

March 27, 1962

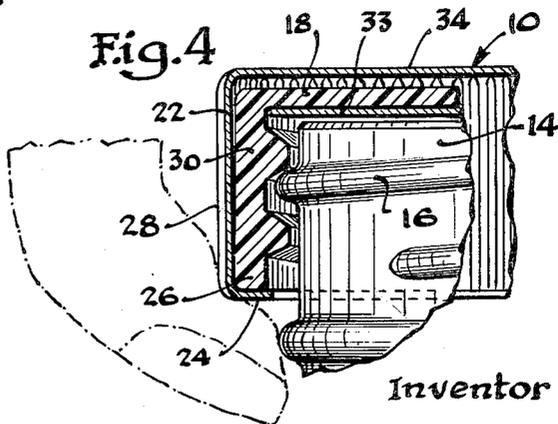
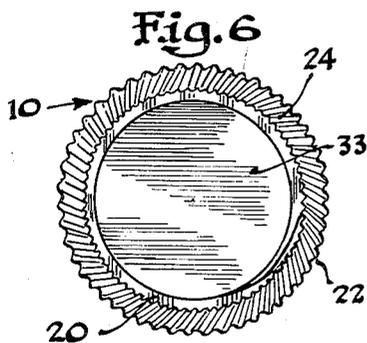
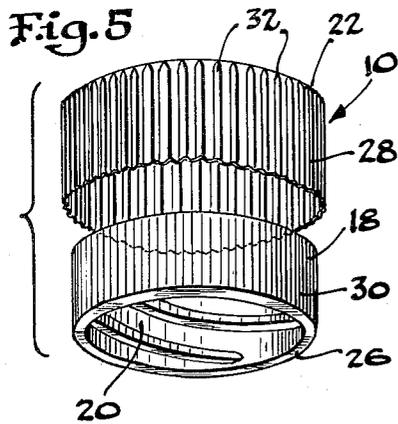
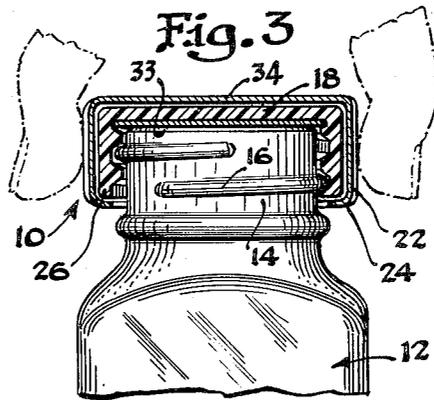
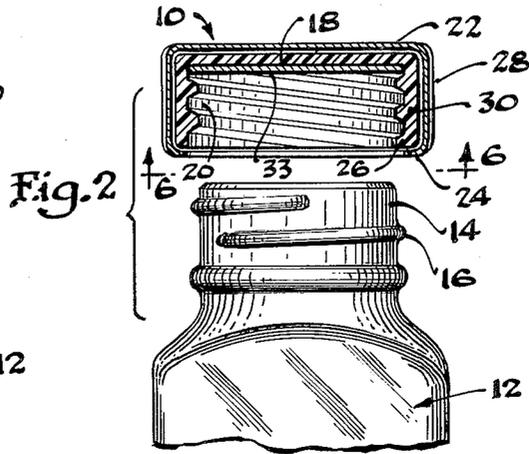
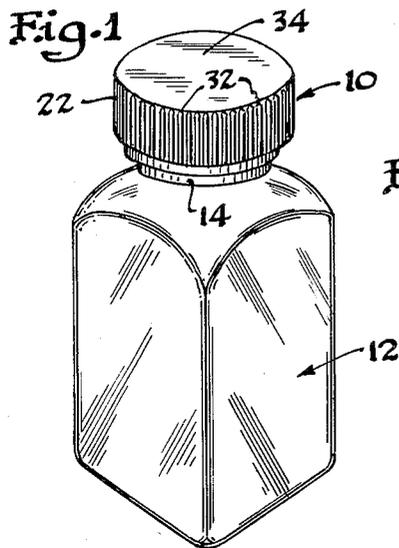
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SAFETY CLOSURE FOR CONTAINERS AND THE LIKE

Filed May 13, 1958

2 Sheets-Sheet 1



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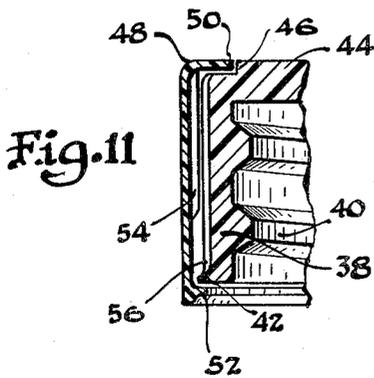
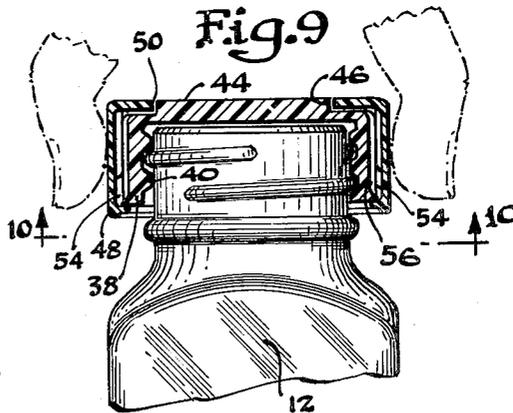
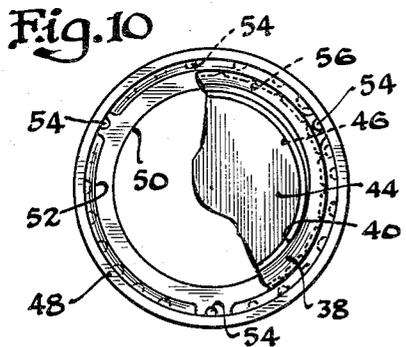
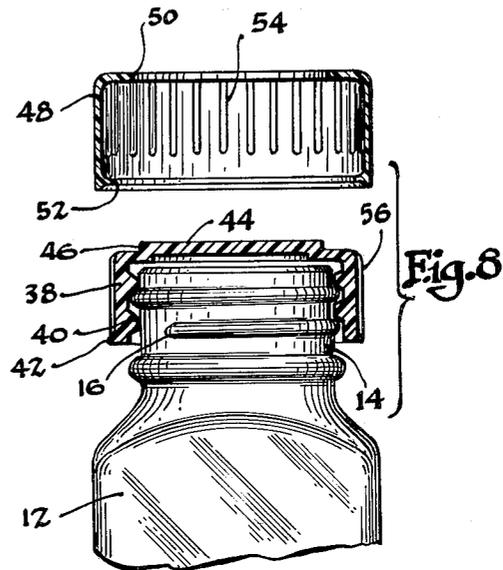
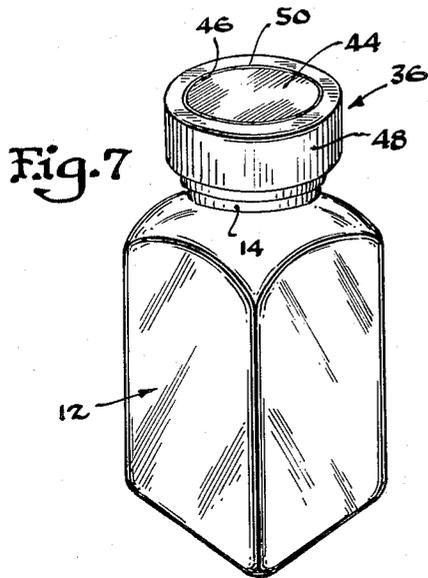
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SAFETY CLOSURE FOR CONTAINERS AND THE LIKE

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2 Sheets-Sheet 2



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3,027,035

## SAFETY CLOSURE FOR CONTAINERS AND THE LIKE

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9 Claims. (Cl. 215-9)

My invention relates to a safety closure for containers, bottles, and the like, and more particularly, to a closure that appears to resemble conventional closures of this type, but which cannot be removed unless gripped in an unusual manner.

It is a well-known fact that a large number of people each year either become seriously ill or die from accidental poisoning. This is particularly true in the toddler age group, children from one to four years of age, the time when locomotion and curiosity far outweigh knowledge and judgment. Case histories indicate that carelessly placed bottles or containers having such substances as barbiturates, kerosene, salicylates, arsenic, strychnine, and lye in them are frequently the start of pediatric poisonings. As long as parents are careless and children are inquisitive, pediatric poisonings will continue unless protective steps are taken.

One way of preventing accidental poisonings is to provide safety closures for containers or bottles that are to have these dangerous substances in them. Conventional safety closures generally comprise a member that is formed to cooperate with, for instance, the screw threads of a threaded bottle neck, and a covering casing that is permanently secured to the fastening member but is freely rotatable with respect thereto. These safety closures generally fall into three groups:

(a) Those which require a special tool for keying the rotatable casing or covering to the fastening member so that the fastening member may be turned to remove the closure from the container;

(b) Those in which the casing and the fastening member are formed to receive a common keying element, such as a knife blade or screw driver, that acts to key the casing and fastening element together;

(c) Those in which no keying element is required, but in which special interlocking elements are mounted that will permit the closure to be removed when it is manipulated in a special or predetermined way.

It will be appreciated that the closures of each of these groups must be specially formed to act as safety closures. Moreover, in the first and second groups, a tool must be provided, and in order to have bottles with caps of this type conveniently useful, the tools must be readily accessible. Ready accessibility to the parent, however, generally means ready accessibility to the child and the safety measures are thereby substantially lessened or defeated wholly.

In the third group, a relatively complicated construction is required normally to maintain the casing inoperatively connected to the fastening element, but permit interengaging of these elements to remove the closure. Thus, such closures are inherently expensive to manufacture and have not been widely adopted.

The closures of all of these groups are also objectionable because it is known that children learn by watching their parents and other grown-ups, and it has been found that they tend to easily master the obvious special manipulation required to open closures of these groups.

A principal object of the present invention is to provide a safety closure that to all appearances is operated in a conventional manner, but which employs a deformable rotatable casing which requires a particular but substantially invisible application of localized pressure to

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remove the closure. There is thus no apparent way for children to learn how to remove the closure.

Another principal object of the invention is to provide a safety closure which requires neither key to operate nor special internal interlocking elements, but which may be removed and applied by merely using one's fingers and thumb of one hand to grip and deform certain portions of the closure.

A further object of the invention is to provide a simplified safety closure that is formed of few and simple parts that require no special forming operations, that lends itself to mass production, and that is applicable to all conventional bottles and containers.

In accordance with the illustrated embodiments of the invention, I provide a cup-shaped fastening element formed to cooperate with, for instance, the externally threaded neck of conventional bottles, and a casing that is permanently secured to and freely rotatable with respect to, the fastening element. The casing covers in whole or in part the exposed portions of the fastening element and when the fastening element has been applied to the bottle, the casing, by freely rotating, appears to defy attempts to remove the closure from the bottle. The casing of the illustrated embodiments is made deformable adjacent the downwardly facing rim of the fastening element, so that when sufficient pressure is applied by the fingers and thumb of an adult's hand to this portion of the casing, the fastening element may be gripped to move it with respect to the bottle.

Other objects, uses and advantages will be obvious or become apparent from a consideration of the following description and the drawings.

In the drawings:

FIGURE 1 is a perspective view of a conventional bottle for poisonous materials having my invention applied thereto;

FIGURE 2 is a side elevational view of the bottle neck with the safety closure of the present invention positioned above the neck and shown in section;

FIGURE 3 is a view similar to that of FIGURE 2, but showing the closure applied to the bottle and the usual way in which conventional bottle closures are gripped to open same, which is ineffective in my invention unless the gripping pressure thus applied is that of an adult or a child beyond the tender years of one to five or more;

FIGURE 4 is an enlarged fragmental view, showing the general area where the closure of the present invention may be pressed or gripped to remove the closure;

FIGURE 5 is an exploded perspective view of the elements comprising the closure; and

FIGURE 6 is a bottom view of the closure;

FIGURE 7 is a perspective view of a conventional bottle having an alternative embodiment of my invention applied thereto;

FIGURE 8 is a side elevational view of the bottle neck with the inner closure member of the present invention positioned above the neck and shown in section, and the outer closure member shown in section positioned apart from the inner member and prior to positioning of the outer member over the inner member;

FIGURE 9 is a view similar to that of FIGURE 2, but showing the outer member snapped into position over the inner member, and the usual way in which conventional bottle closures are gripped to open same, which is ineffective in my invention unless the gripping pressure thus applied is that of an adult or a child beyond the tender years of one to five or more;

FIGURE 10 is a bottom view of the outer and inner members of the closure of my invention shown in assembled relationship, with part of the inner member cut away to show the opening in the top of the outer member;

FIGURE 11 is an enlarged detail view of the cap assembly shown in section.

Reference numeral 10 of FIGURE 1 generally indicates one embodiment of my safety closure applied to a conventional bottle 12 for pills or the like. The bottle includes a conventional neck portion 14 screw threaded at 16.

The safety closure 10 generally comprises an inner fastening member 18 in the form of a cup-shaped element internally screw threaded as at 20, and an imperforate, relatively thin, casing, cover or concealing element 22 that is permanently secured to the element 18 by bending edge 24 over the rim 26 of the fastening element. The edge 24 is so bent that the casing or cover 22 is loosely carried on the fastening element 18 so that it is freely rotatable thereon. Preferably, the internal diameter of the casing sidewall 28 in its non-deformed condition is slightly larger than the external diameter of the sidewall 30 of element 18.

In the illustrated embodiment, the sidewall of the casing or cover 22 is corrugated as at 32.

The fastening element may be made from any suitable relatively hard metal or synthetic resin material. The casing or cover 22 is preferably formed from a relatively stiff substance such as synthetic resin, aluminum or copper. However, it is made sufficiently thin so that when force is applied in the manner now to be described, it will deform or bend slightly. Upon release of the applied force the casing will resume its original shape. The closure may include a conventional sealing disc or gasket 33 of any suitable type.

Referring to FIGURES 3 and 4, it will be appreciated that when the casing 22 is gripped as shown in FIGURE 3 or in the area adjacent the top of the casing 22, it easily resists deformation since the force is applied almost in line with the top 34 of the casing. Bottle caps, incidentally, are conventionally gripped as shown in FIGURE 3 to remove them. In the illustrated embodiment, even if the casing is gripped a distance almost half way down the sidewall of the casing, it will resist deformation and will rotate with respect to the fastening element 18.

However, when the casing is gripped by the thumb and fingers of one's hand where shown in FIGURE 4, that is, adjacent the downwardly facing rim of the fastening element and the turned over edge of the casing, the sidewall of the casing will deform and bend inwardly sufficiently to cause a frictional engagement between the wall and the fastening element whereby the latter may be turned. In the illustrated embodiment, substantial pressure is required to deform the fastening element even at this point, and it has been found that this pressure is above that which could be applied by children in the dangerous one to four year age group. It will also be noted that this gripping pressure may be applied to the lower half of the casing 22 while ostensibly holding the closure in a conventional manner. Small children therefore will not be able to learn how to remove the closure by merely watching a grown-up do it, nor if told the manner of removal will not physically be able to accomplish removal.

Thus, the closure 10 may be applied to the bottle 12 by slightly deforming the casing where shown in FIGURE 4 or on the lower portion of the sidewall 28 and turning the bottle with respect to the closure or the closure with respect to the bottle. After the closure has been applied, the casing will resume its normal shape and move or rotate freely with respect to the fastening element if the closure is gripped in the conventional and usual manner to remove it. Only by gripping the casing downwardly on the sidewall or in the manner shown in FIGURE 4 and by the application of a compression force may the casing be deformed sufficiently to grip the fastening and thereby permit the threaded fastening to be turned relative to the bottle.

Reference numeral 36 of FIGURE 7 generally indicates

another embodiment of my safety closure applied to a conventional bottle 12 for pills or the like. The bottle includes a conventional neck portion 14 screw threaded at 16.

The safety closure 36 generally comprises an inner fastening member 38 in the form of a cup-shaped element internally screw threaded as at 40, and an outwardly disposed annular flange 42 at the open end of the cup. The top or web portion 44 of the inner fastening member 38 has an annular concentric raised portion 46. The outer safety cover member 48 in the form of a cup-shaped element has a concentric circular rim 50 defining a circular aperture in the web portion of the safety cover member. This rim is designed to accommodate the raised portion 46 in spaced relation with and freely rotatable therein when the member 48 is positioned to encompass the member 38. The member 48 has an internally disposed annular flange 52 at the open end of the cup. This flange is designed to be forced by finger pressure past the outwardly disposed annular flange 42 or the inner fastening member 38 with the production of a clicking sound to secure the member 48 and the member 38 in spaced and freely rotatable relation.

In the embodiment shown in FIGURES 8 to 11, the internal sidewall of the cover member 48 is corrugated or fluted as at 54. The outer sidewall of the inner fastening member 38 is corrugated or fluted as at 56. When the cover member 48 is in non-deformed condition, these corrugations or flutings are of a thickness such that the member 48 can freely rotate over the member 38 in spaced relation therewith. When substantial finger pressure is applied to the sidewall of the cover member 48 so as to deform it, the corrugations on the member 48 engage with the corrugations on the member 38 to provide frictional action of the cover member 48 against the fastening member 38 and thereby render possible the unscrewing of the fastening member 38 from the neck portion 14 of the bottle. The embodiment of FIGURES 8 to 11 is desirably made of a suitable plastic such as polyethylene or polystyrene. For example, the outer cover member 48 may be made of polyethylene of a type chosen for its rigidity in relatively thin sections. The inner fastening member 38 may be made of polystyrene in order to enhance the resistance to distortion which may be produced by tightening the fastening member 38 on the neck of the bottle. The cover member 48 may be of a different color than the fastening member 38 in order to indicate more clearly the presence of two members in the composite closure, or for decorative purposes.

The annular concentric raised portion 46 may vary in diameter but is desirably designed with as large a diameter as possible without sacrificing rigidity at the junction of the sidewall of the cup with the top or web portion. The annular concentric raised portion 46 may be of a height such that the top 44 of that portion is flush with the outer surface of the web of the cover member 48. As an alternative, the raised portion 46 may be of a height such that the raised portion 46 extends beyond the outer surface of the web portion of the cover member 48, so long as the extension is not sufficient to permit the user to grasp the edges of the raised portion 46 between the fingers and thereby unscrew the inner fastening member 38 from the bottle neck 14.

The embodiment of FIGURES 7 to 11 is particularly well adapted for manufacture from plastics such as polyethylene and polystyrene by the usual molding techniques. This embodiment has the further advantage over the embodiment of FIGURES 1 to 6 in that the inner fastening member 38 can be applied to the neck of a bottle very securely by an adult and the safety cover pressed on with a clicking sound, all of which provides assurance that the closure of this embodiment is safe and is operating as a safety cap. When thus applied and snapped into position, the cover member 48 cannot be pried from the inner fastening member 38 without using tools and very sub-

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stantial force by an adult. However, when the cover member 48 is squeezed to deform the sidewall thereof, a twisting motion by an adult will serve to loosen the closure for ready removal from the bottle. When the closure is free from the bottle, a firm finger pressure by the thumb on the annular portion 46 while holding the cover member 48 in the fingers will result in a popping out of the cover member 38, sliding the flange 52 over the flange 42 in the process of so doing. The parts are then ready for reengagement in the manner previously described.

This application is a continuation-in-part of my co-pending application, Serial No. 546,414, filed November 14, 1955.

The foregoing description and the drawings are given merely to explain and illustrate my invention, and the invention is not to be limited thereto, except in so far as the appended claims are so limited since those skilled in the art who have my disclosure before them will be able to make modifications and variations therein without departing from the scope of the invention.

I claim:

1. A safety closure for a container of the type having an opening bounded by conformations which receive a closure turned thereon, the closure having a two part construction comprising: a cap part having conformations mating with the conformations of the container, defining a generally cylindrical periphery, a generally flat top face, and an annular bottom margin, the cap part in position serving to close the opening of the container; and a jacket part encompassing the cap part, the jacket part in the unflexed condition being in spaced relation with and freely rotatable about the cap part and shielding the exposed areas thereof to an extent sufficient to preclude turning of the cap part either directly or by rotation of the jacket part while unflexed, the jacket part having a roof portion extending over the top face of the cap, a skirt portion extending about the generally cylindrical periphery thereof, and an intumed lower flange portion extending over the annular bottom margin of the cap to hold the cap and jacket together as a unitary whole, the jacket part further being of material capable of being flexed by substantial finger pressure to gripping and engaging relation with the cap part to permit removal or application of the cap, and returning to original spaced freely rotatable shape after the release of substantial finger pressure.

2. A safety closure for a container of the type having an opening bounded by conformations to receive a closure turned thereon, the closure having a two part construction comprising: a cap part having conformations mating with the conformations of the container, defining a generally cylindrical periphery, and when in position serving to close the opening of the container; and a jacket part encompassing the cap part and secured in assembled relation therewith, the jacket part defining an internal generally cylindrical face adapted when the jacket is flexed to engage the cap frictionally and in the unflexed condition being in spaced relation with and freely rotatable about the cap part, the jacket part shielding a substantial portion of the web portion and all of the skirt portion of the cap part to an extent sufficient to preclude turning of the cap part either directly or by rotation of the jacket part while unflexed, at least one of the surfaces frictionally engaged when the jacket is flexed being roughened to facilitate turning of the cap through the medium of the jacket, the jacket being capable of being flexed by substantial finger pressure to grip and engage the cap and thereby permit the removal or application of the cap and returning to original spaced freely rotatable shape after the release of substantial finger pressure.

3. A safety closure for a container of the type having an outlet passage terminating in an annular lip bounded by external threads to receive a closure, the safety closure having a two part construction comprising: a cap part of generally cup-shaped configuration with a portion having internal threads adapted to mate with and

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be received upon the external threads of the container, an annular seat adapted to engage and seal the annular lip of the container when the cap part is threadedly secured thereon, and an imperforate web portion spanning the annular lip of the container to provide a complete seal when the cap is threadedly secured to the container; and a jacket part of cup shaped conformation nesting over the cap part and secured in assembled relation therewith and in the unflexed condition being in spaced relation with and freely rotatable about the cap part, the jacket part having a web overlying a substantial portion of the web part of the cap part and a skirt depending from the web and encompassing the sleeve portion of the cap part, the jacket part in the unflexed condition being in spaced relation with and freely rotatable about the cap part, the skirt portion of the cap part being of material capable of being flexed by substantial finger pressure to grip and engage the cap and thereby permit removal or application of the cap, and capable of returning to original freely rotatable shape after the release of substantial finger pressure.

4. A safety closure for a container of the type having an outlet passage terminating in an annular lip bounded by external threads to receive a closure, the safety closure having a two part construction comprising: a cap part of generally cup-shaped configuration with a socket portion having internal threads adapted to mate with and be received upon the external threads of the container, an annular seat adapted to engage and seal the annular lip of the container when the cap part is threadedly secured thereon, and an imperforate web portion spanning the annular lip of the container to provide a complete seal when the cap is threadedly secured to the container; and a jacket part of cup-shaped conformation nesting over the cap part and in the unflexed condition being in spaced relation with and freely rotatable about the cap part, the jacket part having a web overlying at least the periphery of the web part of the cap part, a skirt depending from the web and encompassing the sleeve portion of the cap part, and an intumed lower flange underlying the cap part to hold the cap part and the jacket part in assembled relation, the jacket part in the unflexed condition being freely rotatable about the cap part and the skirt portion being of material capable of being flexed by substantial finger pressure to grip and engage the cap and thereby permit removal or application of the cap, and capable of returning to original spaced freely rotatable shape after the release of substantial finger pressure.

5. A safety closure for a container of the type having an opening bounded by conformations to receive a closure turned thereon, the closure having a two part construction comprising: a cap part having conformations mating with the conformations of the container and having an annular cylindrical protrusion on the exterior of the web thereof with a diameter substantially less than that of the web, said cap part having a flange on the exterior of the skirt portion adjacent to the open end of the cap part, said cap part when in position serving to close the opening of the container; and a jacket part having a cup shape with a portion of the web cut out to define a concentric cylindrical aperture, and a flange on the interior face of the skirt portion adjacent to the open end of the skirt portion, said jacket part encompassing the cap part with the flange on the jacket part extended beyond the flange on the cap part and securing the jacket and cap in spaced relation with and freely rotatable about the cap part, the annular cylindrical protrusion on the web of the cap being positioned in spaced relation with and freely rotatable in the cylindrical aperture in the web of the jacket part; said jacket part shielding a substantial portion of the web portion and all of the skirt portion of the cap part to an extent sufficient to preclude turning of the cap part either directly or by rotation of the jacket part while unflexed; the interior surface of the skirt portion

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of the jacket and the exterior surface of the skirt portion of the cap part having raised protrusions thereon designed to be engaged when the skirt of the jacket is flexed to engage the cap part to facilitate turning of the cap part through the medium of the jacket, the jacket being capable of being flexed by substantial finger pressure to grip and engage the cap and thereby permit the removal or application of the cap and returning to original spaced freely rotatable shape after the release of substantial finger pressure; said jacket being demountable from said cap part when the closure is not on the container by means of substantial finger pressure applied to the raised annular web portion of the cap part and supporting substantial finger pressure applied at the open end of the jacket to force the flange on the jacket past the flange on the cap part, and said demounting operation being virtually impossible to achieve with substantial finger pressure when the closure is in tightened position on a container.

6. In a safety bottle closure, the combination of an inner cap member having an apron wall surrounding the bottle neck, thread means between the inner member and the bottle neck for securing the inner cap as a closure to the bottle neck; an outer member with a skirt wall telescoped over the apron wall of the inner member, said skirt-wall lying closely to the outer face of the apron wall of the inner member, said members having co-ordinated means thereon interlocking the same together so as to permit their relative rotation with respect to each other, and preventing their relative longitudinal movement with respect to each other, the skirt wall of said outer member being composed of a material capable of being deformed by compression in an adult's hands to press the skirt wall against the apron wall of the inner member with sufficient force to contact the apron wall and to enable rotation of the outer, skirt wall to be transmitted to the inner cap member, to unscrew the inner cap member on the thread means to remove the inner cap member from the bottle neck.

7. A safety closure for a bottle neck, according to claim 6, in which friction developed upon the surface of the said

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apron wall imparts movement to the inner member to enable the disconnection of the inner member from the bottle neck to be effected.

8. In a safety bottle closure, the combination of an inner cap member having an apron wall, surrounding the bottle neck, thread means between the inner member and the bottle neck for securing the inner cap as a closure to the bottle neck; an outer member with a skirt wall telescoped over the apron wall of the inner member, said skirt-wall lying closely to the outer face of the apron wall of the inner member, said members having coordinated means thereon interlocking the same together so as to permit their relative rotation with respect to each other, and preventing their relative longitudinal movement with respect to each other, the skirt wall of said outer member being composed of a material capable of being deformed by compression in an adult's hands to press the skirt wall toward the apron wall of the inner member with sufficient force to contact the apron wall and to enable rotation of the outer skirt wall to be transmitted to the inner cap member, to unscrew the inner cap member on the thread means to remove the inner cap member from the bottle member, the material of said skirt wall being sufficiently resistant to prevent pressure in a child's hands from deforming the skirt wall toward the apron wall sufficiently to transmit a rotation to the inner cap member sufficient to unscrew the inner cap member.

9. A safety bottle closure means, according to claim 8, in which the friction developed by the pressure between the contacting faces of the outer member and the inner member is sufficient to enable the outer member to transmit the rotary movement to the inner member to rotate the closure.

#### References Cited in the file of this patent

##### UNITED STATES PATENTS

2,359,639	Hanahan	Oct. 3, 1944
2,717,708	Martinez	Sept. 13, 1955
2,864,519	Crabbe	Dec. 16, 1958
2,881,934	Rhodes	Apr. 14, 1959