

radially-inwardly about the outer diameter of the second top wall portion 22b, which remains substantially rigid and undeformed due to the internal thread 26 and the container neck portion 12 threadingly engaged therewith. The lower end 23 of the outer wall 24 assumes a substantially elliptical shape, wherein regions thereof immediately below the locations of force points "F₁", "F₂" are moved axially-downwardly and radially-inwardly. In response thereto, arcuate regions of the lower end 23 of the side wall 24 near the locking lugs 28, 29 move axially-upwardly and radially-outwardly beyond their respective abutments 18b, 19b of ramps 18, 19. Removal rotation of the safety closure 20 may then be applied to remove the safety closure 20 from the container neck portion 12.

With reference to FIGS. 5, 6, 7 and 8, a safety closure 200 according to another embodiment of the present invention for threaded attachment onto a container 100 includes many components in common with the preferred embodiment described hereinabove and like reference numerals are intended to represent like components. However, the safety closure 200 according to the present embodiment includes a pair of locking lugs 228, 229 projecting inwardly from an inner surface of the outer wall 24 at diametrically-opposed locations. The container 100 includes a shoulder 114 having a flattened portion 115 and a sloped portion 117 connecting the flattened portion 115 to an upper end of the container 100. A pair of stops 118, 119 project upwardly from the shoulder 114 at diametrically-opposed locations and are sized to engage locking lugs 128, 129, respectively.

The locking lugs 228, 229 and the stops 118, 119 are respectively sized and shaped to provide a locking means by which removal of the safety closure 200 from the container neck portion 12 is inhibited. More particularly, as the safety closure 200 is threadingly fit downwardly onto the container neck portion 12 by cooperative engagement of the safety closure internal thread 26 with the container neck portion external thread 16, the locking lugs 228, 229 are guided over inclines 118a, 119a and behind abutments 118b, 119b. The outer wall 24 is sufficiently flexible to permit deformation thereof as the locking lugs 228, 229 pass upwardly over the inclines 118a, 119a and beyond the abutments 118b, 119b. Further, the outer wall 24 is sufficiently elastic to permit the locking lugs 228, 229 to snap inwardly behind the abutments 118b, 119b once positioned therebehind, thereby preventing removal rotation of the safety closure 200 relative to the container neck portion 12 unless the locking lugs 228, 229 are permitted to overcome the abutments 118b, 119b.

With reference to FIGS. 6a, 7a and 8a, the locking lugs 228, 229 are radially-outwardly moveable in the directions generally indicated by reference arrows "d₁₀₀" and "d₂₀₀" to overcome their respective abutments 118b, 119b provided by the stops 118, 119 by applying downwardly-directed force or pressure to the first top wall portion 22a of the top wall 22 and in the directions generally indicated by reference arrows "F₁₀₀" and "F₂₀₀". Preferably, pressure applied at force points "F₁₀₀", "F₂₀₀" is applied to the top wall 22 at annular locations immediately above the locking lugs 228, 229.

Forces "F₁₀₀", "F₂₀₀" cause the flexible outer wall 24 to pivot axially-downwardly about the outer diameter of the second top wall portion 22b, which remains substantially rigid and undeformed due to the internal thread 26 and the container neck portion 12 threadingly engaged therewith. The locking lugs 228, 229 move downwardly in response to pressure applied at force points "F₁₀₀", "F₂₀₀" until the locking lugs 228, 229 abut the sloped portion 117 of the container shoulder 114, which thereafter guides the locking

lugs 228, 229 further axially-downwardly and radially-outwardly away from the stops 118, 119. Removal rotation of the safety closure 20 may then be applied to remove the safety closure 20 from the container neck portion 12.

Although the present invention has been described in terms of specific embodiments which are set forth in detail, it should be understood that this is by illustration only and that the present invention is not necessarily limited thereto, since alternative embodiments not described in detail herein will become apparent to those skilled in the art in view of the disclosure. Accordingly, modifications are contemplated which can be made without departing from either the spirit or the scope of the present invention as described hereinabove.

We claim:

1. A safety closure, comprising:

a top wall;

an annular outer wall depending downwardly from an outer periphery of said top wall;

an annular inner wall depending downwardly from an underside surface of said top wall;

at least one locking lug integrally molded with said outer wall, whereby downward displacement of said top wall causes outward displacement of said at least one locking lug; and

an internal thread projecting inwardly from an inner surface of said inner wall.

2. The safety closure according to claim 1, said top wall further comprising:

a first top wall portion, said outer periphery of said top wall defining an outer diameter of said first top wall portion;

a second top wall portion coaxial to said first top wall portion, said second top wall portion being disposed vertically below said first top wall portion; and,

a downward taper connecting an inner diameter of said first top wall portion to an outer diameter of said second top wall portion.

3. A safety closure comprising:

a top wall;

an annular outer wall depending downwardly from an outer periphery of said top wall;

an annular inner wall depending downwardly from an underside surface of said top wall; and,

at least one locking lug integrally molded with said outer wall, whereby downward displacement of said top wall causes outward displacement of said at least one locking lug, said at least one locking lug depends downwardly from a lower end of said outer wall.

4. The safety closure according to claim 1, wherein:

said at least one locking lug projects inwardly from an inner surface of said outer wall.

5. A safety closure in combination with a container, comprising:

a safety closure having a top wall; an annular outer wall depending downwardly from an outer periphery of said top wall; an annular inner wall depending downwardly from an underside surface of said top wall; and, at least one locking lug depending downwardly from a lower end of said outer wall, wherein said at least one locking lug is outwardly displaceable in response to downward displacement of said top wall and depends downwardly from a lower end of said outer wall; and,

a container having a shoulder integrally molded towards an open, upper end thereof; a neck portion projecting