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1,971,371

DISPENSER CLOSURE

Filed Oct. 29, 1930

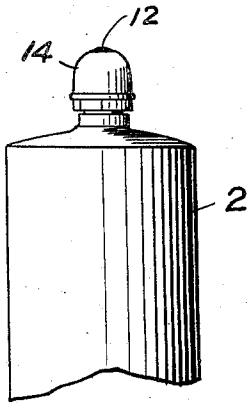


FIG. 1.

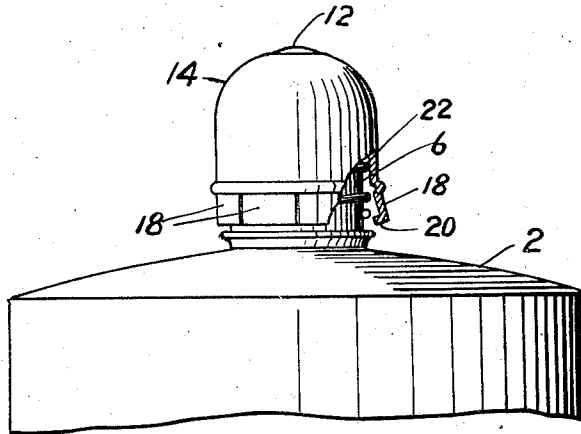


FIG. 2.

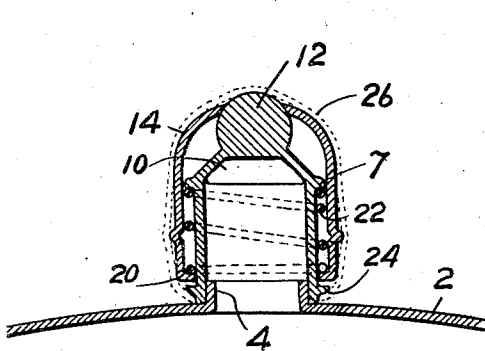


FIG. 3.

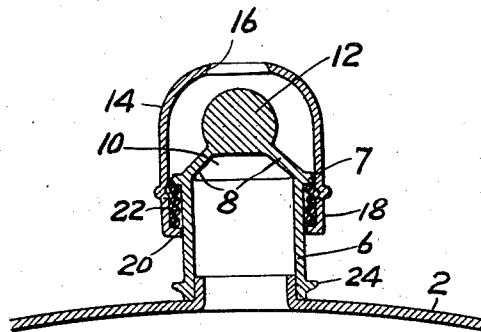


FIG. 4.

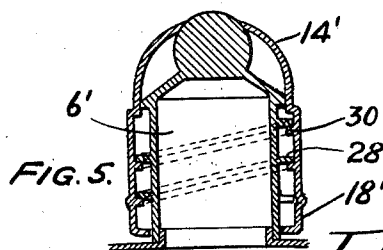


FIG. 5.

WITNESS:

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DISPENSER CLOSURE

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5 Claims. (Cl. 221-60)

This invention relates to closure means for a container, or the like, adapted to be used for dispensing fluent material therefrom, the invention being particularly adapted to the formation of a cap for a tube containing toothpaste, shaving cream, paint or other pasty or powdered fluent material.

It is the broad object of the present invention to provide a closure means which in its preferred form will automatically open upon increase of pressure on the material within the container and permit the ejection of the same and, after the removal of such pressure, which will automatically close. It is a further object of the invention to provide a closure means of this character which will minimize an accumulation of material upon its outside and which will therefore promote the sanitary character of a container when the container holds toothpaste, or the like.

Further objects of the invention, particularly relating to details of construction, will be apparent from the following description read in conjunction with the accompanying drawing in which:

Fig. 1 is a side elevation of the upper part of a container with which the improved closure means is associated;

Fig. 2 is an enlarged view of the same subject partially broken away to illustrate constructional details;

Fig. 3 is an axial section through the improved closure means;

Fig. 4 is a view similar to Fig. 3 showing the parts in a different position; and

Fig. 5 is an axial section through a modified closure means.

While the closure means is adapted for association with various types of containers, it is illustrated in the drawing in combination with a tube 2 of the usual type formed of soft metal and adapted to contain viscous material. This tube is provided with the usual top shown in the present instance as formed with an upturned flange 4 extending within the tubular portion 6 of a valve member. The valve member may be secured to the top of the tube in any suitable manner, or in some cases may be made integral therewith. It will be understood that where it is stated that the valve member is adapted to be secured to a container, it is intended that this shall include an integral arrangement.

The tubular portion 6 of the valve member is provided at its upper portion with an annular

flange 7 and is surmounted by a bridge structure 8 providing a plurality of openings 10 for the flow of the material from the tubular portion. The bridge structure supports a valve element 12, which, in the present case, is illustrated as having a spherical surface receivable within a seat 16 formed in a cap member 14. This cap member 14 forms a cylinder sliding upon the annular flange 7 which constitutes a piston. The flange 7 has very slight clearance with the walls of the cap so as to prevent the escape of material.

The bottom of the cap member 14 is provided with a plurality of skirts 18 each of which has an inwardly directed flange 20 engageable by the coiled spring 22 which surrounds the tubular portion 6 and encases the annular flange 7 so as normally to urge the cap member to the closed position illustrated in Fig. 3 in which the valve element 12 seats within the opening 16 closing the same.

The provision of skirts 18 is arranged to facilitate assembly since when these skirts are bent outwardly, as indicated in the cutaway portion of Fig. 2, the cap member may be slipped over the valve member and spring. The spring may be then slightly compressed and the cap member secured in position by bending the skirts inwardly so that the flanges 20 lie below the spring. It will be obvious that the cap member may be made in numerous other ways to facilitate assembly. It may, for example, be formed in two portions, threaded, or otherwise secured, together. The cap and valve member may be formed of metal or any other suitable material such as rubber, fibre, or the like.

In the operation of the device, assuming initially that it is in the closed position of Fig. 3, pressure would be applied to the fluent material which would thereupon pass through the opening or openings 10 into the chamber formed between the cap and the valve member. The pressure within this chamber would force the cap 14 outwardly of the valve member against the action of the spring 22 thereby producing a relative movement between the element and the opening, so that the material is free to flow through the opening. As soon as the pressure is relieved the spring 22 will tend to move the cap inwardly. Since the volume of the chamber is decreased in such movement flow will continue until the valve element 12 becomes seated within the opening. In view of the fact that the valve and cap are arranged to form a smooth

outer surface, any material thereupon may be readily removed.

To prepare a container provided with the improved closure for sale it may be desirable to seal it with a film of cellulosic material such as a cellulose ester of the type commonly used to cover the stoppers of bottles, etc. For this purpose a flange 24 is provided with which the lower portions of the film engage. This film is not only of advantage from a sanitary standpoint but also from a manufacturing standpoint since it prevents opening of the closure upon application of pressure incident to the filling of a tube through its lower end in the usual fashion.

It is obvious that numerous changes may be made in the arrangements of the various parts. The valve member 12 may, of course, be of other than spherical shape, for example, it may be conical, approaching the form of the conventional needle valve, in which case, of course, the seat will be made to correspond. It will also be clear that the valve element may be supported independently of the tubular member 6.

Figure 5 shows an alternative, non-automatic arrangement made in accordance with the invention. In this construction the tubular portion 6' of the valve member is provided with threads 28 engageable with threads 30 on the cap member 14'. Manual turning will then serve to open the closure. Flanged skirts 18' prevent the removal of the cap since they will not pass over the threads 28. Obviously other variations of this type of closure may also be made.

What I claim and desire to protect by Letters Patent is:

1. Closure means for a container for fluent material including a valve member consisting of a tubular portion carried by the container and a valve element carried by the tubular portion, a cap slidable on the tubular portion of the valve member and having an opening closable by the valve element, and a spring for urging the cap member to a position wherein its opening is closed, said cap member forming a chamber outside the valve member communicating with the container through the valve member, and said tubular portion of the valve member being provided with a flange having a sliding engagement with the cap and forming an abutment for the spring.

2. Closure means for a container for fluent material including a valve member consisting of a tubular portion carried by the container and a valve element carried by the tubular portion,

a cap slidable on the tubular portion of the valve member and having an opening closable by the valve element, and a spring for urging the cap member to a position wherein its opening is closed, said cap member forming a chamber outside the valve member communicating with the container through the valve member, said tubular portion of the valve member being provided with a flange having a sliding engagement with the cap and forming an abutment for the spring, and said cap having a flange directed inwardly towards the tubular portion and forming an abutment for the spring.

3. The combination with a paste tube having a neck provided with a discharge orifice and having a peripheral flange adjacent to said orifice, of a valve secured to said neck and disposed in front of said orifice, a cover surrounding the neck and provided with an opening in registry with the said valve, the cover having close-fitting engagement with the said flange and being movable longitudinally of the neck, an inturned flange at the inner end of the cover, and a spring interposed between said flanges.

4. The combination with a paste tube having a neck provided with a discharge orifice and having a peripheral flange adjacent to said orifice, of a valve secured to said neck and disposed in front of said orifice, a cover surrounding the neck and provided with an opening in registry with the said valve, the cover having close-fitting engagement with the said flange and being movable longitudinally of the neck, a spring seating against the underside of said flange, and a second spring seat disposed interiorly of and carried by said cover, the lower edge of the cover being inturned to house the spring.

5. In combination with a tube of compressible material, a neck having a flange at its upper end connected with the tube with a closure for the upper end of the neck having an opening therein, a cap fitting over the neck and its flange and having a flange at its lower end, a spring encircling the neck and located in the cap with its lower end engaging the flange of the cap for normally holding the cap in closed position, the top of the cap having an opening therein, whereby pressure upon the tube will cause the contents to exert pressure upon the cap to open the same so that some of the contents can pass through the opening in the closure of the neck and then pass through the opening in the top of the cap, the spring returning the cap to closed position when pressure is removed.

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