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(54) **VACUUM PACKAGING CONTAINER**

(57) The invention provides a vacuum package container, it comprises: a body, which includes a top portion, a bottom portion and a side wall, and is provided with one or more vent holes; a lotion pump, which is mounted on the top portion of the body. The vacuum package container further comprises a pouch, an edge of the pouch is hermetically joined to the inner wall of the body so that the pouch is in contact with a lotion on one side thereof and in communication with the atmosphere on the other side. The vacuum package container further comprises a guide bar, which is shaped as having a longitudinally opened guide channel and is connected at one end thereof to the intake of said lotion pump. The vacuum package container can provide a strong suction force, thereby solving the problems that the lotion in the container is difficult to be drawn out or drawn up thoroughly. The requirements for precision of components of the container are not so high and so the manufacture cost of the container is low. A guide bar provided in the container can prevent the intake of the lotion pump from being blocked.

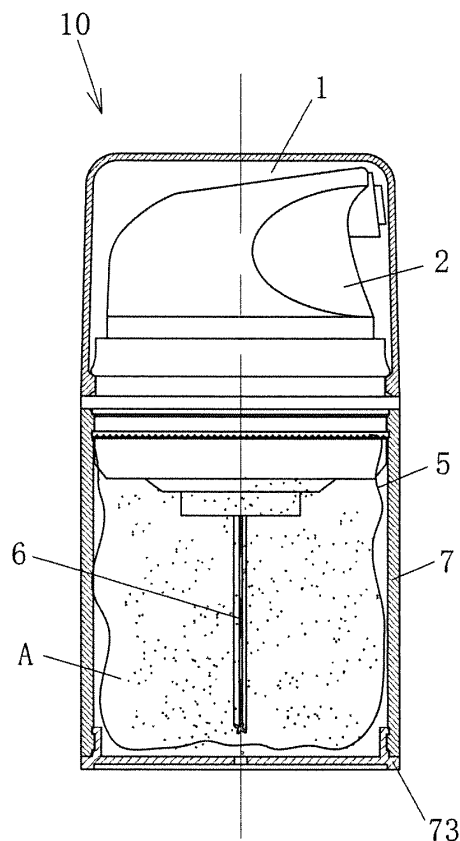


FIG. 2A

Description

Field of the Invention

[0001] This invention relates to a vacuum package container.

Background of the Invention

[0002] In daily chemicals industries, it is desirable for some daily chemicals not to be in contact with the air, and hence it is necessary for them to be packed in a vacuum package container. The existing vacuum package containers can be classified into two types: "bottom piston type" and "internal pouch type".

[0003] As shown in Fig. 1A and 1B, a vacuum package container of the bottom piston type mainly comprises a cap 1, a lotion pump 2, a piston 3 and a bottle or cup 4. The cap 1 covers the lotion pump 2. The lotion pump 2 does not have any vent holes for air pressure equilibrium, and hence the air cannot enter the inside of the bottle 4. The piston 3 is disposed in the bottle 4 and can move up and down. A vent hole (not shown) is provided in the bottom wall. In operation, by pressing the lotion pump 2, lotion is pumped out of the container. During the pumping, the air enters the lower space of the container through the vent hole and pushes the piston 3 to move up. In this manner, the lotion in the container is maintained not to be in contact with the air. Meanwhile, the lotion space above the piston 3 will not be in a vacuum condition.

[0004] Although using a container of the bottom piston type can realize a vacuum package, there are still some problems with it. Firstly, requirements for the precision of the components are very high, the slide fit between the piston 3 and the inner wall of the bottle 4, if it is too loose, will result in leakage, whereas if it is too tight, will cause the piston 3 not to move up. In the latter case, a vacuum will occur in the lotion space above the piston 3, which will cause a problem that it is difficult to pump out the lotion or very hard to draw out the lotion thoroughly. Secondly, since the suction force generated by the lotion pump 2 has to overcome the gravity of the piston 3 and the lotion on it as well as the friction between the piston 3 and the bottle 4, the suction force for drawing lotion is very small. Viewing from this point, it also tends to be difficult to pump out the lotion or very hard to draw out the lotion thoroughly. In addition, the vacuum package container of this type is liable to leak where it contains a thinner liquid or it is compressed.

[0005] A vacuum package container of the internal pouch type comprises a cap, a lotion pump, a pouch or bladder and a bottle or cup. The cap, lotion pump and bottle are all similar to those of the vacuum package container of the bottom piston type described above. A large difference between a container of the bottom piston type and a container of the internal pouch type is that the latter has a pouch for containing lotion. The pouch is placed in the bottle with its opening portion tightly clamped be-

tween the lotion pump and the mouth of the bottle. In operation, by pressing the lotion pump, lotion is pumped out of the container. During the pumping, the air enters the inside of the bottle through a vent hole in its bottom wall, so that the atmosphere pressure compresses the pouch. As the lotion is pumped out more and more, the pouch becomes smaller and smaller. In this manner, the lotion in the pouch is maintained not to be in contact with the air. Meanwhile, the lotion space in the pouch will not be in a vacuum condition.

[0006] Compared with a vacuum package container of the bottom piston type, a vacuum package container of the internal pouch type is much easier to draw out the lotion, and the requirements for the precision of its components are not so high. However, in the case of a vacuum package container of the internal pouch type, it is troublesome to put the pouch in place into its bottle. In addition, there may be such a case that air exists in the upper space of the pouch since the pouch is not filled with a sufficient amount of lotion. Such a case will make difficult to pump out the lotion, and will make the lotion be in contact with the air. Moreover, the opening of a pouch is generally relatively smaller and hence is inconvenient for filling. Yet another problem is that the lotion pump may be selectively provided with a suction pipe, but the end of the suction pipe is liable to be blocked so as to cause difficulty to pump out the lotion or to suction out the lotion thoroughly.

Summary of the Invention

[0007] To remove the above deficiencies, the object of the invention is to provide a vacuum package container that is powerful in suction force, leak-proof and low-cost.

[0008] To achieve the above object, the invention provides a vacuum package container, which comprises: a body, which includes a top portion, a bottom portion and a side wall, and is provided with one or more vent holes; a lotion pump, which is mounted on the top portion of the body. The vacuum package container further comprises a pouch, an edge of the pouch is hermetically joined to the inner wall of the body so that the pouch is in contact with a lotion on one side thereof and in communication to the atmosphere on the other side.

[0009] Preferably, the container further comprises a guide bar, which is shaped as having at least one longitudinally opened guide channel and is connected at one end thereof to an intake of the lotion pump.

[0010] Preferably, the guide bar is a flexible elongated bar with a cross-shaped cross section.

[0011] Preferably, the guide bar includes a guide head, which is the same as the guide bar in configuration and is shorter than the guide bar in length, and is connected at one end thereof to an end of a conventional suction pipe.

[0012] Preferably, the guide bar includes a transversely guiding configuration.

[0013] Preferably, the pouch has a first opened end

and a second closed end, and an outside surface of the first opened end is bonded to an inside surface of the top portion of the body.

[0014] Preferably, the pouch has a first opened end and a second closed end, and an outside surface of the first opened end is bonded to an inside surface of the bottom portion of said body.

[0015] Preferably, the pouch is compressed and expanded in the longitudinal or transverse direction of the body, and the vent hole is provided in the bottom portion of the body.

[0016] Preferably, the pouch is a bellows-shaped pouch.

[0017] Preferably, the bottom portion is a component separately formed from the body.

[0018] In the vacuum package container of the invention, the suction force generated by the lotion pump is substantially applied to draw the lotion. It is unnecessary for the suction force to compensate for the gravity of the lotion pump and the piston as well as the friction between the piston and the body. Accordingly, the powerful suction force of the container can solve the problems that the lotion in the container is difficult to be drawn out or drawn up thoroughly. The requirements for precision of components of the container are not so high and hence the manufacture cost of the container is low. Moreover, since the body has a large mouth and the pouch is placed into the body prior to the filling of the lotion, it is very easy for the container of the invention to be filled with a lotion.

[0019] In addition, the unique guide bar provided in the container can protect the intake of the lotion pump from being blocked in various conditions. Furthermore, in the case that there is some air left in the upper portion, the residual air can be suctioned out at the junction between the lotion pump and the guide bar. Even if the whole container including the lotion pump is put upside down, it is still possible to draw out the lotion. The vacuum package containers of the prior art, no matter they have a suction pipe or not, are unable to realize the above effects.

Brief Description of the Drawings

[0020]

Fig. 1A is a schematic sectional view of a vacuum package container of the bottom piston type in the prior art;

Fig. 1B is an exploded sectional view of the container shown in Fig. 1A;

Fig. 2A is a schematic assembly view of a vacuum package container according to the first embodiment of the invention, in which a pouch is filled with a lotion;

Fig. 2B is a schematic assembly view of a vacuum package container according to the first embodiment of the invention, in which the pouch has been substantially drawn to be empty;

Fig. 2C is a schematic exploded sectional view of

the vacuum package container according to the first embodiment of the invention;

Fig. 3A is a schematic assembly view of a vacuum package container according to the second embodiment of the invention, in which almost no air is in the pouch;

Fig. 3B is a schematic assembly view of a vacuum package container according to the second embodiment of the invention, in which the pouch is filled with the air;

Fig. 3C is a schematic exploded sectional view of the vacuum package container according to the second embodiment of the invention;

Fig. 4A is a schematic assembly view of a vacuum package container according to the third embodiment of the invention, in which a pouch is filled with a lotion;

Fig. 4B is a schematic assembly view of a vacuum package container according to the third embodiment of the invention, in which pouch has been substantially drawn to be empty;

Fig. 4C is a schematic exploded sectional view of the vacuum package container according to the third embodiment of the invention;

Fig. 5A is a schematic assembly view of a vacuum package container according to the fourth embodiment of the invention, in which almost no air is in the two pouches, but the space between the two pouches is filled with a lotion;

Fig. 5B is a schematic assembly view of a vacuum package container according to the fourth embodiment of the invention, in which almost no air is in the two pouches, but the two pouches are filled with the air and the space between them has been drawn to be empty; and

Fig. 6 is schematic perspective view of a variant of the guide bar used in the invention.

Embodiments

[0021] Now, the invention is described in detail by the preferred embodiments and with reference to the accompanying drawings, in which the same or similar reference numbers denote the same or similar components.

[0022] Referring to Fig. 2A-2C, there is shown a vacuum package container 10 according to the first embodiment of the invention. The vacuum package container 10 comprises: a body 7, which includes an opened top portion 71 and a bottom portion 72 and is provided with a base 73 for closing the bottom, and in the base 73 is provided a vent hole; a lotion pump 2, which is mounted to the top portion 71 of the body 7 and does not have a vent hole for pressure equilibrium; a cap 1 which covers the lotion pump 2; a pouch 5, which has a first opened end 51 and a second closed end 52, and the first opened end 51 is hermetically joined to the top portion 71 of the body 7; and a guide bar 6, which is connected, like a conventional suction pipe, to an intake of the lotion pump

2.

[0023] In the first embodiment, the outside surface of the first opened end 51 of the pouch 5 is bonded to the inner wall of the top portion 71 of the body 7 so that the pouch 5 is hermetically joined to the inner wall of the body 7. In this case, one side of the pouch 5 is in contact with the lotion and the other side is in communication with the atmosphere. The hermetical bonding between the pouch 5 and the body 7 can prevent the lotion from leakage, thereby protecting the lotion from being in contact with the air and ensuring the lotion pump 2 operating well.

[0024] The guide bar 6 is a flexible elongated bar made of plastics. In the embodiment, the guide bar 6 has a cross section of a cross shape. In other words, the guide bar 6 has four ridges 61, between every two adjacent ridges is formed an opened guide channel 62 so that there are four channels in all. With the guide bar 6, the lotion A can be drawn into the guide channels 62 at any positions in the longitudinal direction of the guide bar 6, and then be drawn upwardly along the guide channels 62 into the lotion pump 2. With this design, the problem of block, which may occur with a conventional suction pipe, will not occur. In addition, in the case that there is some air left in the upper portion of the pouch, the residual air can be suctioned out at the junction between the lotion pump 2 and the guide bar 6 by the guide bar 6. Moreover, even if the whole container including the lotion pump 2 is put upside down, it is still possible to draw out the lotion. Furthermore, even if the pouch 5 is suctioned to stick to the guide bar 6, a passage similar to a suction pipe will be formed between the pouch 5 and the guide bar 6, thereby ensuring the lotion pump 2 to operate well. The vacuum package containers in the prior art, no matter they have a suction pipe or not, are unable to realize the above effects.

[0025] Although the guide bar 6 in the first embodiment and in the subsequent second and third embodiments is shown as having a cross-shaped cross section, it should be understood that the shape of the guide bar 6 is not limited to it, for example, it is also feasible to provide three or other number of longitudinal ridges to define the guide channels of the corresponding number, or the guide channels can be formed by cutting longitudinal grooves in a rod. In general, to ensure the lotion to be smoothly suctioned into the pump, it is only necessary for the guide bar to have at least one longitudinal opened guide channel. In addition, as shown in Fig. 6, the guide bar can include a guide head 6a, which is the same as the guide bar 6 in configuration but shorter than the guide bar in length. The guide head 6a can be connected to an end of a conventional suction pipe. The guide channels of the guide head 6a, similar to the guide bar 6, can prevent the end of the suction pipe from being blocked. Furthermore, on the ridges 61 a of the guide head 6a is formed a serration guide configuration 610a, respectively, which facilitates the lotion to flow across the guide head 6a. It should be understood that the guide configuration 610a is also applicable to the guide bar 6.

[0026] For the vacuum package container of this embodiment, during filling, the lotion is filled into the pouch 5 through its first opened end 51 and then is contained therein. The lotion expands the volume of the pouch 5 to occupy the whole internal space of the body 7 (see Fig. 2A). In use, as the lotion is continuously drawn out, the pouch 5 becomes smaller and smaller until its volume becomes nearly zero (see Fig. 2B).

[0027] Referring to Fig. 3A-3C, there is shown a vacuum package container 20 according to the second embodiment of the invention. As shown in Fig. 3C, the vacuum package container 20 is different from that of the first embodiment in that the first opened end 51 of the pouch 5 of the vacuum package container 20 is joined hermetically to the bottom portion 72 of the body 7. More particularly, the outside surface of the first opened end 51 of the pouch 5 is bonded to the inner wall of the bottom portion 72 of the body 7 so that the pouch 5 is bonded hermetically to the body 7. In this embodiment, as in the first embodiment, one side of the pouch 5 is in contact with the lotion and the other side is in communication with the atmosphere.

[0028] For the vacuum package container of this embodiment, during filling, the lotion is filled into the pouch 5 through its second end 52. In this case, the lotion is in contact with the inside surface of the body 7, while the pouch 5 is compressed to be flat (see Fig. 3A). In other words, in this case, the pouch 5 serves to be an internal bottom of the body 7, which is in contact with the lotion. In use, as the lotion is continuously drawn out, the pouch 5 moves up until the lotion in the body 7 is nearly drawn up (see Fig. 3B).

[0029] Referring to Fig. 4A-4C, there is shown a vacuum package container 30 according to the third embodiment of the invention. The vacuum package container 30 is different from the above two embodiments in that it incorporates a longitudinally bellows-shaped pouch 5a. The lotion is filled in the bellows-shaped pouch 5a (see Fig. 4A). In use, as the lotion is continuously drawn out, the bellows-shaped pouch 5a is compressed until its volume becomes nearly zero (see Fig. 4B).

[0030] Referring to Fig. 5A and 5B, there is shown a vacuum package container 40 according to the fourth embodiment of the invention. The vacuum package container 40 is different from the other three embodiments in that it incorporates two pouches 5b. They are longitudinally disposed inside the body 7 with their opening edges hermetically joined to the bottom of the body 7. There are two vent holes 74 in the bottom of the body 7.

[0031] The lotion is filled in the body 7 between the two pouches 5b. In use, as the lotion is continuously drawn out, the pouches 5b expands until the lotion is nearly drawn up (see Fig. 5B).

[0032] While the vacuum package containers of the invention have been described in detail by reference with the preferred embodiments, it should be understood that those skilled person in the art can make various changes and modifications without departing from the above

teaching and the spirit of the invention. For example, the pouch can be of a transversely bellows shape and thus is compressed in the transverse direction of the body; the base 73 can be a separate part, as shown in the above, but also can be formed integrally with the body 7; the cap 1 is not an indispensable element but a optional one; in addition to being bonded with an adhesive, the hermetical bonding between the pouch and the body can be realized by hot-pressing, etc.; in addition to using one or two pouches, it is also feasible to use more pouches as desired; in addition to the serration configuration, the guide bar can be made with other configurations as long as they facilitate the lotion to flow across. Therefore, the scope of the invention is not limited to the embodiments described but is defined by the claims appended hereto.

Claims

1. A vacuum package container comprising: a body, which includes a top portion, a bottom portion and a side wall, and is provided with one or more vent holes; a lotion pump, which is mounted on the top portion of the body, **characterized in that**, the vacuum package container further comprising a pouch, an edge of the pouch is hermetically joined to the inner wall of the body so that the pouch is in contact with a lotion on one side and in communication with the atmosphere on the other side.
2. The vacuum package container according to claim 1, further comprising a guide bar, the guide bar is shaped as having at least one longitudinally opened guide channel and is connected at one end thereof to an intake of said lotion pump.
3. The vacuum package container according to claim 2, wherein said guide bar is a flexible elongated bar with a cross-shaped cross section.
4. The vacuum package container according to claim 2, wherein said guide bar includes a guide head, which is the same as said guide bar in configuration and is shorter than said guide bar in length and is connected at one end thereof to an end of a conventional suction pipe.
5. The vacuum package container according to any one of claim 2 to 4, wherein said guide bar includes a transversely guiding configuration.
6. The vacuum package container according to claim 1, wherein said pouch has a first opened end and a second closed end, and an outside surface of the first opened end is bonded to an inside surface of the top portion of said body.
7. The vacuum package container according to claim

1, wherein said pouch has a first opened end and a second closed end, and an outside surface of the first opened end is bonded to an inside surface of the bottom portion of said body.

8. The vacuum package container according to claim 1, wherein said pouch is compressed and expanded in the longitudinal or transverse direction of said body, and said vent hole is provided in the bottom portion of said body.
9. The vacuum package container according to claim 1, wherein said pouch is a bellows-shaped pouch.
10. The vacuum package container according to claim 1, wherein said bottom portion is a component separately formed from said body.

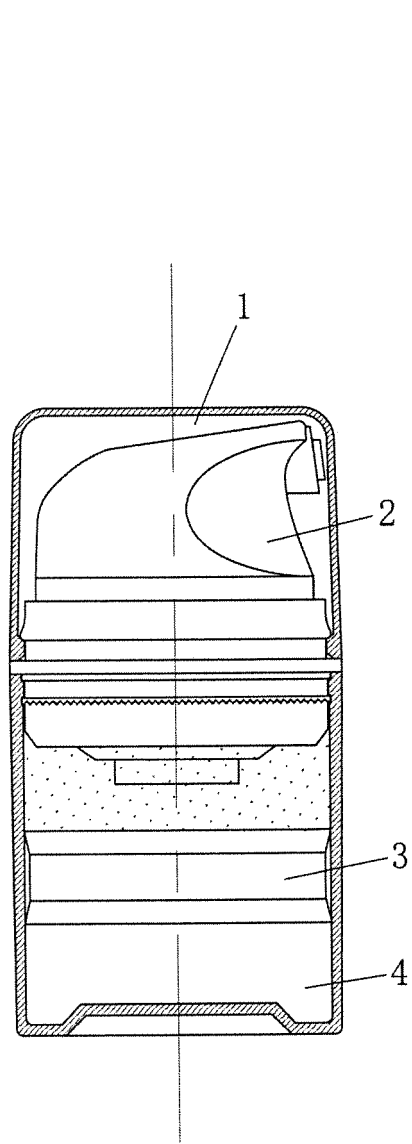


FIG. 1A

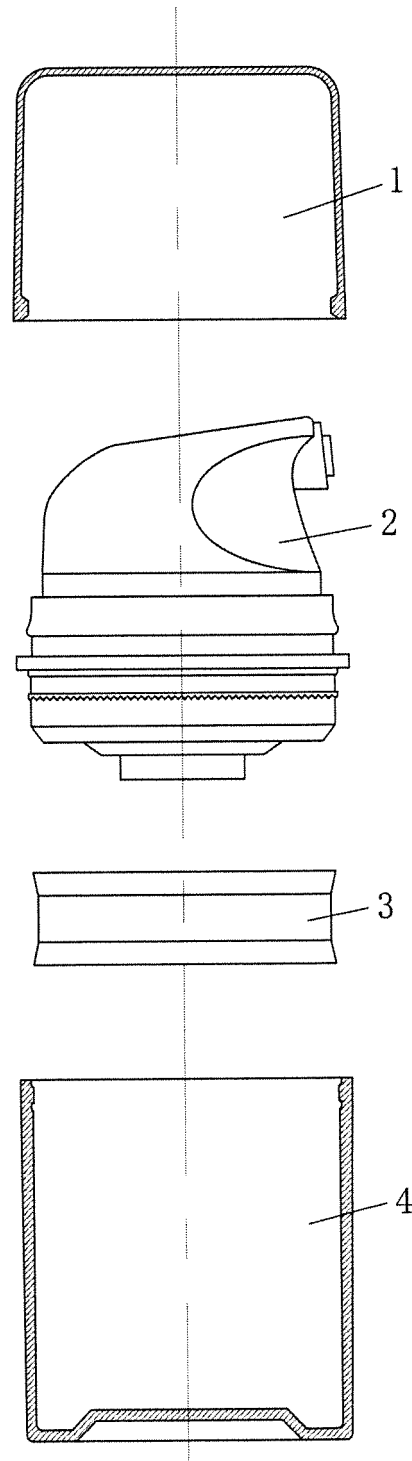


FIG. 1B

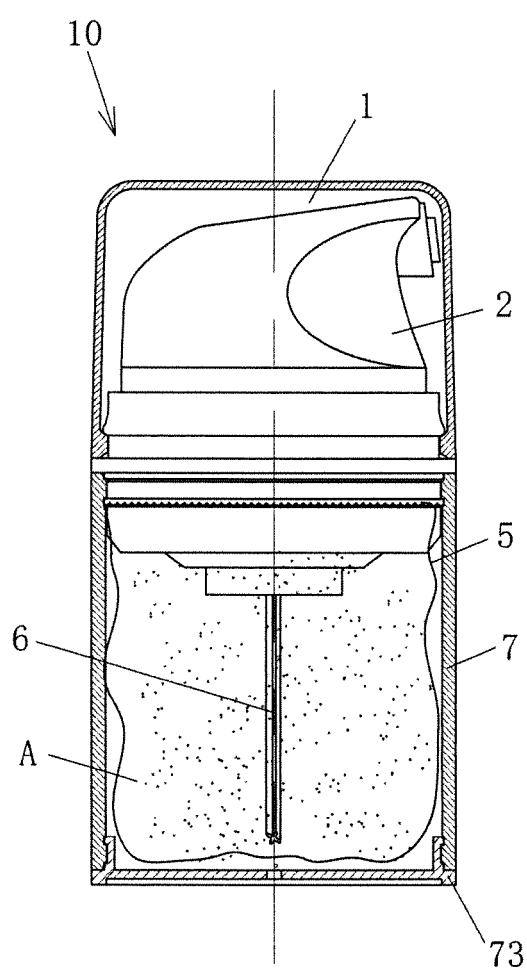


FIG. 2A

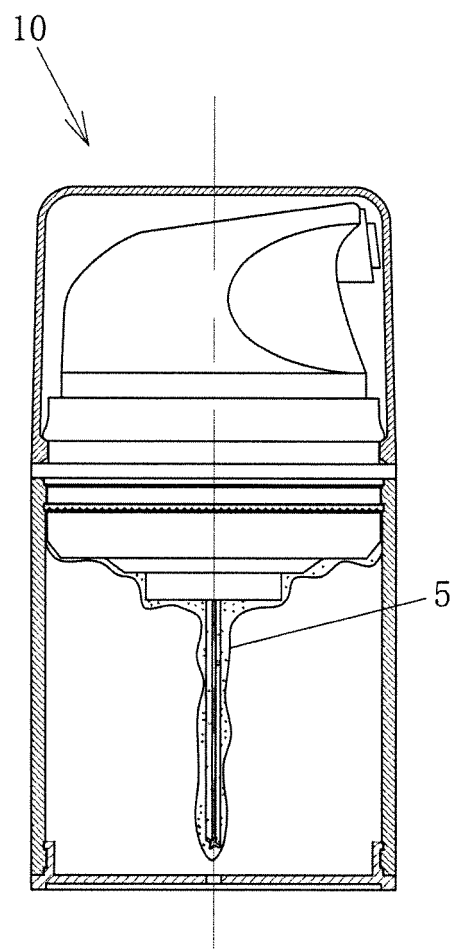


FIG. 2B

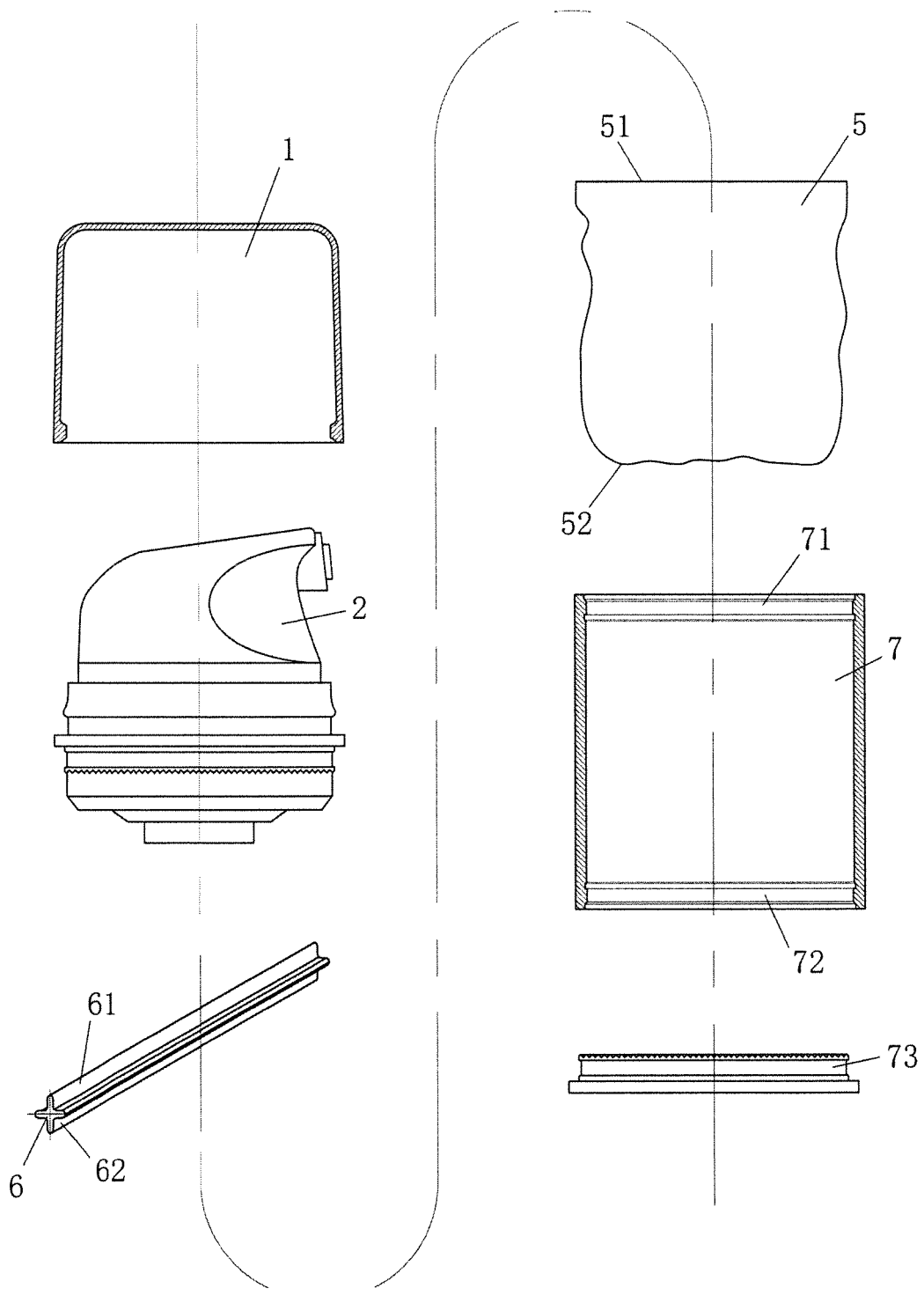


FIG. 2C

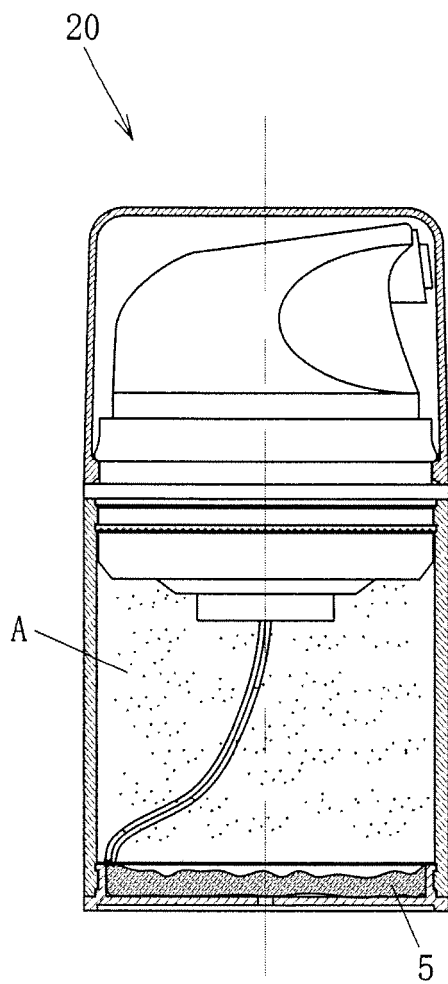


FIG. 3A

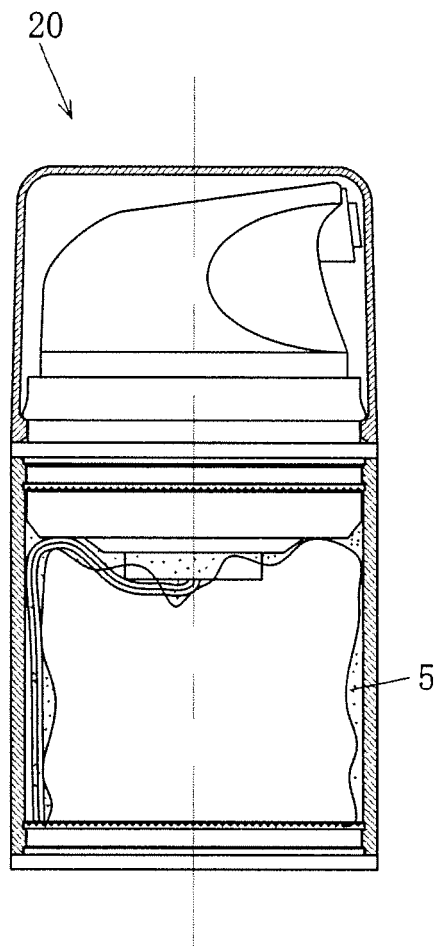


FIG. 3B

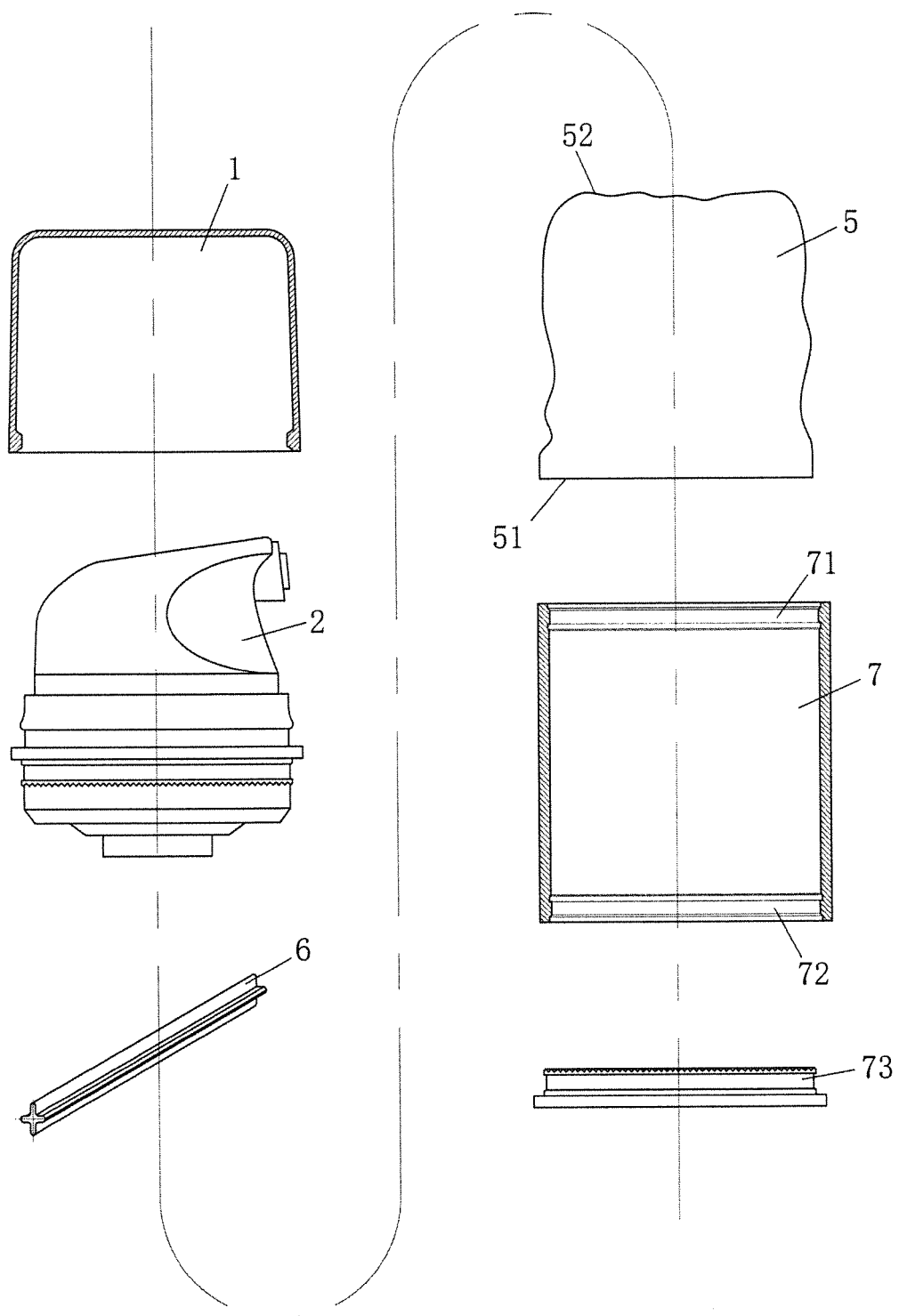


FIG. 3C

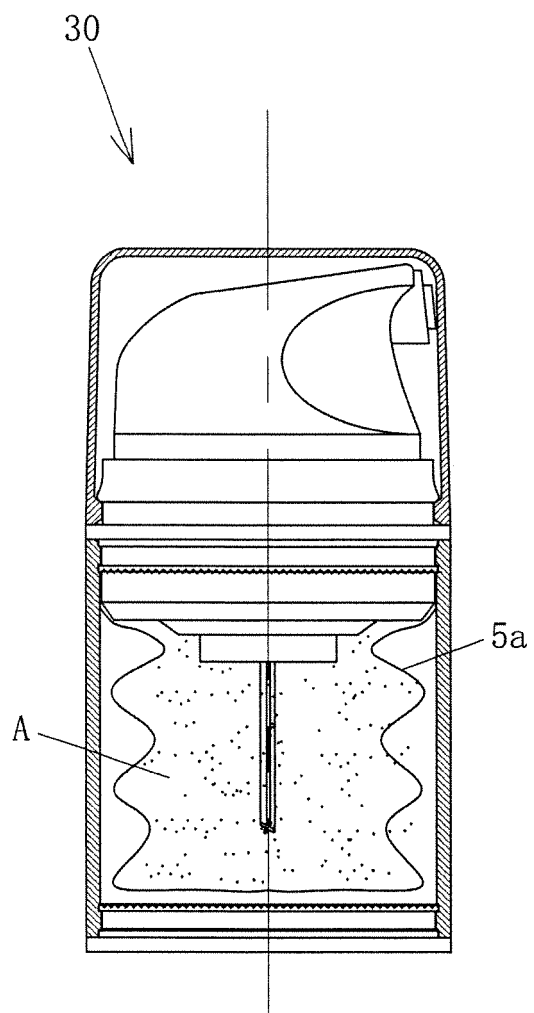


Fig. 4A

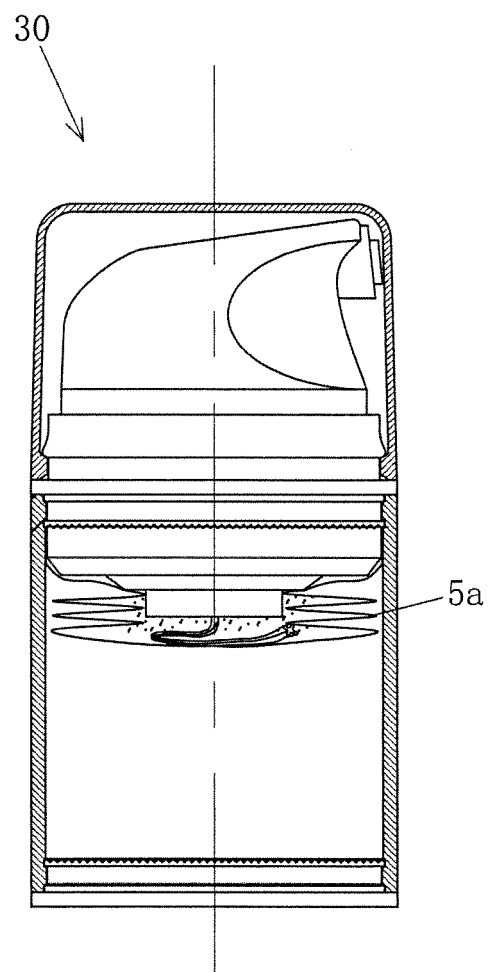


Fig. 4B

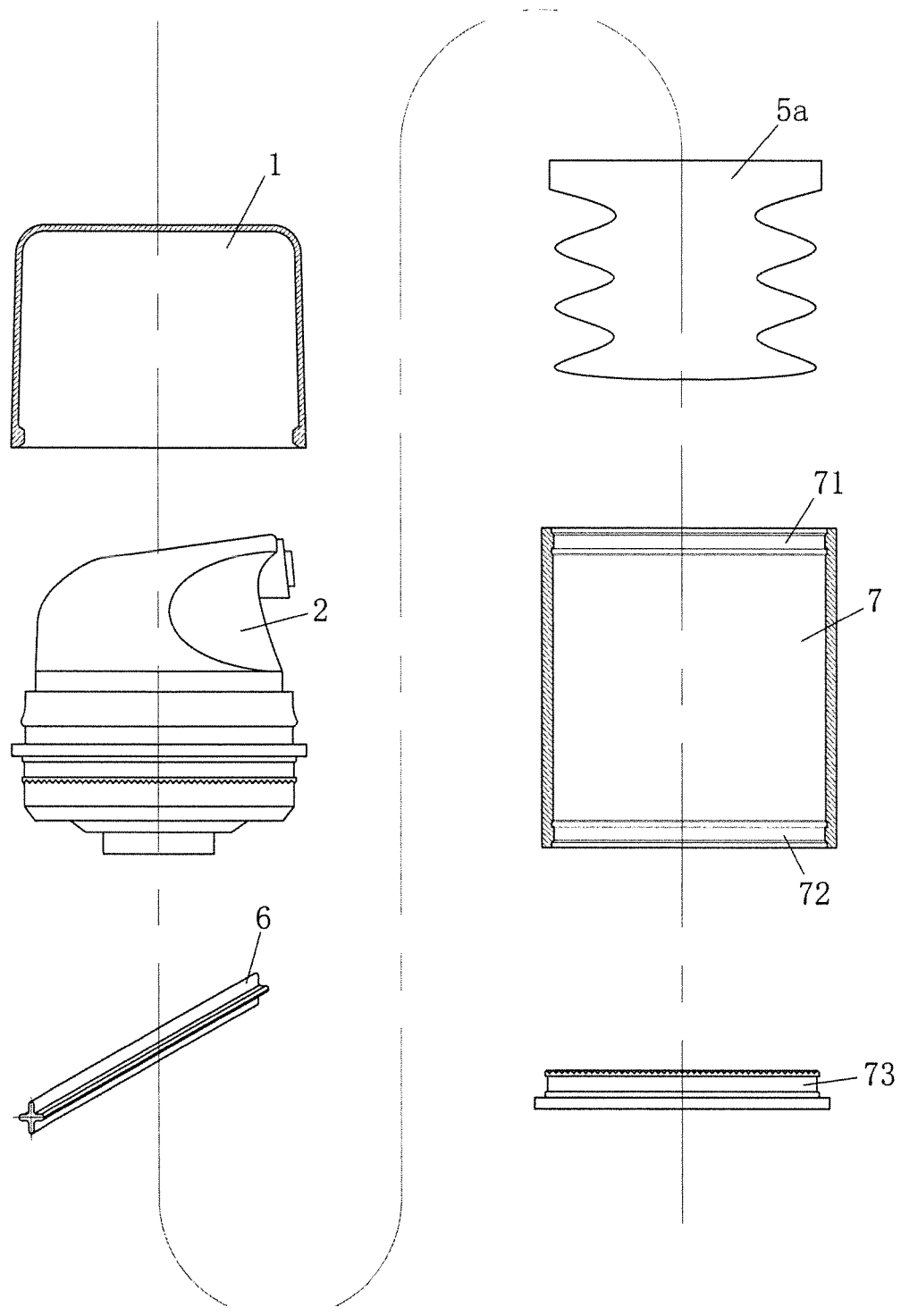


FIG. 4C

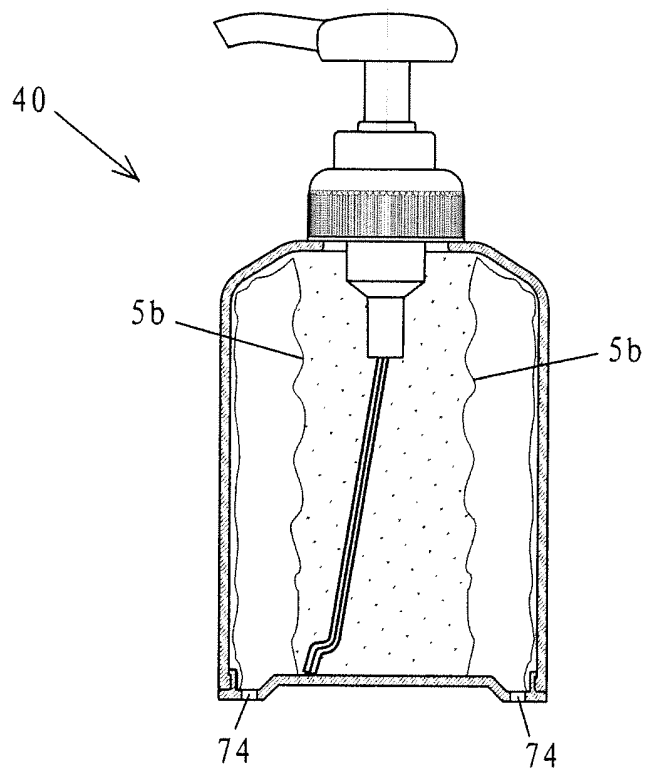


FIG. 5A

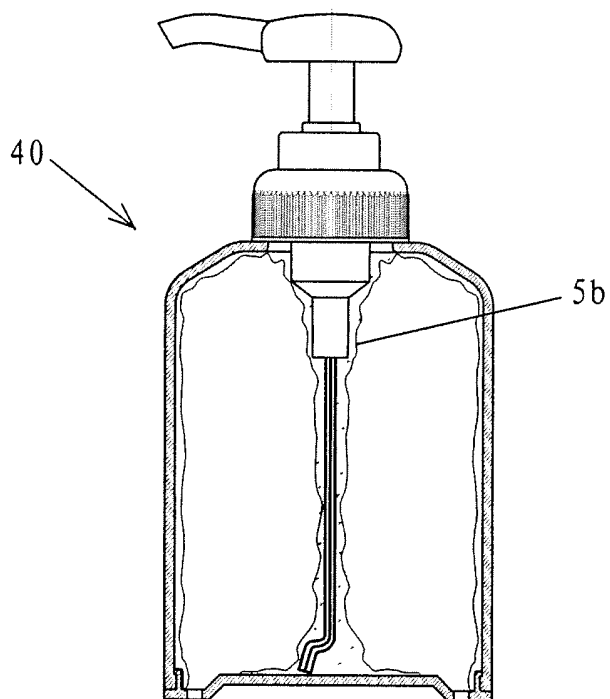


FIG. 5B

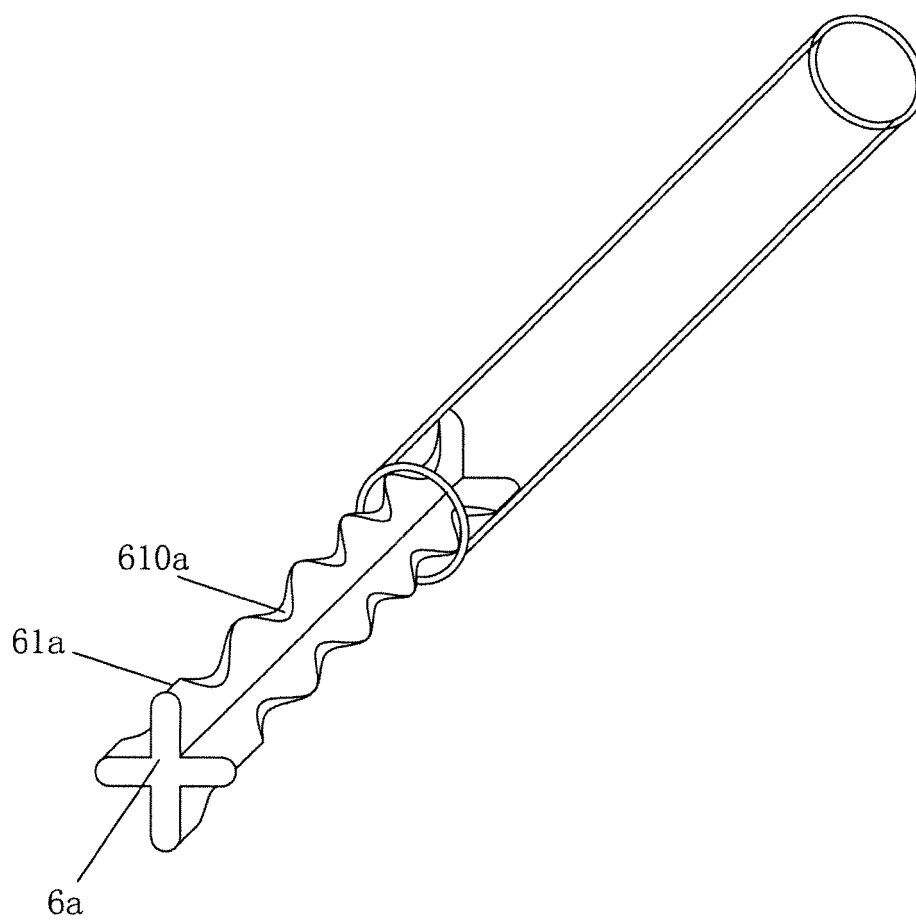


FIG. 6

INTERNATIONAL SEARCH REPORT

International application No.

PCT/CN2007/001337

A. CLASSIFICATION OF SUBJECT MATTER

See extra sheet

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC: B65D 77/06, B65D 77/04, B65D 81/20, B65D 81/18, B65D 83/14, B65D 83/00, B65D 81/24, B65D 81/00

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPODOC, WPI, PAJ, CNPAT, CNKI: container, vessel, bottle, case, receptacle, can, vacuum, evacuate, bag, sack, pocket, pouch, pump, valve, air, atmosphere, emulsion, DING Yaowu

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y A	CN2481660Y (DAI, Yang), 13 Mar. 2002 (13.03.2002), pages 1-2, claims 1-2, figure 1, abstract	1, 8-10 2-7
Y A	CN2411991Y (CHENG, Wenpeng), 27 Dec. 2000 (27.12.2000), page 2, claims 1-2, figures 1 and 3, abstract	1, 8-10 2-7
A	CN2333628Y (LI, Jianzhong), 18 Aug. 1999 (18.08.1999), pages 2-3, figure 1	1-10
A	CN2338281Y (JI, Shenqing), 15 Sep. 1999 (15.09.1999), pages 2-3, figures 1-4	1-10
A	GB2390670A (SCOTIA PRODUCTS LTD), 14 Jan. 2004 (14.01.2004), abstract, figure 4	1-10

☐ Further documents are listed in the continuation of Box C.☒ See patent family annex.

* Special categories of cited documents:

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"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search

28 Sep. 2007 (28.09.2007)

Date of mailing of the international search report

18 Oct. 2007 (18.10.2007)

Name and mailing address of the ISA/CN
The State Intellectual Property Office, the P.R.China
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100088

Facsimile No. (86-10) 62019451

Authorized officer

CAO, Chuanlu

Telephone No. (86-10) 62084408

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/CN2007/001337

Patent Documents referred in the Report	Publication Date	Patent Family	Publication Date
CN2481660Y	13.03.2002	NONE	
CN2411991Y	27.12.2000	NONE	
CN2333628Y	18.08.1999	NONE	
CN2338281Y	15.09.1999	NONE	
GB2390670A	14.01.2004	NONE	

INTERNATIONAL SEARCH REPORT

International application No.

PCT/CN2007/001337

CLASSIFICATION OF SUBJECT MATTER

B65D 77/06 (2006.01) i
B65D 81/20 (2006.01) i
B65D 83/14 (2006.01) i