

[54] SAFETY CLOSURE FOR BOTTLES

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[58] Field of Search.....215/9, 43, 41, 31

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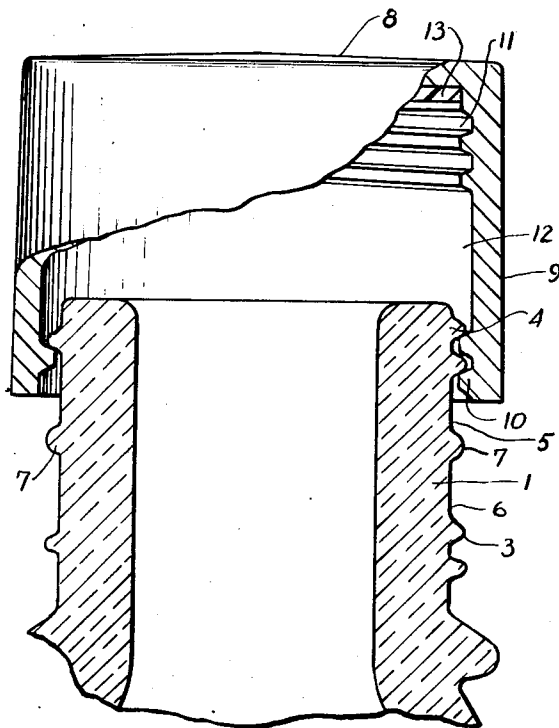
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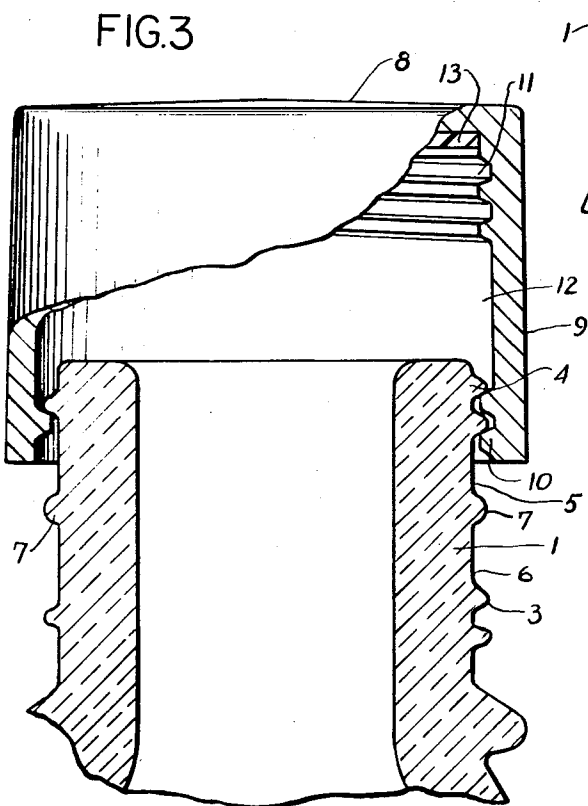
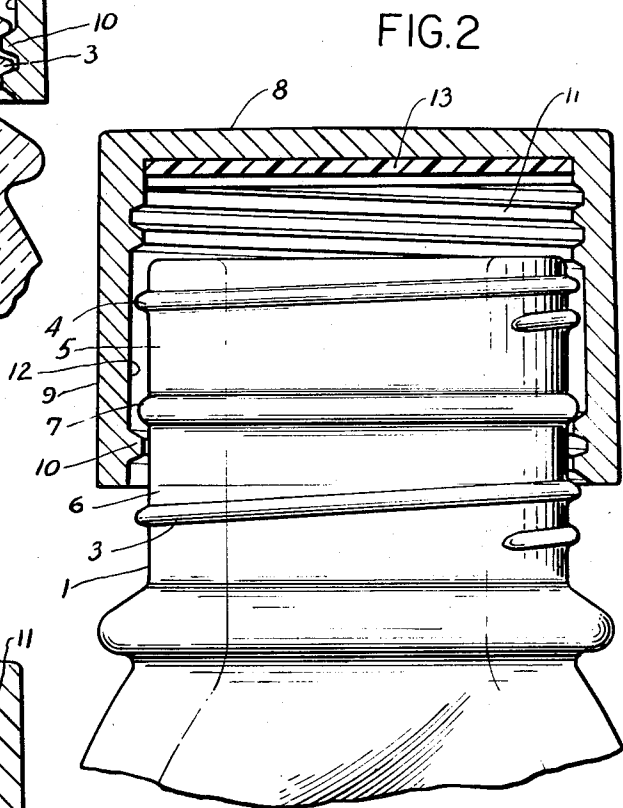
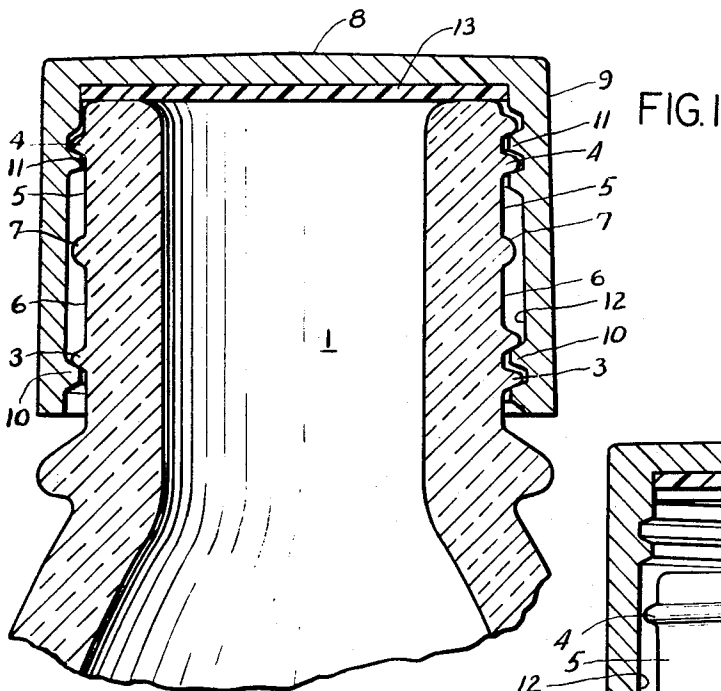
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[57] ABSTRACT

A bottle closure in which the neck of the bottle is provided with upper and lower threaded portions separated by an unthreaded portion divided into two parts by an annular bead. A cap is provided with upper and lower internally threaded portions separated by an unthreaded portion of a width substantially equal to the width of the unthreaded portion of the neck. When removing the cap, the bead interferes with the lower threaded portion of the cap providing resistance to easy removal.

5 Claims, 3 Drawing Figures





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SAFETY CLOSURE FOR BOTTLES

This invention relates to closures for bottles and pertains particularly to screw threaded closures comprising a cap which is difficult for small children to remove. Such closures are sometimes referred to as "child-proof" closures.

It is an object of the invention to provide a closure which is simple and inexpensive to manufacture, which is easily operable by an adult, but which requires more skill and strength to operate than is possessed by small children.

It is a further object of the invention to provide a closure which will provide a tight seal when the cap is screwed down tightly.

Other objects and advantages of the invention will appear hereinafter.

A preferred embodiment of the invention is shown in the accompanying drawings in which,

FIG. 1 is a vertical section through the neck of a bottle and a cap shown in sealing position.

FIG. 2 is a similar view showing the cap in an intermediate position.

FIG. 3 is a similar view showing the cap in position to be removed from the bottle.

Referring to the drawings, the neck 1 of the bottle 2 is provided with a lower helically threaded portion 3, and an upper helically threaded portion 4. Between the lower and upper threaded portions of the neck is an unthreaded portion which is divided into two unthreaded portions 5 and 6 by an annular bead 7 which protrudes beyond the unthreaded portions of the neck a distance approximately equal to the height of the threads of the portions 3 and 4. Preferably the two unthreaded portions 5 and 6 are of substantially equal width.

The cap, preferably made of a yielding plastic material such as polypropylene or polyethylene, comprises a circular disk 8 having a substantially cylindrical or slightly tapered skirt 9 depending from the periphery thereof. The skirt 9 is provided internally with a lower helically threaded portion 10 and an upper helically threaded portion 11, and between the two threaded portions is an unthreaded portion 12. The width of the unthreaded portion of the cap is substantially equal to the total width of the unthreaded portion of the neck. The width of each of the threaded portions of the cap is less than the width of the unthreaded portions 5 and 6 of the neck.

The interior of the cap is provided with a disk 13 of conventional sealing material adapted to be squeezed between the cap disk 8 and the end of the bottle neck to seal the bottle.

As shown in FIG. 1, when the cap is screwed down tightly to seal the bottle, the upper screw thread 11 of the cap is in engagement with the screw thread 4 of the bottle and the lower screw thread 10 of the cap is in engagement with the lower screw thread 3 of the bottle. The unthreaded portion 12 of the cap spans the space

between the two threaded portions of the bottle and clears the annular rib 7 of the bottle.

When it is desired to remove the cap from the bottle, the cap is first unscrewed until the lower threads 3 and 10 of the bottle and cap, respectively, are disengaged. At the same time, the upper threads 4 and 11 are disengaged, the spacing between the respective upper and lower sets of threads being substantially equal as to cause substantially simultaneous disengagement.

At this stage, however, the lower thread 10 of the cap is located opposite the unthreaded portion 6 of the bottle. The cap is retained on the bottle by the interference between the lower threads 10 and the bead 7 but can turn freely on the bottle. In order to remove the cap from the bottle, it must be pulled axially upward to force the lower threads 10 of the cap over the bead 7 to a position opposite the unthreaded portion 5. The interference between the bead 7 and the threads 10 provides substantial resistance to upward movement. Then, upon further upward movement of the cap, the lower thread 10 of the cap may be caused to engage the upper thread 4 of the bottle, whereupon the cap may be unscrewed from the bottle.

In the process of removing the cap from the bottle more force is required to overcome the interference between the lower thread 10 of the cap and the bead 7 than can be applied by small children even though they may be sufficiently intelligent to understand what is required. The closure is especially well adapted for use for bottles containing solid objects such as pills, some of which can be extremely dangerous to small children.

I claim as my invention:

1. A closure for a bottle comprising a neck having an upper threaded portion and a lower threaded portion, said threaded portions being spaced apart by an unthreaded portion, said unthreaded portion having an annular bead projecting outwardly therefrom, a cap having a skirt provided internally with an upper threaded portion and a lower threaded portion, said threaded portions being spaced apart by an unthreaded portion of a length substantially equal to the length of the unthreaded portion of the bottle neck, the outside diameter of said bead being sufficient to interfere with the lower threaded portion of said cap.

2. A closure as claimed in claim 1 in which the width of the unthreaded portion of said neck between said bead and said lower threaded portion is greater than the width of the lower threaded portion of said cap.

3. A closure as claimed in claim 1 in which said bead divides the unthreaded portion of said neck into two portions of substantially equal width, the width of each of said two portions being greater than the width of the lower threaded portion of the cap.

4. A closure as claimed in claim 1 in which the width of each of said threaded portions of said neck and said cap is substantially equal.

5. A closure as claimed in claim 3 in which the width of each of said threaded portions of said neck and said cap is substantially equal.

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