

Aug. 27, 1968

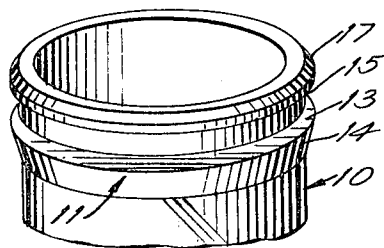
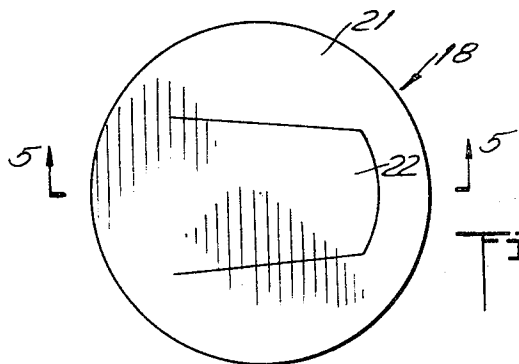
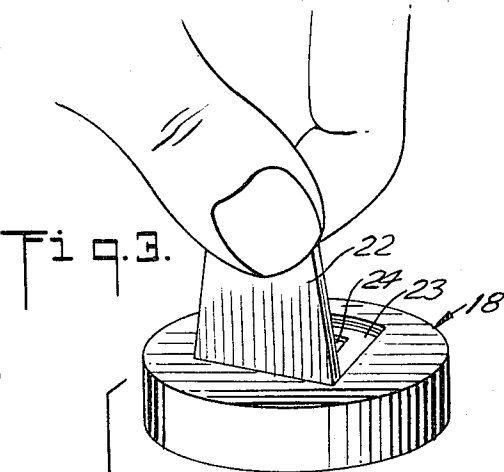
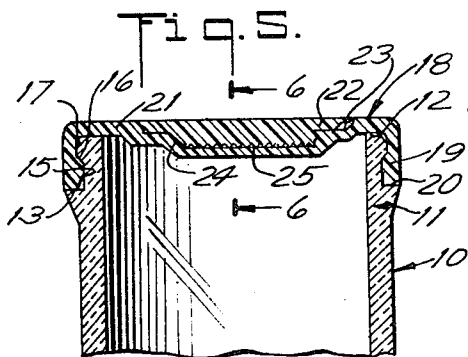
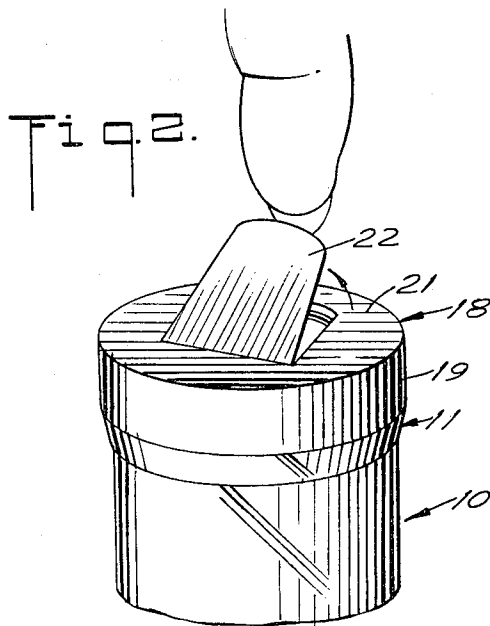
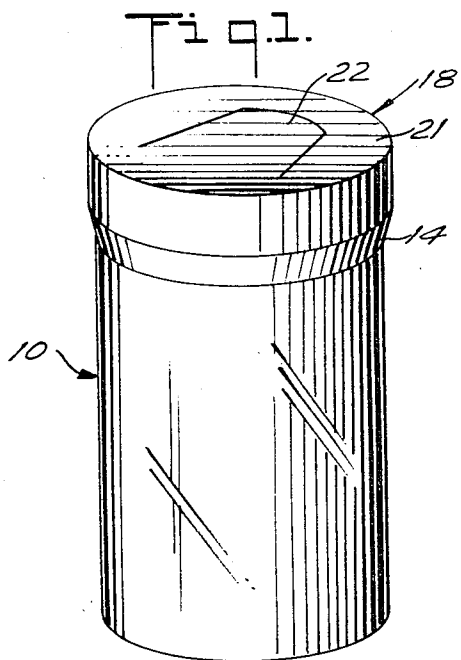
E. J. TOWNS

3,398,847

CONTAINER AND SAFETY CLOSURE THEREFOR

Filed April 6, 1967

2 Sheets-Sheet 1



INVENTOR.
EDWARD J. TOWNS

BY
Kenny & Kenny
ATTORNEYS

Aug. 27, 1968

E. J. TOWNS

3,398,847

CONTAINER AND SAFETY CLOSURE THEREFOR

Filed April 6, 1967

2 Sheets-Sheet 2

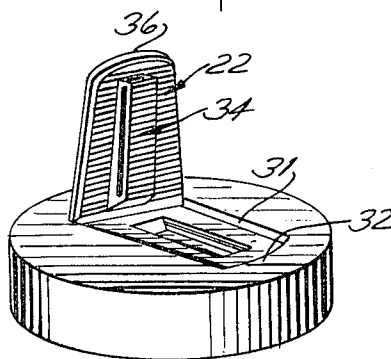
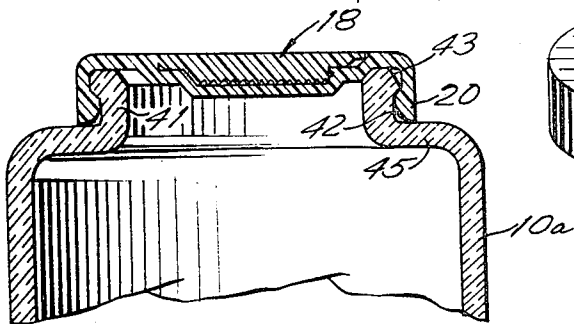
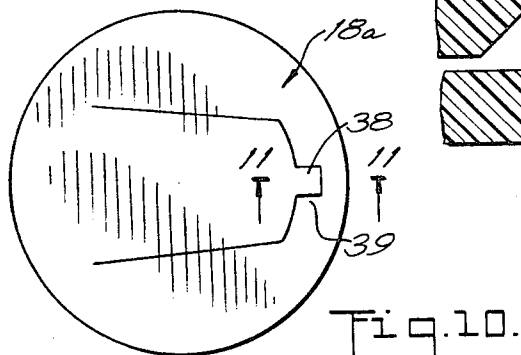
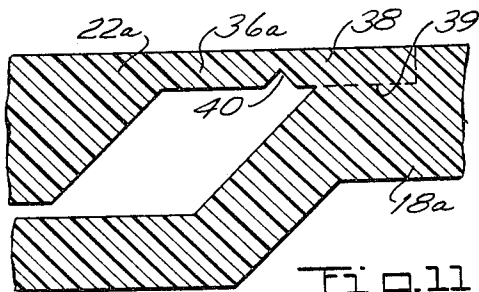
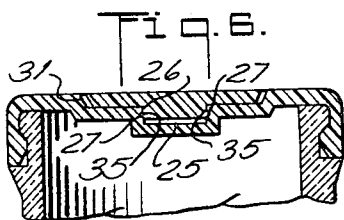
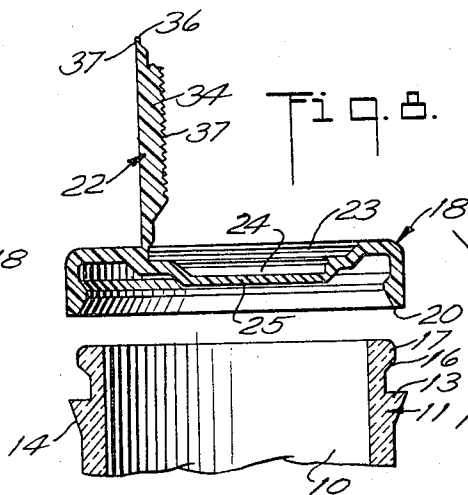
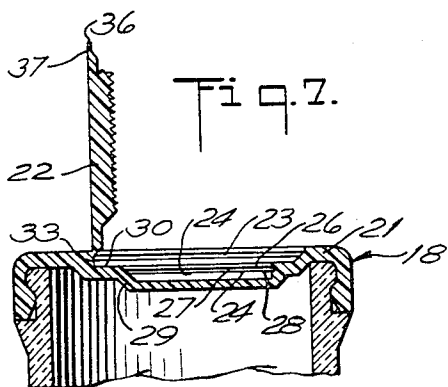


Fig. 9.

INVENTOR.
EDWARD J. TOWNS

BY
Kernon & Kernon
ATTORNEYS

1

3,398,847

CONTAINER AND SAFETY CLOSURE THEREFOR

Edward J. Towns, 53 Mounthaven Drive,

Livingston, N.J. 07039

Filed Apr. 6, 1967, Ser. No. 628,989

9 Claims. (Cl. 215—9)

ABSTRACT OF THE DISCLOSURE

A container and replaceable safety closure therefor wherein the container and closure have portions that are yieldable to interengage when the closure is snapped over the container mouth and wherein the outer diameter of the closure is not greater than the portion of the container on which it rests so as to render it extremely difficult to pry off of the mounted closure and a flush fitted flap integral with the closure that may be swung from its flush position on the closure to an open grasping position by the user to facilitate forcible removal of the closure from said container, the dimensions of the closure and the normally flush position of said flap making it difficult for children to remove the closure from the container, thus providing safe storage for dangerous container contents.

Background of invention

Safety containers and closures intended to prevent the removal of dangerous contents therefrom by children or accidental removal by others are prevalent but have not been popularly accepted by the public or producers of such contents for a number of reasons. Among these are complexity of construction and assembly contributing to excessive and impracticably high manufacturing costs, difficulty of manipulation in application and removal of the closure so that only people with a mechanical bent or thoroughly familiar with the structure can remove it without annoyance and relatively short life of the closure.

A further difficulty with known prior art closures of this type is an inability to mass produce them and undesirable overall size of the parts forming the structure.

This invention relates to a safety container and closure therefor of relatively simple construction that is inexpensive to produce on a mass production basis and fully effective for its intended purposes, making it difficult for children to gain access to dangerous contents but yet permit simple manipulation for authorized removal of such contents.

Further features and objects of the invention are the provision of improved safety containers and closures therefor of a snap-on type without necessity for use of screw threading or the like.

Other objects and features of the invention will become apparent from the following detailed description and the accompanying drawings forming a part hereof, wherein:

FIGURE 1 is a perspective view of a container and a safety closure mounted thereon and embodying the invention;

FIGURE 2 is a similar fragmentary view illustrating a stage in removal of the safety closure cap from the container;

FIGURE 3 is a fragmentary view illustrating the cap as removed from the container;

FIGURE 4 is a plan view of the cap of FIGURE 1;

FIGURE 5 is a sectional view taken along line 5—5 of FIGURE 4;

FIGURE 6 is a sectional view taken along line 6—6 of FIGURE 5;

2

FIGURE 7 is a sectional view similar to FIGURE 5 illustrating parts of the cap in the condition for removal of the latter;

FIGURE 8 is a sectional view of the cap and container mouth in separated condition;

FIGURE 9 is a perspective view of the removal cap;

FIGURE 10 is a plan view of a modified type of safety cap construction;

FIGURE 11 is a fragmentary sectional view taken along line 11—11 of FIGURE 10; and

FIGURE 12 is a fragmentary sectional view of a modified type of container on which the safety cap of this invention is mounted.

Detailed description

Referring to the drawing and first to FIGURES 1—8 inclusive, the reference character 10 denotes a container or receptacle of any suitable material although preferably a moldable synthetic material such as polyethylene, polypropylene, copolymers of these materials or other moldable plastic having the characteristics of a solid ethylene polymer. In the embodiment shown, this container 10 has substantially cylindrical shape and walls of substantially uniform thickness except in the open mouth region whereat an upwardly tapering annular external shoulder 11 is provided somewhat below the upper edge 12 of the container to define a substantially flat horizontal upper ledge 13. The wall 14 of shoulder 11 below its ledge is tapered to merge with the main outer surface of the container.

Above the ledge 13, a recessed portion 15 is provided in the container wall which is joined by an annular tapered wall 16 to a thickened peripheral engageable portion or lip 17 at the upper end of the container 10. If the container 10 is of moldable material, these components may readily all be formed at its upper end during the molding process.

A safety cap 18 preferably of the same molded synthetic material or material as is mentioned in detail below is provided for mounting as a closure over the mouth of container 10. The side wall 19 of this cap 18 is provided with a finished bottom edge 20 intended to seat closely on the upper surface of ledge 13 with a minimal discernable juncture at the abutting surfaces. The diameter of this cap is not greater than the outer diameter of the ledge 13. The inner surface of the side wall 19 of cap 18 substantially is complementary in sectional shape to the shape defined by the annular groove 15 and by lip 17 of the container. This side wall 19 is sufficiently yieldable to permit the cap 18 to be snapped into closing condition on the container and to be retained snugly therein by interengagement of the mating parts of the container 10 and cap 18. At this time, the smoothly finished abutting ledge 13 and edge 20 of cap 18 are maintained with a close fit and since the diameter of cap 18 is not greater than ledge 13, the insertion of a fingernail, knife blade or other prying device to separate the cap and container is prevented. This prevents or makes very difficult the opening of the container by children or accidentally by others.

Authorized removal of the cap 18 from its closed condition on container 10 is effected by concealed means provided in the upper or top wall 21 of the cap 18. This removal means comprises a flap or tab 22 integral with the said top wall 21 which normally fits closely within a shallow recess 23 provided in a central portion of said top wall. This recess 23 has a central substantially rectilinearly shaped recessed portion 24 of substantially greater depth provided with a flat bottom wall 25 whose opposite longer vertical side walls 26 preferably are grooved longi-

tudinally at 27 for purposes presently to be described. One end wall 28 is substantially vertical and the other end wall 29 tapers upwardly and both join the horizontal bottom flat 30 of the shallow recess 23. This recess has opposite side walls 31 that taper towards each other, being joined by a curved end wall 32 and an oppositely located substantially straight end wall 33. The flap 22 is jointed integrally to the cap at the region adjacent end wall 33 and has an overall contour complementary in shape to the recess 23 being provided also on its under face with a projecting island 34 whose contour is complementary to the contour of deeper recessed portion 24 and into which said island is designed to be received with a snug fit. The longitudinal side walls of island 34 are provided also optionally with ribs 35 that are admeasured to fit snugly into grooves 27 in side walls 26 of recess 24.

The unattached forward end 36 of flap 22 is complementary in shape to curved wall 32 of recess 23 and provided with a thin flexible lip 36 which is slightly spaced from wall 32 to permit insertion of a fingernail or other prying means to swing the flap 22 out of its nested retained position in recesses 23 and 24 about its hinged joint with cap 18 at wall 33.

The bottom face of island 34 is preferably serrated at 37 so that in nested condition of flap 22, the extremities of its serrations rest on the bottom face of recess 24 to provide a firm support for the nested flap 22 whose upper face then lies substantially flush with the top surface of cap 18 to facilitate imprinting of suitable indicia onto the top surfaces of the cap and flap. In open condition of the flap as seen in FIGURES 7 and 8, the serrations 37 provide gripping surfaces for the user's fingers to facilitate removal of the cap 18 from container 10.

In an alternative embodiment as seen in FIGURES 10 and 11, the flap 22a is provided along its end 36 with an integral projecting frangible tab 38 that in nested condition of said flap 22a fits into a complementary recess 39 in the top of cap 18a and into which it may be secured by appropriate adhesive. A score line 40 is provided at the juncture of tab 38 and flap 22a to facilitate separation of the two when it is desired to swing flap 22a into cap-removing position. The frangible tab 38 adhered to cap 18a in recess 39 thus provides a protective member to prevent accidental dislodgment of flap 22a from its normally nested position prior to application of cap 18a to a container and further as an indicator to the user that prior to first opening of the container the contents of the latter have not been changed or adulterated.

The caps 18 and 18a are molded preferably by injection molding and the synthetic plastic material thereof which may be polyethylene, polypropylene or copolymers of these materials which in the wall thickness employed are sufficiently flexible to permit mounting of the cap and also swinging movement of the flap and yet provide sufficient strength to prevent its tearing when grasped to remove the cap.

Although caps 18 and 18a have been shown in FIGS. 1-11 as applicable to cylindrical containers 10, they are likewise applicable to containers of different shapes, for example, the containers 10a of FIGURE 12 wherein the diameter of its opening is actually smaller than that of the main body of the container. In such alternative, the container wall 41 defining the opening is provided with an external recess 42 directly below its lip 43 which is admeasured to receive the complementally shaped portions of the cap 18 or 18a when the latter is snapped into place. The height of wall 41 is admeasured so that when so mounted the bottom edge wall 20 of cap 18 or 18a then snugly abuts the flat outer wall portion 45 of container 10a lying flush therewith and being of smaller diameter than the wall portion 45 thus precludes insertion of a user's fingernail or other prying tool therebetween, thus preventing removal of the applied cap from the container by such operations.

In all modifications after the container is filled, the

caps 18 or 18a with their flaps in nested condition are snapped over their open mouths. Thereafter, the caps can only be removed by prying the flaps 18 or 18a into unfolded condition by a fingernail or other prying means and grasping the flap to pull the cap off the container. To reclose the containers, its flap is again nested and the cap snapped back over the container mouth. This may be repeated indefinitely as required to remove selected amounts of container contents.

Ordinarily, children will find it difficult to remove the caps and also to unseat the flaps for cap removal. Likewise, accidental removal will be avoided because the attempted user will be required first to manipulate the flap to an unseated condition to pull the cap off the container, thus warning the user in dark or dimly lighted rooms of the dangerous contents of the container.

While specific embodiments of the invention have been disclosed, variations in structural detail within the scope of the appended claims are possible and are contemplated. There is no intention, therefore, of limitation to the abstract or exact disclosure herein presented.

What is claimed is:

1. A container and safety closure means therefor, said container having a mouth, an engageable portion at said mouth, a recessed portion adjacent said first-named portion and a laterally projecting portion below the recessed portion, said safety closure means comprising a one-piece snap-on cap having a side wall whose inner portion has a surface complementary to that of said first and second-named portions and an abutment wall adapted to rest on said laterally projecting portion in such disposition as to prevent prying the mounted cap off said container, a flap portion integral with said cap, and at least one recess in said cap for receiving and retaining said flap in flush disposition relative to the top surface of said cap, said flap being swingable from said flush disposition to an open grasping position to facilitate forcible removal of the entire cap from said container.

2. A container and safety closure therefor according to claim 1, wherein two recesses are provided in said cap, one of said recesses being deeper than the other and wherein said flap has an island portion fittable into said one of said recesses when said flap is in flush disposition with respect to the top surface of said cap.

3. A container and safety closure therefor according to claim 2, wherein said island portion has a serrated surface adapted to rest upon an underlying surface of said one of said recesses.

4. A container and safety closure therefor according to claim 2, wherein said one of said recesses and said island portion have interengageable ribs and grooves for retaining said flap in its flush disposition.

5. A container and safety closure therefor, said container having a mouth, an engageable portion at said mouth, a recessed portion adjacent said first-named portion and a laterally projecting portion below the recessed portion, said safety closure means comprising a one-piece snap-on cap having a side wall whose inner portion has a surface complementary to that of said first and second-named portions and an abutment wall adapted to rest on said laterally projecting portion in such disposition as to prevent prying the mounted cap off said container, a flap portion integral with said cap, and at least one recess in said cap for receiving and retaining said flap in flush disposition relative to the top surface of said cap, said flap being swingable from said flush disposition to an open grasping position to facilitate forcible removal of the entire cap from said container and including frangible means for securing said flap in said flush disposition in said cap.

6. A container and safety closure therefor according to claim 5, wherein said frangible means extends from said flap and is adhesively joined to said cap.

7. A container and safety closure therefor according to claim 1, wherein the diameter of said cap is not greater

5

than the outer diameter of said laterally projecting portion.

8. A safety closure cap for application to a container according to claim 1, including recesses in said top surface, one of which is deeper than the other and said flap having an island portion contoured and dimensioned to fit into said one of said recesses when said flap is in said flush disposition.

9. A safety closure cap for application to a container according to claim 2, wherein said one of said recesses and said island portion have interengageable ribs and grooves for retaining said flap in its said flush disposition.

5

10

6

References Cited

UNITED STATES PATENTS

1,840,889	1/1932	Duncan	215—38
2,125,609	8/1938	Goodwin	215—38
2,767,754	10/1956	Lederer et al.	215—51
3,071,271	1/1963	Thomas	215—9
3,295,707	1/1967	Knies	215—41

WILLIAM T. DIXSON, JR., *Primary Examiner*.
ROBERT PESHOCK, *Examiner*.