June 13, 1933. A. RACK 1,913,509

AUTOMATIC SEAL FOR CREAM TUBES

Filed Oct. 23, 1931

FIG. 1.

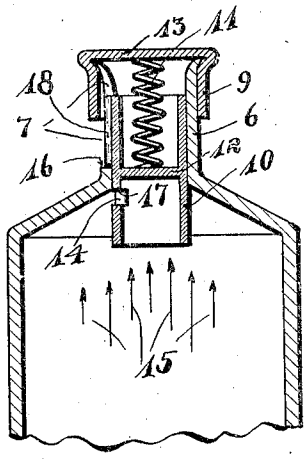


FIG. 2.

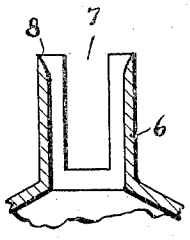


FIG. 3.

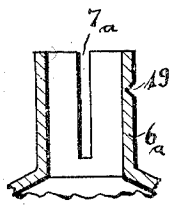


FIG. 4.

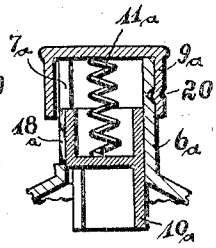
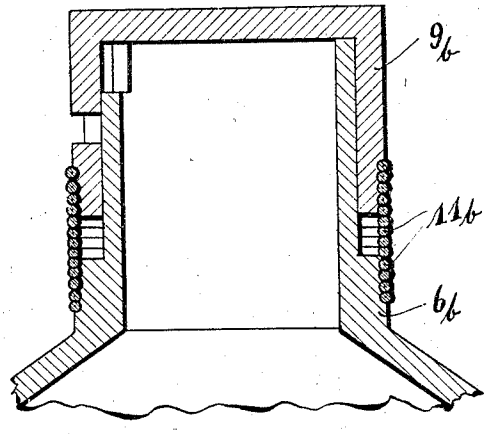


FIG. 5



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Patented June 13, 1933

1,913,509

UNITED STATES PATENT OFFICE

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AUTOMATIC SEAL FOR CREAM TUBES

Application filed October 23, 1931. Serial No. 570,646.

This invention relates to devices used on the discharging end of tubes, made of thin and soft material that can be rolled or crushed to thereby force the contents out of the discharging end, the contents usually being of a pasty or creamy soft consistency to facilitate a discharge in such a manner.

One of the objects of this invention is to eliminate the customary screw cap by providing an automatic gate that will open instantly when the tube is being squeezed for discharging a portion of the contents and will just as readily shut off the discharge upon releasing the tube.

Another object is to provide a spring-controlled cylindrical gate in operative relation to the discharging end of a tube.

Other objects will appear from the following description and appended claim as well as from the accompanying drawing, in which—

Fig. 1 is a fragmentary longitudinal midsectional view of the discharging end of a tube to which a spring-controlled automatically operating gate is applied according to this invention.

Fig. 2 is a fragmentary longitudinal midsectional view of the tube-end illustrated in Fig. 1 turned around about ninety degrees, showing the cut-out for discharging matter through the side of the tube-end when properly handled with a closing device of the type illustrated in Fig. 1.

Fig. 3 is a fragmentary midsectional view of a tube-end with a slightly modified form of cut out and termination.

Fig. 4 is a fragmentary midsectional view of a slightly modified form of closure.

Fig. 5 is a fragmentary midsectional view of another slightly modified form of closure.

In the form illustrated in Figs. 1 and 2, the tube-discharge-end 6 is provided with a cut-out 7 and an edge beveled and thinned down to a suitable degree that it may easily be rolled over when crushed endwise.

Tubes of this sort are customarily made of rather soft material and it will be understood that such an edge can be forced in such a manner that it will firmly engage with a cap of the type indicated at 9 when this cap is forced upon the end of the tube.

A plunger 10 is inserted in the opening of the tube-end 6, forced inwardly by the spring 11, interposed between the bottom 12 formed in the plunger and the top 13 of the cap. The innermost portion of the plunger is provided with an aperture 14.

The plunger and spring are inserted before the cap is sealed on the tube-end 6, being thereby permanently held in the tube.

If a portion of the contents is to be discharged from the tube, any squeezing of the tube naturally forces the contents in the direction of the arrows 15 against the plunger 10 and against the tension of the spring 11 until the aperture 14 reaches a position above the edge 16 of the cut-out 7, when the contents will discharge as long as the tube is being squeezed.

The spring 11, however, is made strong enough that the plunger is immediately forced inwardly again as soon as the tube is released, whereby the tube is sealed as before the squeezing.

Of course, the longer the plunger, the more easily it will slide within the discharging end of the tube without any tendency of wedging or tilting, but it must be understood that the plunger may terminate at the upper edge of the aperture, indicated at 17.

If the plunger is cut off at the edge 17, no particular guide is necessary since any part of the terminating edge 17 of the whole periphery of the plunger can properly cooperate with the edge 16 of the cut-out 7. However, when the plunger is made longer and provide with the aperture as illustrated, a key 18 is preferably provided on the plunger as illustrated, to slide within the cut-out 7, thereby keeping the aperture properly aligned with the cut-out.

In the slightly modified form illustrated in Figs. 3 and 4, the tube-end 6_a is provided with a notch 19, by which the cap 9_a is secured to the tube by means of a slight indentation in the cap as indicated at 20. The front termination of the tube-end for this reason does not have to be beveled as in the form illustrated in Figs. 1 and 2.

Whether the cut-out in the tube-end is made wider as in the form of Figs. 1 and 2, whereby a comparatively short movement of the plunger will suffice to discharge a suitably large amount of the contents, or the cut-out 7_a is made narrower as in the form of Figs. 3 and 4, to require a much longer movement of the plunger before a similar amount of the contents can be discharged is, of course, merely a matter of choice, or perhaps sales talk as to the quick discharge to the fullest extent in the one form and the gradual eventually under better control discharge in the other form, the key 18_a being the guiding means for non-rotative shiftings of the plunger 10_a, and the spring 11_a being inserted between the cap 9_a and the plunger.

Another slightly modified form is illustrated in Fig. 5, in which the cap 9_b itself is movable under control of the spring 11_b, in this form on the outside of the tube. The spring is merely applied over the outside of the cap and of the tube-end 6_b, eliminating the plunger and eventually the guide-key.

Having thus described my invention, I claim:—

In a tube seal, in combination with the tubular discharging end of a tube, the said discharging end being provided with an open slot from the end inwardly, a cap disposed over the end, a closing member shiftable within said end and having means guided in said slot to shiftably retain the member in non-rotative alignment and having an aperture at a point below and adapted to become aligned with the slot to allow matter to pass from the tube when the tube is being squeezed, and a spring inserted between the cap and the closing member for controlling the shifting of the closing member against the discharge of such matter, the said end and the said cap being provided with cooperative means designed to become permanently interengaged when the cap is pressed upon and against the said end.

In testimony that I claim the foregoing as my invention I have signed my name.

ABRAHAM RACK.