F. L. FOX.

DISPENSING TUBE AND CLOSURE THEREFOR, AND METHOD OF JOINING SAME.

APPLICATION FILED OCT. 20, 1920.

1,424,243. Patented Aug. 1, 1922.

Fig. 1.

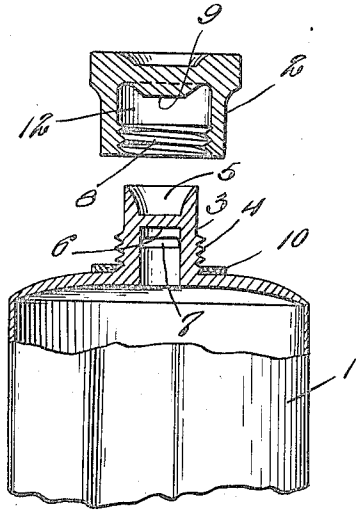


Fig. 2.

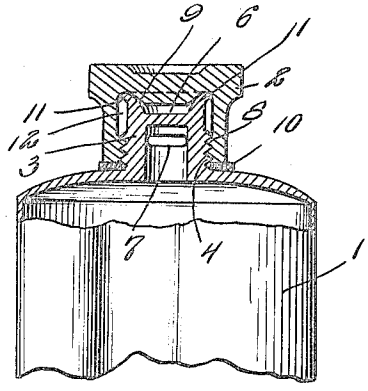


Fig. 4.

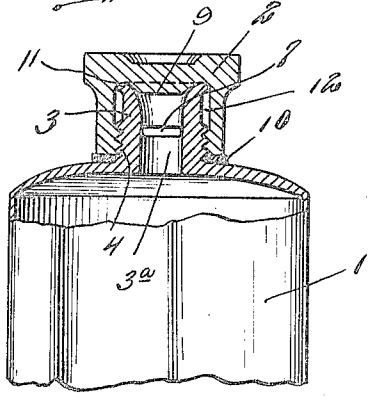
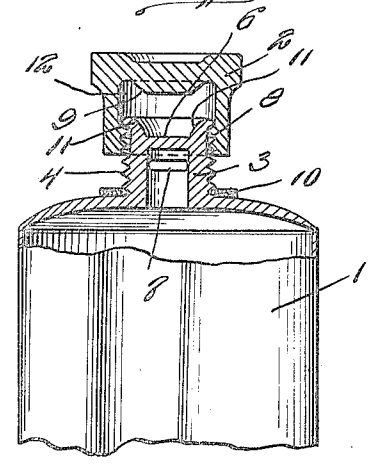


Fig. 3.



Witnesses:

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DISPENSING TUBE AND CLOSURE THEREFOR, AND METHOD OF JOINING SAME.

1,424,243. Specification of Letters Patent. Patented Aug. 1, 1922.

Application filed October 20, 1920. Serial No. 418,153.

To all whom it may concern:

Be it known that I, FREDERICK L. FOX, a citizen of the United States, residing at Washington, in the District of Columbia, have invented new and useful Improvements in Dispensing Tubes and Closures Therefor, and Methods of Joining Same, of which the following is a specification.

It has been found desirable to provide tubes or bottles, particularly compressible dispensing tubes for tooth-paste, toilet cream and similar substance, with closures permanently connected therewith so as to obviate the likelihood of a closure being misplaced or lost during use on its complementary tube.

With the foregoing in view, the object of my present invention is the provision of a collapsible tube or other tube, bottle or container with an improved closure permanently attached thereto; the said container and closure and the permanent connection of the two being characterized by ease and cheapness of production, by simplicity due to the avoidance of the employment of extraneous means in effecting the connection, by compactness and neat appearance, and by the capacity of the combination to effectively prevent casual movement of the opened closure and consequent interference of the same with a tape of paste or cream expressed from the tube.

To the attainment of the foregoing, the invention consists in the improvement as hereinafter described and definitely claimed.

In the accompanying drawings, forming part hereof:—

Figure 1 comprises disconnected sections of the container and closure as they appear precedent to their connection of themselves.

Figure 2 is a section showing the container and closure after the connection of the latter to the former; the closure being shown in hermetically sealed position.

Figure 3 is a similar view showing the permanently connected closure in open position.

Figure 4 is a view similar to Figure 2 of a modification hereinafter explicitly referred to.

Similar numerals designate corresponding parts in Figures 1 to 3 to which reference will first be made.

My invention is designed more especially, though not necessarily, for use as part of those compressible tubes that are formed of soft metal or alloy and are ordinarily filled at the rear end thereof with tooth paste or the like after which the said end is hermetically sealed or closed. The tube which is shown as one type of container is numbered 1, and the closure complementary to said tube or container is numbered 2. As shown in Figure 1 the tube or container is provided at its forward end with a spout 3, of soft metal or alloy, and preferably integral with the tube. This spout 3 has its base portion exteriorly threaded at 4, and the interior of its outer end flared as indicated by 5. In the spout at an intermediate point in the length thereof is an imperforate transverse wall 6, and at a point between said wall 6 and the interior of the tube 1 the spout is provided with a discharge aperture 7 that is of oblong form as shown when it is desired to impart to the expressed paste a tape or ribbon form, though it may be of any other configuration without affecting my invention.

It is feasible to make the closure 2 of metal, glass or other materials. The said closure is of general cap form, and is characterized by an internal thread 8 complementary to the thread 4, and by an interior taper or mandrel portion 9; the latter being disposed at the inner side of the end wall of the closure.

An annular gasket 10 is preferably employed on the end of the tube or container 1, about the base of the spout 3.

In the best practice of my invention of which I am cognizant, the closure 2 shown in Figure 1 is screwed on the nozzle 3 to the extent illustrated in Figure 2 and the tube or container 1 is then filled at the rear end thereof or at any other point with tooth paste or other substance, after which said end or other filling point is closed, when the device will be ready for market and use. The closure 2 may be screwed home as stated by hand or by machinery without affecting my invention, and the said initial closing operation will be attended by the flanging of the outer end of the spout 3, as indicated by 11, through the medium of the taper or mandrel portion 9 of the closure. This will be readily appreciated as an important feature of my invention when it is pointed out that the operation of initially applying the closure brings about the flang-

ing of the nozzle, and the flange 11 serves, in turn, to permanently connect the tube or container and the closure so that there is no liability of the closure being misplaced; also, when it is made clear that the tube or container and the closure are connected of themselves—i. e., without the assistance of other means, which together with the making of the flange coincident with and by the making of the initial closure contributes materially to economy in the use of materials and in the manufacture of the improved device, and this in the fabrication of a closure that is compact and neat in appearance.

When it is desired in the use of the novel device to discharge a portion of the contents of the tube or container 1, the closure 2 is unscrewed to the extent shown in Figure 3, and the tube or container 1 is compressed in the conventional manner with the result that a ribbon of tooth paste will be discharged through the aperture 7. Manifestly with the closure 2 positioned as shown in Figure 3, the spout thread 4 will preclude casual rectilinear inward movement of the opened closure, and hence there is no liability of the opened though permanently attached closure contacting or otherwise interfering with the ribbon of paste or portion of other substance that is being ejected from the tube or container. Again it will be understood that when the closure is fully opened, the closure thread is carried out of engagement with the spout thread, and from this it follows that rough or careless opening of the closure will not result in stripping of or other injury to the threads; and in this connection it will also be apparent that the flange 11 by cooperation with the smooth-bore portion 12 of the closure which portion 12 is of larger interior diameter than the threaded portion 8, assures alinement of the closure with the spout so that there is no liability of the threads being distorted or injured by a careless attempt to screw the closure home.

I have illustrated in Figure 4 a modification in which the spout 3^a is provided with a discharge aperture 7 but lacks the partition 6 before described as part of the embodiment illustrated in Figures 1–3. The partition 6 precludes the possibility of any of the substance discharged from the container or tube gaining access to the interior of the closure, and is advantageous for that reason. It will be noted, however, that aside from said advantage the embodiment shown in Figure 4 is possessed of all of the advantages hereinbefore ascribed to that shown in Figures 1 to 3.

Having described my invention, what I claim and desire to secure by Letters-Patent, is:—

1. The combination with an exteriorly threaded spout, of a closure, interiorly threaded near its open end and screwed on the spout and provided with a recessed side wall beyond the threaded portion and also provided with means to displace a portion of the spout and thereby effect attachment of the closure to the spout incident to the initial threaded connection of the closure to and on the spout.

2. The combination with an exteriorly threaded spout, of a closure, interiorly threaded near its open end and screwed on the spout and provided with a recessed side wall beyond the threaded portion and also provided with a mandrel to flange the outer end of the spout and thereby effect attachment of the closure to the spout into said recess incident to the initial threaded connection of the closure to and on the spout.

3. The combination with a spout having an exteriorly threaded portion and a smooth exterior portion beyond the threaded portion, of a closure having an interiorly threaded portion and a larger smooth-bore portion beyond said threaded portion and also having means to displace a portion of the spout outwardly and thereby effect attachment of the closure to the spout incident to the initial threaded connection of the closure to and on the spout.

4. The combination with a spout having an exteriorly threaded portion and a smooth exterior portion beyond the threaded portion, of a closure having an interiorly threaded portion and a larger smooth-bore portion beyond said threaded portion and also having a mandrel to flange the spout and thereby effect attachment of the closure to the spout incident to the initial threaded connection of the closure to and on the spout.

5. The method of permanently attaching a threaded closure to a threaded spout which consists in displacing a portion of one by the other incident to the thread connection of the two.

6. The method of permanently attaching a threaded closure to a threaded spout which consists in flanging one by the other incident to the thread connection of the two.

7. The method of permanently attaching a threaded closure to a threaded spout which consists in displacing a portion of the spout by a portion of the closure incident to the thread connection of the two and thereby providing closure-retaining means for cooperation with the thread of the closure.

8. The method of permanently attaching a threaded closure to a threaded spout which consists in flanging the end of the spout by a mandrel of the closure incident to the thread connection of the two and thereby providing closure-retaining means for cooperation with the thread of the closure.

9. The combination with a spout having an exteriorly threaded portion and a smooth

exterior portion beyond the threaded portion, of a closure having an interiorly threaded portion and a larger smooth-bore portion beyond said threaded portion and also having means to displace a portion of the spout outwardly and thereby effect attachment of the closure to the spout incident to the initial threaded connection of the closure to and on the spout; the said spout having a discharge aperture at an intermediate point of its length.

10. The combination with a spout having an exteriorly threaded portion and a smooth exterior portion beyond the threaded portion, of a closure having an interiorly threaded portion and a larger smooth-bore portion beyond said threaded portion and also having means to displace a portion of the spout outwardly and thereby effect attachment of the closure to the spout incident to the initial threaded connection of the closure to and on the spout; the said spout having a discharge aperture at an intermediate point of its length, arranged inwardly of the outer end of the spout thread.

11. The combination with a spout having an exteriorly threaded portion and a smooth exterior portion beyond the threaded portion, of a closure having an interiorly threaded portion and a larger smooth-bore portion beyond said threaded portion and also having means to displace a portion of the spout outwardly and thereby effect attachment of the closure to the spout incident to the initial threaded connection of the closure to and on the spout; the said spout having a discharge aperture at an intermediate point of its length, arranged inwardly of the outer end of the spout thread and being closed beyond said aperture.

12. The combination with a spout having an exteriorly threaded portion and a smooth exterior portion beyond the threaded portion, of a closure having an interiorly threaded portion and a larger smooth-bore portion beyond said threaded portion and also having means to displace a portion of the spout outwardly and thereby effect attachment of the closure to the spout incident to the initial threaded connection of the closure to and on the spout; the said spout having a discharge aperture at an intermediate point of its length arranged inwardly of the spout thread and being open beyond said aperture and open at its outer end.

13. The combination of a threaded spout and a threaded closure, one of the said elements constructed and arranged to distort a portion of the other incident to the thread connection of the two and thereby connect the two of themselves.

14. The combination of a threaded spout and a threaded closure, one of the said elements constructed and arranged to distort a portion of the other incident to the thread connection of the two and thereby connect the two of themselves, and the spout having a lateral discharge aperture at an intermediate point in its length.

15. The combination of a threaded spout and a threaded closure, one of the said elements constructed and arranged to distort a portion of the other incident to the thread connection of the two and thereby connect the two of themselves, and the spout having a laterally disposed aperture at an intermediate point of its length and inwardly from the outer end of its thread.

16. The combination of a spout, and a closure therefor, one of the said elements constructed and arranged to distort a portion of the other incident to the connection of the two and thereby connect the two of themselves.

In testimony whereof, I affix my signature.

FREDERICK L. FOX.