# United States Patent [19]

**Bromberg**

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[54] **SAFETY CLOSURE DEVICE**


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[52] **U.S. Cl.** ..... **215/9,** 215/43 R, 215/55

[51] **Int. Cl.** ..... **B65d 41/04,** B65d 55/02

[58] **Field of Search** ..... 215/9, 10, 43, 46, 215/55



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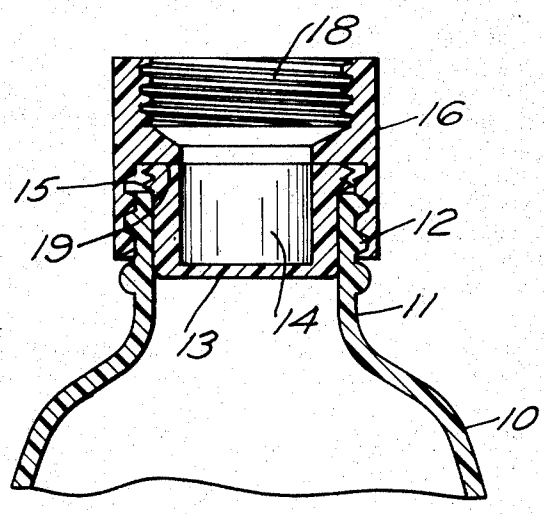
[57] **ABSTRACT**

A safety closure for a container of medicine, poison, or other material to be kept out of the reach of small children. The closure has two parts. The first part comprises a tight fitting plug which is frictionally forced into the container opening. The plug is provided with a narrow flange which overhangs the top edge of the container opening. This flange is provided with an outer thread. The second part of the closure comprises an outer container cap in the form of a cylindrical member open at both ends. The main opening is internally threaded to engage complementary threads on the neck of the container. The plug flange does not extend to the outer edge of the container opening so that the cap clears the plug to engage the neck. When the cap is removed by unscrewing, the plug still remains in place to thwart the child. To remove the plug, the cap is reversed, the other end having internal threads for engaging the flange. By engaging these threads and rotating the cap, the plug is pulled from the container. In replacing the cap, the plug is pushed into position and the outer cap is screwed into place. As the outer cap moves downwardly, it pushes the plug tightly back into the container neck.


**6 Claims, 5 Drawing Figures**



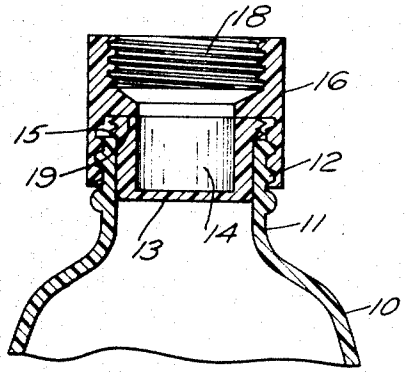



FIG. 1

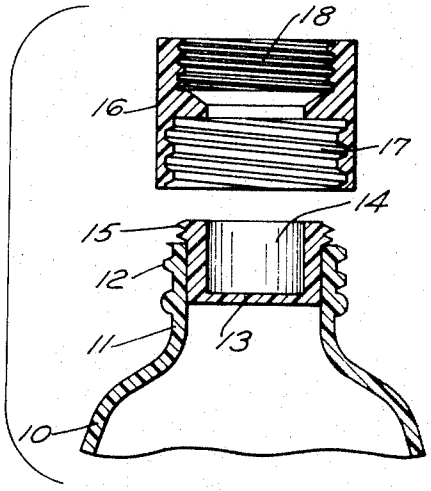



FIG. 2

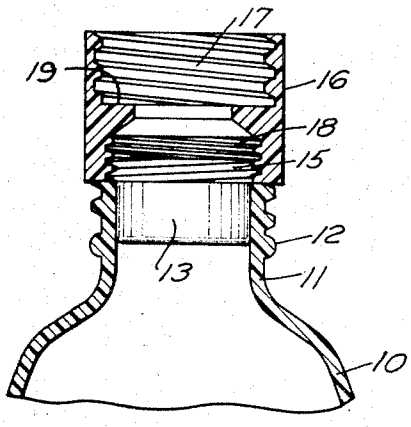



FIG. 3

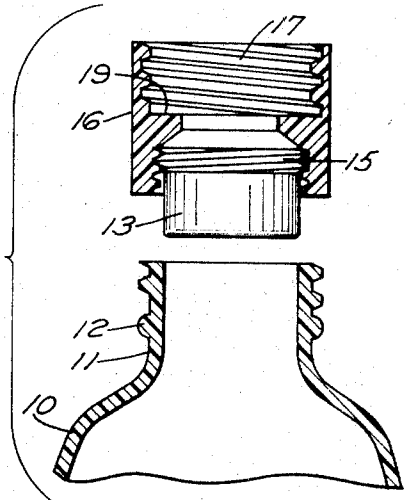



FIG. 4

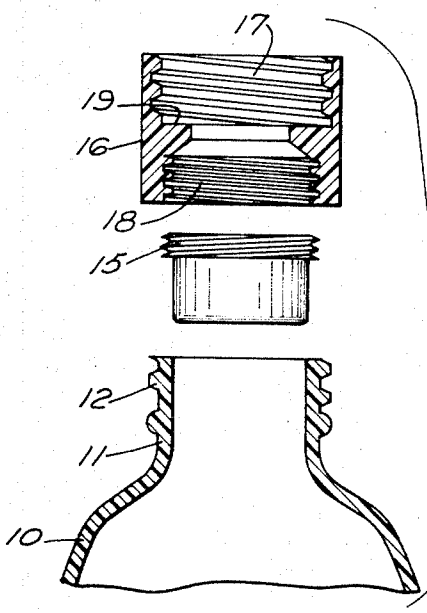



FIG. 5

# SAFETY CLOSURE DEVICE

My present invention relates to a safety closure cap for a bottle of medicine, poison, or any other similar material.

The principal object of the present invention is to provide a medicine bottle or similar container with a safety cap which will not be readily opened by a small child.

Another object of the present invention is to provide a safety cap which will permit an adult to operate the cap for ready removal even by an infirm or old person.

A further object of the present invention is to provide a simple contaiier cap closure which will prevent a small child from accidentally getting into a medicine or poison container.

Another object of the present invention is to provide a safety closure for a bottle or similar container which is simple in construction and easy and economical to manufacture.

With the above and other objects and advantageous features in view, my invention consists of a novel arrangement of parts, more fully disclosed in the detailed description following, in conjunction with the accompanying drawings, and more particularly defined in the appended claims.

In the drawings;

FIG. 1 is a vertical section through the upper part of a container equipped with the closure member of the present invention;

FIG. 2 is a view similar to FIG. 1 showing the initial step in removing the closure;

FIG. 3 is a view similar to FIG. 1 showing the second step in the removal of the closure;

FIG. 4 is a view similar to FIG. 1 showing the final removal of the closure; and

FIG. 5 is an exploded vertical section of the closure.

At the present time there are a great many pills taken by adults from simple aspirin to drugs of all types. It has been found that there have been many accidents caused by curious small children, 5 and 6 years old, who get into medicine cabinets, easily remove the caps from the containers, and swallow dangerous pills causing sickness and even death. To prevent this, some drug manufacturers have devised various types of safety closures to prevent removal by a small child. Most of these devices have been ineffective and costly. The present invention is designed to provide a simple two part safety cap which is firmly held in place against removal by a small child, but which can be easily opened by an adult or an old and infirm person by following simple directions.

Essentially, the safety closure of the present invention comprises two separate and distinct parts. The first part is in the form of a closure plug which is frictionally, tightly, held within the neck opening of a container. The plug is so tightly held that it is virtually impossible to grasp and remove with the fingers. The second part of the closure comprises a cylindrical member having an opening with internal threads at each end. One end is designed to fit over the neck of the container and to threadedly engage the threads on the container neck in the same manner as any conventional cap. When this cap is removed, it can be reversed to the opposite end which also has internal threads. However, these threads are of smaller diameter and are designed to mesh with complementary threads on the perimeter of the plug. By engaging the threads and turning the cap, the plug is pulled from the neck opening with comparatively little effort.



Referring more in detail to the drawings illustrating my invention, FIG. 1 shows a bottle or similar container equipped with a safety closure device of the present invention. The bottle **10** is provided with a neck **11** having conventional external threads **12.** I now provide a plug **13** designed to fit tightly into the neck **11.** It is preferable that the plug **13** be molded of a resilient plastic materialsuch as polyethylene. To save weight and material, the plug **13** may be hollowed out at **14.** The upper outer end of the plug **13** is provided with a small externally threaded flange portion which overhangs the top edge of the bottle neck **11.** It should be noted that the flange threads **15** do not extend to the outer perimeter of the bottle neck.

Now viewing FIG. **2,** I provide an outer cap member **16** of general cylindrical form and having an opening extending completely therethrough. One end is provided with a large opening having internal threads **17.** The other end has a smaller opening with internal threads **18.** The openings at each end communicate with each other to provide the opening through the cap **16** for a purpose hereinafter to be described.

When the plug **13** is mounted in the bottle neck **11** as shown in FIG. **1,** the cap **16** is positioned over the bottle neck **11** with the larger end and threads **17** at the lower end of the cap. In this position the threads **17** will mesh with the threads **12** on the external portion of the neck **11.** As can be seen in FIG. **1,** the larger cap end with the threads **17** will clear the external threads **15** on the plug **13** to easily move on and off the bottle neck. As the cap **16** is threaded onto the neck **11** it will move downwardly until the intermediate shoulder **19** reaches the top of the plug **13** and is tightened in this position.

In opening the container, the cap **16** is twisted counterclockwise until the threads **17** are disengaged from the threads **12** of the bottle neck **11** and the cap can be lifted off into the position shown in FIG. **2.** In this position, the person unscrewing the cap is now confronted with the plug **13** tightly mounted in the bottle neck **11.** A small will be unable to remove this plug to reach the contents of the bottle. However, it is necessary that an elderly person with little strength be able to remove the plug. This is easily accomplished by providing simple and easily followed directions.

The outer cap **16** is turned upside down into the position shown in FIG. **3** and twisted closkwise. The smaller threads **18** will engage the threads **15** on the plug. As can be seen in FIG. **3,** the cap **16** is twisted onto the plug threads **15** until the bottom edge of the cap rests on the top of the bottle neck **11.** Turning movement of the cap **16** will cause the plug **13** to be drawn upwardly into the threads **18** of the cap until the plug is completely withdrawn from the neck **11** as shown in FIG. **4.** The plug **13** may be now manually unscrewed from the cap **16** as shown in FIG. **5.**

In replacing the closure, the plug **13** is first pushed into the bottle neck **13** with very little force, just enough to place it in position. The cap **16** is now placed over the bottle neck into the position shown in FIGS. **1** and **2,** with the large end threads **17** engaging the outer threads **12** of the neck. Turning movement of the cap **16** will cause the shoulder **19** to engage the top end of the plug **13** and force the plug downwardly into the neck **11** into the position shown in FIG. **1.**

The closure contains an additional safety factor. Should the user forget to place the plug **13** in the neck **11** before replacing the cap **16,** he will find that the container has not been closed because the cap **16,** having an opening therethrough, cannot serve as a closure. *Only* by placing the plug **13** in the neck **11** will the container be closed.

The cap **16** can also be molded in a single operation with the internal threads **17** and **18** and the shoulder **19.** This permits both parts of the closure to be easily and economically molded. The parts can be of the same or different materials. The use of the tight fitting plug **13** forms an airtight and liquid tight seal for the container. This also serves to protect the contents from evaporation or deteriation.

The safety closure of the present invention is therefore light, simple and easy to use. Furthermore, it can readily be applied to existing containers without modifying the container or its existing threads. Other advantages of the present invention will be readily apparent to a person skilled in the art.

I claim:

**1.** A safety closure for a container having a dispensing neck with an outer thread comprising an annular plug adapted to fit tightly and frictionally into the container neck to close the dispensing opening, a closure cap adapted to fit over said plug and neck, said cap having a recess with internal threads adapted to mesh with the outer neck threads, and means on said cap for removing said plug from the dispensing neck opening, said plug having a narrow flange portion at its upper edge, said flange portion overhanging the container neck but having a smaller diameter than the container neck, the outer surface of said flange portion being threaded.

**2.** A closure member as in claim **1,** wherein said removing means includes a second recess in said cap opposite said first recess, said second recess having internal threads for engaging said plug flange threads.

**3.** A closure member as in claim **2,** wherein said cap is provided with an axial opening therethrough of smaller diameter than said neck and plug, said opening communicating said recesses.

**4.** A closure member as in claim **2,** wherein said recesses are separated by an integral intermediate shoulder portion, said shoulder portion limiting movement into either of said recesses.

**5.** A closure member as in claim **4,** wherein said shoulder portion defines a central opening of smaller diameter than said neck and plug.

**6.** A closure member as in claim **5,** wherein said shoulder portion engages the top of said plug to push said plug into said neck when said cap is threaded onto said neck threads.

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