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2,158,375

PASTE TUBE CAP

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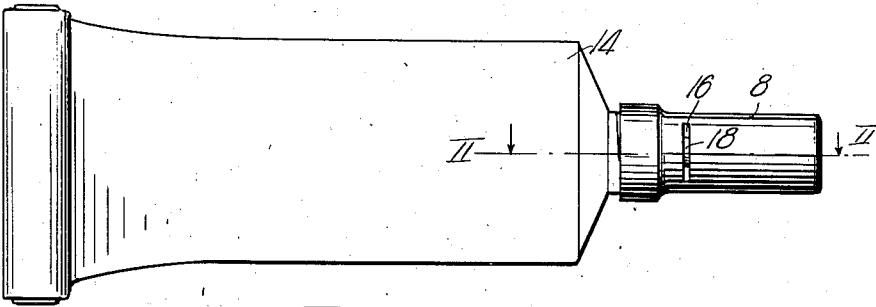


Fig. 1.

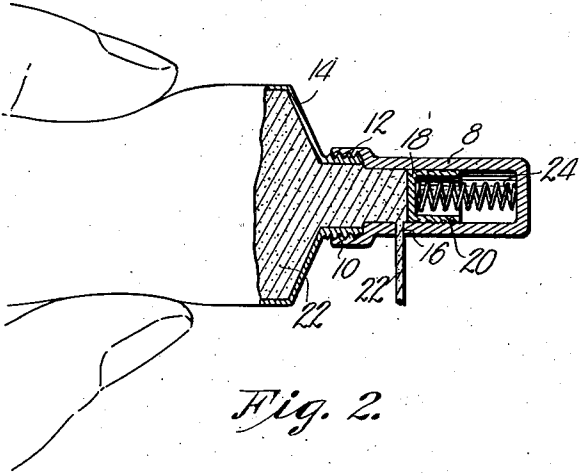


Fig. 2.

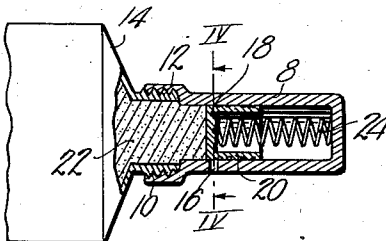


Fig. 3.

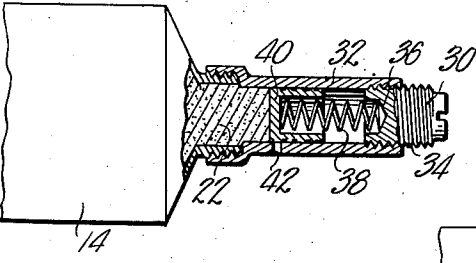


Fig. 5.

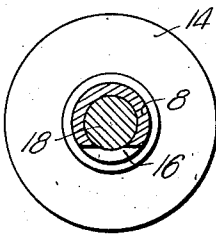


Fig. 4.

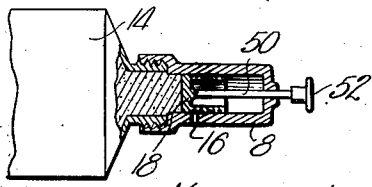


Fig. 6.

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PASTE TUBE CAP

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1 Claim. (Cl. 221-60)

This invention relates to collapsible tubes and especially the cap therefor, and the primary object is to provide a closure for paste tubes which will automatically open and shut the aperture through which the paste is extruded when force is exerted upon and released from the tube respectively.

One of the important aims of the invention is the provision of a paste tube cap which may be attached to the conventional type of collapsible tube wherein paste is contained, said cap having a spring pressed piston therein movable to and from a position closing a specially formed aperture, without being especially manipulated by the operator.

A still further aim of this invention is to provide a paste tube cap of the aforementioned character having a minimum number of parts, some of which may be adjustable to alter the tension of the spring therein.

Other objects of the invention will appear during the course of the following specification, referring to the accompanying drawing wherein:

Figure 1 is a side elevation of a paste tube equipped with a cap embodying this invention.

Fig. 2 is a fragmentary sectional view through the upper portion of the paste tube showing the cap in position taken on line II—II of Fig. 1.

Fig. 3 is a view similar to Fig. 2 but with the slidable piston in the aperture-closing position.

Fig. 4 is a cross sectional view through the cap taken on line IV—IV of Fig. 3; and,

Fig. 5 is a longitudinal sectional view through another form of the cap.

Fig. 6 is a longitudinal sectional view through a paste tube cap made to embody a modified form of the invention.

One of the problems presented through the use of collapsible tubes containing paste, is the nature of the caps heretofore employed. Usually the cap is a separate unit and becomes misplaced when taken from the neck of the tube. Some efforts have been expended to produce caps of different natures than those conventionally commercially used but without apparent success.

The cap embodying this invention is intended to automatically maintain the aperture through which the paste is extruded in a closed condition so long as pressure is not exerted upon the tube to impart force to the contained paste sufficient to compress the spring forming a part of the cap. When the results just set down are obtained, the past within the tube is not wasted

nor allowed to dry so that a portion thereof becomes useless.

Referring particularly to Figs. 1 to 4 inclusive, it will be apparent that the illustrated embodiment of the invention is in the nature of a hollow metal thimble 8 provided with internal screw-threads 10 which fit upon screw-threads 12 of the neck of paste tube 14. The open end of thimble 8 should be slightly enlarged in diameter so that the inner annular wall of thimble 8 is substantially a continuation of the inner annular wall of the neck of tube 14.

Aperture 16 is provided in the side wall of thimble 8 at a point intermediate the ends thereof. Piston 18 is slidably fitted into thimble 8 for movement to and from a position where it closes aperture 16. Piston 18 has a grooved skirt 20 to insure a positive seal and to insure that paste 22 will not escape into the outer end of thimble 8 past piston 18.

Spring 24 serves as a means for yieldably holding piston 18 across aperture 16. This spring is of such length and nature that it will force piston 18 across aperture 16 when pressure upon tube 14 is released by the operator. Spring 24 reaches the limit of its expansion when piston 18 is across aperture 16 as shown in Fig. 3, and as soon as pressure is again exerted on tube 14, piston 18 will be moved back against the force of spring 24 and a ribbon of paste 22 will be extruded through aperture 16, as illustrated in Fig. 2.

In Fig. 5 an additional element is shown forming a part of the paste tube cap. This element comprises an adjustable plug 30 in screw-threaded engagement with the outer end of thimble 32 which is but slightly different from the thimble illustrated in Figs. 1 to 4 inclusive.

Internal screw-threads formed in the outer end of thimble 32 engages screw-threads 34 of plug 30 and the cavity 36 formed in plug 30 receives one end of spring 38, the other end of spring 38 is circumscribed by the skirt of piston 40 which is yieldably held across aperture 42 in precisely the same manner as above described with reference to Figs. 2 and 3.

When it is desired to increase the tension of spring 38, plug 30 is moved by turning the same on its longitudinal axis. In Fig. 5, plug 30 has been moved into thimble 32 as far as the internal screw-threads will permit, but it is obvious that the length of adjustment may be altered to suit the desire of the manufacturer.

Spring 24 or 38, as the case may be, is made stronger or weaker in accordance with the con-

sistency of paste 22, and when the cap is properly made, the automatic action of opening and closing the aperture of the thimble will occur without the user of the paste being conscious of any mechanical movement within the specially constructed cap.

The means for returning piston 18 to a position closing aperture 16, may be manually controllable. In Fig. 6 is illustrated a modified form of the invention which includes a rod 50 having one end secured to piston 18 and the other end projected exteriorly of cap 8. A head 52 of any suitable form is carried by the outer end of rod 50 and after the force of paste 22 has moved both piston 20 and rod 50 along cap 8, so as to open aperture 16, inward force on head 52 will return the said member to the point of beginning where piston 20 is closing aperture 16.

Obviously, the cap and its parts may be made of suitable material, such as metal or some composition best suited for machining. The cap may be moved from one tube to another and the parts of the cap may be separated and cleaned if desired, for they part without the employment of special tools.

A large number of changes and modifications might be made in constructing a paste tube cap that embodies this invention, without departing from the scope of the appended claim.

Having thus described the invention, what is claimed as new and desired to be secured by Letters Patent is:

A cap for paste tubes, having externally screw-threaded necks, comprising a thimble-like body provided with an aperture through the annular side wall thereof intermediate the ends; internal threads adjacent to the open end of the body for engagement with the screw-threads of the tubes to hold the cap in operative position; a piston reciprocally mounted in the body for movement to and from a position closing the aperture; and means for holding the piston in such position, said piston having an annular skirt, the outer face of which is in wiping contact with the annular inner face of the said body, said skirt having a plurality of grooves formed therein to present a plurality of edges serving to ride over the said face of the body as the piston is reciprocated.

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