Nov. 27, 1951 R. R. HREN 2,576,509

SELF-SEALING CAP HAVING RELATIVELY AXIALLY SLIDABLE TUBULAR MEMBERS

Filed July 18, 1949

Fig. 1.

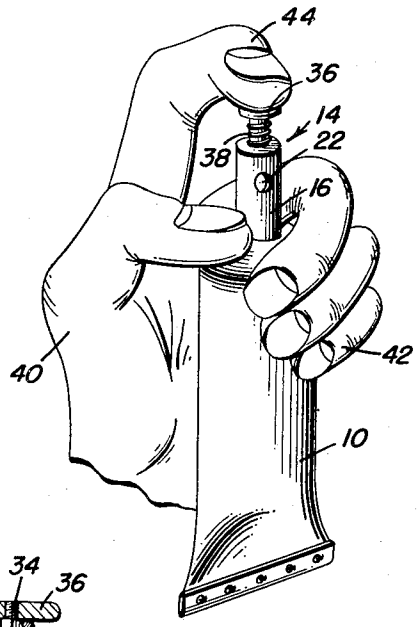


Fig. 2.

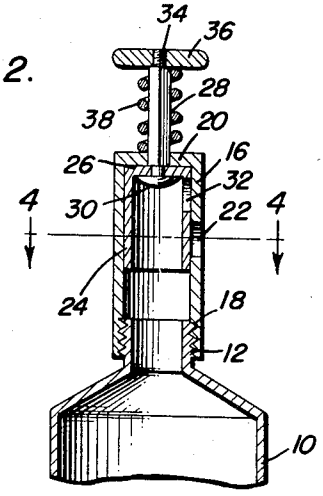


Fig. 3.

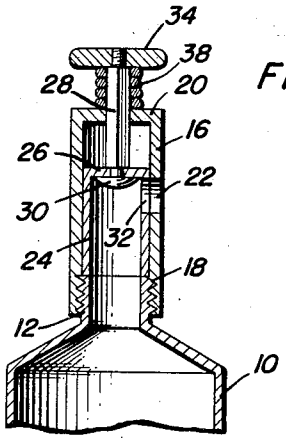
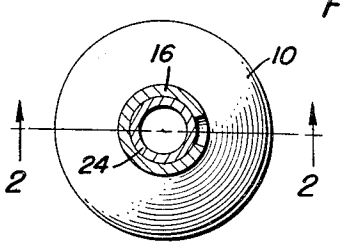


Fig. 4.



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SELF-SEALING CAP HAVING RELATIVELY AXIALLY SLIDABLE TUBULAR MEMBERS

Ralph R. Hren, Chisholm, Minn.

Application July 18, 1949, Serial No. 105,304

2 Claims. (Cl. 222—514)

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This invention relates to a self-sealing cap primarily designed for use with collapsible tubes retaining fluids to be dispensed such as tooth paste, shaving cream, salves and the like.

The primary object of this invention is to provide a self-sealing cap which will obviate the necessity of removing the conventional caps from the collapsible tubes each time fluid is to be dispensed for subsequent use. The present self-sealing cap will eliminate the dropping and eventual loss of the conventional caps, will save considerable time in dispensing fluids from the collapsible tubes, can be operated with one hand, will prevent the collapsible tube from becoming messy by eliminating overrunning fluid, and will effect an economy in the dispensing of the fluid inasmuch as the amount of fluid to be dispensed can be readily and easily controlled by the operator.

Another object of this invention is to provide in a collapsible tube, a self-sealing dispensing cap comprising an outer tubular member closed at the top and open at the bottom and adapted to removably receive the neck of the tube, an inner tubular member slidably received within the outer tubular member, a plunger secured to said inner member and extending through the top of said outer member, resilient means normally urging said inner member towards the top of said outer member, and dispensing apertures in said inner and outer members registrable with each other in response to a depression of the plunger.

These, together with various ancillary objects and features of the invention which will later become apparent as the following description proceeds, are attained by the device, a preferred embodiment of which has been illustrated by way of example only in the accompanying drawings, wherein:

Figure 1 is a perspective view of the cap shown attached to a collapsible tube and in position for dispensing a fluid therefrom;

Figure 2 is a sectional view taken substantially on the plane of section line 2—2 of Figure 4;

Figure 3 is a vertical sectional view through the cap shown in Figure 1; and

Figure 4 is a sectional view taken substantially on the plane of section line 4—4 of Figure 2.

Specific reference is now made to the drawings. In the several views in the accompanying drawings and in the following specification reference characters indicate corresponding elements throughout.

Indicated generally at 10 is a conventional collapsible tube for retaining such fluids as tooth paste, shaving cream, salves and the like and includes a threaded neck 12 from which the conventional threaded cap has been removed. The cap of the instant invention is indicated at 14 and comprises an outer tubular member 16 which is open at its bottom end and includes internal threads 18 for removably retaining the same on the neck 12 of the collapsible tube. The outer tubular member 16 is provided with a top 20 and a dispensing aperture 22 at a particular position in the side wall thereof.

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Slidably received within the outer tubular member 16 is an inner tubular member 24 which is also open at its bottom end and is provided with a top portion 26.

A plunger 28 is provided which extends through a suitable aperture in the top 20 of the outer tubular member and which is secured at its bottom end by means of a rivet 30 to the top member 26 of the inner tubular member 24. The plunger 28 is preferably squared to prevent any relative rotation of the inner tubular member with respect to the outer tubular member. At a particular position adjacent the top member 26, the side wall of the inner tubular member is provided with a dispensing aperture 32.

The upper free end of the plunger 28 is threaded as at 34 to removably retain a fingercap 36 and a coiled spring 38 is wound about the plunger and interposed between the top 20 of the outer tubular member and the fingercap 36. As shown clearly in Figure 2, the tension on the coil spring 38 is such as to normally urge the plunger and the associated inner tubular member upwardly toward the top 20 of the outer tubular member 16 so that the dispensing apertures 22 and 32 will be out of registry with each other to seal the collapsible tube 10.

In use, the conventional cap (not shown) is removed from the neck 12 of the collapsible tube 10 and the self-sealing cap 14 of the instant invention is screwed upon the neck portion 12 in a manner which will be readily understood. When the plunger 28 is not depressed, as shown in Figure 2, the inner tubular member 24 is seated adjacent the top 20 of the outer tubular member 16 so that the dispensing aperture 32 is out of registry with the dispensing aperture 22 effecting a seal whereby no fluid can be dispensed from the collapsible tube 10. When the collapsible tube 10 is grasped by the hand 40 and pressure is applied to the sides of the collapsible tube by means of the fingers 42, the index finger 44 presses down on the cap 36 and plunger 28 against the action

of the spring **38** so that the inner tubular member **24** moves downwardly to a position whereby the two dispensing apertures **32** and **22** are in registry with each other, as shown clearly in Figure 3, and the fluid contents of the tube will be forced out of the registered apertures **22** and **32**. A simple release of the plunger will cause the inner tubular member to move upwardly and cut off the supply of the fluid emitting from the collapsible tube in such a manner that there will be no overrunning fluid on the cap **14** or the collapsible tube **10**.

In view of the foregoing description taken in conjunction with the accompanying drawings, it is believed that a clear understanding of the device will be quite apparent to those skilled in this art. A more detailed description is accordingly deemed unnecessary.

It is to be understood, however, that even though there is herein shown and described a preferred embodiment of the invention the same is susceptible to certain changes fully comprehended by the spirit of the invention as herein described and the scope of the appended claims.

Having described the invention, what is claimed as new is:

1. In a collapsible tube, a self-sealing dispensing cap comprising an outer tubular member closed at the top and open at the bottom and adapted to removably receive the neck of the tube, an inner tubular member slidably received within the outer tubular member, a plunger secured to said inner member and slidably extending through the top of said outer member, said plunger being squared to prevent rotation of the inner tubular member, resilient means normally urging said inner member towards the top of said outer member, and dispensing apertures in said inner and outer members registrable with each other in response to a depression of the plunger.

2. The combination of claim 1 wherein the plunger includes a cap carried at its upper free end, and said resilient means includes a coil spring about said plunger and interposed between the plunger cap and the top of said outer tubular member.

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