June 29, 1954 E. B. ROBBINS 2,682,355

DISPENSING TUBE COLLAPSIBLE BY BELLOWS-LIKE ACTION

Filed Oct. 23, 1951

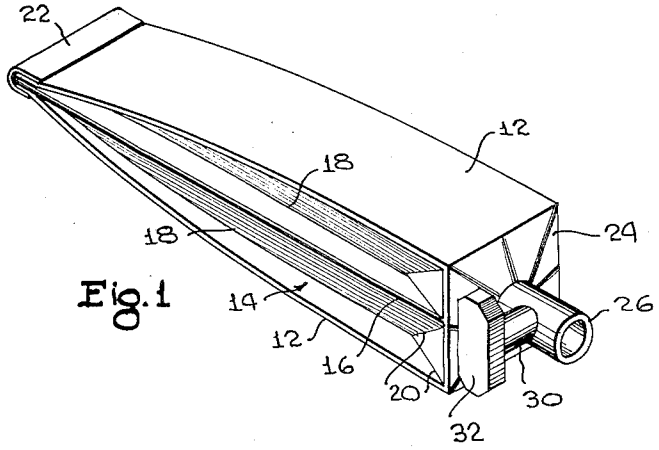


Fig. 1

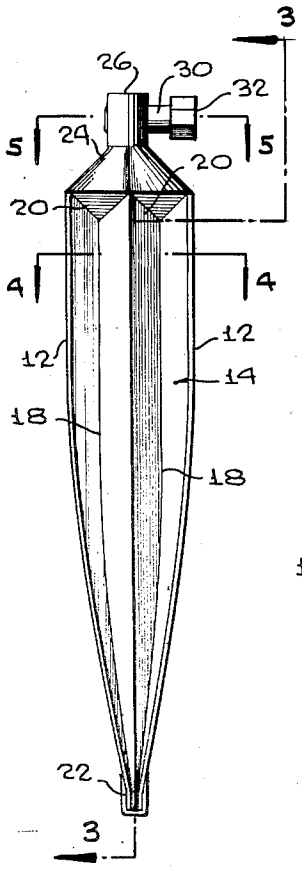


Fig. 2

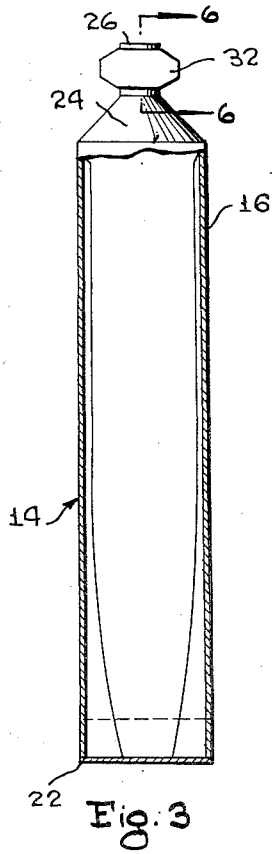


Fig. 3

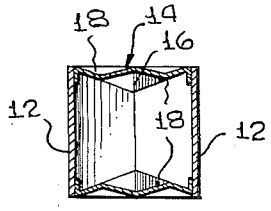


Fig. 4

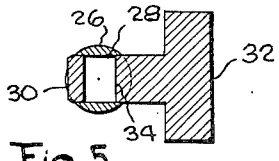


Fig. 5

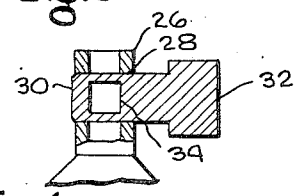


Fig. 6

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Patented June 29, 1954 2,682,355

UNITED STATES PATENT OFFICE

2,682,355

DISPENSING TUBE COLLAPSIBLE BY BELLOWS-LIKE ACTION

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Application October 23, 1951, Serial No. 252,691

1 Claim. (Cl. 222—107)

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This invention relates to dispensing tubes or containers for such materials as tooth paste, shaving cream or the like. More particularly, the invention has reference to a container falling within the category referred to, and formed to a bellows-like configuration to facilitate the dispensing of the contents.

Conventionally, pastes, compounds, creams, or liquids contained within dispensing tubes are merchandised in metallic tubes having collapsible side walls. Dispensing containers so formed have certain deficiencies, however, in that they tend to become wrinkled, punctured, and unsightly. Further, the material of which they are formed is relatively expensive and tends to become critical during times of national stress.

The main object of the present invention, accordingly, is to provide a dispensing container collapsible by a bellows-like action, so as to force the contents thereof from its discharge orifice with considerable ease.

Another important object is to provide a bellows-like dispenser which can be formed wholly from plastic or other non-critical materials.

In carrying out a still further object of the invention, I propose to provide a container of the type stated which will be attractive in appearance at all times, and will be so formed as to eliminate or at least materially reduce the possibility of its being accidentally punctured.

Other objects will appear from the following description, the claims appended thereto, and from the annexed drawings, in which like reference characters designate like parts throughout the several views, and wherein:

Figure 1 is a perspective view of a dispensing container formed in accordance with the present invention;

Figure 2 is a side elevational view;

Figure 3 is a longitudinal sectional view taken substantially on line 3—3 of Figure 2;

Figure 4 is a transverse sectional view taken on line 4—4 of Figure 2;

Figure 5 is an enlarged sectional view on line 5—5 of Figure 2 showing a preferred form of valve; and

Figure 6 is a sectional view on line 6—6 of Figure 3.

Referring to the drawings in detail, the container formed in accordance with the present invention includes a pair of identically shaped, oppositely arranged, main walls 12. These are formed, preferably, from flat, relatively stiff pieces of plastic or other material having similar characteristics.

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Each of the main walls 12 is of generally elongated, rectangular configuration and has its opposite ends cut off squarely, that is, at right angles to the opposite longitudinal edges of the wall.

Secured to and extending between the longitudinal edges of the respective main walls 12 are collapsible walls generally designated 14.

Each collapsible wall 14 is identical to the other, and hence only one will be described herein. The collapsible wall, in this connection, is formed from a piece of plastic material which is thin and flexible and yet strong, to resist its being accidentally punctured. Each piece is generally rectangular in blank, and is formed with an outer fold 16 extending longitudinally and centrally thereof and fully from end to end of the piece. Inner folds 18 are disposed at opposite sides of the main, centrally disposed, outer fold line 16, and are spaced equidistantly from said center fold line and the respective longitudinal edges of the collapsible wall. As may be noted from Figure 3, the inner folds 18 preferably converge along curving lines, in the direction of the bottom of the container. Adjacent the upper ends of the collapsible walls, the inner fold lines merge into upwardly diverging end folds 20.

The respective longitudinal edges of each collapsible wall 14 are bonded either by heat or glue with the longitudinal edges of the main walls 12, said main walls being so spaced apart as to collapse the walls 14 slightly along the lines of their respective folds, as can be readily noted from Figure 4.

Extending transversely of the lower end of the dispenser, and sealably clinching the main and collapsible walls, is a clamp member 22 of U-shaped cross sectional configuration.

At the head end of the dispenser, a top wall 24 is provided, said top wall being of any desired shape and being tapered upwardly in the present instance. The top wall, at its lower end, is secured fixedly in any suitable manner to the upper end edges of the respective main and collapsible walls 12 and 14.

Formed integrally with the top wall 24, and disposed centrally thereof, is an upstanding neck 26, having a bore extending therethrough and communicating with the interior of the dispenser. The neck 26 can, if desired, be externally threaded to receive a conventional closure cap such as is generally provided upon collapsible tubes. This is believed sufficiently obvious as not to require special illustration herein.

Alternatively, the dispensing of the contents

can be controlled through the provision of a transverse bore **28** formed in the neck **26**, and communicating with the longitudinal bore formed in said neck. The transverse bore **28** receives the shank **30** of a key having at one end a handle **32**. The shank **30** can project beyond the opposite ends of the transverse bore **28** if desired, but in the present instance, the shank terminates at one end flush with the surface of the neck **26**.

Formed in the shank **30** is a transversely extended passage **34**, which is adapted to be brought into registration with the longitudinal bore of the neck **26**, when the handle **32** is rotated 90 degrees in one direction. Further rotation of the handle **32** 90 degrees in either direction again shifts the shank to a position in which the passage **34** thereof is out of registration with the longitudinal bore of the neck **26**, so as to seal the dispensing container until the next use thereof.

The valve illustrated in Figures 5 and 6 might be preferable in some instances where the contents of the container are of relatively low viscosity, as would be the case, for example, with some cements.

In use, the valve is moved to the open position thereof, and the user grasps the body of the dispensing container, applying a light pressure against the main walls **12** toward one another. The stiff material of which the main wall is formed distributes the pressure evenly over the entire length of the tube. This is in contrast to the operation of conventionally formed collapsible tubes, wherein the pressure applied to the walls of the tubes is usually retained at or in the immediate vicinity of the location where the fingers are exerting their pressure.

The manner of operation of the dispensing container formed in accordance with the present invention results in a half emptied tube being as attractive as one which is completely filled, the only difference between a tube which has been partially emptied and one which is full residing in the fact that the collapsible side walls are folded partially into the center of the tube.

Because the side walls fold into the center area of the tube, while it is being emptied, it is possible to force substantially all of the tube contents therefrom, with considerable ease.

It is believed clear that the invention is not necessarily confined to the specific use or uses thereof described above, since it may be utilized for any purpose to which it may be suited. Nor is the invention to be necessarily limited to the specific construction illustrated and described, since such construction is only intended to be illustrative of the principles of operation and the means presently devised to carry out said principles, it being considered that the invention comprehends any minor changes in construction that may be permitted within the scope of the appended claim.

What is claimed is:

A dispensing container for fluid material, said container having a head end and a foot end and comprising a pair of rectangular, flat, oppositely arranged main walls converging toward the foot end of the container and formed of a stiff substance for bodily movement thereof toward one another responsive to the application of pressure thereto by a user; bellows-like collapsible walls each disposed at one side of the container and each having its opposite longitudinal edges adhesively secured to the main wall longitudinal edges at the same side of the container, each collapsible wall being formed separately from the main walls from material characterized by its inherent flexibility as compared to the stiffness of the material of which the main walls are formed, each collapsible wall having an outwardly directed fold extending longitudinally and centrally thereof and a pair of inner folds directed inwardly of the container and merged into the first fold at opposite sides of the first fold, the several folds being extended longitudinally of the container in substantially parallel relation to reduce the interior cross-sectional area of the container when the main walls are pressed toward each other and thereby force said material out of the container, the respective folds of the collapsible walls being fully collapsed at the foot end of the container and being engaged by and between the converging ends of the main walls; a clamp extending transversely of the foot end of the container and formed to a U-shaped cross sectional configuration to receive and grip the engaging main and collapsible walls at the foot end of the container; a rigid end wall at the head end of the container secured peripherally to the main and collapsible walls and having a dispensing opening through which said material is forced, the rigid end wall retaining the collapsible walls in a substantially fully unfolded condition at the head end of the container; and valve means mounted upon the end wall and associated with the dispensing opening for controlling the flow of material therethrough.

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