Sept. 8, 1959 M. B. SUTLIFFE 2,903,168

CAP FOR TOOTH PASTE CLOSURE

Filed Sept. 29, 1955

Fig. 1.

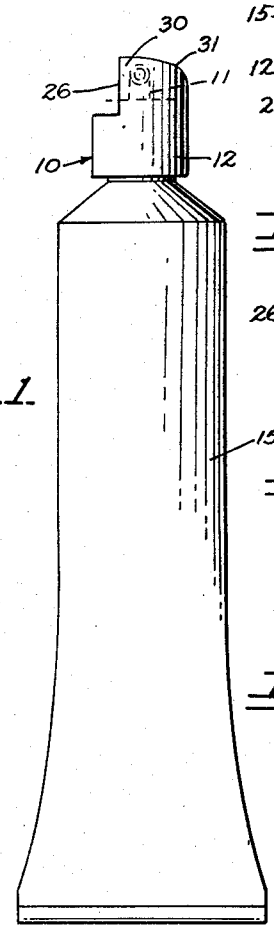


Fig. 5.

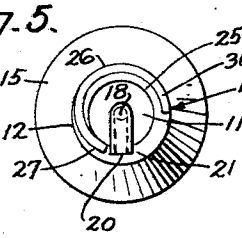


Fig. 2.

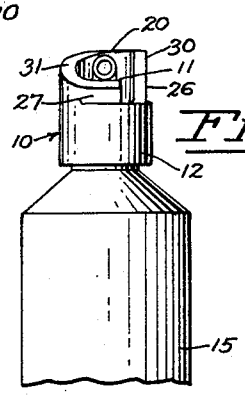


Fig. 6.

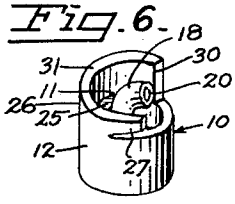


Fig. 7.

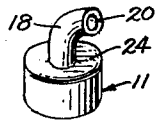


Fig. 8.

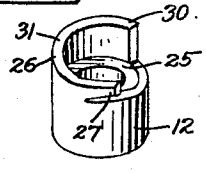


Fig. 3.

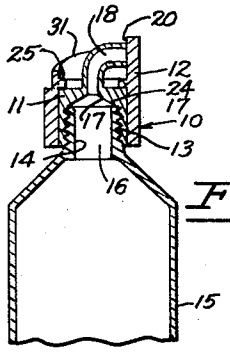
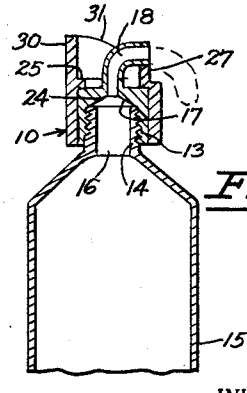


Fig. 4.



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CAP FOR TOOTH PASTE CLOSURE

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2 Claims. (Cl. 222—553)

This invention relates to a combination dispenser and closure particularly well adapted to the dispensing of paste and other viscous materials, such as tooth paste, from collapsible tubes and the like.

Many people have been annoyed by having to take off and put back the screw caps on tooth paste tubes and similar types of dispensing containers each time they use them. Attempts have been made to solve this problem by providing dispensing closures with parts which pull out from the tube or turn in such a way as to send the material being dispensed through a peripheral opening in the side wall of the dispenser; but these have proved unsatisfactory because viscous pastes could not satisfactorily make a right-angle turn to get through the opening. Also, tooth paste and similar materials that get hard when dry, tend to cake and plug the opening.

It is an object of the present invention to solve these problems by providing a type of closure which need not be removed but is opened by a simple turn of a few degrees and is closed in the same manner.

Another object of the invention is to provide an easily operable dispensing closure which can be moved rapidly between a closed position and an open position and back again, without having to disconnect or re-join any parts.

It is also an object of the invention to provide a dispensing pathway, opened and closed by the closure, which guides the material being dispensed via a smoothly curved path, so that while it changes direction by 90°, it does so without angles.

Another object of the invention is to provide a dispensing closure which in its open position does not present any obstructions near the dispensing opening, so that tooth paste, for example, may flow without interference directly from the opening on to the brush, and the brush can wipe the paste off the opening without obstruction by the closure.

In general, the closure-dispenser of this invention includes two relatively movable members, one of which is normally stationary and may be threadably or otherwise secured to the end of a tooth paste tube or other container. This member is provided with a tubular dispensing passage which smoothly changes its direction ninety degrees by means of a curved path. The other member, the closure, is joined to the dispensing tube so as to prevent the assembly from coming apart, but is freely rotatable between a fully closed position where it covers the dispenser opening and prevents the paste from leaking out or drying up, and a fully open position where it gives free access to the opening and in which the material can easily be forced out of the opening by squeezing the tube in the normal way.

Other objects, advantages and features of the invention will appear from the following detailed description presented in accordance with 35 U.S.C. 112.

In the drawings:

Fig. 1 is a view in elevation of a tooth paste tube or the like having a dispenser-closure embodying the principles of my invention. The closure is shown in its closed position.

Fig. 2 is a view in elevation of the top portion of Fig. 1 showing the closure member turned a few degrees to its open position, so that the tooth paste or other material can be dispensed.

Fig. 3 is a view in elevation and in section, taken at 90° to Fig. 2, showing the closure in its fully closed position as in Fig. 1.

Fig. 4 is a view similar to Fig. 3 showing the closure in its open dispensing position, as in Fig. 2.

Fig. 5 is a top plan view of the device of Figs. 1 through Fig. 4.

Fig. 6 is a view in perspective of the closure dispenser unit by itself.

Fig. 7 is a view in perspective of the stationary dispensing tube component thereof.

Fig. 8 is a view in perspective of the rotating closure component thereof.

The dispenser-closure 10 of Figs. 1 through 8 comprises two elements: the inner one a dispenser 11 (Fig. 7) and the outer one a closure 12 (Fig. 8). The dispenser 11 may have an interiorly threaded base 13 (Figs. 3 and 4) for attachment to the screw top 14 of a tooth paste tube 15, or the tube 15 and dispenser 11 may be made as an integral unit, if desired. The dispenser 11 has a relatively wide opening 16 and a tapered portion 17 leading into an arcuate elbow-shaped tube 18 which defines a curved path over 90° of arc to the outer opening 20. The tapered portion 17 between the wide opening 16 and the elbow portion 18, enables the paste to move freely out of the main tube 15 directly into the elbow portion 18 and from there to the dispensing opening 20 without having to turn any sharp angles, the arcuate curved path being a low-friction one. The outer face of the opening 20 is curved (Fig. 5) for better contact and engagement with the closure 12. The dispenser 11, once screwed or otherwise attached to the tube 15, remains stationary with respect to the tube 15.

In the form of the invention shown in Figs. 1–8, the closure member 12 is annular, and is provided with an inner retaining ring 25 which acts as a stop to limit relative lengthwise motion of the dispenser 11 when the two are assembled, so that the closure 12 will not become separated from the dispenser 11. Once these parts are joined together, they remain together because the ring 25 is interposed between the curved elbow 18 and the shoulder 24 of the dispenser 11 adjacent the elbow 18.

The closure member 12 also includes a generally cylindrical axially extending wall 26 whose length varies. The shortest part 27 of the wall 26 is directly under the dispensing opening 20 when the unit is in its dispensing position (Fig. 4), and at other times the longest part 30 acts as the closure by coming in contact with the opening 20 and shutting it off (Fig. 3). Preferably the short part 27 is offset radially inwardly to form a stop member, which comes in contact with the underside of the elbow 18 near the curve when the dispenser 11 is in its dispensing position. For design appearance and for strength of the parts, it is desirable to provide the wall 26 with a curved upper edge 31 leading from the stop 27 smoothly to the closure 30.

Since the members 11 and 12 are freely rotatable relative to each other, operation may be had by turning either in either direction while holding the other one stationary, but preferably the closure 30 is turned over the small angle of less than 90° between fully closed and fully open positions, turning one way to open and the other way to close. The outer face 23 of the dispensing tube is preferably curved sufficiently so that

a tight fit is obtained against the cylindrical interior surface of the closure 30.

To those skilled in the art to which this invention relates, many changes in construction and widely differing embodiments and applications of the invention will suggest themselves without departing from the spirit and scope of the invention. The disclosures and the description herein are purely illustrative and are not intended to be in any sense limiting.

I claim:

1. A closure and dispensing assembly for viscous pastes and the like, comprising a flexible tubular container having an exteriorly threaded neck at one end with axial opening therethrough; an inner element threaded around said neck and held stationary with respect to said container and having therethrough a tubular passageway of substantially constant cross-sectional area extending from adjacent the axial opening of said container via a first portion extending axially of said container; a second smoothly curving portion, and an outlet portion whose axis lies substantially perpendicular to that of said container; and an outer element keyed to said inner element against relative longitudinal movement and rotatable relative thereto, said outer element having an axially elongated segmental closure portion extending axially

beyond the remainder thereof and closing off said outlet in one rotational position and exposing it free from obstruction in another rotational position, said outer element being generally cylindrical and having a sloping axial end connecting said closure portion with a stop portion shorter than said closure portion, said stop portion being adapted to engage the inner element to prevent further rotation at a rotational position of said outer element where the outlet portion of the inner element is exposed free from obstruction.

2. The assembly of claim 1 in which said stop portion has an inner edge lying at a smaller radius from the axis of the outer element than does the inner edge of said closure portion.

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