

(19)



Europäisches Patentamt
European Patent Office
Office européen des brevets



(11)

EP 1 693 335 A1

(12)

EUROPEAN PATENT APPLICATION

(43) Date of publication:

23.08.2006 Bulletin 2006/34

(51) Int Cl.:

B67D 1/04 (2006.01)

(21) Application number: **05381049.5**

(22) Date of filing: **04.11.2005**

(84) Designated Contracting States:

**AT BE BG CH CY CZ DE DK EE ES FI FR GB GR
HU IE IS IT LI LT LU LV MC NL PL PT RO SE SI
SK TR**

Designated Extension States:

AL BA HR MK YU

(71) Applicant: **BEGUDES TOSCA, S.L.**

43527 Reguers - Tortosa (ES)

(72) Inventor: **Vidal Grau, Juan**

43527 Reguers - Tortosa (ES)

(74) Representative: **Esteban Perez-Serrano, Maria**

Isabel et al

UDAPI & ASOCIADOS

Explanada, 8

28040 Madrid (ES)

Remarks:

Amended claims in accordance with Rule 86 (2) EPC.

(54) **Valve-cap for siphon**

(57) Perfected cap with valve for siphon-container, of among the caps with valve which make use of a resilient membrane as spring and recovery means of the position of the valve which comprises three parts: an essentially cylindrical shell (2) from which emerges an oblique conduit (2.5) which connects with the exterior and which has a discoidal lid (2.1) for separation of two chambers, a lower one (2.3) and another upper one (2.2) connected by means of a vertical tubular conduit (2.4); a lid (1) which consists of a resilient membrane (1.2) under which a pusher (1.1) is mounted which lodges in the tubular conduit (2.4) being prolonged to almost the lower end of said conduit (2.4); a lid (1) which consists of a

resilient membrane (1.2) under which a pusher (1.1) is mounted which lodges in the tubular conduit (2.4) being prolonged to almost the lower end of said conduit (2.4); an elastic valve (3) which has a protrusion (3.5) which is driven by the pusher (1.1) and supported by radial elastic segments (3.4), having some fins (3.2) on its external part, characterized in that the central conduit (2.4) has a length for stabilization of the pressurized fluid which connects with the exterior through the oblique tube (2.5), the union between the central conduit (2.4) and the pusher (1.1) having some means of fluid-tightness for the isolation of the upper chamber (2.2).

EP 1 693 335 A1

Description

OBJECT OF THE INVENTION

[0001] The present invention relates to a perfected cap with valve for siphon-container, of among the caps with valve which make use of a resilient membrane as spring and recovery means of the position of the valve, which comprises three parts:

- an essentially cylindrical shell which connects with the exterior through an oblique outlet tube of the pressurized liquid, which has a lid for separation of two chambers, a lower one and another upper one connected by means of a tubular conduit through which the pressurized liquid ascends coming from a bottle.
- a lid which consists of a resilient membrane which is pressed by the user, under which a pusher is mounted which lodges in the tubular conduit being prolonged almost to the lower end of said conduit.
- an elastic valve which has a protrusion which is driven by the pusher and supported by radial elastic segments, having some fins on its external part.

[0002] The present invention is characterized by the fact that the central conduit connects directly with the oblique outlet tube of the pressurized liquid, the union between the upper part of said central conduit and the pusher having some means of fluid-tightness for the isolation of the upper chamber. The passage of the fluid directly to the oblique tube, that is, without passing through the upper chamber eliminates the possibility that remains of the liquid can be left in the chamber and be capable of spoiling, which would emerge mixed with the new fluid in the following use of the bottle, with the ensuing lack of hygiene.

BACKGROUND OF THE INVENTION.

[0003] The use of carbonated water and other sparkling drinks, require recipients which maintain the appropriate pressure so that the dissolved gas does not evaporate and the drink lose the required properties. This gas is used as a means of working the so-called siphon-containers which are pressurized recipients that have an outlet valve of the liquid as well as a lever or the like for the opening thereof when serving the desired quantity.

[0004] The patent with publication number US 5918779 describes a valve for use in siphon-containers which comprises a body with an elastic interior piece which rests on the seat of the valve, this being driven through the pressure applied by the user on a top cap.

[0005] The Patent with publication number US5894962 describes a cap for soda bottles which has an outlet valve with a resilient membrane in domed form under which and centered is found the closing element held by a wedged element.

[0006] Mention is also made as background of the patents with number EP0291788 and W09531398 referring to a siphon-container apparatus for dispensing drinks fitted with a valve.

5 [0007] Finally, mention is also made of the patent application number 03380131.7 "Cap with valve for siphon-container" by the same applicant, which refers to a cap with valve for siphon-container characterized by a valve consisting in the use of an elastic piece which has a closing element on the end of a conduit for communication between the recipient under pressure and a chamber prior to the outlet to the exterior. Use is made of an elastic membrane integral with a pusher intended to achieve the opening of the valve by pressing with the finger and the later recovery and therefore closure of the valve. Lastly, 10 this cap has an oblique outlet conduit which facilitates the pouring of the liquid, expelled for example into a tumbler, without this coming out.

15 [0008] The perfected cap with valve for siphon-container disclosed has, unlike the earlier case, an isolated upper chamber since the oblique conduit connects directly with the central conduit of the cap. In this way it is possible to avoid that liquid be retained in the upper chamber between uses which would spoil and which in 20 the following use of the siphon-container would emerge mixed with the new liquid coming from the bottle, achieving a more hygienic siphon-container cap.

DESCRIPTION OF THE INVENTION.

25 [0009] The present invention refers to a perfected cap with valve for siphon-container, of among the caps with valve which make use of a resilient membrane as spring and recovery means of the position of the valve which comprises three parts:

- an essentially cylindrical shell which connects with the exterior through an oblique outlet tube of the fluid, with a lid for separation of two chambers, one lower and another upper connected by means of a tubular duct through which the fluid ascends coming from a bottle under pressure.
- a lid which consists of a resilient membrane under which a pusher is mounted which lodges in the tubular conduit being prolonged almost to the lower end of said conduit. The pushing by pressure and deformation of the membrane displaces the pusher downwards.
- an elastic valve which has a protrusion which is driven by the pusher and which is supported by radial elastic segments, also having some fins on its external part.

30 [0010] The displacement of the closing protrusion is possible through the deformation of the radii which support it, removing the closure and allowing the passage of the pressurized liquid to the central conduit. On releasing the upper membrane, the pusher ceases to open the 35

elastic valve and both the initial position of the membrane and of the resilient body of the valve are recovered and the passage to the pressurized liquid is cut off.

[0011] The cap disclosed is characterized in that the central conduit connects directly with the exterior through the oblique tube, being also the union between said central conduit in its upper part and the fluid-tight pusher achieving with both characteristics the isolation of the upper chamber, which results in a more hygienic cap.

[0012] To assure also the fluid-tightness of the lower chamber and thereby achieve a better transfer of the fluid, the elastic valve has an upper shoulder which rests on a circular projection of the lid for separation of the two chambers of the cap, and so avoid leakage of the gas under pressure through the threaded element.

[0013] The tubular conduit has two differentiated areas, one lower of smaller internal diameter, through which the pressurized liquid ascends and another upper, of greater internal diameter, located after the mouth of the oblique conduit in which the stabilization of the fluid takes place before emerging to the exterior through the aforementioned oblique tube.

[0014] The closure between the tubular conduit and the pusher is fluid-tight, due to the pusher in its upper segment having a first shoulder where its diameter increases to the diameter on the inside of the central conduit, thereby reducing the clearance for the passage of the fluid which combined with a second shoulder of the pusher external to the central conduit which is located on the latter on pressing the valve of the lid, fluid is prevented from passing to the upper chamber.

[0015] The pusher has some longitudinal fins which guide both the displacement of the same inside the central conduit, and the flow of the pressurized liquid during the ascent through this conduit.

[0016] The protrusion of the valve has a spherical form its upper part being flattened which propitiates a greater support surface of the pusher and therefore a more effective operation of the valve.

DESCRIPTION OF THE DRAWINGS.

[0017] The present descriptive specification is completed with a set of drawings, which illustrate the preferred embodiment of the invention in a non-restrictive manner.

[0018] Figure 1 is a section of the body of the cap which includes the external cylindrical shell and the upper cover.

[0019] Figure 2 is a representation in perspective of the lower chamber of the shell of the cap.

[0020] Figure 3 is a section of the elastic valve.

[0021] Figure 4 is a view in perspective of the upper lid with the pusher.

[0022] Figure 5 is a section of the pusher and the protrusion of the elastic valve.

PREFERRED EMBODIMENT OF THE INVENTION.

[0023] The cap disclosed is situated among the caps with valve which make use of a resilient membrane as spring and recovery means of the position of the valve which comprises three parts:

- an essentially cylindrical shell (2) from which emerges an oblique conduit (2.5) which connects with the exterior and which has a discoidal lid (2.1) for separation of two chambers, one lower (2.3) and another upper (2.2) connected by means of a vertical tubular conduit (2.4), the lower one (2.3) being prolonged in a recipient to which it is coupled by means of an interior thread (2.7).
- a lid (1) which consists of a resilient membrane (1.2) under which a pusher (1.1) is mounted which is lodged in the tubular conduit (2.4) being prolonged to almost the lower end of said conduit (2.4).
- a lid (1) which consists of a resilient membrane (1.2) under which a pusher (1.1) is mounted which is lodged in the tubular conduit (2.4) being prolonged to almost the lower end of said conduit (2.4).
- an elastic valve (3) which has a protrusion (3.5) which is driven by the pusher (1.1) and supported by radial elastic segments (3.4), having some fins (3.2) on its external part.

[0024] The cap disclosed is characterized in that the central conduit (2.4) has a segment for stabilization of the pressurized fluid which is connected with the exterior through the oblique tube (2.5), the union between the central conduit (2.4) and the pusher (1.1) having some means of fluid-tightness for the isolation of the upper chamber (2.2).

[0025] The upper chamber (2.2) has a seat (2.2.1) with rim for the upper lid (1).

[0026] The oblique conduit (2.5) emerges from the central conduit (2.4). This arrangement, different to that in which the central conduit (2.4) is connected with the upper chamber (2.2) where the stabilization of the fluid takes place and from which the oblique conduit (2.5) emerges, removes the possibility that liquid can be retained in the upper chamber (2.2) between two uses, which is capable of spoiling and which would emerge mixed with the new liquid in the following use of the bottle.

[0027] The central part of the lid (1) is constituted by a resilient membrane (1.2) curved concavely downward, which has in its central part a circular form (1.5) curved concavely upward, which facilitates the pressure being directly applied on the pusher (1.1). In correspondence with this area it has underneath a cylindrical projection (1.3) which is stepped in another of smaller diameter (1.4) and finally in the pusher (1.1).

[0028] The conduit (2.4) has two differentiated segments, a lower one of smaller internal diameter and another upper one of greater diameter located after the mouth (2.5.1) of the oblique conduit (2.5), it being in this

upper segment where the stabilization of the pressurized liquid takes place prior to its egress.

[0029] To assure the fluid-tightness between the conduit (2.4) and the rod (1.1) the diameter of the shoulder (1.4) coincides with the internal diameter of the conduit (2.4) in its expansion area (2.4.2), removing the clearance between the two elements for passage of the pressurized liquid, additionally, the projection (1.3), which rests on the external upper part of the conduit (2.4) when the resilient valve (1.2) is pressed, also acts as a means of retention.

[0030] The pusher has some longitudinal ribs (1.1.1) both for the guidance of the same (1.1) inside the tube (2.4) and for the guidance of the flow of the pressurized fluid which ascends via the conduit (2.4) through the clearance with the pusher (1.1) reaching the area of the mouth (2.5.1) of the oblique conduit (2.5) where the conduit (2.4) widens, producing the stabilization of the fluid which emerges to the exterior through the oblique tube (2.5) .

[0031] In the lower chamber (2.3) the elastic body (3) is housed which configures, together with the cavities which it contains and the lower tubular conduit (2.4), the cutoff valve which impedes the egress of the pressurized liquid.

[0032] The elastic body (3) consists of a cylindrical tubular segment (3.3) in which the feed tube enters which reaches the lower part of the container, favoring that at all times the pressure impels the egress of the liquid which tends to be stored below and not the gas which is stored in the high part.

[0033] The cylindrical tubular segment (3.3) is finished at the top in a collar (3.1) intended to establish the closure with the lower part of the discoidal plate (2.1).

[0034] This closure is made in the stepped peripheral area of the collar (3.1) since under the discoidal plate (2.1) there is a circular projection (2.6) on which the seal is established when the valve (3) is tightened against the discoidal plate (2.1), avoiding in this way a leakage of the gas under pressure through the threaded element.

[0035] In the cylindrical tubular segment (3.3) of this same elastic element (3) there is a set of radii (3.4), also elastic, which converge in a protuberance (3.5) with spherical dome with its upper part (3.5.1) flat.

[0036] It is this projection (3.5) which closes the connection between the lower chamber (2.3) and the upper one (2.2) when seated on the lower end (2.4.1) of the tubular conduit (2.4). Said lower end (2.4.1) has a rounded interior finish for a more effective contact with the protuberance (3.5) which has a spherical form.

[0037] The opening of the valve is achieved by applying pressure on the lid (1), deforming the membrane (1.2), giving rise to the guided vertical displacement of the pusher (1.1), the latter under the projection (3.5) and so the passage of the liquid is allowed from the interior of the feeding tube to the mouth (2.5.1) of the oblique conduit (2.5) through the clearance between the pusher (1.1) and the tubular conduit (2.4).

[0038] The resilient element (3) is additionally provided with some external fins (3.2) which rest on the inside the neck of the bottle managing to maintain the appropriate position of the resilient element (3) avoiding the mis-seating of the valve.

[0039] The lower chamber (2.3) has on its bottom part a bevel-edge (2.8) antagonistic of another bevel-edge in the threaded element which sets the relative optimum position between the bottle and the cap and acts as butt between the two elements.

[0040] The essential nature of this invention is not altered by variations in materials, form, size and arrangement of the component elements, described in a non-restrictive manner, sufficient for an expert to proceed to the reproduction thereof.

Claims

1. - Perfected cap with valve for siphon-container, of among the caps with valve which make use of a resilient membrane as spring and recovery means of the position of the valve which comprises three parts:

- an essentially cylindrical shell (2) from which emerges an oblique conduit (2.5) which connects with the exterior and which has a discoidal cover (2.1) for separation of two chambers, one lower (2.3) and another upper (2.2) connected by means of a vertical tubular conduit (2.4).

- a lid (1) which consists of a resilient membrane (1.2) under which a pusher (1.1) is mounted which lodges in the tubular conduit (2.4) being prolonged to almost the lower end of this conduit (2.4).

- an elastic valve (3) which has a protrusion (3.5) which is driven by the pusher (1.1) and supported by radial elastic segments (3.4), having some fins (3.2) on its external part.

Characterized in that

- the central conduit (2.4) has a length for stabilization of the pressurized fluid which connects with the exterior through the oblique tube (2.5), the union between the central conduit (2.4) and the pusher (1.1) having some means of fluid-tightness for the isolation of the upper chamber (2.2) .

2. - Perfected cap with valve for siphon-container according to claim 1 **characterized in that** the length for stabilization of the conduit (2.4) consists of an enlargement (2.4.2) of the internal diameter of the conduit (2.4) starting from the mouth (2.5.1) of the oblique conduit (2.5).

3. - Perfected cap with valve for siphon-container ac-

cording to claim 1 **characterized in that** the rod (1.1) comprises a shoulder (1.4) of diameter equal to the internal diameter of the conduit (2.4) in its enlarged length (2.4.2) which combines with another shoulder (1.3) external to the conduit (2.4) which impedes the egress of the fluid into the upper chamber (2.2) when the valve is pressed.

4. - Perfected cap with valve for siphon-container according to claim 1 **characterized in that** the pusher (1.1) has some ribs (1.1.1) arranged longitudinally for the correct guidance thereof inside the conduit (2.4) and for the guidance of the pressurized liquid through the clearance between the conduit (2.4) and the pusher (1.1). 5 10
5. - Perfected cap with valve for siphon-container according to claim 1 **characterized in that** the cover (2.1) has on the face corresponding to the lower chamber (2.3) a peripheral projection (2.6) which combined with a peripheral collar (3.1) of the valve carries out the closure of the lower chamber (2.3). 15 20
6. - Perfected cap with valve for siphon-container according to claim 1 **characterized in that** the spherical protrusion (3.5) of the valve has a flat upper area (3.5.1) for increasing the support surface of the pusher (1.1). 25
7. - Perfected cap with valve for siphon-container according to claim 1 **characterized in that** the shell (2) has an edge with lip (2.2.1) for the lodging of the lid (1). 30
8. - Perfected cap with valve for siphon-container, according to claim 1 **characterized in that** the resilient membrane (1.2) has a central area (1.5) curved concavely upward over the rod (1.1) for the correct operation of the same (1.1). 35 40
9. - Perfected cap with valve for siphon-container, according to claim 1 **characterized in that** the conduit (2.4) has on its lower end and internally (2.4.1) a curved termination for the better adaptation thereof to the protrusion (3.5). 45
10. - Perfected cap with valve for siphon-container, according to claim 1 **characterized in that** the lower chamber (2.3) on its bottom part has a bevel-edge (2.8) antagonistic to another bevel-edge on the threaded element which fixes the relative optimum position between the bottle and the cap acting as butt between the two elements. 50

Amended claims in accordance with Rule 86(2) EPC.

1. - Perfected cap with valve for siphon-container, of

among the caps with valve which make use of a resilient membrane as spring and recovery means of the position of the valve which comprises:

- an essentially cylindrical shell (2) from which emerges an oblique conduit (2.5) having a discoidal cover (2.1) for separation of two chambers, one lower (2.3) and another upper (2.2) respect of the cylindrical shell and this last upper chamber (2.2) in neighbouring of a resilient membrane placed on the top of the cylindrical shell, wherein the oblique conduit (2.5) connects directly with a tubular conduit (2.4) which goes from the upper chamber (2.2) to the lower one (2.3).
- a lid (1) which consists of a resilient membrane (1.2) under which a pusher (1.1) is mounted which lodges in the tubular conduit (2.4) being prolonged to almost the lower end of this conduit (2.4).

characterized in that

additionally to those elements it also comprises:

- an elastic valve (3) which has a protrusion (3.5) which is driven by the pusher (1.1) and supported by radial elastic segments (3.4), having some fins (3.2) on its external part.
- the central conduit (2.4) has a length for smoothening of flow of the pressurized fluid which connects with the exterior through the oblique tube (2.5),
- having some means of fluid-tightness for avoiding the egress of any liquid into the upper chamber (2.2) in the union between the central conduit (2.4) and the pusher (1.1)

2. - Perfected cap with valve for siphon-container according to claim 1 **characterized in that** the length smoothening the flow of the fluid in the conduit (2.4) consists of an enlargement (2.4.2) of the internal diameter of the conduit (2.4) starting from the mouth (2.5.1) of the oblique conduit (2.5).

3. - Perfected cap with valve for siphon-container according to claim 1 **characterized in that** the pusher (1.1) comprises a shoulder (1.4) of diameter equal to the internal diameter of the conduit (2.4) in its enlarged length (2.4.2) which combines with another shoulder (1.3) external to the conduit (2.4) which impedes the egress of the fluid into the upper chamber (2.2) when the valve is pressed.

4. - Perfected cap with valve for siphon-container according to claim 1 **characterized in that** the pusher (1.1) has some ribs (1.1.1) arranged longitudinally for the correct guidance thereof inside the conduit (2.4) and for the guidance of the pressurized liquid

through the clearance between the conduit (2.4) and the pusher (1.1).

5. - Perfected cap with valve for siphon-container according to claim 1 **characterized in that** the cover (2.1) has on the face corresponding to the lower chamber (2.3) a peripheral projection (2.6) which combined with a peripheral collar (3.1) of the valve carries out the closure of the lower chamber (2.3).

5

10

6. - Perfected cap with valve for siphon-container according to claim 1 **characterized in that** the spherical protrusion (3.5) of the valve has a flat upper area (3.5.1) for increasing the support surface of the pusher (1.1).

15

7. - Perfected cap with valve for siphon-container according to claim 1 **characterized in that** the shell (2) has an edge with lip (2.2.1) for the lodging of the lid (1).

20

8. - Perfected cap with valve for siphon-container, according to claim 1 **characterized in that** the resilient membrane (1.2) has a central area (1.5) curved concavely upward over the pusher (1.1) for the correct operation of the same (1.1).

25

9. - Perfected cap with valve for siphon-container, according to claim 1 **characterized in that** the conduit (2.4) has on its lower end and internally (2.4.1) a curved termination for the better adaptation thereof to the protrusion (3.5).

30

10. - Perfected cap with valve for siphon-container, according to claim 1 **characterized in that** the lower chamber (2.3) on its bottom part has a bevel-edge (2.8) antagonistic to another bevel-edge on the threaded element which fixes the relative optimum position between the bottle and the cap acting as butt between the two elements.

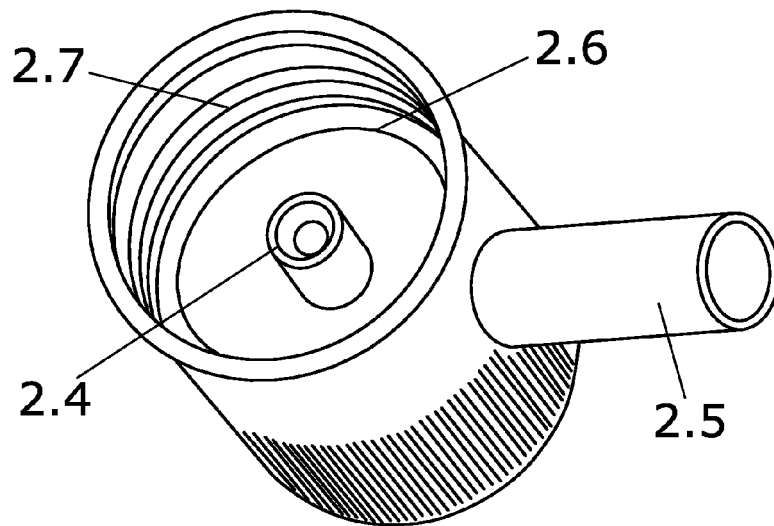
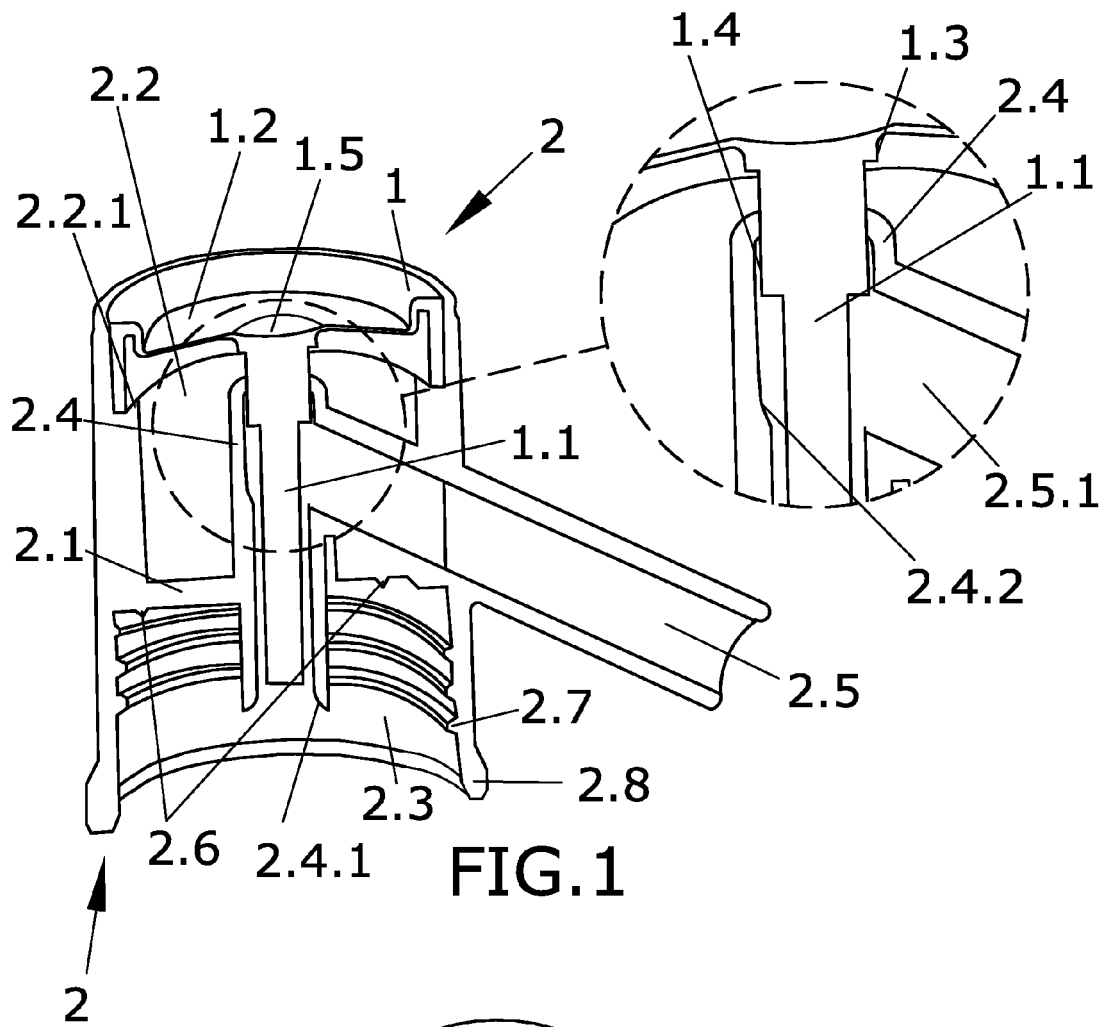
35

40

45

50

55



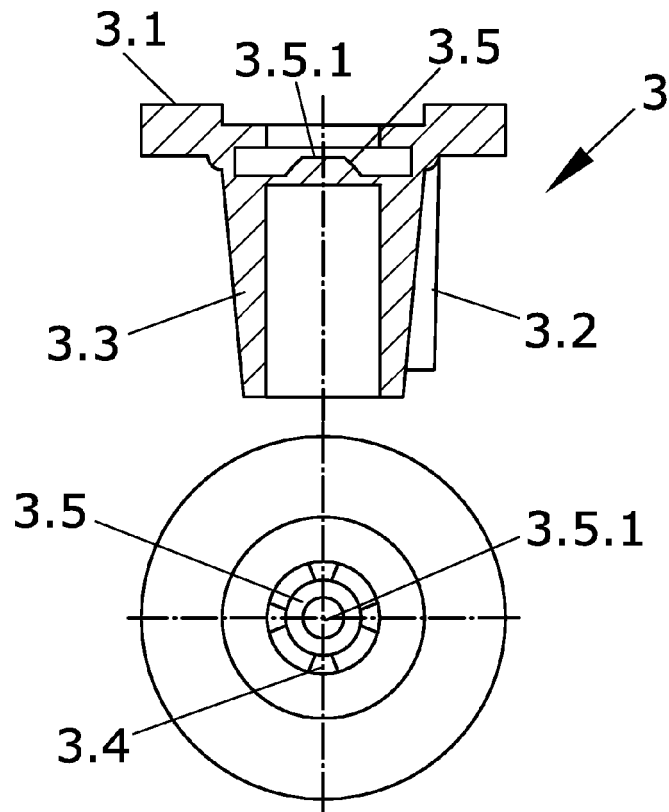


FIG.3

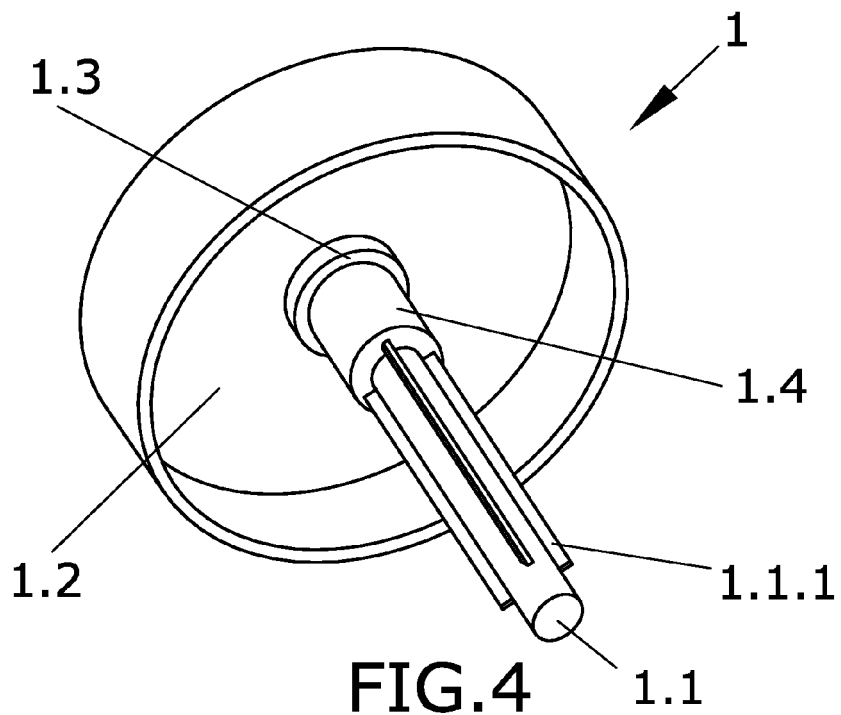
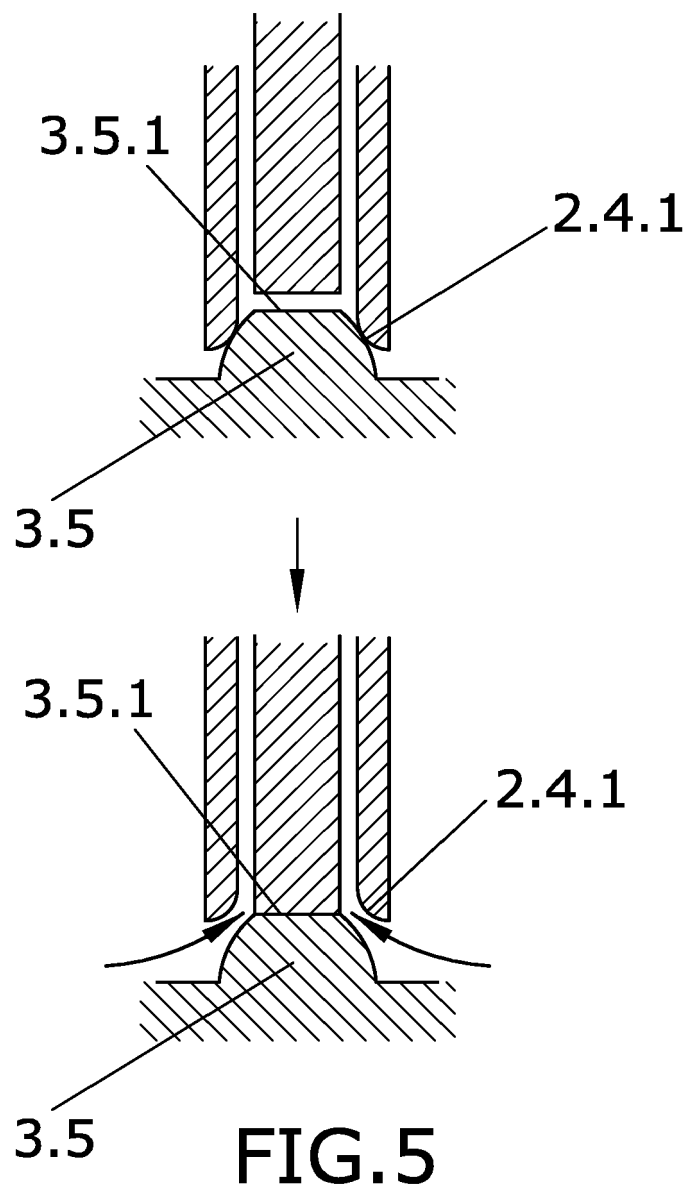


FIG.4





European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 05 38 1049

| 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 | WO 02/102679 A (INNOCAPS. CO., LTD; LEE, JEONG-BON) 27 December 2002 (2002-12-27) * page 13, line 9 - page 15, line 6; figures 1,2,5,9 * | 1,2,7,8, 10 | INV. B67D1/04 |
| A | WO 99/44915 A (RIGO, MIHALY) 10 September 1999 (1999-09-10) | | |
| A | GB 1 328 092 A (GAUNTLETT J H) 30 August 1973 (1973-08-30) | | |
| A | FR 1 389 863 A (RENÉ RINGENBACH) 19 February 1965 (1965-02-19) | | |
| D,A | EP 1 484 280 A (THERMOPLASTICOS BENICARLO, S.L) 8 December 2004 (2004-12-08) | | |
| | | | TECHNICAL FIELDS SEARCHED (IPC) |
| | | | B67D |
| The present search report has been drawn up for all claims | | | |
| Place of search Munich | | Date of completion of the search 5 April 2006 | Examiner Mueller, C |
| 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 | |

2

EPO FORM 1503 03.02 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 05 38 1049

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
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

05-04-2006

| Patent document cited in search report | | Publication date | Patent family member(s) | Publication date |
|---|---|---------------------|----------------------------|---------------------|
| W0 02102679 | A | 27-12-2002 | JP 2004519392 T | 02-07-2004 |
| W0 9944915 | A | 10-09-1999 | AU 2949299 A | 20-09-1999 |
| | | | HU 1426 U | 30-11-1998 |
| | | | HU 9801927 A1 | 28-05-2000 |
| GB 1328092 | A | 30-08-1973 | NONE | |
| FR 1389863 | A | 19-02-1965 | NONE | |
| EP 1484280 | A | 08-12-2004 | NONE | |