

[DESCRIPTION]

[Title of Invention]

DIAPER

[Technical Field]

[0001] The present invention relates to diapers for babies for use in medical facilities such as a hospital, and particularly to diapers to be used for premature babies or low-birth-weight babies.

[Background Art]

[0002] A premature baby or low-birth-weight baby is nursed in an incubator in a neonatal intensive care unit (NICU). In general, for the premature baby or low-birth-weight baby nursed in the neonatal intensive care unit, a standard disposable diaper or paper diaper is used in the same manner for other babies. However, the premature baby or the like has a body weight of, e.g., about not less than 800 g and not more than 2000 g. In other words, a body of the premature baby or the like is smaller than those of other babies. Accordingly, when the standard diaper is used for the premature baby or the like, a gap tends to be formed between the body of the premature baby or the like and the diaper. When the gap is formed between the body of the premature baby or the like and the diaper, human waste excreted by the premature baby or the like may leak out through the gap between the body of the premature baby or the like and the diaper. There are also cases where a tube is attached to the body of the premature

baby or the like and where treatment of cutting a naval cord is required. In such cases, when a standard paper diaper is used, the paper diaper may completely cover up the body of the premature baby or the like, which is also undesirable from a sanitary viewpoint. In addition, a body size of the premature baby or the like differs depending on a body weight thereof. Therefore, it is difficult to respond to different body sizes of a plurality of premature babies or the like by merely reducing a size of the standard diaper, while maintaining a shape and a structure of the diaper.

[0003] PTL 1 discloses a disposable diaper for a premature or low-birth-weight baby to be used for a premature baby or low-birth-weight baby nursed in an incubator in a neonatal intensive care unit. The disposable diaper for a premature or low-birth-weight baby is attached to a premature baby or the like by placing the premature baby or the like on an absorbent main body thereof, wrapping portions of a belt portion protruding from both sides of the absorbent main body around a waist of the premature baby or the like, removably connecting the protruding portions to each other, and then placing the absorbent main body such that the absorbent main body extends from a back side of the premature baby or the like through a crotch portion thereof to an abdomen side thereof to cover the back side, the crotch portion, and the abdomen side. According to a statement in PTL 1, body movement of the premature baby or low-birth-weight baby is limited, and consequently the

absorbent main body does not open even when unfastened with the belt portion. According also to the statement in PTL 1, it may also be possible to insert a front end portion of the absorbent main body between the belt portion wrapped around the waist and the body just to be safe.

[Citation List]

[Patent Literature]

[0004]

[PTL 1] Japanese Patent No. 5069532

[Summary of Invention]

[Technical Problem]

[0005] However, a position at which a male excretes urine is located on a front side (abdomen side) of a position at which a female excretes urine. In other words, compared to a female, a male excretes urine at the position rather on the front side (abdomen side). Accordingly, even though the body movement of the premature baby or low-birth-weight baby is limited, when the absorbent main body is merely placed on the abdomen side or merely inserted between the belt portion and the body, urine of a male premature baby or the like may fall onto the abdomen side of the premature baby or the like. In addition, when the absorbent main body is placed on the abdomen side, a treatment or nursing provider may get caught in a portion of the absorbent main body placed on the abdomen side, which may interrupt treatment or nursing. This leads to a demand for a diaper that can be worn by any of premature or

low-birth-weight babies in response to different body sizes thereof and can be prevented from interrupting treatment or nursing.

[0006] The present invention is achieved in order to solve the problem described above, and an object of the present invention is to provide a diaper that can be worn by any of babies (premature or low-birth-weight babies) in response to different body sizes thereof and can be prevented from interrupting treatment or nursing.

[Solution to Problem]

[0007] According to the present invention, the problem described above is solved by a diaper including: a nonwoven fabric extending from a back side of a baby, through a crotch portion thereof, to an abdomen side thereof; a back sheet provided on an opposite side of the nonwoven fabric to the baby to prevent humane waste, which is excreted by the baby, from penetrating therethrough; an absorbent provided between the nonwoven fabric and the back sheet to absorb the human waste which has penetrated through the nonwoven fabric; and a belt portion fixed to at least one of the nonwoven fabric and the back sheet, and extending to both sides in a direction that crosses a direction in which the nonwoven fabric extends, and moreover having a connection portion removably connectable to the nonwoven fabric, wherein a portion, in which the nonwoven fabric and the back sheet are bonded together, has at least one part serving as an extension portion that does not

overlap the absorbent and extends from an end portion of the absorbent on the abdomen side further toward the abdomen side, and in the direction in which the nonwoven fabric extends, a length of the extension portion is greater than a length of the connection portion.

[0008] In the configuration described above, at least one part of the portion in which the nonwoven fabric and the back sheet are bonded together serves as the extension portion that does not overlap the absorbent. In other words, the absorbent is not disposed in the extension portion. The extension portion further extends from the abdomen-side end portion of the absorbent toward the abdomen side. In the direction in which the nonwoven fabric extends, the length of the extension portion is larger than the length of the connection portion. Since the diaper includes the extension portion mentioned above, a baby care provider folds back the extension portion depending on a body size of the baby to be able to adjust a length of the diaper from the back side of the baby through the crotch portion thereof to the abdomen side thereof and attach the diaper having a size corresponding to the body size of the baby to the baby. Thus, the diaper of the present invention can be worn by any of the babies in response to different body sizes thereof. As a result, it is possible to prevent a gap resulting from sagging of the diaper from being formed between a body of the baby and the diaper and prevent the human waste excreted by the baby from leaking out through

the gap. In addition, since the extension portion is folded back depending on the body size of the baby to be connected to the connection portion, it is possible to prevent a treatment or nursing provider from being caught in the extension portion and prevent the extension portion from interrupting treatment or nursing. When the care provider for the baby (premature or low-birth-weight baby) folds back the extension portion depending on the body size of the baby to the side opposite to the baby and connects the connection portion of the belt portion to the extension portion folded back, by at least folding back the connection portion along an end portion of the absorbent, it is possible to allow the folded-back extension portion to reliably contain the connection portion over an entire width thereof in the extending direction. As a result, the connection portion is connected over the entire width thereof to the extension portion, which solidifies the connection between the connection portion and the extension portion.

[0009] Preferably, the connection portion is a hook-or/and-loop fastener, and a frontal tape to be connected to the hook-or/and-loop fastener is provided on a top surface of the nonwoven fabric.

[0010] In the configuration, the frontal tape to be connected to the hook-or/and-loop fastener serving as the connection portion is provided on the top surface of the nonwoven fabric. This allows the connection portion to be more

reliably connected to the top surface of the nonwoven fabric.

[0011] Preferably, the back sheet has a plurality of fold-line marks provided at positions, each of which corresponds to a body weight of the baby, in the extension portion.

[0012] The configuration can allow the baby care provider to fold back, using the fold-line marks provided on the back sheet as guide marks, the extension portion to the side opposite to the baby depending on the body size of the baby (body weight of the baby). As a result, it is possible to allow the diaper to be easily worn by the baby and prevent a strain from being applied to the baby.

[0013] Preferably, the nonwoven fabric has a plurality of hip marks provided at positions, each of which corresponds to a body weight of the baby.

[0014] The configuration described above can allow the baby care provider to align a hip of the baby with any of the hip marks depending on the body size of the baby and place the baby on the diaper. Consequently, the baby care provider can place the baby at an appropriate position on the diaper by one operation and prevent a strain from being applied to the baby. In addition, since the baby care provider can place the baby at the appropriate position on the diaper, it is possible to prevent a gap resulting from sagging of the diaper from being formed between the body of the baby and the diaper and prevent the human waste excreted by the body/infant from leaking out through the gap.

[0015] Preferably, the back sheet includes: a first hook-or/and-loop fastener provided in the extension portion; and a second hook-or/and-loop fastener to be connected to the first hook-or/and-loop fastener.

[0016] In the configuration, the back sheet includes the first hook-or/and-loop fastener and the second hook-or/and-loop fastener. The first hook-or/and-loop fastener and the second hook-or/and-loop fastener are provided in the extension portion to be connectable to each other. Consequently, when recognizing the body size of the baby (body weight of the baby), the baby care provider folds back the extension portion depending on the body size of the baby care provider before placing the baby care provider on the diaper and connects the first hook-or/and-loop fastener and the second hook-or/and-loop fastener to each other to thus allow a folded-back state of the extension portion to be maintained. Compared to a case where the baby care provider folds back the extension portion after placing the baby on the diaper, it is possible to prevent the baby care provider from stimulating the baby or applying a strain to the baby.

[Advantageous Effects of Invention]

[0017] According to the present invention, it is possible to provide a diaper that can be worn by any of babies (premature or low-birth-weight babies) in response to different body sizes thereof and can be prevented from interrupting treatment or nursing.

[Brief Description of Drawings]

[0018]

[Fig. 1]

Fig. 1 is a plan view illustrating a top surface side of a diaper according to an embodiment of the present invention.

[Fig. 2]

Fig. 2 is a plan view illustrating a back surface side of the diaper according to the present embodiment.

[Fig. 3]

Fig. 3 is a perspective view illustrating the diaper according to the present embodiment.

[Fig. 4]

Fig. 4 is a cross-sectional view along a cut plane A1-A1 illustrated in Fig. 1.

[Fig. 5]

Fig. 5 is a perspective view illustrating a method of using the diaper according to the present embodiment.

[Fig. 6]

Fig. 6 is a perspective view illustrating the method of using the diaper according to the present embodiment.

[Fig. 7]

Fig. 7 is a perspective view illustrating a state in which the diaper according to the present embodiment is worn by a baby.

[Description of Embodiment]

[0019] Referring to the drawings, a preferred embodiment of the present invention will be described below in detail.

Note that the embodiment described below is a preferred specific example of the present invention, and therefore various technically desirable limitations are given thereto. However, the scope of the present invention is not limited to such aspects unless it is specifically stated in the description given below that the present invention is limited. In the drawings, the same components are given the same reference numerals, and a detailed description thereof is omitted appropriately.

[0020] Referring to Figs. 1 to 4, a diaper according to the embodiment of the present invention will be described. A diaper 2 according to the present embodiment is referred to as a disposable diaper (nappy), a paper diaper (nappy), or the like and used for a baby. Specifically, the diaper 2 according to the present embodiment is used for a premature baby or a low-birth-weight baby in medical facilities such as a hospital.

[0021] The diaper 2 is sold in a state in which the diaper 2 is folded at a substantially middle portion in a longitudinal direction thereof. Meanwhile, when used, the diaper 2 is developed as illustrated in Figs. 1 and 2. One end portion of the diaper 2 in the longitudinal direction is disposed on a back side of the baby, while the other end portion of the diaper 2 in the longitudinal direction is disposed on an abdomen side of the baby. In the diaper 2 illustrated in Figs. 1 and 2, a direction indicated by an arrow D11 corresponds to the back side of the baby, while a

direction indicated by an arrow D12 corresponds to the abdomen side of the baby. The substantially middle portion of the diaper 2 in the longitudinal direction is disposed on a crotch portion of the baby.

[0022] As illustrated in Figs. 1 and 2, the diaper 2 includes a nonwoven fabric 3, a back sheet 4, an absorbent 5, and a belt portion 6. The nonwoven fabric 3 is provided on a top surface side to be brought into contact with skin of the baby. In the description of the present application, a "top surface" refers to a surface of the diaper to be brought into contact with a body of a user (baby) thereof. The back sheet 4 is provided on a back surface side opposite to the baby with respect to the nonwoven fabric 3. In the description of the present application, a "back surface" refers to a surface of the diaper 2 to be exposed to an outside in a state in which the diaper 2 is worn by the baby. The absorbent 5 is provided between the nonwoven fabric 3 and the back sheet 4.

[0023] The nonwoven fabric 3 extends from the back side of the baby through the crotch portion thereof to the abdomen side thereof. In other words, the nonwoven fabric 3 extends along an extending direction D1 illustrated in Fig. 1 and 2. The extending direction D1 corresponds to a "direction in which the nonwoven fabric and the back sheet extend" and to the "longitudinal direction of the diaper". In the extending direction D1, a length of the nonwoven fabric 3 is substantially the same as a length of the diaper 2 which is,

e.g., about not less than 100 mm and not more than 300 mm. However, the length of the nonwoven fabric 3 in the extending direction D1 is not limited thereto.

[0024] The nonwoven fabric 3, which is a material less likely to be raised, is used as a surface material to be brought into contact with the skin of the baby and has a function of causing human waste, such as urine, of the baby to penetrate therethrough to the absorbent 5. The nonwoven fabric 3 is referred to as, e.g., a top surface sheet, a top sheet, or the like. The nonwoven fabric 3 is formed by fuse-bonding thermally adhesive fibers (e.g. PET/PE, PP/PE, PET/EP, or PP/EP) obtained by fiberizing a synthetic resin using a thermal bonding process or a spunbonding process without using a binder.

[0025] As illustrated in Fig. 4, the nonwoven fabric 3 of the present embodiment is formed of a plurality of layers, and includes a first fiber layer 33 and a second fiber layer 34. The first fiber layer 33 is disposed in the top surface to be brought into direct contact with the skin of the baby, and has an uneven surface 333 having a plurality of depressed portions 331 and a plurality of protruding portions 332. This reduces an area in which the nonwoven fabric 3 is in contact with the skin and prevents a feeling of discomfort and diaper rash. The second fiber layer 34 is stacked on a back surface (inside the diaper 2) of the first fiber layer 33 to present a generally flat sheet shape.

[0026] The protruding portions 332 of the first fiber layer 33 protrude to a side opposite to the second fiber layer 34 to have inner spaces S formed as portions of the protruding portions 332 in which fibers are sparse. As a result, even when the urine of the baby is not rapidly absorbed by the absorbent 5, the urine is temporarily stored in the inner spaces S of the protruding portions 332. The first fiber layer 33 and the second fiber layer 34 have respective portions compression-bonded to each other.

[0027] Both outside of the uneven surface 333 in a width direction D2, three-dimensional gathered portions 35 are provided. The three-dimensional gathered portions 35 serve as barriers that block the urine not temporarily stored in the uneven surface 333 and prevent so-called side leaks. The width direction D2 corresponds to a "direction crossing the direction in which the nonwoven fabric and the back sheet extend" and to a "lateral direction of the diaper", and is perpendicular to the extending direction D1. In the width direction D2, a length (width) of the nonwoven fabric 3 is, e.g., about not less than 50 mm and not more than 150 mm. However, the length of the nonwoven fabric 3 in the width direction D2 is not limited thereto.

[0028] Both outside of the three-dimensional gathered portions 35 in the width direction D2, crotch gathered portions 36 are provided. The crotch gathered portions 36 come into close contact with the crotch portion of the baby to

prevent excreted urine or the like from leaking to the outside of the diaper 2 even when the urine or the like leaks from the three-dimensional gathered portions 35.

[0029] Inside the three-dimensional gathered portions 35 and the crotch gathered portions 36, respective elastic bodies 7 are provided. Each of the elastic bodies 7 is disposed along the extending direction D1 and has an elastically contracting ability. As the elastic body 7, rubber having an elongated shape, such as, e.g., a rubber thread, is used. As the elastic body 7, sheet-like or net-like rubber may also be used. The elastic bodies 7 are each fixed in an extended state, and give contractive forces to the three-dimensional gathered portions 35 and the crotch gathered portions 36 when no outer force is applied thereto. Accordingly, as illustrated in Figs. 3 and 4, the elastically contracting abilities of the elastic bodies 7 allow the three-dimensional gathered portions 35 and the crotch gathered portions 36 to erect when the diaper is worn. When no outer force is applied to the diaper 2 as illustrated in Fig. 3, an arcuately curved state of the diaper 2 is elastically maintained.

[0030] In a variation of the nonwoven fabric 3, e.g., the protruding portions 332 may also exhibit substantially hexagonal shapes, and the depressed portions 331 may also exhibit groove shapes corresponding to six sides of the substantially hexagonal shapes of the protruding portions 332 (illustration of which is omitted) in plan view (see Fig. 1)

in which the diaper 2 is viewed from the top surface side. Needless to say, the shapes of the depressed portions 331 and the protruding portions 332 are not limited thereto. Alternatively, as the nonwoven fabric 3, a nonwoven fabric in which the first fiber layer 33 and the second fiber layer 34 are mesh-processed and numerous through holes are provided may also be used. Such mesh processing allows the nonwoven fabric 3 to effect rapid penetration of human waste such as urine and loose stool specific to a newborn baby therethrough toward the absorbent 5. As a result, the human waste readily penetrates into the absorbent 5.

[0031] The back sheet 4 is used as a back surface material provided on the side opposite to the baby with respect to the nonwoven fabric 3 to prevent the human waste excreted by the baby from penetrating therethrough. The back sheet 4 is a sheet material to be exposed to the outside in a state in which the diaper 2 is worn by the baby. The back sheet 4 is formed of a flexible material such as, e.g., a thin plastic film. Specifically, as a material of the back sheet 4, a polyethylene film, a polyethylene laminate sheet, or the like is used. Preferably, the back sheet 4 allows water vapor to penetrate therethrough, but does not allow the urine to penetrate therethrough. This can prevent the portion covered with the diaper 2 from becoming soggy.

[0032] The absorbent 5 is provided between the nonwoven fabric 3 and the back sheet 4 to function to absorb the human

waste that has penetrated through the nonwoven fabric 3. In other words, the absorbent 5 is a portion intended to absorb and retain a liquid such as excreted urine. The absorbent 5 preferably has an excellent ability to retain the absorbed liquid and preferably has a relatively small thickness. Preferably, the absorbent 5 has an unbulky shape. As the absorbent 5, a pulp absorber formed by, e.g., mixing a polymer serving as an absorber in pulp or dispersing a polymer in pulp, a polymer sheet obtained by disposing a polymer at a high density between sheet materials made of pulp or the like and forming the sheet materials and the polymer into a sheet shape, or the like is used.

[0033] As illustrated in Fig. 4, the absorbent 5 is wrapped with a tissue 52, and is not exposed to the outside. As the tissue 52, a tissue obtained by forming, either alone or in combination thereof, soft materials which absorb a liquid or the like, such as pulp, rayon, cotton, kenaf, bagasse, silk, and hydrophilized fibers (a polyolefin series, polyester, or acryl), into a sheet is used.

[0034] The belt portion 6 is fixed to at least either one of the nonwoven fabric 3 and the back sheet 4 to extend to both sides in the direction (width direction D2) crossing the extending direction D1 of the nonwoven fabric 3. Specifically, the belt portion 6 includes a first belt main body 61 and a second belt main body 62. The first belt main body 61 is a belt-like member extending one way in the width direction D2.

The second belt main body 62 is a belt-like member extending the other way (opposite to the extending direction of the first belt main body 61) in the width direction D2.

[0035] The belt portion 6 preferably has a stretchability in the width direction D2. For example, as a material of the belt portion 6, a stretchable nonwoven fabric may also be used. Alternatively, as the material of the belt portion 6, a belt-like member in which a plurality of nonwoven fabrics are bonded together and an elastic body such as a rubber thread having the elastically contracting ability is provided between the plurality of nonwoven fabrics may also be used.

[0036] The first belt main body 61 and the second belt main body 62 have connection portions 63 provided in respective leading-end portions thereof. The connection portions 63 are configured to be removably connectable to the nonwoven fabric 3. Specifically, the connection portions 63 are hook-or/and-loop fasteners. As illustrated in Figs. 2 and 3, on the top surface of the abdomen-side end portion of the nonwoven fabric 3, a frontal tape 32 to be connected to the connection portions 63 as the hook-or/and-loop fasteners is provided. Details of the connection between the connection portions 63 and the frontal tape 32 will be described later.

[0037] The connection portions 63 are not limited to the hook-or/and-loop fasteners, and may also be adhesive layers each provided with an adhesive. In this case also, the connection portions 63 made of the adhesive layers are

configured to be removably connectable to the nonwoven fabric 3. Note that the frontal tape 32 need not necessarily be provided.

[0038] It is to be noted herein that, in general, for a premature baby or a low-birth-weight baby nursed in a neonatal intensive care unit, a standard disposable diaper or a standard paper diaper is used in the same manner as for other babies. In that case, however, a gap is likely to be formed between a body of the premature baby or the like and the diaper, and human waste excreted by the premature baby or the like may leak out through the gap between the body of the premature baby or the like and the diaper. In addition, a body size of the premature baby or the like differs depending on a body weight thereof. Accordingly, it is difficult to respond to different body sizes of a plurality of premature babies or the like by merely reducing a size of the standard diaper, while maintaining a shape and a structure of the diaper.

[0039] There have conventionally been disposable diapers for premature or low-birth-weight babies. For example, a diaper for a premature or low-birth-weight baby is attached to a premature baby or the like by placing the premature baby or the like on an absorbent, wrapping a belt portion around a waist thereof, removably connecting the belt portion, and then placing the absorbent such that the absorbent extends from a back side of the premature baby or the like through a crotch portion thereof to an abdomen side thereof to cover the back

side, the crotch portion, and the abdomen side. However, a position at which a male excretes urine is located on a front side (abdomen side) of a position at which a female excretes urine. In other words, compared to a female, a male excretes urine at the position rather on the front side (abdomen side). Accordingly, even though body movement of the premature baby or low-birth-weight baby is limited, when the absorbent is merely placed on the abdomen side, urine of a male premature baby or the like may fall onto the abdomen side of the premature baby or the like. In addition, a treatment or nursing provider may get caught in a portion of the absorbent placed on the abdomen side, which may interrupt treatment or nursing.

[0040] By contrast, the diaper 2 according to the present embodiment includes the extension portion 31. As illustrated in Figs. 1 and 2, the extension portion 31 is a portion which does not overlap the absorbent 5 provided on the back surface side of the nonwoven fabric 3 in planar view and further extends from an abdomen-side end portion 51 of the absorbent 5 toward the abdomen side and in which the nonwoven fabric 3 and the back sheet 4 are bonded together. In other words, the extension portion 31 is a portion in which the nonwoven fabric 3 and the back sheet 4 extend from the abdomen-side end portion 51 of the absorbent 5 in the direction indicated by the arrow D12 in the same plan view, and the nonwoven fabric 3 and the back sheet 4 are bonded together. Consequently, the

absorbent 5 is not disposed in the extension portion 31. In the extending direction D1 of the nonwoven fabric 3, a length L1 of the extension portion 31 is larger than a length L2 (about 2 cm) of each of the connection portions 63 of the belt portion 6. For example, the length L1 of the extension portion 31 is about not less than twice and not more than five times the length L2 of the connection portion 63, and more preferably three times the length L2 of the connection portion 63. When the length L1 of the extension portion 31 is not less than 4 cm, a fold-back operation as will be described later is easily performed. In the diaper 2 illustrated in Figs. 1 and 2, in the extending direction D1, the length L2 of the connection portion 63 is substantially the same as a length of the first belt main body 61 and a length of the second belt main body 62. However, the length L2 of the connection portion 63 is not limited thereto, and may also be shorter than the length of the first belt main body 61 and the length of the second belt main body 62.

[0041] Since the diaper 2 includes the extension portion 31 described above, by folding back the extension portion 31 depending on the body size of the baby, the baby care provider can adjust a length of the diaper 2 extending from the back side of the baby through the crotch portion thereof to the abdomen side thereof and attach the diaper 2 having a size corresponding to the body size of the baby to the baby. This allows the diaper 2 according to the present embodiment to be

worn in response to different body sizes of babies. Therefore, it is possible to prevent a gap resulting from sagging of the diaper 2 from being formed between the body of the baby and the diaper 2 and prevent the human waste excreted by the baby from leaking out through the gap. In addition, since the extension portion 31 is folded back depending on the body size of the baby and connected to the connection portions 63, it is possible to prevent a treatment or nursing provider from being caught in the extension portion 31 and prevent the extension portion 31 from interrupting treatment or nursing.

[0042] In the diaper 2 according to the present embodiment, in the extending direction D1 of the nonwoven fabric 3, the length L1 of the extension portion 31 is larger than the length L2 of each of the connection portions 63. Accordingly, as illustrated in Fig. 7, when the care provider for the baby (premature or low-birth-weight baby) folds back the extension portion 31 to the side opposite to the baby depending on the body size of the baby and connects the connection portions 63 of the belt portion 6 to the extension portion 31 folded back, by at least folding back the connection portions 63 along the end portion 51 of the absorbent, it is possible to allow the folded-back extension portion 31 to reliably contain each of the connection portions 63 over an entire width (length L2) thereof in the extending direction D1. As a result, each of the connection portions 63 is connected over the entire width thereof to the extension portion 31, which solidifies the

connection between the connection portions 63 and the extension portion 31.

[0043] Next, referring to Figs. 5 to 7, a structure of the diaper 2 according to the present embodiment will be further described, and also a method of using the diaper 2 will be described. First, when attaching the diaper 2 to the baby, the baby care provider develops the diaper 2 (see Figs. 1 and 2), and places the baby on the diaper 2.

[0044] At this time, as illustrated in Figs. 1 and 5, the nonwoven fabric 3 has a plurality of hip marks M1, M2, and M3. The hip marks M1, M2, and M3 are provided at respective positions on a top surface side of a middle portion of the absorbent 5 in the extending direction D1 of the nonwoven fabric which correspond to weights of babies. The hip marks M1, M2, and M3 linearly extend along the width direction D2. The hip marks M1, M2, and M3 may have forms in which continuous straight lines extend along the width direction D2 or forms in which, e.g., portions separate from each other such as in a broken line or dotted line are arranged to extend along the width direction D2. For example, the hip marks M1, M2, and M3 may be formed on the nonwoven fabric 3 by printing. Alternatively, the hip marks M1, M2, and M3 may also be formed by, e.g., embossing like the uneven surface 333 described above in relation to Fig. 4.

[0045] When attaching the diaper 2 to the baby, the baby care provider can align a hip of the baby with the hip mark M1,

M2, or M3 depending on the body size of the baby (body weight of the baby) and place the baby on the diaper 2. In other words, the hip mark M1 serves as a guide mark for a baby having a body weight of, e.g., about 800 g. By aligning a hip of the baby having the body weight of, e.g., about 800 g with the hip mark M1 and placing the baby on the diaper 2, the baby care provider can place the baby at an appropriate position on the diaper 2. Specifically, the baby care provider can align the crotch portion of the baby with a substantially middle portion of the absorbent 5 in the extending direction D1. The hip mark M2 serves as a guide mark for a baby having a body weight of, e.g., about 1500 g. By aligning a hip of the baby having the body weight of, e.g., about 1500 g with the hip mark M2 and placing the baby on the diaper 2, the baby care provider can place the baby at an appropriate position on the diaper 2. The hip mark M3 serves as a guide mark for a baby having a body weight of, e.g., about 2000 g. By aligning a hip of the baby having the body weight of, e.g., about 2000 g with the hip mark M3 and placing the baby on the diaper 2, the baby care provider can place the baby at an appropriate position on the diaper 2.

[0046] By thus aligning the hip of the baby with the hip mark M1, M2, or M3 depending on the body size of the baby and placing the baby on the diaper 2, the baby care provider can place the baby at the appropriate position on the diaper 2 by one operation. In other words, the baby care provider can

appropriately align relative positions of the baby and the diaper 2 with each other by one operation and need not unnecessarily move the baby. This can prevent a strain from being applied to the baby. In addition, since the baby care provider can place the baby at the appropriate position on the diaper 2, it is possible to prevent a gap resulting from sagging of the diaper 2 from being formed between the body of the baby and the diaper 2 and prevent human waste excreted by the baby from leaking out through the gap.

[0047] Note that the body weights of the babies corresponding to the hip marks M1, M2, and M3 mentioned above are only exemplary, and are not limited thereto. The body weight of the baby corresponding to the hip mark M1 provided relatively on the back side is lighter than the respective body weights of the babies corresponding to the hip mark M2 and the hip mark M3. The body weight of the baby corresponding to the hip mark M3 provided relatively on the abdomen side is heavier than the respective body weights of the babies corresponding to the hip mark M1 and the hip mark M2. The hip mark M2 provided between the hip mark M1 and the hip mark M3 is heavier than the body weight of the baby corresponding to the hip mark M1 and lighter than the body weight of the baby corresponding to the hip mark M3.

[0048] Subsequently, the baby care provider covers an abdomen of the baby with the abdomen-side portion of the diaper 2. At this time, as illustrated in Figs. 2 and 5, the

back sheet 4 has a plurality of fold-line marks M11, M12, and M13. The fold-line marks M11, M12, and M13 are provided on a back-side portion (surface of the back sheet 4 on a side opposite to the nonwoven fabric 3) of the extension portion 31. The fold-line marks M11, M12, and M13 linearly extend along the width direction D2. The fold-line marks M11, M12, and M13 may have forms in which continuous straight lines extend along the width direction D2 or forms in which, e.g., portions separate from each other such as in a broken line or dotted line are arranged to extend along the width direction D2. For example, the fold-line marks M11, M12, and M13 may be formed on the back sheet 4 by printing. Alternatively, the fold-line marks M11, M12, and M13 may also be formed by, e.g., embossing like the uneven surface 333 described above in relation to Fig. 4.

[0049] The fold-line marks M11, M12, and M13 are provided at respective positions corresponding to body weights of babies. Specifically, the fold-line mark M11 serves as a guide mark for a baby having a body weight of, e.g., about 800 g. As illustrated in Fig. 6, by folding back the extension portion 31 using the position of the fold-line mark M11 as the guide mark, the baby care provider can fold back the extension portion 31 at the position corresponding to the baby having the body weight of, e.g., about 800 g. The fold-line mark M12 serves as a guide mark for a baby having a body weight of, e.g., about 1500 g. As illustrated in Fig. 6, by folding back

the extension portion 31 using the position of the fold-line mark M12 as the guide mark, the baby care provider can fold back the extension portion 31 at the position corresponding to the baby having the body weight of, e.g., about 1500 g. The fold-line mark M13 serves as a guide mark for a baby having a body weight of, e.g., about 2000 g. As illustrated in Fig. 6, by folding back the extension portion 31 using the position of the fold-line mark M13 as the guide mark, the baby care provider can fold back the extension portion 31 at the position corresponding to the baby having the body weight of, e.g., about 2000 g.

[0050] Thus, the baby care provider can fold back, using the fold-line mark M11, M12, or M13 provided on the back sheet 4 as the guide mark, the extension portion 31 depending on the body size of the baby (body weight of the baby). At this time, as illustrated in Fig. 5, in the extension portion 31, the surface of the back sheet 4 on the side opposite to the nonwoven fabric 3 is provided with a first hook-or/and-loop fastener 41 and a second hook-or/and-loop fastener 42. The first hook-or/and-loop fastener 41 and the second hook-or/and-loop fastener 42 are configured to be connectable to each other at the surface of the back sheet 4 on the side opposite to the nonwoven fabric 3. For example, either one of the first hook-or/and-loop fastener 41 and the second hook-or/and-loop fastener 42 is a male member of a hook-or/and-loop fastener. For example, either one of the first hook-or/and-loop fastener

41 and the second hook-or/and-loop fastener 42 is a female member of the hook-or/and-loop fastener. Note that the second hook-or/and-loop fastener 42 need not necessarily be provided in the extension portion 31, and may also be provided on, e.g., a crotch-portion side when viewed from the abdomen-side end portion 51 of the absorbent 5.

[0051] Accordingly, when recognizing the body size of the baby (body weight of the baby), the baby care provider folds back the extension portion 31 depending on the body size of the baby before placing the baby on the diaper 2 and connects the first hook-or/and-loop fastener 41 and the second hook-or/and-loop fastener 42 to each other to be able to maintain a folded-back state of the extension portion 31. Compared to a case where the baby care provider places the baby on the diaper 2 and then folds back the extension portion 31, it is possible to prevent the baby care provider from stimulating the baby or applying a strain to the baby.

[0052] In addition, since the absorbent 5 is not disposed in the extension portion 31, it is possible to prevent the extension portion 31 from being coarse or bulky when the extension portion 31 is folded back. Accordingly, the baby care provider can easily fold back the extension portion 31.

[0053] Subsequently, as illustrated in Fig. 7, the baby care provider covers the abdomen of the baby with the abdomen-side portion of the diaper 2, while maintaining the state of the extension portion 31 folded back to the side opposite to

the baby, and connects the connection portions 63 of the belt portion 6 to the top surface of the nonwoven fabric 3 exposed to the side opposite to the baby. At this time, as described above in relation to Figs. 1 and 3, the frontal tape 32 is provided on the top surface of the abdomen-side end portion of the nonwoven fabric 3. Specifically, the frontal tape 32 is provided on the top surface of the nonwoven fabric 3 in the extension portion 31. The baby care provider covers the abdomen of the baby with the abdomen-side portion of the diaper 2 and connects the connection portions 63 of the belt portion 6 to the frontal tape 32. This more reliably connects the connection portions 63 to the top surface of the nonwoven fabric 3 in the extension portion 31.

[0054] Thus, as illustrated in Fig. 7, the diaper 2 according to the present embodiment is worn by the baby (premature or low-birth-weight baby). The baby care provider can easily attach the diaper 2 to the baby by aligning the hip of the baby with the hip mark M1, M2, or M3 depending on the body size of the baby to place the baby on the diaper 2 and by folding back, using the fold-line mark M11, M12, or M13 as the guide mark, the extension portion 31 depending on the body size of the baby, and can also prevent a strain from being applied to the baby.

[0055] The description has been given heretofore of the embodiment of the present invention. However, the present invention is not limited to the embodiment described above,

and various modifications can be made within the scope not departing from the appended claims. A configuration of the embodiment described above can partially be omitted or can arbitrarily be combined to be different from the configuration described above.

[Reference Signs List]

[0056]

- 2 Diaper
- 3 Nonwoven fabric
- 4 Back sheet
- 5 Absorbent
- 6 Belt portion
- 7 Elastic body
- 31 Extension portion
- 32 Frontal tape
- 33 First fiber layer
- 34 Second fiber layer
- 35 Three-dimensional gathered portion
- 36 Crotch gathered portion
- 41 First hook-or/and-loop fastener
- 42 Second hook-or/and-loop fastener
- 51 End portion
- 52 Tissue
- 61 First belt main body
- 62 Second belt main body
- 63 Connection portion

331 Depressed portion
332 Protruding portion
333 Uneven surface
D1 Extending direction
D2 Width direction
M1, M2, M3 Hip marks
M11, M12, M13 Fold-line marks
N Naval
S Inner space

[CLAIMS]

[Claim 1]

A diaper comprising:

a nonwoven fabric extending from a back side of a baby, through a crotch portion thereof, to an abdomen side thereof;

a back sheet provided on an opposite side of the nonwoven fabric to the baby to prevent human waste, which is excreted by the baby, from penetrating therethrough;

an absorbent provided between the nonwoven fabric and the back sheet to absorb the human waste which has penetrated through the nonwoven fabric; and

a belt portion fixed to at least one of the nonwoven fabric and the back sheet, and extending to both sides in a direction that crosses a direction in which the nonwoven fabric extends, and moreover having a connection portion removably connectable to the nonwoven fabric, wherein

a portion, in which the nonwoven fabric and the back sheet are bonded together, has at least one part serving as an extension portion that does not overlap the absorbent and extends from an end portion of the absorbent on the abdomen side further toward the abdomen side,

in the direction in which the nonwoven fabric extends, a length of the extension portion is greater than a length of the connection portion,

the connection portion is a hook-or/and-loop fastener, and

a frontal tape to be connected to the hook-or/and-loop fastener is provided on a top surface of the nonwoven fabric.

[Claim 2]

The diaper according to claim 1, wherein

the frontal tape is provided in the extension portion.

[Claim 3]

The diaper according to claim 1 or 2, wherein the back sheet has a plurality of fold-line marks provided in the extension portion and at positions, each of which corresponds to a body weight of the baby.

[Claim 4]

The diaper according to claim 1 or 2, wherein the nonwoven fabric has a plurality of hip marks provided on a top surface side of a middle portion of the absorbent and at positions, each of which corresponds to a body weight of the baby.