



(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
09.08.2006 Bulletin 2006/32

(51) Int Cl.:
B65D 43/02 (2006.01) B65D 51/16 (2006.01)

(21) Application number: **05002419.9**

(22) Date of filing: **04.02.2005**

(84) Designated Contracting States:
**AT BE BG CH CY CZ DE DK EE ES FI FR GB GR
HU IE IS IT LI LT LU MC NL PL PT RO SE SI SK TR**
Designated Extension States:
AL BA HR LV MK YU

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(54) **Air-tight container**

(57) An air-tight container is disclosed. The air-tight container comprises a body (1) comprising a receiving space (11); a lid (2) comprising an inlaying portion (21) for removably fitting onto the body (1); and a sealing assembly (3). The sealing assembly (3) comprises a sealing pad (33) at a bottom portion thereof, wherein the bottom portion is surrounded by a resilient element (32) and the

resilient element (32) is positioned between a top surface of the lid (2) and a bottom side of the sealing assembly (3) for moving the sealing assembly (3) up and down in a vertical direction within the air-releasing passage of the lid (2) under an external pressure applied thereto substantially unseal or seal the interior of the air-tight container.

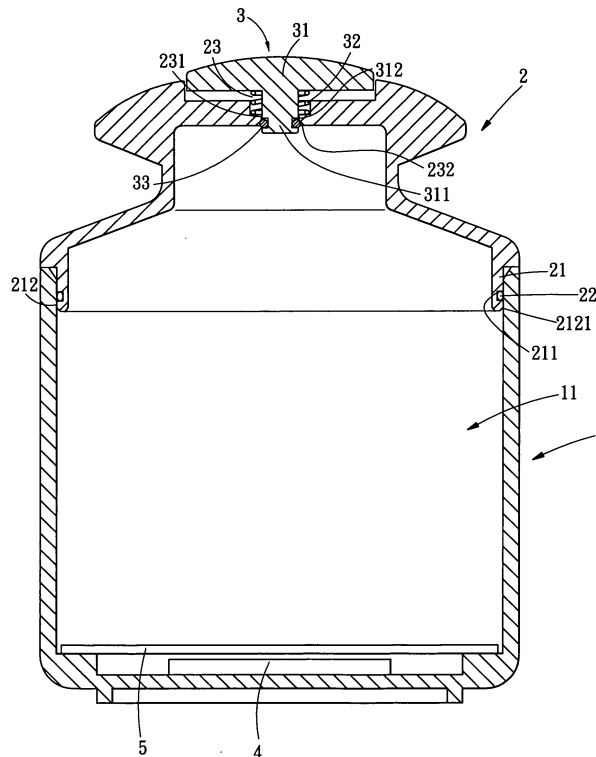


FIG. 5

Description**BACKGROUND OF THE INVENTION****1. The field of the invention**

[0001] The present invention relates to an air-tight container, and more particularly relates to an air-tight container comprising a sealing assembly over a lid, wherein the sealing assembly can be pressed down by a hand towards an air-releasing passage of the lid to release air from the air-tight container or allow air to enter into the air-tight container, and the air-tight container is sealed when the sealing assembly returns back to its original position when the hand is released from the sealing assembly.

2. Description of related art

[0002] With the advancement technologies, life of people has greatly improved, many people take work as priority and therefore are very busy with work and have very little time for other daily routine work. For convenience, many people usually store food at home. Even though the modern technology provides refrigerator for users to preserve different kinds of food, there are several types of items that need special care for storage thereof, such as bead type of food such as green beans, red beans, soy beans, peanuts and the like, or powder type of food such as flour, sugar, coffee and the like, need to be packed individually before being preserved in the food cabinet. And, there are some other items that need to be preserved in a dry condition and keep out the moisture. Usually, the moisture makes the food out of the quality when people use paper pack to pack the food as the paper pack cannot provide adequate packaging condition for storing food for a longer period, and therefore, paper pack is not suitable for preserving food. There are plastic or glass containers with lids available for storing food where the food can be conveniently put in or removed therefrom. However, the plastic or glass containers do not provide effective preservation of food due to inadequate sealing and therefore moisture could penetrate into the containers. Some proposed packing the desiccating agent packet into the containers for better preservation of food therein, however, the damaged/broken desiccating agent packet may undesirably contaminate the food.

[0003] Therefore, the above conventional containers still need improvement for improving the preservation of food therein.

SUMMARY OF THE INVENTION

[0004] Accordingly, in the view of the foregoing, the present inventor makes a detailed study of related art to evaluate and consider, and uses years of experience in this field, and through several experiments, to create an air-tight container comprising a sealing assembly that can be disposed over a lid thereof, wherein the sealing assembly can be pressed down by a hand towards the air-releasing passage of the lid to release air from the air-tight container or allow air to enter into the air-tight container, and the air-tight container is sealed when the sealing assembly returns back to its original position when the hand is released from the sealing assembly.

[0005] According to an aspect of the present invention, the lid of the air-tight container comprises an air-releasing passage, and a sealing assembly is disposed in the air-releasing passage of the lid. The sealing assembly comprises an axle protruding from a bottom side thereof, wherein an end portion of the axle comprises an indentation. A resilient element is disposed around the axle of the sealing assembly surrounding the axle of the sealing assembly. A sealing pad is disposed in the indentation of the axle. The sealing assembly is positioned in the air-releasing passage of the lid. The resilient element surrounding the axle of the sealing assembly is disposed between the top surface of the lid and the bottom side of the sealing assembly such that the resilient element will allow the sealing assembly to elastically move up and down in a vertical direction in the air-releasing passage of the lid. The lid is placed on top of the body of the air-tight container such that a plastic ring disposed in a indented groove at a bottom portion of the lid is adopted to tightly abut against the inner sidewalls of the air-tight container to substantially seal between the lid and the body of the air-tight container.

[0006] According to another aspect of the present invention, the sealing assembly is a T-shaped structure and the sealing pad disposed in the indentation in the bottom end portion of the axle is adopted to seal between the interior of the lid of the air-tight container and the air-releasing passage of the lid.

[0007] According to another aspect of the present invention, the air-releasing passage of the lid comprises an air-sealing hole on the top surface of the lid within the air-releasing passage in which the axle of the sealing assembly axially moves down under an external force applied thereto to release air from the interior of the air-tight container and also allow air to enter into the interior of the air-tight container, and return back to its original position when the external force is released to seal the interior of the air-tight container.

BRIEF DESCRIPTION OF THE DRAWING

[0008] For a more complete understanding of the present invention, reference will now be made to the following detailed description of preferred embodiments taken in conjunction with the following accompanying drawings.

[0009] Fig. 1 is an elevational view showing an air-tight container according to an embodiment of the present invention.

[0010] Fig. 2 is an exploded view showing an air-tight container according to an embodiment of the present invention.

[0011] Fig. 3 is a sectional side view showing an air-tight container according to an embodiment of the present invention.

[0012] Fig. 4 is a sectional side view showing before pressing the lid onto the body of the air-tight container according to an embodiment of the present invention.

[0013] Fig. 5 is a sectional side view showing after pressing the lid onto the body of the air-tight container according to the embodiment of the present invention.

[0014] Fig. 6 is a sectional side view showing while removing the lid from the body of the air-tight container according to an embodiment of the present invention.

[0015] Fig. 7 is a magnified view of section A of Fig. 6.

[0016] Fig. 8 is a sectional side view showing an air-tight container according to an embodiment of the present invention.

[0017] Fig. 9 is the sectional side view showing an air-tight container according to another embodiment of the present invention.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS

[0018] Reference will be made in detail to the preferred embodiments of the invention, examples of which are illustrated in the accompanying drawings. Wherever possible, the same reference numbers are used in the drawings and the description to refer to the same or like parts.

[0019] Referring to Figs. 1 and 2, the air-tight container, according to an embodiment of the present invention, comprises a body 1 having a receiving space 11 and a lid 2 for covering a top of the body 1.

[0020] The lid 2 comprises an inlaying portion 21 having an indented groove 211. A plastic ring 22 is disposed in the indented groove 211, and the indented groove 211 is adapted for retaining the plastic ring 22. The inlaying portion 21 of the lid 2 comprises a buckling portion 212 having a sloped edge portion 2121 at a bottom flange thereof. Furthermore, a top portion of the lid 2 comprises an air-releasing passage 23 and an air-sealing hole 231 with a comparatively smaller diameter formed at a bottom of the air-releasing passage 23, and the air-sealing hole 231 comprises a sloped-edge face 232 at a bottom thereof. The air-releasing hole 231 communicates between the air-releasing passage 23 and the interior of the lid 2.

[0021] A sealing assembly 3 comprises a T-shape sealing valve 31 having an axle 311 with smaller diameter protruding from a bottom thereof, wherein the axle 311 comprises an indentation 312 at a bottom end portion thereof. A sealing pad 33 is disposed in the indentation 312, and the indentation 312 is adapted for retaining the sealing pad 33 therein. The axle 311 is surrounded by a resilient element 32.

[0022] Now referring to Figs. 3, 4 and 5, the sealing assembly 3 is removably disposed in the air-releasing passage 23 of the lid 2, wherein the axle 311 is inserted into the air-sealing hole 231 and the resilient element 32 surrounding the axle 311 is disposed between the top surface of the lid 2 and the bottom side of the sealing assembly 3. Because the outer diameter of the sealing valve 31 of the sealing assembly 3 is smaller than that of the air-releasing passage 23, the sealing valve 31 can be moved up and down in a vertical direction within the air-releasing passage 23 and the axle 311 protruding from the bottom portion of the sealing valve 31 is inserted into the air-sealing hole 231 via the air-releasing passage 23. An outer diameter of the axle 311 is also smaller than that of the air-sealing hole 231, thus, gaps between the sealing valve 31 and the air-releasing passage 23, and between the axle 311 and the air-sealing hole 231 are formed. Accordingly, the air can pass through the gaps. The sealing valve 31 of the sealing assembly 3 can be pressed downwards with a hand, in doing so, the resilient element 32 surrounding the axle 311 get elastically compressed within the air-releasing passage 23 and the bottom end portion of the axle 311 of the sealing valve 31 gets out of air-sealing hole 231 and the sealing pad 33 retained in the indentation 312 of the axle 311 moves out through the air-sealing hole 231 over the sloped edge face 232 of the air-sealing hole 231. Thus, the air within the receiving space 11 of the body 1 is released through the air-releasing passage 23 via the air-sealing hole 231 of the lid 2. Consequently, the inlaying portion 21 of the lid 2 is firmly/tightly fit onto the receiving space 11 of the body 1. Furthermore, the buckling portion 212 positioned at the bottom flange of the inlaying portion 21 of the lid 2 contacts the inner sidewall of the receiving space 11 of the body 1 forcing the inlaying portion 21 of the lid 2 to elastically deform inwards. As the lid 2 is continuously pressed down, the plastic ring 22 disposed in the indented groove 211 of the inlaying portion 21 of the lid 2 elastically abuts against the inner sidewall of the receiving space 11 of the body 1 for position.

[0023] When the hand is released from the lid 2, the resilient element 32 of the sealing assembly 3 positioned above the lid 2 is returns to its original shape and position and thereby restore the sealing valve 31 to its original position. Thus, the sealing pad 33 of the axle 311 of the sealing valve 31 will retract and tightly abut between the sloped edge face 232

and the air-sealing hole **231** to seal the receiving space **11** of the body **1** and make the receiving space **11** in an air-tight condition.

[0024] Furthermore, the receiving space **11** of the body **1** comprises a receiving groove **111** for receiving a chemical agent packet **4** therein, for example, desiccating agent, and a plate **5** is disposed over the chemical agent packet **4** so that food can be placed and stored in an air-tight condition within the receiving space **11** of the body **1** and can be separated from the chemical agent packet **4**.

[0025] Referring to Figs. **6** and **7**, to release the lid **2** from the body **1** in a air-tight condition, the sealing valve **31** of the sealing assembly **3** is pressed down with a hand so that the resilient element **32** is compressed and the end portion of the axle **311** of the sealing valve **31** moves out of the air-sealing hole **231** and the sealing pad **33** gets out of the air-sealing hole **231** and the sloped edge face **232** at the same time. Thus, air from the atmosphere enters into the receiving space **11** via the air-releasing passage **23** and the air-sealing hole **231** of the lid **2** so that the pressure within the receiving space **11** of the body **1** and the outside is rendered same, and thus, the inlaying portion **21** of the lid **2** can be easily released from the receiving space **11** of the body **1**. After the lid **2** is released from the body **1**, the hand is released from the sealing valve **31** so that the resilient element **32** surrounding the axle **311** will return to its original shape and position so that the axle **311** of the sealing valve **31** also returns back to its original position within the air-sealing hole **231** and thereby seal the air-sealing hole **231** such that the sealing pad **33** positioned at the bottom end portion of the axle **311** tightly abuts between the air-sealing hole **231** and the sloped edge face **232**.

[0026] The body **1** and the lid **2** are made of plastic material, and the lid **2** can be used to cover onto or release from the receiving space **11** of the body **1** repeatedly.

[0027] To separate the lid **2** from the body **1**, preferably, the body **1** can be positioned at an angle, approximately 45°, with a hand pressing down the sealing assembly **3** above the lid **2** to let the air enter into the receiving space **11** of the body **1** and separate the lid **2** from the receiving space **11** of the body **1**.

[0028] Referring to Fig. **8**, the body **1** can be made of metallic material. A ring element **112** comprising an inner ring element **113** may be disposed around a top flange of the body **1**. Thus, when the inlaying portion **21** of the lid **2** is fit into the receiving space **11** of the body **1**, the buckling portion **212** positioned at the bottom flange of the inlaying portion **21** of the lid **2** contacts the inner sidewall of the inner ring element **113**. Accordingly, the inlaying portion **21** of the lid **2** gets elastically deformed towards inner side. When the lid **2** is continuously fitted into the receiving space **11**, the plastic ring **22** within the indented groove **211** of the inlaying portion **21** of the lid **2** firms abuts against the inner surface of the inner ring element **113** of the body **1** to effectively seal the receiving space **11** of the body **1** in an air-tight condition.

[0029] Now referring to Fig. **9**, a inner protruded flange **114** protrudes from a top portion of the body **1** extending towards the inside, and a U-shaped sealing ring **115** is assembled to an inward indented flange **116** and a sealing circle **117** is disposed within the inward indented flange **116**. The sealing ring **115** is assembled to the top flange of the body **1** and the sealing circle **117** tightly abuts against the inner protruded flange **114** to produce elastically deformation and sealed status and then the inlaying portion **21** of the lid **2** is fitted into the sealing ring **115** so that the buckling portion **212** of the inlaying portion **21** of the lid **2** contacts the innerside of the sealing ring **115** and thereby elastically deforming the inlaying portion **21**. Furthermore, when the lid **2** is continuously fitted into the receiving space **11**, the plastic ring **22** within the indented groove **211** of the inlaying portion **21** of the lid **2** is supported against the inner surface of the sealing ring **115** of the body **1**, and elastically deforms to effectively seal the receiving space **11** of the body **1**.

[0030] While the invention has been described in conjunction with a specific best mode, it is to be understood that many alternatives, modifications, and variations will be apparent to those skilled in the art in light of the foregoing description. Accordingly, it is intended to embrace all such alternatives, modifications, and variations in which fall within the spirit and scope of the included claims. All matters set forth herein or shown in the accompanying drawings are to be interpreted in an illustrative and non-limiting sense.

1.	Body		
11.	Receiving space	114.	Inner protruded flange
111.	Receiving groove	115.	Sealing ring
112.	Ring element	116.	Inward indented flange
113.	Inner ring element	117.	Sealing circle
2.	Lid		
21.	Inlaying portion	22.	Plastic ring
211.	Indented groove	23.	Air releasing passage
212.	Buckling portion	231.	Air sealing hole
2121.	Sloped edge portion	232.	sloped edge face
3.	Sealing assembly		
31.	Sealing valve	32.	Resilient element

(continued)

- | | | | |
|------|------------------------|-----|-------------|
| 311. | axle | 33. | Sealing pad |
| 312. | indentation | | |
| 4. | Chemical agent package | | |
| 5. | Plate | | |

Claims

1. An air-tight container, comprising:

a body, comprising a receiving space; and
a lid, comprising an inlaying portion for removably fitting onto the body and an air-releasing passage at a top portion thereof, wherein the inlaying portion comprises a indented groove at a bottom flange thereof for retaining a plastic ring, and wherein said plastic ring retained in said indented groove is for tightly abutting against inner sidewall of said body in said receiving space; wherein said lid has a release passage having a air-releasing hole with a smaller bottom portion and a top portion, wherein said release passage has a sealing assembly comprised of a tube with a resilient sealing valve, and wherein said sealing valve comprises an axle surrounded with a sealing pad and said sealing valve is positioned in said release passage of said lid to axially movable therein, **characterized in that:**

said sealing assembly functions for sealing or unsealing said receiving space of said body and said lid.

2. The air-tight container according to claim 1, wherein a bottom edge portion of said air-sealing hole is sloped and an end portion of the axle of said sealing assembly comprises an indented groove for retaining said sealing valve therein.

3. The air-tight container according to claim 1, wherein said body and said lid are comprised of rubber or plastic material, and wherein said body comprises an insertion element and an inner insertion element disposed at a top flange thereof or said body has an insertion element and a sealing ring at a top flange thereof.

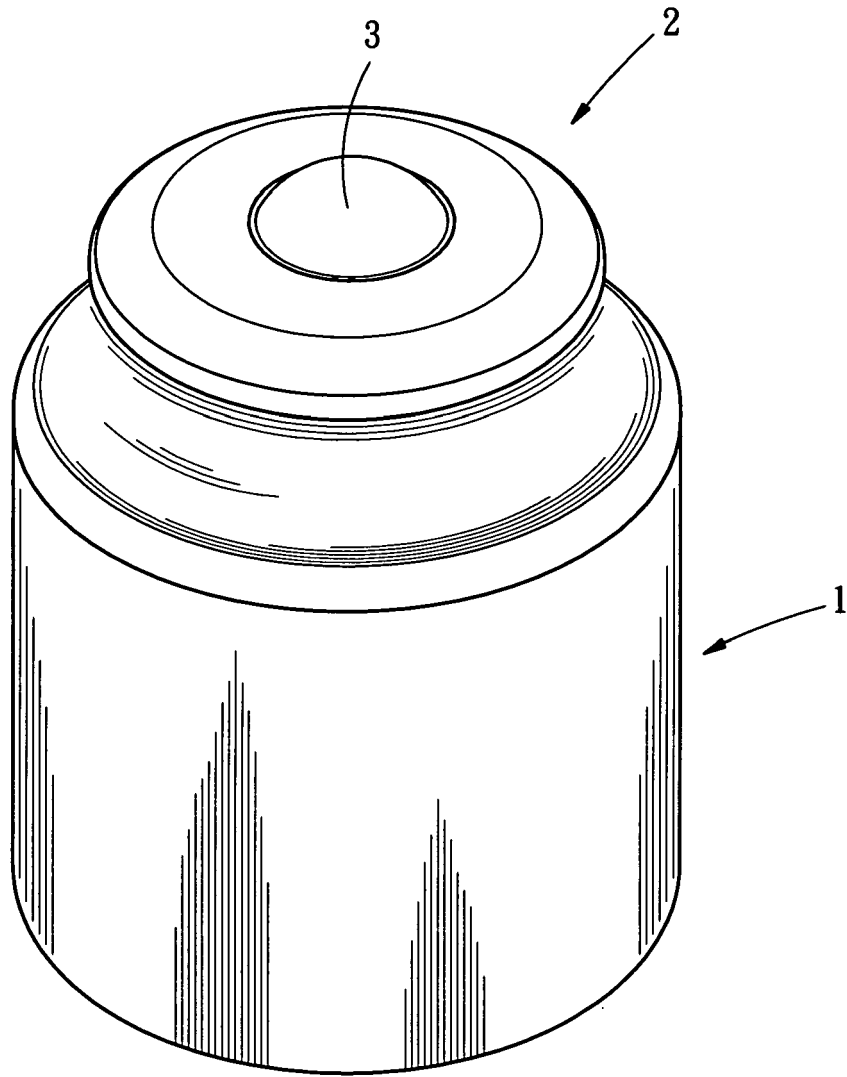


FIG. 1

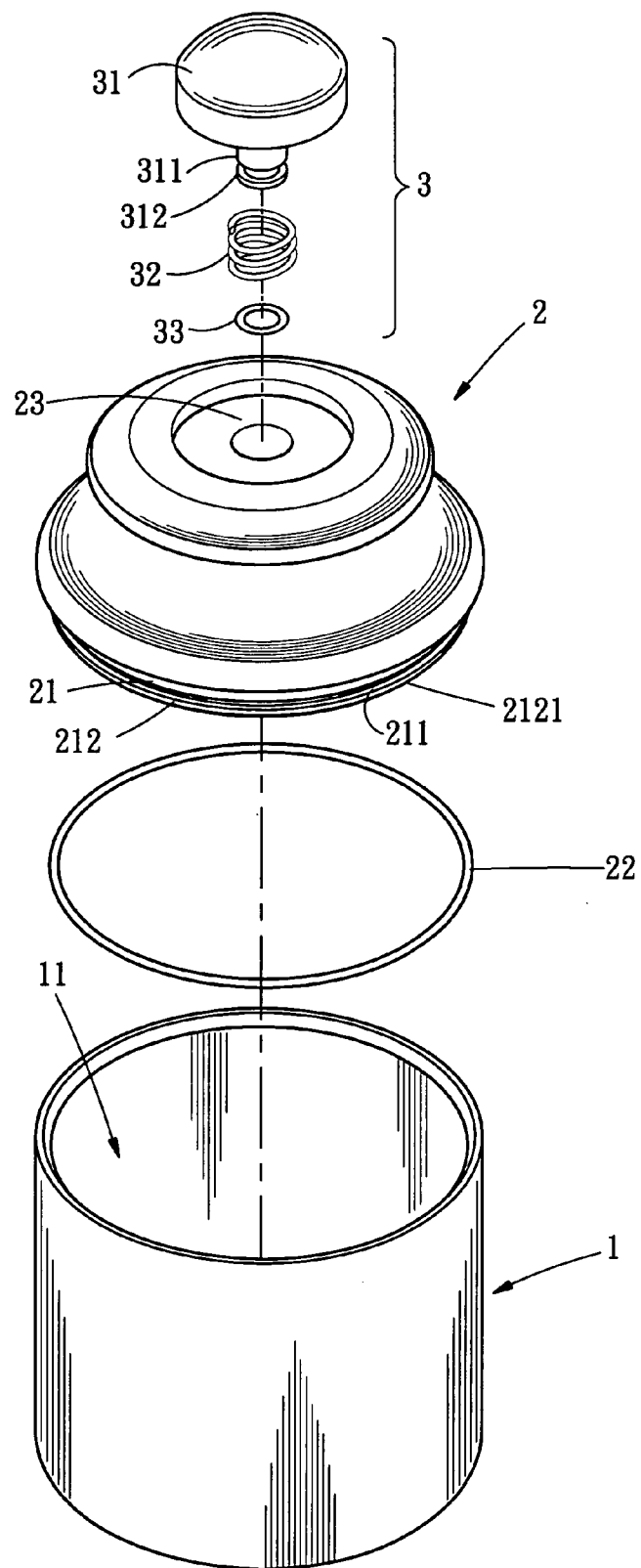


FIG.2

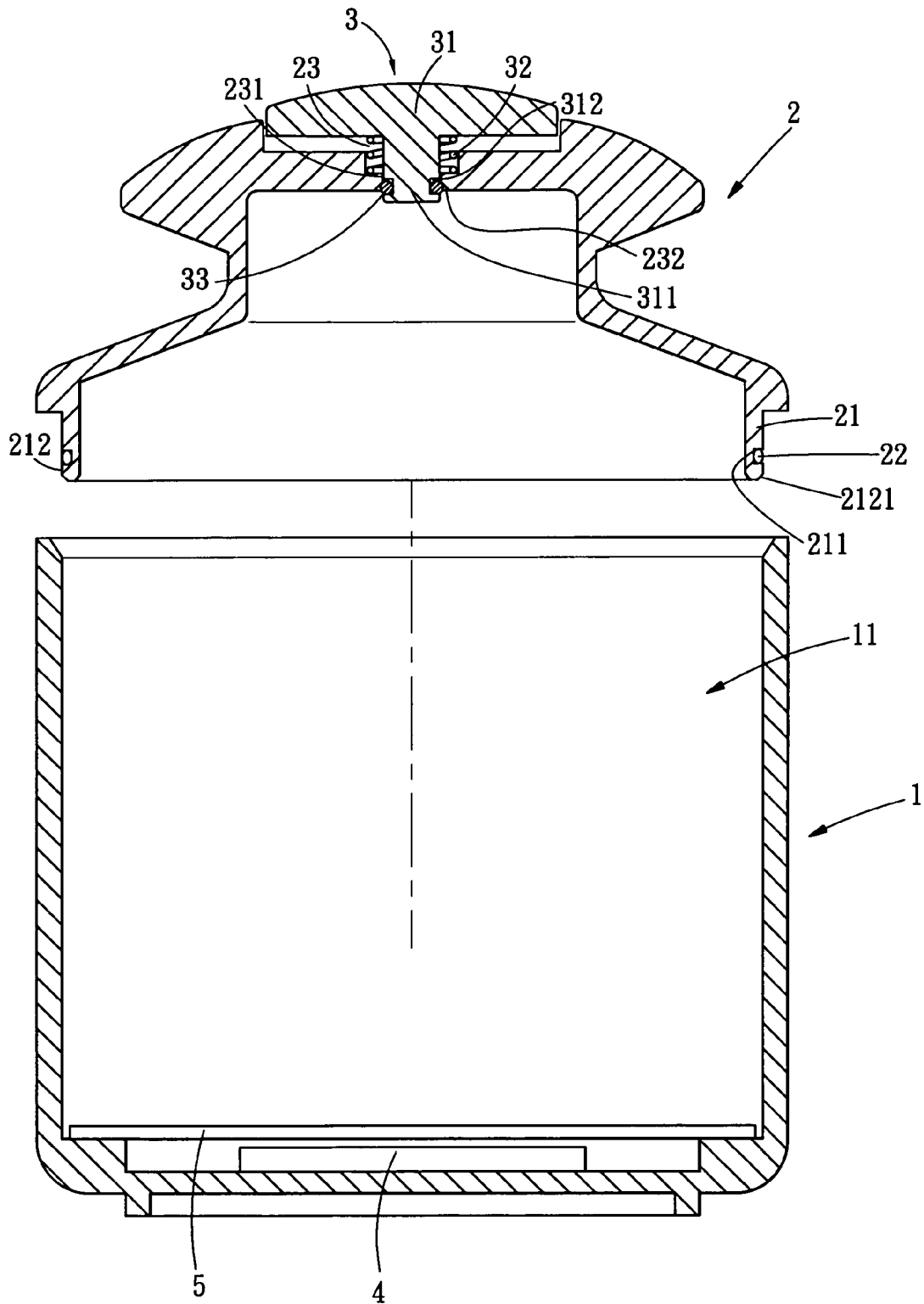


FIG. 3

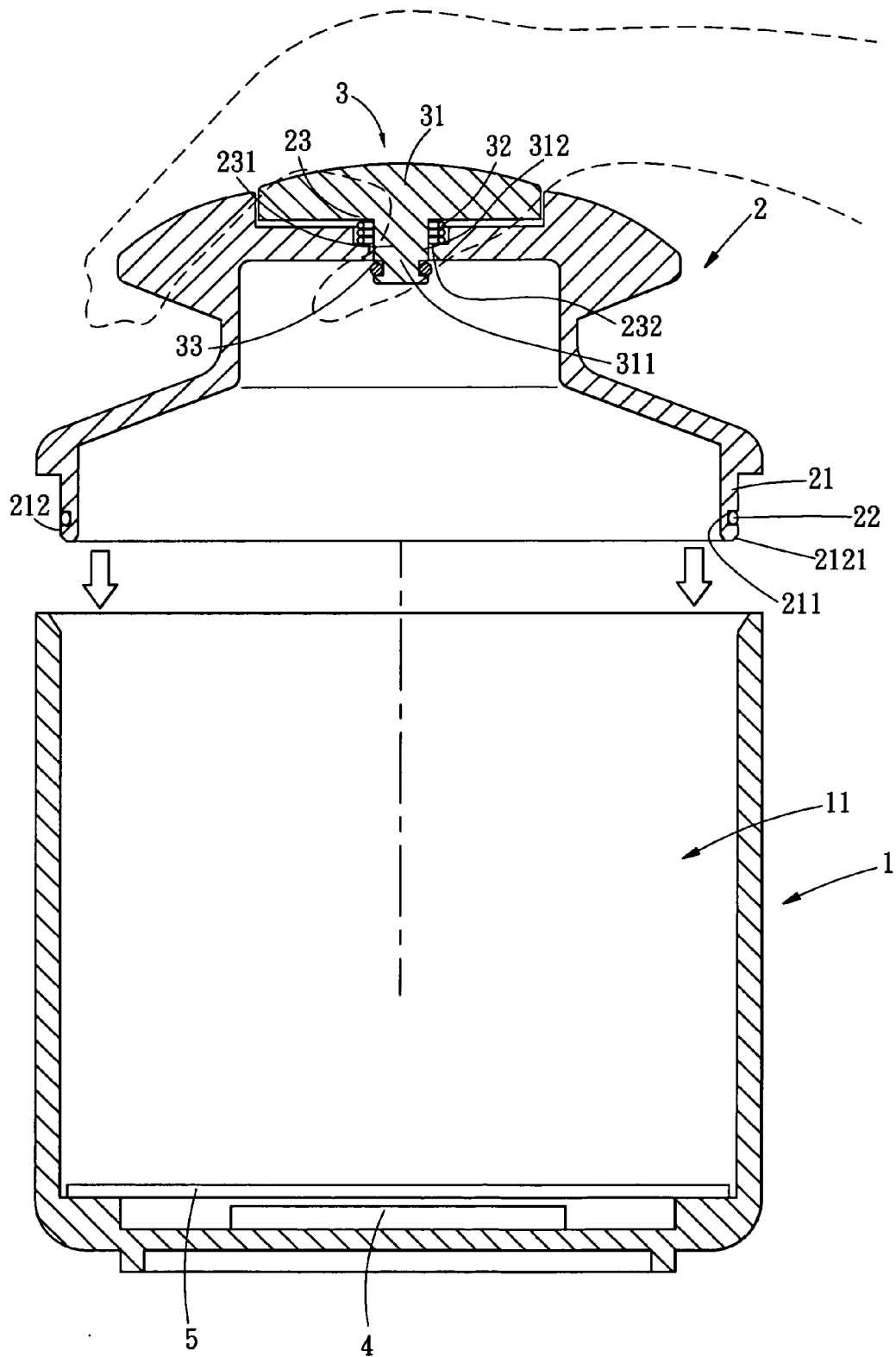


FIG. 4

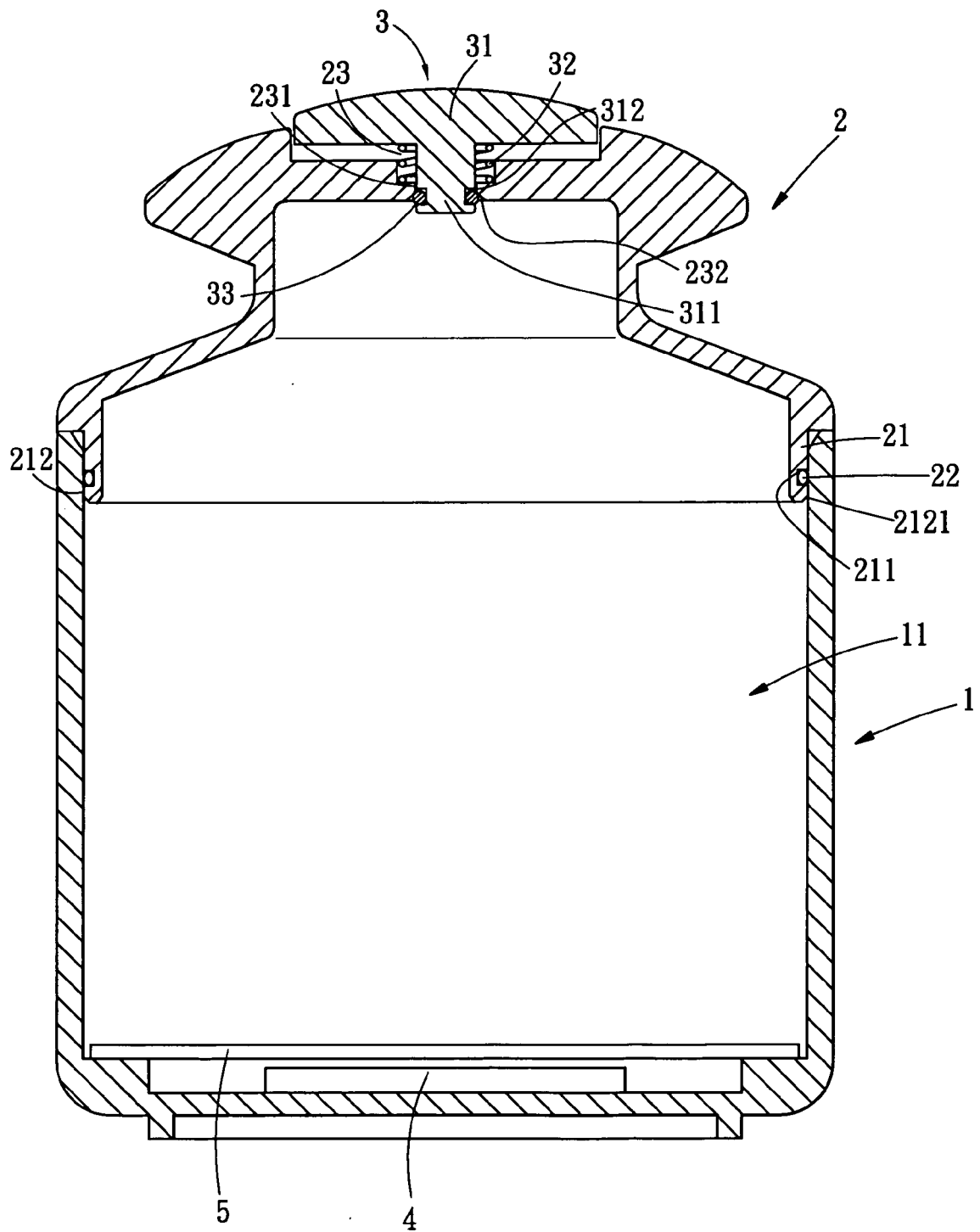


FIG. 5

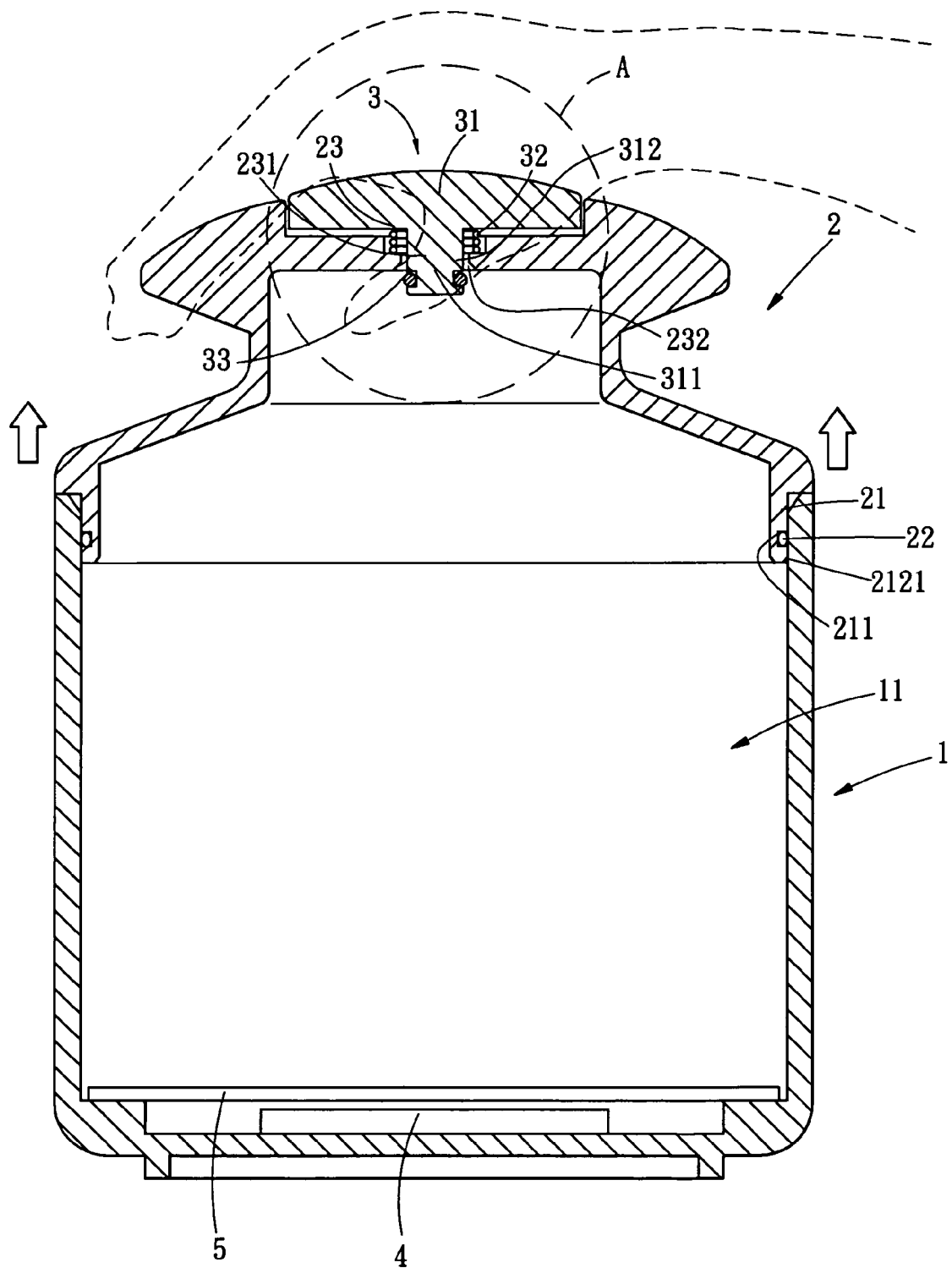


FIG. 6

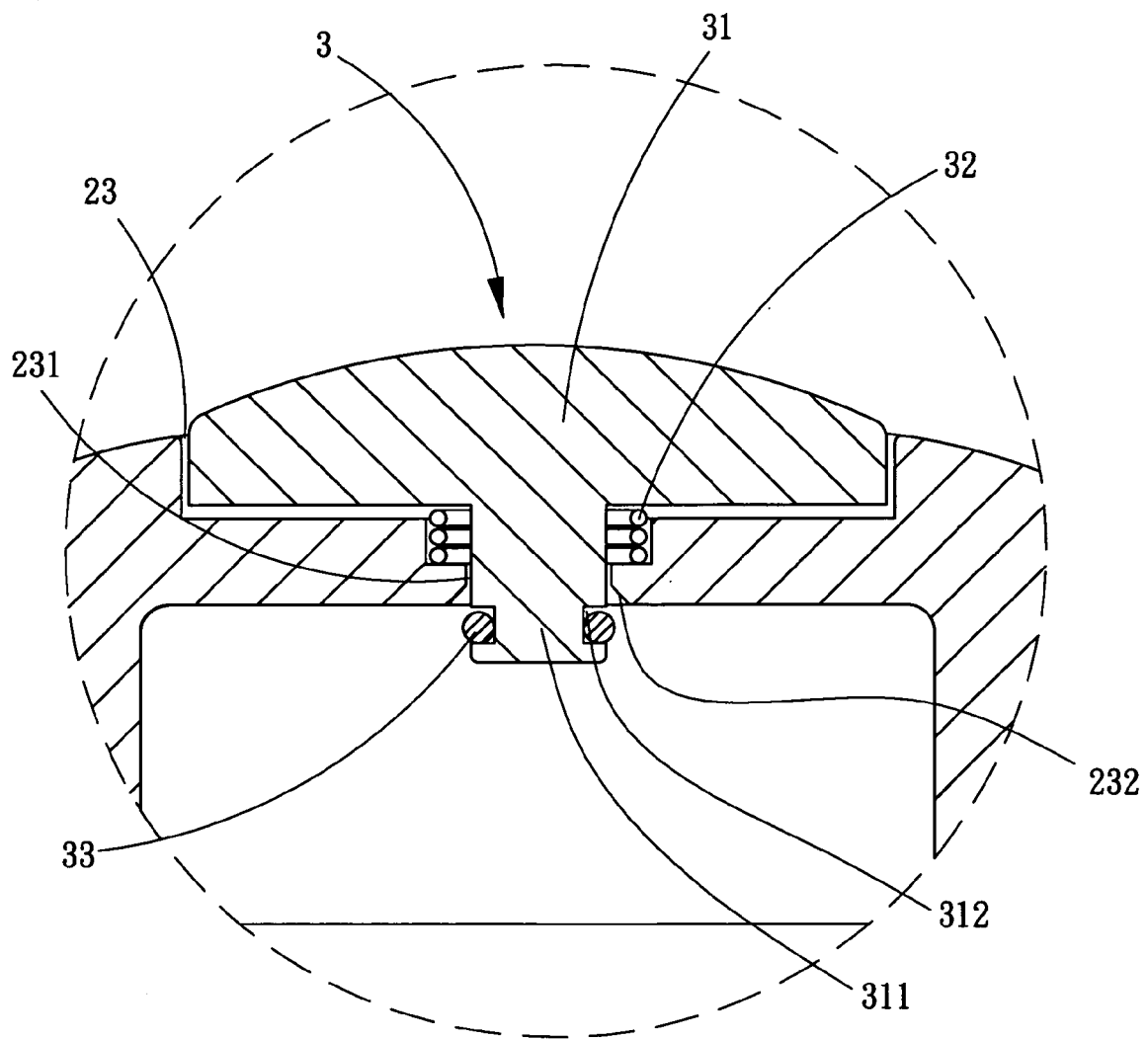


FIG. 7

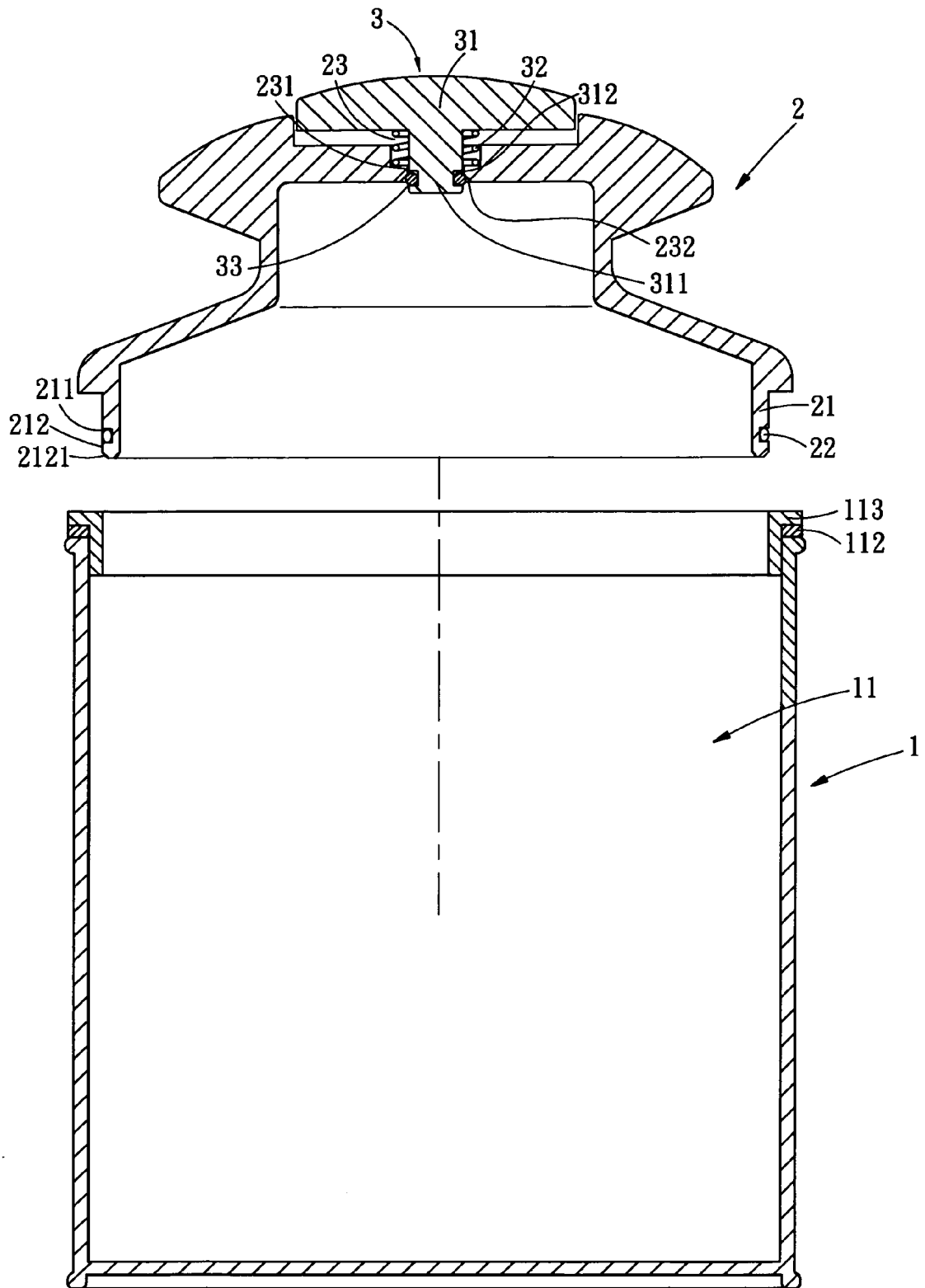


FIG.8

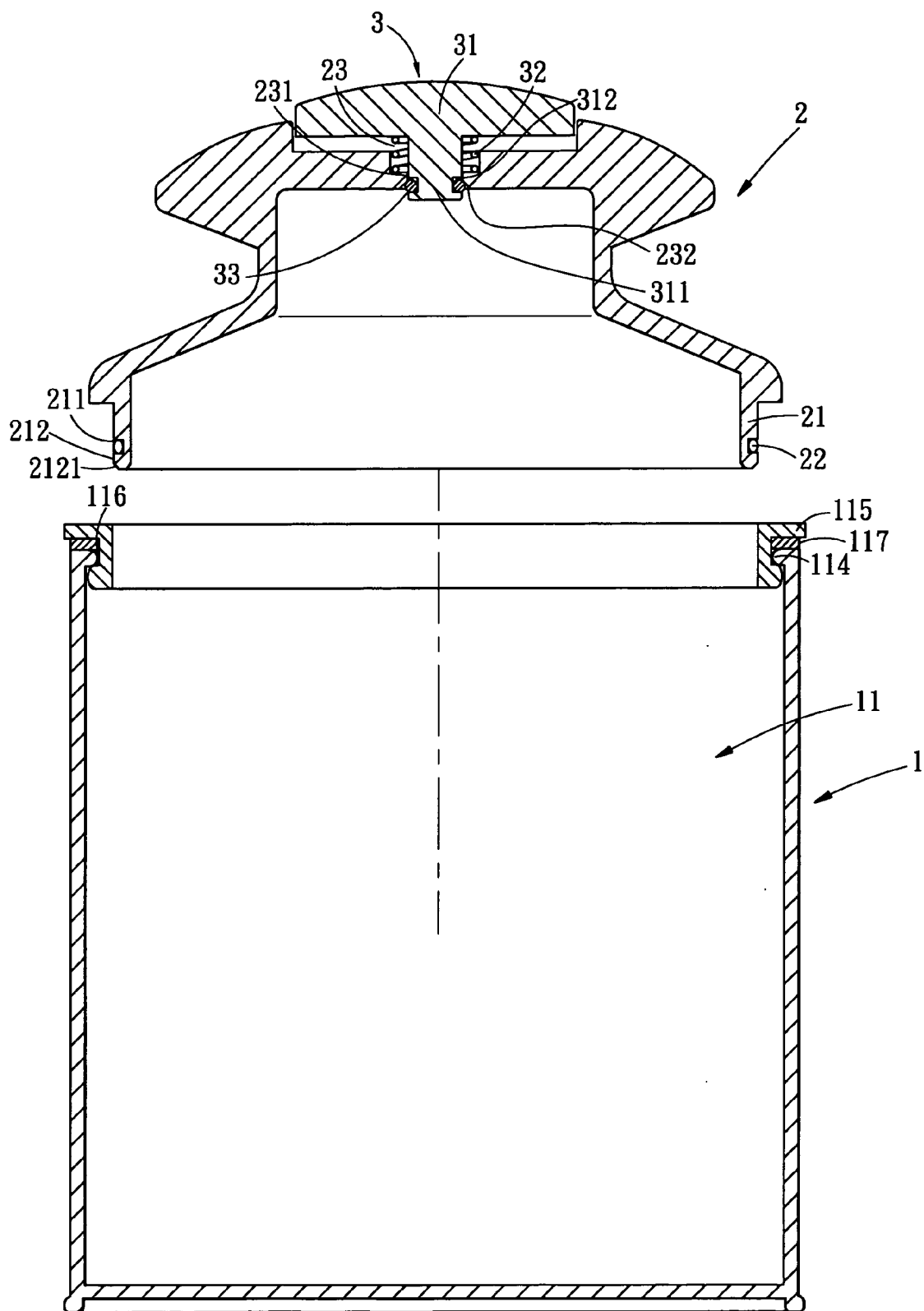


FIG. 9

1. Body

- 11. Receiving space
- 111. Receiving groove
- 112. Ring element
- 113. Inner ring element

- 114. Inner protruded flange
- 115. Sealing ring
- 116. Inward indented flange
- 117. Sealing circle

2. Lid

- 21. Inlaying portion
- 211. Indented groove
- 212. Buckling portion
- 2121. Sloped edge portion

- 22. Plastic ring
- 23. Air releasing passage
- 231. Air sealing hole
- 232. Sloped edge face

3. Sealing assembly

- 31. Sealing valve
- 311. axle
- 312. indentation

- 32. Resilient element
- 33. Sealing pad

4. Chemical agent package

5. Plate



DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
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The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 19 April 2005	Examiner Jervelund, N
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document 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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EPO FORM 1503 03.82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
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