March 20, 1934. M. M. L. BURRELL 1,951,544

SELF SEALING TUBE

Filed April 11, 1932

Fig. 1.

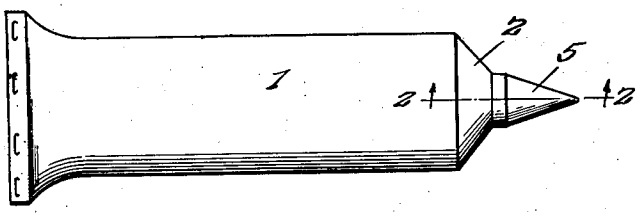


Fig. 2.

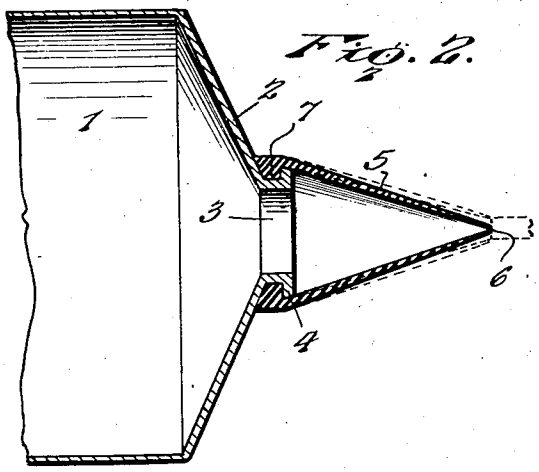


Fig. 3.

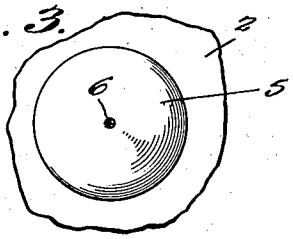


Fig. 4.

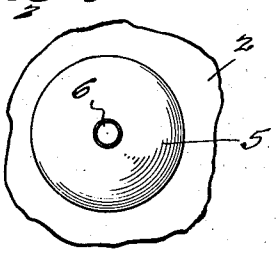


Fig. 5.

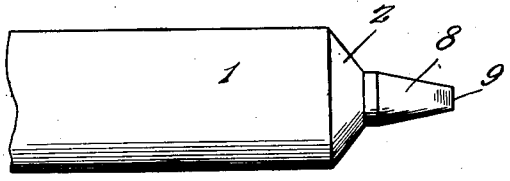


Fig. 6.

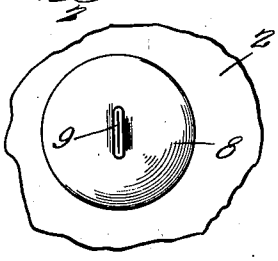
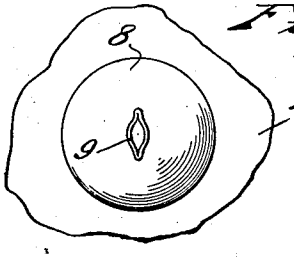


Fig. 7.



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UNITED STATES PATENT OFFICE

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SELF-SEALING TUBE

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Application April 11, 1932, Serial No. 604,561

2 Claims. (Cl. 221—60)

The object of this invention is to provide a collapsible tube for plastic commodities, such as paste, which may be easily manipulated to discharge a portion of the contained commodity, when desired, and which will automatically seal itself to prevent further discharge and prevent the commodity hardening by contact with the outside air. The invention is illustrated in the accompanying drawing and consists in certain novel features which will be hereinafter first fully described and then particularly defined in the appended claims.

In the drawing, Figure 1 is an elevation of a collapsible tube embodying the present invention,

Fig. 2 is an enlarged section on the line 2—2 of Fig. 1,

Figs. 3 and 4 are end views showing the spout closed and opened, respectively,

Fig. 5 is a view similar to Fig. 1 showing a modification,

Fig. 6 is an end view of the form shown in Fig. 5 with the nozzle closed,

Fig. 7 is a view similar to Fig. 6 showing the nozzle opened.

The tube 1 is a soft metal container of well-known form having one end closed after it has been filled and having its opposite end tapered, as shown at 2, to a shouldered flange 3 which defines an outlet or discharge opening. This flange 3 is of a reentrant type having an overhanging annular shoulder 4 and this portion of the tube will preferably be of somewhat thicker material than the main body of the tube in order that it will withstand a moderate amount of pressure while the main body of the tube is intended to be collapsed and rolled as the contained material is used. I provide a nozzle 5 which is formed of rubber and is conical in form, tapering to its outlet which is a minute opening, indicated at 6. The wall of the conical nozzle 5 decreases gradually and uniformly in thickness from its base toward the apex of the cone and at its base it is provided with an internal rib or annular flange, indicated at 7, which is adapted to fit around the flange 3 and engage under the annular rib 4 thereof, the base of the rib being preferably thickened and inclined to conform to and adapted to bear against the tapered end of the container to form a tight joint therebetween, as clearly shown in Fig. 2.

The tube is filled in the usual manner and the rubber nozzle is fitted over the flange 3 so as to be retained firmly thereon by reason of its own elasticity. The wall of the nozzle is very thin and flexible at the apex or point of the nozzle so that it will be collapsed and the discharge opening entirely closed under the pressure of the outside air when the tube is not in use. When the tube is to be used, so as to discharge a portion of its contents, pressure is applied to the closed end of the tube which will force the contained material through the nozzle and will cause the tip of the nozzle to spread so that the discharge opening will be enlarged, as shown in Fig. 4, whereupon the contained material will issue and may be spread over the surface to which it is to be applied, or otherwise handled. As soon as the pressure upon the tube 1 is withdrawn, the nozzle will again collapse and close the discharge opening 6 by reason of its own elasticity and by reason of the pressure exerted by the outside air thereon so that the nozzle will be automatically closed and sealed when the tube is at rest and the drying and hardening of the contained material about the tip of the nozzle will be avoided.

In Figs. 5, 6 and 7, there is shown the same collapsible tube 1, but the discharge nozzle 8 does not extend to a sharp point, being truncated, as indicated at 9, so that the discharge opening is elongated and forms a slot, as shown in Fig. 6. The resiliency of the rubber nozzle and the pressure of the air upon the outside of the same will cause the end of the nozzle to collapse and close the discharge opening, as shown in Fig. 6; but, when pressure is applied to the tube so as to expel some of its contents, the walls of the slotted discharge opening will separate, as indicated in Fig. 7, to permit the material to issue. In this form of the invention, the nozzle is held upon the tube in the same manner as shown in Fig. 2 but the wall of the nozzle, at the apex thereof, need not be as thin as is desirable in the first-described form.

Having thus described the invention, I claim:

1. A collapsible container closed at one end and having an outlet at its opposite end, an elastic conical nozzle secured about the outlet of the container and having a normally closed orifice at the apex thereof and its side walls gradually decreasing in thickness toward its free end to provide a feather edge entirely surrounding the discharge orifice, the interior of the nozzle being unobstructed throughout its entire length to provide an unobstructed chamber having direct communication with the outlet of the container and the discharge orifice of the nozzle.

2. A collapsible container closed at one end and having converging walls at its other end terminating in a neck provided at its end with a laterally extending flange, an elastic conical nozzle fitted to the neck and having a normally closed

discharge orifice at the apex thereof and its side walls gradually decreasing in thickness toward its free end to provide a feather edge entirely surrounding the discharge orifice, the interior of the nozzle being unobstructed throughout its entire length to provide an unobstructed chamber having direct communication with the container and discharge orifice respectively, and an inwardly extending annular rib of uniform thickness formed on the large end of the nozzle and bearing against the flange of the neck, the base of the rib being enlarged and inclined to conform to and adapted to bear against the converging walls of the container.

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