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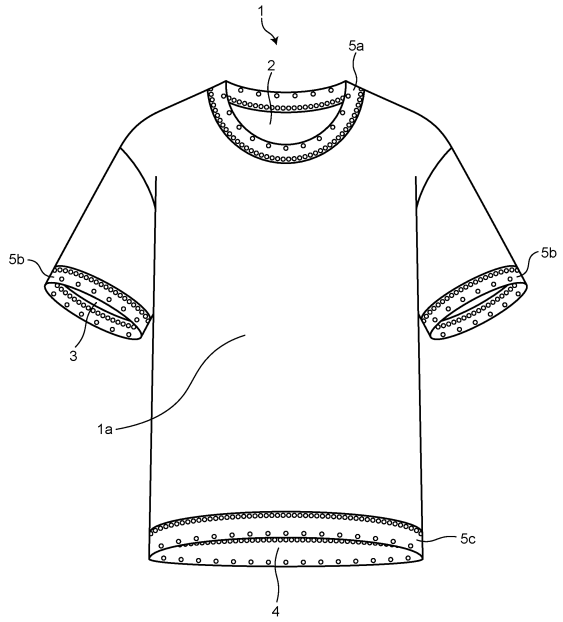
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(54) **GARMENT**

(57) In order to provide a garment in which undulation of an opening part as well as a puckering defect of the opening part and a main body portion are reduced even in a case of a configuration in which the opening part is joined to a concave curved opening, the garment of the present invention is a garment that has an opening through which a wearer's body passes and includes a garment main body provided with an opening part formed by folding a fabric, the opening part being joined along an edge of the opening of a garment main body. The opening part is fixed with adhesive dots provided in a plurality of rows along a mountain fold line and a fabric end of the fabric, and an average value LA of intervals between adjacent adhesive dots provided within a 3-cm section in a row of adhesive dots that are provided closest to a fabric end side of the opening part is smaller than an average value LB of intervals between adjacent adhesive dots provided within a 3-cm section in a row of adhesive dots that are provided closest to a mountain fold line side of the opening part.

FIG.1



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Description

Field

[0001] The present invention relates to a garment. Background

[0002] Conventionally, as a technique for joining a tape-shaped opening part that constitutes a garment to an opening of the garment, the following techniques are generally known: a method of stitching a tape-shaped opening part folded in two with an overlock sewing machine, and a method of stitching a tape-shaped opening part folded in three or four with a flat sewing machine or the like. In addition, a method of processing a collar part using a hot-melt sheet or adhesive dots is employed in recent years. For example, Patent Literature 1 proposes a technique in which an opening of an undergarment such as shorts is subjected to end processing using a tape made of a laminate of a hot-melt sheet and a stretchable fabric. In addition, Patent Literature 2 proposes a technique in which a tape-shaped patch cloth is pressure-bonded to an opening of an undergarment such as shorts using adhesive dots, and Patent Literature 3 proposes a technique in which, at an opening such as a collar of a T-shirt, a fabric of the opening is folded in two and pressure-bonded using adhesive dots and processed.

Citation List

Patent Literature

[0003]

Patent Literature 1: JP H07-40710 U
Patent Literature 2: JP 2003-253510 A
Patent Literature 3: JP 2021-85103 A

[0004] Summary

Technical Problem

[0005] Unfortunately, for example, the conventional general technique in which a tape-shaped opening part is folded in two, three, or four and stitched to an opening of a garment using an overlock sewing machine or a flat sewing machine has the following defect. Specifically, since a linear opening part is stitched to a curved opening, the inside of the opening part becomes excessive and undulated due to a difference between the inner and outer circumferences of the opening part. When a method of stitching the opening part while stretching the opening part is employed in order to solve the undulation of the opening part, the undulation of the opening part is alleviated. However, the method has a defect that a force by which the stretched opening part returns acts at the joint portion of the opening part, and a puckering defect occurs, that is, wrinkles appear on the garment main body side.

[0006] In addition, in the case of employing the technique of subjecting an opening of an undergarment such as shorts to end processing using a tape made of a laminate of a hot-melt sheet and a stretchable fabric as in Patent Literature 1, in the curved opening, a difference between the inner and outer circumferences occurs in the stretchable fabric made of the laminate of the hot-melt sheet and the stretchable fabric as in the conventional general technique, so that undulation occurs at the inside of the stretchable fabric.

[0007] Meanwhile, in the technique of Patent Literature 2, the joint of the opening part is not visible in appearance, and in the technique of Patent Literature 3, no opening part is used. Therefore, these techniques suffer from design restriction.

[0008] The present invention has been made in view of the above, and an object of the present invention is to provide a garment in which undulation of an opening part as well as a puckering defect of the opening part and a main body portion are reduced even in a case of a configuration in which the opening part is joined to a concave curved opening.

Solution to Problem

[0009] To solve the problem described above and to achieve the object, a garment according to the present invention is a garment having an opening through which a wearer's body passes. The garment includes: a garment main body provided with an opening part formed by folding a fabric, the opening part being joined along an edge of the opening of the garment main body. The opening part is fixed with adhesive dots provided in a plurality of rows along a mountain fold line and a fabric end of the fabric, and an average value LA of intervals between adjacent adhesive dots provided within a 3-cm section in a row of adhesive dots that are provided closest to a fabric end side of the opening part is smaller than an average value LB of intervals between adjacent adhesive dots provided within a 3-cm section in a row of adhesive dots that are provided closest

to a mountain fold line side of the opening part.

[0010] In the garment according to the present invention, the LA and the LB have a relation of LA/LB ≤ 0.75.

[0011] In the garment according to the present invention, the opening part is formed in a pattern having a concave curve with the opening being directed upward.

[0012] In the garment according to the present invention, the opening part has a curved shape having an inner periphery on the mountain fold line side and an outer periphery on the fabric end side when the opening part is not joined to the opening, and an angle formed by a tangent line at an end of the opening part on the fabric end side in a longitudinal direction of the opening part and a tangent line at an opposite end of the opening part on the fabric end side in the longitudinal direction is 10° or more and less than 180°.

[0013] In the garment according to the present invention, the LA and the LB have a relation of LA/LB ≤ 0.7, and the opening part has a curved shape having an inner periphery on the mountain fold line side and an outer periphery on the fabric end side when the opening part is not joined to the opening, and an angle formed by a tangent line at an end of the opening part on the fabric end side in a longitudinal direction of the opening part and a tangent line at an opposite end of the opening part on the fabric end side in the longitudinal direction is 10° or more and less than 180°.

[0014] In the garment according to the present invention, the opening part has a stretch rate in a longitudinal direction of 20% or more and 200% or less, and the adhesive dots are fixed with the opening part being stretched.

Advantageous Effects of Invention

[0015] According to the present invention, in the case of joining an opening part to an opening, the undulation of the folded opening part as well as a puckering defect of the opening part and a main body portion can be reduced. Brief Description of Drawings

FIG. 1 is a drawing illustrating an appearance of a garment according to a first embodiment.

FIG. 2 is a drawing illustrating, in the garment illustrated in FIG. 1, an angle between a tangent line at an end of an opening part curved and deformed in advance and a tangent line at the other end of the opening part.

FIG. 3A is a drawing illustrating manufacture of the opening part of the garment illustrated in FIG. 1, and is a drawing schematically illustrating a state before a fabric is folded.

FIG. 3B is a drawing illustrating manufacture of the opening part of the garment illustrated in FIG. 1, and is a drawing schematically illustrating a state after the fabric illustrated in FIG. 3A is folded.

FIG. 4 is a drawing illustrating an interval between adhesive dots provided on the opening part of the garment illustrated in FIG. 1.

FIG. 5A is a drawing illustrating manufacture of an opening part of a garment according to a modification of the first embodiment, and is a drawing schematically illustrating a state before a fabric is folded.

FIG. 5B is a drawing illustrating manufacture of the opening part of the garment according to the modification of the first embodiment, and is a drawing schematically illustrating a state after the fabric illustrated in FIG. 5A is folded.

FIG. 6 is a drawing illustrating an appearance of a garment according to a second embodiment.

Description of Embodiments

[0016] Hereinafter, modes for carrying out the present invention (hereinafter referred to as "embodiments") will be described with reference to the accompanying drawings. Note that the drawings are merely schematic.

(First embodiment)

[0017] FIG. 1 is a drawing schematically illustrating a configuration of a garment according to a first embodiment. A garment 1 illustrated in the drawing is an example of an upper garment that is a short sleeve undergarment, and has a collar opening 2, sleeve openings 3, and a hem opening 4 through which a head, arms, and a torso pass, respectively. The collar opening 2, the sleeve openings 3, and the hem opening 4 are each formed in a pattern having a curve, that is, a pattern having a curvature larger than 0, and have a structure in which opening parts 5a, 5b, and 5c are joined thereto, respectively.

[0018] As a garment main body 1a, a woven or knitted fabric material provided as a general garment material, for example, a fiber structure such as a woven fabric or a knitted fabric can be used, but the garment main body 1a is not limited thereto. In addition, as for the application of the garment 1, the garment 1 can be applied to a material of outerwear such as a T-shirt and a jersey shirt in addition to a general undergarment and padded innerwear, and the application is not limited thereto.

[0019] The opening parts 5a, 5b, and 5c of the garment 1 are made of a stretchable fabric. For example, knitted fabric materials provided as general garment materials, such as stretchable weft-knitted and warp-knitted materials can be used. Examples of the weft knitting include plain knitting (plain stitch), ribbing (rib stitch), purl stitch (garter stitch), interlock stitch

(smooth stitch), variations of plain knitting (such as plain stitch with different stitch density, moss stitch, herringbone stitch, float stitch, single jacquard, accordion stitch, lace stitch, plating stitch, pile stitch, cable stitch, and intarsia knitting), variations of ribbing (such as broad rib stitch, half cardigan stitch, full cardigan stitch, racked stitch, double jacquard stitch, half tubular stitch, Milano rib, double pique, and blister), and variations of interlock stitch (such as eight-lock, single pique, mock Milano, and ponte rome). Examples of the warp knitting include tricot (such as denbigh stitch, cord stitch, and atlas stitch) and Raschel knitting. In addition, a woven fabric material having stretchability for application to a garment is also suitable for the present invention.

[0020] The elongation of the opening parts 5a, 5b, and 5c of the garment 1 is preferably 20% or more and 200% or less, and more preferably 100% or more and 200% or less as measured by the elongation test method B of the Testing methods for woven and knitted fabrics described in "JIS L 1096(2020) ".

[0021] The method for joining the opening parts 5a, 5b, and 5c to the garment main body 1a is not limited to stitching with an overlock sewing machine, stitching with a flat sewing machine, stitching with a flat seamer sewing machine, and stitching with a lockstitch sewing machine. In addition, apart from the joining method by sewing, it is also possible to join the parts by a pressure-bonding method using polyethylene, polypropylene, polyvinyl chloride, polystyrene, polyvinyl acetate, polyurethane, polytetrafluoroethylene, polyacrylic, polyamide, polyacetal, polycarbonate, polyphenylene ether, polyester, polyphenylene sulfide, polysulfone, polyether sulfone, polyether ether ketone, polyimide, polyamideimide, an adhesive containing a polymer compound, or a thermoplastic sheet.

[0022] As for the shapes of the collar opening 2, the sleeve openings 3, and the hem opening 4 of the garment main body 1a, it is preferable that each of the opening parts 5 (5a, 5b, and 5c) is formed in a pattern having a concave curve, that is, a pattern having a curvature larger than 0 with the opening being directed upward. FIG. 2 illustrates the opening part 5 (5a, 5b, or 5c) in a state of not being joined to the main body of the garment 1, and the angle formed by a tangent line 6ta at an end of the opening part 5 on a fabric end side in a longitudinal direction of the opening part 5 and a tangent line 6tb at an opposite end of the opening part 5 on the fabric end side in the longitudinal direction is preferably 10° or more.

[0023] The curvature in the present invention is determined by the following formula.

Curvature = 1 ÷ average curvature radius (cm) of opening after fabric of opening part 5 is folded

[0024] Since the curvature is larger than 0, the opening part 5 can follow the curve of the opening of the garment main body, and the appearance quality with little wrinkles can be obtained. The curvature is more suitably 0.03 or more.

[0025] Hereinafter, the present invention will be described with the opening part 5a joined to the collar opening 2 being taken as an example. The opening parts 5b and 5c respectively joined to the sleeve opening 3 and the hem opening 4 have the same configuration as that of the opening part 5a, and can be manufactured in the same manner. FIG. 3A is a drawing illustrating manufacture of the opening part 5a of the garment 1 illustrated in FIG. 1, and is a drawing schematically illustrating a state before an opening part fabric 5a' is folded. FIG. 3B is a drawing schematically illustrating a state after the opening part fabric 5a' illustrated in FIG. 3A is folded and bonded. The opening part 5a is formed by folding the opening part fabric 5a'. Adhesive dots 10 are provided on one side of the opening part fabric 5a'. The adhesive dots 10 are provided in two rows along a mountain fold line 8 and a fabric end 6 of the opening part fabric 5a'. The adhesive dots 10 include a row of adhesive dots 107 that are provided on the fabric end 6 side and a row of adhesive dots 109 that are provided on the mountain fold line 8 side. In FIGS. 1 and 3B, the adhesive dots 10 are indicated by a solid line in order to facilitate understanding of the position where the adhesive dots 10 are provided.

[0026] For the manufacture of the opening part 5a, first, as illustrated in FIG. 3A, two rows of the adhesive dots 10 are provided on one side of one surface of the opening part fabric 5a', and then the part fabric 5a' is folded in two at the mountain fold line 8. Thereafter, the opening part fabric 5a' is fixed with the adhesive dots 10 in a state where the opening part fabric 5a' is longitudinally stretched by 110% to 190%, preferably by 120% to 180%. After the fixing with the adhesive dots 10, when the stretching of the part fabric 5a' is released, the part fabric 5a' contracts more largely at the mountain fold line 8 side than at the fabric end 6 side. Thus, it is possible to provide the opening part 5a having a concave curved shape having the inner periphery on the mountain fold line 8 side and the outer periphery on the fabric end 6 side.

[0027] Alternatively, two rows of the adhesive dots 10 are provided on one side of one surface of the opening part fabric 5a' as illustrated in FIG. 3A in a state where the opening part fabric 5a' is stretched by 110% to 190%, preferably by 120% to 180% in advance, then the part fabric 5a' is folded in two at the mountain fold line 8 and fixed with the adhesive dots 10, and then the stretching of the part fabric 5a' is released. This method is also preferable because the concave curved shape can be obtained.

[0028] The opening part 5a is folded in two in FIGS. 3A and 3B, but the folded shape is not limited thereto, and the opening part 5a may be folded in three or four.

[0029] FIG. 4 is a drawing illustrating an interval between the adhesive dots 10 provided on the opening part 5a of the garment illustrated in FIG. 1. As illustrated in FIG. 4, an average value LA of intervals between adjacent adhesive dots 107 provided within a 3-cm section in a row of adhesive dots 107 that are provided on the fabric end 6 side of the opening part 5a

of the garment 1 is smaller than an average value LB of intervals between adjacent adhesive dots 109 provided within a 3-cm section in a row of adhesive dots 109 that are provided on the mountain fold line 8 side of the opening part 5a of the garment 1. In the garment 1 of the present invention, the average value LA of intervals between adjacent adhesive dots 107 provided within a 3-cm section in a row of adhesive dots 107 that are provided on the fabric end 6 side of the opening part 5a and the average value LB of intervals between adjacent adhesive dots 109 provided within a 3-cm section in a row of adhesive dots 109 that are provided on the mountain fold line 8 side of the opening part 5a preferably have a relation of LA/LB ≤ 0.75, and more preferably have a relation of LA/LB ≤ 0.7. Since LA and LB satisfy the above-mentioned relation, when the opening part 5a is formed into a curved shape and joined to the collar opening 2, undulation and puckering can be avoided. The average value LA of intervals between adjacent adhesive dots 107 provided within a 3-cm section in a row of adhesive dots 107 that are provided on the fabric end 6 side and the average value LB of intervals between adjacent adhesive dots 109 provided within a 3-cm section in a row of adhesive dots 109 that are provided on the mountain fold line 8 side can be calculated from the following formulae.

$$\text{Average value LA} = \frac{\sum_{k=1}^{n_a} \Delta LA_k}{n_a} \quad \cdots (1)$$

$$\text{Average value LB} = \frac{\sum_{k=1}^{n_b} \Delta LB_k}{n_b} \quad \cdots (2)$$

n_a: (number of adhesive dots 107 provided within 3-cm section) - 1
n_b: (number of adhesive dots 109 provided within 3-cm section) - 1
ΔLA: interval between adjacent adhesive dots 107 provided within 3-cm section in row of adhesive dots 107 provided on fabric end side
ΔLB: interval between adjacent adhesive dots 109 provided within 3-cm section in row of adhesive dots 109 provided on mountain fold line side

[0030] In addition, when a distance d1 from the row of adhesive dots 107 that are provided on the fabric end 6 side to the fabric end 6 is long, the opening part 5a has a long free end on the fabric end 6 side, so that defects such as undulation of the end are likely to occur. Therefore, the distance d1 from the row of adhesive dots 107 to the fabric end 6 is preferably within 2 mm, and more preferably within 1 mm. The lower limit of the distance d1 is not particularly limited and can be appropriately set according to the size of the dot and the like, but the distance d1 is usually preferably 0.2 mm or more. Furthermore, when a distance d2 from the mountain fold line 8 to the row of adhesive dots 109 that are provided on the mountain fold line 8 side is short, the adhesive dots 109 are scattered in the vicinity of the mountain fold line 8 of the opening part 5a, so that defects such as pressure-bonding deformation of the mountain fold line 8 are likely to occur. Therefore, the distance d2 from the mountain fold line 8 of the fabric to the row of adhesive dots 109 is preferably 0.5 mm or more. The upper limit of the distance d2 is not particularly limited, but the distance d2 is usually preferably 10 mm or less.

[0031] The adhesive dots 10 provided on the opening part 5a are preferably made from a synthetic resin rather than a natural resin. Among synthetic resins, a thermoplastic resin is more preferable. The adhesive dots 10 are not particularly limited as long as they are made from, for example, polyethylene, polypropylene, polyvinyl chloride, polystyrene, polyvinyl acetate, polyurethane, polytetrafluoroethylene, polyacrylic, polyamide, polyacetal, polycarbonate, polyphenylene ether, polyester, polyphenylene sulfide, polysulfone, polyether sulfone, polyether ether ketone, polyimide, polyamideimide, or a polymer compound, and various materials can be used.

[0032] The adhesive dots 10 provided on the opening part 5a are preferably made from a reactive hot-melt resin. When the resin is a reactive hot-melt resin, the resin softens or melts and penetrates between the structures of the bonding site, and reacts with surrounding moisture after cooling and solidification. As a result, crosslinking proceeds, and an adhesive structure excellent in heat resistance, solvent resistance, and the like can be formed.

[0033] A preferable size of the adhesive dots 10 varies depending on the structure and thickness of the fabric that constitutes the garment 1. When the dots have a diameter of about 1.0 to 2.0 mm, relatively high adhesion strength can be easily obtained. However, the dots may bleed out to the front side of a thin fabric to be conspicuous, and may impair the appearance. Therefore, the dots are preferably small within a range in which the required adhesion strength is obtained. Adhesive dots having a diameter of 1.0 mm or less are preferable because such adhesive dots hardly bleed out even in the case of a fabric for innerwear having a fabric thickness of about 0.5 to 0.8 mm. Furthermore, adhesive dots having a diameter of 0.6 mm or less are preferable because the bleeding is hardly conspicuous even in the case of a thinner fabric having a fabric thickness of about 0.3 to 0.5 mm. In a case where the adhesive dots have a small diameter and have a low adhesion strength, it is possible to reinforce the adhesion by reducing the interval between the adhesive dots. In the

present specification, the diameter of the adhesive dots is intended to mean the length of the adhesive dots in the planar direction. The adhesive dots when being provided on the fabric end have a height almost the same as the diameter thereof, but the adhesive dots penetrate into the fabric when the fabric is fixed with the adhesive dots. Therefore, the adhesive dots have no influence on the thickness of the garment 1.

[0034] The adhesive dots 10 have a circular shape in the first embodiment, but the shape of the adhesive dots 10 is not limited thereto. The adhesive dots 10 may have any shape as long as the adhesive dots 10 can be successively provided in a separated state so that the interval between the adhesive dots can be changed, and the adhesive dots 10 may have a linear shape, a geometric shape, or a shape obtained by combining these shapes.

[0035] The resin that constitutes the adhesive dots 10 preferably has a hardness of 10 to 90 in terms of the durometer D hardness measured according to the plastic durometer hardness test method described in "JIS K 7215 1986", and the hardness is more preferably 10 to 60.

[0036] The resin that constitutes the adhesive dots 10 preferably has a specific gravity of 1.00 to 1.30 measured according to the method for measuring specific gravity of plastics described in "JIS K 7112 1999", and the specific gravity is more preferably 1.10 to 1.20.

[0037] As described above, in the garment 1 according to the first embodiment, the average value LA of intervals between adjacent adhesive dots 107 in a row of adhesive dots 107 that are provided on the fabric end 6 side of the opening part 5a is smaller than the average value LB of intervals between adjacent adhesive dots 109 in a row of adhesive dots 109 that are provided on the mountain fold line 8 side of the opening part 5a. Therefore, the opening part 5a can be formed into a curved shape, so that undulation that occurs when the opening part 5a is joined to the collar opening 2 as well as puckering can be avoided.

[0038] In the first embodiment, the adhesive dots 10 are provided in two rows, but the number of rows is not limited thereto, and the adhesive dots 10 may be provided in three or more rows. FIG. 5A is a drawing illustrating manufacture of an opening part 5a of a garment according to a modification of the first embodiment, and is a drawing schematically illustrating a state before a fabric is folded. FIG. 5B is a drawing illustrating manufacture of the opening part 5a of the garment according to the modification of the first embodiment, and is a drawing schematically illustrating a state after the fabric illustrated in FIG. 5A is folded and bonded. In FIGS. 5A and 5B, four rows of adhesive dots 107, 107A, 109, and 109A are provided. When three or more rows of the adhesive dots 10 are provided, the adhesive dots 10 should be provided so that the average value LA of intervals between adjacent adhesive dots 107 provided within a 3-cm section in a row of adhesive dots 107 that are provided closest to the fabric end 6 side of the opening part 5a is smaller than the average value LB of intervals between adjacent adhesive dots 109 provided within a 3-cm section in a row of adhesive dots 109 that are provided closest to the mountain fold line 8 side of the opening part 5a.

[0039] In FIGS. 5A and 5B, as for the adhesive dots 107 and the adhesive dots 107A, the average value of intervals between adjacent adhesive dots provided within a 3-cm section is the same, and as for the adhesive dots 109 and the adhesive dots 109A, the average value of intervals between adjacent adhesive dots provided within a 3-cm section is the same. As for the rows of adhesive dots 10, it is more preferable that the average value of intervals between adjacent adhesive dots provided within a 3-cm section in one row increases from the fabric end 6 side toward the mountain fold line 8 side.

(Second embodiment)

[0040] FIG. 6 is a drawing illustrating a configuration of a garment 20 according to a second embodiment. The garment 20 illustrated in the drawing is an example of a lower garment as an undergarment, and has a waist opening 21 and leg openings 22 through which legs and a torso pass, respectively. The waist opening 21 and the leg openings 22 are each formed in a pattern having a curve, that is, a pattern having a curvature larger than 0, and are each concave curved with the opening being directed upward. Opening parts 5d and 5e are joined to the waist opening 21 and the leg openings 22, respectively. As for the opening parts 5d and 5e, an average value LA of intervals between adjacent adhesive dots 107 provided within a 3-cm section in a row of adhesive dots 107 that are provided on the fabric end 6 side of the opening parts 5d and 5e is smaller than an average value LB of intervals between adjacent adhesive dots 109 provided within a 3-cm section in a row of adhesive dots 109 that are provided on the mountain fold line 8 side of the opening parts 5d and 5e, and the opening parts 5d and 5e are curved and deformed. It goes without saying that the effect of the present invention can be obtained also in the second embodiment in the same way as in the first embodiment.

[0041] Modes for carrying out the present invention have been described above, but the present invention should not be limited by the above-mentioned embodiments. For example, the present invention is also applicable to openings of garments such as hats and arm covers.

Examples

(Example 1)

[0042] In Example 1, joining of an opening part 5a to a collar opening 2 of a general garment 1 as illustrated in FIG. 1 is evaluated. The opening part 5a was manufactured using, as a fabric of the opening part 5a, a double-ply fabric of 53% cotton and 47% polyester, and as an adhesive, a reactive polyurethane hot-melt resin. The width of the opening part 5a of the collar opening 2 was set to 20 mm, and the average curvature radius of the collar opening 2 was set to 7 cm. As schematically illustrated in FIGS. 5A and 5B, a row of adhesive dots 107 each having a diameter of 1 mm was provided at a position of 1 mm from a fabric end 6 side of an opening part fabric 5a', and a row of adhesive dots 107A each having a diameter of 1 mm was provided at a position of 4 mm from the fabric end 6 side. As for the adhesive dots 107 and the adhesive dots 107A, the average interval between the dots was set to 1.2 mm. In addition, a row of adhesive dots 109 each having a diameter of 1 mm was provided at a position of 1 mm from a mountain fold line 8 side, and a row of adhesive dots 109A each having a diameter of 1 mm was provided at a position of 4 m from the mountain fold line 8 side. As for the adhesive dots 109 and the adhesive dots 109A, the average interval between the dots was set to 2.0 mm. The opening part fabric 5a' was folded in two in parallel to the longitudinal direction, and the opening part fabric 5a' was fixed in a state of being stretched by 150%. In the obtained opening part 5a, an average interval LA between adhesive dots 107 in a row closest to the fabric end 6 side was 1.25 mm, and an average interval LB between adhesive dots 109 in a row closest to the mountain fold line 8 side was 2.0 mm. LA/LB was 0.63, and an angle θ between a tangent line at an end on the fabric end 6 side of the opening part 5a and a tangent line at the other end on the fabric end 6 side of the opening part 5a was 40°. The configuration and appearance evaluation of Example 1 are shown in Table 1.

(Example 2)

[0043] In Example 2, joining of an opening part 5a to a collar opening 2 of a general garment 1 as illustrated in FIG. 1 is evaluated. The opening part 5a was manufactured using, as a fabric of the opening part 5a, a double-ply fabric of 53% cotton and 47% polyester, and as an adhesive, a reactive polyurethane hot-melt resin. The width of the opening part 5a of the collar opening 2 was set to 40 mm, and the average curvature radius of the collar opening 2 was set to 7 cm. As schematically illustrated in FIGS. 5A and 5B, a row of adhesive dots 107 each having a diameter of 1 mm was provided along a position of 2 mm from a fabric end 6 side of an opening part fabric 5a', and a row of adhesive dots 107A each having a diameter of 1 mm was provided at a position of 5 mm from the fabric end 6 side. As for the adhesive dots 107 and the adhesive dots 107A, the average interval between the dots was set to 1.2 mm. In addition, a row of adhesive dots 109 each having a diameter of 1 mm was provided at a position of 2 mm from a mountain fold line 8 side, and a row of adhesive dots 109A each having a diameter of 1 mm was provided at a position of 5 mm from the mountain fold line 8 side. As for the adhesive dots 109 and the adhesive dots 109A, the average interval between the dots was set to 2.0 mm. The opening part fabric 5a' was folded in two in parallel to the longitudinal direction, and the opening part fabric 5a' was fixed in a state of being stretched by 200%. In the obtained opening part 5a, an average interval LA between adhesive dots 107 in a row closest to the fabric end 6 side was 1.36 mm, and an average interval LB between adhesive dots 109 in a row closest to the mountain fold line 8 side was 2.0 mm. LA/LB was 0.68, and an angle θ between a tangent line at an end on the fabric end 6 side of the opening part 5a and a tangent line at the other end on the fabric end 6 side of the opening part 5a was 60°. The configuration and appearance evaluation of Example 2 are shown in Table 1.

(Example 3)

[0044] In Example 3, joining of an opening part 5c to a hem opening 4 of a general garment 1 as illustrated in FIG. 1 is evaluated. The opening part 5a was manufactured using, as a fabric of the opening part 5a, a double-ply fabric of 53% cotton and 47% polyester, and as an adhesive, a reactive polyurethane hot-melt resin. The width of the opening part 5c of the hem opening 4 was set to 20 mm, and the average curvature radius of the hem opening 4 was set to 50 cm. Similarly to the case of the opening part 5a schematically illustrated in FIGS. 5A and 5B, a row of adhesive dots 107 each having a diameter of 1 mm was provided along a position of 1 mm from a fabric end 6 side of an opening part fabric 5c', and a row of adhesive dots 107A each having a diameter of 1 mm was provided at a position of 4 mm from the fabric end 6 side. As for the adhesive dots 107 and the adhesive dots 107A, the average interval between the dots was set to 1.2 mm. In addition, a row of adhesive dots 109 each having a diameter of 1 mm was provided at a position of 1 mm from a mountain fold line 8 side, and a row of adhesive dots 109A each having a diameter of 1 mm was provided at a position of 4 mm from the mountain fold line 8 side. As for the adhesive dots 109 and the adhesive dots 109A, the average interval between the dots was set to 2.0 mm. The opening part fabric 5c' was folded in two in parallel to the longitudinal direction, and the opening part fabric 5c' was fixed in a state of being stretched by 150%. In the obtained opening part 5c, an average interval LA between adhesive dots 107 in a row closest to the fabric end 6 side was 1.2 mm, and an average interval LB between adhesive dots 109 in a row closest to the mountain fold line 8 side was 2.0 mm. LA/LB was 0.63, and an angle θ between a tangent line at an end on the fabric end 6 side of the opening part 5c and a tangent line at the other end on the fabric end 6 side of the opening part 5c was

40°. The configuration and appearance evaluation of Example 3 are shown in Table 1.

(Example 4)

[0045] In Example 4, joining of an opening part 5b to a sleeve opening 3 of a general garment 1 as illustrated in FIG. 1 is evaluated. The opening part 5a was manufactured using, as a fabric of the opening part 5a, a double-ply fabric of 53% cotton and 47% polyester, and as an adhesive, a reactive polyurethane hot-melt resin. The width of the opening part 5b of the sleeve opening 3 was set to 20 mm, and the average curvature radius of the sleeve opening 3 was set to 30 cm. Similarly to the case of the opening part 5a schematically illustrated in FIGS. 5A and 5B, a row of adhesive dots 107 each having a diameter of 1 mm was provided along a position of 1 mm from a fabric end 6 side of an opening part fabric 5b', and a row of adhesive dots 107A each having a diameter of 1 mm was provided at a position of 4 mm from the fabric end 6 side. As for the adhesive dots 107 and the adhesive dots 107A, the average interval between the dots was set to 1.2 mm. In addition, a row of adhesive dots 109 each having a diameter of 1 mm was provided at a position of 1 mm from a mountain fold line 8 side, and a row of adhesive dots 109A each having a diameter of 1 mm was provided at a position of 4 mm from the mountain fold line 8 side. As for the adhesive dots 109 and the adhesive dots 109A, the average interval between the dots was set to 2.0 mm. The opening part fabric 5b' was folded in two in parallel to the longitudinal direction, and the opening part fabric 5b' was fixed in a state of being stretched by 150%. In the obtained opening part 5b, an average interval LA between adhesive dots 107 in a row closest to the fabric end 6 side was 1.2 mm, and an average interval LB between adhesive dots 109 in a row closest to the mountain fold line 8 side was 2.0 mm. LA/LB was 0.63, and an angle θ between a tangent line at an end on the fabric end 6 side of the opening part 5b and a tangent line at the other end on the fabric end 6 side of the opening part 5b was 40°. The configuration and appearance evaluation of Example 4 are shown in Table 1.

(Example 5)

[0046] An opening part 5a was obtained by pressure-bonding as in the garment of Example 1 as follows: as the configuration of the opening part 5a of the collar opening 2, the number of dots of the adhesive dots 107 provided within a 3-cm section in a row closest to the fabric end side before pressure-bonding was set to 20 dots/3 cm, the dot interval between the adhesive dots 107 provided in a row closest to the fabric end side before pressure-bonding was changed to 1.50 mm, the ratio between the average values of the dot intervals before pressure-bonding, that is, the value determined by the following formula was set to 1.33, and the stretch rate at the time of pressure-bonding was set to 0%.

Ratio between average values of dot intervals before pressure-bonding = dot interval between adhesive dots 109 provided in row closest to mountain fold line side before pressure-bonding ÷ dot interval between adhesive dots 107 provided in row closest to fabric end side before pressure- bonding

[0047] Subsequently, the obtained opening part 5a was joined to a garment main body 1a to give a garment 1. In the opening part 5a of the obtained garment 1, the dot interval LA between adhesive dots 107 provided in a row closest to the fabric end side was 20 dots/3 cm, the dot interval LA between the dots provided in a row closest to the fabric end side after pressure-bonding was 1.50 mm, the ratio between the average values of the dot intervals after pressure-bonding, that is, the ratio (LA/LB) between the dot interval LB of adhesive dots 109 provided in a row closest to the mountain fold line side after pressure-bonding and the dot interval LA of adhesive dots 107 provided in a row closest to the fabric end side after pressure-bonding was 0.75, and the angle θ formed by the tangent line at the fabric end and the tangent line at the other end was 0°. A garment was produced under the same conditions as in Example 1 except for the above-mentioned configuration. The configuration and appearance evaluation of Example 5 are shown in Table 1.

(Comparative Example 1)

[0048] In Comparative Example 1, joining of an opening part to a collar opening 2 of a general garment 1 as illustrated in FIG. 1 is evaluated. An opening part 5a was manufactured using, as a fabric of the opening part 5a, a double-ply fabric of 53% cotton and 47% polyester. The width of the opening part of the collar opening 2 was set to 20 mm, and the average curvature radius of the opening 2 was set to 20 cm. The opening part fabric was folded in two in parallel to the longitudinal direction, and sewn with an overlock sewing machine. The obtained opening part had a linear shape, and an angle θ between a tangent line at an end on a fabric end side of the opening part and a tangent line at the other end on the fabric end side of the opening part was 0°. The configuration and appearance evaluation of Comparative Example 1 are shown in Table 1.

(Comparative Example 2)

[0049] In Comparative Example 2, joining of an opening part to a collar opening 2 of a general garment 1 as illustrated in FIG. 1 is evaluated. An opening part 5a was manufactured using, as a fabric of the opening part 5a, a double-ply fabric of 53% cotton and 47% polyester, and as an adhesive, a reactive polyurethane hot-melt resin. The width of the opening part 5a of the collar opening 2 was set to 20 mm, and the average curvature radius of the collar opening 2 was set to 7 cm. As schematically illustrated in FIGS. 5A and 5B, a row of adhesive dots 107 each having a diameter of 1 mm was provided along a position of 1 mm from a fabric end 6 side of an opening part fabric 5a', and a row of adhesive dots 107A each having a diameter of 1 mm was provided at a position of 4 mm from the fabric end 6 side. As for the adhesive dots 107 and the adhesive dots 107A, the average interval between the dots was set to 2.0 mm. In addition, a row of adhesive dots 109 each having a diameter of 1 mm was provided at a position of 1 mm from a mountain fold line 8 side, and a row of adhesive dots 109A each having a diameter of 1 mm was provided at a position of 4 mm from the mountain fold line 8 side. As for the adhesive dots 109 and the adhesive dots 109A, the average interval between the dots was set to 2.0 mm. The opening part fabric 5a' was folded in two in parallel to the longitudinal direction, and the opening part fabric 5a' was fixed in a state of being stretched by 150%. In the obtained opening part 5a, an average interval LA between adhesive dots 107 in a row closest to the fabric end 6 side was 2.0 mm, and an average interval LB between adhesive dots 109 in a row closest to the mountain fold line 8 side was 2.0 mm. LA/LB was 1.00, and an angle θ between a tangent line at an end on a fabric end side of the opening part 5 and a tangent line at the other end on the fabric end side of the opening part 5 was 0°. The configuration and appearance evaluation of Comparative Example 2 are shown in Table 1.

(Comparative Example 3)

[0050] In Comparative Example 3, joining of an opening part to a collar opening 2 of a general garment 1 as illustrated in FIG. 1 is evaluated. An opening part 5a was manufactured using, as a fabric of the opening part 5a, a double-ply fabric of 53% cotton and 47% polyester, and as an adhesive, a reactive polyurethane hot-melt resin. The width of the opening part 5a of the collar opening 2 was set to 20 mm, and the average curvature radius of the collar opening 2 was set to 20 cm. As schematically illustrated in FIGS. 5A and 5B, a row of adhesive dots 107 each having a diameter of 1 mm was provided along a position of 1 mm from a fabric end 6 side of an opening part fabric 5a', and a row of adhesive dots 107A each having a diameter of 1 mm was provided at a position of 4 mm from the fabric end 6 side. As for the adhesive dots 107 and the adhesive dots 107A, the average interval between the dots was set to 2.0 mm. In addition, a row of adhesive dots 109 each having a diameter of 1 mm was provided at a position of 1 mm from a mountain fold line 8 side, and a row of adhesive dots 109A each having a diameter of 1 mm was provided at a position of 4 mm from the mountain fold line 8 side. As for the adhesive dots 109 and the adhesive dots 109A, the average interval between the dots was set to 1.25 mm. The opening part fabric 5a' was folded in two in parallel to the longitudinal direction, and the opening part fabric 5a' was fixed in a state of being stretched by 150%. In the obtained opening part 5a, an average interval LA between adhesive dots 107 in a row closest to the fabric end 6 side was 2.0 mm, and an average interval LB between adhesive dots 109 in a row closest to the mountain fold line 8 side was 1.25 mm. LA/LB was 1.60, and an angle θ between a tangent line at an end on the fabric end 6 side of the opening part 5a and a tangent line at the other end on the fabric end 6 side of the opening part 5a was 320°. The configuration and appearance evaluation of Example 1 are shown in Table 1.

(Comparative Example 4)

[0051] An opening part 5a was obtained by pressure-bonding as in the garment of Example 1 as follows: as the configuration of the opening part 5a of the collar opening 2, the number of dots of the adhesive dots 109 provided within a 3-cm section in a row closest to the mountain fold line side before pressure-bonding was set to 20 dots/3 cm, the dot interval between the adhesive dots 109 provided in a row closest to the mountain fold line side before pressure-bonding was set to 1.50 mm, the number of dots of the adhesive dots 107 provided within a 3-cm section in a row closest to the fabric end side before pressure-bonding was set to 15 dots/3 cm, the dot interval between the adhesive dots 107 provided in a row closest to the fabric end side before pressure-bonding was set to 2.00 mm, the ratio between the average values of the dot intervals before pressure-bonding, that is, the value determined by the following formula was set to 0.75, and the stretch rate at the time of pressure-bonding was set to 0%.

Ratio between average values of dot intervals before pressure-bonding = dot interval between adhesive dots 109 provided in row closest to mountain fold line side before pressure-bonding ÷ dot interval between adhesive dots 107 provided in row closest to fabric end side before pressure- bonding

[0052] Subsequently, the obtained opening part 5a was joined to a garment main body 1a to give a garment 1. In the

opening part 5a of the obtained garment 1, the number of dots of the adhesive dots 109 provided in a row closest to the mountain fold line side was 20 dots/3 cm, the dot interval LA between the dots provided in a row closest to the fabric end side after pressure-bonding was 1.50 mm, the number of dots of the adhesive dots 107 provided in a row closest to the fabric end side was 15 dots/3 cm, the dot interval LA between the dots provided in a row closest to the fabric end side after pressure-bonding was 2.00 mm, the ratio between the average values of the dot intervals after pressure-bonding, that is, the ratio (LA/LB) between the dot interval LB of adhesive dots 109 provided in a row closest to the mountain fold line side after pressure-bonding and the dot interval LA of adhesive dots 107 provided in a row closest to the fabric end side after pressure-bonding was 1.00, and the angle θ formed by the tangent line at the fabric end and the tangent line at the other end was 0°. A garment was produced under the same conditions as in Example 1 except for the above-mentioned configuration. The configuration and appearance evaluation of Example 1 are shown in Table 1.

Table 1

Level		Example 1	Example 2	Example 3	Example 4	Example 5	Comparative Example 1	Comparative Example 2	Comparative Example 3	Comparative Example 4
Area		Collar	Collar	Hem	Sleeve	Collar	Collar	Collar	Collar	Collar
Width of opening part	mm	20	40	20	20	20	20	20	20	20
Average curvature radius of main body opening	cm	7	7	50	30	7	7	7	7	7
Number of rows of dots	rows	4	4	4	4	4	0	4	4	4
Distance of row of dots from fabric end	mm	1.00	2.00	1.00	1.00	1.00	-	1.00	1.00	1.00
Distance of row of dots from mountain fold line	mm	1.00	2.00	1.00	1.00	1.00	-	1.00	1.00	1.00
Number of dots provided within 3-cm section in row closest to mountain fold line side before pressure-bonding	dots/3 cm	15	15	15	15	15	-	15	25	20
Interval between dots provided in row closest to mountain fold line side before pressure-bonding	mm	2.00	2.00	2.00	2.00	2.00		2.00	1.20	1.50

(continued)

Level		Example 1	Example 2	Example 3	Example 4	Example 5	Comparative Example 1	Comparative Example 2	Comparative Example 3	Comparative Example 4
Number of dots provided within 3-cm section in row closest to fabric end side before pressure-bonding	dots/3 cm	25	25	25	25	20		15	15	20
Interval between dots provided in row closest to fabric end side before pressure-bonding	mm	1.20	1.20	1.20	1.20	1.50	-	2.00	2.00	1.50
Ratio between average values of dot intervals before pressure-bonding		1.67	1.67	1.67	1.67	1.33		1.00	0.60	1.00
Stretch rate at the time of pressure-bonding	%	150%	200%	150%	150%	0%	-	150%	150%	0%
Number of dots provided within 3-cm section in row closest to mountain fold line side after pressure-bonding	dots/3 cm	15	15	15	15	15	-	15	24	20

(continued)

Level		Example 1	Example 2	Example 3	Example 4	Example 5	Comparative Example 1	Comparative Example 2	Comparative Example 3	Comparative Example 4
Interval between dots provided in row closest to mountain fold line side after pressure-bonding (LB)	mm	2.00	2.00	2.00	2.00	2.00	-	2.00	1.25	1.50
Number of dots provided within 3-cm section in row closest to fabric end side after pressure-bonding	dots/3 cm	24	22	24	24	20	-	15	15	20
Interval between dots provided in row closest to fabric end side after pressure-bonding (LA)	mm	1.25	1.36	1.25	1.25	1.50	-	2.00	2.00	1.50
Ratio between average values of dot intervals after pressure-bonding (LA/LB)		0.63	0.68	0.63	0.63	0.75		1.00	1.60	1.00
Angle formed by tangent line at fabric end and tangent line at opposite end	°	40	60	40	40	0	0	0	320	0

(continued)

Level	Example 1	Example 2	Example 3	Example 4	Example 5	Comparative Example 1	Comparative Example 2	Comparative Example 3	Comparative Example 4
Evaluation comments	Good appearance after collar is sewn	Good appearance after collar is sewn	Good appearance after hem is sewn	Good appearance after sleeve is sewn	Good appearance after collar is sewn, but inferior to Example 1	General sewn product. Undulation occurred in collar	Undulation occurred in collar as in general sewn product	Severer undulation than in general sewn product occurred in collar because collar elongated	Undulation occurred in collar as in general sewn product

Reference Signs List

[0053]

1 GARMENT
2 COLLAR OPENING
3 SLEEVE OPENING
4 HEM OPENING
5a OPENING PART JOINED TO COLLAR OPENING
5b OPENING PART JOINED TO SLEEVE OPENING
5c OPENING PART JOINED TO HEM OPENING
5a' OPENING PART FABRIC BEFORE BEING FOLDED
6 FABRIC END OF OPENING PART
6ta TANGENT LINE AT END OF OPENING PART ON FABRIC END SIDE IN LONGITUDINAL DIRECTION
6tb TANGENT LINE AT OPPOSITE END OF OPENING PART ON FABRIC END SIDE IN LONGITUDINAL DIRECTION
8 MOUNTAIN FOLD LINE OF OPENING PART
10 ADHESIVE DOT
20 GARMENT
21 WAIST OPENING
22 LEG OPENING
107, 107A ROW OF ADHESIVE DOTS PROVIDED ON FABRIC END SIDE OF OPENING PART
109, 109A ROW OF ADHESIVE DOTS PROVIDED ON MOUNTAIN FOLD LINE SIDE OF OPENING PART
d1 DISTANCE FROM FABRIC END OF OPENING PART TO ROW OF ADHESIVE DOTS PROVIDED ON FABRIC END SIDE
d2 DISTANCE FROM MOUNTAIN FOLD LINE OF OPENING PART TO ROW OF ADHESIVE DOTS PROVIDED ON MOUNTAIN FOLD LINE SIDE
ΔLA INTERVAL BETWEEN TWO ADJACENT DOTS AMONG ADHESIVE DOTS PROVIDED WITHIN 3-cm SECTION IN ROW OF ADHESIVE DOTS PROVIDED ON FABRIC END SIDE
ΔLB INTERVAL BETWEEN TWO ADJACENT DOTS AMONG ADHESIVE DOTS PROVIDED WITHIN 3-cm SECTION IN ROW OF ADHESIVE DOTS PROVIDED ON MOUNTAIN FOLD LINE SIDE
θ ANGLE AT WHICH TANGENT LINES AT BOTH ENDS OF CURVED OPENING PART ON FABRIC END SIDE IN LONGITUDINAL DIRECTION INTERSECT WITH EACH OTHER

Claims

1. A garment having an opening through which a wearer's body passes, the garment comprising:

a garment main body provided with an opening part formed by folding a fabric, the opening part being joined along an edge of the opening of the garment main body, wherein
the opening part is fixed with adhesive dots provided in a plurality of rows along a mountain fold line and a fabric end of the fabric, and
an average value LA of intervals between adjacent adhesive dots provided within a 3-cm section in a row of adhesive dots that are provided closest to a fabric end side of the opening part is smaller than an average value LB of intervals between adjacent adhesive dots provided within a 3-cm section in a row of adhesive dots that are provided closest to a mountain fold line side of the opening part.

2. The garment according to claim 1, wherein the LA and the LB have a relation of LA/LB $\leq$ 0.75.

3. The garment according to claim 1 or 2, wherein the opening part is formed in a pattern having a concave curve with the opening being directed upward.

4. The garment according to claim 1 or 2, wherein the opening part has a curved shape having an inner periphery on the mountain fold line side and an outer periphery on the fabric end side when the opening part is not joined to the opening, and an angle formed by a tangent line at an end of the opening part on the fabric end side in a longitudinal direction of the opening part and a tangent line at an opposite end of the opening part on the fabric end side in the longitudinal direction is 10° or more and less than 180°.

5. The garment according to claim 1 or 2, wherein:

the LA and the LB have a relation of LA/LB $\leq$ 0.7, and
the opening part has a curved shape having an inner periphery on the mountain fold line side and an outer periphery on the fabric end side when the opening part is not joined to the opening, and an angle formed by a tangent line at an end of the opening part on the fabric end side in a longitudinal direction of the opening part and a tangent line at an opposite end of the opening part on the fabric end side in the longitudinal direction is 10° or more and less than 180°.

6. The garment according to claim 1 or 2, wherein the opening part has a stretch rate in a longitudinal direction of 20% or more and 200% or less, and the adhesive dots are fixed with the opening part being stretched.

FIG.1

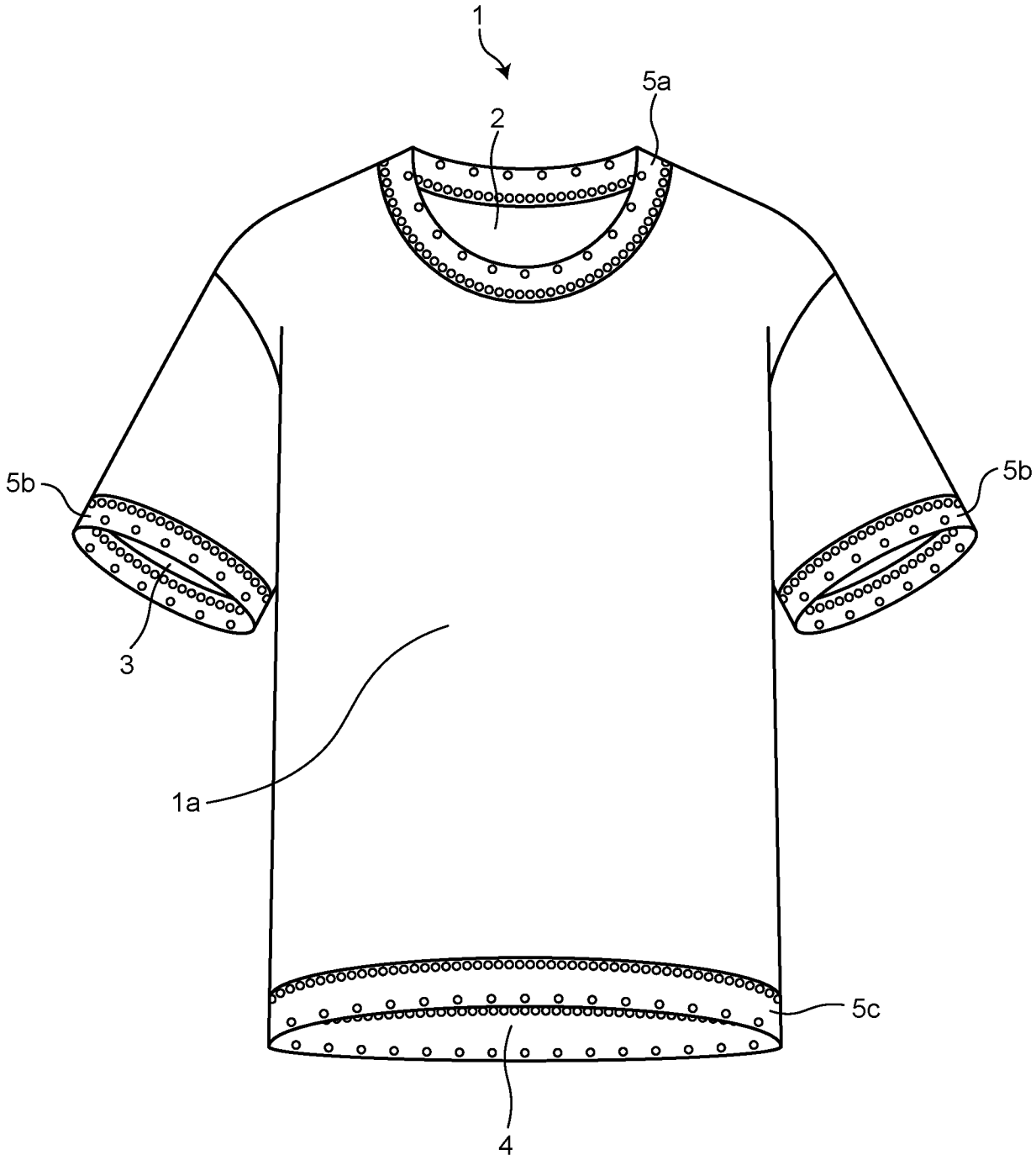


FIG.2

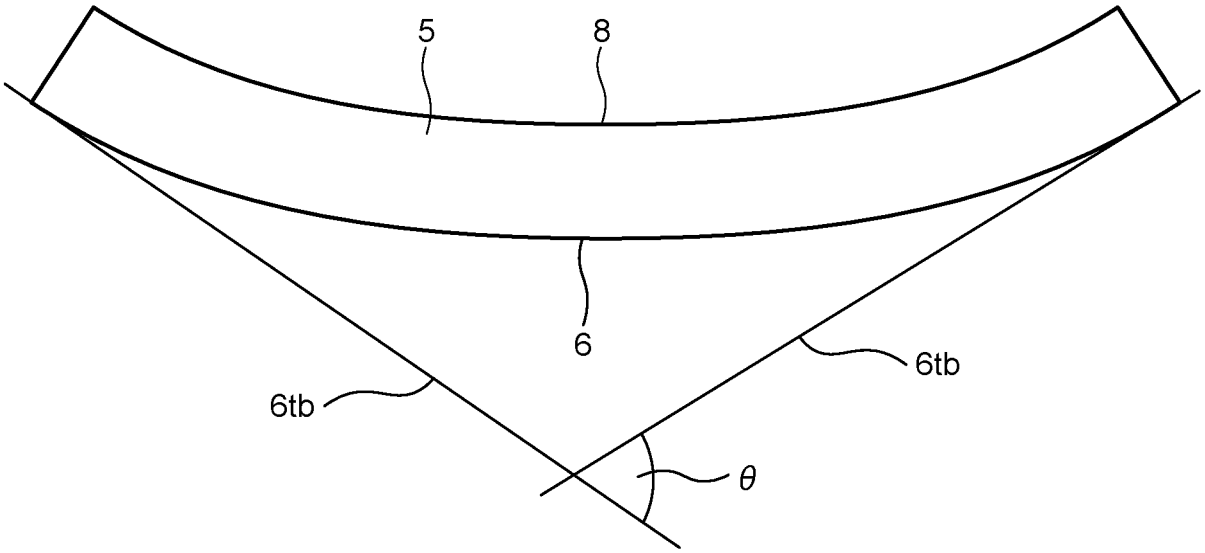


FIG.3A

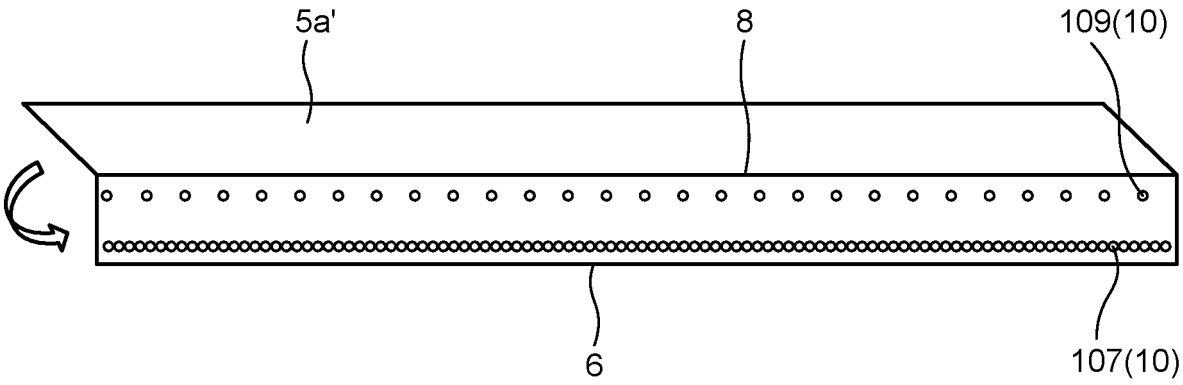


FIG.3B

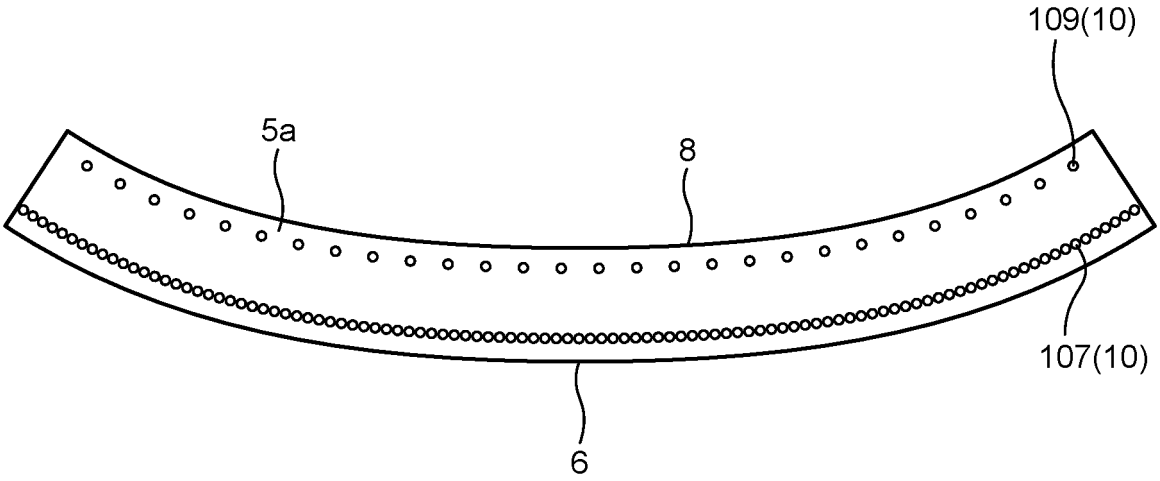


FIG.4

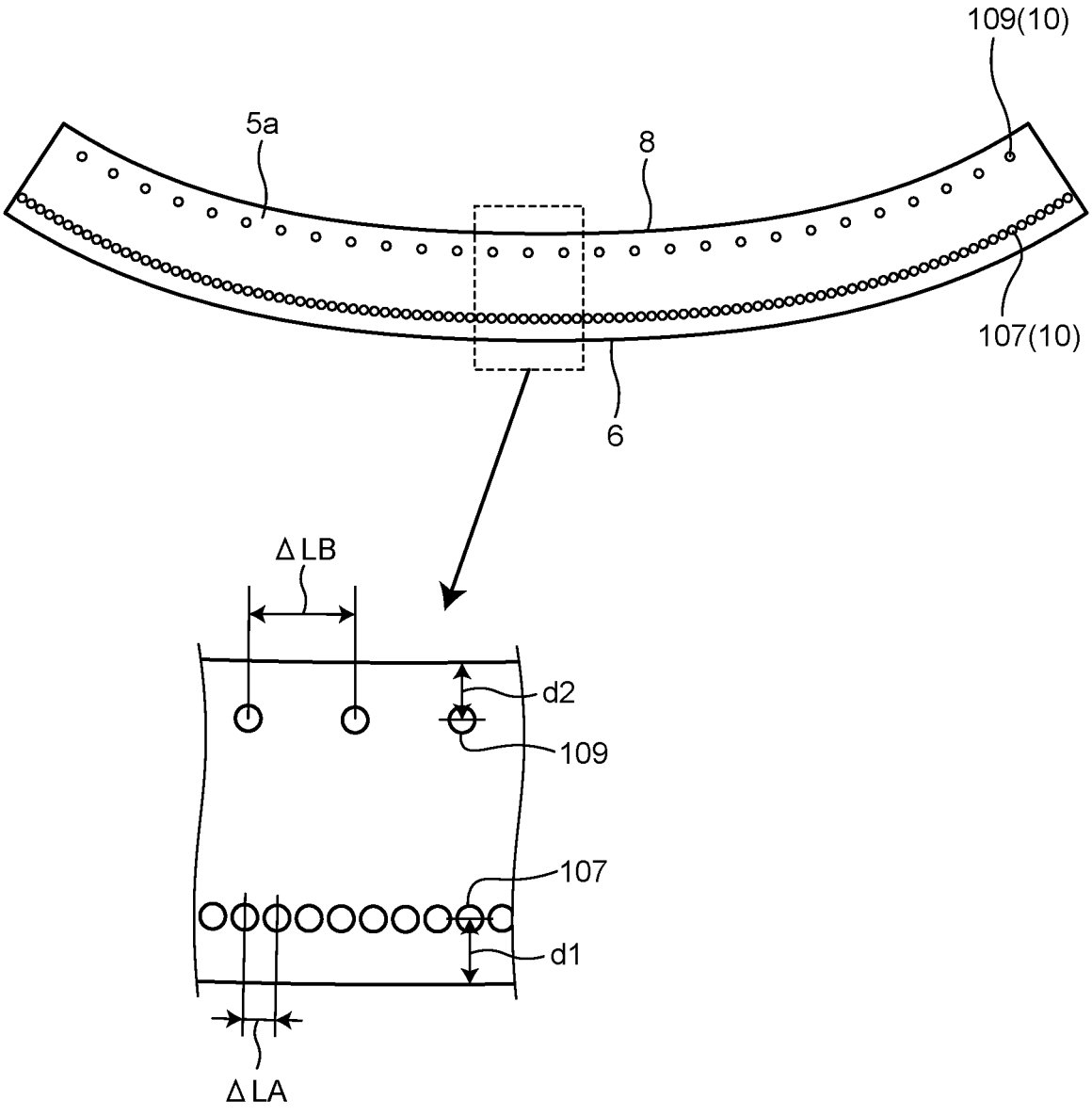


FIG.5A

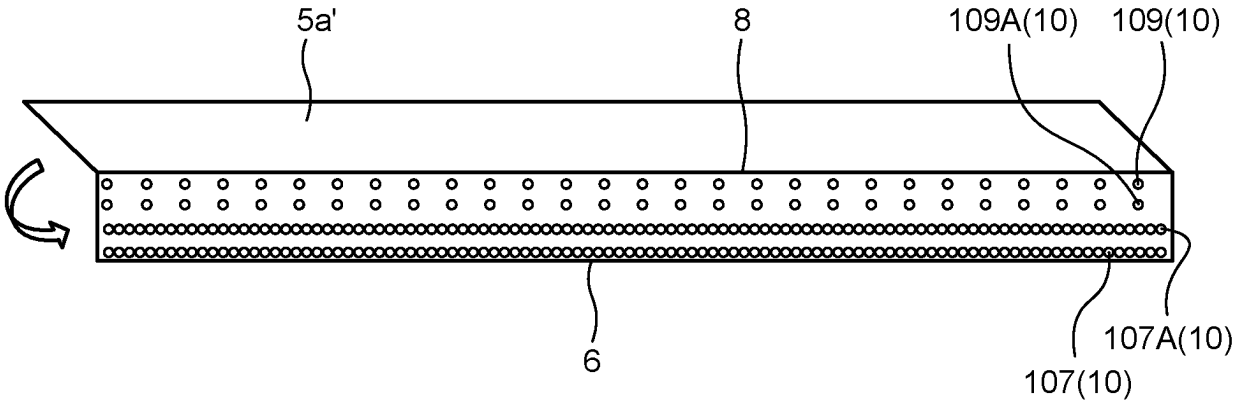

5a'
8
109A(10)
109(10)
6
107A(10)
107(10)

FIG.5B

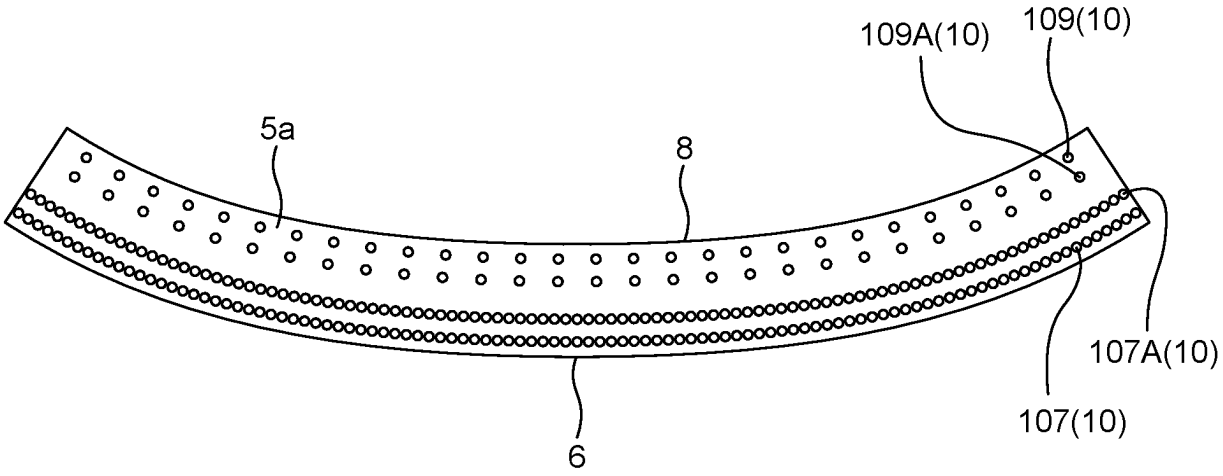
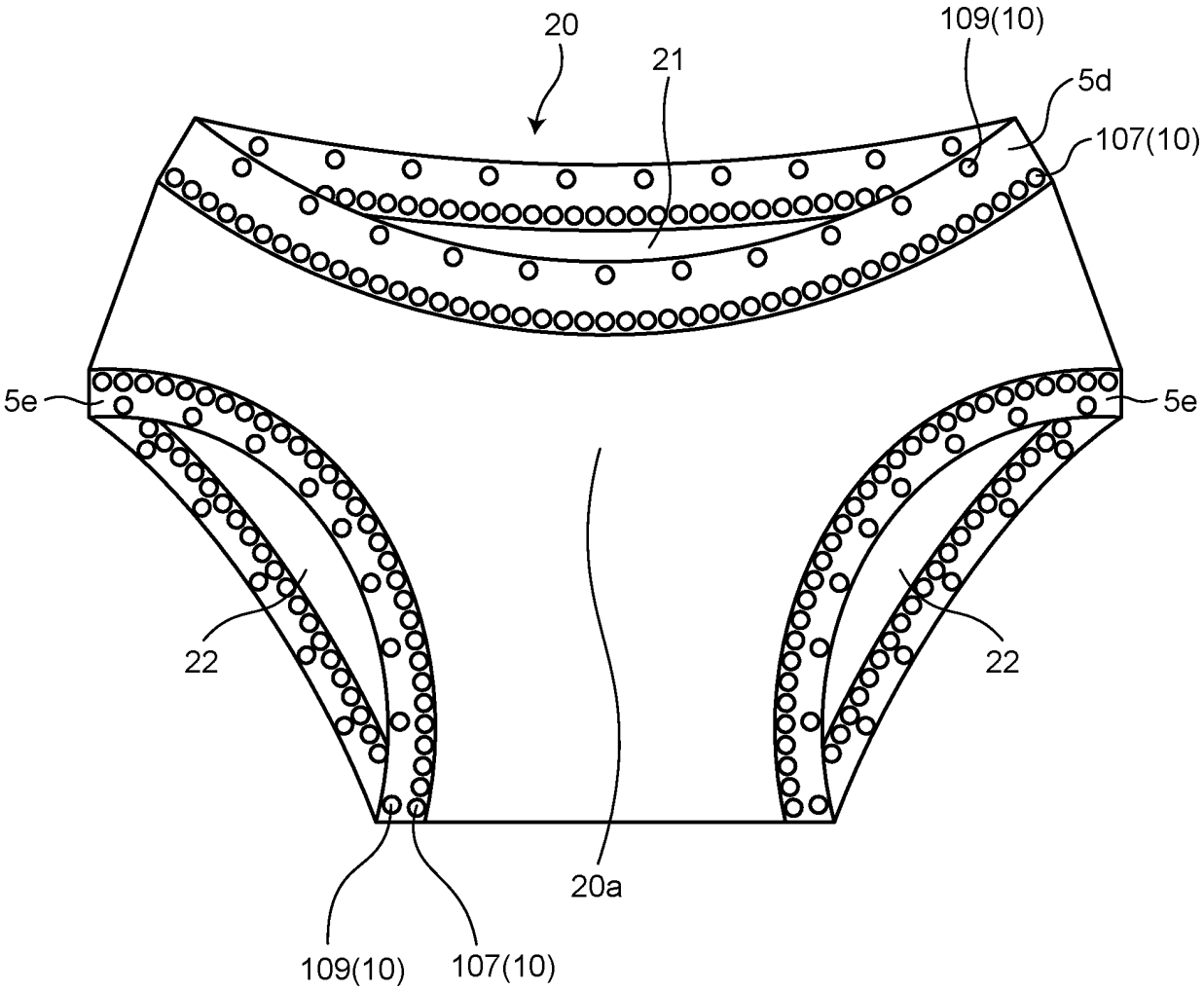

109A(10)
109(10)
5a
8
107A(10)
107(10)
6

FIG.6



INTERNATIONAL SEARCH REPORT

International application No.
PCT/JP2023/030979

A. CLASSIFICATION OF SUBJECT MATTER

A41D 27/00(2006.01)i; ***A41D 27/10***(2006.01)i; ***A41H 43/04***(2006.01)i
FI: A41D27/00 A; A41D27/10 E; A41H43/04 Z

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)

A41D27/00; A41D27/10; A41H43/04

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

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

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	JP 2003-253510 A (GUNZE LTD) 10 September 2003 (2003-09-10) paragraphs [0007]-[0017], fig. 1-2	1-6
A	JP 2022-67207 A (TORAY INDUSTRIES) 06 May 2022 (2022-05-06) paragraphs [0014]-[0038], fig. 1-4	1-6
A	JP 2021-85103 A (TORAY INDUSTRIES) 03 June 2021 (2021-06-03) paragraphs [0006]-[0044], fig. 1-4	1-6
A	CD-ROM of the specification and drawings annexed to the request of Japanese Utility Model Application No. 69051/1993 (Laid-open No. 40710/1995) (WACOAL CORP.) 21 July 1995 (1995-07-21), paragraphs [0005]-[0069], fig. 1-27	1-6

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

* Special categories of cited documents:
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"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
26 October 2023	**07 November 2023**

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/JP2023/030979

Patent document cited in search report	Publication date (day/month/year)	Patent family member(s)	Publication date (day/month/year)
JP 2003-253510 A	10 September 2003	(Family: none)	
JP 2022-67207 A	06 May 2022	(Family: none)	
JP 2021-85103 A	03 June 2021	(Family: none)	
JP 7-40710 U1	21 July 1995	(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 H0740710 U **[0003]**
- JP 2003253510 A **[0003]**
- JP 2021085103 A **[0003]**