United States Patent [19]

Imamura

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[54] **SAFETY CONTAINER AND CAP**

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[21] Appl. No.: **271,496**

[52] **U.S. Cl.** **215/9**

[51] **Int. Cl.** **B65d 55/02**

[58] **Field of Search** 215/9

[56] **References Cited**

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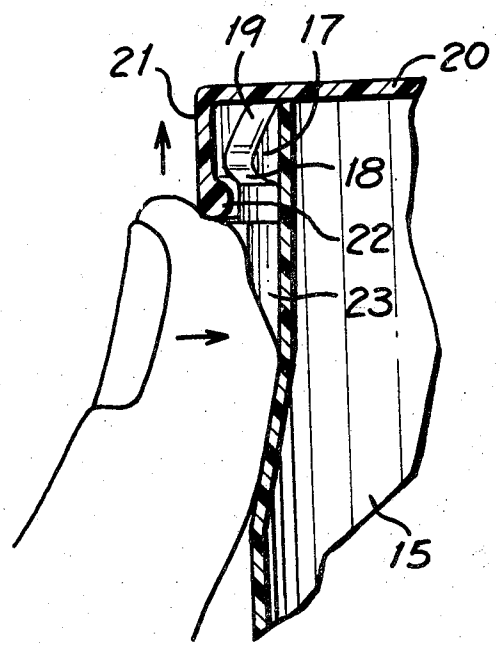
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Primary Examiner—Donald F. Norton
Attorney, Agent, or Firm—Fred C. Matheny

[57] **ABSTRACT**

This invention comprises a tubular container formed of plastic or like resilient material and having a cap which can not be removed by young children but is easily removed by older persons. The container has external flange means on its upper end and a selected area of the upper end part of the container wall is weakened so it can be sprung inwardly to either receive or release a cap and will always spring back to its original position when released. A cap fits over the top end of the container and has internal flange means which will interlock with the external flange means on the container. The only way to release and remove the cap is to bend the weakened upper part of the container wall inwardly by applying external pressure to it and immature children can not do this.

9 Claims, 10 Drawing Figures



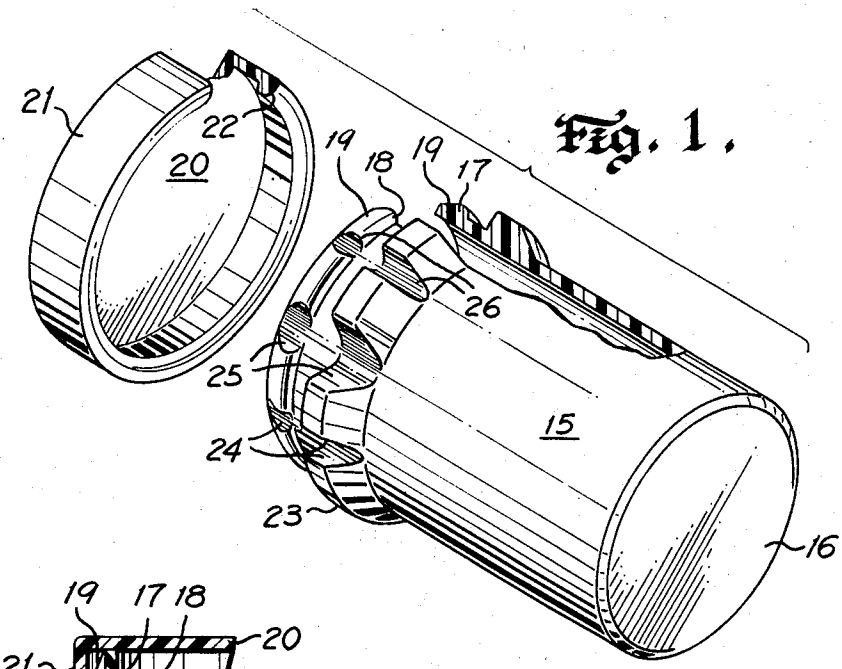


Fig. 1.

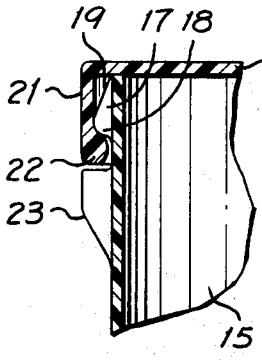
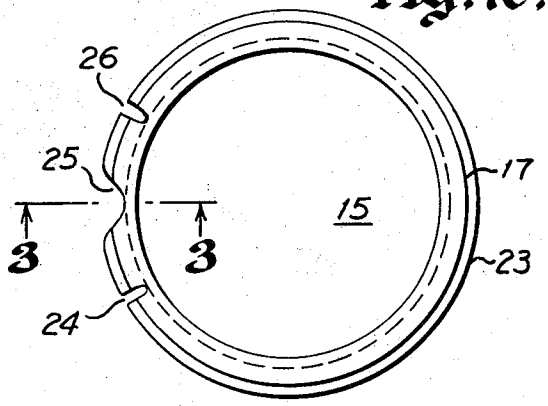


Fig. 3.

Fig. 2.



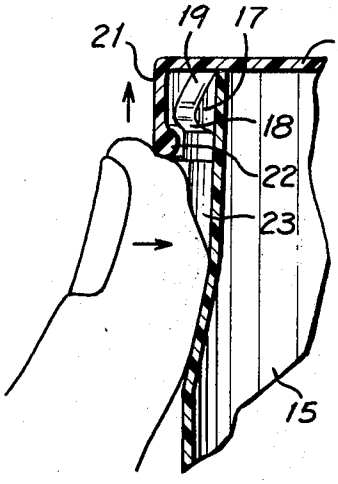


Fig. 5.

Fig. 4.

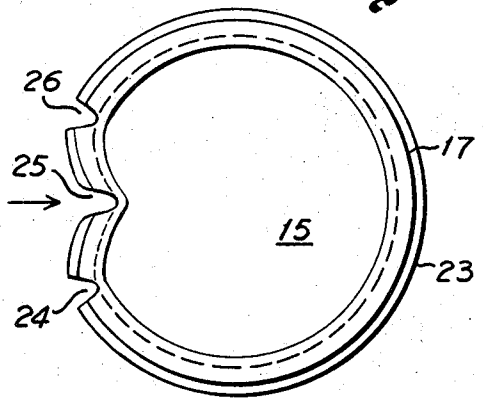


Fig. 6.

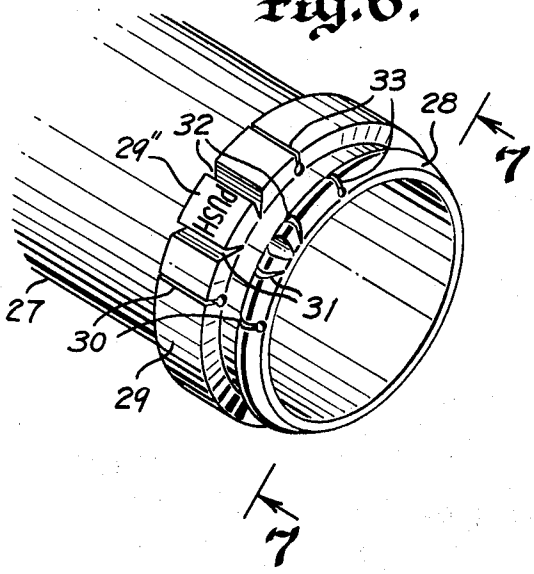
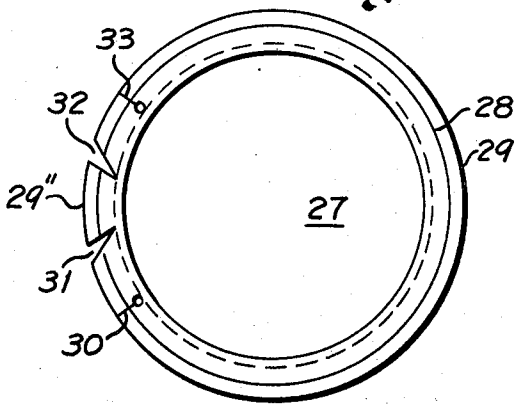


Fig. 7.



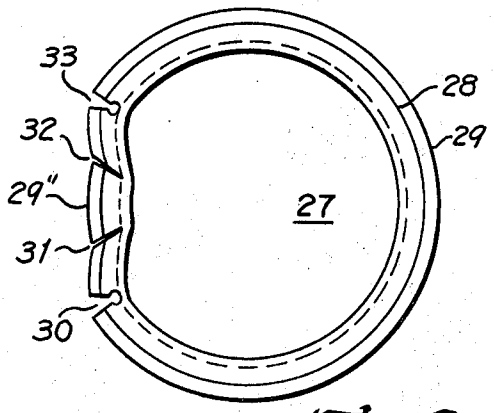
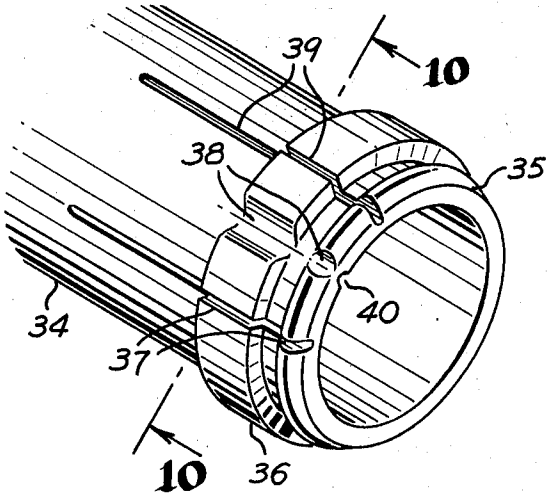


Fig. 8.

Fig. 9.



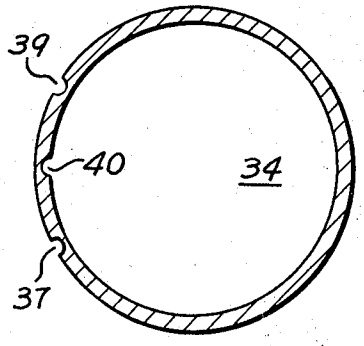


Fig. 10.

SAFETY CONTAINER AND CAP

SUMMARY OF THE INVENTION

It is common knowledge that young children can suffer injuries which are sometimes fatal because they are able to obtain access to injurious materials or substances, such as strong medicines by opening the containers in which these materials are stored. An object of my invention is to prevent these injuries to young children by providing a container having a cap which it is substantially impossible for a young child to remove, due to its immature knowledge, but which can be removed easily by a more mature person who knows how to remove it.

Another object is to provide a tubular container and cap for the same which are formed of plastic or similar resilient material, the container and cap being shaped and dimensioned so that the cap fits over the open end of the container and is locked in a closed position thereon so it can not be removed by a small child but is easily removable by a more mature person by bending weakened parts of the upper end of the container inwardly.

Another object is to provide a container and cap of flexible material in which the container has at least one annular cap engaging flange on its upper end and has at least three spaced apart, side by side, longitudinal, external grooves in its upper end portion, said grooves extending across the flange on the container and weakening a chosen area of the container wall along lines which will cause it to bend inwardly in a way best calculated to facilitate removal and application of the cap.

Other objects of the invention will be apparent from the following description and accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is an exploded perspective view, with parts broken away, showing a container and cap embodying my invention.

FIG. 2 is a top plan view of the container shown in FIG. 1.

FIG. 3 is a fragmentary sectional view taken on broken line 3—3 of FIG. 2 with the cap in a closed position on the container.

FIG. 4 is a top plan view of the container, similar to FIG. 2, except that it shows parts of the container walls bent inwardly as they would be to permit removal or application of the cap.

FIG. 5 is a fragmentary sectional view, similar to FIG. 3 except that it illustrates a preferred manner of simultaneously applying inward pressure to the container and upward pressure to the cap in removing the cap.

FIG. 6 is a perspective view illustrative of the top end portion of a container of modified form.

FIG. 7 is a top plan view of the container shown in FIG. 6 as it may normally appear when expanded.

FIG. 8 is a top plan view similar to FIG. 7 except that it shows parts of the container walls inwardly displaced as they would be to permit removal or application of the cap.

FIG. 9 is a dragmentary perspective view showing the top end portion of another container of modified form.

FIG. 10 is a view in cross section taken on line 10—10 of FIG. 9.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

In the embodiment of my invention shown in FIGS. 1 to 5 I provide a tubular container member 15 of generally cylindrical shape having a closed bottom end 16 and an open top end and formed of plastic or similar flexible or resilient material which can be flexed or bent inwardly by pressure of a thumb or finger and which will spring back to an original expanded condition when the pressure is released. The upper end portion of the container member 15 is provided with cap engaging means in the form of an annular thickened part or flange 17 which is shaped so as to form a downwardly facing shoulder 18 and a generally conical outer wall 19. The wall 19 extends convergently from the shoulder 18 upwardly to the top end of the container member. A cap 20 having a marginal rim 21 within which is an annular bead 22 is adapted to fit over and lock onto the upper end portion of the container member. Preferably the cap 22 is formed of plactic or like flexible material. A second annular flange 23 is provided on the upper end portion of the container member 15 and is spaced a short distance below the flange 17. Both of the flanges 17 and 23 lend stiffness and strength to the upper end portion of the container member 15 and the lower flange 23 shields the lower edge of the cap rim 21 from pressure which might tend to open or lift the cap when the cap is in closed position.

Three side by side grooves 24, 25 and 26 , which are spaced a short distance apart, extend across the flanges 17 and 23 in a direction lengthwise of the container member 15. The grooves 24, 25 and 26 are herein illustrated as being of a depth about equal to the thickness of the flanges 17 and 23 but obviously the depth of these grooves can be varied. The grooved area of the container wall can be bent inwardly, as illustrated in FIG. 4, by applying pressure to the exterior thereof at or near the location of the medial groove 25. When the grooved area is thus bent inwardly the change in shape and the reduction in size of the top end portion of the container member 15 will make possible fairly easy removal of the cap. By placing a thumb on the grooved part of flange 23, as shown in FIG. 5, and simultaneously exerting an inward pressure on said flange 23 and an upward pressure on the cap rim 21 the bead ring 22 is easily disengaged from shoulder 18 of flange 17 and the cap can be lifted off.

A preferred way of applying the cap is to bend the grooved area of the container member inwardly and then pass the cap down over the flange means 17. However, the conical shape of the upper end portion of the container member makes it possible to press the bead means 22 of the cap down over the flange means 17 of the container member until it locks beneath shoulder 18.

When the cap is closed it can not be opened by a young child due to its lack of strength and because it does not usually know where and how to apply pressure to release the cap. However, the cap is easily opened by an older person who does know how and where to apply the pressure needed to bend the weakened part or area of the container member wall inwardly.

In the embodiment of my invention shown in FIGS. 6, 7 and 8 the container member 27 and flanges 28 and 29 on its upper end portion are similar, respectively, to

the container member **15** and flanges **17** and **23** previously herein described except that instead of the three previously described grooves **24, 25** and **26** said container member **27** is provided with four spaced apart, side by side grooves **30, 31, 32** and **33** which extend lengthwise of the container member **27** and across the two flanges **28** and **29.**

The cap, not shown, for container member **27** is the same as previously described cap **20,21,22** and it cooperates with the container member in the same manner. The provision of four side by side grooves in flanges **28** and **29** leaves, between the two medial grooves **31** and **32,** a section **29''** of the flange **29** and this section **29''** serves as a push button on which pressure can be exerted to bend the grooved area of container **27** inwardly to facilitate application or removal of the cap.

FIGS. **9** and **10** show an embodiment of my invention comprising a container member **34** having on it flanges **35** and **36** all similar to previously described corresponding parts shown in FIGS. **1** to **5** and adapted to have a similar cap applied to them. Three side by side, spaced apart, external grooves **37, 38** and **39** extend lengthwise of the container member **34** across the flanges **35** and **36** and a fourth internal groove **40** is provided indide of the wall of container member **34** in the same radial plane as the medial external groove **38.** The two lateral external grooves **37** and **39** extend across the flanges **35** and **36,** are deep enough so they extend a short distance into the external surface of the container wall below the flange **36** and are of substantial length, as shown in FIG. **9.** The internal groove **40** is shallow and is in line with the medial groove **38** and preferably is about the same length as the grooves **37** and **39.**

The operation of the container shown in FIGS. **9** and **10** is similar to the operation of the previously described container members except that the longer grooves **37, 39** and **40** form shallow channels in the container member wall below the flanges **35** and **36** and this allows a longer area of the container member wall to be bent inwardly by the application of external pressure.

I claim:

1. A container and cap comprising a tubular container member formed of flexible material and having a closed bottom end and an open top end; external flange means on the upper end portion of said container member; recesses in said flange means weakening an area of said container member near the top end thereof, whereby said weakened area will bend inwardly when it is subjected to external pressure; and a cap having a rim provided with internal bead means, said cap rim and bead means being shaped and dimensioned so they can be passed over the flange means on said container member when the weakened area of said container member wall is bent inwardly and will be locked in engagement with said flange means when the cap is on the container member and the weakened area of the container member wall is expanded.

2. The container and cap as claimed in claim **1** in which the container member is formed of flexible plastic capable of being bent inwardly by external pressure and of returning to its original expanded condition when the external pressure is released.

3. The container and cap as claimed in claim **2** in which the cap is formed of flexible plastic.

4. A container and cap comprising a tubular container member having a closed bottom end and an open top end and having flexible side walls; external flange means extending outwardly from the container walls near the top end of the container member providing a downwardly facing cap engaging shoulder; a plurality of side by side grooves spaced a short distance apart and extending lengthwise of said container member across said flange means, thereby reducing the strength of the container member walls along the lines of said grooves, whereby the grooved area of the container member wall can be bent inwardly by the application of external pressure thereto and the size of the upper end portion of the container member reduced; and a cap having an annular rim provided with internal bead means, said rim and bead means being shaped and dimensioned so they can be passed over the external flange means on said container member when the grooved area of the container member wall is inwardly bent and will be locked in engagement with said flange means when the cap is on the container member and the grooved area of the container member wall is expanded.

5. The container and cap as claimed in claim **4** in which an annular external reinforcing flange is provided on the upper end portion of the container member a short distance below said first mentioned flange means and in which the spaced apart grooves extend across said reinforcing flange.

6. The container and cap as claimed in claim **4** in which the depth of at least some of the grooves exceeds the thickness of the flange means and these grooves extend below the flange means and form shallow channels in the walls of the container member.

7. The container and cap as claimed in claim **4** in which at least three side by side grooves are provided in the external flange means on the container member.

8. The container and cap as claimed in claim **4** in which an annular reinforcing flange is provided on the upper end portion of the container member a short distance below the first mentioned flange means and in which at least two of the spaced apart grooves extend across the first mentioned flange means and said reinforcing flange and leave between them a section of the reinforcing flange which serves as a push button to receive pressure.

9. The container and cap as claimed in claim **4** in which at least one of the grooves in the container member is formed in the inside surface of the container member wall.

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