

DISPOSABLE DIAPER OF PANTS TYPE

The present invention relates to a disposable diaper adapted to be reliably fastened, after used, in its rolled state for disposal.

Japanese Utility Model Application Laid-Open No. Hei5-51327 discloses a disposable diaper of pants type or pull-on type constructed so that, after used, a peripheral edge of a waist-opening containing therein an elastic member may be circumferentially torn off to obtain an elastic closed loop by which the diaper is fastened in its rolled state for disposal. Disposal of the used diaper in this manner is certainly preferable not only from the sanitary viewpoint but also to look at, because regions of the diaper smeared with excretion will be effectively concealed.

Japanese Utility Model Application Laid-Open No. Hei5-39531 discloses a disposable diaper having a strip of adhesive tape provided on an outer surface of a backsheet of the diaper so that this strip of adhesive tape may be used to fasten the used diaper in its rolled state for disposal.

While it is convenient to use a strip of adhesive tape to fasten the diaper smeared with excretion in its rolled state for disposal, such measure is disadvantageous in that,

once the adhesive surface of the strip of adhesive tape has become dirty, the strip of adhesive tape is no more adhesive and of no practical use. The measure such that a part of the used diaper is torn off to obtain the elastic closed loop which is used to fasten the used diaper in its rolled state as described in Japanese Utility Model Application Laid-Open No. Hei5-51327 is certainly free from the drawback caused by the strip of adhesive tape disclosed in Japanese Utility Model Application Laid-Open No. Hei5-39531. However, if transversely opposite side edges of the diaper of pants type are torn off before the diaper of pants type smeared with excretion is taken off from the wearer, said measure can not be used. Since the diaper of pants type smeared with excretion is often torn off along its transversely opposite side edges before it is taken off from the wearer's body, it will be undesirable that said elastic closed loop necessary to fasten the used diaper in its rolled state can not be obtained due to such manner of taking off the used diaper.

In view of the problem as has been described above, it is a principal object of the invention to provide a disposable diaper improved so that, even after transversely opposite side edges of the diaper smeared with excretion have

been torn off to take it off from the wearer's body, the diaper can be reliably fastened in its rolled state for disposal.

The object set forth above is achieved, according to the invention, by a disposable diaper of pants type comprising a liquid-permeable topsheet, a liquid-impermeable backsheet and a liquid-absorbent core disposed between these two sheets, wherein front and rear waist regions are bonded together along their transversely opposite side edges so as to form a waist-opening and a pair of leg-openings, the disposable diaper of pants type being characterized by that:

the backsheet is outwardly folded in the front or rear waist region across an entire width of a selected waist region of the front and rear waist regions at a desired level in the vertical direction thereof so as to form a single pleat having a U-shaped cross-section, the pleat being provided with a single circumferentially elastic member bonded to an inner surface of the pleat, upper and lower base ends of the pleat being provided with cut-off slits intermittently extending circumferentially of the selected waist region, and the pleat having transversely opposite ends placed upon and fixedly bonded to the transversely opposite side edges of the selected waist region.

Fig. 1 is a perspective view showing an embodiment of a disposable diaper constructed according to the invention as partially broken away;

Fig. 2 is a sectional view taken along line II-II in Fig. 1; and

Fig. 3 is a perspective view showing the diaper as rolled for disposal.

A disposable diaper of pants type or pull-on type constructed according to the invention will be more fully understood from the following detailed description of a preferred embodiment given hereunder in reference with the accompanying drawings.

Fig. 1 shows a diaper 1 from behind in a perspective view as partially broken away. The diaper 1 comprises a liquid-permeable topsheet 2, a liquid-impermeable backsheet 3 and a liquid-absorbent core 4 disposed between these two sheets 2, 3. Configurationally, the diaper 1 has a front waist region 6, a rear waist region 7 and a crotch region 8 extending between the front and rear waist regions 6, 7. The topsheet 2 and the backsheet 3 are bonded together at their portions extending outward beyond a peripheral edge of the core 4. Transversely opposite side edges 6A, 7A of the front

and rear waist regions 6, 7, respectively, extend outwardly of the diaper 1 and placed upon each other with the topsheet 2 inside, followed by integrally bonding the respective side edges 6A, 7A together by means of heat-sealing spots 9 which are intermittently arranged in the vertical direction so as to define a waist-opening 11 and a pair of leg-openings 12. The respective openings 11, 12 are provided along their peripheral edges with waist surrounding elastic member 13 and leg surrounding elastic members 14. These elastic members 13, 14 are bonded in their longitudinally extended conditions to an inner surface of the topsheet 2 or the backsheet 3.

The front and rear waist regions 6, 7 of the diaper 1 are provided with a plurality of elastic members 16 circumferentially extending in parallel one to another at vertically equal spaces. These elastic members 16 are disposed between the backsheet 3 and the core 4, and bonded in their longitudinally extended conditions to the inner surface of the backsheet 3. It should be understood that the portions of these elastic members 16 extending outward beyond transversely opposite side edges of the core 4 are disposed between the topsheet 2 and backsheet 3.

In the proximity of a vertically middle level of the rear waist region 7, the backsheet 3 is partially folded over

its entire width so as to form a pleat 17 projecting outward and having a substantially U-shaped cross-section. Transversely opposite ends 18, 18 of the pleat 17 are put against and firmly bonded to the outer surface of the respective side edges 7A, 7A of the rear waist region 7 at heat-sealing spots 9 with a top edge 19 of the pleat 17 directed downward. Along upper and lower base ends 21A, 21B of the pleat 17 (as will be described in reference with Fig. 2), the backsheet 3 is provided with cut-off slits 22A, 22B intermittently extending in the circumferential direction. It should be understood that these slits 22A, 22B may extend to the transversely opposite ends 18 of the pleat or may terminate somewhere short of the ends 18. To facilitate operation of cutting-off, length of each slit 22A, 22B extending circumferentially of the waist region is preferably larger than a length defined between each pair of circumferentially adjacent slits 22A, 22B, respectively. When the backsheet 3 is made of fibrous nonwoven fabric or contain such nonwoven fabric, these slits 22A, 22B are preferably oriented so as to intersect a fibrous direction of the nonwoven fabric to assure that the operation of cutting-off can be smoothly performed.

Fig. 2 is a sectional view of the pleat 17 taken along

line II-II in Fig. 1. The pleat 17 formed by partially folding the backsheet 3 so as to define its cross-section substantially in a toppled down U-shape is provided adjacent its top edge 19 with at least one elastic member 26 bonded in its longitudinally extended condition to the inner surface of the pleat 17. Mutually facing inner surface sections of the pleat 17 are bonded together by means of hot melt adhesive (not shown). The pleat 17 formed in this manner can be cut off along the slits 22A, 22B from the outer surface of the rear waist region 7, except the transversely opposite side ends 18, 18. In Fig. 2, the pleat cut off is shown by imaginary lines. The pleat 17 thus cut off has its transversely opposite ends 18 remaining fastened to the rear waist region 7 and forms together with the rear waist region 7 a closed loop. Such pleat 17 can be cut off even after the diaper 1 put on the wearer has been torn off along the heat-sealing spots 9 into the front and rear waist region 6, 7 and, in this case also, the pleat 17 is able to form together with the rear waist region 7 the closed loop.

Fig. 3 is a perspective view showing the diaper 1 rolled and fastened utilizing the pleat 17. The diaper 1 smeared with excretion may be taken off by pulling it down or after the transversely opposite side edges have torn off. In

either case, the pleat 17 is cut off after the diaper 1 has been taken off. Then, the diaper is rolled with the pleat 17 outside and the pleat 17 is draped about the rolled diaper 1 as shown by Fig. 3. The pleat 17 is elastic owing to the presence of the elastic member 26 and convenient to fasten the rolled diaper 1 so firmly that the rolled diaper could not be unrolled. The elastic member 26 may be identical to the elastic members 16 provided on the front and rear waist regions 6, 7 or may have an elastic characteristic different from those elastic members 16. While the pleat may be arranged either on the front waist region 6 or on the rear waist region 7, it is preferred to arrange it on the rear waist region 7 which is out of a reach of the baby wearing the diaper 1.

In the diaper 1 according to the invention, the topsheet 2 and the backsheet 3 as well as the core 4 may be made of the materials traditionally employed in this field of industry and these materials may be bonded together by means of adhesive agent such as hot melt adhesive or by heat-sealing technique so long as the materials to be bonded are of heat-sealable nature. The heat-sealing spots 9 adopted by the illustrated embodiment is the latter case. Bonding of the transversely opposite ends 18, 18 also may be achieved by

this heat-sealing technique.

The disposable diaper of pants type or pull-on type according to the invention is formed on the front or rear waist region with the elastic pleat of which the transversely opposite ends are fixedly bonded to the front or rear waist region and which can be cut off from the front or rear waist region. Therefore, the diaper can be rolled and then fastened by this pleat so tightly that the rolled diaper might not be unintentionally unrolled, even when the diaper smeared with excretion is taken off after the transversely opposite side edges of the diaper have been torn off.



What is Claimed is:

1. A disposable diaper of pants type comprising a liquid-permeable topsheet, a liquid-impermeable backsheet and a liquid-absorbent core disposed between these two sheets, wherein front and rear waist regions are bonded together along their transversely opposite side edges so as to form a waist-opening and a pair of leg-openings, the disposable diaper of pants type being characterized by that:

the backsheet is outwardly folded in the front or rear waist region across an entire width of a selected waist region of the front and rear waist regions at a desired level in the vertical direction thereof so as to form a single pleat having a U-shaped cross-section, the pleat being provided with a single circumferentially elastic member bonded to an inner surface thereof, upper and lower base ends of the pleat being provided with cut-off slits intermittently extending circumferentially of the selected waist region, and the pleat having transversely opposite ends placed upon and fixedly bonded to the transversely opposite side edges of the selected waist region.