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J. CRANE
COLLAPSIBLE CONTAINER FROM WHICH PASTY MATERIALS
ARE ADAPTED TO BE EXTRUDED
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2,139,575

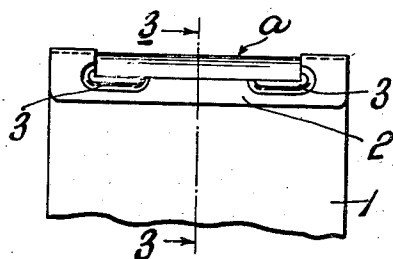


FIG. 1.

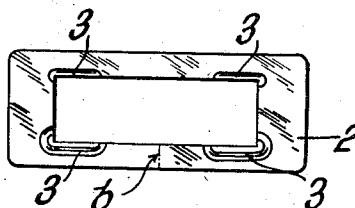


FIG. 2.



FIG. 3.

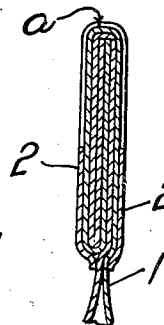


FIG. 4.

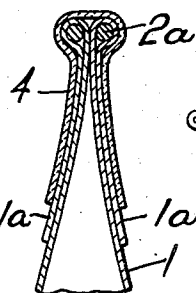


FIG. 6.

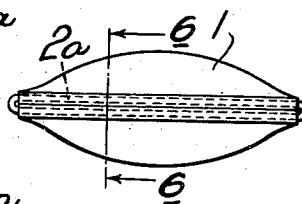


FIG. 5.

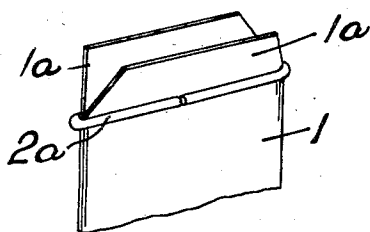


FIG. 7.

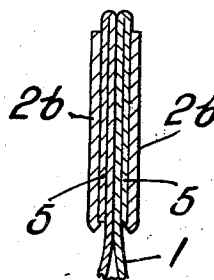


FIG. 8.

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COLLAPSIBLE CONTAINER FROM WHICH
PASTY MATERIALS ARE ADAPTED TO BE
EXTRUDED

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7 Claims. (Cl. 221—60)

This invention relates to collapsible containers from which pasty materials such as tooth paste, shaving cream, soap paste, oil paints and the like are adapted to be extruded.

5 The object of the invention is the provision of an improved collapsible container of this character, which will be cheaper to manufacture and more convenient in use.

10 The invention consists broadly in the arrangement that the aperture of the container through which the pasty material is to be extruded is normally closed by spring means and is adapted, when the container is being squeezed, to open sufficiently to give egress to the material, and 15 when the squeezing pressure is removed to close again.

In order that the invention may be the more clearly understood a number of containers in accordance therewith will now be described, reference being made to the accompanying drawing, wherein:

Figure 1 is a side elevation of the egress end of one of said containers.

25 Figure 2 is a view of a blank employed in the arrangement of Figure 1.

Figure 3 is a section to an enlarged scale on line 3—3 of Figure 1.

Figure 4 is a similar view to Figure 3 showing a slightly modified arrangement.

30 Figure 5 is a plan of the egress end of another of said containers.

Figure 6 is a section to an enlarged scale on line 6—6 of Figure 5.

35 Figure 7 is a perspective view of the arrangement of Figures 5 and 6 in process of manufacture.

Figure 8 is a longitudinal section of the egress end of another of said containers.

40 Referring first to Figures 1 to 3, the end of the tube 1 from which the paste is to be extruded is closed by first being flattened and doubled back upon itself as shown in Figure 3 and then having a clip 2 of spring material fastened over the doubled-back portion in such a way as normally to maintain it in its flattened condition. 45 At this stage the tube is sealed absolutely hermetically and may be kept for any length of time. The spring clip 1 is such that the actual end edge *a* of the tube 1 is exposed, at least throughout part of its length, but, just behind this exposed end edge the two sides of the tube are pressed yieldably together. When the tube 1 is to be used this exposed end edge *a*, or part of it, is cut open by means of any suitable instrument such as scissors or an old razor blade, and 55

then when the tube is squeezed, the spring clip 2 will yield and permit the paste to issue in ribbon form. Immediately the pressure ceases the spring clips 2 will recover and again bring the sides of the tube 1 together, and thus the paste 5 will be retained and kept in good condition throughout the life of the tube.

The spring clip 2 in the embodiment of Figures 1 to 3 takes the form of a rectangular plate of sheet metal (shown in blank form in Figure 10 2) having its length equal to the length of the end edge *a* of the tube 1 and doubled about its major axis over the said end edge of the tube, said plate being formed with a rectangular opening in it, as shown, whereby the major portion 15 of the said end edge *a* of the tube is exposed as heretofore stated. One of the side strips of the clip 2 may be divided as at *b* for the purpose of giving added resiliency to the clip, and in this case, other conditions being equal, the side 20 strips will have to be made wider than in the case when both side strips are undivided. It is of great importance to get the strength of the spring just right to suit the various conditions such as the viscosity of the paste, the 25 width of the emerging ribbon and so on.

The clip 2, in being doubled over the said end edge of the tube, may be formed with indentations 3 which bite into the material of the tube 1 and prevent the possibility of the clip 30 slipping off under pressure. The hold of the clip 2 on the tube 1 may be further increased by doubling the end of the tube back more than once as shown in Figure 4 before applying the clip. This gives the indentations 3 more to bite 35 into and forms ridges over which the side edges of the clip may be bent as shown.

Again, longitudinal lugs may be formed at the ends on one or both sides of the clip, or one such lug may be formed on one side of the clip 40 at one end and another on the other side at the other end, each of such lugs being bent round and over the opposite side of the clip so as to maintain the two sides more firmly together and more firmly on the end of the tube. 45

During manufacture, in order to facilitate the filling of the tube 1 from the opposite end, it may be preferred to effect the cutting open of the end edge *a* of the tube which is exposed through the clip 2, at the factory before performing the filling operation. Thus, as the paste is forced into the tube 1 air will be free to escape through the opening by which the paste will be subsequently extruded.

In this case, in order that the seal shall be 55

absolutely hermetic when the tube 1 leaves the factory, it may be necessary to cover the opened end edge of the tube by means of some adhesive or sealing substance such as cement or glue or a sealing strip of suitable material such as foil or paper or an adhesive substance in the aperture itself or a longitudinal cap, such adhesive or sealing strip to be removed by the user before use.

With a tube in accordance with the present invention, since a screw cap is not employed it is not in the least necessary that the material of the tube shall be metal in the usual way. The tube may be made of any thin waterproof material such as transparent cellulose acetate which may be attractively coloured.

If desired, both ends of the tube may be closed in the same way, either end being cut open by the user, or the separate sealing device being removed when one end has been cut open at the factory.

In the arrangements of Figures 1 to 4 the clips may be modified in a variety of ways. For example the clip may consist of a single length of ribbon, or of wire of any desired section, say round or half round, bent round the flattened end of the tube a small distance from the actual end edge, so that the two ends of such ribbon or wire meet, or nearly so at one side of the tube. Again the clip may consist of a closed ring of wire or ribbon squeezed flat on the flattened end of the tube. It may also consist of two lengths of wire or ribbon held together at or near their ends by any suitable spring means.

Figures 5, 6 and 7 show an arrangement in which the end of the tube 1 is not closed by being doubled back upon itself, but the open end is simply flattened and held in that state by means of the clip 2a, here shown as a single length of wire bent round the flattened end a small distance from the actual end edge. In this case the end of the tube projecting beyond the clip 2a is slit down as far as the clip, as shown in Figure 7, and the flaps 1a so formed turned back over the clip and fastened to the outside of the tube, or, in the case of a heavy metal tube, held there by the strength of the metal. In this case, also, when a closed ring is employed as the clip, this may be slipped over the tube in its round form and flattened, together with the end of the tube.

In the case, as in Figures 5 to 7, when the end of the tube is not closed by being doubled back upon itself, some additional sealing device such as paper or foil 4 (Figure 6) or an adhesive such as cement or glue which hardens after application, or a longitudinal cap should preferably be added as in the case when the doubled back end is cut open at the factory.

In the arrangement shown in Figure 8, the tube 1 is slit down a short distance from its end, the flaps 5 so formed turned down on each side, and the clip 2b (here shown as a metal strip or ring) subsequently squeezed on, the turned down flaps forming a ridge which prevents the clip from being forced off, as in arrangement of Figure 4 when the end of the tube is closed by being doubled back twice.

In this case also the opening may be sealed by means of some adhesive, or a covering strip or a cap, an where a sealing strip is used it may be punched between the tube and the clip or brought down outside the spring and turned in under it.

It will be appreciated that any of the arrangements herein described may, when it is possible,

be employed in combination with each other; for example, the type of clip shown in Figures 1 to 4 may be employed in cases such as Figure 8 where the end of the tube is not closed by being doubled back upon itself.

In all cases it is important to proportion the size and length of the spring according to the viscosity of the contents of the tube.

What I claim, and desire to secure by Letters Patent is:—

1. A collapsible container tube from which pasty materials are adapted to be extruded, comprising a tubular body closed at its egress end by being squeezed together and doubled back upon itself, and spring closing means completely surrounding said egress end and adapted yieldably to maintain said egress end squeezed together, whereby, when the doubled back portion of said egress end is ruptured by the user said egress end remains normally closed but opens when said tube is squeezed sufficiently to give egress to the pasty material and is closed again by said spring closing means when the squeezing pressure is removed.

2. A collapsible container tube from which pasty materials are adapted to be extruded, comprising a tubular body closed at its egress end by being squeezed together, and a spring clip consisting of a single piece of resilient metal completely surrounding said egress end and maintaining said egress end together throughout the whole of its width, whereby said egress end opens, when the tube is squeezed, sufficiently to give egress to the pasty material and is closed again by said spring clip when the squeezing pressure is removed.

3. A collapsible container tube from which pasty materials are adapted to be extruded, comprising a tubular body closed at its egress end by being squeezed together, and a spring clip consisting of a resilient plate doubled upon itself over said egress end and of sufficient length to extend completely across at opposite sides of the body so as to maintain said egress end together throughout the whole of the width, said plate having an opening in it for affording egress to the pasty material, whereby, when said tube is squeezed, said egress end opens and the clip yields sufficiently to give egress to the pasty material through said opening and said end is closed again by said spring clip when the squeezing pressure is removed.

4. A collapsible container tube from which pasty materials are adapted to be extruded, comprising a tubular body closed at its egress end by being squeezed together and doubled back upon itself, and a spring clip consisting of a plate doubled upon itself over said doubled back egress end so as to maintain said egress end together throughout the whole of its width, said plate extending completely across at opposite sides of the body and having an opening in it through which the doubled back portion of said egress end is adapted to be ruptured over part of its width by the user, whereby, subsequently to such rupture, said egress end remains normally closed but opens, when said tube is squeezed, sufficiently to give egress to the pasty material and is closed again by said spring clip when the squeezing pressure is removed.

5. A collapsible container tube from which pasty materials are adapted to be extruded, comprising a tubular body closed at its egress end by being squeezed together, and a spring clip consisting of a single elongated piece of resilient metal substantially surrounding said egress end

so as to maintain it squeezed together throughout the whole of its width, whereby said egress end opens, when the tube is squeezed, sufficiently to give egress to the pasty material, and is closed again by said spring clip when the squeezing pressure is removed.

6. A collapsible container tube from which pasty materials are adapted to be extruded, comprising a tubular body closed at its egress end by being squeezed together, and a spring clip consisting of a single elongated piece of resilient metal substantially surrounding said egress end a small distance from the actual extremity of the tubular body so as yieldably to maintain it squeezed together throughout the whole of its width, said tubular body being slit from the actual extremity to the spring clip and the flaps so formed being doubled back over said spring clip.

7. A collapsible container tube from which pasty materials are adapted to be extruded, comprising a tubular body closed at its egress end by being squeezed together, a spring clip consisting of a single elongated piece of resilient metal substantially surrounding said egress end a small distance from the actual extremity of the tubular body so as yieldably to maintain it squeezed together, said tubular body being slit from the actual extremity of the tube to the spring clip, and the flaps so formed being doubled back over said spring clip, and a separate destructible sealing element doubled back over said egress end and flaps.

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