United States Patent [19]

Kessler

[11] **3,782,604**

[45] **Jan. 1, 1974**

[54] **SCREW CAP WITH SAFETY COVER**

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[22] Filed: **Jan. 20, 1972**

[21] Appl. No.: **219,298**

[52] **U.S. Cl.** **222/153,** 215/9

[51] **Int. Cl.** **B67b 5/00,** B67d 5/32

[58] **Field of Search** 215/9; 200/153, 541

[56] **References Cited**

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Primary Examiner—George T. Hall

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[57] **ABSTRACT**

To render screw-capped bottles containing dangerous substances safe from children, a unitary plastic cover is provided which fits loosely rotatably over the normal screw cap and prevents unscrewing of the cap unless a considerable downward pressure is exerted against the resilient element of the cover to force a portion of the cover into engagement with a portion of the screw cap so that the cap can be unscrewed.

1 Claim, 6 Drawing Figures

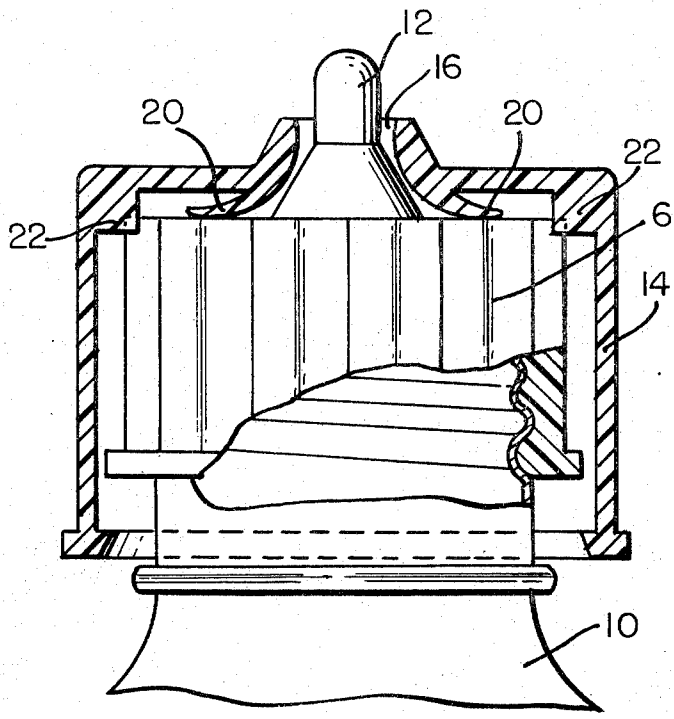


FIG. 1.

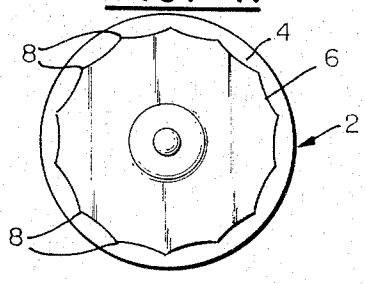


FIG. 2.

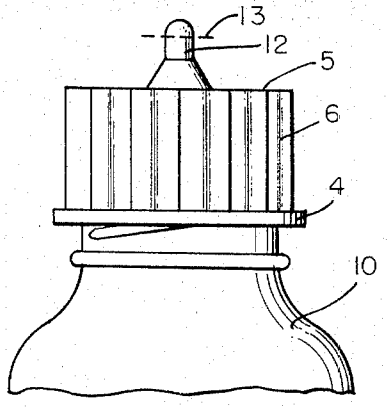


FIG. 3.

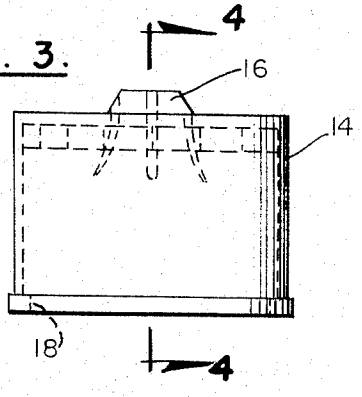


FIG. 4.

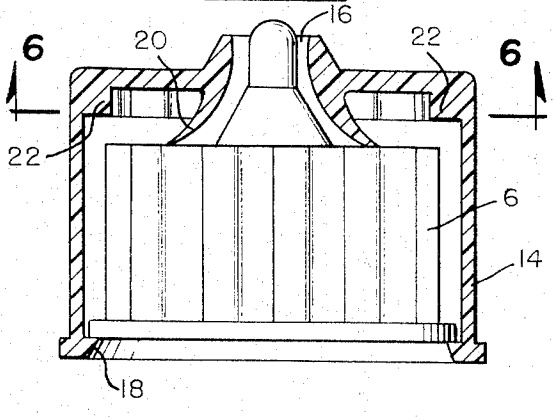


FIG. 5.

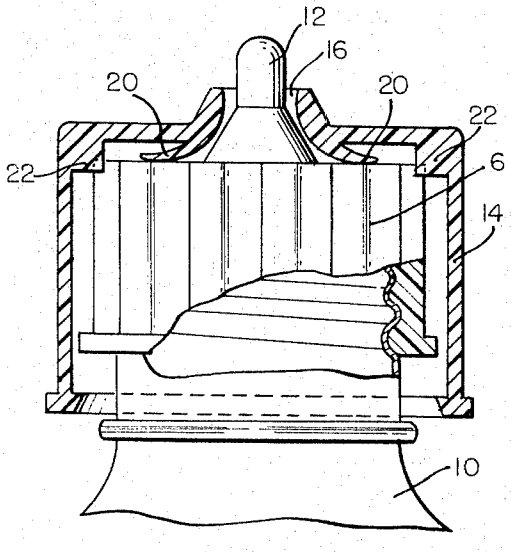
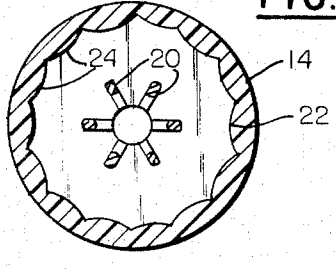


FIG. 6.



SCREW CAP WITH SAFETY COVER

Many substances commonly used in the household are dangerous to children, and many harmful and even fatal accidents have been caused by children unscrewing the caps of containers of such substances as asperin, detergents, etc., and taking the contents into their mouths, eyes, etc. The present invention relates to a safety cap which greatly reduces or totally eliminates the danger of such accidents to small children. The invention can be applied to a widely used type of plastic screw caps without altering the present design of the screw cap in any way, and is therefore adapted to be sold separately so that in those households where there are small children, the cover can be applied to the normal screw cap to rener it safe. A number of designs of safety caps have been proposed, but these are usually fairly complex and in any event greatly increase the cost of the screw-cap, so that manufacturers have been reluctant to apply them to all of their production, since this would render their closures non-competitive with others not so equipped.

The type of screw cap to which this invention is particularly applicable is a common one having its exterior side wall in the form of longitudinally extending scallops which provide a number of axial ridges around the outside of the cap so that it can be firmly gripped by the user to apply or unscrew the cap. This is often necessary because in many cases, such as a housewife using detergent, it is difficult to secure a good grip on the cap with wet or soapy hands. The safety cover according to the invention is arranged to snap on over such screw caps so that it cannot be readily removed, and is of sufficiently large interior diameter so that it can rotate freely on the screw cap in its normal condition but when it is pressed down on the screw cap against the resilient action of integrally formed plastic members, a portion of the interior of the screw cap near the top thereof is provided with inwardly extending projections or lugs which engage the exterior fluting of the screw cap, so that, while the downward pressure is maintained, rotation of the outer cover will also cause rotation of the screw cap to either screw or unscrew it as the case may be.

The specific nature of the invention, as well as other objects and advantages thereof will clearly appear from a description of a preferred embodiment as shown in the accompanying drawing, in which:

FIG. 1 is a top view of a screw cap according to the invention;

FIG. 2 is a side view of the same cap as applied to a bottle;

FIG. 3 is a side view of a safety cover according to the invention;

FIG. 4 is a sectional view of the cover taken on line 4—4 of FIG. 3 showing it in its normal unstressed relationship to a screw cap;

FIG. 5 is a view similar to FIG. 4 but with the cover pressed down on the screw cap so that it can be unscrewed; and

FIG. 6 is a sectional view taken on line 6—6 of FIG. 5.

As best shown in FIGS. 1 and 2, the screw cap 2 is a well-known molded plastic type having a bottom flange 4, a top 5, and a generally cylindrical wall 6 which is axially fluted to provide a series of axially extending fairly sharp rideges 8 both as an ornamental feature and particularly for the purpose of providing a

good finger grip to enable the cap to be tightly screwed or unscrewed onto a bottle 10, or other container of either dry or liquid material to which the cap is applied. The present cap is shown as being of the so-called "snip-top" type, that is, it has a small pouring spout 12 extending from the top thereof, which is capable of being snipped off along the line 13 to provide a pouring spout when desired, or may be left in its original condition, in which case the cap is unscrewed whenever the contents are to be poured out of it. This feature is not essential to the present invention, which would be equally applicable, as will be apparent, to a cap having a plain flat top, but is shown by way of illustration, because this type of snip-top cap is widely used for many common household items such as detergents.

FIGS. 3 and 4 show a safety cover 14, preferably made of a soft and slightly resilient plastic material such as polyethylene having a top aperture 16 for reception of the pouring spout 12 of the cap, and an inwardly projecting small flange 18 at the bottom of the open end thereof, dimensioned to resiliently snap over the flange 4 of the screw cap so that it cannot be easily removed, although if necessary such removal can readily be accomplished by using the point of a small knife or a similar tool. As can best be seen in FIGS. 4 and 6, there are a number of flexible plastic fingers 20 projecting downwardly from the top of the cover at an angle to the perpendicular, and of sufficient length so that they press resiliently against the top of the screw cap 6 so as to keep the flanges 18 and 4 in engagement. Near the top of the side wall 14 of the cover is a thickened portion 22, the inner surface of which is provided with a reverse scallop 24 dimensioned to mate with scallops 6 of the screw cap when the cover is pushed down on the screw cap as shown in FIG. 5; in other words, there are in effect interlocking projections on the screw cap and the cover so that when the cover is pressed down against the resilience of the fingers 20, the latter will become deformed and lie more or less flat along the top of the screw cap while the interlocking projections on the cover and cap are engaged. In this condition, rotation of the cover will obviously cause rotation of the screw cap, so that the latter can be applied to or removed from the bottle. If desired, external ridges may be applied to the cover so that it will be easier to tighten or loosen the screw cap, but since the object is to make the screw cap more difficult to tamper with, it may be considered best to provide a smooth surface on the cover, even at the cost of requiring considerably more finger pressure to apply the screw cap. When the downward pressure is removed from the cover, it will spring back into the relationship shown in FIG. 4, in which mere rotation of the cover will have no effect in loosening the screw cap. It is normally assumed that a child old enough to learn how to operate the cover will be old enough so that it can be taught not to abuse the contents. The spring action should, of course, be made stiff enough so as to be beyond the strength of a very small child, but not that of an adult.

While the screw cap has been shown as having a fluted exterior, it will be apparent that instead a series of axially extending half-round ridges could be employed, or any other type of axially extending projections, and the interior of the cover would be shaped to engage these to interlock the cover and cap for rotation. Actually, the internal projections on the cover shown at 24 need not match exactly, or even closely,

to the fluting; it may be of any other shape which will engage the axial projections on the exterior of the screw cap.

I claim:

1.

a. Safety screw cap means comprising

b. a plastic screw cap for closing containers, the exterior side walls of said cap having a number of first projections extending outwardly of the cap near the top or closed end of the cap,

c. a safety cover in the form of a second plastic cap having an open end and a closed end, fitted over said screw cap,

d. said cover having an inner diameter slightly larger than the largest outer diameter of said screw cap so that when fitted over the screw cap it normally can rotate loosely thereon,

e. said cover including integral latch means engaging a portion of the screw cap to prevent ready coaxial separation of the screw cap from the cover while permitting free relative rotation of the two,

f. locking projections on said cover near the closed end thereof and extending inwardly from the interior of the wall thereof, said locking projections being normally out of engagement with said first projections, but engagable with said first projections to transmit rotary movement of the cover to the screw cap,

g. said cover comprising resilient biasing means engagable with the top of said screw cap to normally maintain the said first projections and said lock projections out of engagement, but being resiliently deformable by axial pressure on said cover to engage said locking projections to permit the screw cap to be unscrewed by rotation of the cover while so engaged,

h. said biasing means being in the form of a plurality of resiliently flexible fingers of plastic material extending integrally downward from the underside of the top of said cover into engagement with the top of said screw cap,

i. said fingers extending at an angle from the perpendicular so that axial pressure will cause them to bend,

j. said cap being of the snip-top type with an initially closed pouring spout extending outward from the center of the cap, said cover having a hole in the center of the top thereof through which said spout protrudes,

k. and said fingers being arranged around said hole in a circular array and inclined from the perpendicular at such an angle that they bend away from the center when axial pressure is applied to the cover.

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