

[DESCRIPTION]

[Title of Invention]

Disposable Diaper

[Technical Field]

[0001]

The present invention relates to a disposable diaper.

[Background Art]

[0002]

Conventionally, in order that the shape of an absorber in a disposable diaper fits the shape of a body of a wearer, there is known a technology for arranging a constriction unit of an absorber in a crotch region of such a disposable diaper.

[0003]

In this case, in order that adhesion and a comfortable feeling when worn are improved in a crotch region of a disposable diaper having an absorber in which the above-described constriction unit is arranged, there is known a technology where a first crotch elastic member is arranged along a product longitudinal direction and a second crotch elastic member is arranged along the product longitudinal direction inside in a product widthwise direction of the first crotch elastic member (see Patent Literature 1, for example).

[Citation List]

[Patent Literature]

[0004]

[PTL 1] Japanese Unexamined Patent Application Publication No. 2008-119416

[Summary of Invention]

[0005]

However, in the above-described disposable diaper, the second crotch elastic member is arranged in a region overlapping the absorber in the crotch region.

[0006]

In this case, the crotch region is a region where the largest load is received in the absorber because the crotch region is sandwiched by right and left legs of a wearer when the disposable diaper is put on the wearer, and a region where the absorber is easily deformed.

[0007]

The above-described disposable diaper has a problem in that, the second crotch elastic member is arranged along the product longitudinal direction, in the region overlapping the absorber in the crotch region which is the portion thus easily

deformed, and therefore, in the crotch region, the absorber is deformed along the product longitudinal direction by the force generated as a result of the second crotch elastic member being shrunk, and it is thus not possible for the absorber to provide an expected absorption performance.

[0008]

Therefore, the present invention has been achieved in view of the problem, and an object thereof is to provide a disposable diaper capable of providing a desired absorption performance even when a constriction unit is arranged in an absorber.

[0009]

A first aspect of the present invention is summarised as a disposable diaper having a product longitudinal direction and a product widthwise direction perpendicular to each other, and comprising a topsheet; a backsheet; and an absorber disposed between the topsheet and the backsheet, wherein in the product longitudinal direction, a dorsal side and a ventral side are defined; outside in the product widthwise direction with respect to a position of a maximum width of the absorber, at least one pair of leg-hole elastic members are arranged which are stretchable in the product longitudinal direction; inside in the product widthwise direction with respect to the pair of leg-hole elastic members and outside in the product widthwise direction with respect to the position of the maximum width of the absorber, at least one pair of inner elastic members are arranged which are stretchable in the product longitudinal direction; the absorber includes a constriction unit; at the ventral side, the constriction unit reaches an outer side in the product longitudinal direction with respect to a range in an effective length of the leg-hole elastic member; and in the product longitudinal direction, an end edge at the ventral side in the effective length of the inner elastic member exists within a range in which the constriction unit is arranged.

[Brief Description of Drawings]

[0010]

[Fig. 1] Fig. 1 is a plan view in which a disposable diaper according to a first embodiment of the present invention is seen from a skin contact surface side.

[Fig. 2] Fig. 2 is a cross-sectional view taken along X-X in Fig. 1.

[Description of Embodiments]

[0011]

With reference to Fig. 1 and Fig. 2, a disposable diaper 1 according to a first embodiment of the present invention will be described.

[0012]

It is noted that in the description of the drawings below, identical or similar symbols are assigned to identical or similar portions. However, it should be noted that the drawings are schematic and ratios of respective dimensions and the like are different from actual ones.

[0013]

Therefore, a specific dimension and the like should be determined in view of the following description. Moreover, among the drawings, the respective dimensional relations or ratios may differ.

[0014]

Fig. 1 shows a plan view in which the disposable diaper 1 according to the present embodiment is seen from a skin contact surface side, and Fig. 2 is a cross-sectional view taken along X-X in Fig. 1.

[0015]

As shown in Fig. 1, the disposable diaper 1 according to the present embodiment has a product longitudinal direction L and a product widthwise direction W perpendicular to each other. Further, the disposable diaper 1 according to the present embodiment has a dorsal side B and a ventral side F in the product longitudinal direction L.

[0016]

Further, as shown in Fig. 1 and Fig. 2, the disposable diaper 1 according to the present embodiment includes a topsheet 2A, a backsheet 2D, and an absorber 2C disposed between the topsheet 2A and the backsheet 2D.

[0017]

Further, as shown in Fig. 2, in the disposable diaper 1 according to the present embodiment, a waterproof nonwoven fabric sheet 2B may be arranged at a non-skin contact surface side of the backsheet 2D.

[0018]

For example, the topsheet 2A is not particularly limited as long as the topsheet 2A is made of a sheet-like material, such as a nonwoven fabric, a woven fabric, a perforated plastic sheet, and a mesh sheet, having a structure through which liquids pass. Examples of a fiber configuring these materials include a monofilament such as polyethylene (PE), polypropylene (PP), and polyethylene terephthalate (PET); a fiber obtained through graft polymerization of polyethylene and polypropylene; and a composite fiber having, for example, a core-clad structure.

[0019]

The absorber 2C includes a core wrap and an absorbent core that absorbs a liquid. The absorbent core includes a hydrophilic fiber and a superabsorbent polymer. Examples of the hydrophilic fibers include cellulose such as ground pulp or cotton; regenerated cellulose such as rayon or fibril rayon; semi-synthetic cellulose such as acetate or triacetate; particulate polymers; fibrous polymers; thermoplastic hydrophobic chemical fibers; or thermoplastic hydrophobic chemical fibers that have been subjected to hydrophilic treatment. These can be used singly or mixed. Among these examples, taking into consideration low cost and ease of making into an absorber, it is preferable to use the ground pulp. A material obtained by mixing a hydrophilic fiber with a polymer absorber may be used.

[0020]

It is noted that the absorbent core is wrapped by the core wrap. For example, as the core wrap, various types of fibrous nonwoven fabric or a tissue sheet having a permeability in at least a part of the skin contact surface side may be used, e.g., an air-through nonwoven cloth, a spun bond nonwoven cloth, an SMS nonwoven cloth, and a tissue sheet having a basis weight of 10 to 30 g/m².

[0021]

For example, the backsheet 2D is made of a liquid-impermeable and moisture-permeable film, or a liquid-impermeable and moisture-impermeable film.

[0022]

In this case, as shown in Fig. 1, in the disposable diaper 1 according to the present embodiment, in a crotch region corresponding to a crotch portion of a wearer, the absorber 2C has a constriction unit 2C1 having a recessed shape.

[0023]

According to the configuration, when the disposable diaper 1 is worn, it is possible to fit the disposable diaper 1 in the crotch portion that lies across a ventral portion and a dorsal portion and is surrounded by right and left legs of a wearer.

[0024]

In particular, when a region where the constriction unit 2C1 at the ventral side F is disposed is enlarged, it is possible to avoid a situation where the absorber 2C having a rigidity rises at the crotch portion of a wearer so that the absorber 2C is kept away from the body of the wearer.

[0025]

Further, as shown in Fig. 1 and Fig. 2, in the disposable diaper 1 according to the present embodiment, outside in the product widthwise direction W with respect to a position of a maximum width W_{max1}/W_{max2} of the absorber 2C, at least a pair of

leg-hole elastic members 3 are arranged which are stretchable in the product longitudinal direction L.

[0026]

Further, as shown in Fig. 1 and Fig. 2, in the disposable diaper 1 according to the present embodiment, inside in the product widthwise direction W with respect to the leg-hole elastic member 3 and outside in the product widthwise direction W with respect to the position of the maximum width W_{max1}/W_{max2} of the absorber 2C, at least a pair of inner elastic members 4 are arranged which are stretchable in the product longitudinal direction L.

[0027]

According to the configuration, each of the inner elastic members 4 fits the body of the wearer and a bodily waste can be effectively blocked, making it possible to return the bodily waste to the absorber 2C side. Further, when the inner elastic member 4 is shrunk, it is possible to continuously fit the absorber 2C to the body of the wearer.

[0028]

Therefore, the leg-hole elastic member 3 and the inner elastic member 4 are disposed in a region not overlapping the absorber 2C in the product widthwise direction W.

[0029]

According to the configuration, in the crotch region of the disposable diaper 1, it is possible to restrain the deformation of the absorber 2C.

[0030]

Specifically, as shown in Fig. 2, in the disposable diaper 1 according to the present embodiment, the inner elastic member 4 may be disposed between the backsheet 2D and the nonwoven fabric sheet 2B.

[0031]

According to the configuration, the backsheet 2D, the topsheet 2A, etc., exist between the skin surface of the wearer and the inner elastic member 4, and thus, it is possible to increase a cushioning property with respect to the skin surface of the wearer and it is possible to soften a feeling when the inner elastic member 4 is in contact with a wearer's skin.

[0032]

It is noted that as shown in Fig. 1, in the disposable diaper 1 according to the present embodiment, at the ventral side F, the constriction unit 2C1 reaches an

outer side in the product longitudinal direction L with respect to a range R1 in an effective length of the leg-hole elastic member 3.

[0033]

According to the configuration, when the disposable diaper 1 is worn, the leg-hole elastic member 3 fits a groin portion of a wearer without intervention of the absorber 2C, and even after the disposable diaper 1 is worn, the absorber 2C is positioned to run along the groin portion of the wearer, as a result of which it is possible to provide an effect that the wearer can easily move legs. Consequently, it is possible to effectively prevent a urine leakage from the groin portion of the wearer.

[0034]

Further, as shown in Fig. 1, in the disposable diaper 1 according to the present embodiment, in the product longitudinal direction L, an end edge E1 at the ventral side F in the effective length of the inner elastic member 4 exists in a range in which the constriction unit 2C1 is arranged.

[0035]

It is noted that as shown in Fig. 1, in the disposable diaper 1 according to the present embodiment, in the product longitudinal direction L, the range R1 in the effective length of the leg-hole elastic member 3 is configured to be longer than a range R2 in the effective length of the inner elastic member 4.

[0036]

According to the configuration, the disposable diaper 1 is firmly held in a portion close to a crotch portion of the wearer, and thus, when the inner elastic member 4 is arranged and the leg-hole elastic member 3 is not installed at the ventral side F and the dorsal side B with respect to the range R2 in the effective length of the inner elastic member 4, and as a result, it is possible to restrain contraction of the absorber 2C at the ventral side F and the dorsal side B with respect to the range R2 in the effective length of the inner elastic member 4 and it is possible to prevent a displacement resulting from the leakage of a body fluid and the shrinkage of the absorber 2C.

[0037]

In this case, the range R1 in the effective length of the leg-hole elastic member 3 is a range in which the leg-hole elastic member 3 is arranged to be stretchable in the product longitudinal direction L, and the range R2 in the effective length of the inner elastic member 4 is a range in which the inner elastic member 4 is arranged to be stretchable in the product longitudinal direction L.

[0038]

Further, as shown in Fig. 1, the disposable diaper 1 according to the present embodiment may be configured such that in the absorber 2C, the maximum width $W_{\max 2}$ at the dorsal side B is shorter than the maximum width $W_{\max 1}$ at the ventral side F.

[0039]

According to the configuration, at the ventral side F, it is possible to effectively absorb urine in a wider area.

[0040]

Further, as shown in Fig. 1 and Fig. 2, in the disposable diaper 1 according to the present embodiment, a leakage-preventing wall 5 may be arranged outside in the product widthwise direction W with respect to the absorber 2C.

[0041]

In this case, the leakage-preventing wall 5 may include a fixed unit 5A fixed to the topsheet 2A and an erecting unit 5B configured to erect from the fixed unit 5A. In this case, at a free end of the erecting unit 5B, an elastic member is arranged.

[0042]

It is noted that as shown in Fig. 1, the disposable diaper 1 according to the present embodiment may be configured such that with respect to a distance W_f/W_b between the fixed unit 5A of the leakage-preventing wall 5 and a lateral edge in the product widthwise direction W of the absorber 2C, the distance at the ventral side (W_f) is shorter than that at the dorsal side (W_b).

[0043]

The configuration enables the erecting unit 5B of the leakage-preventing wall 5 to erect more easily at the dorsal side B than at the ventral side F, enables to widen a pocket (accommodation space) formed by the erecting unit 5B of the leakage-preventing wall 5 and the topsheet 2A at the dorsal side B, and thus, enables to prevent leakage of soft stool, etc.

[0044]

Further, the disposable diaper 1 according to the present embodiment may be configured such that the stress of the inner elastic member 4 is equivalent or larger than the stress of the leg-hole elastic member 3.

[0045]

According to the configuration, it is possible for the inner elastic member 4 arranged in a region closer to the absorber 2C than the leg-hole elastic member 3 to appropriately fit along an uneven body line of the wearer.

[0046]

Further, as shown in Fig. 1, in the disposable diaper 1 according to the present embodiment, outside in the product longitudinal direction L with respect to the range R2 in which the constriction unit 2C1 is arranged, both end edges E2 in the product longitudinal direction L of the erecting unit 5B of the leakage-preventing wall 5 may be fixed to the topsheet 2A.

[0047]

According to the configuration, in a region where not to overlap the constriction unit 2C1 of the absorber 2C configured to fit the body of the wearer, the erecting unit 5B of the leakage-preventing wall 5 is fixed to the topsheet 2A, and thus, it is possible to provide an effect that the leakage-preventing wall 5 is not likely to fall outside in the product widthwise direction W.

[0048]

Further, as shown in Fig. 1 and Fig. 2, in the disposable diaper 1 according to the present embodiment, the inner elastic member 4 may be arranged at both sides in the product widthwise direction W of the fixed unit 5A of the leakage-preventing wall 5.

[0049]

According to the configuration, it is possible to facilitate the shrinkage of the fixed unit 5A of the leakage-preventing wall 5 into the product longitudinal direction L and the erecting unit 5B of the leakage-preventing wall 5 can easily rise, and thus, it is possible to improve the fitting between the free end of the erecting unit 5B of the leakage-preventing wall 5 and the body of the wearer.

[0050]

Thus, the present invention has been explained in detail by using the above-described embodiments; however, it is obvious that for persons skilled in the art, the present invention is not limited to the embodiments explained herein. The present invention can be implemented as corrected and modified modes without departing from the gist and the scope of the present invention defined by the claims. Therefore, the description of the specification is intended for explaining the example only and does not impose any limited meaning to the present invention.

[0051]

In addition, the entire content of Japanese Patent Application No. 2014-080287 (filed on April 9, 2014) is incorporated in the present specification by reference.

[Industrial Applicability]

[0052]

Therefore, it is possible to provide a disposable diaper capable of providing a desired absorption performance even when a constriction unit is arranged in an absorber.

[Reference Signs List]

[0053]

1 ... Disposable diaper

2A ... Topsheet

2B ... Nonwoven fabric sheet

2C ... Absorber

2C1 ... *Constriction unit*

2D ... Nonwoven fabric sheet

3 ... Leg-hole elastic member

4 ... Inner elastic member

5 ... Leakage-preventing wall

5A ... Fixed unit

5B ... Erecting unit

[CLAIMS]

[Claim 1]

A disposable diaper having a product longitudinal direction and a product widthwise direction perpendicular to each other, and comprising a topsheet; a backsheet; and an absorber disposed between the topsheet and the backsheet, wherein

in the product longitudinal direction, a dorsal side and a ventral side are defined; outside in the product widthwise direction with respect to a position of a maximum width of the absorber, at least one pair of leg-hole elastic members are arranged which are stretchable in the product longitudinal direction;

inside in the product widthwise direction with respect to the pair of leg-hole elastic members and outside in the product widthwise direction with respect to the position of the maximum width of the absorber, at least one pair of inner elastic members are arranged which are stretchable in the product longitudinal direction;

the absorber includes a constriction unit;

at the ventral side, the constriction unit reaches an outer side in the product longitudinal direction with respect to a range in an effective length of the leg-hole elastic member;

in the product longitudinal direction, an end edge at the ventral side in the effective length of the inner elastic member exists within a range in which the constriction unit is arranged;

in the absorber, the maximum width at the dorsal side is configured to be shorter than the maximum width at the ventral side;

outside in the product widthwise direction with respect to the absorber, a leakage-preventing wall is arranged;

the leakage-preventing wall includes a fixed unit which is fixed to the topsheet and an erecting unit which erects from the fixed unit; and

with respect to a distance between the fixed unit of the leakage-preventing wall and a lateral edge in the product widthwise direction of the absorber, the distance at the ventral side is configured to be shorter than the distance at the dorsal side.

[Claim 2]

The disposable diaper according to claim 1, wherein

a stress of the inner elastic member is configured to be equivalent or larger than a stress of the leg-hole elastic member.

[Claim 3]

The disposable diaper according to claim 1 or 2, wherein
outside in the product longitudinal direction with respect to the range in which the
constriction unit is arranged, both end edges in the product longitudinal direction of
the erecting unit of the leakage-preventing wall are fixed to the topsheet.

[Claim 4]

The disposable diaper according to any one of claims 1 to 3, wherein
the inner elastic members are arranged at both sides in the product widthwise
direction of the fixed unit of the leakage-preventing wall.