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(54) Thin-walled container with snap-over lid.

(57) Thin-walled container, comprising a wide-mouthed body and a snap-over lid, the body having near its mouth a radially extending external flange and locking means between the mouth and the flange and the lid having a top part and a rim, the rim being provided with locking means to engage with the locking means of the body.

The locking means of the body comprise an external clip which is situated below the point midway between the mouth of the body and the flange. No part of the top part of the lid projects beyond the plane through the edge of the mouth, thus obtaining a good locking and seal between the lid and the body.

A major advantage of the container is, that the same lid can be used for a foil-sealed and for a non-foil-sealed body.

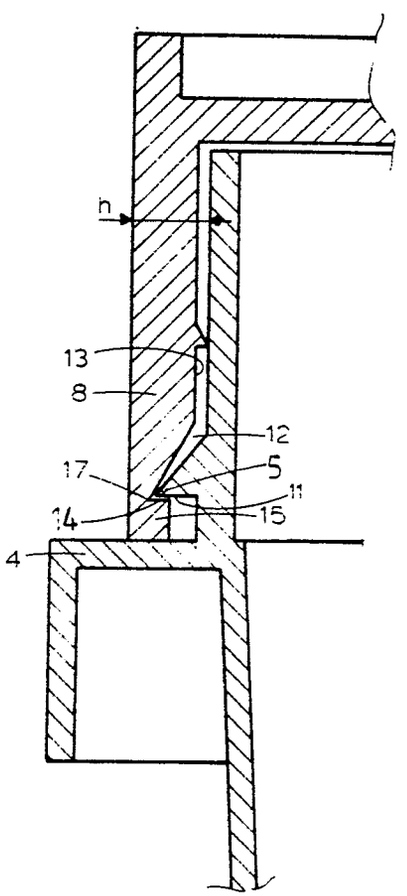

FIG 3

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THIN-WALLED CONTAINER WITH SNAP-OVER LID

The invention concerns a thin-walled container, comprising a wide-mouthed body and a snap-over lid, the body having near its mouth a radially extending external flange and locking means between the mouth and the flange and
the lid having a top part and a rim, the rim being provided with locking means to engage with the locking means of the body.

These containers are generally known and are used to pack, for instance, 'do it yourself' products, such as adhesives and paints and other more or less dangerous products, including medicines.

Since said containers are usually not re-used, it is mandatory that they are cheap to manufacture. In this respect, a suitable process and material combination is injection moulding of a polyolefin. Manufacturers of such containers aim at reducing wall thickness, to decrease raw material consumption and to increase manufacturing speed; a thin-walled article cools down more quickly and can therefore be removed from the mould more quickly, resulting in an increased hourly production rate.

The problem which the manufacturers of such containers have been confronted with up to now is that by thinning the container wall, the locking between the lid and the body was negatively influenced and also that the seal formed by the locking means, on account of not quite predictable shrinking of the material, in particular near the edge of the mouth of the body, where normally the locking means are situated.

Further, it has been shown that under transit conditions the lid can be accidentally removed from the body.

To overcome the above-mentioned problems, manufacturers of said containers designed an annular groove or a circumferential recess in the top part of the lid, so that after the lid has been fitted, the mouth of the body is more or less fixed and the influence of possible shrinkage of the edge of the mouth on the locking and seal between the lid (rim) and the body is eliminated.
Such lid design, however, has the severe disadvantage that it cannot be used when the mouth of the body has to be sealed with a film or similar material. The consequence thereof is that two types of lids have to be manufactured and kept in store to make the container suitable to pack any desired product.
Incidentally, it will be clear that if the container is sealed with film, requirements concerning the sealing action by the locking means are less strict.

It is an object of the invention to provide a container not having the above-mentioned disadvantages.
It is a further object of the invention to provide a container with improved locking of the lid on the body, so that under transit conditions, for example, the lid cannot be accidentally removed.
Yet another object of the invention is to provide a container with locking means which prevent easy removal of the lid by, for example, children.

The container according to the invention is characterized in that the locking means of the body comprise an external clip which is situated below the point midway between the mouth of the body and the flange and in that no part of the top part of the lid projects beyond the plane through the edge of the mouth.
The container according to the invention can be manufactured at a high production speed without showing detrimental shrinkage of the mouth of the body.
A major advantage of the container according to the invention is that the same lid can be used for a foil-sealed and for a non-foil-sealed body, thus eliminating the need for an extra lid tool and the operational and other facilities therefor.

It is noted that a lid with an inner flat diaphragm extending from the rim is known as such from US-A-4,071,156. However, this concerns a container having a relatively thick-walled neck portion, which is not subject to the problem described in the preamble.

An embodiment of the container according to the invention is characterized in that the configuration of the external clip matches a corresponding recess in the inner surface of the rim.
The advantage hereof is, that the overhang of the lid with respect to the wall of the body, i.e. the distance by which the outer edge of the rim of the lid projects beyond the outer surface of the wall of the body, has been minimized, so that the possibility that the lid of the container is accidentally lifted by another container (so-called 'riding up'), which can occur, for instance, under transit conditions of the containers or when containers are packed in a box, is also minimised.

To facilitate removing the lid from the body, the remaining wall thickness of the rim at the deepest point of the recess therein can best be chosen between 1/3 and 1/2 times the wall thickness of the wall of rim thereabove.
For the same reason, the thickness of the wall of the rim below the recess can best be chosen

thinner than that above the recess, for instance, in combination with the range limits specified above, between 1/2 and 1/3 of the thickness of the wall of the rim above the recess.

Another embodiment of the container according to the invention is characterized in that the side of the clip which faces the flange is substantially perpendicular to the body wall section between the flange and the mouth.

This is to achieve extra good locking between the lid and the body.

The perpendicular height of the clip and the thickness of the wall of the body near the clip are not critical, but their ratio is preferably chosen between 1 and 2.

A further embodiment of the container according to the invention is characterized in that the clearance between the free edge of the rim and the flange is less than 0.1 mm.

By this feature, the possibility of riding up, as hereabove defined, is further decreased and also the possibility of, for example, children opening the container is reduced.

A preferred embodiment of the container according to the invention is characterized in that the flange is provided with a recess in radial direction, which at its deepest point coincides with the outer face of the rim.

The recess is to facilitate removing the lid of the container.

However, since the overhang of the rim does not project beyond the deepest point of the recess, accidental removal or removal by children is still prevented.

In particular with this embodiment, it is of advantage to provide a thumb tab at the rim of the lid. For easy removal of the lid, the thumb tab can be aligned with the recess in the flange by turning the lid.

Of course, it should be prevented that the lid is placed on the filled container with the thumb tab and the recess in alignment. However the chances of this occurring are very small, and accidental alignment can be detected with an appropriate controlling device.

In the preferred embodiment the inner side of the rim wall is provided with a circumferential bead, which is situated between the diaphragm and the recess, the perpendicular height of the bead being between 0.1 and 0.2 times the rim thickness, and the inner radius of the rim plus the perpendicular height the of bead substantially equalling the outer radius of the upper part of the body wall.

This circumferential bead greatly facilitates the turning of the lid to align the thumb tab with the recess in the flange.

Thereabove, the bead forms an extra seal against leakage of the container contents.

In addition, said preferred embodiment can be provided with near the outer edge of the flange, a skirt extending from the flange in a direction away from the mouth of the body, which flange and skirt preferably are stiffened by radial ribs which are substantially equidistant.

This increases the rigidity of the wall and, in combination with a conical shape of the body below the flange, makes it possible to nest empty containers.

The best embodiment of the container according to the invention combines all of the above-mentioned features, which are also comprised by the claims 1-9.

Herebelow, the container according to the invention will be elucidated with reference to the drawings.

In Fig. 1 a section of the container through its central axis is shown

in Fig. 2 a view on a section in a plane indicated by Roman numerals II-II in Fig. 1 and

in Fig. 3 a detail of Fig. 1.

As shown in Fig. 1, the container comprises a body 1 and a snap-over lid 2. Body 1 comprises a mouth portion 3, a radially extending external flange 4 and locking means 5.

Lid 2 comprises a top part 6, a rim 7 and locking means 8, which engage with locking means 5 of body 1.

An essential characteristic of the invention is that no part of top part 6 projects beyond the plane through the edge 27 of mouth portion 3. In Fig. 1, a lid with an inner flat diaphragm is shown.

Locking means 5 are preferably shaped as a sharp-edged clip 9 which radially extends from the upper part 10 of the body wall.

Another essential characteristic of the invention is that contact surface 11 (see Fig. 3) of clip 5 is situated at a relatively large distance from edge 27 of mouth portion 3 and at a relatively small distance from flange 4. The exact location of clip 5 depends upon the thickness of the upper part 10 of the body wall, the stiffness of the material used for the container and the diameter of mouth portion 3.

Contact surface 11 preferably extends substantially perpendicularly to upper part 10 of the body.

Locking means 8 comprise a recess 12 in the inner face 13 of rim 7, contact surface 14 (see Fig. 3) preferably being substantially perpendicular to the outer wall of upper part 10.

For the sake of clarity of Figures 1 and 3 contact surfaces 11 and 14 are shown at a small distance from each other.

Part 15 of rim 7, below recess 12, is preferably made thinner than part 16 of rim 7, above recess 12, to facilitate removing lid 2. In fact, as lid 2 is removed, part of rim 7, near the deepest point 17 of recess 12, functions as an elastic hinge.

Flange 4 of the container (see Fig. 2) is provided with a recess 19 in radial direction such, that the deepest point 20 thereof more or less coincides with the outer face of the rim (see also Fig. 3). Preferably, flange 4 is at its outer edge 23 provided with a downwardly extending skirt 24 and ribs 25 (see also Fig. 2).

Rim 7 is provided with a thumb tab 18 (see also Fig. 2) which for easy removal of lid 2 can be aligned with recess 19 by turning lid 2. The thumb tab preferably does not project beyond the outer edge 23 of flange 4.

The inner wall side 21 of rim 7 is provided with a circumferential bead 22, to facilitate the turning of lid 2.

Claims

1. Thin-walled container, comprising a wide-mouthed body and a snap-over lid, the body having near its mouth a radially extending external flange and locking means between the mouth and the flange and
the lid having a top part and a rim, the rim being provided with locking means to engage with the locking means of the body,
characterized in that the locking means of the body comprise an external clip which is situated below the point midway between the mouth of the body and the flange and in that no part of the top part of the lid projects beyond the plane through the edge of the mouth.

2. Container according to Claim 1, characterized in that the configuration of the external clip matches a corresponding recess in the inner surface of the rim.

3. Container according to Claim 1 or 2, characterized in that the side of the clip which faces the flange is substantially perpendicular to the body wall section between the flange and the mouth.

4. Container according to any one of the Claims 1-3, characterized in that the ratio of the perpendicular height of the clip and the thickness of the wall of the body near the clip lies between 1 and 2.

5. Container according to any one of the Claims 1-4, characterized in that the clearance between the free edge of the rim and the flange is less than 0.1 mm.

6. Container according to any one of the Claims 1-5, characterized in that the flange is provided with a recess in radial direction, which at its deepest point coincides with the outer face of the rim.

7. Container according to Claim 6, characterized in that the inner face of the rim wall is provided with a circumferential bead, which is situated between the diaphragm and the recess, the perpendicular height of the bead between 0.1 and 0.2 times the rim thickness and the inner radius of the rim plus the perpendicular height of the bead substantially equalling the outer radius of the upper part of the body wall.

8. Container according to any one of Claims 1-7, characterized in that the flange is near its outer edge provided with a skirt extending from the flange in a direction away from the mouth of the body.

9. Container according to Claim 8, characterized in that the flange and the skirt are stiffened by radial ribs which are substantially equidistant.

10. Container substantially as described and elucidated in the drawings.

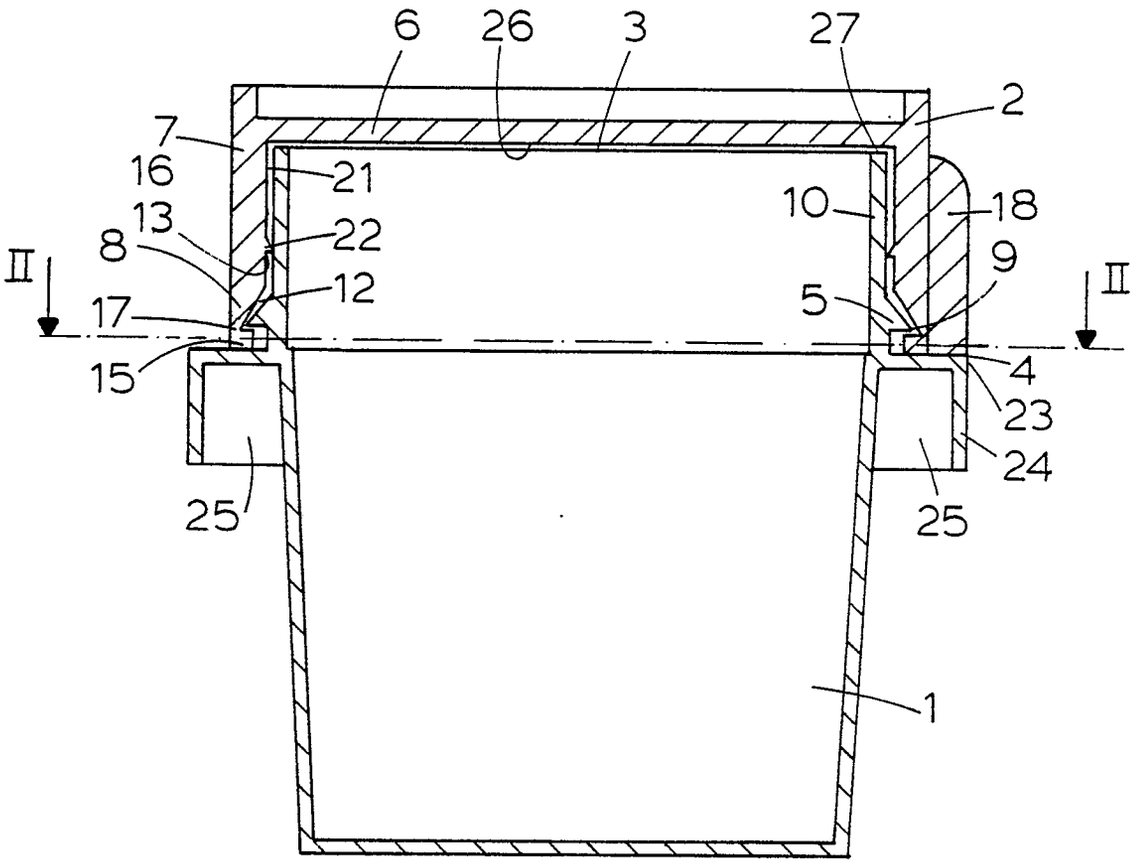
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FIG.1

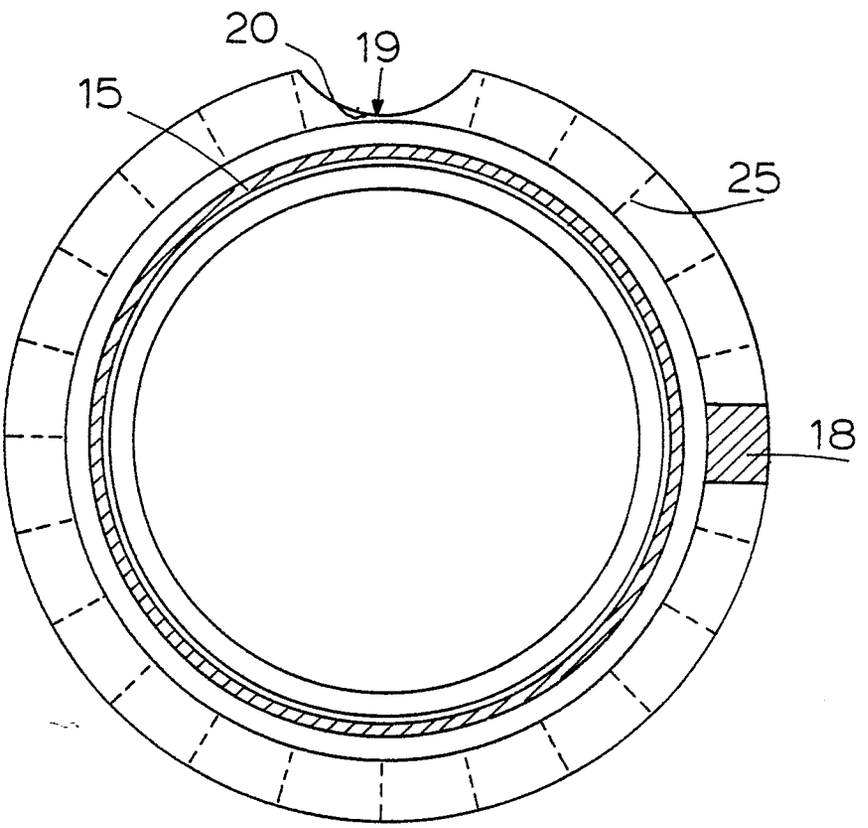
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FIG. 2

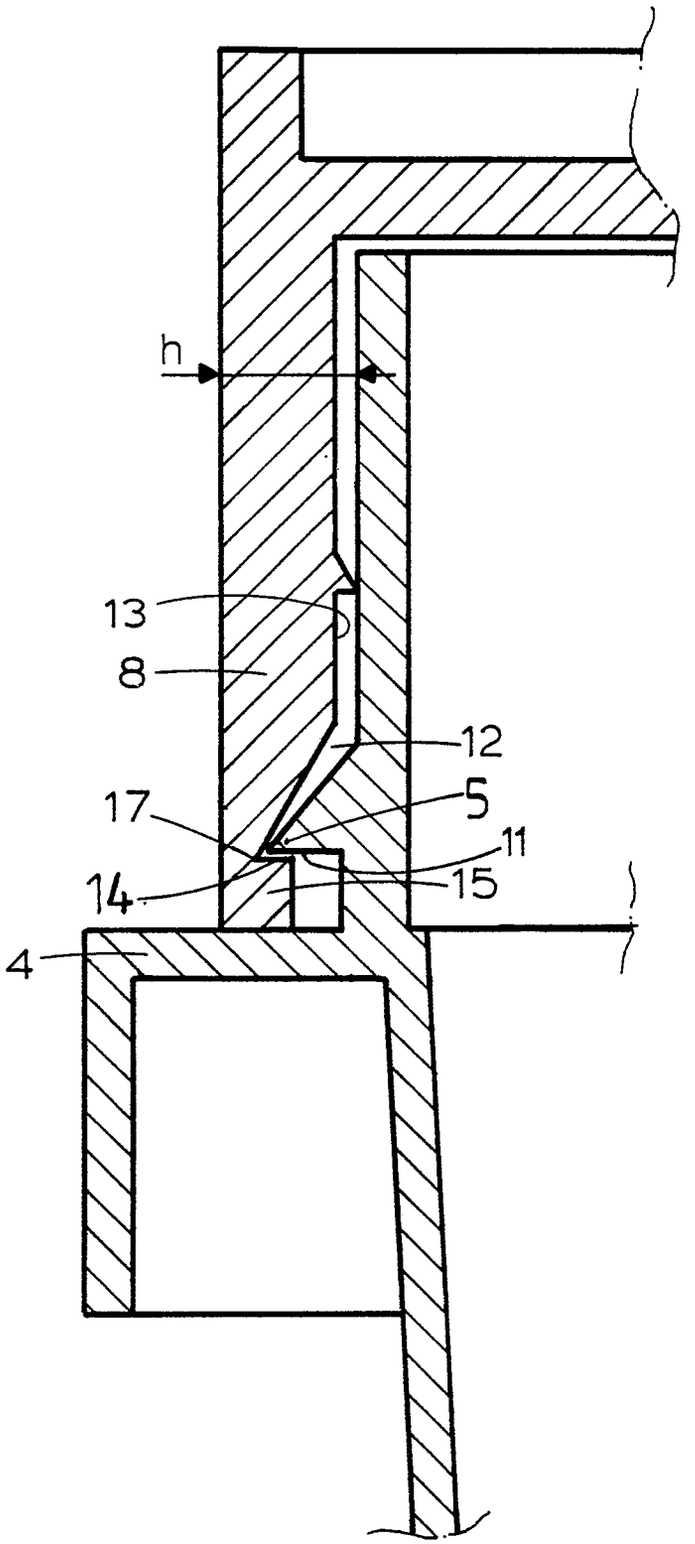

FIG. 3

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EUROPEAN SEARCH REPORT

Application number

EP 86 30 3233

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 4)
A	US-A-4 555 042 (RATHBUN) * column 2, lines 20-62; figures 1-4 *	1,2	B 65 D 41/18 B 65 D 1/46 B 65 D 55/02
A	US-A-3 216 610 (KLYGIS) * column 3, lines 18-61; figures 1-6 *	1-3	
A	US-A-4 014 459 (ROBINSON) * column 3, lines 26-50; figure 4 *	1,2,8	
A	EP-A-0 116 892 (TRI-TECH SYSTEMS INTERNATIONAL) * figures 29-34 *	1,3,6	
A	GB-A-1 025 316 (IMPERIAL CHEMICAL INDUSTRIES) * page 2, lines 2-6; figure 3 *	1,4	TECHNICAL FIELDS SEARCHED (Int Cl 4) B 65 D 1/00 B 65 D 41/00 B 65 D 55/00
A	AU-B- 507 482 (BRISTOL-MYERS CO.) * claim 1; page 10, lines 7-18; figures 10-12 *	1,5	
A	FR-A-2 516 056 (ASEPTA) * page 3, lines 22-25 *	7	

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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
BERLIN	15-12-1986	SIMON J J P

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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EUROPEAN SEARCH REPORT

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EP 86 30 3233

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 4)
A	DE-A-2 806 339 (POLYSAR RESINS) * page 14, lines 18-23; figure 2 *	1,8	
D,A	US-A-4 071 156 (LOWE) * figures 1, 4 *	1	
			TECHNICAL FIELDS SEARCHED (Int Cl 4)

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