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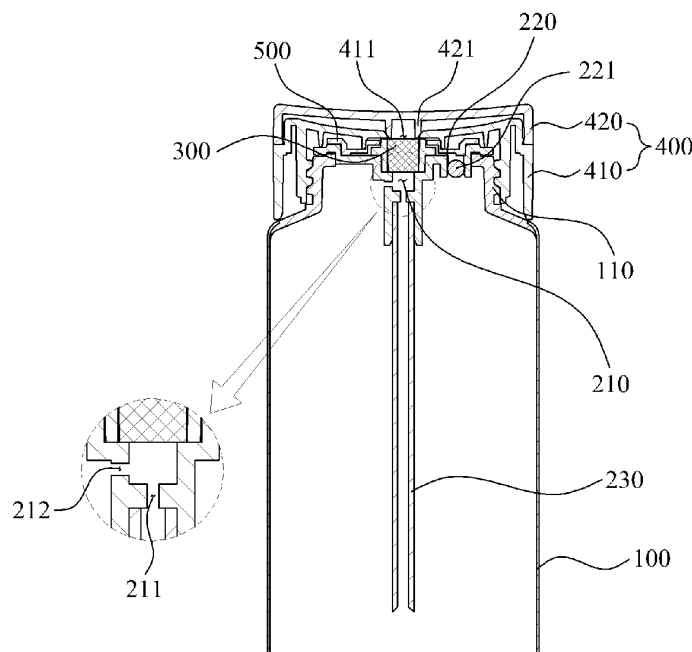
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(54) **FOAM JETTING TUBE CONTAINER**

(57) Provided is a foam jetting tube container. The foam jetting tube container enables contents stored inside of a container body to be moved through a content moving tube when the container body is pressurized, and then allows the contents to be mixed with air flowing in through an air inflow hole in a mixing part inside of a

housing so as to primarily form foam, and allows the foam to be secondarily formed when the foam passes through a foam mesh positioned above the mixing part so as to discharge foam to the outside, thereby jetting foam through a simple structure.

[Fig. 2]



## Description

### BACKGROUND OF THE INVENTION

[0001] The present invention relates to a foam jetting tube container, and the foam jetting tube container enables contents stored inside of a container body to be moved through a content moving tube when the container body is pressurized, and then allows the contents to be mixed with air flowing through an air inflow hole in a mixing part inside of a housing so as to primarily form foam, and allows foam to be secondarily formed when the foam passes through a foam mesh positioned above the mixing part so as to discharge foam to the outside, thereby jetting foam through a simple structure.

[0002] Generally, a foam jetting tube container refers to a container having a structure wherein a user pressurizes a container body having contents stored and makes the container form foam in the process of discharging the contents by mixing with outside air.

[0003] A foam jetting tube container as the above is disclosed in the Korean Registered Patent No. 10-1067748 (hereafter called as 'the registered patent').

[0004] The registered patent, which the present applicant filed on October 09, 2009 and was registered as such, comprises a first container body containing contents; an inner container combined to an upper portion of the first container body and comprising a first tube neck to which a hollow is formed so as for the contents to be discharged; an outer container, which is combined to the inner container as encasing, comprising a second tube neck combined at an upper portion thereof, separated from the inner container with a constant distance and forming a space, which forms a multitude of first air holes separated with a constant distance; an inner cap which is combined to an upper portion of the outer container, comprising a multitude of second air holes separated with constant distance at an upper end thereof; a support cap which is combined to the inner cap at a lower portion of the second tube neck, comprising a protrusion wherein a multitude of third air holes are formed with a constant distance separated at a side thereof; a check valve combined to a lower portion of the support cap directly above the hollow and preventing reflux of content; an air valve which is combined, encasing a lower end of the second air holes and an inner circumferential surface of the support cap in an interior of the inner cap and, made of elastic material, opens/closes either the second air hole or a third air hole according to movement of air; and an outer cap which is combined, encasing the inner cap, comprising a foam mesh at an end of the center thereof.

[0005] However, the registered application has some problems in that the container should be equipped with double tubes in order to make a space where air flows in and is kept, and also has a complicated structure for air inflow, such that it needs a substantial manufacturing time, which thereby results in increasing users' burden.

### SUMMARY OF THE INVENTION

[0006] The present invention was devised to solve these problems in the above, and its goal is to provide a foam jetting tube container which enables contents stored inside a container body to be moved through a content moving tube when the container body is pressurized, and then allows the contents to be mixed with air flowing through an air inflow hole in a mixing part inside of a housing so as to primarily form foam, and allows the foam to be secondarily formed when the foam passes through a foam mesh positioned above the mixing part so as to discharge foam to the outside, thereby jetting foam through a simple structure.

[0007] To solve the above problems, a foam jetting tube container according to the present invention comprises a container body where contents are contained and which is transformed by user's pressurization, thereby discharging contents through the discharge hole; a housing, which is combined to the discharge hole and closes an upper end of the discharge hole at a center portion thereof, comprising a mixing part which primarily generates foam as contents stored in the container body is mixing with air; a foam mesh which is combined to an upper portion of the mixing part and secondly generates foam; an outer cap which encases the housing and the foam mesh and is combined to the discharge hole, comprising a foam jetting hole such that the foam formed through the housing and the foam mesh is jetted out.

[0008] Furthermore, it is characterized that at a lower end of the mixing part is equipped a content inflow hole which the contents stored in the container body flows in, and at a side surface of the mixing part is equipped an air inflow hole which air existing in the interior of the container body flows in.

[0009] Furthermore, it is characterized that at the housing is equipped an air inlet such that outside air can come in, and at the air inlet is equipped a valve member which regulates incoming of outside air according to the pressurization of the container body.

[0010] Furthermore, it is characterized that at a lower end of the mixing part is equipped a content moving tube which moves the contents stored in the container body to direction of the mixing part.

[0011] Furthermore, it is characterized that the air inflow hole has a function of a passage where the contents stored in the container body moves when the container body is pressurized in a state of the container body upside down, and the content moving tube has a function of a passage where the air stored in the container body moves.

[0012] As described as the above, the present invention has an advantage wherein contents stored inside of a container body move through a content moving tube when the container body is pressurized, and then allows the contents to be mixed with air flowing through an air inflow hole in a mixing part inside of a housing so as to primarily form foam, and allows the foam to be second-

arily formed when the foam passes through a foam mesh positioned above the mixing part so as to discharge foam to the outside, thereby jetting foam through a simple structure.

## **BRIEF DESCRIPTION OF THE DRAWINGS**

### **[0013]**

Fig.1 is an exploded cross-sectional view illustrating a configuration of a foam jetting tube container according to an exemplary embodiment of the present invention.

Fig. 2 is a cross-sectional view illustrating a configuration of a foam jetting tube container according to an exemplary embodiment of the present invention; Fig.3 and 4 are constitutional views illustrating an operational state of a foam jetting tube container according to an exemplary embodiment of the present invention.

Fig.5 is a constitutional view illustrating an operational state of a valve member of a foam jetting tube container according to an exemplary embodiment of the present invention.

## **DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS**

**[0014]** 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.

**[0015]** Fig.1 is an exploded cross-sectional view illustrating a configuration of a foam jetting tube container according to an exemplary embodiment of the present invention, and Fig. 2 is a cross-sectional view illustrating a configuration of a foam jetting tube container according to an exemplary embodiment of the present invention;

**[0016]** Referring to Figs.1 and 2, a foam jetting tube container according to an exemplary embodiment of the present invention includes a container body 100, a housing 200, a foam mesh 300, and an over cap 400.

**[0017]** The container body 100, where liquid-type contents are stored, comprises a discharge hole at an upper portion thereof such that the contents can be discharged by a user's pressurizing.

**[0018]** The container body 100 can be composed of a tube container or a blow container which is able to be modified by a user's pressurizing and discharges the contents stored in the container body.

**[0019]** The housing is combined to the discharge hole 110 at an upper portion of the container body 100 and closes an upper end of the discharge hole 110, the housing in the present invention is characterized in that at the center portion of the housing 200 is equipped a mixing part 210 where the contents and the air stored in the container body 100 are mixed and foam is primarily

formed.

**[0020]** The mixing part 210, so as to make the contents and the air mixed, is equipped with a content inflow hole 211 at a lower end thereof, which the contents stored in the container body 100 flows in, and at a side surface thereof is equipped with an air inflow hole 212 where the air stored in the interior of the container body 100 enters, and at a lower end of the mixing part 210 is equipped a content moving tube 230 such that the contents stored in the container body 100 moves to direction of the mixing part 210 and flows into the mixing part 210 through the content inflow hole 211.

**[0021]** Meanwhile, the housing 200 is featured to include an air inlet 220 thereof such that outside air enters the container body 100, wherein at the air inlet 220 is installed a valve member 221 which regulates entering of outside air according to whether the container body 100 is pressurized or not.

**[0022]** The valve member 221 ascends or descends inside the air inlet 220 according to the operation of pressurizing the container body 100 or releasing the pressure, thereby closing an upper portion or a lower portion of the air inlet 220. When pressure of the container body 100 is released and thereby the valve member 221 moves from an upper portion to a lower portion of the air inlet 220, air enters an interior of the container body 100 through a space separated between an inner wall of the air inlet 220 and the valve member 221.

**[0023]** The foam mesh 300 is combined to an upper portion of the mixing part 210 and generates foam, wherein the content and air stored in the container body 100, in a process of moving upward, go through the mixing part 210, primarily forming foam, and then pass through the foam mesh, secondly forming foam. When enough foam is formed, the foam is discharged to the outside through the foam getting hole 411.

**[0024]** The over cap 400 encases the housing 200 and the foam mesh and is combined to the discharge hole 110, comprising a cap body 410 which has a screw thread at an inner circumferential surface and is combined in screw coupling to the discharge hole 110, comprising a foam jetting hole 411 at the center of a cap body 410 such that discharging foam is possible, and a cover 420 which is combined in a hinge combination with one side of the cap body 410 and opens/closes the foam jetting hole 411. It is preferable that at an inner side of the cover 420 is equipped a closing protrusion 421 which opens/closes the foam jetting hole 411 and thereby prevents contents from being leaked.

**[0025]** Meanwhile, at an upper end of the housing 200 is combined a fixing cap 500 which supports the foam mesh 300, wherein a hollow 510 is formed at the fixing cap 500 such that foam, formed while going through the foam mesh 300, can move.

**[0026]** Hereinafter, the foam jetting process of a foam jetting tube container according to an exemplary embodiment of the present invention will be described with reference to Fig. 3 and 4. Fig.3 and 4 are constitutional

views illustrating an operational state of a foam jetting tube container according to an exemplary embodiment of the present invention.

**[0027]** First, referring to Fig. 3, a foam jetting tube container according to an exemplary embodiment of the present invention, when a user pressurizes a container body 100 with the container body 100 in an upright position, the contents stored in the container body 100 moves to an upper portion thereof through a content moving tube 230 and flows into a mixing part 210 through a content inflow hole 211, and at the same time, the air contained in an upper portion of the container body 100 flows into the mixing part 210 through an air inflow hole 212, such that the contents and the air are mixed in the mixing part 210, primarily forming foam, and then secondly forms foam as going through a foam mesh 300 positioned at an upper portion of the mixing part 210, then being discharged to the outside through a foam jetting hole 411. At this time, a valve member 221 moves to an upper portion of the air inlet 220 by internal pressure of the container body 100, thereby closing the air inlet 220.

**[0028]** As above, when pressurization of the container body 100 is released in a state of foam jetting completed, the internal pressure of the container body 100 is released, and thereby, shown in Fig. 5, the valve member 221 which moved up to an upper portion of the container 220 comes to descend. During this process when the valve member is descending, air from the outside enters into the interior of the container body 100 through a separated space formed between an inner wall of the air inlet 220 and the valve member 221, and thereby the air is stored in an inner upper space of the container body 100, and when the user pressurizes the container body 100 again, the air contained in the inner upper space of the container body 100 flows in through the air inflow hole 212 and mixes with contents in the mixing part 210, then jetting foam.

**[0029]** Meanwhile, shown in Fig. 4, when the container body 100 is pressurized in a state of the container body 100 being upside down, the air inflow hole 212 functions as a passage where the contents stored in the container body 100 moves whereas a content moving tube 230 functions as a passage where air stored in the container body 100 moves. Therefore, contents flow in through the air inflow hole 212 while air flows in through the content moving hole 230, and then contents and air are mixed in the mixing part 210, such that it is possible for foam to be jetted easily even in a state of the container body 100 being upside down.

**[0030]** The process that contents and air are mixed through the mixing part 210 and a foam mesh and then foam is jetted is the same as the above; therefore, detailed descriptions are omitted.

**[0031]** As described above, optimal embodiments have been disclosed in the drawings and the specification. Although specific terms have been used herein, these are only intended to describe the present invention

and are not intended to limit the meanings of the terms or to restrict the scope of the present invention as disclosed in the accompanying claims. Therefore, those skilled in the art will appreciate that various modifications and other equivalent embodiments are possible from the above embodiments. Therefore, the scope of the present invention should be defined by the technical spirit of the accompanying claims.

## Claims

1. a foam jetting tube container, the foam jetting tube container comprising:

a container body (100) wherein contents are held, forming a discharge hole (110) at an upper portion thereof and discharging contents through the discharge hole (110) by a user's pressurization;

a housing (200) which is combined to the discharge hole (110) and closes an upper end of the discharge hole (110), comprising a mixing part (210) at a center thereof such that contents stored in the container body (100) and air are mixed and thereby foam is primarily formed; a foam mesh combined to an upper part of the mixing part (210) and secondarily forming foam; an outer cap encasing the housing and the foam mesh and combined to the discharge hole (110), comprising a foam jetting hole (411) such that foam formed through the housing (200) and the foam mesh (300) can be discharged.

2. The foam jetting tube container of claim 1, wherein at a lower end of the mixing part (210) is formed a content inflow hole (211) in which contents stored in the container body (100) flows, and wherein at a side of the mixing part (210) is formed an air inflow hole (212) in which air stored in an interior of the container body (100) flows.
3. The foam jetting tube container of claim 1, wherein at the housing (200) is formed an air inlet (220) such that outside air can enter the container body (100), and wherein at the air inlet (220) is formed a valve member (221) controlling air inflow of outside air according to the presence or absence of pressurization of the container body (100).
4. The foam jetting tube container of claim 2, wherein at the mixing part (210) is combined a content moving tube (230) moving contents stored in the container body (100) to direction of the mixing part (210).
5. The foam jetting tube container of claim 1, wherein the air inflow hole (212) functions as a passage where contents stored in the container body (100)

moves when the container body (100) is pressurized in a state of the container body (100) being upside down, and wherein the content moving tube (230) functions as a passage where air stored in the container body (100) moves.

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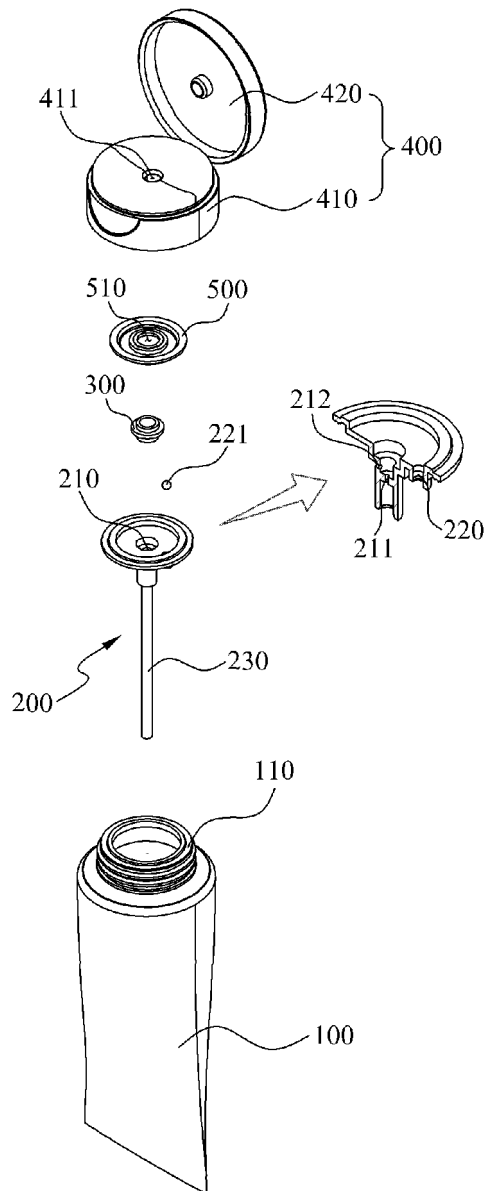
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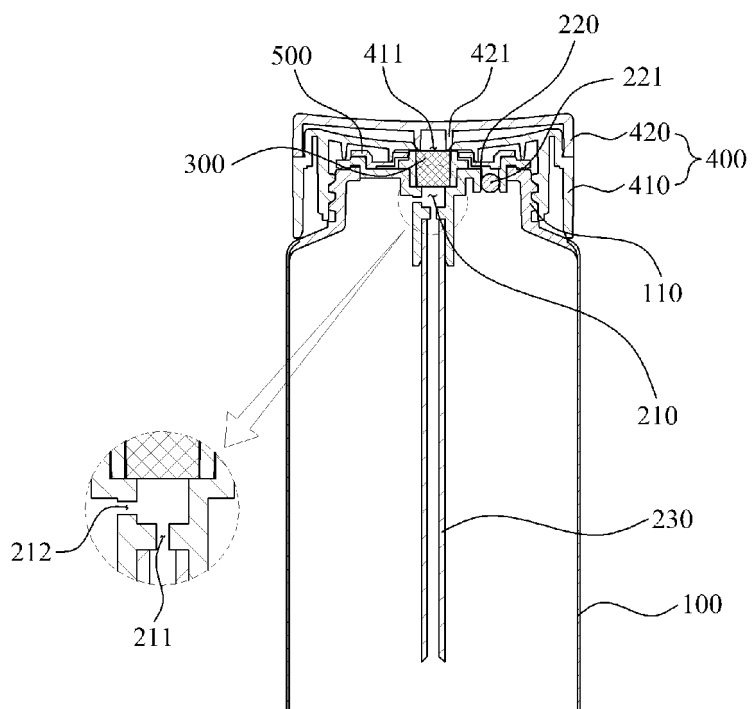
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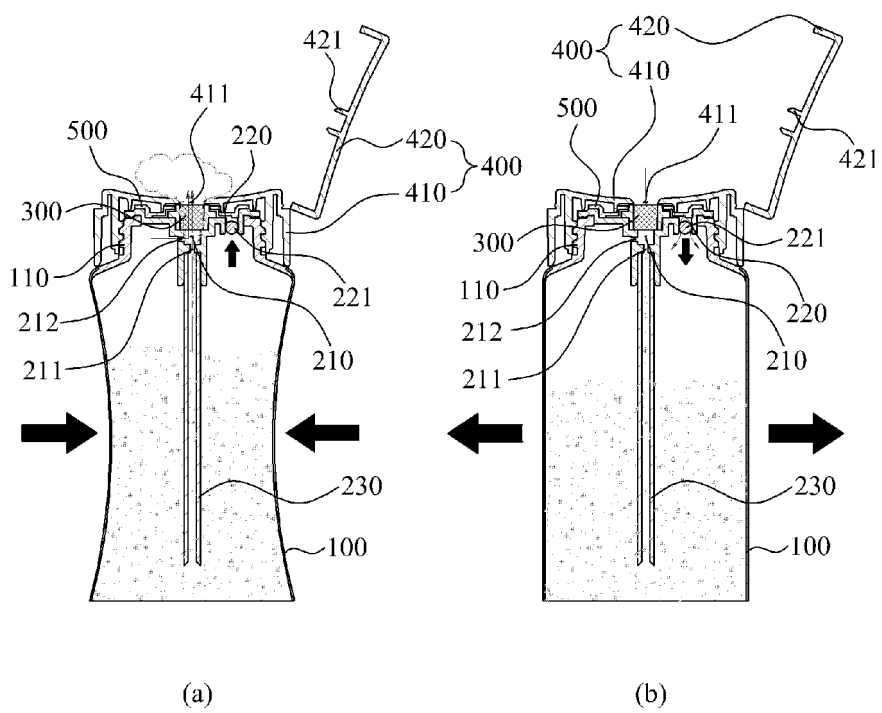
[Fig. 1]



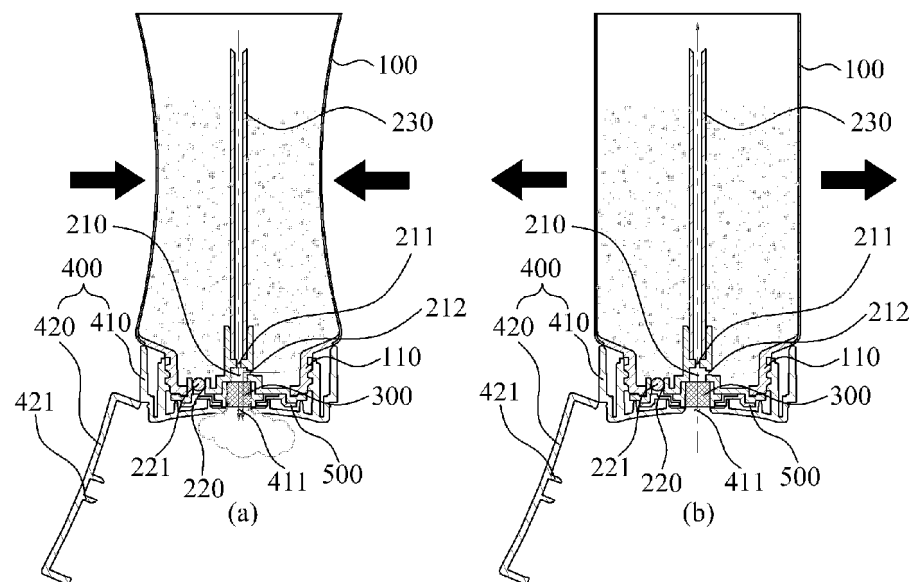
[Fig. 2]



[Fig. 3]

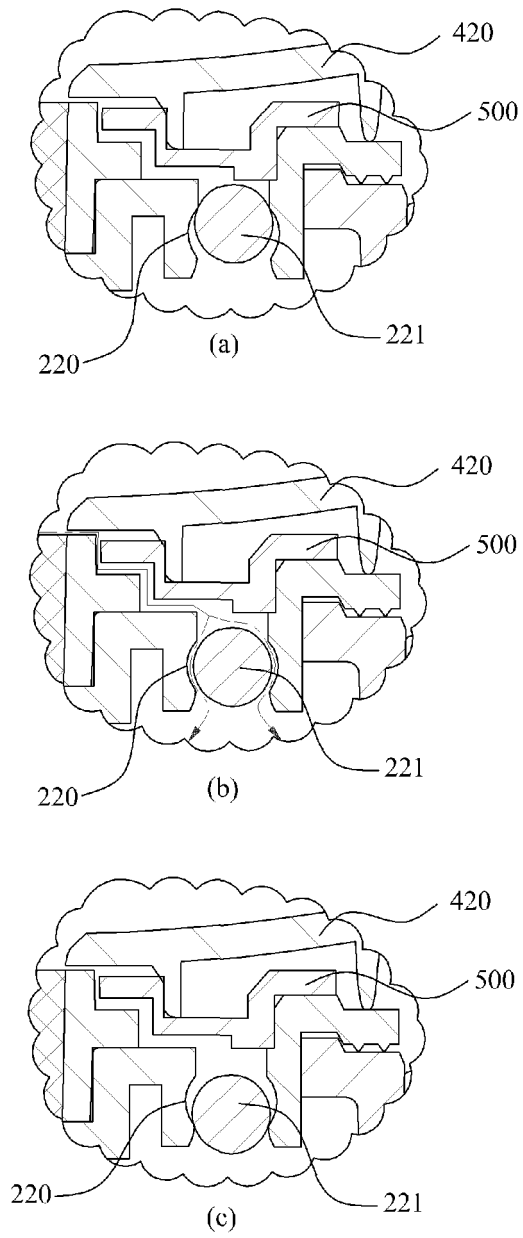


[Fig. 4]





[Fig. 5]



## INTERNATIONAL SEARCH REPORT

International application No.

PCT/KR2014/012257

## A. CLASSIFICATION OF SUBJECT MATTER

**B65D 35/38(2006.01)i, B65D 47/06(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)

B65D 35/38; B65D 83/00; B01F 15/00; B01F 3/04; B05B 11/00; B65D 47/06; B65D 25/22; B65D 35/50

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) &amp; Keywords: container, bubble, spout, tube, main body, housing, bubble net, cap

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category* | Citation of document, with indication, where appropriate, of the relevant passages                                                      | Relevant to claim No. |
|-----------|-----------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
| X         | KR 10-2013-0112776 A (LEE, Kwon Haeng et al.) 14 October 2013<br>See paragraphs [0084]-[0087], [0102], [0118]-[0125]; and figures 9-16. | 1                     |
| Y         |                                                                                                                                         | 3                     |
| A         |                                                                                                                                         | 2,4-5                 |
| Y         | JP 2011-240935 A (KAO CORP. et al.) 01 December 2011<br>See paragraph [0035]; and figures 2-3.                                          | 3                     |
| A         | KR 10-2011-0039000 A (YONWOO CO., LTD.) 15 April 2011<br>See paragraphs [0016]-[0019]; and figure 1.                                    | 1-5                   |
| A         | JP 2012-158391 A (TAKEUCHI PRESS IND CO., LTD.) 23 August 2012<br>See paragraphs [0019]-[0022]; and figures 1-3.                        | 1-5                   |
| A         | JP 2011-161430 A (MICROTEC NITION K.K.) 25 August 2011<br>See paragraph [0017]; and figure 6.                                           | 1-5                   |

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

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Date of the actual completion of the international search

27 FEBRUARY 2015 (27.02.2015)

Date of mailing of the international search report

27 FEBRUARY 2015 (27.02.2015)

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INTERNATIONAL SEARCH REPORT  
Information on patent family members

International application No.

PCT/KR2014/012257

| Patent document<br>cited in search report | Publication<br>date | Patent family<br>member               | Publication<br>date      |
|-------------------------------------------|---------------------|---------------------------------------|--------------------------|
| KR 10-2013-0112776 A                      | 14/10/2013          | KR 10-1376439 B1<br>WO 2013-151320 A1 | 19/03/2014<br>10/10/2013 |
| JP 2011-240935 A                          | 01/12/2011          | NONE                                  |                          |
| KR 10-2011-0039000 A                      | 15/04/2011          | KR 10-1067748 B1                      | 28/09/2011               |
| JP 2012-158391 A                          | 23/08/2012          | NONE                                  |                          |
| JP 2011-161430 A                          | 25/08/2011          | NONE                                  |                          |

**REFERENCES CITED IN THE DESCRIPTION**

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**Patent documents cited in the description**

- KR 101067748 [0003]