Oct. 1, 1968 I. J. MARKOWITZ 3,403,803

SAFETY BOTTLE CLOSURE

Filed Aug. 31, 1966

FIG. 2

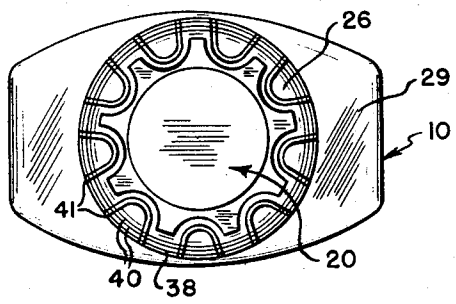


FIG. 1

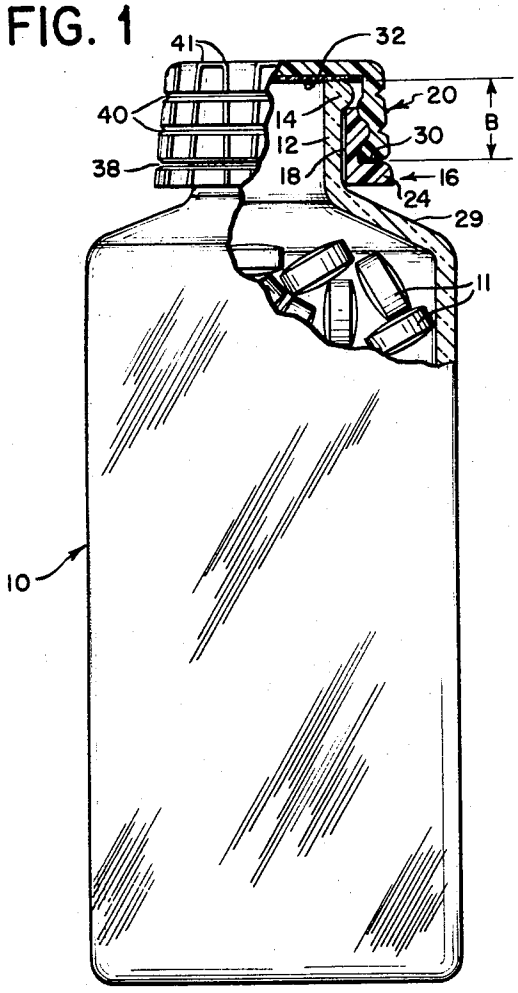
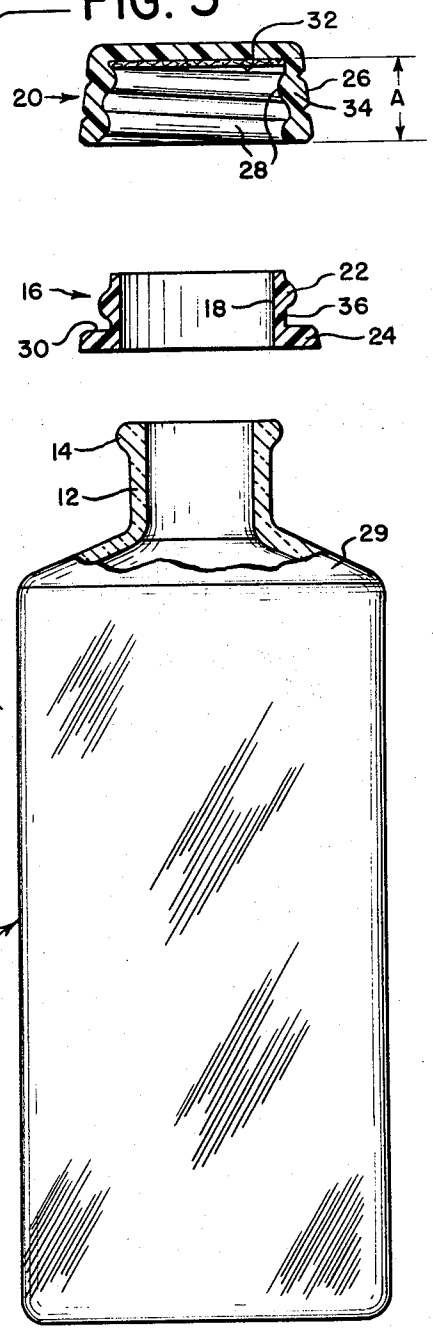


FIG. 3



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United States Patent Office 3,403,803 Patented Oct. 1, 1968

3,403,803

SAFETY BOTTLE CLOSURE

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Filed Aug. 31, 1966, Ser. No. 576,365
6 Claims. (Cl. 215—9)

ABSTRACT OF THE DISCLOSURE

A safety bottle closure of two piece construction having cooperative threaded means between upper and lower elements, the lower element being rotatively secured about the neck of said bottle; both elements freely rotative about the neck of such bottle when threaded together and when said elements are oppositely rotated, the upper element of such safety closure can be removed.

This invention relates to receptacle or bottle closures and more particularly to safety bottle closures, which although they appear to resemble conventional bottle closures, they are not readily loosened or removed from the container or bottle to which they are applied.

It is not uncommon for children, particularly of the toddler age group, i.e. one to four years old, to "explore" the household medicine cabinet in search of today's generally more pleasant tasting pharmaceuticals which to them are just other forms of candy, but in fact generally result in death from accidental poisoning. It is therefore desirable that containers or bottles having toxic chemical compounds therein be placed out of reach of such children and preferably be equipped with a safety bottle closure which cannot be removed by children even if they use their teeth to try to pry off the closure.

Some of the conventional safety closures now available unfortunately do not preclude a child from biting the closure cap off the container or bottle. Other types of safety bottle closures, however, require the use of keying tools or are generally of complicated construction and expensive to manufacture and thus have not been widely adopted.

Accordingly, it is the principal object of the invention to provide an improved safety bottle closure which may be easily opened by responsible adults of average intelligence, but which cannot be removed by children even if they employ their teeth or force beyond that which can be exerted by a child in trying to pry open the bottle.

Another object of the invention is to provide an improved safety bottle closure which is durable in construction, simple in design, economical to manufacture, and easy to assemble so as to be generally acceptable by the industry and public.

Yet another object of the invention is to provide a safety bottle closure which consists of two inexpensive and readily manufactured parts that require no special forming operations, and that is applicable to all conventional bottles and containers.

Still yet another object of the invention, in addition to each and every one of the foregoing objects, is to provide a safety bottle closure which requires neither key to operate nor special interlocking elements, but which may be removed and applied by merely using one's index fingers and thumbs of both hands to grip, hold and rotate certain portions of the closure.

The present specification discloses in accordance with the illustrated embodiment of the invention an improved safety bottle closure comprising a first cap element having a smooth internal bore adapted to be forced over the lip of a bottle but rotatable about the neck of same, and an external threaded portion with a lower gripping portion matching the outer diameter of a second cap element

threadably fastened to the first cap element so that rotation of either or both of the cap elements will not disengage the caps or open the container or bottle and that prying the first, second or both cap elements off the bottle is impossible without destroying such bottle.

Other objects and features of novelty which characterize my invention are pointed out with particularity in the claims annexed to and forming a part of this specification. For a better understanding of the invention, its operating advantages and specific objects attained by its use, reference should be had to the accompanying drawing and descriptive matter in which I have illustrated and described a preferred embodiment of my invention.

Of the drawing:

FIGURE 1 is an elevational view of a conventional smooth neck container or bottle having a lip portion on which is mounted a safety closure, partly shown in section, formed in accordance with the present invention;

FIGURE 2 is a top plan view of the bottle and closure assembly of FIGURE 1; and

FIGURE 3 is a vertical sectional, exploded view of the parts of the safety bottle closure of FIGURE 1, together with the bottle, the lower portion of which is shown in elevation.

Referring now to FIGURES 1, 2 and 3, and particularly to FIGURE 1, there is shown and illustrated a conventional container or bottle **10** retaining toxic containing pills **11**, and having a generally smooth, reduced neck portion **12** terminating in an outwardly extending lip or shoulder **14**. The safety bottle closure of the invention is generally cylindrical in shape and comprises a first or inner cap member **16** having a smooth internal bore **18** which is adapted to be forced over the lip or shoulder **14** of said bottle **10**, and a second or outer cap member **20** threadably mounted to the inner cap member **16**.

The inner cap member **16** is provided with external threads **22** and a lower, thin outwardly extending ring or rim **24** of the same diameter or taper as the outside diameter or taper **26** of the outer cap member **20**. The outer cap member **20** is essentially of conventional shape and is provided with internal threads **28** cooperable with the threads **22** of inner cap member **16** so that when the two cap members **16** and **20** are threadably secured together, in final assembled relationship, the outside surface **26** and the rim **24** will be substantially coextensive and indistinguishable from each other and provide a substantially uninterrupted surface, as best shown in FIGURE 2.

It will be seen that the size of the inner cap member **16** is such that it fits snugly between the lip or shoulder **14** of the bottle **10** and the upper flaring wall portion **29** of same and that it contains at least one full screw thread. It should also be apparent that with such an arrangement, cap member **16** is substantially freely rotatable with respect to neck **12** of bottle **10** and yet is substantially immovable in the vertical direction. The depth of internal threads **28**, represented by the letter A in FIGURE 3 of the drawing is critical and should be the same as the dimension represented by the letter B shown in FIGURE 2. This distance or dimension B is measured from the ledge or shelf **30** formed by the rim **24** to the top of the bottle lip or shoulder **14** and includes the thickness of any gasketing means **32** employed in the outer cap member **20**.

The cap members **16** and **20** should be formed of the same type of material so as to render them undistinguishable from each other, but the inner cap member **16** must be of a deformable plastic or other like materials which possess sufficient resiliency to permit forcing of the inner cap member **16** downwardly over the lip or shoulder **14** of the bottle **10**. It will be seen that when the inner cap member **16** is first positioned and disposed about the neck portion **12** and then the outer cap member **20** is threadably fastened to the inner cap member **16**, it is physically

impossible to pull or pry off the cap assembly from the bottle without destroying same. No adult using all the forces available to him nor a child using its teeth could remove this safety bottle closure. Note that the two cap members **16** and **20** cannot be threadably secured together and then assembled to the bottle **10** inasmuch as the side wall portion **34** of the outer cap member **20** reinforces and renders rigidity to the side wall portion **36** of the inner cap member **20**.

The abutting engagement between the smooth internal bore **18** of the inner cap member **16** and the reduced neck portion **12** provides a frictional coaction therebetween such that when children who are obivously unfamiliar with the functionality of the entire cap assembly attempt to open the bottle **10**, the entire cap assembly, i.e. inner and outer caps **16** and **20** will rotate together as an integral unit about the neck portion **12**, with no disengagement of the safety closure from the bottle occurring. Of course, when it is desired to open the bottle, the mature adult can readily open same by grasping the rim **24** of the inner cap member **16** with an index finger and thumb of one hand to hold said member stationary and grasping the other outer cap member **20** with the remaining hand to rotate or unthread the outer cap member **20** with respect to the held inner cap member **16**. The frictional drag upon relative rotation between the cap members **16** and **20** is such that when the outer cap member **20** is threadably fastened to the inner cap member **16** so that the joint **38** is not perceptible nor noticeable, rotation of either cap member will cause the entire cap assembly to rotate as a unit about the neck portion **12** of the bottle **10**. Simulated grooved joints **40** may also be desired on the outside surface **26** of the outer cap member **20** so as to aid in camouflaging the two-piece cap assembly and give the appearance of a unitary, integral one-piece cover or bottle closure member. In addition, vertically disposed grooves **41** running the length of the outer surface from substantially one end of the safety closure to the other end also contribute to concealing the two-piece cap assembly and aid in providing better gripping means. With a great number of grooves **41** about the cap assembly the distance between the grooves is small and thus any difference in "alignment" between outer and inner caps would hardly be discernible.

I claim:

1. A safety closure for a bottle and the like having a reduced neck portion terminating in an upper outwardly extending lip and a lower flaring wall portion, which comprises: a continuous annular-shaped inner cap member, of resiliently distortable substance, having a smooth inner bore for rotational engagement about said reduced neck portion of said bottle and adapted to be snapped over said lip of said bottle and coacting therewith to retain said inner cap member about said neck and below said lip of said bottle, and said inner cap member having outer thread means terminating in an outwardly extending flange-like rim, an outer cap member having cooperable internal thread means and an outer surface substantially coextensive with said rim and presenting what generally appears to be a substantially uninterrupted outer surface extending from one end of the safety closure to the other end thereof, whereby the side wall portion of said outer cap member supports and renders rigid and inflexible the side wall portion of said inner cap member so as to preclude pulling and prying of said safety closure from said bottle, and said substantially uninterrupted outer surface of said safety closure having camouflaging means which gives to said safety closure the appearance of being a unitary, integral one-piece bottle closure member.

2. The safety closure of claim **1** wherein said camouflaging means comprises simulated groove-like joints parallel to the joint formed by the flange-like rim of said inner cap member and the outside surface of said outer cap member.

3. The safety closure of claim **2** wherein a plurality of vertical grooves are provided on the outer surface of said outer cap member and on the outer surface of said flange-like rim so that said vertical grooves extend from one end of the safety closure to the other end thereof, the distance between said grooves being small so that any difference in alignment between said vertical grooves on said outer element and said vertical grooves on said rim of said inner element being hardly discernible.

4. The safety closure of claim **2** wherein the depth of said inner cap member is of a predetermined size so that it fits snugly between said upper lip and said lower flaring wall portion of said bottle whereby said inner cap member is substantially freely rotatable with respect to said neck portion of said bottle but yet is substantially immovable in the vertical direction.

5. The safety closure of claim **4** wherein said outer cap member is provided with an internal depth dimension slightly smaller than the dimension measured from the top of said flange-like rim of said inner cap member to the top of said bottle lip, whereby the joint between said inner and outer cap members is minimized and said safety closure is thus sealed and rendered leakproof.

6. The safety closure of claim **5** wherein a gasket is disposed between the top of said bottle and said outer cap member.

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