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E. W. GRONEMEYER
CONTAINER CONSTRUCTION

2,876,926

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FIG. 1.

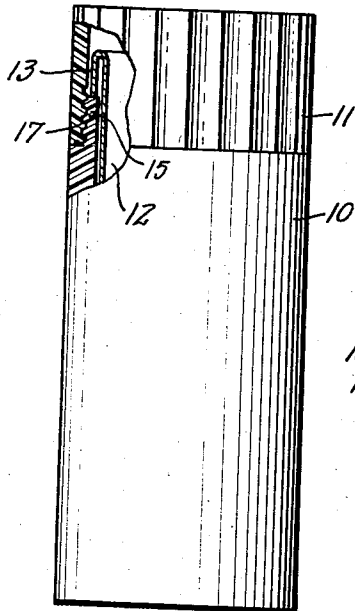


FIG. 2.

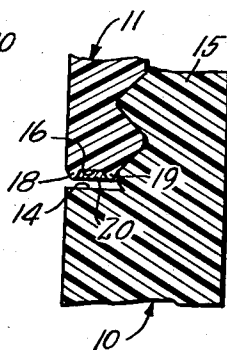


FIG. 3.

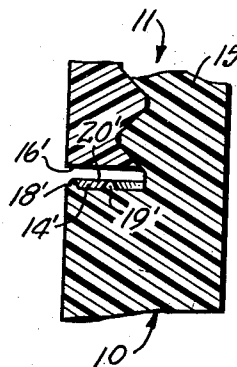


FIG. 4.

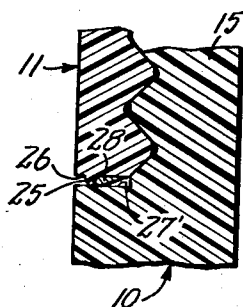
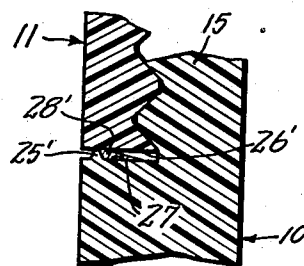


FIG. 5.



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CONTAINER CONSTRUCTION

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11 Claims. (Cl. 220—39)

My invention relates to sealing means for a cosmetic container or the like.

In containers for cosmetics or the like having important volatile ingredients, it is a matter of some concern that the container shall be hermetically sealable if the packaged product is to have an adequate shelf life and if the cosmetic substance is to have an adequate life expectancy in the possession of the customer. Previous attempts to develop an adequate seal have involved the use of carefully formed interfitting surfaces and the use of gaskets. Such surfaces are difficult to form on a production basis if one is to provide the ultimate in sealing effectiveness, and the provision of gaskets entails objectionable additional parts. In either case, the presence of grit or dirt particles on one or both of the interfitting parts relied upon for a seal may interfere with the development of a seal.

It is, accordingly, an object of the invention to provide an improved container of the character indicated.

It is another object to provide an improved seal mechanism for a cosmetic container, or the like, and requiring the provision of no additional parts.

It is a further object to provide an improved seal mechanism for a container of the character indicated and having a sealing effectiveness that is unimpaired by the presence of grit or foreign substance on the interfitting seal parts.

Other objects and various further features of novelty and invention will be pointed out or will occur to those skilled in the art from a reading of the following specification in conjunction with the accompanying drawings. In the drawings, which show, for illustrative purposes only, preferred forms of the invention:

Fig. 1 is a view in elevation showing a cosmetic container of the invention, with a fragment broken away and shown in section to reveal the location of seal parts of the invention; and

Figs. 2 to 5 are enlarged fragmentary sectional views representing alternative embodiments for parts shown in section in Fig. 1.

Briefly stated, my invention contemplates application to a container having two parts which may be cup-shaped and of generally similar proportions. These parts are removably secured to each other at threaded longitudinally overlapping parts, and when secured, the end rim or skirt of the outer part seats firmly against a radial shoulder on the other part. The seal of my invention is embodied in one or the other of the shoulder and rim portions and comprises an integral circumferentially continuous axial projection (on one seal surface) which directly seats against the other seal surface; the height or axial extent of this projection may be very small and almost unnoticeable, but for descriptive purposes the projection is shown with exaggerated proportions in the drawings. Sealing effectiveness is enhanced by provision of a yieldable wax-like filler circumferentially continuously lining and thermally sealed to the seal projection.

In Figs. 1 and 2 of the drawings, the parts 10 and 11

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are shown with different proportions because the lower part 10 substantially completely embraces and supports the cosmetic substance (not shown), and the part 11 serves the function of a cap to close the container when not in use; the part 10 will therefore be referred to as the body member and the part 11 as the cap member. Each of the parts 10—11 may be of molded plastic construction, as suggested by cross-hatching in the drawings. The body member 10 may contain propulsion mechanism 12 for mechanical advancement of the cosmetic substance upon relative rotation of the body member 10 and a manually accessible ring 13, when the cap 11 has been removed. Such mechanism has been shown in detail in accompanying application, Serial No. 501,547, filed April 15, 1955, and therefore will not be shown in greater detail in this application.

As indicated, each of the members 10—11 is cup-shaped, meaning open only at one axial end. The body member 10 happens to be formed with a shoulder 14 defining a reduced portion 15 extending to the open end thereof. The cap 11 is formed with a rim 16 to substantially abut the shoulder 14 when the parts are fitted together. Threaded means 17 permits removable engagement of the cap 11 to the body 10.

In accordance with the invention, I provide novel circumferentially continuous seal means cooperating between the rim 16 and the shoulder 14 when the cap 11 is driven into the secured position shown in Fig. 1. The circumferential seal relies essentially on provision of a short circumferentially continuous axial projection or ridge 18 formed as an integral part of one of the interfitting members and, in the form shown in Fig. 2 projection 18 is a part of the rim 16 of the cap 11. The projection 18 is preferably tapered in the axial direction so that, when driven against the cooperating surface 14, it may establish a circumferentially continuous, essentially line contact with the surface 14. In the form shown in Fig. 2, I indicate my preference for additionally providing a second circumferentially continuous axial projection 19 of limited radial extent on the same surface (16) as that on which the projection 18 is formed; like the projection 18, the projection 19 is preferably tapered in the axial direction so as to establish essentially a line contact with the surface 14.

With the structure thus far described, it will be seen that the sealing effectiveness of both projections 18—19 driven against surface 14 may be relatively great and that a quiescent pocket is developed in the annular space between projections 18—19. I prefer, however, not to leave this as an open pocket, but rather to fill the same with a filler 20 of yieldable material, such as wax, paraffin, or a hybrid plastic-wax preparation as, for example, that known to the trade as "polymekon"; for present purposes, such yieldable materials may be referred to as wax-like.

The filler 20 is preferably initially applied to the pocket between projections 18—19 with a slight excess, so as to define a crown (not shown) extending axially beyond the projections 18—19 and therefore providing the first means of contact with the surface 14 when the parts are first driven into the secured relation. The yieldable filler material 20 is preferably extrudable and has a melting point above ordinary ambient temperatures, as, for example, above 120° F. and preferably above 150° F. This will mean that, when the cap 11 and body 10 are first secured together, any excess filler material 20 will be extruded radially over one or both of the projections 18—19 until such time as the projections 18—19 directly abut the surface 14.

It will be appreciated that in securing the parts so as to effect extrusion of the filler 20 over one or both of the projections 18—19, there is assurance of a radially

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extensive contact between the rim 16 and the shoulder 14. For each particular container assembly, this contact is effectively custom-made, in that the extrudable filler is self-conforming to the unfilled adjacent surface (14). In repeated use, the filler is retained between the projections 18—19; and even though grit or other contaminating material may accumulate on the interfitting seal parts, the yieldable nature of the filler 20 is such as to receive the embedded grit particle and to extrude the displaced filler material, so that sealing effectiveness is maintained as long as there is still extrudable material 20.

Figs. 3, 4 and 5 show alternative filled seals incorporating the principles discussed in connection with Fig. 2. In Fig. 3, the arrangement is the same except that two circumferential projections 18'—19' are formed on the shoulder 14' rather than on the rim 16'. These and related parts have therefore been given the same reference numerals but with primed notations in Fig. 3.

In Figs. 4 and 5, only one circumferentially continuous projection is shown, the projection 25 of Fig. 4 being on the rim 26 of the cap 11, and the projection 25' of Fig. 5 being on the shoulder 27 of the body member 10. In both cases, a filler 28—28' is applied against the projection 25—25' and alongside the adjacent radial abutment or sealing surface 26 or 27. As in the case of Figs. 2 and 3, the amount of extrudable sealing material 28—28' is initially in excess of that required to establish a seal so that, when the parts 10—11 are first secured, the excess extrudable material 28—28' may conform to the flat surface against which it is to fit.

It will be seen that I have described a relatively simple seal which can retain its hermetic sealing qualities for a relatively extended life, involving repeated opening and closing of the seal. Sealing effectiveness extends over a relatively great annular thickness and is unimpaired by the presence of foreign matter on one or both of the sealed surfaces. As a practical matter, adequate sealing may be accomplished with a comparative minimum consumption of sealing material 20, and it has been determined that, if the projections 18—19 are of the order of a few thousandths of an inch in axial extent, a perfectly adequate and superior seal is achieved. The sealing material or filler 20—20', 28—28' may conveniently be applied by a brush when in hot molten condition so that such fillers may be referred to as thermally sealed to and filling their respective annular pockets.

While I have described the invention in detail for the preferred forms shown, it will be understood that modifications may be made within the scope of the invention as defined in the claims which follow.

What I claim is:

1. A cosmetic container comprising two cup-shaped parts having threaded engagement with one another at longitudinally overlapping portions of said parts, said parts having circumferentially continuously extending generally radial surfaces in mutual abutment when said parts are secured together, one of said surfaces having integrally formed thereon a continuous circumferential ridge extending axially towards the other of said surfaces for full circumferential contact with said other surface when said parts are secured together, said one part having adjacent said ridge and extending radially over an adjacent part of said one radial surface a preassembled circumferentially continuous annular fill of extrudable wax-like material thermally sealed to said ridge and extending in the direction of the other radial surface by an amount at least as great as the axial extent of said ridge, there being initially a slight circumferentially extending excess of said wax-like material axially beyond said ridge, whereby upon securing said parts said wax-like material will be extruded until said ridge seats against said other surface, thereby allowing said wax-like material to conform throughout with the adjacent contour of said other surface.

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2. A container according to claim 1, in which said extrudable material is wax.

3. A container according to claim 1, in which said extrudable material is paraffin.

4. A container according to claim 1, in which said extrudable material is a mixture of plastic and wax having a melting point above substantially 120° F.

5. A cosmetic container comprising two cup-shaped members, one of which has a reduced portion at the open end thereof defining a radial shoulder, said reduced portion having a threaded interfit with the inner surface of the open end of the other of said members, whereby on securing said members together the circumferential rim of said second member circumferentially abuts said shoulder, said shoulder and rim each being essentially a radial plane surface, one of said surfaces having formed therein a circumferentially continuous axial projection of limited radial extent tapering substantially in the direction of contact with the other of said surfaces, whereby the contact of said projection with said other surface may be essentially a circumferentially extending line contact, and a continuous annular filler of extrudable wax-like sealing material extending between said one surface and substantially the axial limit of said projection and thermally sealed to said projection and to said one surface, there being initially a slight circumferentially extending excess of said wax-like material axially beyond said projection, whereby upon securing said parts said wax-like material will be extruded until said projection seats against said other surface, thereby allowing said wax-like material to conform throughout with the adjacent contour of said other surface.

6. A container according to claim 5, in which said projection is on said shoulder.

7. A container according to claim 6, in which said projection is on said rim.

8. A cosmetic container comprising two cup-shaped members, one of which has a reduced portion at the open end thereof defining a radial shoulder, said reduced portion having a threaded interfit with the inner surface of the open end of the other of said members, whereby on securing said members together the circumferential rim of said second member circumferentially abuts said shoulder, said shoulder and rim each being essentially a radial plane surface, one of said surfaces having formed therein two circumferentially continuous axial projections of limited radial extent tapering substantially in the direction of contact with the other of said surfaces, said two projections being radially spaced from each other so as to define a circumferentially extending annular pocket therebetween, and a filler of extrudable wax-like material thermally sealed in said pocket and extending at least to the axial limits of said projections.

9. A container according to claim 8, in which said projections are both formed on said rim.

10. A container according to claim 8, in which said projections are both formed on said shoulder.

11. A container according to claim 8, in which said circumferential pocket is initially filled with an excess of said yieldable material, whereby said yieldable material forms a circumferentially extending crown axially beyond the axial limits of said projections, so that upon securing said members together until said axial projections contact said other surface, the excess yieldable material is extruded and a custom-made seal established with said other surface.

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