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DISPENSING TUBE

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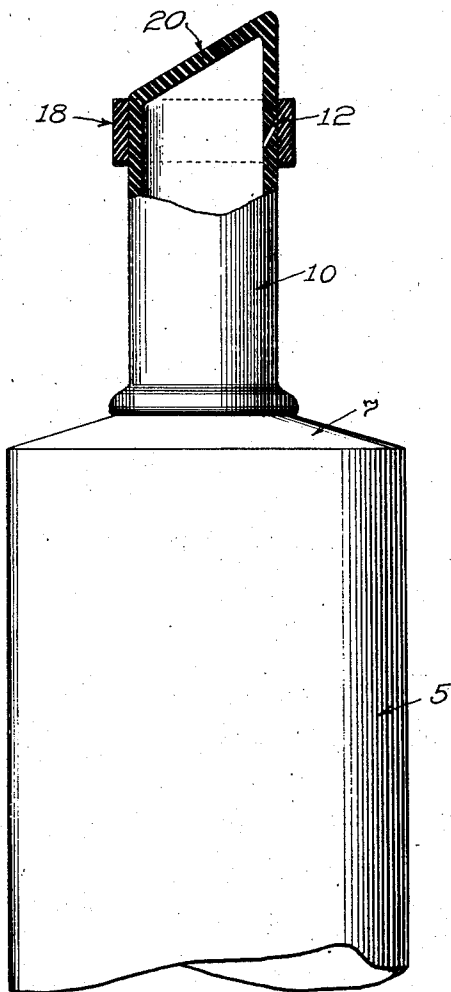


Fig. 1

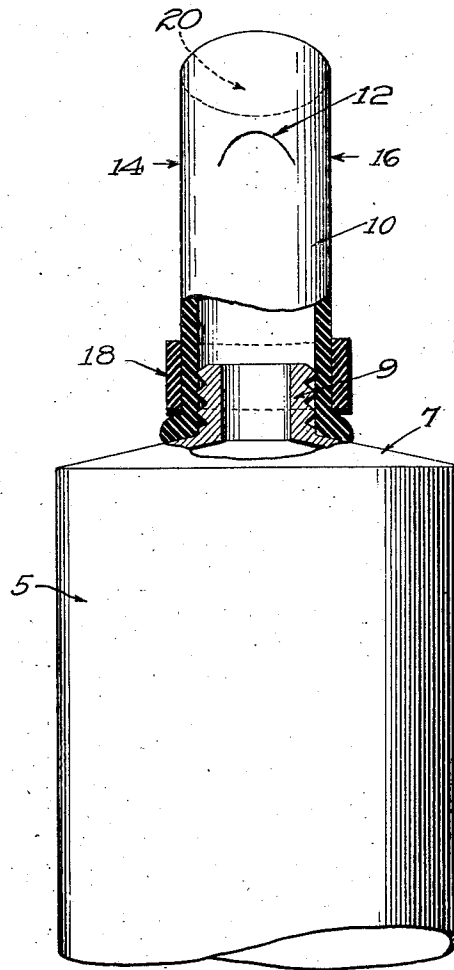


Fig. 2

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DISPENSING TUBE.

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This invention relates to dispensing tubes such, for example, as tubes designed to contain material of a liquid, semi-liquid or pasty consistency, and more particularly to closures for such tubes. These tubes are manufactured from a collapsible material and the contents is caused to exude by pressure thereon. The present invention is highly advantageous in expressing such material as tooth paste, library paste, cement, lubricating jellies, ointment for nasal and other medicinal uses, petroleum jelly and its related products, and like materials in a semi-viscous state.

At the present time the commercial collapsible tubes for products of this nature are generally provided with a screw cap which must be removed in order to express the material, leaving the discharge orifice open until the cap is replaced. Two main disadvantages accrue from this construction; first if the cap is lost or not replaced the material dries and hardens making it difficult to obtain later, and the exposed material becomes contaminated by insects, dust and dirt and, second, the amount of material to be expressed cannot readily be controlled which often leaves an excess on the screw threads making replacement of the cap difficult and the tube unsightly and hard to clean.

The object of the present invention is to overcome these disadvantages and such others as are inherent in the present commercial form of collapsible tube for the kind of material named. Accordingly the present invention provides a form of closure, adapted to any present type of collapsible tube, which prevents contamination, is readily cleaned and enables the user to control the amount of material expressed to a fine degree.

To the accomplishment of this object and such others as may hereinafter appear, as readily understood by those skilled in the art, the invention comprises the form and construction having the features hereinafter described and then particularly pointed out in the appended claims.

The preferred form of the invention is illustrated by the accompanying drawing, in which Figure 1, is a view, in elevation, of a collapsible tube with the novel closure applied thereto, the closure being in section at its upper end, and Fig. 2 is a similar view, at right angles to Fig. 1, with the closure in section at its lower end.

In the embodiment of the invention illustrated in the drawing, 5 represents a tube of the usual type and construction of permanently collapsible tubes now generally used for dispensing tooth paste and the like. Such a tube is provided with the relatively rigid breast portion 7 and the tubular, externally threaded neck 9 forming the outlet, on which a metal cap (not shown) is threaded. The present invention provides, in one aspect, a substitute for the metal cap and, in another aspect, an auxiliary collapsible tube or container overcoming the disadvantages hereinbefore referred to.

The auxiliary tube or substitute cap is designated by 10 and comprises an elastic rubber nipple, specially shaped (see Fig. 1) for a purpose to be described later. The open end of the nipple 10 is of such diameter as to tightly fit and obtain a firm grip upon the threads of the neck 9. Near its upper end the wall of the nipple is provided with an oblique slit 12 extending downwardly and inwardly. This slit is exaggerated in Fig. 1 in order that it may be seen on the drawing, but in practice it is formed by a knife incision so that when the nipple is fully distended its two lips are in contact and there is no outlet whatever for the enclosed material.

Special attention is called to the fact that the wall of the nipple is soft and pliable all about the discharge slit, whatever its location in the wall may be, so that pressure from within will readily cause its lips to open.

In using the dispensing tube, the new closure, after having been fitted in place, is filled with the contained material by squeezing the tube as usual. To discharge a quantity for use the collapsible tube is squeezed as usual or, if found more convenient, the nipple 10 itself may be squeezed by pressure at the sides 14 and 16 opposite the ends of the slit 12. In either case the pressure on the material in the nipple causes the slit to open, the outer lip lifting much in the nature of a fish scale, and the material exudes forwardly, or in the general direction of the length of the nipple. Upon a cessation of pressure the outlet formed by the open slit closes instantaneously immediately cutting off the expressed ribbon of material when the exact amount desired has been obtained. After wiping the attached end of the ribbon from the nipple is can readily be cleaned

with a damp cloth, or by running water, due to its smooth outer surface. At all times, when not in use, the slit 12 is tightly closed thus completely preventing contamination of the contents of the tube. The closure is not removed until the tube 5 is to be discarded for a new one, thus obviating the usual repeated removal and replacement of the screw cap.

A further novel feature resides in the provision of means for preventing an accidental expression of the contents of the tube through the slit 12. This might occur if the tube is thrown loosely into a travelling bag where the nipple might be collapsed from pressure by surrounding articles, or if the tube were carried, unencased, in the pocket. To guard against this the nipple 10 is provided with a collar in the form of an elastic rubber ring 18 which may be slipped up and down on the nipple. In Fig. 1 this collar is shown in position over the slit 12 and it will be understood that when in this location the slit is effectively kept from opening under the most severe pressure on the nipple. When the tube is to be used the collar 18 is slipped to a position below the slit 12 and it may, with advantage, be placed at the lower end of the nipple, as shown in Fig. 2. In this latter location it serves to place additional pressure on the threaded neck 9 and assists in holding the closure 10 firmly on the tube 5. It will be observed that with this construction the tube 5 may be made with an unthreaded neck and the closure would still be held firmly in place.

The special shape of the nipple, hereinbefore referred to, is obtained by forming it with a slabbled-off upper end. As shown, the upper end of the nipple terminates, preferably, in an oblique section cut across its cylindrical body, producing a flat top-wall 20. The smooth outer surface of the top-wall 20, however produced, may be used effectively as a spreader for library paste, cement, vaseline and the like. It should be distinctly understood that the invention is not limited in its scope to a location of the discharge opening, for the contained material, in the side-wall of the cap, but includes the location of such opening in any part of the cap wall that may be most convenient for expressing the particular material that may be in the tube, as defined in the appended claims.

It will be understood, of course, that the cylindrical wall of the nipple, altho collapsible by pressure of the fingers on opposite sides, is sufficiently firm to resist collapsing or material distortion when the end-wall 20 is used as a spreader or spatula; and it will be understood also that the light pressure that is used in such cases will not be sufficient to expel any of the paste out through the discharge-slit, so that a discharge of the

paste can be obtained only by squeezing either one of the tubes 5 or 10.

The advantage and comfort of a soft rubber nipple, as described, in using a tube when filled with a nasal ointment will be obvious. In all of the uses of the dispensing tube the outlet 12 may easily be kept clean and the tube never becomes unsightly, nor can it invite infection. It will be understood, from the foregoing disclosure of the invention, that it is contemplated to apply the novel closure to collapsible containers for dispensing any of the materials named, or others of the same general characteristics. It will be observed that the main reservoir 5 must be of the permanently-collapsible type and that, on the contrary, the auxiliary reservoir-tube 10 shall be of the temporarily-collapsible type, i. e., the type which may be collapsed by squeezing between the fingers and which when released will return to normal, cylindrical shape. The reason for this is that, as the main reservoir is collapsed, the viscous material will be forced into the auxiliary reservoir, thereby keeping the auxiliary reservoir filled at all times. The viscous material may be expelled by alone collapsing the main tube or, as hereinfore stated, it may be expelled by merely collapsing the elastic reservoir by means of the fingers at a point between the coupling and the exit, this latter mode of expressing the substance being resorted to in those cases where a very little of the paste substance is needed or where care is needed in applying and positioning it. It is therefore essential that the nipple reservoir shall be sufficiently long to enable it to be collapsed at a point between its connection to the main reservoir and the discharge-slit 12.

The nature and scope of the present invention having been indicated and its preferred embodiment having been specifically described, what is claimed as new, is:

1. A closure for collapsible paste tubes comprising a rubber nipple, cylindrical in form, having a slit through its side wall, and a collar frictionally engaging the outer surface of the nipple and slidable on the nipple to and from a position over said slit.

2. An auxiliary tube or substitute cap for collapsible adhesive tubes comprising an elastic rubber nipple tubular in shape and having its outer end slabbled off in an oblique section providing a flat smooth surface adapted for use as a spreader of the adhesive, said nipple having a normally-closed discharge-slit at its outer end, said tubular wall of the nipple being sufficiently firm to permit said end-wall to be used as a spreader without collapsing the tube and without expelling the contents thereof through said discharge-slit.

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