

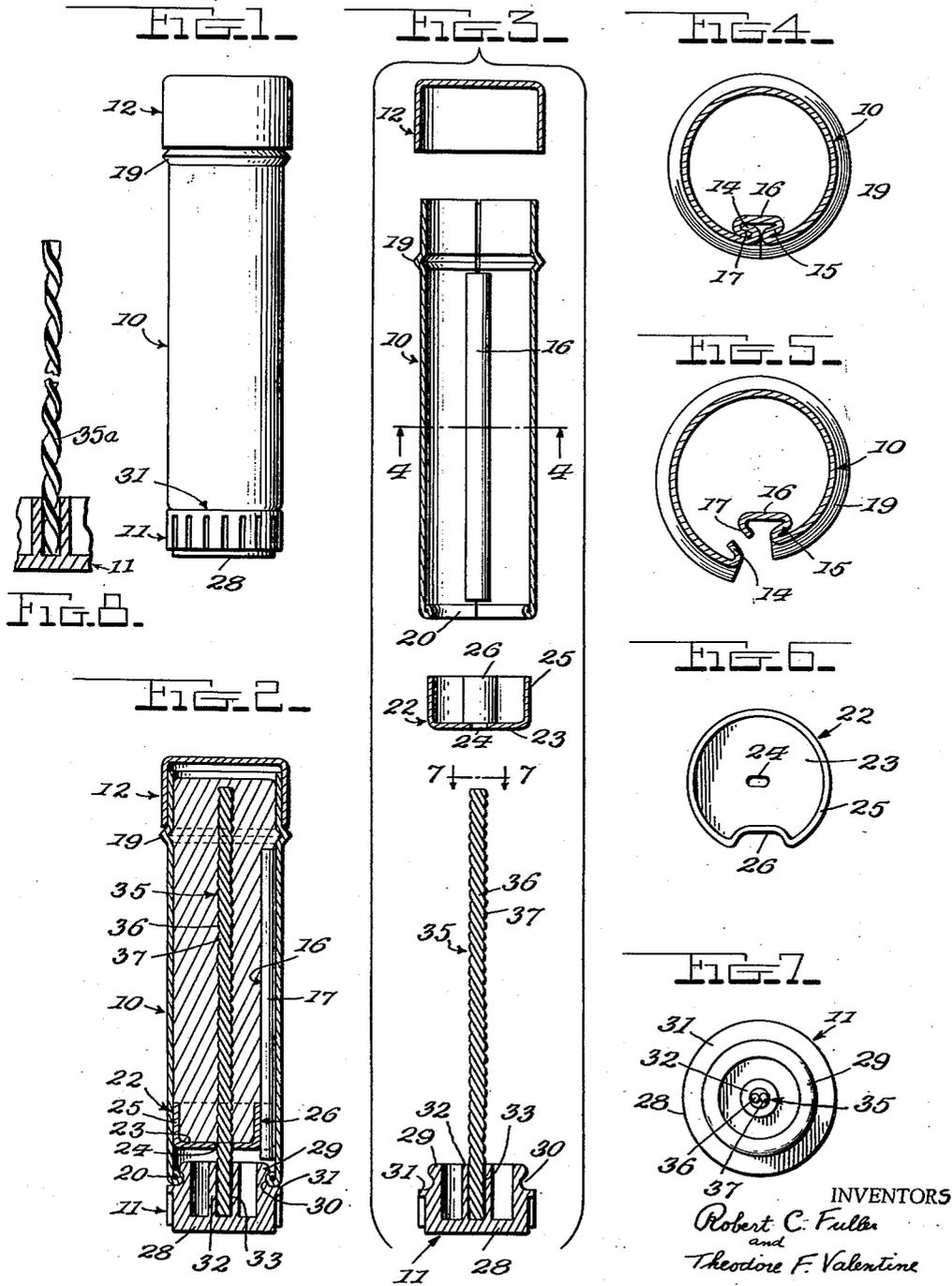
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CONTAINER AND APPLICATOR FOR SEMI-SOLID SUBSTANCES

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CONTAINER AND APPLICATOR FOR SEMI-SOLID SUBSTANCES

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2 Claims. (Cl. 206—56)

This invention relates to a container and applicator for semi-solid substances such as medicaments, salves, and cosmetics.

An object of the invention is the provision of a container and applicator which is made of a few simply manufactured parts which can be made separately and then assembled without complicated operations, and then filled with the semi-solid material to be contained and dispensed.

Another object of the invention is to provide a container and applicator for such substances which is made of a sheet metal body having its parts so provided and arranged as to establish a non-rotational relationship of certain elements, and to provide a resilient engagement with a relatively rotatable element whereby accidental separation is prevented.

With these and other objects in view, as will appear in the course of the following description and claims, an illustrative form of practice is shown on the accompanying drawings, in which:

Figure 1 is a side elevation of the completed device.

Figure 2 is an upright sectional view through the same.

Figure 3 is an exploded view of the several parts, shown essentially in longitudinal section.

Figure 4 is a transverse section substantially on line 4—4 of Figure 3.

Figure 5 is a view showing an intermediate condition of the parts in Figure 4.

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

Figure 7 is a view on line 7—7 of Figure 3.

Figure 8 is an elevational view of a modified form of screw member.

In these drawings, the device is shown as comprised of a body member 10, a rotatable member 11 formed as a knob having an irregular peripheral surface for easy grasp, and a closing cap 12.

As shown in Figure 3, the cap 12 can be formed by simple blanking and stamping of sheet metal.

The body 10 is likewise illustratively formed of sheet metal which has inherent springiness, and the blank of such metal is first curled as shown in Figure 5 to have an inward hook 14 at one seam edge and a composite hook at the other seam edge formed by a rebent portion 15, a substantially flat portion 16, and an outward hook 17. In assembly, the hooks 14 and 17 are interengaged, and then the parts are bumped by providing an internal mandrel and striking an external blow along the longitudinal seam thus provided, whereby the hooks 14, 16, are clinched together into a condition at which the semi-solid material is not forced through the seam, under the low pressures employed in dispensing. This bumping also flattens the reverse bend 15: so that the cross-section of the device is now as shown in Figure 4.

The parts 14, 15, 16, 17 do not extend for the entire length of the body 10 but (Figures 2 and 3) terminate adjacent an outward bead 19 provided in the body

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for stiffening the upper end against change of shape, and serving also as a stop (Figure 1) to limit the movement of the cap 12. At the lower end, these parts 14—17 terminate adjacent an inward curl 20 of the material at the lower end of the body, this curl providing an internal flange for the body.

A piston member 22 (Figures 2, 3 and 6) is provided with a bottom 23 essentially sealing the interior of the body 10, this bottom having an oblong hole 24 at its center. The piston member 22 also has an upstanding flange 25 which closely conforms to and is guided by the body and has an indentation 26 conforming to the internal rib of the body provided by the parts 14—17. This piston member can likewise be made from a blank of sheet metal by simple forming operations in a punch press for example.

The rotatable member 11 (Figures 1, 2, 3 and 7) is formed with a closing end 28, and has an external diameter illustratively essentially the same as that of the body 10, being roughened by flutings so that it can be easily grasped and rotated by the fingers while the body 10 is held. This rotatable member 11 has a reduced upward projection 29 with a peripheral groove 30 for interengaging with the curled flange 20 on the body 10. The shoulder 31 of rotatable member 11 therewith is in sliding rotational engagement with the lower edge of the body 10, and prevents relative inward movement of the member 11, while outward movement of accidental separation is prevented by the upper wall of groove 30 engaging with the upper part of the curled flange 20, the resiliency of the metal body 10 or the member 11, or both, being sufficient to permit snapping the member 11 into place, for the initial engagement of parts, and serving thereafter for maintaining them in relative rotational engagement but against accidental separation.

Centrally, the rotatable member 11 has a stem 32 with cavity 33 opening toward the interior of the body 10, for receiving the screw member 35 which can be formed of two wires 36, 37, twisted together to form a double helix having a pitch angle of about 30° relative to the axis: the wires being twisted and soldered together in a continuous operation and then cut into sections of length to extend from the bottom of cavity 33 in member 11 essentially to the top of the body 10 (Figure 2) when the parts are assembled. The screw member 35 is secured in the cavity 33 by cement.

With the individual parts made as described, the assembly is a simple operation of introducing the piston member 22 through the upper end of the body 10, aligning its indentation 26 with the rib 16. The screw member 35 is introduced at the bottom of the body and moved until the joined wires 36, 37, engage in the opening 24. The order of introduction of the piston and screw member may be reversed: the important thing being to engage them with introduction from opposite ends of the body 10, and thereafter to effect relative rotation of the member 11 with an inward or downward movement of the piston 22. At some stage of this relative rotation, the body 10 is held and end pressure is exerted against the member 11 so that the parts snap together and the curled flange 20 engages in the groove 30. Thereafter, the relative rotation may be continued until the piston is at its lowermost position, for example in contact with the member 11. The assembled structure is then filled with a semi-solid substance such as a cosmetic or medicament, to a level essentially at the top of the body 10. Therewith, the material surrounds the portion of the screw member 35 which projects through the aperture 24: but little or no material passes beyond the wall 23 of the piston, due to its fitting within the body 10, and the filling of the aperture 24 by the screw member 35. The

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end cap 12 may now be applied, it being noted that the upper portion of the body, above the rib portion 16 may be slightly separated (Figure 3) so that there is inherent resiliency in the body for detaining the cap when so telescoped into position.

In use the cap 12 is removed, the body 10 is held, and the member 11 is rotated relative thereto, so that the screw member 35 acts in the aperture 24 to exert an axial force upon the piston member 22 and cause the same to move axially within the body 10, relative rotation being prevented by the engagement of the walls of indentation 26 with the internal rib provided by parts 14-17 of the body. Therewith a part of the substance is raised above the level of the top of the body 10, for application. If the amount so raised is not consumed in the application, it may be returned into the body by a reverse rotation of the member 11. The cap 12 may be reapplied, to prevent contact of the substance with articles brought near the container.

In Figure 8, a modified screw member 35a is shown, which can be quickly and cheaply formed in quantity by twisting an originally flat strip into a helical form, and cutting to the desired lengths. Preferably, the strip has rounded edges and thus conforms to the shape of the aperture 24: e. g. the strip is made by roll-crushing a round wire to the desired thickness.

It is obvious that the invention is not limited to the illustrated form of practice, but may be employed in other ways within the scope of the appended claims.

What is claimed is:

1. A container and applicator for semi-solid substances comprising a hollow tubular body of sheet metal having a longitudinal seam for a part of its length formed by an inwardly turned hook at one edge of the seam and a rebent portion, a connecting portion and a second and outwardly turned hook at the other edge of the seam, said hooks being interengaged so that the parts provide an internally projecting rib in the body member, said rib terminating short of the ends of said body, said body member having its sheet material inwardly turned at the bottom end to provide an internal curled flange; a rotatable

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member having a reduced part extending into the bottom of said body with a groove on said part to engage said flange whereby to prevent accidental separation of said rotatable member and said body, said rotatable member having a shoulder below said groove for engaging the end surface of said curled body, said internal rib terminating adjacent the curled flange whereby the curled flange has resiliency for permitting the initial engagement of said rotatable member in the body with said curled flange in said groove, and for thereafter maintaining such engagement; a piston member of thin metal having an end wall closing said body and an upwardly extending flange conforming to and guided by said body, said piston member being slidably fitted in said body for essentially sealing the same and having a peripheral indentation of the skirt and end wall for fitting said rib whereby to prevent relative rotation of said body and piston member; and a helical screw member of oblong section secured in a central cavity of the rotatable member and extending through the piston member, said piston member having a central oblong opening closely fitting said screw member whereby upon relative rotation of said rotatable member and said body, said screw member causes the piston member to move axially in said body member.

2. A container and applicator as in claim 1, in which the screw member is formed of a pair of wires twisted into double helical form and secured by solder.

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