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(54) **Dispenser for sucking back contents remaining in the nozzle outlet**

(57) The Dispenser for sucking back contents is disclosed, which makes it possible to prevent over consumption of contents in such a way to suck back the contents remaining at an end portion of a nozzle (910) of a button (900) of a dispenser after the contents are discharged and used, and also makes it possible to prevent a container body) from being contaminated by contents. The back suction functionality is obtained when releasing the button by the return movement of the stem (400) relatively to the piston rod (500), actuated by the decompression of the second spring (800) and/or of the elastic sealing cap (600).

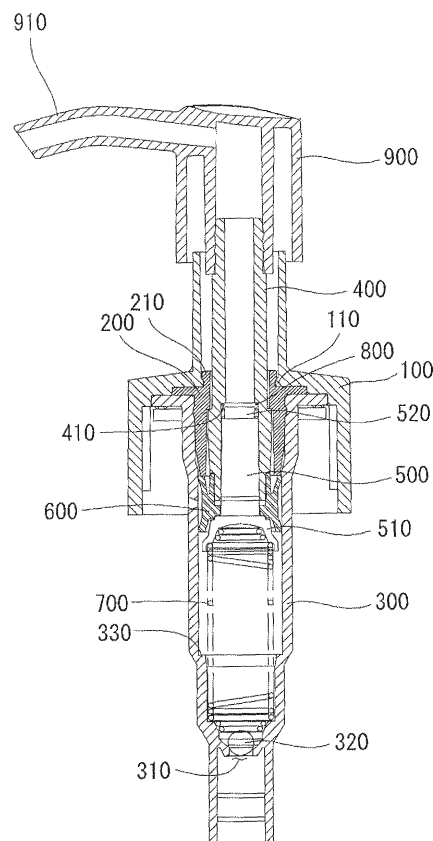


Figure 1

Description

Technical Field

[0001] The present invention relates to a dispenser for sucking back contents, and more particularly to a dispenser for sucking back contents which makes it possible to prevent over consumption of contents in such a way to suck back the contents remaining at an end portion of a nozzle of a button of a dispenser after the contents are discharged and used, and also makes it possible to prevent a container body from being contaminated by contents.

Background Art

[0002] Common liquid or sticky liquid type cosmetic is stored in a dispenser container and is used as it is discharged by a certain amount. The dispenser container is equipped with a dispenser at the top of a container which stores contents. The above dispenser is pumped when a button with a nozzle is pressed for thereby discharging contents from the dispenser container.

[0003] In case of the above mentioned dispenser, when a user presses the button so as to discharge contents, the contents remains at an end portion of the nozzle after the contents is discharged. In this event, the contents remaining at the end portion of the nozzle may move down and contaminate the container and may be spoiled as it directly contact with air. In worse case, the contents may be hardened and block the nozzle. When such situation occurs, the user first needs to remove the hardened and stuck contents when in use. The contents may be over consumed.

[0004] Under the above described problems in the conventional art, many researchers are strongly interested in developing various dispensers which are capable of sucking back the contents remaining at the end portion of the nozzle in an attempt to prevent the container from being contaminated.

Disclosure of Invention

[0005] Accordingly, it is an object of the present invention to provide a dispenser for sucking back contents which makes it possible to prevent over consumption of contents in such a way to suck back the contents remaining at an end portion of a nozzle of a button of a dispenser after the contents are discharged and used, and also makes it possible to prevent a container body from being contaminated by contents.

[0006] To achieve the above objects, there is provided a dispenser for sucking back contents, comprising a body which is engaged to the top of a container body; an engaging body which is engaged to the body and fixes a cylinder and is hollow; a cylinder which is engaged to the bottom of the engaging body and has a content input hole formed at the bottom for inputting contents and a valve

member which is opened and closed by the pressure of contents in the content input hole; a stem which passes through the hollow interior of the engaging body and has a support shoulder at an inner surface; a piston rod which is engaged to the stem, the bottom of which piston rod is equipped with a spring support part, and the top of which has a spring engaging protrusion which protrudes in an upward direction; a sealing cap which is installed at the bottom of the stem, the outer surface of the sealing cap coming into close contact with an inner surface of the cylinder; a first spring which is installed in the interior of the cylinder and serves to provide an elastic force to the piston rod; a second spring which is installed surrounding the spring engaging protrusion of the piston rod, the bottom of which second spring is supported by the piston rod, and the top of which is supported by the support shoulder of the stem for thereby providing an elastic force in an upward direction; and a button which is engaged to the top of the stem and has a nozzle for discharging contents.

[0007] In addition, the second spring is contracted by a support shoulder when the stem descends and recovers for thereby allowing the stem to ascend, so the contents remaining at an end portion of the nozzle is sucked back as much as the distance defined as the support shoulder of the stem and the spring engaging protrusion of the piston rod are spaced apart.

[0008] In addition, the sealing cap is made from an elastic material and is contracted by a pressure of the stem when the stem descends and recovers, so the stem is allowed to ascend by a change of the length of the sealing cap, for thereby sucking back the contents remaining at an end portion of the nozzle.

Advantageous effects

[0009] The present invention is advantageous because it is possible to prevent over consumption of contents in such a way to suck back the contents remaining at an end portion of a nozzle of a button of a dispenser after the contents are discharged and used, and also makes it possible to prevent a container body from being contaminated by contents.

Brief Description of Drawings

[0010]

Figure 1 is a cross sectional view illustrating a construction of a dispenser for sucking back contents according to a preferred embodiment of the present invention.

Figures 2 to 5 are views for explaining a suck-back procedure of contents of a dispenser for sucking back contents according to a preferred embodiment of the present invention.

Figure 6 is a cross sectional view illustrating a state that a dispenser for sucking back contents is en-

gaged to a container body according to a preferred embodiment of the present invention.

Best modes for carrying out the invention

[0011] The preferred embodiments of the present invention will be described with reference to the accompanying drawings.

[0012] Figure 1 is a cross sectional view illustrating a construction of a dispenser for sucking back contents according to a preferred embodiment of the present invention. Figures 2 to 5 are views for explaining a suck-back procedure of contents of a dispenser for sucking back contents according to a preferred embodiment of the present invention. Figure 6 is a cross sectional view illustrating a state that a dispenser for sucking back contents is engaged to a container body according to a preferred embodiment of the present invention.

[0013] As best seen in Figures 1 to 6, the dispenser for sucking back contents according to the present invention comprises a body 100, an engaging body 200, a cylinder 300, a stem 400, a piston rod 500, a sealing cap 600, a first spring 700, a second spring 800 and a button 900.

[0014] The body 100 is engaged to the top of the container body 10 which is filled with contents "a" for thereby closing the open top of the container body 10, and the body 100 has an engaging shoulder 110 at its inner side for an engagement to the engaging body 200.

[0015] The engaging body 200 is engaged to the body 100 for thereby fixing the cylinder 300 and has an engaging protrusion 210 at its portion which comes into contact with the engaging shoulder 110, for the engaging protrusion 210 to be fixedly mounted at the engaging shoulder 110 of the body 100.

[0016] The engaging body 200 is formed in a hollow shape for the stem 400 to pass through.

[0017] The cylinder 300 is engaged to the bottom of the engaging body 200 and has a content input hole 310 at its lower side for the content stored in the container body 100 to input. It is preferred that a valve member 320 is installed at the content input hole 310 for the purpose of preventing a reverse flow of contents as it is opened and closed by the pressure of the contents.

[0018] The stem 400 passes through the hollow portion of the engaging body 200 and is formed in a cylindrical shape the top and bottom of which communicate with each other for the contents to pass through. In the present invention, at an inner surface of the stem 400 is provided a support shoulder 410 supporting the top of the second spring 800. When the stem 400 descends by the pressure of the button 900, the second spring 800 pressurizes the second spring 800 and moves down and comes into contact with the top of the spring engaging protrusion 520 of the piston rod 500 for hereby transferring a pressure to the piston rod 500, so the piston rod 500 moves downward.

[0019] The piston rod 500 is inserted into the bottom

of the stem 400. A certain space is formed in the longitudinal direction for the sake of the movement of the contents. At the bottom of the piston rod 500 is provided a spring support part 510 supporting the top of the first spring 700 for the piston rod 500 to ascend by means of an elastic force of the first spring 700.

[0020] In the present invention, at the top of the piston rod 500 is provided a spring engaging protrusion 520 which protrudes in the upward direction for the sake of the installation of the second spring 800. The spring engaging protrusion 520 serves to prevent the distortion of the second spring 800 and to guide the movements when the second spring 800 contracts and releases as the stem 400 descends and ascends.

[0021] Coming into contact with the support shoulder 410 of the stem 400, the spring engaging protrusion 520 helps generate a vacuum pressure in the interior of the stem 400 as much as the distance spaced apart from the support shoulder 410 when the stem 400 ascends by means of an elastic force of the second spring 800 for thereby sucking back the contents remaining at the end portion of the nozzle 910.

[0022] Surrounding the stem 400 and the piston rod 500, the sealing cap 600 is installed at the bottom of the stem 400.

[0023] In the present invention, the sealing cap 600 is made from an elastic material, the top of which is supported by the stem 400, the bottom of which is supported by the piston rod 500, so when the stem 400 descends, it is pressurized by the pressure of the stem 400 and then recovers for thereby allowing the stem 400 to ascend. A vacuum pressure is generated in the interior of the stem 400 as much as the length changed by a change in the length of the sealing cap 600 which occurs when the sealing cap 600 is compressed and recovers for thereby sucking back the contents remaining at the end portion of the nozzle 910.

[0024] The first spring 700 is installed in the interior of the cylinder 300, the bottom of which first spring is mounted at the spring mounting shoulder 330 formed at the bottom of the inner side of the cylinder 300, the other side of which is supported by the spring support part 510 of the piston rod 500 for thereby generating and transferring an elastic force to the piston rod 500 during the pumping operations.

[0025] The second spring 800 surrounds the spring engaging protrusion 520 of the piston rod 500, the bottom of which second spring is supported by the piston rod 500, the top of which is supported by the support shoulder 410 of the stem 400 for thereby providing an elastic force in the upward direction during pumping operation, so the stem 400 ascends.

[0026] In the present invention, the second spring 800 is contracted by the support shoulder 410 when the stem 400 descends by a pressure of the button 900 and recovers when the pressurization of the button 900 is removed for thereby allowing the stem 400 to ascend, so the support shoulder 410 of the stem 400 and the spring

engaging protrusion 520 of the piston rod 500 becomes spaced apart. The stem 400 ascends by an elastic force of the second spring 800, and a vacuum space is generated in the interior of the stem 400 as much as the distance "H" defined as the support shoulder 410 and the spring engaging protrusion 520 are spaced apart for thereby sucking back the contents remaining at the end portion of the nozzle 910.

[0027] The button 900 is engaged to the top of the stem 400 and transfers a pressure to the stem 400 as a user pressurizes and has a nozzle 910 through which the contents moving through the stem 400 are discharged outside.

[0028] As the present invention may be embodied in several forms without departing from the spirit or essential characteristics thereof, it should also be understood that the above-described examples are not limited by any of the details of the foregoing description, unless otherwise specified, but rather should be construed broadly within its spirit and scope as defined in the appended claims, and therefore all changes and modifications that fall within the meets and bounds of the claims, or equivalences of such meets and bounds are therefore intended to be embraced by the appended claims.

Claims

1. A dispenser for sucking back contents, comprising:

a body which is engaged to the top of a container body;

an engaging body which is engaged to the body and fixes a cylinder and is hollow;

a cylinder which is engaged to the bottom of the engaging body and has a content input hole formed at the bottom for inputting contents and a valve member which is opened and closed by the pressure of contents in the content input hole;

a stem which passes through the hollow interior of the engaging body and has a support shoulder at an inner surface;

a piston rod which is engaged to the stem, the bottom of which piston rod is equipped with a spring support part, and the top of which has a spring engaging protrusion which protrudes in an upward direction;

a sealing cap which is installed at the bottom of the stem, the outer surface of the sealing cap coming into close contact with an inner surface of the cylinder;

a first spring which is installed in the interior of the cylinder and serves to provide an elastic force to the piston rod;

a second spring which is installed surrounding the spring engaging protrusion of the piston rod, the bottom of which second spring is supported

by the piston rod, and the top of which is supported by the support shoulder of the stem for thereby providing an elastic force in an upward direction; and

a button which is engaged to the top of the stem and has a nozzle for discharging contents.

2. The dispenser of claim 1, wherein the second spring is contracted by a support shoulder when the stem descends and recovers for thereby allowing the stem to ascend, so the contents remaining at an end portion of the nozzle is sucked back as much as the distance defined as the support shoulder of the stem and the spring engaging protrusion of the piston rod are spaced apart.

3. The dispenser of claim 1, wherein the sealing cap is made from an elastic material and is contracted by a pressure of the stem when the stem descends and recovers, so the stem is allowed to ascend by a change of the length of the sealing cap, for thereby sucking back the contents remaining at an end portion of the nozzle.

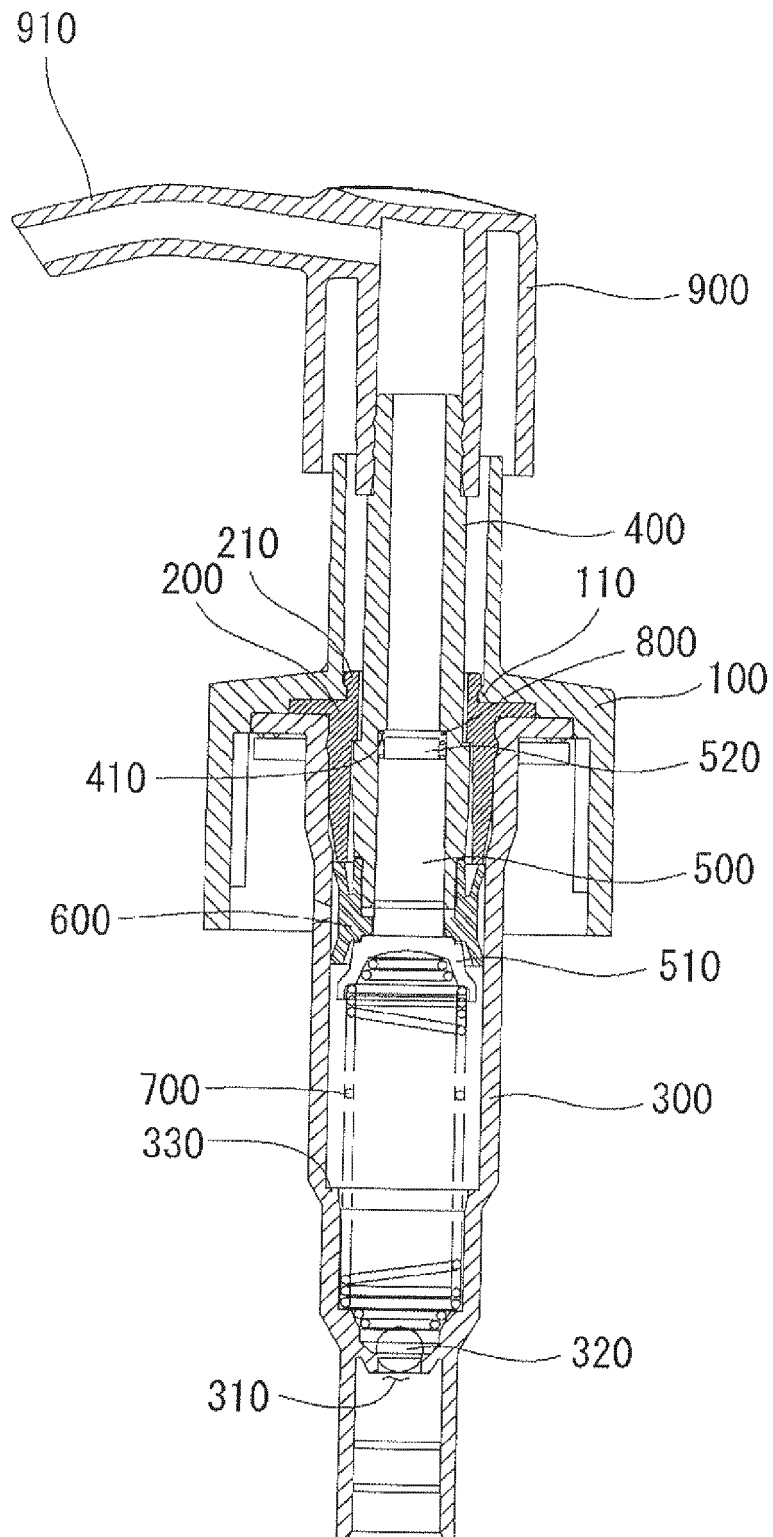


Figure 1

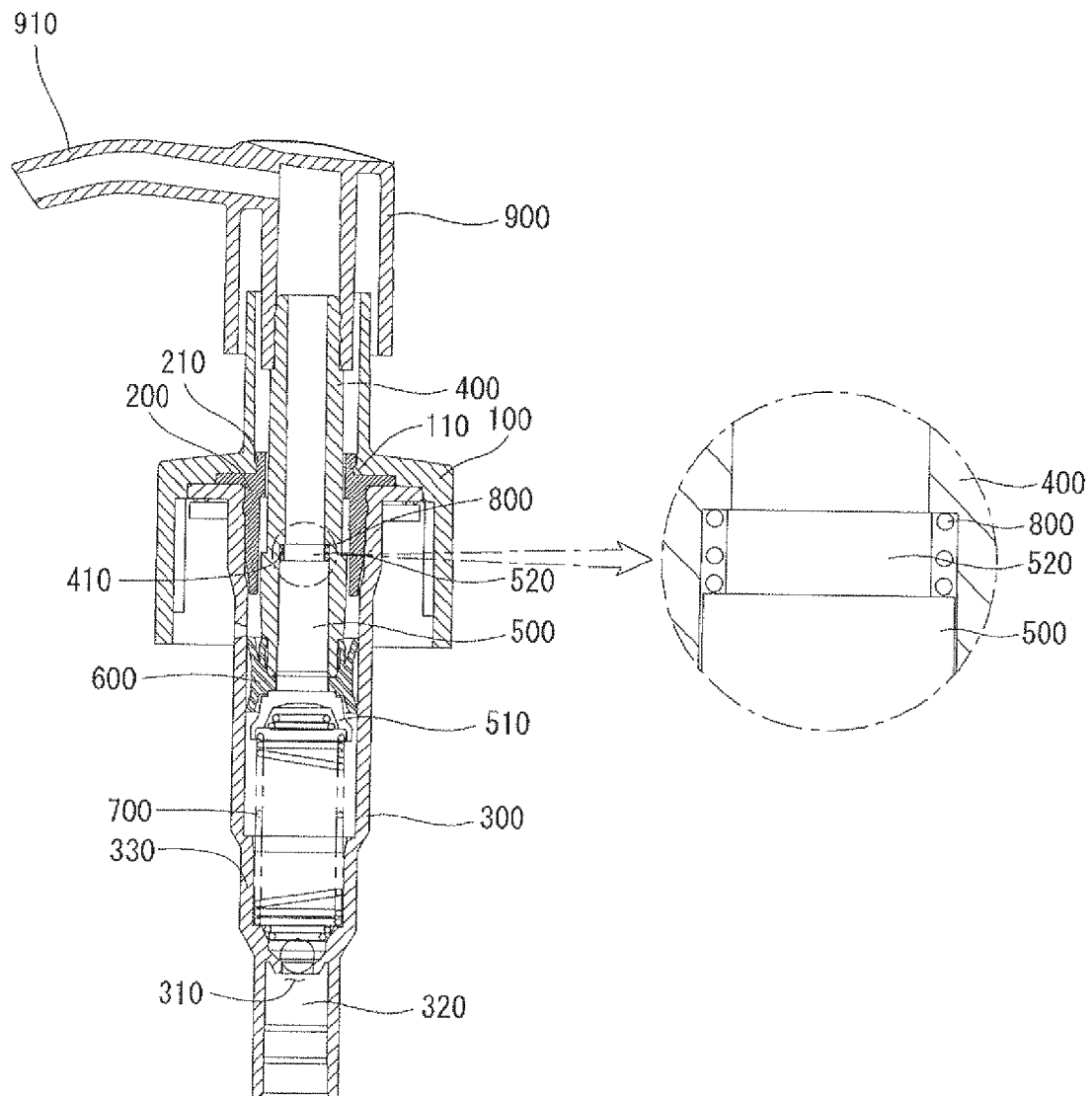


Figure 2

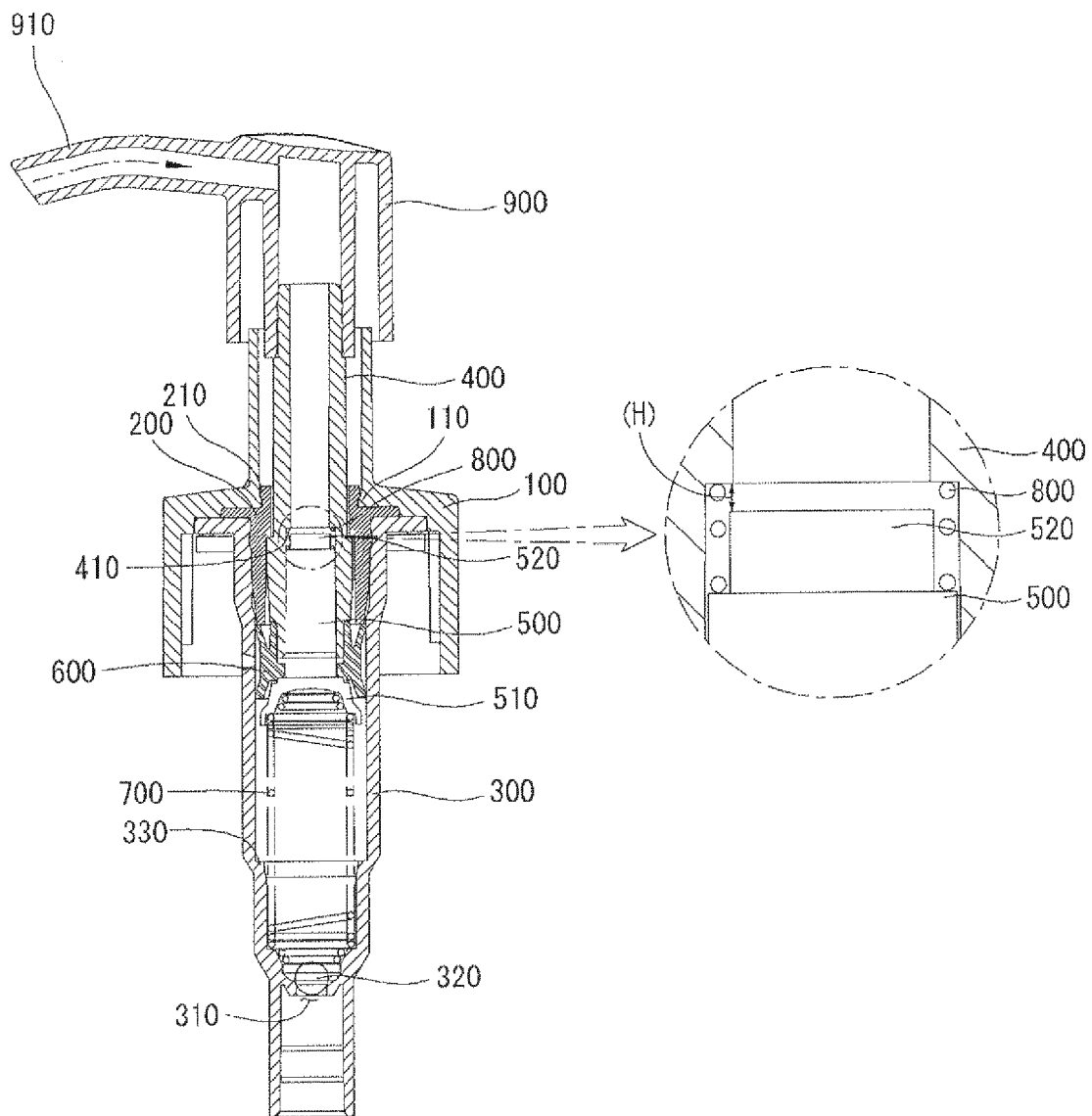


Figure 3

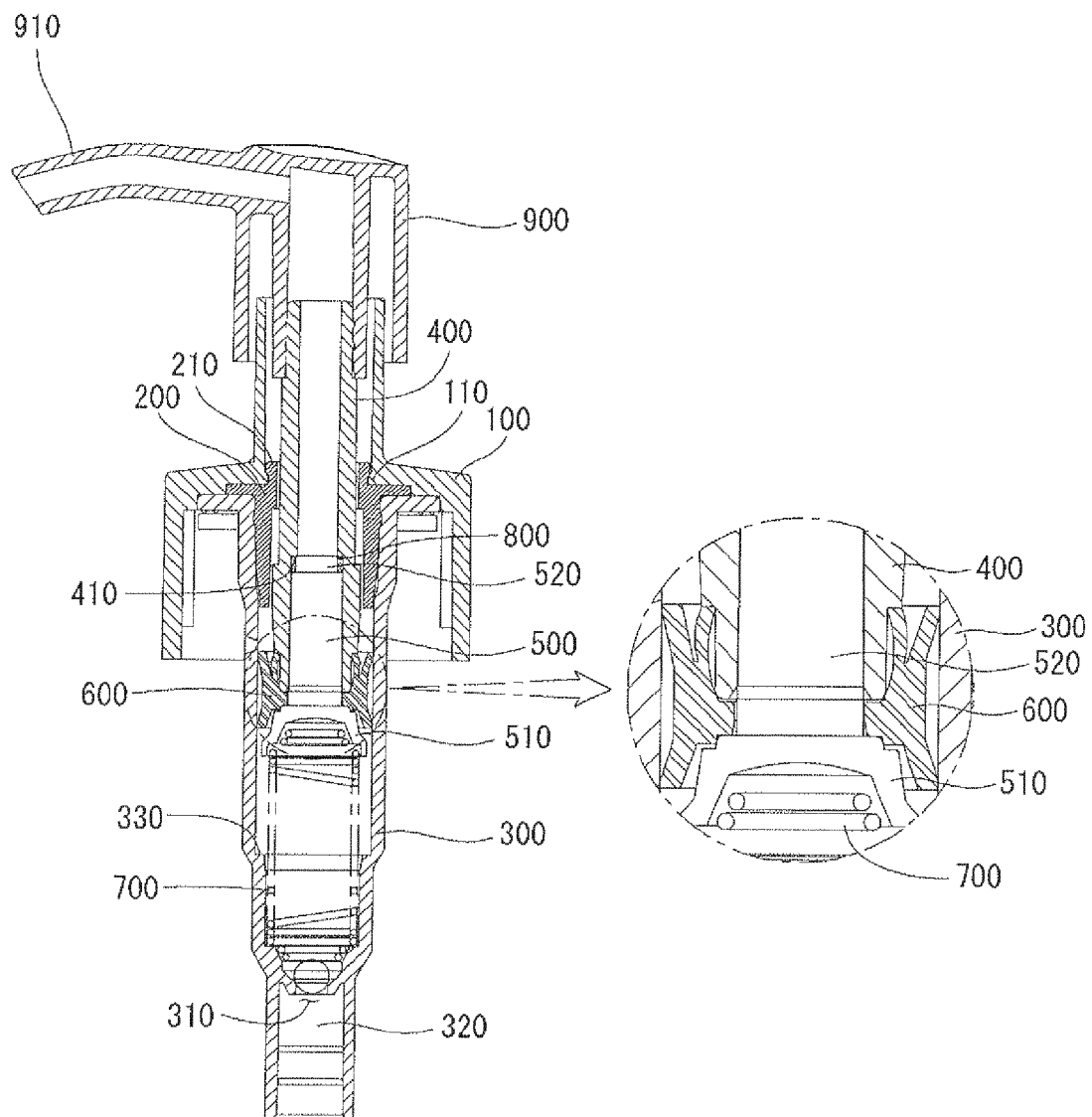


Figure 4

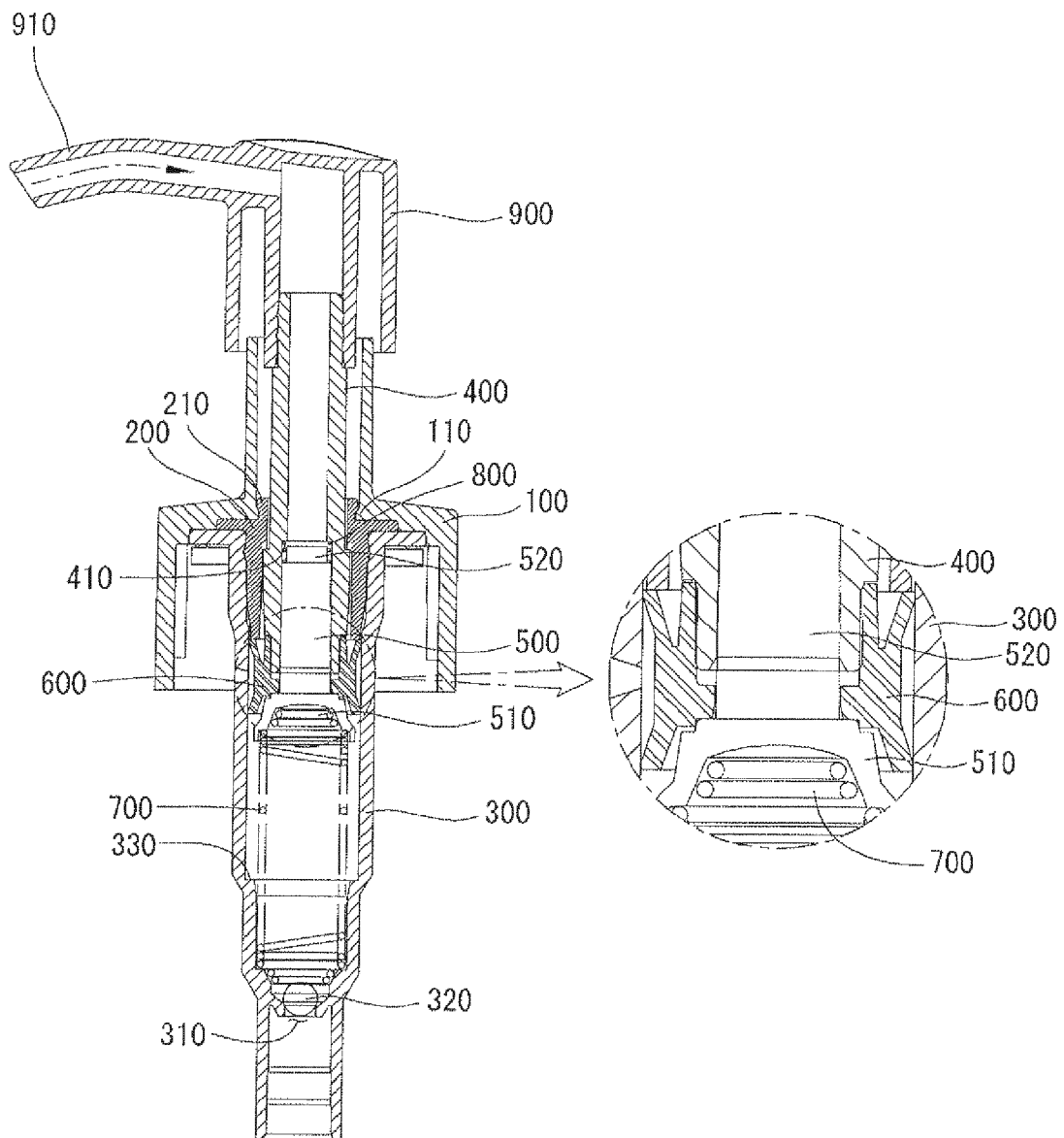


Figure 5

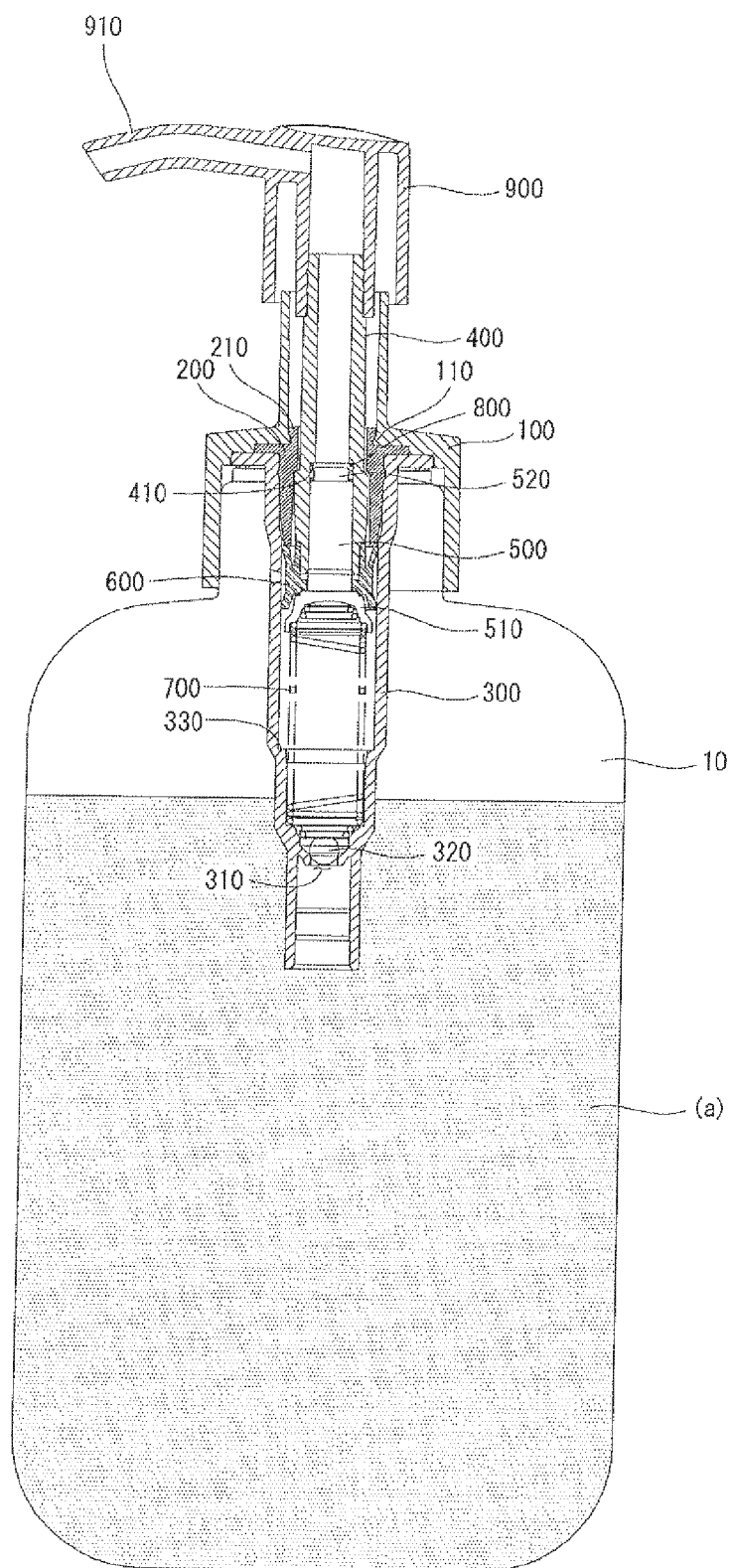


Figure 6



EUROPEAN SEARCH REPORT

Application Number
EP 13 18 8504

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DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	US 5 482 188 A (LINA JEAN-PIERRE [FR]) 9 January 1996 (1996-01-09)	1,2	INV. B05B11/00
Y	* column 10, lines 3-22; claim 4; figures 4-8 *	3	
Y	----- US 6 390 338 B1 (BAUDIN GILLES [FR]) 21 May 2002 (2002-05-21) * column 6, lines 9-14, 20-24, 35-42,; figures 5-10 *	3	
X	----- CN 101 973 431 A (HUAMING SHI) 16 February 2011 (2011-02-16) * figures 1,4,9,12 *	1,2	
A	----- EP 2 457 664 A1 (GOTOHTI COM INC [CA]) 30 May 2012 (2012-05-30) * figures 22-27 *	1,3	
			TECHNICAL FIELDS SEARCHED (IPC)
			B05B
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 22 May 2014	Examiner Marin, Charles
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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**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 13 18 8504

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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22-05-2014

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 5482188	A	09-01-1996	DE 69300399 D1	28-09-1995
			DE 69300399 T2	18-04-1996
			EP 0623060 A1	09-11-1994
			FR 2686377 A1	23-07-1993
			JP 3265347 B2	11-03-2002
			JP H07503927 A	27-04-1995
			US 5482188 A	09-01-1996
			WO 9313873 A1	22-07-1993

US 6390338	B1	21-05-2002	AT 288857 T	15-02-2005
			CA 2324489 A1	26-04-2001
			DE 60018009 D1	17-03-2005
			DE 60018009 T2	30-03-2006
			EP 1095871 A1	02-05-2001
			ES 2235802 T3	16-07-2005
			FR 2800132 A1	27-04-2001
			JP 2001193665 A	17-07-2001
			JP 2004286034 A	14-10-2004
			US 6390338 B1	21-05-2002
			US 2002043540 A1	18-04-2002

CN 101973431	A	16-02-2011	NONE	

EP 2457664	A1	30-05-2012	CA 2722646 A1	26-05-2012
			CN 102556484 A	11-07-2012
			EP 2457664 A1	30-05-2012
			US 2012132668 A1	31-05-2012

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82