provided discontinuously.

Citation List

Patent Literature

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Summary of Invention

Technical Problem

However, in the manufacturing method of PLT 1, since the bands and sheet webs are cut and removed, material that is not used in the finished product is required, thereby resulting in the risk of increasing material costs. Since the bands and sheet webs are cut and removed continuously along the edges of the sheet webs, the increase in cost in this case cannot be ignored.

In addition, since a device for forming and affixing the bands as well as space for installing that device are required, there is also the risk of an increase in costs required for production equipment.

Solution to Problem

According to the present invention, a manufacturing method of an underpants-type absorbent article is provided, which is provided with an outer body provided with a front piece and back piece mutually joined at side areas, the outer body having elastic members provided discontinuously along portions of the lower edges of the front piece and back piece that define leg holes, and an inner body containing an absorptive body and which is anchored to the inside of the outer body so as to be positioned in a crotch area, comprising, in turn: a step in which a continuous sheet in the form of a sheet web that forms the front piece or the back piece is transported in a machine direction, a step in which a continuous elastic member in the form of a continuous elastic body is supplied to the sheet web while oscillating in a cross-machine direction perpendicular to the machine direction so that the continuous elastic body

of the portions of the connecting sheet 6 that overlap with the front piece 4 and the back piece 5. In addition, both end edges 6E in the longitudinal direction LN of the connecting sheet 6 extend substantially in the transverse direction LT.

On the other hand, the inner body 3 has a rectangular shape that extends in the longitudinal direction LN. Both side edges 3S in the transverse direction LT of the inner body 3 extend substantially in the longitudinal direction LN, while both end edges 3E in the longitudinal direction LN extend substantially in the transverse direction.

In addition, a pair of leakage preventing members 7 is provided on both sides in the transverse direction LT of the inner body 3 along both side edges 3S of the inner body 3. The free edges and/or outer edges 7SO in the transverse direction ~~LN~~ LT of the leakage preventing members 7 extend in the longitudinal direction LN.

As was previously described, the inner body 3 is overlapped and anchored on the connecting sheet 6 so as to be positioned in the crotch area 1C. In this case, the inner body 3 extends in the longitudinal direction ~~LT~~ LN beyond the connecting sheet 6 and is also anchored to the front piece 4 and the back piece 5.

In addition, in this case, at least a portion of the central portion 6SC of both side edges 6S of the connecting sheet 6 are positioned farther to the inside in the transverse direction LT than the outer edges 7SO of the leakage preventing members 7, and are also positioned farther to the inside in the transverse direction LT than both side edges 3S of the inner body 3. In contrast, the end portions 6SE of both side edges 6S are positioned farther to the outside in the transverse direction LT than both side edges 3S of the inner body 3, and are also positioned farther to the outside in the transverse direction LT than the outer edges 7SO of the leakage preventing members 7.

elastic member 5WG is anchored between the back sheets 5B at the folding portion 5F. On the other hand, the elastic members 5FG and 5LG are anchored between the top sheet 5T and the back sheet 5B. These elastic members 4WG, 4FG, 4LG, 5WG, 5FG and 5LG are in the form of threads, for example, and are attached to the front piece 4 and the back piece 5 while stretched in the transverse direction LT.

In this case, the elastic member 5FG includes an elastic member 5FGW provided in the waist portion 5W of the back piece 5 and an elastic member 5FGE provided in the extending portion 5E. As can be understood from FIG. 2, the elastic member 5FGE is provided overlapping the inner body 3 and the leakage preventing member 7. This elastic member 5FGE provides elastic action between the side areas 1F and crotch area 1C of the diaper 1 when worn. Similarly, the elastic members 4LG and 5LG also provide elastic action between the side areas 1F and crotch area 1C of the diaper 1 when worn.

Note that the elastic members 4LG and 5LG are not provided around the central portions 4LC and LC of the respectively corresponding lower edges 4L and 5L, and are thus provided discontinuously. Consequently, the elastic members 4LG and 5LG do not extend across the inner body 3 and/or connecting sheet 6 in the transverse direction LT. However, as shown in FIG. 2, the elastic members 4LG and 5LG slightly overlap the connecting sheet 6 and the inner body 3.

Note that the upper edges of the top sheets 4T and 5T are arranged roughly along the lower edges of the elastic members 4WG and 5WG, while the lower edges of the top sheets 4T and 5T are arranged roughly along the lower edges of the back sheets 4B and 5B.

Here, the elastic members 4WG, 4FG, 4LG, 5WG, 5FG and 5LG are formed from elastic fibers in the manner of natural rubber, synthetic rubber or spandex fibers, and have a draw ratio of, for example, 1.3 to 3.5. In the

styrene-butadiene-styrene (SBS) or styrene-ethylene-butylene-styrene (SEBS) adhesive can be used for the adhesive.

More specifically, the top sheets 4T and 5T and back sheets 4B and 5B of the front piece 4 and the back piece 5 are mutually connected to the elastic members 4WG, 4FG, 5WG and 5FG with a preliminarily applied HMA. In addition, at those locations where the elastic members 4WG, 4FG, 5WG and 5FG are sparse, namely where the interval between elastic members is, for example, 10 mm or more, HMA is applied to the top sheets 4T and 5T and the back sheets 4B and 5B by a coating method in the manner of spiral coating or controlled seam coating. Moreover, HMA is also applied to the top sheets 4T and ~~4B~~ 5T and the back sheets ~~5T~~ 4B and 5B around the lower edges 4L and 5L in order to prevent separation.

On the other hand, the elastic members 4LG and 5LG are anchored to the top sheets 4T and 5T by HMA preliminarily applied to the top sheets 4T and 5T by a coating method such as spiral coating. In this case, the HMA is applied so as to follow the loci of the elastic members 4LG and 5LG.

In addition, the connecting sheet 6 is connected to the front piece 4 and the back piece 5 by a method such as sonic sealing or adhesive. In the first embodiment according to the present invention, HMA is preliminarily applied to the back of the connecting sheet 6 by a coating method such as slot coating.

On the other hand, in the inner body 3, the top surface and bottom surface of the absorptive body core 3AC are connected to the core wrapping sheet 3AW by an adhesive such as HMA. In this case, the adhesive is applied by a coating method such as spiral coating, slot coating, controlled seam coating, bead coating or curtain coating so as to have a basis weight of 1.5 g/m^2 to 10 g/m^2. In the first embodiment according to the present invention, HMA is applied by a spiral coating method so

provided with the elastic members 4LG and 5LG.

Next, the front piece web W4 and the back piece web W5 reach a suction transfer roller RS and are transported while being suctioned and held thereby.

On the other hand, following application of HMA by the HMA applicator AS6, the connecting sheet web W6 is transported to a cutter CTR and cut to form the connecting sheet 6. This connecting sheet 6 is discontinuously attached to the front piece web W4 and the back piece web W5 on the suction transfer roller RS. The outer body web W2 is formed in this manner.

Next, the outer body web W2 is transported by a belt conveyor BC traveling over a suction box SB. This being the case, the outer body web ~~2~~ W2 can be suppressed from shifting out of position and forming wrinkles. Note that the suction box SB is preferably formed so that suction action is applied to the front piece web W4 and the back piece web W5 without being applied to the spacing area SP.

Next, an explanation is further provided regarding holding and cutting the portions of the continuous elastic bodies W4LG and W5LG positioned in the spacing area SP.

As shown in FIG. 6, an endless belt V1 is wrapped around the roller R1 and the main drum M, and an endless belt V2 is wrapped around the roller R2, idle rollers R11 and R12 and the main drum M.

As shown in FIGS. 7(A) and 7(B), the endless belt V1 is formed from, for example two flat belts, while the endless belt V2 is formed from, for example, four wire belts having a circular cross-section. In this case, a single flat belt and two wire belts are used as a set. Note that the endless belt V1 may be formed from a wire belt, while the endless belt V2 may be formed from a flat belt.

As shown in FIG. 7(A), a concave groove RID that receives the endless belt V1 is formed in the center of

CLAIMS

Claim 1

A manufacturing method of an underpants-type absorbent article, which is provided with an outer body provided with a front piece and back piece mutually joined at side areas, the outer body having elastic members provided discontinuously along portions of the lower edges of the front piece and back piece that define leg holes, in which the outer body is provided with a connecting sheet which extends in the front-to-rear direction in a crotch area and mutually connects the front piece and the back piece, and

an inner body containing an absorptive body and which is anchored to the outer body so as to be positioned in a crotch area, comprising, in turn:

a step in which continuous bodies of sheets that respectively form the front piece and the back piece in the form of two sheet webs are respectively transported along the machine direction while maintaining a spacing area in the cross-machine direction ~~a continuous body of a sheet that forms the front piece or the back piece in the form of a sheet web is transported in a machine direction~~,

a step in which a continuous body of an elastic member in the form of a continuous elastic body is supplied to the sheet web while oscillating in a cross-machine direction perpendicular to the machine direction so that the continuous elastic body is alternately positioned on the sheet web and outside the sheet web, and the portions of the continuous elastic body positioned on the sheet web are attached to the sheet web,

a step in which portions of the continuous elastic body positioned outside the sheet web are held by a holder, and

a cutting step in which the portions of the continuous elastic body outside the sheet web are cut and removed, and

after the cutting step, further comprising, in turn:

a step in which the two sheet webs are transferred onto a suction transfer roller, and then the connecting sheet is attached to the two sheet webs, positioned on the suction

transfer roller, so as to straddle the spacing area and form a continuous body of the outer body in the form of an outer body web, wherein the connecting sheet overlaps a part of the elastic members,

an edge forming step in which the outer body web is cut to form edges that define leg openings, and

an inner body attachment step in which the inner body is attached to the outer body web after the edge forming step.

Claim 2

The manufacturing method according to claim 1, wherein continuous bodies of sheets that respectively form the front piece and the back piece in the form of two sheet webs are respectively transported along the machine direction while maintaining a spacing area in the cross-machine direction, and the continuous elastic body

is supplied so as to be alternately positioned on a single sheet web and within the spacing area.

Claim 3

The manufacturing method according to claim 1 or claim 2, wherein, after the continuous elastic body is attached on the sheet web, an additional sheet web is overlapped with the sheet web and the continuous elastic body is sandwiched between these sheet webs.

Claim 4

The manufacturing method according to any of claims 1 to 3, wherein the holder is provided with a pair of holding members that move with the sheet web, and the portions of the continuous elastic body outside the sheet web are cut while held between the holding members.

Claim 5

The manufacturing method according to claim 4, wherein the pair of holding members are formed by a wire belt and a flat belt having a concave groove capable of receiving the wire belt, and the portions of the continuous elastic body outside the sheet web are held as a result of the wire belt being accommodated in the concave groove of the flat belt together with those portions.

~~Claim 6~~

~~The manufacturing method according to any of claims 1 to 5 of an underpants-type absorbent article in which the outer body extends in the front-to-rear direction in a crotch area and is provided with a continuous sheet that mutually connects the front piece and the back piece, wherein continuous bodies of sheets that respectively form the front piece and the back piece in the form of two sheet webs are respectively transported along the machine direction while maintaining a spacing area in the cross-machine direction, and after the edge forming step, a connecting sheet is attached to the two sheet webs so as to straddle the spacing area and form a continuous body of the outer body in the form of an outer~~

~~body web.~~

Claim ~~7~~ 6

The manufacturing method according to claim ~~5~~ 1, wherein the connecting sheet is attached to the sheet webs at intervals in the machine direction.

~~Claim 8~~

~~The manufacturing method according to claim 6 or claim 7, further comprising an edge forming step in which the outer body web is cut to form edges that define leg openings.~~

~~Claim 9~~

~~The manufacturing method according to claim 8, further comprising an inner body attachment step in which the inner body is attached to the outer body web after the edge forming step.~~