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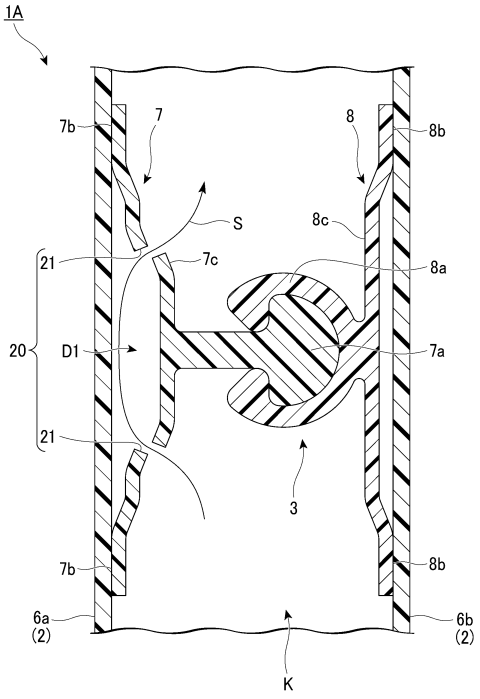
(54) ZIPPER AND MICROWAVE-PROOF PACKAGING BAG WITH ZIPPER

(57) A zipper (3) configured to be attached to a bag body (2) inside which steam is generated, includes: a first zipper tape (7) including a base portion (7c) and a first fitting portion (7a); and a second zipper tape (8) including a second fitting portion (8a), the second fitting portion (8a) being configured to fit the first fitting portion (7a) to seal the zipper, wherein two parts of the base portion (7c) of the first zipper tape (7) between which the first fitting portion (7a) is interposed are provided with a steam-passing section (20) through which steam generated inside the bag body (2) passes.

FIG. 3



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Description

[Technical Field]

[0001] The present invention relates to a zipper and a zipper-attached microwave oven applicable packaging bag.

[0002] Priority is claimed on Japanese Patent Application No. 2021-214417, filed December 28, 2021, the content of which is incorporated herein by reference.

[Background Art]

[0003] A zipper-attached microwave oven applicable packaging bag is known which includes a zipper tape on the inner surface of a bag body and can be subjected to the microwave heating by a microwave oven in a state in which food ingredients are stored inside the bag body from an opening of the bag body and the opening is sealed by a male-female fitting type zipper.

[0004] The zipper-attached microwave oven applicable packaging bag is provided with a mechanism for releasing steam generated inside the bag body to the outside of the bag body during the microwave heating by the microwave oven.

[0005] Patent Document 1 discloses a synthetic resin male-female claw type zipper-attached bag body in which a base piece formed in a base portion of the zipper is surface-adhered to the inner side surface of the opening of the bag body by a required width with adhesion parts having an appropriate length at intervals in the longitudinal direction of the base piece and weak adhesion parts having easy peelability are provided between the adhesion parts.

[Citation List]

[Patent Document]

[0006] [Patent Document 1]
Japanese Unexamined Patent Application, First Publication No. 2000-72156

[Summary of Invention]

[Technical Problem]

[0007] However, since the invention described in Patent Document 1 has the structure that releases steam from the weak adhesion parts between the adhesion parts, the pressure of the steam generated inside the bag body makes it difficult for the weak adhesion parts to open, and a release of the steam may be insufficient.

[0008] The present invention is made to solve the above-described problems, and an object thereof is to provide a zipper and a zipper-attached microwave oven applicable packaging bag that can stably release steam generated inside a bag body to the outside of the bag body during the microwave heating by a microwave oven.

[Solution to Problem]

[0009] In order to obtain the above object, the present invention provides the following means.

[0010] A first aspect of the present invention is a zipper configured to be attached to a bag body inside which steam is generated, the zipper includes: a first zipper tape including a base portion and a first fitting portion; and a second zipper tape including a second fitting portion, the second fitting portion being configured to fit the first fitting portion to seal the zipper, wherein two parts of the base portion of the first zipper tape between which the first fitting portion is interposed are provided with a steam-passing section through which steam generated inside the bag body passes.

[0011] A second aspect of the present invention is that in the zipper of the first aspect, the steam-passing section includes either one of a rift or a hole and both thereof provided in the base portion of the first zipper tape.

[0012] A third aspect of the present invention is a zipper-attached microwave oven applicable packaging bag, the packaging bag includes: a bag body in which inner surfaces of packaging films overlap each other and peripheral edges of the packaging films are adhered to each other; and the zipper according to claim 1 or 2, wherein the first and second zipper tapes are welded to an inner surface or inner surfaces of the packaging films, and the steam-passing section releases steam generated inside the bag body from an opening of the bag body formed after opening the bag body to an outside of the bag body.

[0013] A fourth aspect of the present invention is that in the zipper-attached microwave oven applicable packaging bag of the third aspect, the first zipper tape is welded to an inner surface of a packaging film of the packaging films, the second zipper tape is welded to the inner surface of the packaging film to which the first zipper tape is welded in a state in which the second zipper tape covers the first zipper tape, and the opening is formed by tearing part of the packaging film close to a peripheral edge of the bag body among parts of the packaging film between a welded portion of the first zipper tape and a welded portion of the second zipper tape.

[0014] A fifth aspect of the present invention is that the zipper-attached microwave oven applicable packaging bag of the fourth aspect further includes a cut tape attached to the inner surface of the packaging film, wherein the opening is formed by pulling a tab provided at one end of the cut tape and tearing the packaging film along the cut tape.

[0015] A sixth aspect of the present invention is that in the zipper-attached microwave oven applicable packaging bag of any one of the third to fifth aspects, a liquid content is stored inside the bag body.

[Advantageous Effects of Invention]

[0016] As described above, according to the present invention, it is possible to provide a zipper and a zipper-attached microwave oven applicable packaging bag that can stably release steam generated inside a bag body to the outside of the bag body during the microwave heating by a microwave oven.

[Brief Description of Drawings]

[0017]

FIG. 1 is a plan view showing a configuration of a microwave oven applicable packaging bag according to a first embodiment of the present invention.
FIG. 2 is a cross-sectional view of the zipper-attached microwave oven applicable packaging bag along line II-II shown in FIG. 1.
FIG. 3 is a cross-sectional view showing a state in which steam generated inside a bag body of the zipper-attached microwave oven applicable packaging bag shown in FIG. 2 is released to the outside of the bag body.
FIG. 4 is a plan view showing a configuration of a microwave oven applicable packaging bag according to a second embodiment of the present invention.
FIG. 5 is a cross-sectional view of the zipper-attached microwave oven applicable packaging bag along line V-V shown in FIG. 4.
FIG. 6 is a cross-sectional view in which an enclosed part T shown in FIG. 5 is enlarged and showing a state of the zipper-attached microwave oven applicable packaging bag before opening.
FIG. 7 is a cross-sectional view along line VII-VII shown in FIG. 4, part (A) thereof is a diagram showing a state before a tab piece of a cut tape is pulled, and part (B) thereof is a diagram showing a state in which the tab piece of the cut tape is pulled.
FIG. 8 is a cross-sectional view in which the enclosed part T shown in FIG. 5 is enlarged and showing a state of the zipper-attached microwave oven applicable packaging bag after opening.
FIG. 9 is a cross-sectional view in which the enclosed part T shown in FIG. 5 is enlarged and showing a state in which the zipper is unsealed after the zipper-attached microwave oven applicable packaging bag is opened.
FIG. 10 is a cross-sectional view in which the enclosed part T shown in FIG. 5 is enlarged and showing a state in which steam generated inside a bag body of the zipper-attached microwave oven applicable packaging bag is released to the outside of the bag body.
FIG. 11 is a plan view showing a configuration of a zipper-attached microwave oven applicable packaging bag according to a third embodiment of the present invention.
FIG. 12 is a cross-sectional view of the zipper-attached microwave oven applicable packaging bag along line XII-XII shown in FIG. 11.
FIG. 13 is a cross-sectional view showing a state of the zipper-attached microwave oven applicable packaging bag shown in FIG. 12 before a content is stored inside a bag body thereof.
FIG. 14 is a plan view showing other configuration examples of a steam-passing section.
FIG. 15 is a plan view showing a configuration of a microwave oven applicable packaging bag according to a first modification of the first embodiment of the present invention.
FIG. 16 is a plan view showing a configuration of a microwave oven applicable packaging bag according to a second modification of the first embodiment of the present invention.

[Description of Embodiments]

[0018] Hereinafter, embodiments of the present invention will be described in detail with reference to the drawings.

[0019] The materials, sizes and the like shown in the following description are examples, the present invention is not necessarily limited to them, and it is possible to appropriately modify them within the scope of the present invention.

(First Embodiment)

[0020] First, as a first embodiment of the present invention, a zipper-attached microwave oven applicable packaging bag (hereinafter simply referred to as a "packaging bag") 1A shown in, for example, FIGS. 1 to 3 will be described.

[0021] FIG. 1 is a plan view showing a configuration of the packaging bag 1A. FIG. 2 is a cross-sectional view of the packaging bag 1A along line II-II shown in FIG. 1. FIG. 3 is a cross-sectional view showing a state in which steam generated inside a bag body 2 of the packaging bag 1A is released to the outside of the bag body 2.

[0022] As shown in FIGS. 1 and 2, the packaging bag 1A of the present embodiment includes the bag body 2, a zipper 3 and a cutting-opening part 4, and the bag body 2 can be opened to form an opening (not shown in FIGS. 1 to 3) by tearing part of the bag body 2 using the cutting-opening part 4. The packaging bag 1A is subjected to the microwave heating by a microwave oven in a state in which the zipper 3 is sealed after food ingredients are stored inside the bag body 2 from the opening, whereby the food ingredients are heated and cooked.

[0023] The left-right direction in FIG. 1 may be referred to as a width direction of the bag body 2. The up-down direction in FIGS. 1 and 2 may be referred to as an up-down direction of the bag body 2, and a side of the bag body 2 on which the cutting-opening part 4 is provided in the up-down direction may be referred to as an upper

side.

[0024] In the packaging bag 1A of the present embodiment, a liquid content L such as a seasoning liquid is stored inside the bag body 2 in advance. The content L is not necessarily limited to liquid and may be powder or solid. The content L may be, for example, freeze-dried food or the like other than the seasonings described above. The packaging bag 1A of the present embodiment is not limited to one in which the content L is stored inside the bag body 2 in advance but may be one in which the inside of the bag body 2 before opening is empty.

[0025] In the bag body 2, three packaging films 6a, 6b and 6c overlap each other, and peripheral edges at each of the top, sides and bottom thereof are adhered to each other to form an upper edge-sealing portion 2b, side edge-sealing portions 2c and a bottom edge-sealing portion 2d, and the bag body 2 includes a storage space K for storing the content L such as food ingredients thereinside.

[0026] Specifically, the bag body 2 includes the packaging film 6a that forms a front surface as one surface of the bag body 2, the packaging film 6b that forms a rear surface as another surface thereof, and the packaging film 6c that forms a bottom surface thereof, the packaging film 6c folded in half is sandwiched between the packaging films 6a and 6b and overlaps them, and the peripheral edges thereof are adhered by heat welding (hereinafter also referred to as "heat fusion"), whereby the bag body 2 is a self-standing bottom-gusset bag with a gusset at the bottom, which is also called a standing pouch. In other words, the bag body 2 is a bottom-gusset bag having an upper part configured of two packaging films and a lower part configured of four packaging films, with a boundary R being positioned between the upper and lower parts.

[0027] The packaging films 6a, 6b and 6c are made of a resin laminated film obtained by adhering and laminating a base material layer forming the outer surface of the bag body 2 and a sealant layer forming the inner surface of the bag body 2 through an adhesive layer. For the production of the laminated film, for example, a dry lamination method in which an adhesive diluted with an organic solvent is applied, dried and then thermocompression-adhered can be suitably used.

[0028] For the base material layer, as a layer having excellent properties such as impact resistance and pinhole resistance, for example, a biaxially oriented film such as biaxially oriented polyester, biaxially oriented polyamide or biaxially oriented polypropylene, or a film obtained by vapor-depositing a metal or a metal oxide on the biaxially oriented film can be suitably used.

[0029] For the sealant layer, as a layer having heat sealability, for example, low-density, medium-density, high-density or linear low-density polyethylene (hereinafter referred to as "PE"), homo, random or block polypropylene (hereinafter referred to as "PP") or the like can be suitably used.

[0030] For the adhesive layer, as an adhesive for the dry lamination, for example, a polyester-based adhesive, a polyether-based adhesive or the like can be suitably used.

[0031] The packaging films 6a, 6b and 6c may be made of a laminated film including one or more layers of an intermediate layer and a printed layer in addition to the base material layer and the sealant layer described above. Examples of the packaging films 6a, 6b and 6c include a laminated film obtained by laminating a base material layer, a printed layer, an adhesive layer, an intermediate layer, an adhesive layer and a sealant layer in this order, and a laminated film obtained by laminating a base material layer, a printed layer, an adhesive layer and a sealant layer in this order.

[0032] For the intermediate layer, as a layer having excellent properties such as impact resistance and pinhole resistance, the same material as the base material layer can be suitably used. The printed layer is formed by printing on the rear surface of the base material layer.

[0033] In the present embodiment, for the packaging films 6a, 6b and 6c, a laminated film is used which is obtained by laminating a base material layer made of a biaxially oriented polyethylene terephthalate film (hereinafter referred to as "PET") with a thickness of 12 μm, an adhesive layer, an intermediate layer made of a transparent vapor-deposited PET with a thickness of 12 μm, an adhesive layer, an intermediate layer made of a biaxially oriented nylon film (hereinafter referred to as "ONY") with a thickness of 15 μm, an adhesive layer, and a sealant layers made of non-oriented polypropylene (hereinafter referred to as "CPP") with a thickness of 60 to 100 μm in this order using the dry lamination method.

[0034] The zipper 3 includes, as a zipper tape provided with a zipper fitting portion, a first zipper tape 7 attached by being adhered to the inner surface of the packaging film 6a constituting the front surface of the bag body 2, and a second zipper tape 8 attached by being adhered to the inner surface of the packaging film 6b constituting the rear surface of the bag body 2.

[0035] The zipper 3, the first zipper tape 7 and the second zipper tape 8 have shapes extending in one direction. A direction in which the zipper 3, the first zipper tape 7 and the second zipper tape 8 extend may be referred to as a longitudinal direction. The longitudinal direction is the same as the left-right direction in FIG. 1 (i.e., the width direction of the bag body 2).

[0036] The first zipper tape 7 and the second zipper tape 8 include film-shaped flat base portions 7c and 8c heat-welded to the inner surfaces of the packaging films 6a and 6b, and fitting portions 7a and 8a protruding from central parts of the base portions 7c and 8c, respectively.

[0037] The first zipper tape 7 includes the first fitting portion 7a. The first fitting portion 7a forms either one of a male fitting portion and a female fitting portion that are fitted to each other. The first fitting portion 7a is provided to protrude from a central part of a surface of the first zipper tape 7 facing the second zipper tape 8. In the present embodiment, the first fitting portion 7a forms the male fitting portion.

[0038] In a state in which a first gap D1 is provided between the first zipper tape 7 and the inner surface of the packaging film 6a, the first zipper tape 7 is attached by heat welding in the width direction of the bag body 2 to the upper part of the inner surface of the packaging film 6a through a pair of first welded portions 7b positioned on two sides of the first zipper tape 7 (two sides separated in the up-down direction of the bag body 2) between which the first gap D1 is interposed.

[0039] The up-down direction of the bag body 2 is the same as the direction orthogonal to the longitudinal direction and along the packaging film 6a (or the base portion 7c).

[0040] The second zipper tape 8 includes the second fitting portion 8a. The second fitting portion 8a forms the other of the male fitting portion and the female fitting portion that are fitted to each other. The second fitting portion 8a is provided to protrude from a central part of a surface of the second zipper tape 8 facing the first zipper tape 7. In the present embodiment, the second fitting portion 8a forms the female fitting portion.

[0041] The second zipper tape 8 is attached by heat welding in the width direction of the bag body 2 to the upper part of the inner surface of the packaging film 6b through a pair of second welded portions 8b.

[0042] For the first zipper tape 7 and the second zipper tape 8, any material that can be heat-welded to the sealant layer of the packaging film 6a may be used, and for example, a PE-based resin, a PP-based resin or the like can be used.

[0043] The zipper 3 can be sealed between the first zipper tape 7 and the second zipper tape 8 in the width direction of the bag body 2 by fitting the first fitting portion 7a that is the male fitting portion to the second fitting portion 8a that is the female fitting portion.

[0044] The cutting-opening part 4 includes a notch 4a for forming the opening by tearing part of the bag body 2. The notch 4a is provided in the side edge-sealing portion 2c between the upper edge-sealing portion 2b of the bag body 2 and the zipper 3. The notch 4a is a pentagonal tortoise shell notch having a home plate shape but can be appropriately selected from an I-notch having I-shape, a V-notch having V-shape, a U-notch having U-shape and the like. The cutting-opening part 4 allows the bag body 2 to open by tearing the bag body 2 by hand from the notch 4a that is the opening start part without using scissors or the like.

[0045] The packaging bag 1A of the present embodiment includes a steam-passing section 20 provided in two parts of the base portion 7c of the first zipper tape 7 (two parts separated in the up-down direction of the bag body 2) between which the first fitting portion 7a is interposed, and the steam-passing section 20 is used for releasing steam S generated inside the bag body 2 from the opening to the outside of the bag body 2.

[0046] The steam-passing section 20 is formed of a pair of rifts 21, and the pair of rifts 21 are positioned on two parts of the first zipper tape 7 between which the first fitting portion 7a is interposed and are configured such that parts of the base portion 7c are linearly torn in parallel in a direction in which the first zipper tape 7 extends. The pair of rifts 21 linearly penetrate the base portion 7c of the first zipper tape 7 in the thickness direction thereof at positions between the first fitting portion 7a and the pair of first welded portions 7b.

[0047] A plurality (three in the present embodiment) of steam-passing sections 20 are arranged side by side in the direction in which the first zipper tape 7 extends. In the present embodiment, the steam-passing section 20 (the pair of rifts 21) is provided at each of three parts of a central part in the longitudinal direction of the first zipper tape 7 and parts on two sides thereof between which the central part is interposed.

[0048] In the packaging bag 1A of the present embodiment, as shown in FIG. 3, the first gap D1 and the storage space K communicate with each other through the steam-passing section 20 opened by the pressure of the steam S generated inside the bag body 2 during the microwave heating by the microwave oven.

[0049] Specifically, in the steam-passing section 20, when the bag body 2 inflates due to the pressure of the steam S generated inside the bag body 2 from a state in which cut surfaces forming each rift 21 are in close contact with each other, the base portion 7c is pulled away from the bag body 2 (i.e., the packaging film 6a) by the fitted zipper fitting portions (the fitting portions 7a and 8a fitted to each other) so that the cut surfaces are separated. At this time, while the first zipper tape 7 is deformed, the first gap D1 is opened wide like a tunnel between the pair of rifts 21.

[0050] As a result, in the packaging bag 1A of the present embodiment, it is possible to cause the steam S generated inside the bag body 2 to be stably released through the opened steam-passing section 20 from the opening to the outside of the bag body 2.

[0051] In the present embodiment, the width (width in the up-down direction) of the base portions 7c and 8c of the first zipper tape 7 and the second zipper tape 8 is about 10 to 30 mm. The width (width in the up-down direction) of the first welded portion 7b and the second welded portion 8b is about 3 to 5 mm.

[0052] The length (length in the longitudinal direction) of the rift 21 may be appropriately adjusted such that the steam S is easily released or it is difficult for the steam S to be released according to the content L and cooking purposes, and it is preferably 3 to 30 mm, more preferably 5 to 10 mm from the viewpoint of releasing ease of the steam S.

[0053] The position of the steam-passing section 20 in the width direction of the bag body 2 may be appropriately adjusted such that the steam S is easily released or it is difficult for the steam S to be released according to the content L and cooking purposes, and it is preferable to provide the steam-passing section 20 in a central part in the width direction of the bag body 2, more specifically, within a range of 1/3 of the length in the width direction

of the bag body 2 including the center thereof, the range is obtained by dividing the length into three equal parts. If the steam-passing section 20 is within this range, the bag body 2 inflates and part thereof within the range protrudes when the steam S is generated, and the steam-passing section 20 is greatly opened, so the steam S can be easily released. In contrast, if the short rift 21 is provided to be close to the end in the width direction of the bag body 2 away from the central part, the release of the steam S can be limited, and it can be convenient when the content L is required to be steamed.

[0054] In the present embodiment, the first zipper tape 7 is provided with the steam-passing section 20, but the second zipper tape 8 may be provided with the steam-passing section 20, or both of the first zipper tape 7 and the second zipper tape 8 may be provided with the steam-passing section 20.

[0055] When comparing the male fitting portion that is the first fitting portion 7a with the female fitting portion that is the second fitting portion 8a, the first fitting portion 7a has a less amount of resin per unit length and lower rigidity than the second fitting portion 8a, so the steam-passing section 20 in the first zipper tape 7 easily deforms when the bag body 2 inflates due to the pressure of the steam S, and the steam S is easily released. Therefore, it is preferable to provide the steam-passing section 20 in the first zipper tape 7 including the first fitting portion 7a that is the male fitting portion.

[0056] Regarding the method of using the packaging bag 1A of the present embodiment, first, an empty bag body 2 whose upper part is not adhered is prepared. That is, an empty bag body 2 is prepared in which three packaging films 6a, 6b and 6c are adhered by heat fusion at only the side and bottom parts thereof and which has an upper opening before adhering the upper peripheral edges thereof by heat fusion.

[0057] Next, the content L is filled in the empty bag body 2, and thereafter the bag body 2 is sealed. Specifically, the content L is filled into the storage space K of the bag body 2 from the upper opening in a state in which the fitting between the first fitting portion 7a and the second fitting portion 8a of the zipper 3 is released, and thereafter the upper peripheral edges of the packaging films 6a and 6b are adhered to each other by heat welding to form the upper edge-sealing portion 2b. As a result, the storage space K is air-tightly sealed, and the packaging bag 1A storing the content L is shipped.

[0058] When using the packaging bag 1A, a user tears the bag body 2 from the notch 4a to form an opening, then opens the zipper 3, and supplies food ingredients, water, seasoning liquid and the like from the opening into the bag body 2. Thereafter, the zipper 3 is sealed by fitting the first fitting portion 7a and the second fitting portion 8a to each other, and then the heat cooking is performed by the microwave oven.

[0059] During the heat cooking, the packaging bag 1A can stand by itself, and the steam S can be released through the steam-passing section 20 even if the zipper 3 is sealed, so the bag body 2 can be prevented from bursting. Since the zipper 3 is sealed, it is possible to prevent the inside of the microwave oven from getting dirty by the heated content L scattering.

After the heat cooking, the zipper 3 is opened, and then the cooked content L can be taken out from the opening.

(Second Embodiment)

[0060] Next, as a second embodiment of the present invention, a zipper-attached microwave oven applicable packaging bag (hereinafter simply referred to as a "packaging bag") 1B shown in, for example, FIGS. 4 to 10 will be described.

[0061] FIG. 4 is a plan view showing a configuration of the packaging bag 1B. FIG. 5 is a cross-sectional view of the packaging bag 1B along line V-V shown in FIG. 4. FIG. 6 is a cross-sectional view in which an enclosed part T shown in FIG. 5 is enlarged and showing a state of the packaging bag 1B before opening. FIG. 7 is a cross-sectional view along line VII-VII shown in FIG. 4, part (A) thereof is a diagram showing a state before a tab piece 9a (tab) of a cut tape 9 is pulled, and part (B) thereof is a diagram showing a state in which the tab piece 9a of the cut tape 9 is pulled. FIG. 8 is a cross-sectional view in which the enclosed part T shown in FIG. 5 is enlarged and showing a state of the packaging bag 1B after opening. FIG. 9 is a cross-sectional view in which the enclosed part T shown in FIG. 5 is enlarged and showing a state in which a zipper 3 is unsealed after the packaging bag 1B is opened. FIG. 10 is a cross-sectional view in which the enclosed part T shown in FIG. 5 is enlarged and showing a state in which steam S generated inside a bag body 2 of the packaging bag 1B is released to the outside of the bag body 2. In the following description, descriptions of parts equivalent to those of the packaging bag 1A of the first embodiment are omitted, and the same reference numerals are attached to the parts in the drawings.

[0062] As shown in FIGS. 4 and 5, the packaging bag 1B of the present embodiment includes the bag body 2, the zipper 3, a cutting-opening part 4 and an easy peeling part 5, and the bag body 2 can be opened to form an opening 2a (refer to FIG. 8 to 10) by tearing part of the bag body 2 using the cutting-opening part 4. The packaging bag 1B is subjected to the microwave heating by the microwave oven in a state in which the zipper 3 is sealed after food ingredients are stored inside the bag body 2 from the opening 2a, whereby the food ingredients are heated and cooked.

[0063] The bag body 2 constituting the packaging bag 1B of the present embodiment is formed of a flat bag (hereinafter also referred to as a "four-sided bag") with no gusset at the bottom in which two packaging films 6a and 6b overlap each other, and peripheral edges at each of the top, sides and bottom thereof are adhered to each other to form an upper edge-sealing portion 2b, side edge-sealing portions 2c and a bottom edge-sealing portion 2d.

[0064] The packaging bag 1B of the present embodiment includes a storage space K for storing a content L such as food ingredients inside the bag body 2, and the liquid content L such as seasoning liquid and seasoning is stored therein in advance.

[0065] As shown in FIGS. 4, 5 and 6, the zipper 3 constituting the packaging bag 1B of the present embodiment includes, as a zipper tape provided with a zipper fitting portion, a first zipper tape 7 attached by being adhered to the inner surface of the packaging film 6a that forms the front surface of the bag body 2, and a second zipper tape 8 attached by being adhered to the inner surface of the packaging film 6a in a state in which the second zipper tape 8 covers the first zipper tape 7.

[0066] In a state in which a first gap D1 is provided between the first zipper tape 7 and the inner surface of the packaging film 6a, the first zipper tape 7 is attached by heat welding in the width direction of the bag body 2 to the upper part of the inner surface of the packaging film 6a through a pair of first welded portions 7b positioned on two sides of the first zipper tape 7 (two sides separated in the up-down direction of the bag body 2) between which the first gap D1 is interposed.

[0067] In a state in which the second zipper tape 8 covers the first zipper tape 7 and a second gap D2 is provided between the second zipper tape 8 and the inner surface of the packaging film 6a, the second zipper tape 8 is attached by heat welding in the width direction of the bag body 2 to the upper part of the inner surface of the packaging film 6a through a second welded portion 8b positioned on one side (upper side in the present embodiment) of two sides of the second zipper tape 8 between which the second gap D2 is interposed.

[0068] The cutting-opening part 4 allows the opening 2a to be formed by tearing part of the packaging film 6a close to the peripheral edge (i.e., the upper edge-sealing portion 2b) of the bag body 2 among parts of the packaging film 6a between the first welded portions 7b of the first zipper tape 7 and the second welded portion 8b of the second zipper tape 8.

[0069] Specifically, the cutting-opening part 4 includes the cut tape 9 provided with the tab piece 9a at one end thereof. The cut tape 9 is attached to an upper part (in other words, a position close to the peripheral edge of the bag body 2) of the inner surface of the packaging film 6a than a first fitting portion 7a of the first zipper tape 7 to extend in the width direction of the bag body 2.

[0070] The cut tape 9 is heat-welded in the width direction of the bag body 2 to the inner surface of the packaging film 6a through a third welded portion 9b positioned between the second welded portion 8b and the first welded portion 7b adjacent to the second welded portion 8b.

[0071] The cut tape 9 is peelably adhered to the second zipper tape 8 through an easy peeling layer 10a at the adhered part of the side peripheral edge of the bag body 2. Peeling forms of the easy peeling layer 10a include interfacial peeling, cohesive peeling, and interlayer peeling, and they may be properly used according to sealing conditions, sterilization conditions and the like.

[0072] For example, in a case of the interfacial peeling, a laminate obtained by laminating a support layer made of PE and an adhesive layer containing ethylene vinyl acetate copolymer (EVA) and an adhesive can be used. In a case of the cohesive peeling, a laminate obtained by laminating a support layer made of PE or PP and a cohesive peeling layer containing PP, PE and, if necessary, other materials can be used.

[0073] For the cut tape 9, a laminate obtained by laminating the above-described sealant layer, the adhesive layer, the intermediate layer, the adhesive layer and the easy peeling layer 10a in this order, a laminate obtained by laminating the sealant layer, the adhesive layer, the intermediate layer, the adhesive layer, the intermediate layer, the adhesive layer and the easy peeling layer 10a in this order, a laminate obtained by laminating the sealant layer, the adhesive layer, the intermediate layer, the printed layer, the adhesive layer and the easy peeling layer 10a in this order, or a laminate obtained by laminating the sealant layer, the adhesive layer, the intermediate layer, the printed layer, the adhesive layer, the intermediate layer, the adhesive layer and the easy peeling layer 10a in this order can be used.

[0074] In the present embodiment, as the cut tape 9, a laminate obtained by laminating a sealant layer made of CPP with a thickness of 60 μm, an adhesive layer, an intermediate layer made of ONY with a thickness of 25 μm, an adhesive layer, an intermediate layer made of ONY with a thickness of 25 μm, an adhesive layer, and a PE-based easy peeling layer 10a with a thickness of 50 μm in this order is used.

[0075] The tab piece 9a is provided to be separable from the bag body 2 by cutting the packaging films 6a, 6b and the second zipper tape 8 along the outline of the tab piece 9a. The base end of the tab piece 9a is provided with a rift 9c formed by cutting the second zipper tape 8 and the packaging film 6b in a direction orthogonal to the cut tape 9.

[0076] In the cutting-opening part 4, as shown in parts (A) and (B) of FIG. 7 and FIG. 8, the packaging film 6a is linearly torn along the cut tape 9 while the tab piece 9a is pulled. At this time, the cut tape 9 is peeled from the second zipper tape 8 together with the easy peeling layer 10a starting from the rift 9c. Thereby, it is possible to form the opening 2a linearly in the width direction of the bag body 2.

[0077] In the packaging bag 1B of the present embodiment, as shown in FIG. 8, the opening 2a of the bag body 2 formed by the cutting-opening part 4 can be sealed by the zipper 3. In addition, in the packaging bag 1B of the present embodiment, as shown in FIG. 9, the opening 2a can be opened by releasing the fitting between the first fitting portion 7a and the second fitting portion 8a of the zipper 3, and food ingredients E can be stored inside of the bag body 2 through the opening 2a.

[0078] As shown in FIGS. 4, 5 and 6, the easy peeling part 5 includes the above-described easy peeling layer

10a, and an easy peeling layer 10b peelably adhering the inner surface of the packaging film 6a to the second zipper tape 8. That is, the packaging film 6a and the second zipper tape 8 are peelably adhered to each other through the easy peeling layers 10a and 10b positioned on two sides (two sides separated in the up-down direction of the bag body 2) between which the first zipper tape 7 is interposed. For the easy peeling layer 10b, the same layer can be used as the above-described easy peeling layer 10a.

[0079] The easy peeling part 5 includes an easy peeling tape 11 peelably adhered to the second zipper tape 8 through the easy peeling layer 10b. The easy peeling tape 11 is heat-welded in the width direction of the bag body 2 to the inner surface of the packaging film 6a through a fourth welded portion 11a positioned on the other (lower side in the present embodiment) of two sides between which the second gap D2 is interposed.

[0080] For the easy peeling tape 11, a laminate obtained by laminating the above-described sealant layer, the adhesive layer, the intermediate layer, the adhesive layer and the easy peeling layer 10b in this order, a laminate obtained by laminating the sealant layer, the adhesive layer, the intermediate layer, the adhesive layer, the intermediate layer, the adhesive layer and the easy peeling layer 10b in this order, a laminate obtained by laminating the sealant layer, the adhesive layer, the intermediate layer, the printed layer, the adhesive layer and the easy peeling layer 10b in this order, or a laminate obtained by laminating the sealant layer, the adhesive layer, the intermediate layer, the printed layer, the adhesive layer, the intermediate layer, the adhesive layer and the easy peeling layer 10b in this order can be used.

[0081] In the present embodiment, for the easy peeling tape 11, a laminate obtained by laminating a sealant layer made of CPP with a thickness of 60 μm, an adhesive layer, an intermediate layer made of ONY with a thickness of 25 μm, an adhesive layer, an intermediate layer made of ONY with a thickness of 25 μm, an adhesive layer, and a polyethylene (PE) based easy peeling layer 10a with a thickness of 50 μm in this order is used.

[0082] In the easy peeling part 5, as shown in FIG. 9, the opening 2a is formed in the bag body 2 by using the cutting-opening part 4, the bag body 2 is opened, and thereafter the fitting between the first fitting portion 7a and the second fitting portion 8a of the zipper 3 is released, whereby the second zipper tape 8 is peeled from the easy peeling layer 10b.

[0083] In the packaging bag 1B of the present embodiment, before the opening 2a is formed and the bag body 2 is opened, the easy peeling layer 10b can prevent the liquid content L from entering the inside of the second gap D2.

[0084] The packaging bag 1B of the present embodiment includes a steam-passing section 20 provided on two sides (two sides separated in the up-down direction of the bag body 2) of the base portion 7c of the first zipper tape 7 between which the first fitting portion 7a is interposed, and the steam-passing section 20 is used for releasing the steam S generated inside the bag body 2 from the opening 2a to the outside of the bag body 2.

[0085] The steam-passing section 20 is formed of a pair of rifts 21, and the pair of rifts 21 are positioned on two sides of the first zipper tape 7 between which the first fitting portion 7a is interposed and are configured such that parts of the base portion 7c are linearly torn in parallel in a direction in which the first zipper tape 7 extends. The pair of rifts 21 linearly penetrate the base portion 7c of the first zipper tape 7 in the thickness direction thereof at positions between the first fitting portion 7a and the pair of first welded portions 7b.

[0086] A plurality (three in the present embodiment) of steam-passing sections 20 are arranged side by side in the direction in which the first zipper tape 7 extends. In the present embodiment, the steam-passing section 20 (the pair of rifts 21) is provided at each of three parts of a central part in the longitudinal direction of the first zipper tape 7 and parts on two sides thereof between which the central part is interposed.

[0087] In the packaging bag 1B of the present embodiment, as shown in FIG. 10, the first gap D1 and the second gap D2 communicate with each other through the steam-passing section 20 opened by the pressure of the steam S generated inside the bag body 2 during the microwave heating by the microwave oven.

[0088] Specifically, in the steam-passing section 20, when the bag body 2 inflates due to the pressure of the steam S generated inside the bag body 2 from a state in which cut surfaces forming each rift 21 are in close contact with each other, the base portion 7c is pulled away from the bag body 2 (i.e., the packaging film 6a) by the fitted zipper fitting portions so that the cut surfaces are separated. At this time, while the first zipper tape 7 is deformed, the first gap D1 is opened wide like a tunnel between the pair of rifts 21.

[0089] As a result, in the packaging bag 1B of the present embodiment, the steam S generated inside the bag body 2 can be stably released through the opened steam-passing section 20 from the opening 2a to the outside of the bag body 2.

[0090] Regarding the method of using the packaging bag 1B of the present embodiment, first, an empty bag body 2 whose upper part is not adhered is prepared. Specifically, an empty bag body 2 is prepared in which two packaging films 6a and 6b are adhered by heat fusion at only the side and bottom parts thereof and which has an upper opening before adhering the upper peripheral edges thereof by heat fusion.

[0091] Next, the content L is filled in the empty bag body 2, and thereafter the bag body 2 is sealed. Specifically, the content L is filled into the storage space K of the bag body 2 from the upper opening, and thereafter the upper peripheral edges of the packaging films 6a and 6b are adhered to each other by heat welding to form the upper edge-sealing portion 2b. As a result, the storage space K is air-tightly sealed, and the packaging bag 1B

storing the content L is shipped.

[0092] When using the packaging bag 1B, a user linearly tears the packaging film 6a along the cut tape 9 while pulling the tab piece 9a of the cut tape 9 to form the opening 2a, then opens the zipper 3, and supplies food ingredients, water, seasoning liquid and the like from the opening 2a into the bag body 2. Thereafter, the zipper 3 is sealed, and then the heat cooking by the microwave oven is performed.

[0093] During the heat cooking, the steam S can be released through the steam-passing section 20 even if the zipper 3 is sealed, so the bag body 2 can be prevented from bursting. Since the zipper 3 is sealed, it is possible to prevent the inside of the microwave oven from getting dirty by the heated content L scattering.

After the heat cooking, the zipper 3 is opened, and then the cooked content L can be taken out from the opening 2a.

[0094] Compared to the packaging bag 1A of the first embodiment, the packaging bag 1B of the present embodiment does not require an operation of releasing the fitting of the zipper 3 when filling the content L, and it is possible to fill the content L using a filling machine similar to that used for a packaging bag without the zipper 3. After the content L is filled, the content L does not come into contact with the fitting portion of the zipper 3 before the user releases the fitting portion of the zipper 3 by hand and fingers and supplies food ingredients and the like from the opening 2a of the packaging bag 1B thereinto. Therefore, the user's fingers are not soiled when releasing the fitting portion of the zipper 3.

[0095] In the packaging bag 1B of the present embodiment, even if the bag body 2 is laid down, since the zipper 3 is attached to the packaging film 6a and is separated from the liquid surface of the content L, it is possible to prevent the content L from spilling from the steam-passing section 20 during the heat cooking. Accordingly, even if the microwave oven is small and does not have enough height to allow the bag body 2 to stand by itself, the user can perform the heat cooking at ease without soiling the inside of the microwave oven.

(Third Embodiment)

[0096] Next, as a third embodiment of the present invention, a zipper-attached microwave oven applicable packaging bag (hereinafter simply referred to as a "packaging bag") 1C shown in, for example, FIGS. 11 to 13 will be described.

[0097] FIG. 11 is a plan view showing a configuration of the packaging bag 1C. FIG. 12 is a cross-sectional view of the packaging bag 1C along line XII-XII shown in FIG. 11. FIG. 13 is a cross-sectional view showing a state of the packaging bag 1C before a content is stored inside a bag body thereof. In the following description, descriptions of parts equivalent to those of the packaging bag 1A of the first embodiment and the packaging bag 1B of the second embodiment are omitted, and the same reference numerals are attached to the parts in the drawings.

[0098] As shown in FIGS. 11, 12 and 13, the packaging bag 1C of the present embodiment includes a bag body 2, a zipper 3, a cutting-opening part 4 and an easy peeling part 5, and the bag body 2 can be opened to form an opening 2a by tearing part of the bag body 2 by using the cutting-opening part 4. The packaging bag 1C is subjected to the microwave heating by the microwave oven in a state in which the zipper 3 is sealed after food ingredients are stored inside the bag body 2 from the opening 2a, whereby the food ingredients are heated and cooked.

[0099] Similarly to the packaging bag 1A of the first embodiment, the bag body 2 constituting the packaging bag 1C of the present embodiment includes a packaging film 6a that forms a front surface as one surface of the bag body 2, a packaging film 6b that forms a rear surface as another surface thereof, and a packaging film 6c that forms a bottom surface thereof, the packaging film 6c folded in half is sandwiched between the packaging films 6a and 6b and overlaps them, and the peripheral edges thereof are adhered by heat welding, whereby the bag body 2 is a self-standing bottom-gusset bag with a gusset at the bottom, which is also called a standing pouch. In other words, the bag body 2 is a bottom-gusset bag having an upper part configured of two packaging films and a lower part configured of four packaging films, with a boundary R being positioned between the upper and lower parts.

[0100] Similarly to the packaging bag 1B of the second embodiment, the zipper 3 constituting the packaging bag 1C of the present embodiment includes, as a zipper tape provided with a zipper fitting portion, a first zipper tape 7 attached by being adhered to the inner surface of the packaging film 6a constituting the front surface of the bag body 2, and a second zipper tape 8 attached by being adhered to the inner surface of the packaging film 6a in a state in which the second zipper tape 8 covers the first zipper tape 7.

[0101] Similarly to the packaging bag 1B of the second embodiment, the packaging bag 1C of the present embodiment includes a steam-passing section 20 provided on two sides (two sides separated in the up-down direction of the bag body 2) of a base portion 7c of the first zipper tape 7 between which a first fitting portion 7a is interposed, and the steam-passing section 20 is used for releasing steam S generated inside the bag body 2 from the opening 2a to the outside of the bag body 2.

[0102] In the packaging bag 1C of the present embodiment, similarly to the packaging bag 1B of the second embodiment, a first gap D1 and a second gap D2 communicate with each other through the steam-passing section 20 opened by the pressure of the steam S generated inside the bag body 2 during the microwave heating by the microwave oven.

[0103] Specifically, in the steam-passing section 20, when the bag body 2 inflates due to the pressure of the steam S generated inside the bag body 2 from a state in

which cut surfaces forming each rift 21 are in close contact with each other, the base portion 7c is pulled away from the bag body 2 (i.e., the packaging film 6a) by the fitted zipper fitting portions so that the cut surfaces are separated. At this time, while the first zipper tape 7 is deformed, the first gap D1 is opened wide like a tunnel between a pair of rifts 21.

[0104] As a result, in the packaging bag 1C of the present embodiment, the steam S generated inside the bag body 2 can be stably released through the opened steam-passing section 20 from the opening 2a to the outside of the bag body 2.

[0105] The method of using the packaging bag 1C of the present embodiment is similar to that of the packaging bag 1B of the second embodiment, so the descriptions thereof are omitted.

[0106] The packaging bag 1C of the present embodiment has configurations equivalent to those of the packaging bag 1A of the first embodiment and the packaging bag 1B of the second embodiment and can obtain effects equivalent to those of the packaging bag 1A of the first embodiment and the packaging bag 1B of the second embodiment.

[0107] The present invention is not necessarily limited to the first to third embodiments, and various modifications can be made within the scope of the present invention.

[0108] Specifically, the steam-passing section 20 is not necessarily limited to one composed of the pair of rifts 21 but may be configured as shown in, for example, parts (A) to (C) of FIG. 14.

[0109] Among these, a steam-passing section 20 shown in part (A) of FIG. 14 is provided with a perforation rift 22 and is configured such that the perforation rift 22 is linearly cut due to the pressure of the steam S generated inside the bag body 2.

[0110] A steam-passing section 20 shown in part (B) of FIG. 14 is provided with a linear (oval) hole 23 instead of the rift 21.

[0111] A steam-passing section 20 shown in part (C) of FIG. 14 is provided with a plurality of holes 24 linearly arranged instead of the rift 21.

[0112] The holes 23 and 24 can be formed by punching the first zipper tape 7.

[0113] As described above, the steam-passing section 20 may include either one of a rift or a hole or both thereof formed by cutting the first zipper tape 7, and the rift and hole are disposed at two positions between which the first fitting portion 7a is interposed. It is possible to appropriately adjust the arrangement and number of the steam-passing sections 20.

[0114] The cutting-opening part 4 is not necessarily limited to a configuration in which the opening 2a is formed by tearing the packaging film 6a along the cut tape 9 while pulling the tab piece 9a provided at one end of the cut tape 9, but may have a configuration in which an opening is formed by tearing part of the bag body 2.

[0115] The content L may be a cooked food that can be eaten only by heating it by the microwave oven. The filling point of the content L is not limited to the above-described upper opening, and the content L may be filled from an opening provided at the side or bottom.

[0116] The steam-passing section 20 is not limited to one that completely penetrates the base portion 7c of the first zipper tape 7 but may have a semi-penetration part that partially penetrates the base portion 7c in the thickness direction and be configured such that the semi-penetration part completely penetrates it when a pressure is applied to the zipper 3 due to the pressure of the steam S.

[0117] The first zipper tape 7 is attached to the bag body 2 by adhering part of the base portion 7c to the inner surface of the bag body 2 by heat welding, but in the first embodiment, a fitting portion (i.e., the second fitting portion 8a) provided on the inner surface of the bag body 2 on which the steam-passing section 20 is not disposed may be formed at the same time as a film forming the sealant layer is extruded.

[0118] In each of the first to third embodiments, the peripheral edge of the bag body 2 is formed by adhering the packaging films 6a, 6b and 6c together, but part of the peripheral edge may be formed of a bent part of the packaging film 6a, 6b or 6c. Specifically, the bottom edge-sealing portion 2d of the bottom-gusset bag of the first and third embodiments may be the bent part. The flat bag of the second embodiment may be a three-sided bag with adhered three peripheral edges instead of a four-sided bag with adhered four peripheral edges.

[0119] The bag body 2 of each of the first to third embodiments may be formed of one folded packaging film or a plurality of packaging films.

[0120] In the packaging bag 1B of the second embodiment and the packaging bag 1C of the third embodiment, instead of a configuration in which the second gap D2 communicates with the storage space K by peeling the easy peeling part 5, a configuration may be adopted in which the base portion 8c of the second zipper tape 8 close to the storage space K is provided with a thin part, and the second gap D2 communicates with the storage space K by breaking the thin part when releasing the fitting between the first fitting portion 7a and the second fitting portion 8a.

[0121] Moreover, as modifications of the first embodiment, the following first and second modifications may be adopted.

[0122] As the first modification of the first embodiment, a zipper-attached microwave oven applicable packaging bag (hereinafter simply referred to as "packaging bag") 1AA shown in FIG. 15 will be described. In the following description of the first modification, descriptions of parts equivalent to those of the packaging bag 1A of the first embodiment are omitted, and the same reference numerals are attached to the parts in the drawings. A direction in which a zipper 3 extends is referred to as a width direction, and a direction along the front and rear surfaces of the packaging bag 1AA and orthogonal to the width direction is referred to as an up-down direction. A side

on which the zipper 3 is provided is referred to as the upper side of the packaging bag 1AA.

[0123] FIG. 15 is a plan view showing the configuration of the packaging bag 1AA. The packaging bag 1AA of the present modification has a similar configuration to the packaging bag 1A of the first embodiment, except that a storage port 2e for storing a content L in advance in a storage space K of a bag body 2 is provided on one side part of two side parts of the bag body 2, and that the width of an upper edge portion 26, which is a part of the bag body 2 positioned above the storage port 2e, is less than the entire length in the width direction of the bag body 2 (the entire length in the width direction at a position of the storage port 2e). That is, before a part (an intermediate part in the up-down direction) of the above-described one side part of packaging films 6a and 6b configuring the bag body 2 is adhered together, the part is provided with the storage port 2e that communicates with the storage space K between the packaging films 6a and 6b. A side on which the storage port 2e is provided is referred to as the left side of the packaging bag 1AA. The upper edge portion 26 includes at least an upper edge-sealing portion 2b and the zipper 3. In the present modification, a part of the bag body 2 in which the storage port 2e is provided further protrudes leftward than the left end of the upper edge portion 26. When the packaging films 6a and 6b at the storage port 2e are adhered to each other by heat welding, the storage port 2e is sealed, and a storage port-sealing portion 2f is formed. In the present modification, the zipper 3 is provided on a side (i.e., the upper part) of a plurality of sides of the bag body 2, and the storage port 2e is provided in a side (i.e., the above-described one side part) different from the side on which the zipper 3 is provided.

[0124] Regarding the method of using the packaging bag 1AA of the present modification, first, an empty bag body 2 is prepared in which one side (the left side in FIG. 15) of two sides thereof is not adhered together. That is, an empty bag body 2 is prepared in which each of the other side (the right side in FIG. 15) of the two sides, the upper part and the bottom part of three packaging films 6a, 6b and 6c is adhered together by heat welding and which has the storage port 2e before the above-described one side is adhered together by heat welding.

[0125] Next, the empty bag body 2 is filled with the content L, and then the bag body 2 is sealed. Specifically, the content L is filled in the storage space K of the bag body 2 from the storage port 2e, and thereafter the packaging films 6a and 6b at the storage port 2e are adhered to each other by heat welding, so that the storage port-sealing portion 2f is formed. Thereby, the storage space K is air-tightly sealed, and the packaging bag 1AA containing the content L is shipped.

[0126] In this way, in the packaging bag 1AA of the present modification, an operation to release the fitting of the zipper 3 is not required at the time of filling the content L, and the content L can be filled using a similar filling machine to that used for a packaging bag without the zipper 3. In addition, after the content L is filled, the fitting of the zipper 3 is maintained until the fitting part of the zipper 3 is released by hand and fingers of a user in order for the user to put food ingredients and the like from an upper opening of the packaging bag 1AA and the food ingredients and the like are put thereinto, so the content L does not come into contact with the fitting part (particularly, the upper side of the fitting part) of the zipper 3. Therefore, it is possible to prevent the user's fingers from getting dirty when releasing the fitting part of the zipper 3.

[0127] In the present modification, the width of the upper edge portion 26 is less than the entire length in the width direction of the bag body 2, and a part of the bag body 2 in which the storage port 2e is provided further protrudes leftward than the left end of the upper edge portion 26. Therefore, at the time the storage port 2e and the vicinity thereof are heated and pressed to form the storage port-sealing portion 2f, the heating and pressing can be performed while avoiding the upper edge portion 26, and the influence of the thick zipper 3 on the heating and pressing can be eliminated.

[0128] A packaging bag manufacturer may prepare an empty bag body 2 having the storage port 2e before heat welding, and a food product manufacturer may prepare the packaging bag 1AA containing the content L. In this case, the food product manufacturer fills the content L from the storage port 2e in the storage space K of the bag body 2 and thereafter adheres the packaging films 6a and 6b at the storage port 2e by heat welding to form the storage port-sealing portion 2f. Here, although a stepped seal portion 2g positioned between the storage port 2e and a bottom edge-sealing portion 2d is a part in which the two packaging films 6a and 6b overlap each other, since the stepped seal portion 2g is positioned in the vicinity of the bottom edge-sealing portion 2d in which four packaging films overlap each other, a step may occur between these sealing portions, and it may be relatively difficult to perform heat welding. Therefore, when the packaging bag manufacturer forms the stepped seal portion 2g by heat welding at the time of preparing the empty bag body 2, the food product manufacturer does not have to form the stepped seal portion 2g, and it is possible to prevent poor sealing at the stepped seal portion 2g.

[0129] Next, as the second modification of the first embodiment, a zipper-attached microwave oven applicable packaging bag (hereinafter simply referred to as "packaging bag") 1AB shown in FIG. 16 will be described. In the following description of the second modification, descriptions of parts equivalent to those of the packaging bag 1AA of the first modification are omitted, and the same reference numerals are attached to the parts in the drawings.

[0130] FIG. 16 is a plan view showing the configuration of the packaging bag 1AB. The packaging bag 1AB of the present modification has a similar configuration to that of the first modification, except that a storage port 2e provided in an intermediate portion in the up-down direction of one side (the left side in FIG. 16) of the bag

body 2 further protrudes outward (leftward) than portions (upper edge portion 26 and lower edge portion 27 to be described below) other than the intermediate portion of the one side, and that the widths of the upper edge portion 26 and the lower edge portion 27 that is a part of the bag body 2 positioned below the storage port 2e are less than the entire length in the width direction of the packaging bag 1AB (the entire length in the width direction at a position of the storage port 2e).

[0131] In the packaging bag of the first or second modification provided with the storage port 2e at the side, after the content L is filled from the storage port 2e in the storage space K of the bag body 2, the packaging films 6a and 6b at the storage port 2e are adhered to each other by heat welding using heating and pressing to form the storage port-sealing portion 2f. Therefore, at the time of forming the storage port-sealing portion 2f, two packaging films 6a and 6b are heat-welded. On the other hand, at the bottom of the bag body 2, heating and pressing are performed in a state where a packaging film 6c folded in half is disposed between the packaging films 6a and 6b to form the bottom edge-sealing portion 2d, so four packaging films are heat-welded for forming the bottom edge-sealing portion 2d. In this way, the numbers of packaging films to be heat-fused are different between the side part and the bottom part of the bag body 2, so the thicknesses of the fused portions differ, and a step may occur between these portions. However, in the second modification, since the storage port 2e is provided to protrude from the side part of the bag body 2, the storage port 2e and the vicinity thereof can be appropriately heated and pressed while a heating part such as a heat seal bar does not go on the thick upper edge portion and an area (e.g., the bottom edge-sealing portion 2d) where four packaging films overlap each other during the heating and pressing, thereby preventing the pressing force for forming the storage port-sealing portion 2f from being insufficient. Therefore, it is possible to appropriately form the storage port-sealing portion 2f and to reliably seal the storage port 2e.

[0132] Moreover, the configurations of the first and second modifications may be applied to the second and third embodiments.

[0133] A zipper 3 configured to be attached to a bag body 2 inside which steam is generated, includes: a first zipper tape 7 including a base portion 7c and a first fitting portion 7a; and a second zipper tape 8 including a second fitting portion 8a, the second fitting portion 8a being configured to fit the first fitting portion 7a to seal the zipper 3, wherein two parts of the base portion 7c of the first zipper tape 7 between which the first fitting portion 7a is interposed are provided with a steam-passing section 20 through which steam generated inside the bag body 2 passes.

[0134] In the zipper 3, the steam-passing section 30 includes either one of a rift 21 or 22 or a hole 23 or 24 and both thereof provided in the base portion 7c of the first zipper tape 7.

[0135] A zipper-attached microwave oven applicable packaging bag 1A, 1B or 1C includes: a bag body 2 in which inner surfaces of packaging films 6a and 6b overlap each other and peripheral edges of the packaging films 6a and 6b are adhered to each other; and the zipper 3, wherein the first and second zipper tapes 7 and 8 are welded to an inner surface or inner surfaces of the packaging films 6a and 6b, and the steam-passing section 20 releases steam generated inside the bag body 2 from an opening 2a of the bag body 2 formed after opening the bag body 2 to the outside of the bag body 2.

[0136] In the zipper-attached microwave oven applicable packaging bag 1A, 1B or 1C, the first zipper tape 7 is welded to an inner surface of a packaging film 6a of the packaging films 6a and 6b, the second zipper tape 8 is welded to the inner surface of the packaging film 6a on which the first zipper tape 7 is welded in a state in which the second zipper tape 8 covers the first zipper tape 7, and the opening 2a is formed by tearing part of the packaging film 6a close to a peripheral edge of the bag body 2 among parts of the packaging film 6a between a first welded portion 7b of the first zipper tape 7 and a second welded portion 8b of the second zipper tape 8.

[0137] The zipper-attached microwave oven applicable packaging bag 1A, 1B or 1C further includes: a cut tape 9 attached to the inner surface of the packaging film 6a, wherein the opening 2a is formed by pulling a tab piece 9a provided at one end of the cut tape 9 and tearing the packaging film 6a along the cut tape 9.

[0138] In the zipper-attached microwave oven applicable packaging bag 1A, 1B or 1C, a liquid content is stored inside the bag body 2.

[Reference Signs List]

[0139]

1A, 1B, 1C zipper-attached microwave oven applicable packaging bag (packaging bag)
2 bag body
2a opening
3 zipper
4 cutting-opening part
4a notch
5 easy peeling part
6a, 6b, 6c packaging film
7 first zipper tape
7a first fitting portion
7b first welded portion
8 second zipper tape
8a second fitting portion
8b second welded portion
9 cut tape
9a tab piece
9b third welded portion
10a, 10b easy peeling layer
11 easy peeling tape
11a fourth welded portion

20 steam-passing section
21, 22 rift
23, 24 hole
L content
K storage space
D1 first gap
D2 second gap
E food ingredient
S steam

Claims

1. A zipper configured to be attached to a bag body inside which steam is generated, the zipper comprising:

   a first zipper tape including a base portion and a first fitting portion; and
   a second zipper tape including a second fitting portion, the second fitting portion being configured to fit the first fitting portion to seal the zipper, wherein
   two parts of the base portion of the first zipper tape between which the first fitting portion is interposed are provided with a steam-passing section through which steam generated inside the bag body passes.

2. The zipper according to claim 1, wherein
   the steam-passing section includes either one of a rift or a hole and both thereof provided in the base portion of the first zipper tape.

3. A zipper-attached microwave oven applicable packaging bag, comprising:

   a bag body in which inner surfaces of packaging films overlap each other and peripheral edges of the packaging films are adhered to each other; and
   the zipper according to claim 1 or 2, wherein
   the first and second zipper tapes are welded to an inner surface or inner surfaces of the packaging films, and
   the steam-passing section releases steam generated inside the bag body from an opening of the bag body formed after opening the bag body to an outside of the bag body.

4. The zipper-attached microwave oven applicable packaging bag according to claim 3, wherein

   the first zipper tape is welded to an inner surface of a packaging film of the packaging films,
   the second zipper tape is welded to the inner surface of the packaging film to which the first zipper tape is welded in a state in which the second zipper tape covers the first zipper tape, and
   the opening is formed by tearing part of the packaging film close to a peripheral edge of the bag body among parts of the packaging film between a welded portion of the first zipper tape and a welded portion of the second zipper tape.

5. The zipper-attached microwave oven applicable packaging bag according to claim 4, further comprising:

   a cut tape attached to the inner surface of the packaging film, wherein
   the opening is formed by pulling a tab provided at one end of the cut tape and tearing the packaging film along the cut tape.

6. The zipper-attached microwave oven applicable packaging bag according to any one of claims 3 to 5, wherein
   a liquid content is stored inside the bag body.

FIG. 1

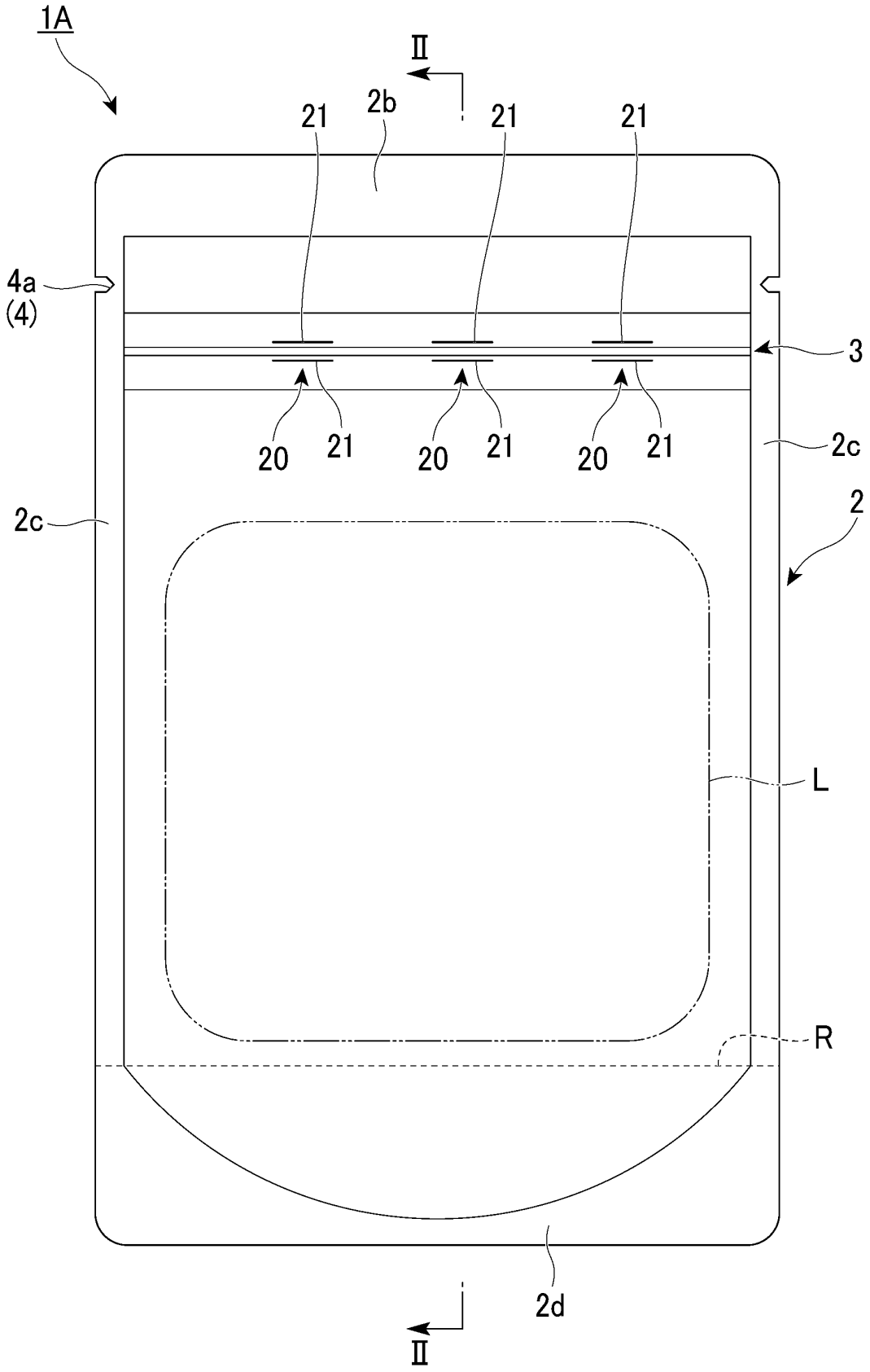


FIG. 2

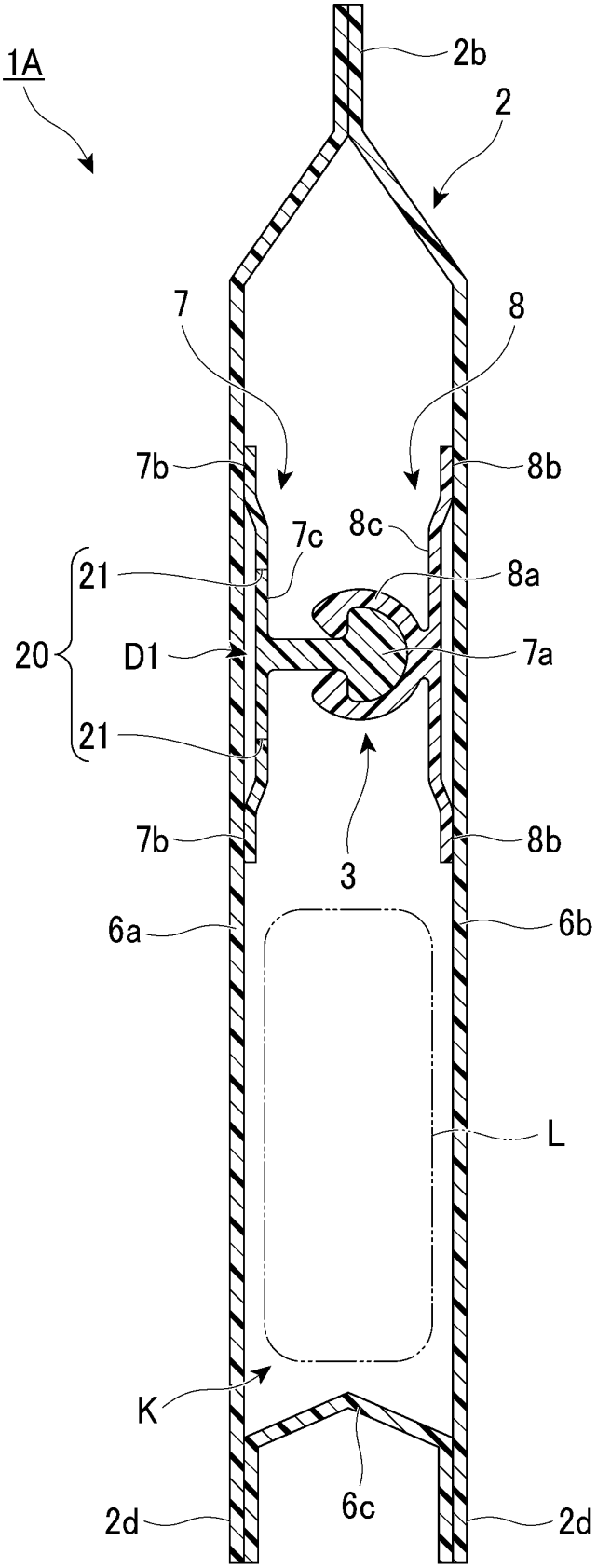


FIG. 3

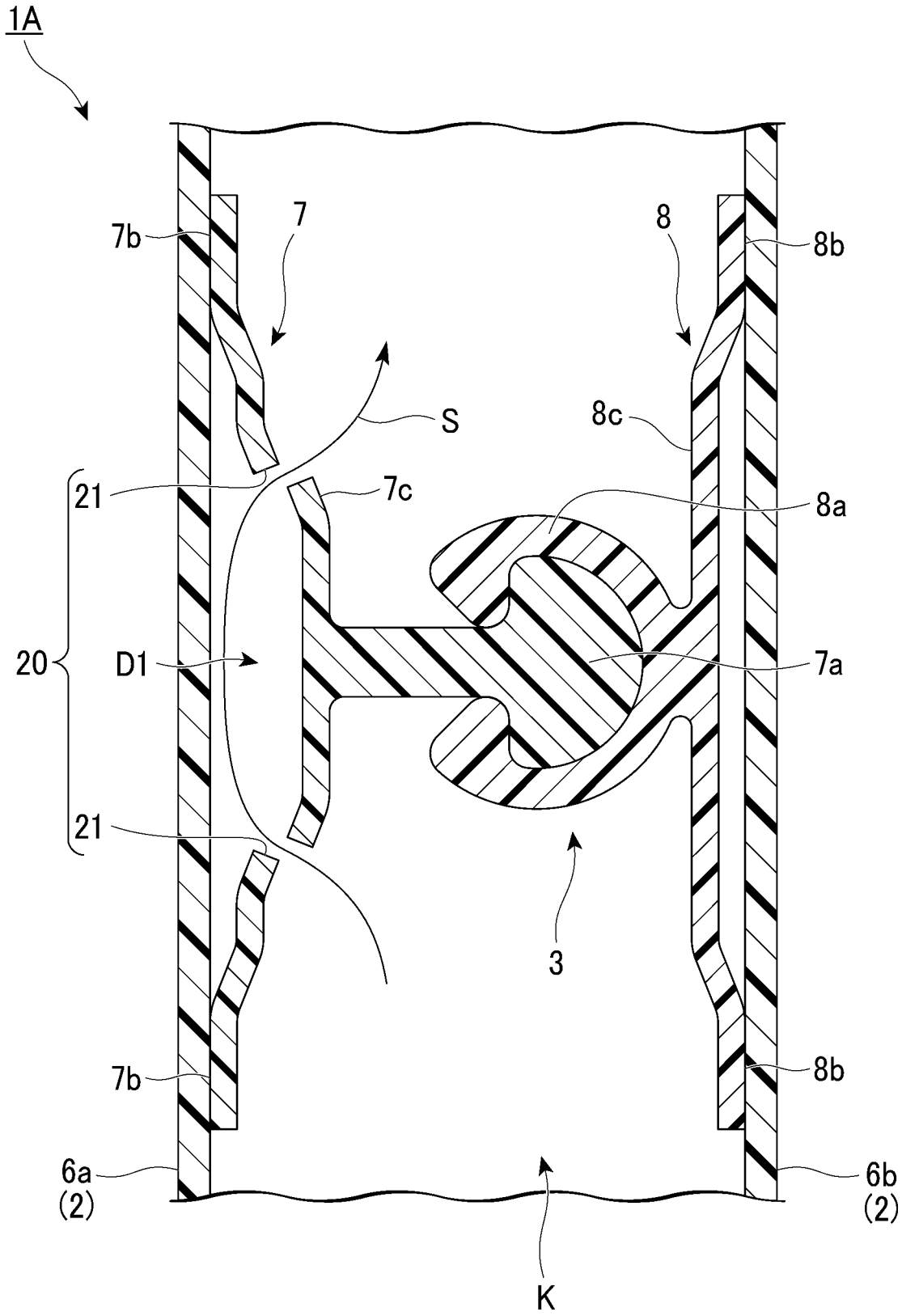
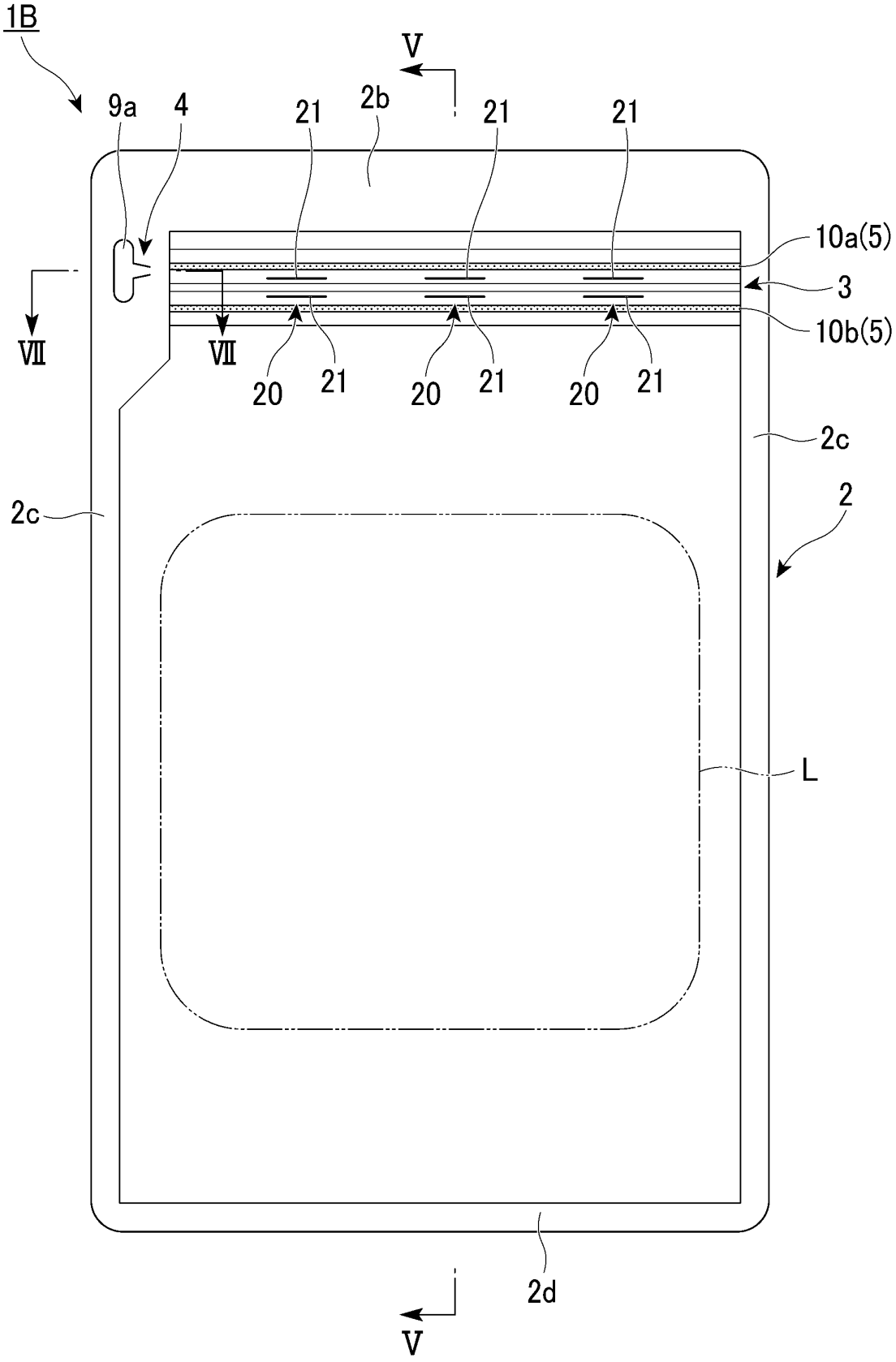


FIG. 4


1B
V
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4
21
2b
21
21
10a(5)
3
10b(5)
VII
VII
20
21
20
21
20
21
2c
2c
2
L
2d
V

FIG. 5

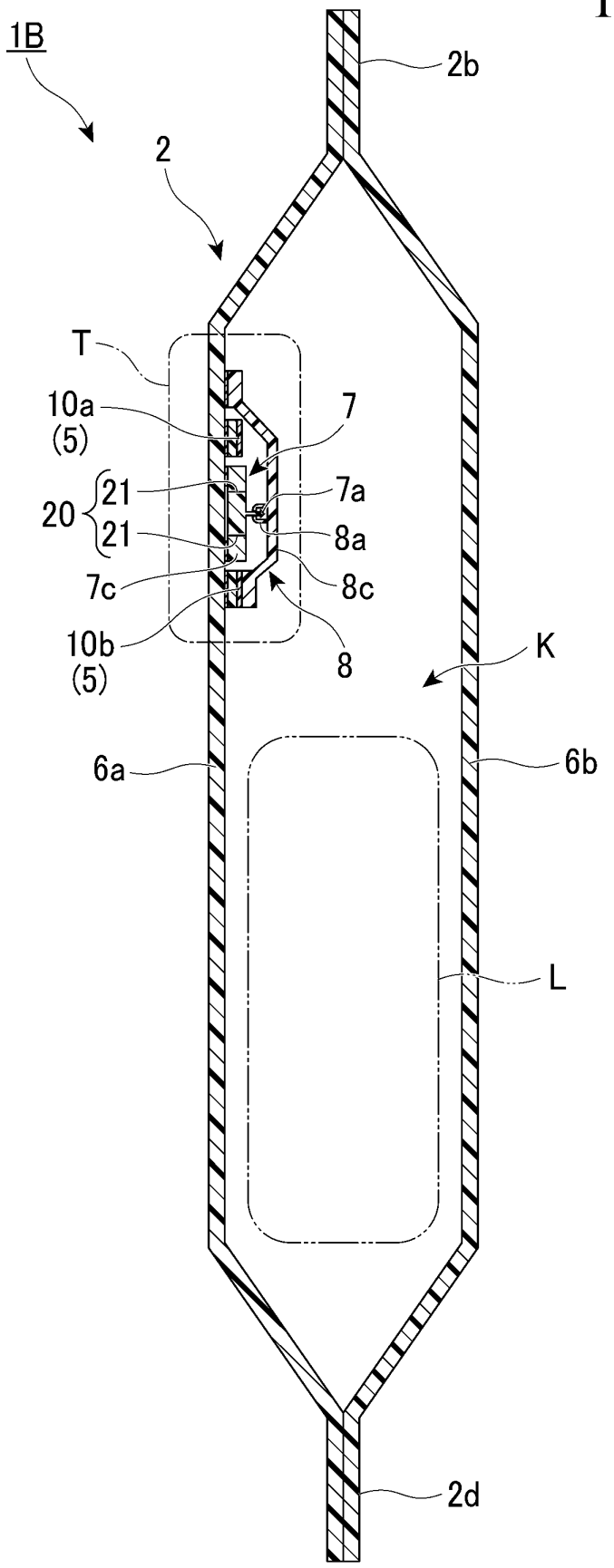


FIG. 6

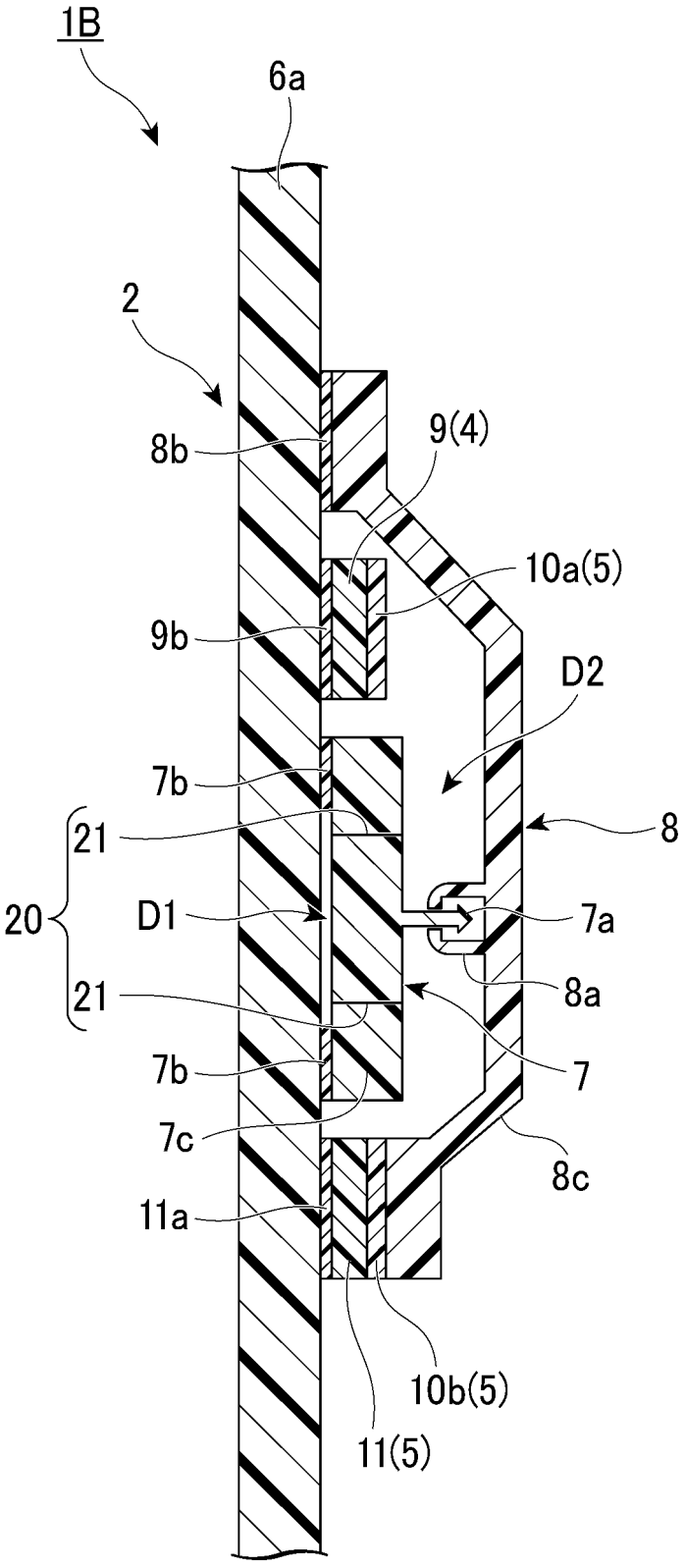


FIG. 7

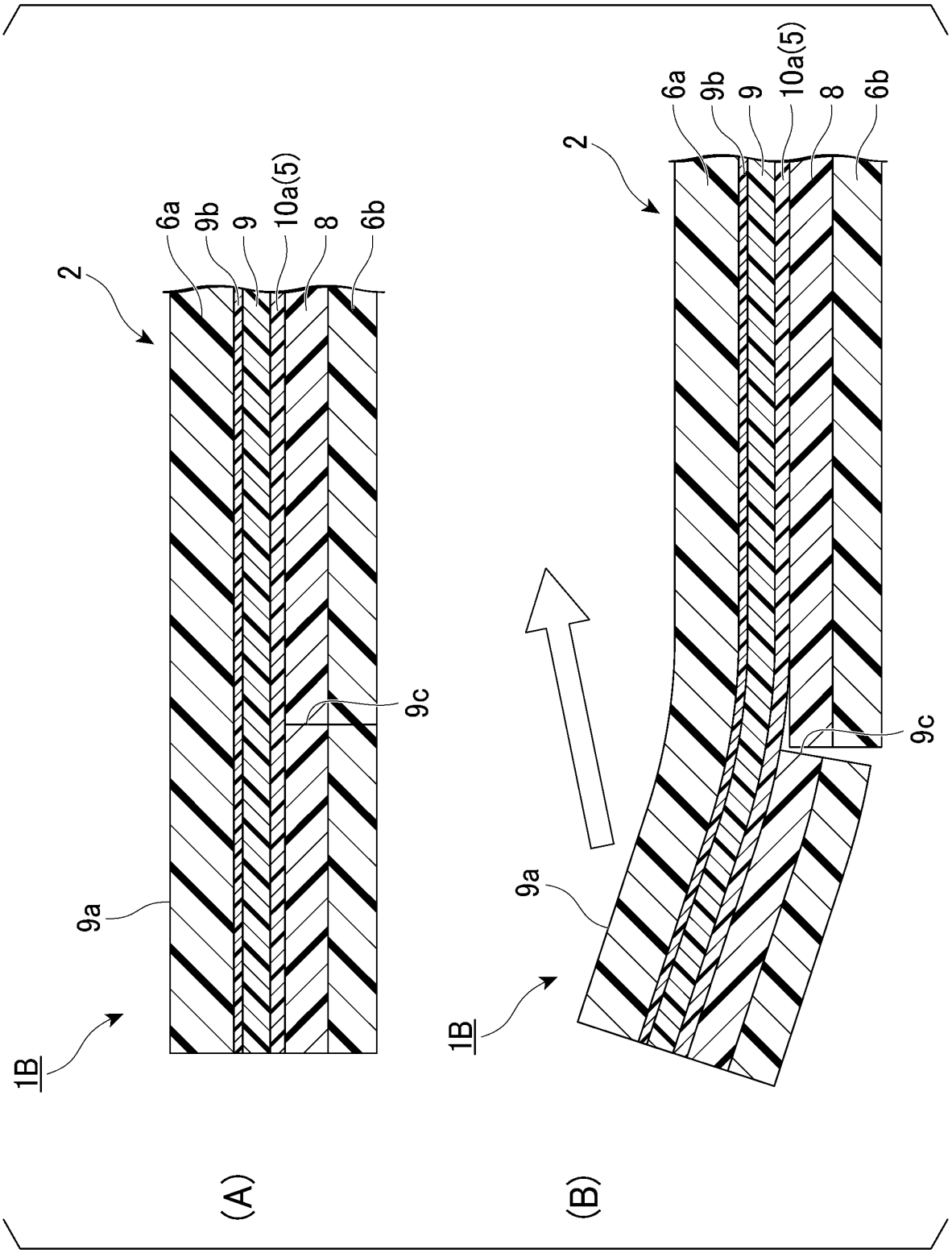


FIG. 8

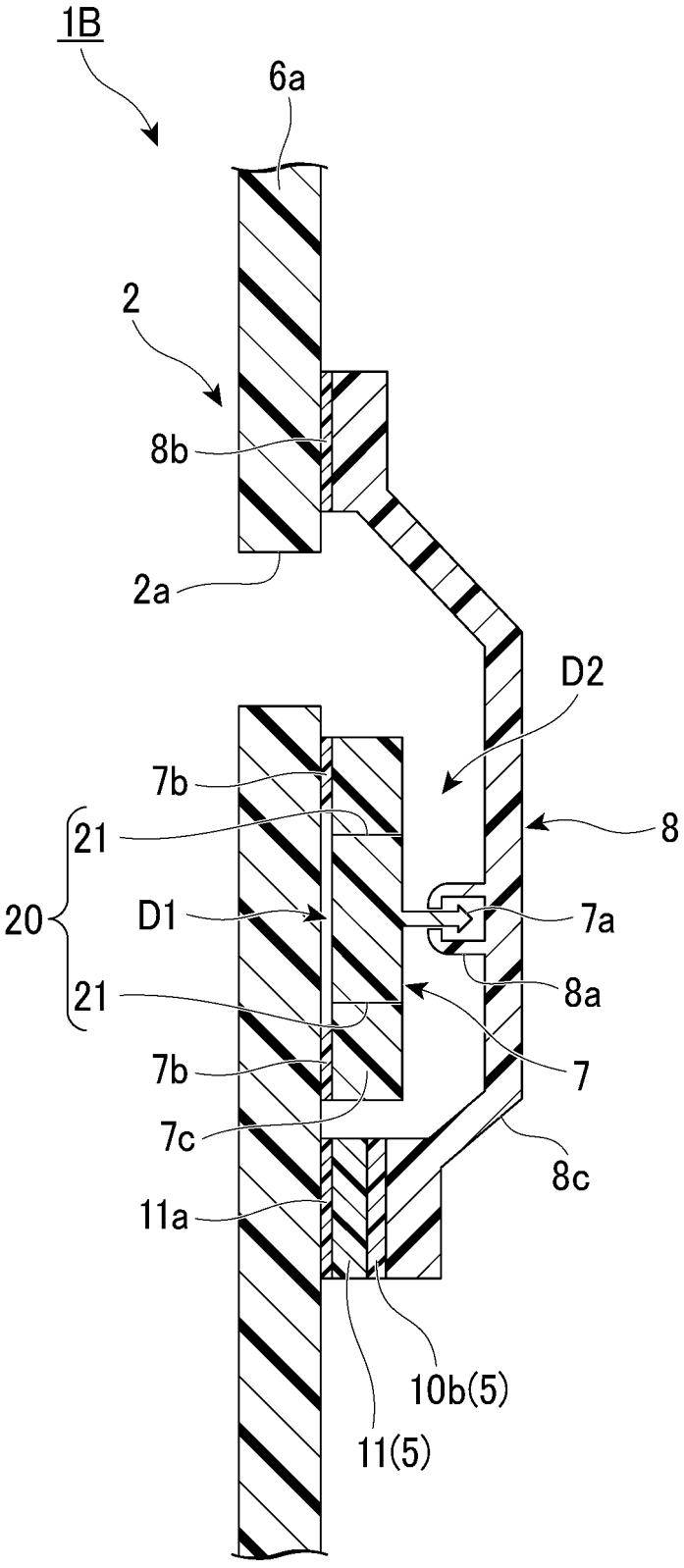


FIG. 9

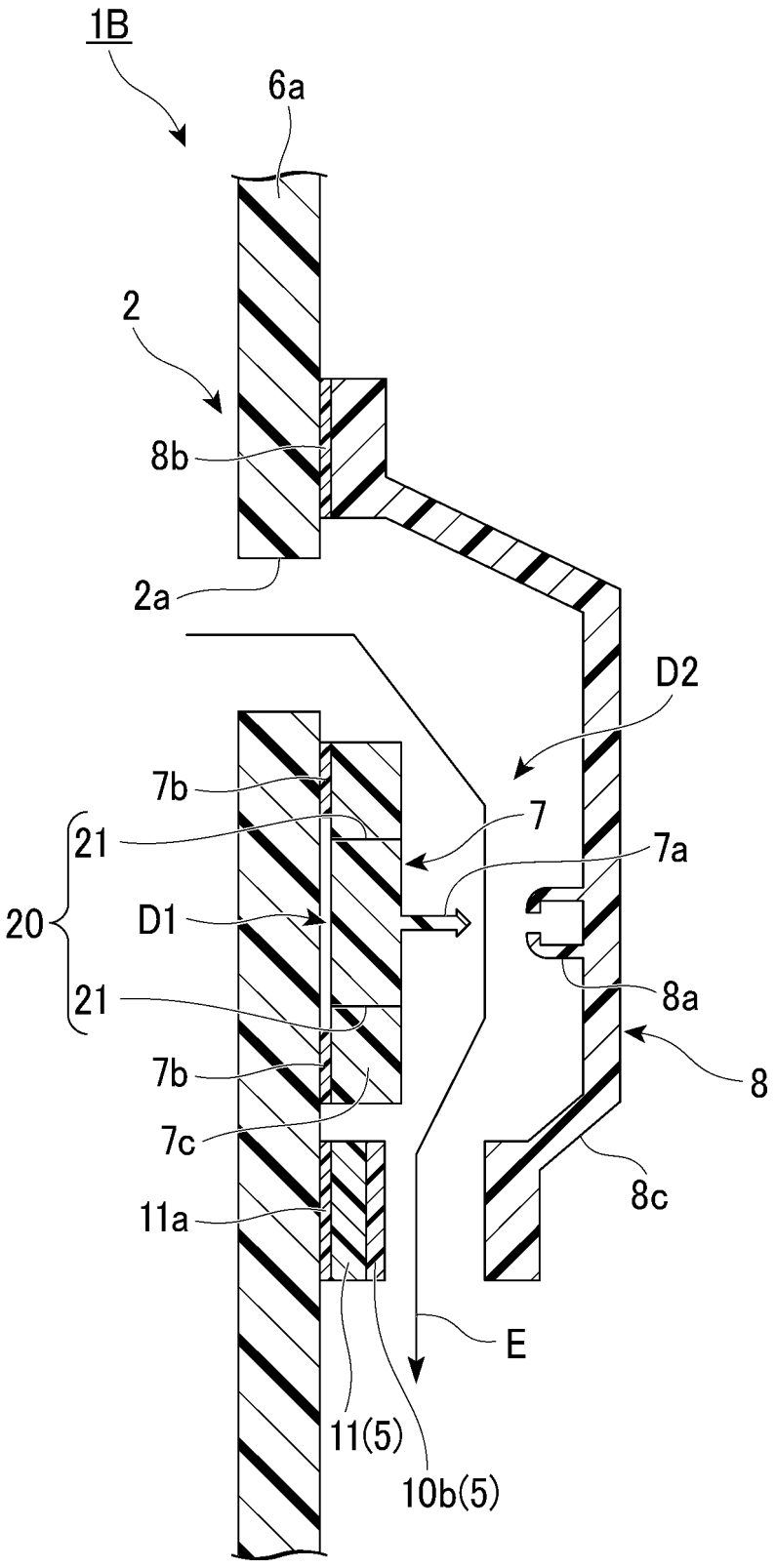


FIG. 10

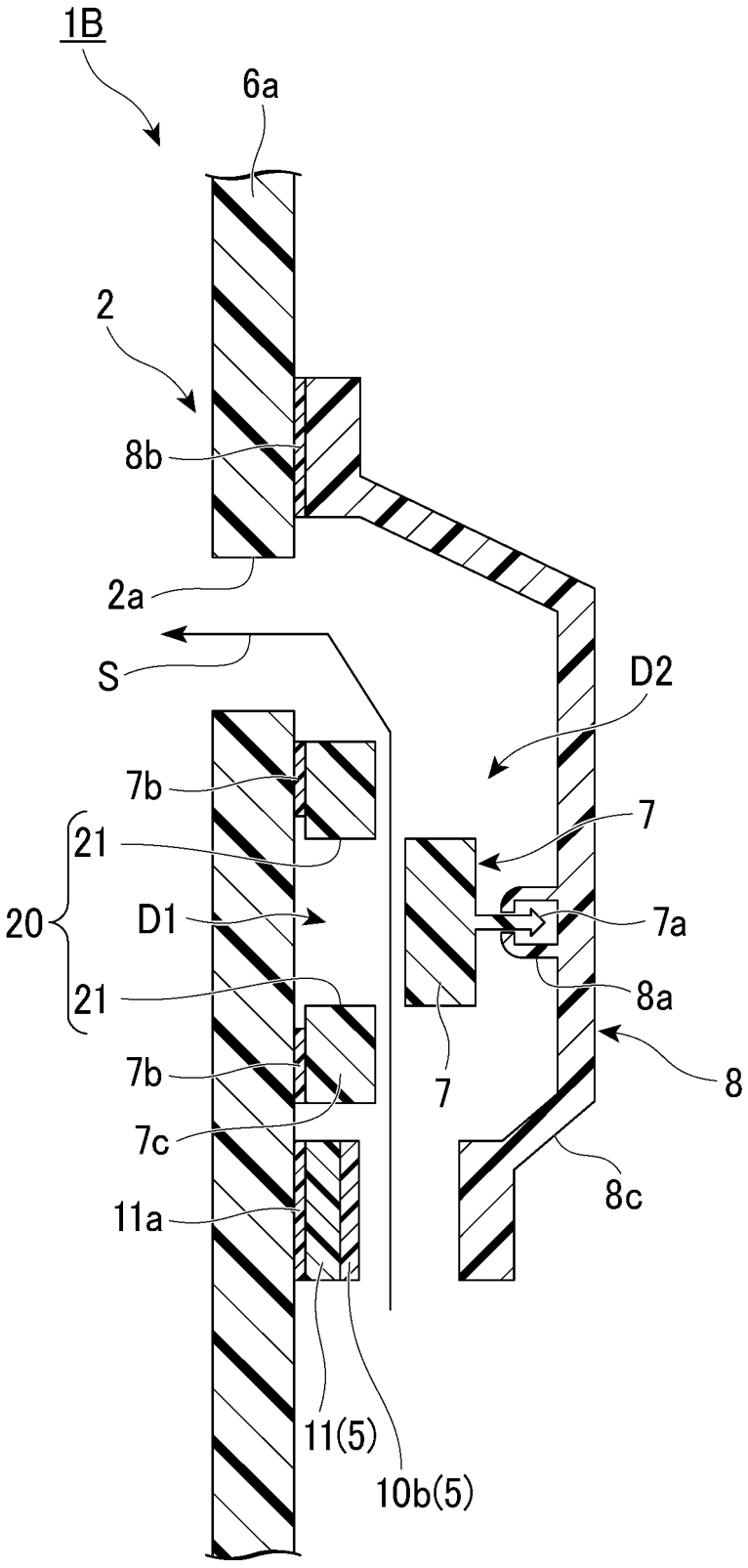


FIG. 11

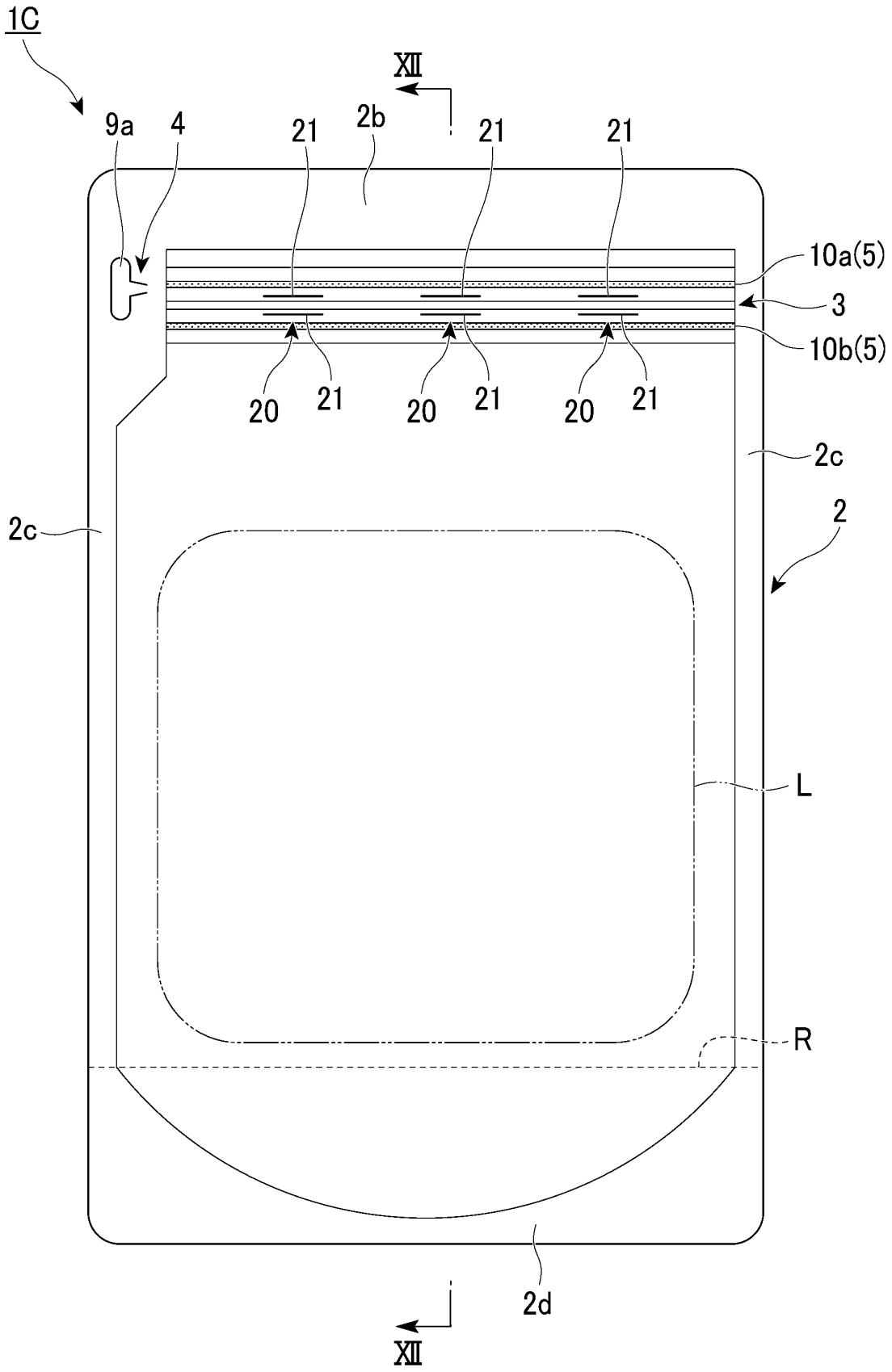


FIG. 12

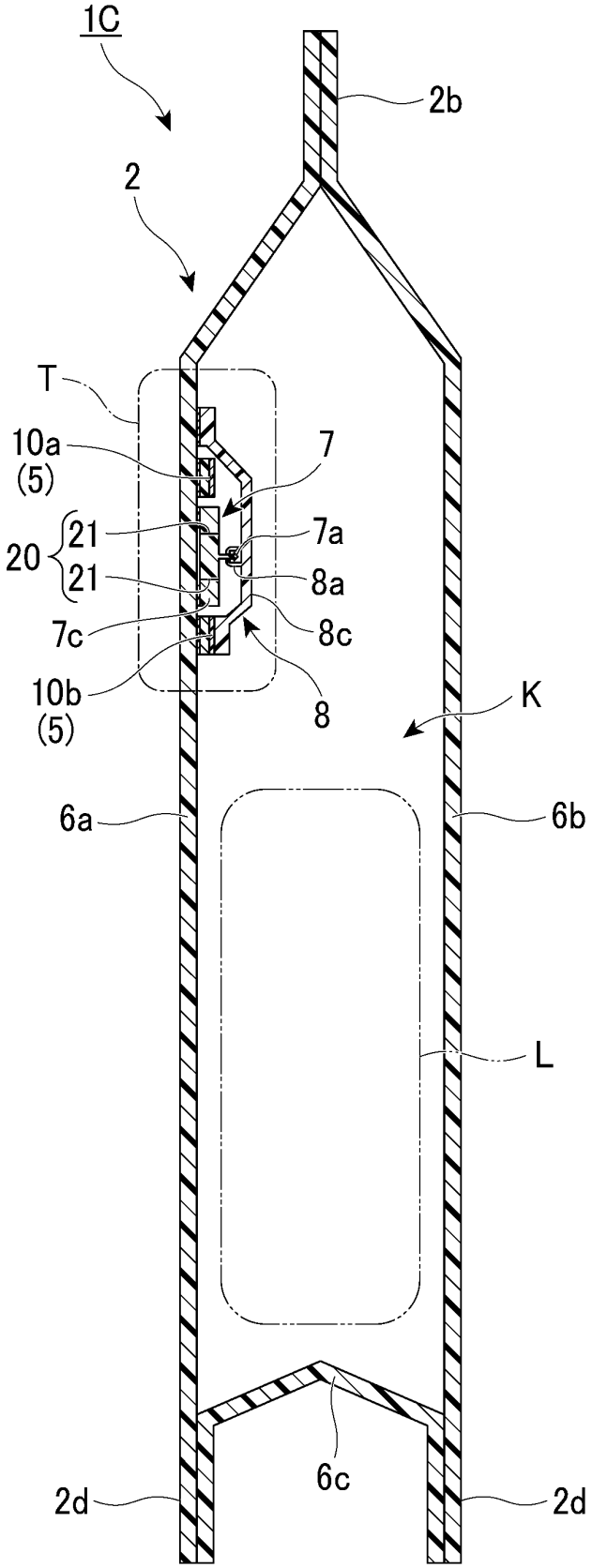


FIG. 13

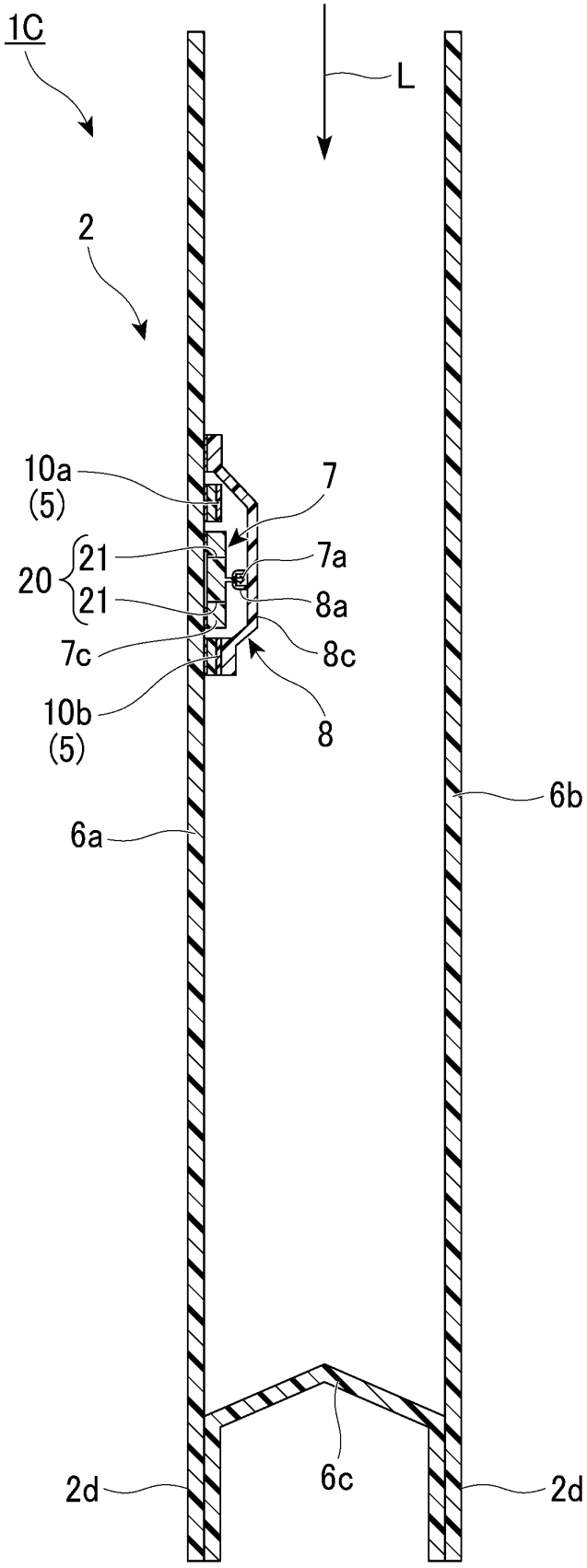
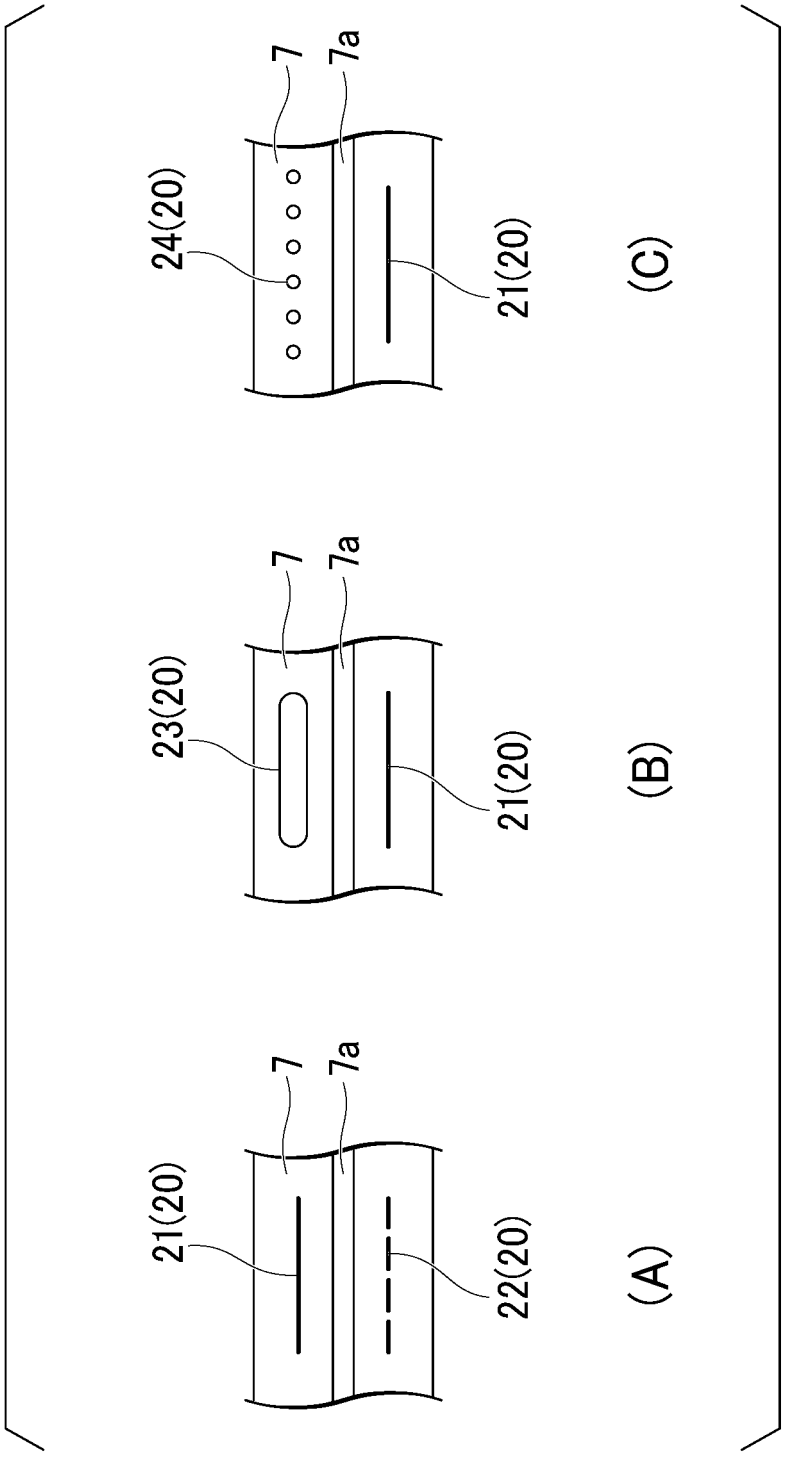


FIG. 14



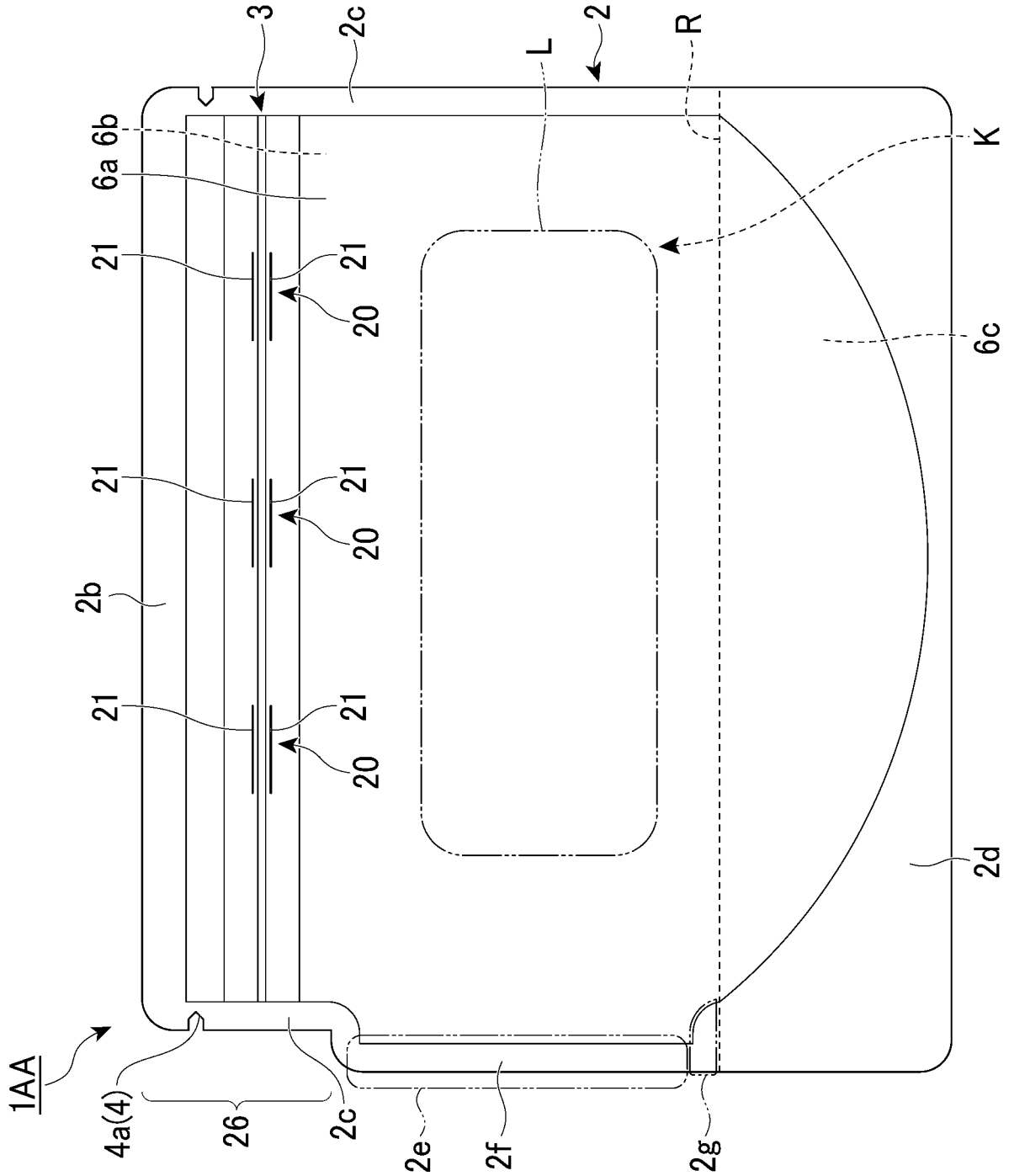
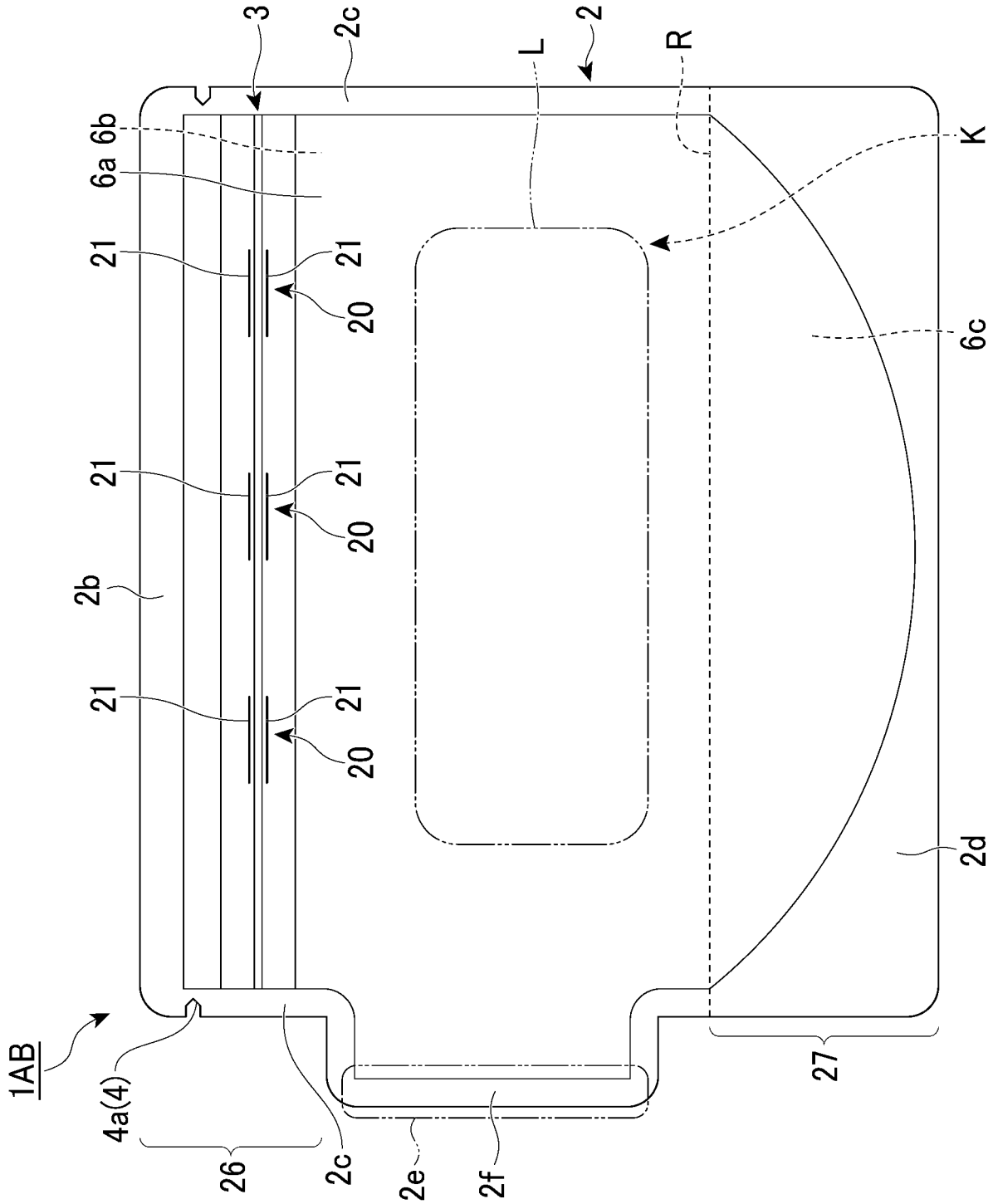


FIG. 15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2c
L
2
R
6b
6a
K
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20
6c
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20
2b
21
21
20
2d
1AB
4a(4)
26
2c
2e
2f
27

FIG. 16

INTERNATIONAL SEARCH REPORT

International application No.
PCT/JP2022/048320

A. CLASSIFICATION OF SUBJECT MATTER

B65D 81/34(2006.01)i
FI: B65D81/34 U

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)

B65D81/34

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Published examined utility model applications of Japan 1922-1996
Published unexamined utility model applications of Japan 1971-2023
Registered utility model specifications of Japan 1996-2023
Published registered utility model applications of Japan 1994-2023

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.
X	JP 11-292158 A (SHOWA HIGHPOLYMER CO., LTD.) 26 October 1999 (1999-10-26) paragraphs [0007]-[0015], fig. 4	1-3
Y	paragraphs [0007]-[0015], fig. 4	4-6
Y	JP 2009-269640 A (HOSOKAWA YOKO CO., LTD.) 19 November 2009 (2009-11-19) paragraphs [0010]-[0038], fig. 1-5	4-6
A	CD-ROM of the specification and drawings annexed to the request of Japanese Utility Model Application No. 19110/1992 (Laid-open No. 20253/1994) (SEISAN NIPPONSHA KK) 15 March 1994 (1994-03-15), entire text, all drawings	1-6
A	JP 2000-219252 A (NIHON TOKKYO KANRI CO., LTD.) 08 August 2000 (2000-08-08) entire text, all drawings	1-6
A	JP 2017-39496 A (HOSOKAWA YOKO CO., LTD.) 23 February 2017 (2017-02-23) entire text, all drawings	1-6
A	WO 2016/163349 A1 (IDEMITSU UNITECH CO., LTD.) 13 October 2016 (2016-10-13) entire text, all drawings	4-6

☐ Further documents are listed in the continuation of Box C. ☑ See patent family annex.

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"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
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"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	Date of mailing of the international search report
10 February 2023	**07 March 2023**
Name and mailing address of the ISA/JP **Japan Patent Office (ISA/JP)** **3-4-3 Kasumigaseki, Chiyoda-ku, Tokyo 100-8915** **Japan**	Authorized officer Telephone No.

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INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/JP2022/048320

Patent document cited in search report	Publication date (day/month/year)	Patent family member(s)	Publication date (day/month/year)
JP 11-292158 A	26 October 1999	(Family: none)	
JP 2009-269640 A	19 November 2009	(Family: none)	
JP 6-20253 U1	15 March 1994	(Family: none)	
JP 2000-219252 A	08 August 2000	(Family: none)	
JP 2017-39496 A	23 February 2017	(Family: none)	
WO 2016/163349 A1	13 October 2016	TW 201700360 A	

Form PCT/ISA/210 (patent family annex) (January 2015)

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- JP 2021214417 A **[0002]**
- JP 2000072156 A **[0006]**