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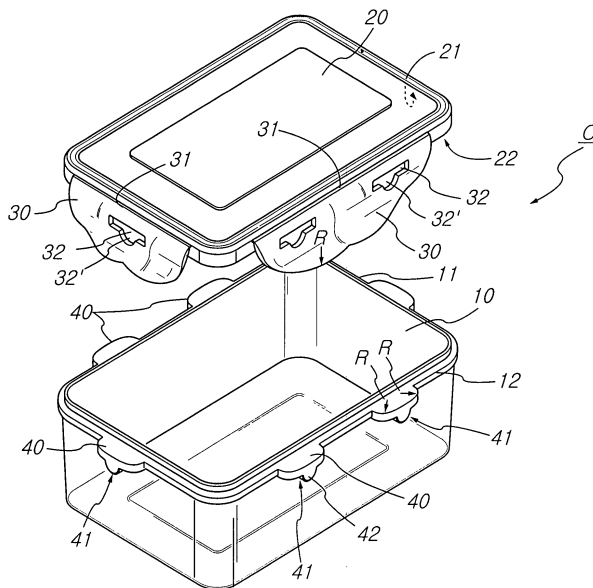
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Fastening structure of airtight container

(57) Disclosed herein is an airtight container. The fastening structure comprises a body (10) with a rim (11) integrally formed at a periphery of an opened upper end of the body, a lid (20) with a channel portion formed at a periphery of the lid to be fitted into the body and maintain an airtight seal between the body and the lid, one or more foldable fastening ribs (30), each being protruded from the lid in a lateral direction as an integral part of the lid and having a fastening slit (32) perforated through the fastening rib in a lengthwise direction, and one or more fastening pieces (40) corresponding to the fastening ribs, each being protruded from the body in the lateral direction and inserted onto the corresponding

fastening slit (32') of the fastening rib, wherein each of the fastening ribs is formed with one or more reinforcing rib-receiving portions (32) of a semicircular shape, each of the reinforcing rib-receiving portions opened toward a central lower portion of the fastening slit in a lengthwise direction through the fastening rib, and wherein each of the fastening pieces is a protruded piece protruded in a lateral direction at a position corresponding to the fastening slit of the fastening rib, and is integrally formed with a reinforcing rib being a thick portion downwardly protruded from the fastening piece while being extended in a transverse direction of the fastening piece.

Fig. 1



Description

BACKGROUND OF THE INVENTION

Field of the INVENTION

[0001] The present invention relates to a fastening structure of an airtight container, and more particularly to an enhanced fastening structure, which can be widely applicable to domestic or industrial airtight containers.

Description of the Related Art

[0002] Due to recent development of catering services and diversification of foodstuffs, there has been widely used an airtight container, which can contain beverages or keep foodstuffs in airtight and watertight states, while being in a refrigerated state, for maintaining the foods for a long time.

[0003] That is, as the foods to be maintained for a long time are purchased in a great quantity due to an increasing ratio of instant foods to natural foods consumed in today's family life and to an appearance of large discount stores, requirements for maintaining the foods for a long time have increased, and a typical airtight container is a product which has been widely distributed in markets in order to meet such increasing requirement. The typical airtight container comprises a body with a rim formed at an upper end thereof, and a lid provided, at a portion of the lid to be engaged with the rim of the body, with a soft packing of an approximately O-shaped ring or with a fitting portion having a cross-sectional shape corresponding to the shape of the rim. Here, the body and the lid are separately formed by injection molding with a transparent or translucent synthetic resin.

[0004] Additionally, as a fastening structure for fastening the body and the lid to each other, the airtight container further comprises fastening pieces fixed to the body or the lid, and foldable fastening ribs fixed to the body or the lid, so that the fastening pieces can be fitted into the fastening ribs, respectively.

[0005] With the conventional airtight container, the fastening structure in the body and the lid has a considerable fastening force at an initial time, thereby maintaining an airtight seal of the airtight container with a packing material, such as an O-ring, provided in the lid. However, prolonged use of the container causes fatigue to the packing material, which distorts or deforms the fastening pieces, lowering the fastening force, thereby deteriorating a function as an airtight container.

[0006] Furthermore, dimensional errors in the fastening pieces and the fastening ribs make it difficult to fasten the body and the lid to each other, and when a fastening slit is formed with a play, a user must pay attention to fasten the body and the lid at an exact fastening position thereof.

[0007] Furthermore, since the fastening piece is generally a rectangular-shaped protrusion integrally formed

with the body in the lateral direction, anyone who is washing dishes may get easily hurt in the hand at an angled portion of the rectangular fastening pieces, otherwise rubber gloves for washing dishes may be frequently torn, leading to avoiding use of the airtight container.

SUMMARY OF THE INVNETION

[0008] The present invention has been made to solve the above problems, and it is an object of the present invention to provide a fastening structure for an airtight container, which has a reinforcing structure enabling an airtight seal to be always maintained between a lid and a body fastened to each other with a packing material provided therebetween, thereby realizing an airtight structure, and which has a fastening piece and a fastening rib enhanced in their shapes, thereby preventing the hand or rubber gloves for washing dishes from being hurt or torn.

[0009] In accordance with an aspect of the present invention, the above and other objects can be accomplished by the provision of a fastening structure of an airtight container formed by an injection molding, the fastening structure comprising: a body with a rim integrally formed at a periphery of an opened upper end of the body; a lid with a channel portion formed at a periphery of the lid to be fitted into the body and maintain an airtight seal between the body and the lid; one or more foldable fastening ribs, each being protruded from the lid in a lateral direction as an integral part of the lid and having a fastening slit perforated through the fastening rib in a lengthwise direction; and one or more fastening pieces corresponding to the fastening ribs, each of the fastening pieces being protruded from the body in the lateral direction and inserted onto the corresponding fastening slit of the fastening rib, wherein each of the fastening ribs is formed with one or more reinforcing rib-receiving portions of a semi-circular shape, each of the reinforcing rib-receiving portions opened toward a central lower portion of the fastening slit in a lengthwise direction through the fastening rib, and wherein each of the fastening pieces is a protruded piece protruded in a lateral direction at a position corresponding to the fastening slit of the fastening rib, and is integrally formed with a reinforcing rib being a thick portion downwardly protruded from the fastening piece while being extended in a transverse direction of the fastening piece.

[0010] The reinforcing rib may be formed with a fastening hook acting as a locking threshold extending in the transverse direction of the fastening piece, and the fastening hook may have an outer portion first contacting the reinforcing rib-receiving portion when fastening and an inner portion, the outer portion having a diameter larger than that of the inner portion.

[0011] The fastening ribs and the fastening pieces may have a partially circular shape, such as a semi-circular shaped cross section, or may be subject to a

rounding operation at one portion or at several continuous portions, such that an angled edge is not formed thereon.

BRIEF DESCRIPTION OF THE DRAWINGS

[0012] The foregoing and other objects and features of the present invention will be more clearly understood from the following detailed description taken in conjunction with the accompanying drawings, in which:

Fig. 1 is a perspective view illustrating an airtight container having a fastening structure according to one embodiment of the present invention in an unfastened state;

Fig. 2 is a perspective view illustrating the airtight container having the fastening structure according to one embodiment of the present invention in a fastened state;

Fig. 3 is a side view illustrating a body of the airtight container having the fastening structure according to one embodiment of the present invention;

Fig. 4 is a perspective view of the body of the airtight container seen below the airtight container, illustrating a fastening effect and operations of the airtight container having the fastening structure according to one embodiment of the present invention; and

Fig. 5 is an enlarged cross-sectional view illustrating a fastening portion before and after the fastening structure is fastened to the airtight container.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0013] Preferred embodiments of a fastening structure of an airtight container according to the present invention will be described in detail with reference to the accompanying drawings by comparing with the conventional construction.

[0014] Fig. 1 is a perspective view illustrating an airtight container having a fastening structure according to one embodiment of the present invention in an unfastened state, and Fig. 2 is a perspective view illustrating the airtight container having the fastening structure according to one embodiment of the present invention in a fastened state. Fig. 3 is a side view illustrating a body of the airtight container having the fastening structure according to one embodiment of the present invention, and Fig. 4 is a perspective view of the body of the airtight container seen below the airtight container, for explaining a fastening effect and operations of the airtight container having the fastening structure according to one embodiment of the present invention. Fig. 5 is an enlarged cross-sectional view illustrating a fastening portion before and after the fastening structure is fastened to the airtight container.

[0015] An exemplary airtight container C of the present invention shown in Fig. 1 is formed by an injection molding with a transparent or translucent synthetic resin, and comprises a body 10, which is defined with a receiving space having a variety of shapes therein.

[0016] Although the airtight container C has a rectangular shape in the present invention, it should be understood that the present invention is not limited to this, and the airtight container C may have a variety of shapes.

[0017] The body 10 is integrally formed, at an opened upper end thereof, with a rim 11 to be fastened to a lid 20, and at a lower portion of the rim 11, with a protruded guide 12 for defining a border of fastening with the lid 20.

[0018] By the injection molding, the lid 20 is integrally formed with a packing channel 22 on the lid 20, such that the lid 20 is fitted, and then fixed to the rim 11 of the body 10. The packing channel 22 is a groove of a channel shape substantially corresponding to the shape of the rim 11, and is provided with a packing material 21 therein at a portion contacting the end of the rim 11.

[0019] The rim 11 of the body 10 is fitted into the packing channel 22 of the lid, and then, contacts the packing material 21 in the packing channel 22, thereby realizing an airtight seal.

[0020] In order to fasten the body 10 and the lid 20 of the airtight container C, the airtight container C of the present invention is provided with fastening ribs 30 and fastening pieces 40. The fastening ribs 30 are integrally formed with the lid 20, and the fastening pieces 40 are integrally formed with the body 10.

[0021] As shown in the drawings, the fastening ribs 30 are integrally formed with the lid 20 by the injection molding. Each of the fastening ribs 30 is formed at an edge thereof with a folding line 31, such that the fastening rib 30 can be folded at a border to the lid 20. Preferably, it is advantageous in terms of enhancing a fastening force to integrally form every fastening rib at four sides of the lid 20. Each of the fastening ribs 30 is subject to a rounding operation at respective edges R thereof, or has a semi-circular or partially circular shape.

[0022] Each of the fastening ribs 30 has one or more fastening slits 32 as foldable pieces having a certain length.

[0023] As shown in the drawings, each of the fastening slits 32 is a slit cut approximately in a lengthwise direction, and integrally formed, at a central lower portion thereof, with a reinforcing rib-receiving portion 32' of a semi-circular shape perforated through the fastening rib 30.

[0024] Corresponding to the fastening ribs 30, the body 10 is integrally formed with the fastening pieces 40, which are protruded pieces protruded in the lateral direction at positions respectively corresponding to the fastening slits 32 of the fastening ribs 30. As shown in the drawings, each of the fastening pieces 40 has an approximately semi-circular shape, or a shape rounded at an edge R thereof.

[0025] Additionally, each of the fastening pieces 40 is integrally formed with a reinforcing rib 41, which is a thick portion downwardly protruded from the fastening

piece 40 while being extended in a transverse direction B of the fastening piece 40.

[0026] As shown in Fig. 4, the reinforcing rib 41 has a fastening hook 42, which extends in the transverse direction B of the fastening piece 40. At an outer portion of the fastening hook 42, which first contacts the reinforcing rib-receiving portion 32' when fastening, the fastening hook 42 has a height D, which is higher than a height d of an inner portion of the fastening hook 42.

[0027] Operational effects of the fastening structure of the airtight container according to the present invention will be described.

[0028] As shown in Fig. 5, after each of the fastening ribs 30 of the lid 20 is folded downward to face the corresponding fastening piece 40 of the body 10, the fastening rib 30 is pushed onto the fastening hook 42 of the fastening piece 40 such that the fastening hook 42 can be guided along the reinforcing rib-receiving portion 32' of the fastening slits 32. Here, the reinforcing rib-receiving portion 32' acts as a guide for fastening, and enables the fastening rib 30 to be easily fastened to the fastening piece 40. Then, the reinforcing rib-receiving portion 32' goes over the fastening hook 42 (at this moment, an elastic force of an airtight packing is utilized), and is then stably mounted on the inner portion of the fastening hook 42, thereby finally fixing the fastening rib 30 to the fastening piece 40.

[0029] Accordingly, unlike the conventional fastening structure, there is no difficulty of pushing the fastening rib 30 to the fastening piece 40 at an initial time, and even if a play is provided in the fastening slit 32 in the lengthwise direction, the fastening force is secured.

[0030] Furthermore, since each of the reinforcing ribs 41 is a reinforcing part formed as the thick portion extending on the reinforcing rib 41 in the transverse direction B as an integral part of the reinforcing rib 41, the reinforcing rib 41 is prevented from being deflected toward the lid 20 of the reinforcing rib 41. Accordingly, unlike the conventional fastening structure, the fastening force is not lowered since an upper or lower play attributed to an upward deflection of the fastening piece 40 cannot be formed in the fastening slit 32. Additionally, the fastening ribs 30 of the lid 20 and the fastening pieces 40 of the body 10 have the semi-circular shape or the rounded edges R, thereby minimizing any damage to the hand by the edges of the container when washing dishes.

[0031] As is apparent from the above description, the fastening structure of the airtight container according to the present invention, which overcomes the problems of reduced fastening force of the airtight container having the conventional packing material, of damage to the hand due to the plurality of edges, and of the difficulty in fastening, can be easily used by anybody, and has an enhanced life span.

[0032] It should be understood that the embodiments and the accompanying drawings as described above have been described for illustrative purposes and the

present invention is limited by the following claims. Further, those skilled in the art will appreciate that various modifications, additions and substitutions are allowed without departing from the scope and spirit of the invention as set forth in the accompanying claims.

Claims

1. A fastening structure of an airtight container (C) formed by an injection molding, the fastening structure comprising: a body (10) with a rim (11) integrally formed at a periphery of an opened upper end of the body (10); a lid (20) with a channel portion (22) formed at a periphery of the lid (20) to be fitted into the body and maintain an airtight seal between the body (10) and the lid (20); one or more foldable fastening ribs (30), each being protruded from the lid in a lateral direction as an integral part of the lid and having a fastening slit (32) perforated through the fastening rib in a lengthwise direction; and one or more fastening pieces (40) corresponding to the fastening ribs (30), each of the fastening pieces (40) being protruded from the body in the lateral direction and inserted onto the corresponding fastening slit (32) of the fastening rib,

wherein each of the fastening ribs is formed with one or more reinforcing rib-receiving portions (32') of a semi-circular shape, each of the reinforcing rib-receiving portions opened toward a central lower portion of the fastening slit (32) in a lengthwise direction through the fastening rib, and

wherein each of the fastening pieces (40) is a protruded piece protruded in a lateral direction at a position corresponding to the fastening slit (32) of the fastening rib, and is integrally formed with a reinforcing rib (41) being a thick portion downwardly protruded from the fastening piece (40) while being extended in a transverse direction of the fastening piece.

2. The fastening structure of an airtight container as set forth in claim 1, wherein the reinforcing rib (41) is formed with a fastening hook (42) acting as a locking threshold extending in the transverse direction of the fastening piece, and the fastening hook (42) has an outer portion first contacting the reinforcing rib-receiving portion (32') when fastening, and an inner portion, the outer portion having a diameter larger than that of the inner portion.
3. The fastening structure of an airtight container as set forth in claim 1 or 2, wherein the fastening ribs (30) and the fastening pieces (40) have a partially circular shape, such as a semi-circular shaped cross section, or are subject to a rounding operation at one portion or at several continuous portions, such that an angled edge is not formed thereon.

Fig. 1

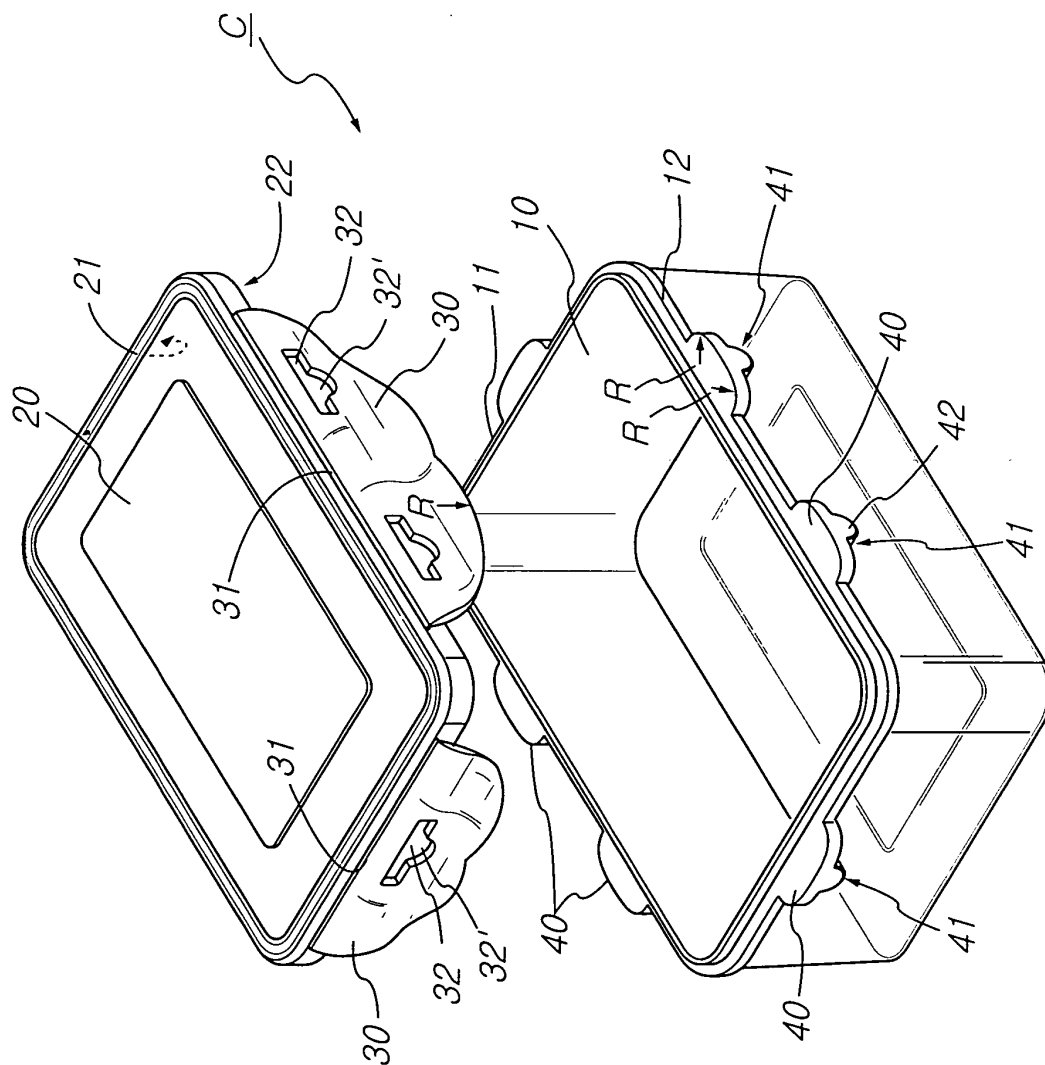


Fig. 2

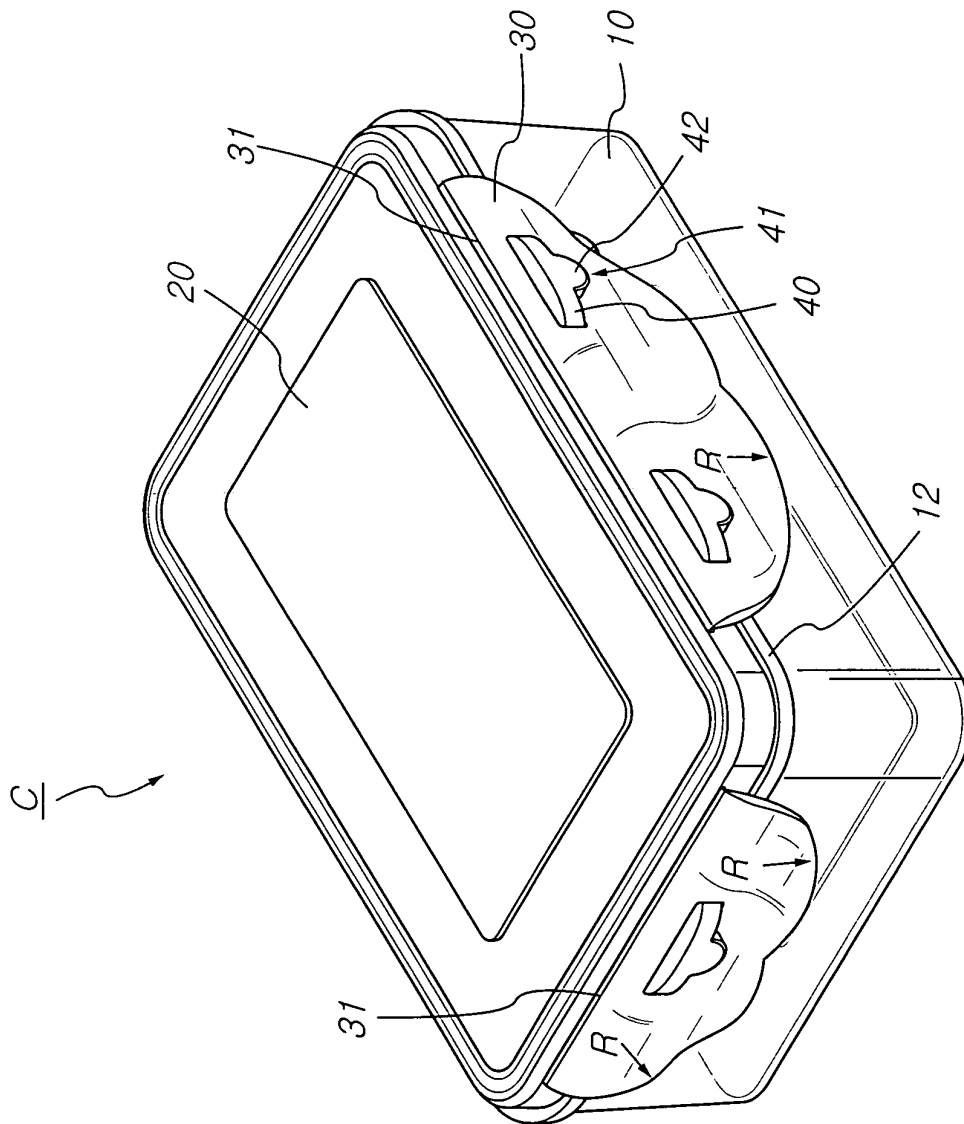


Fig. 3

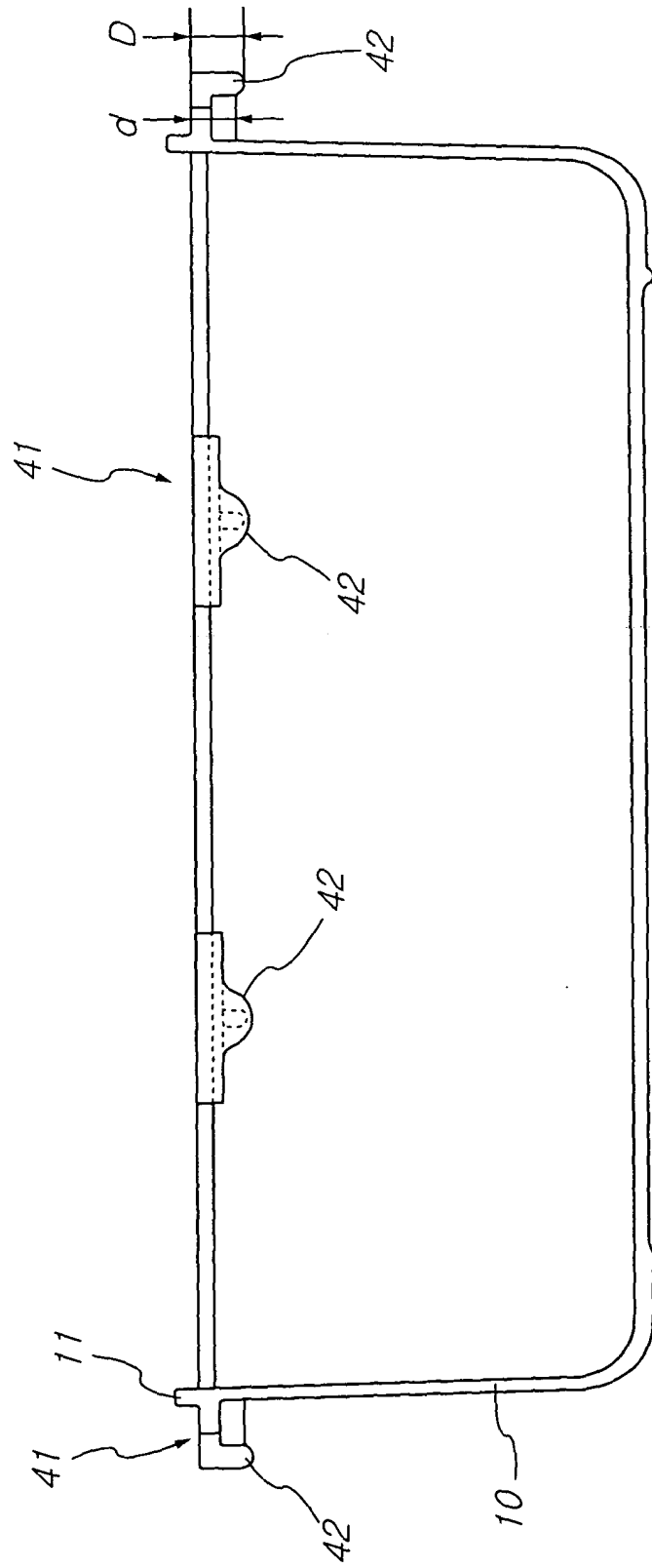


Fig. 4

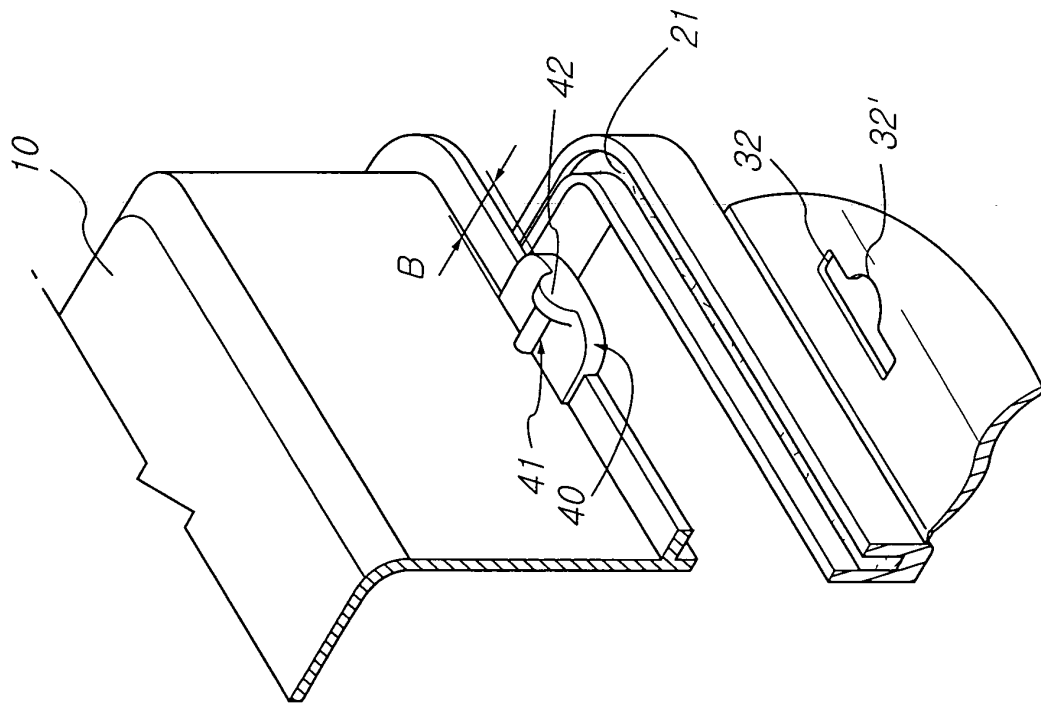
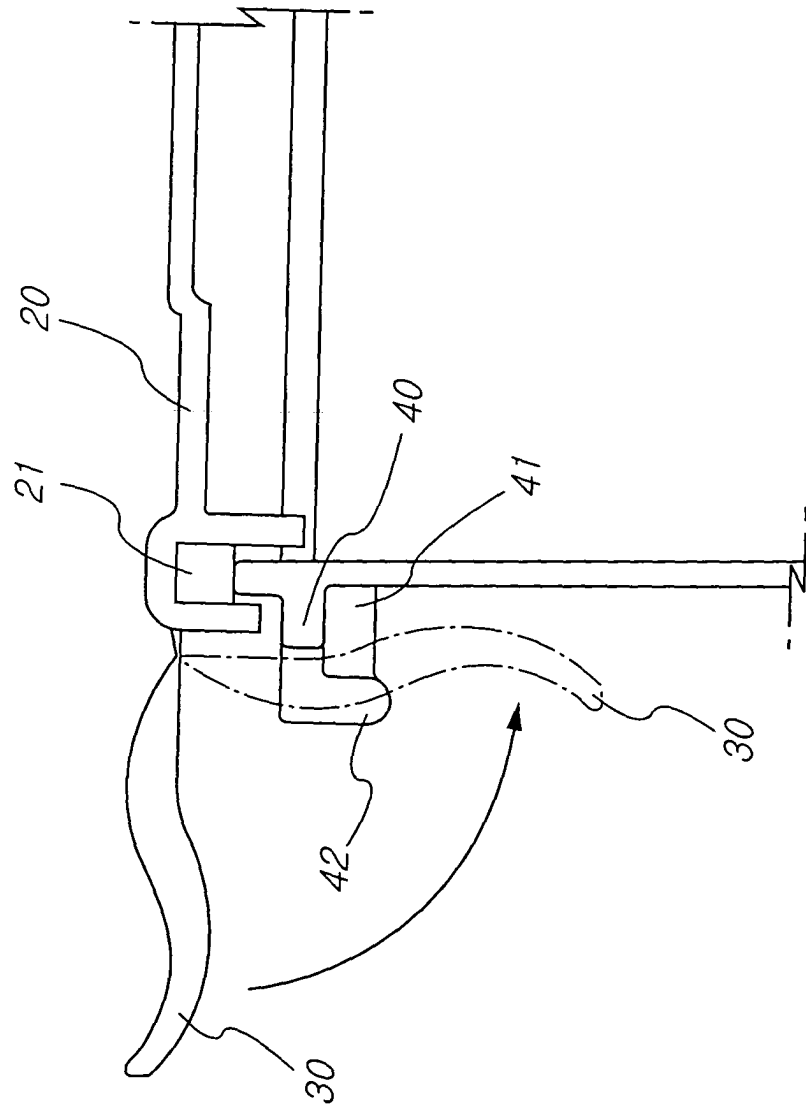


Fig. 5





European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 04 01 9066

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.7)
A	CA 2 314 537 A (PROMOTIONS ATLANTIQUES INC) 25 January 2002 (2002-01-25) * page 3, line 4 - line 15; figures 1-4 * -----	1-3	B65D45/20 B65D43/02
A	FR 2 791 036 A (GROUPE SYMPA S A) 22 September 2000 (2000-09-22) * page 2, line 34 - page 4, line 10; figures 1-3 * -----	1-3	
			TECHNICAL FIELDS SEARCHED (Int.Cl.7)
			B65D A47G A47J
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 6 December 2004	Examiner Derrien, Y
<p>CATEGORY OF CITED DOCUMENTS</p> <p>X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document</p> <p>T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document</p>			

EPO FORM 1503 03.82 (P04C01)

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

EP 04 01 9066

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
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06-12-2004

Patent document cited in search report		Publication date	Patent family member(s)		Publication date
CA 2314537	A	25-01-2002	CA	2314537 A1	25-01-2002
FR 2791036	A	22-09-2000	FR	2791036 A1	22-09-2000