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(54) **Stackable Lid**

(57) A lid (10) for a container is provided. The lid (10) may include a central panel (12), an annular wall (14), an outer flange (18), an upwardly projecting ring, and an internal lip (26). The annular wall (14) extends around the outer periphery of the central panel (12). The annual wall (14) defines a recessed area adapted to engage an inward portion of the container. The outer flange (18) extends outwardly from an upward region of the annular wall (14) to a curled outer edge. The curled outer edge extends inward of and above a top edge of the container, such that the top edge of the container and the outer edge of the lid may support a second container stacked upon the first container. The internal lip (26) extends inwardly from the upward region of the annular wall (14) such that it provides a surface for fingers to grab and aid in the removal of the lid (10) from the container.

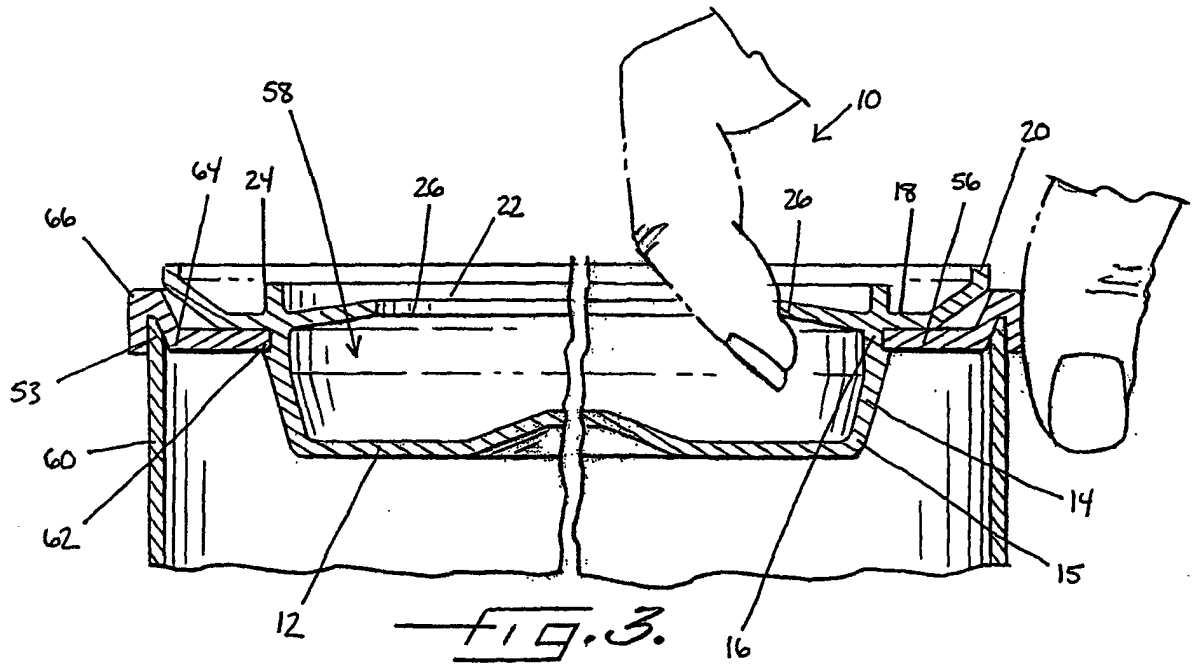

Fig. 3.

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Description

BACKGROUND OF THE INVENTION

1) Field of the Invention

[0001] The present invention generally relates to lids or molded caps for containers. More particularly, the invention relates to plug-style lids that seal container openings by engaging an inward surface or portion of the containers.

2) Description of Related Art

[0002] A wide range of rigid containers are used to store and handle products and materials. A typical container includes a body for providing an inner storage area and an opening for providing access to the storage area. A lid or other type of enclosure is used to close off the opening to secure and protect the products within the container during shipping and handling. In some applications, such as with containers storing oxygen-sensitive products and/or liquid products, the lid may be adapted for hermetically sealing the opening. Sealing the container may help preserve the stored products for a longer period of time or prevent the stored product from leaking out of the container.

[0003] Often the sealed lid must be adapted to withstand the rigors associated with shipping and handling. For example, in some applications, such as paint cans or containers, plug-style lids are often used. In general, a plug-style lid is a lid that is adapted to form an interference fit with an inner surface of the container. A plug-style lid usually forms a seal that can withstand shipping and handling.

[0004] However, a tool is often necessary to remove the plug-style lid from the container. Requiring a tool is less than desirable because the tool must be maintained, stored, and readily available. Also, in many cases, the use of the tool distorts the lid or container such that resealing the container is impractical and thus limits the shelf life of the stored products once the lid is initially removed.

[0005] Containers are often stacked one on top of another other during shipping or storage. Therefore it is desirable for the lid of one container to be able to support one or more containers that are stacked above it.

[0006] In light of the foregoing, it would be desirable to provide a lid for closing an opening of a container that is adapted to withstand the rigors of shipping and handling. Also, it would be desirable if the lid is suitable for stacking or capable of being removed from the container without the use of a separate tool.

BRIEF SUMMARY OF THE INVENTION

[0007] The present invention addresses one or more of the above needs by providing a lid for a container. The lid is securable to an inner portion of the container for closing an opening within the container. The lid provides an outer flange adapted for stacking a second container on top of the first container. The lid may also include a portion adapted for a user's fingers to grab and aid in the removal of the lid. In some embodiments, the lid may be removable from the container without the need for a separate removal tool.

[0008] According to one embodiment of the present invention, the lid includes a central panel, an annular wall, an outer flange, and an internal lip. The central panel is configured to cover the opening of the container. The annular wall extends around the outer periphery of the central panel from a lower region to an upward region. The annual wall defines a recessed area adapted to engage a distal end of a top rim of the container. The outer flange extends outwardly from the upward region of the annular wall to an outer edge. The outer edge extends inward of and above a top edge of the container. The outer edge corresponds to an inner diameter of a second container, such that the top edge of the first container may support the bottom end of a second container and the outer edge may engage an inward facing surface of the second container for stacking purposes. The internal lip extends inwardly from the upward region of the annular wall such that it provides a surface for fingers to grab and aid in the removal of the lid from the container.

BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S)

[0009] Having thus described the invention in general terms, reference will now be made to the accompanying drawings, which are not necessarily drawn to scale, and wherein:

Figure 1 is a perspective view of a container and a lid according to an embodiment of the present invention;

Figure 2 is a perspective view of the container and the lid of Figure 1, wherein the lid is partially out of the top opening of the container;

Figure 3 a cross-sectional view of the container and the lid of Figure 1 taken along line 3-3 and illustrating a user grasping the internal lip to remove the lid from the container;

Figure 4 is a perspective view of a second container stacked onto the first container of Figure 1; and

Figure 5 is a partial cross-sectional view of the containers of Figure 4.

DETAILED DESCRIPTION OF THE INVENTION

[0010] The present invention now will be described more fully hereinafter with reference to the accompanying drawings in which some but not all embodiments of the invention are shown. Indeed, this invention may be embodied in many different forms and should not be con-

strued as limited to the embodiments set forth herein; rather, these embodiments are provided so that this disclosure will satisfy applicable legal requirements. Like numbers refer to like elements throughout.

[0011] The present invention provides a lid for a container. The construction and type of container may vary. According to the illustrated embodiment, the container **50** includes a side wall **60** that defines an interior for storing products or materials. The side wall can be formed from various materials, including but not limited to metal (e.g., the side wall can be formed through a stamping and rolling process), composite (e.g., the side wall can be formed of paperboard laminated with an impervious liner of various constructions), or plastic (e.g., the side wall can be thermoformed or molded from polymer material(s)). The side wall **60** extends from a first end, referred to herein for descriptive purposes only as the top end **53,** and a second end, referred to herein for descriptive purposes only as the bottom end 51.

[0012] The bottom end defines a bottom opening. The bottom opening may be closed by any suitable closure, such as a crimped metal end or double seamed end or the like, as known in the art. For example and as best seen in the second container **150** of Figure 5, the bottom closure **170** includes an outer periphery **171** that defines a channel for receiving the bottom end **151** of the side wall. The bottom end **151** may be affixed within the channel by a variety of methods, including crimping, adhering, and/or welding the side wall to the bottom closure as known in the art. The bottom end **151** of the side wall together with the bottom closure 170 is referred to herein as the bottom portion **152** of the container. Also, an inward facing surface **172** of the bottom closure, which extends generally lengthwise of the container **150** and inside of the side wall **160** defines an inner diameter of the bottom portion of the container.

[0013] As best seen in Figure 3, a top rim **56** of the container defines a top opening **58** that may be closed by the lid **10** of the present invention. More specifically, the container **50** may further include an end member **64** that is attached to the top end **53** of the side wall. The end member is generally a ring-shaped structure that includes a radially outer edge portion and a radially inner portion. The radially outer edge portion of the end member is curled such that it defines a generally annular channel for receiving the top end of the side wall. The top end **53** may be affixed within the channel by a variety of methods, including crimping, roll-seaming, adhering, and/or welding the side wall to the end member as known in the art. The top of the curled outer edge portion defines a top edge **66** of the container. The radially inner portion defines the top rim **56** of the container that extends inwardly from the top edge **66** to a distal end **62** that defines the top opening **58** of the container. As shown, the top rim may include a portion that extends downwardly from the top edge of the container.

[0014] The lid **10** of the present invention includes a central panel **12,** an annular wall **14,** and an outer flange **18.** The central panel **12** is configured to cover the top opening **58.** For example, in the illustrated embodiment the central panel **12** is shaped and dimensioned to substantially correspond to the circular top opening **58.** The annular wall **14** extends around the periphery of the central panel **12** from a lower region **15** to an upward region **16.** The outer flange **18** extends outwardly from the upward region **16** of the annular wall to an outer edge **20.**

[0015] The lower region **15** of the annular wall generally extends upwardly at a predetermined angle from the central panel **12.** The angle between the central panel **12** and the lower region **15** may vary. For example, the lower region **15** may be perpendicular to the central panel **12** or be at an obtuse angle to the central panel **12.** According to the illustrated embodiment, the lower region **15** of the annular wall extends upwardly at a 97° angle from the central panel **12.** The outer surface of the lower region defines an outer diameter. The outer diameter varies from the central panel to the upward region in applications where the angle between the lower region and central panel is greater than 90°. More specifically, the outer diameter of the lower region becomes smaller as the annular wall extends from the upward region to the central panel and thus defines a tapered lower region.

[0016] The outer surface of the annular wall **14** also defines a recessed area **24.** The recessed area **24** is shaped to engage the distal end **62** of the rim **56.** For example, as shown in the illustrated embodiment, the annular wall defines an annular groove.

[0017] According to the illustrated embodiment, the top opening **58** of the container may be closed by inserting the central panel **12** into and through the top opening. The outer diameter of the lower region of the annular wall **14** corresponds to the diameter of the top opening such that at least a portion of the lower region **15** of the annular wall may be inserted through the opening. The difference between the outer diameter of the lower region and the diameter of the opening may vary. In general, the greater the difference between the outer diameter of the lower region and the diameter of the opening, the greater the interference between the annular wall and the top opening. Tapering the annular wall as discussed above may facilitate the insertion of at least a portion of the annular wall through the top opening.

[0018] The annular wall **14** is inserted through the opening **58** until the recessed area **24** defined in the annular wall engages the distal end **62** of the rim **56** and thus secures the lid to the container. As shown in the illustrated embodiment, the recessed area **24** may be immediately below the outer flange **18** such that the outer flange may function as a stop to help prevent the annular wall from being inserted beyond the recessed area.

[0019] As best seen in Figures 3 and 5, once the lid is engaged in the opening **58,** the outer flange **18** generally extends over the top rim **56.** The outer flange **18** curls upwardly near its outer edge **20,** such that the outer edge extends **20** inward of and above the top edge **66** of the container. The extension of the outer edge inward of and

above the top edge of the container provides a stacking feature for the present invention. As shown in Figures 4 and 5, the outer edge **20** of the lid **10** in the first container **50** facilitates the stacking of a second container **150** onto the first container **50.** More specifically, the top edge **66** of the first container may receive and support the bottom portion **152** of the second container **150.** The outer edge **20** substantially corresponds with the inner diameter of the bottom portion **152** of the second container which inhibits the second container **150** from moving or sliding perpendicular to the first container **50.** Inhibiting the movement of the second container **150** increases the stability of the stacked configuration of the containers **50, 150.**

[0020] The lid may further include an internal lip **26.** The internal lip **26** extends inwardly from the upward region **16** of the annular wall and is configured to provide a portion for fingers to grab. The space between the internal lip **26** and the central panel **12** may be large enough to allow a user's fingers to fit between the internal lip and the central panel as the user grasps the internal lip, as shown in Figures 2 and 3. Although the length in which the internal lip extends inwardly varies, in general the internal lip is long enough to allow a user to grasp the internal lip in order to pull the internal lip and aid in the removal of the lid from the top opening. In the illustrated embodiment, the internal lip is substantially constant around the lid. In other applications, the length of the internal lip may vary or the internal lip may extend for only a portion of the lid.

[0021] In some embodiments, the lid **10** may be removable from the container **50** by a user grapping and pulling one the internal lip **26** and without the need of a separate removal tool. However, in other applications, a separate removal tool may be required depending on the level of seal desired between the lid **10** and the container **50.** More specifically, according to some embodiments the interference fit between the container **50** and the lid **10** is great enough that a separate removal tool is required to aid in the removal of the lid **10.**

[0022] The lid may further include an upwardly projecting ring **22** that extends from the outer flange **18** in a direction away from the central panel **12.** As illustrated, the ring **22** may be substantially aligned with the annular wall **14.** The ring may be used to facilitate the processing and handling of lids. For example, the ring may be configured to engage the lower region of an annular wall of a second lid to facilitate the stacking of lids during a manufacturing or packaging process.

[0023] Many modifications and other embodiments of the invention set forth herein will come to mind to one skilled in the art to which this invention pertains having the benefit of the teachings presented in the foregoing descriptions and the associated drawings. Therefore, it is to be understood that the invention is not to be limited to the specific embodiments disclosed and that modifications and other embodiments are intended to be included within the scope of the appended claims. Although specific terms are employed herein, they are used in a generic and descriptive sense only and not for purposes of limitation.

Claims

1. A lid for a container having a bottom portion and a top portion, the top portion includes a top rim defining a top opening and extending inwardly from a top edge of the container to a distal end, said lid comprising:

a central panel configured to substantially cover the top opening;
an annular wall extending around and from the central panel to an upward region;
an outer flange extending outwardly from the upward region of the annular wall to an outer edge such that the outer flange substantially covers and is proximate the top rim and the outer edge extends inward of and above the top edge of the container;
a recessed area defined by the upward region of the annular wall and the outer flange, the recessed area being outwardly facing and configured to receive the distal end of the top rim for securing the lid to the container; and
an internal lip extending inwardly from the upward region of the annular wall, the internal lip being configured to provide a surface for fingers to grab and aid in the removal of the lid from the container.

2. The lid according to claim 1 further comprising a ring extending upwardly from the outer flange.

3. The lid according to claim 2 wherein the ring is substantially aligned with the annular wall.

4. The lid according to any of the preceding claims, wherein the annular wall includes a tapered lower region between the central panel and the upward region.

5. The lid according to any of the preceding claims, wherein the internal lip of the lid is below the top edge of the container.

6. The lid according to any of the preceding claims, wherein the central panel is below the top edge of the container.

7. A lid comprising:

a central panel having an outer periphery;
an annular wall extending around the outer periphery from a lower region to an upward region,

wherein the lower region is tapered and defines a recessed area;
an outer flange extending outwardly from the upward region to a curled outer edge;
an internal lip extending inwardly from the upward region along the annular wall; and
an upwardly projecting ring that is substantially aligned with the annular wall.

8. The lid according to claim 7, wherein the curled outer edge extends above the upwardly projecting ring and the recessed area is directly below the outer flange.

9. A container assembly for storing a product comprising:

a first container having a side wall extending from a bottom end to a top end and defining an interior for storing the product, wherein the top end defines a top edge of the container and a top opening; and
a lid for closing the top opening, wherein the lid includes a central panel having an outer periphery, an annular wall extending around the outer periphery from a lower region to an upward region, wherein the lower region defines a recessed area for engaging an inward portion of the container, an outer flange extends outwardly from the upward region to a curled outer edge, wherein the curled outer edge extends inward of and above the top edge of the container.

10. The container assembly according to claim 9 further comprising a second container having a bottom end and an inward facing surface defining an inner diameter of the second container, wherein the top edge of the first container supports the bottom end of the second container and the outer edge of the lid corresponds with the inward facing surface of the second container.

11. The container assembly according to claim 9 or claim 10 wherein the lid includes an internal lip that extends inwardly from the upward region for facilitating the removal of the lid from the top opening.

12. The container assembly according to claim 11, wherein the first container further includes an end member, wherein the end member has an outer edge portion for engaging the top end of the side wall and an inner edge portion extending inwardly to a distal end and defining a top rim, wherein the recessed area engages the distal end and the outer flange extends over the top rim.

13. The container assembly according to claim 12, wherein the lid further includes an upwardly projecting ring that is substantially aligned with the annular wall.

14. The container assembly according to claim 13, wherein the annular wall defines a perimeter and the internal lip extends along the perimeter.

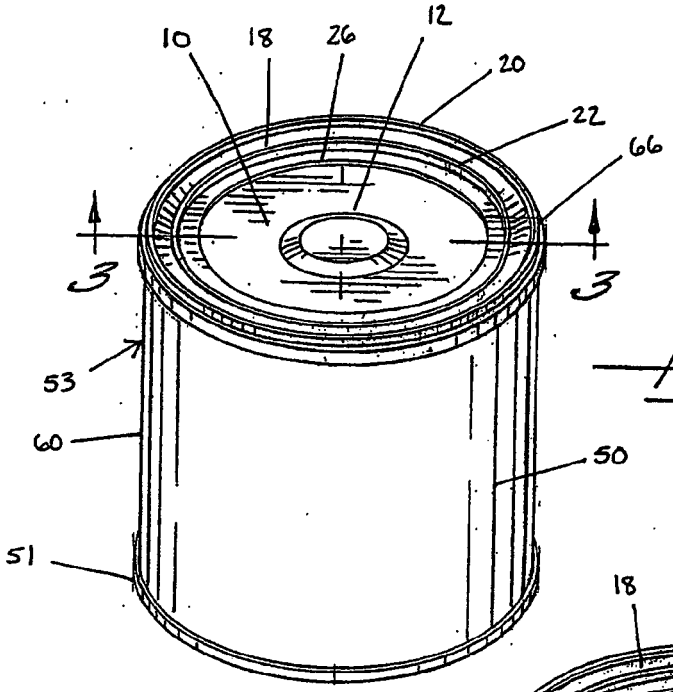


Fig. 1.

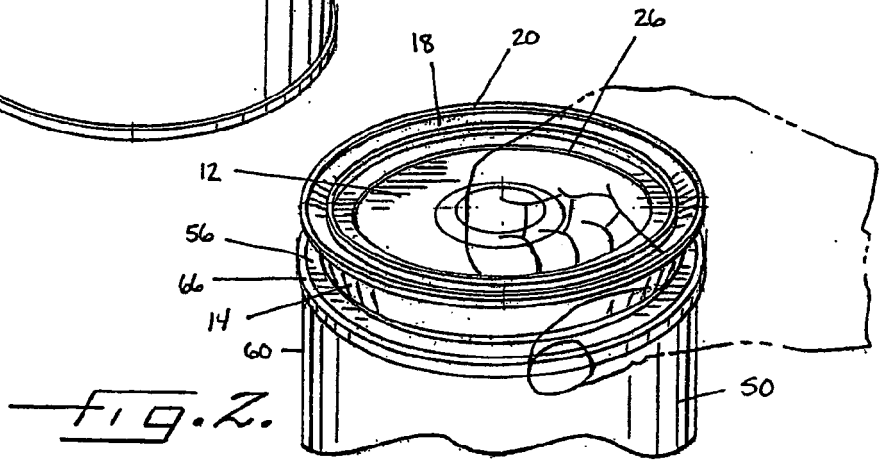


Fig. 2.

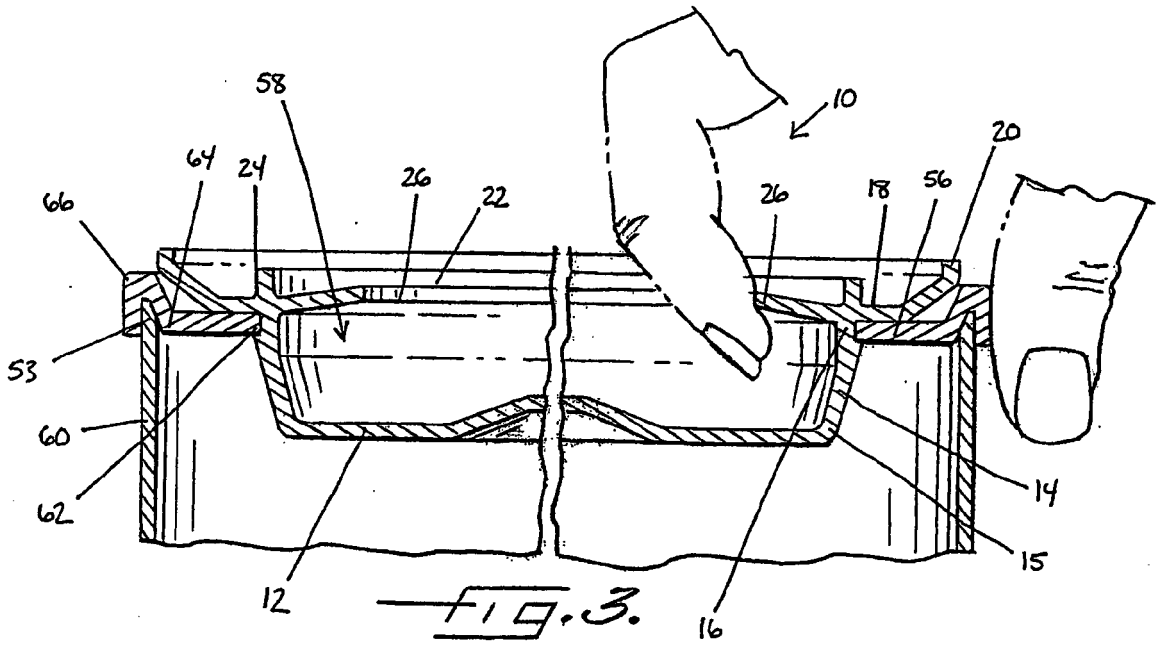
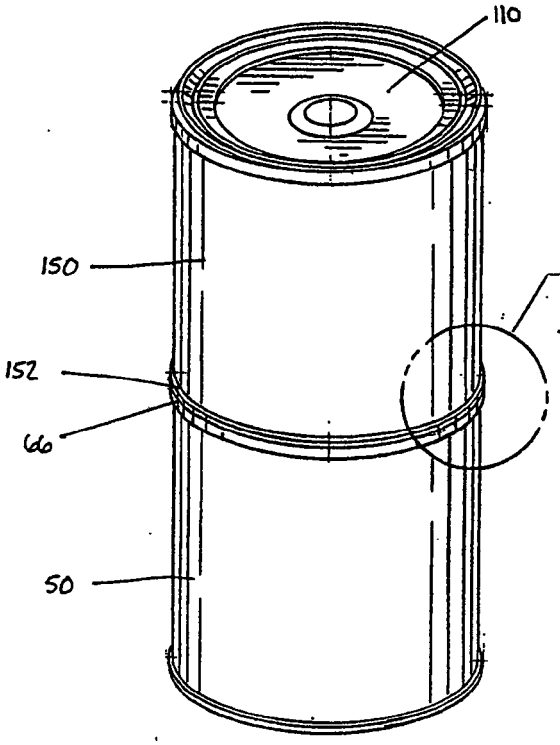


Fig. 3.


110
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152
66
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SEE FIG. 5.

Fig. 4.

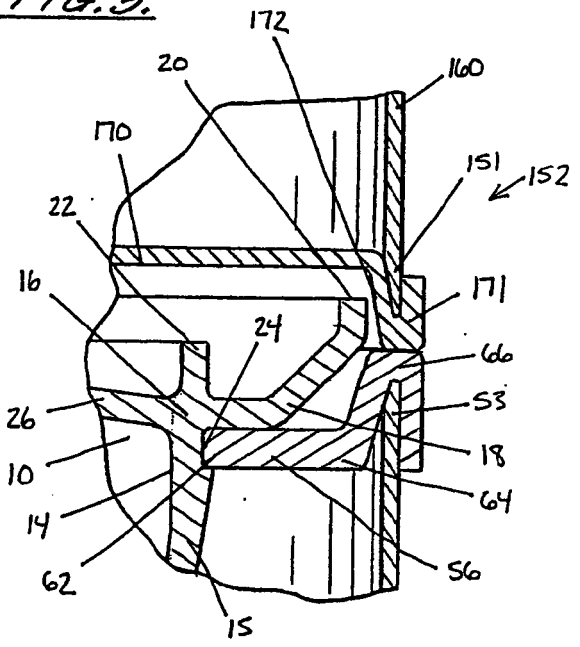
172
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Fig. 5.

European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 07 25 3541

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 Y	CH 438 987 A (W HAMBURGER FA [AT]) 30 June 1967 (1967-06-30) * column 2, line 10 - column 3, line 13 * * figures 1-3 *	1-3,6 7,8	INV. B65D21/02 B65D43/02
X Y	US 2 652 947 A (JOHN HENCHERT) 22 September 1953 (1953-09-22) * column 3, lines 9-45 * * figure 2 *	9,10,12 7,8	
X	DE 299 21 599 U1 (OESTERREICHISCHE BLECHWARENFAB [AT]) 6 April 2000 (2000-04-06) * page 2, paragraph 5 - page 3, paragraph 4 * * figures 1-3 *	9,10,12	
A	WO 2006/058402 A (BRASILATA EMBALAGENS METALICAS [BR]; ALVARES ANTONIO CARLOS TEIXEIR [B) 8 June 2006 (2006-06-08) * page 6, line 4 - page 7, line 3 * * figures 3,4 *	1,4,5,7, 11,14	TECHNICAL FIELDS SEARCHED (IPC) B65D
A	GB 2 151 593 A (OLYMPIC CONTAINERS LIMITED) 24 July 1985 (1985-07-24) * page 1, line 111 - page 2, line 11 * * figure 1 *	1	

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	13 December 2007	Piolat, Olivier

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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13-12-2007

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
CH 438987 A	30-06-1967	AT 265104 B	25-09-1968
US 2652947 A	22-09-1953	NONE	
DE 29921599 U1	06-04-2000	AT 4942 U1	25-01-2002
WO 2006058402 A	08-06-2006	AR 052417 A1	21-03-2007
		BR PI0405465 A	11-07-2006
		EP 1831081 A2	12-09-2007
		KR 20070094753 A	21-09-2007
GB 2151593 A	24-07-1985	NONE	

EPO FORM P0459

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