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(54) Collapsible tube with dispenser pump and method for manufacturing the same

(57) The collapsible tube is composed of a soft tube and a pump assembly. The soft tube has a tube body with a storing room and a connecting end with a first engagement portion. The pump assembly has a pressing head with a nozzle and a pump body with a second engagement portion. The pump body is disposed in the storing room and the first engagement portion firmly engages with the second engagement portion.

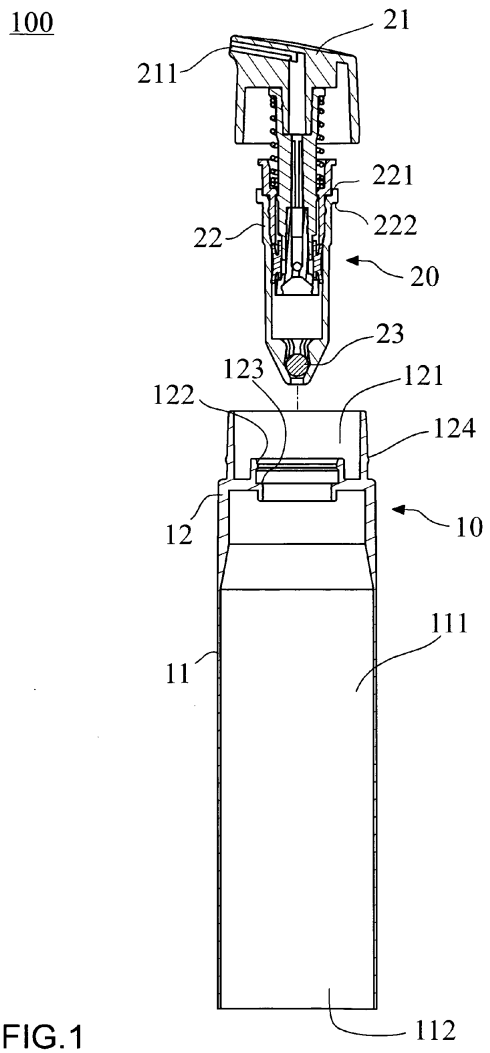

FIG.1

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Description

BACKGROUND OF THE INVENTION

(1) FIELD OF THE INVENTION

[0001] The invention relates to dispensers for gels or viscous liquids, particularly to collapsible tubes with pump caps.

(2) DESCRIPTION OF THE PRIOR ART

[0002] With progress of technologies, people always expect higher life quality. Also, use efficiency of daily necessities of life is required by moderns.

[0003] Collapsible tubes are extensively applied to serve as packaging containers for cleansing cream, toothpaste and cosmetics. Because these products are of single-use daily necessities, such collapsible tubes are in great demand.

[0004] Collapsible tubes can be simply pressed with a hand, but they are not very suitable for high-priced skincare products because a given quantity is hard to be obtained by a hand-press operation to a collapsible tube. It will cause waste when pressing too much. Besides, a liquid product held in a collapsible tube tends to rot because a frequently opened cap of collapsible tube is easy to cause microorganism breeding.

SUMMARY OF THE INVENTION

[0005] An object of the invention is to provide a collapsible tube with a dispenser pump, which allows a user to access the liquid content by a pressing operation. Not only can a given quantity be obtained, the valve of the pump assembly can also enhance a sealing effect to prevent the liquid content from polluting.

[0006] To accomplish the above objects, the collapsible tube of the invention is composed of a soft tube and a pump assembly. The soft tube has a tube body with a storing room and a connecting end with a first engagement portion. The pump assembly has a pressing head with a nozzle and a pump body with a second engagement portion. The pump body is disposed in the storing room and the first engagement portion firmly engages with the second engagement portion.

[0007] Also, the invention provides a method for manufacturing a collapsible tube with a dispenser pump. The method includes the steps of:

a) providing a soft tube a soft tube comprising a tube body with a storing room and a connecting end with a first engagement portion;
b) providing a pump assembly comprising a pressing head with a nozzle and a pump body with a second engagement portion;
c) disposing the pump body in the storing room, and
d) firmly engaging the first engagement portion with the second engagement portion.

[0008] Furthermore, the soft tube and the connecting end are integrally formed into a single piece. The connecting end further includes a blocking portion, the bump body is formed with a flange portion, and the flange portion abuts against the blocking portion. The connecting end further includes a receiving space for receiving the pressing head and providing a reciprocating action compartment. A cap is optionally added, the connecting end is formed with a third engagement portion for engaging with a fourth engagement portion of the cap.

BRIEF DESCRIPTION OF THE INVENTION

[0009]

FIG. 1 is an exploded cross-sectional view of the collapsible tube of the invention;
FIG. 1A is a partially enlarged view of the soft tube of the invention;
FIG. 2 is a schematic view of the dispenser pump of the invention;
FIG. 3 is a partially enlarged view of the connecting end of the invention; and
FIG. 4 is a flowchart of the manufacturing method of the collapsible tube of the invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0010] Please refer to FIG. 1, which shows a collapsible tube 100 with a dispenser pump of the invention. The collapsible tube 100 includes a soft tube 10 and a pump assembly 20. The soft tube 10 includes a tube body 11 and a connecting end 12. A storing room 111 is formed in the tube body 11 for storing a liquid material such as cream or gel. In this embodiment, the tube body 11 and the connecting end 12 is integrally formed into a single piece, for example, injection molding. The tube body 11 and the connecting end 12 can be made of any suitable material, and polyethylene (PE) is preferable. The connecting end includes a first engagement portion 122 for engaging with the pump assembly 20.

[0011] Please refer to FIG. 1A, which shows the soft tube 10. The soft tube 10 may be formed by one or more layers depending upon actual requirements. Different layers may be identical or different in material. FIG. 1A depicts the soft tube 10 composed of two layers, namely, a first layer 11a and a second layer 11b.

[0012] The pump assembly 20 includes a pressing head 21 and a pump body 22. The pressing head 21 is provided with a nozzle 211. When the pressing head 21 is depressed, the pump assembly 20 will draw the liquid content in the storing room 111 to drain away for being used.

[0013] It should be noted that a conventional collapsible tube is only provided with a single opening and a

user must press the tube to drain the liquid content away through the opening. Once a user exerts a force unduly, the liquid content will be drained away overmuch. Furthermore, a plastic collapsible tube has elasticity, it will rebound after it has been pressed. The tube will suck the liquid content which has been drained away at the opening back into the tube while the tube is rebounding. Thus, the liquid content may rot due to microorganism breeding. Therefore, the invention provides a collapsible tube 100 with a dispenser pump, so that a user can access the liquid content by a pressing operation. Not only can a given quantity be obtained, the valve 23 of the pump assembly 20 can also enhance a sealing effect to prevent the liquid content from polluting.

[0014] Besides, the soft tube 10 and the connecting end 12 are integrally formed into a single piece. The connecting end 12 includes a first engagement portion 122 and the pump body 22 has a second engagement portion 221. The bump body 22 is disposed in the storing room 111 by the engagement of the first engagement portion 122 and the second engagement portion 221. Thus, an additional element or process is not necessary to secure the bump assembly 20. This can simplify the manufacturing process and reduce the manufacturing costs.

[0015] In the single-pieced soft tube 10, the connecting end 12 further includes a blocking portion 123. The bump body 22 is formed with a flange portion 222. The flange portion 222 can abut against the blocking portion 123 to firmly secure the bump assembly 20 and the soft tube 10.

[0016] On the other hand, the connecting end 12 further includes a receiving space 121 for receiving the pressing head 21 and providing a reciprocating action compartment.

[0017] Please refer to FIG. 2, which shows the collapsible tube 100. The invention may further include a cap 30. The connecting end 12 is formed with a third engagement portion 124 for engaging with a fourth engagement portion 31 of the cap 30. As a result, the nozzle 211 can keep moist and prevent pollution of dust.

[0018] The liquid content can be filled into the soft tube 10 through a filling aperture 112. The filling aperture 112 will be sealed up after the liquid content has fully filled.

[0019] Please refer to FIG. 3. As shown, the first engagement portion 122 is further formed with a guiding slant 1221 and a hook portion 1222. The guiding slant 1221 can guide the second engagement portion 221 of the bump assembly 20 to slide into the connecting end 12 and the hook portion 1222 can withhold the second engagement portion 221, so that the pump assembly 20 can be firmly installed in the soft tube 10.

[0020] Please refer to FIG. 4, which shows the flowchart of the manufacturing method of the invention. The method includes the steps of:

S01) providing a soft tube 10. The soft tube 10 includes a tube body 11 with a storing room 111 and a connecting end 12 with a first engagement portion 122;

S02) providing a pump assembly 20. The pump assembly includes a pressing head 21 with a nozzle 211 and a pump body 22 with a second engagement portion 221;

S03) disposing the pump body in the storing room, and

S04) firmly engaging the first engagement portion with the second engagement portion.

[0021] In the above method, the soft tube 10 and the connecting end 12 are integrally formed into a single piece. The connecting end 12 further includes a blocking portion 123. The bump body 22 is formed with a flange portion 222. The flange portion 222 can abut against the blocking portion 123 to firmly secure the bump assembly 20 and the soft tube 10.

[0022] On the other hand, the connecting end 12 further includes a receiving space 121 for receiving the pressing head 21 and providing a reciprocating action compartment.

[0023] Of course, the invention may further include a cap 30. The connecting end 12 is formed with a third engagement portion 124 for engaging with a fourth engagement portion 31 of the cap 30. As a result, the nozzle 211 can keep moist and prevent pollution of dust.

Claims

1. A collapsible tube with a dispenser pump, comprising:

   a soft tube, comprising a tube body with a storing room and a connecting end with a first engagement portion; and

   a pump assembly, comprising a pressing head with a nozzle and a pump body with a second engagement portion;

   wherein the pump body is disposed in the storing room, and the first engagement portion firmly engages with the second engagement portion.

2. The collapsible tube of claim 1, wherein the soft tube and the connecting end are integrally formed into a single piece.

3. The collapsible tube of claim 2, wherein the connecting end further includes a blocking portion, the bump body is formed with a flange portion, and the flange portion abuts against the blocking portion.

4. The collapsible tube of claim 2, wherein the connecting end further includes a receiving space for receiving the pressing head and providing a reciprocating action compartment.

5. The collapsible tube of claim 2, further comprising a cap, wherein the connecting end is formed with a

third engagement portion for engaging with a fourth engagement portion of the cap.

6. A method for manufacturing a collapsible tube with a dispenser pump, comprising the steps of:

a) providing a soft tube comprising a tube body with a storing room and a connecting end with a first engagement portion;
b) providing a pump assembly comprising a pressing head with a nozzle and a pump body with a second engagement portion;
c) disposing the pump body in the storing room, and
d) firmly engaging the first engagement portion with the second engagement portion.

7. The method of claim 6, wherein the soft tube and the connecting end are integrally formed into a single piece.

8. The method of claim 7, wherein the connecting end further includes a blocking portion, the bump body is formed with a flange portion, and the flange portion abuts against the blocking portion.

9. The method of claim 7, wherein the connecting end further includes a receiving space for receiving the pressing head and providing a reciprocating action compartment.

10. The method of claim 7, further comprising a cap, wherein the connecting end is formed with a third engagement portion for engaging with a fourth engagement portion of the cap.

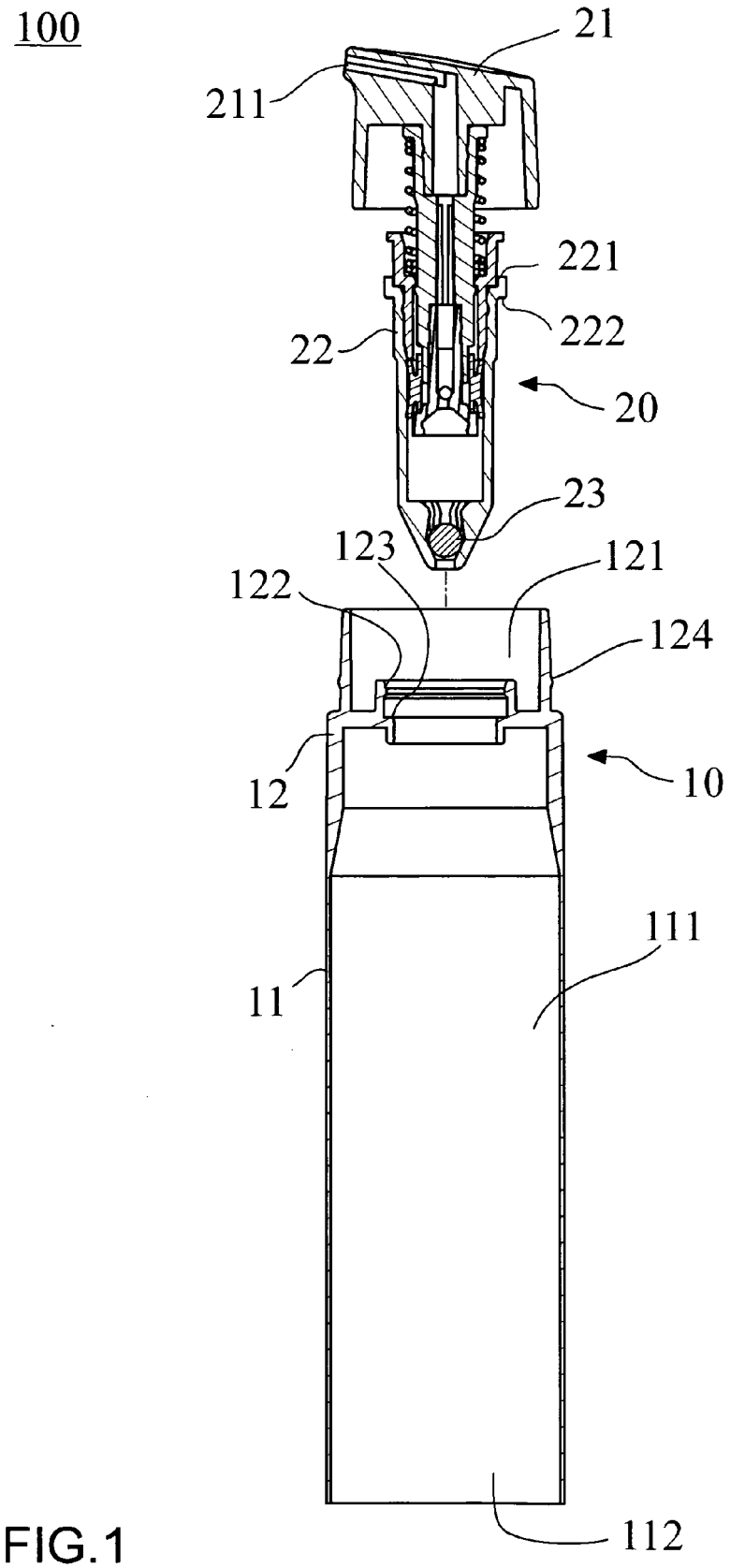

FIG.1

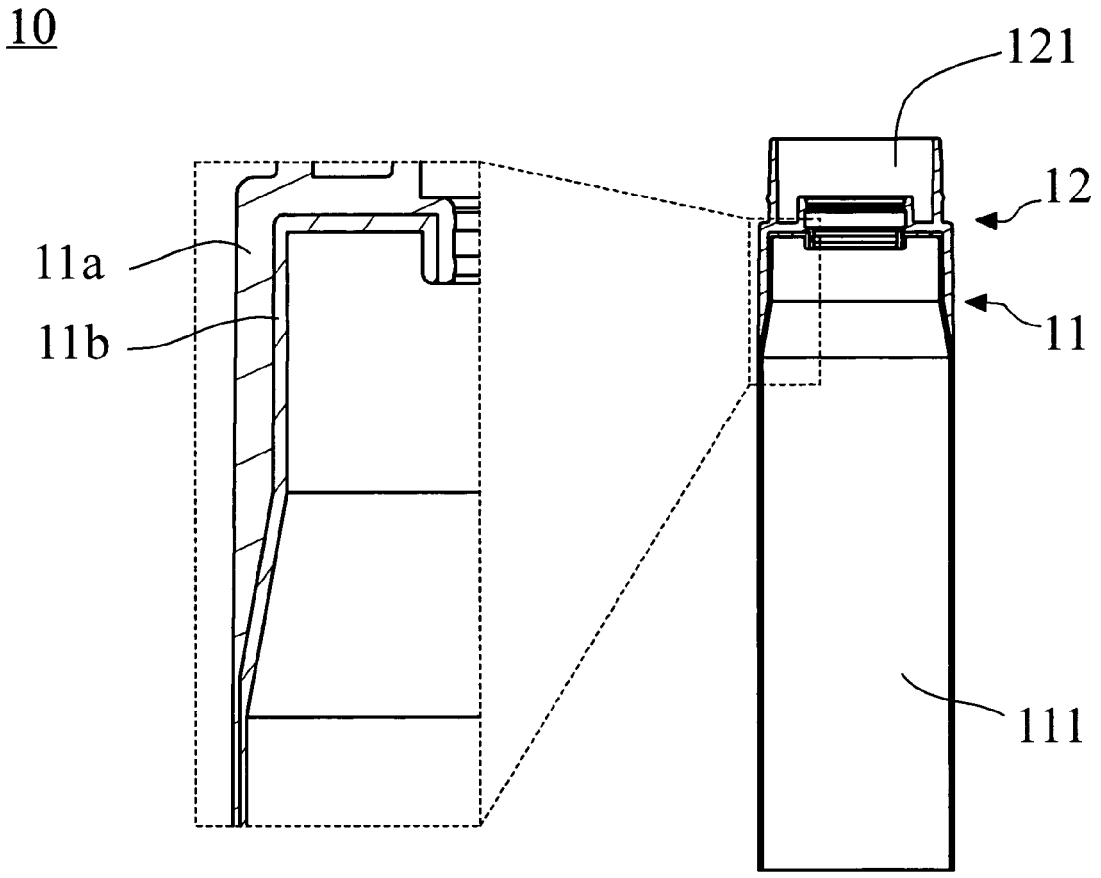

FIG.1A

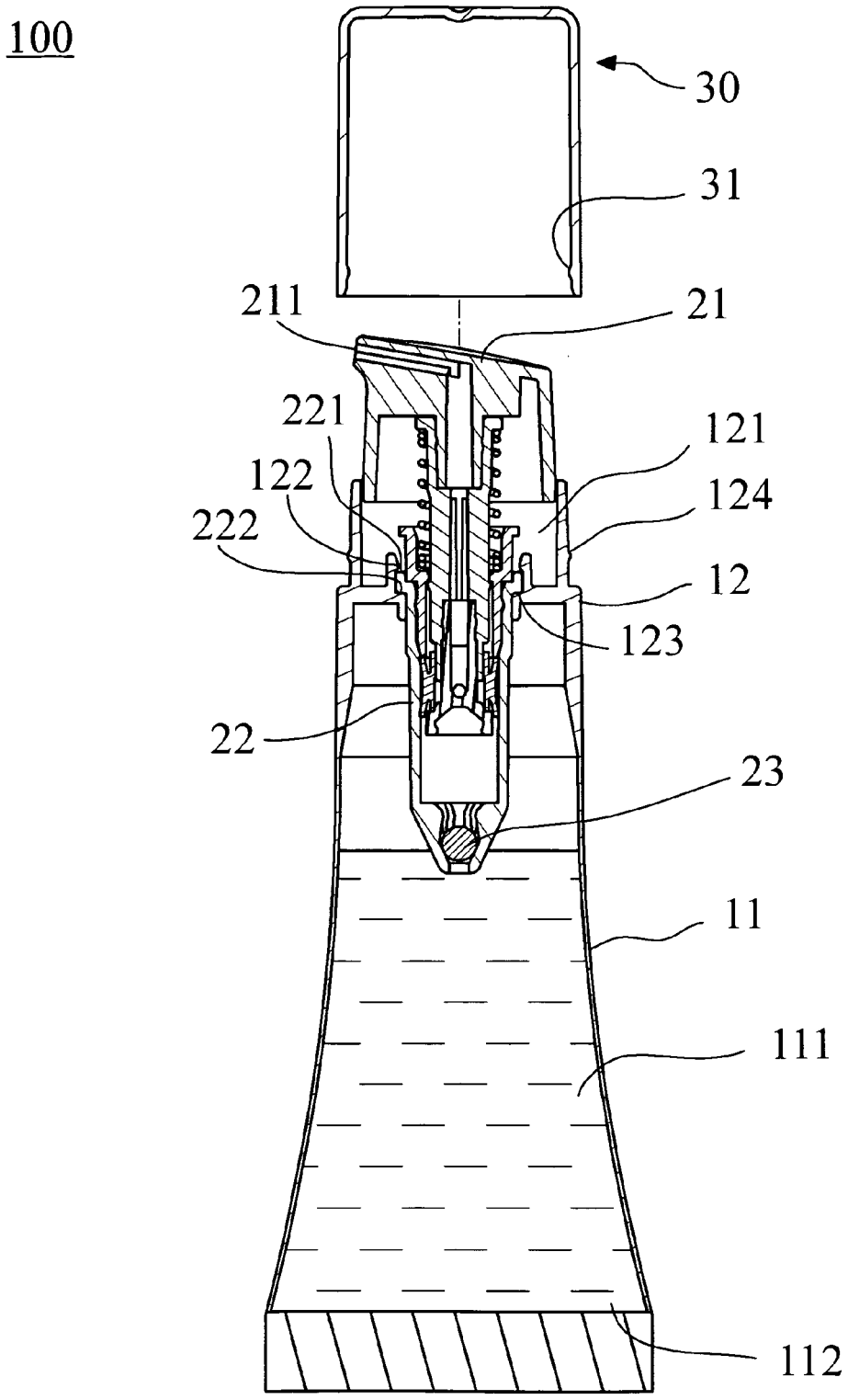

FIG.2

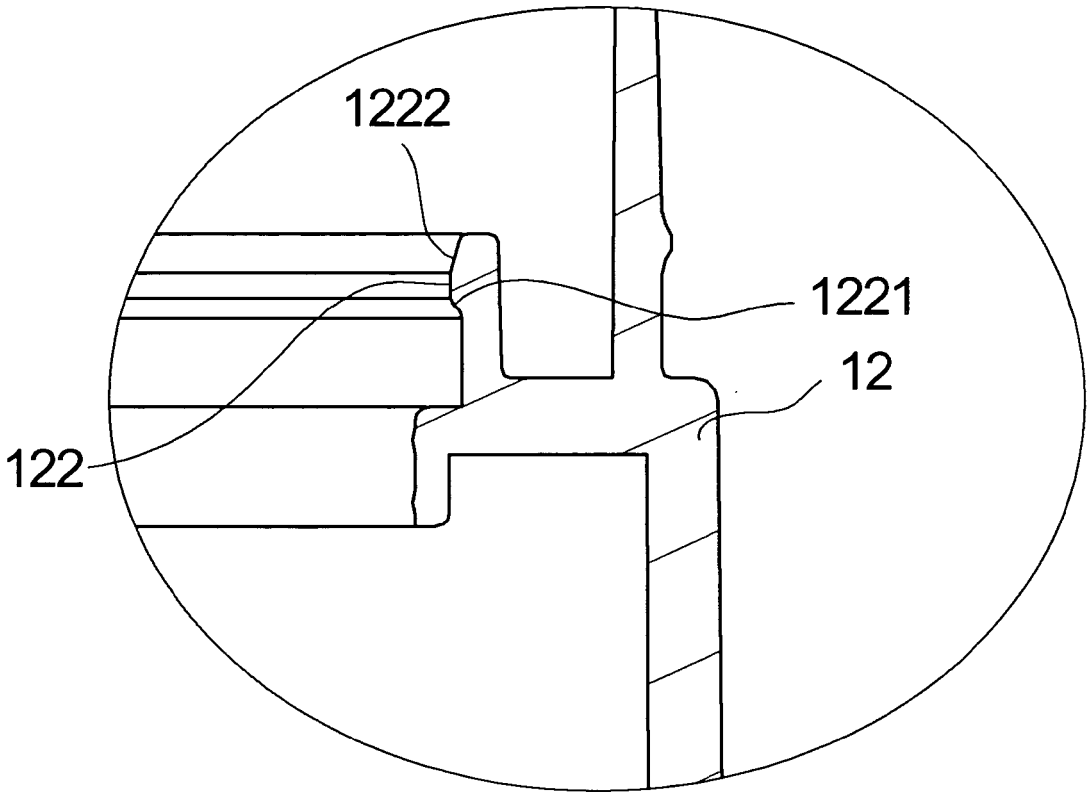

FIG.3

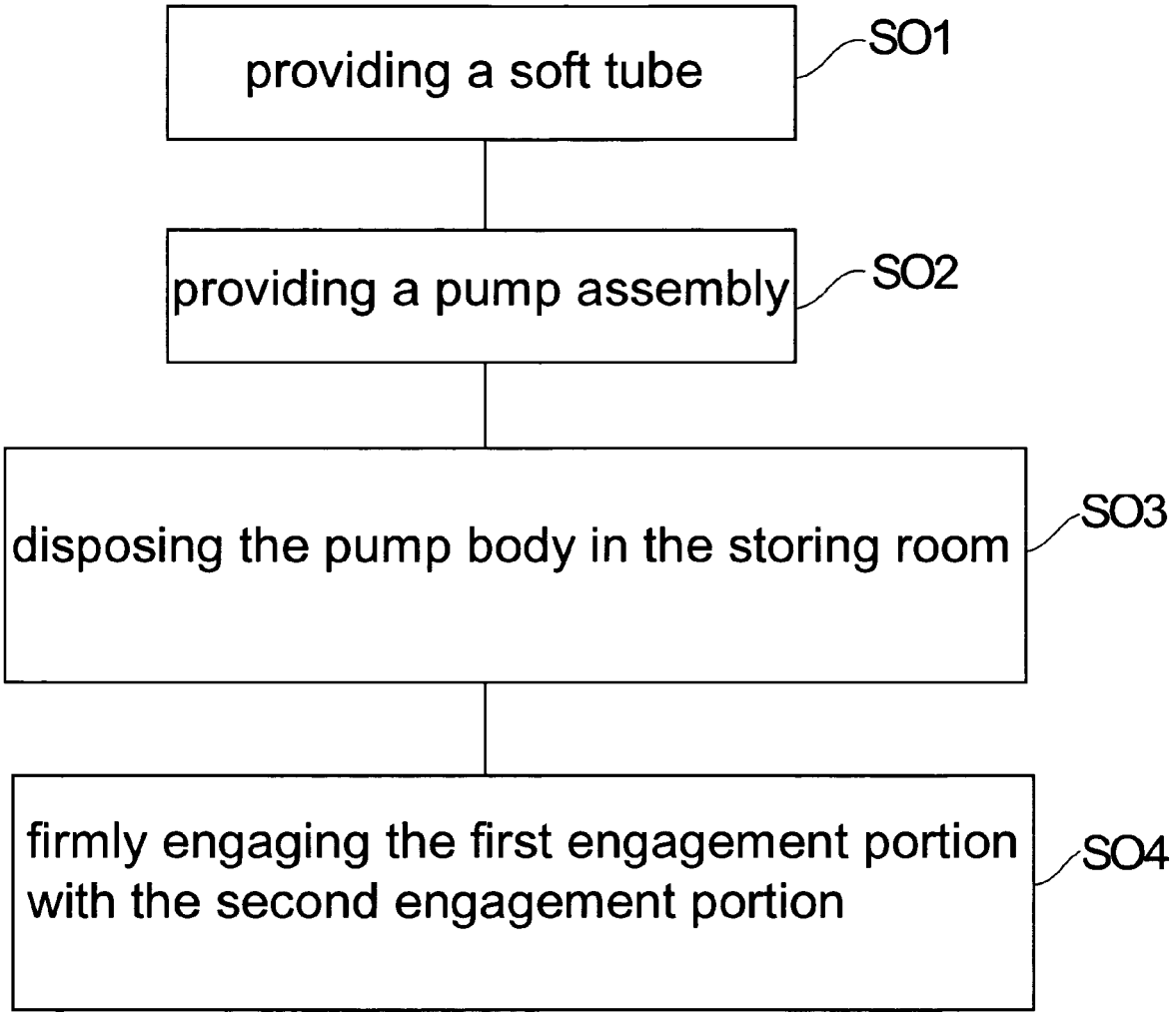
providing a soft tube
SO1
providing a pump assembly
SO2
disposing the pump body in the storing room
SO3
firmly engaging the first engagement portion with the second engagement portion
SO4

FIG.4

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EUROPEAN SEARCH REPORT

Application Number
EP 13 25 0003

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 A	FR 2 710 036 A1 (SIVEL [FR]) 24 March 1995 (1995-03-24) * the whole document *	1-4,6-9 5,10	INV. B05B11/00 B65D83/62
X	EP 0 622 311 A2 (SHINKO KAGAKU KK [JP]) 2 November 1994 (1994-11-02) * column 6, line 4 - line 15; figures 1,7 *	1-10	
X	EP 2 243 557 A1 (LUMSON SPA [IT]) 27 October 2010 (2010-10-27) * paragraphs [0022] - [0023]; figures 1-10 *	1,5	
X	DE 93 21 517 U1 (HYGIENE TECHNIK INC [CA]) 24 December 1998 (1998-12-24) * the whole document *	1,5	
X	WO 2005/016551 A1 (SEAQUIST PERFECT DISPENSING [DE]; BOEHNISCH KARSTEN [DE]; JASPER BERNH) 24 February 2005 (2005-02-24) * the whole document *	1,5	TECHNICAL FIELDS SEARCHED (IPC) B05B B65D
X	WO 2011/013876 A1 (YONWOO CO LTD [KR]; SON SU-JIN [KR]; KIM JOONG-GU [KR]) 3 February 2011 (2011-02-03) * figure 3 *	1,5	

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	19 June 2013	Barré, Vincent

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 13 25 0003

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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19-06-2013

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
FR 2710036 A1	24-03-1995	NONE	
EP 0622311 A2	02-11-1994	EP 0622311 A2	02-11-1994
		JP H06312019 A	08-11-1994
EP 2243557 A1	27-10-2010	CN 101863343 A	20-10-2010
		EP 2243557 A1	27-10-2010
		RU 2010115513 A	27-10-2011
		US 2010264166 A1	21-10-2010
DE 9321517 U1	24-12-1998	NONE	
WO 2005016551 A1	24-02-2005	DE 10335842 A1	10-03-2005
		EP 1651356 A1	03-05-2006
		US 2007007307 A1	11-01-2007
		WO 2005016551 A1	24-02-2005
WO 2011013876 A1	03-02-2011	CN 102470968 A	23-05-2012
		EP 2460740 A1	06-06-2012
		JP 2013500907 A	10-01-2013
		KR 20110012781 A	09-02-2011
		US 2012125948 A1	24-05-2012
		WO 2011013876 A1	03-02-2011

EPO FORM P0459

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