

DISPOSABLE DIAPER

The present invention relates to a disposable diaper provided with adhesive tapes used to retain a used diaper in a rolled state for disposal thereof.

In the case of a pull-on disposable diaper disclosed in Japanese Utility Model Application Disclosure Gazette No. Hei5-39531, a pair of adhesive tape strips extend from transversely opposite side edges of the diaper, respectively, in parallel to a waist line of the diaper so that the pair of adhesive tape strips may be used to hold a used diaper in its rolled state. The used diaper thus held in its rolled state can be disposed without raising any sanitary problem even if the diaper contains excrement clinging thereto.

With the diaper described in the foregoing Disclosure Gazette No. Hei5-39531, the adhesive tape cannot be effectively used when the diaper is rolled from the transversely opposite side edges from which the pair of adhesive tape strips extend, respectively. To strip the wearer of his or her pull-on diaper which has been stained with excrement, the transversely opposite side edges are usually torn off and thereby the front and rear waist

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sections are separated from each other. A used diaper having its side edges thus torn off is preferably rolled from its side edges so as to prevent a portion of the used diaper stained with excrement from being exposed. To achieve this, the situation in which the adhesive tape cannot be effectively used must be avoided.

This known diaper has no means enabling the transversely rolled diaper to be closed over a range as wide as possible in its vertical direction and, in consequence, the portions stained with excrement are liable to be exposed when the diaper is large-sized, for example, the diaper for the adult wearer.

In view of the problem as described above, it is a principal object of the invention to enable a transversely rolled disposable diaper to be closed over a range as wide as possible.

The object set forth above is achieved, according to the invention, by a disposable diaper having a front waist section, a rear waist section and a crotch section therebetween, the diaper comprising a liquid-permeable topsheet, a liquid-impermeable backsheet and a liquid-absorbent core disposed therebetween and provided on an outer

surface of a backsheet of one of the front and rear waist sections with adhesive tapes used to retain a used diaper in a rolled state for disposal thereof, the diaper being characterized by that:

the adhesive tape comprises at least a pair of adhesive tape strips extending in parallel to each other in a circumferential direction of the diaper and spaced apart from each other in a vertical direction of the diaper.

Other and further objects, features and advantages of the invention will appear more fully from the following description.

Fig. 1 is a perspective view exemplarily showing a diaper according to the invention as partially broken away;

Fig. 2 is a side view showing a tape fastener as viewed in a direction indicated by arrows II-II in Fig. 1;

Fig. 3 is a view similar to Fig. 2 as viewed in a direction indicated by arrows III-III in Fig. 1;

Fig. 4 perspectively shows a rolled diaper (A) as viewed in a direction so as to show a rear waist section and (B) in a direction so as to show a front waist section of the diaper;

Fig. 5 is a view similar to Fig. 1 but showing a

variant of the diaper according to the invention.

Details of a disposable diaper according to the invention will be more fully understood from the description of preferred embodiments given hereunder in reference with the accompanying drawings.

Pull-on disposable diaper 1 shown by Fig. 1 in a perspective view as viewed from behind and as partially broken away has a front waist section, a rear waist section and a crotch section therebetween and comprises a liquid-permeable topsheet 2, a liquid-impermeable backsheet 3 and a liquid-absorbent core 4 disposed therebetween. The front and rear waist sections 6, 7 are put upon and bonded to each other along their transversely opposite ends so as to define transversely opposite side edges 11, 12 as well as a waist-opening 13 and a pair of leg-openings 14. The waist-opening 13 and a pair of leg-openings 14 are provided along their peripheral edges with elastic members 16, 17, respectively, each comprising a plurality of elastic elements. These elastic members 16, 17 are bonded under appropriate tensions to an inner surface of the top- or backsheet 2, 3. An outer surface of the backsheet 3 in the rear waist section 7 carries at its transversely middle region a pair of adhesive

tape strips 19, 20 used to keep the used diaper 1 in its rolled state. The adhesive tape strips 19, 20 have their respective one end portions 19A, 20A fixed to the outer surface of the backsheet and remaining portions 19B, 20B folded several times over so that they may be unfolded left- and rightward as viewed in Fig. 1 in a manner as illustrated by imaginary lines.

Figs. 2 and 3 are side views of the adhesive tape strips 19, 20 as viewed directions indicated by arrows II-II and III-III, respectively, in Fig. 1. The tape strips 19, 20 have their respective one end portions 19A, 20A fixed to the diaper 1 by means of hot melt adhesive 24 and remaining portions 19B, 20B respectively extending from the respective end portions 19A, 20A toward transversely side edges of the diaper 1. These portions 19B, 20B are freely deformable and have adhesive regions 27 defined by adhesive 26 applied to both surfaces thereof at predetermined locations. The freely deformable portions 19B, 20B are normally folded several times over and held in such folded positions under the effect of the adhesive 26. The tape strips 19, 20 have previously been subjected to a surface treatment such that the respective surface sections facing the associated adhesive regions 27 in the folded portion of the tape strips

19, 20 may be easily released from the respective adhesive regions 27 and thereby unfolded as the respective tape strips 19, 20 are pulled in their longitudinally opposite directions with longitudinally opposite ends 19C, 20C of the respective tape strips 19, 20 held by fingers.

Fig. 4 is a perspective view showing the diaper 1 rolled for disposal (A) as viewed from behind so as to show the rear waist section 7 and (B) as viewed from front so as to show the front waist section 6. As shown, the diaper 1 is rolled by, after the crotch section 8 has been folded onto the front waist section 6, rolling the diaper 1 from the left and right side edges 11, 12, successively, with the front waist section 6 inside. As will be apparent from Fig. 4(B), the respective adhesive tape strips 19, 20 are circumferentially draped about the rolled diaper so that the adhesive region 27 of the tape strip 19 is fastened to the outer surface of the diaper 1 rolled from the right side edge 12 while the adhesive region 27 of the tape strip 20 is fastened to the outer surface of the diaper 1 rolled from the left side edge 11 of the waist sections. These tape strips 19, 20 fastened to the rolled diaper 1 are spaced apart from each other in a vertical direction of the diaper 1 as will be seen in Fig. 4, so that the rolled diaper 1 can be closed

over a wide range in the vertical direction , correspondingly, the portions of the diaper 1 stained with excrement can be effectively prevented from being exposed. It should be understood that, if it is attempted to close the used diaper 1 over such wide range using a single strip of adhesive tape, the strip of adhesive tape must be substantially longer than those as shown and it should be troublesome to handle such long strip of adhesive tape.

The used diaper 1 must be rolled as shown by Fig.4 for the reason as will be described below. For example, the pull-on diaper 1 stained with excrement is sometimes pulled down along the wearer's legs to strip the wearer of such used diaper and excrement partially clings to various regions of the wearer's body as excrement rubs the wearer's body. To avoid this, the diaper 1 put on the wearer is usually separated into the front and rear waist sections 6, 7 by tearing off, i.e., opening the diaper 1 along the transversely opposite side edges 11, 12 and removed from the wearer in a peel-off manner rather than in a pull-down manner. In this manner, undesirable effect of rubbing can be alleviated. However, with the diaper 1 thus separated into the front and rear waist sections 6, 7, excrement may be exposed and/or leak along the opened side edges of the diaper

1. In order to avoid such exposure and/or leakage of excrement, it is preferred and necessary to roll the diaper 1 from their transversely opposite side edges 11, 12 which have been opened or torn off, before disposal thereof.

The diaper 1 can be rolled as shown by Fig. 4 no matter whether the diaper 1 is of pull-on type, i.e. closed type or of non-pull-on type, i.e. open type. With the diaper provided with tape fasteners extending outward from the transversely opposite side edges thereof, these tape fasteners may be used to retain the used diaper 1 in its rolled state. However, as in the diaper described in the above-mentioned Japanese Utility Model Application Disclosure Gazette No. Hei5-39531, such tape fasteners may often be concealed in the rolled diaper 1 and their lengths are not always sufficient to achieve such function. Accordingly, it is preferred to provide the diaper of open type also with the adhesive tape strips 19, 20 as shown.

Fig. 5 is a view similar to Fig. 1 but showing a variant of the diaper according to the invention. In the adhesive tape strips 19, 20 of this diaper 1, the respective freely deformable portions 19B, 20B are provided along their transversely middle lines, respectively, with perforation lines 30 extending longitudinally of the tape strips 19, 20.

Immediately before the tape strips 19, 20 are fastened to the rolled diaper 1, as shown by Fig. 4, the respective freely deformable portions 19B, 20B may be torn in two along the perforation lines 30 to facilitate a fastening range to be further widened in the vertical direction. This variant is particularly suitable for the adult-size diaper.

Though not shown in Fig., it should be noted that the pair of adhesive tape strips 19, 20 may be arranged so as to extend circumferentially in the same direction.

To implement the invention, plastic film or nonwoven fabric may be employed as base material for the adhesive tape strips 19, 20. The tape strips 19, 20 are formed at predetermined locations on both surfaces with the adhesive regions 27 adapted to be used not only to keep the tape strips 19, 20 in their folded position but also to retain the diaper 1 in its rolled state. The free ends 19C, 20C serving as tabs are preferably nonadhesive on both surfaces. The tape strips 19, 20 may be present in any one of the front and rear waist sections 6, 7.

With the disposable diaper according to the invention, a pair of adhesive tape strips having their respective one end portions fixed to the diaper at its transversely middle region are spaced apart from each other in the vertical

direction of the diaper, so there is no apprehension that the wearer might lose sight of these adhesive tape strips as the diaper is transversely rolled. Furthermore, the range of the rolled diaper to be fastened can be sufficiently widened to prevent the portion of the diaper stained with excrement from being exposed even when the diaper is of a large size.

Having described our invention as related to the embodiments shown in the accompanying drawings it is our intention that the invention be not limited by any of the details of description, unless otherwise specified, but rather be construed broadly within its spirit and scope as set out in the accompanying claims.



What is Claimed is:

1. A disposable diaper having a front waist section, a rear waist section and a crotch section therebetween, the diaper comprising a liquid-permeable topsheet, a liquid-impermeable backsheet and a liquid-absorbent core disposed therebetween and provided on an outer surface of a backsheet of one of the front and rear sections with adhesive tapes used to retain a used diaper in a rolled state for disposal thereof, the diaper being characterized by that:

the adhesive tape comprises at least a pair of adhesive tape strips extending in parallel to each other in a circumferential direction of the diaper and spaced apart from each other in a vertical direction of the diaper.

2. A disposable diaper according to Claim 1, wherein each of the pair of adhesive tape strips has one end portion thereof fixed to the outer surface of the backsheet at a transversely middle region of one of the front and rear waist sections and the remaining portion extending from the one end portion is freely deformable so that said freely deformable portion of said one adhesive tape strip circumferentially extends toward one of transversely opposite side edges of the



diaper while said freely deformable portion of the other adhesive tape strip circumferentially extends toward the other of the transversely opposite side edges of the diaper.

3. A disposable diaper according to Claim 1, wherein each of the adhesive tape strips is formed with adhesive regions at predetermined locations on both surfaces of said freely deformable portion and folded longitudinally of the tape strip several times over and the adhesive regions releasably hold the adhesive tape strip in such folded position.

4. A disposable diaper according to Claim 1, wherein said freely deformable portion of each adhesive tape strip is provided along a transversely middle line of said freely deformable portion with a perforation-line extending in said circumferential direction.