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SAFETY BOTTLE CAP

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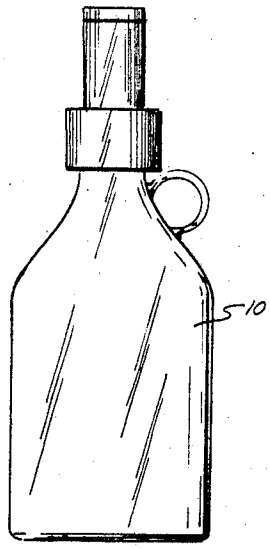


FIG. 1

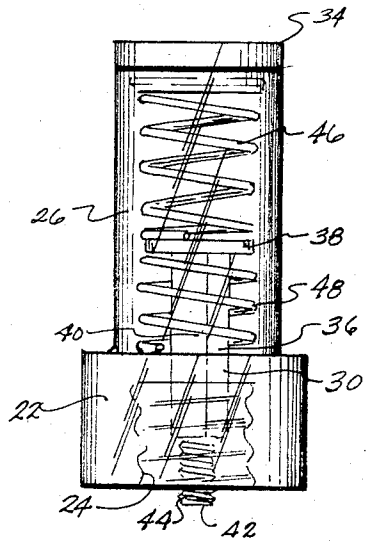


FIG. 2

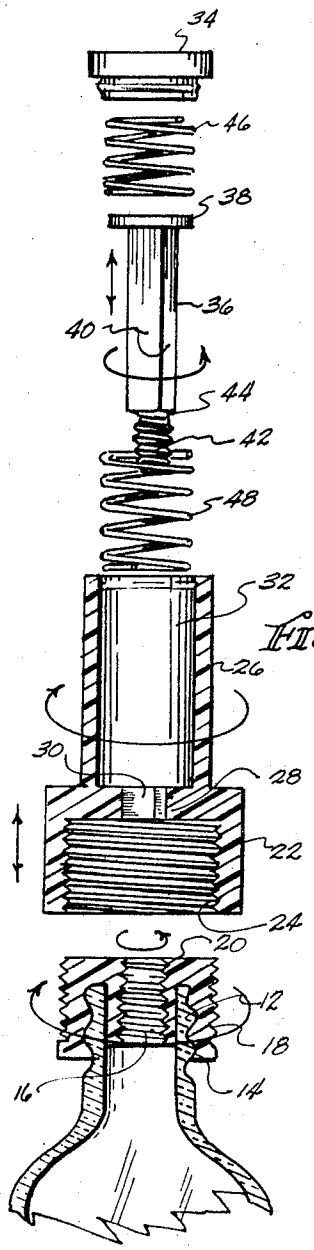


FIG. 3

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SAFETY BOTTLE CAP

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Int. Cl. B65d 55/02

This invention relates to safety capping means for p bottles containing dangerous pills or liquids of any kind.

One of the main objects of the invention is to provide safety capping structure for bottles containing dangerous or poisonous contents of any character.

It is well known that many serious accidents occur to adults and children when bottles containing dangerous elements to human life are open by an unauthorized user and the contents consumed. The novel safety capping structure is designed to defy any child's manipulation that would open the bottle for withdrawal of dangerous contents. The safety cap is designed also to prevent easy access by adults to the contents of the bottle containing elements dangerous to human life. Persons with nervous disorders have many times consumed barbiturates or the like from bottles having a conventional cap. The present structures are designed to make the user think carefully during the opening operation, and thus concentrate his mind on the fact that the bottle contains elements dangerous to human life. There are so many categories of dangerous or prescription drugs and pills and so many acids and liquids that it is impossible to enumerate them herein. It is believed sufficient to say that the problem of unauthorized opening of bottles containing a substance dangerous to human life is always present and multitudinous accidents have occured and will no doubt happen again. The novel safety feature is designed to prevent opening of a bottle by the careless but persistent manipulations of a child.

The safety capping structure is not complicated but a combination of cap movements are required to open the bottle and permit withdrawal of the contents therefrom.

In removing the safety cap, it is first necessary to start the cap in the usual counter clockwise manner. Then the cap is held manually against pressure from the bottle and turned in a clockwise manner until an inner portion of the cap is completely released from the bottle. Certain interior mechanism makes possible this safe removal of the bottle cap. It is a simple operation once instructed, but it defies children and even adults will have difficulty if confused or unsure. The recapping is simply a matter of attaching the exterior bottle neck threads and turning the cap in a clockwise manner.

Another object of the invention is to provide a safety capping structure for bottles that requires a combination of physical movements to withdraw the cap from the bottle neck.

Yet another object of the invention is to provide a safety bottle capping structure that requires a succession of required physical movements before the cap is removed and dangerous contents made available.

These and other objects and advantages of the present invention will become apparent to those skilled in the art upon consideration of the following detailed description of the preferred embodiment thereof, reference being made to the accompanying drawings, wherein:

FIGURE 1 is an elevational view showing the safety cap attached to a conventional bottle;

FIGURE 2 is a transparent elevational view of the cap itself; and

FIGURE 3 is an exploded schematic view in elevation of all elements.

A bottle **10** of any conformation, size or structure may have the safety bottle cap applied. It is essential that the

neck of the bottle be changed slightly. The threaded neck **12** may be formed integrally as part of the bottle or threaded therein as shown at **14** in FIGURE 3. It is immaterial as far as cap operation is concerned. The main difference in conventional bottle neck structure is in the interior threaded aperture **16** in the bottle neck itself. The neck aperture is restricted but this can be overcome by enlarging the bottle neck.

The exterior threads **18** of bottle neck are right handed for initial conventional removal of the cap in a counter clockwise movement. It is stated now that all threads may be reversed with satisfactory movement as will be later described, but the structure disclosed is the most desireable. The interior aperture **16** is threaded at **20** in a left handed manner for reasons later to be described.

The safety cap, FIGURES 2–3, has an expanded base **22** with interior threads **24** received on the threads **18** on the bottle. A slightly reduced upwardly projecting housing **26** is divided at **28** and the portion **28** apertured by a reduced squared opening **30**. The upper cylindrical interior portion **32** of the cap housing has a removable cap **34** which may be firmly pressed thereon or thoroughly secured as desired. The cap merely contains the sealing elements of the safety mechanism.

A sealing plug **36**, FIGURES 2–3, has a small cap **38** and a squared shank **40** that slides in the retaining opening **30** at all times. The lower tip **42** of the sealing plug **38** is threaded at **44** for engagement with the threaded bottle cap interior aperture **16**. The spring **46** is contained between cap **38** of the plug **36** and the removable cap **34**. The spring **48** surrounding plug **36** is contained between cap **38** and the apertured division portion **28**.

The safety cap as described in compact and the lower end **42** of the threaded sealing plug projects slightly below the base **22** thereof. The cap is in a position for optional removable or replacement in a safe manner under control of the spring tensioned plug **36** sliding in the squared rotary retaining opening **30**. The retaining opening could have any shape.

The operation of the device is not so complicated as to defy use but it requires certain unconventional movements to permit removal from the bottle. Replacement of the cap is entirely natural although certain safety elements are at work. Let us assume that the user or filler of a dangerous prescription attempts to attach the cap to the bottle. The interior threads **24** of the base **22** readily engage the right hand threads **18** of the bottle neck **12** and the cap is manually rotated to clockwise or sealed position. The threaded tip **42** of the sealing plug **36** cannot enter the left handed threaded **20** interior bottle necks aperture and merely rides thereon during the capping operation.

When the safety cap is to be removed and the dangerous contents, liquid or solid exposed, it is an entirely different story. The expanded base **22** of the cap is moved naturally in a counterclockwise manner. It may be detached from the bottle neck but no farther. In the meantime, the spring pressed sealing plug **36** with left handed threads **44** is moved in a direction wherein the threaded tip will mesh with the threaded interior and draw the sealing plug into the neck of the bottle. Therefore, as the cap base is being released, the inter plug is engaging the bottle to fullest extent.

Now it is necessary for the operator to use a directed movement. He must hold the bottle in one hand and the cap in the other. They must be slightly separated. (That is the interior thread **24** disengaged from bottle neck **12**, pulling against spring **48** the cap is manually rotated in a reverse or clockwise manner.) There are several easy finger movements that permit this reverse operation. Clockwise movement will now release the rotary retained threaded end **44** of the sealing plug **36** and it will be

gradually withdrawn from the bottle and the contents ready for use.

The operation is not difficult and the arrangement of parts is relatively simple but the safety results are obviously effective. No great imagination is required, just enough to save many lives or dangerous accidents.

While I have shown and described in considerable detail what I believe to be the preferred form of my invention, it will be understood by those skilled in the art that various changes may be made in the shape and arrangement of the several parts without departing from the broad scope of the invention.

I claim:

1. A safety capping device for bottles containing dangerous pills or liquids, comprising:

a threaded bottle neck having an interior threaded aperture;

a safety cap threaded to engage the threaded bottle neck;

a housing in said safety cap; and

a spring loaded sealing plug in said housing non engageable with the bottle neck when the safety cap is first engaged but when the safety cap is removed, the sealing plug engages the bottle neck until the cap is detached whereupon a reverse movment of the safety cap permits complete withdrawal of the sealing plug.

2. A safety capping device for bottles containing dangerous pills or liquids, comprising:

a threaded bottleneck having an interior threaded aperture;

a safety cap threaded to engage the threaded bottle neck;

a portion of said cap forming an upper housing having a plug controlled aperture between the housing and the threaded portion thereof; and

a spring loaded sealing plug non engageable with the bottle neck when the safety cap is first engaged but when the safety cap is removed, the sealing plug engages the bottle neck until the cap is detached whereupon a reverse movement of the safety cap permits complete withdrawal of the sealing plug.

3. A device as set forth in claim 2 in which there is a divided portion in said housing in which said plug controlling aperture is disposed.

4. A device as set forth in claim 2 in which an adapter portion having similar design may be connected to a conventional bottle neck.

5. A device as set forth in claim 2 in which a head on the sealing plug is disposed between upper and lower spring members.

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