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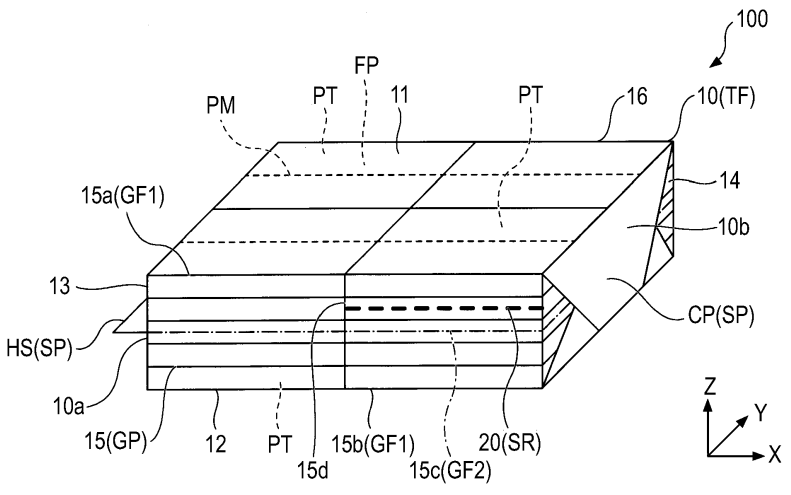
(54) AGGREGATE PACKAGING BODY, GUSSETED PACKAGING BAG, AND PRODUCTION METHOD FOR GUSSETED PACKAGING BAG

(57) An aggregate packaging body that includes: a plurality of individual packaging bodies that house packaged bodies; a gusseted packaging bag that is formed from a tubular film and comprises a gusset part at which a portion of the tubular film has been folded into a gusset and seal parts at which either end part of the tubular film has been sealed; and a notch part that is formed in the gusseted packaging bag and is for opening the gusseted packaging bag. The plurality of individual packaging bodies are vertically stacked inside the gusseted packaging bag. The gusseted packaging bag has: a top surface that is provided on the top in the vertical direction; a front surface that is provided at the front in the front-rear direction, is continuous with the top surface, and constitutes the gusset part; and a pair of side surfaces that face in the left-right direction, are continuous with the top surface, and constitute the seal parts. The notch part is a slit that is formed in the front surface and extends in the left-right direction. The slit is arranged between the top surface and a vertical-direction center part of the front surface and is shorter than the left-right-direction width of the front surface.

FIG.1



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Description

Technical Field

[0001] The present invention relates to an aggregate packaging body, a gusseted packaging bag, and a production method for the gusseted packaging bag.

Background Art

[0002] A conventional aggregate packaging body is used by housing a plurality of individual packaging bodies, in which packaged bodies such as pocket tissues are housed, in a film-shaped packaging bag. As the film-shaped packaging bag, a gusseted packaging bag in which a tubular film is folded in a gusset shape is used. In addition, the gusseted packaging bag is provided with a perforation for opening (for example, Japanese Patent No. 5,833,381).

Citation List

Patent Document

[0003] Patent Document 1: Japanese Patent No. 5,833,381

Summary of the Invention

Technical Problem

[0004] In the conventional aggregate packaging body, the perforation for opening is formed in a small size on a top surface where the perforation is easily visible, or is formed in a large size on a side surface close to the top surface, and thus the perforation breaks before opening. In addition, in an aggregate packaging body having a perforation adjusted to a position or a size at which the perforation hardly breaks before opening, a strong force is required to open the packaging bag, so that some users have difficulty in opening the packaging bag. In addition, even in the case of opening along the perforation for opening, an outlet is formed on the top surface of the aggregate packaging body, or the side surface of the aggregate packaging body tends to be largely broken, so that it is difficult to cleanly store or carry remaining individual packaging bodies in the aggregate packaging body after opening without change.

[0005] An object of the invention is to provide an aggregate packaging body that is not easily broken before opening, has excellent openability, and is easy to handle after opening.

Solution to Problem

[0006] An aspect of the invention provides an aggregate packaging body including a plurality of individual packaging bodies in which packaged bodies are housed, a gusseted packaging bag formed using a tubular film, the gusseted packaging bag including a gusset part obtained by folding a part of the tubular film into a gusset shape and a seal part obtained by sealing both end portions of the tubular film, and a notch part for opening formed in the gusseted packaging bag, the plurality of individual packaging bodies being stacked in a vertical direction and housed in the gusseted packaging bag, in which the gusseted packaging bag has a top surface provided in an upper part in the vertical direction, a front surface provided in a front part in a front-rear direction intersecting the vertical direction, continuous with the top surface, and included in the gusset part, and a pair of side surfaces which faces each other in a left-right direction intersecting the vertical direction and the front-rear direction, is continuous with the top surface, and is included in the seal part, the notch part is configured by a slit formed on the front surface to extend in the left-right direction, the slit is disposed between the center part of the front surface in the vertical direction and the top surface, and a length of the slit is shorter than a width of the front surface in the left-right direction.

Advantageous Effects of the Invention

[0007] According to an aspect of the invention, it is possible to provide an aggregate packaging body that is not easily broken before opening, has excellent openability, and is easy to handle after opening.

Brief Description of the Drawings

[0008]

Fig. 1 is a diagram illustrating an aggregate packaging body according to an embodiment (first embodiment) of the invention.
Fig. 2 is a diagram illustrating the aggregate packaging body (individual packaging bodies are omitted) according to the first embodiment.
Fig. 3 is a diagram illustrating a usage state (at the time of opening) of the aggregate packaging body according to the first embodiment.
Fig. 4 is a diagram illustrating a usage state (at the time of taking out) of the aggregate packaging body according to the first embodiment.
Fig. 5 is a diagram illustrating a usage state (after taking out) of the aggregate packaging body according to the first embodiment.
Fig. 6 is a diagram illustrating an aggregate packaging body (individual packaging bodies are omitted) according to an embodiment (second embodiment) of the invention.
Fig. 7 is a diagram illustrating an aggregate packaging body (individual packaging bodies are omitted) according to an embodiment (third embodiment) of the invention.
Fig. 8 is a flowchart illustrating an example of a production method for the gusseted packaging bag according to the present embodiment.
Fig. 9 is a diagram illustrating a production process of the gusseted packaging bag according to the present embodiment.
Fig. 10 is a diagram illustrating an example of a semi-finished product obtained in the production process of the gusseted packaging bag according to the present embodiment.
Fig. 11 is a diagram illustrating a conventional aggregate packaging body (Comparative Example 1).
Fig. 12 is a diagram illustrating a conventional aggregate packaging bag (Comparative Example 2).
Fig. 13 is a diagram illustrating a conventional aggregate packaging bag (Comparative Example 3).
Fig. 14 is a diagram illustrating a conventional aggregate packaging bag (Comparative Example 4).

Mode for Carrying Out the Invention

[0009] Hereinafter, embodiments of the invention will be described in detail with reference to the drawings. To facilitate understanding, the scale of each member in each drawing may differ from the actual scale. Further, in the following description, common parts in each drawing are denoted by the same reference numerals, and description thereof may be omitted.

<Aggregate packaging body>

[0010] Fig. 1 is a diagram illustrating an aggregate packaging body according to an embodiment (first embodiment) of the invention. Fig. 2 is a diagram illustrating the aggregate packaging body (individual packaging bodies are omitted) according to the first embodiment. In Fig. 1, an aggregate packaging body 100 includes a plurality of individual packaging bodies PT, a gusseted packaging bag 10, and a notch part 20, and the plurality of individual packaging bodies PT are housed (or accommodated) in the gusseted packaging bag 10.

[Individual packaging bodies PT]

[0011] The individual packaging bodies PT housed in the gusseted packaging bag 10 house packaged bodies. The individual packaging bodies PT, in which the packaged bodies are housed, are not particularly limited. However, for example, it is possible to use a sanitary thin paper container in which sanitary thin paper is housed (hereinafter referred to as a thin paper container). Specific examples of the thin paper container include a portable thin paper packaging body (for example, a pocket tissue) illustrated in Fig. 1. Note that the individual packaging bodies PT are an example of individual packaging bodies included in an aggregate packaging body of the invention.

[0012] Note that when the individual packaging bodies PT are pocket tissues (thin paper packaging bodies), a plurality of pieces of folded and stacked tissue paper (not illustrated) is accommodated in the film-shaped packaging bag FP provided with a perforation PM on an upper surface as illustrated in Fig. 1. In such a thin paper packaging body, the packaging bag FP is opened by breaking the perforation PM, and the tissue paper can be taken out from an outlet formed in the packaging bag FP.

[0013] Note that a form of the packaged bodies housed in the individual packaging bodies PT is not limited to tissue paper, and can be applied to sanitary thin paper such as toilet paper, kitchen paper, or paper towel. Note that these sanitary thin papers include sanitary thin paper containing a moisturizing component (for example, lotion tissue etc.) . Further, the use of the sanitary thin paper is not limited, and it is possible to apply any of industrial, household, or portable sanitary thin paper. Among these sanitary thin papers, portable sanitary thin paper (for example, pocket tissue) such as

tissue paper or toilet paper containing a moisturizing component is preferable.

[0014] A size of each of the packaged bodies housed in the individual packaging bodies PT is not particularly limited. For example, when the packaged body is a stacked body of sanitary thin paper (tissue paper), it is possible to set a length in a longitudinal direction (X direction of Fig. 1) of the individual packaging bodies PT to about 80 to 250 mm, set a length in a width direction (Y direction of Fig. 1) orthogonal to the longitudinal direction to about 50 to 115 mm, and set a height (Z direction of Fig. 1) to about 10 to 90 mm. For example, such a stacked body of the sanitary thin paper can be produced by a rotary or multi-stand inter-folder.

[0015] In addition, in the individual packaging body PT, a shape of the packaging bag FP is not particularly limited. For example, in the shape of the packaging bag FP, an appearance has a three-dimensional shape of a substantially rectangular parallelepiped. In the present embodiment, the length in the X direction illustrated in Fig. 1 is longer than the length in the Y direction. Note that the shape of the individual packaging body PT may have another three-dimensional shape depending on the type of the packaged body to be housed and the shape of the packaged body. For example, the length of the housed packaged body in the X direction may be equal to the length in the Y direction, or may be shorter than the length in the Y direction. Further, a contour shape is not limited to a rectangular shape such as a rectangle, and may have a contour shape such as a triangle or a circle.

[0016] A form of the packaging bag FP of the individual packaging bodies PT is not particularly limited. For example, the packaging bag FP can be produced by pillow packaging, caramel packaging, etc. in which a flexible film is formed into a bag shape by side sealing, and the bag-shaped film is further folded in a gusset shape and sealed by heat sealing. Note that the individual packaging bodies PT are an example of the individual packaging bodies included in the aggregate packaging body of the invention.

[0017] In addition, a material of a film used for the packaging bag FP of the individual packaging bodies PT is not particularly limited, and can be formed of, for example, a flexible film. As a specific example of such a flexible film, for example, it is possible to use a resin film such as polyethylene (PE), polypropylene (PP), polyethylene terephthalate (PET), polystyrene (PS), polyvinyl chloride (PVC), ethylene-vinyl acetate copolymer (EVA), or polyamide (PA). In addition, examples of polyethylene include high-density polyethylene and low-density polyethylene.

[0018] Note that as the material of the film used for the packaging bag FP of the individual packaging bodies PT, polyethylene, polypropylene, polyethylene terephthalate, etc. are preferable since these materials are flexible, easy to handle, have high sealing property when heat-sealed, and are inexpensive. In addition, polyethylene and polypropylene are more preferable since these materials are odorless, have excellent water resistance and chemical resistance, and can be mass-produced at low cost. Further, the film may be a laminated film in which a plurality of films is laminated, or a film made of a mixture of two or more resins among the above resins.

[0019] A thickness of the film used for the packaging bag FP of the individual packaging bodies PT is arbitrary. Note that from viewpoints of imparting sufficient strength to the packaging bag FP, ensuring flexibility and lightness, and suppressing costs, the thickness of the film is preferably in a range of 10 to 100 μm, and more preferably in a range of 20 to 70 μm.

[0020] The number of the plurality of individual packaging bodies PT housed in the gusseted packaging bag 10 is not particularly limited. For example, in the present embodiment, 20 pocket tissues are housed as the plurality of individual packaging bodies PT. Specifically, as illustrated in Fig. 1, 20 pocket tissues are housed in the gusseted packaging bag 10 in a state in which five stages, each of which has four pocket tissues arranged therein, are stacked in a vertical direction (Z direction). Note that arrangement of the individual packaging bodies PT housed in the gusseted packaging bag 10 is not limited to this arrangement. For example, 12 pocket tissues may be stacked in three stages, each of which has four pocket tissues arranged therein, in the vertical direction (Z direction), or 12 pocket tissues may be stacked one by one in 12 stages in the vertical direction (Z direction).

[Gusseted packaging bag]

[0021] The gusseted packaging bag 10 has a gusset structure formed of a tubular film TF. The gusseted packaging bag 10 having such a gusset structure includes a gusset part GP and a seal part SP. The gusset part GP is configured by folding a part of the tubular film TF into a gusset shape. Further, the seal part SP is configured by sealing both end portions 10a and 10b of the tubular film TF.

[0022] A form of the gusseted packaging bag 10 is not particularly limited as long as the gusseted packaging bag 10 has the gusset structure. For example, as illustrated in Figs . 1 and 2, in the present embodiment, a film-shaped sheet is formed on the tubular film TF by a side seal, and the tubular film TF is folded in a gusset shape. In this state, one end portion of the tubular film TF (the end portion 10a of the gusseted packaging bag 10) is sealed by pillow packaging based on heat sealing HS, and the other end portion of the tubular film TF (the end portion 10b of the gusseted packaging bag 10) is sealed caramel packaging CP (see Figs. 1 and 2). In this way, the gusset part GP and the seal part SP of the gusseted packaging bag 10 are configured.

[0023] Note that the gusseted packaging bag 10 is an example of a gusseted packaging bag included in the aggregate

packaging body of the invention. A packaging form of the gusseted packaging bag 10 is not limited to these forms as long as the gusseted packaging bag 10 has the gusset structure. For example, one end portion of the tubular film TF (the end portion 10a of the gusseted packaging bag 10) may be sealed by caramel packaging CP, and the other end portion of the tubular film TF (the end portion 10b of the gusseted packaging bag 10) may be sealed by pillow packaging based on heat sealing. Alternatively, the both end portions 10a and 10b of the tubular film TF may be sealed only by pillow packaging.

[0024] A material of the gusseted packaging bag 10 is not particularly limited. For example, the gusseted packaging bag 10 may be formed of a resin film. Specific examples of such a resin film include polypropylene (PP), polyethylene (PE), and a stacked body (PE/EVOH/PE) of PE-ethylene vinyl alcohol copolymer (EVOH)-PE. Among these materials, polypropylene (PP) is preferable.

[0025] A thickness of the resin film used for the gusseted packaging bag 10 is not particularly limited. For example, the thickness of the resin film can be set to 10 to 70 μm, preferably 15 to 60 μm, and more preferably 20 to 50 μm.

[0026] In this embodiment, the gusseted packaging bag 10 has a top surface 11, a bottom surface 12, a pair of side surfaces 13 and 14, a front surface 15, and a back surface 16.

[0027] The top surface 11 is provided in an upper part in the vertical direction (Z direction). The bottom surface 12 is provided in a lower part in the vertical direction (Z direction) and faces the top surface 11. The pair of side surfaces 13 and 14 faces each other in a left-right direction (X direction) intersecting the vertical direction (Z direction) and is continuous with the top surface 11 and the bottom surface 12. The front surface 15 is provided in a front part in the front-rear direction (Y direction) intersecting the vertical direction (Z direction) and is continuous with the top surface 11 and the bottom surface 12. The back surface 16 is provided in a back part in the front-rear direction (Y direction) intersecting the vertical direction (Z direction), faces the front surface 15, and is continuous with the top surface 11 and the bottom surface 12.

[0028] Further, the pair of side surfaces 13 and 14 is included in the seal part SP of the gusseted packaging bag 10 (see Figs. 1 and 2). Specifically, on the side surface 13, the end portion 10a of the gusseted packaging bag 10 included in the seal part SP of the gusseted packaging bag 10 described above is disposed. Further, on the side surface 14, the end portion 10b of the gusseted packaging bag 10 included in the seal part SP of the gusseted packaging bag 10 described above is disposed.

[0029] In addition, the front surface 15 is included in the gusset part GP of the gusseted packaging bag 10 (see Figs. 1 and 2). Specifically, the left-right direction (X direction) of the front surface 15 of the gusseted packaging bag 10 is a stretching direction of the film.

[0030] In addition, at each of an upper edge 15a (portion at which the front surface 15 is continuous with the top surface 11) and a lower edge 15b (portion at which the front surface 15 is continuous with the bottom surface 12) of the front surface 15 of the gusseted packaging bag, a first fold GF1 forming a pleat of a mountain fold of the gusset part GP extending in the left-right direction (X direction or film stretching direction) is disposed.

[0031] Further, at a center part 15c of the gusseted packaging bag 10 in the vertical direction (Z direction), a second fold GF2 forming a pleat of a valley fold of the gusset part GP extending in the left-right direction (X direction or film stretching direction) is disposed. In Figs. 1 and 2, the second fold GF2 is indicated by a dashed line.

[0032] Note that in the present embodiment, as illustrated in Fig. 2, an interval between the first fold GF1 (the upper edge 15a of the front surface 15) and the center part 15c in the vertical direction (Z direction) is substantially the same as an interval between the second fold GF2 (the lower edge 15b of the front surface 15) and the center part 15c in the vertical direction (Z direction).

[Notch part]

[0033] The notch part 20 is formed in the gusseted packaging bag 10 as a notch for opening. The notch part 20 is configured by a slit SR formed on the front surface 15 to extend in the left-right direction (X direction) . A mode of the slit SR is not particularly limited. For example, the slit SR may be configured by perforations, etc. in which a plurality of cuts and ties (portions where there are no cuts between the cuts) are alternately disposed (see Figs. 1 and 2).

[0034] Note that when the slit SR included in the notch part 20 is configured by the perforations, respective dimensions of the tie and the cut of the perforations are arbitrary. For example, the dimension of the tie is preferably 0.3 to 3.0 mm, more preferably 0.5 to 2.5 mm, and even more preferably 0.5 to 2.0 mm. In addition, the dimension of the cut is preferably 1.0 to 8.0 mm, more preferably 1.5 to 6.0 mm, and even more preferably 2.0 to 4.0 mm.

[0035] The slit SR included in the notch part 20 is disposed between the center part 15c of the front surface 15 in the vertical direction (Z direction) and the top surface 11. Specifically, the slit SR is formed between the first fold GF1 (the upper edge 15a of the front surface 15) and the second fold GF2 (the center part 15c of the front surface 15 in the Z direction) of the gusset part GP (Fig. 1).

[0036] In the first embodiment, as illustrated in Fig. 2, a distance D1 between the upper edge 15a of the front surface 15 and the notch part 20 (slit SR) in the vertical direction (Z direction) is substantially the same as a distance D2 between the center part 15c and the notch part 20 (slit SR) in the vertical direction (Z direction).

[0037] Further, in the notch part 20, as illustrated in Fig. 2, a length L2 of the slit SR is shorter than a width L1 of the front surface 15 in the left-right direction (X direction) . In the first embodiment, as illustrated in Fig. 2, the slit SR is disposed between a center part 15d of the front surface 15 in the left-right direction (X direction) and the other end portion (the end portion 10b of the gusseted packaging bag 10) of the front surface 15 in the left-right direction (X direction) . In this way, the length L2 of the slit SR included in the notch part 20 is approximately half the width L1 of the front surface 15 in the left-right direction (X direction).

[0038] Here, the effect of the invention will be described. Fig. 3 is a diagram illustrating a usage state (at the time of opening) of the aggregate packaging body according to the first embodiment. Fig. 4 is a diagram illustrating a usage state (at the time of taking out) of the aggregate packaging body according to the first embodiment. Fig. 5 is a diagram illustrating a usage state (after taking out) of the aggregate packaging body according to the first embodiment.

[0039] In the present embodiment, as illustrated in Figs. 1 and 2, since the plurality of individual packaging bodies PT is stacked in the vertical direction (Z direction) and housed in the gusseted packaging bag 10, the vertical direction (Z direction) is a stacking direction of the plurality of individual packaging bodies PT. In addition, in the gusseted packaging bag 10, the front surface 15 includes the gusset part GP and the pair of side surfaces 13 and 14 includes the seal part SP, and thus the left-right direction (X direction) of the front surface 15 is the stretching direction of the film.

[0040] In addition, at each of the upper edge 15a and the lower edge 15b of the front surface 15 of the gusseted packaging bag 10, the first fold GF1 of the gusset part GP extending in the left-right direction (X direction or film stretching direction) is disposed. Further, at the center part 15c of the front surface 15 of the gusseted packaging bag 10 in the vertical direction (Z direction), the second fold GF2 of the gusset part GP extending in the left-right direction (X direction or film stretching direction) is disposed.

[0041] In addition, in the present embodiment, since the notch part 20 is configured by the slit SR extending in the left-right direction (X direction) of the front surface 15 of the gusseted packaging bag 10, a direction in which the slit SR extends is a direction intersecting the vertical direction (the Z direction or the stacking direction of the plurality of individual packaging bodies PT). In addition, the direction intersecting with the vertical direction (Z direction) is a direction along the left-right direction of the front surface 15 (the X direction or the film stretching direction).

[0042] In the present embodiment, when the slit SR included in the notch part 20 of the aggregate packaging body 100 is formed on the front surface 15 to extend in the left-right direction (X direction) of the front surface 15, the slit SR included in the notch part 20 can be disposed along the stretch direction of the film in which the film tends to easily tear. For this reason, in the aggregate packaging body 100 according to the first embodiment, the notch part 20 is easily opened, and the openability is excellent.

[0043] In addition, in the present embodiment, as illustrated in Figs. 2 and 3, the aggregate packaging body 100 can be opened by breaking the slit SR included in the notch part 20. Specifically, as illustrated in Figs. 2 and 3, by breaking the slit SR, an outlet OP (hereinafter referred to as an outlet or an outlet after opening) is formed on the front surface 15 of the gusseted packaging bag 10. Further, as illustrated in Figs. 4 and 5, the individual packaging bodies PT can be taken out from the outlet OP on the front surface 15.

[0044] In the present embodiment, since the direction in which the slit SR extends intersects the vertical direction (the Z direction or the stacking direction of the plurality of individual packaging bodies PT), a direction in which the outlet OP formed on the front surface 15 extends after the notch part 20 is opened is a direction intersecting the stacking direction of the plurality of individual packaging bodies PT. The direction in which the outlet OP extends is a direction along a surface where two individual packaging bodies PT adjacent each other in the vertical direction (Z direction) overlap (or overlap each other). For this reason, in the aggregate packaging body 100 according to the present embodiment, it is easy to take out the individual packaging bodies PT from the front surface 15 after opening (the notch part 20 or the outlet OP after opening) , and a take-out property is excellent.

[0045] In addition, in the present embodiment, since the slit SR included in the notch part 20 is disposed between the center part 15c of the front surface 15 in the vertical direction (Z direction) and the top surface 11, the outlet OP after opening is formed above the center part 15c of the front surface 15 in the vertical direction (Z direction). In addition, since the length L2 of the slit SR is shorter than the width L1 of the front surface 15 in the left-right direction (X direction), the outlet OP after opening is not formed over the entire front surface 15 in the left-right direction (X direction) . For this reason, the individual packaging bodies PT remaining in the aggregate packaging body 100 after opening are less likely to come off the outlet OP. In addition, even after opening, it is possible to carry the aggregate packaging body 100 with the individual packaging bodies PT housed therein. Therefore, the aggregate packaging body 100 according to the first embodiment is excellent in storability and portability after opening.

[0046] In addition, in the present embodiment, the slit SR included in the notch part 20 is formed on the front surface 15 of the gusseted packaging bag 10, and the notch part 20 is not provided on the top surface 11 where dust, dirt, etc. (hereinafter referred to as dirt and dust) easily enter. In addition, as described above, the outlet OP after opening is not formed over the entire front surface 15 in the left-right direction (X direction). For this reason, in the present embodiment, dirt and dust hardly enter the inside of the aggregate packaging body 100 from the outlet OP after opening. From this point of view, the aggregate packaging body 100 according to the present embodiment is excellent in storability after

opening.

[0047] In addition, in the present embodiment, the slit SR included in the notch part 20 is formed between the center part 15c (gusset fold) of the front surface 15 in the vertical direction (Z direction) and the top surface 11 (the upper edge 15a of the front surface 15). For this reason, the slit SR included in the notch part 20 can be disposed on the front surface 15 of the gusseted packaging bag 10 so that the slit SR is not caught by the gusset fold at which the film tends to tear.

[0048] In addition, the slit SR included in the notch part 20 is merely formed in a part of the front surface 15 of the gusseted packaging bag 10, and is not formed on the top surface 11 or the bottom surface 12 to which a force from the outside (hereinafter referred to as an external force) is easily applied. For this reason, even when an external force is applied to the aggregate packaging body 100 (or the gusseted packaging bag 10 before the individual packaging bodies PT are housed) before opening, the notch part 20 is unlikely to tear before opening. Therefore, the aggregate packaging body 100 according to the present embodiment is excellent in non-breakability before opening.

[0049] Note that in the first embodiment, the slit SR is disposed between the center part 15d of the front surface 15 in the left-right direction (X direction) and one end portion of the front surface 15 in the left-right direction (X direction). Specifically, the slit SR included in the notch part 20 is disposed between the other end portion (the end portion 10b of the gusseted packaging bag 10) of the front surface 15 in the left-right direction (X direction) and the center part 15d of the front surface 15 in the left-right direction (X direction).

[0050] In such a configuration, the length L2 of the slit SR included in the notch part 20 can be made approximately half the width L1 of the front surface 15 in the left-right direction (X direction). In this way, the length L2 of the outlet OP after opening in the left-right direction (X direction) can be made approximately half the width L1 of the front surface 15 in the left-right direction (X direction) . For this reason, in the first embodiment, it is possible to further inhibit the individual packaging bodies PT remaining in the aggregate packaging body 100 after opening from coming off the outlet OP. In addition, even after opening, it becomes easier to carry the aggregate packaging body 100 with the individual packaging bodies PT housed therein.

[0051] Fig. 6 is a diagram illustrating an aggregate packaging body according to a second embodiment. In the second embodiment, a slit SR is disposed near a top surface 11. Specifically, as illustrated in Fig. 6, a distance D1 between an upper edge 15a of a front surface 15 in the vertical direction (Z direction) and a notch part 20 (slit SR) is shorter than a distance D2 between a center part 15c in the vertical direction (Z direction) and the notch part 20 (slit SR).

[0052] In the second embodiment, since the slit SR included in the notch part 20 is formed near the upper edge 15a of the front surface 15 of the gusseted packaging bag 10, the outlet OP after opening can be formed near the upper edge 15a of the front surface 15 of the gusseted packaging bag 10. With such a configuration, in the second embodiment, it is possible to further inhibit individual packaging bodies PT remaining in an aggregate packaging body 100 after opening from coming off the outlet OP. In addition, even after opening, it is possible to carry the aggregate packaging body 100 with the individual packaging bodies PT housed therein.

[0053] Fig. 7 is a diagram illustrating an aggregate packaging body according to a third embodiment. In the third embodiment, a slit SR is disposed near a center part 15c of a front surface 15 in the vertical direction (Z direction). Specifically, as illustrated in Fig. 7, a distance D1 between an upper edge 15a of the front surface 15 in the vertical direction (Z direction) and a notch part 20 (slit SR) is longer than a distance D2 between the center part 15c in the vertical direction (Z direction) and the notch part 20 (slit SR).

[0054] In the third embodiment, with such a configuration, the outlet OP after opening can be formed near the center part 15c (gusset fold) of the front surface 15 of the gusseted packaging bag 10 in the vertical direction (Z direction) . For this reason, in the third embodiment, it is possible to take out the individual packaging bodies PT that overlap the inner side in the stacking direction among the plurality of individual packaging bodies PT that overlaps in the vertical direction (Z direction) (the stacking direction).

[0055] In addition, such individual packaging bodies PT that overlap the inner side have a small area of the individual packaging bodies coming into contact with the gusseted packaging bag 10 in a state of being housed the gusseted packaging bag 10, and thus hardly hit a corner of the gusseted packaging bag 10 or the front surface 15 when taken out from the outlet OP after opening. In this way, in the third embodiment, the individual packaging bodies PT can be pulled out with a small force, and thus the individual packaging bodies PT can be taken out more easily.

<Gusseted packaging bag>

[0056] Hereinafter, a description will be given of a gusseted packaging bag according to an embodiment of the invention. The gusseted packaging bag of the present embodiment can be configured as the gusseted packaging bag 10 of the aggregate packaging body 100 described above. That is, the gusseted packaging bag of the present embodiment may include the gusset part GP, the seal part SP, and the notch part 20 (see Figs. 1 to 5).

[0057] Specifically, the gusseted packaging bag according to the present embodiment can be configured as the gusseted packaging bag 10 having the top surface 11 provided in the upper part in the vertical direction (Z direction), the front surface 15 provided in the front part in the front-rear direction (Y direction) intersecting the vertical direction (Z

direction), continuous with the top surface 11, and included in the gusset part GP, and the pair of side surfaces 13 and 14 which faces each other in the left-right direction (X direction) intersecting the vertical direction (Z direction) and the front-rear direction (Y direction), is continuous with the top surface 11, and is included in the seal part SP.

[0058] In the gusseted packaging bag of the present embodiment, by having such a configuration, the notch part 20 can be configured by the slit SR formed on the front surface 15 to extend in the left-right direction (X direction) . In addition, the slit SR can be disposed between the center part 15c of the front surface 15 in the vertical direction (Z direction) and the top surface 11. Further, the length L2 of the slit SR can be made shorter than the width L1 of the front surface 15 in the left-right direction (X direction) (see Figs. 1 and 2).

[0059] In this way, in the gusseted packaging bag of the present embodiment, it is possible to obtain a similar effect to that of the aggregate packaging body 100 according to the above-described embodiment. That is, the gusseted packaging bag of the present embodiment can provide the aggregate packaging body 100 excellent in the openability, the take-out property, the storability after opening, the portability after opening, and the non-breakability before opening.

<Production method for gusseted packaging bag>

[0060] Next, a description will be given of a production method for the gusseted packaging bag according to an embodiment of the invention. Fig. 8 is a flowchart illustrating an example of the production method for the gusseted packaging bag according to the present embodiment (first embodiment). Fig. 9 is a diagram illustrating a production process of the production method for the gusseted packaging bag according to the present embodiment. Fig. 10 is a diagram illustrating an example of a semi-finished product obtained in the production process illustrated in Fig. 9. Note that in Fig. 10, portions that can be the first fold GF1 and the second fold GF2 are indicated by dashed lines.

[0061] The production method for the gusseted packaging bag according to the present embodiment can produce the gusseted packaging bag 10 of the present embodiment described above. Such a production method for the gusseted packaging bag is an example of a production method for the gusseted packaging bag according to the invention.

[0062] As illustrated in Fig. 8, the production method for the gusseted packaging bag according to the present embodiment includes a raw film carrying out process (step ST11), a slit forming process (step ST12), a tubular film forming process (step ST13), a gusset forming process (step ST14), a sealing process (step ST15), and a gusset sheet winding process (step ST16) .

[0063] In the raw film carrying out process (step ST11), as illustrated in Fig. 9, a raw film RF which is a material of the gusseted packaging bag 10 is carried out in the production process of the gusseted packaging bag 10. Specifically, by a carry-out section 110, the raw film RF is carried out in a carrying direction MD from a carry-out roll 111 wound with the raw film RF.

[0064] In the slit forming process (step ST12), the slit SR is formed in the gusseted packaging bag 10. Specifically, as illustrated in Fig. 9, by a slit forming section 120, the slit SR is formed in the raw film RF. The slit SR formed by the slit forming section 120 constitutes the slit SR included in the notch part 20 in the gusseted packaging bag 10. Note that the slit SR is formed at a predetermined interval in the carrying direction MD by the slit forming section 120.

[0065] In the tubular film forming process (step ST13), as illustrated in Fig. 9, the raw film RF in which the slit SR is formed is formed into a tubular shape to form the tubular film TF. Specifically, the raw film RF is folded in half in a direction (width direction) substantially orthogonal to the carrying direction MD by a tubular film forming section 130, and both end portions of the raw film RF are bonded together by heat sealing (side sealing SS is performed).

[0066] In the gusset forming process (step ST14), the tubular film TF is folded in a gusset shape to form a gusset-shaped sheet (gusset sheet) GS. Specifically, by a gusset forming section 140, the tubular film TF in which the slit SR is formed is folded in a gusset shape through a folding plate 141 from both edges of the tubular film TF in the width direction to form the gusset sheet GS. In the formed gusset sheet GS, a pair of first folds GF1 is formed at both end portions in the width direction, and a pair of second folds GF2 is formed on the inside (see Fig. 9).

[0067] In the sealing process (step ST15), as illustrated in Fig. 9, the gusset sheet GS folded in the gusset shape is sealed by heat sealing HS. Specifically, by a seal forming section 150, the seal part (heat sealing HS) that separates each gusseted packaging bag 10 is formed on the gusset sheet GS.

[0068] In the gusset sheet winding process (step ST16), the gusset sheet GS on which the seal part (heat sealing HS) is formed is wound around a winding roll 161 by a winding section 160. Note that the gusseted packaging bag 10 is obtained by cutting the gusset sheet GS wound around the winding roll 161 at a predetermined interval.

[0069] In the production method for the gusseted packaging bag according to the present embodiment, the slit forming process (ST12) is performed before the gusset forming process (ST14). In this way, the slit SR can be formed along the stretching direction of the film, which tends to be easily broken in the raw film RF. In addition, in the state of the tubular film TF (semi-finished product of the gusseted packaging bag 10) in which the raw film RF has the tubular shape, the slit SR is formed between the first fold GF1 and the second fold GF2 (see Fig. 9 and Fig. 10).

[0070] In the production method for the gusseted packaging bag according to the present embodiment, the above-mentioned gusseted packaging bag 10 is obtained by sealing both end portions of a semi-finished product (tubular film

TF) of such a gusseted packaging bag 10 by pillow packaging or caramel packaging based on heat sealing HS.

[0071] That is, the obtained gusseted packaging bag 10 has the top surface 11 provided in the upper part in the vertical direction (Z direction), the front surface 15 provided in the front part in the front-rear direction (Y direction) intersecting the vertical direction (Z direction), continuous with the top surface 11, and included in the gusset part GP, and the pair of side surfaces 13 and 14 which faces each other in the left-right direction (X direction) intersecting the vertical direction (Z direction) and the front-rear direction (Y direction), is continuous with the top surface 11, and is included in the seal part SP.

[0072] Then, the notch part 20 can be configured by the slit SR formed on the front surface 15 to extend in the left-right direction (X direction) . Further, the slit SR can be disposed between the center part 15c of the front surface 15 in the vertical direction (Z direction) and the top surface 11. Furthermore, the length L2 of the slit SR can be made shorter than the width L1 of the front surface 15 in the left-right direction (X direction) (see Figs. 1 and 2).

[0073] As described above, in the production method for the gusseted packaging bag according to the present embodiment, by performing the slit forming process (ST12) before the gusset forming process (ST14) , a similar effect to that of the gusseted packaging bag 10 according to the present embodiment can be obtained. That is, according to the production method for the gusseted packaging bag according to the present embodiment, it is possible to obtain the aggregate packaging body 100 excellent in the openability, the take-out property, the storability after opening, the portability after opening, and the non-breakability before opening, or the gusseted packaging bag that can be included in the aggregate packaging body 100.

[0074] Note that in the production method for the gusseted packaging bag according to the present embodiment, the slit forming process (ST12) is performed before the tubular film forming process (step ST13). However, the order of processes is not limited. In the production method for the gusseted packaging bag according to the present embodiment, as long as the slit forming process (ST12) is performed before the gusset forming process (ST14), for example, the slit forming process (ST12) may be performed after the tubular film forming process (step ST13).

[0075] Note that when the slit forming process (ST12) is performed after the tubular film forming process (step ST13), the slit SR is formed in the state of the tubular film TF. Specifically, in the state of the semi-finished product illustrated in Fig. 10, slits SR are formed in two places of an upper film portion and a lower film portion obtained by folding back the tubular film TF at the second fold GF2. Note that even though the second fold GF2 is an outline of the semi-finished product of the gusseted packaging bag 10 illustrated in Fig. 10, and the second fold GF2 is indicated by a dashed line for easier understanding in Fig. 10.

[0076] In this case, it is preferable to form the slit SR disposed between the first fold GF1 and the second fold GF2 near the second fold GF2. In this way, two slits SR that are adjacent to each other and extend in parallel can be formed in the gusset part GP of the gusseted packaging bag 10 in which the second fold GF2 is expanded, and thus it is possible to make substantially the same mode as that in which one slit SR is disposed.

Examples

[0077] Hereinafter, the invention will be specifically described with reference to examples. Evaluation of the examples and comparative examples was performed by the following tests.

[Aggregate packaging body (test body)]

[0078] As the test body, the aggregate packaging body 100 in which the plurality of individual packaging bodies PT was stacked in the vertical direction (Z direction) and housed in the gusseted packaging bag 10 was prepared. As the individual packaging body PT, a pocket tissue ("Elleair tissue" manufactured by Daio Paper Co., Ltd., length: about 190 mm, width: about 210 mm, 20 sheets (10 sets)) was used. Twenty pieces of this tissue paper were housed in the gusseted packaging bag 10 by arranging four pieces in one stage and stacking five stages in the vertical direction (Z direction) . In addition, as the gusseted packaging bag 10, a gusseted packaging bag 10 including a gusset part GP obtained by folding a part of a tubular film TF formed of a polypropylene resin film (thickness: about 30 μm) into a gusset shape, and a seal part SP obtained by sealing an end portion 10a of the tubular film TF using heat sealing HS was used. In addition, in the gusseted packaging bag 10, the front surface 15 was included in the gusset part GP, the pair of side surfaces 13 and 14 was included in the seal part SP, and the notch part 20 (slit SR) extending in the left-right direction (X direction) was formed on the front surface 15.

[Breakability]

[0079] For the aggregate packaging body 100, breakability was verified. A breakability test was evaluated from a tensile strength (kgf) measured as follows. First, a push-pull gauge (DSP-20, manufactured by IMADA) was attached to a tensile tester (MX-500N, manufactured by IMADA). Clips (film chuck (FC21), manufactured by IMADA) were attached

to the push-pull gauge and a chuck attachment plate. A width between the clips attached to the push-pull gauge and the chuck attachment plate was fixed to about 125 mm. One gusseted packaging bag 10 was used as a test piece, and clips were attached to a top and a bottom of the test piece (gusseted packaging bag 10) so that the slit SR (perforation) is disposed between the clips in a state in which the gusset part GP of the gusseted packaging bag 10 is folded. Then, the tensile strength (peak) was measured by pulling the clip at a speed of 100 mm/min until the perforation broke in a direction intersecting the film stretching direction. The tensile strength was measured three times, and an average value (kgf) thereof was calculated as the tensile strength. Note that when the tensile strength exceeds 5 kgf at the perforation break, the breakability is indicated by "> 5.00". The breakability was evaluated as excellent when the tensile strength exceeded 5 kgf, and the breakability was evaluated as poor when the tensile strength was 5 kgf or less.

[Openability]

[0080] For the aggregate packaging body 100, openability was verified. An openability test was performed using the same measuring instrument (tensile tester) as that of the breakability test. A width between clips attached to the push-pull gauge and the chuck attachment plate was set to about 30 mm, and a size of the gusseted packaging bag 10 (film) was set to about 50 × 30 mm. Clips were attached to a top and a bottom of the test piece (gusseted packaging bag 10) so that the slit SR (perforation) was disposed at a center between the clips. Note that a direction in which the film is pulled was set to 50 mm, and the width was set to 30 mm. Note that in Comparative Example 4, it was necessary to open two perforated films at the same time, and thus two films were measured. Further, the other examples and comparative examples were performed with one film. The openability was evaluated as excellent when the tensile strength was less than 0.5 kgf, and the openability was evaluated as poor when the tensile strength was 0.5 kgf or more.

[Take-out property]

[0081] For the aggregate packaging body 100, a take-out property was verified. In a take-out property test, first, a center part of one side of one individual packaging body (pocket tissue) PT, which extends in the longitudinal direction (X direction), overlapping a position closest to the outlet OP after opening the aggregate packaging body 100 was interposed by a double clip (CP102, manufactured by PLUS Co., Ltd.) from the outside of the outlet OP. A hook attached to the push-pull gauge (DSP-20, manufactured by IMADA) was hooked to an upper knob of the double clip interposing the pocket tissue PT therebetween and pulled in a substantially horizontal direction to measure a maximum load (kgf) when the pocket tissue PT is taken out from the aggregate packaging body 100. Note that as a pocket tissue PT used for measurement, a pocket tissue PT that overlaps in the middle was selected in the examples, and a pocket tissue PT located at an uppermost stage or a most side end was selected in the comparative examples. The take-out property was measured three times, and an average value (kgf) was calculated as a maximum load of the take-out property. The take-out property was evaluated as excellent when the maximum load was less than 0.35 kgf, and the take-out property was evaluated as poor when the maximum load was 0.35 kgf or more.

[Portability]

[0082] For the aggregate packaging body 100, portability was verified. In a portability test, after taking out two pocket tissues PT housed in the aggregate packaging body 100, the end portion 10a (seal part SP) of the gusseted packaging bag 10 closed by heat sealing HS was held and shaken once in a range of 180°, and whether the individual packaging bodies PT contained in the aggregate packaging body 100 did not pop out was verified. The test was performed five times for each of the examples and comparative examples, and evaluation was performed according to the following criterion.

○: Not came out even once out of five times (excellent)
×: Came out once or more out of five times (poor)

[0083] Hereinafter, the examples and comparative examples will be described.

[Example 1]

[0084] The aggregate packaging body 100 of the first embodiment illustrated in Figs. 1 and 2 was prepared. In the aggregate packaging body 100, the notch part 20 (slit SR) was disposed between the center part 15c of the front surface 15 included in the gusset part GP in the vertical direction (Z direction) and the top surface 11, and the length L2 of the slit SR was set to be shorter than the width L1 of the front surface 15 in the left-right direction (X direction). In addition, the slit SR was disposed between the other end portion (the end portion 10b of the gusseted packaging bag 10) of the

front surface 15 in the left-right direction (X direction) and the center part 15d of the front surface 15 in the left-right direction (X direction) . In addition, the slit SR was disposed so that the distance D1 between the upper edge 15a of the front surface 15 in the vertical direction (Z direction) and the notch part 20 (slit SR) is approximately the same as the distance D2 between the center part 15c in the vertical direction (Z direction) and the notch part 20 (slit SR). In addition, a height (film bulk) of the gusseted packaging bag 10 in the vertical direction (Z direction) was set to about 50 mm. Each of the above-mentioned tests was performed and for the aggregate packaging body 100 produced as described above, and evaluation was performed. The results are shown in Table 1.

[Example 2]

[0085] The aggregate packaging body 100 of the second embodiment illustrated in Fig. 6 was prepared. The aggregate packaging body 100 was produced similarly to that of Example 1 except that the slit SR was disposed near the top surface 11 (the distance D1 between the upper edge 15a of the front surface 15 in the vertical direction (Z direction) and the notch part 20 (slit SR) was set to be shorter than the distance D2 between the center part 15c in the vertical direction (Z direction) and the notch part 20 (slit SR)), and evaluation was performed. The results are shown in Table 1.

[Example 3]

[0086] The aggregate packaging body 100 of the third embodiment illustrated in Fig. 7 was prepared. The aggregate packaging body 100 was produced similarly to that of Example 1 except that the slit SR was disposed near the center part 15c of the front surface 15 in the vertical direction (Z direction) (the distance D1 between the upper edge 15a of the front surface 15 in the vertical direction (Z direction) and the notch part 20 (slit SR) was set to be longer than the distance D2 between the center part 15c in the vertical direction (Z direction) and the notch part 20 (slit SR)), and evaluation was performed. The results are shown in Table 1.

[Comparative Example 1]

[0087] The aggregate packaging body 100 was produced similarly to that of Example 1 except that a notch part 30 (slit SR) extending in the left-right direction (X direction) of the top surface 11 was provided between the center part 11a of the top surface 11 in the left-right direction (X direction) and the end portion (the end portion 10b of the gusseted packaging bag 10) in the left-right direction (X direction) on the top surface 11 of the gusseted packaging bag 10 as illustrated in Fig. 11, and evaluation was performed. The results are shown in Table 1.

[Comparative Example 2]

[0088] The aggregate packaging body 100 was produced similarly to that of Example 1 except that a notch part 40 (slit SR) extending in the left-right direction (X direction) between one end (the end portion 10a of the gusseted packaging bag 10) of the top surface 11 in the left-right direction (X direction) and the other end (the end portion 10b of the gusseted packaging bag 10) in the left-right direction (X direction) and extending in the vertical direction (Z direction) of the side surface 14 was provided on the top surface 11 of the gusseted packaging bag 10 as illustrated in Fig. 12, and evaluation was performed. The results are shown in Table 1.

[Comparative Example 3]

[0089] The aggregate packaging body 100 was produced similarly to that of Example 1 except that a notch part 50 (slit SR) extending in the front-rear direction (Y direction) of the top surface 11 was provided on the other end (the end portion 10b of the gusseted packaging bag 10) side of the top surface 11 of the gusseted packaging bag 10 in the left-right direction (X direction) as illustrated in Fig. 13, and evaluation was performed. The results are shown in Table 1.

[Comparative Example 4]

[0090] The aggregate packaging body 100 was produced similarly to that of Example 1 except that a notch part 60 (slit SR) extending in the left-right direction (X direction) of the front surface 15 was provided on the top surface 11 side of the front surface 15 not included in the gusset part as illustrated in Fig. 14, and the height (film bulk) of the gusseted packaging bag 10 in the vertical direction (Z direction) was set to about 75 mm, and evaluation was performed. The results are shown in Table 1.

[Table 1]

	Example 1	Example 2	Example 3	Comparative Example 1	Comparative Example 2	Comparative Example 3	Comparative Example 4
Film bulk (mm)	50	50	50	50	50	50	75
Breakability (kgf)	>5.00	>5.00	>5.00	1. 14	1.29	>5.00	>5.00
Openability (kgf)	0.47	0.47	0.47	0.47	0.47	0.82	1.36
Take-out property (kgf)	0.15	0.25	0.13	0.56	0.08	0.57	0.15
Portability	○	○	○	○	×	×	×

[0091] From Table 1, in all the aggregate packaging bodies 100 in which the slit SR is disposed between the center part 15c of the front surface 15 included in the gusset part GP in the vertical direction (Z direction) and the top surface 11, and the length L2 of the slit SR was set to be shorter than the width L1 of the front surface 15 in the left-right direction (X direction), the breakability exceeded 5.00 kgf, the openability was less than 0.5 kgf, the take-out property was less than 0.35 kgf, and the portability was O (excellent) (Examples 1 to 3).

[0092] On the other hand, in all the aggregate packaging bodies 100 in which the slit SR is not disposed between the center part 15c of the front surface 15 included in the gusset part GP in the vertical direction (Z direction) and the top surface 11, the breakability was 5.00 kgf or less, the openability was 0.5 kgf or more, the take-out property was 0.35 kgf or more, and the portability was X (poor) (Comparative Examples 1 to 4) .

[0093] From these results, it was found that when the slit included in the notch part is disposed between the center part of the front surface in the vertical direction and the top surface to extend in the left-right direction of the front surface included in the gusset part, and the length of the slit is set to be shorter than the width of the front surface in the left-right direction, breaking hardly occurs before opening, the openability is excellent, and handling after opening becomes easy.

[0094] Even though the embodiments of the invention have been described above, the invention is not limited to the specific embodiments, and various modifications and changes are possible within the scope of the invention described in the claims.

[0095] Hereinafter, preferred aspects of the invention will be additionally described.

[0096] A first aspect of the invention provides an aggregate packaging body including a plurality of individual packaging bodies in which packaged bodies are housed, a gusseted packaging bag formed using a tubular film, the gusseted packaging bag including a gusset part obtained by folding a part of the tubular film into a gusset shape and a seal part obtained by sealing both end portions of the tubular film, and a notch part for opening formed in the gusseted packaging bag, the plurality of individual packaging bodies being stacked in a vertical direction and housed in the gusseted packaging bag, in which the gusseted packaging bag has a top surface provided in an upper part in the vertical direction, a front surface provided in a front part in a front-rear direction intersecting the vertical direction, continuous with the top surface, and included in the gusset part, and a pair of side surfaces which faces each other in a left-right direction intersecting the vertical direction and the front-rear direction, is continuous with the top surface, and is included in the seal part, the notch part is configured by a slit formed on the front surface to extend in the left-right direction, the slit is disposed between the center part of the front surface in the vertical direction and the top surface, and a length of the slit is shorter than a width of the front surface in the left-right direction.

[0097] In the first aspect, since the plurality of individual packaging bodies is stacked in the vertical direction and housed in the gusseted packaging bag, the vertical direction becomes a stacking direction of the plurality of individual packaging bodies. In addition, in the gusseted packaging bag, the front surface is configured by the gusset part and the pair of side surfaces is configured by the seal part, and thus the left-right direction of the front surface becomes a film stretching direction. Furthermore, at the center part of the front surface of the gusseted packaging bag in the vertical direction, a fold (hereinafter referred to as a gusset fold) of the gusset part extending in the left-right direction (film stretching direction) is disposed.

[0098] In addition, in the first aspect, since the notch part is configured by the slit extending in the left-right direction of the front surface of the gusseted packaging bag, a direction in which the slit extends becomes a direction intersecting the vertical direction (the stacking direction of the plurality of individual packaging bodies) and a direction along the left-right direction of the front surface (film stretching direction). Furthermore, the slit included in the notch part is disposed between the center part (gusset fold) of the front surface in the vertical direction and the top surface, and the length of the slit is shorter than the width of the front surface in the left-right direction.

[0099] According to such a configuration, in the first aspect, when the slit included in the notch part of the aggregate packaging body is formed on the front surface to extend in the left-right direction of the front surface, the slit included in the notch part can be disposed along the film stretching direction in which the film tends to easily tear. For this reason, in the aggregate packaging body according to the first aspect, the notch part is easily opened, and the openability is excellent.

[0100] In addition, in the first aspect, since the direction in which the slit extends intersects the vertical direction (the direction in which the plurality of individual packaging bodies is stacked), the direction in which the outlet formed on the front surface after the notch part is opened (hereinafter referred to as outlet or outlet after opening) extends becomes a direction intersecting the stacking direction of the plurality of individual packaging bodies. The direction in which the outlet extends is a direction along a surface where two individual packaging bodies adjacent each other in the vertical direction overlap (or overlap each other). For this reason, in the aggregate packaging body according to the first aspect, it is easy to take out the individual packaging bodies from the front surface after opening (the notch part or the outlet after opening), and a take-out property is excellent.

[0101] In addition, in the first aspect, since the slit included in the notch part is disposed between the center part of the front surface in the vertical direction and the top surface, the outlet after opening is formed above the center part of

the front surface in the vertical direction. In addition, since the length of the slit is shorter than the width of the front surface in the left-right direction, the outlet after opening is not formed over the entire front surface in the left-right direction. For this reason, the individual packaging bodies remaining in the aggregate packaging body after opening are less likely to come off the outlet. In addition, even after opening, it is possible to carry the aggregate packaging body with the individual packaging bodies housed therein. Therefore, the aggregate packaging body according to the first aspect is excellent in storability and portability after opening.

[0102] In addition, in the first aspect, the slit included in the notch part is formed on the front surface of the gusseted packaging bag, and the notch part is not provided on the top surface where dust, dirt, etc. (hereinafter referred to as dirt and dust) easily enter. In addition, as described above, the outlet after opening is not formed over the entire front surface in the left-right direction. For this reason, in the first aspect, dirt and dust hardly enter the inside of the aggregate packaging body from the outlet after opening. From this point of view, the aggregate packaging body according to the first aspect is excellent in storability after opening.

[0103] In addition, in the first aspect, since the slit included in the notch part is formed between the center part of the front surface in the vertical direction (gusset fold) and the top surface, the slit can be disposed on the front surface of the gusseted packaging bag so that the slit is not caught by the gusset fold at which the film tends to tear. In addition, the slit included in the notch part is merely formed in a part of the front surface of the gusseted packaging bag, and is not formed on the top surface or the bottom surface to which a force from the outside (hereinafter referred to as an external force) is easily applied. For this reason, even when an external force is applied to the aggregate packaging body (or the gusseted packaging bag before the individual packaging bodies are housed) before opening, the notch part is unlikely to tear before opening. Therefore, the aggregate packaging body according to the first aspect is excellent in non-breakability before opening.

[0104] A second aspect of the invention provides the aggregate packaging body in which the slit is disposed between a center part of the front surface in the left-right direction and one end portion of the front surface in the left-right direction. In the second aspect, the slit included in the notch part is disposed between one end portion of the front surface in the left-right direction and the center part of the front surface in the left-right direction, or between the other end portion of the front surface in the left-right direction and the center part of the front surface in the left-right direction.

[0105] In such a configuration, since the length of the slit included in the notch part can be made approximately half the width of the front surface in the left-right direction, the length of the outlet after opening in the left-right direction can be made approximately half the width of the front surface in the left-right direction. For this reason, in the second aspect, it is possible to further inhibit the individual packaging bodies remaining in the aggregate packaging body after opening from coming off the outlet. In addition, even after opening, it becomes easier to carry the aggregate packaging body with the individual packaging bodies housed therein.

[0106] A third aspect of the invention provides the aggregate packaging body in which the slit is disposed near the top surface. In the third aspect, since the slit included in the notch part is formed near the top surface of the gusseted packaging bag, the outlet after opening can be formed near the top surface of the gusseted packaging bag. In this way, in the third aspect, it is possible to further inhibit the individual packaging bodies remaining in the aggregate packaging body after opening from coming off the outlet. In addition, even after opening, it becomes easier to carry the aggregate packaging body with the individual packaging bodies housed therein.

[0107] A fourth aspect of the invention provides the aggregate packaging body in which the slit is disposed near the center part of the front surface in the vertical direction. In the fourth aspect, since the slit included in the notch part is formed near the center part of the front surface of the gusseted packaging bag in the vertical direction, the outlet after opening can be formed near the center part (gusset fold) of the front surface of the gusseted packaging bag in the vertical direction.

[0108] In this way, in the fourth aspect, it is possible to take out the individual packaging bodies that overlap the inner side in the stacking direction among the plurality of individual packaging bodies that overlaps in the vertical direction (the stacking direction). Such individual packaging bodies that overlap the inner side have a small area of the individual packaging bodies coming into contact with the gusseted packaging bag in a state of being housed the gusseted packaging bag, and thus hardly hit a corner of the gusseted packaging bag or the front surface when taken out from the outlet after opening. In this way, in the fourth aspect, the individual packaging bodies can be pulled out with a small force, and thus the individual packaging bodies can be taken out more easily.

[0109] A fifth aspect of the invention provides a gusseted packaging bag of the above-described aggregate packaging body, the gusseted packaging bag including the gusset part, the seal part, and the notch part. In the fifth aspect, it is possible to form the gusseted packaging bag having the top surface provided in the upper part in the vertical direction, the front surface provided in the front part in the front-rear direction intersecting the vertical direction, continuous with the top surface, and included in the gusset part, and the pair of side surfaces which faces each other in the left-right direction intersecting the vertical direction and the front-rear direction, is continuous with the top surface, and is included in the seal part.

[0110] In addition, in the fifth aspect, it is possible to form the gusseted packaging bag in which the notch part is

configured by the slit formed on the front surface to extend in the left-right direction, the slit is disposed between the center part of the front surface in the vertical direction and the top surface, and the length of the slit is shorter than the width of the front surface in the left-right direction.

[0111] In this way, in the fifth aspect, it is possible to obtain a similar effect to that of the aggregate packaging body according to the first aspect. That is, according to the fifth aspect, it is possible to obtain the aggregate packaging body excellent in the openability, the take-out property, the storability after opening, the portability after opening, and the non-breakability before opening of the aggregate packaging body.

[0112] A sixth aspect of the invention provides a production method for the above-described gusseted packaging bag, the method including a tubular film forming process of forming a raw film into a tubular shape to form the tubular film, a gusset forming process of folding the tubular film into a gusset shape to form a gusset-shaped sheet, and a slit forming process of forming the slit in the gusset part, in which the slit forming process is performed before the gusset forming process.

[0113] In the sixth aspect, by performing the slit forming process before the gusset forming process, it is possible to obtain the gusseted packaging bag having the top surface provided in the upper part in the vertical direction, the front surface provided in the front part in the front-rear direction intersecting the vertical direction, continuous with the top surface, and included in the gusset part, and the pair of side surfaces which faces each other in the left-right direction intersecting the vertical direction and the front-rear direction, is continuous with the top surface, and is included in the seal part.

[0114] In this way, in the sixth aspect, it is possible to obtain a similar effect to that of the aggregate packaging body according to the fifth aspect. That is, according to the sixth aspect, it is possible to obtain the aggregate packaging body excellent in the openability, the take-out property, the storability after opening, the portability after opening, and the non-breakability before opening of the aggregate packaging body.

[0115] This application claims the priority based on Japanese Patent Application No. 2018-70113 filed on March 30, 2018, and the entire contents thereof are incorporated herein.

Reference Signs List

[0116]

100	Aggregate packaging body
PT	Individual packaging body (pocket tissue)
PM	Perforation
10	Gusseted packaging bag
11	Top surface
12	Bottom surface
13	Side surface
HS	Heat sealing
14	Side surface
CP	Caramel packaging
15	Front surface
15a	Upper edge
15b	Lower edge
15c	Center part in vertical direction
15d	Center part in left-right direction
GP	Gusset part
GF1	First fold
GF2	Second fold
16	Back surface
20	Notch part
SR	Slit
OP	Outlet
110	Carry-out section
111	Carry-out roll
120	Slit forming section
130	Tubular film forming section
140	Gusset forming section
141	Folding plate
150	Seal forming section

160 Winding section
161 Winding roll
RF Raw film
TF Tubular film
SS Side sealing
GS Gusset sheet
MD Carrying direction

Claims

1. An aggregate packaging body comprising:

a plurality of individual packaging bodies in which packaged bodies are housed;
a gusseted packaging bag formed using a tubular film, the gusseted packaging bag including a gusset part obtained by folding a part of the tubular film into a gusset shape and a seal part obtained by sealing both end portions of the tubular film; and
a notch part for opening formed in the gusseted packaging bag,
the plurality of individual packaging bodies being stacked in a vertical direction and housed in the gusseted packaging bag,
wherein the gusseted packaging bag has a top surface provided in an upper part in the vertical direction, a front surface provided in a front part in a front-rear direction intersecting the vertical direction, continuous with the top surface, and included in the gusset part, and a pair of side surfaces which faces each other in a left-right direction intersecting the vertical direction and the front-rear direction, is continuous with the top surface, and is included in the seal part,
the notch part is configured by a slit formed on the front surface to extend in the left-right direction,
the slit is disposed between the center part of the front surface in the vertical direction and the top surface, and a length of the slit is shorter than a width of the front surface in the left-right direction.

2. The aggregate packaging body according to claim 1, wherein the slit is disposed between a center part of the front surface in the left-right direction and one end portion of the front surface in the left-right direction.

3. The aggregate packaging body according to claim 1 or 2, wherein the slit is disposed near the top surface.

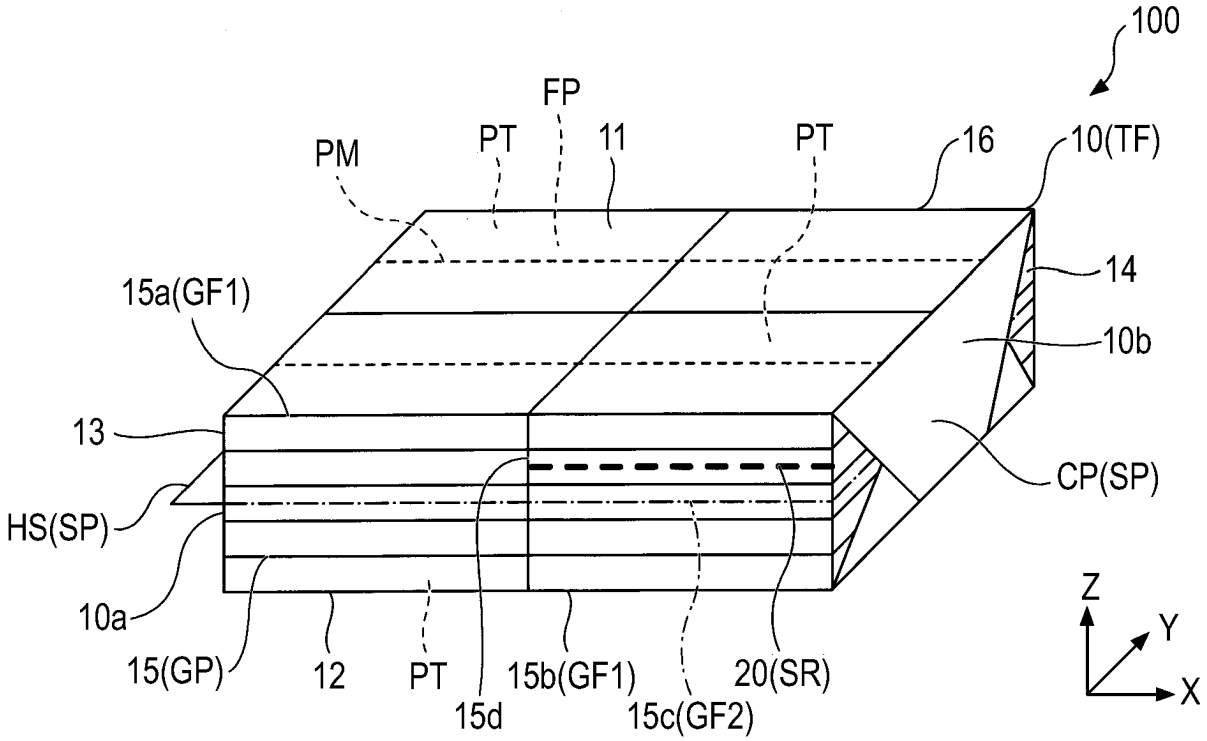
4. The aggregate packaging body according to claim 1 or 2, wherein the slit is disposed near the center part of the front surface in the vertical direction.

5. A gusseted packaging bag of the aggregate packaging body according to any one of claims 1 to 4, the gusseted packaging bag comprising:

the gusset part;
the seal part; and
the notch part.

6. A production method for the gusseted packaging bag according to claim 5, the method comprising;
a tubular film forming process of forming a raw film into a tubular shape to form the tubular film;
a gusset forming process of folding the tubular film into a gusset shape to form a gusset-shaped sheet; and
a slit forming process of forming the slit in the gusset part,
wherein the slit forming process is performed before the gusset forming process.

FIG.1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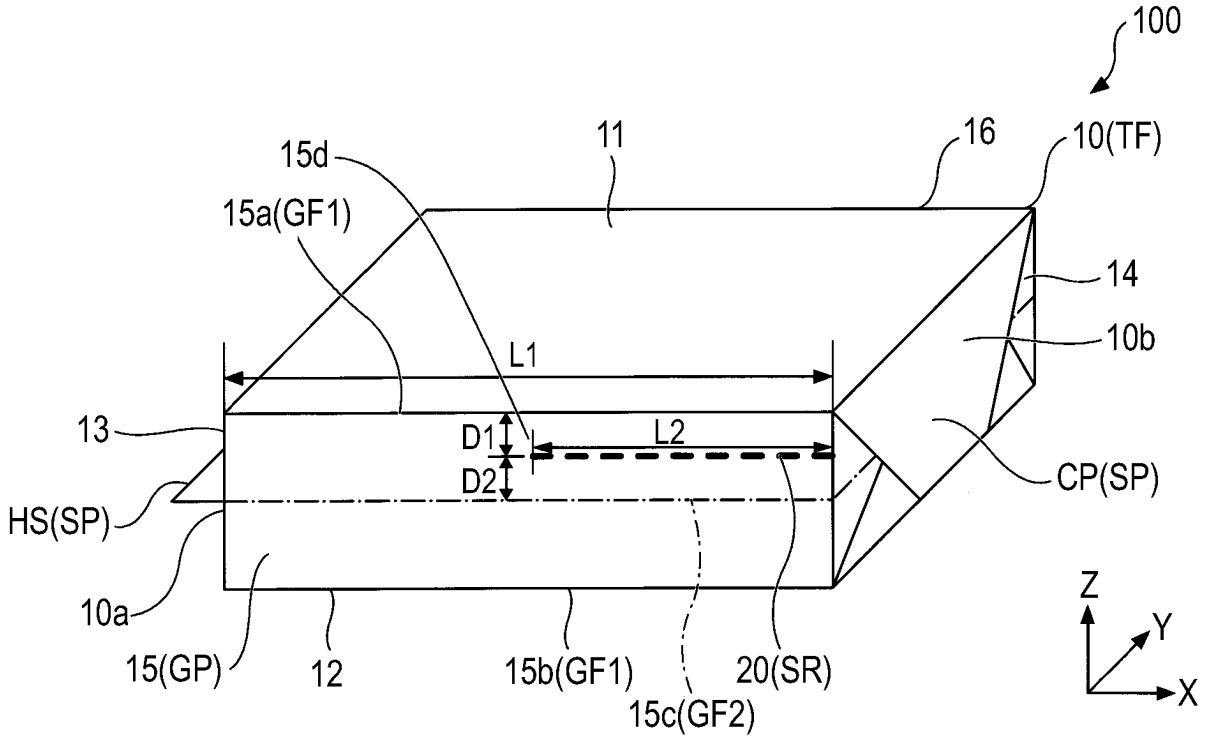
20(SR)
Z
Y
X

FIG.2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L2
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15(GP)
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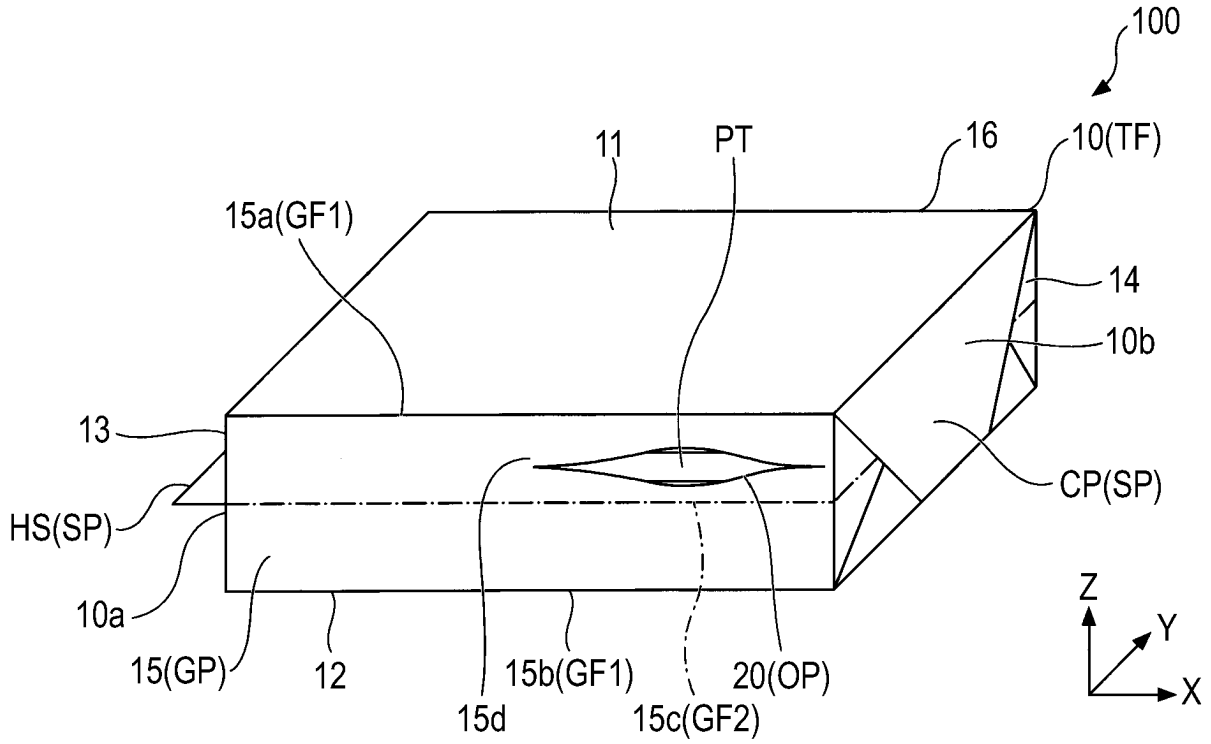
20(SR)
15c(GF2)
Z
Y
X

FIG.3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15c(GF2)
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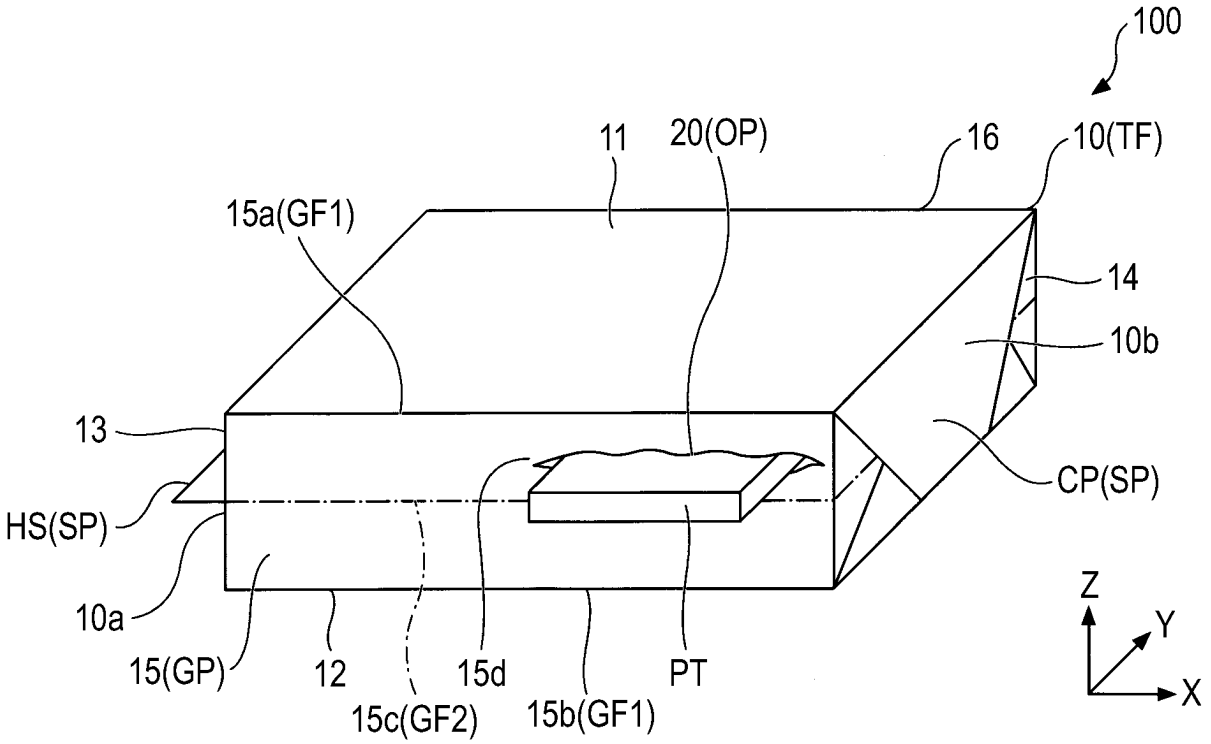
FIG.4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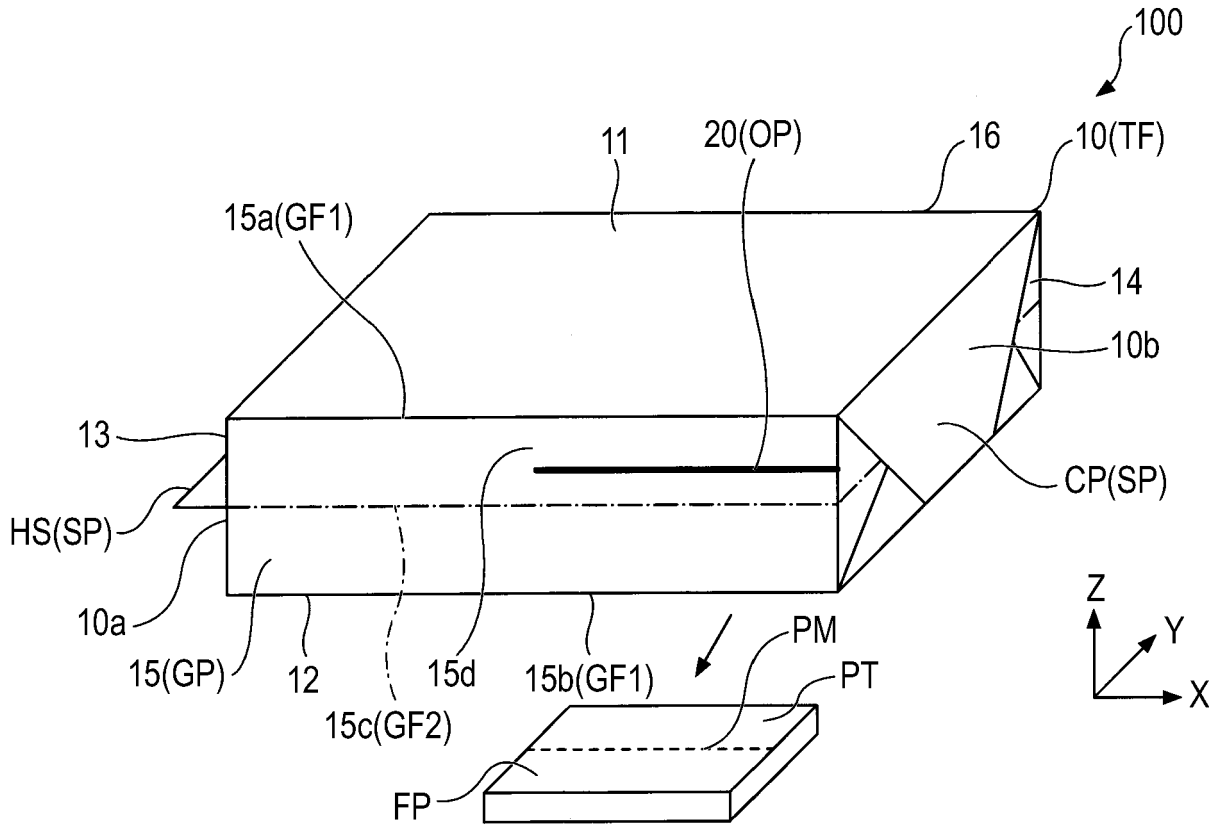
Y
X

FIG.5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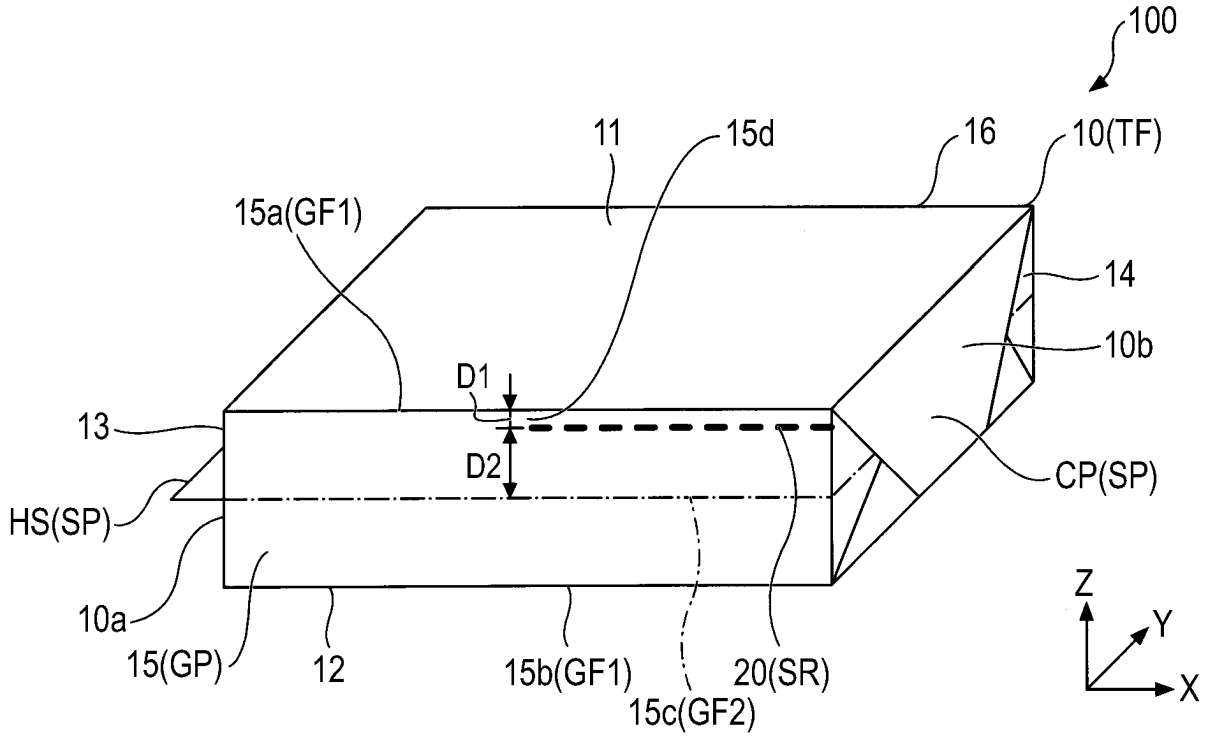
PM
PT
FP
Z
Y
X

FIG.6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Y
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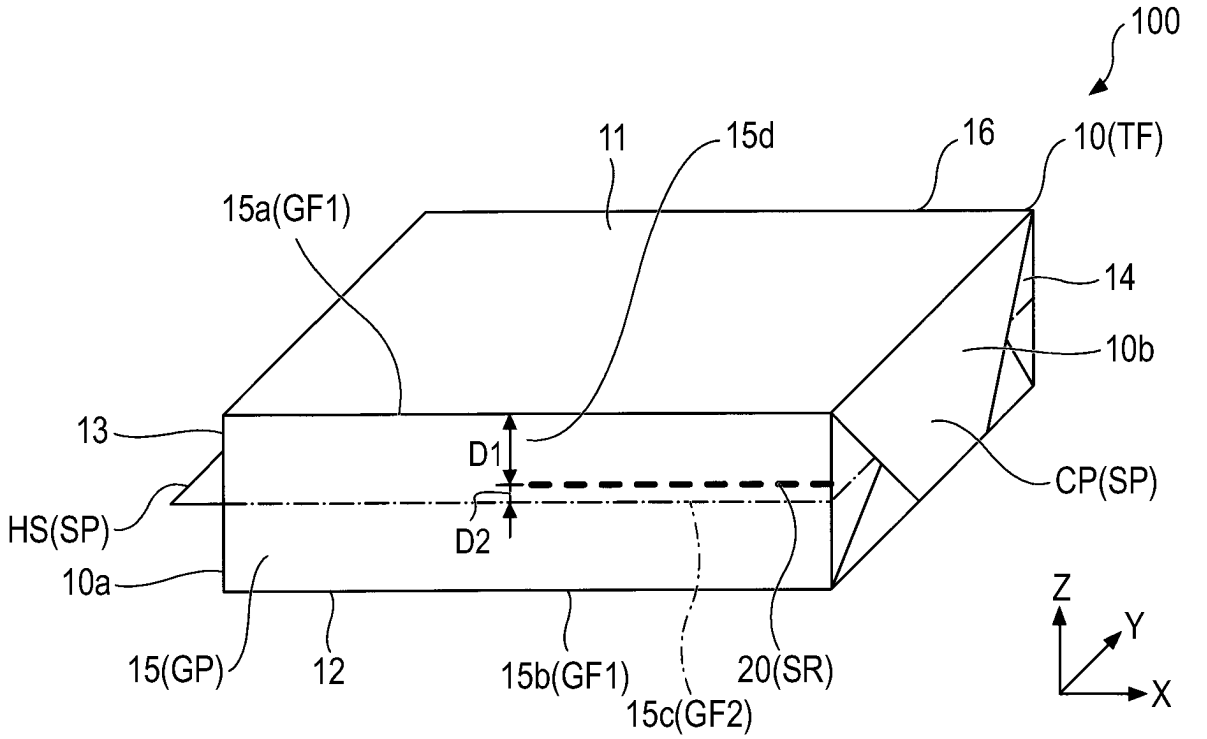
FIG.7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15c(GF2)
Z
Y
X

FIG.8

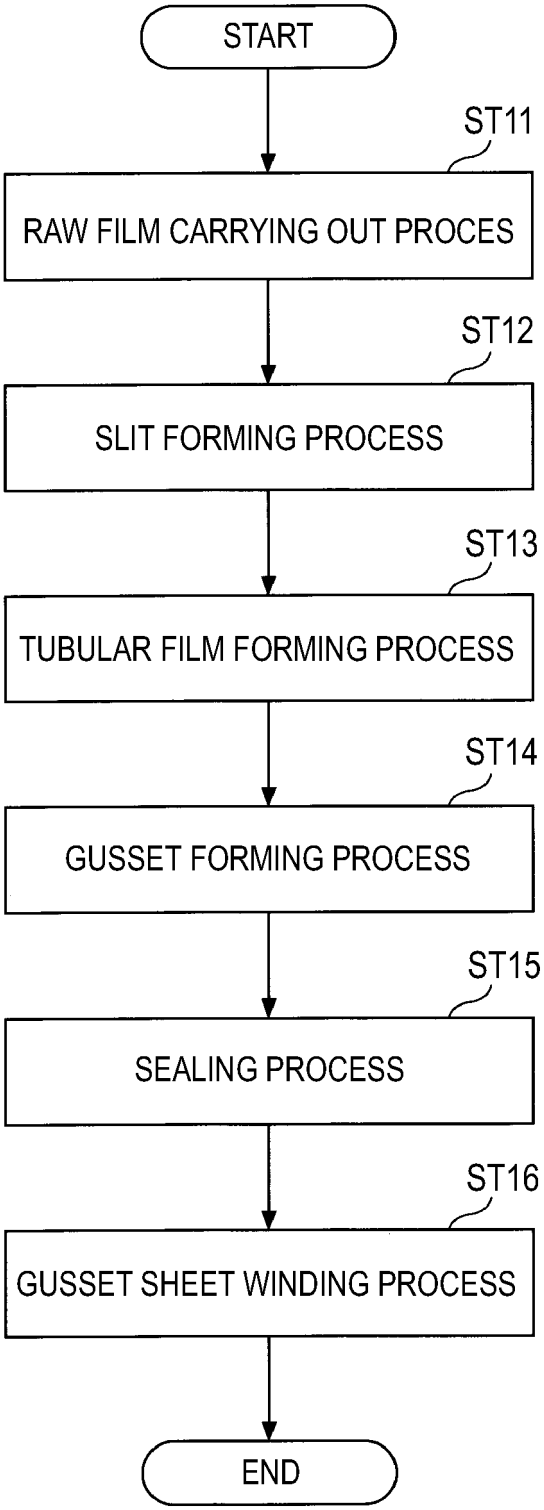
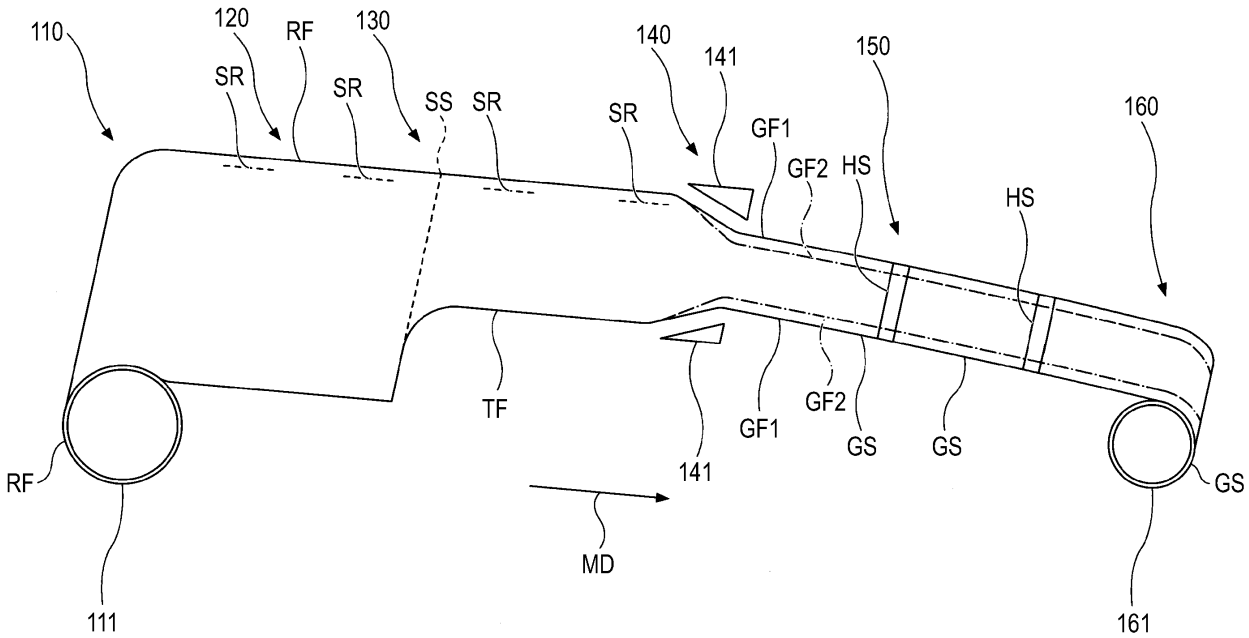

START
ST11
RAW FILM CARRYING OUT PROCES
ST12
SLIT FORMING PROCESS
ST13
TUBULAR FILM FORMING PROCESS
ST14
GUSSET FORMING PROCESS
ST15
SEALING PROCESS
ST16
GUSSET SHEET WINDING PROCESS
END

FIG.9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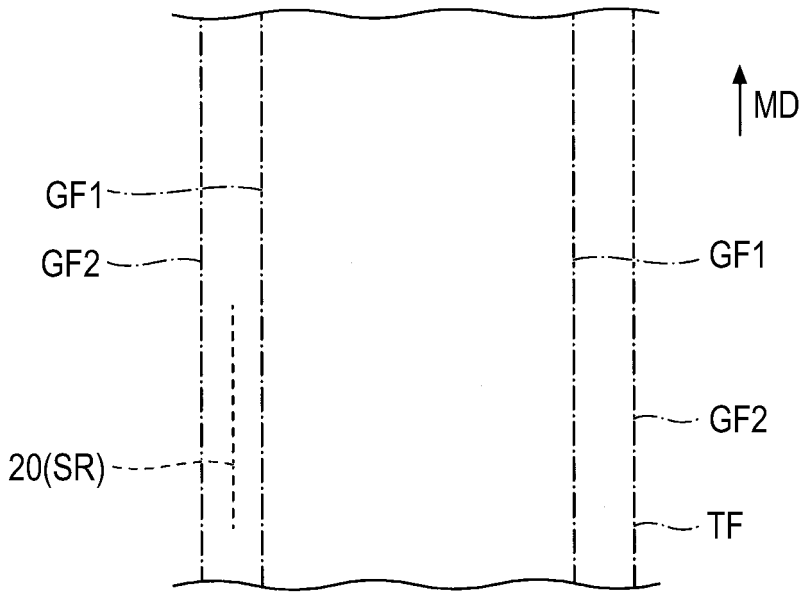
141
MD
111
161

FIG.10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GF2
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TF

FIG.11

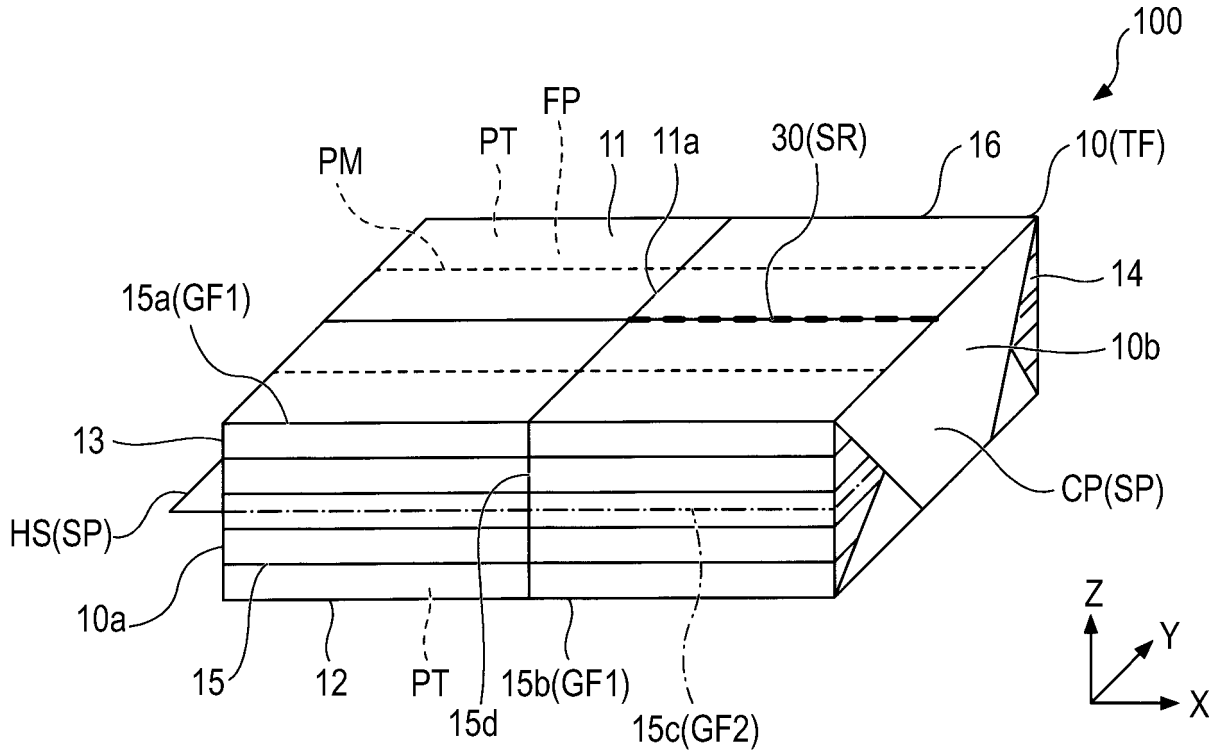
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FIG.12

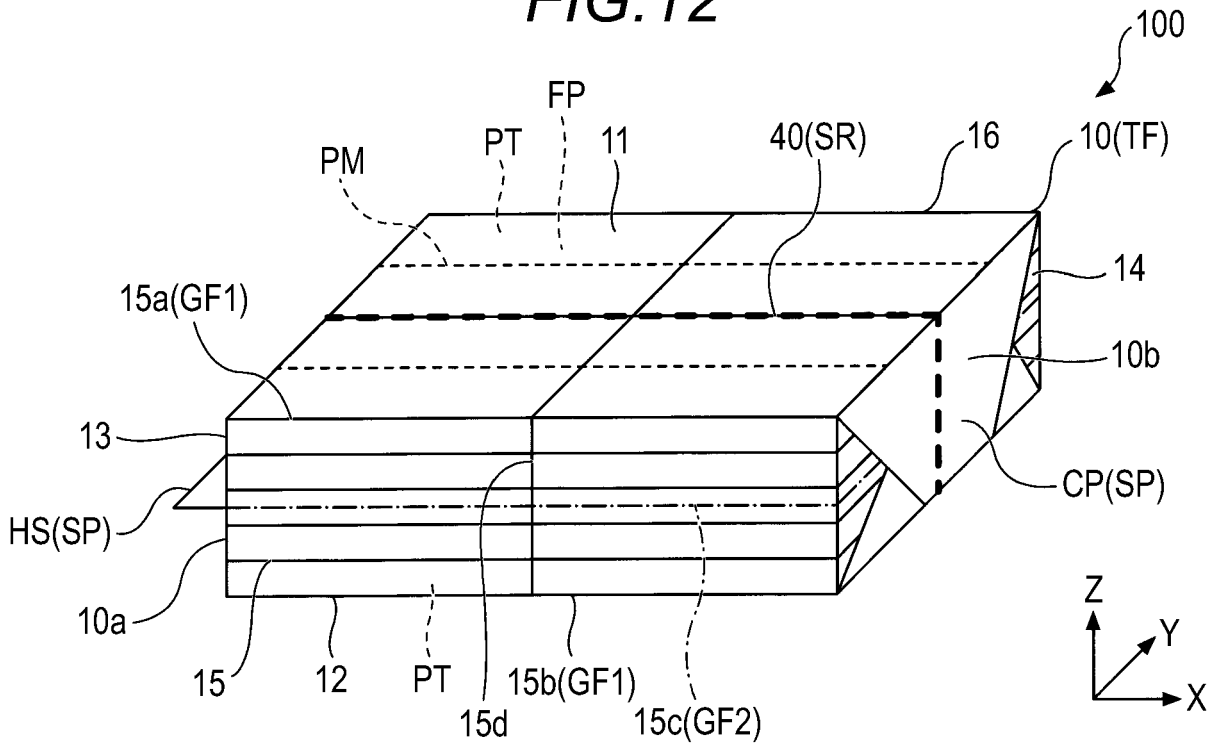
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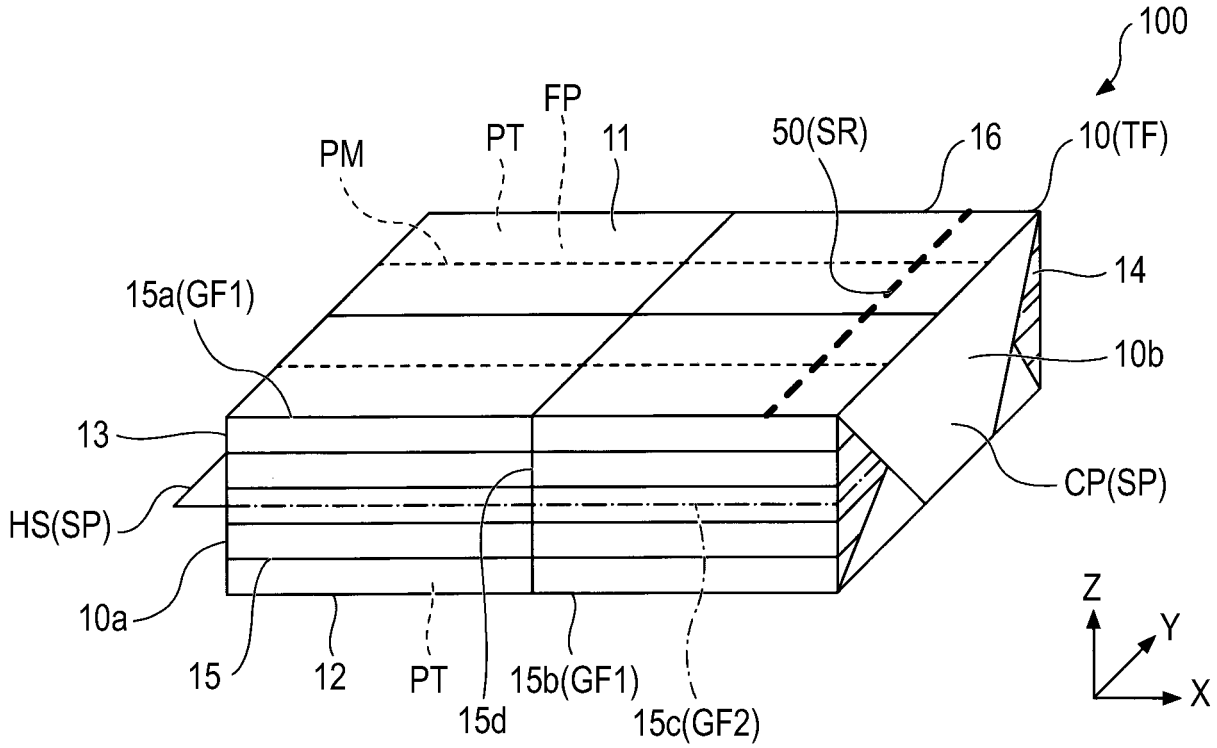
FIG.13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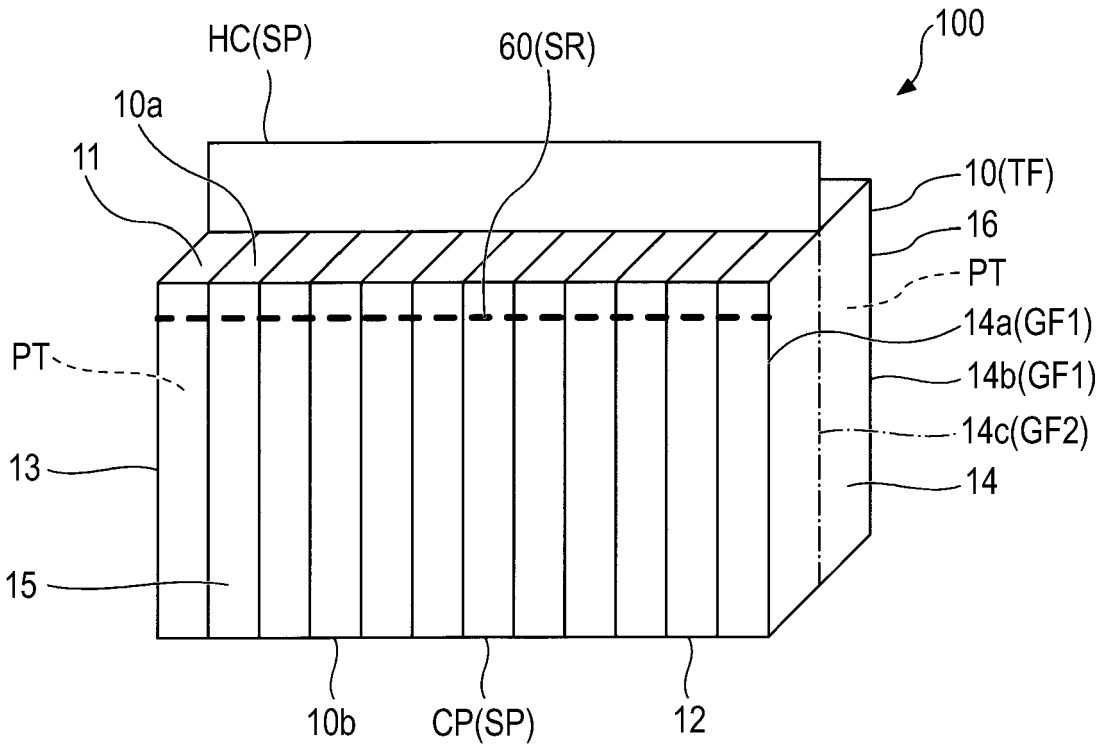
Y
X

FIG.14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INTERNATIONAL SEARCH REPORT

International application No.
PCT/JP2018/044893

A. CLASSIFICATION OF SUBJECT MATTER
Int.Cl. B65D75/62(2006.01)i, B65D77/04(2006.01)i

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. B65D75/62, B65D77/04

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 1971-2019
Registered utility model specifications of Japan 1996-2019
Published registered utility model applications of Japan 1994-2019

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 2009-530201 A (THE PROCTER & GAMBLE COMPANY) 27 August 2009, paragraphs [0001]-[0007], [0018]-[0021], [0025], [0026], [0053], [0057], [0058], [0064], fig. 1, 18, 21 & US 2007/0233031 A1, paragraphs [0001]-[0007], [0039]-[0042], [0046], [0047], [0074], [0078], [0079], [0085], fig. 1, 18, 21 & CN 101405200 A	1-6

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Date of the actual completion of the international search	Date of mailing of the international search report
18.02.2019	26.02.2019
Name and mailing address of the ISA/ Japan Patent Office 3-4-3, Kasumigaseki, Chiyoda-ku, Tokyo 100-8915, Japan	Authorized officer Telephone No.

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/JP2018/044893

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	JP 56-142162 A (MATSUMOTO, Tomio) 06 November 1981, column 1, line 16 to column 2, line 5, column 5, lines 6-15, fig. 12 (Family: none)	1-6
Y	JP 2015-199500 A (UNI CHARM CORPORATION) 12 November 2015, paragraphs [0001], [0071]-[0077], fig. 11 (Family: none)	6
A	JP 2006-347633 A (DAIO PAPER CORPORATION) 28 December 2006, paragraph [0016], fig. 3 (Family: none)	1-6
A	US 9827150 B1 (THE PROCTER & GAMBLE COMPANY) 28 November 2017, fig. 6, 9 & WO 2018/102176 A1	1-6
A	Microfilm of the specification and drawings annexed to the request of Japanese Utility Model Application No. 201690/1984 (Laid-open No. 113261/1986) (LION CORPORATION) 17 July 1986, specification, page 1, lines 14-16 (Family: none)	1-6

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Patent documents cited in the description

- JP 5833381 B **[0002] [0003]**
- JP 2018070113 A **[0115]**