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54 Improved closure.

57 A closure for closing the mouth of a container having a screw neck finish, the closure comprising an inner part adapted to interengage with the screw neck of the container, an outer part to be applied over the inner part when in position on a container and including a depending skirt connected to anchor means by tearable or frangible means, and drive means on the inner and outer parts of the closure which are interengageable with one another in use to allow the inner part to be unscrewed from a container only once the anchor means has been separated from the depending skirt and only be relative axial movement between the outer and inner parts during unscrewing whereby the closure is tamper-resistant until separation of the anchor means and child-resistant thereafter.

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IMPROVED CLOSURE

This invention relates to an improved closure and to a container/closure assembly including such a closure. It is well known to provide a child-resistant closure that screws on to a conventional bottle neck but can only be removed by pressing down the outer shell whilst unscrewing. We have now found that a new danger exists where closures with child-resistance only are used with products that are vulnerable to tampering.

An object of the present invention therefore is to provide a closure which is both tamper-resistant and child resistant.

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According to the present invention there is provided a closure for closing the mouth of a container having a screw neck finish, the closure comprising an inner part adapted to interengage with the screw neck of the container, an outer part to be applied over the inner part when in position on a container and including a depending skirt connected to anchor means by tearable or frangible means, and drive means on the inner and outer parts of the closure which are interengageable with one another in use to allow the inner part to be unscrewed from a container only once the anchor means has been separated from the depending skirt and only by axial movement relative between the outer and inner parts during unscrewing whereby the closure is tamper-resistant until separation of the anchor means and child-resistant thereafter.

Preferably the depending skirt of the outer part of the closure is connected to an anchor band by a removable tear band: the anchor band being retained after removal of the tear band as a visual indication that the tear band has been removed.

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However, alternatively, the anchor band itself may be secured to the depending skirt by tearable means in the form of a line of weakening such that the whole anchor band is removed. This may be advantageous where it is
5 desired to reuse the container since no band is left remaining once the container has been opened.

More particularly there is provided a container/closure assembly comprising a container having a screw neck finish and annular anchor bead, and a closure
10 comprising an inner cap screwed to the container, an outer cap applied over the inner cap and having a depending skirt, an anchor band anchored to the anchor bead on the container, and a removable tear band between the depending skirt and the anchor band, and inter-
15 engageable drive means on the inner and outer cap prevented from interengagement until the tear band has been torn away and then only by relative^{axial}/movement between the caps whereby the closure is tamper-resistant until removal of the tear band and is child-resistant
20 thereafter.

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The invention will now be described by way of example with reference to the accompanying drawing which shows a part-sectioned sketch of a preferred form of closure in accordance with the invention.

5 In the drawing the closure 1 comprises an inner cap 2 and an outer cap 3. The inner cap 2 has a top 4 and a depending skirt 5 on the inner surface of which are screw threads 6 for interengagement with screw threads 7 formed on the neck of a container 8. A seal
10 between the inner cap 2 and the container 8 is provided by an annular, resilient projection 9 which, when the inner cap 2 is positioned on the container 8, seals against the rim of the mouth of the container 8 as shown.

 The outer cap 3 has a top 10 with a depending skirt
15 11 and an anchor band 12 connected to the depending skirt 11 by means of a removable tear band 13. The tear band 13 has a tab 14, which may be manipulated by a user to effect removal of the tear band 13, and may include tamper-evident bridge members 15 between the respective
20 parts. The anchor band 12 is provided with an internal, annular groove 16 which interengages with an annular bead 17 of wedge-shaped cross-section on the outside of the neck of a specially profiled container.

If desired additional tamper evident means may be provided in the form of frangible spaced apart nibs 22 bridging an annular channel 22 separating the central part of the top 10 from the outer part. The act of
5 pushing the outer cap down will break the nibs 22 because an annular bead 24 on the inner cap will stop downward movement of the central part of the top 10.

A container and closure assembly according to this invention is now known under our Trade Mark TRAGER-LOK.

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The inner cap 2 and outer cap 3 are interengageable by means of opposed driving dogs 18 and 19 on the top of the cap 2 and underside of the top of the cap 3 respectively. Also shown are cooperating annular beads 20 and 21 on the outside of the depending skirt of the cap 2 and the inside of the depending skirt of the cap 3 respectively which prevent the two caps being separated from one another.

10 In use the inner and outer caps 2 and 3 are applied to the container 8 separately. Using, say a glass bottle 8 with a standard screw neck, below which is the special bead 17, the inner cap 2 is screwed on to the bottle like any ordinary screw cap. The outer cap 3 is
15 then applied over the top of the cap 2 and the bottle neck by simple top pressure, effectively creating a tamper-resistant and child-resistant seal. Once in position the closure cannot be unscrewed as the skirt formation of the outer caps prevents the unscrewing dogs
20 18, 19 engaging with each other. By the same token, the closure cannot be pulled off because of the interengagement of the bead 17 and groove 16 on the tamper-evident anchor band 12. Only when the tearband 13 has been

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removed (leaving the anchor band behind) can the outer cap 3 be pressed downwards to bring the unscrewing dogs 18, 19 into engagement with one another. As it is only by maintaining this top pressure whilst
5 unscrewing that the closure can be removed, it is effectively child-resistant. The two cap parts 2 and 3 of the closure 1 cannot be pre-assembled because it is not possible to screw it on to the bottle neck as it is essential that there be no pre-engagement between the
10 dogs 18, 19 until the tamper-resistant tear band 13 has been removed.

The closure of the present invention may be used to close the mouth of any suitable container to provide tamper and child-resistance. The profile of the outer
15 surface of the skirt of the outer cap 3 may be ridged to facilitate manipulation as shown.

We have therefore provided a closure having an inner cap for closing the mouth of a container, an outer cap for locking the closure to the container by removable
20 tamper-resistant means, the outer cap being interengageable with the inner cap on removal of the tamper-resistant means and by pressing the outer cap against the

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inner cap such that the inner cap ^{then} may be released from
the container by manipulation of the outer cap, the
closure being tamper-resistant until removal of the
tamper-resistant means and thereafter child-resistant.

CLAIMS

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1. A closure for closing the mouth of a container having a screw neck finish, the closure comprising an inner part adapted to interengage with the screw neck of the container, an outer part to be applied over the inner part when in position on a container and including a depending skirt connected to anchor means by tearable or frangible means, and drive means on the inner and outer parts of the closure which are interengageable with one another in use to allow the inner part to be unscrewed from a container only once the anchor means has been separated from the depending skirt and only by relative axial/^{movement} between the outer and inner parts during unscrewing whereby the closure is tamper-resistant until separation of the anchor means and child-resistant thereafter.
2. A closure according to claim 1 wherein the depending skirt of the outer part of the closure is connected to an anchor band by a removable tear band, the anchor band being retained on the container after removal of the tear band as a visual indication that the tear band has been removed.
3. A closure according to claim 1 wherein an anchor band is secured directly to the depending skirt of the outer part by tearable means in the form of a line of weakness.

4. A container/closure assembly comprising a container having a screw neck finish and annular anchor bead, and a closure comprising an inner cap screwed to the container, an outer cap applied over the inner cap and having a depending skirt, an anchor band anchored to the anchor bead on the container, and a removable tear band between the depending skirt and the anchor band, and interengageable drive means on the inner and outer cap prevented from interengagement until the tear band has been torn away and then only by relative axial movement between the caps whereby the closure is tamper-resistant until removal of the tear band and is child-resistant thereafter.

5. A closure according to claim 2 wherein the tear band has a tear tab to assist in manipulation of the band and wherein the tear tab includes tamper-evident bridge members between the respective parts.

6. A closure according to claim 2 or 3 wherein the anchor band has an internal annular groove for engagement with an annular bead of wedge-shaped cross-section on the outside of the container.

7. A closure according to any of the preceding claims wherein the inner cap and the outer cap are interengageable by means

of opposed driving dogs respectively on the top of the inner cap and on the underside of the top of the outer cap.

8. A closure according to claim 7 with cooperating annular beads respectively on the outside of the depending skirt of the inner cap and on the inside of the skirt of the outer cap to prevent the two caps being separated from one another.

9. A closure according to any of the preceding claims wherein the top of the outer cap has an annular channel bridged by frangible nibs adapted to break when the outer cap is pressed down.

10. A closure having an inner cap for closing the mouth of a container, an outer cap for locking the closure to the container by removable tamper-resistant means, the outer cap being interengageable with the inner cap on removal of the tamper-resistant means and by pressing the outer cap against the inner cap such that the inner cap may then be released from the container by manipulation of the outer cap, the closure being tamper-resistant until removal of the tamper-resistant means and thereafter child-resistant.

