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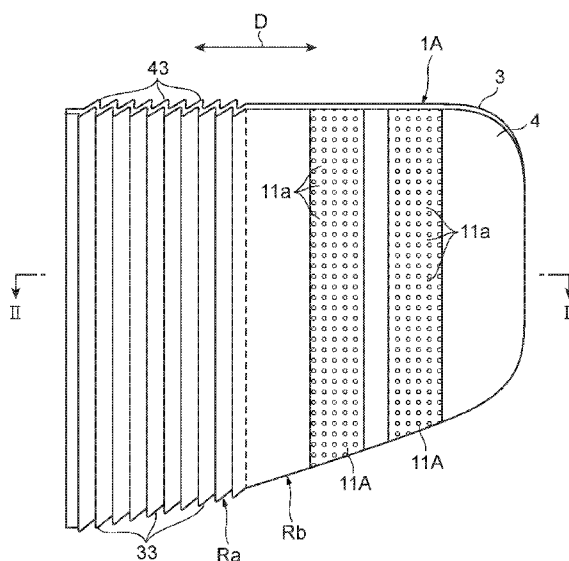


FIG. 1

(57) Abstract: A diaper ear part according to one embodiment, which contains a nonwoven fabric, a stretchable film that is layer laminated on at least one side of the nonwoven fabric, a stretchable region, where at least the nonwoven fabric and the elastic film are fixed and adhered, and a low stretchable area, which includes at least one part of the nonwoven fabric, and whose elastic properties are lower than those of the elastic area, and also, which is located adjacent to and in the same direction as the elastic area, where the nonwoven fabric of the elastic area is provided with an expansion/contraction allowing (stretchable) part where numerous folds are provided aligned in one direction, and the nonwoven fabric of the low elasticity area is provided with an expansion/contraction restricting part, where there are no multiple folds formed.



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DIAPER EAR MEMBER, SHEET MEMBER AND DIAPER

TECHNICAL FIELD

5 The present invention relates to a diaper ear member, a sheet member, and a diaper.

BACKGROUND

Japanese Patent Application Publication No. 2016-209552 describes an elastic
diaper member referred to as a diaper ear. For example, in paragraph “0022” of Japanese
10 Patent Application Publication No. 2016-209552, “the diaper member has inelastic zones
a1 and a2 at the connection end. In the gap between the inelastic zones a1 and a2, the
above diaper member, has the elastic region c. Regarding the elastic region c, in the gap
between both connection ends 3, 4, the elastic film 2 is bonded with the outer carrier layer
1, which can be have a nonwoven fabric on its outer side, through multiple parallel
15 adhesive agent strips 6. The adhesive strips 6 extend transverse to the pulling direction A”
has been described. Also, in paragraph “0029” the following has been reported: ”the above
described elastic diaper member is characterized by the fact that it is an elastic diaper
member, which includes at least one carrier layer (1) and an elastic film (2) connected to
this carrier layer (1), and at least in the area of the elastic film (2), it is made of a laminate
20 that is elastically extensible in the direction of pulling (A), where the above described
laminate includes a first connection end (3) for securing to the diaper and a second
connection end (4) for the fastening element, and where the second connection end (4) has
a width (B2) narrower in the lateral direction with respect to the pulling direction (A)
compared to the first connection end (3), and where the carrier layer (1), is connected to
25 the elastic film (2) through a plurality of parallel adhesive strips (6) extending transversely
to the pulling direction (A) in the elastic region (c) between the two connection ends (3,
4), and for the elastic diaper member the adhesive strips (6) form an adhesive pattern
where compared to the region (c1), which is adjacent to the first connection end (3), for
the region (c2), which is adjacent to the second connection end (4) they are wider adhesive
30 strips (6) and / or they have narrower intervals (s) between the immediately adjacent
adhesive strips (6).”

Summary of the Invention

When a user (a person who puts it on to the recipient, a parent, a care giver, etc.) of an open type disposable diaper for the recipients (baby, care recipient etc.), adheres and uses the diaper, the user pulls and fixes the diaper ear parts on both sides when wearing it. If the fixing is tight, then when the receiver moves around, if the diaper ear part is fixed and non-stretchable, and the mobility for the thigh circumference, etc., may become low. On the other hand, in the case of loose fixing, there is a risk of leakage of urine, etc. Also, if you simply extend or retract the diaper ear part, it will stretch too much when worn, causing the user to lose the fixed position. Especially, there are many cases where the user is often busy, and is expected to quickly attach the diaper to the appropriate position and to have high mobility after wearing. According to one aspect of the present invention, it is possible to design improved diaper wearability properties.

According to one aspect of the present invention, the diaper ear part contains a nonwoven fabric, a stretchable film that is layer laminated on at least one side of the nonwoven fabric, a stretchable region, where at least the nonwoven fabric and the elastic film are fixed and adhered, and a low stretchable area, which includes at least one part of the nonwoven fabric, and whose elastic properties are lower than those of the elastic area, and also, which is located adjacent to and in the same direction as the elastic area, and the nonwoven fabric of the elastic area is provided with an expansion/contraction allowing (stretchable) part where numerous folds are provided aligned in one direction, and the nonwoven fabric of the low elasticity area is provided with an expansion/contraction-restricting part where there are no multiple folds formed.

Stretching the diaper ear member in one direction mainly stretches the elastic film in the elastic region in one direction. The stretchable portion of the nonwoven fabric is provided with the expansion/contraction-restricting part and in the expansion/contraction-restricting part multiple folds are provided arranged in one direction. The multiple folds open following the direction of the stretch of the elastic film, however they resist fully opening and they will prevent excessive stretch of the elastic film. As a result, by appropriate tightening it is possible to improve the wearability properties by preventing the leak of the recipient's urine, etc., while suppressing a drop in the mobility of the thighs of the adhesion recipient, etc.

The sheet member according to the present invention contains a non-woven fabric, a stretchable film that is layer laminated on at least one part of one side of the non-woven fabric, a stretchable (elastic) area that is an area where at least the nonwoven fabric and the elastic film are adhered, a low-stretch area that includes at least a part of the non-woven fabric and is less stretchable than the stretch area, and is located adjacent to the stretch area in the same direction and an engaging portion provided in the low expansion and contraction area, which is a pair of engagement parts forming the mechanical fastener, and the nonwoven fabric of the elastic area is provided with an expansion/contraction allowing (stretchable) part where numerous folds are provided aligned in one direction, and the nonwoven fabric of the low elasticity area is provided with an expansion/contraction-restricting part where there are no multiple folds formed.

The open type diaper according to one the aspect of the present invention is provided with a pair of engagement parts forming the mechanical fastener, where one engagement part is provided with a positioned as a ventral (stomach, belly) fixation part and a dorsal (back) side fixation part, which is provided on the opposite side of the ventral fixation part, a main body part, which contains a liquid absorbing layer inside it and is connected to the ventral fixation part and the dorsal fixation part, gather parts provided on both sides of the main body part, diaper ear parts, that are positioned so that they project from both sides of the back fixation part, and where the other engagement part is provided on the back fixation part, and is the other engagement part of the pair of the engagement parts; and where the diaper ear part contains a nonwoven fabric, a stretchable film that is layer laminated on at least one side of the nonwoven fabric, a stretchable region, where at least the nonwoven fabric and the elastic film are fixed and adhered, and a low stretchable area, which includes at least one part of the nonwoven fabric, and whose elastic properties are lower than those of the elastic area, and also, which is located adjacent to and in the same direction as the elastic area, and the nonwoven fabric of the elastic area is provided with an expansion/contraction allowing (stretchable) part where numerous folds are provided aligned in one direction, and the nonwoven fabric of the low elasticity area is provided with an expansion/contraction-restricting part where there are no multiple folds formed, and the elastic region is located at a position closer to the back fixation part than the low elastic region in one direction and the other engagement portion is provided in the low expansion and contraction area.

Brief Description of the Drawings

Fig. 1 is a plane view of a diaper ear member according to a first embodiment.

Fig. 2 is a cross-sectional view taken along the line II-II in Fig. 1, (a) the figure
5 before stretching, (b) the figure being stretched and the fold unfolded.

FIG. 3 is a plane view of a sheet member according to an embodiment of the present invention.

Fig. 4 is a cross-sectional view corresponding to Fig. 2 (a) in another embodiment, and (a) diagram is a cross-sectional view of a diaper ear member according to the second
10 embodiment, and (b) is a cross-sectional view of a diaper ear member according to the third embodiment.

Fig. 5 is a perspective view of a diaper provided with a member according to an embodiment of the present invention.

Fig. 6 is a perspective view showing a state in which a diaper provided with a
15 member according to an embodiment of the present invention is attached to a recipient.

Detailed Description

The diaper ear parts according to one aspect of the practical embodiment are provided with a nonwoven fabric, a stretchable film that is layer laminated on at least one
20 side of the nonwoven fabric, a stretchable region, where at least the nonwoven fabric and the elastic film are fixed and adhered, and a low stretchable area, which includes at least one part of the nonwoven fabric, and whose elastic properties are lower than those of the elastic area, and also, which is located adjacent to and in the same direction as the elastic area, and the nonwoven fabric of the elastic area is provided with an
25 expansion/contraction-allowing (stretchable) part where numerous folds are provided aligned in one direction, and the nonwoven fabric of the low elasticity area is provided with an expansion/contraction- restricting part where there are no multiple folds formed.

Stretching the elastic member in one direction mainly stretches the elastic film in the elastic region in one direction. The non-woven fabric in the stretchable region is
30 provided with a stretchable portion, and the stretchable portion is provided with a plurality of folds aligned in one direction. Multiple folds open following the stretch of the elastic film, but when fully expanded, they resist further expansion and prevent excessive stretch

of the elastic film. As a result, by appropriate tightening it is possible to improve the wearability properties by preventing the leak of the recipient's urine, etc., while suppressing a drop in the mobility of the thighs of the adhesion recipient, etc. Also, in addition, if the elastic performance of the diaper ear part is exceeded, at the time when the person is wearing the diaper, there are cases when the elasticity is exceeded and it may cause the user of the diaper that is too stretched to lose the fixed position. Especially, there are many cases where the user is often busy, and is expected to quickly attach the diaper to the appropriate position and to have high mobility after wearing, and in the case of the above described diaper ear part, results according to the above expectations have been demonstrated. Moreover, here, the recipient generally refers to the person who uses the diaper, such as a baby or a care recipient. In addition, the user is intended to be a person who performs the attachment of the diaper to the recipient, for example, a parent or a caregiver.

Regarding the above described diaper ear part, especially it further comprises another non-woven fabric disposed opposite to the non-woven fabric and at least partially laminated on the stretchable film. The other non-woven fabric in the stretchable region is provided with a stretchable portion provided with numerous folds aligned in the stretch direction of the stretchable film. The other non-woven fabric in the low expansion and contraction area may have an expansion/contraction-restricting portion in which the numerous folds are not formed.

According to the above-mentioned diaper ear member, at least one part of the stretchable film is covered on both sides by the oppositely positioned non-woven fabric and the other non-woven fabric. As a result, compared to the aspect in which one side of the stretchable film is completely exposed, it is advantageous for improving the contactability (skin feel etc.).

In the above-described diaper ear member, the stretchable film may be positioned to avoid the low stretchable region. There are no numerous folds provided in the nonwoven fabric of the low elasticity region, and even if the elastic fin is arranged in the low elasticity region, it hardly contributes substantially to the elasticity of the diaper ear member. That is, by arranging the stretchable film by avoiding the low stretchable area, it is possible to efficiently demonstrate the stretchability of the layered member. Note that "avoid placement" means that the stretch film is placed so that the low stretch area is

smaller in stretchability than the stretch area, and in the low stretch area not only there is no stretchable film present, but also it includes the circumstances where part of the stretchable film is present in the low stretch region and the stretchable film integral with the stretch film disposed in the stretch zone is also present in the low stretch zone, but the film member in the low stretch zone has low stretchability, or alternatively, it does not have stretchability properties (for example, due to non-activation).

The low stretch region of the above-described diaper ear component may further comprise an additional non-woven fabric laminated between the non-woven fabric and the other non-woven fabric. By placing an elastic film between the non-woven fabric and the other non-woven fabric in the elastic region and disposing an additional non-woven fabric in the low elastic region, the variation in thickness of the diaper ear member is reduced.

One of the pair of engaging portions forming the mechanical fastener may be provided in the low expansion and contraction area of the above-described diaper ear member. By providing this one engagement portion in the low expansion and contraction region, it is not easily affected by the expansion and contraction when it is connected to the other engagement portion, which is advantageous for improving the mounting performance.

In the case of the above-mentioned diaper ear members, the state in which the fold (crease) is opened is the extension limit, and the value obtained by subtracting the reference length before extension from the limit length at the extension limit is the extension amount, and the elongation coefficient, which is the ratio of the amount of elongation divided by the original (reference) length, may be 10% or more and 100% or less, and this is a good option. Setting the elongation percentage of the diaper ear member to this range is further advantageous for improving the mounting performance.

For the above described diaper ear member, the ratio of stretchable area length relative to the total body length in one direction may be 5% or more and 70% or less, and it is a good option. By setting the ratio of the length of the stretchable area to this range, the stretchability of the diaper ear member can be appropriately demonstrated.

In the above-mentioned diaper ear member, the value obtained by subtracting the length of the stretchable region before stretching from the length of the stretchable region when stretched in one direction with a tensile strength of 20 (N / 25 mm) is the elongation value of the stretchable region. The elongation value per unit length of the stretchable

area, which is the ratio of the amount of stretch of the stretchable area to the length of the stretchable area before stretching, may be 100% or more and 300% or less. Setting the elongation rate per unit length of the expansion and contraction area in this range is further advantageous to improve the mounting performance.

5 The sheet member according to the present embodiment includes a non-woven fabric, an elastic film laminated on at least a part of one side of the non-woven fabric, a stretchable area where at least the non-woven fabric and the elastic film are fixed, low stretch area, which contains at least one part of the non-woven fabric and which is less stretchable than the stretchable area, and also, which is disposed adjacent to the stretchable area in one direction, an engaging part provided in the low elastic region, which is a pair of engaging portions that form a mechanical fastener; the nonwoven fabric of the stretchable part is provided with a plurality of folds arranged in one direction, and the nonwoven fabric in the low stretch region is provided with a stretch limiting portion, in which a plurality of folds are not formed.

10 By cutting this sheet member into a desired shape, it is possible to manufacture a number of diaper ear members. In the case of these diaper ear parts, through fitting by appropriate tightening, it is possible to prevent the leakage of urine etc. of the recipient of the adhered diaper, while suppressing the decrease of mobility around the thigh circumference, etc., of the wearer and by that it is possible to improve the recipient wearability properties.

15 The above-mentioned sheet member may also further include another nonwoven fabric disposed opposite to the nonwoven fabric and at least partially laminated on the elastic film, and in the elastic region, the other nonwoven fabric is fixed to the elastic film and the non-woven fabric in the stretchable region has a stretchable portion provided with a plurality of folds aligned in the stretch direction of the stretchable film, and in the low stretch region, the other non-woven fabric may have a stretch limiting portion in which a plurality of folds are not formed. This sheet member is advantageous for improving the contact properties (skin touch etc.).

20 The open type diaper according to the present embodiment is provided with a pair of engagement parts forming the mechanical fastener, where one engagement part is provided with a positioned as a ventral (stomach) fixation part and a dorsal (back) side fixation part provided on the opposite side of the ventral fixation part, a main body part,

which contains a liquid absorbing layer inside it and is connected to the ventral fixation part and the dorsal fixation part, gather parts provided on both sides of the main body part, a diaper ear part, which is positioned so that it is projecting from both sides of the back fixation part, and where the other engagement part is provided on the back fixation part, and is the other engagement part of the pair of the engagement parts; and where the diaper ear part contains a nonwoven fabric, a stretchable film that is layer laminated on at least one side of the nonwoven fabric, a stretchable region, where at least the nonwoven fabric and the elastic film are fixed and adhered, and a low stretchable area, which includes at least one part of the nonwoven fabric, and whose elastic properties are lower than those of the elastic area, and also, which is located adjacent to and in the same direction as the elastic area, and the nonwoven fabric of the elastic area is provided with an expansion/contraction allowing (stretchable) part, where numerous folds are provided aligned in one direction, and the nonwoven fabric of the low elasticity area is provided with an expansion/contraction-restricting part, where there are no multiple folds formed, and the elastic region is located at a position closer to the back fixation part than the low elastic region in one direction, and the other engagement portion is provided in the low expansion and contraction area.

When the diaper of the present invention is worn on a subject such as an infant, a gather and a part of the diaper are arranged so as to surround the circumference of the thigh of the recipient subject of the adhesion. In this diaper, not only the gather portion but also the diaper ear portion is stretchable, so it is possible to adhere by appropriate tightening while suppressing the decrease in mobility of the wearer such as the thigh circumference and to improve the wearability properties by preventing the leakage of urine etc. of the wearer. In addition, when the stretch function is given to a part of the diaper ear, at the time when the wearer wears it, it may stretch too much and the user may lose the fixed position. Especially, the user is often busy, and is expected to quickly install the diaper in a suitable position and to have high mobility after wearing, and it is preferable to use a diaper equipped with the above-mentioned part of the diaper, where the effects corresponding to this expectation can be demonstrated.

In the above-described diaper, the diaper ear part may also further include another nonwoven fabric disposed opposite to the nonwoven fabric and at least partially laminated on the extensible film, and in the elastic region, the other nonwoven fabric is fixed to the

stretchable film and the non-woven fabric in the stretchable region has a stretchable portion provided with a plurality of folds aligned in the stretch direction of the stretchable film, and in the low stretch region, the other non-woven fabric may have a stretch limiting portion, in which a plurality of folds are not formed.

5 In the above-mentioned diaper, at least a part of the stretchable film of the diaper ear part is covered on both sides by the oppositely disposed non-woven fabric and the other non-woven fabric. As a result, compared with the completely exposed surface of the stretchable film, it is advantageous for the improvement of the contact properties (skin feel, etc.).

10 In the above diapers, regarding the diaper ear part, the state in which the fold (crease) is opened is the extension limit, and the value obtained by subtracting the reference length before extension from the limit length at the extension limit is the extension amount, and the elongation coefficient, which is the ratio of the amount of elongation divided by the original (reference) length, may be 10% or more and 100% or less and this is a good option. By setting the elongation percentage of the diaper ear member to this range, in cooperation with the gather part, the thigh circumference of the subject to the adhesion is suitably covered and it is more advantageous to maintain and improve stable wearing conditions.

20 Hereinafter, practical embodiments will be described in detail with reference to the accompanying drawings. In the description of the drawings, the same or equivalent elements will be denoted by the same reference numbers and their description will be omitted.

25 The diaper ear member according to the embodiment can be suitably used, for example, as a part of a disposable diaper, etc., and also it can be appropriately used in applications, for which aesthetic appearance and excellent contact properties (skin touch etc.) are required.

30 As shown in Figures 1 and 2, the diaper ear member 1A according to the first embodiment (Figures 1 and 2) is a sheet-like member, and it is provided with a first nonwoven fabric 3 (an example of a nonwoven fabric), an elastic film 2 laminated on at least a part of one side 2 a of the first nonwoven fabric 3, a second non-woven fabric 4 (an example of another non-woven fabric) disposed opposite to the first non-woven fabric 3 with the stretchable film 2 interposed between them, and between the first non-woven

fabric 3 and the second non-woven fabric 4, a third non-woven fabric 5 (an example of an additional non-woven fabric) disposed adjacent to the stretchable film 2.

5 The first non-woven fabric 3 is fixed to one surface of the stretchable film 2 and the third non-woven fabric 5. The second non-woven fabric 4 is fixed to the other side 2 b of the stretchable film 2 and the third non-woven fabric 5. The first non-woven fabric 3 has a region (stretchable portion) 31 laminated on the stretchable film 2 and a region (stretching restriction portion) 32 laminated on the third non-woven fabric 5. The second non-woven fabric 4 includes a region (stretchable portion) 41 laminated on the stretchable film 2 and a region (stretching restriction portion) 42 stacked on the third non-woven fabric 5.

10 The stretchable portion 31 and the stretch-restricting portion 32 of the first nonwoven fabric 3 according to the present embodiment are aligned in one direction D1. This one direction D is assumed to be the expansion and contraction direction of the diaper ear member 1A. The stretchable portion 31 of the first non-woven fabric 3 is provided with a plurality of folds 33 formed in a corrugated shape (a pleated shape). The plurality of folds 33 are provided side by side in one direction D, and the ridges 33a and valleys 33b of the plurality of folds 33 alternate along the one direction D. The valleys 33b of the plurality of folds 33 are fixed to one side of the stretchable film 2, and in the space between the ridges 33a and the stretchable film 2 a gap is formed that allows expansion and contraction of the elastic film 2. Note that the expansion / contraction allowing portion 3 1 and one surface side of the expansion / contraction restricting portion 32 according to the present embodiment are formed as an integral continuous first non-woven fabric 3. As a result, for example, the stretchable portion and the stretch-restricting portion are softer and have a better skin feel than a configuration in which separate non-woven fabrics are partially overlapped and joined together by a bonding, etc. Furthermore, the other sides of the stretchable portion 31 and the stretch limiting portion 32 are also formed of the integral continuous second non-woven fabric 4, so that they are soft and have good skin feel.

25 The expansion / contraction portion-allowing 41 and the expansion / contraction restricting portion 42 of the second nonwoven fabric 4 according to this embodiment are arranged in one direction D assumed as the expansion / contraction direction of the diaper ear member 1A. The stretchable portion 41 of the second nonwoven fabric 4 is provided with a plurality of folds 43 formed in a pleated shape. A plurality of folds 43 are provided

side by side in one direction D, and peaks 43a and valleys 43b of the plurality of folds 43 alternate along the one direction D. The valleys 43b of the plurality of folds 43 are fixed to the other surface of the stretch film 2, and in the gap between the ridges 43a and the stretchable film 2 a gap is formed that allows expansion and contraction of the elastic film

5 2. Moreover, according to Fig. 2 and Fig. 4 etc., the ridges 33a and 43a and the valleys 33b and 43b of the creases 33 and 43 are bent, and especially, the interval between the peaks 33a 43a of the folds 33 and 43 is shown to be large, however, it is also a good option if the peaks 33a and 43a and valleys 33b, 43b of the folds 33 and 43 have a curved shape in which the peak portions 33 a and 43b of the folds 33 and 43 are in contact with

10 each other and in a dense state.

In addition, the heights of the folds 33 and 43 in this embodiment, in other words, the heights from the valley (bottom) 33 b to the peak (summit) 33 a (for example, multiple average heights), or the height from the valleys (bottom) 43b to the peak (summit) 43a (for example, the average height of multiples) is preferred to be 100 μm or more, and, 500 μm

15 or less, and especially preferably it is more than 200 μm , and less than 400 μm . Also, in the present embodiment, it is preferred that the pitch of the folds 33 and 43, that is, the distance between adjacent valleys 33b or the distance between adjacent valleys 43b is 100 μm or more and less than 500 μm and it is more preferable that it is 200 μm or more and 400 μm or less. It is further desirable that the thickness be 400 μm or less. In the present

20 embodiment, the heights and pitches of the folds 33 and 43 are substantially the same, and there is no difference as a level that affects the stretchability such as the extension limit, however, other cases some of the folds may have height or pitch smaller than the others in order to achieve superior properties.

In the present embodiment, the area where the first and second non-woven fabrics

25 3 and 4 and the stretchable portions 31 and 41 of the first non-woven fabric 3 and the second non-woven fabric 4 are bonded together is the stretch area Ra. The area in which the expansion / contraction regulating portions 32, 42 of the second nonwoven fabric 3 and the second nonwoven fabric 4 and the third nonwoven fabric 5 are attached is a low elasticity region Rb having a smaller elasticity than the elasticity region Ra. In other

30 words, the stretchable area Ra is a high stretchable area that is more stretchable than the low stretchable area Rb. The stretchable region Ra and the low stretchable region Rb are disposed adjacent to the one direction D, which is the stretch direction. Further, in the

present embodiment, the stretchable film 2 is disposed only in the low stretch region Rb and is not disposed in the stretch region Ra. This arrangement of the elastic film 2 is an example of “the arrangement avoiding the low elastic region”.

From the pair of engaging portions 11A and 11B that form the mechanical fastener 22 (see Fig. 5), one of the engaging portions, 11A, is fixed on the expansion / contraction-restricting portion 32 of the first nonwoven fabric 3. As the mechanical fastener, for example, it denotes, a surface fastener or the widely used structure called hook and loop fastener, and it denotes a fastener that can be attached or removed in a plane. The mechanical fastener 22 has a pair of planar engaging portions 11A and 11B in contact with each other, and on each of the contact surfaces of the pair of engaging portions 11A and 11B, the raised nap portions 11A, which are physically associated with each other, are provided. As the mutually bonded raised nap part 11A, in addition to the hook and loop, it is also possible to use parts where both are hooks connecting with each other, both hooks and loops are in contact with each other as the raised portions 11A that are mutually engaged, mushroom type raised parts, etc.

Two strip-like engaging portions 11A are fixed to the expansion / contraction-restricting portion 32 of the first nonwoven fabric 3. The engaging portion 11A extends in a direction orthogonal to one direction D which is the expansion and contraction direction, and the two engaging 11 A are arranged side by side in the one direction D.

The elastic (stretchable) film 2 may be made of a resin material containing an elastomer. The type of elastomer is not particularly limited, and, for example, styrene / ethylene styrene copolymer (SIS), styrene / butadiene / styrene / styrene block copolymer (SBS), styrene - ethylene / butylene - styrene block copolymer (SEBS), polyurethane, ethylene copolymer (for example, ethylene vinyl acetate, ethylene propylene copolymer, ethylene - polyethylene diene polymer), propylene oxide (PO), etc., can be used. From the point of view of the convenience in the manufacturing process, it is also a good option it is a multilayer structure where at least on one surface of the elastomer core there is a skin such as a polyolefin, etc.

The resin material constituting the stretchable film 2 may contain other components other than the above. For example, in this resin material it is possible to compound and include a strengthening agent (for example, polyvinyl styrene, polystyrene, poly - α - methyl styrene, polyester, epoxy resin, polyolefin, cumarone - indene resin),

viscosity reducing agents, plasticizers, tackifying agents (for example, aliphatic hydrocarbon tackifiers, aromatic hydrocarbon tackifiers, terpene resin tackifiers, hydrogenated terpene resin tackifiers), dyes, pigments, antioxidants, anti-static agents, adhesives, anti-tack agents, slip agents, heat stabilizers, light stabilizers, metal salts, microfibers, etc.

For the first non-woven fabric 3, the second non-woven fabric 4, and the third non-woven fabric 5, it is possible to utilize the widely used materials that can be processed into fibers, and materials can be appropriately combined, and the fiber length, fiber thickness, etc., can be adjusted to prepare for the desired softness. For the materials of the first non-woven fabric 3, the second non-woven fabric 4 and the third non-woven fabric 5, for example, mixed fibers of polypropylene fibers, polyester fibers and polyester fibers, concentric composite fibers in which the core polyethylene terephthalate material is covered with polyethylene, may be used and it is also a good option. The manufacturing method of the first non-woven fabric 3, the second non-woven fabric 4 or the third non-woven fabric 5 may be, for example, a spun bonding method, a spun lace method, or a thermal bonding method.

Next, the manufacturing for the preparation of the diaper ear member 1A will be described. When manufacturing the diaper ear part 1A, first, the sheet member 50 as shown in Fig. 3 is manufactured. The sheet member 50 basically comprises a plurality of unit parts 51A, 51B provided with all of the structure of the above-described one member 1A and the member 1A is manufactured by cutting each unit portion 51A, 51B into a desired shape.

The single-dotted dashed line in Fig. 3 is a virtual boundary between unit 51A and unit 51B. The two-dot dashed line virtually indicates the desired shape of the first member 1A, and in the present embodiment, two shapes are illustrated. Hereinafter, the sheet member 50 will be described and as the same reference numbers are given to the structures of the first member 1A for the same members, the detailed description will be omitted.

The sheet member 50 is provided with a plurality of unit parts 51A, 51B arranged continuously along one direction D (stretching direction). The directions of the unit parts 51A and 51B, which are adjacent to each other in one direction D, are opposite to each other. Specifically, for example, as shown in FIG. 3, the portion arranged in the order of the stretchable region Ra and the low stretchable region Rb from the left is the unit portion

51A, and the connected to this unit part 51A portion arranged in the order of the low expansion and contraction area Rb and the expansion and contraction area Ra, is the next unit section 51B. In other words, the plurality of unit portions 51A and 51B according to the present embodiment has a form in which the low expansion and contraction areas Rb or the expansion and contraction areas Ra are continuously provided. In addition, the plurality of the unit parts 51A and 51 B may be continuously disposed so as to have the same orientation, or may be disposed so as to have an irregular orientation.

At the time when the sheet member 50 is manufactured, corrugated (pre-shaped) folds 33, 43 are formed at a predetermined place of the first nonwoven fabric 3 and the second nonwoven fabric 4. The first non-woven fabric 3 and the second non-woven fabric 4 sandwich the mutually lined up stretchable film 2 and third non-woven fabric 5, and heat or ultrasonic bonding is used and by that they are fixed onto the stretch film 2 and the 3 non-woven fabrics 5. Furthermore, one engaging portion 11A forming the mechanical fastener 22 (see Fig. 5) fixed at the appropriate timing on the first non-woven fabric 3 by an adhesive agent.

Next, the open type diaper 20 will be described with reference to Fig. 5 and Fig. 6. The diaper 20 according to this embodiment means a disposable type diaper. The diaper 20 is a rectangular laminate (one example of the main body) 25, including an outer liquid-impermeable polymer film and an inner liquid-absorption layer 24. The laminate 25 is a part that covers the crotch of the recipient, such as infants. On both sides of the laminate 25 there are irregularly pleated, stretchable gather parts 26.

At one end in the longitudinal direction of the laminate 25 a ventral fixation portion 27 is provided, which contacts the belly (lower abdomen) of the recipient H, and at the other end, the dorsal fixing part 28 in contact with the back (lumbar) of the recipient H is provided. For the belly fixing part 27 and the dorsal fixing part 28, the side in contact with the recipient H is the inner side, and the opposite side is the outer side.

The ventral fixation portion 27 has an inner surface on the inner side and an outer surface on the outer side. The engagement portion 11B of the mechanical fastener 22 is fixed to the outer surface of the ventral fixing portion 27 so as to cover a wide range in the width direction. On the side parts 28a in both directions of the width direction of the backside-fixing portion 28, the above-described one side member 1A is fixed and a diaper ear part 20a is provided. The diaper ear part 1A is fixed to the backside-fixing portion 28

so that the engaging part 11A of the mechanical fastener 22 is directed to the inner side of the fixed first nonwoven fabric 3.

The diaper 20 is attached to the recipient H so as to cover the crotch of the recipient H with the laminate 25. And especially, the ventral fixation part 27 is placed so that it is in contact with the perimeter of the lower abdomen of the recipient H, and the dorsal fixing part 28 is placed in contact with the waist area of the recipient H. Next, for the diaper 20, the left and right diaper ear parts 20a are pulled, and the engagement part 11A of the diaper ear part 20a is engaged with the engagement part 11B of the belly side fixing part 27, and it is attached and fixed.

As shown in FIG. 4 (a), the diaper ear member 1B according to the second embodiment does not have the third nonwoven fabric 5 compared to the first member 1A according to the first embodiment. That is, in the diaper ear part material 1B, the first nonwoven fabric 3 and the second non-woven fabric 4 are directly adhered in the low-stretch area Rb. In the other members 1B, the structures and elements common to those of the diaper ear member 1A are indicated by the same reference numbers as those of the layer member 1A and the detailed description is omitted.

As shown in FIG. 4 (b), the diaper ear member 1C according to the third embodiment is not provided with the third non-woven fabric 5 as compared to the diaper ear member 1A according to the first embodiment and instead, there is another second elastic film 7, which is less elastic than the elastic film 2 of the diaper ear member 1A. That is, the elastic region Ra according to the present embodiment includes the first nonwoven fabric 3, the second nonwoven fabric 4, and the second elastic film 7 common to the first embodiment, and the low-stretch area Rb is provided with a first nonwoven fabric 3, a second nonwoven fabric 4 and a second elastic film 7 different from the first embodiment. Regarding the second stretchable film 7, for example, it is provided with an inner stretchable core layer and a skin layer provided on both sides of the core layer. The skin layer is less elastic than the core layer, and as a result, the elasticity of the second elastic film 7 is, for example, not activated and by that it is kept lower than the elasticity of the film 2 (the first elastic film). This arrangement of the stretchable film 7 is an example of “arrangement avoiding the low stretch area”.

When the diaper ear members 1A to 1C according to the above-described embodiments are stretched in one direction D, the stretchable film 2 of the stretchable

region Ra is mainly stretched in the one direction D. The first non-woven fabric 3 in the expansion / contraction region Ra is provided with an expansion / contraction portion 31, and the expansion / contraction portion 31 is provided with a plurality of folds 33 aligned in one direction D. Multiple folds 33 open following the stretch of stretch film 2, however
5 when complete opened, they resist further stretching and prevent excessive stretching of stretchable film 2. As a result, by appropriate tightening, it is possible to design an improvement in the wearability by preventing the leak of urine etc., of the recipient H, while suppressing a drop in mobility such as the mobility of the thigh H a of the recipient. In addition, there are cases where the stretching capability is only supported by the diaper ear part, and the subject H may stretch too much when wearing, and the user may lose the
10 fixed position. In particular, the user is often busy, and it is expected that the user can quickly install the diaper at an appropriate position and that the mobility after wearing is high. According to the diaper ear parts 1A~ 1C related to the above practical embodiments effects corresponding to this expectation can be exhibited. Moreover, the structures according to the respective embodiments can be combined and applied to the diaper ear members 1A to 1C according to the respective embodiments described above.
15

Furthermore, in the diaper ear members 1A to 1C according to each of the above-described embodiments, a second non-woven fabric 4 is provided that is disposed so as to be opposite to the first non-woven fabric 3 and where at least a portion thereof is
20 laminated to the stretchable film 2. Then, regarding the stretchable region Ra, in the second non-woven fabric 4a, a stretchable portion 41, in which a plurality of folds 43 is provided in the stretch direction of the stretchable film 2, is provided, and also, a stretchable restriction portion 42 is provided. According to this diaper ear member 1A, at least a part of the stretchable film 2 is covered with the first non-woven fabric 3 and the
25 second non-woven fabric 4 disposed opposite to each other. As a result, compared with the aspect in which one side of the stretchable film 2 is completely exposed, it is advantageous for improving the contactability (skin feel etc.).

The second nonwoven fabric 4 can be omitted in the diaper ear member 1A according to each of the above embodiments, for example, instead of the second
30 nonwoven fabric 4, it is also possible to use a sheet member 50 where instead of the second non-woven fabric 5, which has elasticity to a degree that does not affect the

functions of the expansion / contraction portion 31 and the expansion / contraction-restricting portion 32.

Further, in the case of the diaper ear members 1A ~ 1C according to each of the above-described embodiments, or the diaper ear parts, in which the second nonwoven fabric 4 is omitted, the state in which the folds 33 are opened is taken as the extension limit. Also, assuming that this extension limit is the length limit L_a (see Fig. 2) of the diaper ear member 1A, the value obtained by subtracting the reference length L_b before extension from the length limit L_a is the amount of extension L_c . Note that “before extension” means that no tensile force is applied to the diaper ear member 1A. Here, the elongation ratio X_a , which is a ratio of the elongation amount L_c to the reference length L_b is obtained by the following equation (1), and it is a good option when the elongation rate X_a is 10% or more, and also 100% or less. Also, it is a good option if the elongation rate X_a is 20%, or more. Also, it is a good option if the elongation rate X_a is 30%, or more. Also, the elongation rate X_a may be 90%, or less. Also, the growth rate X_a may be 80% or less. By setting the elongation percentage X_a of each diaper ear member 1A to 1C in the above range, it is further advantageous to improve the mounting performance.

$$X_a (\%) = 2 L_c / L_b \times 100 \cdots (1)$$

In addition, in the case of the diaper ear members 1A ~ 1C according to each of the above-described embodiments, or the diaper ear parts 1A, in which the second nonwoven fabric 4 is omitted, it is a good option if ratio X_b of the length B_a in one direction D of the expansion / contraction area R_a to the reference length L_b (total length) in one direction D, is 5% or more, and also 70% or less. Also, the ratio X_b may be 10 % or more and it is a good option. Also, the ratio X_b may be 15% or more and it is a good option. Also, the ratio X_b may be less than or equal to 60%. Also, the ratio X_b may be 40% or less. By setting the ratio X_b of the length of the expansion / contraction area R_a in the above range, it becomes easy to appropriately demonstrate the elastic (stretching) properties of the diaper ear members 1A ~ 1C.

In addition, in the case of the diaper ear members 1A ~ 1C according to each of the above-described embodiments, or the diaper ear parts, in which the second nonwoven fabric 4 is omitted, the value obtained by subtracting the length B_a of the stretch area R_a before stretching from the length of the stretch area R_a when stretched in the direction D at tensile strength of 2.0 (N / 25 mm), is the amount of elongation of the stretch area R_a ,

and it is a good option if the stretch area R_a 's elongation coefficient per unit length, which is the ratio of the amount of extension of the expansion and contraction area R_a to the length B_a of the stretch area prior to the extension, is 100% or more and 500% or less.

Also, it is a good option if the elongation coefficient is 110% or more. In addition,
5 it is also a good option if the elongation coefficient is 120% or more. Also, the elongation coefficient may be 400% or less. Also, the elongation coefficient may be 300% or less. By setting the elongation rate per unit length of the expansion / contraction area R_a in the above-mentioned range, it is further advantageous to improve the (diaper) mounting properties.

10 In addition, when wearing an open-type diaper 20 (see FIG. 6), in which the diaper ear members 1A to 1C according to each of the above embodiments, or the diaper ear members where the second non-woven fabric 4 is omitted, are used as a diaper ear member 20a and the diaper is attached to a receiver such as a baby, the gather part 26 and the diaper ear part 20a are placed around the circumference of the thigh H_a of the receiver
15 H. In the case of this diaper 20, not only the gather part 26 but also the diaper ear part 20a can stretch, so it is difficult for the thigh circumference to shift as a whole, and the stable wearing state is maintained, and it becomes an advantageous improvement. As a result, by appropriate tightening, it is possible to improve the wearability by preventing the leak of the recipient H's urine, etc., while suppressing the decrease in mobility of the recipient H
20 such as the mobility of the thigh H_a , etc.

Furthermore, regarding the diaper part 20a of this diaper 20, the state in which the folds 33 are opened is the extension limit, and the value obtained by subtracting the reference length L_b prior to the extension from the length limit L_a at the extension limit, is the amount of elongation L_c . Then, it is a good option if the elongation rate X_a , which is
25 the ratio of the elongation L_c to the reference length L_b before the elongation of the diaper ear part 20a, is 10% or more and 100% or less. By setting the elongation rate X_a of the diaper ear portion 20a in this range, the thigh H_a of the recipient H is suitably covered in cooperation with the gather portion 26, and a stable wearing state is achieved, and it becomes especially advantageous for the improvement.

30

Examples

Hereinafter, the present invention will be described in more detail by way of examples, however the present invention is not limited to these examples.

5

Example 1

A stretch film with a basis weight of 35 gsm produced using a SIS copolymer was used. Also, for each non-woven fabric, the non-woven fabric common to Examples 1 to 6 was used, except that the Comparative Example 1 was not formed with “corrugated” shape (folds). In particular, the first non-woven fabric and the second non-woven fabric were spun bond non-woven fabrics with a basis weight of 15 gsm. The third non-woven fabric was a spunbond non-woven fabric with a basis weight of 20 gsm. In addition, the first non-woven fabric and the second non-woven fabric and the stretchable film were fixed by ultrasonic welding. Also, the first and second non-woven fabrics and the third non-woven fabric were fixed using a spray-type adhesive.

15

The first practical example basically has a configuration corresponding to a diaper ear member according to the first embodiment described above. That is, the diaper ear member according to Practical Example 1 includes the first nonwoven fabric, the second nonwoven fabric, the third nonwoven fabric, and the stretchable film. In addition, the first nonwoven fabric and the second nonwoven fabric of Example 1 are provided with an area (elastic area) laminated to the elastic film and an area (low expansion area) laminated to the third non-woven fabric. A corrugate (fold) is formed in the stretchable area, and no corrugate is formed in the non-stretchable area.

20

The height of the corrugate, from the valley (bottom) to the peak (top), is 260 μm to 35 μm , and the average height of the multiple measurement points is 290 μm . Also, the pitch of the corrugate, in other words, the interval between adjacent valleys is 230 μm to 260 μm . The average pitch is 240 μm .

25

The properties of the diaper ear member according to the Practical Example 1 are as shown in Table 1. In Table 1, the term “total length of the diaper ear member” means the overall length (reference length) in the direction of expansion and contraction (one direction), that is, the overall length before extension. Also, in Table 1, the term “the length of the stretch area” means the length of the stretchable area in the stretch direction, that is, the length of the stretchable area before stretching. In Table 1, the term “the ratio of

30

the length of the stretchable area" means the ratio of the "length of the stretchable area" to the "total length of the diaper ear member".

In Table 1, the term "Elongation per unit of stretchable area" means the ratio of the amount of elongation of the elastic region to the length of the elastic region before
5 elongation, where the amount of elongation of the stretchable area is a value calculated as the length of the stretchable area before stretching is subtracted from the length of the stretchable area when stretched in one direction with a tensile strength of 2.0 (N / 25 mm). Further, in Table 1, the term "Elongation ratio of the diaper ear member" means the
10 amount of elongation of the diaper ear member with respect to the "total length of the ear member" (reference length). In this case, the state in which the corrugation is expanded is the extension limit of the diaper ear member, and the value obtained by subtracting the reference length of the diaper ear member from the total length of the diaper ear part material at this extension limit is the amount of elongation of the member.

Table 1

	Practical Example 1	Practical Example 2	Practical Example 3	Practical Example 4	Practical Example 5	Comparative Example 1	Comparative Example 2
Diaper Ear Part Total Length	75	75	75	75	75	75	75
Stretchable Area Length	5	10	21	30	50	75	0
Stretchable Area Length Ratio	7%	13%	28%	40%	67%	100%	0%
Elongation Ratio Per Unit Length of the Stretchable Area	150%	150%	150%	150%	150%	150%	150%
Diaper Ear Part Elongation Ratio	10%	20%	42%	60%	100%	150%	0%
Wearability Evaluation	○	○	⊙	○	○	×	×

Wearability evaluation is an evaluation of wearability performance. Specifically, when a diaper ear member according to the practical examples and the comparative examples is applied to a diaper and the diaper is actually attached to the recipient, it is an evaluation about whether or not it was easy to appropriately put on without excessive tightening and while preventing over extension, and also whether or not the diaper ear part could be attached without misalignment. For the performance evaluation of the wearability “X” means that excessive tightening is necessary for the attachment of the diaper ear parts. “Δ” indicates a condition where the diaper ear part has been tightened for the installation, however it cannot be regarded as excessive tightening due to the fact that the extension has been stopped. “O” means that the tightening of the diaper ear part for wearing was appropriate. “◎” indicates that the tightening of the diaper ear part was comfortable for the wearer.

Example 2 to Example 5

As shown in Table 1, Example 2 to Example 6 are the same as Example 1 except for the length of the stretchable region.

Comparative Example 1, Comparative Example 2

The comparative example 1 does not have the low expansion and contraction area, and is the same as the first example except for the low expansion and contraction area. In addition, Comparative Example 2 does not have the stretchable region, and on the other hand, except for the stretchable region, is the same as Example 1.

Example 6

Example 6 used a stretch film with a basis weight of 35 gsm, which was produced using a SIS copolymer. Furthermore, for each of the nonwoven fabrics, Examples 7 to 12 use a common nonwoven fabric, and Comparative Example 2 does not have a corrugate (fold) formed, and except for these points, it uses the nonwoven fabric common to Example 7. Specifically, the first non-woven fabric and the second non-woven fabric used was a spunbond non-woven fabric with a basis weight of 15 gsm. The third non-woven fabric was a spunbond non-woven fabric with a basis weight of 20 gsm. The first non-woven fabric and the second non-woven fabric and the stretchable film were fixed by

ultrasonic welding. Also the first non-woven fabric, the second non-woven fabric, and the third non-woven fabric were adhered and fixed by using a spray type adhesive.

The sixth Practical Example basically has a configuration corresponding to a diaper ear member according to the first embodiment described above. That is, the diaper ear member according to the Practical Example 1 includes the first non-woven fabric, the second non-woven fabric, the third non-woven fabric, and the stretchable film. Also, the first non-woven fabric and the second non-woven fabric of the Practical Example 7 are provided with an area laminated to the elastic film (elastic area) and an area laminated to the third non-woven fabric (low expansion area). A corrugate (fold) is formed in the stretchable area, and no corrugate is formed in the non-stretchable area.

The height of the corrugate, that is, the height from the valley (bottom) to the peak (peak), is 250 μm to 350 μm , and the average height of a plurality of measurement points is 290 μm . Also, the pitch of the corrugate, in other words the interval between adjacent valleys is 10 μm to 150 μm , and the average pitch of several measurement points is 120 μm .

The properties of the diaper ear members according to the Practical Example 6 are as shown in Table 2.

Example 7 to Example 10

Practical Example 7 to Practical Example 10 are the same as the Practical Example 6 except for the length of the stretchable area as shown in Table 2.

Comparative Example 3, Comparative Example 4

Comparative Example 3 is not provided with the low expansion and contraction area, and is the same as the Practical Example 6 except for the low expansion and contraction area. The Comparative example 4 is not provided with the expansion and contraction area, and is the same as the Practical example 7 except for the expansion and contraction area.

Table 2

		Practical Example 6	Practical Example 7	Practical Example 8	Practical Example 9	Practical Example 10	Comparative Example 3	Comparative Example 4
Diaper Ear Part Total Length	mm	75	75	75	75	75	75	75
Stretchable Area Length	mm	5	10	21	30	50	75	0
Stretchable Area Length Ratio	%	7%	13%	28%	40%	67%	100%	0%
Elongation Ratio Per Unit Length of the Stretchable Area	%	300%	300%	300%	300%	300%	300%	300%
Diaper Ear Part Elongation Ratio	%	20%	40%	84%	120%	200%	300%	0%
Wearability Evaluation		○	◎	○	△	△	×	×

Example 11

Practical Example 11 used a stretch film having with a weight of 35 gsm produced using a SIS copolymer. In addition, for each non-woven fabric, Practical Examples 13 to 18 use a common non-woven fabric, and Comparative Example 3 uses a non-woven fabric that is the same as the practical examples except that a corrugate (fold) is not formed. Specifically, the first non-woven fabric and the second non-woven fabric were spunbonded non-woven fabrics with a basis weight of 15 gsm. The third non-woven fabric was a spunbond non-woven fabric with a basis weight of 20 gsm. Also, the first non-woven fabric and the second non-woven fabric and the stretchable film were fixed by ultrasonic welding. Also, the first non-woven fabric, the second non-woven fabric and the third non-woven fabric were fixed by using a spray type adhesive.

The Practical Example 11 basically has a configuration corresponding to a diaper ear member according to the first embodiment described above. That is, the diaper ear member used in the Practical Example 11 includes the first non-woven fabric, the second non-woven fabric, the third non-woven fabric, and the stretchable film. In addition, the first nonwoven fabric and the second nonwoven fabric of the Practical Example 11 have the area laminated on the stretch film (stretch area) and the area laminated on the third nonwoven fabric (Low expansion and contraction area). A corrugate (fold) is formed in the stretchable area, and no corrugate is formed in the non-stretchable area.

The height of the corrugate, from the valley (bottom) to the peak (top), is 250 μm to 350 μm , and the average height of multiple measurement points is 290 μm . Also, the pitch of the corrugate, namely, the interval between adjacent valleys is 300 μm to 350 μm . The average pitch is 320 μm .

The properties of the diaper ear part according to the Practical Example 11 are as shown in Table 3.

Example 12 to Practical Example 15

As shown in Table 3, Practical Example 12 to Practical Example 15 show similar values to the values according to the Practical Example 1 to Practical Example 4, except for the length of the stretchable area.

Comparative Example 5

The Comparative example 5 is not provided with the expansion and contraction area, and on the other hand, is the same as the Practical Example 13 except for the expansion and contraction area.

5

Table 3

		Practical Example 11	Practical Example 12	Practical Example 13	Practical Example 14	Practical Example 15	Comparative Example 5
Diaper Ear Part Total Length	mm	75	75	75	75	75	75
Stretchable Area Length	mm	5	10	21	30	50	0
Stretchable Area Length Ratio	%	7%	13%	28%	40%	67%	0%
Elongation Ratio Per Unit Length of the Stretchable Area	%	100%	100%	100%	100%	100%	100%
Diaper Ear Part Elongation Ratio	%	7%	13%	28%	40%	67%	0%
Wearability Evaluation		△	△	○	◎	○	×

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CLAIMS

1. A diaper ear part, comprising
a nonwoven fabric,
a stretchable film that is layer laminated on at least one side of the nonwoven fabric,
a stretchable region, where at least the nonwoven fabric and the elastic film are fixed and
10 adhered,

and a low stretchable area, which includes at least one part of the nonwoven fabric, and
whose elastic properties are lower than those of the elastic area, and also, which is located
adjacent to and in the same direction as the elastic area,

15 where the above-described nonwoven fabric of the elastic area is provided with a
stretchable part where numerous folds are provided aligned in one direction,
and where the nonwoven fabric of the low elasticity area is provided with an
expansion/contraction control part where there are no multiple folds formed.

2. The diaper ear part according to the above described Claim 1, where together with the
20 mutually facing positioning of the above described nonwoven fabrics, especially, another non-
woven fabric is provided,

and for the above described stretch area, the above described other nonwoven fabric is
fixed on the above described stretch (elastic) film,

25 and the above described other nonwoven fabric of the above described stretch area is
provided with a stretchable portion where numerous folds are aligned in the stretch direction of
the above described stretchable film,

and where the other non-woven fabric in the low expansion and contraction area is
provided with an expansion/contraction-restricting portion, in which numerous folds are not
formed.

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3. The diaper ear part according to the above-described Claim 2, where the above described
stretchable film is positioned so as to avoid the low stretchable region.

4. The diaper ear part according to the above described claim 3, further comprising an
35 additional non-woven fabric that is layer laminated in the space between the non-woven fabric
and the other non-woven fabric in the low-stretch area.

- 5 5. The diaper ear part according to any one of the above described claims 1 to 4, wherein one of the pair of engaging portions forming a mechanical fastener is provided in the low expansion and contraction area.
- 10 6. The diaper ear part according to any one of the above described claims 1 to 5, wherein, when the state in which the fold is opened is the extension limit, and the value obtained by subtracting the reference length before extension from the length limit at the extension limit is the amount of elongation, the elongation ratio, which is the ratio of the above described elongation amount relative to the reference length, is at least 10% or more, and also is 100% or less.
- 15 7. The diaper ear part according to any one of the above described claims 1 to 6, wherein, the ratio of the length of the above described stretchable area to the total length in one direction is at least 5% or more, and is also 70% or less.
- 20 8. The diaper ear part according to any one of the above described claims 1 to 7, wherein, the value obtained by subtracting the length of the stretchable region before stretching from the length of the stretchable region when stretched in one direction with a tensile strength of 20 (N / 25 mm) is the elongation value of the stretchable region, and the elongation value per unit length of the stretchable area, which is the ratio of the amount of stretch of the stretchable area to the length of the stretchable area before stretching is at least 100% or more and also is 300% or less.
- 25 9. A sheet member, comprising
a non-woven fabric,
a stretchable film that is layer laminated on at least one part of one side of the non-woven fabric, a stretchable (elastic) area that is an area where at least the nonwoven fabric and the elastic film are adhered,
30 a low-stretch area that includes at least a part of the non-woven fabric and is less stretchable than the stretch area, and is located adjacent to the stretch area in the same direction,
an engaging portion provided in the above described low expansion and contraction area,
35 which is a pair of engagement parts forming the mechanical fastener,
where the nonwoven fabric of the above described elastic area is provided with an expansion/contraction allowing part where numerous folds are provided aligned in one direction,

5 and the nonwoven fabric of the low elasticity area is provided with an expansion/contraction control part where there is no multiple folds formed.

10. The sheet member according to Claim 9, further comprising
a second non-woven fabric where at least one part of it is layer laminated on the above-
10 described stretchable film,
a stretchable part, where for the above described elastic region, the above described other nonwoven fabric is fixed to the stretchable film, and the above described non-woven fabric in the stretchable region has a stretchable portion provided with a plurality of folds aligned in the stretch direction of the stretchable film,
15 and the above described other non-woven fabric in the low stretch region, has an expansion/contraction control (limiting) part, in which a plurality of folds are not formed.

11. An open type diaper, comprising
pair of engagement parts forming the mechanical fastener, where one engagement part is
20 provided as positioned as a ventral fixation part,
a dorsal side fixation part, which is provided on the opposite side of the ventral fixation part,
a main body part, which contains a liquid absorbing layer inside it and is connected to the ventral fixation part and the dorsal fixation part,
25 gather parts provided on both sides of the main body part,
diaper ear parts, which are positioned so that they project from both sides of the back fixation part,
and the other engagement part is provided on the back fixation part, and is the other engagement part of the pair of the engagement parts,
30 wherein the diaper ear part contains,
a nonwoven fabric,
a stretchable film that is layer laminated on at least one side of the nonwoven fabric,
a stretchable region, where at least the nonwoven fabric and the elastic film are fixed and adhered,
35 a low stretchable area, which includes at least one part of the nonwoven fabric, and whose elastic properties are lower than those of the elastic area, and also, which is located adjacent to and in the same direction as the elastic area,

5 where the nonwoven fabric of the elastic area is provided with an expansion/contraction
allowing part where numerous folds are provided aligned in one direction,
 and the nonwoven fabric of the low elasticity area is provided with an
expansion/contraction control part where there are no multiple folds formed,
 and the above-described elastic region is located at a position closer to the back fixation
10 part than the low elastic region in one direction,
 and the above described other engagement portion is provided in the low expansion and
contraction area.

12. The diaper according to Claim 11,
15 where the diaper ear part comprises
together with the above-described nonwoven fabrics positioned so that they are mutually facing
each other, the above-described diaper ear part may also further include another nonwoven fabric
disposed opposite to the nonwoven fabric and at least partially laminated on the extensible film,
 and in the above-described elastic region, the other nonwoven fabric is fixed to the
20 stretchable film and the non-woven fabric in the stretchable region has a stretchable portion
provided with a plurality of folds aligned in the stretch direction of the stretchable film,
 and in the low stretch region, the other non-woven fabric has a stretch-limiting portion in
which a plurality of folds is not formed.

25 13. The diaper according to Claim 11 or 12,
 wherein, when the state in which the fold is opened is the extension limit, and the value
obtained by subtracting the reference length before extension from the length limit at the
extension limit is the amount of elongation, the elongation ratio, which is the ratio of the above
described elongation amount relative to the reference length, is at least 10% or more, and also is
30 100% or less.

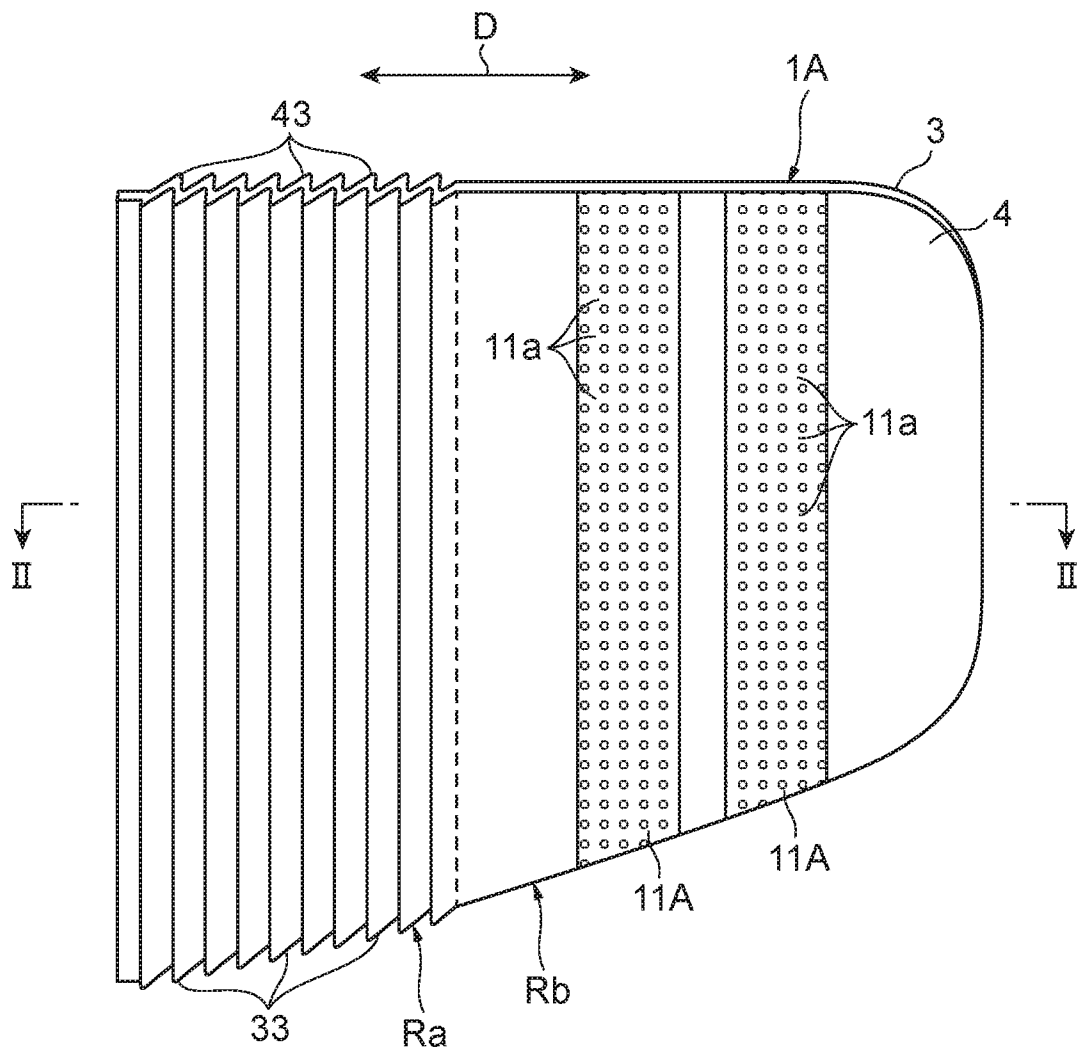


FIG. 1

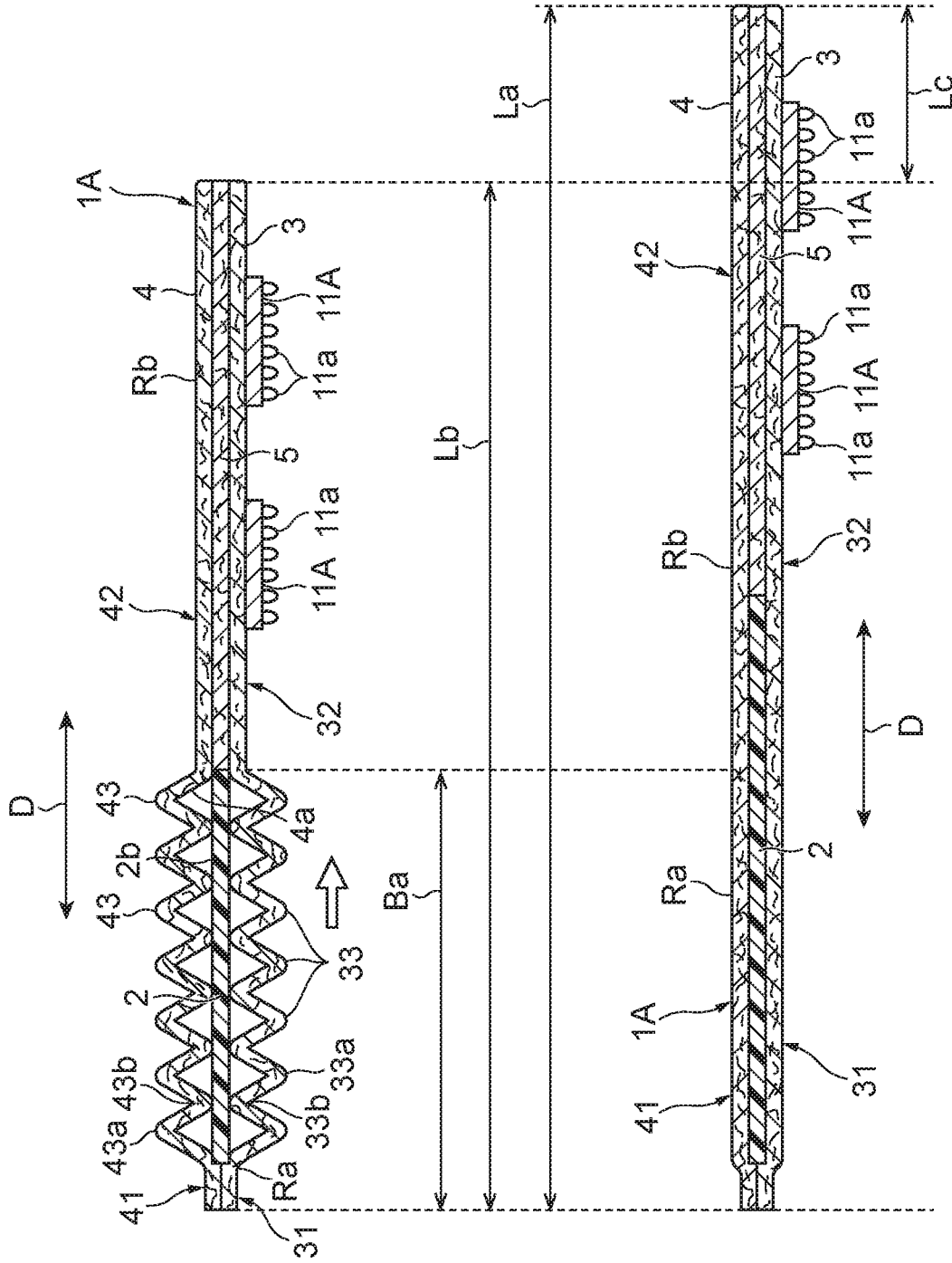


FIG. 2A

FIG. 2B

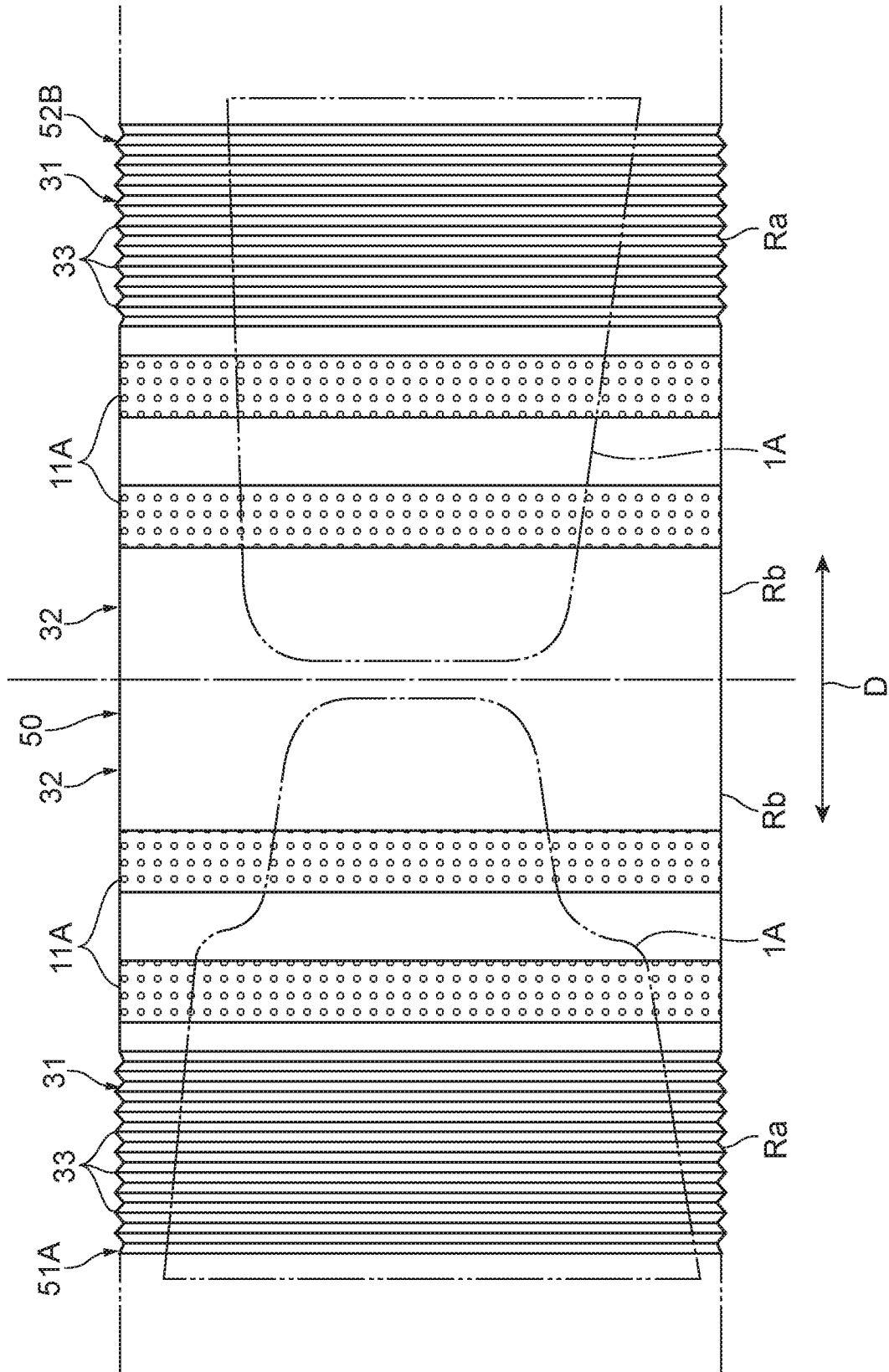


FIG. 3

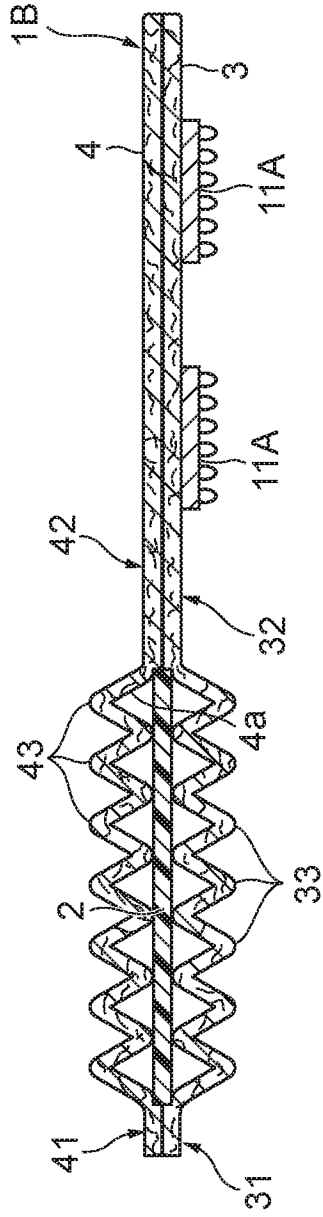


FIG. 4A

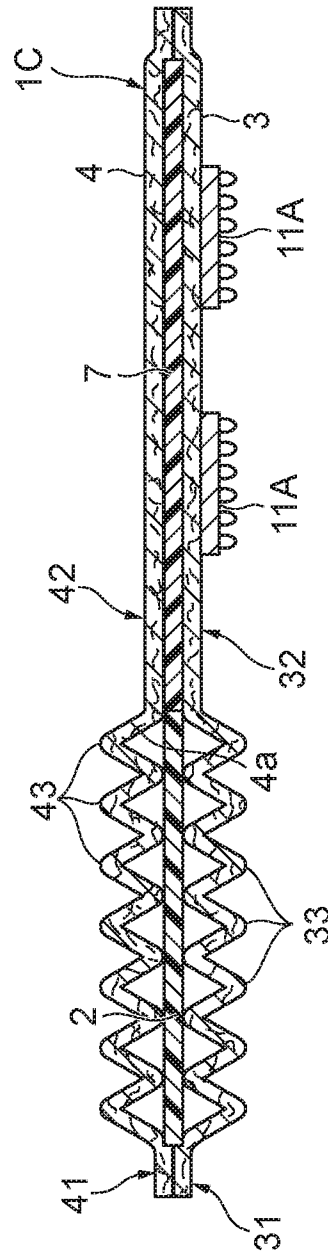


FIG. 4B

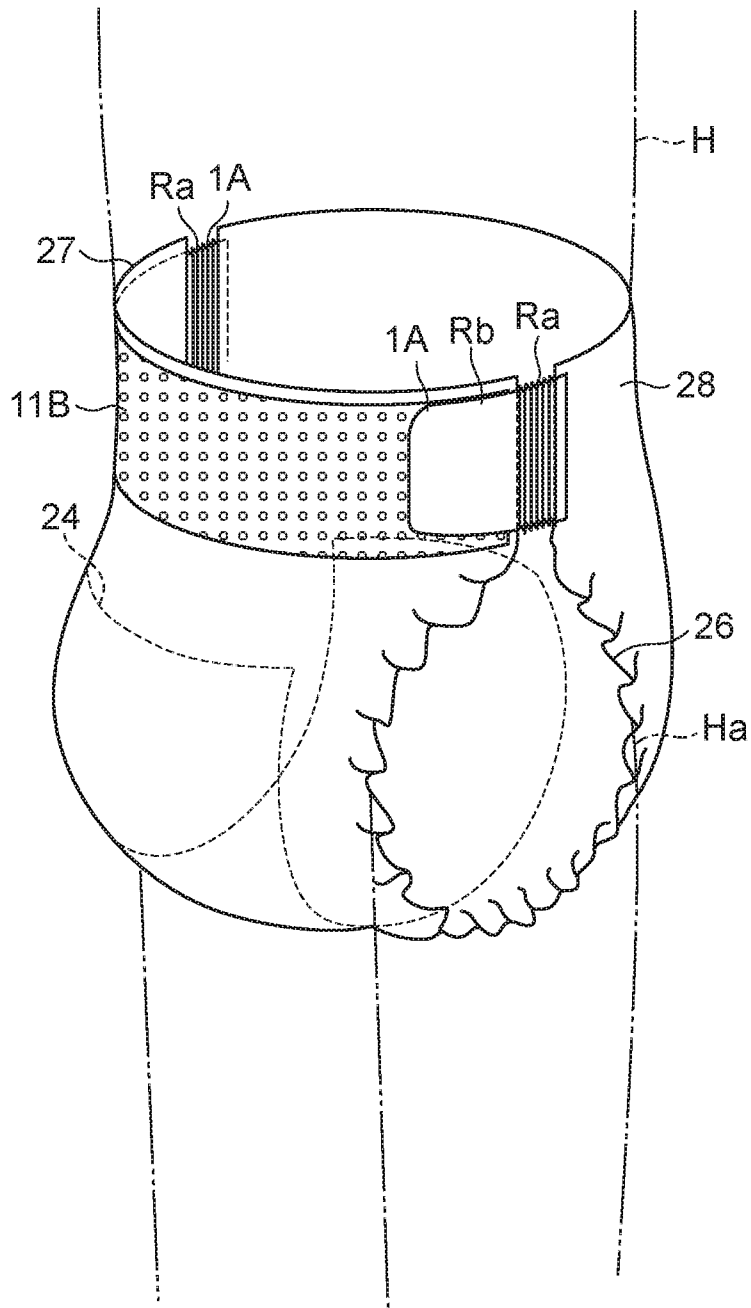


FIG. 6