

Dec. 27, 1960

J. G. MORAN

2,966,286

CAP CLOSURE

Filed Oct. 6, 1958

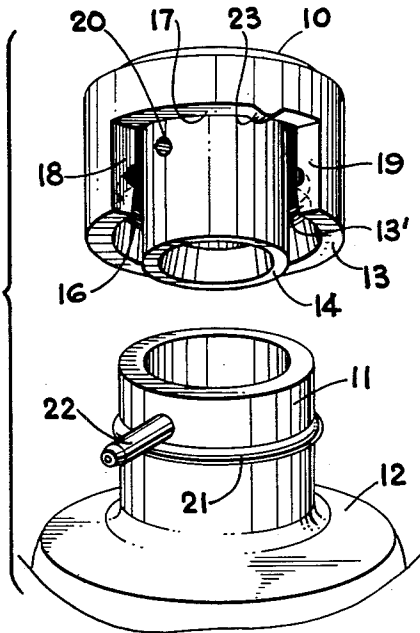


FIG. 1

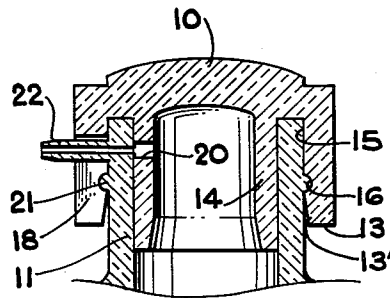


FIG. 2

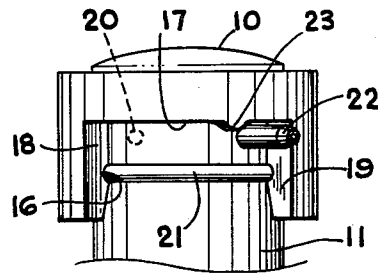


FIG. 3

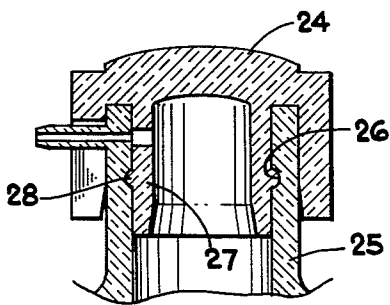


FIG. 4

INVENTOR.

JAMES G. MORAN

BY *Elliott & Pastoriza*

ATTORNEYS

1

2,966,286

## CAP CLOSURE

James G. Moran, Burbank, Calif.  
(631 Wilshire Blvd., Santa Monica, Calif.)

Filed Oct. 6, 1958, Ser. No. 765,374

5 Claims. (Cl. 222—553)

This invention relates generally to cap closures for dispensing containers and more particularly to an improved cap closure and dispensing container neck structure useful in dispensing hand lotions, shaving creams, and similar cosmetic products.

Many cosmetic products commercially available at the present time are packaged in flexible plastic type dispensing containers in which the contents thereof are extruded by manually removing a cap closure and simply squeezing the walls of the container together. It is useful in such products to provide a closure structure which need never be separated from the container itself and yet which by a simple manual movement will open a suitable communicating port to the interior of the container tube to permit the contents thereof to be expressed. Towards this end, many different types of cap closures have been proposed which operate in response to pressure manually exerted on the walls of the container for opening a suitable outlet orifice in the cap itself. Some of these prior art devices simply include a flexible slotted opening which normally is biased to a closed position and yet which may be stretched open by pressure of the contents within the container. In order to prevent accidental extrusion of material in containers of this type, more advanced closure members include manual locking means so that an intentional operation on the cap must first be effected before the outlet orifice can be opened under pressure of the contents within the container.

While a variety of different cap closures which accomplish the above noted ends have been constructed and introduced on the market, a majority suffer the disadvantage of incorporating movable parts such as spring clips or pivoting structures resulting in an increase in manufacturing costs. It is primarily the added manufacturing expense of such items that has limited their success in the present market.

Bearing the above in mind, it is a primary object of the present invention to provide an improved cap closure and dispensing container neck structure which will enable the container to be positively closed off when the cap assumes a first position and yet which will permit the contents of the container to be readily expelled when the cap is manually moved to a second position.

More particularly, it is an object to provide an improved dispensing container of the above type which may be manufactured and assembled more economically than conventional containers presently available.

Still another important object is to provide a cap closure for a dispensing container of the above type which comprises an integrally formed structure of a single material and which does not include any auxiliary pivoting mechanism, spring retaining clips, or similar components, and which avoids the use of threads so that initial positioning of the cap on the container neck during manufacture is accomplished simply and rapidly.

These and many other objects and advantages of the present invention are attained by providing a combination cap closure and container neck structure in which the cap closure is provided with an integrally formed tubular stem concentrically extending from its interior to define an annular recessed area between the exterior of the stem and the inside of the peripheral walls of the cap. The neck of the dispensing container itself is re-

2

ceivable within this annular recessed area with the stem of the cap extending into the neck. The stem includes a lateral opening in its side while the neck of the dispensing container in turn is provided with a laterally extending egress means in the form of a spout structure. A portion of the peripheral wall of the cap is cut out to define side stop edges between which the spout extends when the cap is assembled on the neck. The arrangement is such that limited circumferential movement of the cap on the neck is permitted by the cut out portion, the sides of the cut out portion serving as stops upon abutment against the lateral spout from the neck.

With one of the side stop edges in engagement with the spout, the spout is in registration with the lateral opening on the tubular stem so that the contents of the container may be readily expressed. A small circumferential rotation of a quarter of a turn, for example, of the cap will bring the other stop side edge against the spout in which position the lateral opening in the tubular stem will be out of registration with the spout and the container completely closed.

The cut out portion itself includes a small boss for frictionally retaining the spout in the closed off position so that a positive manual action is required to rotate the cap. Also included are interengaging means between the cap and the neck in the form of a rib and annular groove lying in a horizontal plane such that the cap is prevented from moving axially with respect to the neck. The material forming the cap and neck is preferably plastic such that the cap is initially deformed slightly in order to enable the rib and groove to be intercoupled. By this arrangement, the cap may simply be "snapped on" to the neck and retained thereon as a permanent part of the structure, the only movement of the cap necessary for operation being the circumferential movement.

A better understanding of the preferred embodiment of the invention will be had by referring to the accompanying drawings in which:

Figure 1 is an exploded perspective view of a preferred embodiment of the cap closure and neck structure showing the cap separated from the neck;

Figure 2 is an elevational cross sectional view showing the cap positioned on the neck for expressing the contents of the container;

Figure 3 is a full elevational view showing the cap positioned on the neck wherein the dispensing container is in closed position so that no contents can be expressed; and,

Figure 4 is another elevational cross sectional view of a modified embodiment of the invention.

Referring to Figure 1, there is shown a cap member 10 shown separated from the neck 11 of a dispensing container 12. The cap member 10 includes an annular peripheral sidewall 13 having a lower inside tapered portion 13', and an integrally formed concentrically extending tubular stem 14. The exterior of the tubular stem 14 defines with the exterior of the wall 13 an annular recessed area 15 arranged to receive the neck 11 when the cap is positioned on the dispensing container.

In the embodiment illustrated in Figures 1, 2, and 3, the inside of the peripheral wall 13 is provided with an annular groove 16 above the taper 13' lying in a plane normal to the axis of the tubular stem 14. In addition, a portion of the peripheral wall also includes a cut out section 17 defining side stop edges 18 and 19. The tubular stem 14 near its upper end includes a lateral opening 20 providing a communication between the annular recessed area 15 and the interior of the stem.

Referring to the neck 11 for the dispensing container 12, there is provided about the exterior thereof an annular rib 21 arranged to be received within the annular groove 16 of the cap member. The neck 11 also includes a

laterally extending egress means in the form of a spout structure 22.

Referring particularly to the assembled views of Figures 2 and 3, it will be noted that the spout structure 22 extends between the side edges 18 and 19 when the cap is assembled on the neck with the annular rib 21 riding within the annular groove 16. The circumferential spacing between the side edges is made greater than twice the inside diameter of the spout.

In actually assembling the cap onto the neck, a downward pressure on the top of the cap in an axial direction is all that is needed to "snap" the cap onto the neck. By the use of a plastic material for the cap and the neck structure, sufficient elasticity is present to enable this snap-on action to take place. The taper 13' facilitates initial expansion of the cap walls over the rib. It will be evident, therefore, that in the manufacture of the dispensing containers with the cap structures as described, the cap may be readily positioned on the container neck by a simple machine which will apply the necessary downward pressure. In this respect, the tubular stem 14 serves as a telescopic guide so that this assembly operation is simple and rapid.

With the tubular stem 14 positioned within the neck 11 so that the side stop 18 is in abutting engagement with the spout 22, the opening 20 is in registration with the spout 22 as shown in Figure 2. In this position, the contents of the container may be readily expressed by simply applying manual pressure on the container.

In Figure 3, it will be noted that the cap 10 has been rotated such that the other side stop edge 19 is brought into abutting engagement with the stop 22. In this position, the spout is out of registration with the opening 20 which is illustrated in dotted lines. The contents of the container are thus closed off.

Preferably, the upper edge of the cut out section 17 includes a small boss 23 spaced at a distance between one-half and one times the outside diameter of the spout 22 so that when the cap structure is rotated to the position illustrated in Figure 3 it will be frictionally retained in that position as a consequence of the boss 22 bearing against the upper left side portion of the spout 22. Accordingly, a positive manual pressure is required to rotate the cap 10 and place the spout 22 in registration with the opening 20. The proper positioning of the spout with respect to the opening is insured inasmuch as the side stop edge 18 will check movement of the cap 10 at the precise position in which the opening 20 in the stem 14 is in registration with the spout.

Figure 4 illustrates a modified embodiment wherein the interengaging means in the form of the rib and groove for holding the cap onto the container is formed on the exterior of the stem and interior of the neck. Thus, as shown in Figure 4 a modified cap 24 is arranged to cooperate with a modified neck 25 provided with an annular internal groove 26. The stem 27 of the modified cap 24 includes an annular rib 28 arranged to be received within the groove 26 when the stem structure is inserted into the neck 25. The remaining components of the cap and neck are identical to those described in connection with the embodiment of Figures 1 to 3.

There are several advantages to the structure described. As already mentioned, the provision of the rib and groove enables a simple snapping on of the cap to be achieved whereby manufacture and assembly of the cap and container are considerably simplified with a consequent savings in cost particularly from the labor standpoint. Further, the annular rib and groove structure as illustrated in the drawings provides a convenient guiding track for the limited circumferential movement of the cap. Thus, any possible tilting of the cap which might prevent complete registration of the opening 20 with the spout structure 22 is prevented.

The spout 22 itself may be integrally formed with the neck as shown and actually serves a dual function. First,

the spout serves as an egress means for the contents within the container, and, second, it serves as a stop means for limiting the circumferential extent through which the cap 10 can be rotated.

Finally, the provision of the small boss or projection 23 on the upper edge of the cut out portion 17 serves to normally hold the cap in a closed position so that accidental extrusion of the contents of the container is positively avoided.

The overall structure is extremely simple and can all be integrally molded. By avoiding the use of screw threads and substituting a single annular rib and groove, the cap will always be retained on the container so that there is no possibility of losing the same.

Minor modifications that fall clearly within the scope and spirit of the present invention will readily occur to those skilled in the art. The improved cap closure, therefore, is not to be thought of as limited to the particular embodiment set forth for illustrative purposes.

What is claimed is:

1. A combination cap closure and container neck structure comprising: a cap member having a peripheral wall and an integrally formed tubular stem concentrically extending from the interior of said peripheral wall to define an annular recessed area between the exterior of said stem and the inside of said peripheral wall, said neck being receivable within said annular recessed area with said stem extending into said neck, said stem including a lateral opening in its side; a spout structure extending laterally from said neck, said peripheral wall of said cap having a cut out portion defining side stop edges between which said spout extends, said stop edges being circumferentially spaced a distance greater than twice the inside diameter of said spout, said opening being in registration with said spout when one of said stop edges is positioned against said spout whereby rotation of said cap member moves said opening out of registration with said spout prior to engagement of said spout by the other of said stop edges.

2. The subject matter of claim 1, in which said cap member and container neck structure include annular circumferentially extending interengaging means lying substantially in a plane normal to the axis of said tubular stem when said stem is positioned within said neck, whereby said cap member is free for circumferential rotation between said stop edges and is blocked from axial movement relative to said neck.

3. The subject matter of claim 2, in which said cut out portion has an upper edge between said stop edges, said upper edge including a boss spaced from said other of said stop edges a distance between one-half and one times the outside diameter of said spout whereby said spout is adapted to be frictionally held by said boss in a position out of registration with said opening.

4. The subject matter of claim 2, in which said interengaging means comprises an annular rib passing circumferentially about the exterior of said neck, said inside of said peripheral wall including an annular groove positioned to receive said rib when said cap member is positioned on said neck and an inside annular taper below said groove for initially engaging said rib when said cap is initially assembled on said neck.

5. The subject matter of claim 2, in which said interengaging means comprises an annular rib passing circumferentially about the exterior of said tubular stem, the inside of said neck including an annular groove positioned to receive said rib when said stem is positioned in said neck.

#### References Cited in the file of this patent

#### UNITED STATES PATENTS

|           |            |               |
|-----------|------------|---------------|
| 1,542,563 | Lieberthal | June 16, 1925 |
| 1,841,664 | Montalbano | Jan. 19, 1932 |
| 2,534,139 | McLaughlin | Dec. 12, 1950 |