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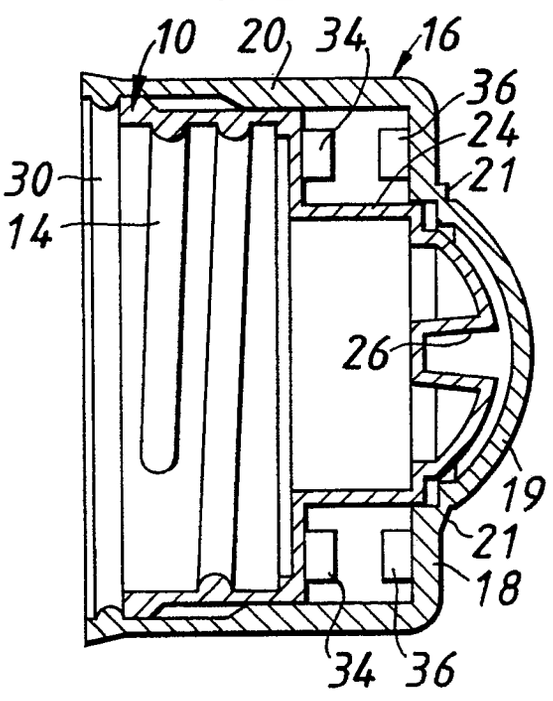
(54) Closure device.

(57) A closure device for a container of the kind which is childproof by having an inner threaded cap (10) and an outer cap (16) which operates by turning the outer cap (16) in a closing direction while the inner (10) and outer (16) caps are operably engaged and which is free to rotate in the opposite direction without engagement of the inner cap (10); the improvement being that the outer cap (16) has an aperture (22) and the inner cap (10) has a slot (26) or other feature which can be engaged from outside by a coin or spoon handle. This makes the device easier for the old and infirm to open.

FIG.1.



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CLOSURE DEVICE

This invention relates to a closure device for a container having a screw-threaded cylindrical opening or neck.

Various closure devices for bottles or other containers have been devised which are resistant to being opened by children, so that these bottles are suitable for holding e.g. medicines or pills. Generally such closures comprise an inner cap which is screw-threaded to engage the screw-threaded cylindrical opening or neck of the bottle, and an outer member which serves for driving the inner member; in order to remove the closure from the bottle, the outer member must be pushed in to engage with the inner member and then turned to unscrew the inner member from the opening of the bottle. However it is often difficult, especially for the elderly or those who suffer from arthritis, to push the outer member in and turn it at the same time. Also, some medicines are very sticky with the result that the inner member becomes stuck firmly to the opening of the container, again making it difficult to unscrew the closure.

I have now devised a closure device which overcomes the problems outlined above.

In accordance with this invention there is provided a closure device for a container having a screw-threaded opening,
the closure device comprising an inner member in the form of a screw-threaded cap
and an outer member in the form of a cap into which the inner member fits,
the outer member operably engaging with the inner member for turning the latter in a closing direction, but being able to turn in an opening direction without operably engaging with the inner member,
characterised in that the outer member has an opening which enables a portion of the inner member to be operably engaged from outside, and that said portion can be operably engaged, for example by means of a spoon handle or coin, from outside for turning the inner member to unscrew it from the container.

Thus, the inner member can be rotated more easily by the elderly and infirm without the need for applying excessive torque. A spoon handle in particular enables the necessary torque to be applied very easily.

Generally the inner member portion will project out through the opening in the outer member, but this is not essential. If the aperture is large enough the spoon handle can be inserted in through the hole.

Preferably the said portion of the inner member is formed with a slot which can be engaged for turning the inner member.

Preferably the said portion of the inner member is formed with two slots substantially at right angles to each other.

Preferably the closure device comprises a cover which covers the opening in the outer member and is releasably attached thereto to provide a tamper evident feature.

An embodiment of this invention will now be described by way of example only and with reference to the accompanying drawings, in which:

Figure 1 is a section through a closure device in accordance with the invention;

Figure 2 is a section through an inner member of the device;

Figure 3 is a view of the top of the inner member;

Figure 4 is a section through an outer member of the closure device;

Figure 5 is a view of the top of the outer member;

Figure 6 is a section through a separate cover member for the opening in the top of the outer member of the closure device; and

Figure 7 is a view of the top of the separate cover member of Figure 6.

Referring to the drawings, there is shown a closure device for the screw-threaded cylindrical opening or neck of a glass bottle or other container. The closure device comprises an inner member 10 in the form of a cap having a top and a depending cylindrical skirt 12 formed with an internal screw-thread 14. The closure device further comprises an outer member 16 in the form of a cap having a flat top 18 and a depending cylindrical skirt 20. The top 18 of the outer member 16 is formed with a circular aperture 22 in its centre, which aperture is closed by a cap-shaped cover portion 19 integral with the outer member 16 and frangibly connected thereto by e.g four spaced webs 21. The top of the inner member is formed with a cylindrical extension portion 24 which is formed with two slots 26, 28 at right angles to each other in its outer end.

The inner member 10 is received within the outer member 16 so that the extension portion 24 of the inner member 10 projects through the circular aperture 22 in the top of the outer member 16 and into the cover portion 19, the latter being formed with a single channel 23 in its top. This channel also serves as a feature which can be engaged by a coin or other object for removal, but should be so wide that it cannot slot into the slots underneath. The inner member 10 is held captive within the outer member 16 by snap-engagement of its outer rim past an annular ridge 30 on the

inside of the skirt 20 of the outer member.

The cover portion forms a tamper-evident feature for the closure device. It can be gripped and torn off by hand, or it can be forced off by pushing the outer member 16 axially inwards relative to the inner member 10 and towards the container, so that the extension portion 24 of the inner member is caused to project further out through the aperture 22.

Four flexible fingers 32 project from the inside of the top of the outer member 16 in a peripheral direction. When the outer member 16 is turned in the clockwise direction, these fingers 32 abut respective abutments or dogs 34 on the top of the inner member, to correspondingly turn the inner member for tightening it onto the container next. Once the cover portion 19 has been removed, then when the outer member 16 is turned in the opposite i.e. counterclockwise direction, the flexible fingers 32 ride over the top of the abutments 34 and the outer member 16 turns freely relative to the inner member 10. However, if the outer member 16 is pushed in the axial direction towards the container, the outer member slides on the inner member (the fingers 32 being urged towards the underside of the top of the outer member). Now if the outer member is turned in the counterclockwise direction, abutments 36 on the underside of the top of the outer member engage the abutments 34 on the top of the inner member, to turn the inner member and so unscrew it from the container.

However, for those who find difficulty in pressing the outer member in and at the same time turning it in the counterclockwise or unscrewing direction, the slots 26, 28 provide an alternative means of loosening the closure device. Thus, a coin or other convenient article e.g a spoon, can be inserted into either slot 26 or 28 and twisted to turn the inner member 10 directly and unscrew it from the container.

The cover portion may be formed as a separate cap-shaped member 119 as shown in Figures 6 and 7 having e.g four radial projections 120 spaced around its rim. The cover portion can then be inserted into the aperture 22 in the outer member 16 from the interior of the latter before the inner member 10 is inserted, the projections 120 preventing the cover from passing right through the aperture. However, the cover can be pulled by hand through the aperture when desired, or forced off by pushing the other member axially inwards relative to the inner member and container.

The closure device may be provided without the tamper-evident cover portion 19 or cover member 119 if desired.

Claims

1. A closure device for a container having a screw-threaded opening,
the closure device comprising an inner member (10) in the form of a screw-threaded cap and an outer member (16) in the form of a cap into which the inner member fits,
the outer member operably engaging with the inner member for turning the latter in a closing direction, but being able to turn in an opening direction without operably engaging with the inner member,
characterised in that the outer member has an opening (22) which enables a portion (24) of the inner member to be operably engaged from outside, and that said portion (24) can be operably engaged, for example by means of a spoon handle or coin, from outside for turning the inner member to unscrew it from the container.

2. A closure device according to claim 1 in which said portion of the inner member is formed with a slot which can be engaged for turning the inner member.

3. A closure device according to claim 2 in which said portion of the inner member is formed with two slots (26, 28) substantially at right angles to each other

4. A closure device according to any of the preceding claims comprising a cover (19) which covers the opening in the outer member and is releasably attached thereto to provide a tamper evident feature.

FIG.1.

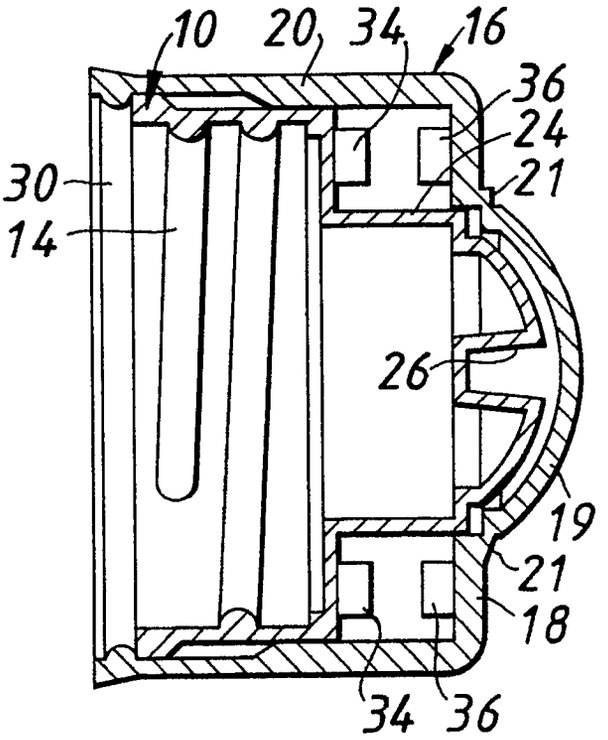


FIG.2.

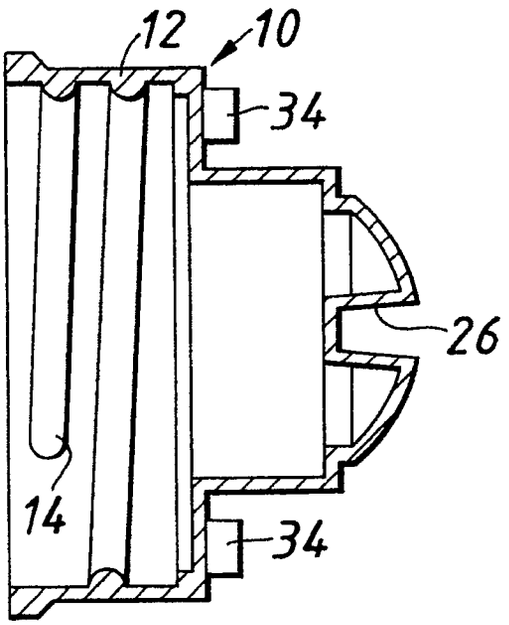
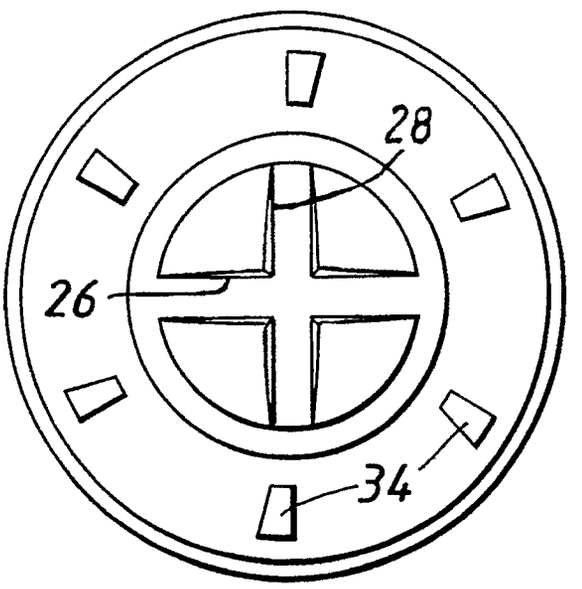


FIG.3.



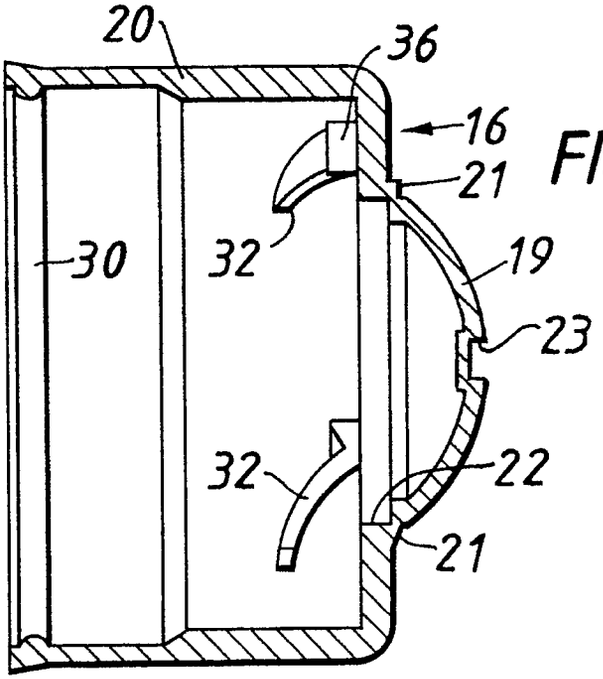


FIG. 4.

FIG. 5

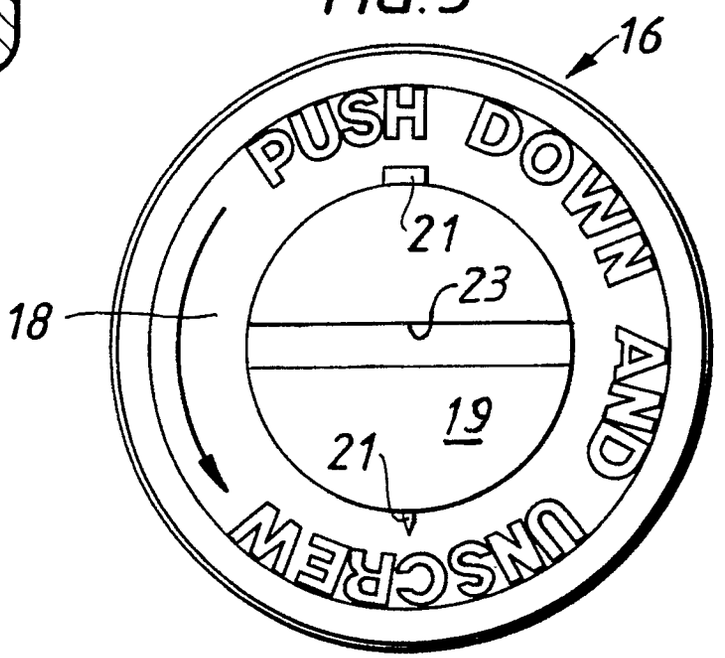


FIG. 6.

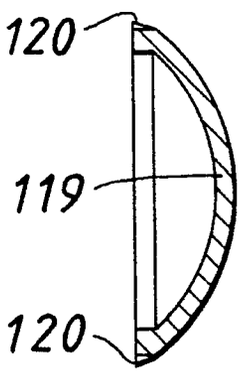
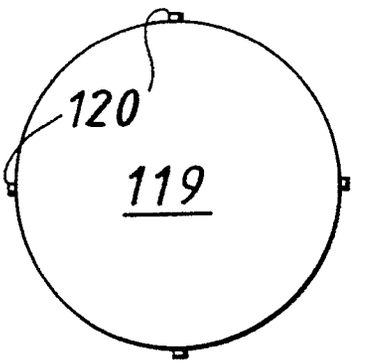


FIG. 7.



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EUROPEAN SEARCH REPORT

Application Number

EP 90 31 3619

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
X	CH-A-5 092 08 (CHEMISCHE WERKE HÜLS) * Column 2, line 25 - column 3, line 31; figures 1-8 *	1,2	B 65 D 50/04 B 65 D 50/14
Y		4	
X	US-A-3 989 153 (McROSKEY) * Column 3, line 61 - column 4, line 47; figures 6-8 *	1-3	
X	GB-A-2 190 366 (WEST) * Page 2, lines 69-116; figures 3,4 *	1,2,4	
X	US-A-4 775 061 (COOTE) * Column 2, lines 55-68; figures 1-7 *	1,2	
A	US-A-4 281 771 (SIEGEL) * Column 1, lines 41-48; column 3, lines 29-47; figures 1-5 *	1	
A	DE-A-2 307 205 (NEURO-PLAST) * Page 8, lines 5-24; page 9, lines 4-8; figures 1-3 *	1	
Y	EP-A-0 164 154 (TECHNOPLAST B.V.) * Page 7, lines 24-36; figures 2,3 *	4	

TECHNICAL FIELDS SEARCHED (Int. Cl.5)
B 65 D

The present search report has been drawn up for all claims

Place of search	Date of completion of search	Examiner
The Hague	08 March 91	BERRINGTON N.M.

CATEGORY OF CITED DOCUMENTS

X: particularly relevant if taken alone
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A: technological background
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