Oct. 22, 1929. J. D. SMITH 1,732,571

RETAINING DEVICE FOR THE CLOSURES OF COLLAPSIBLE TUBES AND OTHER CONTAINERS

Filed Oct. 7, 1927

Fig. 1.

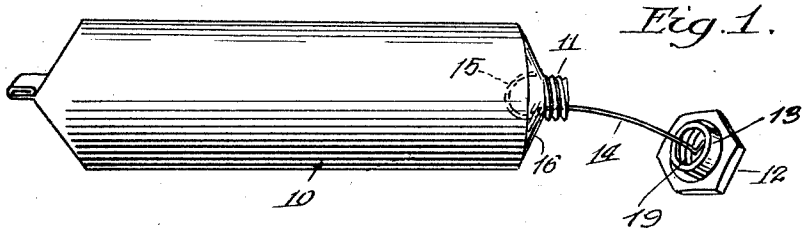


Fig. 2.

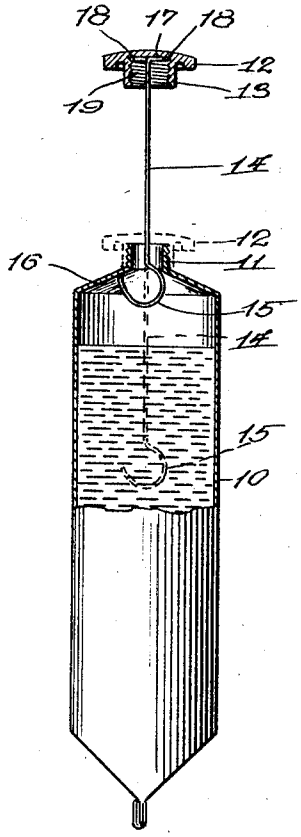


Fig. 3.

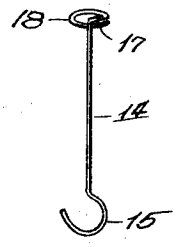


Fig. 5.

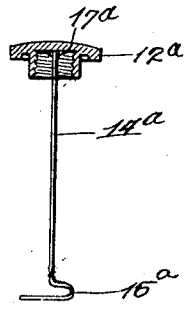


Fig. 4.

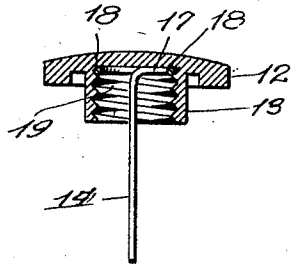
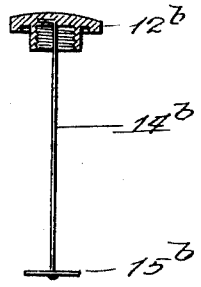


Fig. 6.



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UNITED STATES PATENT OFFICE

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RETAINING DEVICE FOR THE CLOSURES OF COLLAPSIBLE TUBES AND OTHER CONTAINERS

Application filed October 7, 1927. Serial No. 224,545.

This invention relates to a retaining device for the closures of collapsible tubes and other containers and its principal object is to provide a simple, efficient and practical connection between the closure and container which will permit the ready removal and replacement of the closure, but which will prevent the closure from being entirely disconnected from the container. Frequently when the cap or other closure is removed from a collapsible tube or other container, it falls to the floor or is misplaced, and has to be searched for, which causes considerable annoyance and waste of time. Certain containers are in the form of collapsible tubes which have caps that are provided with a screw connection with the containers, and the misplacement or loss of such screw caps is a common occurrence. One object of the present invention is to provide a connecting device between the container and the cap or other closure, which will not interfere with the discharge of the contents of the container and which may be easily attached to the container and closure, and which shall be simple and inexpensive in construction. The invention consists, therefore, in a retaining device in the form of a wire or other thin connecting member secured to one end of the cap or closure and adapted to extend through the opening in the neck of the container and having an enlargement or shoulder on the end contained within the container and of greater extent than the diameter of the opening in the neck, whereby the connecting member cannot be detached from the container except upon the application of great force. The invention further consists in a connecting member in the form of a short length of wire formed of light gauge spring material and having one end arranged for connection with the usual internal threads of a screw cap and the other end formed with a head or enlargement adapted to engage with the end wall of the container adjacent the neck, whereby the screw cap can be readily unscrewed from the container, but cannot be completely disconnected therefrom. The invention further consists in the several novel features hereinafter fully set forth and claimed.

The invention is clearly illustrated in the drawing accompanying this specification, in which:

Fig. 1 is a perspective view of a collapsible tube and its screw cap showing the preferred embodiment of the present invention applied thereto; Fig. 2 is a view partly in side elevation and partly in central longitudinal section of a collapsible tube and threaded cap, illustrating the preferred embodiment of the invention applied thereto; Fig. 3 is a perspective view of the retaining device forming the subject matter of this specification; Fig. 4 is an enlarged central longitudinal section through a screw cap and showing a fragment of the retaining device secured therein; Fig. 5 is a central longitudinal section through a screw cap and showing a slightly modified form of the invention applied thereto and Fig. 6 is a central longitudinal section of a screw cap with another form of the invention applied thereto.

Referring to said drawing, and first to Figs. 1 to 4 inclusive, which illustrate the preferred embodiment of the present invention, the reference character 10 designates a container, here shown in the form of a collapsible tube of common and well known form, provided with the usual screw threaded neck 11 for receiving the ordinary screw cap or closure 12. Such collapsible tubes are usually employed for containing tooth paste, massage creams and a great variety of other semi-solid substances as is well understood. The screw cap 12 is usually formed with a sleeve like part 13, which is internally threaded as at 19, whereby the cap may be threadedly secured upon the screw threaded neck of the container.

The retaining device 14 is secured to the screw cap and extends inward through the opening in the neck 11 of the container and is formed with a shoulder or enlargement 15 upon the end contained in the container, which shoulder is arranged to abut against the end wall 16 of the container adjacent the neck, whenever the retaining device is drawn out to its extreme limit. In the preferred embodiment of the invention, the retaining de-

vice consists in a short length of flexible or spring wire of comparatively light gauge, one end thereof being bent up to form the hook like member 15 which comprises the enlargement or shoulder above mentioned, and the other end is bent up to form a short transverse portion 17 and an annular or ring like portion 18. The annular or ring like portion 18 is of a diameter permitting the same to be inserted into the sleeve 13 of the screw cap and screwed up between the threads 19 thereof until it is screwed tightly against the bottom of the internally threaded cavity of the sleeve 13. With such an arrangement the retaining device may be readily and quickly connected to the screw cap so as to project from the middle portion of the cap whereby it may enter the opening into the neck of the container. Being made of resilient or spring metal material, the hook like member 15 may be collapsed sufficiently (when assembling the parts) to insert it through the opening in the neck, and after the hook like member passes through said opening, it expands into its normal condition and effectively prevents the complete withdrawal of the retaining device from the container.

The retaining device being centrally located with respect to the screw cap and extending from an end thereof, it does not interfere with the ready removal or replacement of the screw cap on the container and being made of light gauge material, it does not interfere with the discharge of the contents. It is to be observed that when the screw cap is unscrewed, and moved away from the container, the retaining device will be partially withdrawn from the container and that as soon as the hooked or enlarged end 15 thereof engages with the end wall 16 it prevents disconnection of the screw cap from the container. When it is desired to replace the screw cap, the latter is simply moved towards the threaded neck of the container and screwed thereon in the customary way, the retaining device being thereby forced back into the container.

In the modified form of the invention illustrated in Fig. 5, the retaining device 14^a is secured to the end wall of the screw cap 12^a by soldering or brazing it thereto as shown at 17^a. In this form of the invention the hook member 15^a is made flatter, otherwise the construction is practically the same as in the preferred form.

In the modified form of the invention illustrated in Fig. 6 the retaining device 14^b is secured to the end wall of the cap 12^b by casting it therein. If desired, the enlargement 15^b at the end of the retaining device may be in the form of a small plate 15^b suitably secured to the stem of the retaining device.

From the above it is apparent that a screw cap or other closure, equipped with the retaining device above described, cannot become entirely disconnected from the container on which it is used without using unnecessary force. The retaining device being contained within the container, it does not interfere with the removal or replacement of the cap. Furthermore it is not likely to become broken or worn, or disconnected by the usual handling of the tube or container.

More or less variation of the exact details of construction is possible without departing from the spirit of this invention; I desire, therefore, not to limit myself to the exact form of the construction shown and described, but intend, in the following claims, to point out all of the invention disclosed herein.

I claim as new, and desire to secure by Letters Patent:

1. A retaining device for internally screw threaded closures of containers that are formed with a screw threaded neck, comprising a short length of flexible wire, bent up at one end into an annular part extending transversely of the length of the wire, said annular part frictionally engaging the internal thread of the closure, and the other end of the wire being contained within the container and bent up in the form of an enlargement of greater lateral extent than the diameter of the opening in the neck.

2. A retaining device for internally threaded caps of collapsible tubes, that are formed with threaded necks, comprising a short length of wire formed at one end with an annular transversely extending part secured in the cap, said length of wire entering a discharge opening in the neck of the tube and having a bent up hook like portion on its other end of greater lateral extent than the opening through which it enters the tube.

JAMES D. SMITH.