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(54) **DROPPER**

(57) A dropper (1) comprising a pipette (2) formed of an elongated element (2B) - which delineates a cavity (8) which is open, at a free end thereof, due to the presence of a passageway (10) - and a screw cap (3); the pipette (2) comprises a flange (2C) for fastening the said pipette onto the screw cap (3), the screw cap (3) comprising a skirt (4) on which a thread (5) is provided, facing the pipette (2), for coupling the dropper (1) to a bottle (6), the cap (3) forming a deformable wall (7) facing the said pipette (2) so that, when the deformable wall is pushed towards the pipette and the free end (2A) of the pipette (2) is immersed in a fluid, a vacuum is generated which sucks the said fluid back into the cavity (8), the screw cap being made as a single body.

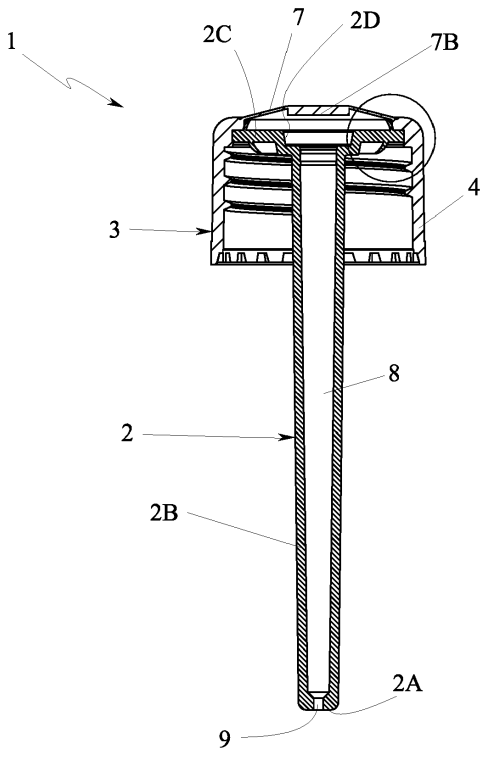

FIG.2

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Description

FIELD OF THE INVENTION

[0001] The present invention relates to a dropper.

[0002] In particular, it relates to a dropper for cosmetic and or medical fluids, for example, those in liquid form or in cream form.

BACKGROUND ART

[0003] Commonly known droppers are made of several different parts, which may also be made of very different and hard to recycle materials.

SUMMARY OF THE INVENTION

[0004] The object of the present invention is to provide a dropper which is improved with respect to the prior art.

[0005] A further object of the invention is to provide a dropper that is easier to recycle than conventional droppers.

[0006] Not least object of the invention is to provide a dropper formed of a smaller number of parts than commonly known droppers, which is advantageous in terms of manufacturing costs as well as assembly simplicity and speed.

[0007] This and other objects are achieved by means of a dropper according to the technical teachings of the claims annexed hereto.

BRIEF DESCRIPTION OF THE FIGURES

[0008] Further characteristics and advantages of the invention will become clearer in the description of a preferred but not exclusive embodiment of the dropper, illustrated - by way of a non-limiting example - in the drawings annexed hereto, in which:

Figure 1 is a lateral view of a dropper according to the present invention;

Figure 2 is a sectional view taken along the line II-II in Figure 1;

Figure 3 is an enlargement of the part circled in Figure 2;

Figure 4 is a sectional view of a coupling between the dropper of Figure 1 and a bottle; and

Figure 5 is a partial, simplified sectional view of a variant of the dropper in Fig. 1.

DETAILED DESCRIPTION OF THE INVENTION

[0009] With reference to the figures stated, reference number 1 is used to denote, as a whole, a dropper.

[0010] The dropper 1 comprises a pipette 2 formed of an elongated element 2B which delineates a cavity 8 which is open - at a free end 2A thereof - due to the presence of a passageway 10. The pipette 2 also comprises a flange 2C for the fastening thereof onto a screw cap 3.

[0011] Advantageously, the pipette 2 is made as a single body by injection-moulding. One material of which the pipette can be made is PP.

[0012] As already mentioned, the pipette is fastened to a screw cap 3.

[0013] Advantageously, the flange 2C of the pipette is coupled by means of an undercut to the cap 3, which is preferably a pressure-fit cap. For this purpose, the cap has a special seat S whose perimeter may be the same as the external perimeter of the flange and also has a tooth D on the bottom thereof to engage and lock the pipette to the cap.

[0014] The screw cap consists of a single body comprising a skirt 4 on which a thread 5, facing the pipette 2, is provided for coupling the dropper 1 to a bottle 6.

[0015] The cap 3 comprises a deformable wall 7 facing the said pipette 2 so that, when the deformable wall is pushed towards the pipette and the pipette 2 has its free end 2A immersed in a fluid, a vacuum is generated which sucks the said fluid back inside the cavity 8.

[0016] Advantageously, the flange 2C have a first sealing gasket 11 designed to cooperate with a mouth 6A of the bottle 6 when the dropper 1 is mounted on the bottle.

[0017] The first gasket 11 may be an annular lip gasket, the lip being flexible, as can be clearly seen in Figure 3.

[0018] Advantageously, the lip is continuously tapered starting from the flange 2C up to its free end.

[0019] Therefore, the section of the lip may decrease from the flange 2C to the lip free end.

[0020] Preferably the lip is curved.

[0021] Specifically, the lip is curved so that it forms a convex part facing the skirt 4.

[0022] The lip may therefore feature a slight curvature towards the axis of the pipette 2.

[0023] For the seal between the pipette 2 and the cap 3, the flange 2C may feature a second gasket 12A, 12B designed to create seal with the cap 3.

[0024] The second gasket may be of a similar type to the first gasket, therefore a lipped gasket 12A, the lip being flexible, as shown in Figure 3.

[0025] In the present description, when a part is defined 'flexible' it means that it can be easily deformed also by hand, so that it can adapt to the shape of a piece (bottle mouth or screw cap) in contact with it to form a seal to air and/or liquid.

[0026] The second gasket may also be an 'annular' lip which, advantageously, is continuously tapered, starting from the flange 2C up to its free end.

[0027] This mean that a section of the lip decreases continuously from the flange to its free end.

[0028] The lip may also feature a slight curvature towards the axis of the pipette 2.

[0029] This gives to the lip a convex surface facing the screw cap 3.

[0030] The lips of the first and the second gasket may feature a similar shape and similar characteristics, as described above.

[0031] Alternatively, as shown in Figure 5, the gasket may consist of a protruding ring 12B which engages tightly in a suitable annular seat 13 in the cap 3.

[0032] The elastically deformable wall 7 may consist of the top of the cap 3 and may be made by having a thinner portion 7A of the cap, which preferably has an annular conformation.

[0033] Advantageously, the deformable wall 7 features a groove 20 around the perimeter thereof which increases the deformation capacity of the said wall.

[0034] Advantageously, the deformable wall 7 has a dome conformation, as can be clearly seen in Figure 2.

[0035] The top of the dome facing the pipette 2 may feature a thicker section (which helps the production of the mould). In this case, the pipette 2 may feature a recess 2D (made to communicate with the cavity 8) which accommodates (at least partially) the said thicker section when the deformable wall 7 is deformed.

[0036] This minimizes the air or fluid trapped in the dropper when the deformable wall is depressed.

[0037] According to the invention, the screw cap 3 is made as a single body, preferably by means of the technique consisting injection moulding plastic material.

[0038] The plastic material used for the cap is preferably made of PP with an added elastomer, such as EVA. Preferably, the weight percentage of EVA is 15%.

[0039] Various embodiments of the innovation have been disclosed herein, but further embodiments may also be conceived using the same innovative concept.

Claims

1. Dropper (1) comprising a pipette (2) formed by an elongated element (2B) which defines a cavity (8) which is open at one of its free ends through a passage (10), and a screw cap (3), **characterized in that** the pipette (2) comprises a flange (2C) for its fixing to the screw cap (3), the screw cap (3) including a skirt (4) on which, facing the pipette (2), a thread (5) is made for coupling the dropper (1) with a bottle (6), the cap (3) defining a deformable wall (7) facing said pipette (2) so that, when the deformable wall is pressed towards the pipette and the pipette (2) has one of its free ends (2A) immersed in a fluid, a depression is generated which is able to draw said fluid inside the cavity (8), the screw cap (3) being made in one piece, the flange (2C) defining a first flexible sealing gasket (11) intended to cooperate with a mouth (6A) of the bottle (6) when the dropper (1) is mounted on the bottle and the flange (2C) providing a second gasket (12A, 12B) intended to seal with the screw cap (3).

2. Dropper according to claim 1, wherein the flange (2C) is coupled in an undercut manner with the cap (3), preferably snaped-on the cap.

3. Dropper (1) according to claim 1, wherein the first gasket (11) is of the lip type.

4. Dropper according to the preceding claim, wherein the first gasket (11) is continuously tapered from the flange (2C) to its free end.

5. Dropper according to claim 3, wherein the first gasket (11) features a curvature.

6. Dropper according to the preceding claim, wherein the curvature forms on the lip a convex surface facing said skirt (4).

7. Dropper according to claim 1, wherein the second gasket (12A, 12B) is of the lip type (12A), the lip being flexible.

8. Dropper according to the preceding claim, wherein the second gasket (12A) is continuously tapered from the flange (2C) to its free end.

9. Dropper according to claim 7, wherein the first gasket (11) features a curvature.

10. Dropper according to the preceding claim, wherein the curvature forms on the lip a convex surface facing said screw cap (3).

11. Dropper according to claim 1, wherein the second gasket is defined a protruding ring (12B) which engages in an annular seat (13) of the cap (3).

12. Dropper according to claim 1, wherein said deformable wall (7) is defined at the top of the cap (3) and is made by means of a reduced thickness portion (7A) of the cap, preferably of annular conformation.

13. Dropper according to the previous claim, wherein said deformable wall (7) has a dome shape.

14. Dropper according to the previous claim, in which the top of the dome facing the pipette (2) provides for a thickening, and / or in which the pipette (2) has a recess (2D) which houses such thickening when the deformable wall (7) is deformed.

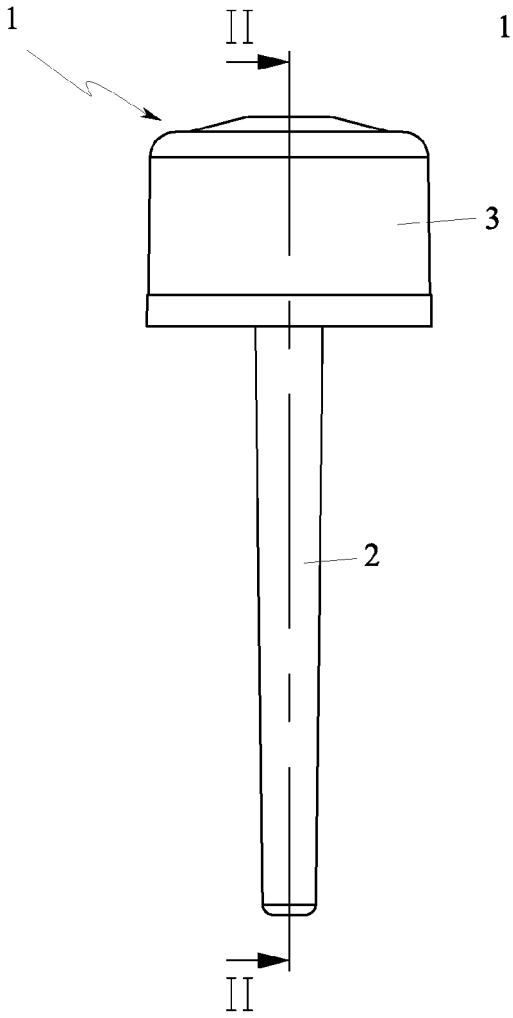

FIG.1

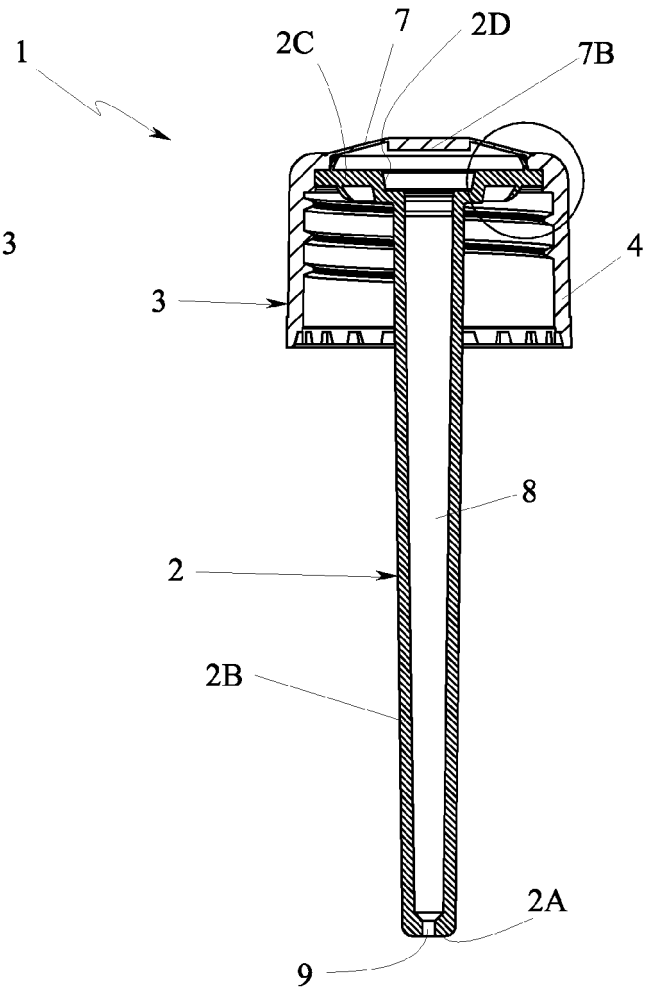

FIG.2

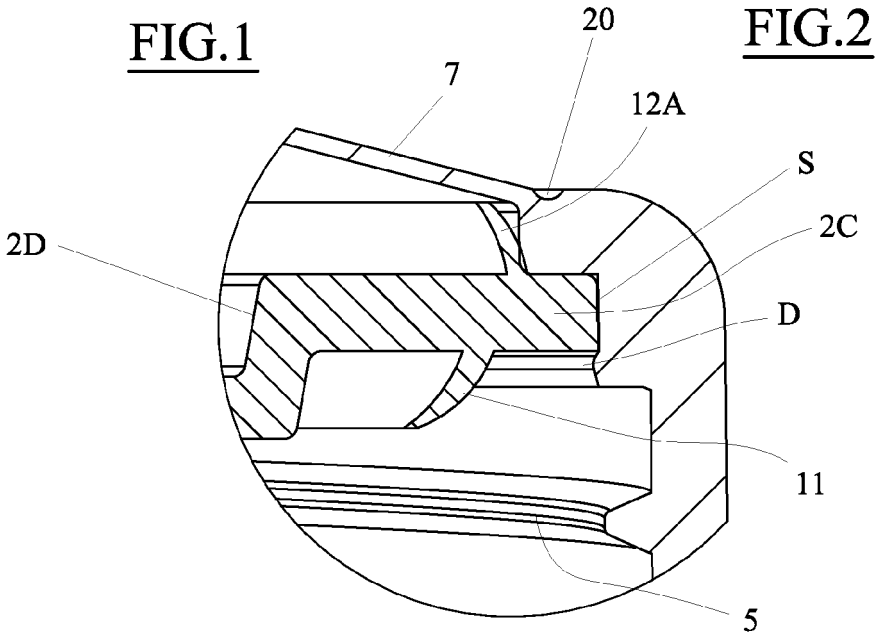

FIG.3

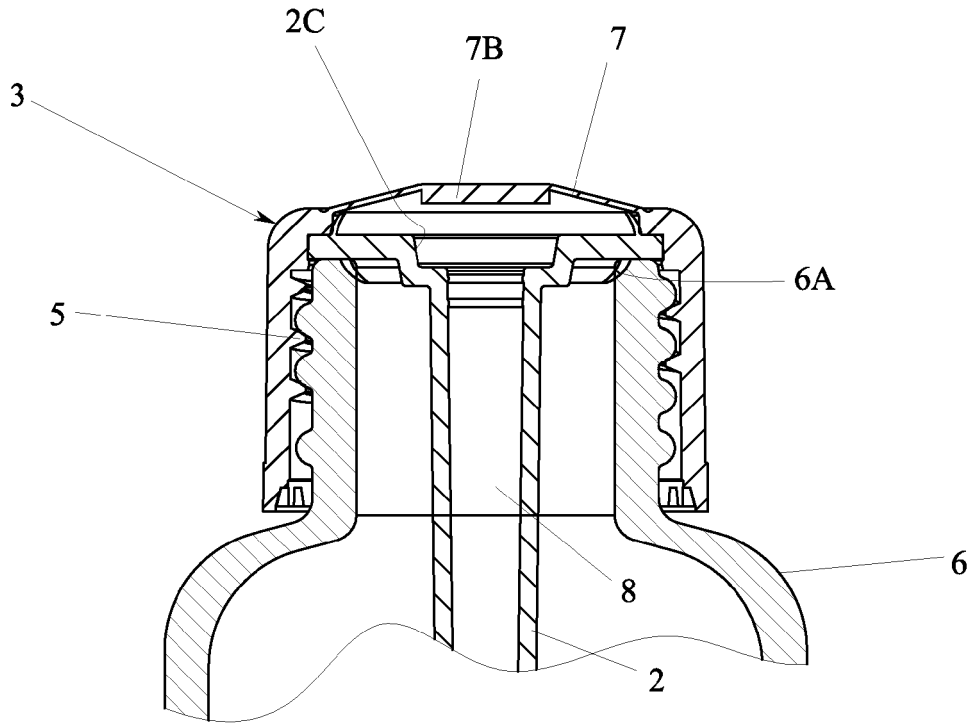

FIG.4

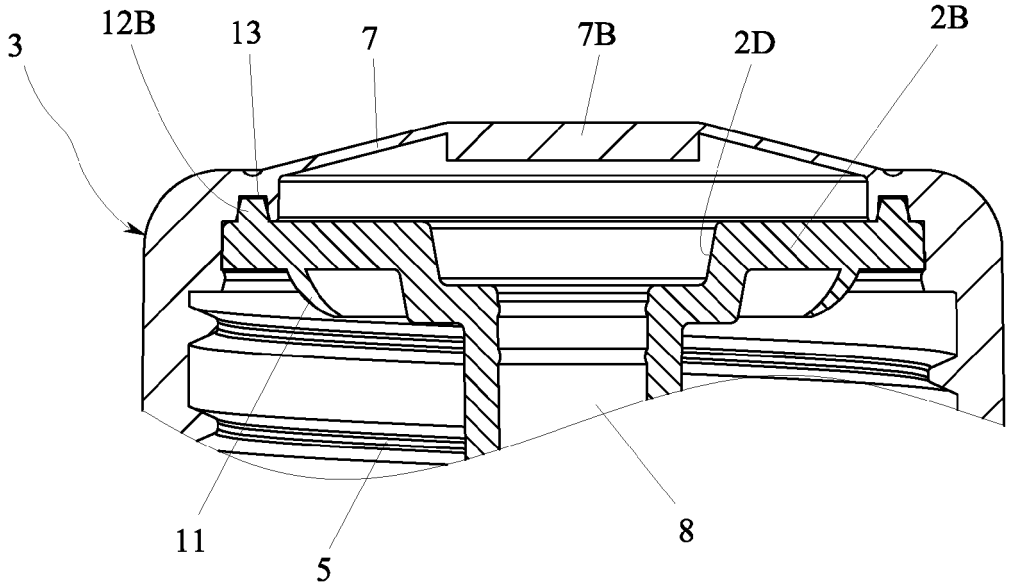

FIG.5

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EUROPEAN SEARCH REPORT

Application Number
EP 22 18 5398

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 2 319 538 A1 (FINKE KUNSTSTOFF ROBERT [DE]) 25 February 1977 (1977-02-25) * page 5, line 21 - page 6, line 6 * * figures 3,4 *	1-3,5-7, 9-14 4,8	INV. A45D34/04 B01L3/02 B65D83/00
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X A	US 2 872 950 A (CHARLES CASTELLI) 10 February 1959 (1959-02-10) * column 3, line 42 - column 4, line 44 * * figures 4,5 *	1-7,9-14 8	
X A	ES 1 023 420 U (-) 1 July 1993 (1993-07-01) * the whole document *	1-3,5-7, 9-14 4,8	
A	US 941 489 A (BEVERLY FRANK M [US]) 30 November 1909 (1909-11-30) * page 1, lines 56-88 * * figures 1,2 *	14	

TECHNICAL FIELDS SEARCHED (IPC)

A45D
B01L
B65D

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	23 November 2022	Witkowska-Piela, A

CATEGORY OF CITED DOCUMENTS

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23-11-2022

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