Aug. 2, 1932. W. T. HANCOCK 1,869,808

DISPENSING TUBE

Filed Dec. 18, 1929

Fig 3

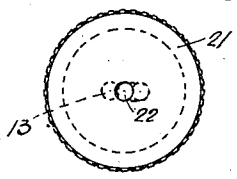


Fig. 1.

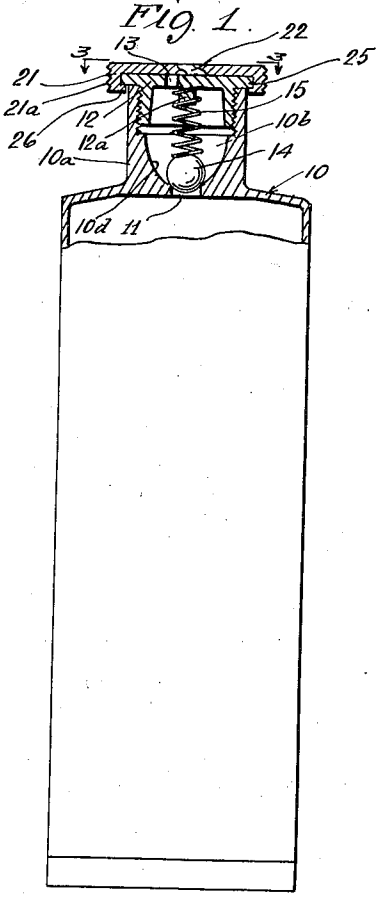
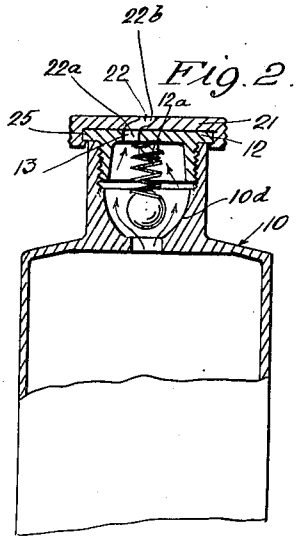


Fig. 2.



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UNITED STATES PATENT OFFICE

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DISPENSING TUBE

Application filed December 18, 1929. Serial No. 414,858.

My invention relates to dispensers for semi-liquid substances and is particularly adaptable for dispensing such substances as pastes, creams and glue. While the invention is capable of many other uses and adaptations, which the following detailed description will render obvious to those skilled in the art, I shall elect, in order to give a clear understanding of my invention, to describe it as a tooth paste or shaving cream dispenser.

One of the chief disadvantages of known dispensers is the inconvenient and bothersome means, usually a screw cap, for opening and closing the container tube. As a result, users often fail to close the tube after use, and the material near the mouth of the dispenser becomes hard and deteriorated. Numerous attempts have been made to overcome this difficulty, but usually have resulted in devices too expensive to be commercially practicable, or most inefficient in operation.

I overcome this difficulty by providing a dispensing valve which acts automatically to open and close the mouth of the container tube thus insuring its being closed at all times when not in use.

In describing in detail this particular adaption of my invention, I refer to the accompanying drawing, in which:

Fig. 1 is a cross-sectional view of my dispensing device, showing the valve in closed position;

Fig. 2 is a similar view, showing the valve open; and

Fig. 3 is a view on line 3—3 of Fig. 1.

In the drawing the numeral 10 designates a compressible container for such semi-liquid substances as tooth paste or shaving cream. While this container may be made in any desirable form, I illustrate it as a tube made of flexible material so that it may be compressed or squeezed to create a pressure of the contained substance against the valve controlling the outlet orifice, to be later described. Container 10 has an outlet orifice 11 and a neck portion 10*a* surrounding outlet 11 and providing a chamber 10*b* above the orifice to house the valve elements to be hereinafter described. The inner wall of the neck portion converges downwardly, as shown at 10*d*, to guide the valve member, to be described, onto its seat. Screwed into the outlet end of neck 10*a* is a cup-shaped cap member 12 having in its top an outlet 13 which communicates through chamber 10*b* with container outlet 11. This cap 12 has a depending lug 12*a* which provides a seat for the spring to be hereinafter described.

For opening and closing the outlet 11 any suitable valve member may be used. I prefer a ball valve, here designated by the numeral 14. Valve 14 is constantly urged against outlet 11, which provides an annular seat, by a coil spring 15. Spring 15 fits onto the cap lug 12*a* snugly so that said lug acts as a seat for one end of the spring and also tends to hold the spring in position. Spring 15 may be of any form, size or strength desired so long as it does not exert more inward pressure against valve member 14 than can be overcome by outward flow pressure of the material contained in the container 10 caused by compressing the container.

Thus, to dispense the substance from the container, it is only necessary to squeeze or compress the container 10 sufficiently to exert enough outward flow pressure against valve 14 to raise the valve off outlet 11. The substance, under continued pressure, then passes out through outlet 11, around valve member 14 and through the cap outlet 13, as indicated by the arrows in Fig. 2. When the pressure on the substance is relieved, spring 15 forces valve 14 onto its seat.

While my device, as thus far described, operates satisfactorily to dispense most semi-liquid substances, it is desirable in certain instances to protect the small quantity of the substance remaining in chamber 10*b* after using the dispenser. For this purpose I provide an auxiliary seal consisting of a secondary cap 21 rotatably mounted upon and covering the top portion of cap 12. To prevent this secondary cap from moving longitudinally on cap 12, I provide a flange 25 on said cap, which flange overhangs the top of the neck 10*a*, and under which is turned the annular extension 26 of cap flange 21*a*. This secondary cap has, through its top portion, a passageway 22, the lower orifice of which is

offset from the common axis of caps 12 and 21. Opening 13 is likewise offset from said axis so that rotation of the secondary cap upon cap 12 brings orifice 22*a* alternately into and out of register with opening 13. In order that delivery from passage 22 may be at the center of cap 21, said passage may incline from orifice 22*a*, as clearly shown in the drawing, bringing delivery orifice 22*b* to said center.

Neck 10*a* may be made integral with the body of container 10 or it may be found more desirable in some instances to make it as a separate element and screw it into or otherwise affix it to body 10. It really makes no difference insofar as function and operation are concerned.

I have employed the foregoing details of structure for illustrative purposes only and wish it understood that my invention, in its broader aspects, is not limited to such details, but is only limited as set forth in the appended claims.

I claim:

1. A dispenser of semi-liquid substance comprising, in combination: a compressible container having a neck within which is provided a chamber, a restricted opening at each end of said neck, one of said openings providing communication between the chamber and container and the other forming a final discharge orifice, and a spring pressed valve in said chamber normally seating against said first mentioned opening and adapted to be unseated by pressure in the container; the inner walls of said neck converging downwardly to said first mentioned opening to form guide means for the valve.

2. A dispenser of semi-liquid substance comprising, in combination: a compressible container having a neck within which is provided a chamber, a restricted opening at each end of said neck, one of said openings providing communication between the chamber and cnotainer and the other forming a final discharge orifice; a spring pressed valve in said chamber normally closing said first mentioned opening and adapted to be opened by pressure in the container; and means for opening and closing the final discharge orifice.

3. A dispenser of semi-liquid substance comprising, in combination: a compressible container having a neck within which is provided a chamber, a restricted opening at each end of said neck, one of said openings providing communication between the chamber and container and the other forming a final discharge orifice; a spring pressed valve in said chamber normally closing said first mentioned opening and adapted to be opened by pressure in the container; the inner walls of said neck converging downwardly to the first mentioned opening to form guide means for the valve; and means for opening and closing the final discharge orifice.

4. A device of the character described, comprising, in combination: a compressible container having an outlet orifice providing a valve seat, a chamber enclosing neck on said container communicating with said orifice, a cap on the neck and enclosing the chamber, an outlet opening in said cap, a ball valve member in the chamber adapted to seat against the container outlet orifice, a spring acting between the valve member and the cap and adapted constantly to press the valve member onto its seat, said valve member being adapted to be unseated against the pressure of the spring by pressure from within the container; means for guiding the valve member onto its seat including downwardly converging inner walls of the neck; and a secondary cap rotatably mounted on the first mentioned cap and having an outlet passage therein adapted to be moved into and out of register with the outlet of said first mentioned cap.

In witness that I claim the foregoing I have hereunto subscribed my name this 18th day of November, 1929.

WILLIAM T. HANCOCK.