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CAP FOR COLLAPSIBLE TUBES

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Fig. 1.

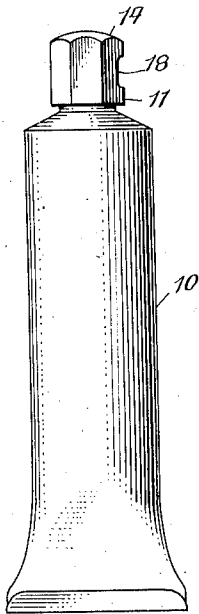


Fig. 2.

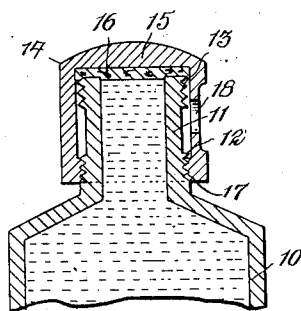


Fig. 3.

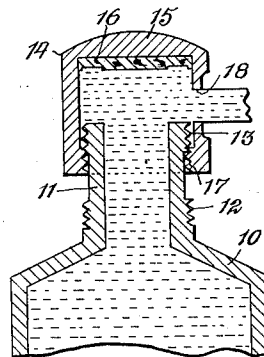


Fig. 4.

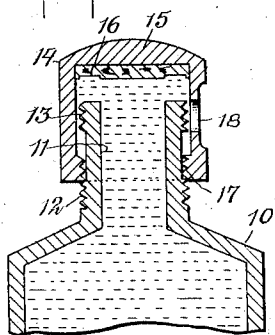


Fig. 5.

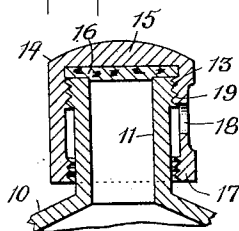
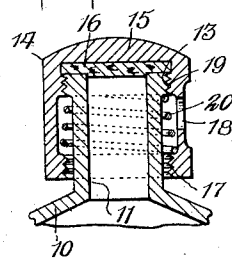


Fig. 6.



WITNESSES

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CAP FOR COLLAPSIBLE TUBES

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An object of the invention is to provide a cap for a collapsible tube having a limited movement on the tube neck and being provided with an outlet through which the contents of the tube may be exuded.

Another object of the invention is to provide the cap with a lateral outlet which is disposed at a side of the tube neck when the tube is sealed by the engagement of the head of the cap with the outer end of the tube neck.

Still other objects of the invention are to provide resilient means for holding the cap yieldingly extended on the neck of the tube and to provide means for securing the cap against movement relatively to the tube.

Additional objects of the invention are to provide means to shear off the exuded contents of the tube as desired; to provide means for measuring a definite quantity of the contents of the tube as desired; to provide means to prevent the stripping of the threads on the cap or tube and to prevent the possible cross-threading of the threads on the cap and tube; to provide means to prevent the possible loss of the compressible gasket on the cap; and to provide means to permit of the removal of the cap from the tube when desired.

The invention also comprehends a collapsible tube having a cap for securing means for holding the cap to close the neck of the tube, the cap having a limited movement on the neck when freed from the said securing means to permit of the outward movement of the cap on the neck under the pressure of the contents of the tube when the tube is squeezed, thereby opening communication from the neck of the tube to an outlet in the side of the cap.

Additional objects of the invention will appear in the following specification in which the preferred form of the invention is described.

In the drawing similar reference characters refer to similar parts in all the views, of which

Figure 1 is a side elevation illustrating a tube provided with the improvement which is the subject matter of this application,

Figure 2 is an enlarged fragmentary sectional view illustrating a portion of the tube with its neck and the cap secured thereto to close the outer end of the neck,

Figure 3 is a sectional view similar to the view illustrated in Figure 2, but with the cap moved outwardly to permit the contents of the tube to be exuded through an outlet in a side of the cap,

Figure 4 is a sectional view similar to the views illustrated in Figures 2 and 3, but showing the cap free to move outwardly on the neck of the tube when the tube is pressed to force its contents through the neck and against the head of the tube,

Figure 5 is a fragmentary sectional view illustrating a modified form of the invention, and

Figure 6 is a fragmentary sectional view illustrating another modified form of the invention.

By referring to the drawing it will be seen that the collapsible tube 10 has a neck 11 with an external thread 12 at the inner end of the neck and an external thread 13 at the outer end of the neck. Disposed on the neck 11 there is a cap 14 having a head 15 with a gasket 16 for closing the outer end of the neck, the cap 14 having at its inner end an inner thread 17 which is provided for meshing with the thread 12 and also with the thread 13 on the neck 11. It will also be seen that the side of the cap 14 is provided with an outlet 18 which, when the thread 17 on the cap meshes with the thread 12 on the neck, will be disposed at the outer side of the neck 11, as illustrated in Figure 2.

It will be understood that the cap 14 may be disposed on the neck 11 in the position illustrated in Figure 4 by screwing the thread 17 on the cap 14 on the thread 13 on the neck 11, when the thread 17 on the cap 14 may engage the thread 12 on the neck 11, as may be desired.

In using the invention, the cap 14 at its thread 17 may be freed from the thread 12 on the neck 11, as illustrated in Figure 4, when the tube may be squeezed to press its contents through the neck 11 and against the head 15 or the gasket 16 to move the cap

14 outwardly, the outward movement of the cap 14 being limited by the engagement of the thread 17 on the cap with the thread 13 on the neck. With a further pressure
 5 against the sides of the tube, more of the contents of the tube will be exuded through the outlet 18 at the side of the cap 14, as illustrated in Figure 3. When sufficient of the contents of the tube have been exuded,
 10 the cap 14 may be pressed downwardly on the neck 11, which will return some of the contents of the tube back through the neck 11 by means of the downward pressure on the head 15, the remainder of the contents
 15 of the tube passing out of the outlet 18. When the cap 14 has been moved downwardly where its thread 17 is positioned for meshing with the thread 12 on the neck 11, the cap may be rotated to secure the cap to the neck by the engagement of the thread
 20 17 with the thread 12, it being understood that with this downward movement the head 15 and the gasket 16 will press against the outer end of the neck 11 to seal the latter.

25 In the form of the invention illustrated in Figure 5 of the drawing, the construction is the same as has been described with reference to the form of the invention illustrated in Figures 2, 3 and 4, but in Figure 5
 30 the thread 12 on the neck 11 is omitted and there is an additional thread 19 at the side of the cap 14 adjacent its head 15. In this form of the invention the cap 14 is held in closed position on the neck 11 by the engagement
 35 of the thread 19 on the cap with the thread 13 on the neck, and the outward movement of the cap 14 relatively to the neck 11 is limited by the engagement of the thread 17 on the side of the cap with the
 40 thread 13 on the neck 11. In the form of the invention illustrated in Figures 2, 3 and 4 the outward movement of the cap 14 relatively to the neck 11 is limited by the engagement of the thread 17 on the cap with
 45 the thread 13 on the neck 11. In the form of the invention illustrated in Figure 5, the cap 14 is mounted on the neck 11 by meshing the thread 17 on the cap with the thread 13 on the neck until the thread 17 is dis-
 50 posed below the thread 13.

In the form of the invention illustrated in Figure 6 of the drawing, the construction is the same as that illustrated in Figure 5, but in Figure 6 there is a spiral spring 20
 55 disposed around the neck 11 and engaging the neck 11 at its thread 13, the other end of the spiral spring 20 engaging the side of the cap at its thread 17, it being understood that this spiral spring 20 serves to move the
 60 cap 14 downwardly on the neck 11 to a position where its thread 19 is disposed for meshing with the thread 13 on the neck 11.

What is claimed is:

1. A tube having a neck, a cap movably
 65 mounted on the neck and provided with a

lateral outlet through which the contents of the tube may pass from the neck when the cap is moved outwardly on the neck, means integral with the cap, means on the neck cooperating with the means on the cap to
 70 arrest the said outward movement of the cap, the said means permitting of the removal of the cap from the neck when desired, and means for securing the cap against outward movement on the neck when the cap is moved
 75 inwardly thereon.

2. A tube having a neck, a cap disposed for closing the neck and being provided with a lateral outlet, the cap being movable longitudinally of the neck from a position where
 80 the outlet is positioned adjacent the side of the neck to a position where the outlet is disposed beyond the outer end of the neck to permit the contents of the tube to pass from the neck through the outlet, and means in-
 85 tegral with the cap, means on the neck cooperating with the means on the cap to arrest the movement of the cap relatively to the neck in the second mentioned position, the said means permitting of the removal of the
 90 cap from the neck when desired.

3. A tube having a neck, a cap disposed for closing the neck and being provided with a lateral outlet, the cap being movable longitudinally of the neck from a position where
 95 the outlet is positioned adjacent the side of the neck to a position where the outlet is disposed beyond the outer end of the neck to permit the contents of the tube to pass from the neck through the outlet, means to secure
 100 the cap to the neck in the first mentioned position, and means integral with the cap and means on the neck cooperating with the means on the cap to arrest the movement of the cap relatively to the neck in the second
 105 mentioned position, the said means permitting of the removal of the cap from the neck when desired.

4. A tube having a neck member, a cap member for closing the neck member, one of
 110 the members having two threads spaced apart and the other member having a thread for meshing with either of the first mentioned threads, the cap member having an outlet through which the contents of the tube may
 115 pass from the neck when the cap is disposed in a predetermined position on the neck.

5. A tube having a neck member, a cap member for closing the neck member, one of
 120 the members having two threads spaced apart and the other member having a thread for meshing with either of the first mentioned threads, the cap member having an outlet through which the contents of the tube may pass from the neck when the cap is
 125 disposed in a predetermined position on the neck, and resilient means for holding the cap yieldingly in a predetermined position relatively to the neck.

6. A tube having a neck member open at 130

its outer end, a cap member having a head for engaging the outer end of the neck member for closing the latter and sides disposed at the sides of the neck member, the cap member having an outlet in a side, two threads spaced apart on one of the members, and a thread on the other member for meshing with either of the first mentioned threads.

7. A tube having a neck member open at its outer end, a cap member having a head for engaging the outer end of the neck member for closing the latter and sides disposed at the sides of the neck member, the cap member having an outlet in a side, two threads spaced apart on one of the members, a thread on the other member for meshing with either of the first mentioned threads, and resilient means for holding the cap member yieldingly in a predetermined position.

8. A tube having a neck open at its outer end, a cap having a head for engaging the outer end of the neck for closing the latter and sides extending adjacent the sides of the neck, the cap having an outlet in a side, two threads spaced apart on the neck, and a thread on the cap for meshing with either of the first two mentioned threads.

9. A tube having a neck open at its outer end, a cap having a head for engaging the outer end of the neck for closing the latter and sides extending adjacent the sides of the neck, the cap having an outlet in a side, two threads spaced apart on the cap, and a thread on the neck for meshing with either of the first two mentioned threads.

10. A tube having a neck open at its outer end, a cap having a head for engaging the outer end of the neck for closing the latter and sides extending adjacent the outer sides of the neck, the cap having an outlet in a side, two threads spaced apart on the cap, a thread on the neck for meshing with either of the first two mentioned threads, and a spiral spring disposed around the neck and engaging the neck at its thread and the cap at one of its threads.

11. A tube having a neck member, a cap member having a head for closing the neck member, a gasket in the cap member at its head for pressing against the neck member, one of the members having two threads spaced apart and the other member having a thread for meshing with either of the first mentioned threads, and the cap member having a lateral outlet through which the contents of the tube may pass from the neck when the cap is disposed in a predetermined position on the neck.

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