

Jan. 1, 1963

R. H. THOMAS

3,071,271

SAFETY CAP

Filed May 1, 1961

Fig. 1.

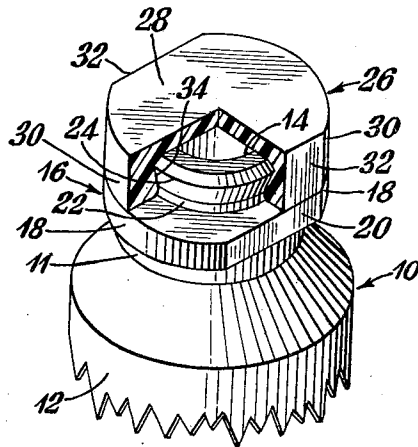


Fig. 2.

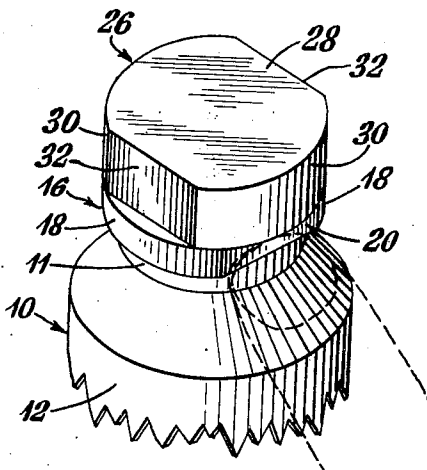
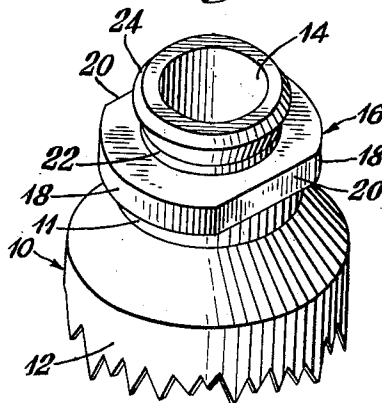


Fig. 3.



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SAFETY CAP

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5 Claims. (Cl. 215-9)

This invention relates to a snap-on closure cap for a bottle. More specifically, this invention relates to a combination snap-on cap and bottle whereby the cap cannot be removed or is difficultly removable by a child but whose removal does not present too great a problem for an adult. The closure cap and bottle of this invention finds particular utility for the storage of medicinals which are deleterious if taken in excess amounts.

An object of this invention is the provision of a novel, simple, inexpensive, resilient snap-on cap and cooperating bottle whereby it is extremely difficult for young children to remove the cap from the bottle but which does not present too great a problem for adults.

A further object of this invention is the provision of a novel snap-on cap which can be removed from a cooperating bottle only by first rotating the cap to an indicated predetermined position and then applying a force within a relatively small predetermined area.

Additional objects will become apparent in this specification.

Briefly, the invention comprises a resilient snap-on cap and cooperating bottle. The cap is similar to resilient snap-on caps used as closures for bottles containing medicinals except that at least one side of the cap circumference is not circular. The bottle has the usual neck, mouth and snap-on bead for retaining the resilient cap and in addition has a radial flange on the neck immediately below the bottle snap-on bead. The dimensions and peripheral shape of the radial neck flange are such that in a rotatable position of the cap the radial dimensions of the flange as compared to the cap will be equal to or greater than the latter. This position will be referred to as the safe position. In other positions of the rotatable cap, portions thereof will extend radially beyond the neck flange. Preferably at the safe position of the cap the radial dimensions of the cap correspond with those of the neck flange.

In operation the cap is snapped over the mouth of the bottle and the cap is rotated to the safe position wherein the radial dimensions about the cap circumference are equal to or less than that of the neck flange immediately below the cap. In this position the cap cannot be removed by either a child or an adult since no portion of the bottom of the cap extends radially beyond the neck flange and thus the finger cannot be inserted between the two nor sufficient leverage applied to raise the cap. The bottom end of the cap can be in contact with the neck flange or slightly above the top of the flange. However, the distance between the two must be such that the finger cannot be disposed therebetween to lift the cap. Removal of the cap is effected by manually rotating the cap so that the radial dimensions of portions of the cap circumference extend beyond the radial dimensions of the neck flange circumference immediately below the cap. In this latter position there is present an overlying portion of the bottom or base of the cap, which optionally may also be flanged in order to add strength to the cap base, extending beyond the neck flange. The thumb can then be pushed upwardly past the neck flange to pry the cap off the bottle.

These and other features of the invention contributing satisfaction in use and economy in manufacture will be more fully understood from the following description of a preferred embodiment of the invention when taken in

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connection with the accompanying drawings, wherein identical numerals refer to identical parts and in which:

FIG. 1 is a fragmentary side elevational view of a bottle and closure cap of this invention wherein the cap is in the safety position, parts being broken away and shown in section to reveal the neck and cap structure;

FIG. 2 is a side elevational view showing the cap after being rotated 90° from the position in FIG. 1 so that the cap extends beyond the flattened portion of the neck flange and accessible for removal by pushing upward with the thumb.

FIG. 3 is a side elevation of the top of the bottle of FIGS. 1 and 2 with the cap removed therefrom.

In the illustrated embodiment of the cooperating cap and bottle, the bottle 10 is provided with a diametrically reduced neck 11 which extends upwardly from the body 12 and defines the usual mouth 14. About the neck is a radial flange 16 having circular portions 18-18 and diametrically opposed flattened portions 20-20. Above neck flange 16 is a circular groove 22. A circular snap-on bead 24 is located above the neck groove 22.

A closure cap 26, preferably, though not necessarily, is formed of polyethylene or some similar resilient thermoplastic material or rubber and includes a top portion 28 and a depending skirt whose circumferential portion includes circular sides 30-30 and flat sides 32-32. Internally of the skirt there is an annular bead 34 designed for snap-on holding engagement with the neck bead 24. In operation of the illustrated device the cap 26 is telescoped over the top portion of bottle neck 16 and the inwardly disposed resilient cap bead 34 snaps over the outwardly disposed neck bead 24. The cap is firmly held in this position. To provide the additional safety feature which makes it extremely difficult for removal of the cap from the bottle, the cap is aligned by manual rotation with the neck flange 16 so that the cap skirt circumference lies entirely within the area prescribed by the neck flange 16. Preferably the bottom end of the cap abuts the neck flange, although this is not necessary, provided that the space between the bottom of the cap and the top of the flange is insufficient to permit the insertion of a finger to push the cap off the bottle. To remove the cap from the bottle it is rotated 90° from the above described position so that the circular portions 30-30 of the cap overhang past the flattened portions 20-20 of the flange. The thumb can then be used to pry the cap off the bottle.

Modifications may be resorted to within the spirit and scope of the described invention. Illustratively the shape of the neck flange and cap can be that of an ellipse; the cap can have a bottom flange which of course would have to be dimensioned so that it overlies the neck flange upon rotation to a predetermined position.

What is claimed is:

1. In combination a bottle having a mouth-defining neck rising therefrom, said neck formed with a circular closure cap retaining bead spaced from the mouth end, a circumferentially extending radial flange externally of the neck spaced slightly below said bead and of greater radial extent than the latter, the circumference of said flange being flattened on one side; a resilient slip-type closure cap telescoped over the neck and including a top portion, a depending attaching skirt and a radially inwardly directed annular projection formed within the skirt for holding engagement with said neck bead and projecting into the space between the latter and the neck flange, said cap having a flattened circumference on one side thereof and being rotatable about the neck to at least two positions wherein in one position each portion of the neck flange circumference extends radially to a distance at least as great as that of the cap circumference and wherein in a second position a portion of the cap circumference

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extends beyond the neck flange, whereby an upward pressure may be applied to the undersurface of said portion of the cap to disengage said annular projection from said circular retaining bead.

2. The combination defined in claim 1 wherein the bottom of the cap is in abutting relationship with the neck flange.

3. The combination defined in claim 1 wherein the circumferential dimension of the flattened side of the neck flange is only sufficient to permit finger engagement with the portion of the cap circumference which extends beyond the neck flange when the cap is in said second position in relation to said neck flange.

4. In combination a bottle having a mouth-defining neck rising therefrom, said neck having a circular retaining bead spaced from the mouth end, a circumferentially extending radial flange externally of the neck spaced slightly below said bead and having a portion thereof extending radially outwardly to a greater extent than said bead, said flange having a flat circumferential side, a re-

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silient snap-on closure cap telescoped over the neck and including a top portion, a depending attaching skirt and a radially inwardly directed annular bead formed at the lower margin of the skirt for holding engagement with said neck bead in all angular positions of the cap in relation to the neck of the bottle and projecting into the space between the latter and the flange, the cap having a horizontally extending surface at the lower end of the skirt thereof of the identical shape and size as the upper surface of the neck flange.

5. The combination of claim 4 wherein said surface of the cap and flange have peripheries in the form of a circle minus two parallel chordal segments.

References Cited in the file of this patent

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UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,071,271

January 1, 1963

Ralph H. Thomas

It is hereby certified that error appears in the above numbered patent requiring correction and that the said Letters Patent should read as corrected below.

Column 1, line 11, for "difficulty" read -- difficultly --;
line 60, after "dimensions" insert -- of portions --;
column 2, line 19, for "opopsed" read -- opposed --; line
43, after "rotated" insert -- about --; column 3, line 19,
for "that" read -- than --; column 4, line 11, for "surface"
read -- surfaces --.

Signed and sealed this 20th day of August 1963.

(SEAL)

Attest:

ERNEST W. SWIDER
Attesting Officer

DAVID L. LADD
Commissioner of Patents