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3,147,873

BOTTLES AND CLOSURE CAPS FOR THE SAME

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FIG. 1.

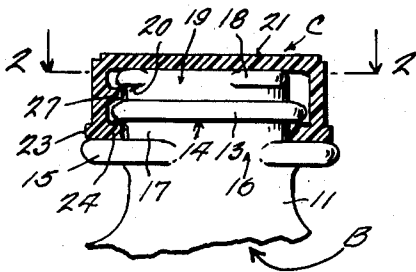


FIG. 3.

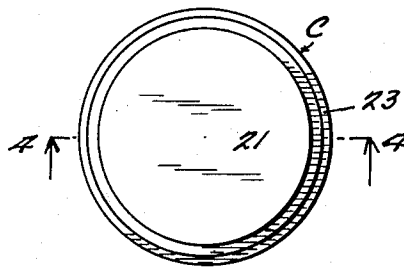


FIG. 2.

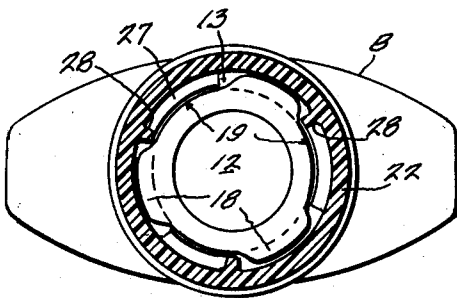


FIG. 4.

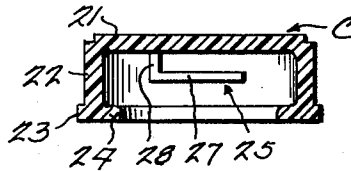
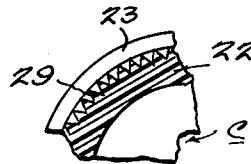


FIG. 6.

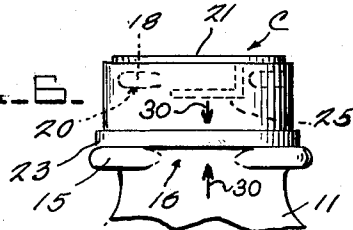


FIG. 5.

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BOTTLES AND CLOSURE CAPS FOR THE SAME
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This invention relates generally to bottles and closure caps for the same and more specifically to medicine bottles and safety closure caps for the same.

It is well known that in recent years ready access to bottles of aspirin tablets and many other medicines and the exceptional ease of closure cap removal have resulted both in serious illness and deaths among children.

It is, therefore, an important object of the present invention to provide a completely reliable closure cap which will effectively preserve the bottle contents, aspirin tablets, for example, against deterioration and at the same time provide a cap which small children cannot remove easily, if at all, except by sheer accident.

It is also an object of my invention to provide a bottle and closure cap combination, which, although practically impossible to open by small children, may be easily opened by adults.

A further object of my invention is the provision of a novel resilient plastic snap cap and bottle combination in which proper orientation of the cap and bottle is essential to easy cap application, as well as removal.

It is likewise an object of my invention to provide in a combination of the above character, a lock which requires the opener to rotate the closure cap relative to the bottle, a few degrees, before removal can be readily effected, the lock being of such character that the opener's sense of feeling involved in grasping and rotating the cap guides him in properly positioning or orienting the closure cap.

It is a still further object of my invention to provide in an article of the above character, lock means incorporating a stop capable of indicating both locked and unlocked positions of the closure cap.

These and other objects of this invention will become apparent from a reading of the following detailed description taken in conjunction with the drawings wherein:

FIGURE 1 is a transverse vertical sectional view of the closure cap affixed to a bottle neck which is shown in elevation, these elements incorporating my invention;

FIGURE 2 is a sectional plan view taken along the plane of line 2-2 of FIGURE 1 with the bottle in full outline;

FIGURE 3 is a top plan view of the closure cap;

FIGURE 4 is a sectional view taken substantially along the plane of line 4-4 of FIGURE 3 showing one of the lock devices;

FIGURE 5 is a fragmentary sectional view of the closure cap skirt, showing knurling incorporated on it; and

FIGURE 6 is an elevational view showing a closure cap and bottle incorporating indicia which functions to indicate proper cap orientation.

In the illustrated embodiment of my invention the bottle B has a diametrically reduced circular neck 11 rising from its body and defining the customary mouth 12 for filling and dispensing purposes. This neck is formed with an external annular bead 13 providing a continuous downwardly facing abutment 14, which is the primary holding means for securing a closure cap C upon the bottle neck 11. If preferred this abutment may be interrupted rather than a continuous surface. Just below the bead 13 is a radially outwardly extending bead 15 which is interrupted to provide at least one notch 16 or transverse opening such designed to accommodate one's thumb or finger

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for cap removal purposes, as will be apparent hereinafter. Between these two beads 13 and 15 there is an annular groove 17, or channel dimensioned to snugly accommodate part of the cap C, as is apparent.

A closure cap lock or secondary holding means just above the primary holding means or bead 13, comprises an annular series of lugs 18. Specifically there are three equidistantly spaced apart lugs, each being of substantial circumferential length and projecting radially outward flush with the rim end of the mouth forming neck. Thus there is a relatively long open space or notch 19 between each pair of lugs and each lug provides a downwardly facing abutment 20 or secondary cap locking surface. The upper or outer surface of these lugs, being in the plane of the rim end of the neck serve to increase the sealing surface area for contact with the closure cap panel.

The closure cap C preferably is formed of a resilient thermoplastic material, such as polyethylene, and comprises a circular panel or top portion 21 and a depending annular attaching skirt or flange 22, at the margin of said panel. The free lower edge of the skirt is thickened radially to provide an external annular rib 23 and an internal annular head 24 designed for entry into the groove 17 and in releasable holding engagement with the abutment 14 on the bottle neck. The lower end of the skirt terminates quite close to the bead 15 and is of no greater external diameter than said bead, to the end that resort to conventional cap removing procedure will be ineffective and instead requires the application of axially upward pressure against the skirt through the notch 19. Such upward pressure distorts the cap skirt allowing the bead 24 to slide over the abutment forming bead 13, as is shown in U.S. Patent No. 2,953,271, owned by the common assignee herewith.

When the closure cap C is properly applied, however, such easy removal is impossible because of the provision of lock means or secondary holding means. This lock means requires rotation of the cover cap a predetermined extent in a given direction before cap removal can be effected, as will be more apparent presently. Structurally the lock means comprise a plurality of generally L-shaped ribs 25 spaced equidistantly about the interior surface of the cap skirt 22 in relatively close proximity to the panel 21. Each lock device or rib 25 includes a circumferentially extending section 27 positioned to holdingly engage the lower side of one of the three lugs 18 thus aiding the bead 24 at the bottom end of the skirt in securing the cap to the bottle. At the rearmost end of the rib section 27 (FIGS. 2, 4 and 6) an upstanding stop or extension 28 is provided for engagement with an end of one of the lugs 18. This stop, when the cap has been telescoped over the neck and rotated clockwise the proper distance, engages the adjacent end of a lug 18 and insures holding contact between the lock means and the lug 18. Reverse movement, or counter-clockwise rotation of the closure cap ultimately engages this stop 28 with another adjacent lug 18 and with such contact, which can readily be detected by the opener's sense of feeling, one realizes the lock devices are positioned in a line between the lugs 18 and cap removal can be effected merely by upward pressure on a segment of the skirt through the notch 19. Until such alignment of the lock devices has been effected it is almost impossible to remove the cover cap.

In FIGURE 5, I have shown a skirt surface treatment comprising ribs 29 or knurling which is designed to facilitate manual grasping and rotation of the cap.

In FIGURE 6, I have incorporated indicia in the form of arrows 30 on the cap skirt and bottle neck, functioning in obvious fashion to indicate proper cap and bottle orientation to the opener and aid him in removing and replacing the closure. Modifications such as forming the

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stops 28 on the lugs 18 may be resorted to within the spirit and scope of the appended claims.

I claim:

1. In the combination of a bottle having a neck rising therefrom, said neck being cylindrical and terminating in an annular mouth-defining rim portion, an annular downwardly facing abutment encircling the neck at a point spaced from said rim, a circumferential radial bead externally of the neck immediately below said abutment, said bead having a transverse notch of radial extent about equal to the radial depth of the bead, a resilient snap-type cover cap telescoped over said neck and including a panel and annular depending attaching skirt, said skirt having at its lower free end an internal annular bead projecting into the space between said abutment and adjacent notched bead and snugly contacting the abutment, said free end of the skirt spanning the notch and being of no greater diameter externally than the external diameter of the notched bead; the improvement which comprises lock means offering added resistance to cover cap removal comprising an annular series of circumferential external lugs at the rim end of the neck each providing an abutment facing the bottle proper and an annular series of ribs formed internally of the cap skirt for holding engagement with the abutments.

2. A combination according to claim 1 wherein each

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stop is an angular extension of an end of one of said ribs.

3. A combination according to claim 1 wherein each lug has an upper surface lying substantially flush with the neck rim.

4. A combination according to claim 1 where stops individual to each pair of engaged lug and rib are provided for predetermining the possible extent of rotation of the cover cap on the bottle neck.

5. A combination according to claim 4 wherein the lugs are so spaced from each other as to permit passage of the stops between them during cap application and removal.

6. A combination according to claim 3 wherein each stop is an upward extension of the rearmost end of a rib and the extension is of such length as to engage an end of either of two adjacent lugs.

7. A combination according to claim 6 wherein the extension on each rib is directed toward the cover cap panel and substantially merges therewith.

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