

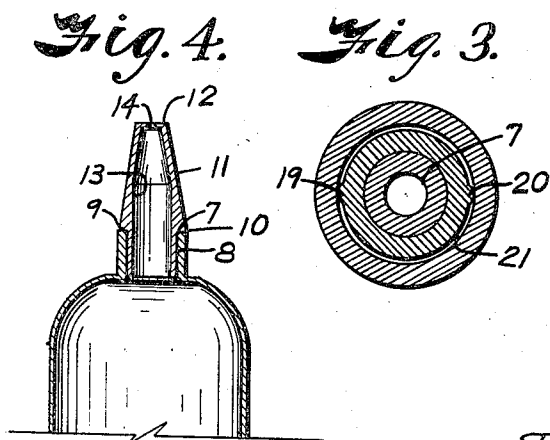
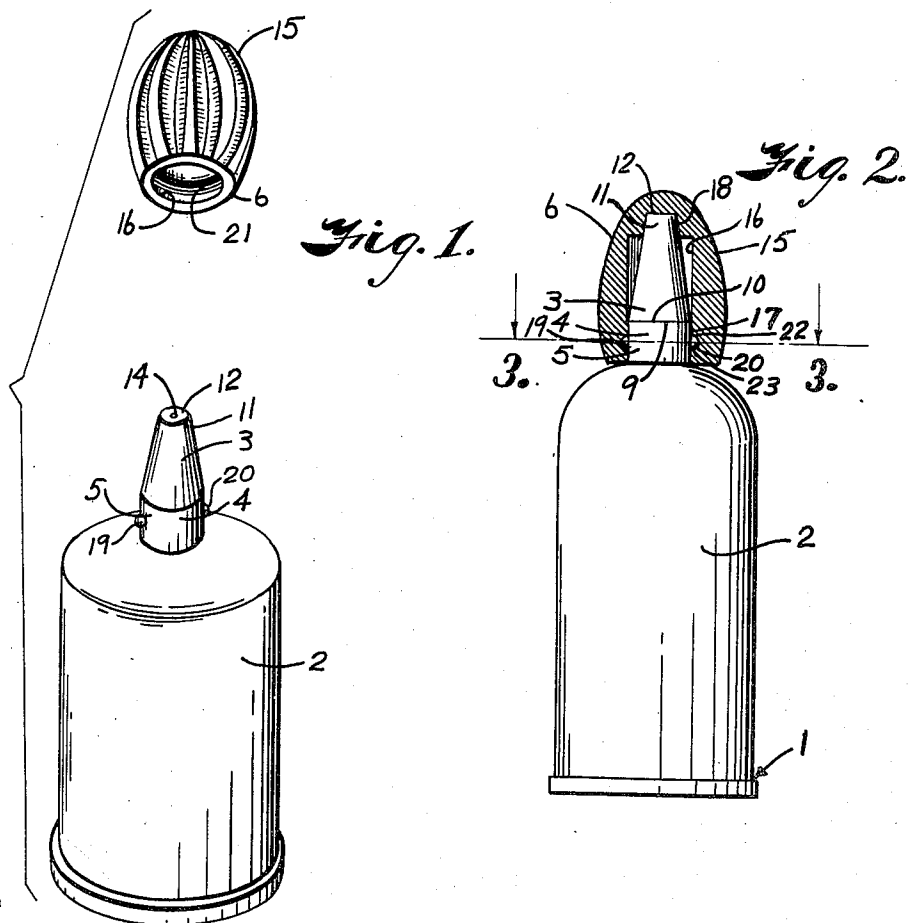
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RESILIENT CONTAINER AND CLOSURE THEREFOR

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RESILIENT CONTAINER AND CLOSURE
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1 Claim. (Cl. 299—90)

1 This invention relates to bottles, tubes and similar containers formed of resilient plastic material. In order to produce such bottles economically, they must be formed in high production molding machines. Consequently, the closure caps for such containers have been retained on the neck of the container by means of a sliding frictional fit.

This is satisfactory when the bottles are in ordinary use. However, when accidental pressure is applied to the bottles, the caps are apt to be displaced and the content is spilled.

Therefore, the principal objects of the present invention are to provide a container and closure therefor capable of economic manufacture in simply constructed, high pressure molds and to provide a closure that is readily applied and easily removed from the neck of the container, but which is affixed against displacement under accidental pressure that may be applied to the container.

In accomplishing these and other objects of the invention as hereinafter pointed out, I have provided improved structure, the preferred form of which is illustrated in the accompanying drawing wherein:

Fig. 1 is a perspective view of a bottle of the dispensing nozzle type that is equipped with a neck and closure cap embodying the features of the present invention, the closure cap being shown removed and in spaced relation.

Fig. 2 is a side elevational view of the bottle with the cap shown in vertical section to better illustrate the connection for securing the cap to the neck of the container.

Fig. 3 is a horizontal cross section on the line 3—3 of Fig. 2.

Fig. 4 is a vertical section through the upper portion of the container, with the closure cap removed.

Referring more in detail to the drawings:

1 designates a bottle or similar container formed of resilient material such as a resilient plastic whereby the sides 2 of the container may be pressed toward each other to create interior pressure for expelling the content through, in the illustrated instance, a nozzle 3 that is applied to the neck 4 of the container. The neck 4 is preferably formed integral with the body of the container and projects therefrom sufficiently to provide an annular cylindrical sealing surface 5 for a cap 6. The neck 4 has an opening 7.

The nozzle 12 includes a cylindrical portion 8 having a diameter to be tightly engaged within the opening 7 of the neck 4 in the manner of a cork. Extending circumferentially above the

2 portion 8 is a shoulder 9 for engaging the annular end face 10 of the neck 4, as best shown in Fig. 4. The dispensing portion 11 of the nozzle projects somewhat in the form of a cone and has a substantially flat apical portion 12. The nozzle has an axial bore 13 terminating short of the end face 12 to provide passage to a spray orifice 14 through which the content is discharged in the form of a spray when pressure is applied to the sides of the wall of the container.

The container is provided with a closure cap 15 that is also formed of resilient plastic material. The cap has an axial bore 16 of suitable diameter to freely pass the base portion of the nozzle 3 and a counterbore 17 of a diameter to frictionally engage the cylindrical surface 5 of the neck 4. The inner end of the bore 16 terminates in a tapered recess 18 conforming to the taper of the nozzle 3 so that the tip of the nozzle is engaged therein when the cap is applied to the container. The end of the recess 18 preferably conforms to the end face of the nozzle and covers the orifice 14.

In order to prevent accidental displacement of the closure cap, the neck 4 is provided with diametrically opposed bosses or lugs 19—20 that project from the cylindrical surface and which engage in an annular groove 21 that is formed within the wall of the closure cap and in position to receive the bosses or lugs when the cap is pushed downwardly over the nozzle and neck of the container. The bosses or lugs are preferably rounded so as to facilitate passage of the closure cap over the lugs when the closure cap is applied.

The cross sectional shape of the groove preferably conforms with the shape of the lugs so that when the cap is in place, the opposite sides 22 and 23 of the groove closely engage the lugs to anchor the cap in place.

The annular locking groove in the cap and the locking lugs on the neck are readily formed by an annular projection on the core of the mold which forms the closure cap since the groove formed in the cap is relatively shallow and the caps are easily displaced from the mold since the material is sufficiently resilient to allow slipping out of the groove forming flange. Likewise, the locking lugs on the neck are formed by means of depressions in the cavity of the container mold, and the containers are readily discharged from the mold since the nature of the material permits withdrawal of the locking lugs.

The closure cap is applied by inserting it over the nozzle and pushing it downwardly over the neck of the container to cause the material of

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the cap to flex outwardly and ride over the locking lugs. When the groove registers with the lugs, the cap contracts and the lugs securely engage in the groove so that the closure cap cannot become displaced under accidental pressure applied to the walls of the container.

It is also obvious that the structure of the cap, together with the form of the nozzle, which in conjunction with the lugs and grooves, also prevents the nozzle from displacement from the neck of the container.

The closure is readily removed by pulling it outwardly from the neck to cause the material of the cap to yield sufficiently to permit passing of the lugs.

It is obvious that I have provided a container and closure cap therefor which is adapted for construction in high production molds and which results in a closure cap that is securely retained against accidental displacement under pressure on the container walls.

It is also obvious that the closure cap is easily applied and removed.

While I have particularly illustrated the container as provided with a spray type nozzle, it is obvious that the locking lugs and grooves may be used with any plastic container having the dispensing neck.

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

A container formed of resilient material and having a tubular neck with substantially cylindrical interior and exterior portions and having an annular end face, a spray nozzle having an exterior cylindrical portion frictionally engaged

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within the inner cylindrical portion of the tubular neck and having a conical portion of larger base diameter than the cylindrical portion thereof to provide a shoulder to seat upon the end face of the tubular neck, and a removable cap also formed of resilient material and having a cylindrical interior portion surrounding the cylindrical portion of the spray nozzle and an internally tapered portion engaging the conical portion of the spray nozzle, the interior cylindrical portion of the cap having an annular groove and the exterior cylindrical portion of the tubular neck having a lug projecting therefrom to expand the inner cylindrical portion of the cap when the cap is moved axially over the spray nozzle and onto the tubular neck of the container and to engage in said annular groove when the internally tapered portion of the cap engages the conical portion of the spray nozzle to retain the spray nozzle in said tubular neck and the closure cap on the container under applied pressure tending to distort the resilient container.

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