

## SQUEEZE AND TURN CHILD RESISTANT PACKAGE

This invention relates to child resistant packages and particularly to such packages which are of the squeeze and turn type.

### BACKGROUND AND SUMMARY OF THE INVENTION

In typical squeeze and turn child resistant packages, it is common to provide a container having opposed stop lugs and a closure which has lugs on the periphery thereof which engage the stop lugs on the container. To remove the closure, it must be squeezed to permit the lugs on the closure to be moved out of the path of the lugs on the container and the closure can then be unthreaded from the container. Typical patents showing such a construction are U.S. Pat. Nos. 3,949,893; 3,894,021; 4,116,351 as well as EPO WO 9/01924.

Such child resistant packages have been produced and have been successful in the marketplace. However, they sometimes are difficult to use. When efforts are made to make such packages easier to use and more user friendly, the closure may be defeated if the lugs on the closure are bent backward and the closure is rotated in an unthreading direction (counter clockwise), even though the closure has not been squeezed.

Accordingly, among the objectives of the present invention are to provide a child resistant package which is readily usable by an adult; more user friendly; and which can not be readily defeated.

In accordance with the invention, the squeeze and turn child resistant package comprises a container having a finish and a closure having a base wall and an outer peripheral flexible wall or skirt depending from the base wall. The wall has an internal thread on the inner surface thereof. The finish has an external thread thereon. The closure has an internal surface with spaced flexible chordal lugs extending circumferentially in the direction of removal of the closure. The container finish has opposed radially extending abutments, each abutment including a radial abutting surface. The finish of the container includes an integral radial projection adjacent the radial abutting surface of the abutment which has a lesser radial extent than the abutment. The radial projection also has a chordal surface extending to the intersection of the radial abutting surface on the finish such that the chordal lug on the closure is forced toward the intersection when a closure is rotated in a retrograde direction (counter clockwise) to remove the closure without flexing the peripheral wall. The finish also has stops below the threads engaging a blunt leading end of the thread on the closure to limit the rotation of the closure with respect to the container and orient the closure on the container.

### DESCRIPTION OF THE DRAWINGS

FIG. 1 is an elevational view of a child resistant package embodying the invention.

FIG. 2 is a sectional view taken along the line 2—2 in FIG. 1.

FIG. 3 is a view similar to FIG. 2 showing the relative positions of the closure and the container when the closure is being removed.

FIG. 3A is a view similar to FIG. 2 showing the relative positions of the closure and container when an attempt is made to remove the closure in without squeezing.

FIG. 4 is a fragmentary part sectional elevational view of a portion of the package.

FIG. 5 is an elevational view of the container.

FIG. 6 is a side elevational view of a container taken from the right in FIG. 5.

FIG. 6A is a fragmentary enlarged sectional view taken along the line 6A—6A in FIG. 6.

FIG. 7 is a plan view of the container shown in FIG. 5.

FIG. 8 is a fragmentary enlarged plan view of a portion of the container.

FIG. 9 is a perspective view of the closure.

FIG. 10 is a sectional view taken along the line 10—10 in FIG. 9.

FIG. 11 is a sectional view taken along the line 11—11 in FIG. 9.

FIG. 12 is a bottom plan view of the closure.

FIG. 13 is an elevational of a modified form of closure.

FIG. 14 is a sectional view taken along the line 14—14 in FIG. 13.

FIG. 15 is a sectional view taken along the line 15—15 in FIG. 14.

FIG. 16 is a bottom plan view of the closure shown in FIG. 14.

FIG. 17 is a sectional view of the closure shown in FIGS. 13—16 as applied to a container.

FIG. 18 is a fragmentary part sectional elevational view of the package shown in FIG. 17.

### DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring to FIGS. 1—12, the squeeze and turn child resistant package 20 embodying the invention comprises a container 22 and a closure 24. The container 22 is made of plastic such as polypropylene or polyethylene terphthalate and the closure is made of plastic, preferably polypropylene.

The closure 24 includes a base wall 26 and a peripheral wall or skirt 28 which is generally oval in cross section having a long axis and a short axis. Opposed flat finger engaging portions 30 are provided at the long axis (FIGS. 2, 9) and have vertical ribs 32 to facilitate grasping between the thumb and the finger. The closure further includes an inner annular wall skirt 34 having dual threads 36 (FIG. 4, 11). The leading end of each of the threads 36 on the closure is a blunt end, 38 for purposes presently described.

Referring to FIGS. 7 and 9, the container 22 is generally oval in horizontal cross section corresponding to the horizontal cross section of the closure 24 so when the closure is fully applied, the profiles of the closure 24 and container 22 conform. Thus, the container 22 has arcuate sides 40 and flat oppose sides 42 (FIG. 7). The container 22 further includes a shoulder 44 with a cylindrical finish 46 extending upwardly therefrom. The finish 46 has threads 48 complementary to the threads 36 on the closure 24. In addition an axial stop 50 is provided on each of the threads 48 and extends downwardly therefrom as shown in FIG. 6, for purposes presently described.

Referring to FIGS. 7 and 8, the finish 46 is formed with radially opposed abutments 52, each of which has a radially extending and axially extending surface 54. An upwardly and circumferentially extending radial projection 56 having a lesser radial extent than abutment 52 is provided adjacent the abutting surface 54 and includes a chordal surface 58 intersecting the abutting surface 54 at a right angle. Abut-