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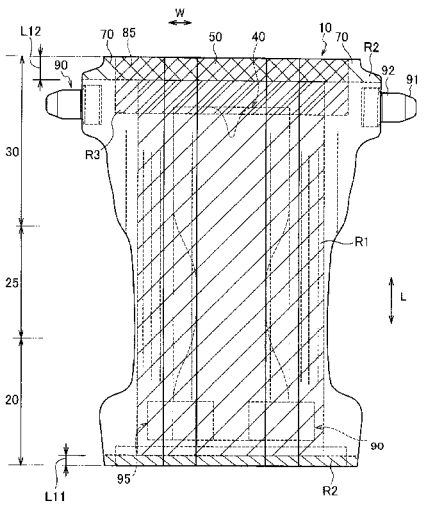
(54) **Title**: DISPOSABLE DIAPER

(54) 発明の名称 : 使い捨ておむつ

[図2]



(57) **Abstract**: A disposable diaper (10) has: a pair of fastening tapes (90); and a liquid impermeable back sheet (60a) which is disposed on the surface of an absorption body which does not come into contact with the skin. The disposable diaper has: a back sheet arrangement region (R1) in which the back sheet (60a) is disposed; and a region (R2) in which the back sheet (60a) is not disposed. The region (R2) in which the back sheet (60a) is not disposed is disposed at the front end section (10F) of the disposable diaper (10) and/or the rear end section (10R) of the disposable diaper. The rate of elongation of the region (R2) in which the back sheet (60a) is not disposed is higher than that of the back sheet arrangement region (R1). As a result of this configuration, the disposable diaper, which of tape type, is capable of appropriately covering the waist of the wearer in a manner corresponding to a change in the dimension of the waist of the wearer.

(57) 要約: 使い捨ておむつ（１０）は、一対のファスニングテープ（９０）と、吸収体の非肌当接面側に配置された液不透過性のバックシート（６０ａ）と、を有する。使い捨ておむつは、バックシート(６０ａ)が配置されたバックシート配置領域（Ｒ１）と、バックシート(６０ａ)が配置されていないバックシート非配置領域（Ｒ２）と、を有する。バックシート非配置領域（Ｒ２）は、使い捨ておむつ（１０）の前側端部（１０Ｆ）及び使い捨ておむつの後側端部（１０Ｒ）の少なくとも一方に配置されている。バックシート非配置領域（Ｒ２）の伸長率は、バックシート配置領域（Ｒ１）の伸長率よりも高い。着用者の腰回りの寸法の変化に対応して着用者の腰回りを適切に覆うことができる、テープタイプの使い捨ておむつが得られる。

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DESCRIPTION

Title of Invention
DISPOSABLE DIAPER

Technical Field
[0001]
The present invention relates to a disposable diaper.

Background Art
[0002]
A reference herein to a patent document or any other matter identified as prior art, is not to be taken as an admission that the document or other matter was known or that the information it contains was part of the common general knowledge as at the priority date of any of the claims.
[0002a]
Where any or all of the terms "comprise", "comprises", "comprised" or "comprising" are used in this specification (including the claims) they are to be interpreted as specifying the presence of the stated features, integers, steps or components, but not precluding the presence of one or more other features, integers, steps or components.
[0002b]
Patent Literature 1 describes a tape-type diaper, the diaper including an absorber, a backsheet arranged on a non-skin contact surface side of the absorber and a cover sheet arranged on the non-skin contact surface side than the backsheet. The backsheet is made of a liquid-impermeable film, and the cover sheet is made of a nonwoven fabric (see, for example, Fig. 2, paragraphs 0024 and 0038 of Patent Literature 1).
[0003]
The liquid-impermeable backsheet is arranged from a front end portion to a rear end portion of the disposable diaper. Accordingly, even in a case in which a body fluid is leaked from the absorber, the leakage of the body fluid to an outer surface of the disposable diaper is suppressed by the backsheet.
Citation List
Patent Literature
[0004]
Patent Literature 1
JP 2006-305104 A

Summary of Invention
Technical Problem
[0005]
However, the disposable diaper described above has the following

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problems.

[0006]

At the time of wearing the tape-type diaper, the disposable diaper is arranged below a crotch portion of a wearer. Thereafter, the diaper is fixed to the wearer's waist by a fastening tape by pulling a fastening tape, which extends from a rear waistline region, toward a front waistline region side while wrapping the wearer's buttocks by a rear waistline region.

[0007]

There is a case in which the disposable diaper is misaligned and the leakage of the body fluid is caused at the time of being worn when the fastening tape is fixed to the front waistline region in a state in which the disposable diaper is not fitted to the wearer's body. Accordingly, a wearing assistant generally fixes the fastening tape to the front waistline region at a position at which the disposable diaper is fitted to the wearer's waist.

[0008]

However, a size of the wearer's waist is not always constant, but sometimes increases due to a meal or the like of the wearer. Accordingly, when the wearer's waist size increases, the disposable diaper is fitted to the body very tightly, and the feeling of wearing deteriorates in some cases.

[0009]

In particular, a pulling force in a width direction is applied to the front end portion and the rear end portion of the disposable diaper when the wearer's waist size increases. In general, the liquid-impermeable film configuring the backsheet has a lower flexibility than the nonwoven fabric. The backsheet of Patent Literature 1 is arranged from the front end portion to the rear end portion of the disposable diaper. Accordingly, the disposable diaper of Patent Literature 1 hardly copes with a change in the wearer's body, and the front end portion and the rear end portion of the disposable diaper become stiff when the wearer's waist size increases, and the feeling of wearing deteriorates in some cases.

[0010]

Thus, the present invention has been made in view of the problems described above, it is desirable to provide a tape-type disposable diaper capable of properly covering a wearer's waist in response to a change in a size of the wearer's waist.

[0011]

According to the present invention there is provided a disposable diaper comprising: a front waistline region; a rear waistline region; a crotch region which is positioned between the front waistline region and the rear waistline region in a product long-side direction extending from the front waistline region toward the rear waistline region; an absorber which straddles the crotch region, and extends to at least any one of the front waistline region and the rear waistline region; a pair of fastening tapes which is arranged in an outer end portion in a product width direction of the rear waistline region, the product width

direction being orthogonal to the product long-side direction, and is fastened to the front waistline region; a liquid-impermeable backsheet which is arranged on a non-skin contact surface side of the absorber; and a pair of leg opening sections which is recessed toward a center in the product width direction of the disposal diaper, wherein the disposable diaper includes, in a plan view thereof, a backsheet arrangement region in which the backsheet is arranged, and a backsheet non-arrangement region which is positioned more outwardly in the product long-side direction than the backsheet arrangement region, and in which the backsheet is not arranged, the backsheet non-arrangement region is arranged in at least any one of a front end portion of the disposable diaper and a rear end portion of the disposable diaper, an elongation ratio of the backsheet non-arrangement region is higher than an elongation ratio of the backsheet arrangement region, the leg opening sections includes a rear leg opening section which is positioned at the rear side than a center in the product long-side direction of the leg opening section and a front leg opening section which is positioned at the front side than the center in the product long-side direction of the leg opening section, the rear leg opening section extends outwardly in the product width direction more than the front leg opening section, a convex section which has a convex shape toward the outer side in the product width direction are formed in the rear leg opening section, the fastening tape has an engagement section in which a member to be engaged with the front waistline region is arranged, and the backsheet arrangement region extends to a rearward side more than a rear end portion of the absorber, and extends to a rearward side more than a center in the product long-side direction of the engagement section.

Advantageous Effect of Invention

[0012]

According to the tape-type disposable diaper described above, it is possible to properly cover the wearer's waist in response to the change in the size of the wearer's waist.

Brief Description of Drawings

[0013]

Fig. 1 is an exploded plan view of a disposable diaper according to the present embodiment.

Fig. 2 is an exploded plan view of the disposable diaper according to the present embodiment.

Fig. 3 is a cross-sectional view of the disposable diaper taken along line F1-F1 illustrated in Fig. 1.

Fig. 4 is a cross-sectional view of the disposable diaper taken along line F2-F2 illustrated in Fig. 1.

Fig. 5 is an exploded plan view of a disposable diaper according to a modified example.

Description of Embodiment

[0014]

Next, an embodiment of a disposable diaper according to the present invention will be described with reference to the drawings. Incidentally, the same or similar reference numerals are attached to the same or similar parts in the following description of the drawings. Meanwhile, the drawings are schematic, and it should be noted that a ratio of each dimension is different from an actual one.

[0015]

Accordingly, detailed dimensions or the like should be determined in consideration of the following description. In addition, among the drawings, there may include parts having dimensional relations or ratios differently from one another.

[0016]

Figs. 1 and 2 are exploded plan views of a disposable diaper 10 according to the present embodiment. Fig. 3 is a cross-sectional view of the

disposable diaper 10 taken along line F1-F1 illustrated in Fig. 1. Fig. 4 is a cross-sectional view of the disposable diaper 10 taken along line F2-F2 illustrated in Fig. 1. The exploded plan views illustrated in Figs. 1 and 2 are the views in which a leg stretch section 75 and an elastic member 81 of a leg side gather 80 are in an elongated state such that wrinkles are not formed in a topsheet 50, a side flap 70, and the like that configure the disposable diaper.

[0017]

The disposable diaper 10 is a tape-type disposable diaper. The tape-type diaper is a diaper of which an outer end portion in a product width direction of a front waistline region and an outer end portion in the product width direction of a rear waistline region are not joined each other before being worn, but are joined each other by a fastening member such as a fastening tape or the like at the time of being worn.

[0018]

The disposable diaper 10 includes a front waistline region 20, a crotch region 25 and a rear waistline region 30. The front waistline region 20 is a part that is in contact with the front waistline section (abdominal part) of a wearer. In addition, the rear waistline region 30 is a part that is in contact with the rear waistline section (dorsal part) of the wearer. The crotch region 25 is positioned between the front waistline region 20 and the rear waistline region 30.

[0019]

Incidentally, in the present embodiment, a direction from the front waistline region 20 toward the rear waistline region 30 will be referred to as a product long-side direction or a product longitudinal direction L, and a direction orthogonal to the product long-side direction L will be referred to as a product width direction W.

[0020]

The disposable diaper 10 has an absorber 40 which straddles the crotch region 25, and extends toward at least any one of the front waistline region 20 and the rear waistline region 30 from the crotch region 25. The absorber 40 is configured of an absorbent core 40a and a core wrap 40b.

[0021]

The absorbent core 40a is the same as an absorbent core a conventional disposable diaper, and can be configured using a known member or material such as pulverized pulp or a highly absorbent polymer as appropriate. The absorbent core 40a is wrapped by the sheet-like core wrap 40b.

[0022]

The core wrap 40b is a sheet that covers the absorbent core 40a. A part of at least a skin surface side of the core wrap 40b is made using various fibrous nonwoven fabrics or a tissue sheet having liquid-permeability. For example, an air-through fibrous nonwoven fabric, a spunbond nonwoven fabric, or an SMS (spunbond-meltblown-spunbond) nonwoven fabric having a mass of

about 10 g/m2 to 30 g/m2, or a tissue sheet having a mass of about 10 g/m2 to 30 g/m2 can be used.

[0023]

The liquid-permeable topsheet 50 is provided at a top side (skin contact surface side) of the absorber 40. In addition, a liquid-impermeable backsheet 60a is provided at a back side (non-skin contact surface side) of the absorber 40. An exterior sheet 60 is provided at the back side (non-skin contact surface side) of the backsheet 60a.

[0024]

It is possible to use a liquid-impermeable polyethylene film having a basis weight of 10 g/m2 to 30 g/m2, for example, as a material of the backsheet. It is possible to use a spunbond nonwoven fabric, a through-air nonwoven fabric, a point bond nonwoven fabric, and the like, which is formed of polyethylene/polypropylene fibers having a basis weight of 10 g/m2 to 35 g/m2, or the like, as a material of the exterior sheet. It is possible to set an elongation ratio of the backsheet to be lower than an elongation ratio of other sheet members (the exterior sheet 60, the topsheet 50, and the side flap 70) that configure the disposable diaper.

[0025]

In each plan view of the exploded plan views illustrated in Figs. 1 and 2, the disposable diaper includes a backsheet arrangement region R1 in which the backsheet is arranged, and a backsheet non-arrangement region R2 which is positioned at an outer side (a front side or a rear side) in the product long-side direction of the backsheet arranged region, and in which the backsheet is not arranged. Fig. 2 illustrates the backsheet arrangement region R1 and the backsheet non-arrangement region R2 by allowing each of the backsheet arrangement region R1 and the backsheet non-arrangement region R2 to be denoted by different oblique lines.

[0026]

The backsheet non-arrangement region R2 is arranged in a front end portion 10F of the disposable diaper and a rear end portion 10R of the disposable diaper. The backsheet non-arrangement region R2 is arranged in the entire region in the product width direction of the front end portion 10F of the disposable diaper. The backsheet non-arrangement region R2 is arranged in the entire region in the product width direction of the rear end portion 10R of the disposable diaper.

[0027]

Incidentally, the backsheet non-arrangement region R2 may be arranged in a partial region in the product width direction of the front end portion 10F of the disposable diaper, or may be arranged in a partial region in the product width direction of the rear end portion 10R of the disposable diaper. The backsheet non-arrangement region R2 may be arranged in the front end

portion 10F of the disposable diaper or the rear end portion 10R of the disposable diaper.

[0028]

An elongation ratio of the backsheet non-arrangement region is higher than an elongation ratio of the backsheet arranged region. The elongation ratio of the backsheet arrangement region is preferably 1.01 times to 1.12 times. The elongation ratio of the backsheet non-arrangement region is preferably 1.14 times to 1.35 times.

[0029]

Incidentally, the elongation ratio of the backsheet arrangement region and the elongation ratio of the backsheet non-arrangement region mean a degree of elongation of the backsheet arrangement region and a degree of elongation of the backsheet non-arranged region, respectively, and are defined as below.

[0030]

An elongation ratio of the backsheet arrangement region = (a length of the backsheet arrangement region after being elongated)/(a length of the backsheet arrangement region before being elongated)

An elongation ratio of the backsheet non-arrangement region = (a length of the backsheet non-arrangement region after being elongated)/(a length of the backsheet non-arrangement region before being elongated)

In the present specification, the elongation ratio of the backsheet arrangement region and the elongation ratio of the backsheet non-arrangement region are defined as follows, for example.

[0031]

Firstly, in a case in which the disposable diaper 10 is enclosed in a package or the like, the disposable diaper 10 is taken out from the package. Subsequently, each length of samples before being elongated is measured in a state in which the leg stretch section 75 and the elastic member 81 of the leg side gather 80 are elongated such that wrinkles are not formed in the topsheet 50, the side flap 70, and the like that configure the disposable diaper. To be specific, marks are attached to positions that clamp a pair of clips to be described later (positions corresponding to a distance between clips), and a distance between the marks is measured. This distance is set as a "length of the backsheet arrangement region before being elongated", and a "length of the backsheet non-arrangement region before being elongated".

[0032]

Subsequently, samples of the backsheet arrangement region R1 in which the backsheet is arranged is cut out. At this time, an exterior sheet to be joined to the backsheet is also cut out. Further, samples of a backsheet non-arrangement region R2 in which the backsheet is not arranged, and which is positions at the front side or the rear side than the backsheet arrangement region

is cut out. To be specific, the exterior sheet, the topsheet and the side flap 70 are cut out, or the exterior sheet and the topsheet are cut out. A length (width) in the short-side direction of the sample is set to be 25 mm, and a length in the long-side direction of the sample is set to be equal to or longer than a length clamped by the clips to be described later. To be specific, the length in the long-side direction of the sample is set to be equal to or longer than 95 mm. Incidentally, in the case of a region in which a waist stretch section is arranged, the waist stretch section is also cut out.

[0033]

Each sample is set in a test apparatus. To be specific, both end portions in the long-side direction of each sample are clamped by the pair of claps. Subsequently, one of the clips is arranged at an upper end portion of the sample, and the other clip is arranged at a lower end portion of the sample, and then, the clip arranged at the lower end portion is connected with a weight. A total weight of the weight and the clip arranged at the lower end portion of the sample is set to be 250 g. Further, a position of the upper clip is fixed, and the sample, the lower clip, and the weight are suspended. Each sample is suspended, and a distance between the clips at the time in which a stretch of each sample is stationary for three seconds is measured. This distance is set as a "length of the backsheet arrangement region after being elongated", and a "length of the backsheet non-arrangement region after being elongated".

[0034]

The elongation ratio is measured from calculation according to the above-described formula using these measurement results. In addition, in the measurement of the "length" in the present specification, a spring measure (tape: covered with glass fiber reinforced vinyl chloride), manufactured by Shinwa Rules Co., Ltd., is used along a section to be measured so as to measure the length. The above-described measurement is performed in the respective states with respect to 10 samples, and an average value thereof is set as a length as the measurement result described above.

[0035]

The side flaps 70 are provided at both side edges in the product width direction W of the absorber 40. The side flaps 70 straddle the front waistline region 20, the crotch region 25, and the rear waistline region 30, and are arranged more outwardly in the product width direction than the absorber 40. The side flap 70 is configured using one or a plurality of pieces of nonwoven fabrics overlapping one another.

[0036]

A pair of leg opening sections 35 is formed in the side flaps 70 of the disposable diaper 10. The leg opening sections 35 are provided, respectively, at both side end portions in the product width direction of the disposable diaper, and are parts which are arranged along the wearer's legs in a state in which the

disposable diaper is worn by the wearer. The leg opening section 35 is recessed toward a center in the product width direction of an absorbent main body.

[0037]

In addition, fastening tapes 90 are provided at the pair of side flaps 70. The fastening tape 90 extends along the product width direction W in the rear waistline region 30, and is fastened to the non-skin contact surface of the front waistline region 20, thereby allowing the disposable diaper 10 to be tightly fitted to the wearer's body.

[0038]

A target section 95 is configured to be arranged on the non-skin contact surface in the front waistline region so that the pair of fastening tapes 90 is fastened thereto.

[0039]

In the present embodiment, a waistline retaining section is configured of the front waistline region 20, the rear waistline region 30, and the fastening tape 90. The waistline retaining section of the rear waistline region 30 is a part that extends in the product width direction from a region in which an engagement section of the fastening tape 90 is provided. The waistline retaining section of the front waistline region 20 is a part that extends in the product width direction from a region in which the target section 95 is provided.

[0040]

A pair of the leg stretch sections 75, which are arranged more inwardly in the product width direction than the leg opening section 35, and can stretch and contract in the product long-side direction L, is provided in the side flaps 70.

[0041]

The leg stretch section 75 may be configured so as to allow the leg opening section 35 to stretch and contract in the product long-side direction, and may be arranged along the leg opening section 35, or may be arranged in a state in which a part thereof is inclined with respect to the leg opening section 35.

[0042]

In addition, auxiliary stretch sections 77, which straddle the crotch region 25 and the rear waistline region 30 and stretches and contracts in the product long-side direction, are arranged more outwardly in the product width direction than the leg stretch section 75. Both the leg stretch section 75 and the auxiliary stretch section 77 are arranged between the backsheet 60a and the exterior sheet 60.

[0043]

Incidentally, the leg stretch section 75 and the auxiliary stretch section 77 are parts that are practically contracted in the product long-side direction by a rubber thread or the like, and conceptually exclude a part in which the elastic member is arranged in a state in which a contractile force does not exhibit.

[0044]

The leg stretch section 75 is arranged along the product long-side direction L more outwardly in the product width direction than the absorber 40, and is configured so as to be capable of stretching and contracting the product long-side direction L. The leg stretch section 75 is provided with a first leg stretch section 751, which is positioned more inwardly in the product width direction than a center point O2 in the product width direction between an inner end portion 35I in the product width direction of the leg opening section 35 and an the outer end portion 40T in the product width direction of the absorber 40, and two second leg stretch sections 752 which are positioned more outwardly in the product width direction than the center point O2. The elastic member according to the present embodiment is made of a polyurethane elastic fiber or natural rubber.

[0045]

The auxiliary stretch section 77 is configured of a predetermined number of the elastic member (one elastic member in the example of Fig. 1). The elastic member according to the present embodiment is made of a polyurethane elastic fiber or natural rubber. Since it is possible to allow the side flap 70 to follow the wearer's bulging buttocks by evenly contracting the entire region in which the auxiliary stretch sections of the side flaps 70 are provided, it is possible to cover the buttocks without riding up of the region.

[0046]

A center O3 in the product long-side direction of the leg stretch section 75 is positioned at a forward side than a center O1 in the product long-side direction of the disposable diaper in the elongated state of the disposable diaper. In addition, a center O4 in the product long-side direction of the leg opening section 35 is positioned at the forward side than the center O1 in the product long-side direction of the disposable diaper in the elongated state of the disposable diaper.

[0047]

A front end portion 77F of the auxiliary stretch section 77 is arranged at the rear side than a front end portion 75F of the leg stretch section 75. Accordingly, a region at a rearward side than the front end portion 75F of the leg stretch section 75 is contracted by the auxiliary stretch section 77. A rear end portion 77R of the auxiliary stretch section 77 is arranged at the rear side than the leg stretch section. Accordingly, a region at the rearward side than the leg stretch section 75 is contracted by the auxiliary stretch section 77.

[0048]

Frill-like contracted sections, which are contracted by the leg stretch section 75 and the auxiliary stretch section 77, are formed in the side flaps 70. It is possible to allow the frill-like contracted sections to be tightly fitted to the body by the leg stretch section 75 and the auxiliary stretch section 77. In addition, a distance between the inner end portion 35I, positioned at the

innermost side in the product width direction, and the leg stretch section is shorter than a distance between the leg stretch section and the auxiliary stretch section in the leg opening section. Accordingly, it is possible to suppress rolling of the inner end portion of the leg opening section by the leg stretch section. In addition, it is easy to maintain a spread shape of the entire region in which the auxiliary stretch sections of the side flaps are arranged by arranging the auxiliary stretch sections from the crotch portion over the rear waistline region.

[0049]

Further, the frill formed by the leg stretch section 75 and the auxiliary stretch section 77 stretches and contracts in the product long-side direction, and thus, the frill (wrinkle) is stretched along the product width direction. It is possible to prevent the rolling of the end portions in the product width direction of the rear waistline region to the inner side in the product width direction by the support of the frill (wrinkle).

[0050]

In a natural state of the disposable diaper 10, the inner end portion 35I of the leg opening section passes through a center in the product width direction between the second leg stretch section 752 and the auxiliary stretch section 77, and is positioned on a center line L2 extending along the product long-side direction. According to such a configuration, the inner end portion of the leg opening section is pulled up by the leg stretch section and the auxiliary stretch section, and thus, it is possible to prevent the rolling of the inner end portion of the leg opening section. Accordingly, it is possible to arrange the inner end portion of the leg opening section to follow the body.

[0051]

An elongation ratio of the leg stretch section 75 is preferably 1.7 times to 2.4 times. In the present embodiment, the elongation ratio of the leg stretch section 75 is set to be 1.9 times to 2.2 times. Incidentally, the elongation ratio means a degree of elongation of the leg stretch section, and is defined as below.

[0052]

An elongation ratio of the leg stretch section = (a length of the leg stretch section in the elongated state)/ (a length of the leg stretch section in the natural state)

In addition, an elongation ratio of the auxiliary stretch section 77 is preferably 1.6 times to 2.4 times. Incidentally, the elongation ratio of the auxiliary stretch section 77 means a degree of elongation of the auxiliary stretch section, and is defined as below.

[0053]

An elongation ratio of the auxiliary stretch section = (a length of the auxiliary stretch section in the elongated state)/(a length of the auxiliary stretch section in the natural state)

The elongation ratio of the leg stretch section and the elongation ratio of the auxiliary stretch section are defined as follows, for example.

[0054]

Firstly, in a case in which the disposable diaper 10 is enclosed in the package or the like, the disposable diaper 10 is taken out from the package. Subsequently, an arrangement region of the leg stretch section is cut out. At this time, the arrangement region of the leg stretch section is cut out including an exterior sheet to be joined to the leg stretch section. An elongation ratio of a sample of the leg stretch section after being cut out is measured, thereby measuring the elongation ratio of the leg stretch section.

[0055]

Each sample is left in an atmosphere of 20°C±2°C and a relative humidity of 60%±5% RH for 60 minutes. Thereafter, a length of the leg stretch section is measured along a stretch direction. This length is set as the "length of the leg stretch section in the natural state".

[0056]

Secondly, a length in the stretch direction of a desired region in the corresponding state (that is, the natural state) is measured, and then, a length in the stretch direction of the desired region, at the time of being stretched, from the natural state, to a state in which the wrinkle caused by the elastic member is hardly confirmed on a non-stretchable sheet by visual observation, is measured. This length is set as the "length of the leg stretch section in the elongated state", or the "length in the elongated state of the auxiliary stretch section".

[0057]

The elongation ratio is measured from calculation according to the above-described formula using these measurement results.

[0058]

In addition, a pair of leg side gathers 80, as side gathers, that extend along the product long-side direction L is provided at the inner side (close to the center in the product width direction W) of the pair of leg stretch sections 75. The leg side gathers 80 are provided in the inner end portions in the product width direction of the side flaps 70, and are orthostatic stretch gathers which are arranged more inwardly in the product width direction than the leg stretch section 75. The leg side gather 80 is arranged more inwardly in the product width direction than the leg stretch section 75. The pair of leg side gathers is arranged to be spaced apart from each other in the product width direction.

[0059]

The leg side gather 80 is configured of the side flap 70 as a side sheet, and an elastic member 81 as a stretchable member. The side flap 70 is folded using a fold line extending along the product long-side direction as a starting point. The elastic member 81 is arranged in the elongated state between parts of the folded side sheet, and stretches and contracts in the product long-side

direction. The side flap 70 is arranged from the front end portion to the rear end portion of the disposable diaper. However, the side gather is provided in a partial region including a center in the product long-side direction not in the entire region in the product long-side direction of the side flap 70. Incidentally, the leg side gather 80 can employ a conventionally well-known configuration, and specifically, may be configured using a sheet member different from the side flap 70.

[0060]

In addition, a waist stretch section 85, which can stretch and contract in the product width direction, is provided between the pair of fastening tapes in the product width direction. The waist stretch section 85 contracts in the product width direction between the fastening tapes.

[0061]

In the present embodiment, the waist stretch section 85 is configured using a stretchable sheet. A member configuring the waist stretch section 85 is not particularly limited, and a member which is thin and has a low bending rigidity and a small width reduction rate, as much as possible, is preferably used. When the waist stretch section 85 is configured using the material having the low bending rigidity, the waist stretch section 85 is easily bent following the body, and it is possible to allow the waist stretch section 85 to follow and be fitted to the body without applying a load to the wearer's body. In addition, when the waist stretch section 85 is configured using the small width reduction, the contraction in the product long-side direction of the disposable diaper in a case in which the disposable diaper is elongated in the product width direction is suppressed, and it is possible to suppress the disposable diaper from slipping down to the crotch side in the wearer's waist.

[0062]

In the present embodiment, a stretchable film having a basis weight of 20 g/m2 to 45 g/m2 is used as the waist stretch section 85.

[0063]

The waist stretch section 85 is stretched out to be 1.5 times to 2.5 times the length of the non-elongated state (natural state), and then, is attached to the exterior sheet 60 by a hot-melt adhesive or heat treatment and the like.

[0064]

In the present embodiment, the waist stretch section 85 is arranged between the exterior sheet 60 and the backsheet 60a. However, the waist stretch section 85 may be arranged between the core wrap 40b and the backsheet 60a or the exterior sheet 60 in a configuration in which the core wrap 40b extends outwardly in the product long-side direction more than the absorbent core 40a. The position of the waist stretch section is not particularly limited. In addition, the waist stretch section 85 may be arranged between the

side flap 70 and the backsheet 60a or the exterior sheet 60 in a region in which the absorber is not arranged.

[0065]

Incidentally, the waist stretch according to the present embodiment is configured so as to stretch and contract in the product width direction, but the waist stretch section may be configured so as to stretch and contract in the product width direction and the product long-side direction.

[0066]

The waist stretch section 85 is arranged to straddle the backsheet arrangement region R1 and the backsheet non-arrangement region R2 in the rear waistline region 30. Fig. 2 illustrates a stretch sheet arrangement region R3 by attaching oblique lines to the stretch sheet arrangement region R3 in which the waist stretch section 85 is arranged.

[0067]

An elongation ratio of the stretch sheet arrangement region R3 inside the backsheet non-arrangement region R2 is higher than an elongation ratio of a region other than the stretch sheet arrangement region R3 inside the backsheet non-arrangement region R2. In the present embodiment, the elongation ratio of the stretch sheet arrangement region R3 is set to be 1.15 times to 1.3 times.

[0068]

The elongation ratio of the stretch sheet arrangement region means a degree of elongation of the stretch sheet arrangement region, and is defined as below.

[0069]

An elongation ratio of the stretch sheet arrangement region = (a length of the stretch sheet arrangement region in the elongated state)/(a length of the stretch sheet arrangement region in the natural state of)

Incidentally, the elongation ratio of the stretch sheet arrangement region R3 can be measured using the same measurement method as the elongation ratio of the backsheet non-arrangement region R2.

[0070]

The fastening tape 90 is attached to a region of the side flap 70 corresponding to the rear waistline region 30. The fastening tape 90 includes a base sheet 91 coupled with the side flap 70, and a hook sheet 92 provided with a plurality of engagement members (not illustrated), which are the members for engagement with the front waistline region, and fixed to the base sheet 91. The hook sheet 92 configures the engagement section provided with the engagement members. The waistline retaining section in the rear waistline region described above is a region that extends in the product width direction from the hook sheet 92.

[0071]

The hook sheet 92 is fixed, and specifically joined to the base sheet 91. It is preferable that the hook sheet 92 and the base sheet 91 be joined each other such that the rigidity of the fastening tape 90 does not increase more than necessary. To be specific, it is preferable that the hook sheet 92 and the base sheet 91 be joined each other by the hot-melt adhesive intermittently applied in a point shape, a linear shape or a spiral shape. Incidentally, the hook sheet 92 and the base sheet 91 may be joined each other by a heat seal and the like.

[0072]

The base sheet 91 is configured using one or a plurality of pieces of nonwoven fabrics overlapping one another. A nonwoven fabric, manufactured by a method such as spun bond (SB) or spunbond-meltblown-spunbond (SMS), can be used as the base sheet 91. A basis weight (a total basis weight in the case of the plurality of sheets) of the nonwoven fabric configuring the base sheet 91 is 30 g/m2 to 120 g/m2, and preferably 40 g/m2 to 90 g/m2.

[0073]

The target section 95 is provided on a face at a non-skin contact side of the exterior sheet 60 in the front waistline region. The target section 95 is configured so as to be caught by the engagement member of the fastening tape, and serves a function as a loop of an engagement system formed of the hook and the loop. It is possible to use an air-through nonwoven fabric, for example, as the target section.

[0074]

It is possible to use a fibrous nonwoven fabric or a polyolefin thermoplastic synthetic resin film made using polyolefin thermoplastic synthetic resin fibers, for example, as the target section 95. In addition, it is possible to form the loop attached to the target section using a polyolefin thermoplastic synthetic resin.

[0075]

Further, it is also possible to use a nonwoven fabric, which is a bulky nonwoven fabric, and a part of which is embossed to prevent fluff on a nonwoven fabric surface, as the target section 95.

[0076]

In addition, it is also possible to provide the target section by forming the exterior sheet 60 of the disposable diaper using a nonwoven fabric, and printing a pattern to indicate an attachment position of the fastening tape 90 on the face of the non-skin contact side of the backsheet 60a or the exterior sheet 60, or arranging a patterned sheet on the non-skin contact side of the backsheet 60a or the exterior sheet 60.

[0077]

In addition, the area of a region between the rear leg opening section 35R and a straight line L1, which passes through the center in the product width direction and is parallel with the product long-side direction, is wider than the

area of a region between the front leg opening section 35F and the straight line L1 which passes through the center in the product width direction and is parallel with the product long-side direction. Accordingly, the side flap, which is positioned at the rear side than the center in the product long-side direction of the leg opening section, extends outwardly in the product width direction more than the side flap which is positioned at the front side than the center in the product long-side direction of the leg opening section, and thus, the area of a region capable of covering the body is wide.

[0078]

Incidentally, the straight line L1, which passes through the center in the product width direction and is parallel with the product long-side direction, is the straight line L1 which passes through a center in the product width direction of the disposable diaper, and is parallel with the product long-side direction. The above-described area is the area in the elongated state in which the leg stretch section 75 and the elastic member 81 of the leg side gather 80 are elongated such that the wrinkles in the topsheet 50, the side flap 70 and the like that configure the disposable diaper are not visually observed.

[0079]

The wearer's body is longitudinally asymmetric, and a surface area of a dorsal side is wider than a surface area of an abdominal side. It is because there are the buttocks to the outer side on the wearer's dorsal side. In addition, in a state in which the wearer has worn the disposable diaper, the center O4 in the product long-side direction of the leg opening section 35 is likely to be at a position that corresponds to a center in the product long-side direction of the wearer's crotch. For example, area of a region between the rear leg opening section, which is positioned at the rearward side than the center in the product long-side direction of the leg opening section, and the straight line, which passes through the center in the product width direction and is parallel with the product long-side direction, is set as a first area. In addition, the area of a region between the front leg opening section, which is positioned at the forward side than the center in the product long-side direction of the leg opening section, and the straight line, which passes through the center in the product width direction and is parallel with the product long-side direction, is set as a second area. It is considered a case in which the first area is the same as the second area, or a case in which the first area is smaller than the second area. In those cases, it is difficult to arrange the disposable diaper so as to cover the longitudinally asymmetric body. Thus, the disposable diaper is in the state of being tensioned at the wearer's dorsal part, or the state of being wrinkled at the wearer's abdominal part.

[0080]

Further, it is considered a case in which the side flap 70, which is positioned at the rear side than the center O4 in the product long-side direction

of the leg opening section, and the side flap 70, which is positioned at the front side than the center O4 in the product long-side direction of the leg opening section, are at substantially the same positions in the product width direction. In this case, the leg opening section 35 at the rear waistline region side is turned up in the state of being worn thereby exposing the wearer's buttocks in some cases when the leg opening section 35 is tensioned at a dorsal position of the wearer. In addition, since the sufficient area that can cover the buttocks is not provided, the end portion in the product width direction of the rear waistline region is rolled into the inner side at the time of being worn, thereby exposing the wearer's buttocks in some cases.

[0081]

However, the side flap, which is positioned at the rear side than the center in the product long-side direction of the leg opening section, extends outwardly in the width direction more than the side flap which is positioned at the front side than the center in the product long-side direction of the leg opening section. Thus, it is possible to arrange the disposable diaper so as to cover the longitudinally asymmetric body, and to arrange the disposable diaper corresponding to the wearer's body.

[0082]

A plurality of convex sections 36, each of which has a convex shape toward the outer side in the product width direction, are formed in the rear leg opening sections 35R. The convex section 36 is a part that is projected more outwardly in the product width direction than front and rear regions of the leg opening section. The leg opening sections 35 are places that correspond to the wearers' leg holes, and are parts that are easily put into the inner side of the disposable diaper 10. Accordingly, it is preferable that the leg opening section 35 cover the body more widely, and particularly, it is desirable that the rear leg opening section 35R be arranged so as to cover the body. When the convex section 36 を is provided, the area of the rear leg opening section 35R part increases, and it is possible to widely cover the buttocks by forming a shape of the rear leg opening section 35R in an outwardly convex shape.

[0083]

Further, since stress is easily focused on the rear leg opening section 35R, and particularly, a rear portion of the rear leg opening section 35R, it is preferable to form a state that allows pressure to the skin to be dispersed more by forming the convex section 36. To be specific, the stress is easily focused on a position close to a proximal end of the fastening tape 90, and further, the position is a part longitudinally overlapping at the time of wearing the disposable diaper 10 in some cases. Thus, it is preferable that the rear of the rear leg opening section 35R be formed in the convex shape so as to allow the stress on the skin to be dispersed.

[0084]

A concave section, which has a shape recessed toward the inner side in the product width direction, is formed in the front leg opening section 35F. The concave section 37 is a part that is recessed more inwardly in the product width direction than the front and rear regions of the leg opening section. The concave section 37 has a concave shape, and thus, easily becomes a state that follows the wearer's inguinal part. Thus, the side flap 70 and the leg stretch section 75 are allowed to be more fitted to the wearer, and the disposable diaper 10 from the front waistline region 20 to the crotch region 25 is allowed to stably follow the body regardless of the wearer's motion. For example, even in the case of taking motion such that the width of the absorber 40 is narrowed by motion of the wearer's legs, the concave section 37 is continuously fitted to the inguinal part, and it is possible to maintain a state in which the width of the absorber 40 is wide without being narrowed. The convex section 36 and the concave section 37 need to follow the wearer's body as well as to mitigate pressure to the skin.

[0085]

The leg opening section 35 has a convex shape projected from the outer side in the product width direction toward the inner side in the product width direction, and a distance D2 between the inner end portion 35I, which is positioned at the innermost side in the product width direction in the leg opening section 35 in the elongated state of the disposable diaper 10, and the leg stretch section 75 is shorter than a distance in the product width direction between the leg stretch section and the auxiliary stretch section, and is equal to or shorter than 15 mm.

[0086]

It is considered a case in which the distance between the inner end portions 35I of the leg opening sections 35 and the leg stretch section 75 in the elongated state of the disposable diaper 10 is longer than 15 mm. In this case, there is a risk that a contractile force caused by the leg stretch section 75 is not applied to the inner end portion of the leg opening section 35, and the leg opening section 35 is not allowed to be properly contracted by the leg stretch section 75. In addition, the inner end portion 35I of the leg opening section 35 is a part that is sandwiched by the wearer's legs in the state of being worn, and tightly fitted to the wearer. When the distance between the inner end portion 35I of the leg opening section 35 and the leg stretch section is equal to or shorter than 15 mm, it is possible to allow at least the part of the leg opening section, which is tightly fitted to the wearer, to be contracted and arranged corresponding to the wearer's legs.

[0087]

Subsequently, a description will be made regarding a state in which the disposable diaper configured as above is worn. At the time of wearing the disposable diaper 10, the hook sheet 92 of the fastening tape 90 is fastened to

the target section 95 to set the disposable diaper to be held by the wearer's waist. At this time, the backsheet non-arrangement region R2 arranged in the front end portion 10F of the disposable diaper is arranged at the wearer's abdominal part. In addition, the backsheet non-arrangement region R2 arranged in the rear end portion 10R of the disposable diaper is arranged the wearer's dorsal part.

[0088]

In general, the wearer's waist size is not always constant, but sometimes increases due to a meal or the like of the wearer. When the wearer's waist size increases, a region extending in the product width direction from the fastening tape of the disposable diaper is tightly fitted to the body too much in some cases. In particular, there is a case in which the front end portion and the rear end portion of the disposable diaper are tightly fitted to each other strongly when the wearer's waist size increases. At this time, a pulling force in the product width direction is applied to the front end portion and the rear end portion of the disposable diaper.

[0089]

The backsheet non-arrangement regions R2 are arranged in the front end portion 10F and the rear end portion 10R of the disposable diaper. Since the elongation ratio of the backsheet non-arrangement region R2 is higher than the elongation ratio of the backsheet arrangement region R1, the backsheet non-arrangement region R2 is easily stretched than the backsheet arrangement region R1. When the wearer's waist size increases, and the pulling force in the width direction is applied to the front end portion and the rear end portion of the disposable diaper, the front end portion and the rear end portion of the disposable diaper are stretched in the product width direction.

[0090]

For example, the backsheet arrangement region R1 is configured using a non-elongated film, and is hardly stretched when the pulling force in the width direction is applied. That is, the length of the backsheet arrangement region R1 hardly changes between a state in which the force in the width direction is applied due to the change in the wearer's waist size and a state in which the force is not applied. On the other hand, the backsheet non-arrangement region R2 is stretched when the force in the width direction is applied due to the change in the wearer's waist size as compared to a case in which the force in the width direction is not applied, thereby being longer than the designed size. Accordingly, it is possible to change each size of the front end portion and the rear end portion 10R of the disposable diaper in response to the change in the wearer's waist size. Accordingly, it is possible to properly cover the wearer's waist in response to the change in the wearer's waist size. It is possible to suppress the front end portion and the rear end portion of the disposable diaper from being stiff, and to suppress deterioration in the feeling of wearing.

[0091]

In addition, the front end portion 10F and the rear end portion 10R of the disposable diaper is easily in direct contact with the wearer's skin in the state of being worn, and is tightly fitted to the wearer's body. The exterior sheet 60 and the topsheet 50 are laminated on the front end portion 10F and the rear end portion 10R of the disposable diaper. In general, the nonwoven fabric that configures the exterior sheet 60 or the topsheet 50 has a higher flexibility than the film that configures the backsheet. Since the part to be in direct contact with the wearer has the high flexibility, irritation to the skin is reduced, and the feeling of wearing is improved. Further, the backsheet arrangement region R1, which is also capable of reducing the irritation to the skin with favorable moisture permeability because the film configuring the backsheet is not arranged thereon, extends to the rearward side than the rear end portion 40R of the absorber 40. Accordingly, even when the body fluid is leaked from the rear end portion 40R of the absorber 40, it is possible to suppress the leakage of the body fluid to the exterior sheet 60 side by the liquid-impermeable backsheet 60a.

[0092]

In addition, the backsheet arrangement region R1 extends to the rearward side than a center O5 in the product long-side direction of the hook sheet 92 of the fastening tape 90. In a state in which the disposable diaper is worn, the region that extends in the product width direction from the hook sheet 92 of the fastening tape is tightly fitted to the wearer's body. The backsheet arrangement region extends to the rearward side than the center O5 in the product long-side direction of the hook sheet 92 of the fastening tape. Thus, a region more than half in the product long-side direction among the region that is tightly fitted to the wearer's body is tightly fitted to the wearer's body. It is possible to suppress the spreading of the body fluid leaked to the rearward side of the absorber by the backsheet non-arrangement region R2 in the rear waistline region, and prevent the body fluid from reaching the rear end of the disposable diaper.

[0093]

Incidentally, the backsheet arrangement region preferably extends to the rearward side by equal to or larger than 5 mm more than the rear end portion of the absorber, and more preferably extends by equal to or larger than 10 mm than the rear end portion of the absorber. It is enough that the backsheet arrangement region extends more than the center O5 in the product long-side direction of the hook sheet 92 of the fastening tape. In addition, the length in the product long-side direction of the hook sheet 92 of the fastening tape is preferably equal to or larger than 20 mm, and more preferably equal to or larger than 25 mm from a viewpoint of securing a region that is held by the wearer's waistline by the fastening tape, and a viewpoint of securing a region in which the fastening tape and the backsheet arrangement region are overlapped in the long-side direction.

[0094]

The waist stretch section 85 configuring the stretchable sheet which stretches and contracts at least in the product width direction, is arranged to straddle the backsheet arrangement region R1 and the backsheet non-arrangement region R2 in the rear waistline region. The rear end portion of the waist stretch section 85 is positioned at the rear end portion 10R of the disposable diaper, and the front end portion of the waist stretch section 85 is positioned inside the backsheet arrangement region R1.

[0095]

Since the waist stretch section 85 is positioned inside the backsheet arrangement region R1, it is possible to allow the backsheet that prevents the leakage of the body fluid to be more tightly fitted to the body, and to improve the effect of preventing the leakage. In addition, since the waist stretch section 85 reaches the rear end portion 10R of the disposable diaper beyond the backsheet arrangement region R1, it is possible to allow the region beyond the backsheet arrangement region R1 (the backsheet non-arrangement region R2) to be tightly fitted to the wearer's body.

[0096]

In addition, the wearer is laid down on the disposable diaper in a developed state, the fastening tapes of the rear waistline region are pulled outwardly in the width direction to fasten the fastening tape at the time of wearing the disposable diaper. At this time, a pulling force to the outer side in the width direction is applied to the backsheet non-arrangement region R2 of the rear waistline region of the disposable diaper, and particularly, to the rear end portion 10R of the disposable diaper. The backsheet non-arrangement region R2, and particularly, the rear end portion 10R of the disposable diaper is easily stretched in the product width direction by the waist stretch section 85, and operability at the time of being worn is improved.

[0097]

Further, a fitting property of a region, positioned more outwardly in the long-side direction than a waistline position, increases due to the contraction of the waist stretch section 85 in the state (worn state) of maintaining the waistline retaining section at the wearer's waistline position by providing the waist stretch section 85, and it becomes easy to maintain the disposable diaper at the wearer's waistline position.

[0098]

Incidentally, the waist stretch section 85 may be provided in the front waistline region as well as the rear waistline region. It is preferable that the waist stretch section 85 to be provided in the front waistline region be arranged to straddle the backsheet arrangement region R1 and the backsheet non-arrangement region R2 in the front waistline region. To be specific, it is preferable that the front end portion of the waist stretch section 85 be positioned

at the front end portion 10F of the disposable diaper, and the rear end portion of the waist stretch section 85 be positioned inside the backsheet arrangement region R1.

[0099]

The waist stretch section 85 serving as the stretchable sheet extends more outwardly in the product width direction than the backsheet arrangement region. Thus, the region at the outer side in the product width direction than the backsheet arrangement region is easily stretched in the product width direction by the waist stretch section 85. Accordingly, the region at the outer side in the product width direction than the backsheet arrangement region is easily pulled outwardly in the product width direction at the time of being worn, and the operability at the time of being worn is improved.

[0100]

The backsheet non-arrangement regions R2 are provided in the front end portion 10F of the disposable diaper and the rear end portion 10R of the disposable diaper. The backsheet non-arrangement regions R2 with the high the elongation ratio are provided in both the front end portion 10F of the disposable diaper and the rear end portion 10R of the disposable diaper. Accordingly, when the pulling force in the product width direction is applied, both the front end portion 10F of the disposable diaper and the rear end portion 10R of the disposable diaper are easily stretched.

[0101]

A length L12 in the product long-side direction of the backsheet non-arrangement region of the rear waistline region is longer than a length L11 in the product long-side direction of the backsheet non-arrangement region of the front waistline region (see Fig. 2). Since the fastening tape is arranged in the rear waistline region, the pulling force the outer side in the product width direction is applied more greatly to the backsheet non-arrangement region R2 of the rear waistline region than to the backsheet non-arrangement region of the front waistline region. Since the length L12 in the product long-side direction of the backsheet non-arrangement region of the rear waistline region is set to be long, it is possible to secure a wide region that is elongated in the rear waistline region.

[0102]

The side flaps serving as the side sheet are arranged in the entire region in the product long-side direction of the disposable diaper. Parts of the folded side flap are not joined each other in the front end portion of the disposable diaper and the rear end portion of the disposable diaper. When the folded parts of the side flap are joined each other, a joint part thereof becomes hard resulting in deterioration of the texture of the part or the part being hardly stretched.

[0103]

However, the side flaps are not joined each other in the front end portion of the disposable diaper and the rear end portion of the disposable diaper. Thus, it is possible to suppress the front end portion of the disposable diaper and the rear end portion of the disposable diaper from being hard, and to secure the flexibility. In addition, it is possible to suppress the front end portion of the disposable diaper and the rear end portion of the disposable diaper from being hardly stretched.

[0104]

An embossed ratio of the exterior sheet is equal to or larger than 5% and equal to or smaller than 15%. When the embossed ratio of the exterior sheet is less than 5%, it is likely to be disadvantageous in terms of a difficulty in fluffing, which is required as the exterior sheet, although advantageous in relation to the elongation. Generation of the fluff leads to a tear or the like on the exterior sheet, and thus, it is not preferable in terms of strength when the embossed ratio of the exterior sheet is smaller than 5%. On the other hand, when the embossed ratio of the exterior sheet exceeds 15%, a degree of freedom of fibers with respect to the pulling of the nonwoven fabric sheet decreases, whereby the sheet is hardly elongated (practically, does not elongated). Incidentally, the embossed ratio described here is a ratio of the embossed area with respect to the entire area.

[0105]

In addition, a low rigidity section, in which the absorbing core configuring the absorber is not present, or the basis weight of the absorbing core is lower than that in the other part, is formed in the absorber 40 including the rear end portion of the absorber. The flexibility of the rear end portion of the absorber increases by providing the low rigidity section in the rear end portion of the absorber, and the rear end portion of the absorber is also easily extended in the width direction when the rear waistline region side is drawn to the front waistline region side.

[0106]

(3) Method of Manufacturing Disposable Diaper

Next, a description will be made regarding an example of a method of manufacturing the disposable diaper according to the present embodiment. Incidentally, it is possible to use an existing method regarding a step that is not described in the present embodiment. In addition, the manufacturing method to be described hereinafter is exemplary, and the disposable diaper described above can be manufactured using another manufacturing method. The method of manufacturing the disposable diaper includes, at least, a step of forming components, a step of placing components, and a step of forming leg holes, and a cutting step.

[0107]

In the step of forming components, components that configure the disposable diaper are formed. Specifically, for example, absorbent materials are laminated to form the absorber 40.

[0108]

In the step of placing components, the components, which configure the disposable diaper 10, including the stretchable sheet that configures the leg stretch section 75, another web such as a web that configures the topsheet, a leakage-preventing sheet, the absorber, the leg stretch section 75, the auxiliary stretch section 77, and the like are placed on a web that configures the backsheet.

[0109]

In the step of forming leg holes, the topsheet 50, the exterior sheet 60, and the backsheet 60a are cut. In this manner, the front end portions 77F of the auxiliary stretch sections 77 are cut, and the leg opening sections 35 to be arranged in the wearer's legs are formed.

[0110]

In the cutting step, a continuous body in which the topsheet 50, the backsheet 60a, the absorber 40, and the like are arranged is cut along the product width direction W to be a size as one product. In this manner, the disposable diaper 10 is manufactured.

[0111]

(4) Other embodiments

As described above, content of the present invention has been disclosed through the embodiment of the present invention. However, it should not be interpreted that the statements and drawings, which form a part of the present disclosure, limit the present invention. From this disclosure, a variety of alternate embodiments, examples, and applicable techniques will become apparent to a person skilled in the art.

[0112]

Subsequently, a description will be made regarding a disposable diaper 10A according to a modified example. Incidentally, in the disposable diaper 10A according to the modified example, the same configurations as those of the disposable diaper according to the embodiment will be attached with the same reference numerals, and descriptions thereof will not be provided.

[0113]

Fig. 5 is an exploded plan view of the disposable diaper 10A according to the modified example. The disposable diaper 10A according to the modified example is configured such that an elongation ratio of the side flap 70 is low substantially equivalent to that of a backsheet. A region of the backsheet non-arrangement region R2 that overlaps the side flap 70 is hardly elongated in the product width direction as similarly to the backsheet arrangement region R1.

[0114]

It is possible to use a nonwoven fabric sheet alternately having a high basis weight portion and a low basis weight portion in the product width direction as a topsheet of the disposable diaper according to the modified example. When such a topsheet is used, a force is focused on a boundary between the high basis weight portion and the low basis weight portion so that it is preferable for elongation of an elongating part and the elongation is promoted.

[0115]

The disposable diaper according to the modified example is configured such that an elongation ratio of a region R4 (the region between the side flaps 70) of the backsheet non-arrangement region R2, which does not overlap the side flap 70, is higher than an elongation ratio of the backsheet arrangement region R1. It is possible to allow the rear end portion of the disposable diaper to be elongated in the width direction when the wearer's waist size increases, and to prevent the front end portion and the rear end portion of the disposable diaper from being stiff even according to the modified example.

[0116]

The nonwoven fabric sheet that configures the topsheet or the exterior sheet according to the modified example is formed using a sheet without a thermal fusion point due to point or linear embossing, or a sheet having an area ratio of the point or linear embossing of 5% to 15%. The embossed area ratio is a ratio of the embossed area with respect to the entire area of the sheet, and, for example, is the area of a part of the exterior sheet in which embossment is formed with respect to the area of the entire exterior sheet.

[0117]

In addition, sheets (to be specific, the topsheet, the backsheet, the stretchable sheet), which configure the region R4 (the region between the side flaps 70) of the backsheet non-arrangement region R2 which does not overlap the side flap 70, are joined each other in a fixed manner using an adhesive (hot-melt adhesive) intermittently applied. The intermittent application refers to a state in which a linear adhesive is applied while drawing a meandering or spiral shape, not the state of being planarly applied. In this manner, join points among the sheets decreases whereby the join does not inhibit the elongation of each elongating sheet.

[0118]

In addition, in another modified example, the backsheet arrangement region may be at the forward side than the rear end portion of the absorber, or may be arranged at the forward side than the center in the product long-side direction of the hook sheet 92.

[0119]

In another modified example, an outer end portion in the product long-side direction of the stretchable sheet may be arranged at the rearward side than the front end portion of the disposable diaper, or at the forward side than

the rear end portion of the disposable diaper. Further, an inner end portion in the product long-side direction of the stretchable sheet may be arranged outside the backsheet arrangement region.

[0120]

In another modified example, the stretchable sheet may be arranged at the outer and inner sides in the product width direction than an outer end portion in the product width direction of the backsheet arrangement region. In addition, an outer end portion in the product width direction of the stretchable sheet and the outer end portion in the product width direction of the backsheet arrangement region may match with each other in the product width direction.

[0121]

In another modified example, the backsheet arrangement region may be arranged in the front end portion of the disposable diaper, or may be arranged in the rear end portion of the disposable diaper.

[0122]

In another modified example, the length in the product long-side direction of the backsheet non-arrangement region of the rear waistline may be the same as or shorter than the length in the product long-side direction of the backsheet non-arrangement region of the front waistline region.

[0123]

In another modified example, the side flap may be arranged in a partial region in the product long-side direction of the disposable diaper. Further, the parts of the folded side flap may be joined in the front end portion of the disposable diaper and the rear end portion of the disposable diaper.

[0124]

In another modified example, the exterior sheet may not be embossed. In addition, the embossed ratio of the exterior sheet may be smaller than 8% or larger than 16%.

[0125]

(5) Example

Samples of Examples 1 to 4 of the disposable diaper according to the present embodiment were used to measure the elongation ratio of the backsheet arrangement region and the elongation ratio of the backsheet non-arrangement region.

[0126]

Samples of the backsheet arrangement region R1 were used in Examples 1 and 2, and samples of the backsheet non-arrangement region R2 were used in Examples 3 and 4.

[0127]

Each sample was a symmetry region with the center of a straight line L1 which passes through the center in the product width direction and is parallel with the product long-side direction. A short-side direction of each sample is the

product long-side direction of the disposable diaper, and a long-side direction of each sample is the product width direction of the disposable diaper. Incidentally, each length in the long-side direction of the samples is longer, by 20 mm, than a "length before being elongated" in Table 1. Each 10 mm at end portions in the long-side direction of each sample is provided as a clamp margin for the clips.

[0128]

The sample of Example 1 is a sample of the backsheet arrangement region at the rearward side than the absorber 40, and of a region in which both end portions in the long-side direction of the sample overlap the side flaps. Accordingly, the sample of Example 1 includes a part in which the topsheet, the waist stretch section, the backsheet, and the exterior sheet are laminated, and a part in which the topsheet, the waist stretch section, the side flap, the backsheet, and the exterior sheet are laminated.

[0129]

The sample of Example 2 is a sample of the backsheet arrangement region at the rearward side than the absorber 40, and of a region between the pair of side flaps. Accordingly, the topsheet, the waist stretch section, the backsheet, and the exterior sheet are laminated in the sample of Example 2.

[0130]

The sample of Example 3 is a sample of the stretch sheet arrangement region R3 inside the backsheet non-arrangement region of the rear waistline region, and of a region in which both end portions in the long-side direction of the sample overlap the side flaps. Accordingly, the sample of Example 3 includes a part in which the topsheet, the waist stretch section, and the exterior sheet are laminated, and a part in which the topsheet, the waist stretch section, the side flap, and the exterior sheet are laminated.

[0131]

The sample of Example 4 is a sample of the stretch sheet arrangement region R3 inside the backsheet non-arrangement region of the rear waistline region, and of a region between the pair of side flaps. Accordingly, the topsheet, the waist stretch section, and the exterior sheet are laminated in the sample of Example 4.

[0132]

Table 1 shows each measurement result of an elongation ratio of the samples.

[Table 1]

[0133]

The present application claims priority to Japanese Patent Application No. 2013-118176, filed on June 4, 2013, the entire contents of which are incorporated by references herein.

Needless to say, the present invention includes various embodiments and the like which are not described here. Therefore, the technical range of the

present invention is to be defined only by the inventive specific matter according to the appropriate claims from the above description.

Industrial Applicability

[0134]

The invention of the present application can be applied to a tape-type diaper that includes an absorber, a backsheet arranged on a non-skin contact surface side of the absorber, and a cover sheet arranged on the non-skin contact surface side than the backsheet.

Reference Signs List

[0135]

10: disposable diaper
20: front waistline region
25: crotch region
30: rear waistline region
35: leg opening section
35I: inner end portion
35F: front leg opening section
35R: rear leg opening section
40: absorber
40a: absorbent core
40b: core wrap
50: topsheet
60: exterior sheet
60a: backsheet
70: side flap (side sheet)
75: leg stretch section
77: auxiliary stretch section
80: leg side gather
81: elastic member
85: waist stretch section
90: fastening tape
91: base sheet
92: hook sheet (engagement portion)
95: target section
R1: backsheet arrangement region
R2: backsheet non-arrangement region
L: product long-side direction
W: product width direction

The claims defining the invention are as follows:

1. A disposable diaper comprising:

a front waistline region;

a rear waistline region;

a crotch region which is positioned between the front waistline region and the rear waistline region in a product long-side direction extending from the front waistline region toward the rear waistline region;

an absorber which straddles the crotch region, and extends to at least any one of the front waistline region and the rear waistline region;

a pair of fastening tapes which is arranged in an outer end portion in a product width direction of the rear waistline region, the product width direction being orthogonal to the product long-side direction, and is fastened to the front waistline region;

a liquid-impermeable backsheet which is arranged on a non-skin contact surface side of the absorber; and

a pair of leg opening sections which is recessed toward a center in the product width direction of the disposal diaper,

wherein the disposable diaper includes, in a plan view thereof, a backsheet arrangement region in which the backsheet is arranged, and a backsheet non-arrangement region which is positioned more outwardly in the product long-side direction than the backsheet arrangement region, and in which the backsheet is not arranged,

the backsheet non-arrangement region is arranged in at least any one of a front end portion of the disposable diaper and a rear end portion of the disposable diaper,

an elongation ratio of the backsheet non-arrangement region is higher than an elongation ratio of the backsheet arrangement region,

the leg opening sections includes a rear leg opening section which is positioned at the rear side than a center in the product long-side direction of the leg opening section and a front leg opening section which is positioned at the front side than the center in the product long-side direction of the leg opening section,

the rear leg opening section extends outwardly in the product width direction more than the front leg opening section,

a convex section which has a convex shape toward the outer side in the product width direction are formed in the rear leg opening section,

the fastening tape has an engagement section in which a member to be engaged with the front waistline region is arranged, and

the backsheet arrangement region extends to a rearward side more than a rear end portion of the absorber, and extends to a rearward side more than a center in the product long-side direction of the engagement section.

2. The disposable diaper according to claim 1, further comprising

a stretchable sheet which is stretchable in the product width direction,

wherein an outer end portion in the product long-side direction of the stretchable sheet is arranged in at least any one of the front end portion of the disposable diaper and the rear end portion of the disposable diaper,

an inner end portion in the product long-side direction of the stretchable sheet is arranged inside the backsheet arrangement region,

an outer end portion of the stretchable sheet extends to outwardly in the product width direction more than the backsheet arrangement region, and

the stretchable sheet is arranged inner side of the fastening tape in the product width direction and apart from the fastening tapes.

3. The disposable diaper according to claim 2, wherein

the stretchable sheet extends more outwardly in the product width direction than the backsheet arrangement region.

4. The disposable diaper according to any one of claims 1 to 3, wherein

the backsheet non-arrangement region is arranged in the front end portion of the disposable diaper and the rear end portion of the disposable diaper,

a target section where the fastening tape is fastened is provided in the front waistline region, and

the front end portion of the backsheet arrangement region is positioned at the front side than the front end portion of the target section.

5. The disposable diaper according to claim 4, wherein

a length in the product long-side direction of the backsheet non-arrangement region of the rear waistline region is longer than a length in the product long-side direction of the backsheet non-arrangement region of the front waistline region.

6. The disposable diaper according to any one of claims 1 to 5, further comprising

a pair of orthostatic side gathers which is arranged on a skin contact surface side of the absorber,

wherein the pair of side gathers is arranged to be spaced apart from each other in the product width direction,

each of the pair of side gathers includes a side sheet folded using a fold line extending along the product long-side direction as a starting point, and a stretchable member arranged between parts of the folded side sheet,

the side sheet is arranged from the front end portion to the rear end portion of the disposable diaper, and

the parts of the folded side sheet are not joined each other in the front end portion of the disposable diaper and the rear end portion of the disposable diaper.

7. The disposable diaper according to any one of claims 1 to 6, further comprising

an exterior sheet which is arranged on the non-skin contact surface side of the backsheet,

wherein an embossed ratio of the exterior sheet is equal to or larger than 5% and equal to or smaller than 15%.

8. The disposable diaper according to any one of the claims 1 to 7, further comprising

a target section where the fastening tape is fastened is provided in the front waistline region,

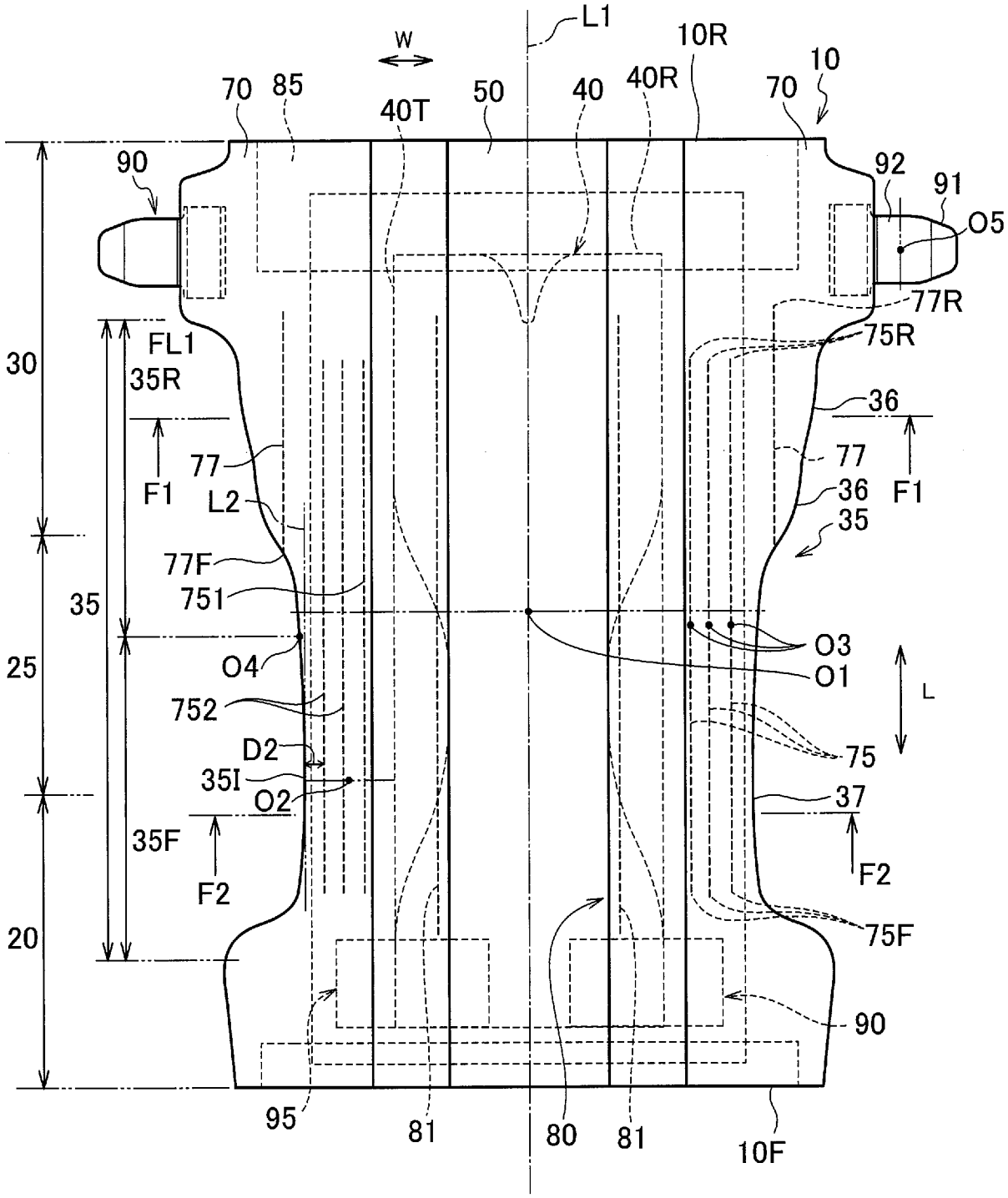
the outer end of the backsheet arrangement region is positioned at inner side than the outer end of leg opening section in the product width direction and is positioned at outer side than the outer end of target section in the product width direction.

9. The disposable diaper according to any one of claims 1 to 7, further comprising

a plurality of leg stretch section which is stretchable in the product long-side direction is provided at inner side than the leg opening section in the product width direction, and

the leg stretch section are arranged in the backsheet arrangement region and are not arranged in the backsheet non-arrangement region.

FIG. 1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70
85
40T
50
40
40R
70
90
92
91
O5
77R
75R
FL1
35R
30
36
F1
77
77
L2
36
F1
35
77F
751
35
O3
O1
O4
25
752
L
D2
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O2
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35F
F2
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20
75F
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80
81
10F

FIG. 2

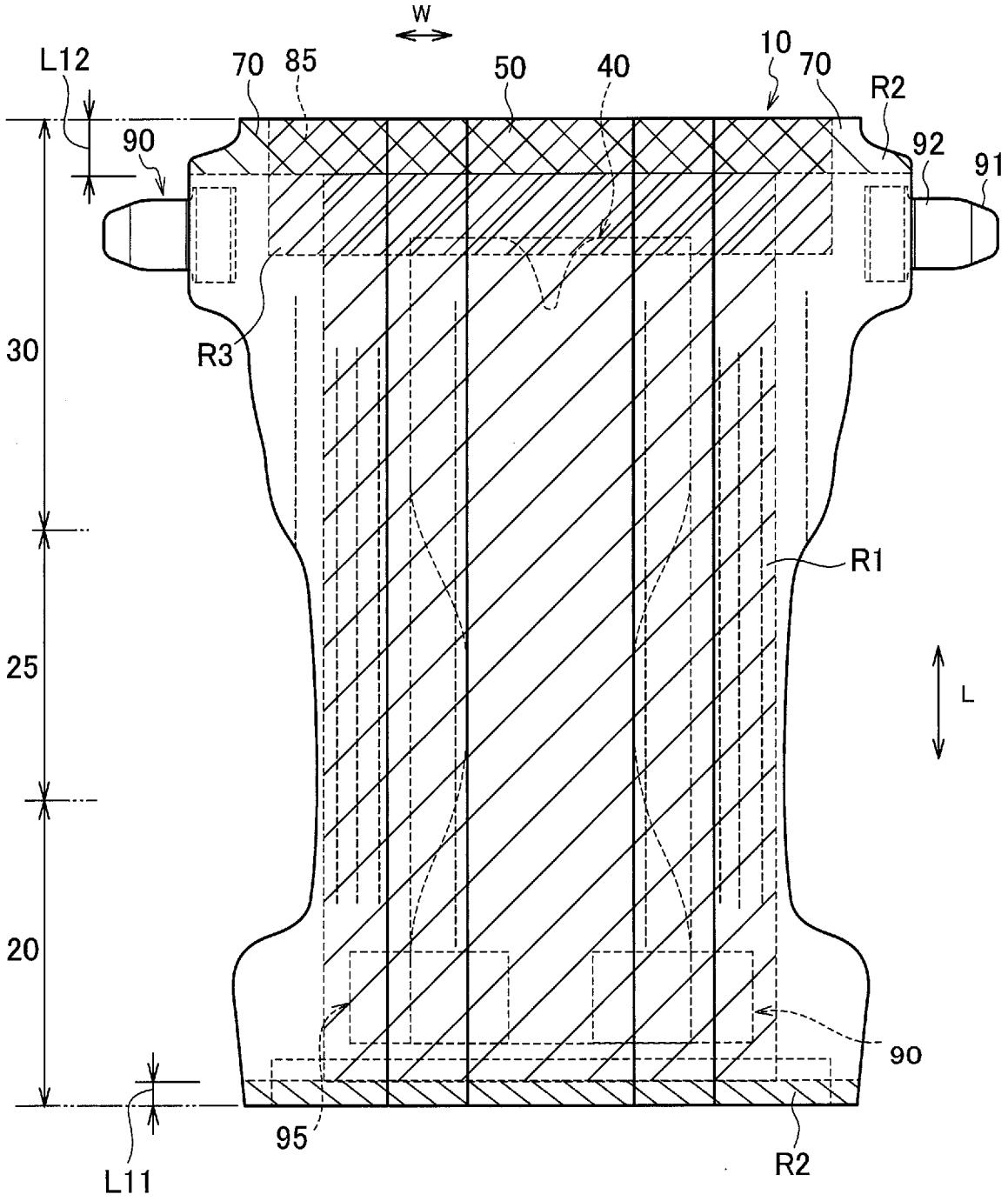

FIG. 3

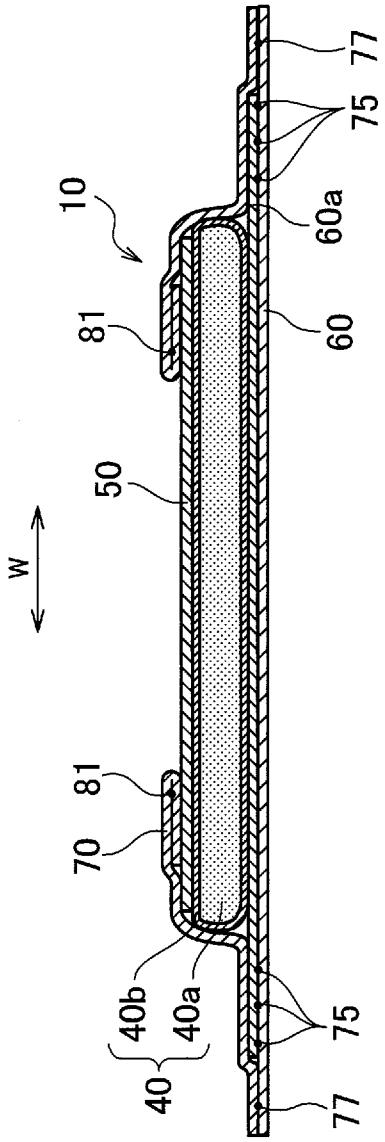

FIG. 4

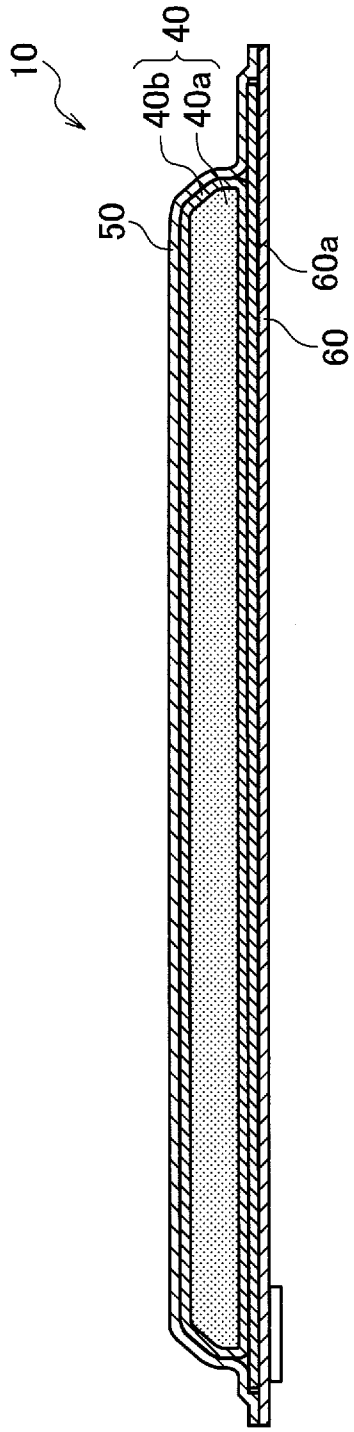

FIG. 5