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FRICTION CAP AND PACKAGE

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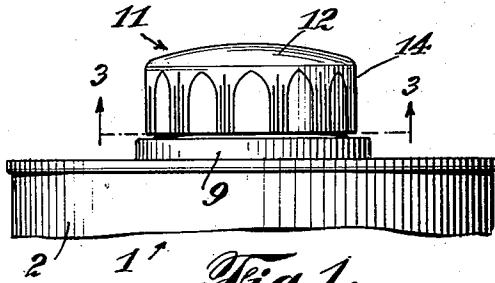


Fig. 1.

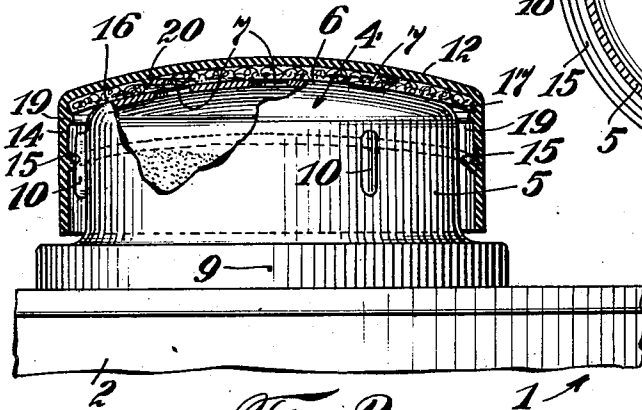


Fig. 2.

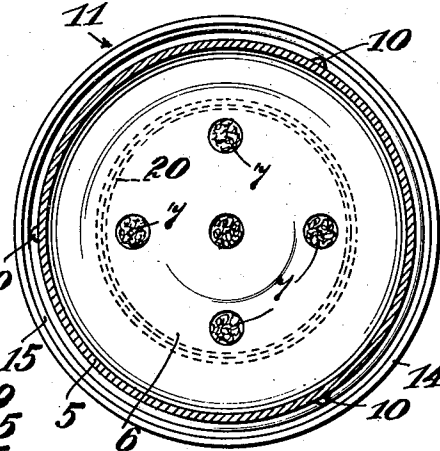


Fig. 3.

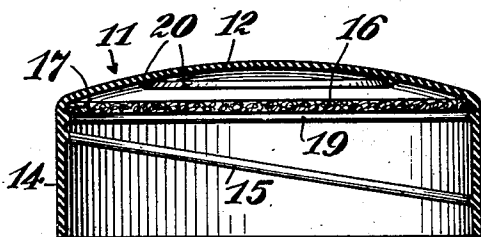


Fig. 4.

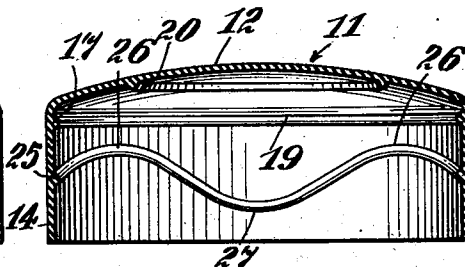


Fig. 5.

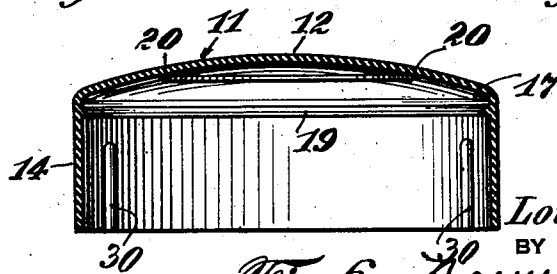


Fig. 6.

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FRICTION CAP AND PACKAGE

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14 Claims. (Cl. 220-42)

The present invention relates to closure caps and sealed packages, and more particularly to a friction cap and to the package formed thereby.

In packaging products such as talcum powder and the like, slip caps are utilized quite generally because of the ease with which they can be removed and applied. Such caps are required to fit the upper cylindrical end of the container sufficiently tight not to fall off when the container is inverted, and sufficiently loose to be readily removed by the consumer, because they are repeatedly removed and applied. By making the caps of metal, a fairly accurate fit can be obtained because the variations in the size of metal caps can be maintained within very narrow limits, although every cap varies slightly in size and shape from every other cap. These slight variations, both in the size of the cap and the container, are taken care of by the elasticity of the metal, by inspection at the time of application, and by selecting caps that fit individual containers. Attempts have been made to make slip caps of molded compositions such as phenolic condensation products, synthetic resins, and the like. Such attempts have not been successful, partly due to the fact that molded caps vary much more from a standard size than metal caps due to manufacturing limitations, and partly due to the fact that molded caps are fragile and less elastic than metal caps. For these reasons, molded slip closure caps have not supplanted metal closure caps to any extent, although they have a number of distinct advantages.

The present invention aims to provide an inexpensive molded closure cap adapted to frictionally engage a container. The construction of the cap is designed to size itself to take up the variations in size and to form a friction grip on the container equal or superior to that of a metal cap. The invention aims, also, to provide a container adapted to cooperate with the closure cap in taking up the size variations without increasing the force necessary to apply and remove the cap.

An object of the invention is to provide a cap formed of a moldable material adapted to frictionally engage a container.

Another object of the invention is to provide a closure cap having container engaging means thereon adapted to correct for size variations in the cap and the container.

Another object of the invention is to provide a molded closure cap of the friction type, which may be readily manufactured at low cost.

Another object of the invention is to improve the friction grip between a closure cap and a container by minimizing the effect of variations in size.

Another object of the invention is to provide an improved metal container adapted to cooperate with a closure cap frictionally retained thereon.

A further object of the invention is to provide a cap and package which are simple in construction, attractive in appearance, and which can be manufactured at a low cost.

Other and further objects of the invention will be obvious upon an understanding of the illustrated embodiment about to be described or will be indicated in the appended claims, and various advantages not referred to herein will occur to one skilled in the art upon employment of the invention in practice.

A preferred embodiment of the invention has been chosen for purposes of illustration and description and is shown in the accompanying drawing, wherein

Fig. 1 is a fragmentary side elevational view of a sealed package illustrating a preferred embodiment of the present invention;

Fig. 2 is a fragmentary sectional view illustrating the cap sealed upon the container;

Fig. 3 is a horizontal sectional view taken along the line 3-3 of Fig. 1;

Fig. 4 is a sectional view of the closure cap of the present invention;

Fig. 5 is a sectional view of a closure cap illustrating another embodiment of the invention; and

Fig. 6 is a vertical sectional view illustrating a further embodiment of the invention.

Referring again to the drawing, there is shown a container 1 comprising a body part 2, and a suitable sifter top or dispensing nozzle 4. To illustrate the application of the present invention, a metal container preferably of the type used for dispensing powder and the like, is shown herein, but it will be understood that the invention may also be utilized in connection with other types of containers. For present purposes, it is desirable that the sifter top 4 of the container be provided with a substantially cylindrical side wall 5 and a top portion 6 having apertures 7 therein for dispensing the contents of the container. Preferably, the sifter top 4 is constructed of a cup-shaped blank which is formed in any suitable manner, and the lower edge of the side wall 5 thereof is connected by means of a seam 9 to the body part 2. The

cylindrical portion 5 is primarily adapted to receive a suitable closure cap and is preferably provided with a plurality of outwardly extending projections or ribs 10 adapted to be frictionally engaged by a suitable closure cap. As shown in Fig. 2, these projections 10 are spaced at intervals and are substantially vertical, that is, their length is preferably greater than their width. However, other suitably shaped projections may be advantageously utilized. Preferably, the projections 10 are formed by striking portions of the metal of zone 5 radially outwardly during formation of the sifter top 4.

In order to seal the sifter top or dispensing nozzle so that the contents of the container cannot be spilled accidentally, a suitable closure cap 11 is provided, comprising a cover portion 12 and a substantially cylindrical depending skirt 14 having a slightly larger periphery than the sealing zone 5 of the container upon which the cap is to be applied. The caps, preferably are formed of a phenolic condensation product or other organic molding material.

The invention is particularly concerned with overcoming the difficulties encountered heretofore in attaching these molded caps to containers so that they are readily removable, and yet, securely retained against accidental displacement. This is accomplished herein by providing an annular rib 15 which extends about the inner periphery of the skirt portion and projects radially inwardly to engage the projections 10 on the sealing zone of the container. The rib 15 is illustrated in the drawing as continuous, but if desired it may be interrupted. Greater variations in size of cap and container may be accommodated if the rib 15 is formed in a plane inclined with respect to the horizontal plane of the cap, as shown more particularly in Fig. 4. By reason of the rib 15 being disposed in a plane inclined to the bottom of the cap, the cap will take up a greater range of variations in size. The outward pressure is applied at various distances from the bottom of the cap which permits the cap to stretch more easily than if the pressure was applied at the same distance from the bottom of the cap. In addition, the inclined rib facilitates application and removal of the cap. In removing a cap, there is a tendency to rotate it. With the inclined rib, rotation produces a cam action tending to raise the cap, thereby facilitating removal of it. The vertical ribs 10 on the cam concentrate the pressure at several points about the periphery which permits the cap to deform slightly and take up the necessary size variations. The projections 10, by reason of their vertical length, are always in engagement with the rib 15, that is, the various projections are engaged at different elevations when the cap is sealed upon the container. The seal is sufficiently tight to prevent accidental displacement and removal. The projections 10 provide a substantially resilient sealing zone, adapted to cooperate with the rib 15 of the closure cap to form an effective grip.

In order to seal the sifter apertures 7 in the dispensing nozzle, a suitable sealing liner 16 of felt or other material is placed in the upper portion of the cap. Preferably, an annular recess 17 is provided in the skirt of the cap by means of an annular rib 19 to seat the outer periphery of the liner and prevent it from falling out of the cap. In many instances, it is desirable to press the liner firmly against the portion of the

container to be sealed and for this purpose, a suitable projection such as the annular rib 20 may be provided on the underside of the cover part 12.

In Fig. 5, a slightly modified form of closure cap is shown wherein an inwardly extending rib 25 is provided in the skirt of the cap, which has a substantially sinuous or wavy contour when viewed in elevation. This rib provides an excellent cam effect, since the upper and lower arcuate portions 26 and 27 respectively, cooperate with the projections 10 of the container to engage them at different elevations. Furthermore, the cam effect is attained by slightly rotating the cap whereby the rib 25 tends to raise the cap upwardly at each projection 10 about the periphery of the zone 5. The rib is also very effective in accommodating variations in sizes.

While the cap constructions described above can be used without the vertical ribs 10, the cap shown in Fig. 6 is primarily adapted for application to a cylindrical sealing zone. The cap differs from the above construction in that a plurality of vertical ribs 30 are provided to take up the variations in size between the cap and container.

In making the parts of the package shown herein, the body part of a container is constructed in the usual manner and the sifter top 4 is shaped to provide projections 10 and apertures 7. The closure cap is molded by placing a quantity of material into a mold and then forming the cap by means of a pin, shaped to conform to the inside of the cap, including the ribs 15 or 25, and 19, recess 17, and projection 20. Immediately after the cap is formed, the moldable material is in a semi-plastic condition, and at this stage, the caps may be stripped from the pins. In this manner, continuous ribs may be molded without the use of segmental or collapsible molds whereby the cost of manufacturing the caps of the present invention is greatly reduced.

For applying the cap upon the container, any suitable automatic machinery may be utilized or this operation may be performed by manual labor, since a slight downward pressure is sufficient to force the cap on the container.

It will be seen that the present invention provides a simple and inexpensive package particularly adapted for dispensing products in a powder form, for example, soap powder, talcum powder, various cosmetics, pulverized spices and other products which do not require a very tight hermetic seal. The caps shown herein, are molded in a convenient manner and adapted to securely engage the container, to provide both an effective original seal and an equally efficient reseal. The inclined annular rib facilitates application and removal of the caps by cooperating with the projections on the container. The package is attractive in appearance and thereby promotes the salability of the products packed therein.

As various changes may be made in the form, construction and arrangement of parts without departing from the spirit and scope of the invention and without sacrificing its advantages, it is to be understood that all matter herein is to be interpreted as illustrative and not in a limiting sense.

While the present invention is described with particular reference to molded closure caps, various features thereof are applicable to metal caps.

Having thus described my invention, I claim: 75

1. In a molded closure cap of the class described, the combination of a cover portion, a substantially cylindrical depending skirt of uniform length throughout its circumference adapted to receive decorations, and an annular rib extending about the inner periphery of said skirt adapted to frictionally engage a container, said rib being spaced a greater distance from the lower edge of said skirt throughout half its periphery than through the other half of its periphery.

2. In a sealed package, the combination of a metal container having a substantially cylindrical nozzle at the upper end thereof, and a closure cap formed of a phenolic condensation product having an endless rib in the skirt thereof for engaging said nozzle, said rib being substantially circular when viewed in plan and substantially elliptical when viewed in elevation.

3. In a sealed package, the combination of a container having a cap receiving portion at the top thereof, provided with a plurality of outwardly extending projections, and a friction closure cap having a skirt of substantially uniform length provided with an inwardly extending rib disposed in a plane inclined with respect to the lower edge of the skirt, said rib being adapted to frictionally engage said projections to hold said cap on said container.

4. In a sealed package, the combination of a metal container having a cylindrical portion at the top thereof, and a closure cap formed of a phenolic condensation product having a substantially cylindrical skirt and an inwardly extending elliptical rib formed in said skirt adapted to frictionally engage the cylindrical portion of the container said rib being independent of the exterior of said skirt.

5. In a sealed package, the combination of a metal container having a substantially cylindrical sifter nozzle provided with outwardly extending projections at the side thereof, and a closure cap having an annular radially inwardly extending rib in the skirt thereof for frictionally engaging said projections at different elevations throughout the periphery of said annular means.

6. In a sealed package, the combination of a metal container having a dispensing nozzle at the upper end thereof provided with a cap engaging zone and interrupted projections in said zone, and a closure cap having a liner therein, for sealing said dispensing nozzle, means for holding the liner in position and annular means in the skirt of said cap for frictionally engaging said projections, said annular means being substantially circular when viewed in plan and substantially elliptical when viewed in elevation.

7. In a molded closure cap of the class described, the combination of a cover portion, a depending skirt, and an inwardly extending rib formed in said skirt independently of the exterior contour thereof adapted to engage a container, said rib having a substantially sinuous contour when viewed in elevation.

8. In a sealed package, the combination of a container having a cap engaging zone provided with outwardly extending projections, and a closure cap having an endless rib in the skirt thereof adapted to engage said projections, said rib having a substantially sinuous contour to facilitate application and removal of the cap.

9. In a sealed package, the combination of a container having a substantially cylindrical cap engaging zone, and a closure cap formed of organic molding material having a rib on the interior of the skirt thereof adapted to engage said zone and hold said cap on said container, said rib being substantially elliptical to facilitate engagement with and removal from said zone, said rib being formed independently of the exterior contour of said skirt.

10. In a cap molded of a phenolic condensation compound, the combination of a cover portion, a substantially cylindrical skirt portion, and a projection in said skirt adapted to frictionally engage a container, said projection appearing substantially circular when viewed in plan and elliptical when viewed in elevation.

11. In a closure cap of the class described, the combination of a cover portion, a substantially cylindrical depending skirt adapted to receive decorations on the exterior thereof, a rib in said skirt for holding a liner within said cap, and an elliptical projection below said rib for frictionally engaging a container, said rib and projection being formed independently of the exterior of the skirt.

12. A closure cap comprising a cover portion and a depending skirt, said skirt having annular means for frictionally engaging a substantially cylindrical zone on a container, said annular means being substantially circular when viewed in plan and substantially elliptical when viewed in elevation.

13. In a cap formed of an organic molding compound, the combination of a cover portion, a depending skirt of uniform length throughout its circumference, and an endless circumferentially inclined rib formed at the interior of said skirt adapted to frictionally engage a container, said rib being spaced a greater distance from the lower edge of said skirt at certain portions than at other portions of said skirt.

14. In a sealed package, the combination of a metal container, an apertured sifter nozzle at the upper end of said container, said nozzle having a cylindrical side wall provided with substantially vertical projections extending outwardly from said cylindrical wall, and a closure cap having a liner therein for sealing the apertures in the nozzles, and annular inwardly extending means in the skirt of said cap for frictionally engaging said projections, said means lying in a transverse plane inclined with respect to the lower edge of the skirt whereby said means engage the projections at different elevations throughout the periphery of said annular means.