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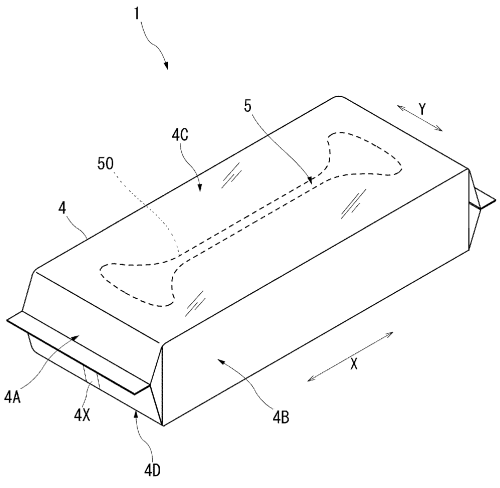
(54) PACKAGING BODY

(57) A film-packaged sanitary tissue paper product with excellent openability includes a bundle of the paper packaged with a flexible resin film, and has a dispenser-port-forming region defined by an easy-tear line in a loop in its top face. The easy-tear line which defines the boundary of an end of the region having a perforated line wherein modified cut areas each having major cut part and a dogleg peripheral cut part contiguous thereto at 90° or larger, are arranged with uncut areas interposed. A peripheral cut part of one modified cut area overlaps an end without a peripheral cut part of the adjacent modified cut area, on the outside and/or the side closer to the center of the region, such that the peripheral cut part or the end of the modified cut area located on the outer side of the region is positioned on the outer side of the region.

[FIG.1]



EP 4 286 296 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 problems 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 in the approximate elliptical shape or the approximate 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 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.

[0007] On the other hand, like the approximate elliptical dispenser-port-forming region as shown Fig. 9(a), for example, 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. 9(b). However, in the opening operation 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. 9(c), which may lead to unintended ripping 105P on an end of the dispenser port 106 as shown in Fig. 9(d). 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. Accordingly, dispenser-port-forming regions, such as those in an approximate gourd shape having enlarged ends, are prone to ripping 105P.

[0008] In particular, when the packaging film is a unitary oriented film stretched in the direction Y perpendicular to the longitudinal direction X of the dispenser-port-forming region 105, such ripping 105P is more prone to occur. Further, in packaged products in pillow wrapping or gusset wrapping, the longitudinal direction (machine direction: MD) of the packaging film is usually aligned to the longitudinal direction of the dispenser-port-forming region, so that such ripping is prone to occur.

PRIOR ART PUBLICATION

PATENT PUBLICATION

[0009]

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

[0010] It is therefore a primary obj ect of the present invention, in view of the problems discussed above, to provide a film-packaged product which is hard to be ripped on an end in the width direction of the dispenser port upon opening the dispenser port and thus has excellent openability, and which has excellent withdrawability of sheets of sanitary tissue paper, in particular, stiff sanitary tissue paper, such as paper towels.

MEANS FOR SOLVING THE PROBLEMS

[0011] Solutions to the above problems are as follows.
[0012] 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 defined by an easy-tear line disposed in a loop in a top face of the product,
wherein a portion of the easy-tear line which defines a boundary of at least one of ends in a width direction of the dispenser-port-forming region including:

a perforated line wherein modified cut areas each having a major cut part and a dogleg peripheral cut part contiguous to one or each end of the major cut part at an angle of 90° or larger, are arranged in a line with uncut areas interposed therebetween,
wherein the peripheral cut parts of modified cut areas overlap in the width direction of the dispenser-port-forming region with ends without a peripheral cut part of respective adjacent modified cut areas on at least one of an outside and a side closer to a center in the width direction of the dispenser-port-forming region, and
wherein the peripheral cut parts overlap in the width direction of the dispenser-port-forming region with the respective ends without a peripheral cut part such that a modified cut area located on an outer side in the width direction of the dispenser-port-forming region is positioned on an outer side in the width direction of the dispenser-port-forming region.

[0013] The second aspect is the packaged product according to the first aspect,

wherein the dispenser-port-forming region has a narrowed section extending in the width direction in a middle of a depth direction of the top face, 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 portion of the easy-tear line defining a boundary of at least one of the curved convex sections includes a perforated line having the modified cut areas and the uncut areas arranged alternately.

[0014] The third aspect is the packaged product according to the second aspect,
wherein 80% or more of the portion of the easy-tear line defining the boundary of a curved convex section is formed of the perforated line having the modified cut areas and the uncut areas arranged alternately.
[0015] The fourth aspect is the packaged product according to the second aspect,
wherein a dimension in a 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.
[0016] The fifth aspect is the packaged product according to any one of the second to the fourth aspects,
wherein a dimension in the width direction of the dispenser-port-forming region is 70% or more a dimension in the width

direction of the top face of the bundle, a maximum dimension in a depth direction of the dispenser-port-forming region is 10 to 40% a dimension in the depth direction of the top face of the bundle, a dimension in a width direction of the narrowed section is 50 to 70% a dimension in the width direction of the top face of the bundle, and a dimension in a depth direction of the narrowed section is 0.5 to 10% the dimension in the depth direction of the top face of the bundle.

EFFECT OF THE INVENTION

[0017] According to the present invention, there is provided a film-packaged product which is hard to be ripped on an end in the width direction of the dispenser port upon opening the dispenser port and thus has excellent openability, and which has excellent withdrawability of sheets of sanitary tissue paper, in particular, stiff sanitary tissue paper, such as paper towel.

BRIEF DESCRIPTON OF THE DRAWINGS

[0018]

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.
Fig. 6 shows partially enlarged views for explaining other embodiments of the dispenser-port-forming region.
Fig. 7 illustrates another embodiment of the shape of the dispenser-port-forming region.
Fig. 8 illustrates another embodiment of the dispenser-port-forming region.
Fig. 9 shows views for explaining a conventional dispenser-port-forming region.

MODE FOR CARRYING OUT THE INVENTION

[0019] Embodiments of the present invention will now be explained with reference to Figs. 1 to 8. 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.

[0020] 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.

[0021] 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 bonding with 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 1 has been packaged is not limited. The packaged product 1 may have been packaged in any suitable packaging configuration, such as simple pillow wrapping without the gussets, or overlap wrapping such as shown in Fig. 7 formed by sealing flaps placed one on top of the other in each transverse side face 4A, which is also referred to as caramel wrapping.

[0022] 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.

[0023] 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. Remedying effect on the pop-up failure according to the present invention is higher 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.

[0024] 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.

[0025] 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, but 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.

[0026] 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.

[0027] 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.

[0028] The raw material pulp of the sanitary tissue paper 2 is not limited, but 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.

[0029] 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.

[0030] The dispenser-port-forming region 5 is formed by disposing an easy-tear line 50 in a loop in the packaging film 4 in the top face 4C, which faces the topmost sanitary tissue paper sheet 2 of the bundle 3. 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.

[0031] The packaged product 1 of the embodiment shown in Figs. 1 to 5 has a dispenser-port-forming region 5 of a particularly preferred, approximate gourd shape. This dispenser-port-forming region 5 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.

[0032] 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.

[0033] 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.

[0034] In the embodiment illustrated in Figs. 1 to 5, 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 to lean against and support the subsequently exposed sheet of sanitary tissue paper 2. Further, with the dispenser port 6 formed from the dispenser-port-forming region 5, 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 easily deformable in its root portion 2R to be rolled along the edges 6E of the curved convex sections 53 into a shape with an enhanced stand-up property. Moreover, when the dispenser port 6 is formed, deep indentations 6H are formed from the respective flaring sections 52 to the respective curved convex sections 53 of the dispenser-port-forming region 5, and the stand-up property is further enhanced by the root portion 2R of the subsequent sanitary tissue paper sheet partly exposed out of the dispenser port 6, fitting in the deep indentations 6H. In this way, with this dispenser-port-forming region 5, 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. Note that the dispenser-port-forming region 5 according to the present invention 5 may be devoid of the flaring sections 52 as shown in Fig. 7. Further, the dispenser-port-forming region 5 may be provided with one or more straight easy-tear lines connected to the easy-tear line disposed in loop, as long as the effects of the present invention are not disturbed.

[0035] With the contour of the dispenser-port-forming region 5 having the narrowed section 51, the flaring sections 52, and the curved convex sections 53 as shown in Figs. 1 to 5, it is particularly preferred that 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. Such a contour of the dispenser-port-forming region 5 provides curved convex sections 53 particularly broader in the depth direction. The contour also provides still broader and larger free edge flaps 51A to be formed in the vicinity of the boundaries of the narrowed section 51, which allows the narrowed section 51 to open widely upon withdrawal of the sheets, resulting in smooth dispensing of the sanitary tissue paper sheets 2 from the bundle 3. In particular, 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 paper 2, 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. Further, the free edge flaps 51A of the approximate trapezoidal shape to be formed in the vicinity of the boundaries of the narrowed section 51 are rendered still broader and larger while deeper indentations 6H are to be formed, so that the edge flaps lean firmly against even the stiff sanitary tissue paper sheet 2 to support the root portion 2R of the sanitary tissue paper sheet 2, which effectively prevents fall back of the sheet. In addition, having a longer boundary, each curved convex section 53 gently rolls the sanitary tissue paper sheet 2 along its edge, which enhances the stand-up property of the hard-to-warp stiff sanitary tissue paper 2.

[0036] 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.

[0037] 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.

[0038] 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.

[0039] 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.

[0040] The dispenser-port-forming region 5 according to the present invention has, in the portion defining the boundary of at least one of its ends in the width direction (the other end 5B in the illustrated embodiment) as particularly shown in Figs . 5 and 6, an easy-tear line 50 having a perforated line wherein modified cut areas 50D each having a major cut part 50m and a dogleg peripheral cut part 50e contiguous to an end of the major cut part 50m at an angle of 90° or larger, are arranged in a line with uncut areas 50U interposed therebetween. Each modified cut area 50D may be, as shown in Fig. 5, a modified cut area $50D^1$ having only one end provided with the dogleg peripheral cut part 50e, or a modified cut area $50D^2$ having both ends provided with the dogleg peripheral cut parts 50e, and the modified cut areas 50D may be a mixture of these two. As shown in Figs. 6 (a) and 6 (b), the portion may be composed only of the modified cut areas $50D^1$ having only one end provided with the dogleg peripheral cut part 50e. Further, as particularly shown in Fig. 6(b), a cut area 50C without a peripheral cut part 50e may be arranged in a perforated line wherein the modified cut areas 50D are arranged in a line with the uncut areas 50U interposed therebetween.

[0041] In the contours of the dispenser-port-forming regions 5 as shown in Figs. 1 to 6, in particular, 80% or more of the portion of the easy-tear line 50 defining the boundary of a curved convex section 53 is a portion 50P where the modified cut areas 50D and the uncut areas 50U are arranged alternately. In this curved convex section 53, preferably 90% or more, particularly preferably 95% or more of the portion may be the portion 50P where the modified cut areas 50D and the uncut areas 50U are arranged alternately. All of the portion may be formed with the modified cut areas 50D and the uncut areas 50U arranged alternately. Note that, though Figs. 5 and 6 illustrate the embodiments wherein the portion defining the boundary of a curved convex section 53 has the modified cut areas 50D and the uncut areas 50U arranged alternately, the present invention is not limited thereto, but a portion defining the boundary of an end of a dispenser-port-forming region 5 having a simple approximate elliptical shape as shown in Fig. 7 may be formed of the modified cut areas 50D and the uncut areas 50U arranged alternately.

[0042] More specifically, the peripheral cut part 50e of the modified cut area 50D has, as shown particularly in Fig. 5, a first cut subpart $50e^1$ contiguous to the major cut part 50m and a second cut subpart $50e^2$ contiguous to the first cut subpart $50e^1$, which contiguously form a dogleg at an angle $\angle\beta$ of 90° or larger therebetween.

[0043] The layout of the modified cut areas 50D in the portion wherein the modified cut areas 50D and the uncut areas 50U are arranged alternately is such that the peripheral cut parts 50e of modified cut areas 50D partly overlap in the width direction of the dispenser-port-forming region with the ends 50t without a peripheral cut part of respective adjacent modified cut areas 50D on at least one of the outside and the side closer to the center in the width direction of the dispenser-port-forming region 5, and the peripheral cut parts 50e overlap in the width direction of the dispenser-port-forming region 5 with the respective ends 50t without a peripheral cut part such that a modified cut area 50D located on the outer side in the width direction of the dispenser-port-forming region 5 is positioned on the outer side in the width direction of the dispenser-port-forming region 5. Fig. 5 illustrates the embodiment where the peripheral cut parts 50e overlap in the width direction with the ends 50t only on the outside in the width direction of the dispenser-port-forming region 5, but the peripheral cut parts 50e are not necessarily located on the outside in the width direction of the dispenser-port-forming region 5, and may be arranged to overlap in the width direction with the ends 50t only on the side closer to the center in the width direction of the dispenser-port-forming region 5 as in the embodiment of Fig. 6(b), or some peripheral cut parts 50e overlap in the width direction with the ends 50t on the outside in the width direction of the dispenser-port-forming region 5 while the some other peripheral cut parts 50e overlap in the width direction with the ends 50t on the side closer to the center in the width direction of the dispenser-port-forming region 5 as shown in Fig. 6(a) . According to the present invention, it suffices that the peripheral cut parts 50e overlap in the width direction with the respective ends 50t such that, not the peripheral cut parts 50e per se, but the modified cut areas 50D having the peripheral cut parts 50e and located on an outer side in the width direction of the dispenser-port-forming region 5 than the respective adjacent modified cut areas 50D are positioned on the outer side. The same may preferably be applied to embodiments wherein the peripheral cut parts 50e overlap in the width direction with a cut area 50C without a peripheral

cut part 50e and, when a cut area 50C without a peripheral cut part 50e is located outer side in the width direction of the dispenser-port-forming region 5 than the adjacent modified cut area 50D as shown in Fig. 6(b), the two may preferably overlap in the width direction with each other such that an end of the cut area 50C without a peripheral cut part 50e is positioned outer side in the width direction of the dispenser-port-forming region 5 than the peripheral cut part 50e of the adjacent modified cut area 50D.

[0044] The second cut subpart $50e^2$ of a peripheral cut part 50e is preferably arranged substantially in parallel to the major cut part 50m. Here, "substantially in parallel" does not necessarily mean "completely in parallel", and may allow a margin of generally $\pm$ 10°.

[0045] The portion 50P where the modified cut areas 50D and the uncut areas 50U are arranged alternately is provided on an 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, which is the last to be tear-opened and the most prone to ripping in 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. In such a portion 50P where the modified cut areas 50D and the uncut areas 50U are arranged alternately, the peripheral cut part 50e of one modified cut area 50D overlaps in the width direction of the dispenser-port-forming region with an end 50t without a peripheral cut part of the adjacent modified cut area 50D at the boundary on the other end 5B, particularly such that one of the peripheral cut part 50e and the end 50t without a peripheral cut part of the modified cut area 50D located on the outer side in the width direction is positioned on the outer side in the width direction than the other of the peripheral cut part 50e and the end 50t of the adjacent modified cut area 50D. For that reason, in 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, the peripheral cut part 50e that has already been cut out is present at a location further in the direction of peeling in the outer side in the width direction compared to the uncut area 50U. Accordingly, even if small ripping is generated in the packaging film while the uncut area 50U between the modified cut areas 50D is tear-opened during the opening operation, the small ripping is likely to connect immediately to the peripheral cut part 50e of the adjacent modified cut area 50D that has already been cut out, so that no further ripping is likely to proceed. Moreover, the ends of the adjacent modified cut areas 50D are offset both in the width direction and in the depth direction, so that in the usual opening operation of the packaged product by continuously peeling the region bounded by the easy-tear line 50 from one end 5a toward the other end 5B, the uncut area 50U between the adjacent modified cut areas 50D is twisted immediately before being torn, and thus ripping or elongation of the film may hardly occur. 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 according to the present invention where the modified cut areas 50D and the uncut areas 50U are arranged alternately, the packaged product is easily openable, and the risk of ripping during the opening may be reduced. In addition, as the peripheral cut part 50 is contiguous to the major cut part 50m at an angle of 90° or larger, the cuts are opened smoothly from the peripheral cut part 50e to the major cut part 50m. Further, the cuts are opened still more smoothly with the first cut subpart $50e^1$ and the second cut subpart $50e^2$ arranged at an angle of 90° or larger.

[0046] Further, with the dispenser-port-forming region 5 providing particularly excellent withdrawability of stiff paper towels or the like, which is in the form of an approximate gourd shape having the narrowed section 51, flaring sections 52, and the curved convex sections 53 as shown in Figs. 1 to 5 and has the dimensions in the preferred numerical ranges discussed above, the portion of the easy-tear line defining the boundary of a curved convex section 53 is broad and arranged along the depth direction, which may result in a large angle formed between the peeling direction for opening and the direction of tear-opening along the easy-tear line, and thus likely ripping of the packaging film 4 in the opening operation. However, by providing an end of the dispenser-port-forming region 5 with the portion 50P having the modified cut areas 50D and the uncut areas 50U arranged alternately according to the present invention, the risk of the ripping is significantly reduced. This is particularly effective with the packaging configuration, such as pillow wrapping or gusset wrapping, which is prone to ripping as the longitudinal direction (MD) of the packaging film 4 is parallel to the longitudinal direction of the dispenser-port-forming region 5.

[0047] Further, with the dispenser-port-forming region 5 according to the present invention, in the portion 50P 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.

[0048] 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 a modified cut area $50D^2$ having each end provided with the peripheral cut part 50e which overlaps in the width direction of the dispenser-port-forming region 5 with the adjacent end of the adjacent modified cut area 50D on the outside in the width direction of the dispenser-port-forming region 5. At the same time, the modified cut area 50D

located outward in the depth direction of the modified cut area $50D^2$ on each side thereof is a modified cut area $50D^1$ having only one end provided with the peripheral cut part 50e which overlaps in the width direction of the dispenser-port-forming region 5 with the adjacent end of the adjacent modified cut area 50D on the outside in the width direction of the region 5, the only one end being 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 without a peripheral cut part of one modified cut area $50D^1$, the peripheral cut part 50e of the adjacent modified cut area $50D^1$, $50D^2$ is present at a position further in the direction of peeling outer side in the width direction, so that even if small ripping is generated in the packaging film while the uncut area 50U between the adjacent modified cut areas 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 out, so that no further ripping is likely to proceed.

[0049] The ratio in length between the modified cut areas 50D and the uncut areas 50U on an end of the dispenser-port-forming region 5 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 the first cut subpart $50e^1$ and the length of L9 of the second cut subpart $50e^2$ of each peripheral cut part 50e may not necessarily be the same, and may respectively 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.

[0050] Further, the dimension L12 of overlap between the peripheral cut part 50e of one modified cut area 50D and the end without a peripheral cut part of the adjacent modified cut area 50D is not particularly limited, but may be 0.2 mm to 3.0 mm, preferably 0.3 m 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.

[0051] It suffices that the angle $\angle\beta$ between the major cut part 50m and the first cut subpart $50e^1$ of the peripheral cut part 50e and the angle $\angle\gamma$ between the first cut subpart $50e^1$ and the second cut subpart $50e^2$ may not necessarily be the same, and may respectively fall within a range of 90° or larger, preferably 100° or larger, more preferably 120° or larger. The transition from the major cut part 50m to the first cut subpart $50e^1$ and the transition from the first cut subpart $50e^1$ and the second cut subpart $50e^2$ are preferably rounded, though not necessarily identically, and the curvature of the rounding 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 along the modified cut areas smoothly proceeds from the major cut part 50m to the peripheral cut part 50e or from the peripheral cut part 50e to the major cut part 50m.

[0052] Alternatively, in an easy-tear line 50 defining the boundary of the dispenser-port-forming region according to the present invention, the portion 50P 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. When the portion 50P 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 53A on one side of the depth direction is formed as a continuous cut area, as shown in Fig. 8(a). In this way, as shown in Fig. 8 (b), a tab 5T is formed in the part 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.

[0053] The thickness of the packaging film 4 may suitably be selected, and preferably 20 to 75 μm as measured in accordance with JIS P 8118 (1998). With the thickness of 20 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).

[0054] A portion of the easy-tear line 50 defining the dispenser-port-forming region 5 according to the present invention other than where the cut areas 50C and the uncut areas 50U are arranged alternately, may be a perforated line, a slit cut line having uncut areas, or the like, but is not limited thereto.

[0055] When the portion of the easy-tear line 50 other than where the cut areas 50C and the uncut areas 50U are arranged alternately, is a perforated line, the type thereof is not limited. 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, with the standard perforated line being preferred. A slit cut line refers to slit-like areas 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 standard straight cut areas, i.e., a line in which two consecutive standard 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.

[0056] A cut/tie ratio of a perforated line or a slit cut line having uncut areas in the portion of the easy-tear line 50 other than where the cut areas 50C and the uncut areas 50U are arranged alternately, 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 area) within a range of 0.3 mm to 5.0 mm.

[0057] Part or all of the uncut areas 50U of the easy-tear line 50 according to the present invention may be half-cut areas, in each of which the packaging film 4 is not completely cut through in its thickness direction from the top surface, which does not face the bundle 3, down to the bottom surface, which faces the bundle, but is cut for a certain extent in the thickness direction. By replacing the uncut areas 50U with the half-cut areas having cutting, the force required for tearing the packaging film 4 is smaller, which promotes continuous and smooth tear-opening along the easy-tear line 50. The uncut areas 50U between the modified cut areas 50D on an end of the dispenser-port-forming region 5, particularly the curved convex section 53, may be half-cut areas. The extent of the cut at the half-cut areas is not limited, but may preferably be 20% to 80% the thickness of the packaging film.

[0058] Further, with the contour having the narrowed section 51, flaring sections 52, and the curved convex sections 53 as shown in Figs. 1 to 5, the boundaries of the narrowed section 51 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 not substituted with the half-cut areas. This preferably keeps the boundaries of the narrowed section 51 from unintended tear-opening.

[0059] 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 where the cut areas 50C and the half-cut areas are arranged alternately.

EXAMPLE

[0060] Next, packaged products were prepared in Examples 1 to 4 according to the present invention and in Comparative Examples 1 and 2, and tested for fall back of the sanitary tissue paper sheets inside the products and for ripping of the dispenser port. The dispenser-port-forming regions of the packaged products in Examples 1 to 4 and Comparative Example 1 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 2 is in the form of a mere straight perforated line.

[0061] 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.

[0062] 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.

[0063] "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".

[0064] 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	Comparative Example 1	Comparative Example 2
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 / Depth 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	Comparative Example 1	Comparative Example 2
Easy-tear line	Curved convex section	Length of uncut areas	mm	1	0.5	1	2	1	-
		Length of modified cut areas *	mm	10	10	10	10	10	-
		Length of peripheral cut part	mm	1.8	0.5	1.5	2.5	-	-
	Flaring section	Length of uncut areas	mm	1	1	1	1	1	-
		Length of cut areas	mm	10	10	10	10	10	-
	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 cut areas in Comparative Example 1

[0065] Table 1 shows that, 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 modified cut areas and the uncut 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.

[0066] In Comparative Example 1, wherein the cut areas in the curved convex sections in Example 1 were replaced with conventional cut areas without a peripheral cut part, rather than with the modified cut areas, ripping was observed on an end of the dispenser port in the opening operation. It was demonstrated that, even with the easy-tear lines defining very long boundaries of the curved convex sections as in the Examples, ripping on an end of the dispenser port in the opening operation was prevented by alternately arranging the modified cut areas and the uncut areas in those portions.

[0067] Thus, with dispenser ports having other narrow shapes without the flaring sections as shown, for example, in Fig. 7, ripping on an end of the dispenser port in the opening operation may further be prevented by forming the portion of the easy-tear line which defines the boundary on an end with the modified cut areas and the uncut areas arranged alternately.

[0068] With regard to the fall back, in Comparative Example 2, 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 4 and Comparative Example 1, 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 the narrowed section, flaring sections, and curved convex sections had excellent anti-fall-back properties.

[0069] As discussed above, the packaged product according to the present invention is a film-packaged product which is hard to be ripped on an end in the width direction of the dispenser port upon opening and thus provides excellent openability, and also provides excellent withdrawability of sheets of sanitary tissue paper, in particular even stiff sanitary tissue paper, such as paper towels.

DESCRIPTION OF REFERENCE NUMERALS

[0070]

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
6H: indentation of dispenser port
50: easy-tear line
50D, $50D^1$, $50D^2$: modified cut area
50m: major cut part
50e: peripheral cut part
$50e^1$: first cut subpart
$50e^2$: second cut subpart

50t: end without peripheral cut part of modified cut area
$\angle\beta$: angle between major cut part and first cut subpart
$\angle\gamma$: angle between first cut subpart and second cut subpart
50C: cut area
50U: uncut area (tied area)
50P: portion where modified cut areas and uncut 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
Q: overlap zone
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 first and second cut subparts
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: dimension of overlap between peripheral cut part of one modified cut area and end without peripheral cut part of adjacent modified cut area
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 defined by an easy-tear line disposed in a loop in a top face of the product,
wherein a portion of the easy-tear line which defines a boundary of at least one of ends in a width direction of the dispenser-port-forming region comprising:

a perforated line wherein modified cut areas each having a major cut part and a dogleg peripheral cut part contiguous to one or each end of the major cut part at an angle of 90° or larger, are arranged in a line with uncut areas interposed therebetween,
wherein the peripheral cut parts of modified cut areas overlap in the width direction of the dispenser-port-forming region with ends without a peripheral cut part of respective adjacent modified cut areas on at least one of an outside and a side closer to a center in the width direction of the dispenser-port-forming region, and
wherein the peripheral cut parts overlap in the width direction of the dispenser-port-forming region with the respective ends without a peripheral cut part such that a modified cut area located on an outer side in the width direction of the dispenser-port-forming region is positioned on an outer side in the width direction of

the dispenser-port-forming region.

2. The packaged product according to claim 1,

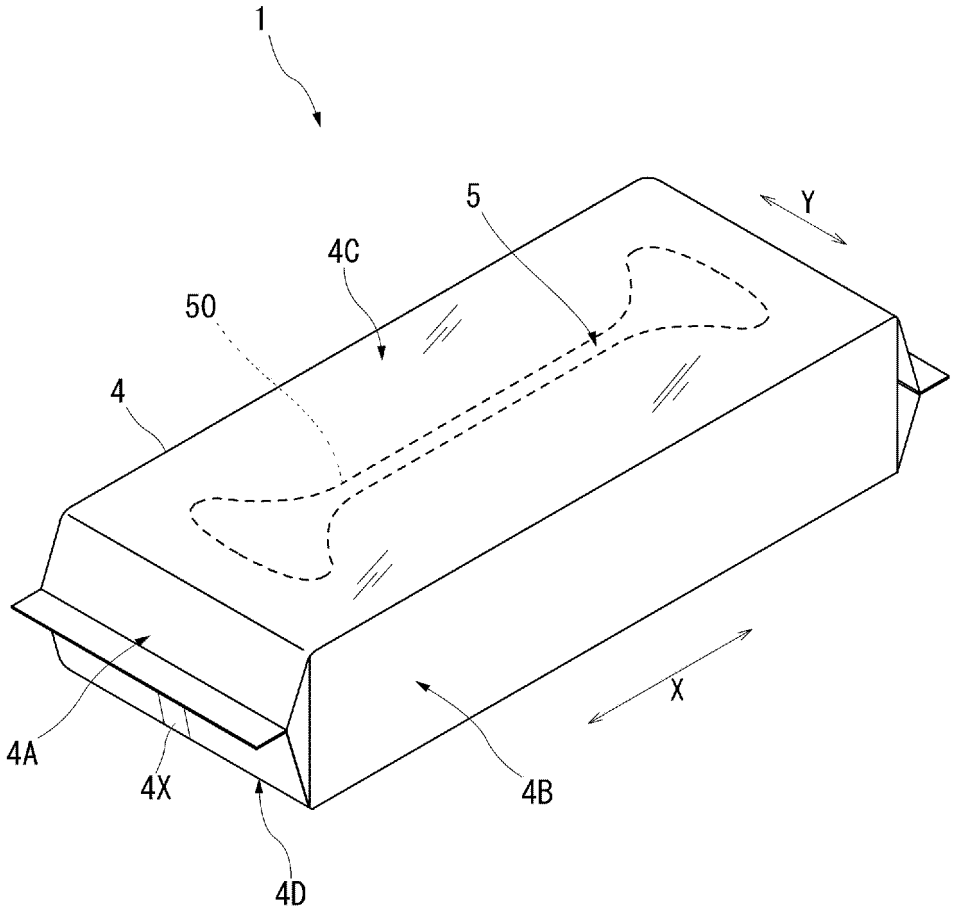
wherein the dispenser-port-forming region has a narrowed section extending in the width direction in a middle of a depth direction of the top face, flaring sections each continued from a corresponding end of the narrowed section and gradually flaring with increasing distance from the narrowed section 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 portion of the easy-tear line defining a boundary of at least one of the curved convex sections comprises a perforated line having the modified cut areas and the uncut areas arranged alternately.

3. The packaged product according to claim 2,
wherein 80% or more of the portion of the easy-tear line defining the boundary of a curved convex section is formed of the perforated line having the modified cut areas and the uncut areas arranged alternately.

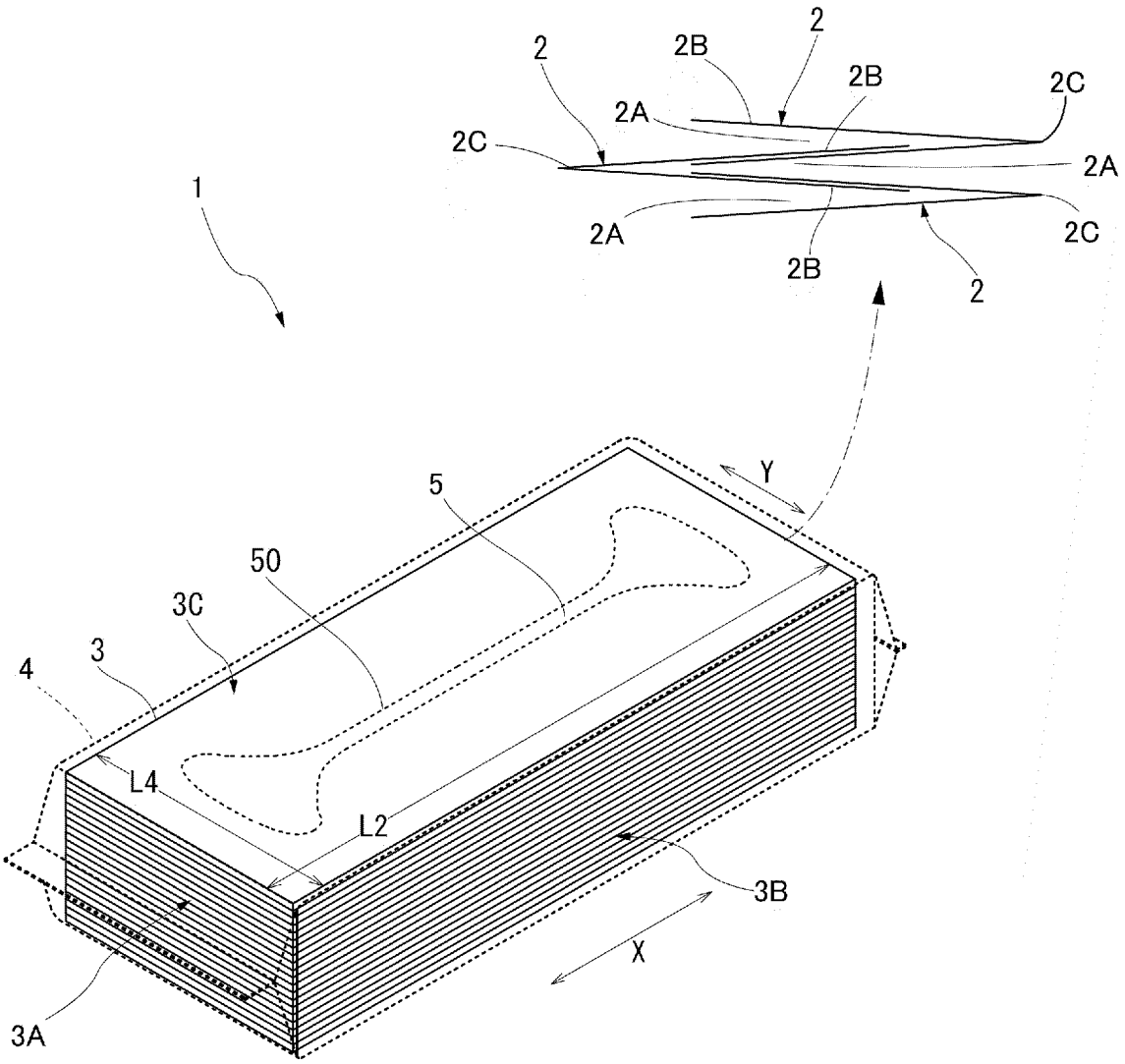
4. The packaged product according to claim 2,
wherein a dimension in a depth direction of the curved convex sections is 25 to 45 mm, and a dimension in the width direction of bulging of the curved convex sections is 2.5 to 12.5 mm.

5. The packaged product according to any one of claims 2 to 4,
wherein a dimension in the width direction of the dispenser-port-forming region is 70% or more a dimension in a width direction of the top face of the bundle, a maximum dimension in a depth direction of the dispenser-port-forming region is 10 to 40% a dimension in a depth direction of the top face of the bundle, a dimension in a width direction of the narrowed section is 50 to 70% a length of the top face of the bundle, and a dimension in a depth direction of the narrowed section is 0.5 to 10% the dimension in the depth direction of the top face of the bundle.

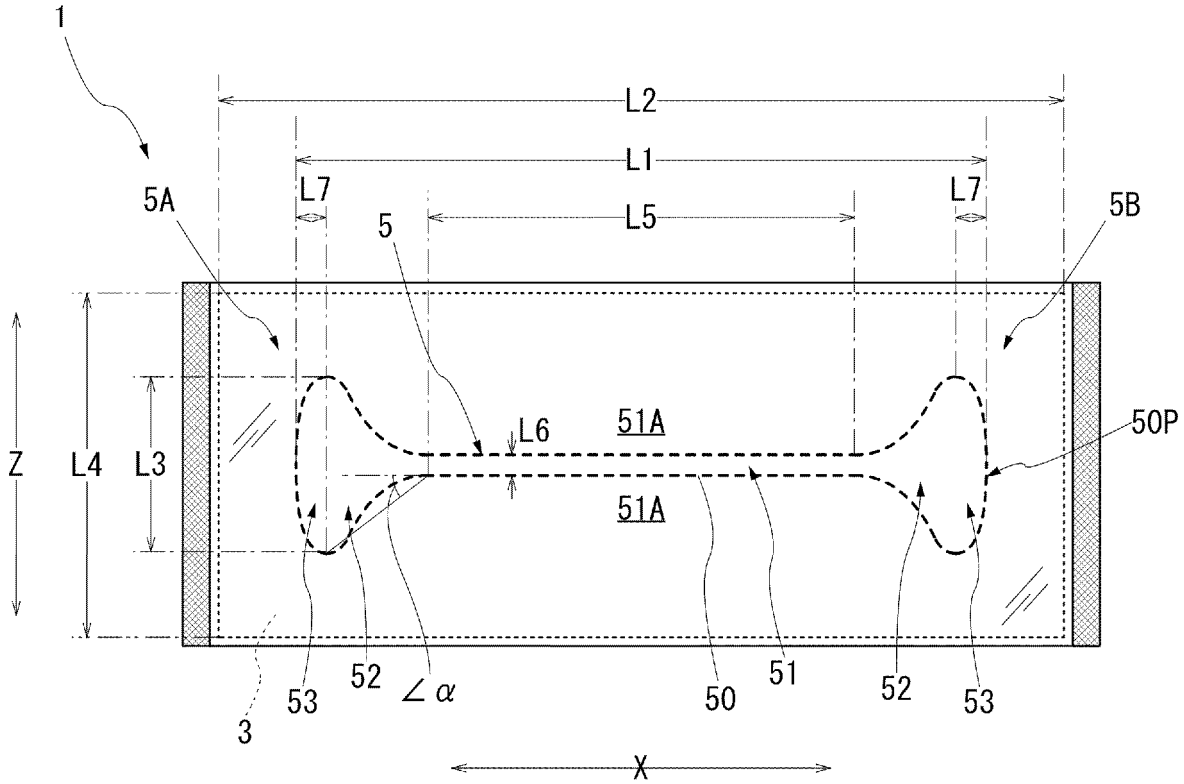
[FIG.1]



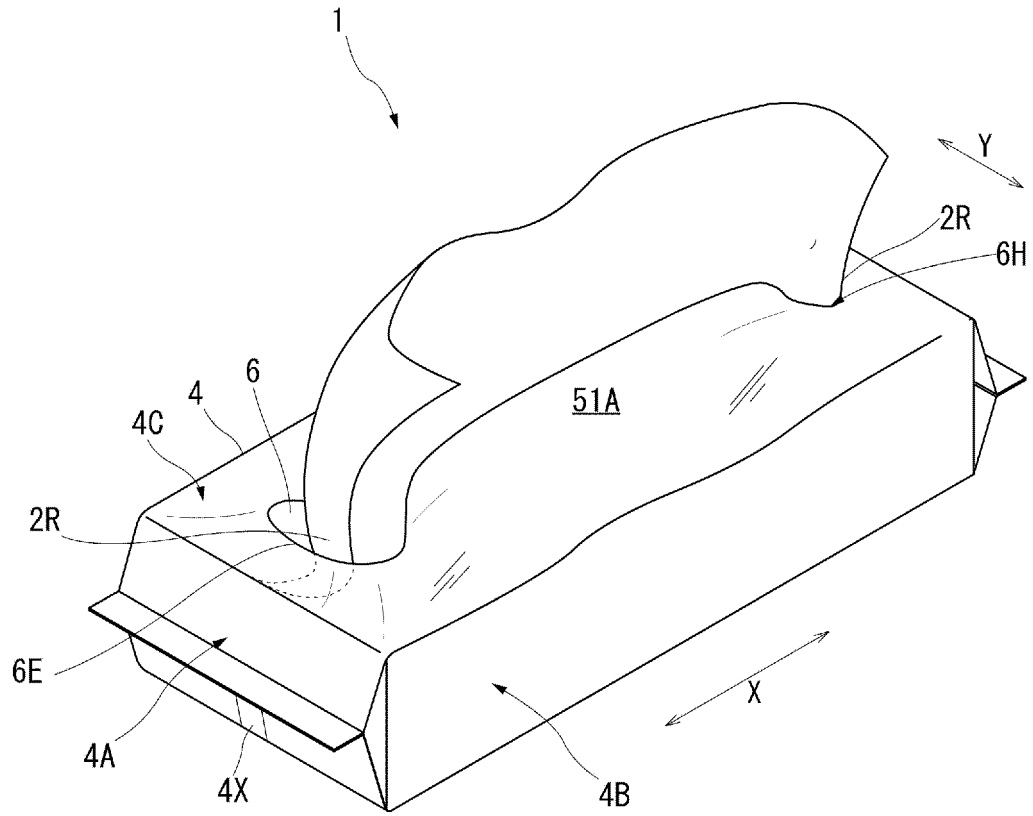
[FIG.2]



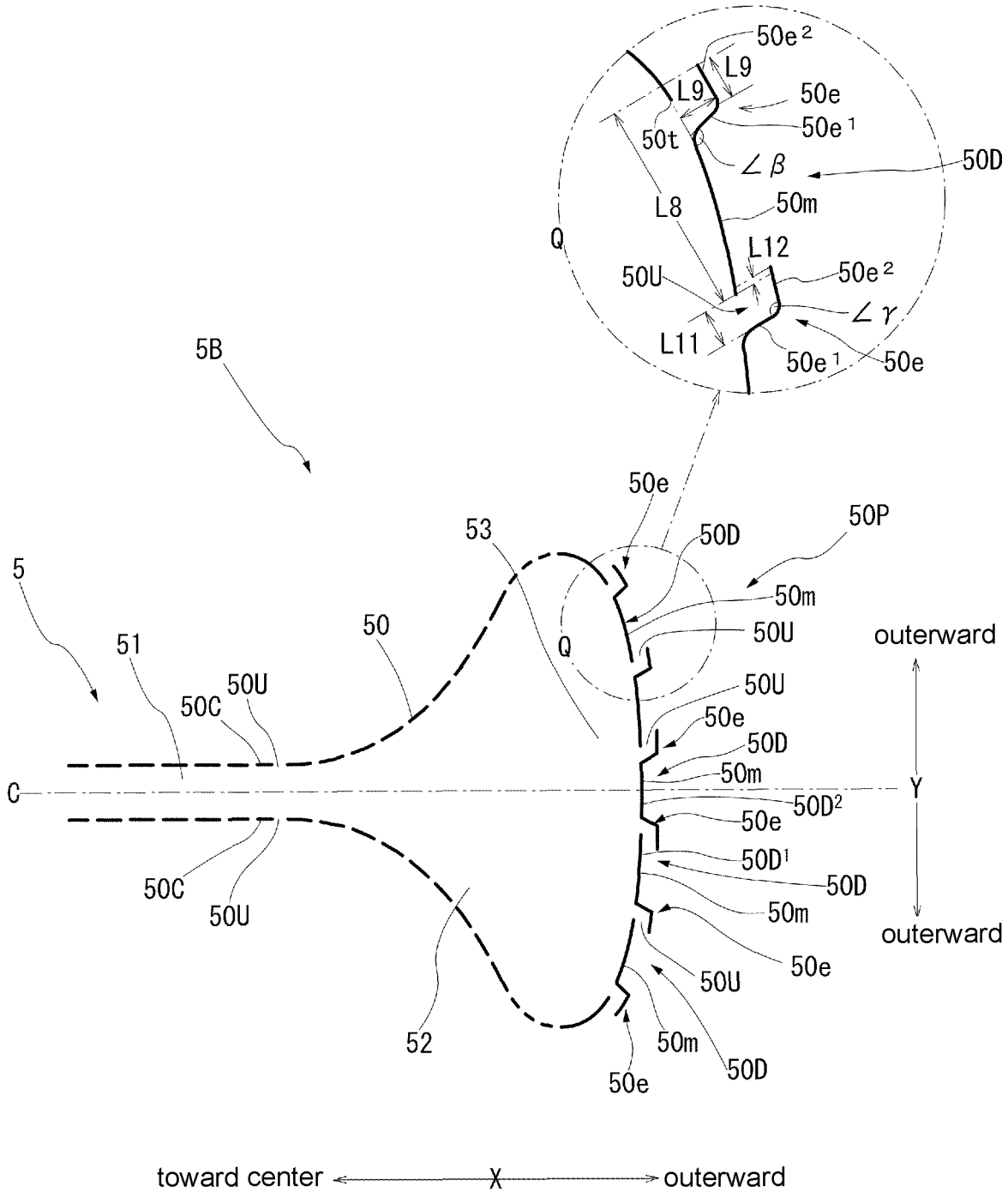
[FIG.3]



[FIG.4]



[FIG.5]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L9
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50e1
50t
∠β
50D
L8
50m
Q
L12
50U
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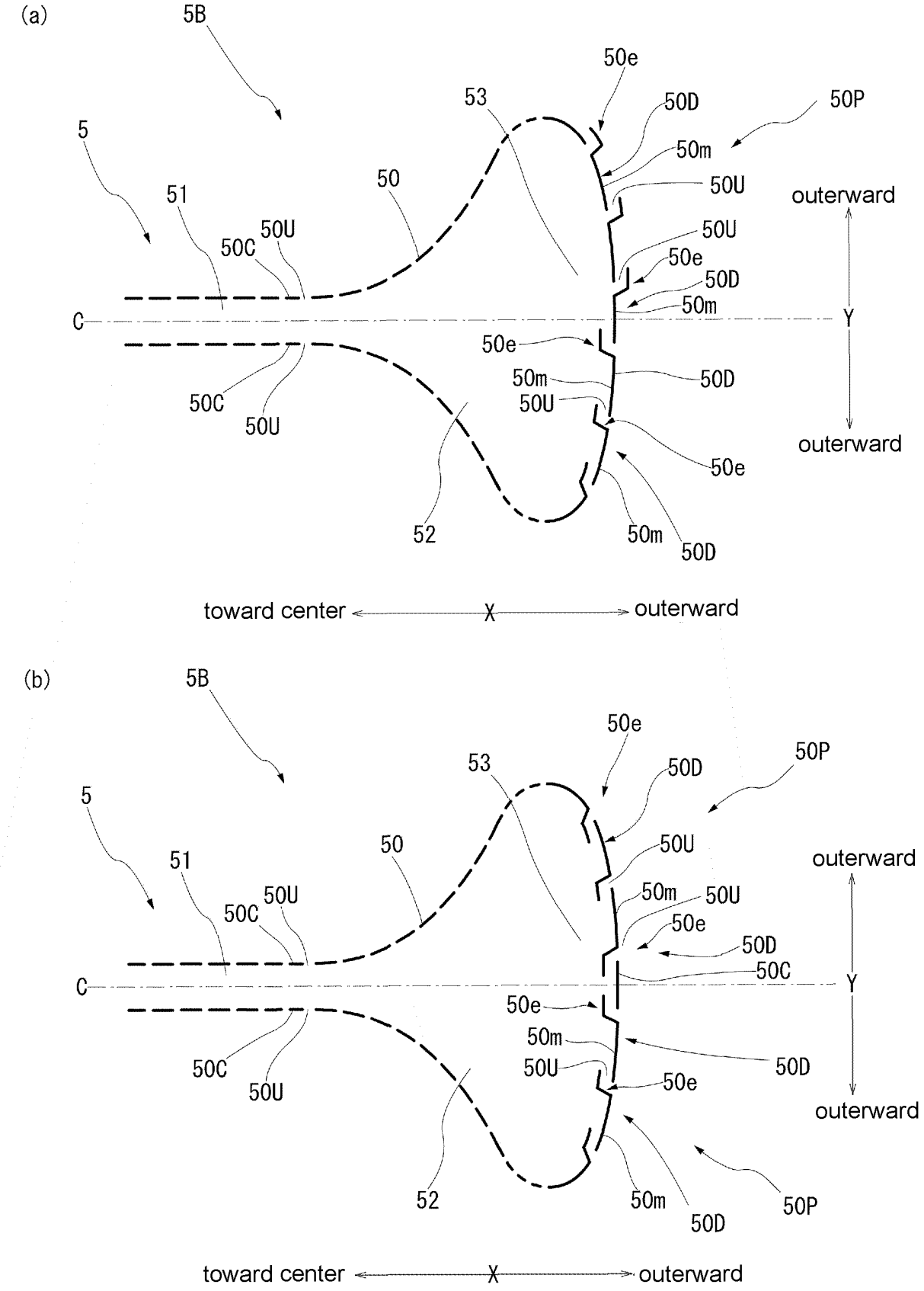
∠γ
L11
50e1
50e
5B
50e
53
50D
50P
5
50m
50
Q
50U
outerward
51
50U
50C
50U
50e
50D
C
50m
Y
50D2
50e
50D1
50D
50C
50U
50m
50e
50U
52
50m
50D
50e
toward center
X
outerward

[FIG.6]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50D
50P
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50m
51
50
50U
outerward
50C
50U
50U
C
50e
Y
50D
50m
50e
50m
50D
50C
50U
50U
50e
52
50m
50D
outerward
toward center
X
outerward
(b)
5B
50e
50P
53
50D
5
50U
51
50
outerward
50m
50U
50C
50U
50e
50D
50C
C
Y
50e
50m
50D
50C
50U
50U
50e
outerward
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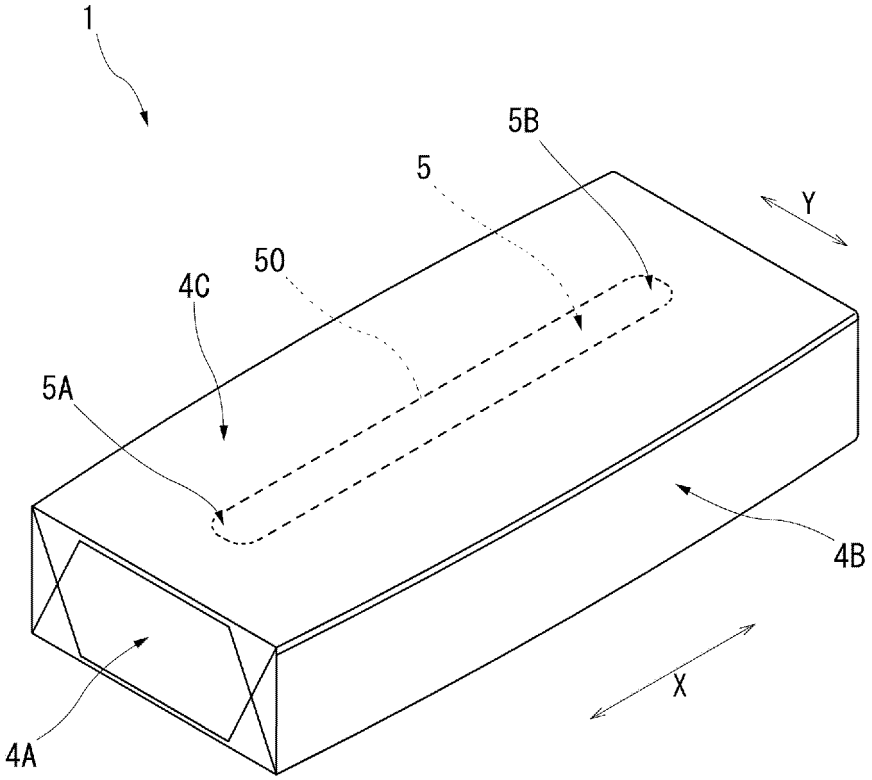
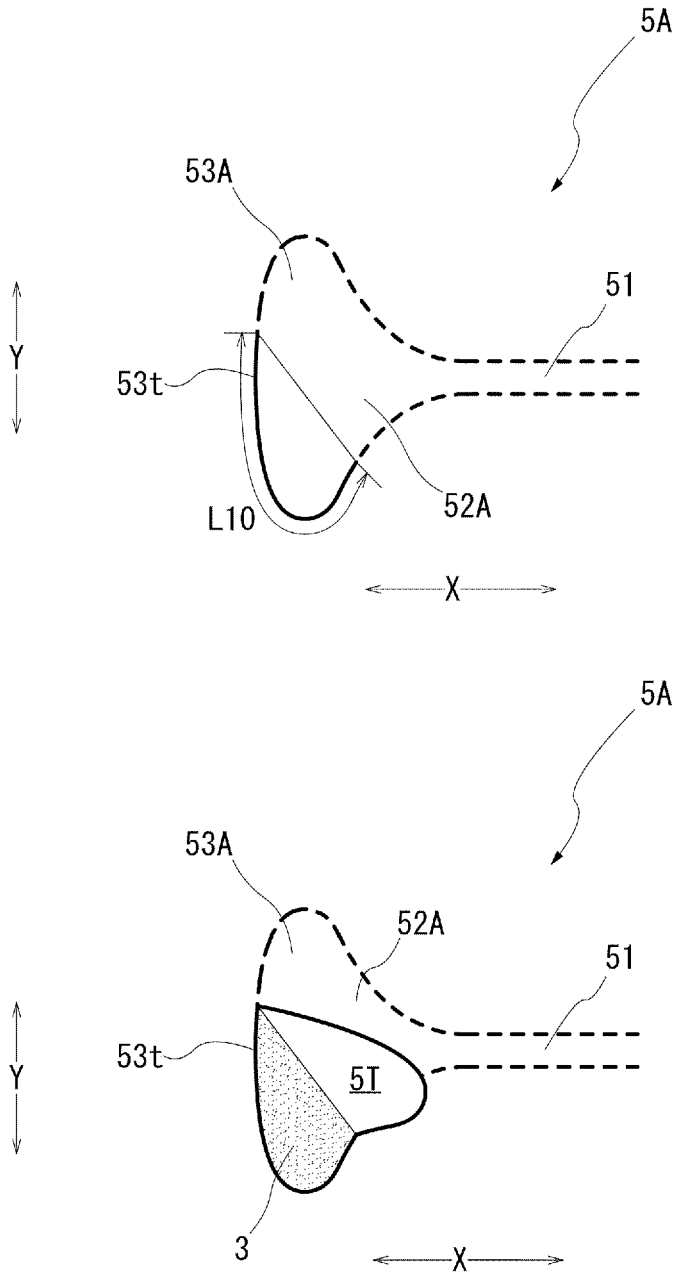
50m
50D
50P
toward center
X
outerward

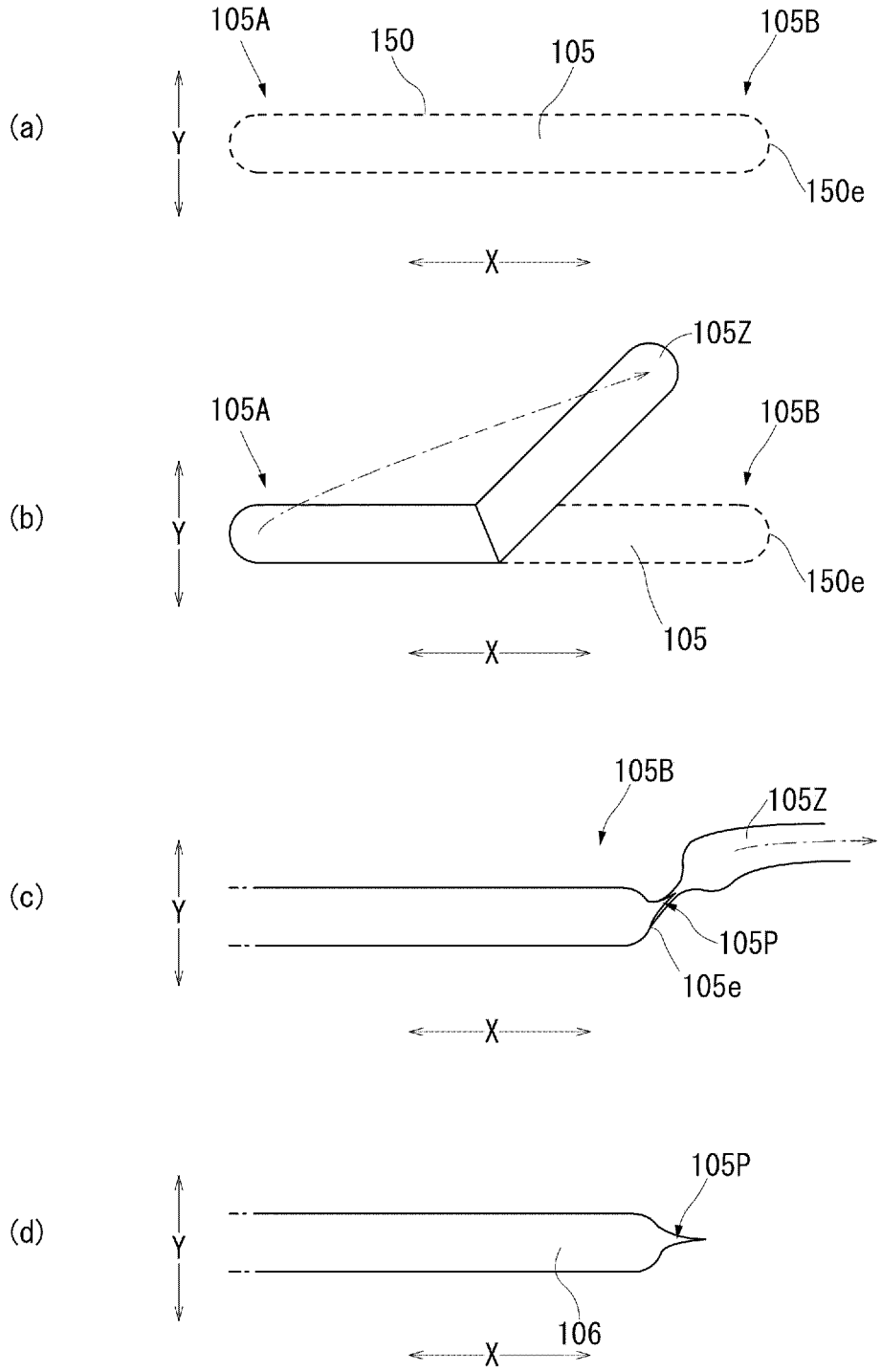
[FIG.7]



[FIG.8]



[FIG.9]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105
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Y
X
(b)
105Z
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105
Y
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(c)
105B
105Z
105P
105e
Y
X
(d)
105P
106
Y
X

INTERNATIONAL SEARCH REPORT

International application No.
PCT/JP2022/012005

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 B; A47K10/42 A

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.
Y	WO 2020/110835 A1 (DAIO PAPER CORPORATION) 04 June 2020 (2020-06-04) paragraphs [0009]-[0118], fig. 1-8	1-5
Y	JP 3069849 U (MARUKIN INSATSU KK) 12 April 2000 (2000-04-12) paragraphs [0010]-[0017], fig. 1-5	1-5
Y	JP 2018-172145 A (DAIO PAPER CORPORATION) 08 November 2018 (2018-11-08) paragraphs [0015]-[0048], fig. 4	1-5
Y	WO 2020/004025 A1 (DAIO PAPER CORPORATION) 02 January 2020 (2020-01-02) paragraphs [0024]-[0068], fig. 1-10	5
A	US 2019/0344946 A1 (SONOCO DEVELOPMENT, INC.) 14 November 2019 (2019-11-14)	1-5
A	Microfilm of the specification and drawings annexed to the request of Japanese Utility Model Application No. 101674/1984 (Laid-open No. 17028/1986) (TOPPAN INC) 31 January 1986 (1986-01-31), fig. 9	1-5

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

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

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INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/JP2022/012005

Patent document cited in search report	Publication date (day/month/year)	Patent family member(s)	Publication date (day/month/year)
WO 2020/110835 A1	04 June 2020	(Family: none)	
JP 3069849 U	12 April 2000	(Family: none)	
JP 2018-172145 A	08 November 2018	US 2020/0022539 A1 paragraphs [0031]-[0065], fig. 4 WO 2018/180622 A1 EP 3604173 A1 CN 110167850 A KR 10-2019-0135467 A	
WO 2020/004025 A1	02 January 2020	JP 2020-1796 A	
US 2019/0344946 A1	14 November 2019	US 2021/0237956 A1 WO 2019/217710 A1	
JP 61-17028 U1	31 January 1986	(Family: none)	

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

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- JP 2018052559 A **[0009]**
- JP 2018058654 A **[0009]**