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[54] **COMBINED CONTAINER AND DISPENSING CAP**
 6 Claims, 5 Drawing Figs.

[52] U.S. Cl..... **222/213,**
 222/96

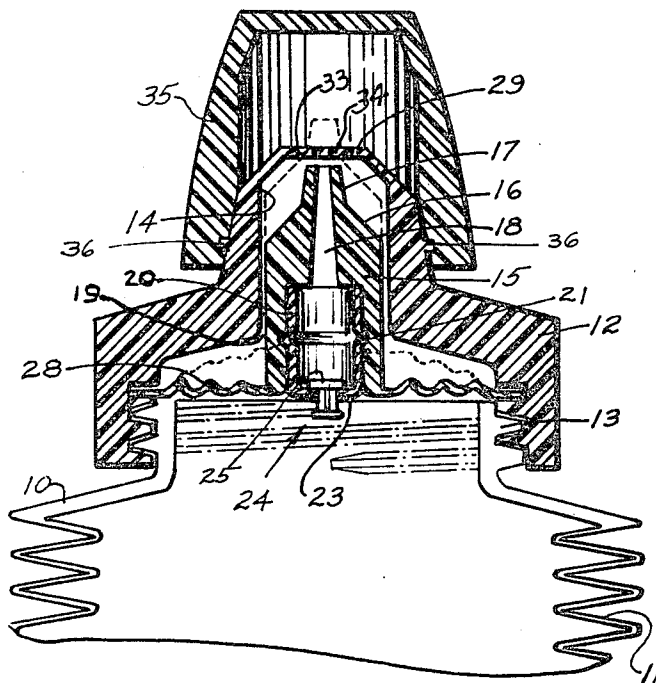
[51] Int. Cl..... **B65d 3/100**

[50] Field of Search..... 222/213,
 207, 96, 92, 211, 95

ABSTRACT: A combined container and dispensing cap therefor in which the container is compressible and the cap is provided with a projectable and retractable spout, the latter being projected outwardly of the cap by pressure being applied to the container to dispense the contents thereof and retracted within the cap upon release of such pressure and a valve means in the spout opening upon application of pressure to the container and closing upon release of said pressure.

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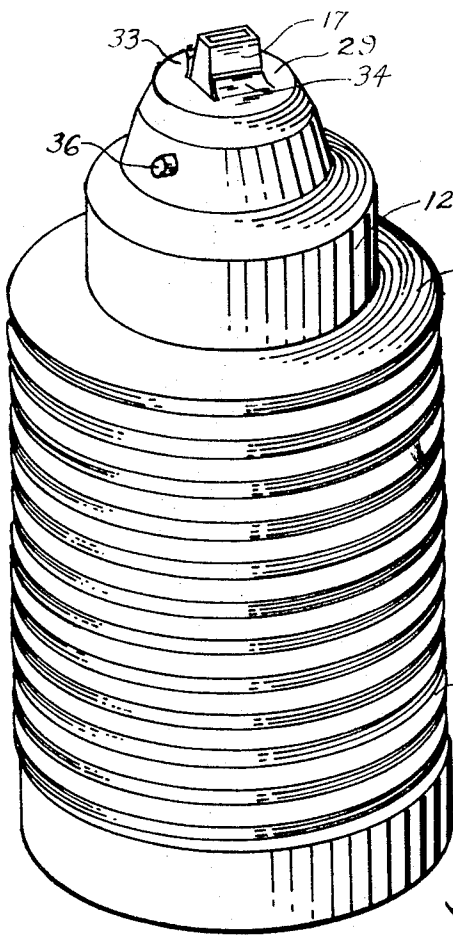


FIG. 1

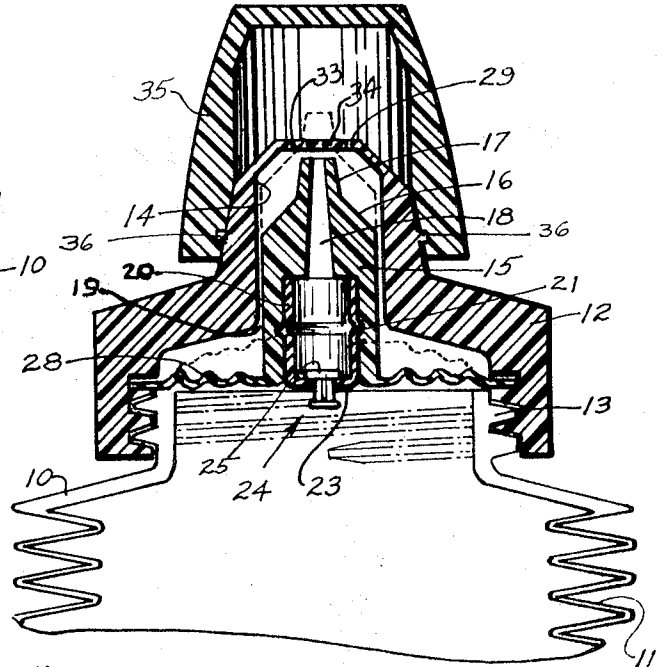


FIG. 2

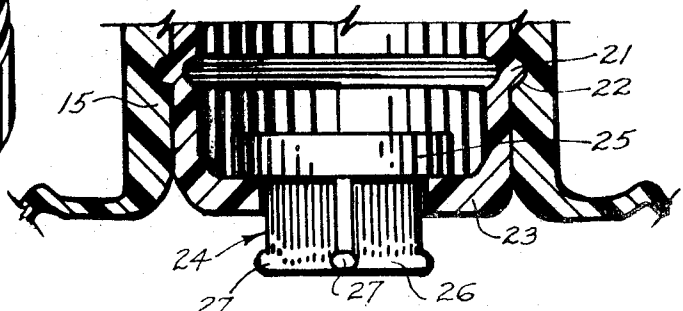


FIG. 3

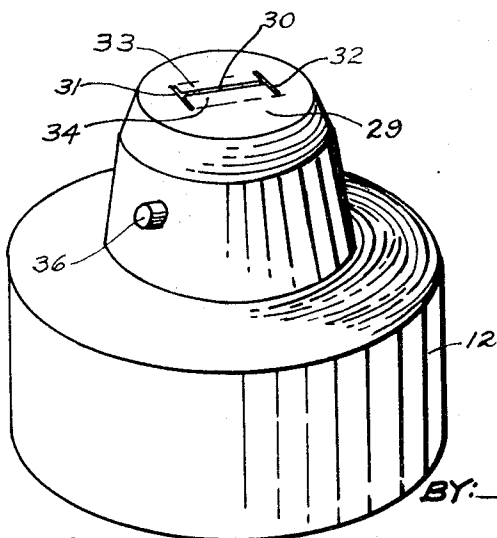


FIG. 5

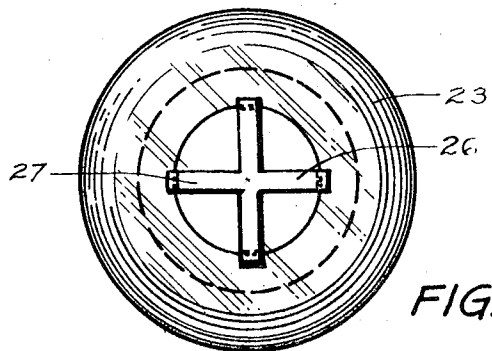


FIG. 4

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COMBINED CONTAINER AND DISPENSING CAP

This invention relates to combined container and dispensing cap therefor and more especially to a collapsible container and a dispensing cap which is particularly suitable for substances which are semiliquid or of a creamy nature, such as tooth paste, cosmetic creams and like materials.

Collapsible containers for creamy substances are well known in the art but most of these devices have drawbacks, not the least of which is their tendency, after use, to leave portions of the contents exposed in the vicinity of their dispensing openings or spouts to present an unclean or messy appearance or, worse still, to lay the contents open to contamination.

Applicant's invention overcomes these disadvantages of convention dispensing containers by providing a movable valved spout on the container cap which spout is normally contained within the cap but which, when pressure is applied to the container, will not only open the valve to allow discharge of the contents but will cause the spout to be projected outwardly of the cap to allow for easy application of the emitted contents to its place of intended use and when pressure on the container is released will cause the valve to close and the spout to be retracted into the cap and there be protected and out of sight.

It is one object, therefore, to provide a container and cap having the functions above stated and which may be economically produced and marketed.

It is another object to produce such a container and cap with a minimum of separate parts thereby requiring the simplest of assembly operations.

The above and other objects and advantages will become more apparent as this description proceeds and reference is had to the accompanying drawing forming a part of this specification and in which:

FIG. 1 is a perspective view of a combined container and dispensing cap according to my invention showing the discharge spout in projected position;

FIG. 2 is a fragmentary cross-sectional view thereof with the discharge spout in retracted position;

FIG. 3 is an enlarged fragmentary sectional view of the valve portion of the spout;

FIG. 4 is a bottom plan view of the valve; and

FIG. 5 is a perspective view of the cap with the spout retracted.

Referring in detail to the drawings, 10 represents a collapsible container which may be made of plastic, rubber or any suitable resilient material, and is here shown as having corrugated or accordion pleated sidewalls 11 to permit its longitudinal collapse. A cap member 12 closes the upper end of the container and may be fastened thereto by any suitable means such as the threads 13 as is well known in the art of container caps. The cap 12 has a central internal bore 14 in which the spout member 15 is slidably mounted. The spout is tapered at its end as shown at 16 and is provided with a reduced extension 17 somewhat rectangular in cross section. An opening 18 extends through the spout member 15 and out through the reduced extension 17. The inner end of the opening through the spout is enlarged at 19 into a counterbore and a valve thimble or ferrule 20 is secured in this counterbore by a press fit or by a bead 21 on the ferrule snapping into a groove 22 in the counterbore.

The end of the ferrule is flanged inwardly at 23 and retains the valve member 24 for limited sliding movement in the ferrule. As may be seen from FIGS. 3 and 4 the valve member has a round head 25 and a cruciform extension 26 projecting from one side of the head 25, which extension projects through the intumed flange 23 in the ferrule and acts as a guide for the valve member. Small nubs 27 at the ends of the arms of the cruciform extension retain the valve member in the ferrule for limited longitudinal movement between open and closed positions.

The spout 15 is provided at its end opposite the extension 17 with a corrugated diaphragm 28 whose outer periphery is secured in sealing engagement with the cap 12 and which not only supports the spout in the bore 14 in the cap but seals the

cap and container and prevents discharge of the container contents except through the valve 24 and passage 18 in the spout.

The diaphragm 28 being flexible will react to any pressure on the contents of the container to bulge upwardly as shown in dotted lines in FIG. 2 and move the spout upwardly in equal amount. The bore 14 in the cap is closed at its upper end by a thin wall 29. This wall is slotted with a relatively long slot 30 in a diametrical direction with transverse slots 31 and 32 at the ends of the slot 30. As the material of the cap is flexible and somewhat resilient, the slots thus formed will provide two tongues or lips 33 and 34 which may be deflected upwardly as shown in FIG. 1. In fact, when pressure is applied to the container the spout 15 will be forced upwardly and the reduced extension 17 will press against the lips 33 and 34 to deflect them to an open position allowing the extension 17 to project therethrough. At the same time the valve 24 will open to allow some of the contents of the container to be discharged. Upon release of the pressure on the container the inherent tendency of the container to expand to its original size will cause the valve 24 to close and diaphragm 28 to flatten out, thereby retracting the extension 17 of the spout within the cap and allowing the lips 33 and 34 to close.

While the closure may be particularly adaptable for use with corrugated containers it may be used with other types of collapsible pressure containers.

When the closure is used with a collapsible corrugated container the container is collapsed by pressing the bottom upwardly toward the closure. As the contents of the container are depressed the container is collapsed to a point where the corrugations are completely in contact with each other wherein the user may estimate the amount of the contents left therein by the height of the container. The tendency of the container to move outwardly to its previous height will create a vacuum closing the valve 24 after which the container will not expand further but as stated herein before as more and more of the contents are removed the nearer the corrugations of the container move toward each other until the container is fully collapsed.

I claim:

1. In combination:

- a. a resiliently collapsible container;
- b. a cap for said container having an opening therethrough;
- c. a spout member movably mounted in said opening from a first position entirely within said cap to a second position in which the end of said spout member projects beyond the end of the cap; and
- d. means within said cap and supporting said spout member and responsive to pressure applied to said container to collapse the same to move said spout member from said first position to said second position.

2. The structure defined in claim 1 in which said means supporting said spout comprises a flexible diaphragm mounted in said cap with said spout member centrally attached thereto whereby pressure in said container will cause deflection of said diaphragm and consequent movement of said spout member.

3. The structure defined in claim 2 in which a check valve is mounted in the spout, said check valve permitting flow through the spout in an outward direction only.

4. The structure defined in claim 3 in which the cap has a closure means for the opening therethrough said spout member abutting said closure means to open the same when pressure is applied to said container to move the spout member to said second position.

5. The structure defined in claim 4 in which the closure means comprises at least one flexible lip member extending across the opening in said cap, said flexible lip member being deflectable by said spout member as it moves to said second position.

6. In combination;

- a. a resilient corrugated collapsible container having an opening at one end thereof for dispensing a semifluid product by collapsing the container;

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- b. a cap closing said opening;
- c. a spout member movably mounted in said opening from a first position entirely within said cap to a second position in which the end of the spout member projects beyond the end of the cap;
- d. means within said cap for supporting said spout member and responsive to pressure applied to said pressure to collapse the same to move said spout member from said first

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- position to second position;
- e. a valve within the said opening for allowing the product to pass outwardly from the container when compressed and closed by a slight reverse movement of the container, within said container will be retained substantially in the same compressed position as initially compressed after said valve is closed.