Jan. 5, 1937. N. R. McLEOD 2,066,792

COLLAPSIBLE TUBE CONTAINER

Filed Oct. 31, 1934

Fig. 1.

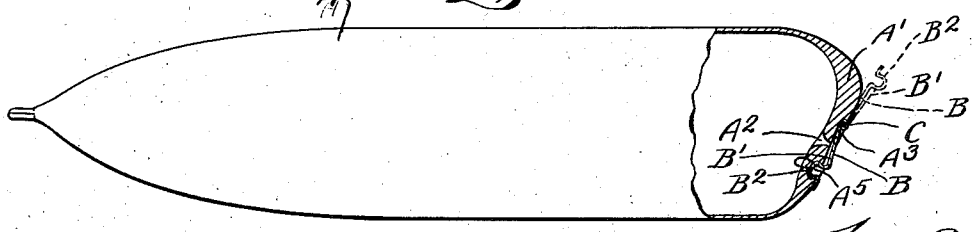


Fig. 2.

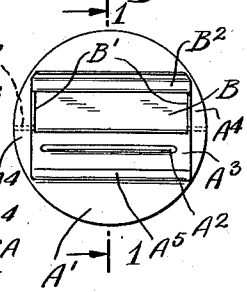


Fig. 3.

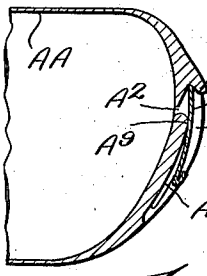


Fig. 3A.

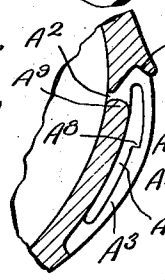


Fig. 4.

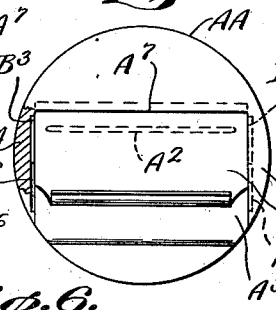


Fig. 5.

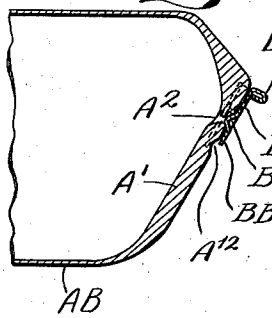


Fig. 6.

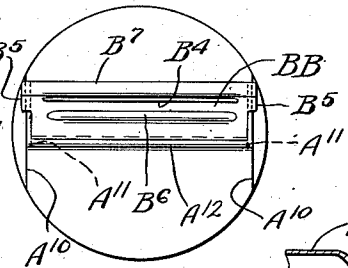


Fig. 8

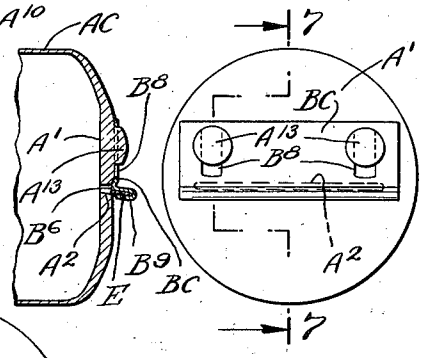


Fig. 7.

Fig. 9.

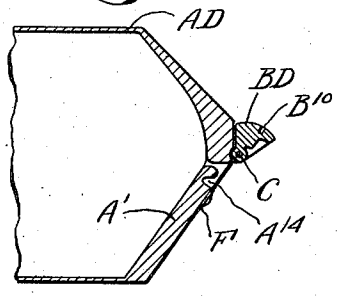
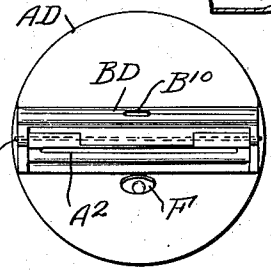


Fig. 10.



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Patented Jan. 5, 1937 2,066,792

UNITED STATES PATENT OFFICE

2,066,792

COLLAPSIBLE TUBE CONTAINER

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Application October 31, 1934, Serial No. 750,785

12 Claims. (Cl. 91—67.4)

The general object of the present invention is to provide an improved collapsible tube container for a semi-fluid material of the general consistency of cold cream and of the well known type in which the container is formed with a thin wall of soft metal, so that pressure applied to the container by the fingers of the user will compress or collapse the container to thereby expel through a restricted container outlet as much or as little of its contents as may be desirable at each compressing operation.

More specifically, the object of the invention is to devise a container of the type specified including provisions whereby the container may be used to spread a thin coating of the material in the container over the face of the user or other surface which is to be coated with the material expelled from the container by collapsing the latter. To this end, the container is provided with a suitably shaped discharge outlet ordinarily and preferably in the form of a narrow elongated slot, and the container is provided with a suitably shaped and disposed spreader portion of considerable areal extent between which and the surface to be coated a layer or thin body of the coating material expelled from the container is held during the coating operation.

A further object of the invention is to provide the container with simple and effective closure means adapted to seal the discharge outlet of the container when the latter is not in use and which in its open position may provide all or a part of the spreading surface of the container, or will occupy a position at one side of the spreading surface provided by the body portion of the container. In preferred forms of the invention the closure member in its closed position covers a spreader surface formed on the body of the container, and when moved from its open into its closed position, forces back into the container through the discharge outlet of the latter excess material expelled from the container and remaining on the spreader surface at the conclusion of the preceding spreading operation.

The various features of novelty which characterize my invention are pointed out in the claims annexed to and forming a part of this specification. For a better understanding of the invention, however, its nature and specific objects attained with it, reference should be had to the accompanying drawing and descriptive matter in which I have illustrated and described preferred embodiments of the invention.

Fig. 1 is an elevation of a collapsible container, partly in section on the line 1—1 of Fig. 2;

Fig. 2 is an end elevation of the container shown in Fig. 1;

Fig. 3 is a partial longitudinal section of a container of modified form;

Fig. 3A is a partial section taken similarly to Fig. 3 but on a larger scale and with the closure part removed.

Fig. 4 is an end elevation of the container shown in Fig. 3;

Fig. 5 is a longitudinal section of a third form of container;

Fig. 6 is an end elevation of the container shown in Fig. 5;

Fig. 7 is a partial longitudinal section of a fourth form of container;

Fig. 8 is an end elevation of the container shown in Fig. 7;

Fig. 9 is a partial longitudinal section of a container of still another form; and

Fig. 10 is an end elevation of the container shown in Fig. 9.

In the form of the invention shown in Figs. 1 and 2, the collapsible container A is in the form of a tube made of soft metal and of conventional shape, except that its discharge end wall portion A^1 is thicker and more rigid than is customary and is specially shaped in accordance with the present invention. The container discharge orifice A^2 is in the form of a slot in the thickened end wall portion A^1, the slot extending transversely to the tube axis, and opening into a shallow recess A^3 formed in the outer surface of the end wall portion A^1 and adapted to be covered by a cover member B. The latter is advantageously formed of a thin resilient sheet of metal, such as tin or brass, and is hinge connected to the end wall A^1 at one side of the recess A^3. In the construction shown, the hinge pintle is a wire or small diameter rod C of suitable metal having its ends anchored in the portions A^4 of the container which form the end walls of the recess A^3, the hinge edge of the cover plate B being bent about the wire C.

Suitable provisions are desirably made for normally holding the cover in its closed position. The provisions shown for the purpose in Figs. 1 and 2, comprise a tongue or rib B^2 at the inner side of the cover, which is adapted to enter and be resiliently held in an undercut grove A^5 in the outer surface of the end wall A' at the lower edge of the recess A^3 as the container appears in Fig. 1. The tongue B^2 is advantageously formed by bending a portion of the cover plate B adjacent

its free edge into an open loop of proper dimensions to be compressed slightly as it is being moved into recess A^4 so that it will expand and resiliently engage the undercut walls of that groove when fully entered therein.

When the cover is in its open position, shown in Figs. 1 and 2, the shaving cream or other material in the container may be extruded or expelled as required, by collapsing the body portion of the tube, and as the material is extruded it may be distributed over the face of the user or other surface onto which the material is to be spread, by moving the container around over said surface while keeping the edges of the recess A^3 in more or less close contact with said surface. The end wall A^1 is advantageously so shaped that the portions thereof at the margin of the recess A^3 will lie in a plane, or, preferably, in a smooth rounded surface which can be defined generally as a cylindrical surface with its surface elements generally parallel to the hinge pintle C. While the external contour of the end wall A^1 may vary, it should be such as to insure that the material extruded into the recess will spread in a suitably thin layer on a surface over which the container is moved with the marginal edge of the spreading surface in more or less close contact therewith.

As shown, the cover B is provided at its ends with inwardly extending flange portions B^1 which fit snugly between and may be in resilient engagement with the opposed end walls A^4 of the recess A^3 when the cover is in its closed position. The cover B in its open position forms an extension of the spreading portion of the container formed by the recess A^3, and the spreading surface or portion of the container has a marginal scraping edge comprising the portions of the container body at the ends of the recess, the edge of the groove A^5 remote from the orifice A^2, and the flanges B' and rib B^2 of the cover B.

With the arrangement shown in Figs. 1 and 2, at the end of each spreading operation the recess A^3 is wholly or largely filled with material extruded from the container, and more or less of that material is held on the face or side of the cover B which is then exposed. The movement of the member B into its closed position will force the bulk of the material held on the cover and in the recess A^3 back into the receptacle through the orifice A^2 and the cover B, in its closed position, forms a seal for the material in the outlet A^2 and in the recess A^3.

The end wall A^1 with its outlet A^2, recess A^3 and groove A^5 may readily be formed in the course of the metal extrusion operation commonly employed in forming a soft metal, collapsible container, and without requiring any change in the apparatus customarily employed to make collapsible tube containers, except for the necessary changes in shape of the male and female die parts of the apparatus. Furthermore, the wire C, if suitably mounted and held in female die part may be anchored in place during the tube forming operation, with the cover part B mounted on said wire. Alternatively, the cover part may be secured in place after the container is formed, by forcing the pintle wire C through one portion A^4 and into the other portion A^4.

In the modified form of the invention shown in Figs. 3, 3A, and 4, the container AA may be identical in construction with the tube A of Figs. 1 and 2, except in respect to the provisions made for the mounting and movement of the cover member BA, which is slidingly connected to the container. As shown, the cover member BA is formed of resilient sheet metal and is provided with projecting end portions B^3 received in guide slots A^6 which are formed in the opposing inner faces of the container portions A^4 at the ends of the recess A^3, and extend transversely to the outlet A^2. Advantageously, the edge A^7 of the recess A^3 engaged by the front edge of the cover plate in the closed position of the latter, is undercut so as to spring the engaging edge of the cover plate inwardly when the latter is moved into its closed position. To resiliently hold the cover plate BA in its closed position, the outer wall of each slot A^6 may be formed with an outwardly extending jog A^8 into which the rear edge of the corresponding end projection B^3 will spring when the cover plate is moved into its closed position, the cover plate then turning about the outer edge A^9 of the side of the orifice slot A^2 remote from the under cut surface A^7 as the latter is engaged by and deflects the adjacent edge of the cover. With the arrangement shown in Figs. 3, 3A, and 4, the cover plate and grooves or guideways A^6 are preferably curved slightly as shown, the concave sides of the curves being toward the container.

The general operation of the form of the invention shown in the last mentioned figures is substantially the same as that of the construction first described, except that the action of forcing back material held in the recess A^3 is less pronounced in the construction Figs. 3, 3A, and 4, than in the construction first described. Moreover, the movement of the cover plate BA into its closed position does not return into the container material which may have accumulated on the outer side of the cover plate. However, the container including the cover plate BA may be so proportioned and manipulated that the spreading surface of the container is wholly formed by the bottom wall of the portion of the recess A^3 at one side of the cover member BA, in the open position of the latter, so that there will be no tendency to any significant accumulation of material on the outer side of the cover plate BA in the normal spreading operation of the container. As shown, the edge portion of the cover plate BA remote from the slot A^2 is doubled back on itself to provide an edge or handle portion for engagement by the finger of the user in opening the container. By the use of metal extruding apparatus having suitable die parts, the grooves A^6 may be formed with the projections B^3 of the cover BB received therein, during, and in the course of, the extrusion operation by which the container is formed.

In the form of the invention shown in Figs. 1 and 2, the portions of the cover and of the container end wall at the margin of the spreading surface collectively formed by said end wall and cover provide a raised marginal rim extending all the way around the spreading surface, so that regardless of the direction in which the container is moved over the surface, there is a trailing rim portion which acts as an effective scraping edge or rib and regulates the thickness of the coating applied. In general, however, the movement of the container may be, and in applying shaving cream to the face, is desirably uni-directional so that a scraping edge or rim is essential only at the trailing side of the spreader surface. Thus the container shown in Figs. 3, 3A and 4 may and for the best results should be moved over the surface to be coated

in a direction transverse to the edge A^7 and so that the edge A^7 is the trailing edge of the recess A^3 during the movement and the edge A^7 then performs the scraping, thickness determining function of the spreader. The portions of the end walls A^4 of the recess A^3 adjacent the shoulder A^7 perform a guiding surface, and tend to prevent extrusion of the coating material longitudinally of the rib A^7 beyond the ends of the latter, but are not strictly essential, and nothing equivalent thereto is provided in the hereinafter described constructions shown in Figs. 5–8.

In the form of the invention shown in Figs. 5 and 6, the material extruded through the outlet opening A^2 in the thickened end wall A' is not received in a recess A^3, as in the construction previously described, but passes through an orifice slot B^4 in the sliding cover member BB, the outer side of which forms all the effective spreading surface of the container. The cover member BB is slidingly connected to the container by providing the cover member at its ends with reversely bent portions B^5 back of and slightly spaced from the inner side of the cover member. The projections B^5 enter slots A^{11} in the oppositely facing walls A^{10} of recesses or rabbets, provided at the opposite ends of, and extending transversely to the orifice A^2 As shown, the cover plate is shaped to provide an internal rib B^6 which is resiliently received in the outlet slot A^2 in the closed position of the cover BB, and in the open position of the latter is recived in a parallel groove A^{12} formed in the outer face of the thickened end wall A^1, so that the cover member is resiliently held both in its open and in its closed position. One edge of the cover member BB is desirably shaped to form an outwardly extending rib B^7 for engagement by the user in moving the cover between its opened and closed positions, also serving as the scraping edge of the device and regulates the thickness of the coating applied. With the form of the invention shown in Figs. 5 and 6, the cover member BB may be moved into place after the formation of the container by a simple sliding movement, if the slots A^{11} are open ended. The movement of the cover BB into its closed position does not serve to return into the container any significant portion of the material previously dispensed from the container.

In lieu of the provisions shown in Figs. 3 to 6 for slidingly mounting a cover member on the container, the cover member may be formed with slots receiving the shanks of headed integral extensions of the thickened end wall A^1 of the container. Thus as shown in Figs. 7 and 8, the sheet metal cover member BC is formed with slots B^8 which extend transversely to the container orifice A^2 and through which extend the shanks of integral headed extensions A^{13} from the end wall A' of the container AC. The cover member BC is shown as formed with a rib B^6 at its inner side serving the functions of the rib B^6 of Figs. 5 and 6. The cover member BC also is shown as including a folded portion B^9 adjacent its outlet closing edge which may receive and resiliently hold a strip E of cork or the like which is in sealing engagement with the outer end of the wall of the outlet slot A^2 in the closed position of the container. The loop portion B^9 also serves as an operating handle or portion for engagement by the finger of the user in opening and closing the container, and as the scraping rib.

The form of the invention shown in Figs. 9 and 10 differs from that shown in Figs. 1 and 2 primarily in the fact that the hinged cover member BD is not formed of sheet metal but is formed of the same soft metal used in the formation of the container body AD to which it is hinge connected by a pintle pin C. With the arrangement of Figs. 9 and 10, it is practically essential to attach the cover member BD to the container AD after the latter and the cover member are separately formed, by forcing the pintle wire C into place. With the arrangement of Figs. 9 and 10, the cover member BD may be locked in its closed position by a button or latching member F pivotally connected to the thickened end wall A^1 of the container AD and engaging in a groove B^{10} formed for the purpose in the edge of the cover member BD remote from the pintle C. In the closed position of the cover member BD, a rib portion at the free edge of the latter is received in a groove A^{14} formed in the outer surface of the thickened end A^1 of the container.

The different forms of the invention illustrated herein are all alike in that in each, the end wall of the container is thickened and specially shaped to provide a spreading surface support of sufficient rigidity to avoid objectionable deformation in the normal use of the container, regardless of whether the spreading surface is formed wholly or partly on the end wall of the container or is formed in whole or in part by the cover member movably mounted on the end wall. In each form of the invention also, the container outlet may be tightly sealed by the cover member illustrated, when the container is not in use, so as to avoid the drying and hardening of the container contents which occurs on any prolonged exposure to the air, and which is especially objectionable because of the tendency for the outlet opening to be plugged by a more or less hardened body of material.

In each form of the invention disclosed, also, the container alone or with its cover member forms an effective and easily manipulated implement for spreading the container contents over the surface to be coated therewith. The improved container is especially useful as a container and spreader for a so-called brushless shaving cream, and in such use, the invention is characterized in particular by the economy in the use of the shaving cream obtainable as a result of the desirable uniformity with which it may spread over the face or other body portion to be shaved and the avoidance of waste, and particularly the avoidance of any necessity for the accumulation of the cream on the fingers of the user.

The forms of the invention shown in Figs. 1–4, 9 and 10 are especially advantageous because of the provisions which they include for covering all or the major portion of the spreading surface, when the container is closed, and the provisions for forcing excess material on the spreading surface, back into the container at the conclusion of each spreading operation. With the container covers formed of thin sheet metal as in the constructions illustrated in all the figures except Figs. 9 and 10, the ribs or folds with which the cover members are formed give a desirable stiffness to the cover members, as well as serving the special purposes previously mentioned.

With any of the forms of the invention disclosed, the container when originally made and filled may have its outlet opening A^2 sealed by a thin integral portion of the container which can

readily be cut out by the user preparatory to the initial use of the container.

While in accordance with the provisions of the statutes, I have illustrated and described the best forms of embodiment of my invention now known to me, it will be apparent to those skilled in the art that changes may be made in the form of the apparatus disclosed without departing from the spirit of my invention as set forth in the appended claims and that in some cases certain features of my invention may be used to advantage without a corresponding use of other features.

Having now described my invention, what I claim as new and desire to secure by Letters Patent, is:

1. A collapsible tube container for semi-fluid material, having a thickened end wall and a narrow elongated discharge orifice therein and having an extended external spreading surface transverse to and through which said orifice opens and extends for substantially the full width of said surface.

2. A collapsible tube container for semi-fluid material having a thickened end wall and a narrow elongated discharge orifice therein, and having an extended spreading surface transverse to and through which said orifice opens, and a cover member mounted on said wall and movable into and out of position to cover said surface and close said orifice.

3. A collapsible tube container for semi-fluid material formed with a thickened end wall and with a narrow elongated discharge orifice extending through said wall, and with a shallow recess in the outer side of said wall into which said orifice opens, said recess being adapted to hold material expelled from the container through said orifice as the container is moved about over a surface to be coated with the margin of said recess adjacent said surface.

4. A collapsible tube container for semi-fluid material having a thickened end wall with a narrow elongated discharge orifice therein, and with a shallow external recess in said wall into which said orifice opens, said recess being adapted to hold material expelled from the container through said orifice as the container is moved about over a surface to be coated with the margin of said recess adjacent said surface, and a cover mounted on said thickened end wall for movement between open and closed positions in which the cover is respectively at one side of, and extends across said recess.

5. A collapsible tube container for semi-fluid material having a thickened end wall and a narrow elongated discharge orifice therein, and having a cover member slidingly connected to said end wall for movement into and out of the position to close said orifice, said container having an extended external spreading surface transverse to and through which said orifice opens.

6. A collapsible tube container for semi-fluid material having a thickened end wall and a narrow elongated discharge orifice therein, and having an extended spreading surface transverse to and through which said orifice opens, and a cover member hinge connected to said end wall to turn into and out of position to close said orifice.

7. A collapsible tube container for semi-fluid material having a thickened end wall and a narrow elongated discharge orifice therein, and having an extended spreading surface transverse to and through which said orifice opens, and a cover member hinge connected to said end wall to turn into and out of position to close said orifice and adapted when in its open position to form an extension of said spreading surface.

8. A collapsible tube container for semi-fluid material, having a thickened end wall and a narrow elongated discharge orifice therein, and having a sheet metal cover member connected to said end wall for movement into and out of the position to close said orifice, said cover member and end wall having cooperating provisions for resiliently holding said cover in said position, and said container having an extended external spreading surface transverse to and through which said orifice opens.

9. A collapsible tube container for semi-fluid material having a thickened end wall and a narrow elongated discharge orifice therein, and a sheet metal cover member connected to said end wall to move into and out of position to close said orifice and being bent to provide a transversely extending rib stiffening said member and providing a part for engagement to move the cover.

10. A collapsible tube container for semi-fluid material having a thickened end wall and a narrow elongated discharge orifice therein and having an extended external spreading surface transverse to and through which said orifice opens, and having a raised portion at one side of said surface and generally parallel to said orifice and adapted to serve as a scraper edge determining the thickness of the coating of material spread on a surface over which the container is moved with said spreading surface generally parallel thereto and in such direction that said scraping edge is at the trailing side of said spreading surface.

11. A collapsible tube container for semi-fluid material having a thickened end wall and a narrow elongated discharge orifice therein and having an extended spreading surface transverse to, and through which said orifice opens and having guide slots extending transversely to said orifice at the opposite ends of said spreading surface, and a plate like cover member having end portions received in said slots and slidable therein for movement of said member between closed and open positions in which said member respectively does and does not close said orifice and cover said surface.

12. A collapsible tube container for semi-fluid material having a thickened end wall and a narrow discharge orifice therein of a length substantially greater than half the container diameter and having an extended spreading surface transverse to and through which said orifice opens, and a plate-like cover member connected to said container adjacent opposing sides of the latter for movement of said member between closed and open positions in which said member respectively does and does not close said orifice and cover said surface, said member tending in all positions to prevent distortion of said end wall.

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