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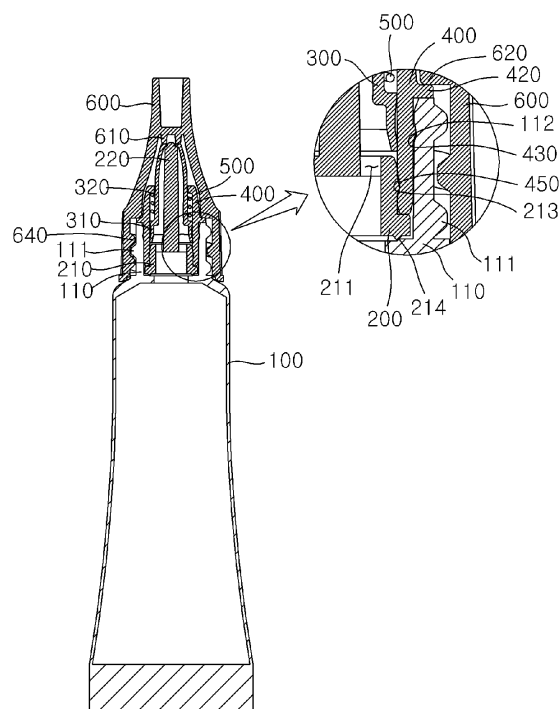
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(54) **TUBE VESSEL CAPABLE OF PREVENTING AIR INFILTRATION**

(57) The present invention relates to an air inflow interruptible tube container. The air inflow interruptible tube container can prevent a corruption of contents, by installing a nozzle rising and opened by a pressure of contents inside an outlet part to allow the nozzle to be opened only when the contents are discharged, maintaining a closed state of an outlet hole of the nozzle unless the contents are discharged even when a cap is opened, and thus preventing air from flowing into a tube body through the outlet hole.

[Fig. 3]



Description

BACKGROUND OF THE INVENTION

[0001] The present invention disclosed herein relates to an air inflow interruptible tube container, and more particularly, to an air inflow interruptible tube container which can prevent a corruption of contents, by installing a nozzle rising and opened by a pressure of contents inside an outlet part to allow the nozzle to be opened only when the contents are discharged, maintaining a closed state of an outlet hole of the nozzle unless the contents are discharged even when a cap is opened, and thus preventing air from flowing into a tube body through the outlet hole.

[0002] Generally, tube containers include a tube body containing contents, a tube neck coupled to an upper portion of the tube body to support the tube body and including an outlet hole for discharging the contents contained in the tube body, and a cap detachably coupled to the tube neck to open and close the outlet hole.

[0003] The tube containers are used by separating the cap from the tube body and then pressurizing the tube body to discharge the contents through the outlet hole. In a state where the cap is opened, since the outlet hole is always exposed to the outside, air may flow into the tube body. Accordingly, the contents may be corrupted.

[0004] Also, when the contents are directly spread on an affected part by pressurizing the tube body, contaminants around the affected part may be mixed with the contents that are discharged. In this case, when the tube body is depressurized after the spreading of the contents, the contents are taken into the tube body due to the internal pressure of the tube body, allowing the contaminants mixed with the contents to be stuck to an inner wall of the outlet hole or to flow into the tube body and thus corrupt the contents.

SUMMARY OF THE INVENTION

[0005] The present invention provides an air inflow interruptible tube container which can prevent a corruption of contents, by installing a nozzle rising and opened by a pressure of contents inside an outlet part to allow the nozzle to be opened only when the contents are discharged, maintaining a closed state of an outlet hole of the nozzle unless the contents are discharged even when a cap is opened, and thus preventing air from flowing into a tube body through the outlet hole.

[0006] The present invention also provides an air inflow interruptible tube container which can prevent a corruption of contents, by preventing contents remaining on an outlet hole from being discharged to the outside and then taken into the inside again through rising and falling operations of an external nozzle and thus preventing the contents contaminated by the direct spreading of the contents on an affected part from sticking to the inside of the nozzle or flowing into the tube body.

[0007] Embodiments of the present invention provide air inflow interruptible tube containers including: a tube body containing contents and including an outlet part formed at an upper portion thereof to discharge the contents; an internal nozzle including a coupling part inserted into the outlet part and having a content inflow hole communicating with the outlet part, and a blocking rod upwardly protruding from a central portion of the coupling part; an external nozzle seated on an upper end of the coupling part while covering the blocking rod, rising and falling by a pressure of the contents, and open and closed by the blocking rod; a fixing body coupled to an inner side of the outlet part while covering a portion of the external nozzle and including a hollow part to allow the external nozzle to rise and fall; an elastic body disposed inside the fixing body while surrounding the external nozzle to allow the external nozzle to fall; and a closing cap coupled to an outer side of the outlet part while covering the internal nozzle and the external nozzle.

[0008] In some embodiments, the external nozzle may include: a seating part having a piston structure in which an upper end portion and a lower end portion of an outer circumferential surface thereof contact an inner wall surface of the fixing body; and a content movement tube upwardly extending from the seating part to form a passage through which the contents move and having an outlet hole opened/closed by the blocking rod.

[0009] In other embodiments, the fixing body may include a seating stopper surrounding an outer circumferential surface of the fixing body and seated on an upper end of the outlet part and a fixing protrusion formed under the seating stopper to be fixed to an inner side of the outlet part.

[0010] In still other embodiments, the fixing body may include an elastic body supporting stopper formed at an upper end of the fixing body to support the elastic body while surrounding an inner circumferential surface of the fixing body.

[0011] In even other embodiments, the internal nozzle may include a blocking protrusion formed at a lower end thereof to block the contents moving through the outlet part from leaking out of the internal nozzle.

[0012] In yet other embodiments, the closing cap may include a pressurizing protrusion formed an upper portion of an inner side thereof to pressurize the external nozzle.

[0013] In further embodiments, the closing cap may include a coupling restriction protrusion formed on an inner side of the closing cap and seated on the seating stopper of the fixing body to restrict screw-coupling when the closing cap is screw-coupled to the outlet part

BRIEF DESCRIPTION OF THE DRAWINGS

[0014] The accompanying drawings are included to provide a further understanding of the present invention, and are incorporated in and constitute a part of this specification. The drawings illustrate exemplary embodiments of the present invention and, together with the descrip-

tion, serve to explain principles of the present invention. In the drawings:

FIG. 1 is an assembled perspective view illustrating a configuration of an air inflow interruptible tube container according to an exemplary embodiment of the present invention;

FIG. 2 is an exploded perspective view illustrating a configuration of an air inflow interruptible tube container according to an exemplary embodiment of the present invention;

FIG. 3 is a cross-sectional view illustrating a configuration of an air inflow interruptible tube container according to an exemplary embodiment of the present invention; and

FIG. 4 is a view illustrating an operational state of an air inflow interruptible tube container according to an exemplary embodiment of the present invention.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS

[0015] Preferred embodiments of the present invention will be described below in more detail with reference to the accompanying drawings. The present invention may, however, be embodied in different forms and should not be constructed as limited to the embodiments set forth herein. Rather, these embodiments are provided so that this disclosure will be thorough and complete, and will fully convey the scope of the present invention to those skilled in the art.

[0016] Hereinafter, exemplary embodiments of the present invention will be described in detail with reference to the accompanying drawings. The same reference numerals provided in the drawings indicate the same members.

[0017] FIG. 1 is an assembled perspective view illustrating a configuration of an air inflow interruptible tube container according to an exemplary embodiment of the present invention. FIG. 2 is an exploded perspective view illustrating a configuration of an air inflow, interruptible tube container according to an exemplary embodiment of the present invention.

[0018] FIG. 3 is a cross-sectional view illustrating a configuration of an air inflow interruptible tube container according to an exemplary embodiment of the present invention. FIG. 4 is a view illustrating an operational state of an air inflow interruptible tube container according to an exemplary embodiment of the present invention.

[0019] Referring to FIGS. 1 to 4, an air inflow interruptible tube container according to an exemplary embodiment of the present invention may include a tube body 100, an internal nozzle 200, an external nozzle 300, a fixing body 400, an elastic body 500, and a closing cap 600.

[0020] The tube body 100 may contain contents, and include an outlet part 100 coupled to an upper portion of the tube body 100 so as to discharge the contents. The

outlet part 110 may include a first screw thread 111 on the outer circumferential surface of the outlet part 110 so as to be screw-coupled to the closing cap 600 described later.

5 [0021] The internal nozzle 200 may be inserted into the outlet part 110 to guide the contents moving through the outlet part 110 and open and close the external nozzle 300 described later. The internal nozzle 200 may include a coupling part 210 and a blocking rod 220.

10 [0022] The coupling part 210 may be inserted into the outlet part 110 to guide the contents moving through the outlet part 110. The coupling part 210 may have a content inflow hole 211 formed at the upper portion thereof to communicate with the outlet part 110 and thus enable the inflow of the contents discharged through the outlet part 110. In the content inflow hole 211, a plurality of extending parts 212 may be disposed at a uniform interval to extend from the inner circumferential surface of the coupling part 210 to the central portion thereof.

15 [0023] The coupling part 210 may include a coupling protrusion 213 formed on the outer circumferential surface thereof to be coupled to a coupling groove 450 of the fixing body 400 described later.

20 [0024] Also, the coupling part 210 may include a blocking protrusion 214 formed at a lower end thereof to contact a lower end of the inner side of the outlet part 110 such that the contents moving through the outlet part 110 is prevented from leaking to the outside of the internal nozzle 220.

25 [0025] The blocking rod 220 may upwardly protrude from the central portion of the coupling part 210 at which the plurality of extending parts 212 meet each other, and may open and close an outlet hole 321 of the external nozzle 300 according to the rising and falling of the external nozzle 300.

30 [0026] The blocking rod 220 may include a protrusion part 221 formed at the end portion thereof and protruding to the outside of the external nozzle 300 so as to prevent the contents from being stuck in a space that the outlet hole 321 of the external nozzle 300 defines.

35 [0027] Since the protrusion part 221 is formed on the blocking rod 220, it is easy to distinguish the opening/closing of the nozzle according to the movement of the nozzle from the outside.

40 [0028] The external nozzle 300 may be seated on the upper end of the coupling part 210 while covering the blocking rod 220, and may rise and fall by the pressure of the contents while being opened/closed by the blocking rod 220. The external nozzle 300 may include a seating part 310 and a content movement tube 320.

45 [0029] The seating part 310 may be seated on the upper end of the coupling part 210 of the internal nozzle 200 to support the elastic body 500 described later. The seating part 310 may support the lower end of the elastic body 500 surrounding the content movement tube 320 to pressurize the elastic body 500 and thus contract the elastic body 500 when the external nozzle 300 rises according to the discharge of the contents. On the other

hand, when the discharge of the contents is finished, the external nozzle 300 may fall due to the elastic force of the elastic body 500.

[0030] According to an embodiment of the present invention, the seating part 310 may have a cylindrical shape, and may be configured to have a piston structure in which the upper end and lower end of the outer circumferential surface of the seating part 310 contact the inner wall surface of the fixing body 400. Thus, when the external nozzle 300 rises or falls, the external nozzle 300 may be prevented from rocking, enabling the contents to be uniformly discharged and preventing the contents from leaking along the inner wall of the fixing body 400.

[0031] The content movement tube 320 may upwardly extend from the seating part 310, forming a passage through which the contents introduced through the content inflow hole 211 of the internal nozzle 200 can move. The content movement tube 320 may have the outlet hole 321 formed at the end of thereof and opened/closed by the blocking rod 220 so as to enable the introduced contents to be discharged to the outside.

[0032] The fixing body 400 may be formed to have a cylindrical shape that covers a portion of the external nozzle 300 and is coupled to the inner side of the outlet part 110. The fixing body 400 may have a hollow part 410 in which the external nozzle 300 moving along the discharge of the contents can rise and fall, and may cover the outer circumferential surface so as to be seated on the upper end of the outlet part 110. The fixing body 400 may include a seating stopper 420.

[0033] In this embodiment, the fixing body 400 may include a fixing protrusion 430 formed under the seating stopper 420 and fixed to a fixing groove 120 of the outlet part 110. Since the nozzle is simply installed in the tube container by coupling the fixing protrusion 430 to the fixing groove 112 of the outlet part 110 after integrally modularizing the internal nozzle 200, the external nozzle 300, the fixing body 400, and the elastic body 500, it is possible to prevent air from flowing into the tube body 100 when the closing cap 600 is opened.

[0034] Meanwhile, the fixing body 400 may include an elastic body supporting stopper 440 bent toward the inside at the upper end thereof, surrounding the inner circumferential surface thereof, and thus supporting the elastic body 500 described later. The elastic body supporting stopper 440 may support the upper end of the elastic body 500 to contract the elastic body 500 when the external nozzle 300 rises.

[0035] Also, the fixing body 400 may have a coupling groove 450 formed on an inner side of the fixing body 400 and corresponding to the coupling protrusion 210 so as to be coupled to the internal nozzle 200.

[0036] The elastic body 500 may surround the external nozzle 300 inside the fixing body 400, and may move down the external nozzle 300. The elastic body may have one side seated on the seating part 310, and may have the other side contacting the elastic body supporting stopper 440 of the fixing body 400.

[0037] The elastic body 500 may contract according to the movement of the external nozzle 300 due to the pressure of the contents when the tube body 100 is pressurized, and may expand when the tube body 100 is depressurized, providing an elastic force to the seating part 310 of the external nozzle 300 and thus allowing the external nozzle 300 to fall.

[0038] The closing cap 600 may cover the internal nozzle 200 and the external nozzle 300, and may be screw-coupled to the outside of the outlet part 111. The closing cap 600 may include a second screw thread 640 formed in the inner circumferential surface thereof and coupled to the first screw thread 111 so as to be screw-coupled to the outlet part 110.

[0039] In this embodiment, the closing cap 600 may include a pressurizing protrusion 610 formed on an upper portion of the inside thereof and pressurizing the external nozzle 300. The pressurizing protrusion 610 may pressurize the upper end of the external nozzle 300 to restrict the rising of the external nozzle 300, thereby preventing the contents from being discharged even when the tube body 100 is pressurized while the closing cap 600 is being closed. Thus, it is possible to prevent the contents from being unnecessarily consumed, and prevent the inside of the closing cap 600 from being contaminated by the leakage of the contents.

[0040] The closing cap 600 may include a coupling restriction protrusion 620 that is provided inside the closing cap 600 and is seated on the seating stopper 420 of the fixing body 400 to restrict the screw coupling when the closing cap 600 is screw-coupled to the outlet part 110. When the closing cap 600 is forcedly coupling to the outlet part 110, the external nozzle 300 may be excessively inserted and caught in the internal 200 by the pressurizing of the pressurizing protrusion 610. Accordingly, the malfunction of the nozzle can be prevented by allowing the coupling restriction protrusion 620 provided inside the closing cap 600 to contact the seating stopper 420 and thus restrict the screw coupling of the closing cap 600.

[0041] On the other hand, the closing cap 600 may include an anti-slip protrusion 630 on the outer circumferential surface thereof to facilitate the screw coupling and separation with/from the outlet part 110.

[0042] Hereinafter, an operation process of an air inflow interruptible tube container according to an exemplary embodiment of the present invention will be described with reference to FIG. 4.

[0043] FIG. 4 is a view illustrating an operational state of an air inflow interruptible tube container according to an exemplary embodiment of the present invention. Referring to FIG. 4, in the air inflow interruptible tube container according to the exemplary embodiment of the present invention, when the outlet hole 321 of the external nozzle 300 is closed by the blocking rod 220 of the internal nozzle 200 and the tube body 100 is pressurized, the contents may upwardly move through the outlet part 110, and then may flow into the content movement tube 320 of the external nozzle 300 through the content inflow hole

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[0044] As described above, while the contents are flowing into the content movement tube 320, a pressure may be applied to the external nozzle 300 by the contents, allowing the external nozzle 300 to rise. When the external nozzle 300 rises, the outlet hole 321 that is being closed by the blocking rod 220 of the internal nozzle 200 may be opened, allowing the contents to be discharged to the outside through the outlet hole 321.

[0045] On the other hand, when the tube body 100 is depressurized, the contents may stop moving. In this case, the elastic body 500 that is contracted according to the rising of the external nozzle 300 may be stretched, providing an elastic force to external nozzle 300 and thus allowing the external nozzle 300 to fall. When the external nozzle 300 falls, the outlet hole 321 may be closed by the blocking rod 220 of the internal nozzle 200, thereby blocking the contents from being discharged.

[0046] As described above, an air inflow interruptible tube container according to an embodiment of the present invention can prevent a corruption of contents, by installing a nozzle rising and opened by a pressure of contents inside an outlet part to allow the nozzle to be opened only when the contents are discharged, maintaining a closed state of an outlet hole of the nozzle unless the contents are discharged even when a cap is opened, and thus preventing air from flowing into a tube body through the outlet hole.

[0047] Also, the air inflow interruptible tube container can prevent a corruption of contents, by preventing contents remaining on an outlet hole from being discharged to the outside and then taken into the inside again through rising and falling operations of an external nozzle and thus preventing the contents contaminated by the direct spreading of the contents on an affected part from sticking to the inside of the nozzle or flowing into the tube body.

[0048] The above-disclosed subject matter is to be considered illustrative and not restrictive, and the appended claims are intended to cover all such modifications, enhancements, and other embodiments, which fall within the true spirit and scope of the present invention. Thus, to the maximum extent allowed by law, the scope of the present invention is to be determined by the broadest permissible interpretation of the following claims and their equivalents, and shall not be restricted or limited by the foregoing detailed description.

Claims

1. An air inflow interruptible tube container comprising:

a tube body containing contents and comprising an outlet part formed at an upper portion thereof to discharge the contents;
an internal nozzle comprising a coupling part inserted into the outlet part and having a content inflow hole communicating with the outlet part,

and a blocking rod upwardly protruding from a central portion of the coupling part;
an external nozzle seated on an upper end of the coupling part while covering the blocking rod, rising and falling by a pressure of the contents, and open and closed by the blocking rod;
a fixing body coupled to an inner side of the outlet part while covering a portion of the external nozzle and comprising a hollow part to allow the external nozzle to rise and fall;
an elastic body disposed inside the fixing body while surrounding the external nozzle to allow the external nozzle to fall; and
a closing cap coupled to an outer side of the outlet part while covering the internal nozzle and the external nozzle.

2. The air inflow interruptible tube container of claim 1, wherein the external nozzle comprises:

a seating part having a piston structure in which an upper end portion and a lower end portion of an outer circumferential surface thereof contact an inner wall surface of the fixing body; and
a content movement tube upwardly extending from the seating part to form a passage through which the contents move and having an outlet hole opened/closed by the blocking rod.

3. The air inflow interruptible tube container of claim 1, wherein the fixing body comprises a seating stopper surrounding an outer circumferential surface of the fixing body and seated on an upper end of the outlet part and a fixing protrusion formed under the seating stopper to be fixed to an inner side of the outlet part.

4. The air inflow interruptible tube container of claim 1, wherein the fixing body comprises an elastic body supporting stopper formed at an upper end of the fixing body to support the elastic body while surrounding an inner circumferential surface of the fixing body.

5. The air inflow interruptible tube container of claim 1, wherein the internal nozzle comprises a blocking protrusion formed at a lower end thereof to block the contents moving through the outlet part from leaking out of the internal nozzle.

6. The air inflow interruptible tube container of claim 1, wherein the closing cap comprises a pressurizing protrusion formed an upper portion of an inner side thereof to pressurize the external nozzle.

7. The air inflow interruptible tube container of claim 3, wherein the closing cap comprises a coupling restriction protrusion formed on an inner side of the closing cap and seated on the seating stopper of the fixing

body to restrict screw-coupling when the closing cap is screw-coupled to the outlet part.

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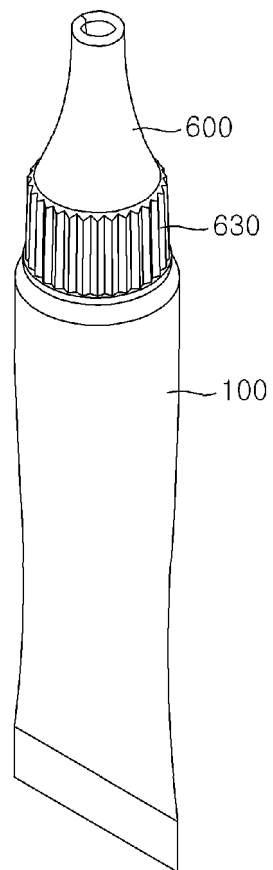
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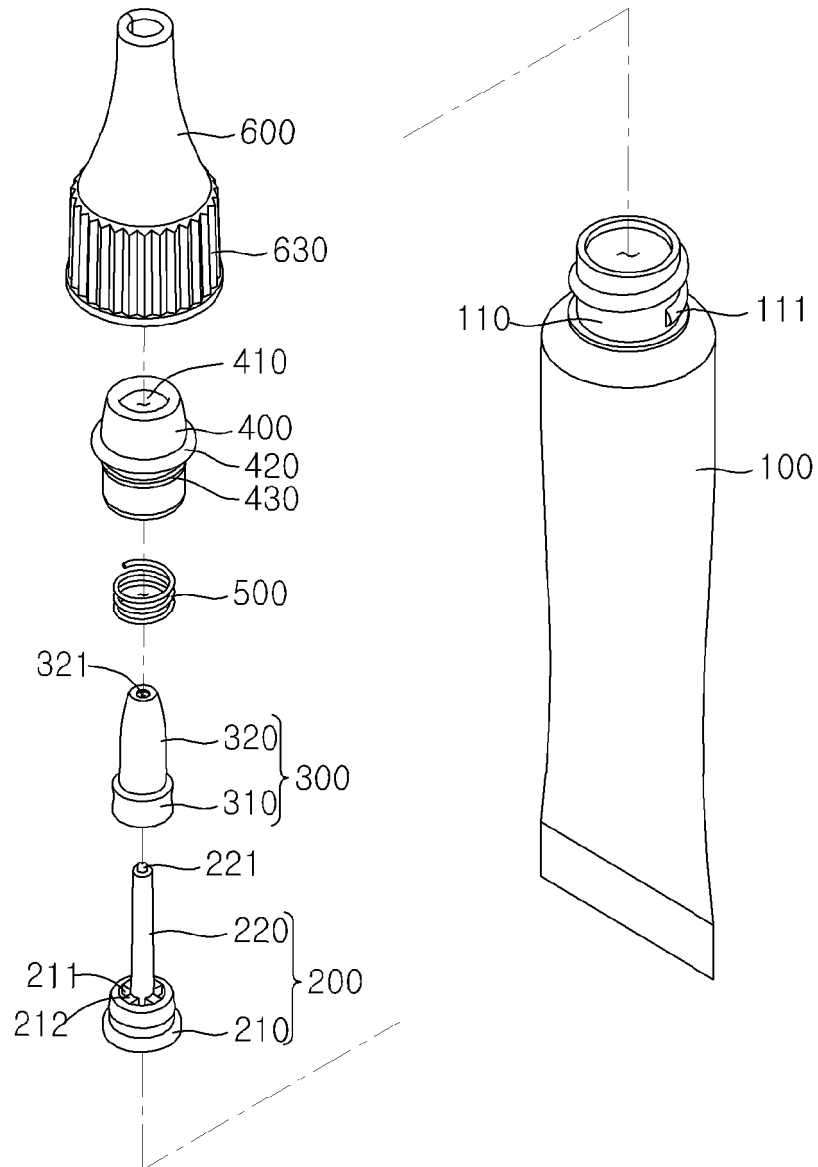
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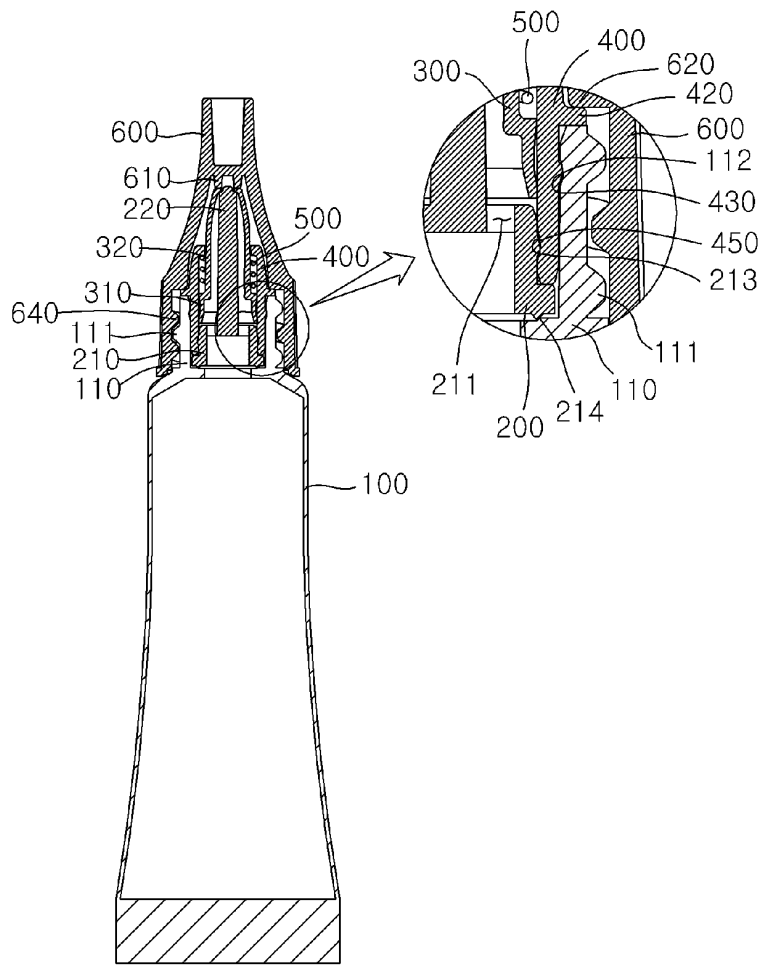
[Fig. 1]



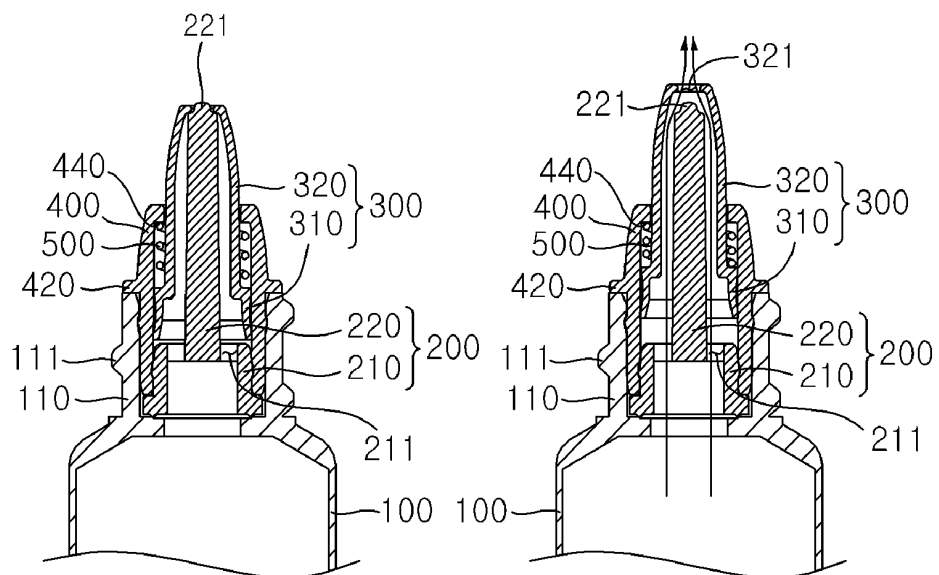
[Fig. 2]



[Fig. 3]



[Fig. 4]



INTERNATIONAL SEARCH REPORT

International application No.

PCT/KR2013/001891

A. CLASSIFICATION OF SUBJECT MATTER

B65D 35/48(2006.01)i, B65D 47/28(2006.01)i

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 35/48; B65D 47/20; B67D 5/06; B65D 55/04; B65D 35/50; B65D 35/46

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

Korean Utility models and applications for Utility models: IPC as above

Japanese Utility models and applications for Utility models: IPC as above

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

eKOMPASS (KIPO internal) & Keywords: tube, nozzle, elasticity, cap, tube, nozzle, elastic, cap

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	KR 10-1044637 B1 (KIM, Bong Sik) 29 June 2011 See paragraphs [0017]-[0031] and figures 1-3.	1-7
Y	EP 0046464 A1 (AHK ALKOHOL HANDELSKONTOR GMBH & CO. KG) 03 March 1982 See paragraphs [0016]-[0017],[0019] and [0029]-[0030] and figures 3-4.	1-7
A	US 4561570 A (ZULAUF et al.) 31 December 1985 See column 3, line 25 - column 4, line 36 and figures 1-5.	1-7
A	US 5992764 A (BOUGAMONT et al.) 30 November 1999 See abstract and figures 1-2.	1-7
A	KR 10-2010-0029921 A (CHOI, Min-Cheol) 18 March 2010 See claim 1 and figures 1-2.	1-7

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

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

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"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

15 MAY 2013 (15.05.2013)

Date of mailing of the international search report

15 MAY 2013 (15.05.2013)

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Authorized officer

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INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.

PCT/KR2013/001891

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