



(12) **EUROPEAN PATENT APPLICATION**
published in accordance with Art. 158(3) EPC

(43) Date of publication:
07.11.2001 Bulletin 2001/45

(51) Int Cl.7: **B65D 81/20, B65D 77/20**

(21) Application number: **99938508.1**

(86) International application number:
PCT/JP99/04433

(22) Date of filing: **18.08.1999**

(87) International publication number:
WO 01/12524 (22.02.2001 Gazette 2001/08)

(84) Designated Contracting States:
DE FR GB IT

(74) Representative: **Weber, Dieter, Dr. et al**
Weber, Dieter, Dr.,
Seiffert, Klaus, Dipl.-Phys.,
Lieke, Winfried, Dr.,
Gustav-Freytag-Strasse 25
65189 Wiesbaden (DE)

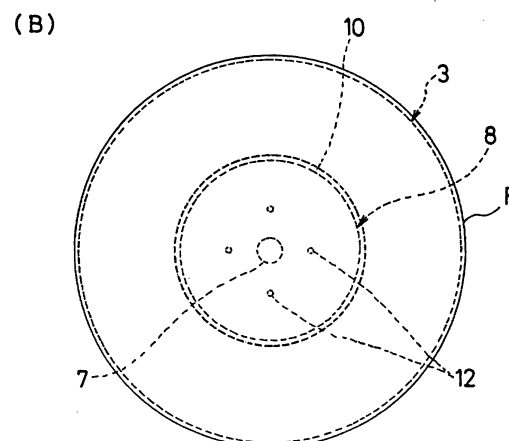
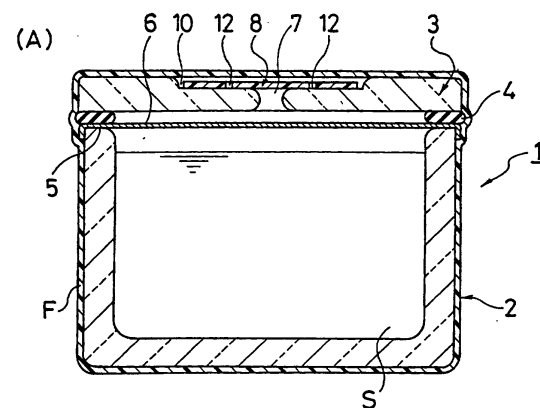
(71) Applicant: **Ogura, Akira**
Toyokawa-shi, Aichi-ken (JP)

(72) Inventor: **Ogura, Akira**
Toyokawa-shi, Aichi-ken (JP)

(54) **HEAT SHRINKABLE FILM PACKAGE**

(57) A heat-shrinkable film package wherein an opening 7 is formed to a lid 3 equipped to the open portion of a vessel main body 2 such that the lid seals the inside thereof, a gas non-permeable sheet 8 having formed air vents 12 at the off set positions from the opening(s) 7 is placed on the outer surface of the lid 3 and is stuck thereto as covering the opening 7 to constitute a vessel 1 containing groceries, etc., and further at least the whole body of the lid 3 of the vessel 1 is covered with a heat-shrinkable film F.

Fig. 1



Description

Technical Field

[0001] The present invention relates to a heat-shrinkable film package of a vessel for groceries, etc., and more specifically to a heat-shrinkable film package capable of newly re-utilizing a vessel after consuming a grocery, etc., contained therein as a vessel for reserving for a long period of time and/or a cooking vessel.

Background of the Invention

[0002] Hitherto, as means for storing groceries such as jams, honeys, coffees, etc., for a long period of time without changing the qualities, there are vessels for containing them in tightly sealed state, such as bottled goods, etc. However, because in a sealed vessel of prior art, when the vessel is once opened, the quality of the grocery contained is quickly changed, after opening, the grocery must be consumed fast and when this is neglected, the grocery must be wasted, and the increase of the wasted amount deteriorates the environment. Also, because in sealed vessels of prior art, when the groceries contained are consumed, the vessels are wasted as empty bottles or empty cans, they also cause the increase of the environmental pollution.

[0003] Self-governing bodies are compelled to bear the large expense for the disposals of the wasted groceries, etc., and empty vessels as described above, and thus, the countermeasure for reducing the amounts of the wastes has been taken up as national problems.

Disclosure of the Invention

[0004] An object of the invention is to provide a heat-shrinkable film package capable of storing contained groceries for a long period of time not only before opening the seal of the packed vessel but also after opening the seal of the vessel.

[0005] Other object of the invention is to provide a heat-shrinkable film package, which reduces the wasted amounts of groceries, etc., by capable of storing the groceries contained thereon for a long period of time after opening the seal of the packed vessel, and also, contributes to reduce the amounts of waste materials by making it possible to utilize the empty vessel after consuming the groceries, etc., contained therein as a new vessel for storing for a long period of time and/or a cooking vessel without wasting the empty vessels.

[0006] That is, the present invention has been made for attaining the above-described objects and the invention provides a heat-shrinkable package wherein opening(s) is or are formed to a lid equipped to the open portion of a vessel main body for sealing the inside of the vessel, a gas non-permeable sheet having formed air vents at the off set positions from the openings is disposed on the surface of the outer side of the lid and

closely stuck thereto such that the seat covers the above-described opening to construct a vessel for containing groceries, etc., and at least the above-described whole lid is covered with a heat-shrinkable film.

[0007] As described above, by covering at least the whole lid with a heat-shrinkable film before opening the seal of the vessel, the groceries, etc., contained therein can be stored for a long period of time. The above-described situation is same as the case of a vessel of prior art.

[0008] However, because in the structure of the vessel in the invention, an opening is formed in the lid, and, a gas non-permeable sheet having formed air vents at the off set positions from the opening is disposed on the surface of the outer side of the lid by closely adhering thereto such that the seat covers the above-described opening, when a suction means is applied to the outer side of the gas non-permeable sheet and sucking, the inside air is sucked from the opening through the air vents of the gas non-permeable sheet, the amount of active oxygen in the inside of the vessel is reduced, and the reduced-pressure state is maintained. Accordingly, rotting by oxidation of the groceries, etc., contained is delayed and also, the growth, etc., of bacteria is restrained, whereby the stable storage for a long period of time becomes possible.

[0009] Also, in the vessel that can be maintained at the reduced-pressure state as described above, for example, vegetables lightly preserved in salt of rice bran in the reduced-pressure state can be formed as pickled vegetables of a mild taste in a very short time, and thus, the vessel can be used as a specific cooking vessel. Also, similarly, about a jam or liquors (sake, shochu, whisky, etc.), by storing them in the reduced-pressure state, the quality thereof can be changed to a mild taste in a short time.

[0010] Also, because the above-described vessel in the invention can store groceries, etc., for a long period of time even after opening the seal of the vessel, the waste amount of the groceries, etc., by rotting is reduced, and also because the empty vessel after consuming the groceries contained can be re-utilized as a vessel for storing for a long period of time, the amounts of the wastes can be wholly reduced, whereby the disposal cost of the self-governing bodies can be reduced.

[0011] Also, because the heat-shrinkable film covers at least the whole lid of the vessel, the film can prevent the occurrences of the movement and slipping of the gas non-permeable sheet disposed on the outer side of the lid by the contact with outside obstacles, whereby the leakage, etc., of the groceries contained can be prevented.

Brief Description of the Drawings

[0012]

Fig. 1 (A) and (B) show an embodiment of the heat-

shrinkable film package of the invention, wherein (A) is a cross-sectional view and (B) is a plain view, Fig. 2 (A) and (B) show the state of the heat-shrinkable film package of Fig. 1 after opening the seal, wherein (A) is a cross-sectional view and (B) is a plain view,

Fig. 3 (A) and (B) show the views explaining the pressure-reduction operation of a vessel packed to the heat-shrinkable film package of the invention, wherein (A) is a cross-sectional view of a gas non-permeable sheet at sucking operation, and (B) is a cross-sectional view of the gas non-permeable sheet after sucking operation,

Fig. 4 is a cross-sectional view of other embodiment of the heat-shrinkable film package of the invention, Fig. 5 is a cross-sectional view of still other embodiment of the heat-shrinkable film package of the invention,

Fig. 6 is a cross-sectional view of still other embodiment of the heat-shrinkable film package of the invention,

Fig. 7 is a cross-sectional view of still other embodiment of the heat-shrinkable film package of the invention,

Fig. 8 is a cross-sectional view of still other embodiment of the heat-shrinkable film package of the invention,

Fig. 9 is a cross-sectional view of still other embodiment of the heat-shrinkable film package of the invention,

Fig. 10 is a cross-sectional view of still other embodiment of the heat-shrinkable film package of the invention, and

Fig. 11 is a cross-sectional view of still other embodiment of the heat-shrinkable film package of the invention.

Best Mode for Carrying out the Invention

[0013] The heat-shrinkable film package of the invention is constructed of a vessel composed of a main body containing a grocery and a lid, and a heat-shrinkable film covering the outer side of the vessel such that tightly sealing at least the portion of the lid. Also, an opening penetrating the lid from the inside to the outside is formed in the lid of the vessel, and a gas non-permeable sheet is disposed on the outer surface of the lid such that the sheet closely adhered to the sheet by covering the above-described opening. Also, the gas non-permeable sheet is constructed such that the sheet has air vents at the off set positions from the position corresponding to the opening of the lid.

[0014] It is better to install the above-described lid to an opening portion of the vessel main body via packing. The packing not only improve the adhesion of the opening portion of the vessel main body and the lid but also prevents entering of air and various bacteria in the case of reduce the pressure of the inside of the vessel, where-

by the keeping quality of the inside grocery for a long period time is more improved. The packing may be simply placed between the vessel main body and the lid, may be adhered to the lid side, or may be adhered to the vessel main body side, but preferably, it is better to adhere the packing to the lid side from the convenience of handling property.

[0015] Furthermore, in addition to the above-described packing a tightly sealing sheet may be directly adhered to the opening portion of the vessel main body to seal the vessel. By directly adhering such a tightly sealing sheet to the opening portion of the vessel main body, the keeping quality for a long period of time of the grocery contained in the vessel before opening the seal of the vessel can be more improved. As the tightly sealing sheet, an aluminum vapor deposited resin film, a laminate sheet of a resin film and a resin film, a laminated sheet of a paper and a resin sheet, etc., can be used.

[0016] In the invention, the heat-shrinkable film of covering the outer side of the vessel has a function of tightly sealing the inside of the vessel before opening the seal to obtain the keeping quality of the grocery contained in the inside for a long period of time. Accordingly, it is necessary that the heat-shrinkable film covers at least the whole outer side of the lid of the vessel, and because the inside of the vessel is made a closely sealed state by covering at least the whole lid as described above, the contained grocery, etc., can be stored for a long period of time.

[0017] Preferably, in the case of containing a grocery, etc., in the vessel before covering with the heat-shrinkable film as described above, by making the inside of the vessel substantially a sterile state by heating or by reducing the amount of active oxygen by a pressure-reducing treatment, the preservation of a longer period of time becomes possible.

[0018] By heat-treating the heat-shrinkable film in the case of covering the vessel, the heat-shrinkable film is shrunk by itself to fast-stuck to the outer surface of the vessel, whereby a high sealing property is obtained. Particularly, by covering the outer side of the gas non-permeable sheet disposed on the outer surface of the lid with the heat-shrinkable film, the sheet is not brought into contact with other materials, whereby the sheet is not simply released or does not fall off.

[0019] As the material of the heat-shrinkable film used in the invention, any stretched synthetic resin films can be used. Stretching may be uniaxial or biaxial, and, for example, there are uniaxially or biaxially stretched polyethylene film, polypropylene film, polyester film, polyvinyl chloride film, polyvinylidene film, etc. The thickness of the film differs according to the size, the weight, the form, etc., of the vessel, but is preferably from about 10 to 20 μm .

[0020] As the heat-shrinkable film before packing, it is better to use the heat-shrinkable film of a tube form and being stretched to at least the tube peripheral direction. As a method of obtained such a heat-shrinkable

film tube, there are a method of connecting a synthetic resin film to a tube by a fusing seal method, a ultrasonic sealing method, or a solvent connecting method, and a method of jetting a molten resin in a film form from slit holes formed by intermittently circularly disposing circular arc-form slits and while introducing air from the space between the adjacent slit holes, welding the films formed from the slit holes to form a tube-form film.

[0021] When the vessel containing groceries, etc., is packed with the above-described film tube, the vessel is inserted into the film tube from one opening of the film tube, the outer side thereof is heated to thermally shrinking the film tube to fast-stuck the film tube to the outer side surface of the vessel, and further both the end portions of the film tube can be sealed by welding to form a package.

[0022] Opening of the seal of the heat-shrinkable film package is carried out by cut-opening the heat-shrinkable film and removing, and thereafter, the lid is detached. For making easy the cut-opening and removal of the heat-shrinkable film as described above, if necessary, sewing machine stitches may be formed in a line form at the heat-shrinkable film or a short cut may be formed at the end portion of the heat-shrinkable film. In this case, it is necessary to form such a sewing machine stitches or a short cut for cut opening as described above so that the tight sealing property of the vessel is not hindered. For the purpose, the sewing machine stitches or the short cut must not be formed at the portion of covering the gas non-permeable sheet and must be formed at other portion than the covered portion of the gas non-permeable sheet.

[0023] In the invention, there is no particular restriction on the size of the vessel covered by the heat-shrinkable film and the heat-shrinkable film can be applied to from a small-sized vessel for domestic use to a large-sized vessel for business use. For example, the film can be applied to from a small-sized vessel of sample bottle to a large-sized vessel of a hotel pan. Also, as the constituting material of the vessel main body and the lid, a glass, a metal, a resin, a pottery, etc., can be used.

[0024] Also, in the vessel used in the invention, in order to make it possible to store the groceries, etc., contained therein for a long period of time after opening by cutting and removing the heat-shrinkable film and opening the seal, and further to reutilize the vessel as a vessel for storing for a long period of time after it becomes an empty vessel, an opening penetrating from the inside to outside is formed to the lid, and further, a gas non-permeable sheet is disposed on the outer surface of the lid such that the sheet is fast stuck thereto to cover the opening, and also, air vents are formed to the gas non-permeable sheet at the positions off set from the opening of the lid.

[0025] As the opening formed at the lid, there are no particular restrictions on the form, the number, and the size thereof when the opening(s) are covered by the gas non-permeable sheet, the sheet can be kept thereon as

sucked state by a reduced pressure (negative pressure) of the inside of the vessel. As the form of the opening, a circle is preferred but an ellipse, polygons such as a triangle, a square, etc., a star form, a slit form, etc., can be employed.

[0026] The number of the opening may be one or plural. When the number of the opening is one, the productivity of the lids can be improved, and when the number of the opening is plural, between the adjacent openings, the tensile force of pulling the gas non-permeable sheet is acted. Also, in the case of forming plural openings, the sizes and the forms thereof may be same or different.

[0027] As to the size of the opening, it is better that the maximum distance of crossing the opening (diameter in the case of a circle) is from 3 mm to 15 mm. When the maximum distance is shorter than 3 mm, bending and deformation of the gas non-permeable sheet is small and the adsorptivity becomes weak. Also, when the maximum distance is larger than 15 mm, the necessary area of the gas non-permeable sheet becomes excessively large, which is undesirable from the point of cost. Also, in this case, the gas non-permeable sheet becomes too large and as the result thereof, it is required to use a large suction means, which is hard to handle.

[0028] The place of forming the opening to the lid is preferably the upper surface in the point of insuring the holding property of the gas non-permeable sheet. Also, in the portion of forming the opening, it is preferred to form a concaved portion depressed to the inside. When such a concaved portion is formed and the gas non-permeable sheet is kept in the concaved portion, the gas non-permeable sheet is not released by a strong contact with other outside material, whereby the adsorptivity of the gas non-permeable sheet can be improved.

[0029] As the gas non-permeable sheet, a material, which is gas non-permeable and has flexibility, is used. Also, because the gas non-permeable sheet alternately repeats a flat state and bent state in the state of disposed on the upper surface of the lid, it is preferred to use an elastic material excellent in the elastic recovering property as the gas non-permeable sheet. The material having a heat resistance enduring high temperature in addition to the above-described properties is more preferred.

[0030] The material for such a sheet includes, for example, a silicone rubber, a thermoplastic polymer elastomer, and synthetic or natural rubbers. In these materials, a silicone rubber is particularly preferred.

[0031] The thermoplastic polymer elastomer includes a polyamide-base elastomer, a polyurethane-base elastomer, a polyester-base elastomer, a polyolefin-base elastomer, a styrene black-base elastomer, etc. In these materials, a silicone rubber is particularly preferred.

[0032] There is no particular restriction on the form of the gas non-permeable sheet when the sheet can cover the opening formed to the lid and air vents are formed at the positions thereof off set from the place corre-

sponding to the opening. For example, as the form thereof, a circle, an ellipse, polygons, etc., can be employed, and a circle is particularly preferred. Also, the area of the gas non-permeable sheet is larger than the size of the opening formed to the lid and must cover the whole opening. When plural openings are formed to the lid, the gas non-permeable sheet must simultaneously cover all of these openings.

[0033] Also, in the gas non-permeable sheet, air vents are formed thereto at the positions off set from the place corresponding to the opening formed to the lid in the case of being placed on the lid. The air vents are used as the exhaust gas passages of air in the inside in the case of carrying out the pressure-reducing operation of the inside of the vessel by applying the suction hole of the suction means on the upper surface of the gas non-permeable sheet as will be described below. There are no particular restrictions on the form and the size of the air vents, but as the form, a circle is preferred and as the size, a sufficiently smaller size than the size of the opening of the lid is preferred. For example, the diameter of the air vent may be from about 0.3 to 2.0 mm. Also, the thickness of the gas non-permeable sheet is from about 0.5 to 3 mm.

[0034] It is preferred that the surface of the gas non-permeable sheet and the surface of the lid at the portion that the gas non-permeable sheet is closely stuck to the upper surface the lid are mirror planes to improve the sealing property. More practically, it is preferred that the upper surface of the lid and the surface of the gas non-permeable sheet are mirror planes having a surface roughness of 0.2 S or lower. Also, it is preferred that beveling of curve surface is applied to the edge of the opening of the lid. By applying such a beveling of the curved surface, when the gas non-permeable sheet is brought into contact with the edge of the opening of the lid and is bent and deformed, the gas non-permeable sheet cannot be injured by the edge.

[0035] In the case of making the inside of the vessel a reduced pressure state (negative pressure state), first the suction hole of a suction means is placed on the outer surface of the gas non-permeable sheet disposed on the outer side surface of the lid. In this case, the suction hole is placed on the gas non-permeable sheet such that the opening of the lid and the air vents of the gas non-permeable sheet are located at the inside of the suction hole, and in the state, sucking operation is carried out. By the sucking operation, the gas non-permeable sheet becomes the state of being inflated to the inner side of the suction hole of the suction means, air in the vessel is sucked out to the outside from the opening of the lid through the air vents of the gas non-permeable sheet, and the inside of the vessel becomes a reduced pressure state. When the inside pressure reaches a definite reduced pressure, the sucking operation is stopped, the gas non-permeable sheet is closely stuck to the outer surface of the lid and also the portion of the sheet corresponding to the opening of the lid becomes the state

of being bent to the inner side.

[0036] Because by the gas non-permeable sheet, the inside of the vessel is brought into a reduced pressure state and the vessel is sealed, the entrance of various bacteria into the inside of the vessel is prevented and also the growth, etc., of bacteria are prevented. Also, because active oxygen remaining in the inside of the vessel becomes rare, the occurrence of the oxidation reaction of the contained groceries is delayed and even after opening the vessel, the groceries contained therein can be preserved for a long period of time. Also, even after consuming the contained groceries, the vessel can be re-utilized as a vessel for reserving groceries for a long period of time.

[0037] Then, the present invention is practically explained by the embodiments shown in the accompanying drawings.

[0038] Fig. 1 (A) and (B) show an embodiment of the heat-shrinkable film package of the invention.

[0039] A vessel 1 is constructed of a cylindrical heat-resisting glass-made vessel main body 2 and a heat-resisting glass-made lid 3 of closing the open portion of the vessel via a sealing packing 4. A heat-shrinkable film F covers the whole outer side of the vessel 1 such that the vessel is tightly sealed, and the inside of the vessel is sealed.

[0040] The packing 4 is formed such that the packing is stuck to the outer periphery of the inner surface of the lid 3. Also, a tightly sealing sheet 6 is stuck to the upper edge 5 of the open portion of the vessel main body 2, the groceries (goods) S in the inside of the vessel are also sealed by the tightly sealing sheet 6, and protected such that the groceries are not deteriorated and leaked.

[0041] In the above-described vessel 1, an opening 7 is formed at the center portion of the lid 3 and a concaved portion 10 is formed at the upper surface region including the opening 7 in a concentric circle form with the opening 7. On the concaved portion 10 is placed a gas non-permeable sheet 8 such that the sheet covers the opening 7 and to the gas non-permeable sheet 8 are formed plural (four in the figure) air vents 12 at the places gas non-permeable sheet 8 off set from the position corresponding to the opening 7.

[0042] In the case of opening the seal of the vessel from the package covered by the heat-shrinkable film F as described above, first the heat-shrinkable film F is open by cutting and removed, the vessel 1 is taken out, then the lid 3 is detached and the sealing sheet 6 may be released and removed. When the vessel 1 is once opened, by simply placing the lid 3 thereafter, the deterioration of the groceries S in the inside proceed faster than before opening the vessel.

[0043] Fig 2 (A) and (B) show the state that the lid 3 is placed on the vessel 1 after opening as described above, and then the inside thereof is evacuated (negative pressure). In the gas non-permeable sheet 8 disposed on the upper surface of the lid 3, because the inside of the vessel is in a negative pressure, the portion

of the gas non-permeable sheet corresponding to the opening 7 is bent or deformed in a concaved form to the inner side, and also, the gas non-permeable sheet is tightly stuck to the upper surface of the lid 3 not corresponding to the opening 7 and seals, whereby the inside of the vessel is maintained at a negative pressure state.

[0044] By sealing the vessel 1 and maintaining the inside pressure thereof in a reduced pressure state, the entrance of various bacteria, etc., into the inside of the vessel and the growth of bacteria are prevented, and also active oxygen in the inside of the vessel becomes rare, whereby the deterioration of the contained groceries S is delayed and even after opening, the storage for a long period of time becomes possible. Also, the empty vessel 1 after consuming all the contained groceries S can be re-utilized as the vessel for storing for a long period of time by the use as described above.

[0045] Also, when the vessel 1, which can maintain a reduced pressure state as described above, contains therein pickles, jams, or liquors, etc., and is stored, the tastes thereof can be changed to mild tastes in a short time. Accordingly, the vessel can be also re-utilized as a special cooking vessel.

[0046] Also the gas non-permeable sheet 8 is in the state of being disposed in the concaved portion 10 of the lid 3, the area of the concaved portion 10 is larger than the area of the sheet 8, and the depth is same as the thickness of the sheet 8 or thicker than the thickness thereof. Accordingly, the sheet 8 is not projected over the opening of the concaved portion 10 and cannot become unstable in the case of piling the vessels 1.

[0047] Also, the state that the gas non-permeable sheet 8 is bent to the inner side at the portion of the opening 7 of the lid 3 and kept by adsorbing as described above is maintained until the vessel 1 is opened and the reduced pressure is released, and when the reduced pressure is released, the bent state of the sheet 8 is returned to a flat state by the elastic force thereof. Accordingly, by confirming the presence or absence of the bent state of the sheet 8, whether or not the vessel 1 is opened on the way can be easily confirmed. That is, whether or not a poison, etc., is admixed in the vessel by a mischief, etc., can be checked beforehand.

[0048] Because when the inside of the vessel is in a reduced pressure state, by the action of the atmospheric pressure, the lid 3 is hard to open by a weak force, and thus, by the easiness or not of opening the lid 3, whether or not the vessel is opened on the way can be confirmed. That is, whether or not a poison, etc., is admixed in the vessel can be checked beforehand.

[0049] The operation of making the inside of the vessel 1 described above a reduced pressure state can be practiced as shown in Fig. 3 (A) and (B).

[0050] First, the opening 7 of the lid 3 is covered by a flexible gas non-permeable sheet 8 at the upper surface of the lid, and the sheet 8 is placed on the lid 3 such that the air vents 12 of the sheet 8 is off set from the opening 7, and then, the sucking hole Km of a sucking means K

is pushed to the outer surface of the sheet 8. In this case, the sucking hole Km is set such that the opening 7 and the air vents 12 are all positioned in the inside of the sucking hole.

[0051] Then, when sucking is carried out by the sucking means K, the sheet 8 is bent as rising to the sucking side as shown in Fig. 3 (A), and a gas such as air in the inside of the vessel is sucked out from the opening 7 through the air vents 12 as indicated by arrow, and the pressure of the inside of the vessel is reduced to a negative pressure.

[0052] When the inside of the vessel becomes a definite negative pressure and then the sucking operation is stopped, the sheet 8 is sucked back to the vessel side by the negative pressure of the inside of the vessel, the sheet is closely stuck onto the upper surface of the lid 2 and also the portion of the sheet corresponding to the opening 7 is bent in a concaved form to the inner side of vessel as shown in Fig. 3 (B).

[0053] Fig. 4 to Fig. 11 show other embodiments of the heat-shrinkable film package of the invention.

[0054] The heat-shrinkable film package shown in Fig. 4 is almost same as the embodiment of Fig. 1 but in this case, the heat-shrinkable film F does not cover the whole body of the vessel 1 but covers the whole body of the lid 3 and the portion near the open portion of the vessel main body 1. Because the heat-shrinkable film F in the heat-shrinkable film package covers at least the whole lid body, the sealing property of the inside of the vessel is maintained, and the storing property for a long period of time before opening the vessel is maintained.

[0055] In the heat-shrinkable film package shown in Fig. 5, the heat-shrinkable film F covers the whole lid as the embodiment of Fig. 4. However, different from the embodiments shown in Fig. 1 and Fig. 4, the sealing sheet 6 is not stuck to the open portion of the vessel main body 2, the inside of the vessel is made a negative pressure state by a pressure reducing treatment. For the purpose, the gas non-permeable sheet 8 is in the state of bending the inner side in the opening 7 of the lid 3. In the heat-shrinkable film package, before releasing the sheet 8, the lid 3 is adsorbed by the action of the reduced pressure action of the inside of the vessel, the vessel cannot be open.

[0056] In a heat-shrinkable film package shown in Fig. 6, the form and the material of a vessel 1 are different from those of the embodiments of Fig. 1, Fig. 4, Fig. 5, etc. That is, a lid 3 is made of a heat-resisting glass but the vessel main body 2 is made of a metal such as stainless steel, etc. Also, a difference in level is formed at the peripheral portion of the inner surface of the lid 3 to prevent the occurrence of gap of packing 4. The heat-shrinkable film F does not cover the whole vessel main body and covers the lid 3, the sheet 8, and the open portion region of the vessel main body 2. Even by partial covering, because the sheet covers at least the whole body of the lid 3, the inside of the vessel can be sealed.

[0057] In a heat-shrinkable film package shown in Fig.

7. a vessel main body 2 and a lid 3 are made of a heat-resisting glass but the form of the vessel main body 2 is a truncated cone form and the lid 3 is a bowl form. Also, a heat-shrinkable film F covers the whole body of the vessel 1.

[0058] In a heat-shrinkable film package shown in Fig. 8, a vessel main body 2 and a lid 3 are made of a metal such as a stainless steel, etc., and the form of the vessel main body 2 is truncated cone form. A heat-shrinkable film F covers the whole body of the vessel 1.

[0059] In a heat-shrinkable film package shown in Fig. 9, a male screw 13 is formed at the open portion of a cylindrical heat-resisting glass-made vessel main body 2 and a vessel 1 is constructed such that a metal-made lid 3 having formed a female screw 14 screwing with the male screw 13 is mounted on the vessel via a sealing packing 4 and a sealing sheet 6. A heat-shrinkable film F covers the whole body of the vessel 1.

[0060] In a heat-shrinkable film package shown in Fig. 10, the vessel main body 2 is composed of a glass jar, and as the case of the embodiment of Fig. 9, a male screw 13 is formed at the open portion of the vessel and the vessel is constructed such that a lid 3 having formed a female screw 14 screwing with the male screw 13 is mounted on the vessel via a packing 4. A tightly sealing sheet 6 is not used, and also the pressure of the inside of the vessel is not reduced, and a heat-shrinkable film F covers the whole body of the vessel 1.

[0061] In a heat-shrinkable film package shown in Fig. 11, parallel linear sewing machine stitches 15, 15 are formed lengthwise and breadthwise to a heat-shrinkable film F covering the outer side of the vessel, and by breaking the heat-shrinkable film F via the sewing machine stitches 15, 15, the package can be easily opened. These sewing machine stitches 15, 15 are formed avoiding the portion of covering a gas non-permeable sheet 8 with the heat-shrinkable film F so that the sealing property of the vessel 1 is not hindered by the heat-shrinkable film F. It is preferable that the sewing machine stitches 15, 15, are formed avoiding all the portion of covering the lid 3.

[0062] The heat-shrinkable film package of the invention described above is for containing groceries but the package can be effectively used for, in addition to groceries, powders, chemicals, etc., which are liable to be deteriorated by humidity and the occurrence of quality change after opening the seal is delayed and they can be also stored for a long period of time.

[0063] As described above, according to the invention, by covering at least the whole lid with the heat-shrinkable film before opening the seal of the vessel, contained groceries, etc., can be stored for a long period of time. Furthermore, because, as the structure of the vessel, opening(s) are formed to the lid and a gas non-permeable sheet having formed air vents at the places of off set from the opening(s) is placed on the outer surface of the lid closely stuck thereto such that the sheet covers the above-described opening(s), when a sucking

means is placed on the outer side of the gas non-permeable sheet and sucking is carried out, air in the inside of the vessel is sucked out from the opening(s) of the lid through the air vents of the gas non-permeable sheet, active oxygen in the inside is reduced and a reduced pressure state of the vessel is maintained, whereby rotting by oxidation of the contained groceries, etc., is delayed, also the growth, etc., of bacteria are restrained, and the contained groceries, etc., can be stably stored for a long period of time.

[0064] Also, because in the invention, after opening the seal, the contained groceries, etc., can be stored for a long period of time, the amount of wastes such as groceries, etc., by rotting is reduced and the empty vessel after consuming the contained groceries, etc., can be re-utilized as a vessel for storing for a long period of time. Also, the empty vessel can be re-utilized as a specific cooking vessel. Accordingly, in the invention, the amount of waste materials is wholly reduced and the disposal cost by self-governing bodies can be reduced.

Industrial Applicability

[0065] The vessel of the heat-shrinkable film package of the invention can be utilized as a vessel for storing groceries, medical supplies, etc., for a long period of time and/or as a cooking vessel for foods. Also, the invention can reduce the amount of waste materials and can contribute to the environmental preservation of the earth.

Claims

1. A heat-shrinkable package wherein opening(s) is or are formed to a lid equipped to the open portion of a vessel main body as sealing the inside of the vessel, a gas non-permeable sheet having formed air vents at the off set positions from the opening(s) is placed on the surface of the outer side of the lid and closely stuck thereto such that the sheet covers the above-described opening to construct a vessel for containing groceries, etc., and at least the above-described whole lid is covered with a heat-shrinkable film.
2. The heat-shrinkable package according to claim 1 wherein a tightly sealing sheet is adhered to the open portion of the above-described vessel main body such that the sheet closes the open portion.
3. The heat-shrinkable package according to claim 1 or 2 wherein a concaved portion of containing the gas non-permeable sheet is formed at the portion of placing the gas non-permeable sheet on the outer surface of the lid, the area of the concaved portion is larger than the area of the gas non-permeable sheet, and the depth of the concaved portion is

at least same as the thickness of the gas non-permeable sheet.

4. The heat-shrinkable package according to claim 1 or 2 wherein the whole body of the vessel is covered by the heat-shrinkable film. 5
5. The heat-shrinkable package according to claim 1 or 2 wherein the gas non-permeable sheet is made of a silicone rubber and the surface roughness of at least the portion of tightly sticking to the outer surface of the lid is 0.2 S or lower. 10
6. The heat-shrinkable package according to claim 1 or 2 wherein sewing machine stitches are formed in plural lines to the heat-shrinkable film at the portions other than the portion of covering the gas non-permeable sheet such that the heat-shrinkable film can be cut-open via the sewing machine stitches. 15

20

25

30

35

40

45

50

55

Fig. 1

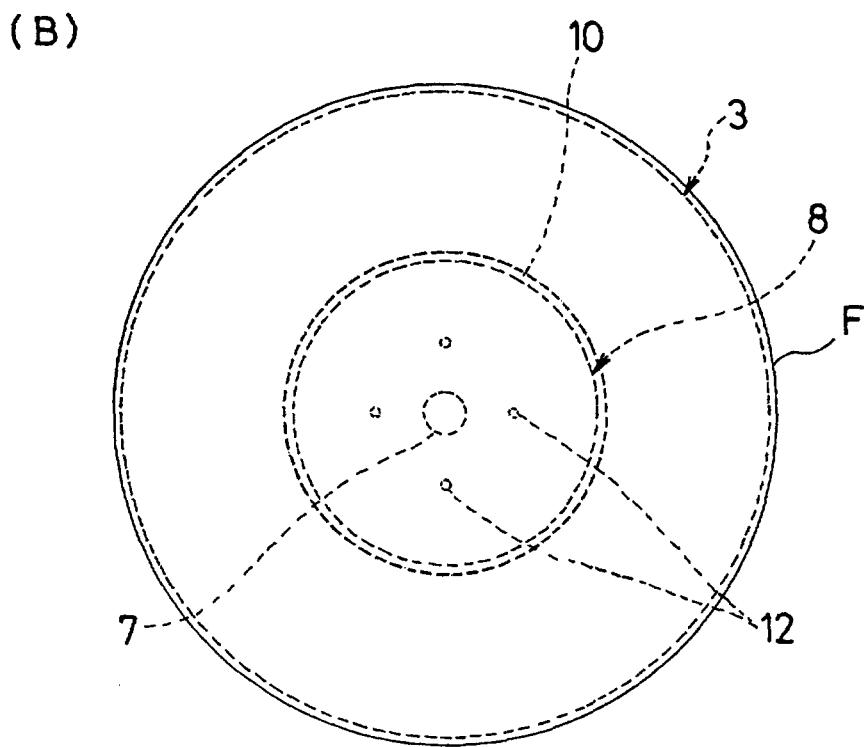
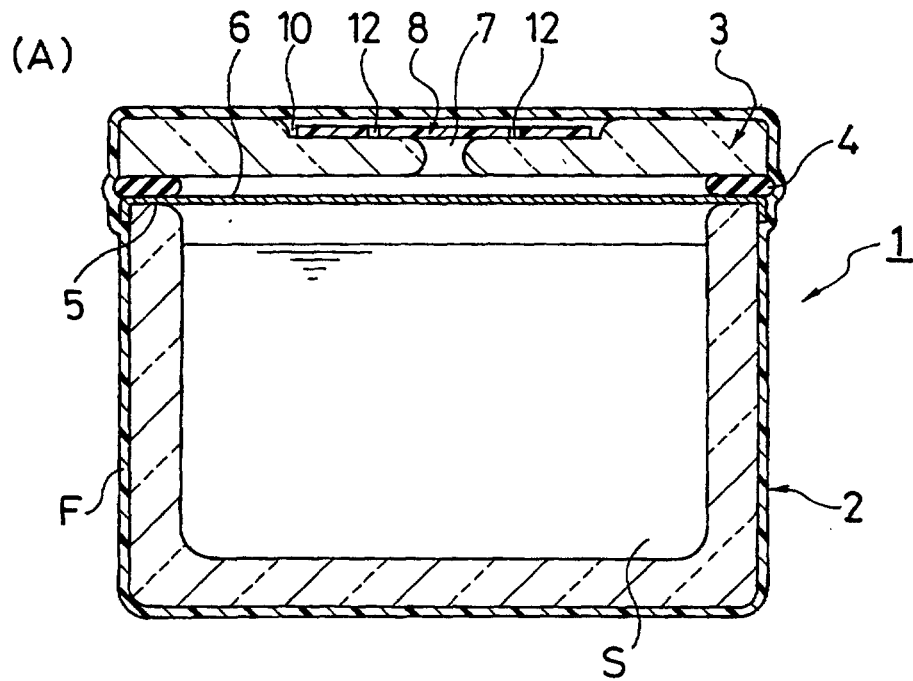


Fig. 2

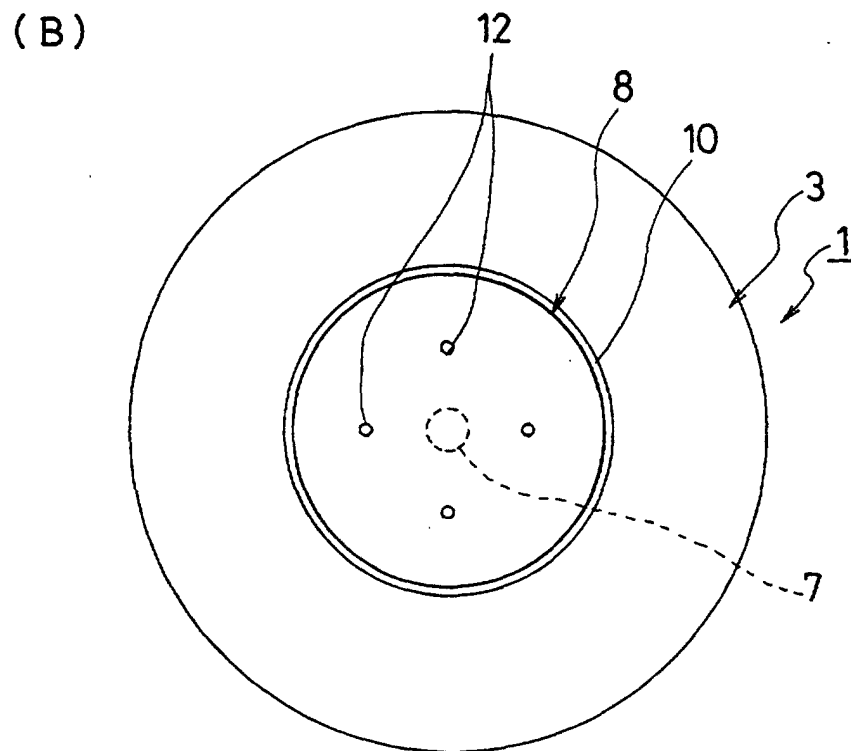
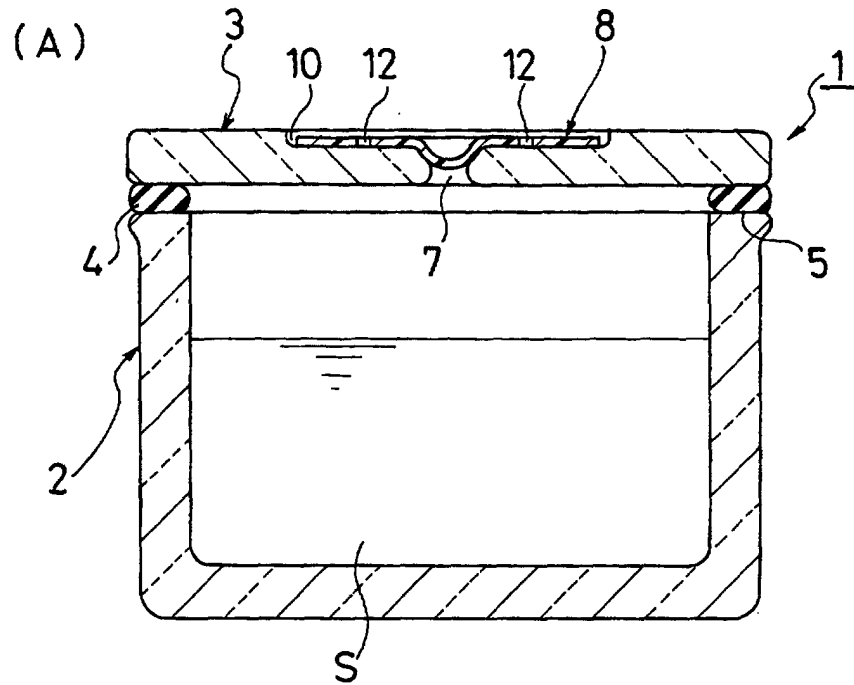


Fig. 3

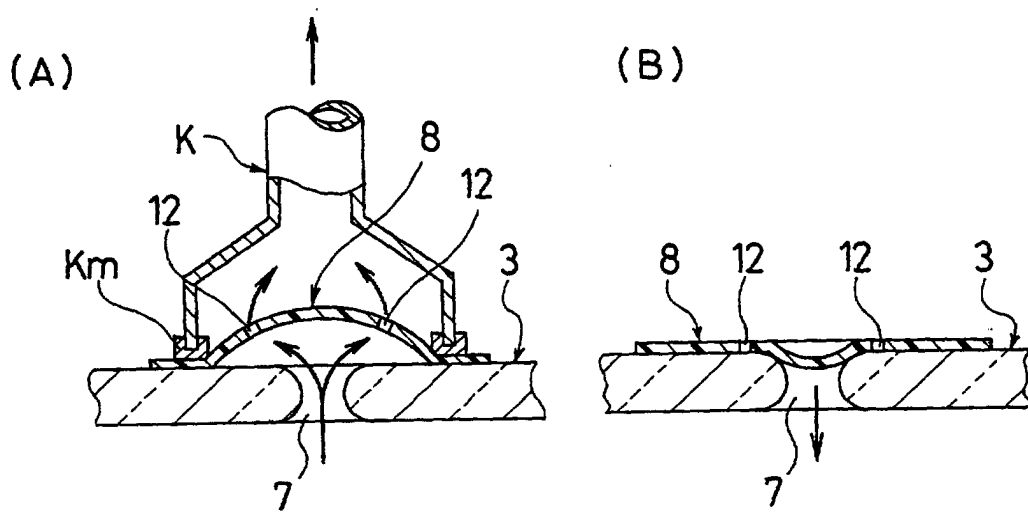


Fig. 4

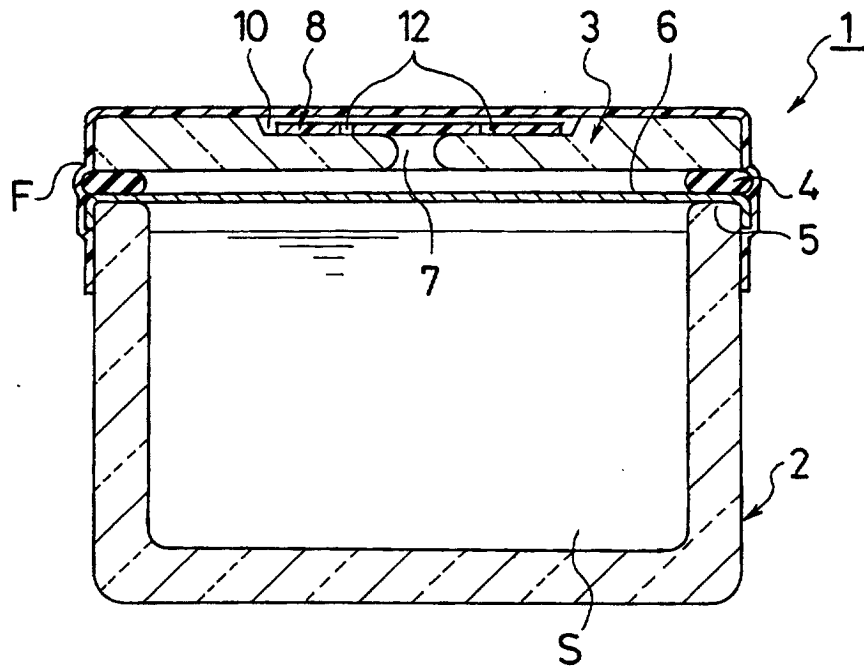


Fig. 5

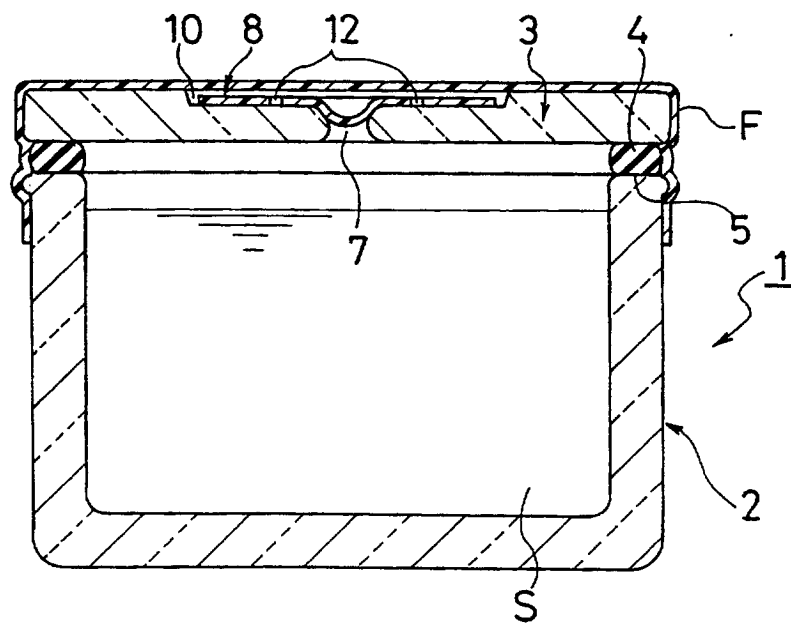


Fig. 6

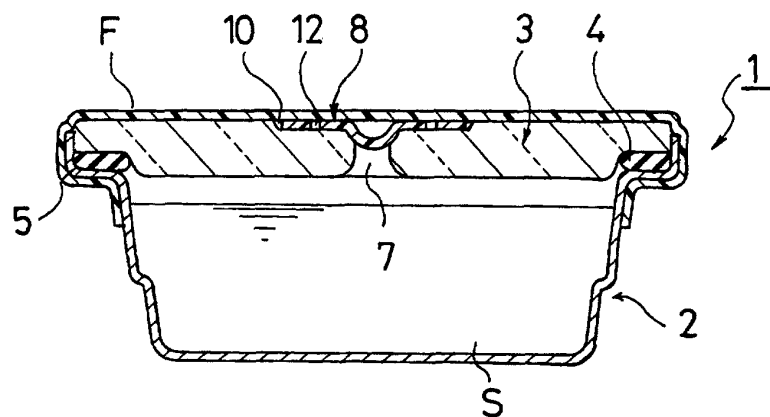


Fig. 7

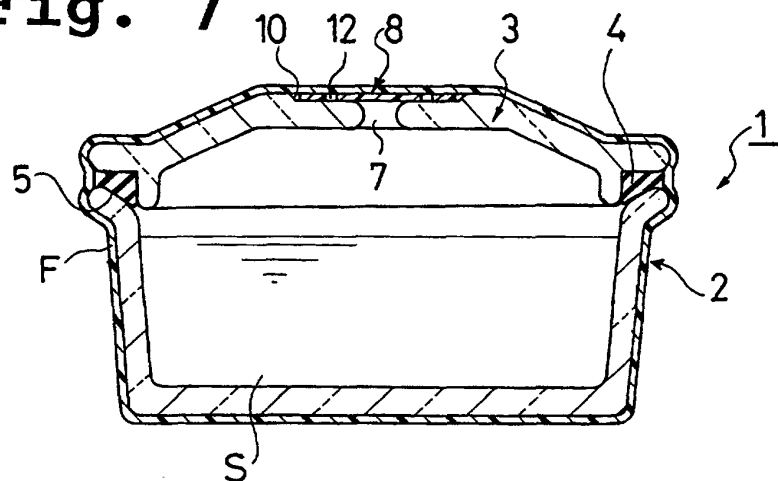


Fig. 8

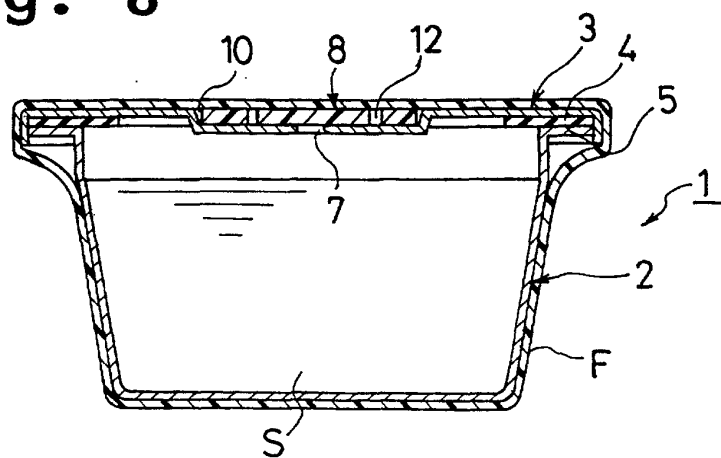


Fig. 9

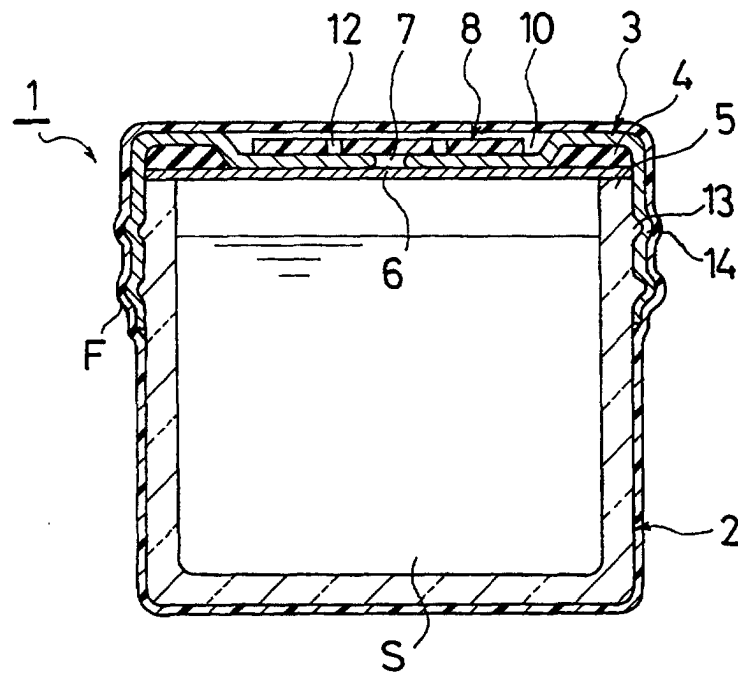


Fig. 10

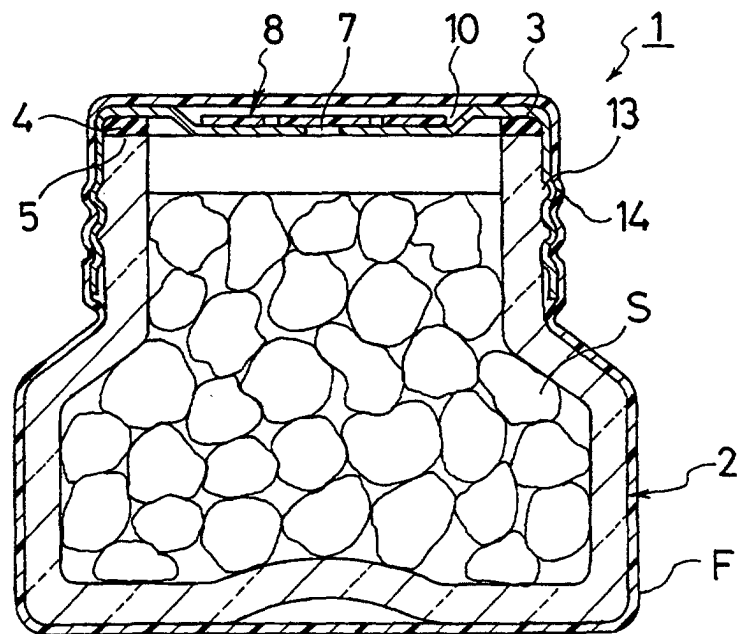
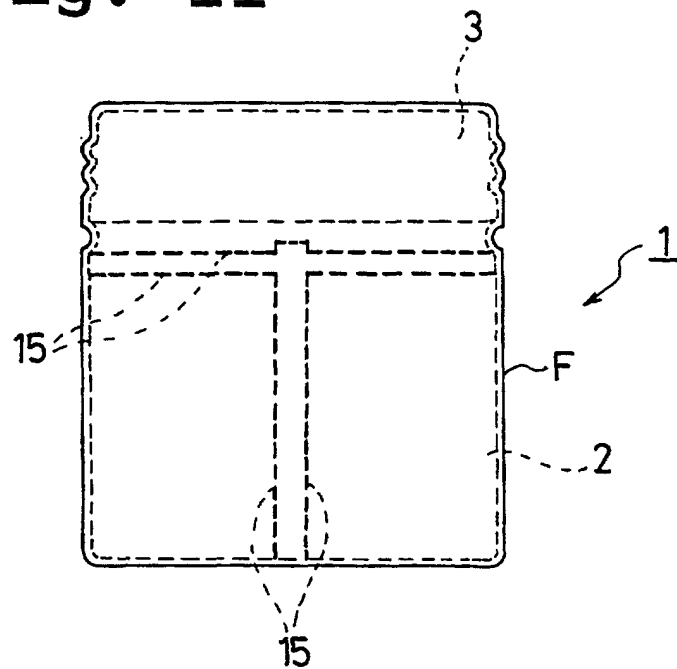


Fig. 11



INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP99/04433

A. CLASSIFICATION OF SUBJECT MATTER Int.Cl. ⁶ B65D 81/20 B65D 77/20		
According to International Patent Classification (IPC) or to both national classification and IPC		
B. FIELDS SEARCHED Minimum documentation searched (classification system followed by classification symbols) Int.Cl. ⁶ B65D 81/00-81/30 B65D 77/20		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched Jitsuyo Shinan Koho 1925-1999 Kokai Jitsuyo Shinan Koho 1971-1999		
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	JP, 4-367475, A (Kyoko MIZOGUCHI), 18 December, 1992 (18.12.92), Column 1, lines 2 to 10 (Family: none)	1-6
Y	JP, 11-43116, A (Satake Eng. Co., Ltd.), 16 February, 1999 (16.02.99), Column 1, lines 2 to 37 (Family: none)	2-6
Y	JP, 10-35701, A (Fuji Seal Co., Ltd.), 10 February, 1998 (10.02.98), Column 1, lines 2 to 19 (Family: none)	2-6
Y	JP, 70738, B (Junichiro KASHII), 23 August, 1926 (23.08.26), page 1, line 8 to page 3, line 4 (Family: none)	3
Y	Microfilm of the specification and drawings annexed to the request of Japanese Utility Model Application No. 104091/1990 (Laid-open No.60848/1992), (Isao SAKAI), 25 May, 1992 (05.05.92), page 1, line 5 to page 2, line 13 (Family: none)	3
☒ Further documents are listed in the continuation of Box C. ☐ See patent family annex.		
* Special categories of cited documents: "A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier document but published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art "&" document member of the same patent family	
Date of the actual completion of the international search 12 November, 1999 (12.11.99)		Date of mailing of the international search report 24 November, 1999 (24.11.99)
Name and mailing address of the ISA/ Japanese Patent Office		Authorized officer
Facsimile No.		Telephone No.

Form PCT/ISA/210 (second sheet) (July 1992)

INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP99/04433

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	Microfilm of the specification and drawings annexed to the request of Japanese Utility Model Application No. 27663 /1992 (Laid-open No. 76115 /1994), (Kohjin Co., Ltd.), 25 October, 1994 (25.10.94), Column 1, line 1 to Column 2, line 1 (Family: none)	4
Y	JP, 10-305857, A (Sugiken K.K.), 17 November, 1998 (17.11.98), Column 1, lines 2 to 33 (Family: none)	6

Form PCT/ISA/210 (continuation of second sheet) (July 1992)