SINGLE USE SAFETY CLOSURE

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References Cited
UNITED STATES PATENTS
FOREIGN PATENTS OR APPLICATIONS
455,545 7/1968 Switzerland ................. 215/330

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ABSTRACT
A safety closure particularly adapted for single use containers. The safety closure includes an internally threaded main body. A flexible skirt is attached to the lower portion of the main body by a flexible circumferential ring. The skirt includes a plurality of inwardly directed interior projections. An annular locking ring is molded as a part of the closure, the locking ring being formed below the skirt and attached thereto by frangible ribs. In use, the locking ring is pushed upward to surround the skirt, fracturing the frangible ribs in the process. When the closure is placed on a container with the locking ring in place, the projections on the skirt will cooperate with external projections on the container finish to define a one-way ratchet drive. So long as the locking ring remains in place, the closure cannot be removed. When the locking ring is pushed off of the skirt, the skirt can flex sufficiently to allow disengagement of the one-way ratchet drive, thus allowing removal of the closure from the container.

3 Claims, 4 Drawing Figures
SINGLE USE SAFETY CLOSURE

BACKGROUND OF THE INVENTION

This invention generally relates to safety closures for containers. More specifically, this invention relates to a safety closure designed for use with a single unit of use container. Most particularly, this invention relates to a safety closure of the class described wherein a locking ring prevents over-riding of a one-way ratchet drive until use of the container contents is desired.

Safety closures for containers have become an important item of commerce. Such closures are designed to prevent children from gaining unauthorized access to containers, thus significantly reducing the incidence of accidental poisoning of children. Some containers, for example containers for drain cleaner, may be designed as single unit of use packages. The entire contents of the packages are used at once upon opening of such packages. In this case, a safety closure designed for a long life and multiple openings and resealings of the container is not required. However, the high standard of safety required of a safety closure cannot be compromised. I have devised a safety closure that is particularly adapted for a single unit of use container that is inexpensive yet durable and capable of meeting the required safety standards. While the safety or child-resistant feature of my closure is designed for only a single actuation, it can be re-applied to the closure to once again render the closure child-resistant.

SUMMARY OF THE INVENTION

My invention is a safety closure for a container, the container including an externally threaded finish portion and a plurality of external projections located below and adjacent to the threads. The safety closure includes a main body member which has threads formed on the interior thereof for engagement with the threads of the finish. A flexible skirt is attached to the lower portion of the main body member by a flexible circumferential ring. The skirt includes a plurality of interior, inwardly directed projections. A locking means is integrally formed with the main body member of the flexible skirt. The locking means is provided for stiffening the flexible skirt when engaged therewith to prevent removal of the closure from the container when the internal and external projections are engaged. The locking means is movable out of engagement with the flexible skirt, thereby allowing removal of the closure from the container.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a side elevational view, partially in cross-section, of the closure of the present invention in the as-formed condition;

FIG. 2 is a side elevational view, partially in cross-section, of the closure of the present invention in position on a container finish with the locking feature in position to prevent removal of the closure;

FIG. 3 is a top, plan view, in cross-section, taken generally along the line 3—3 of FIG. 2; and

FIG. 4 is a side elevational view, partially in cross-section, showing the locking feature of the closure of the present invention disengaged and the closure partially removed from a container finish.
with a safety closure that is capable of maintaining its safety features through a number of openings and re-sealings. The safety closure of the present invention does have the potential of being reused, but due to its operational characteristics it would require a separate step on the part of a person resealing the container before the safety feature could be reimploded after opening. Therefore, this type of closure is not particularly adaptable for multiple use containers.

In FIG. 4, the opening sequence is clearly illustrated. The locking ring 16 is moved downwardly away from the skirt 14 by pushing on the flange 22 which is a part of the locking ring 16. This then leaves the skirt 14 free. As was previously noted, the skirt 14 is a relatively flexible element, as may be seen from the cross-sectional view of FIG. 4 which shows the wall thickness of the skirt 14 to be much less than the wall thickness of the skirt 26 which is a part of the main body 12. A person desiring to open the container in this configuration simply begins to turn the main body 12 in the untightening direction. This will place a force on the projections 32 on the skirt 14 and cause the skirt 14 to bow outwardly, pivoting about the circumferential ring 18. The removal torque or force required to begin removal is quite high and will remain high until after all of the projections 32 have completely cleared the projections 42. After this has occurred, the main body 12 may be unthreaded from the finish portion 34 with normal application of force or torque. This high initial removal torque adds an additional safety feature in that the force required would be beyond the ability of most children.

I claim:

1. A safety closure for a container, said container including a finish portion having threads formed on the exterior thereof and a plurality of external projections located below and adjacent to said threads, said safety closure comprising, in combination:
- a main body member having threads formed in the interior thereof for engagement with the threads of said container finish;
- a flexible skirt, attached to the lower portion of said main body member by a flexible circumferential ring, which is formed with a plurality of interior, inwardly directed projections; and
- locking means, integrally formed with said main body member and said flexible skirt, for stiffening said flexible skirt when engaged therewith to prevent removal of said closure from said container when said internal and external projections are engaged, said locking means being movable out of engagement with said flexible skirt to thereby allow removal of said closure from said container.

2. The closure of claim 1 wherein said locking means includes:
- an annular locking ring formed in a position below said flexible skirt; and
- a plurality of frangible ribs joining said annular ring to said flexible skirt.

3. The closure of claim 2 wherein said locking means further includes:
- a radially extending flange integrally formed at the outer peripheral edge of said locking ring.

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