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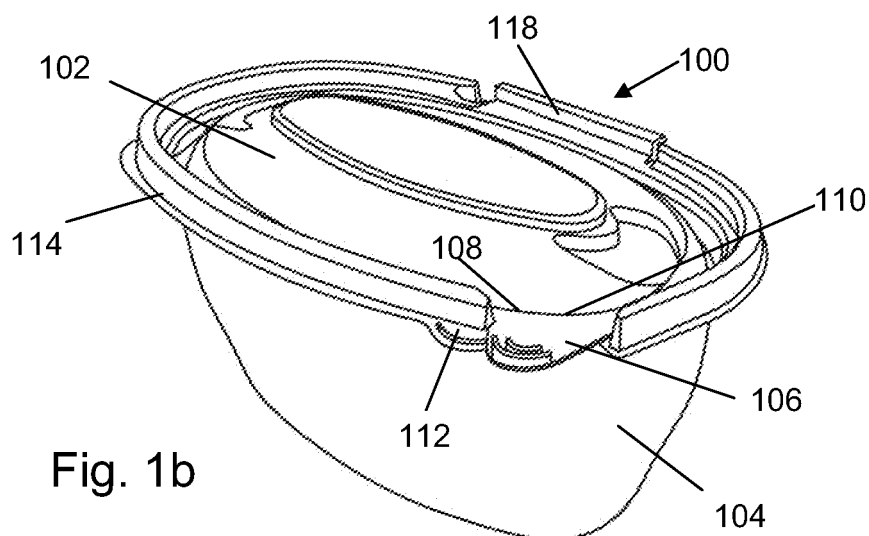
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(54) **Tamper evident container**

(57) A tamper evident container (100) comprises a base (104) forming a compartment (105), and a lid (102) arranged to reversibly open and close the compartment (105). A gripping flap (106) extending outwardly from a periphery of the lid (102) is provided, the gripping flap (106) being connected to the lid (102) and hence to the base (104) via a rupturable portion (108) and a non-rupturable portion (110). The lid (102) is at least partially separable from the base (104) to open the compartment (105), the lid (102) being connected to the base (104) in

such a way that the compartment (105) may be opened by pulling the gripping flap (106). The gripping flap (106) is accessible by two fingers when the rupturable portion (108) is unbroken, and the rupturable portion (108) is breakable when the gripping flap (106) is pulled. Opening of the compartment (105) by pulling the gripping flap (106) requires a force which is larger than the force required to break the rupturable portion (108), whereby it is ensured that the rupturable portion (108) is broken before the compartment (105) is opened.



**Fig. 1b**

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## Description

### Technical field

**[0001]** The present invention relates to tamper evident containers, e.g. for containing food.

### Background of the invention

**[0002]** Containers are used to store many different types of products for later use and/or sale. Conventional containers for food for retail use consist of a base and a lid having peripheral configurations allowing the lid to be snap-fitted onto the base and released by a user. From the supplier's point of view, ease of snapfitting the lid onto the base is of importance as it reduces the time and effort needed to fill and close a container. However, in case of food, one problem is that some customers try to get access to the content of the containers in order to taste the food. The content may as a result be contaminated.

**[0003]** In case of food, medicine and the like it is therefore highly appreciated and may even be necessary that containers for these types of products include tamper evident features.

**[0004]** In taking steps to avoid this invasion of the container, many approaches have been utilized. Some of these security attempts have been easily circumvented by the persistent person who wishes to invade the container and/or its contents. Some of the security measures have been so cumbersome as to make the container virtually useless. Other security measures have been unacceptably expensive and indirectly driven up the price of the goods contained in the container. In addition, many of the security attempts have been unsuccessful in that it is not fully evident that the security of the container has been breached.

**[0005]** WO 2005/082734 discloses a container having a base and a cover. The base has an opening adapted to be closed by the cover. The cover and the base have an interengaging device adapted to couple the base and the cover. At least one of the cover and the base has a handle that is accessed by destroying a frangible connection. The handle and the frangible connection can be formed in the cover. The handle and the frangible connection can be disposed above a pocket or recess in the base. The disrupted frangible connection provides evidence of tampering.

**[0006]** One drawback of the disclosed container is, that opening of the container requires two movements; a first movement breaks the frangible connection and a second movement opens the container.

### Summary of the invention

**[0007]** It is an object of embodiments of the present invention to produce a container which is relatively inexpensive, easy to produce and is substantially tamper ev-

ident and incorporates the characteristics that tampering is evident to the consumer.

**[0008]** Embodiments of the present invention provides a container comprising:

- a base forming a compartment with an opening;
- a lid arranged to reversibly open and close the compartment; and
- a gripping flap extending outwardly from a periphery of the lid and comprising a rupturable connecting portion and a non-rupturable connecting portion, wherein the lid is at least partially separable from the base to open the compartment, the lid being connected to the base in such a way that the compartment may be opened by pulling the gripping flap in a predefined direction,

wherein

- the gripping flap is arranged such with respect to the rupturable portion that the gripping flap is accessible by two fingers when the rupturable portion is unbroken; and
- the rupturable portion is breakable when the gripping flap is pulled in said predefined direction; and in that opening of the compartment by pulling the gripping flap in said predefined direction requires a force which is larger than the force required to break the rupturable portion. It may thereby be ensured that the rupturable portion is broken before the compartment is opened.

**[0009]** By arranging the gripping flap such that it is accessible by two fingers when the rupturable portion is unbroken and allowing for opening of the compartment by pulling the gripping flap in the predefined direction, it is possible to break the rupturable portion and open the container by one movement. At the same time, once the rupturable portion is broken, the break will appear as an indicator or evidence of previous access to the container, thereby rendering the container tamper evident.

**[0010]** It will be appreciated, as discussed in further detail below, that the gripping flap, extending outwardly from the periphery of the the remainder of the container (lid/base) is connected to the base via the rupturable portion and the non-rupturable portion.

**[0011]** It should be understood that the gripping flap may be integrally formed with the lid, so that the lid and the gripping flap are made from a single piece of material.

A peripheral portion of the lid may be snugly fit or snap-fitted within an inner periphery of the base in order to provide a safe closure of the container and to render it reclosable and reopenable. For example, a collar or rim of the base may engage a collar or rim of the lid, so as to achieve a safe mechanical grip between the lid and the base. The lid may additionally or alternatively be sealed to the base by heat welds, glue or mechanical fastening means. In preferred embodiments of the inven-

tion, the rupturable portion is provided between the gripping flap and the lid, or between the gripping flap and a tab extending outwardly from the lid. Likewise, the non-rupturable portion may be provided between the gripping flap and the lid, or between the gripping flap and a tab extending outwardly from the lid. When the package is in its closed configuration, the gripping flap may hence be connected to the base via the rupturable portion, the non rupturable portion, and the interconnection between lid and the base. When the container is opened to make the compartment accessible from the outside, the gripping flap preferably stays connected to the lid through the non-rupturable portion, whereas the interconnection between the gripping flap and the base does not necessarily remain - and in many embodiments recedes - when the compartment is opened.

**[0012]** It will hence be understood that the gripping flap is connected to base via the rupturable and the non-rupturable portion, which interconnect the gripping flap and the lid, and further via the connection between the lid and the base when the compartment is closed.

**[0013]** There may be provided more than a single rupturable portion and more than a single non-rupturable portion. For example, the gripping flap may comprise an inner section, which along one of its edges is connected to the remainder of the lid via a first rupturable and a first non-rupturable portion. Another, oppositely located edge of the inner section may be connected to an outer section via a second rupturable portion and a second non-rupturable portion.

**[0014]** In case the gripping flap is integrally formed with the lid, the rupturable portion may conveniently be constituted by a weakened connection between the gripping flap and the remainder of the lid. For example, during manufacture of the container, the gripping flap may initially be formed as an extension of the lid and subsequently partially separated from the lid, e.g. forming a cut, a plurality of cuts, or perforations between the gripping flap and the remainder of the lid, so that the gripping flap remains attached to the remainder of the lid at a distinct point or at a plurality of distinct points. Alternatively, or additionally, a weakened line may be formed at a transition between the gripping flap and the remainder of the lid, the line having a reduced thickness, so as to render it rupturable.

**[0015]** A retention flap secured to the base or formed integrally with the base may further be provided. Preferably the gripping flap and the retention flap are arranged in the vicinity of each other, e.g. with a mutual overlap, so that the retention flap may be held by an operator's one hand, while the compartment or container is opened with the operator's other hand by pulling the gripping flap in said predefined direction. Hence, the gripping flap provides a convenient handle for the operator's one hand, allowing the operator to maintain control with the container, while the compartment is being opened. In one embodiment, an outer periphery of the retention flap extends outwardly beyond an outer periphery of the grip-

ping flap, so as to facilitate access to the retention flap.

**[0016]** In order to enhance the tamper-evident functionality of the container, the gripping flap may be configured to be upstanding when it has been pulled to open the compartment, so that the upstanding gripping flap becomes evidence of previous access. Other visual or tactual indicators of a previous access may alternatively be provided, e.g. in the form of colour markings, serrations appearing upon opening of the container or the like.

**[0017]** The gripping flap and/or the retention flap may comprise a corrugation or an embossed structure near their outer periphery, so as to improve mechanical stability of the flap(s) in question, and to increase friction between the operator's fingers and the flap(s).

**[0018]** As mentioned previously, a peripheral portion of the lid may be snugly fit or snap-fitted within an inner periphery of the base. The lid may for example form a collar, which fits within an inner periphery of the base, the collar extending into the base downwardly with respect to the gripping flap. Such an arrangement results in improved transfer of forces and facilitated user-access during opening of the lid. The remainder of the lid may be elevated with respect to the gripping portion, or even dome-shaped, in order to maximize the volume of the compartment within the container, and in order to enhance mechanical stability of the lid. The lid may further comprise or form one or more elevated or depressed ribs or depressions, e.g. in the vicinity of the downwardly extending collar near the periphery of the lid.

**[0019]** An edge portion of the lid may be hinged, preferably permanently hinged, to an edge portion of the base. Hence, the risk of any unintentional loss of the lid is reduced. In embodiments, in which the lid and the base are essentially rectangular or essentially elliptical, forming two relatively long sides and two relatively short sides, the gripping flap is preferably arranged substantially at or near a transition between one of the relatively short sides and that one of the relatively long sides, which is opposite to the side, at which the lid is hinged to the base. The lid may be hinged to the base at any one of the relatively long or the relatively short sides.

**[0020]** In preferred embodiments, the rupturable portion comprises a perforated connection, and the non-rupturable portion comprises a non-perforated connection. The point, at which the perforation ends, may hence constitute a pull point for the lid.

**[0021]** It will be appreciated that one aspect of the present invention generally provides a container comprising:

- a base forming a compartment with an opening;
- a lid arranged to reversibly open and close the compartment; and
- a gripping flap extending outwardly from a periphery of the lid and being connected to the base via a rupturable portion and a non-rupturable portion, wherein the lid is at least partially separable from the base to open the compartment, the lid being connected to

the base in such a way that the compartment may be opened by pulling the gripping flap in a predefined direction,

wherein

- the gripping flap is arranged such with respect to the rupturable portion that the gripping flap is accessible by two fingers when the rupturable portion is unbroken; and
- the rupturable portion is breakable when the gripping flap is pulled in said predefined direction; and in that
- opening of the compartment by pulling the gripping flap in said predefined direction requires a force which is larger than the force required to break the rupturable portion.

#### Description of the drawings

**[0022]** Embodiments of the invention are illustrated in the drawings, in which:

Figs. 1a-d illustrate an open and a closed container and opening thereof, and

Figs. 2a-e illustrate overall dimensions of the container.

**[0023]** As shown in the drawings, an embodiment of a container 100 according to the present invention comprises a lid 102 and a base 104, the base forming a compartment 105. A gripping flap 106 is connected to the lid 102, and hence indirectly connected to the base 104, via a rupturable portion 108, which is e.g. in the form of a perforation or a partially cut line. The gripping flap 106 is further connected to the lid 102, and hence indirectly connected to the base 104, via a non-rupturable portion 110.

**[0024]** The base 104 is integrally formed with a retention flap 112 extending outwardly from a peripheral portion of the base 104 in the area of the gripping flap 106, when the compartment of the container 100 is closed by the lid 102. The retention flap 112 partially overlaps the gripping flap 106, with a portion of the retention flap 112 extending beyond the gripping flap 106 in order for the gripping flap 112 to be accessible while the container is in its initial closed condition.

**[0025]** The gripping flap 106 is reinforced by an embossed line 107, and the retention flap 112 is reinforced by an embossed line 113. The embossed lines 107 and 113 also increase friction between a person's fingers and the respective flaps 106 and 112.

**[0026]** An upper portion of the base 104 forms a peripheral rim or collar 114, which may be engaged by a mating rim or collar 116 formed by the lid 102. The rim or collar 116 of the lid may extend downwardly from the remainder of the lid 102. The rim or collar 114 of the base 104 extends upwardly from the remainder of the base 104. The rims or collars 114 and 116 may ensure a firm,

but yet releasable and reclosable mechanical interengagement between the lid 102 and the base 104.

**[0027]** At one of the side edges of the container, the lid 102 is connected to the base 104 via hinge 118 extending along a portion of the side edge.

**[0028]** A fork or spoon 120 may be releasably attached to an inner surface of the lid 102.

**[0029]** Generally, as shown in Figs. 1a-1d, the tamper evident pack of the present invention may provide a perforation (rupturable portion 108) along the back of the tab (gripping flap 106) when the tab (gripping flap 106) is pulled to open. Where this perforation ends then becomes the pull point for the lid 102. The upstanding tab (gripping flap 106) then becomes evidence of previous access.

**[0030]** Figs. 2a-2e include dimensions (mm) of a particular embodiment of a container according to the present invention, suitable for container e.g. fruit or salad.

#### **Claims**

1. A container (100) comprising:

- a base (104) forming a compartment (105) with an opening;
- a lid (102) arranged to reversibly open and close the compartment (105); and
- a gripping flap (106) extending outwardly from a periphery of the lid (102) and comprising a rupturable connecting portion (108) and a non-rupturable connecting portion (110),

wherein the lid (102) is at least partially separable from the base (104) to open the compartment (105), the lid (102) being connected to the base (104) in such a way that the compartment (104) may be opened by pulling the gripping flap (106) in a predefined direction,

#### **characterised in that**

- the gripping flap (106) is arranged such with respect to the rupturable portion (108) that the gripping flap (106) is accessible by two fingers when the rupturable portion (108) is unbroken; and
- the rupturable portion (108) is breakable when the gripping flap (106) is pulled in said predefined direction; and **in that**
- opening of the compartment (105) by pulling the gripping flap (106) in said predefined direction requires a force which is larger than the force required to break the rupturable portion (108).

2. A container according to claim 1, wherein the gripping flap (106) is integrally formed with the lid (102).

3. A container according to claim 1 or 2, wherein the

gripping flap (106) is connected to the base (104) via the rupturable portion (108), the non rupturable portion (110), and an interconnection (114;116) between lid (102) and the base (104), when the container is in a closed configuration.

4. A container according to any of the preceding claims, wherein the gripping flap (106) is integrally formed with the lid (102). 5
5. A container according to claim 4, wherein the rupturable portion (108) is constituted by a weakened connection between the gripping flap (106) and the remainder of the lid (102). 10
6. A container according to any of the preceding claims, further comprising a retention flap (112) secured to the base (104) or formed integrally with the base (104), the gripping flap (106) and the retention flap (112) being arranged in the vicinity of each other, e.g. with a mutual overlap, so that the retention flap (112) may be held by an operator's one hand, while the compartment (105) or container is opened with the operator's other hand by pulling the gripping flap (106) in said predefined direction. 15 20 25
7. A container according to any of the preceding claims, wherein the gripping flap (106) is configured to be upstanding when it has been pulled to open the compartment (105), so that the upstanding gripping flap (106) becomes evidence of previous access. 30
8. A container according to claim 6 or 7, wherein an outer periphery of the retention flap (112) extends outwardly beyond an outer periphery of the gripping flap (106). 35
9. A container according to any of the preceding claims, wherein the gripping flap (106) and/or the retention flap (112) comprises a corrugation or an embossed structure (107;113) near its outer periphery. 40
10. A container according to any of the preceding claims, wherein a peripheral portion of the lid (102) is snugly fit or snap-fitted within an inner periphery of an upper portion of the base (104). 45
11. A container according to claim 10, wherein the lid forms a collar (116), which fits within an inner periphery of the base (104), the collar extending (116) into the base (104) downwardly with respect to the gripping flap (106). 50
12. A container according to any of the preceding claims, wherein an edge portion of the lid (102) is hinged to an edge portion of the base (104). 55
13. A container according to claim 12, wherein the lid

(102) and the base (104) are essentially rectangular or essentially elliptical, forming two relatively long sides and two relatively short sides, and wherein the lid (102) is hinged to the base (104) at one of the relatively long sides, and wherein the gripping flap (106) is arranged substantially at a transition between one of the relatively short sides and that one of the relatively long sides, which is opposite to the side, at which the lid (102) is hinged to the base (104).

14. A container according to any of the preceding claims, wherein the rupturable portion (108) comprises a perforated connection, and wherein the non-rupturable portion (110) comprises a non-perforated connection.
15. A container according to claim 14, wherein that point, at which the perforation ends, constitutes a pull point for the lid.

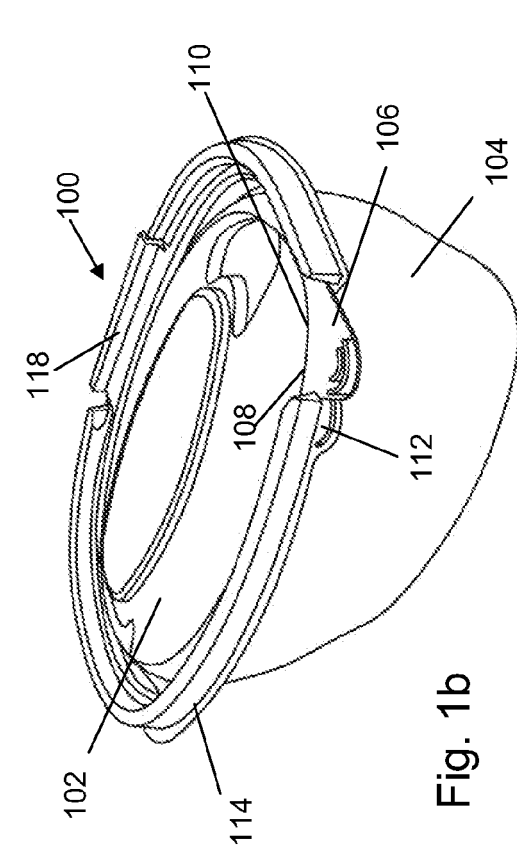


Fig. 1b

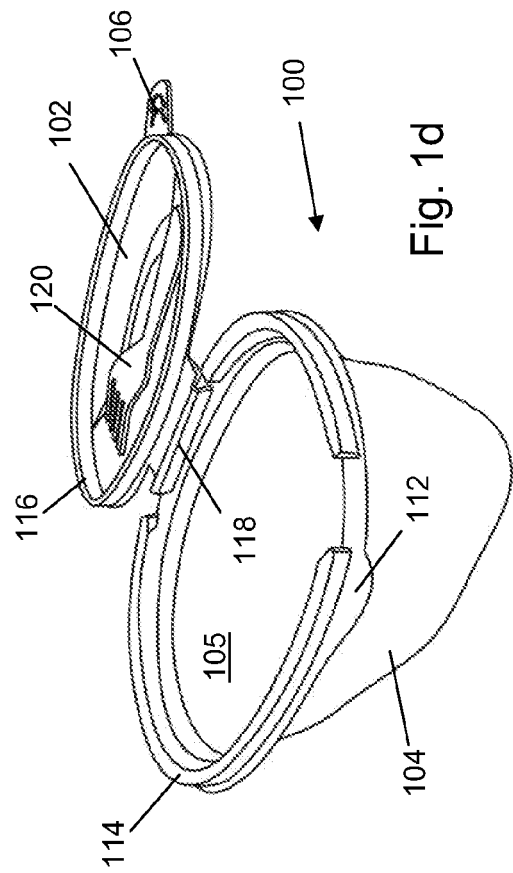


Fig. 1d

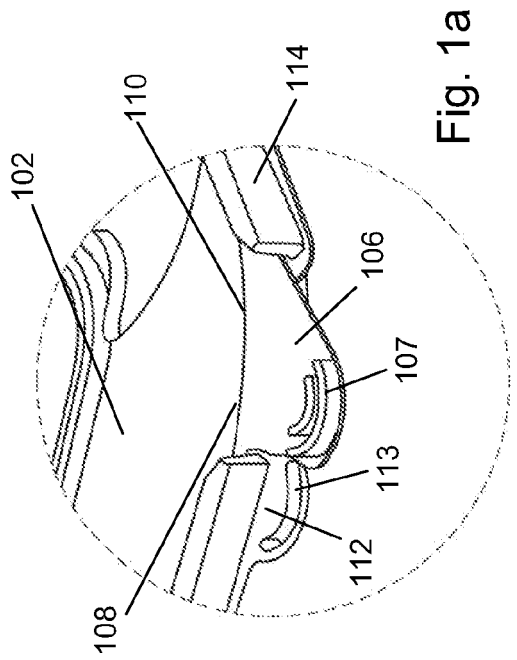


Fig. 1c

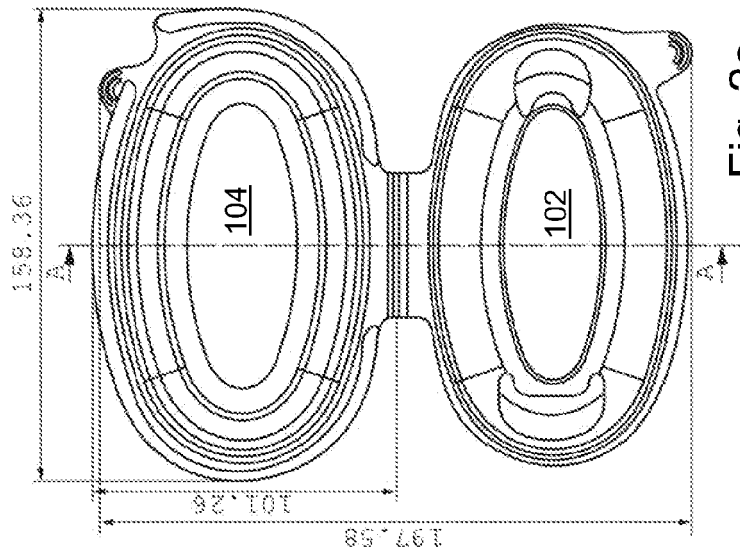


Fig. 2a

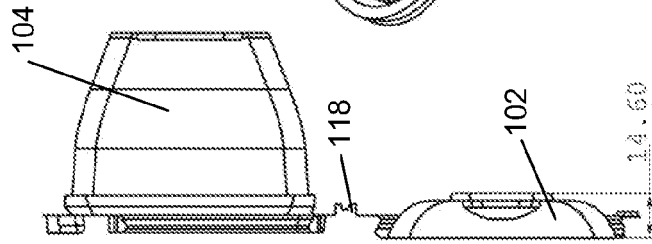


Fig. 2b

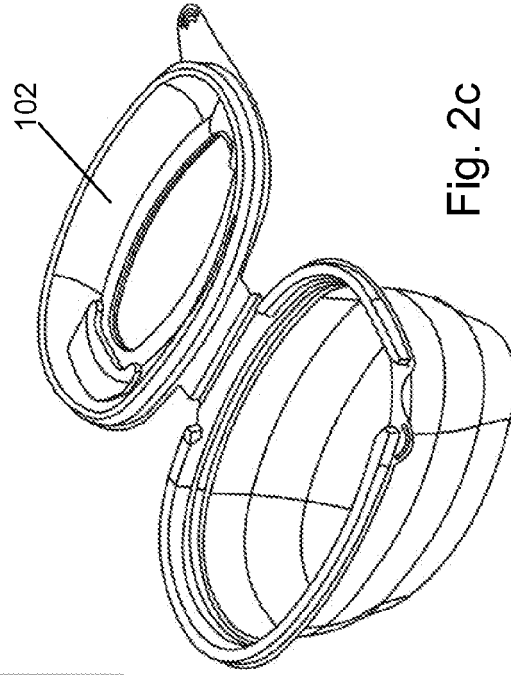


Fig. 2c

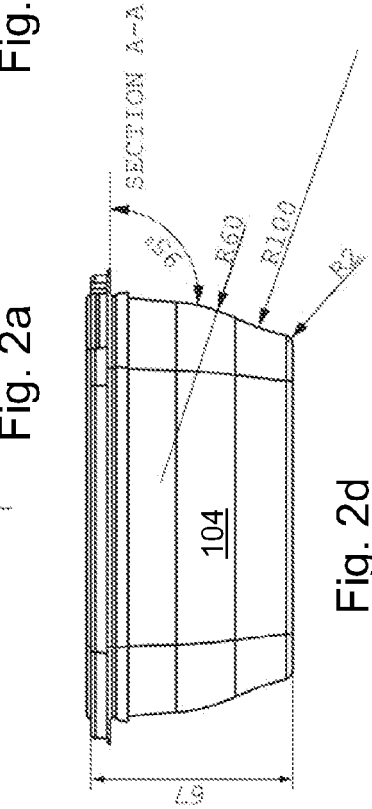


Fig. 2d

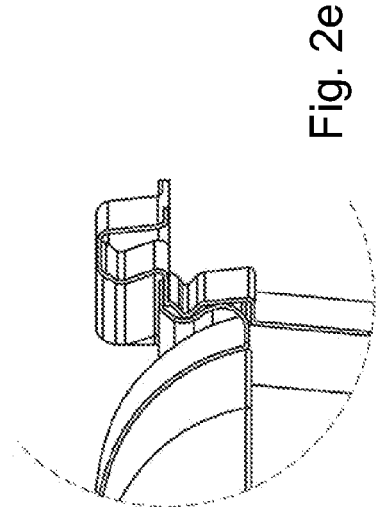


Fig. 2e



## EUROPEAN SEARCH REPORT

Application Number  
EP 08 16 3232

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	FR 2 287 390 A (GOIFFON ETS LEON [FR]) 7 May 1976 (1976-05-07) * page 2, line 5 - page 3, line 6; figures 1-3 *	1-5,14, 15	INV. B65D43/02 B65D51/24
X	US 2007/045317 A1 (ROSENDER ADAM K [US] ET AL) 1 March 2007 (2007-03-01) * figures 1,4-6 *	1-4,6,8, 10-14	
X	FR 2 849 645 A (BERICAP [FR]) 9 July 2004 (2004-07-09) * page 7, line 31 - page 8, line 25; figures 1,4,5 *	1-5,7, 9-11	
			TECHNICAL FIELDS SEARCHED (IPC)
			B65D
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 27 November 2008	Examiner Balz, Oliver
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EPO FORM 1503 03.82 (P04C01)



**ANNEX TO THE EUROPEAN SEARCH REPORT  
ON EUROPEAN PATENT APPLICATION NO.**

EP 08 16 3232

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27-11-2008

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
FR 2287390	A	07-05-1976	NONE	
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US 2007045317	A1	01-03-2007	NONE	
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FR 2849645	A	09-07-2004	NONE	
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**REFERENCES CITED IN THE DESCRIPTION**

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- WO 2005082734 A [0005]