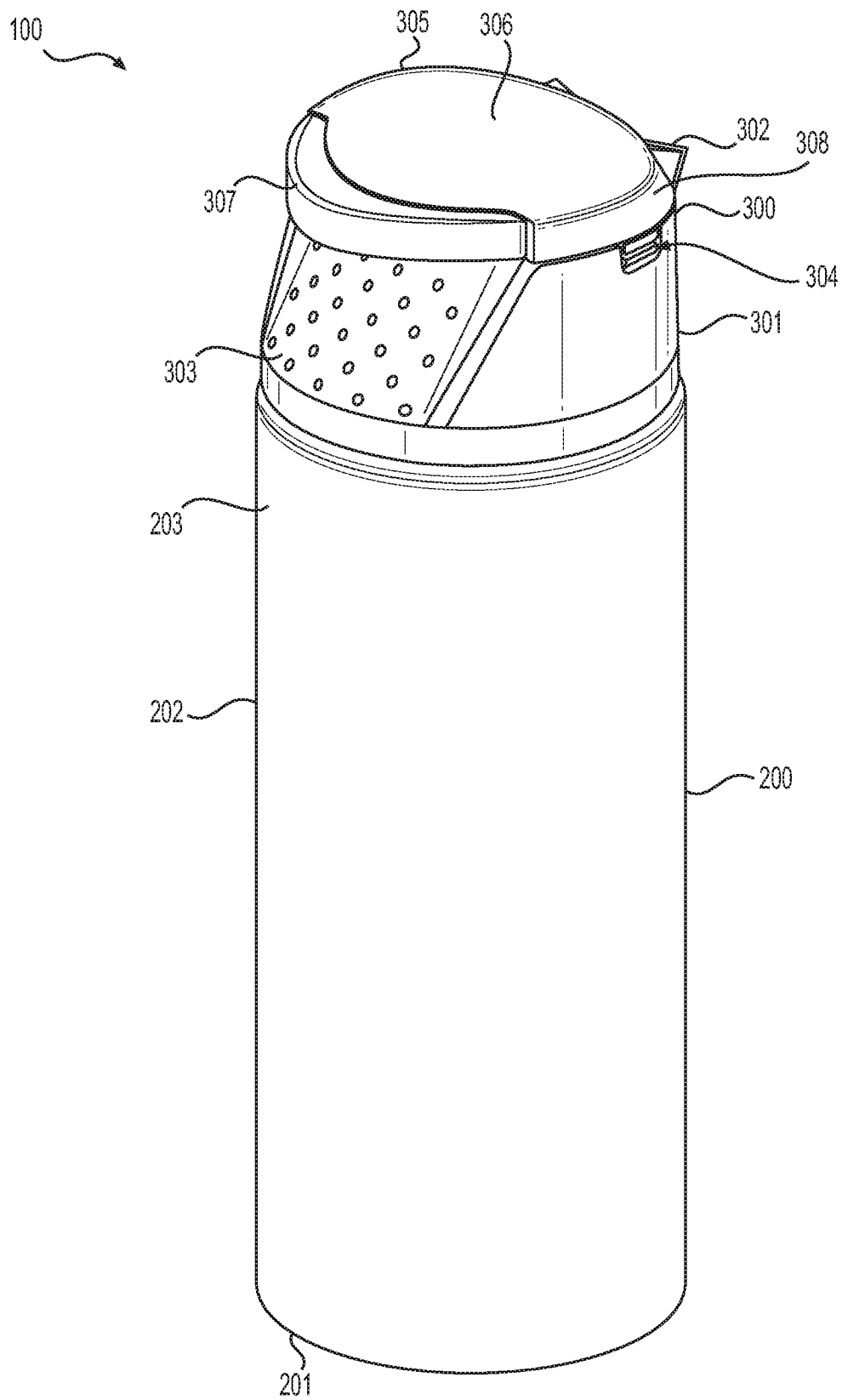


FIG. 2

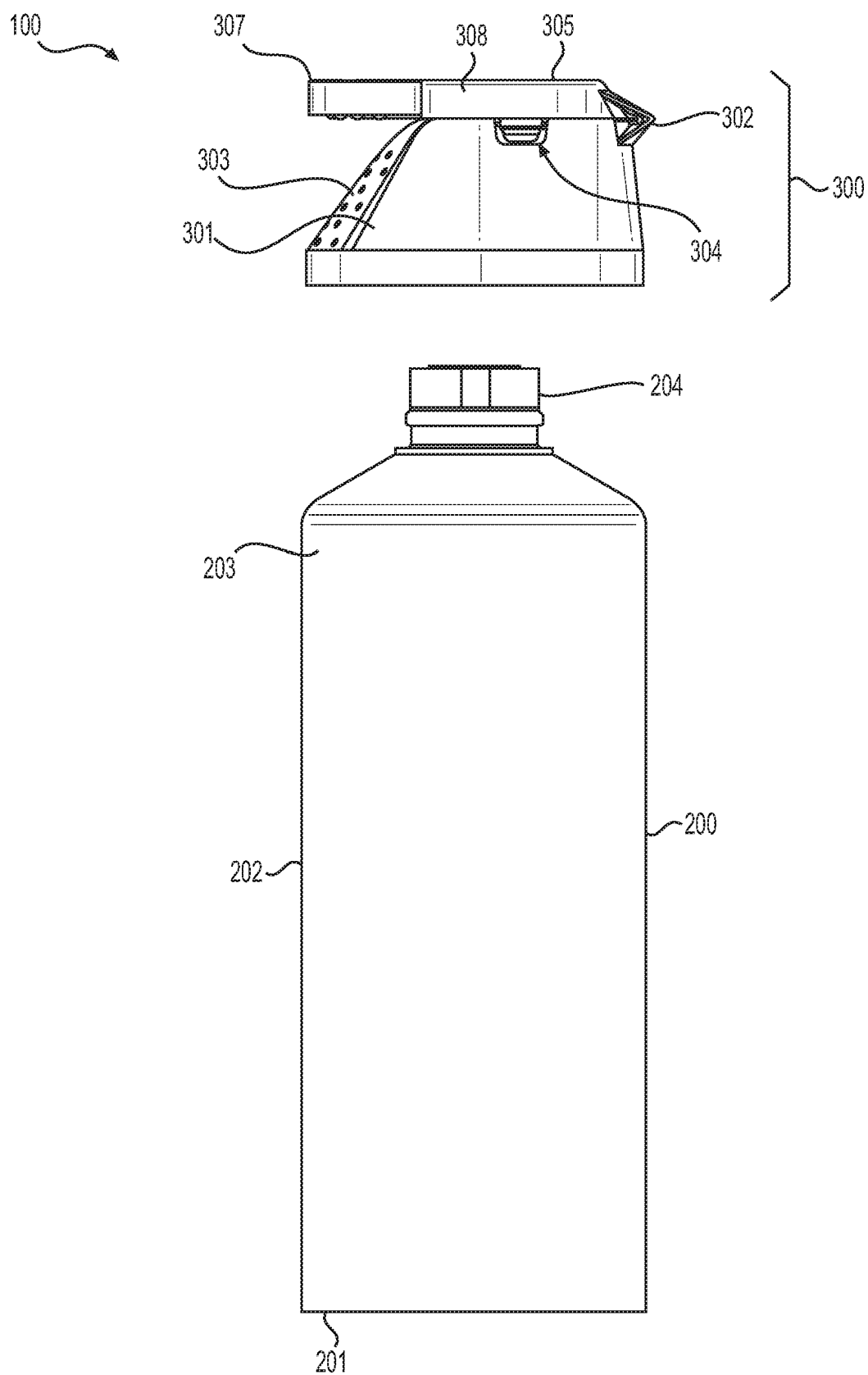


FIG. 3

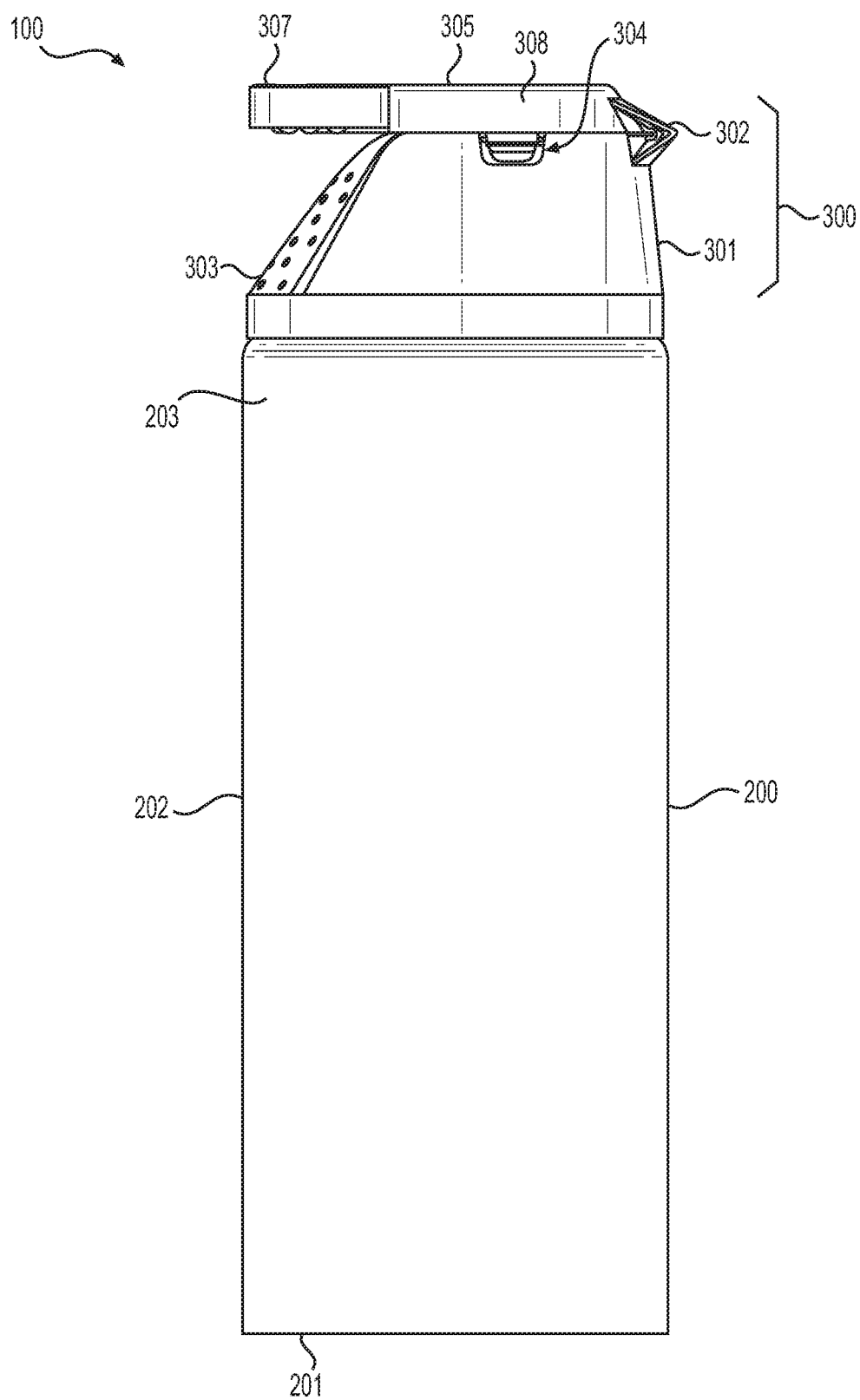


FIG. 4

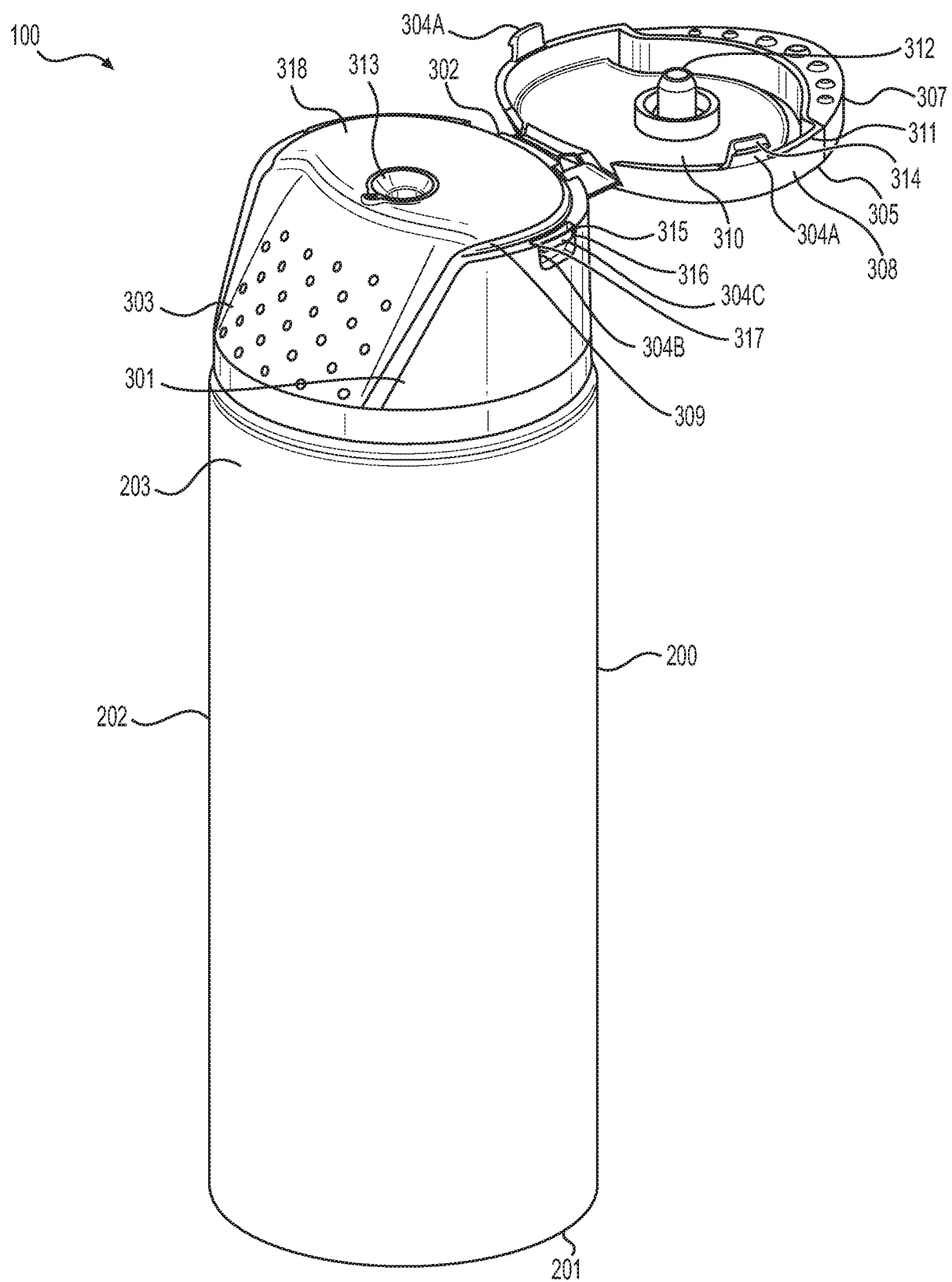


FIG. 5

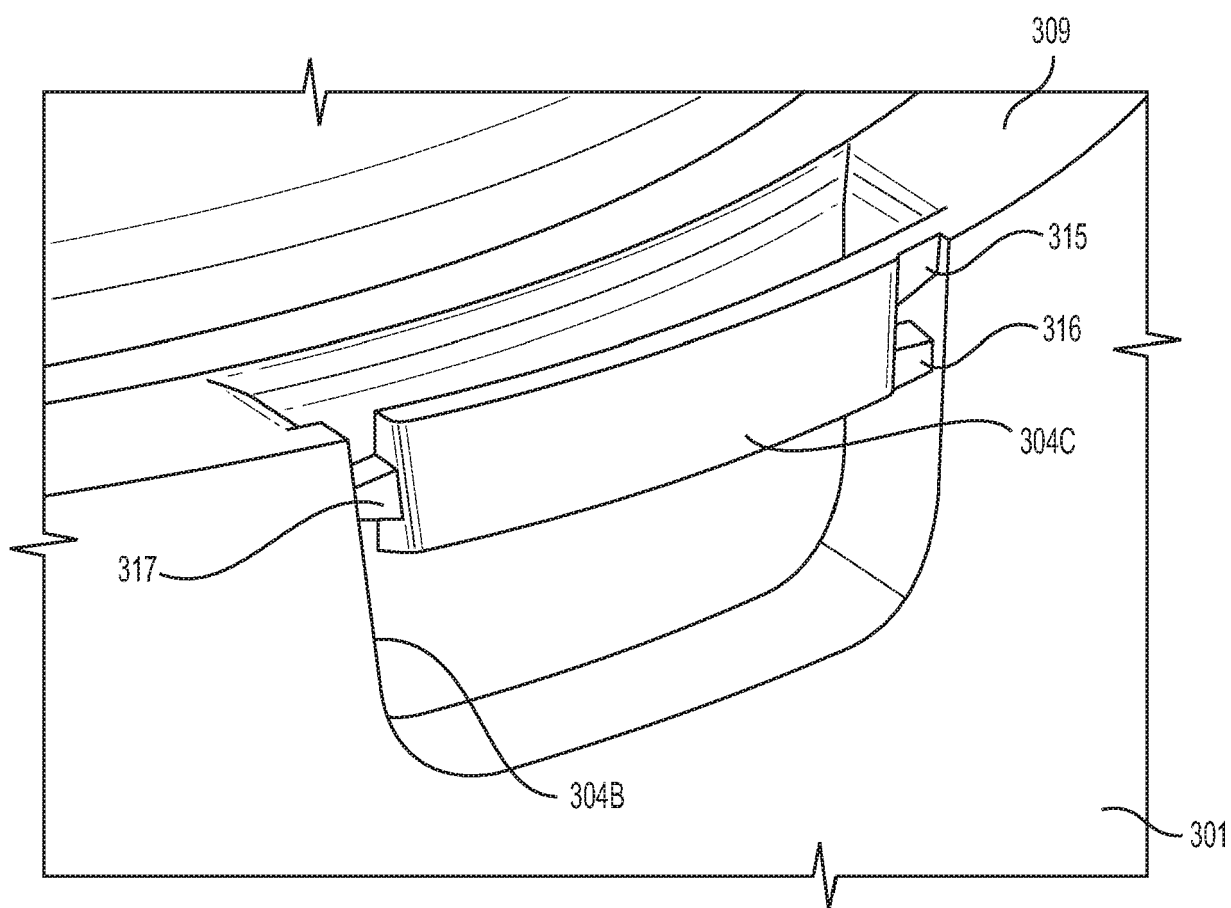


FIG. 6

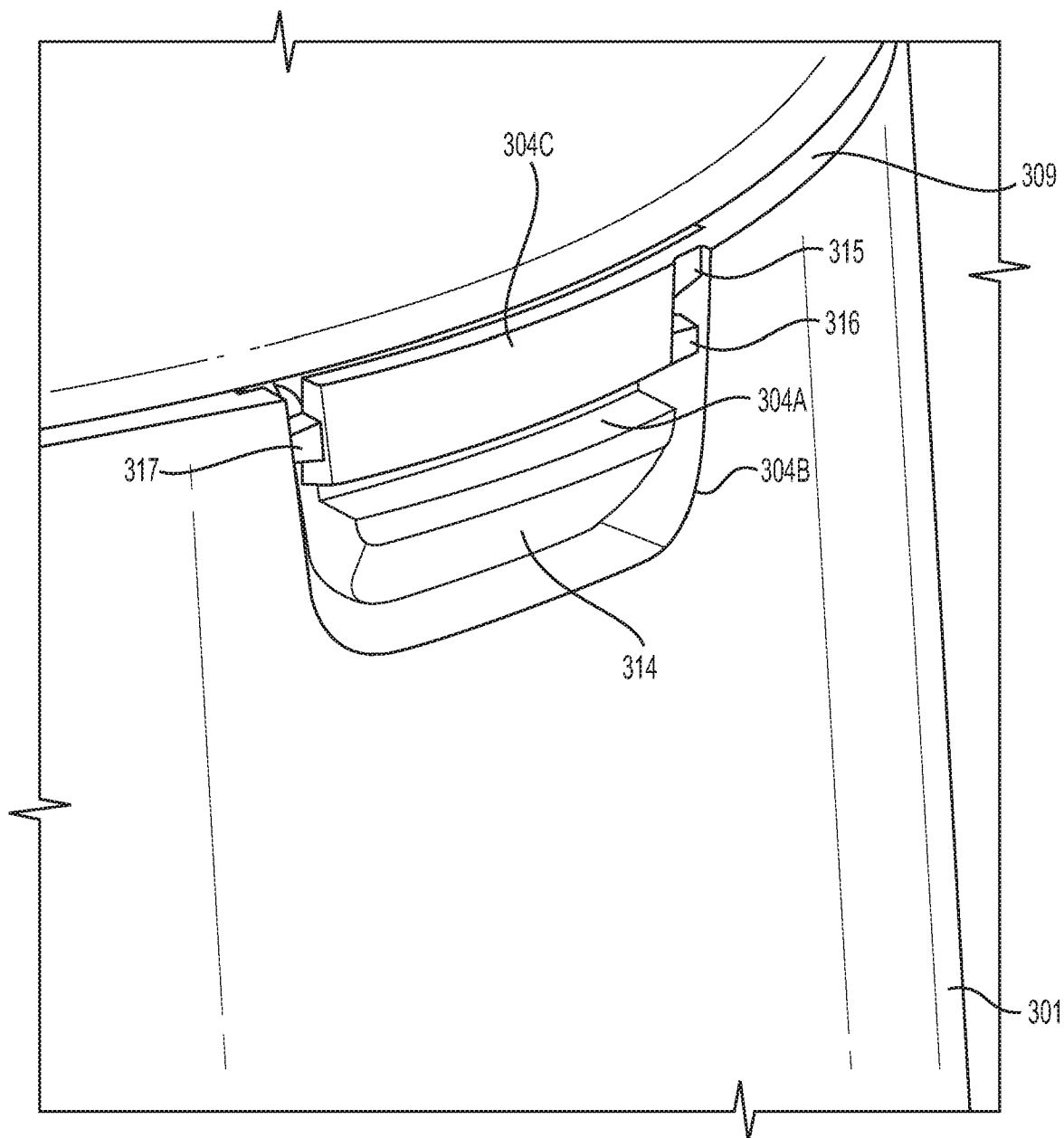


FIG. 7

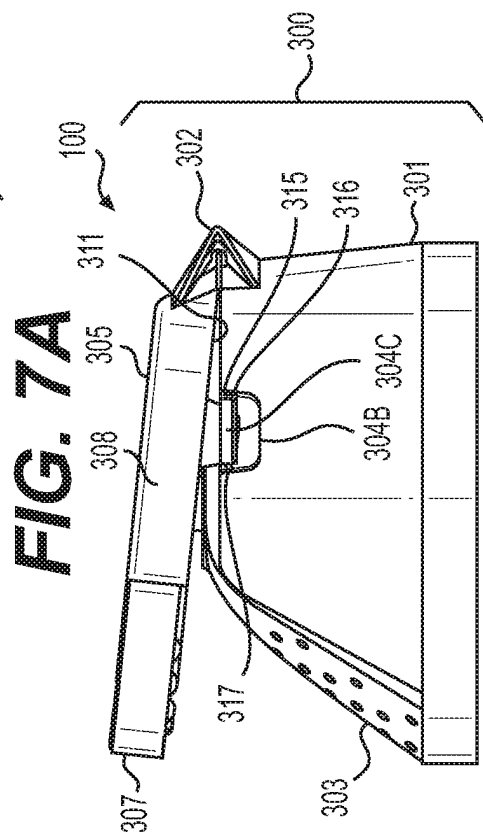
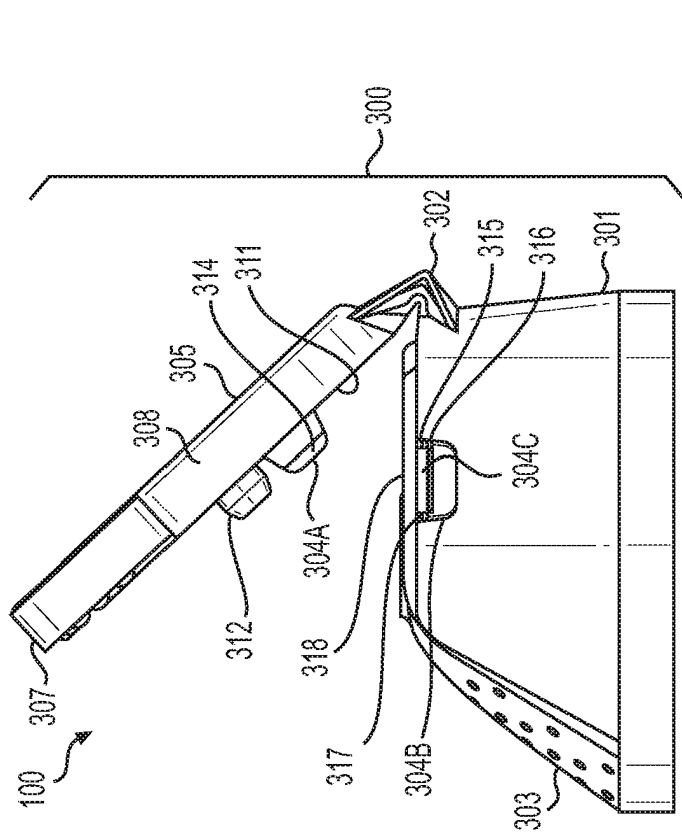
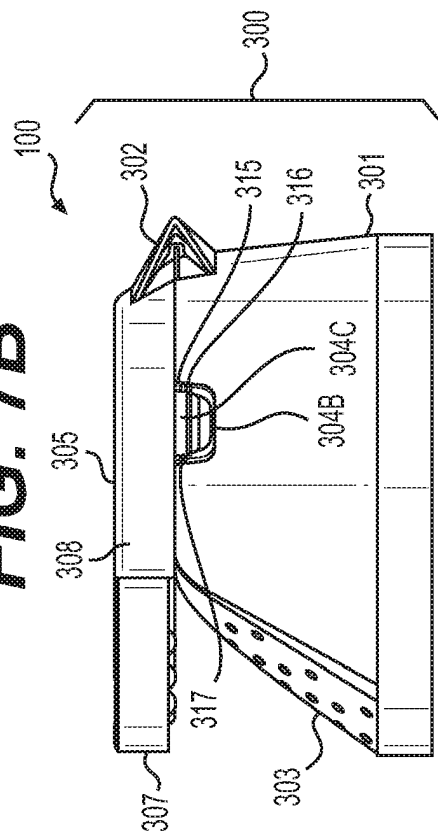
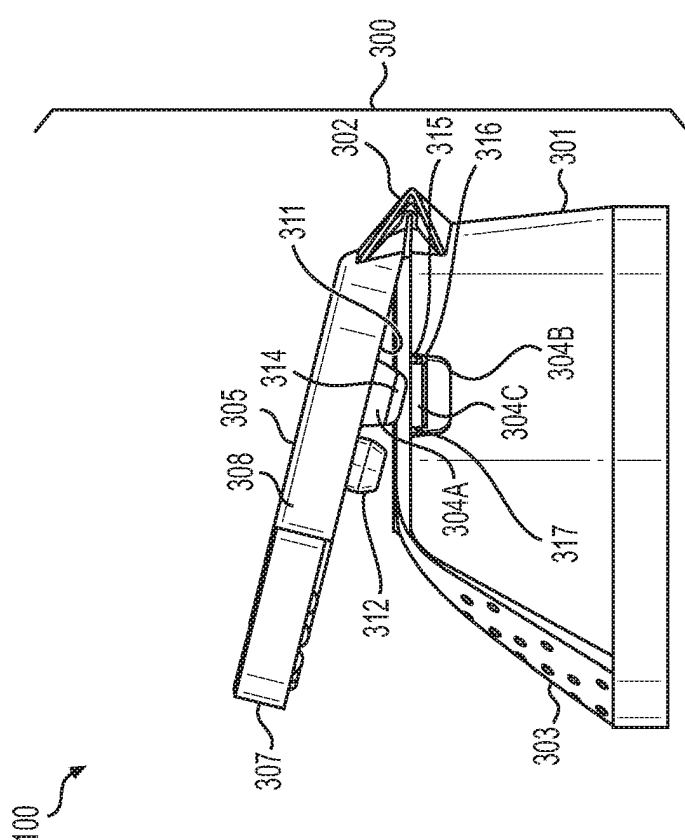


FIG. 8

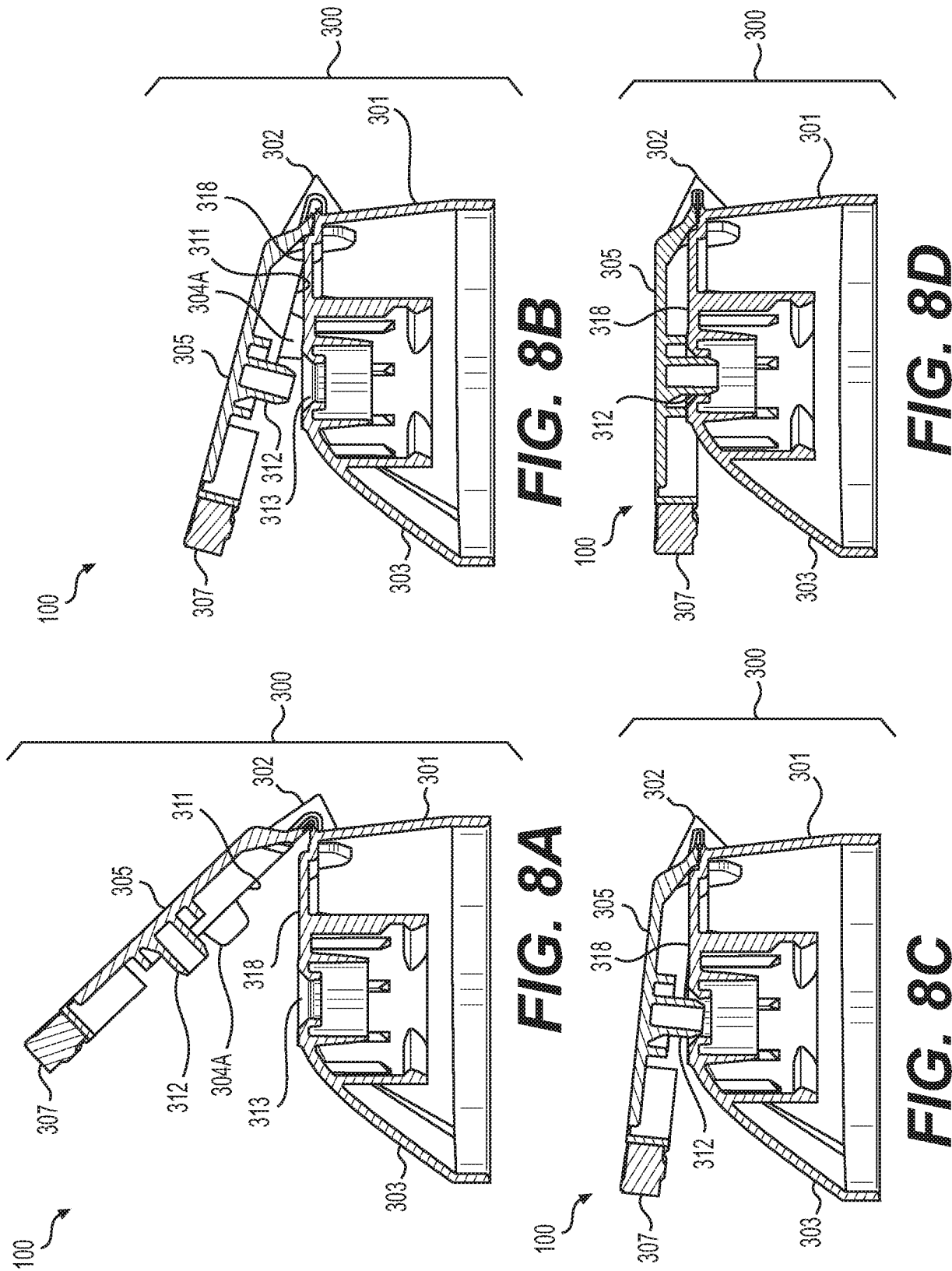


FIG. 9

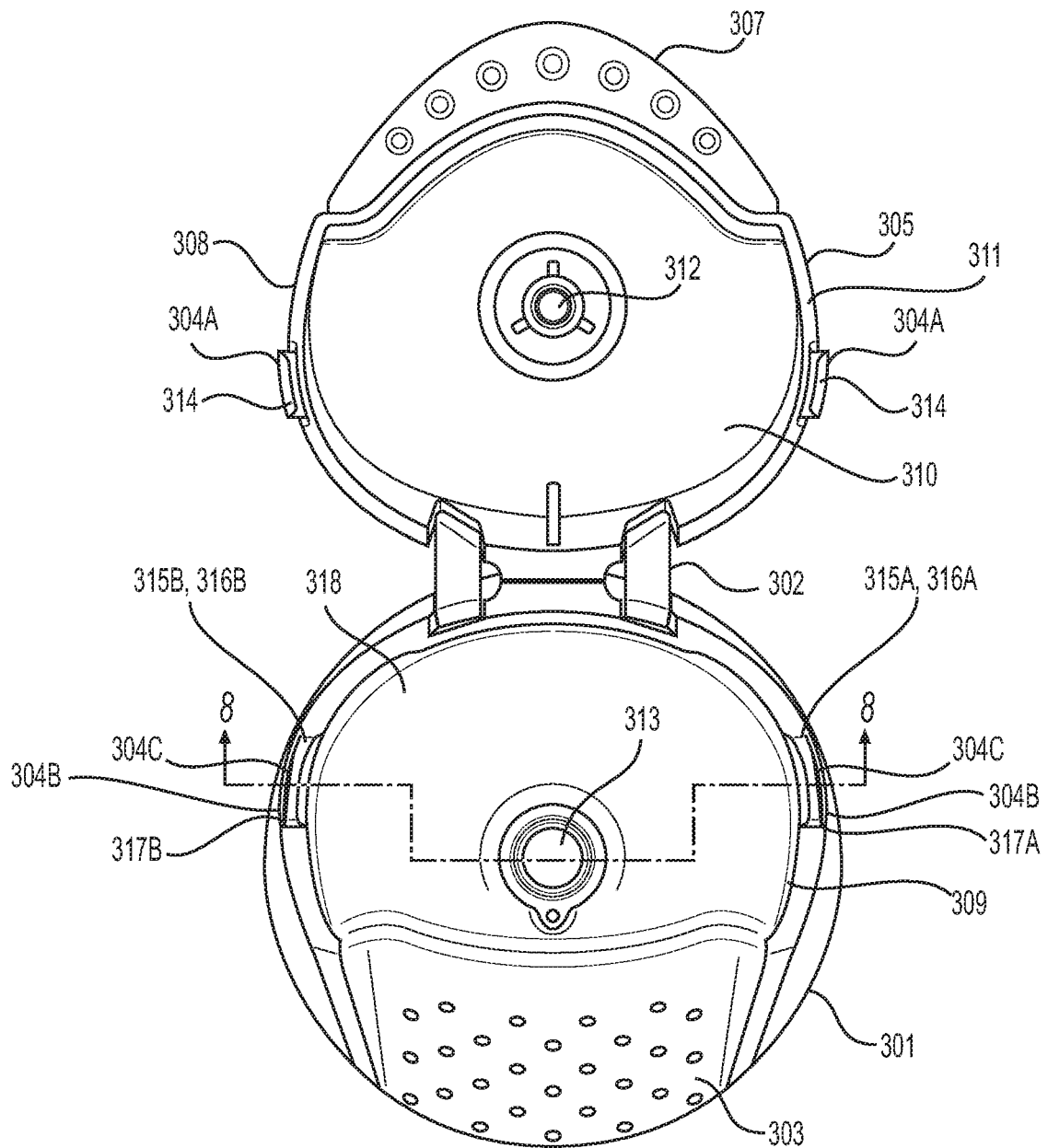


FIG. 10

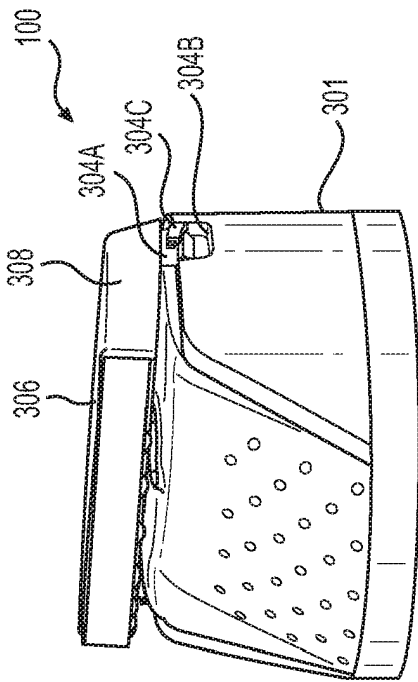


FIG. 10B

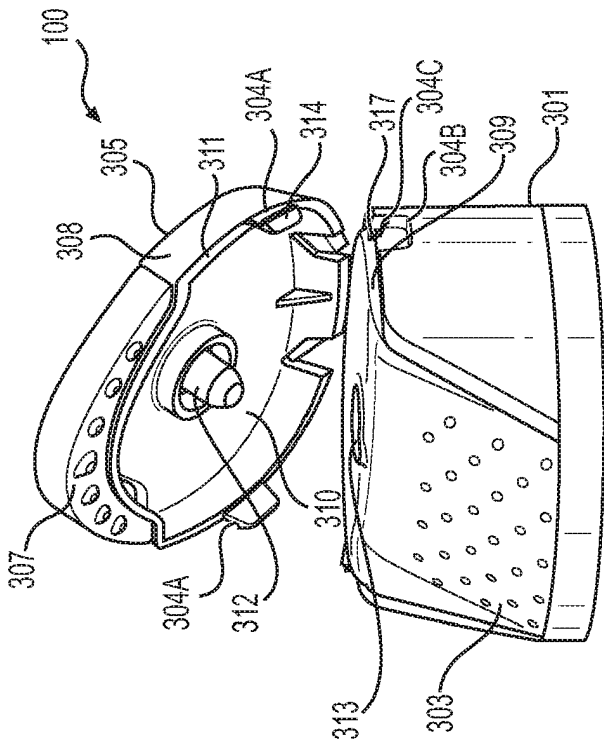


FIG. 10D

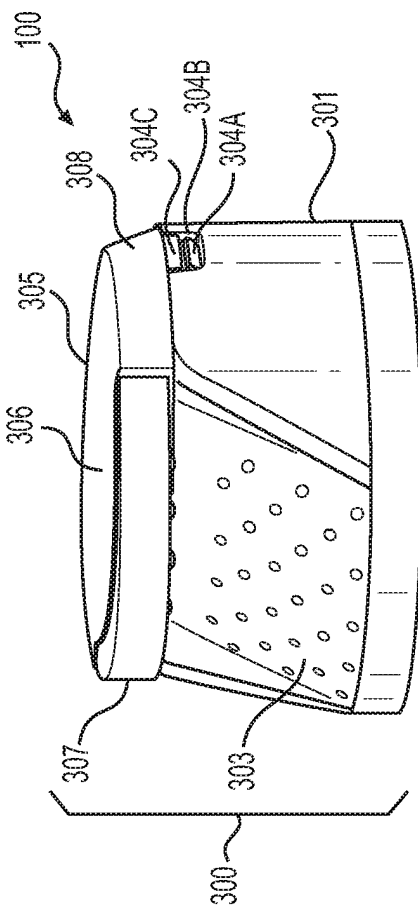


FIG. 10C

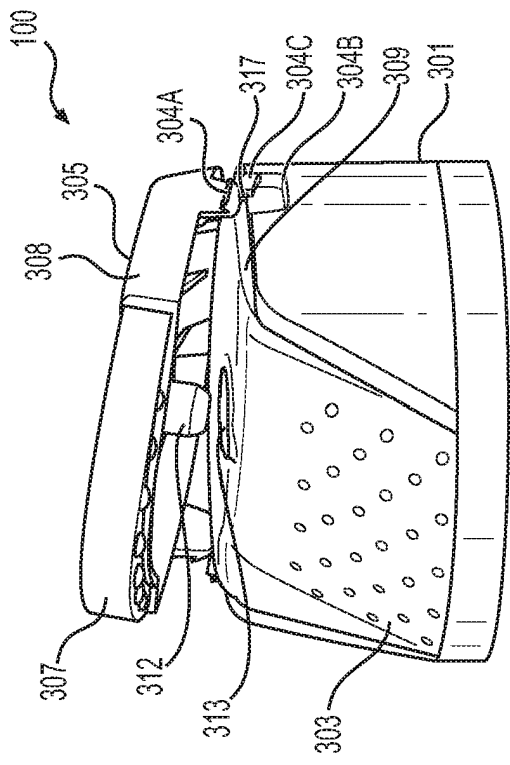


FIG. 10D

FIG. 11

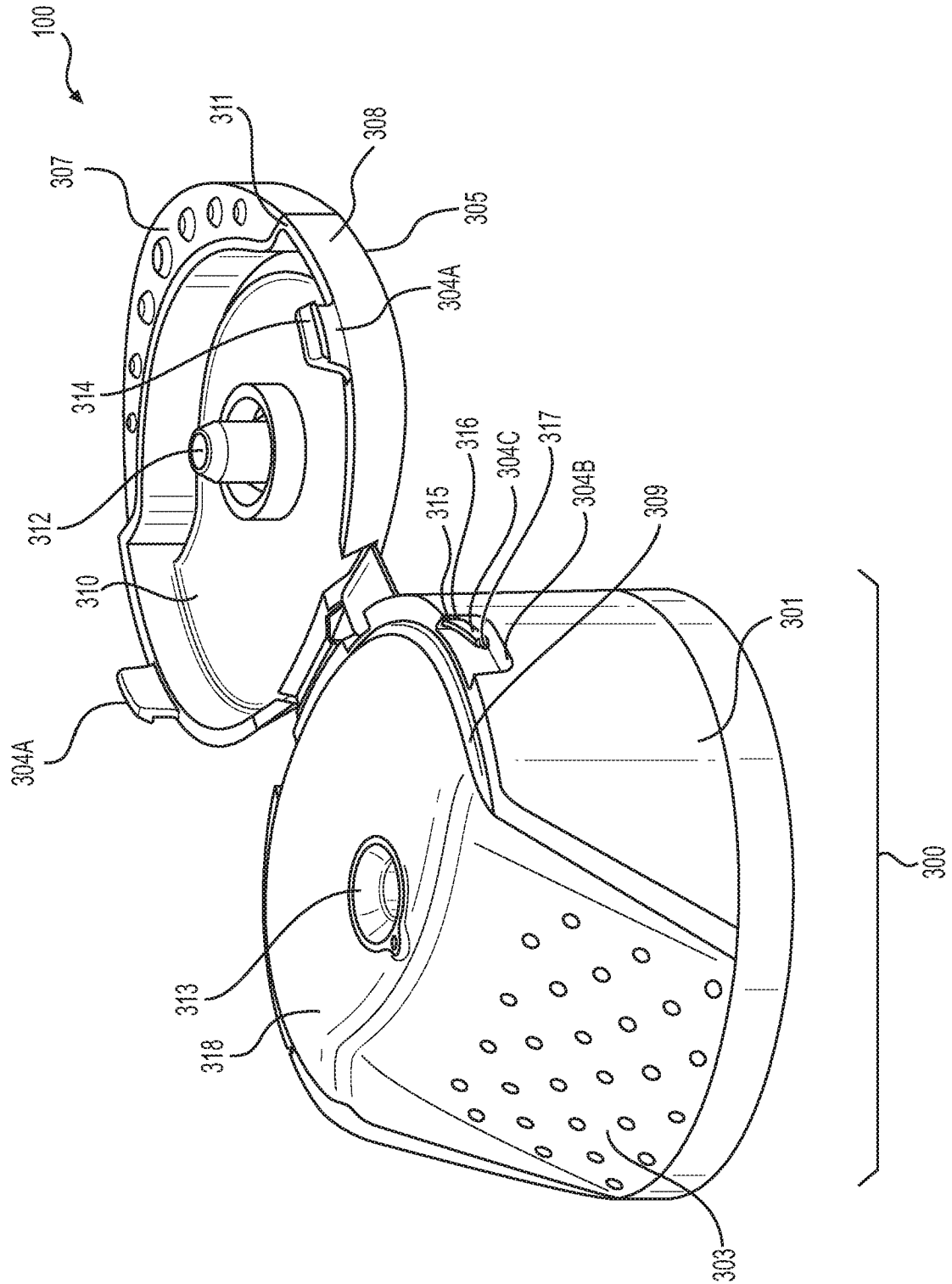
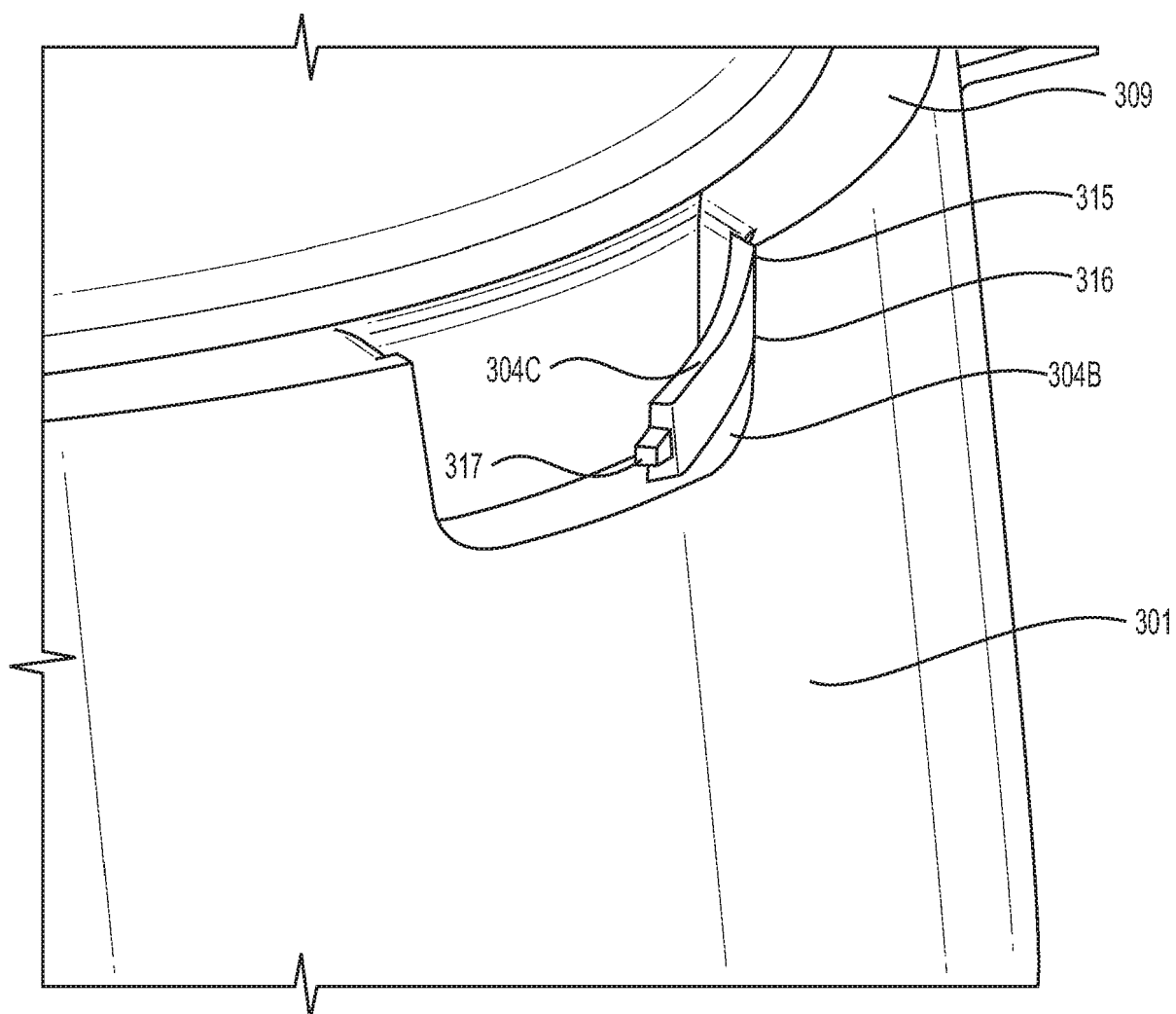


FIG. 12



REFERENCES CITED IN THE DESCRIPTION

This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.

Patent documents cited in the description

- EP 3526131 A1 [0004]