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A. W. PAULL

CAP RETAINER FOR DEFORMABLE TUBES

Filed Apr. 23, 1920

*Fig. 1.*

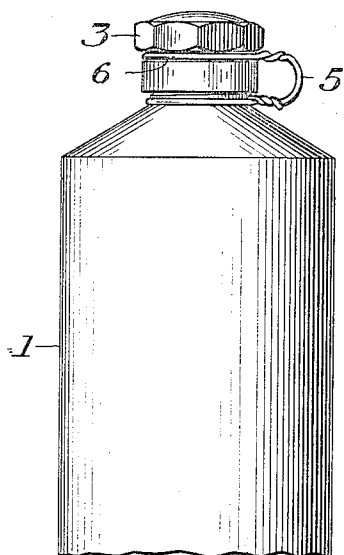


*Fig. 2.*

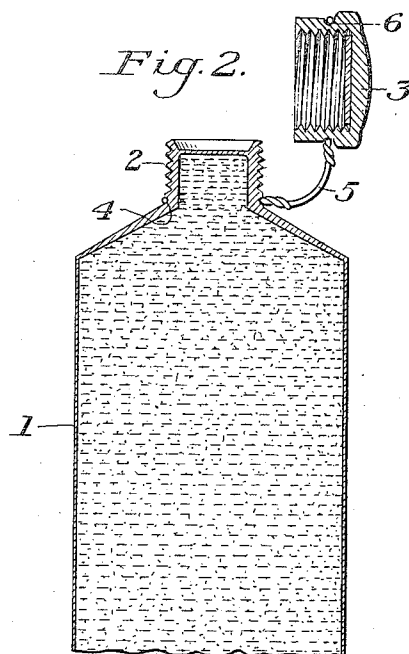
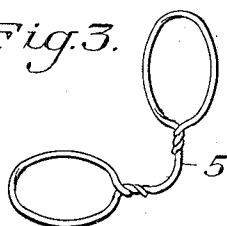


*Fig. 3.*



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## UNITED STATES PATENT OFFICE.

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## CAP RETAINER FOR DEFORMABLE TUBES.

Application filed April 23, 1920. Serial No. 375,974.

*To all whom it may concern:*

Be it known that I, ARCHIBALD W. PAULL, a citizen of the United States, and a resident of Wheeling, in the county of Ohio and State of West Virginia, have invented a new and useful Improvement in Cap Retainers for Deformable Tubes, of which the following is a full, clear, and exact description.

The present invention relates broadly to containers having removable caps, and more particularly to deformable containers such as collapsible tooth paste tubes and the like having screwed caps which are removed to permit discharging the contents from the tube.

The principal object of the present invention is to provide means cooperating with the tube and with the cap for preventing the loss of the cap.

A further object of the present invention is to provide fastening means of the character described which will not interfere with the free rotation of the cap and which will not be disconnected from the tube when the cap is unscrewed.

The foregoing and other objects, together with their attendant advantages, will be apparent as the invention becomes better understood by reference to the accompanying specification and drawings forming a part thereof, it being premised that changes may be made in the various details and the manner of operation within the scope of the appended claim without departing from the spirit of the invention.

Figure 1 is a side elevation of a portion of a tube having a cap held thereon by my invention.

Figure 2 is a sectional view through a tube and cap constructed in accordance with my invention, the cap being removed from the tube.

Figure 3 is a perspective view of one form of fastening means employed.

It has heretofore been proposed to provide cap retainers for deformable tubes, which retainers are secured around the cap at one end, and at their opposite ends cooperate with the threaded end of the tube. Such devices have been objectionable in use for the reason that quite frequently the retainer is unscrewed or detached from the threaded end of the tube when it is attempted to remove the cap.

I am also aware of various modified forms of retainers which have had a rigid connection either with the cap or with the tube, thereby preventing easy removal and application of the cap.

By means of the present invention the objections inherent in constructions of the nature described are overcome and the unrestricted removal of the cap is permitted.

Referring more particularly to the drawings, there is illustrated a tube 1 having the usual threaded neck portion 2 adapted to receive the cap 3. As illustrated in Figures 1 and 2, the base of the neck 2, below the screw threaded portion thereof, is provided with a groove 4 adapted to receive therein one end of a fastening wire, or other retaining means, 5. The fastening wire is preferably rotatably mounted within the groove 4 to permit the same to rotate therein during removal of the cap.

The cap 3 is also preferably provided with a similar groove 6 adapted to loosely receive the opposite end of the wire or retaining means 5. By providing a rotatable connection between both the retaining means and the neck of the tube, and between the retaining means and the cap, it has been found that the cap may be easily removed without bending or breaking the retaining means. Also, by providing the groove 4 at the base of the threaded neck 2, the retaining means is prevented from riding out of the threads and becoming detached from the container during the removal of the cap.

As illustrated in Figure 3, the retaining means 5 may conveniently comprise an ordinary piece of wire having the opposite ends looped to pass over the neck and cap into engagement with the respective grooves therein, whereupon a slight additional twist will provide the rotatable connection described.

The wire of the retaining means 5 is resilient so that when the cap is unscrewed it is held to one side of the nozzle so as not to interfere with the discharge of the contents of the tube. The resilient wire, moreover, holds the cap properly positioned so that when it is to be applied it only needs to be pressed down against the end of the neck.

The advantages of the present invention arise from a construction in which the retaining means is prevented from engaging

the threaded portion of the neck and becoming disengaged therefrom upon removal of the cap.

Further advantages arise from the rotatable connection provided between both the tube and the cap, permitting easy removal of the latter.

I claim:

An improved cap retaining means for deformable tubes, comprising a tube having a neck portion through which the contents of the tube may be discharged, a cap cooperating with said neck portion, said neck and cap being screw-threaded and each provided with a separate exterior groove, and a resili-

ent retaining member rotatably mounted in said separate grooves and adapted to automatically lift the cap away from the neck upon disengagement of the screw-threaded connection between said cap and neck, the groove in the cap engaged by the retaining member being so located as to provide a finger engaging portion on the cap to permit the cap to be readily gripped and rotated without interference from the retaining member.

In testimony whereof I have hereunto set my hand.

ARCHIBALD W. PAULL.