Oct. 10, 1933. W. A. ROSELLE 1,929,794

COLLAPSIBLE TUBE CLOSURE

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Fig. 1.

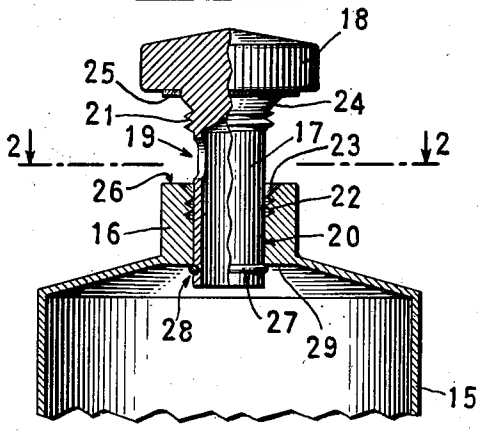


Fig. 2.

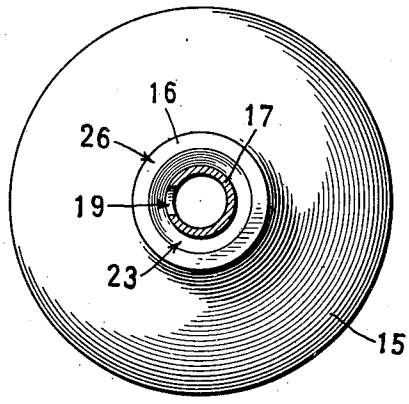


Fig. 3.

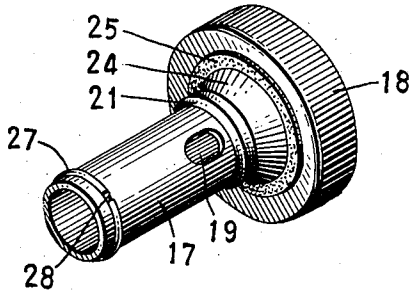


Fig. 4.

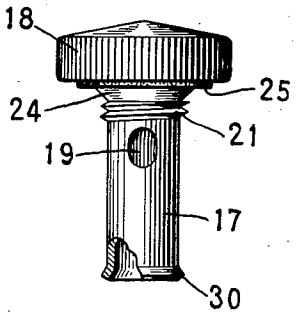
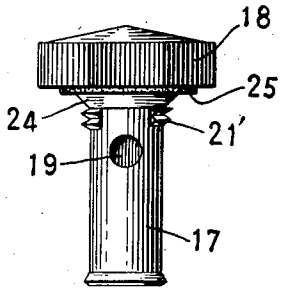


Fig. 5.



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Fig. 6.

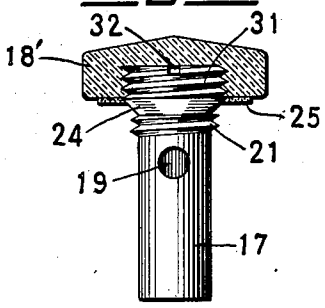


Fig. 7.

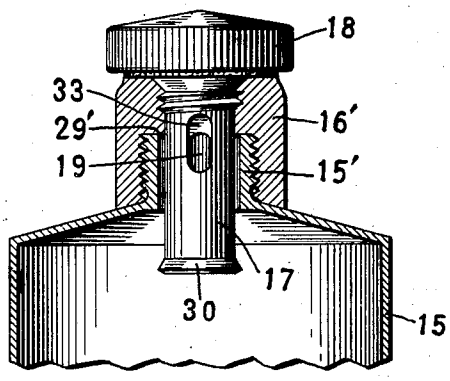


Fig. 11.

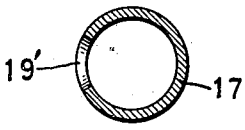


Fig. 8.

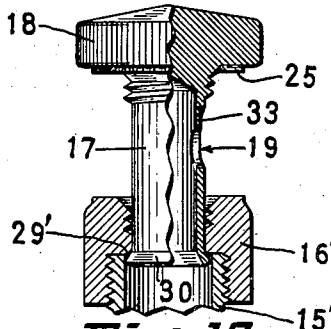


Fig. 9.

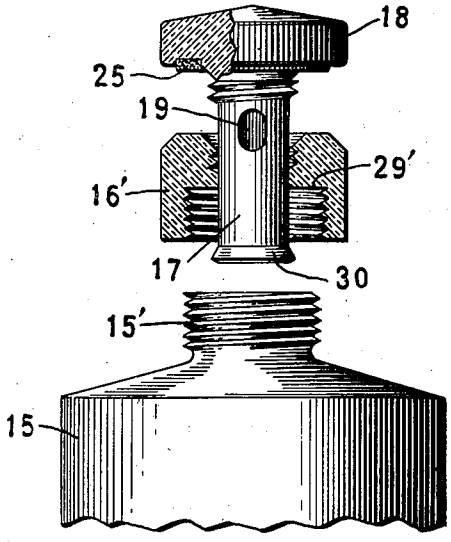
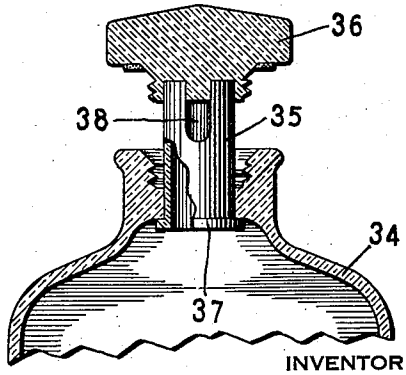


Fig. 10.



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COLLAPSIBLE TUBE CLOSURE

Walter A. Roselle, New York, N. Y.

Application April 22, 1933. Serial No. 667,311

4 Claims. (Cl. 221—60)

My invention relates to dispensing devices and is especially directed to what are commonly termed collapsible tubes for pastes and the like.

The main object is to provide a simple, inexpensive form of device which is normally sealed or tightly closed but which can be readily opened for discharge of the contents without removing the closure device.

The invention contemplates the use of a sliding tube having a discharge outlet and adapted to be tightly seated in the container by means of a screw thread or similar camming device. This tube is provided with a knob or finger piece for actuating it and is so mounted that it is not ordinarily detached. The closure device may be applied directly to the container or formed as an attachment for a container.

The invention is susceptible of many modifications in detail, some of which are illustrated in the accompanying drawings.

Fig. 1 is a vertical sectional view of a fragment of one form of container with the outlet and closure device protruded to expose the outlet opening.

Fig. 2 is a transverse sectional view on the plane of the line 2—2 of Fig. 1.

Fig. 3 is a perspective view of the closure and outlet device.

Figs. 4 and 5 are side views of the closure and outlet device showing modifications.

Fig. 6 is a side view and partial section showing another modification of the outlet and closure.

Fig. 7 is a sectional and side view of another modification closed, the closure device being of a removable type.

Fig. 8 is a sectional and side view of the form shown in Fig. 7—but open.

Fig. 9 is a section and side view of parts similar to Figs. 7 and 8 but with the closure removed from the container.

Fig. 10 is a sectional view showing another form.

Fig. 11 is a transverse section of the outlet tube with a modified discharge passage.

In the form shown in Figs. 1 and 2, the container 15 constitutes the body which may be of the collapsible or other suitable type. This body is provided with a neck 16 which may be integral with it.

The movable part of the closure device includes a tube 17 which is open at its inner end and provided with a knob or finger piece 18 at its outer end, which may be integral therewith. The tubular portion is provided with an outlet or discharge opening 19 of any suitable size and shape. This tube is mounted to slide in a passageway 20 in the neck in which it has a sliding fit. The tube is also provided with a threaded portion 21 adapted to be screwed into a threaded seat 22 inside the neck.

Sealing means should also be provided which is sufficiently tight to prevent evaporation of moisture from the container. One form of such sealing means consists of a tapered or conical valve seat 23 in the outer end of the neck with which a correspondingly shaped valve portion 24 is adapted to coact. In some forms of the device I may also provide an additional sealing means consisting of a yielding washer 25 adapted to seat against the outer end of the neck at 26. Such a washer may be formed of cork or other suitable material.

Various forms of devices may be employed to limit the outward movement of the sliding discharge tube, such for instance as a split spring ring 27 which may fit in the groove 28 in the outer wall of the tube 17. The inner wall 29 serves as an abutment for this ring.

This ring may be applied from the inside of the container before it is closed at the end or by making the groove 28 deep enough that the ring 27 may be contracted into the groove so as to permit the tube and its ring to be inserted into the outer end of the neck 16 so that it can snap outward into its expanded position, as shown in Fig. 1, and then be held against accidental detachment.

When the closure device is in the position shown in Fig. 1 it is obvious that there is a passageway from the interior of the container through the tube 17 and out through the discharge orifice 19. When the device is to be closed it is simply necessary to push the sliding tube inwardly and turn it until the screw threads 21 or the cone seat 24 or the washer 25 is tightly seated. In fact, it is desirable that all three of these features be arranged to contribute toward the closing of the device so that if any one of the three is defective the other two means will serve to maintain a tight closure. In fact, with the three means mentioned any two may be defective without permitting evaporation to take place. Such a construction is highly desirable for the dispensing of compositions such as tooth pastes, which contain highly volatile substances and that become hard and substantially useless if the volatile substances are permitted to evaporate.

In the construction shown in Fig. 4 the lower

end of the tube 17 is flared or flanged outwardly at 30. This may be effected in any suitable manner after the parts are assembled. In case the tube is made of metal this flange would be made in the ordinary method of flanging or spreading metal—usually when cold. In case the tube is made of a non-metallic composition the flanging may be effected, for instance, by means of a heated expanding tool.

In Fig. 5 is shown a form in which segmental cams or threads 21' are provided. These would ordinarily be used with corresponding segmental threads in the neck of the container. This figure also shows a circular outlet 19 instead of the elongated outlet of Figs. 3 and 4.

In Fig. 6 I have shown another modification in which the knob 18' is formed separately from the tube and secured to it in any suitable manner as, for instance, by molding or screwing it onto a threaded portion 31 on the outer end of the tube. The outer end of the tube will be closed and may be provided with a slot 32 to permit the application of a suitable tool for unscrewing the tube from the neck of the container in case the knob 18' is removed.

In the construction shown in Fig. 7 the container 15 has an integral neck 15' which is screw threaded on the outside. The member 16' constitutes a collar or supplemental neck which screws onto the neck 15' of the container so as to form an extension. This collar 16' may be screwed tightly on the container neck so that it would not ordinarily be removed. In this case the inner end of the tube 17 will be provided with a flange 30 which may be designed to abut against the inner part 29' to limit the outward movement of the tube. In this form of device I have also shown a recess 33 which is an extension from the passage 19 and which may serve as an overflow to receive excess contents which may be present when closing the device.

Fig. 8 shows the construction of Fig. 7 but with the discharge tube protruded.

Fig. 9 shows a device substantially the same as that shown in Figs. 7 and 8 but with the sealing washer 25 partially embedded in the undersurface of the knob 18 and omitting the recess 33.

Fig. 10 shows a modified form of container 34 and a sliding tube 35 provided with a separately formed knob 36 molded or otherwise attached to the tube. The inner end of the tube is provided with a flange 37 which may be pre-formed so that the knob is applied to the tube after the tube has been inserted from the inside of the container. In this case the outlet 38 is formed as a slot in the outer end of the tube 37. Otherwise the construction and method of operation are substantially the same as previously described.

In Fig. 11 I have shown a tube 17 with a discharge orifice 19' which is conical so that the outer end is of greater area than the inner end, thus making it possible to remove from the orifice practically all of the paste which may be contained in it all the way down to the inner surface of the tube.

It should be understood that the container as well as the closure device may be formed of any suitable material such as metal, or molded composition.

It should also be understood that the container and closure device may be made of different materials.

I claim:—

1. A collapsible paste container having an integral neck with a smooth guide passage and having a stop shoulder at the inner end of the guide passage and an internally threaded screw seat at its outer end, a discharge outlet tube slidable and rotatable in said passage and having an externally screw threaded portion coacting with the said screw seat and having a lateral discharge outlet near said screw threaded portion, a stop coacting with the stop shoulder for limiting the outward protrusion of the tube when the outlet is close to the outer end of the neck, said tube being freely rotatable to adjust the position of the outlet when the outlet is exposed, a knob on the outer end of the tube forming a finger piece for actuating the tube and a valve seat and valve for sealing the joint between the tube and the outer end of the neck to prevent evaporation from the paste.

2. A closure for a collapsible paste container comprising a neck having a smooth guide passage and an internally threaded screw seat, a discharge outlet tube slidable and rotatable in said passage and having an externally screw threaded portion coacting with the said screw seat and having a lateral discharge outlet and a recess in the outer wall of the tube adjacent the outer end of the discharge outlet to receive excess paste which may be forced out when closing the tube, a stop for limiting the outward protrusion of the tube when the discharge outlet is exposed, a knob on the outer end of the tube forming a finger piece for actuating the tube and means for sealing the joint between the tube and the outer end of the neck to prevent evaporation from the paste in the tube.

3. A collapsible paste container closure comprising a neck having a smooth guide passage and an internally threaded screw seat at its outer end, a discharge outlet tube slidable in said passage and having an externally screw threaded portion coacting with the said screw seat and having a lateral discharge outlet tapered outwardly to form a recess around the outer part of the outlet to receive excess paste which may be forced out when closing the tube, a knob on the outer end of the tube forming a finger piece for actuating the tube, and means for sealing the joint between the tube and the neck to prevent evaporation from the paste.

4. A closure for a paste container comprising a neck having a smooth guide passage with a screw threaded seat and a conical valve seat immediately adjacent the threaded seat, an outlet tube rotatably and slidably guided in the passage and having a screw threaded portion coacting with the screw threaded seat and having a conical valve portion coacting with the valve seat and a resilient washer around the conical valve portion, said tube having an actuating finger piece at its outer end, said tube being freely rotatable in said passage and being open at its inner end and having an outlet for paste adjacent the screw threaded portion, and a stop device at the inner end of the tube coacting with the inner end of the neck to prevent complete withdrawal of the tube, the length of the tube and the location of the outlet being such with relation to the stop that the outlet is exposed close to the outer end of the neck when the tube is extended.

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