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F. A. MORROW
DISPENSER CLOSURE
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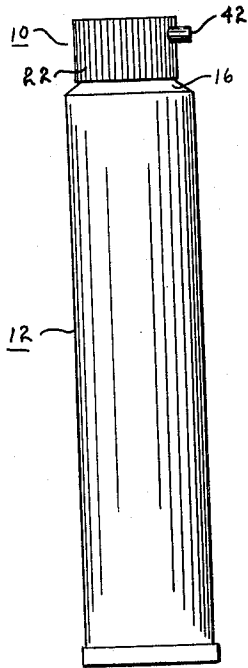


FIG. 1

FIG. 3

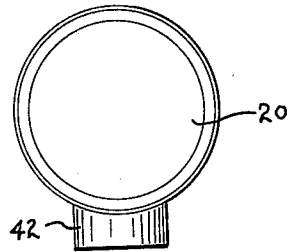


FIG. 2

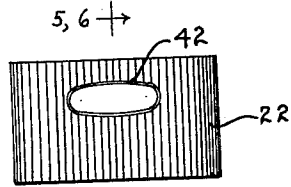


FIG. 4

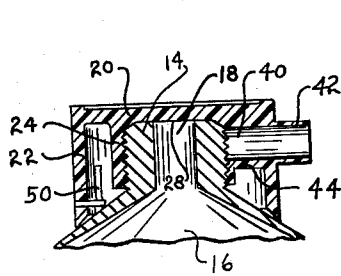
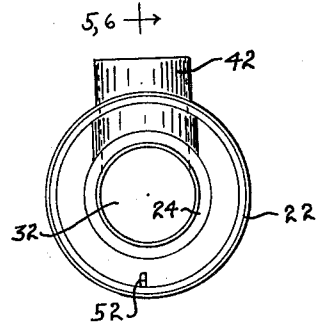


FIG. 5

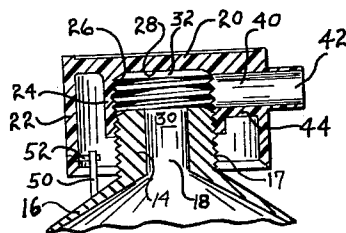


FIG. 6

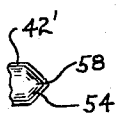


FIG. 7



FIG. 8

INVENTOR.
FRED A. MORROW

BY *M. A. Hobbs*

ATTORNEY

1

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DISPENSER CLOSURE

Fred A. Morrow, 417 E. Charles St., Plymouth, Ind.

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The present invention relates to closures and more particularly to a closure device for dispensers such as tooth paste and shaving cream collapsible tubes and aerating dispensers.

In removing tooth paste or shaving cream from conventional tubes or aerating dispensers, the cap must be removed and placed on a surface such as the edge of a lavatory or the like. Often these small, round caps roll off the supporting surface onto the floor or even down the drain. Therefore, one of the principal objects of the present invention is to provide a closure for a dispenser having a screw threaded neck, which can be easily manipulated to open and close the dispenser without being removed therefrom.

Another object of the invention is to provide a closure for a dispenser such as tooth paste and shaving cream collapsible tubes and aerating dispensers, which can be opened and closed with one hand and which does not become detached from the dispenser when it is fully opened.

Still another object of the invention is to provide a closure for tooth paste and shaving cream collapsible tubes which can be fully manipulated between opened and closed positions in either direction with the use of only one hand, leaving the other hand free to hold the tooth brush or razor.

A further object is to provide a closure of the foregoing type which is adapted to fit and operate satisfactorily on conventional tooth paste and shaving cream dispensers having necks with a screw threaded external surface.

Another object of the invention is to provide a combination closure and ejector spout for materials in a paste-like condition, which permits the material to be readily removed from the discharge end of the spout and which can easily be kept free of excess unused material.

Additional objects and advantages will become apparent from the following description and accompanying drawing, wherein:

FIGURE 1 is an elevational view of a collapsible tube dispenser for tooth paste or shaving cream, having my closure mounted thereon in fully closed position;

FIGURE 2 is an enlarged elevational view of my closure removed from the dispenser;

FIGURE 3 is a top plan view of the closure shown in FIGURE 2;

FIGURE 4 is a bottom view of the closure shown in the preceding figures;

FIGURE 5 is a vertical cross sectional view of my closure and the upper portion of a collapsible tube, taken on line 5-5 of FIGURE 2 showing the closure in its fully closed position;

FIGURE 6 is a vertical cross sectional view of my closure and the upper portion of a collapsible tube, taken on line 6-6 of FIGURE 2, showing the closure in its fully opened position;

FIGURE 7 is a fragmentary side elevational view of a modified form of the discharge spout forming a part of my closure; and

FIGURE 8 is a front elevational view of the modified form of discharge spout shown in FIGURE 7.

Referring more specifically to the drawing, numeral 10 designates my closure and numeral 12 a conventional collapsible tube dispenser containing tooth paste, shaving cream or other paste-like material, the closure being shown in its fully closed position. The collapsible tube

2

is sealed at its bottom and is provided at the top with a neck 14 joined to a frusto-conical upper end 16 and having screw threads 17 extending from the top to a point adjacent upper end 16. A hole 18 in the neck communicates freely with the internal portion of the tube and is sufficiently large to permit free flow of the tube contents therethrough. The present invention is not limited to any particular type of collapsible tube and may be successfully used in connection with aerating type pressure dispensers. The description herein will be directed to the collapsible tube dispensers since the present disclosure is particularly adapted for use in conjunction therewith.

The closure consists of a disc-shaped upper panel 20 having an outer cylindrical depending skirt 22 and an inner cylindrical depending sleeve 24 concentrically arranged with the skirt. The internal side wall of sleeve 24 is provided with screw threads 26 corresponding to the threads 17 on the periphery of neck 14 and extends substantially the full length of the neck when the closure is tightened to its fully closed position, as shown in FIGURE 5. The sleeve, however, is shorter than the neck to permit the under surface 28 of panel 20 to seat firmly on the upper end 30 of neck 14. Skirt 22 extends downwardly from panel 20 almost to the upper surface of upper end 16 when the closure is in its fully closed position but is spaced from said surface to avoid interference with the seating of surface 28 on the upper end of the neck. The external surface of the skirt is preferably knurled or otherwise roughened throughout its circumference in order to provide a good gripping surface for the user's forefinger and thumb for turning the closure to open and close the container.

The hollow interior 32 of sleeve 24 adjacent the closed end thereof is connected with the outside by a conduit 40 having a lip 42 extending a substantial distance beyond the periphery of skirt 22. The wall portion 44 defining conduit 40 is preferably formed integrally with the remaining structure of the closure and lip 42 is preferably joined integrally with the skirt. In order to permit free flow of the contents of the tube through the conduit without making the closure bulky and difficult to handle, the conduit is flattened somewhat in the vertical direction into a cross sectional oval shape and intersects sleeve 24 well above the latter's lower end, thus providing a substantial screw threaded portion on the sleeve below the conduit for gripping neck 14. With this construction the closure is firmly gripping the neck when the conduit is fully opened and in easy communication through the interior of the sleeve with hole 18 of the neck. Conduit 40 is so positioned relative to the sleeve and the upper end of neck 14 that the inner end of the conduit is placed substantially below the upper end of the neck when the closure is tightened into its fully closed position, as shown in FIGURE 5, to provide a second seal between the outlet of the container neck and the inlet of the conduit, the first being the seating of panel surface 28 on the upper end of the neck. The discharge end of lip 42 is preferably straight across and has a smooth surface to provide an edge which will permit the contents ejected through the lip to be thoroughly wiped from the end of the lip and the closure thereby kept in a clean sanitary condition.

The entire closure is preferably constructed in one piece of suitable plastic material; however, the body of the closure including panel 20, skirt 22 and sleeve 24 may be formed as one unit and a tube having the configuration of conduit 40 can be inserted in aligned holes in the skirt and sleeve. Other materials such as metal or a combination of metal and plastic may be used in the construction of the closure if desired.

When the collapsible tube is not being used, closure 10 is screwed tightly or firmly onto the neck 14 of the tube with surface 28 of panel 20 seated firmly on the upper end of the neck, forming an effective seal for the tube. With the closure tightened into fully closed position in this manner, the contents of the tube cannot be accidentally removed or ejected if the tube should be inadvertently squeezed or pressed. When it is desired to remove a portion of the tube contents, the closure is unscrewed from the neck to the position shown in FIGURE 6, with surface 28 raised substantially from the upper end of the neck and with conduit 40 in easy communication through the hollow interior of sleeve 24 with hole 18. With the closure in this position, pressure on the side walls of the collapsible tube causes the contents to flow from hole 18 through the hollow interior of the sleeve and outwardly through conduit 40. As the content material emerges from lip 42 it can be easily applied directly to a tooth brush and/or wiped from the end of the lip. After the desired portion of the contents has been removed, the closure is retightened onto the neck reestablishing the seal between surface 28 and the upper end of the neck.

To facilitate the opening of the closure to the required position for free flow of the tube contents into and through conduit 40 without danger of accidental removal of the closure from the neck, a stop means may be provided consisting of a pin 50 extending vertically upwardly from upper end 16 into the space between skirt 22 and sleeve 24 and a pin 52 extending inwardly from the internal surface of skirt 22. Pin 52 rotates with the closure and when the closure reaches the position shown in FIGURE 6, as the closure is rotated in the opening direction, pin 52 engages pin 50 and prevents further loosening of the closure. In order to permit the closure to be initially assembled on the neck of the tube, pin 52 is not inserted in the hole in the skirt provided therefor until the closure is first turned to its fully closed position.

If the material contained in the tube is fluid to the point that it approaches the consistency of a thick liquid such that it tends to run, or if the contents remaining in conduit 40 tend to become hard from drying, the outlet end of lip 42 may be constructed to close when not in use. As shown in FIGURES 7 and 8 the side walls 54 and 56 of the lip 42' are formed to provide a slot 58 which remains closed except when pressure is being applied to eject the tube contents. The lip, being of resilient plastic, permits the portion forming the slot to yield when pressure is applied to the tube and to close again when the pressure is released.

While several changes in the structure shown in the drawing have been mentioned herein, various other changes and modifications may be made without departing from the scope of the present invention.

I claim:

1. In combination with a dispenser container for paste-like materials having a hollow cylindrical neck with a longitudinal hole therethrough and screw threads on the periphery: a rotatable closure, comprising an imperforate disc-shaped panel, a cylindrical skirt joined to the edge of said panel and extending downwardly therefrom toward the dispenser container, the external surface of said skirt having knurling thereon, a cylindrical sleeve joined to the underside of said panel and arranged concentrically with and in spaced relation to said skirt and having screw threads on the internal surface of said

sleeve corresponding to the threads on said neck, said sleeve being shorter in length than said neck, walls joined integrally with said panel, skirt and sleeve forming a conduit connecting the hollow interior of said sleeve adjacent the panel with the outside and spanning the space between said skirt and sleeve, a lip for said conduit connected to said skirt and having resilient portions for closing said conduit, and a stop means for limiting the rotational movement of said closure relative to said dispenser container including a pin mounted on said dispenser container and a pin on said closure adapted to engage said first mentioned pin when the maximum desired opening of said closure is reached.

2. In combination with a dispenser for paste-like materials having a hollow cylindrical neck with screw threads on the periphery: a rotatable closure, comprising an imperforate disc-shaped panel, a cylindrical skirt joined to the edge of said panel and extending downwardly therefrom toward the dispenser, a cylindrical sleeve joined to the underside of said panel and arranged concentrically with and in spaced relation to said skirt and having screw threads on the internal surface of said sleeve corresponding to the threads on said neck, walls joined integrally with said panel, skirt and sleeve forming a conduit connecting the hollow interior of said sleeve adjacent the panel with the outside and spanning the space between said skirt and sleeve, and a lip for said conduit connected to said skirt.

3. In combination with a dispenser having a hollow cylindrical neck with screw threads on the periphery: a rotatable closure, comprising an imperforate disc-shaped panel, a cylindrical skirt joined to the edge of said panel and extending downwardly therefrom toward the dispenser, a sleeve joined to the underside of said panel and arranged concentrically with and in spaced relation to said skirt and having screw threads on the internal surface of said sleeve corresponding to the threads on said neck, walls joined integrally with said panel, skirt and sleeve forming a conduit connecting the hollow interior of said sleeve adjacent the panel with the outside and spanning the space between said skirt and sleeve, and a lip for said conduit connected to said skirt.

4. In combination with a dispenser having a hollow cylindrical neck with screw threads on the periphery: a rotatable closure, comprising an imperforate disc-shaped panel, a cylindrical skirt joined to the edge of said panel and extending downwardly therefrom toward the dispenser, a sleeve joined to the underside of said panel in spaced relation to said skirt and having screw threads on the internal surface of said sleeve corresponding to the threads on said neck, and walls forming a conduit connecting the hollow interior of said sleeve with the outside, said walls spanning the space between said skirt and sleeve and extending beyond the external surface of said skirt.

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