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(54) **MULTI-PIECE SNAP-TOGETHER CAP**

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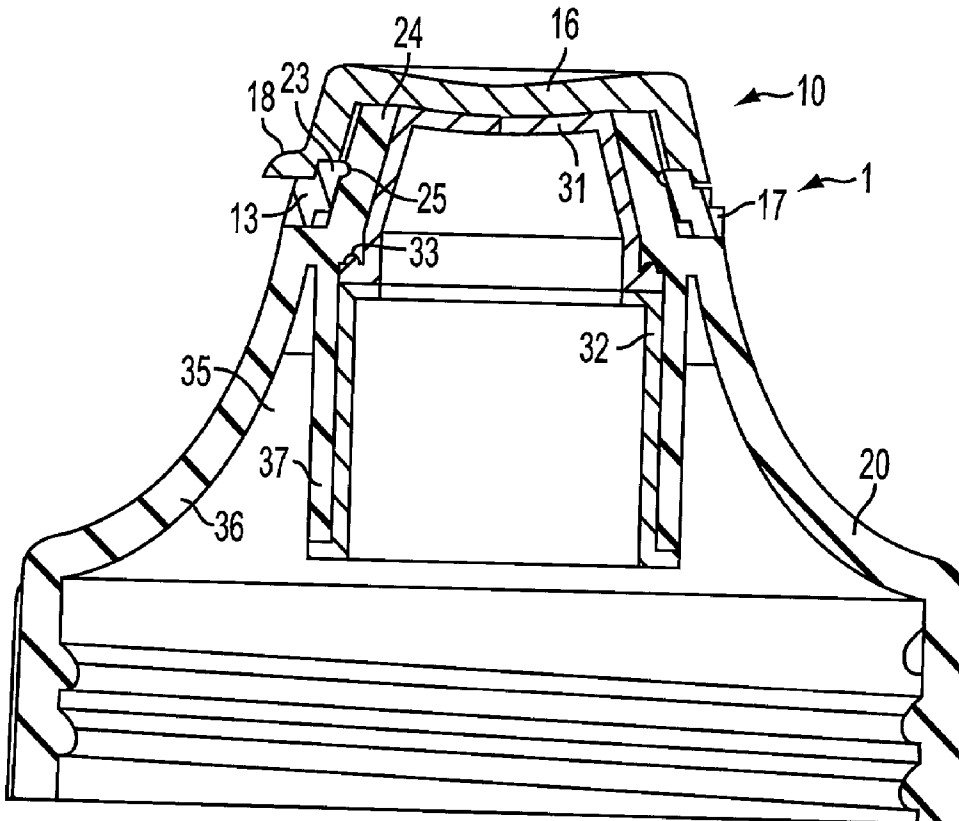
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(57) **ABSTRACT**

A multi-piece snap together cap generally comprises a molded base cap and a covercap intended to be used on a

flexible-walled container and in an inverted position. Neither the covercap nor the base cap require special orientation during the assembly process of the multi pieces. To assemble, the top open ring of the covercap is lowered onto the base cap. The ring is molded with a one-way negative snap-in void area that is formed with an undercut, insuring the top positive overlapping snap ring in locked in place after assembly.

The top cap covercap piece is unique in its construction and combines several functional features. For instance, it is molded in the open position and connected to the top open snap ring with a living hinge, forming a single piece. When the lid is in the open position, the living hinge keeps it out of the way when product is dispensed. The top lid and snap ring also includes a second open/close friction snap ring, which keeps the top lid in a down position during storage and the internal product fresh. The top lid also provides an overhang tab so that the consumer may easily unsnap the lid with a fingertip.



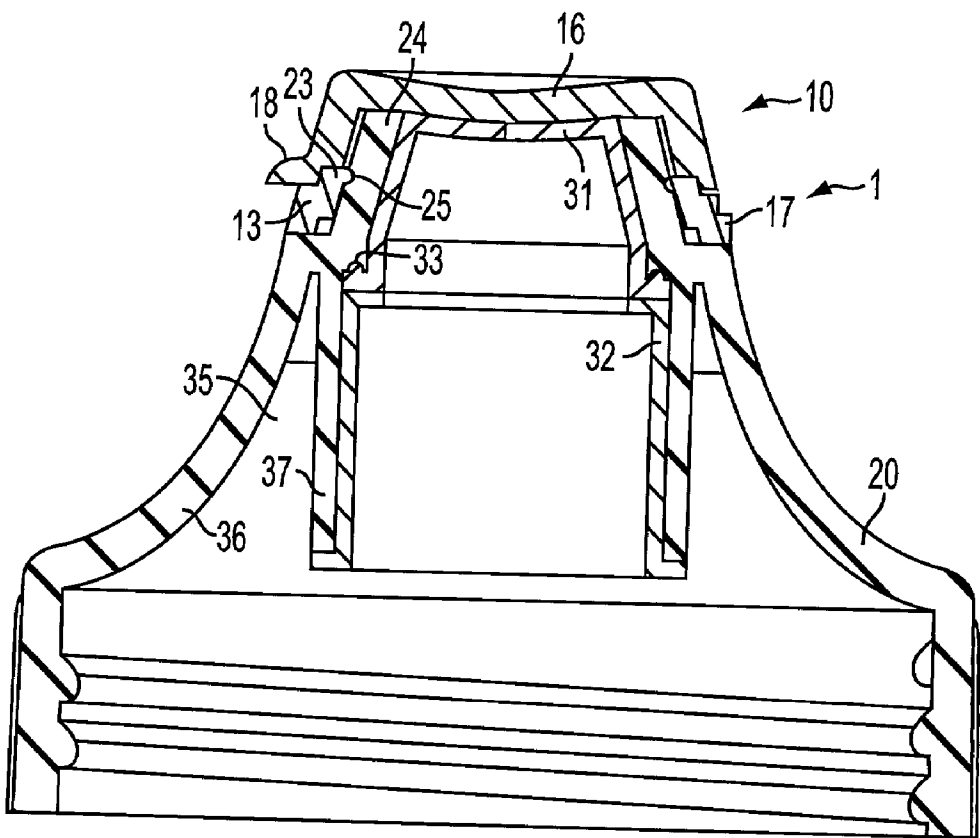


FIG. 1



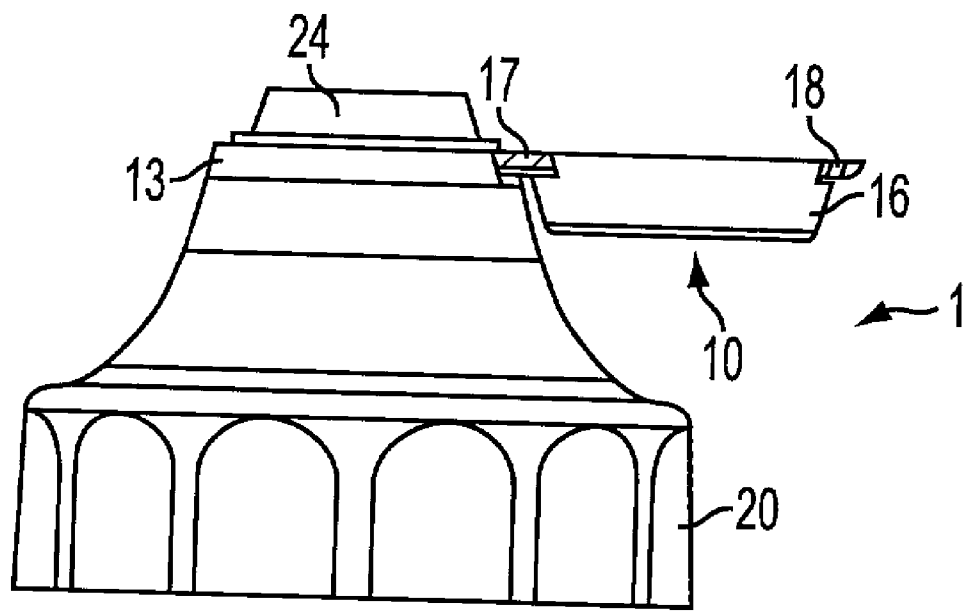


FIG. 3

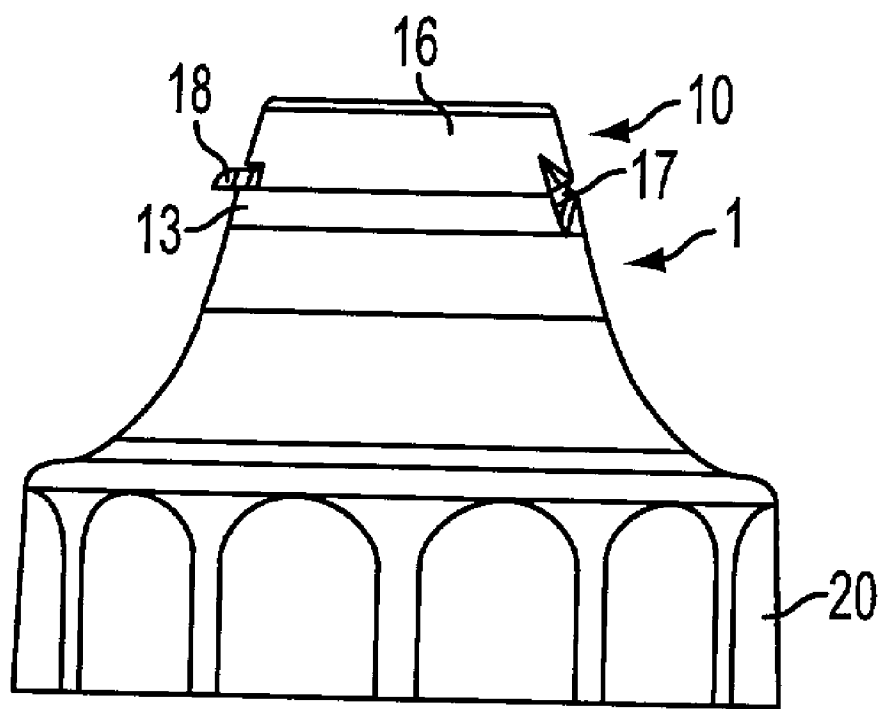


FIG. 4

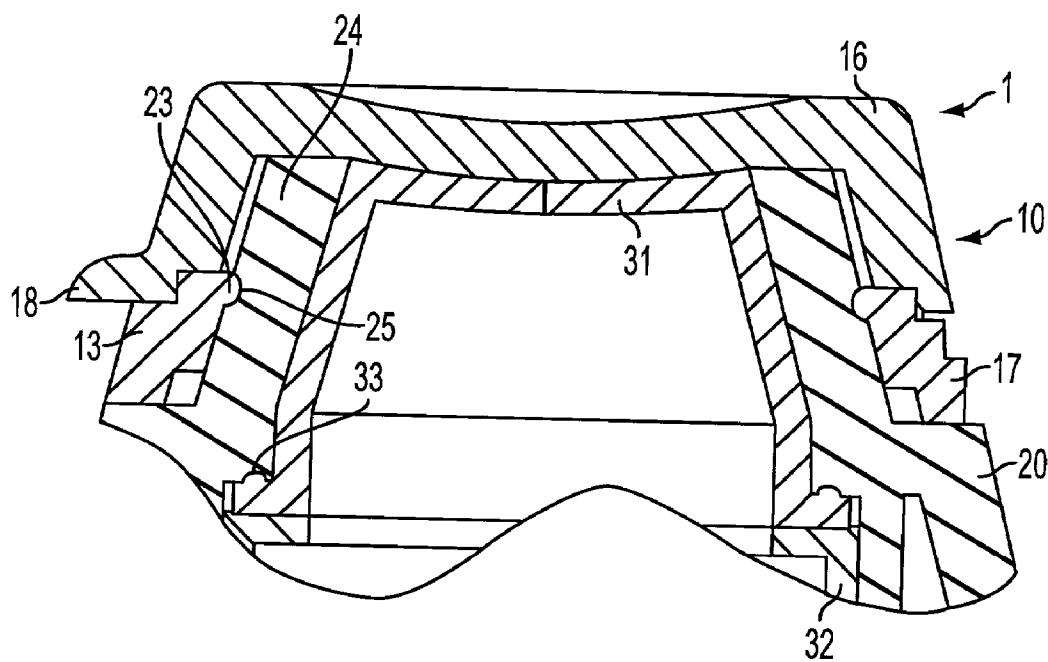


FIG. 5

MULTI-PIECE SNAP-TOGETHER CAP

(a) TITLE OF THE INVENTION. MULTI-PIECE SNAP-TOGETHER CAP.

(b) CROSS-REFERENCE TO RELATED APPLICATIONS. NONE.

(c) STATEMENT RE: FEDERALLY SPONSORED RESEARCH AND DEVELOPMENT. NONE.

(d) REFERENCE TO A SEQUENCE LISTING. NONE.

e) BACKGROUND OF THE INVENTION

[0001] Closures for various containers are, of course, well known and are disclosed in numerous publication and patents. Many of the patents are owned by the assignee herein.

[0002] Perhaps the closest closures to the invention herein are those having a straight skirt and a living hinge on it which could be molded all in one. However, because such closures have tapered tips, much less material is required than if one were to have a closure with a lower circumference identical to main channel of the container leading to the contents within. Because of the focusing type of nozzle required for dispensing many types of products, the tapered sides of the base cap do not lend themselves to a "one piece" closure with a cover cap included as single unit. Special tooling cams can be designed and built into the mold. However, these types of cams can be very expensive and also require a much higher ongoing maintenance fee. This type of more complicated cam tooling also results in more tooling downtime, cutting into manufacturing productivity.

[0003] It is therefore an object of the invention to provide a multi-piece snap together cap generally intended to be used on a flexible-walled container and in preferably an inverted position which does not require the use of much material.

[0004] Another object of the invention to provide a multi-piece snap together cap which is easy to assemble.

[0005] A further object of the invention to provide a multi-piece snap together cap which does not require specific orientation during the assembly of the two pieces.

[0006] Additionally an object of the invention to provide a multi-piece snap together cap which insures that it is locked in place after assembly.

[0007] Yet another object of the invention to provide a multi-piece snap together cap which is molded in the open position and in which the cover cap stays out of the way of product when it is dispensed.

[0008] Moreover an object of the invention to provide a multi-piece snap together cap which includes a second open/close friction snap ring in which keeps the top lid is in a closed position during storage and the internal product remains fresh.

[0009] Furthermore, an object of the invention to provide a multi-piece snap together cap which the consumer may easily unsnap the lid with a fingertip.

(f) BRIEF SUMMARY OF THE INVENTION

[0010] These and other objects of the invention, which shall become hereinafter apparent, are achieved by a multi-piece snap together cap, generally comprising a molded base cap and a covercap intended to be used on a flexible-walled container and in an inverted position. The simple negative and positive overlapping snap rings that are formed on the covercap and base cap make it very easy to assemble.

[0011] Neither the covercap nor the base cap require special orientation during the assembly process of the two pieces. To assemble, the top open ring is lowered onto the base and snapped into place. The positive overlapping snap ring located on the top covercap expands and retracts, as it is forced down over the base ring. The base ring is designed and molded with a one-way negative snap-in void area that is formed with an undercut, insuring the top positive overlapping snap ring in locked in place after assembly.

[0012] The top cap covercap piece is unique in its construction and combines several functional features. The top covercap lid is molded in the open position and connected to the top open snap ring with a living hinge, forming one single piece. When the lid is in the open position, the living hinge keeps it out of the way when product is dispensed. The top lid and snap ring also includes a second open/close friction snap ring, which keeps the top lid closed during storage and the internal product fresh. The top lid also provides an overhang tab so that the consumer may easily unsnap the lid with a fingertip.

(g) BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWINGS

[0013] The invention will be better understood by the detailed description of the invention, with reference to the drawings, in which:

[0014] **FIG. 1** is a cross-sectional view of a multi-piece snap together cap according to the invention on a container in a closed position shown with a valve located into the synerisis trap channel;

[0015] **FIG. 2** is a cross-sectional view of the multi-piece snap together cap of **FIG. 1**, but in an open position also showing a valve with a locking retainer ring;

[0016] **FIG. 3** is a perspective view of the multi-piece snap together cap of **FIG. 1** in an open position;

[0017] **FIG. 4** is a perspective view of the multi-piece snap together cap of **FIG. 1** in a closed or locked position; and

[0018] **FIG. 5** is a detailed cross-sectional view of the multi-piece snap together cap of **FIG. 1**.

(h) DETAILED DESCRIPTION OF THE INVENTION

[0019] Referring now to the drawings, in which like numerals depict like elements throughout the various views, **FIG. 1** is a cross-sectional view of a multi-piece snap together cap **10**, generally comprising a molded base cap **20** and a covercap **30** intended to be used on a flexiblewalled container **1**.

[0020] The covercap **10** includes generally a lid **16** and an overlapping snap ring **13** to fit over the base cap **20**. Neither

the covercap **30** nor the base cap **20** require special orientation during the assembly of the two pieces; in fact, when assembled, the snap ring **13** rotates around an inward recess **25** of the base cap **20**. (It should be noted that the configuration may be reversed to have an outwardly projecting lip on the base cap and a corresponding channel on the ring.) To assemble the snap ring **13** to the base cap **20**, the ring **13** is placed over the lip **24** of the base cap **20** and snapped into place with the ridge **23** inside of the ring **13** fitting into recess **25**. The lid **16** has a lifting tab **18**, which facilitates the open of the cap **10** merely by one's finger.

[0021] The positive overlapping ring **13** located on the covercap **10** expands over the base cap **20** and retracts as it is forced down over the base cap **20**. A portion of the ring **13** has a "step" (ie. it is stepped) in a certain manner such that when one brings the lid **16** down, it fits inside the covercap **30**.

[0022] The covercap **10** is unique in its construction and combines several functional features. For instance, the lid **16** is molded in the open position and connected to the snap ring **13** by a living hinge **17**, forming one complete piece. When the lid **16** is in the open position, the living hinge **17** keeps it out of the way when product is dispensed. Although the vast majority of closures have a living hinge, because of the structure of the cap, the living hinge creates some problems in that if one were to make it one-piece, and the flexibility of dispensing different kinds of products from the multi-component construction would be lost. The cams used in the molding process are not so expensive, but mold maintenance becomes more of a problem, particularly with large volume manufacturing.

[0023] Constructed in the above manner, the multi-piece snap together cap permits the closure to have good color variation. The difference in color makes the product look like more product for one's money and facilitates product labeling. For instance, the containers could be identical, but one with a red cover cap could be indicative of ketchup or one with a yellow cover cap could be indicative of mustard. The cap **1** is preferably made of because of, among other reasons, the living hinge between the ring **13** and the covercap **30**.

[0024] FIG. 2 shows the cap in an open position. The place on the cap **10** where it meets the ring when closed is depicted best in FIG. 5. In this embodiment, fitted into the cap **1** is a thermoplastic elastomer (TPE) valve **31** which is held in place, in this embodiment, by an insert piece **32**. (The closure can be manufactured with or without the valve. The flexibility of this multi-construction closure is designed to be manufactured with and without a valve that is dependent upon requirements and consumer benefits.) Such valves facilitate generally the one-way flow of the product and prevents spillage. **33** is a projection on the valve, which allows the valve to fit underside of extension **34**. The valve slit may be created in several ways including being molded (as opposed to being subsequently cut), stretched and punched or laser pierced.

[0025] The container **1** has a trap channel **35** so that when it is tipped slightly (for instance if a liquid and a portion of the product separates from the product because of the

differing viscosities) the liquid is trapped in the channel created between the inner side wall **36** of the base cap **20** and inner channel guide **37**.

[0026] In addition, the basic cap and covercap construction is a development which is extremely versatile and usable with many different types of products. The basic design has been developed to be manufactured with or without a valve depending on the type of product to be dispensed. Depending on the product and price point, the valve is insert-molded, co-injected or added as a certain piece.

[0027] Moreover, the valve can be placed inside the syerisis trap channel and held in place with a separate locking retainer piece. The valve can be co-injected and fused to the overcap ring or molded in the nozzle of the base cap. The valve can also be insert molded or manufactured as a separate piece held in place by the overcap ring.

[0028] While the preferred embodiment of the invention has been depicted in detail, modifications and adaptations may be made thereto, without departing from the spirit and scope of the invention as delineated in the following claims:

1. A closure for selective dispensing of product from a flexible-walled container, said closure comprising:

a base cap for attachment to said container;

a cover cap for attachment to the base cap;

a structure for retaining the cover cap in a locked position.

2. The closure of claim 1, further comprising a circumscribing member on the cover cap to be fitted onto the base cap.

3. The closure of claim 1, wherein said circumscribing member is expandable to be retained on the base cap.

4. The closure of claim 1, wherein said circumscribing member is rotatable on the base cap and does not require special orientation during the assembly process of the base and cover caps.

5. The closure of claim 1, further comprising a tab on the cover cap to facilitate the opening of the cap merely by one's finger.

6. The closure of claim 1, wherein said cover cap further comprises a living hinge connecting a lid of the cover cap to said circumscribing member.

7. The closure of claim 6, wherein said cover cap stays distal from the product when dispensed.

8. The closure of claim 6, further comprising a second open/close friction snap ring which keeps the in a down position during storage and the internal product fresh.

9. The closure of claim 1, wherein said cover cap has a different visual characteristic from the base cap or container.

10. The closure of claim 9, wherein said different visual characteristic is color.

11. The closure of claim 1, wherein at least a portion thereof is made from polypropylene.

12. The closure of claim 1, further comprising an area for trapping liquid or products of differing viscosities in a channel.

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