July 23, 1968 C. P. GRIMM 3,393,816

CONTAINER AND DOUBLE LOCK SAFETY CAP THEREFOR

Filed Feb. 6, 1967

FIG. 1

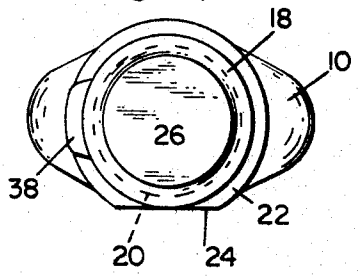


FIG. 2

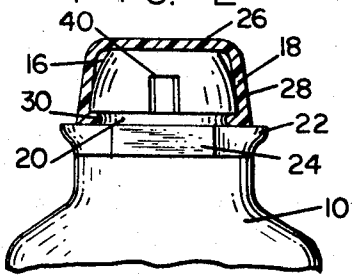


FIG. 3

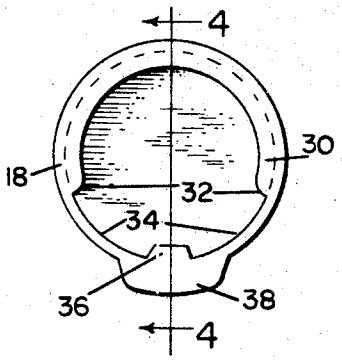


FIG. 4

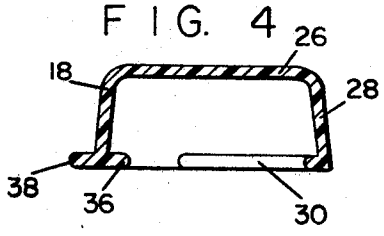


FIG. 5

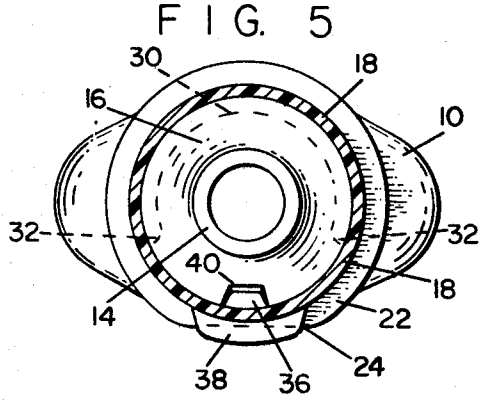
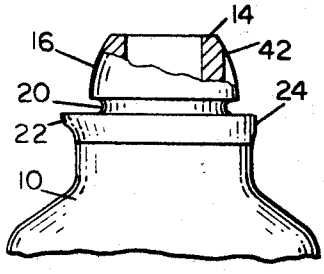


FIG. 6



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CONTAINER AND DOUBLE LOCK SAFETY CAP THEREFOR

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Filed Feb. 6, 1967, Ser. No. 614,341
3 Claims. (Cl. 215—9)

ABSTRACT OF THE DISCLOSURE

A safety cap and bottle construction for preventing children from opening medicament containers. The bottle has an annular groove disposed between an upper inwardly directed, axially aligned guide recess and a lower outwardly extending circumferential abutment with the abutment having a reduced area in alignment with the guide recess. The cap has an interrupted, inwardly extending rim rotatably engaged with the groove and a rim portion movable upwardly along the guide recess to remove the cap. The cap has a thumbpiece which is rotatable to a position in alignment with the reduced area of the abutment whereupon pressure can be applied to the thumbpiece to remove the cap.

This invention relates to a new and improved safety closure cap which is adapted e.g., for medicament containers and the like, and the principal object of the invention resides in the provision of a construction preventing removal of the cap by children, and making the container substantially impossible to open unless a certain new and improved tab on the cap is in registration with a special indentation in the neck of the container.

In prior art safety caps of similar nature, it has been found that in some cases they can be removed even though the parts are not properly aligned for removal and even though very small children still may not be strong enough to remove such safety caps, nevertheless an older child may be able to do so.

Other objects and advantages of the invention will appear hereinafter.

Reference is to be had to the accompanying drawings in which:

FIG. 1 is a top plan view of a container to which the new cap is applied;

FIG. 2 is a view in front elevation thereof with the cap in section;

FIG. 3 is a bottom plan view of the cap;

FIG. 4 is a cross section on line 4—4 of FIG. 3;

FIG. 5 is a top plan view of the bottle neck construction of FIG. 2 with the cap outlined and in section to show the cooperation therewith, and

FIG. 6 is a view in elevation of the bottle neck, part being in section.

As shown in the drawings, the new safety cap is applied to a bottle **10**. Bottle **10** is provided with a diametrically reduced neck portion extending upwardly from the main body portion of the bottle and it has a more or less usual mouth or rim **14**.

The upper portion of the neck diminishes in diameter as shown in FIGS. 2 and 6 at **16**, and this is for the purpose of facilitating the application of the closure cap **18** preferably made of a strong material which is not apt to break and is hard and "bite resistant," but at the same time it does have a certain degree of flexibility as will be made more clear hereinafter.

At the base of the tapered portion **16** of the neck of the container there is an inwardly directed annular groove **20**, this being shown in dotted lines in FIG. 1. This annular groove is continuous and below it there is an outwardly extending annular abutment **22** which however is provided with a chordal flat area **24** and therefore it will be seen that the annular abutment **22** is not completely continuous.

The closure cap **18** is preferably made of a relatively high impact polyethylene or similar thermaplastic material. This cap includes a top closed area **26** and a depending annular skirt **28** which may be of any desired cross sectional shape but in any event it terminates at its lower margin in an inwardly directed rim **30** which preferably extends over a greater portion than one-half of the inside of the cap, see particularly FIG. 3, terminating at the areas **32** and thus leaving gaps **34** between these two areas. However this gap itself is not continuous because there is a rim tab portion **36** which is conveniently located approximately half way between the terminal portions **32, 32** of the rim **30** but may be on a level therewith as is perhaps best shown in FIG. 4. At the outside of the cap adjacent the tab portion **36** there is an outstanding front piece or tab **38**.

In the tapering area of the bottle neck at **16** it is provided with an in-cut or molded indentation, recess, or guide means **40** arranged in an axial direction at the periphery thereof and extending from the groove **20** to the surface of the tapered portion of the bottle neck as for instance at **42**, see FIG. 7, and it is located directly opposite or in alignment with the flat **24** as shown in FIGS. 5 and 6.

The cap is easily snapped down on the tapered portion **16** of the neck of the bottle and the rim **30** comes to rest upon the abutment at **22** with the rim snapped into the groove **20**. This is the condition shown in FIG. 5 where the rim **30** is shown in dotted lines, and the rim tab portion **36** in solid lines being located in alignment with the indentation **40** and the fingerpiece or tab at **38** is of course also located here.

With the parts in the position as shown in FIG. 5, it is only necessary to push upwardly on the fingerpiece **38** with the thumb for instance to cause the cap to bend enough at the gaps **34** to snap the interrupted rim **30** out of its groove **20** and thus to snap the cap off.

However, with the parts assembled as in FIG. 5, it is only necessary to rotate the cap so that the thumb tab **38** is at a point of misalignment with respect to the flat **24** and indentation **40**, in which case the thumbpiece **38** is not in a position where it can be reached to be pressed upwardly, and even if it were, the inwardly directed tab portion **36** being now in the groove **20**, is not releasable, and regardless of any reasonable force exerted on the thumbpiece in the upward direction, the cap cannot be distorted.

It will be appreciated that were the tab **34** not present, it would be possible to push upwards on the thumbpiece **38**, even though it should not be in alignment with flat **24**, by inserting a fingernail under it, and thus cause enough distortion for the plastic material of the cap to allow it to be snapped off of the neck of the bottle.

The effect of this construction is that it is very nearly impossible to remove the cap from the bottle in the event that the tab at **36** is in any position except in alignment with the recess or guide means **40**, but with the thumbpiece **38** in such alignment and the tab **36** underlying the lower end of the recess **40**, it is only necessary to exert a small amount of pressure in an upward manner in order to snap off the cap. With the high impact plastic referred to above or some similar material, it is almost impossible to remove the cap except under conditions stated, but even though the cap should be taken off and replaced many times, the high impact material does not become permanently distorted even under constant use.

Having thus described my invention and the advan-

tages thereof, I do not wish to be limited to the details herein disclosed, otherwise than as set forth in the claims, but what I claim is:

1. The combination of a bottle having a neck, a rim on the neck defining a mouth, a circumferential groove in the neck spaced inwardly from the mouth, an outwardly extending generally circumferential abutment on the neck of the container adjacent the groove, a reduced area in said abutment, and a guide means in the neck of the container of the bottle in general alignment with said reduced area and at the opposite side of the groove therefrom, said guide means in general extending longitudinally with respect to the general axis of the neck of the bottle,

with a snap-on closure cap, said cap having a solid top and a depending skirt and an inwardly directed rim at terminal portion of said skirt, said rim being spaced from the solid top of the cap, and a portion of the cap at the exterior thereof extending outwardly therefrom forming a thumbpiece,

said inwardly directed rib being interrupted, a portion of said rim cooperating with said guide means and being located adjacent said thumbpiece and being of

a size to pass along the guide means, said cap being rotatable on said neck to position substantially all of the interrupted rim in said groove with said portion in misalignment with respect to said guide means, whereby pressure on said thumbpiece is of substantially no effect, the rim portion being substantially locked in the groove, said thumbpiece being capable of causing the cap to be removed from the neck of the bottle by pressure applied thereto in a direction causing said rim portion to enter and pass along said guide means only when the rim portion is in alignment with the guide means.

2. The combination of claim 1 wherein the guide means is a recess and the rim portion is a tab.

3. The combination of claim 1 wherein the guide means is an inwardly directed recess.

References Cited

UNITED STATES PATENTS

3,147,873	9/1964	Mumford	215—9
3,170,585	2/1965	O'Donnell	215—9

DONALD F. NORTON, *Primary Examiner.*

UNITED STATES PATENT OFFICE

CERTIFICATE OF CORRECTION

Patent No. 3,393,816

July 23, 1968

Carl Peter Grimm

It is certified that error appears in the above identified patent and that said Letters Patent are hereby corrected as shown below:

Column 2, line 31, "rim snapped" should read -- rim 30 snapped --; line 50, "in the upward direction" should read -- in an upward direction --.

Signed and sealed this 6th day of January 1970.

(SEAL)
Attest:

Edward M. Fletcher, Jr.
Attesting Officer

WILLIAM E. SCHUYLER, JR.
Commissioner of Patents