April 9, 1968 F. O. KLAPP, SR 3,376,992

SAFETY CONTAINER

Filed July 12, 1967

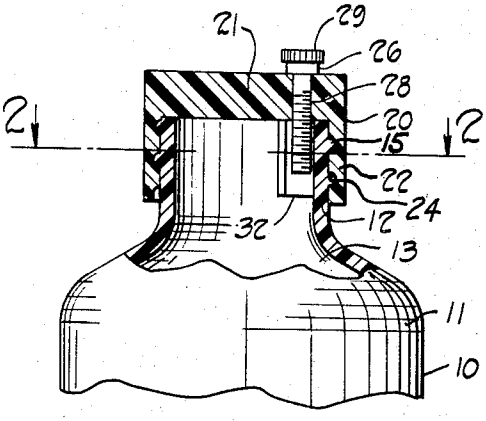

Fig. 1

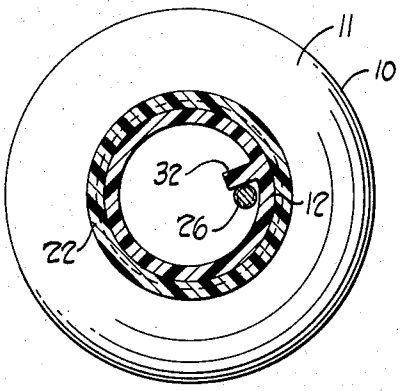

Fig. 2

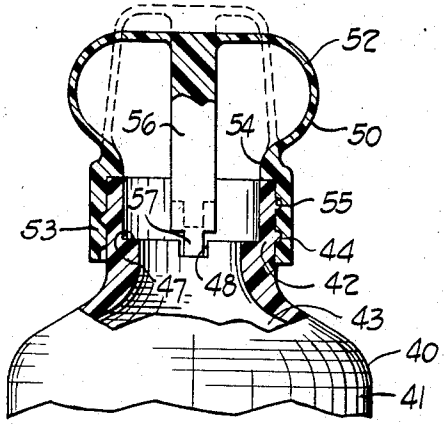

Fig. 3

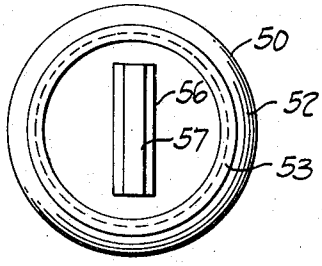

Fig. 4

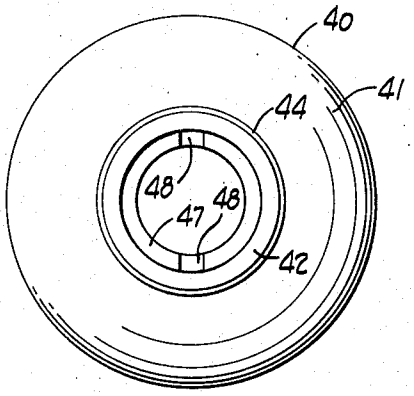

Fig. 5

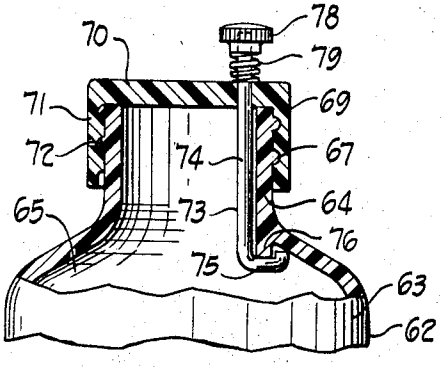

Fig. 6

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SAFETY CONTAINER

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ABSTRACT OF THE DISCLOSURE

A container and rotatable closure combination including a releasable safety latch carried by the closure for engagement with a fixed catch on the container to prevent rotation and removal of the closure.

Summary of the invention

The invention relates generally to containers, and more particularly, to a new safety container including a closure therefor.

The present invention provides a new safety container or bottle for potentially harmful substances such as drugs and medicines, cleansers, lye, soaps, disinfectants, depilatories, and other products in liquid, paste and solid form. The new safety container, which includes a rotatable closure or cap, is specially constructed to prevent children from tampering with and opening the container, as well as to protect adults from accidentally consuming the contents. The new container is also constructed to afford protection of the products against contamination.

As compared to the various proposals for safety containers and/or closures which have been provided in the past, the container of this invention has the important advantage of being difficult for a child to open, while being relatively easy for an adult to consciously remove the closure or cap. Another advantage over many of the prior art structures is that the invention can be embodied in containers made of substantially any material, including metal, glass and plastic. As will be apparent from the following detailed description, the simplicity of the closure locking structure which is embodied in the new container, is such that the container can be economically manufactured by mass production methods.

In its preferred form, the invention comprises a container body having a catch and a rotatable cap or closure which carries a releasable latch. The latch is preferably movable longitudinally of the closure and container body between a one position in which the latch engages the catch to prevent rotation of the closure and another position in which the closure can be rotated and removed from the container body. According to one embodiment, the latch is in the form of a screw which is threaded through the top of the closure, and the catch is in the form of a longitudinal rib or fin on the neck of the container body. In another embodiment of the invention, the closure is a resiliently flexible, bulbous member which includes a latch in the form of a central stem or key that is engageable in a slot or slots formed on the container body to define the catch. In still another embodiment, the latch comprises a spring biased hook member which extends through the closure to engage a catch rib on the neck of the container body.

In each embodiment of the invention, the locking structure for preventing rotation of the closure is relatively simple and comprises a single movable member. The movable latch member can be easily manipulated by an adult, but is difficult for a child to operate.

An object of the invention is to provide a new safety container including a rotatable closure and locking structure which in one position prevents rotation of the closure and in another position permits the closure to be removed from the container body.

Another object of the invention is to provide a safety container as previously described wherein the locking structure is difficult for a child to operate and at the same time is relatively easy for an adult to release.

Another object of the invention is to provide a safety container of the type described which is constructed to protect the contents from contamination.

Still another object of the invention is to provide a safety container of the type described which is relatively simple in construction and lends itself to economical manufacture by mass production techniques.

Other objects, advantages and a full understanding of the invention will be had by reference to the following detailed description and the accompanying drawing.

Description of the drawing

FIGURE 1 is a fragmentary side elevational view, partially in cross section, of a container embodying the present invention;

FIGURE 2 is a top plan view of the container taken along the lines 2—2 of FIGURE 1;

FIGURE 3 is a fragmentary side elevational view, partially in cross-section, of another embodiment of the invention;

FIGURE 4 is a bottom plan view of the closure of the container shown in FIGURE 3;

FIGURE 5 is a top plan view of the container shown in FIGURE 3; and

FIGURE 6 is a fragmentary side elevational view, partially in cross-section, of still another embodiment of the invention.

Description of the preferred embodiments

Referring now to the drawing, and more specifically to FIGURES 1 and 2, reference numeral **10** generally designates a container comprised of a body **11** and a closure or cap **20**. The container body has a cylindrical end portion **12** which defines a mouth, and forms an inner chamber **13** for receiving material in liquid, solid, or paste form. As shown, the end portion **12** is in the form of a reduced neck having a spiral ridge **15** on its outer surface which forms a threaded connection for the cap **20**. It is to be understood that the shape of the container **10**, and particularly the shape of the body **11**, can be widely varied and is not limiting of the invention. For example, the body **11** and the end portion **12** may have the same diameter.

The cap **20** has an annular top portion **21** and a peripherally depending skirt wall **22** including a spiral groove **24** for cooperative engagement with the spiral ridge **15**. The cap **20** is adapted to be rotated relative to the container **10** between open and closed positions, a closed position being shown in FIGURE 1.

In accordance with the present invention, the cap **20** is provided with a latch member in the form of a screw **26** including a threaded portion **28** extending through the top portion **21** to one side of its center. A particular length of the threaded portion **28** and size of the threads thereon may be selected according to the speed or slowness desired for removal. It is preferred to provide fine threads on the threaded portion **28** for increasing the removal time so that a child will be likely to lose interest in tampering with the container. The screw **26** also includes a knob **29** for turning it.

A catch member, preferably in the form of a rib **32**, is integrally connected to an inner side of the end portion **12** and extends inwardly therefrom. When the cap **20** is in a closed position as shown in FIGURE 1, the screw **26** is adapted to abut the rib **32**.

In use, the threaded portion **28** normally projects toward the inner chamber **13** and abuts the rib **32** to prevent rotation of the cap **20** relative to the container **10**. To

remove the cap 20, the screw 26 is rotated to retract it away from the rib 32. It will be apparent that the screw 26 is movable lengthwise along a path transverse to the top portion 21 and preferably parallel to the central axis of the end portion 12. When the screw 26 is no longer capable of abutting the rib 32, the cap 26 is free to rotate and can be removed from the container 10. Remounting of the cap 26 on the container 10 is performed by reversing the above steps.

In a second form of the invention shown in FIGURES 3–5, a container 40 comprises a body 41 which defines an inner chamber 43 for receiving material and which is provided with a closure or cap 50. A cylindrical end portion 42 of the body 41 defines a mouth of the container 40 and is provided with a spiral ridge 44 on its outer surface for forming a threaded connection with the cap 50. The end portion 42 also includes an inwardly thickened portion forming a ring-like shoulder 47. The shoulder 47 has a pair of catch members in the form of diametrically opposed slots 48 formed therein.

The cap 50, which is preferably bulbous in shape, is composed of a resilient, flexible plastic material and includes a resilient, flexible top wall 52 integrally connected to a cylindrical and relatively stiffer skirt wall 53 depending therefrom. A restricted shoulder portion 54 is located at the juncture of the top wall 52 and the skirt wall 53 for abutment with the outer end of the body end portion 42. The skirt wall 53 is provided with a spiral groove 55 for cooperative engagement with the spiral ridge 44 on the end portion 42. The cap 50 includes a stiff, integrally connected internal latch member in the form of a key 56 aligned across a central portion of the top wall 52 and spaced inwardly from sides of the top wall 52 and the skirt wall 53. The key 56 includes a reduced end portion 57 for cooperative engagement with the slots 48.

In use, the key 56 is normally disposed in the slots 48 when the cap 50 is in a closed position. This prevents rotation of the cap 50 relative to the container 40. To remove the cap 50, the top wall 52 is compressed as shown in the dotted lines thereby retracting the key 56 from the slots 48 so that the cap 50 can be freely rotated and removed. It can be seen that alternate compression and release of the top wall 52 causes movement of the key 56 relative to the container 40 along a path transverse to the central portion of the top wall 52 so that the cap 50 may be alternately changed from a locked to a free position. Preferably, the path of movement of the key 56 is parallel to the central axis of the neck portion 42 when the cap 50 is mounted thereon. Remounting the cap 50 is accomplished by again compressing the top wall 52, rotating the cap 50 on the end portion 42, and releasing the top wall 52 so that the key 56 is disposed in the slots 48.

In a third form of the invention shown in FIGURE 6, a container 62 comprises a body 63 having a cylindrical end portion 64 and an inner chamber 65 for receiving material. The end portion 64 includes a spiral ridge 67 on its outer surface which forms a threaded connection for the cap 69 of the container.

The cap 69 is adapted to be rotated between open and closed positions on the end portion 64. The cap 69 includes an annular top wall 70 and a peripherally depending skirt wall 71. The skirt wall 71 has a spiral groove 72 on its inner surface for cooperative engagement with the spiral ridge 67 on the end portion 64.

A latch member in the form of a spring-biased hook 73, including shank and hook portions 74, 75, respectively, is slidably inserted through the top wall 70. The shank portion 74 preferably forms a seal with the top wall 70 if moist or liquid material is to be held in the container 62. The hook portion 75 is adapted to cooperatively engage a catch member in the form of a rib 76 which is integral with the container 62 on one side of the body 63 near the end portion 64. The rib 76 is preferably arranged in a plane tangential to the neck portion 64 to provide clearance for the hook 73 as the cap 69 is rotated and to provide easy access to the rib 76. At its outer end, the hook 73 has a knob 78 mounted thereon. A spring 79 located between the knob 78 and the top wall 70 normally biases the hook 73 outwardly from the top wall 70.

When the cap 69 is in a normally closed position, the hook portion 75 is biased against the rib 76 by the action of the spring 79. This prevents rotation of the cap 70 relative to the container 62. To remove the cap 69, the knob 78 is depressed, the hook 73 is rotated so that the hook portion 75 is free of the rib 76, and the cap 69 is then rotated and removed. It can be seen that the hook 73 is movable lengthwise along a path transverse to the cap 69 and preferably parallel to the central axis of the end portion 64. Remounting of the cap 69 on the container 62 is accomplished by merely reversing the above steps.

Although each form of the invention has been illustrated with a reduced neck portion, other configurations, such as a somewhat straight sided container, are contemplated. Many modifications and variations of the invention will be apparent to those skilled in the art in view of the foregoing detailed disclosure. Therefore, it is to be understood that, within the scope of the appended claims, the invention can be practiced otherwise than as specifically shown and described.

What is claimed is:

1. A safety container and closure combination comprising:
   (a) a container body having an end portion which defines a mouth;
   (b) a cap including a top wall rotatable relative to the container body for closing the mouth;
   (c) said cap including stiff latch means movable relative to said container along a path transverse to the top wall, said latch means being a screw threaded through said cap; and
   (d) said container body including catch means adapted for engagement with said latch means to prevent rotation of said cap relative to said container body, said latch means being a rib projecting from a side of said container body.

2. A safety container and closure combination comprising:
   (a) a container body having an end portion which defines a mouth;
   (b) a cap rotatable relative to the container body for closing the mouth, said cap including a top wall and a resilient bulbous portion;
   (c) said cap including stiff latch means movable relative to said container along a path transverse to the top wall, said latch means being a stiff key connected internally to said bulbous portion; and
   (d) said container body including catch means adapted for engagement with said latch means to prevent rotation of said cap relative to said container body, said catch means comprising slots formed in said container.

3. A safety container and closure combination comprising:
   (a) a container body having an end portion which defines a mouth;
   (b) a cap including a top wall rotatable relative to the container body for closing the mouth;
   (c) said cap including stiff latch means movable relative to said container along a path transverse to the top wall, said latch means comprising a hook slidably inserted through said cap; and
   (d) said container body including catch means adapted for engagement with said latch means to prevent rotation of said cap relative to said container body, said catch means being a rib projecting on the inside of the container body.

4. A safety container and closure combination comprising:

(a) a container body having an end portion which defines a mouth;

(b) a cap including a top wall rotatable relative to said container body to close said mouth;

(c) a screw threaded through said cap and movable along a path transverse to the top wall; and

(d) a rib internally connected to said container body and arranged for engagement with said screw when it is threaded through said cap to thereby prevent rotation of said cap relative to said container.

5. A safety container and closure combination comprising:

(a) a container body having an end portion which defines a mouth;

(b) a cap including a flexible, resilient bulbous portion;

(c) a stiff key member internally connected to said bulbous portion, said key being movable along a path transverse to said bulbous portion upon its compression and release; and

(d) a pair of opposed slots formed in said container body and arranged for engagement with said key member to thereby prevent rotation of said cap relative to said container.

6. A safety closure and container combination comprising:

(a) a container body having an end portion which defines a mouth;

(b) a cap including a top wall rotatable relative to said container body to close said mouth;

(c) a hook member movable through said cap along a path transverse to the top wall;

(d) biasing means connected to said hook member to bias it away from an outer side of said cap; and

(e) a rib connected to said container body for cooperative engagement with said hook member to thereby prevent rotation of said cap relative to said container body.

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