Nov. 25, 1930. W. C. UDE 1,782,980

COLLAPSIBLE TUBE

Filed Aug. 10, 1929

Fig. 1.

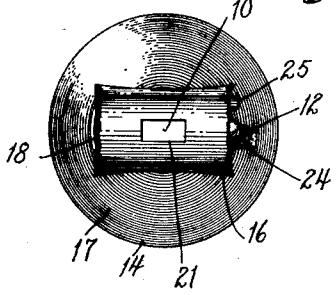


Fig. 3.

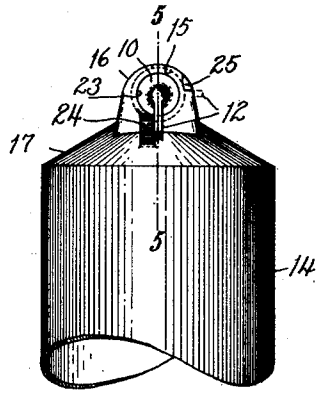


Fig. 2.

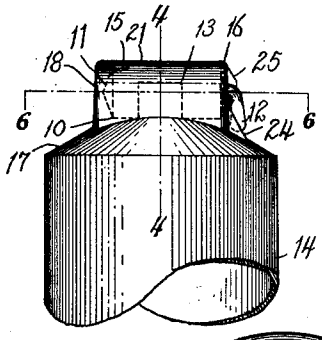


Fig. 4.

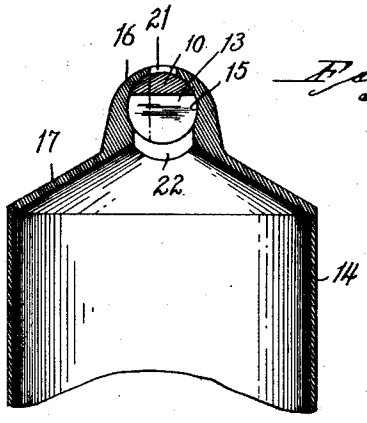


Fig. 6.

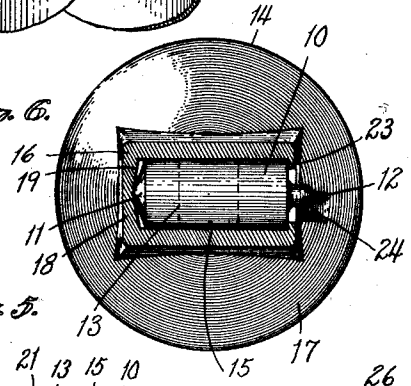


Fig. 5.

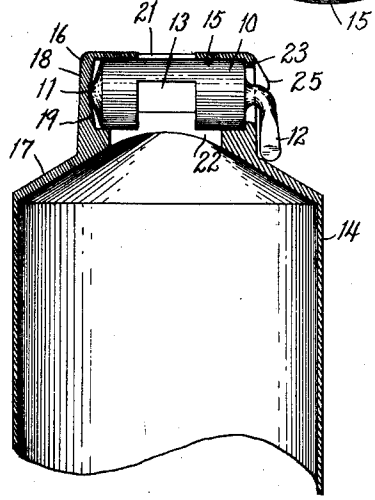
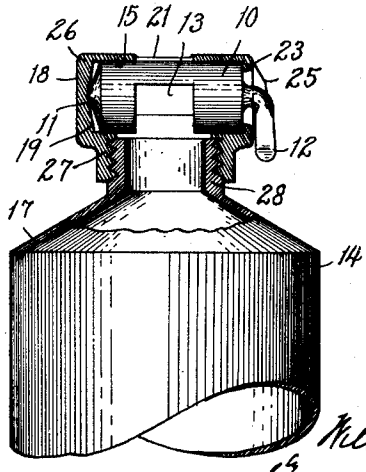


Fig. 7.



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Patented Nov. 25, 1930

1,782,980

UNITED STATES PATENT OFFICE

WILLIAM C. UDE, OF EAST HAVEN, CONNECTICUT

COLLAPSIBLE TUBE

Application filed August 10, 1929. Serial No. 384,865.

This invention relates to an improvement in collapsible tubes such as are employed as are containers for tooth paste and other viscous material and relates in particular to an improvement in the closure-means for the discharge-openings of such tubes.

I am aware that many efforts have been made to provide collapsible tubes with permanently-installed rotary closures but they have all been open to various objections, among which may be mentioned high cost, which is due mainly to the mode of mounting the closures in the head or cap of the collapsible tube.

The main object of this invention is to provide a simple, reliable and convenient oscillating closure-means for collapsible tubes constructed with particular reference to ease of assembly and low cost for manufacture.

With the foregoing and other objects in view, my invention consists in a collapsible tube having certain details of construction and combinations of parts as will be hereinafter described and particularly recited in the claims.

In the accompanying drawings:

Fig. 1 is a top or plan view of a collapsible tube embodying my invention;

Fig. 2 is a broken side view thereof;

Fig. 3 is a view corresponding to Fig. 2 but viewing the tube from a right angle thereto;

Fig. 4 is a vertical central sectional view on an enlarged scale taken on the line 4—4 of Fig. 2;

Fig. 5 is a similar view taken on the line 5—5 of Fig. 3;

Fig. 6 is a transverse sectional view taken on the line 6—6 of Fig. 2; and

Fig. 7 is a vertical central sectional view corresponding to Fig. 5 but showing the closure mounted in a removable cap which is threaded onto the collapsible tube proper.

In carrying out my invention as shown in Figs. 1 to 6 inclusive, I employ an oscillatable closure 10 of cylindrical form terminating at one end in a conical bearing-terminal 11 and at its opposite end provided with a radially-offsetting finger-lever 12.

Extending diametrically across the closure 10 at a right angle to the finger-lever 12 is a notch-like passage 13 which when turned into proper position, as will hereinafter appear, provides for the outward flow of tooth paste or other viscous material contained within the collapsible tube 14.

The oscillatable closure 10 is mounted in a cylindrical socket 15 formed in an integral boss 16 rectangular in cross-section and upstanding from the head-portion 17 of the collapsible tube 14. The said cylindrical socket 15 is open at one end, as shown, and is closed at its opposite end by a wall 18 formed integral with the boss 16 and having its inner face shaped to form a conical seat 19 for engagement with the adjacent conical end 11 of the closure 10 aforesaid.

The upper end of the boss 16 is formed with a rectangular egress-passage 21 opening through its outer end and intersecting the socket 15 in which the closure 10 is mounted.

In line with the egress-passage 21 but diametrically opposite the same is a passage 22 connecting the interior of the collapsible tube 14 with the notch-like passage 13 of the closure 10 and hence with the egress-passage 21, when the said closure is turned into the position indicated by broken lines in Figs. 3 and 4.

For the purpose of retaining the oscillatable closure 10 in place in the socket 15 with its conical terminal 11 in substantial engagement with the conical bearing-surface 19, I swage or otherwise inwardly force a portion of the metal surrounding the open end of the socket 15, as most clearly shown in Figs. 5 and 6, to form a retaining-flange 23 which, as shown, is of annular form but may, if desired, be modified to bear at one or more separate points against the outer end of the closure 10.

To limit the oscillatory movement of the closure 10 to a one-quarter turn as required to cause the notch-like passage 13 thereof to connect the passage 22 and the egress-passage 21, I form a vertical stop-rib 24 at the junction of the head-portion 17 and the boss 16, as clearly shown in Figs. 2 and 3, and also form a stop-lug 25 at a right angle thereto near the periphery of the boss 16.

In Fig. 7 I have shown the oscillatable closure 10 as mounted in a cap 26 having the same

general features as the boss 16 before described and formed in its lower end in line with its passage 21, with an internally-threaded socket 27 adapted to receive the externally-threaded tubular stem 28 projecting upward from the head-portion 17 of a collapsible tube 14.

By turning the finger-lever 12 from the position in which it is shown by full lines in Fig. 3 into the position in which it is shown by broken lines in the same figure, the notch-like passage 13 will be caused to register with both the passage 22 and the egress-opening 21, as indicated by broken lines in Fig. 4, so as to permit the tube to be collapsed by finger pressure for the expulsion of its contents.

When the finger-lever 12 is swung into the position in which it is shown by full lines in Figs. 1 to 6 inclusive, the notch-like passage 13 is moved out of alignment with the egress-opening 21 and effectually seals the same and hence seals the tube against the escape of its contents.

By providing the sloping stop-rib 24 as shown, the danger of the finger-lever 12 being accidentally turned is minimized.

I would also call attention to the fact that by differentially tapering the terminal 11 of the closure 10 and the inner face 19 of the wall 18, I localize their bearing-surfaces and minimize the danger of binding the said closure when the metal of the boss 16 is swaged inward as at 23 to retain the closure in place.

I claim:

1. A collapsible tube having a cylindrical oscillatable closure formed with a transverse passage and mounted in a cylindrical socket in the outer end of the said tube, the said socket being open at one end and formed with a seat at its opposite end for engaging the adjacent end of the said closure and having the metal surrounding this open end forced inward after the insertion of the said closure to partly close the said opening of the socket and retain the closure in place therein against endwise displacement.

2. A collapsible tube having a cylindrical oscillatable closure formed with a transverse passage and with a conical inner end and mounted in a cylindrical socket in the outer end of the said tube, the said socket being open at one end and having a conical seat at its opposite end for engagement with the adjacent conical end of the said closure and having the metal surrounding this open end forced inward after the insertion of the said closure to partly close the said opening of the socket and retain the closure in place therein against endwise displacement.

In testimony whereof, I have signed this specification.

WILLIAM C. UDE.