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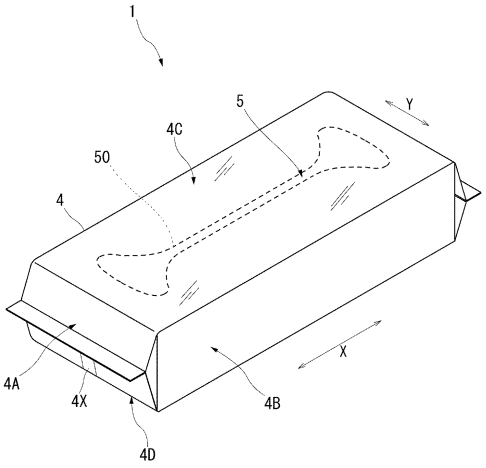
(54) **WRAPPED BODY**

(57) A film-packaged product with excellent withdrawability of sheets of sanitary tissue paper has a bundle of sanitary tissue paper packaged with a flexible resin film, and includes a dispenser-port-forming region formed by disposing an easy-tear line in a loop in the top face, the region has a narrowed section extending widthwise in the middle of the depth direction, flaring sections each gradually flaring with increasing distance from the narrowed section outward widthwise, and curved convex sections each bulging convexly outward widthwise, and the width of the region is 70% or more the width of the top face, a maximum depth of the region is 10 to 40% the depth of the top face, the width of the narrowed section is 50 to 70% the length of the top face, and the depth of the narrowed section is 0.5 to 10% the depth of the top face.

[FIG.1]



EP 4 286 295 A1

Description

FIELD OF ART

[0001] The present invention relates to a packaged product in which sheets of sanitary tissue paper, such as paper towels, are folded and stacked into a bundle and packaged with a flexible packaging film.

BACKGROUND ART

[0002] As a packaging configuration of sanitary tissue paper, such as paper towels and facial tissues, there is known to interfold and stack sheets each having a single or a plurality of plies, into a so-called pop-up-type bundle so that picking up and withdrawal of the topmost sheet leads to withdrawal of part of the subsequent sheet, and to wrap the bundle with a flexible packaging film made of resin.

[0003] Hitherto, such a packaged product of sanitary tissue paper typically has a perforated line in the form of a simple straight line for forming a dispenser port, so that a slit-like dispenser port is formed in the top face of the product. However, a slit-like dispenser port has problems in that a longer slit may cause fall back of the sheets inside the package when the number of sheets remaining in the package becomes small, whereas a shorter slit may cause difficulties in dispensing the first sheet after opening the package, or may cause too high a removal resistance of a sheet in the beginning or the end of use, so that the package is lifted up with the sheet and cannot allow the subsequent sheets to pop up.

[0004] For the purpose of solving the problem of such a slit-like dispenser port, the perforated line for forming a dispenser port is arranged in a longitudinally-elongated circular form by means of a die-cutting technique to broaden the dimension of the opening of the dispenser port in the depth direction, to be like an ellipse (see Patent Publications 1 and 2 below). Alternatively, the dispenser port is formed in an approximate gourd shape with its ends in the width direction enlarged for further improving withdrawability.

[0005] However, conventional dispenser ports generally in the elliptical shape or the gourd shape are mainly designed for sanitary tissue paper like facial tissues, which are mainly in facial use, such as for blowing your nose or wiping your mouth at meals, and of which softness and pliancy are valued. Thus, the dispenser ports of such shapes are not always suitable for sanitary tissue paper, such as tissues having utility in wiping your skin other than face skin or cleaning up goods, with "qualities of strength, thickness, and resistance to tear", or paper towels which have a higher stiffness compared to that of facial tissues, and mainly used for wiping your hands after washing.

[0006] For improving withdrawability of such sanitary tissue paper sheets, it is conceivable to broaden the dimension in the depth direction of the dispenser port. However, a dispenser port for the stiff sanitary tissue paper is difficult to be designed in the same way as facial tissues, which are excellent in softness and pliancy, due to difference in paper quality. Simply broadening the dimension in the depth direction of the dispenser port very likely leads to problems in withdrawability, such as pop-up failure, wherein, in the pop-up action, the subsequent sheet of sanitary tissue paper is not pulled up but falls back, or stand-up failure, wherein the sanitary tissue paper sheets cannot stand up from the top face of the package but falls back.

PRIOR ART PUBLICATION

PATENT PUBLICATION

[0007]

Patent Publication 1: JP 2018-052559 A
Patent Publication 2: JP 2018-058654 A

SUMMARY OF THE INVENTION

PROBLEMS TO BE SOLVED BY THE INVENTION

[0008] It is therefore a primary object of the present invention, in view of the problems discussed above, to provide a packaged product with excellent withdrawability of sheets of sanitary tissue paper, in particular, stiff sanitary tissue paper, such as paper towels.

MEANS FOR SOLVING THE PROBLEMS

[0009] Solutions to the above problems are as follows.

[0010] The first aspect is a packaged product including a flexible packaging film made of resin, and a bundle of sanitary tissue paper packaged therewith,

the packaged product having a dispenser-port-forming region formed with an easy-tear line disposed in a loop in a top face of the product,
wherein the dispenser-port-forming region is shaped to have a narrowed section extending in a width direction of the product in a middle of a depth direction of the product, flaring sections each continued from a corresponding end of the narrowed section and gradually flaring with increasing distance from the narrowed section outward in the width direction, and curved convex sections each continued from a corresponding flaring section and bulging convexly outward in the width direction, and
wherein a dimension in the width direction of the dispenser-port-forming region is 70% or more of a width of the top face, a maximum dimension in the depth direction of the dispenser-port-forming region is 10 to 40% of a dimension in the depth direction of the top face, a dimension in the width direction of the narrowed section is 50 to 70% of a length of the top face, and a dimension in the depth direction of the narrowed section is 0.5 to 10% of a dimension in the depth direction of the top face.

[0011] The second aspect is the packaged product according to the first aspect, wherein a dimension in the depth direction of the curved convex sections is 25 to 45 mm, and a dimension in the width direction of bulging of the curved convex sections is 2.5 to 12.5 mm.

EFFECT OF THE INVENTION

[0012] According to the present invention, there is provided a packaged product with excellent withdrawability of sheets of sanitary tissue paper, in particular, stiff sanitary tissue paper, such as paper towel.

BRIEF DESCRIPTON OF THE DRAWINGS

[0013]

Fig. 1 is a perspective view for explaining a packaged product according to the present invention.
Fig. 2 is a perspective view for explaining a bundle of sanitary tissue paper.
Fig. 3 is a top view for explaining a dispenser-port-forming region.
Fig. 4 is a perspective view for explaining state of use of the packaged product according to the present invention.
Fig. 5 shows partially enlarged views for explaining a dispenser-port-forming region having modified cut areas.
Fig. 6 shows partially enlarged views for explaining other dispenser-port-forming regions having modified cut areas.
Fig. 7 shows partially enlarged views for explaining a dispenser-port-forming region having convex cut areas.
Fig. 8 shows partially enlarged views for explaining other embodiments of the convex cut areas.
Fig. 9 is a perspective view for explaining state of use of a packaged product provided with a dispenser-port-forming region having convex cut areas.
Fig. 10 is a partially enlarged view for explaining a dispenser-port-forming region having half-cut areas.
Fig. 11 shows a front view and a sectional view for explaining the half-cut areas.
Fig. 12 illustrates another embodiment of the dispenser-port-forming region.
Fig. 13 illustrates ripping in formation of the dispenser port.

MODE FOR CARRYING OUT THE INVENTION

[0014] Embodiments of the present invention will now be explained with reference to Figs. 1 to 12, in comparison to Fig. 13 showing a comparative mode. As used herein, directions, such as the top-bottom direction and the right-left direction, vary depending on the orientation of the packaged product, and do not mean absolute spatial directions. Stiffness may also be termed flexural rigidity of paper.

[0015] The packaged product 1 according to the present invention is obtained by packaging a bundle 3 of generally a cuboid shape, which is formed by interfolding and stacking sheets of sanitary tissue paper 2, such as paper towels, with a flexible packaging film 4, and has a dispenser-port-forming region 5 formed in its top face 4C. This packaged product 1 is generally in the form of a hexahedron having a top face 4C, a bottom face 4D opposite from the top face 4C, and longitudinal side faces 4B and transverse side faces 4A located between the top face 4C and the bottom face 4D, to approximate the shape of the bundle 3.

[0016] Figs. 1 to 4 show an embodiment in gusset wrapping. The gusset wrapping according to this embodiment is a pillow wrapping with gussets, and is performed by cylindrically wrapping the bundle 3, which is an object of packaging,

with the packaging film 4 so that an opening is formed on each longitudinal end; adhering, by heat-sealing or bonding with an adhesive, a portion 4X overlapped in the wrapping direction on the bottom face or the like of the bundle 3; gusseting each portion extending beyond the shorter side face 3A of the bundle 3; and adhering the end edge in the top-bottom direction by heat-sealing or using an adhesive to form the transverse side face 4A as a sealed face. The sealed faces, which are the transverse side faces 4A of this gusset wrapping, face the shorter side faces 3A of the bundle 3, while the longitudinal side faces 4B, which are the gussets, face the longer side faces 3B having the folds, of the bundle 3. Note that, according to the present invention, how the packaged product has been packaged is not limited. The packaged product may have been packaged in any suitable packaging configuration, such as simple pillow wrapping without the gussets, or overlap wrapping formed by sealing flaps placed one on top of the other in each transverse side face, which is also referred to as caramel wrapping.

[0017] The bundle 3 of the sanitary tissue paper 2 contained in the packaged product 1 according to the present invention is of a so-called pop-up type. As shown particularly in Fig. 2, this bundle 3 is formed by folding a rectangular tissue paper sheet 2 in half, and placing, inside 2A the folded tissue paper sheet, folded halves 2B of the other tissue paper sheets 2 arranged above and below, so that a plurality of tissue paper sheets 2 is interfolded and stacked to form an approximate cuboid shape having a pair of longer side faces 3B, in each of which the folded edges 2C of the tissue paper sheets 2 are arranged, a pair of shorter side faces 3A, in each of which the folded edges 2C are not arranged, and a pair of planes (top and bottom faces) 3C contiguous to the shorter side faces 3A and the longer side faces 3B.

[0018] The number of sheets of the sanitary tissue paper 2 constituting the bundle 3 is not particularly limited, but may be 30 to 240 sheets, with one ply or a plurality of plies being counted as one sheet. Also, the bundle 3 may be in any size without limitation, and may have a height of 30 to 100 mm by a longitudinal dimension (width) of 150 to 250 mm by a transverse dimension (depth) of 100 to 130 mm, when 200 sheets of sanitary tissue paper are bundled. Effect of resolving the pop-up failure according to the present invention is larger when the dimension in the height direction of the bundle is smaller than the dimension in the depth direction of the top face of the bundle.

[0019] The filling rate of the packaged product 1 with the bundle 3 is not limited as long as the effects of the present invention are not disturbed, but the gap between the bundle and the packaging film is preferably in the range of 0 to 30 mm. The bundle 3 may be packaged slightly compressed in the top-bottom direction with the packaging film.

[0020] Each sheet of sanitary tissue paper 2 making up the bundle 3 is of a single-ply structure or of a layered structure of a plurality of plies. The number of plies is not limited, but one ply or two plies are preferred. The basis weight per ply is not limited, and preferably 10 to 40 g/m^2. One sheet of the sanitary tissue paper preferably has a mass of 1.0 to 2.5 g. The sanitary tissue paper sheets of one or two plies each having the basis weight mentioned above are particularly suitable for paper towels suitably used for wiping hands after washing. Further, the paper thickness per sheet of the sanitary tissue paper is preferably 100 to 500 μm. The sanitary tissue paper with the number of plies and the basis weight, as well as the paper thickness in the above-mentioned ranges, provides excellent effects in resolving pop-up failure, wherein, in the pop-up action, the subsequent sanitary tissue paper sheet is not pulled up but falls back, or stand-up failure, wherein the subsequent sanitary tissue paper sheet cannot stand up from the top face of the package but collapse, in combination with the characteristic shape of the dispenser-port-forming region having a narrowed section, flaring sections, and curved convex sections, which are the features of the present invention.

[0021] Note that the basis weight is determined in accordance with JIS P 8124 (1998). The basis weight per ply is calculated by the following formula: basis weight = weight per sheet / (area of sheet $\times$ number of plies). The paper thickness is a value determined by subjecting a specimen to sufficient moisture conditioning under the conditions prescribed in JIS P 8111 (1998), and then measuring the thickness of a plurality of plies under the same conditions, using a dial thickness gauge (thickness measuring device), PEACOCK Model G (OZAKI MFG. CO., LTD.) or an equivalent thereof.

[0022] The sanitary tissue paper 2 according to the present invention is of a dry type, not a so-called wet type impregnated with liquid chemical. Thus, the above-mentioned bundle 3 made up of the sanitary tissue paper sheets 2 entrains a large amount of air. Among such dry type sanitary tissue paper 2, some are of liquid-chemical-applied type, which has liquid chemical, such as a moisturizer including polyols or the like, typically glycerin, applied thereto to increase moisture content by moisture absorption of the polyols or the like, and the sanitary tissue paper may be of this type.

[0023] The raw material pulp of the sanitary tissue paper 2 is not limited, and may be a blend of pulp derived from softwood, such as NBKP, and pulp derived from hardwood, such as LBKP. The raw material pulp may contain or consist solely of de-inked pulp. The present invention produces particularly excellent effect with sanitary tissue paper having a high flexural rigidity and high stiffness, such as paper towels, so that it is particularly preferred that the raw material pulp contains more than 50% pulp derived from softwood.

[0024] The dry tensile strength of the sanitary tissue paper 2 is not limited, but sanitary tissue paper having a dry tensile strength of 1000 to 3000 cN/25 mm in the longitudinal direction and 250 to 1500 cN/25 mm in the horizontal direction is particularly suitable for the present invention. The dry tensile strength is determined in accordance with JIS P 8113 (1998) . Apparatus for the measurement may be Universal Tensile and Compressing Testing Machine TG-200N manufactured by MINEBEA CO., LTD., or equivalents thereof.

[0025] The dispenser-port-forming region 5 of the packaged product 1 according to the present invention is formed by disposing an easy-tear line 50 in a loop in the top face 4C, which faces the topmost sanitary tissue paper sheet 2 of the bundle 3 packaged with the packaging film 4. As used herein, the meaning of the term "loop" is not limited to a circular or elliptical shape, but includes a shape forming a closed region. From such a dispenser-port-forming region 5, a dispenser port 6, which is an opening for dispensing the sanitary tissue paper 2, is formed in the top face 4C of the packaged product 1, by tearing along the easy-tear line 50 and separating and removing the region bounded by the easy-tear line 50. In the packaged product 1 according to the present invention, the bundle 3 is of a pop-up type and thus, withdrawal of the topmost single sheet of the sanitary tissue paper 2 from the bundle 3 through the dispenser port thus formed, leads to exposure of part of the subsequent sanitary tissue paper sheet located immediately below the topmost, out of the dispenser port. Since the dispenser-port-forming region 5 is formed by arranging the easy-tear line 50 in a loop, the dispenser port 6 formed by removing the region bounded by the easy-tear line 50 is not in the form of a mere slit composed only of a straight line, but has a certain dimension in the depth direction. Such a dispenser-port-forming region 5 allows the packaging film therein to be separated and removed by tearing and continuously peeling the region of the packaging film bounded by the easy-tear line 50 from one end 5A toward the other end 5B, and thus provides good handleability in package opening. As used herein, the end located on the left in each figure is referred to as one end 5A, whereas the end located on the right is referred to as the other end 5B, which are defined merely for the sake of explanation, and the two may be used interchangeably.

[0026] Here, the dispenser-port-forming region 5 of the packaged product 1 according to the present invention characteristically has a narrowed section 51 extending in the width direction in the middle of the depth direction of the top face 4C, flaring sections 52 each continued from a corresponding end of the narrowed section 51 and gradually flaring with increasing distance from the narrowed section 51 outward in the width direction of the bundle 3, and curved convex sections 53 each continued from a corresponding flaring section 52 and bulging convexly outward in the width direction of the bundle 3. In particular, the dimension L1 in the width direction of the overall dispenser-port-forming region 5 is 70% or more the dimension L2 in the width direction of the top face of the bundle 3, the maximum dimension L3 in the depth direction of the overall dispenser-port-forming region 5 is 10 to 40% the dimension L4 in the depth direction of the top face of the bundle 3, the dimension L5 in the width direction of the narrowed section is 50 to 70% the dimension L2 in the width direction of the top face of the bundle 3, and the dimension L6 in the depth direction of the narrowed section is 0.5 to 10% the dimension L4 in the depth direction of the top face of the bundle 3.

[0027] Formation of the dispenser port 6 from the dispenser-port-forming region 5 results in a pair of approximate trapezoidal free edge flaps 51A movable in the top-bottom direction, in the vicinity of the opposed boundaries of the narrowed section 51 over to the flaring sections 52. Withdrawal of a single sheet of sanitary tissue paper 2 from the bundle 3 causes the edge flaps 51A to deform in the direction of the withdrawal with a slight turn up and, as particularly shown in Fig. 4, to lean against and support the subsequently exposed sheet of sanitary tissue paper 2. Further, the dispenser-port-forming region 5 in the above-discussed dimension range according to the present invention is particularly configured to have the flaring sections 52 each continuing from the narrowed section 51 in a very small dimension in the depth direction to the curved convex section 53 in a very large dimension in the depth direction, so that the resulting dispenser port 6 renders the free edge flaps 51A formed in the vicinity of the opposed boundaries of the narrowed section 51 very broad. In this way, upon withdrawal of a sanitary tissue paper sheet 2, the narrowed section 51 is allowed to open widely, which leads to smooth dispensing of a relatively stiff sanitary tissue paper sheet 2 from the bundle 3. Further, the edge flaps 51A lean firmly against even the stiff sanitary tissue paper sheet 2 to enhance the anti-fall-back property. As such a narrowed section 51 is allowed to open widely, the overall top face is hard to be distorted and likely to be maintained flat upon withdrawal of the sanitary tissue paper sheets 2, and the packaging product is particularly stable upon dispensing the sanitary tissue paper 2 sheet by sheet, even with packaging, like gusset wrapping or pillow wrapping, which hardly forms a clear folding line along the boundary between the transverse side faces 4A and the top face 4C, and thus may cause likely deformation of the packaging film in the top face of the packaged body 1, or with packaging in which the contained sanitary tissue paper is stiff sanitary tissue paper 2, such as paper towel, having the basis weight and the paper thickness discussed above, and the top face of the packaged product 1 is likely to be deformed upon withdrawal of the sheet 2.

[0028] Further, the dispenser-port-forming region 5 configured according to the present invention has the curved convex sections 53 broad in the depth direction, which makes the boundary of each curved convex section 53 longer and causes deep indentations 6H to be formed from the respective flaring sections 52 to the respective curved convex sections 53 of the dispenser-port-forming region 5 when the dispenser port 6 is formed. Thus, the subsequent sanitary tissue paper sheet partly exposed out of the dispenser port 6 following the sanitary tissue paper sheet withdrawn from the bundle 3 is deformed in its root portion 2R to be rolled gently along the edges 6E of the curved convex sections 53. Stiff sanitary tissue paper 2 is hard to be warped, and the stand-up property is enhanced by the gradual rolling. The stand-up property is further enhanced because the root portion 2R of the subsequent sanitary tissue paper sheet partly exposed out of the dispenser port 6 is fit in the deep indentations 6H. In this way, with the dispenser-port-forming region 5 according to the present invention, the pop-up failure due to the fall back of the sanitary tissue paper sheets inside

the packaging film, which is said to be likely to occur with sanitary tissue paper with a higher stiffness, is hard to occur because of the behaviors discussed above. Note that such effects are efficiently achieved particularly by the combination of the sanitary tissue paper sheets having preferred basis weight and paper thickness discussed above and a preferred packaging film to be discussed later.

[0029] It is particularly preferred that the angle of the easy-tear line 50 with respect to the width direction in each flaring section 52 gradually increases outward in the width direction of the bundle 3. Further, the portion of the easy-tear line 50 defining the boundary of each flaring section 52 preferably forms a taper angle $\angle\alpha$ of 25 to 60 degrees with respect to the width direction.

[0030] Further, it is preferred that the easy-tear line 50 is formed as a curved line and smoothly continues from the flaring section 52 to the curved convex section 53. With such a layout, the packaged product may be tear-opened along the easy-tear line 50 smoothly from the flaring section 52 toward the curved convex section 53.

[0031] It is preferred that the dimension L3 in the depth direction of the curved convex sections 53 is specifically 25 to 45 mm, and that the dimension L7 in the width direction of the bulging is 2.5 to 12.5 mm.

[0032] The packaging film 4 that is flexible, made of resin, and forms the exterior of the packaged product 1 may specifically be, for example, a single-layer film of polyethylene, polypropylene, polyester, polyethylene terephthalate, nylon, polyvinylidene chloride, or an ethylene-vinyl alcohol copolymer; a laminate film in which films including any of these are suitably layered; or a gas barrier film obtained by subjecting any of these films to surface treatment, such as aluminum deposition. Further, biomass films may also be used, which derive from plant materials, such as sugar cane, potato (starch), or corn. Use of such biomass films is preferred in light of environmental protection.

[0033] Among these, polypropylene film or polyethylene film is particularly preferred. Further, the packaging film 4 may be a matte film having excellent designability and hand feel properties. The melting point of the film is preferably 150 °C or lower. Note that a lower melting point of the packaging film allows heat sealing treatment at lower temperatures, but the practical lower limit is 80 °C. Polypropylene film may be cast polypropylene (CPP) film, whereas polyethylene film may be linear low-density polyethylene (LLDPE) film, low-density polyethylene (LDPE) film, or medium-density polyethylene (MDPE) film.

[0034] For packaging odorous products, such as scented tissues, ethylene-vinyl alcohol copolymer resin film or polyethylene terephthalate resin film, both having excellent aroma retention, is preferred. Multi-layered resin films having a polyethylene resin film or a polypropylene resin film laminated on one or both of the surfaces of an ethylene-vinyl alcohol copolymer resin film or a polyethylene terephthalate resin film to improve heat sealability, may also be used.

[0035] The thickness of the packaging film 4 may suitably be selected, and preferably 25 to 75 μm as measured in accordance with JIS P 8118 (1998). With the thickness of 25 to 75 μm, the packaging film may particularly effectively produce the effects of the present invention. The thickness is measured using a dial thickness gauge (thickness measuring device), PEACOCK Model G-1A (OZAKI MFG CO., LTD.) or an equivalent thereof, after the specimen is subjected to sufficient moisture conditioning under the conditions prescribed in JIS P 8111 (1998).

[0036] In the packaged product 1, the softness of the packaging film 4 is preferably lower than the softness of the sanitary tissue paper 2. With the softness of the packaging film 4 lower than that of the sanitary tissue paper 2, the effects of the present invention may particularly effectively be exhibited.

[0037] The easy-tear line 50 defining the dispenser-port-forming region 5 according to the present invention may be a perforated line, a slit cut line having uncut areas, or the like, but is not limited thereto. The type of the perforated line is not limited as long as cut areas 50C and uncut areas 50U are arranged alternately. The perforated line may be a standard perforated line wherein the cut areas 50C are straight lines; a microperforated line wherein the cut areas are pores; or a cutline for zipper tear strip wherein each cut area is Y-shaped, approximate L-shaped, or dogleg. A slit cut line has slit-like portions cut in a film, and by leaving uncut areas, the cut areas and the uncut areas are alternately arranged. Incidentally, a slit cut line having uncut areas may be referred to simply as a slit cut line. Perforated lines and slit cut lines having uncut areas may not sometimes be distinguished from each other, but as used herein, a slit cut line refers to a line with less than two pitches of cut areas, i.e., a line in which two consecutive cut areas of the same length are not continuous. In general, a slit cut line has cut areas of a larger length compared to those of a perforated line.

[0038] A cut/tie ratio of a perforated line or a slit cut line having uncut areas may be decided with suitable intervals, depending on easiness of fracture of the film used, and the length of each cut area may suitably be designed to fall within a range of 0.8 mm to 20.0 mm, and the length of each uncut area (or tied portion) within a range of 0.3 mm to 5.0 mm.

[0039] Here, referring to Fig. 13(a), a dispenser-port-forming region 105 formed by disposing a perforated line 150 in a loop by means of a die-cutting technique, has an advantage in that a dispenser port may be formed easily by tearing and peeling the region 105Z of the packaging film bounded by the looped easy-tear line from one end 105A toward the other end 105B in the longitudinal direction X as shown in Fig. 13(b). On the other hand, in the opening in this way, as the tearing is approaching the perforation 150e, which is the last to be tear-opened on the other end 105B, the direction of tearing along the perforated line 150 becomes closer to the perpendicular to the direction in which the region 105Z of the packaging film bounded by the looped perforated line is peeled. Consequently, it is conceivable that the tearing along the perforated line 150 does not proceed smoothly and continuously on this end, in particular, in the vicinity of the

perforation 150e on the other end 105B as shown in Fig. 13(c), which may lead to unintended ripping 105P on an end of the dispenser port 106 as shown in Fig. 13(d). It is assumed that this ripping is prone to occur as the ends in the width direction of the dispenser-port-forming region 105 are broadened in the depth direction Y, which broadens the range of the perforations oriented closer to the perpendicular to the direction of the tearing and peeling.

[0040] In order to reduce the risk of such ripping, the portion 50P defining the boundary of at least one end in the width direction (the other end 5B in the illustrated embodiment) of the dispenser-port-forming region 5 according to the present invention may have a characteristic perforated line $50P^1$ where uncut areas 50U and the modified cut areas 50D are arranged alternately as shown particularly in Figs. 5 and 6, wherein each of the modified cut areas 50D has one or two peripheral cut parts 50e to form a dogleg cut on one or both ends thereof. In particular, it is preferred that 80% or more, preferably 90% or more, particularly preferably 95% or more of the boundary of the curved convex section 53 is the portion 50P where the modified cut areas 50D and the uncut areas 50U are arranged alternately. All of the boundary of the curved convex section 53 may be formed with an easy-tear line having the modified cut areas 50D and the uncut areas 50U arranged alternately.

[0041] Each of the modified cut areas 50D has, more specifically, a major cut part 50m in the form of a straight line or a mildly curved line approximating a straight line, and a peripheral cut part 50e arranged contiguously to the major cut part 50m at a particular angle thereto on one or each end of the major cut part 50m to form a dogleg cut on one or each end, particularly as shown in Figs. 5 and 6 . The modified cut areas 50D may include modified cut areas $50D^1$ each having only one end formed as a dogleg cut, and modified cut areas $50D^2$ each having both ends formed as dogleg cuts as shown in Fig. 5. As shown in Fig. 6 (c), the modified cut areas 50D may also include modified cut areas $50D^3$ each having one end formed as a dogleg cut 50e of which end is oriented outward in the width direction of the top face of the bundle 3, and the other end formed as a dogleg cut 50e of which end is oriented toward the center of the width of the top face of the bundle 3.

[0042] Further, the arrangement of the modified cut areas 50D in the portion $50P^1$ where the modified cut areas 50D and the uncut areas 50U are arranged alternately may be such that only the modified cut areas 50D are arranged in each of which the end of each peripheral cut part 50e is oriented outward in the width direction of the top face of the bundle 3 as shown in Figs. 5 and 6 (a), or that only the modified cut areas 50D are arranged in each of which the end of each peripheral cut part 50e is oriented toward the center of the width of the top face of the bundle 3 as shown in Fig. 6(b). Further, those having a peripheral cut part 50e of which end is oriented outward in the width direction of the top face of the bundle 3 and those having a peripheral cut part 50e of which end is oriented toward the center of the width of the top face of the bundle 3 may be mixed. Moreover, the arrangement may be such that, as shown in Fig. 6(c), only the end of the peripheral cut part 50e located on each end in the depth direction of the top face of the bundle 3 is oriented outward in the width direction of the top face, while the ends of the other peripheral cut parts 50e are oriented toward the center of the width of the top face.

[0043] When the usual opening operation of the packaged product is performed by continuously peeling the region bounded by the easy-tear line 50 from one end 5A toward the other end 5B, in the portion $50P^1$ on one end (the other end 5B in the illustrated embodiment) where the modified cut areas 50D and the uncut areas 50U are arranged alternately, where the ends of the adjacent peripheral cut parts 50e of adjacent modified cut areas 50D both are oriented outward in the width direction of the top face of the bundle 3, or both are oriented toward the center of the width of the top face of the bundle 3, the directions of extension of the adjacent peripheral cut parts 50e are converging, so that the uncut areas 50U between these adjacent peripheral cut parts 50e are easily cut. On the other hand, when the end of one of the adjacent peripheral cut parts 50e of adjacent modified cut areas 50D are oriented outward in the width direction of the top face of the bundle 3, and the end of the other oriented toward the center of the width of the top face of the bundle 3, when the usual opening operation of the packaged product is performed by continuously peeling the region bounded by the easy-tear line 50 from one end 5A toward the other end 5B, the uncut areas 50U between these adjacent peripheral cut parts 50e are twisted immediately before being torn, and thus likely to be cut easily without ripping or elongation of the film. Similarly, where one of the adjacent ends of adjacent modified cut areas 50D has a peripheral cut part 50e while the other having none, when the usual opening operation of the packaged product is performed by continuously peeling the region bounded by the easy-tear line 50 from one end 5A toward the other end 5B, the uncut areas 50U between these adjacent modified cut areas are twisted immediately before being cut off, and thus likely to be cut easily without ripping or elongation of the film. In this way, by providing an end in the width direction (the other end 5B in the illustrated embodiment) of the dispenser-port-forming region 5 with the portion $50P^1$ where the modified cut areas 50D and the uncut areas 50U are arranged alternately, the risk of ripping during the opening may be reduced.

[0044] Further, with the dispenser-port-forming region 5 according to the present invention, in the portion $50P^1$ where the modified cut areas 50D and the uncut areas 50U are arranged alternately, the peripheral cut parts 50e cause slight displacement of the ends of the modified cut areas 50U inward or outward in the width direction from the direction along which the major cut parts 50m extend, so that formation of the dispenser port 6 results in slight projections originated from the portions which have been the uncut areas 50U to form serrated edges. In this way, when a sheet of sanitary tissue paper 2 is dispensed from the bundle 3, the lateral edges of the subsequent sheet of sanitary tissue paper 2

partially exposed out of the dispenser port following the dispensed sheet is supported in its root portion 2R by the serrated edges, which enhances the anti-fall-back property.

[0045] Here, particularly preferred is that, as shown in Fig. 5, a modified cut area 50D is located on the virtual line extending in the width direction and passing the center C of the dimension in the depth direction of the narrowed section 51 and is an modified cut area $50D^2$ having peripheral cut parts 50e oriented outward in the width direction on both ends, and the modified cut area located outward in the depth direction of the modified cut area $50D^2$ on each side thereof is an modified cut area $50D^1$ having a peripheral cut part 50e oriented outward in the width direction only on its end located outward in the depth direction of the center C of the dimension in the depth direction of the narrowed section 51. In the dispenser-port-forming region 5 shown in Fig. 5, during the usual opening operation by continuously peeling the region bounded by the easy-tear line 50 from one end 5A toward the other end 5B, compared to the end of one modified cut area $50D^1$ with no peripheral cut part, the peripheral cut part 50e of the adjacent modified cut area $50D^1$, $50D^2$ is present in a position further in the direction of peeling outward in the width direction, so that even if small ripping is generated in the packaging film while the uncut area 50U therebetween is tear-opened during the opening operation, the small ripping is likely to connect immediately to the peripheral cut part 50e, which has already been cut, so that no further ripping is likely to proceed.

[0046] When an end of the dispenser-port-forming region 5 is provided with modified cut areas 50D, the ratio between the modified cut areas 50D and the uncut areas 50U in length is not particularly limited, but the length L8 of each modified cut area 50D may be, though not limited to, 5 mm to 20 mm, preferably 7 mm to 13 mm. The length L9 of each peripheral cut part 50e of a modified cut area 50D may be 0.2 m to 3.0 mm, preferably 0.5 mm to 2.5 mm. The length L11 of each uncut area 50U between modified cut areas 50D may be 0.2 mm to 3.0 mm, preferably 0.3 mm to 2.0 mm. Within this range, the uncut areas 50U are cut while ripping hardly occurs between the modified cut areas 50D, promoting smooth and continuous tear-opening.

[0047] It suffices that the angle $\angle\beta$ between the major cut part 50m and the peripheral cut part 50e at the dogleg cut of a modified cut area 50D is 90° or larger, preferably 100° or larger, more preferably 120° or larger. The transition from the major cut part 50m to the peripheral cut part 50e is preferably rounded and, in that case, the curvature at the dogleg cut is not limited, but may be preferably R 0.1 to R 2.0, more preferably R 0.2 to R 1.2, particularly preferably R 0.4 to R 1.1. At such a curvature, the tear-opening of the modified cut areas smoothly proceeds from the major cut part 50m to the peripheral cut part 50e.

[0048] Alternatively, in order to reduce the risk of ripping during opening, the part 50P defining the boundary of at least one end in the width direction (the other end 5B in the illustrated embodiment) of the dispenser-port-forming region 5 according to the present invention may be a portion $50P^2$ where the easy-tear line 50 is composed of alternately arranged convex cut areas 50T, each having a convex shape tapered outward in the width direction, and uncut areas 50U each connecting the bases of adjacent convex cut areas 50T, as shown particularly in Figs. 7 and 8. In particular, it is preferred that 80% or more, preferably 90% or more, particularly preferably 95% or more of the portion defining the boundary of the curved convex section 53 is the portion $50P^2$ where the convex cut areas 50T and the uncut areas 50U are arranged alternately. All of the portion defining the boundary of the curved convex section 53 may be formed with an easy-tear line having the convex cut areas 50T and the uncut areas 50U arranged alternately. Though not shown, a convex cut area 50T may have a shape wherein more than one convex shapes are interconnected at their bases to form a continuous profile. The number of interconnected convex shapes is not particularly limited, but may preferably be about 2 to 5. Note that, in the portion $50P^2$ where the convex cut areas and the uncut areas are arranged alternately, convex cut areas each having only one convex shape and convex cut areas each having continuous convex shapes may be mixed.

[0049] Each convex cut area 50T may be in any shape as long as it is tapered outward in the width direction of the top face of the bundle 3, and may be in a V-shape having one vertex as shown in Fig. 7, a U-shape as shown in fig. 8 (a), or a trapezoidal shape as shown in Fig. 8 (b) . Note that "tapered outward in the width direction" means that the vertex of the convex cut area 50T is not oriented toward the depth direction Y or toward the center of the width direction. Preferably, the vertex of each convex cut area 50T forms an angle $\angle\gamma$ with respect to the depth direction Y of 15° or larger, preferably 30° or larger, more preferably 45° or larger. The vertex angle $\angle\Delta$ of each convex cut area 50T is not particularly limited as long as it is less than 180°, but may be preferably 15 to 120°, more preferably 20 to 90°, still more preferably 30 to 60°.

[0050] When the opening operation is carried out by tear-opening along the easy-tear line 50 and tearing and peeling continuously the region bounded by the easy-tear line from one end 5A toward the other end 5B, at the edge of the other end 5B provided with the convex cut areas 50T, a convex cut area 50T which has already been cut out is present at a position preceding in the direction of peeling further outwardly in the width direction than an uncut area 50U positioned between the bases of convex cut areas 50T. For that reason, even if small ripping is generated in the packaging film while the uncut area 50U between the bases of the convex cut areas 50T is tear-opened during the opening operation, the small ripping is likely to connect immediately to the convex cut area 50T, which has already been cut, so that no further ripping is likely to proceed. In this way, by providing an end in the width direction (the other end 5B in the illustrated embodiment) of the dispenser-port-forming region 5 with the portion 50P where the convex cut areas 50T and the uncut

areas connecting the bases thereof are arranged alternately, the risk of ripping may be reduced significantly.

[0051] Further, as shown in Fig. 9, in the portion $50P^2$ where the convex cut areas 50T tapered outward in the width direction and the uncut areas 50U connecting the bases of the convex cut areas 50T are arranged alternately, formation of the dispenser port 6 results in serrated edges with a series of convex pieces 6T. When a sheet of sanitary tissue paper 2 is pulled up from the bundle 3, these convex pieces 6T turn over in the direction of withdrawal of the sanitary tissue paper sheet, and thus do not disturb the sanitary tissue paper to be rolled up along the edges 6E of the dispenser port 6, such as the areas which have been the curved convex sections 53, to deform into a shape which is highly capable of raising itself up. Also, smooth withdrawal of the sanitary tissue paper sheets is allowed. On the other hand, the convex pieces 6T function as barbs against the root portion 2R of the subsequent sheet of sanitary tissue paper 2 partially exposed out of the dispenser port following the dispensed sheet, which contributes to prevention of the fall back. Further, the lateral edges of the sheet of sanitary tissue paper 2 are supported between the convex pieces, which further enhances the anti-fall-back property.

[0052] The length L12 from the base to the vertex of each convex cut area 50T may preferably be 0.1 mm or more. The maximum height is not particularly limited, but is preferably in a range not exceeding 10 mm. The height of the convex cut area 50T is preferably 0.5 to 7 mm, more preferably 1 to 5 mm. Convex cut areas 50T with a smaller length of less than 1.0 mm may be formed by a technique referred to as microwave cutting, or otherwise. With the convex cut areas 50T having such a smaller height, the corrugation of the serrated edge of the dispenser port 6 formed in the portion where the convex cut areas 50T and the uncut areas 50U connecting the bases thereof are arranged alternately, is less noticeable, resulting in good designability.

[0053] The ratio of the length L13 between the base ends of each convex cut area 50T to the length L14 of each uncut area 50U between the bases of adjacent convex cut areas 50T is not particularly limited, but preferably, the length L13 between the base ends of each convex cut area 50T may be 5 mm to 20 mm, preferably 7 mm to 13 mm, and the length L14 of each uncut area 50U may be 0.3 mm to 3 mm, preferably 0.7 mm to 1.3 mm. Within these ranges, unintended ripping may not occur, and smooth and continuous tear-opening may be likely to proceed.

[0054] Alternatively, in order to reduce the risk of ripping during opening, the portion 50P defining the boundary of at least one end in the width direction (the other end 5B in the illustrated embodiment) of the dispenser-port-forming region 5 according to the present invention may be a portion $50P^3$ where the easy-tear line is composed of alternately arranged cut areas 50C and half-cut areas 50H, as shown particularly in Figs. 10 and 11. In particular, it is preferred that 80% or more, preferably 90% or more, particularly preferably 95% or more of the boundary of the curved convex section 53 is the portion $50P^3$ where the cut areas 50C and the half-cut areas 50H are arranged alternately. All of the boundary of the curved convex section 53 may be formed with an easy-tear line having the cut areas 50C and the half-cut areas 50H arranged alternately.

[0055] The cut areas 50C and the half-cut areas 50H are shown in a plan view in Fig. 11(a) and in a cross-sectional view taken along lines b-b therein in Fig. 11(b) . At the cut areas 50C, the packaging film 4 is completely cut through in the thickness direction Z from the top surface 41, which does not face the bundle 3, down to the bottom surface 42, which faces the bundle 3, whereas at the half-cut areas 50H, the packaging film 4 is not completely cut through, and is cut for a certain extent L15 in the thickness direction from the top surface 41 toward the bottom surface 42. In the portion where the cut areas 50C and the half-cut areas 50H are alternately arranged, continuous tear-opening along the easy-tear line tends to be smoother, compared to the portion where the cut areas 50C and the uncut areas 50U with no cutting are arranged alternately. This is because the difference in force required for tearing the packaging film 4 is smaller between the cut areas 50C and the half-cut areas 50H than between the cut areas 50C and the uncut areas 50U, so that the tear-opening is likely to proceed continuously and smoothly from a cut area 50C to a half-cut area 50H and from a half-cut area 50H to a cut area 50C. Accordingly, when the opening operation is carried out by peeling continuously the dispenser-port-forming region 5 from one end 5A toward the other end 5B, the risk of unintended ripping of the packaging film 4 at the other end 5B, which is the last to be cut out, is lower.

[0056] Here, it is preferred that, at the half-cut areas 50H, the packaging film 4 is cut for an extent of 20% or more of its thickness L16. With a cut extent of 20% or more, tear-opening of the cut areas 50C and the half-cut areas 50H may sufficiently proceed continuously and smoothly in forming the dispenser port by the opening operation. The maximum cut extent is not limited, but with a cut extent of 80% or less, more preferably 60% or less of the thickness L16, unintended ripping may be hard to occur.

[0057] The ratio in length of each cut area 50C and each half-cut area 50H on the end of the dispenser-port-forming region 5 is not particularly limited, but, preferably, the length of the cut area 50C may be 5 mm to 20 mm, preferably 7 mm to 13 mm, and the length of the half-cut area 50H may be 0.3 mm to 3 mm, preferably 0.7 mm to 1.3 mm. Within these ranges, smooth and continuous tear-opening may be likely to proceed from a cut area 50C to a half-cut area 50H and from a half-cut area 50H to a cut area 50C, and unintended ripping may be hard to occur.

[0058] In an easy-tear line 50 defining the boundary of the dispenser-port-forming region according to the present invention, half-cut areas may be provided between the modified cut areas 50D or between the convex cut areas, or between the cut areas in a portion of the perforated line other than those on both ends of the dispenser-port-forming region.

[0059] Alternatively, in an easy-tear line 50 defining the boundary of the dispenser-port-forming region according to the present invention, the portion $50P^1$ where the modified cut areas 50D and the uncut areas 50U are arranged alternately, may be provided on both ends or on only either end of the dispenser-port-forming region 5. The portion $50P^2$ where the convex cut areas 50T and the uncut areas 50U are arranged alternately, may be provided on both ends or on only either end of the dispenser-port-forming region 5. The portion $50P^3$ where the cut areas 50C and the half-cut areas 50H are arranged alternately, may also be provided on both ends or on only either end of the dispenser-port-forming region 5. Here, when such a portion $50P^1$, $50P^2$, or $50P^3$ is provided on only either end of the dispenser-port-forming region 5, the other end may be such that, for example, the part L10 of the easy-tear line extending from the middle of the flaring section 52A beyond the laterally outer end 53t of the curved convex section 53 on one side of the depth direction is formed as a continuous cut area, as shown in Fig. 12(a). In this way, as shown in Fig. 12(b), a tab 5T is formed in the portion of the dispenser-port-forming region 5 on one end 5A from one side of the depth direction up to the laterally outer end. This tab 5T may easily be picked and peeled to further facilitate the opening operation.

[0060] Further, the boundaries of the narrowed section 51 according to the present invention extend in the same direction as the peeling direction from the one end 5A toward the other end 5B in the opening operation, and are thus preferably composed of perforated lines having uncut areas, rather than half-cut areas. This preferably keeps the boundaries of the narrowed section 51 from unintended tear-opening.

[0061] Note that the easy-tear line 50, which may be a perforated line or a slit cut line having uncut areas, may be formed at one time by, for example, die cutting, even including a portion wherein the cut areas 50C and the half-cut areas 50H are arranged alternately.

EXAMPLE

[0062] Next, packaged products were prepared in Examples 1 to 5 according to the present invention and in Comparative Example 1, and tested for fall back of the sanitary tissue paper inside the products and for ripping of the dispenser port. The dispenser-port-forming regions of the packaged products in Examples 1 to 5 are in an approximate gourd shape having the narrowed section, the flaring sections, and the curved convex sections as shown in Figs. 1 to 5. The dispenser-port-forming region of the packaged product in Comparative Example 1 is in the form of a mere straight perforated line.

[0063] The bundle in the packaged product in each Example is a pop-up-type bundle of 100 sheets of interfolded and stacked one-ply paper towel (tradename "Rakura Cook Kitchen Paper", 20 g/m^2 in basis weight, 220 μm in paper thickness) . The packaging configuration in each Example is gusset wrapping, with the stretching direction of the packaging film aligned to the direction perpendicular to the width direction of the dispenser-port-forming region.

[0064] In the test for determining the "number of fall backs", the packaged product was tear-opened along the easy-tear line defining the dispenser-port-forming region to form the dispenser port therein, the sheets of paper towels constituting the bundle were pulled out one by one through the dispenser port until the last sheet, and the number of actual fall backs occurred was counted.

[0065] "Openability" was evaluated by having panels tear-open a sample of each Example by picking and peeling one end of the dispenser-port-forming region toward the other end, and observing whether any ripping is formed on the other end of the resulting dispenser port. With N = 10, samples in which ripping was observed were indicated as "YES", whereas samples in which no ripping was observed were indicated as "NO".

[0066] The dimensions of the dispenser-port-forming region, the ratios thereof to the dimension in the depth direction or the dimension in the width direction of the top face of the bundle, and the results of the tests are shown in Table 1.

Table 1

			Example 1	Example 2	Example 3	Example 4	Example 5	Comparative Example 1
Shape of dispenser-port-forming region	Width of bundle top face	mm	210	186	210	210	210	210
	Depth of bundle top face	mm	115	115	115	115	115	115
	Dimension in width direction of dispenser port	mm	170	145	170	170	170	150
	Maximum dimension in depth direction of dispenser port	mm	35	35	35	35	35	-
	Dimension in depth direction in the middle of dispenser port	mm	5	5	5	5	5	-
	Dimension in width direction of narrowed section	mm	105	80	105	105	105	-
	Dimension in depth direction of narrowed section	mm	5	5	5	5	5	-
	Width of dispenser port / Width of bundle top face	%	81	78	81	81	81	71
	Maximum dimension in depth direction of dispenser port / depth of bundle top face	%	30	30	30	30	30	-
	Dimension in width direction of narrowed section / Width of bundle top face	%	50	43	50	50	50	-
	Dimension in depth direction of narrowed section / Depth of bundle top face	%	4	4	4	4	4	-
	Taper angle of flaring section	°	35	35	35	35	35	-
	Packaging configuration	-	Pillow wrapping	Pillow wrapping	Pillow wrapping	Pillow wrapping	Pillow wrapping	Pillow wrapping

(continued)

				Example 1	Example 2	Example 3	Example 4	Example 5	Comparative Example 1
Easy-tear line	Curved convex section	Length of half-cut areas *	mm	1	0.5	1	2	1	-
		Length of cut areas	mm	10	10	10	10	10	-
		Cut extent of half-cut areas	μm	20	10	20	20	-	-
	Flaring section	Length of half-cut areas *	mm	1	1	1	1	1	-
		Length of cut areas	mm	10	10	10	10	10	-
		Cut extent of half-cut areas	μm	20	10	20	20	20	-
	Narrowed section	Length of Uncut areas	mm	1	1	1	1	1	1
		Length of cut areas	mm	4	4	4	4	4	4
Packaging film	Material			PE	PE	PE	PE	PE	PE
	Thickness			40	30	40	40	40	40
Sheet strength	Dry tensile strength (longitudinal)		cN	1801	1801	1801	1300	1801	1801
	Dry tensile strength (horizontal)		cN	599	599	599	300	599	599
Evaluation	Number of fall backs			0	0	0	0	0	12
	Openability			NO	NO	NO	NO	YES	NO
* Length of uncut areas in Example 5									

[0067] Table 1 shows that, with regard to the fall back, in Comparative Example 1, wherein the dispenser-port-forming region is formed of a single perforated line and the resulting dispenser port is in the form of a slit, twelve fall backs were observed. On the other hand, in Examples 1 to 5, the number of fall backs was zero and no fall back was observed. That is, it was demonstrated that dispenser ports resulting from the dispenser-port-forming regions having a narrowed section, flaring sections, and curved convex sections had excellent anti-fall-back properties.

[0068] In Examples 1 to 4, wherein the portion of the easy-tear line defining the boundary on an end (curved convex section) of the dispenser-port-forming region has the cut areas and the half-cut areas arranged alternately, irrespective of the fact that the maximum dimension in the depth direction of the dispenser port, i.e., the dimension in the depth direction of the curved convex sections, which are on the ends of the dispenser-port-forming region, is as long as 35 mm, which occupies as much as 30% the dimension in the depth direction of the top face of the bundle, and is thus easy to rip, no ripping on the ends of the dispenser port was observed in the opening operation in any of the samples.

[0069] In Example 5, wherein the half-cut areas between the cut areas in the curved convex sections in Example 1 were replaced with conventional uncut areas, ripping was observed on an end of the dispenser port of some samples in the opening operation. It was demonstrated that, with the easy-tear lines defining rather long boundaries of the curved convex sections as in Examples 1 to 4, the openability was enhanced by alternately arranging the cut areas and the half-cut areas in those portions.

[0070] As discussed above, the packaged product according to the present invention is a film-packaged product providing excellent withdrawability of sheets of sanitary tissue paper, in particular, even stiff sanitary tissue paper, such as paper towels.

DESCRIPTION OF REFERENCE NUMERALS

[0071]

1: packaged product
2: sanitary tissue paper
2A: inside of fold
2B: folded half
2C: folded edge
2R: root portion of sanitary tissue paper sheet exposed out of dispenser port
3: bundle of sanitary tissue paper
3A: shorter side face
3B: longer side face
3C: top/bottom face of bundle
4: packaging film
4A: transverse side face
4B: longitudinal side face
4C: top face
4D: bottom face
4X: overlapped portion of packaging film
5: dispenser-port-forming region
5A, 5B: longitudinal end
5T: tab
6: dispenser port
6E: edge of dispenser port
6T: convex piece
6H: indentation of dispenser port
41: top surface of packaging film
42: bottom surface of packaging film
50: easy-tear line
50D, $50D^1$, $50D^2$, $50D^3$: modified cut area
50m: major cut part
50e: peripheral cut part
R: curvature of dogleg cut
50C: cut area
50U: uncut area (tied portion)
50T: convex cut area
50P: boundary of end of dispenser-port-forming region

50P1: portion where modified cut areas and uncut areas are arranged alternately
50P2: portion where convex cut areas and uncut areas are arranged alternately
50P3: portion where cut areas and half-cut areas are arranged alternately
51: narrowed section
51A: generally trapezoidal edge flap
52: flaring section
53: curved convex section
$\angle\alpha$: taper angle of flaring section
$\angle\beta$: angle of dogleg cut
$\angle\gamma$: angle of orientation of convex cut area with respect to depth direction
LΔ: vertex angle of convex cut area
L1: dimension in width direction (longitudinal direction) of dispenser-port-forming region
L2: dimension in width direction (longitudinal direction) of bundle top face
L3: maximum dimension in depth direction (transverse direction) of dispenser-port-forming region
L4: dimension in depth direction (transverse direction) of bundle top face
L5: dimension in width direction (longitudinal direction) of narrowed section
L6: dimension in depth direction (transverse direction) of narrowed section
L7: dimension in width direction of bulging of curved concave section
L8: length of modified cut area
L9: length of peripheral cut part
L10: part extending from middle of flaring section beyond laterally outer end of curved convex section on one side of depth direction
L11: length of uncut area between modified cut areas
L12: height of convex cut area
L13: length between base ends of convex cut area
L14: length of uncut area between convex cut areas
L15: extent of half-cut area
L16: thickness of packaging film
105: dispenser-port-forming region
105A: one end of dispenser-port-forming region
105B: the other end of dispenser-port-forming region
105P: ripping in film
150: perforated line
150e: perforation on end in width direction
X: longitudinal direction (width direction)
Y: direction perpendicular to longitudinal (depth direction)
Z: thickness direction of packaging film
C: centerline passing the center of depth direction of narrowed section

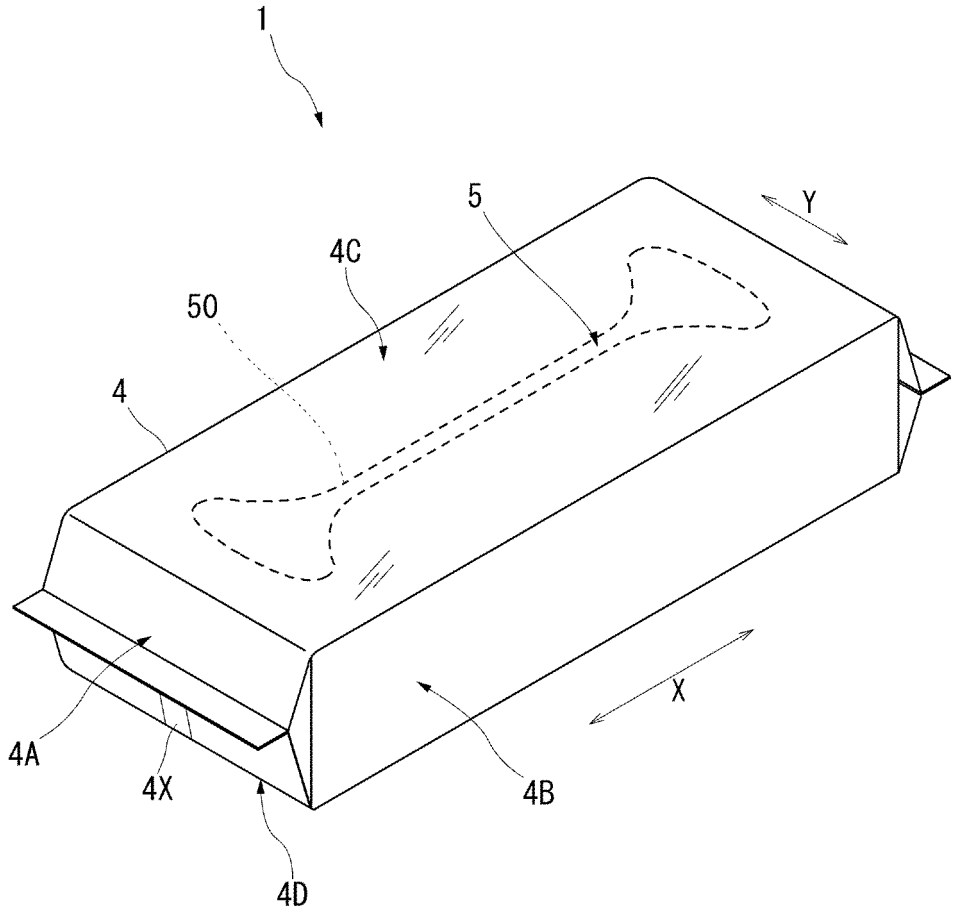
Claims

1. A packaged product comprising:

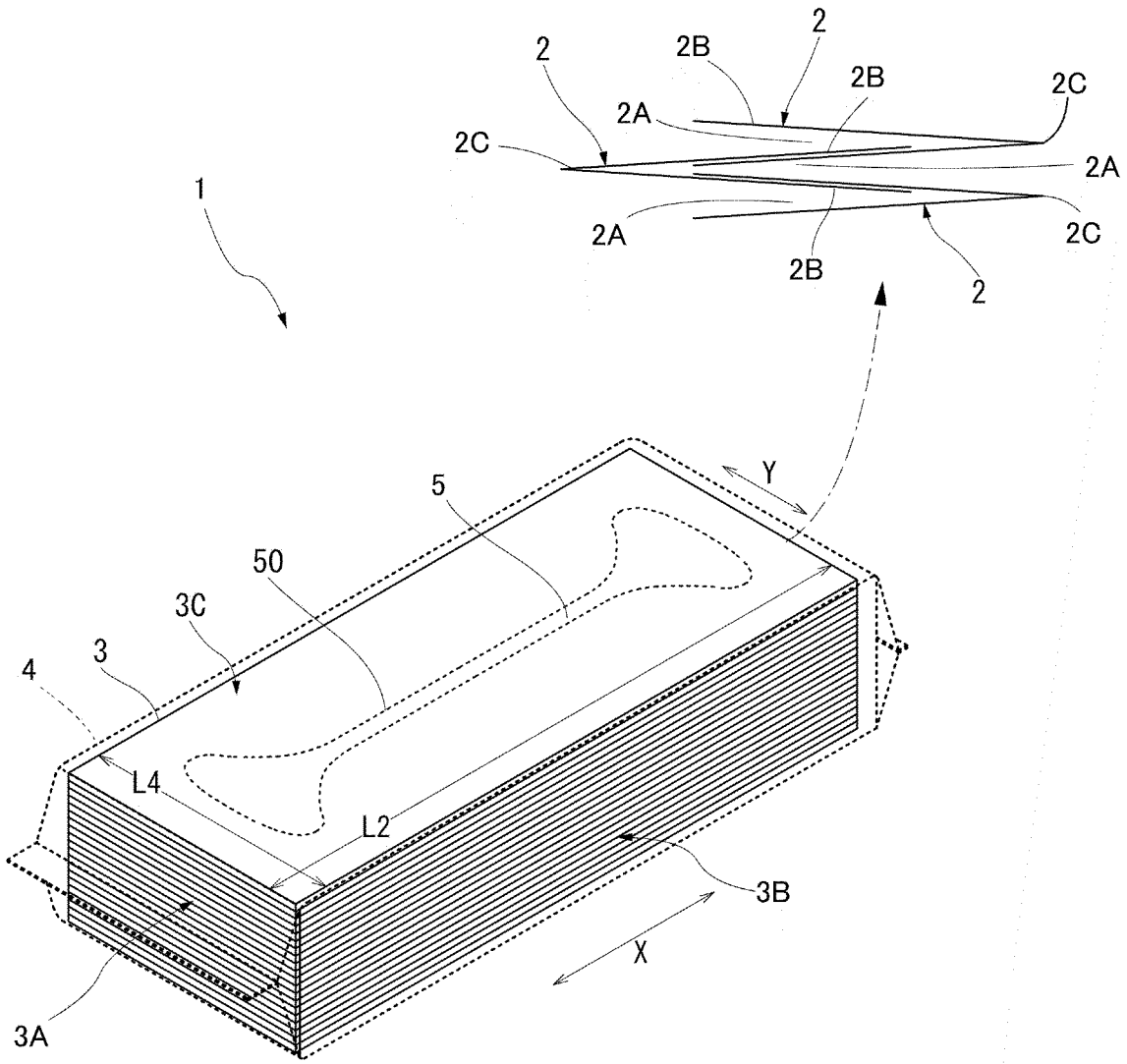
a flexible packaging film made of resin; and
a bundle of sanitary tissue paper packaged therewith,
the packaged product having a dispenser-port-forming region formed with an easy-tear line disposed in a loop in a top face of the product,
wherein the dispenser-port-forming region is shaped to have a narrowed section extending in a width direction of the product in a middle of a depth direction of the product, flaring sections each continued from a corresponding end of the narrowed section and gradually flaring with increasing distance from the narrowed section outward in the width direction, and curved convex sections each continued from a corresponding flaring section and bulging convexly outward in the width direction, and
wherein a dimension in the width direction of the dispenser-port-forming region is 70% or more a width of the top face, a maximum dimension in the depth direction of the dispenser-port-forming region is 10 to 40% a dimension in the depth direction of the top face, a dimension in the width direction of the narrowed section is 50 to 70% a length of the top face, and a dimension in the depth direction of the narrowed section is 0.5 to 10% a dimension in the depth direction of the top face.

2. The packaged product according to claim 1,
wherein a dimension in the depth direction of the curved convex sections is 25 to 45 mm, and a dimension in the width direction of bulging of the curved convex sections is 2.5 to 12.5 mm.

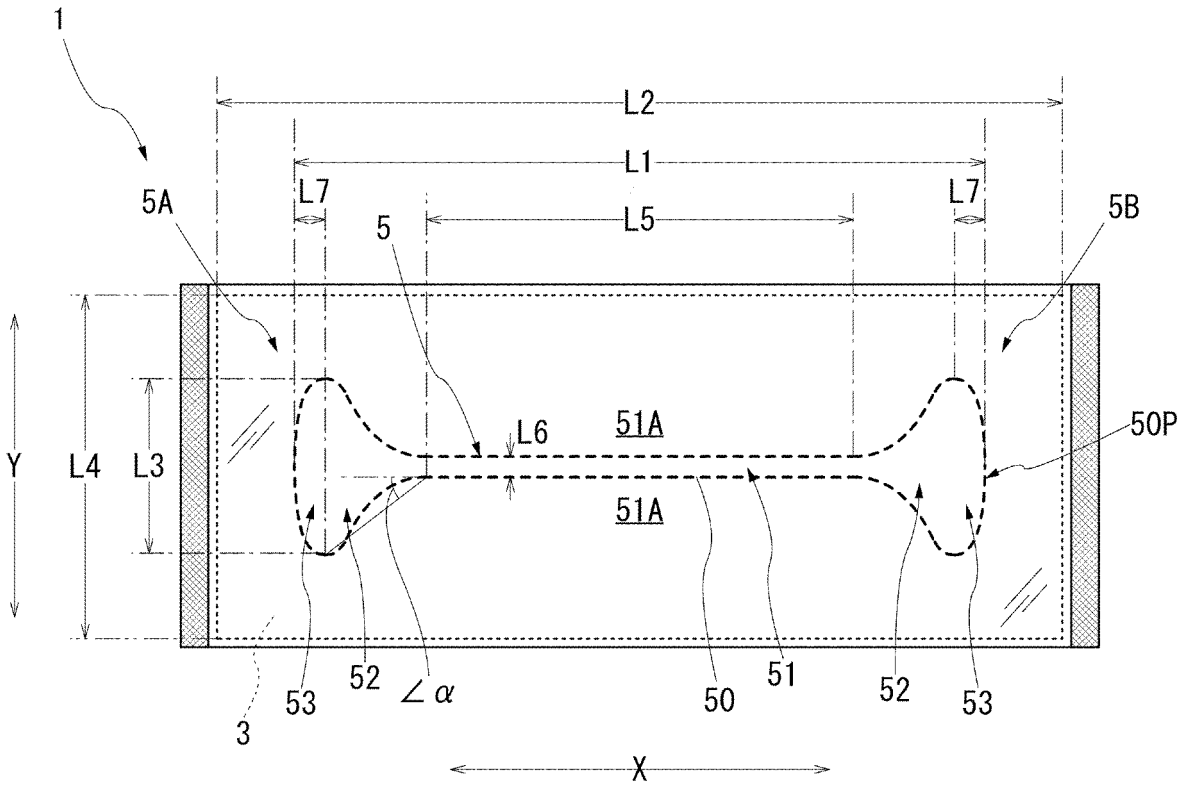
[FIG.1]



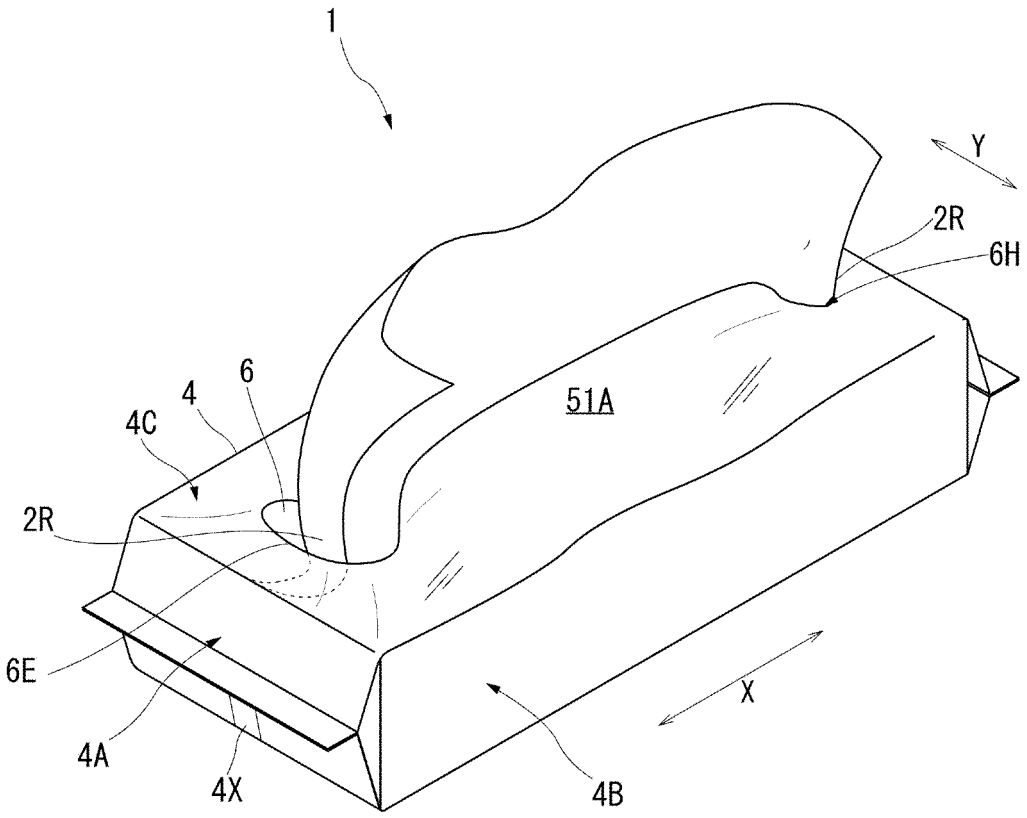
[FIG.2]



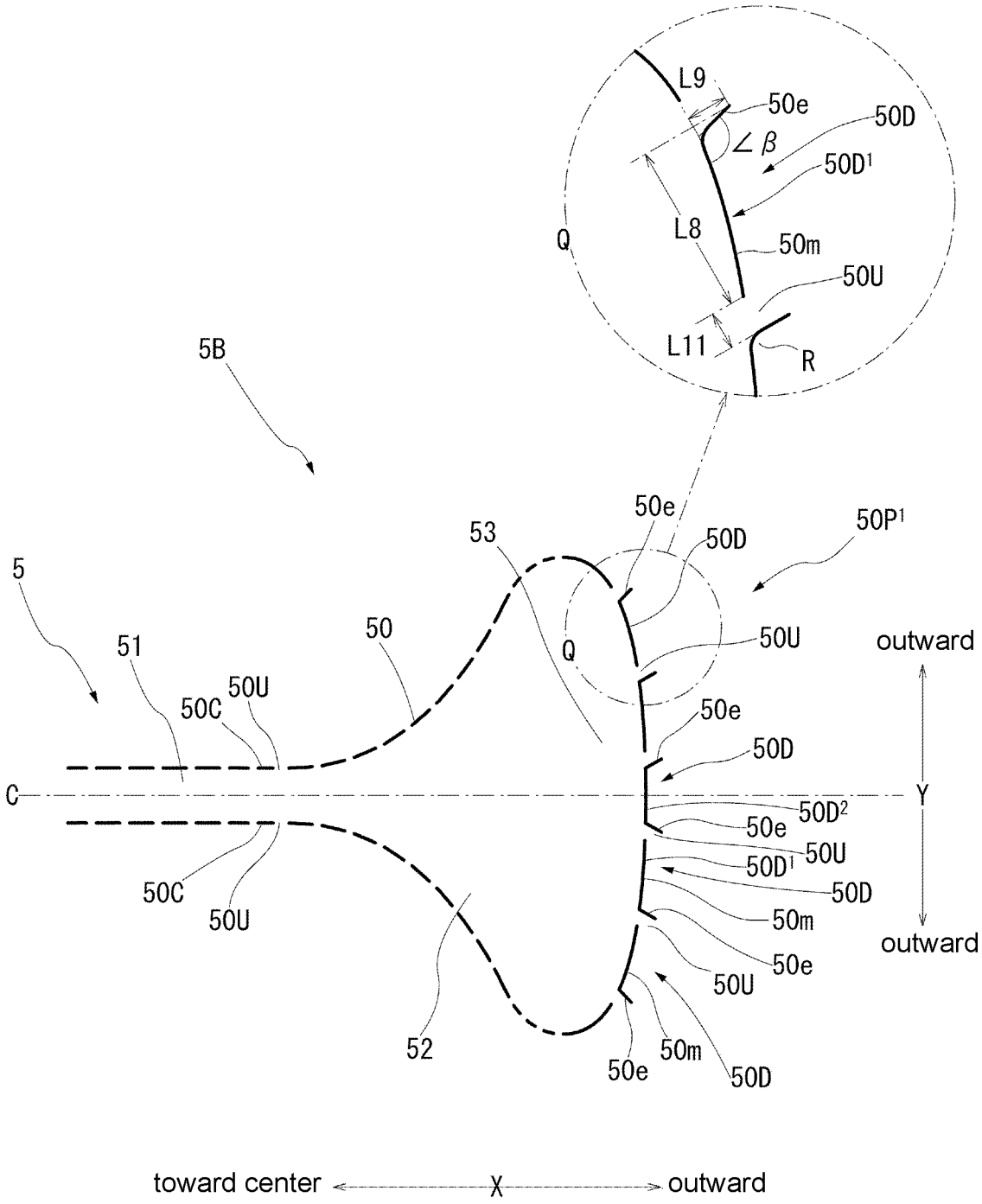
[FIG.3]



[FIG.4]



[FIG.5]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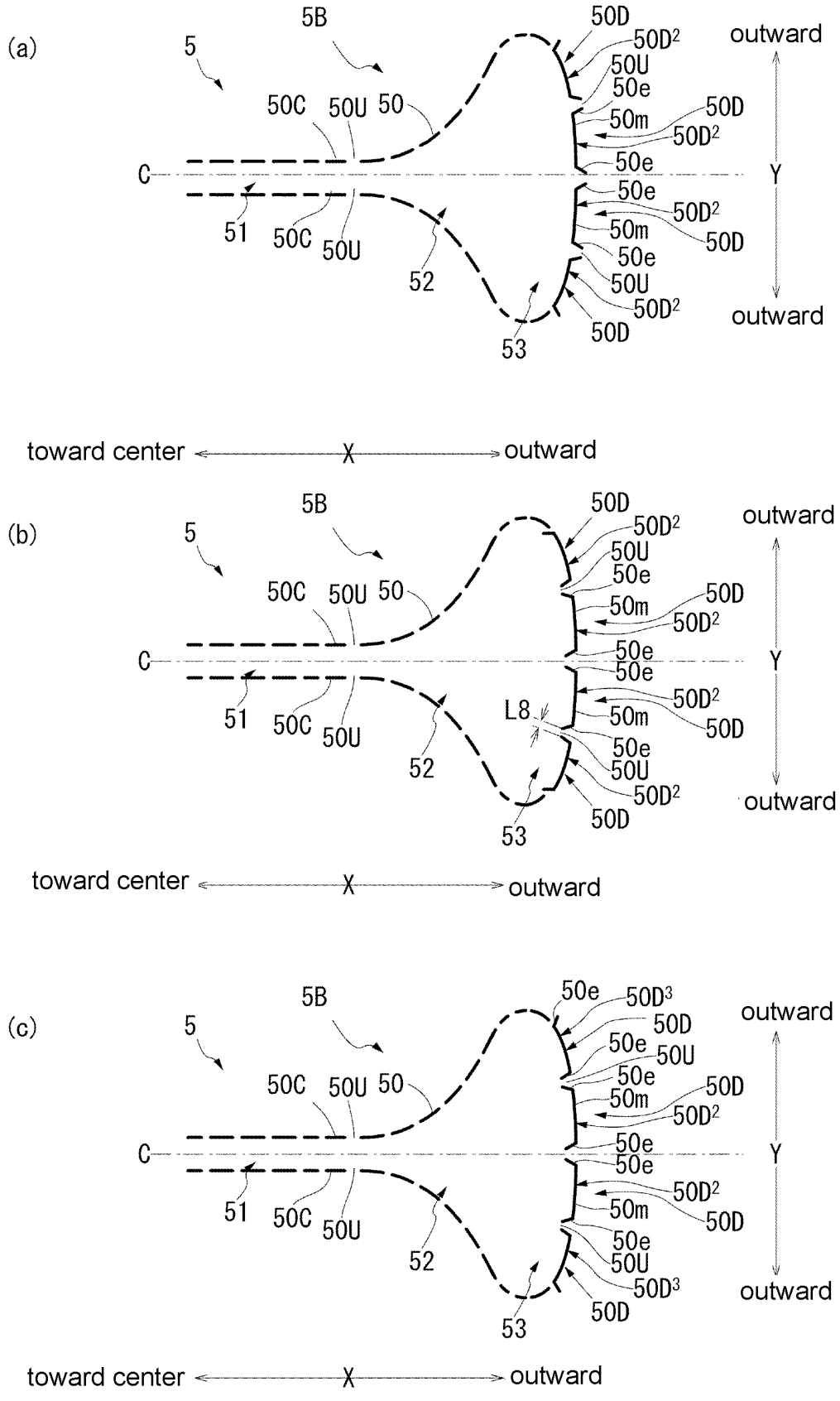
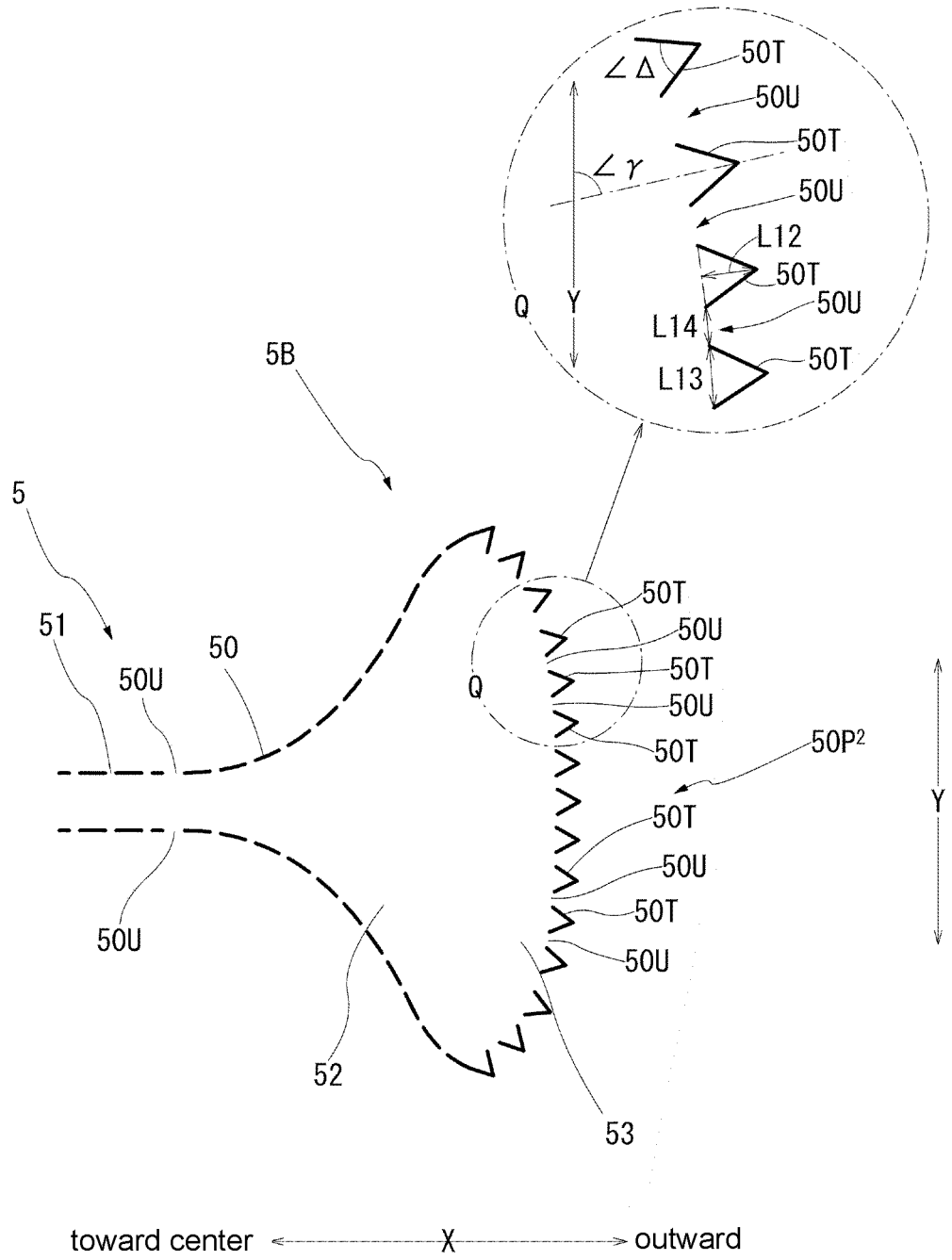
50D
∠β
50D1
L8
Q
50m
50U
L11
R
5B
50e
50P1
53
50D
5
51
50
Q
50U
outward
50C
50U
50e
50D
C
Y
50D2
50e
50U
50D1
50C
50U
50D
50m
50e
50U
52
50e
50m
50D
outward
toward center
X
outward

[FIG.6]


(a)
5
5B
50C
50U
50
50D
50D2
50U
50e
50m
C
51
52
53
Y
outward
toward center
X
outward
(b)
L8
(c)
50D3

[FIG.7]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∠γ
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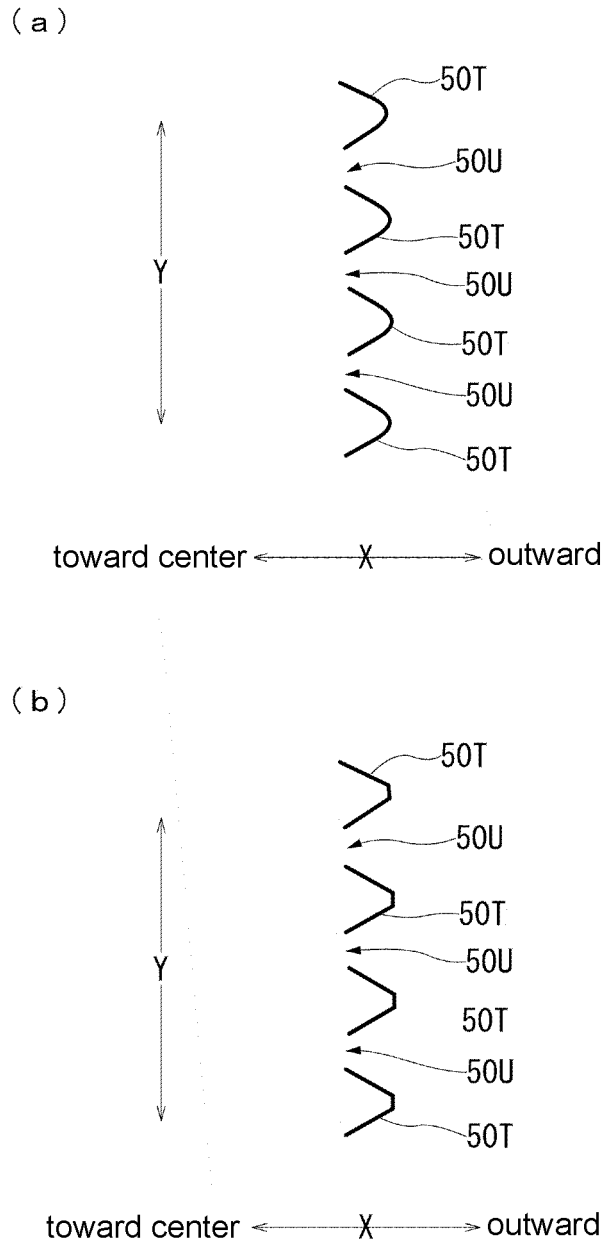
50T
Q
Y
50U
L14
50T
L13
5B
5
51
50
50U
Q
50T
50U
50T
50U
50T
50P2
Y
50T
50U
50T
50U
50U
52
53
toward center
X
outward

[FIG.8]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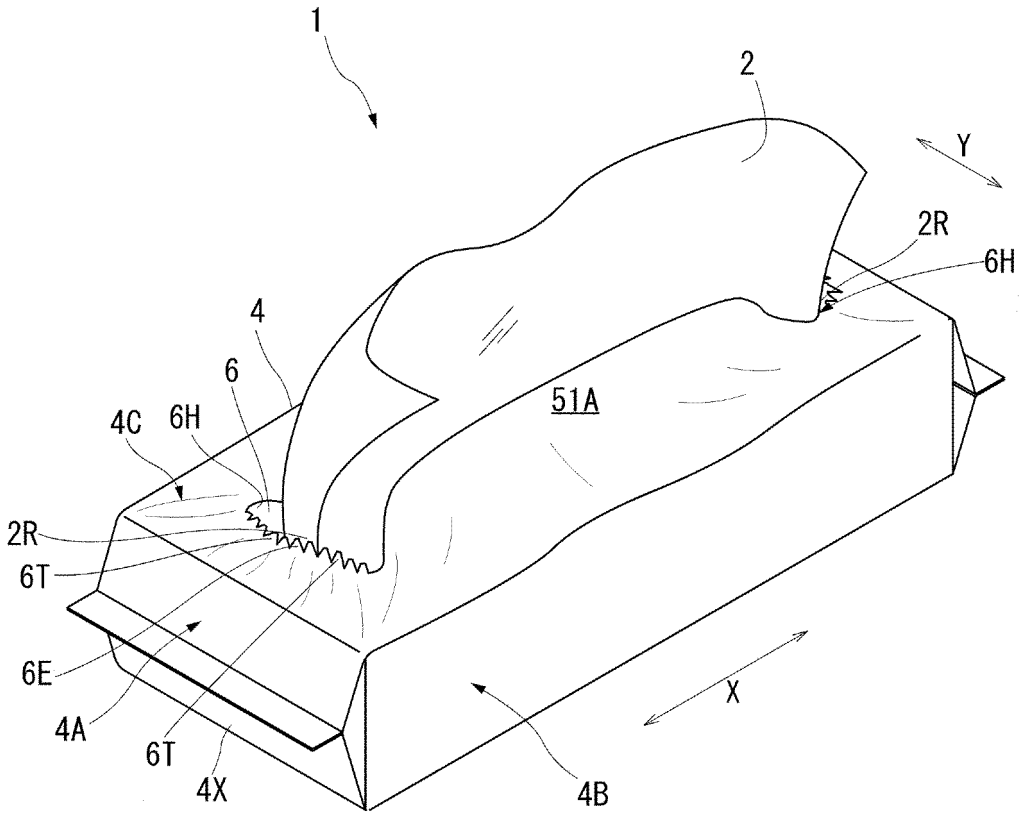
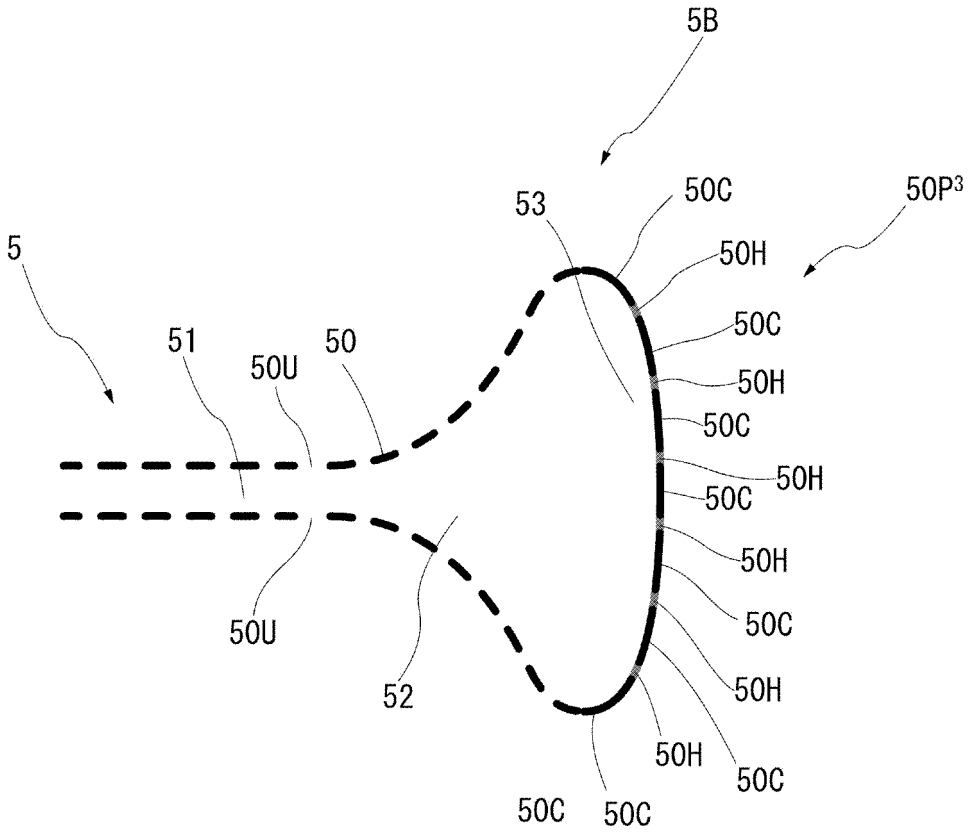
50U
50T
50U
50T
50U
50T
Y
toward center
X
outward
(b)
50T
50U
50T
50U
50T
50U
50T
Y
toward center
X
outward

[FIG.9]



[FIG.10]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50C
50P3
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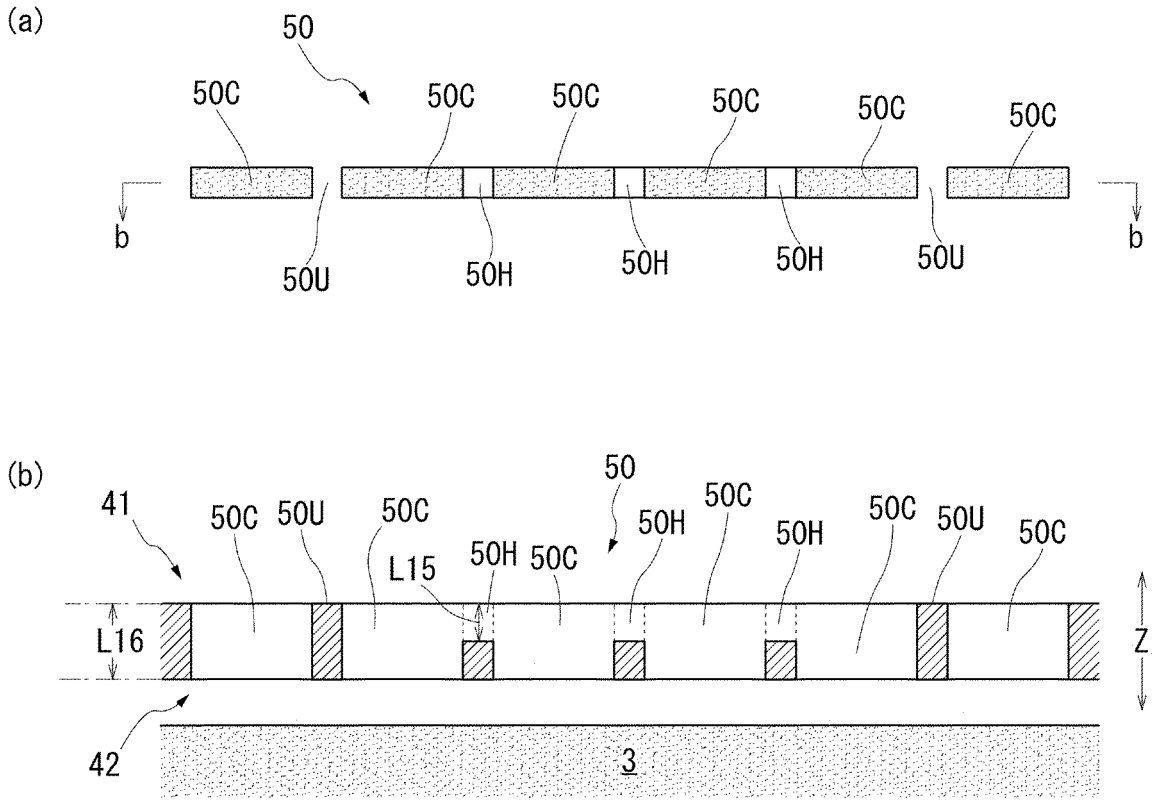
50H
51
50C
50
50U
50H
50C
50H
50C
50H
50U
50C
52
50H
50H
50C
50C
50C

[FIG.11]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50C
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50C
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50C
b
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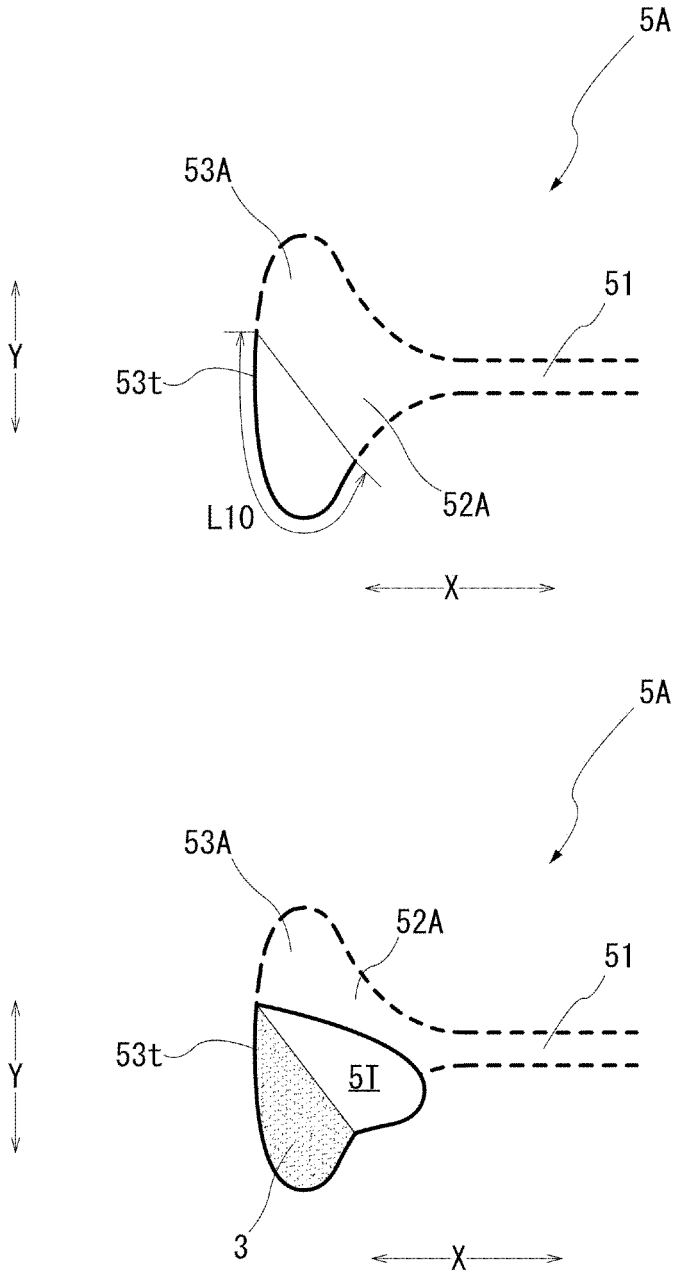
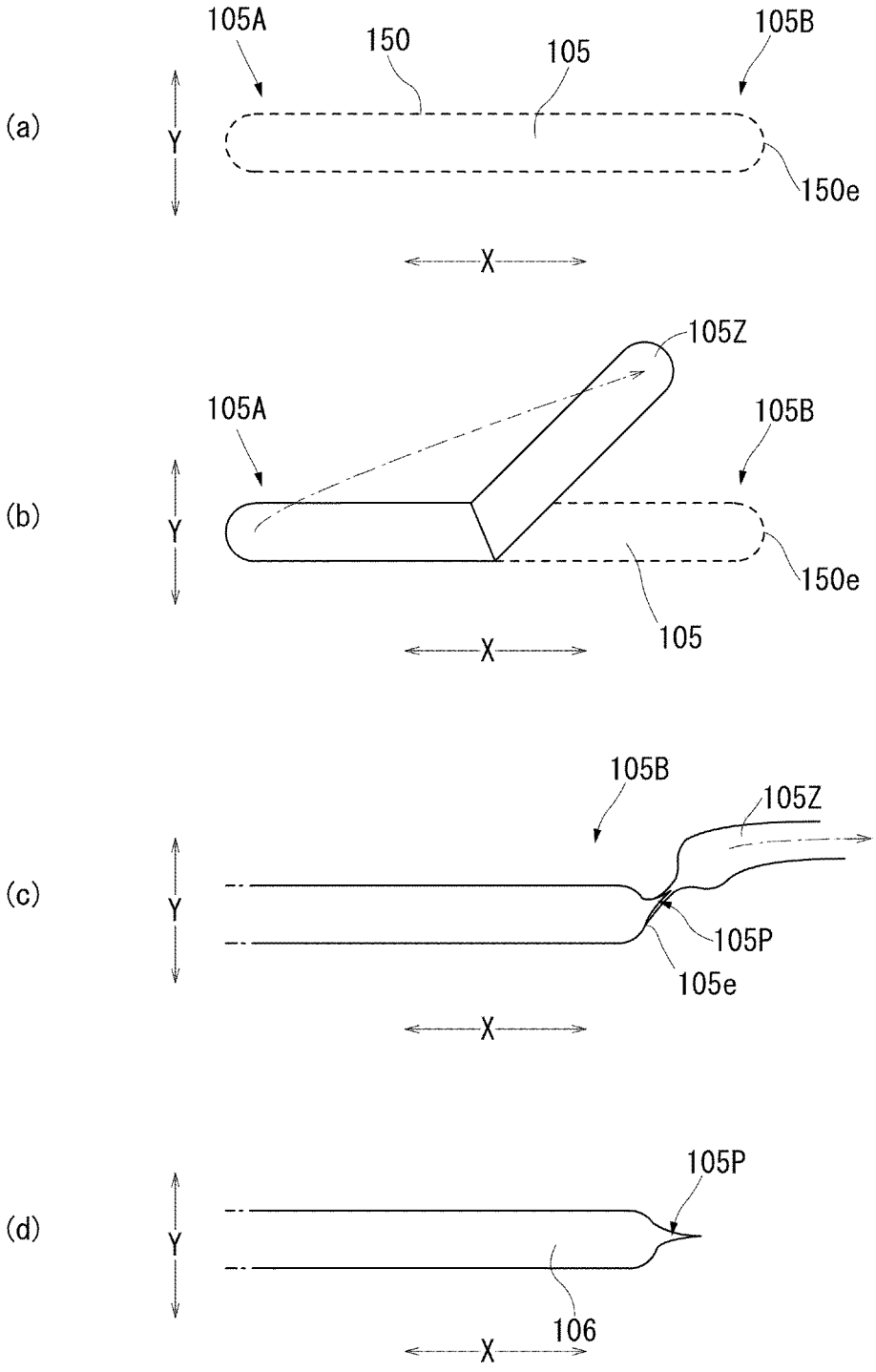
50H
50H
50U
(b)
41
50C
50U
50C
L15
50H
50C
50
50H
50C
50H
50C
50U
50C
L16
Z
42
3

[FIG.12]



[FIG.13]


(a)
105A
150
105
105B
150e
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X
(b)
105Z
105A
105B
150e
105
Y
X
(c)
105B
105Z
105P
105e
Y
X
(d)
105P
106
Y
X

INTERNATIONAL SEARCH REPORT

International application No.
PCT/JP2022/012000

A. CLASSIFICATION OF SUBJECT MATTER

B65D 83/08(2006.01)i; ***A47K 10/20***(2006.01)i; ***A47K 10/42***(2006.01)i
FI: B65D83/08 G; A47K10/20 Z; A47K10/42 B

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)

B65D83/08; A47K10/20; A47K10/42

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 1971-2022
Registered utility model specifications of Japan 1996-2022
Published registered utility model applications of Japan 1994-2022

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 2020-1796 A (DAIO PAPER CORP.) 09 January 2020 (2020-01-09) paragraphs [0024]-[0065], fig. 1-7	1-2
A	WO 2020/110835 A1 (DAIO PAPER CORP.) 04 June 2020 (2020-06-04)	1-2
A	JP 2016-124598 A (NIPPON PAPER CRECIA CO., LTD.) 11 July 2016 (2016-07-11)	1-2
A	WO 2020/262236 A1 (DAIO PAPER CORP.) 30 December 2020 (2020-12-30)	1-2

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

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"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
06 May 2022	**07 June 2022**

Name and mailing address of the ISA/JP	Authorized officer
Japan Patent Office (ISA/JP) **3-4-3 Kasumigaseki, Chiyoda-ku, Tokyo 100-8915** **Japan**	Telephone No.

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INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/JP2022/012000

Patent document cited in search report	Publication date (day/month/year)	Patent family member(s)	Publication date (day/month/year)
JP 2020-1796 A	09 January 2020	WO 2020/004025 A1	
WO 2020/110835 A1	04 June 2020	(Family: none)	
JP 2016-124598 A	11 July 2016	(Family: none)	
WO 2020/262236 A1	30 December 2020	JP 2021-8279 A	

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REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- JP 2018052559 A **[0007]**
- JP 2018058654 A **[0007]**