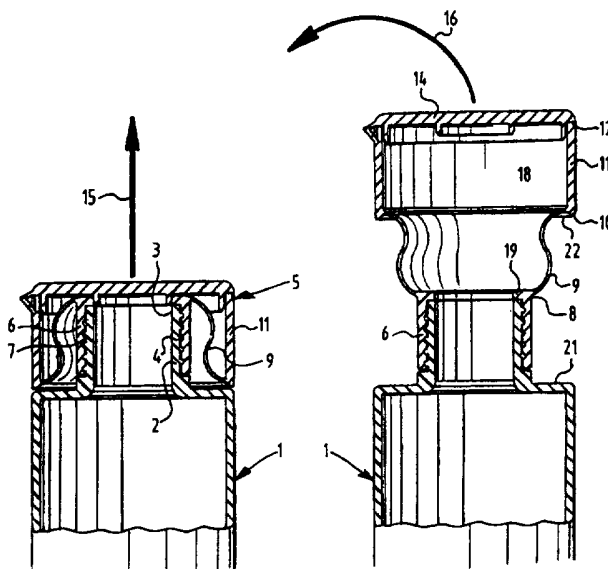




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(54) Title: CLOSURE WITH A COLLAPSIBLE FUNNEL



(57) Abstract

A closure cap for a container for a liquid, optionally viscous, granular or powder-form mass comprises: coupling means for sealingly coupling the body of the closure cap (5) to the mouth of a container, for instance screwing means (4), bayonet means, snapping means, clamping means; and a tube (11) which is situated outside the (optionally imaginarily extended) peripheral surface of the body and which is connected sealingly to the body via a flexible connecting member (9) such that the tube (11) is movable between a rest position (Fig. 1) in which the tube is situated in the region of the body and an active position (Fig. 2) in which the tube is displaced axially outward and forms together with the connecting member (9) a funnel connecting onto the mouth.

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CLOSURE WITH A COLLAPSIBLE FUNNEL

Closure caps for containers for liquid, optionally viscous, granular or powder-form masses are known. A known closure cap is embodied for instance as a screw cap comprising a generally cylindrical body, on the inner surface of which are arranged screw threaded means which can co-act with corresponding screw threaded means arranged round the mouth of a container. Connected to the body is an end wall which can co-act sealingly with the mouth rim. This known cap can be arranged and removed in screwing manner by relative rotation.

In recent years a trend has developed where a container can be refilled from a simple refill packaging, consisting for instance of a paper bag, a foil bag, a relatively large storage container or the like.

The known containers often have a narrow mouth aperture such that refilling without spillage is not simple. Use must often then be made of a funnel.

It is an object of the invention to furnish provisions which can be added to an extant container or can be supplied together therewith, which provisions enable refilling of an emptied container from a refill packaging in very simple manner without any substantial danger of spillage.

In respect of this objective the invention provides a closure cap for a container for a liquid, optionally viscous, granular or powder-form mass, which closure cap comprises:

coupling means for sealingly coupling the body of the closure cap to the mouth of a container, for instance screwing means, bayonet means, snapping means, clamping means; and

a tube which is situated outside the (optionally imaginarily extended) peripheral surface of the body and which is connected sealingly to the body via

a flexible connecting member such that the tube is movable between a rest position in which the tube is situated in the region of the body and an active position in which the tube is displaced axially outward and forms together with the connecting member a funnel connecting
5 onto the mouth.

If desired, the mouth aperture can be closed with its own separate cover.

In order to close the container on which the closure cap according to the invention is placed, this
10 closure cap can also be provided with a cover for closing the tube.

A preferred embodiment has the special feature that in said rest position the cover also closes the
15 mouth. In this embodiment the connecting member and the inner surface of the tube are prevented from becoming fouled by the content of the container when not in use.

It is however noted that in some circumstances it can be recommended to maintain the active position for
20 a time after filling of the container. Viscous substances in particular then have sufficient time to drain steadily downward along the connecting member and optionally the inner surface of the tube to be then received in the container via the mouth aperture.

A specific embodiment very suitable for shampoo and other viscous liquids has the special feature that a dispensing opening closable by an auxiliary cover is present in the cover in the region of the mouth. This
25 dispensing opening can have the dimensions of a normal dispensing opening of a shampoo bottle. By turning over the container, and in the case of a flexible container squeezing lightly therein, the liquid can be delivered in
30 small quantities via the dispensing opening.

A specific embodiment has the feature that the
35 connecting member takes a bellows form. A general bellows form has the advantage of possessing great flexibility. This makes the transition between the rest position and the active position and vice versa very easy.

A specific embodiment has the special feature that the closure cap is monolithic.

Simple and inexpensive to manufacture is the variant in which the closure cap is an injection moulded product.

In the case where a relative rotation of the closure cap in relation to the container must take place for arranging and removal thereof, the closure cap can advantageously be provided with rotation locking means for locking the tube and the body against relative rotation in at least the rest position. Thus is prevented that the flexible connecting member is placed under torsional strain such that plastic deformation occurs and leakages can occur.

An attractive appearance is obtained with an embodiment in which the outer surfaces of the body and the container mutually connect in substantially smooth manner. Nor is there any need in such an embodiment to be concerned about the tube being moved unintentionally from the rest position into the active position.

The closure cap can further have the special feature that the outer surfaces of the body and the container have substantially the same prismatic form. In this embodiment the outer surfaces of the body and the container can also mutually connect in substantially smooth manner.

It is noted that the term "prismatic" is understood to mean a form which has the same cross sectional shape at any axial position.

The invention will now be elucidated with reference to the annexed drawings. Herein:

figure 1 shows a cross section through the upper part of a container which is closed with a closure cap according to the invention in rest position;

figure 2 shows a view corresponding with figure 1 of the situation in which the closure cap is placed in its active position but is still closed by a cover;

figure 3 shows a view corresponding with figure 2 of the situation according to figure 2 in which however the cover is opened to enable refilling of the container;

figure 4 is a perspective view of the container and the closure cap according to figures 1, 2 and 3;

figure 5 shows a view corresponding with figure 1 of a variant.

Figure 1 shows a plastic container 1 with a neck 2 which bounds a mouth 3 with its end zone. Neck 2 is provided with screw thread 4 on its outer surface.

The container 1 is closed by means of a closure cap 5 according to the invention. This closure cap comprises a cylindrical body 6 provided on its inner surface with screw thread 7 which co-acts with screw thread 4. The body 6 can thus be screwed onto neck 2. Body 6 is connected with its free end edge 8 to a bellows-shaped connecting member 9 which in turn supports the end edge 10 of a tube 11. Tube 11 carries a cover 14 on its other end edge 12 via a film hinge 13. Body 6, connecting member 9, tube 11 and cover 14 are monolithic and formed by injection moulding. The bellows-shaped connecting member 9 is of thin flexible plastic and can thereby be moved easily from the folded-in rest position shown in figure 1 to the folded-out active position shown in figures 2 and 3. For this purpose, from the situation shown in figure 1, a pulling force is exerted as indicated with arrow 15 on the tube 11 relative to container 1. The tube is hereby moved to the position shown in figure 2 with a temporary deformation of connecting member 9. Cover 14 can then be opened as according to arrow 16 whereby refill mass can be carried into the container as according to arrow 17 via the funnel structure formed by respectively the relatively wide tube 11, connecting member 9 and container neck 2.

It will be apparent that the various mentioned components are mutually connected in sealing manner. Certain standards are required of the sealing properties, particularly in the case of liquids.

Cover 14 has an internal sealing edge 18 which can co-act sealingly with a flanged edge 19 present on body 6 in the region of the free end edge 8. In the manner shown in figure 1 the sealing edge 18 can co-act sealingly and with slight elastic deformation with flanged edge 19 which under screw clamping force in turn co-acts sealingly with the outer edge of container mouth 3.

As shown in figure 4, closure cap 5 can be arranged on container 1 and removed therefrom by applying a rotation as indicated symbolically with arrow 20. In such a rotation, wherein the rotation force is applied relative to container 1 by the user via tube 11, the rotation force is transmitted to body 6 via connecting member 9. This latter is thereby placed under torsional strain. In order to be able to apply a relatively large rotation force and nevertheless place the connecting member under torsional strain, the end surface 21 of container 1, i.e. the peripheral surface round neck 2, can be provided with one or more protrusions or recesses and/or cams which can co-act with complementary recesses respectively protrusions and/or cams on the opposing end surface 22 of tube 11. These co-acting protrusions, recesses and/or cams mutually co-act such that in the situation shown in figure 1 they lock the tube 11 against rotation relative to container 1.

Figure 5 shows a variant in which the cover 23, which corresponds functionally with cover 14 as according to figures 1, 2, 3 and 4, is provided in the region of the aperture 24 of mouth 4 with a dispensing opening 25 which can be closed by an auxiliary cover 26 which is connected to cover 23 by means of a film hinge 27. Due to this construction for instance shampoo or another substance can be delivered via the dispensing opening in the situation where auxiliary cover 26 is opened (26'). Closure caps 5 as according to figures 1, 2, 3 and 4, respectively 28 as according to figure 5 can be of any

suitable material. Polyethylene and polypropylene are very suitable.

CLAIMS

1. Closure cap for a container for a liquid, optionally viscous, granular or powder-form mass, which closure cap comprises:

5 coupling means for sealingly coupling the body of the closure cap to the mouth of a container, for instance screwing means, bayonet means, snapping means, clamping means; and

10 a tube which is situated outside the (optionally imaginarily extended) peripheral surface of the body and which is connected sealingly to the body via a flexible connecting member such that the tube is movable between a rest position in which the tube is situated in the region of the body and an active position in which the tube is displaced axially outward and forms together with the connecting member a funnel connecting onto the mouth.

2. Closure cap as claimed in claim 1, comprising a cover for closing the tube.

20 3. Closure cap as claimed in claim 2, wherein in said rest position the cover also closes the mouth.

4. Closure cap as claimed in claim 3, wherein a dispensing opening closable by an auxiliary cover is present in the cover in the region of the mouth.

25 5. Closure cap as claimed in claim 1, wherein the connecting member takes a bellows form.

6. Closure cap as claimed in claim 1, wherein the closure cap is monolithic.

7. Closure cap as claimed in claim 1, wherein the closure cap is an injection moulded product.

30 8. Closure cap as claimed in claim 1, comprising rotation locking means for locking the tube and the body against relative rotation in at least the rest position.

9. Closure cap as claimed in claim 1, wherein the outer surfaces of the body and the container mutually connect in substantially smooth manner.

5 10. Closure cap as claimed in claim 1, wherein the outer surfaces of the body and the container have substantially the same prismatic form.

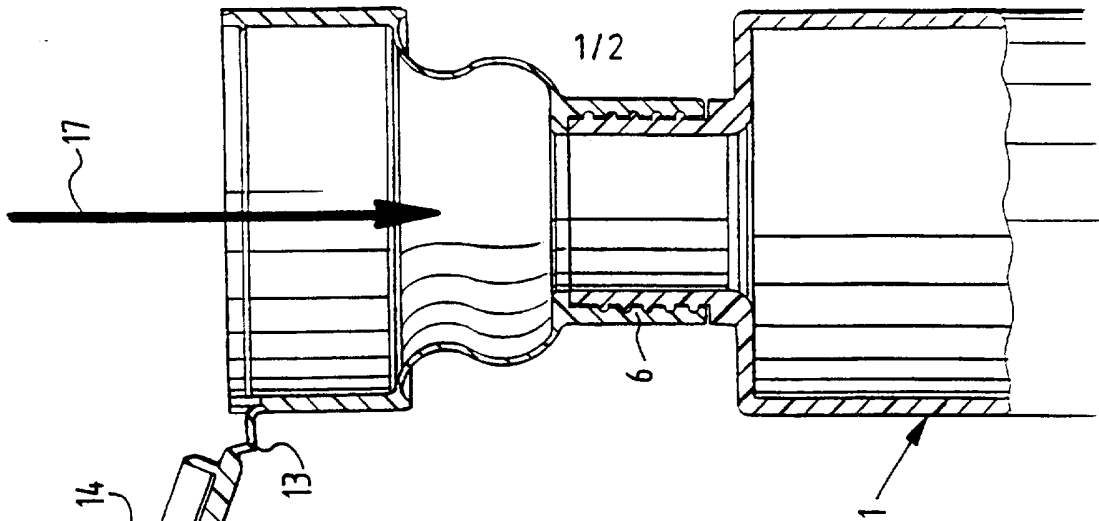


FIG. 3

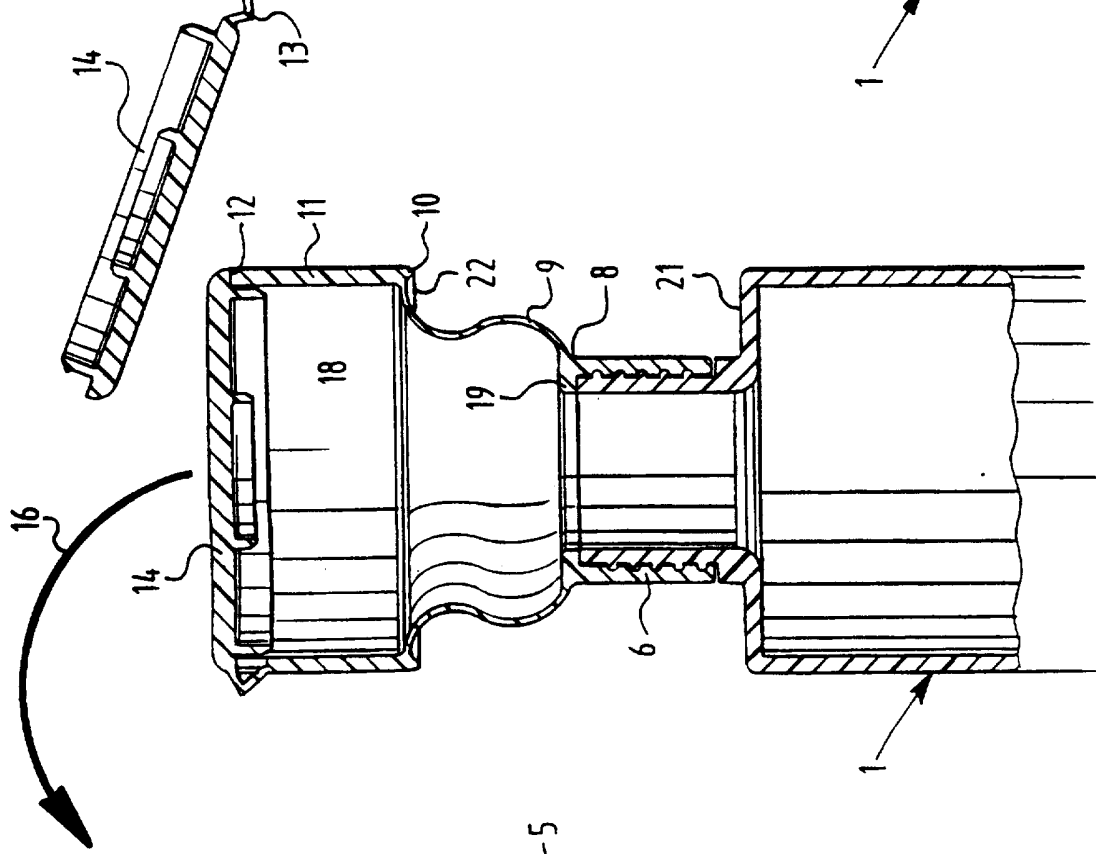


FIG. 2

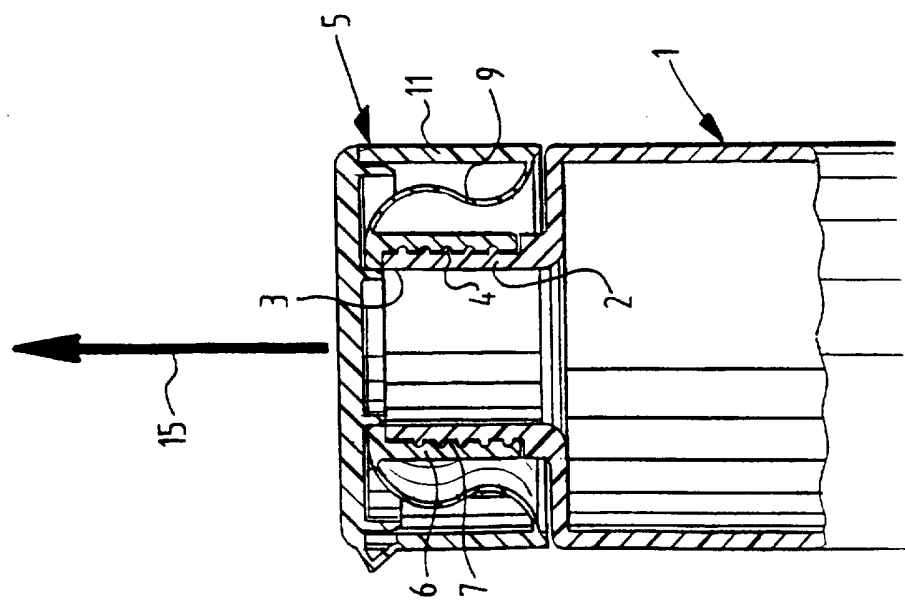
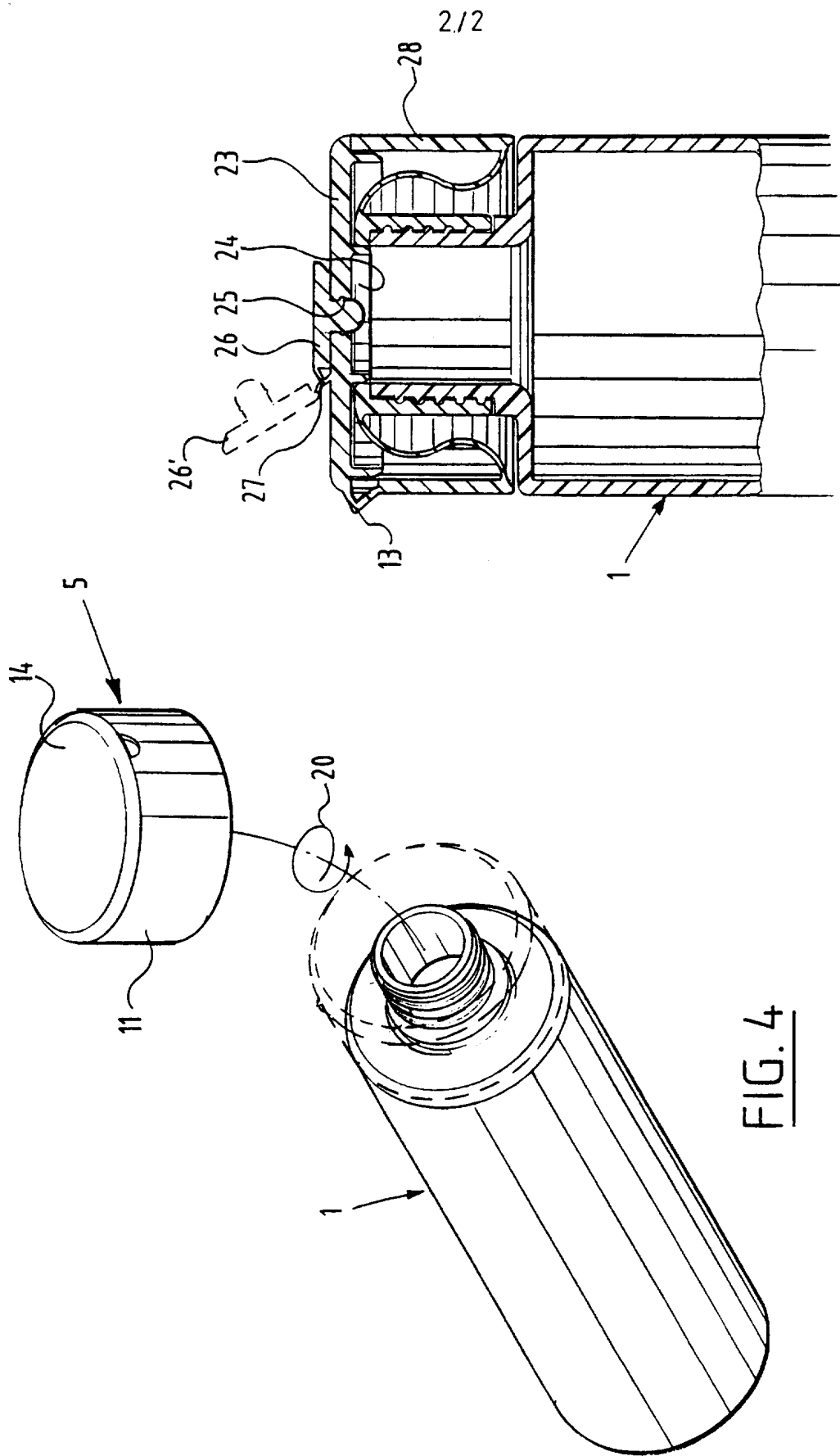


FIG. 1



INTERNATIONAL SEARCH REPORT

Int. onal Application No
PCT/NL 97/00090

A. CLASSIFICATION OF SUBJECT MATTER IPC 6 B65D47/06				
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) IPC 6 B65D				
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched				
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C. DOCUMENTS CONSIDERED TO BE RELEVANT				
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.		
A	DE 30 15 453 A (BEROLINA KG) 22 October 1981 see the whole document ---	1-10		
A	US 4 256 154 A (S. BLACK) 17 March 1981 see the whole document ---	1-10		
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A	DE 37 30 225 A (JACOB BERG GMBH) 23 March 1989 see the whole document ---	1-10		
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INTERNATIONAL SEARCH REPORT

Information on patent family members

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
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