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URINE-ABSORBENT BAG

The present invention relates generally to a urine-absorbent bag and more particularly to a urine-absorbent bag for male patients suffering from incontinence including bedridden male patients and the like.

Japanese Laid-Open Patent Application No. Hei7-124190 discloses an example of a urine-absorbent bag formed by bonding a top layer to a back layer along both side edges and a bottom edge thereof so as to define at a top thereof an opening for insertion of the user's penis. The top layer comprises a nonwoven fabric and the back layer comprises a stretchable nonwoven fabric sheet defining an inner surface of the bag, a foam polyethylene sheet defining an outer surface of the bag and an absorbent core disposed therebetween.

The known urine-absorbent bag is disadvantageous in that the back layer necessarily has a relatively high rigidity due to the presence of these sheet and absorbent core. The urine-absorbent bag of such construction tends to be angularly bent, instead of being smoothly curved as the bag is put against the user's penis and such angularly bent location often leaves a gap between the bag and the penis

through which a leakage of urine may occur.

Accordingly, it is a principal object of the invention to improve a fitness of the urine-bag around the penis.

The object set forth above is achieved, according to the invention, by a urine-absorbent bag a front section and a rear section adapted to cover the user's penis, an opening for insertion of the penis into the bag and a bottom opposed to the opening, wherein:

the front section has a cut extending from an edge of the opening toward the bottom of the bag so as to divide the front section in first and second portions and fastening means adapted to fasten the first and second portions divided by the cut as the first and second portions are overlapped each other; and

the rear section has a leakage blocking dam including an elasticized sheet having a base end extending along and bonded to the edge of the opening transversely of the bag and a free end adapted to be rose radially of the opening from the base end.

The urine-absorbent bag according to the invention allows a leakage of urine possibly occurring out of a gap which might otherwise be left between the bag and the user's

penis to be reliably avoided by sealing such gap by the elastically stretchable leakage blocking dam adapted to be rose from the inner surface of the bag at the opening for insertion of the penis.

Fig. 1 is a perspective view exemplarily showing a urine-absorbent bag according to the invention as partially broken away;

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

Fig. 3 is a sectional view taken along line III-III in Fig. 1;

Fig. 4 is a fragmentary plan view showing a rear section of the urine-absorbent bag as partially broken away; and

Fig. 5 is an end view showing an opening of the urine-absorbent bag.

A urine-absorbent bag 1 shown by Figs. 1, 2 and 3 in a perspective view as partially broken away, in a sectional view taken along line II-II and in a sectional view taken along line III-III comprises a front section 2 and a rear section 3. In use of the urine-absorbent bag 1, the user's

penis is inserted thereinto with the front section 2 facing outward and the rear section 3 facing the user's body. The front and rear sections 2, 3 are continuous with each other along a bottom edge 5 of the bag 1, overlap each other and bonded together along transversely opposite side edges 6, 7 of the bag 1, leaving a top edge not bonded together so as to define an opening 10. Each of these front and rear section 2, 3 comprises a liquid-permeable inner sheet 11, a liquid-impermeable outer sheet 12 and a liquid-absorbent core 13 disposed therebetween. These inner sheet 11 and outer sheet 12 are bonded together along portions thereof extending beyond a peripheral edge of the core 13. The respective inner sheets 11 of the front and rear sections 2, 3 are bonded together along the side edges 6, 7 of the bag 1. It should be understood that, of the core 13 continuously extending across the front and rear sections 2, 3, a portion occupying the front section 2 is designated by reference numeral 13A and a portion occupying the rear section 3 is designated by reference numeral 13B. It should be also understood that both the front and rear sections 2, 3 and the sheets 11, 12 are illustrated as if they are slightly spaced from each other along their mutually bonded regions in order to avoid an indistinctness. The line III-III in Fig. 1 lies

a little to the right hand with respect to a center line transversely of the bag 1.

The front section 2 has a notch 17 extending downward from an edge 16 of the opening 10 so as to divide an upper portion of the front section 2 into right and left regions. On both sides of this notch 17, the inner sheet 11 and the outer sheet 12 are bonded together along portions thereof extending beyond a general V-shaped notch 18 of the core 13A. A flap-like portion formed on the right side of the notch 17 as viewed in Fig. 1 by the inner sheet 11 and the outer sheet 12 bonded together along marginal regions thereof extending beyond the V-shaped notch 18 of the core 13A serves as a tab 20 used to put the urine-absorbent bag 1 against the user's penis. On the left side of the notch 17, a hook member 22 of a mechanical fastening system known under the trade mark "Velcro" is attached to an outer surface of the outer sheet 12 and on the right side of the notch 17, a loop member 23 of the mechanical fastening system is attached to an inner surface of the inner sheet 11. An inner surface of the core 13A in the front section 2 is symmetrically formed in the proximity of the bottom edge 5 with a transversely extending first groove 25 and a longitudinally but slight obliquely extending pair of second grooves 26.

The rear section 3 has a nonwoven fabric 27 integrally laminated by hot melt type adhesive 40 to the outer surface of the outer sheet 12. This nonwoven fabric 27 is folded back along an edge 28 of the opening 10 in a general Z-shape (in an inverted general Z-shape as viewed in Fig. 3) and partially bonded by adhesive 40 to the inner sheet 11 so that a forward end of this folded portion may extend from an inner side to an outer side of the bag 1 to define a free end 30. An elastic member 31 is secured in an elastically stretched condition to this free end 30 in parallel to the edge 28 of the opening 10. Such free end 30 has transversely opposite ends thereof disposed between the respective inner sheets 11 of the front and rear sections 2, 3 overlapping along the side edges 6, 7 of the bag 1 and bonded to these inner sheets 11. Between the transversely opposite side edges 6, 7 of the bag 1, the free end 30 functions as a dam to block a leakage of urine as will be described in more detail. The core 13B occupying the rear section 3 has third to seventh grooves 33 - 37 on inner and outer surfaces of the core 13B arranged in a layout illustrated by Fig. 4.

In the rear section 3 of the urine-absorbent bag 1 shown by Fig. 4 in a plan view as partially broken away, the liquid-absorbent core 13B occupying this rear section 3 has

the third groove 33 (indicated by a broken line) formed in an upper region of the core 13B on an inner surface of the core 13B so as to extend in a vertical direction of the core 13B substantially across a transversely middle region of the core 13B, a pair of the fourth^o grooves 34 (each indicated by a solid line) formed in the upper region of the core 13B on an outer surface of the core 13B so as to lie on transversely opposite sides of the core 13B with the third groove 33 between and to extend in a vertical direction of the core 13B, the fifth groove 35 formed in a lower region of the core 13B on the outer surface of the core 13B so as to extend transversely of the core 13B and the sixth and seventh grooves 36, 37 (each indicated by a solid line) formed in a lower region of the core 13B on the outer surface of the core 13B so as to extend substantially in vertical but somewhat oblique directions of the core 13B.

The manner in which the bag 1 of such arrangement is used will be described. After insertion of the user's penis into the bag 1, the loop member 23 is anchored to the hook member 22 of the mechanical fastening system so as to put the opening 10 of the bag 1 closely around the user's penis with the tab 20 of the front section 2 held by the user's fingers. With the bag put on the user in this manner, right and left

flap-like portions defining the notch 17 therebetween may be overlapped one upon another to put the opening edge 16 of the front section 2 against the user's penis from the outer side and the presence of the third and fourth grooves 33, 34 extending on the core 13B in the vertical direction allows the opening edge 28 of the rear section 3 to be smoothly curved and thereby to be put against the user's penis from the inner side. The third groove 33 formed on the inner surface of the core 13B facilitates the core 13B to be deformed in an outwardly convex shape while the fourth groove 34 formed on the outer surface of the core 13B facilitates the core 13B to be deformed in an inwardly convex shape. The respective edges 16, 28 defining the opening 10 properly fit the user's penis from inner and outer sides thereof, leaving no gap between the penis and the bag 1 which might cause a leakage of urine.

The known urine-absorbent bag has been disadvantageous in that the bag of excessively large size with respect to the user's penis readily generates wrinkles or folds which may cause a leakage of urine even if the core 13 is provided with the grooves. On the contrary, the bag 1 according to the invention reliably eliminates an apprehension of such leakage because the invention allows the free edge 30 to fit the

user's penis and thereby to function as a leakage blocking dam. Details of this effect will be fully understood from the following description in reference with Fig. 5.

Fig. 5 is an end view of the opening 10 of the bag 1, illustrating how the free edge 30 fits the user's penis P and functions as the leakage blocking dam. After insertion of the user's penis P into the bag 1, the rear section 3 is smoothly curved under the effect of the third groove 33 and the fourth grooves 34 in the outwardly convex shape as shown, as the regions of the front section 2 divided by the V-shaped notch 17 are drawn toward each other with the tab 20 being held by the user's fingers. Thereupon the elastic member 31 contracts and rises the free edge 30 from an inner surface of the rear section 3 so as to be held against the user's penis P. The free edge 30 thus seals a gap which might otherwise be left between the inner surface of the rear section 3 and the user's penis P and functions as the dam to block urine possibly leaking out of the opening 10.

In the urine-absorbent bag 1, there are provided adjacent the common bottom edge 5 of the core 13A, 13B the first and fifth grooves 25 and 35 extending transversely of the bag 1 and the second, sixth and seventh grooves 26, 36 and 37 extending in the vertical but somewhat oblique

directions. These grooves facilitates the common bottom of the core 13A, 13B to be deformed following the glans of the inserted penis.

According to the invention, the core 13 is formed with those grooves in order to improve a fitness of the urine-absorbent bag 1 to the user's penis and to facilitate the bag 1 to be deformed in conformity with a shape of the user's penis. Therefore, various factors such as the number, the positions, the orientations, the width and the lengths of the respective grooves may be selected depending on the particular condition under which the bag 1 is used. However, the core 13 preferably has at least the groove 33 centrally formed on the inner surface of the core 13B and extending in the vertical direction because this groove 33 assures a reliable fitness of the bag 1 to the user's penis at the opening 10.

Liquid-permeable nonwoven fabric or perforated plastic film may be used as material for the inner sheet of the bag 1 and plastic film, more preferably air-permeable but liquid-impermeable plastic film may be used as material for the outer sheet 12 of the bag 1.

Fluff pulp or a mixture of 40 - 100 w% fluff pulp and 60 - 0 w% superabsorptive polymer particles may be used as

material for the liquid-absorbent core 13. 20 or less wt% thermoplastic synthetic fibers may be mixed into such material so that the grooves of the core 13 may be easily formed and/or a strength of the core 13 may be increased.

While the outer side of the rear section 3 is covered with the nonwoven fabric 27 so that the rear section 3 may offer a soft touch when the rear section 3 comes in contact with the user's skin, such outer covering may be eliminated if it is unnecessary. When the leakage blocking dam is formed by the free end 30 of the nonwoven fabric 27, the free end 30 is preferably provided with water-repellency or liquid-impermeability. Appropriate pattern 41 (See Fig. 4) may be printed on the nonwoven fabric 27 if it is desired to facilitate front and rear sides of the bag 1 to be identified.

The grooves 25, 26, 33 - 37 on the core 13 may be obtained by subjecting the core 13 to debossing or heat debossing. The grooves formed in this manner have a fiber density higher in bottoms thereof than the remaining portions and spreading of urine in the bottoms occurring longitudinally of the grooves will be promoted. In a consequence, the urine-absorbent bag 1 according to the invention allows a liquid absorbing capacity of the core 13

to be fully utilized. To bond the respective components one to another may be achieved by using adhesive agents such as hot melt type adhesive or the heat-sealing technique so far as the components to be bonded are of heat-sealable nature.

While the front section 2 is continuous with the rear section 3 and have a common bottom edge 5 in the urine-bag 1 illustrated, an alternative arrangement is also possible in which the front section 2 and the rear section 3 are separately provided. In any way, it is possible to dispose the liquid-absorbent core 13 in only one of these front and rear sections 2, 3. In addition, it is also possible to construct the urine-absorbent bag 1 in which the opening 10 includes no leakage blocking dam. Furthermore, the leakage blocking dam may be formed also by a member other than the nonwoven fabric 27, for example, liquid-impermeable plastic film bonded to the opening 10.

Though not shown, the bag 1 is generally used together with a conventional diaper or incontinent pants.



WHAT IS CLAIMED IS:

1. A urine-absorbent bag comprising a front section and a rear section adapted to cover the user's penis, an opening for insertion of the penis into the bag and a bottom opposed to the opening, wherein:

the front section has a cut extending from an edge of the opening toward the bottom of the bag so as to divide the front section in first and second portions and fastening means adapted to fasten the first and second portions divided by the cut as the first and second portions are overlapped each other; and

the rear section has a leakage blocking dam including an elasticized sheet having a base end extending along and bonded to the edge of the opening transversely of the bag and a free end adapted to be rose radially of the opening from the base end.

2. A urine-absorbent bag according to Claim 1, wherein one of the front and rear sections comprises a liquid-permeable inner sheet, a liquid-impermeable outer sheet and a liquid-absorbent core disposed therebetween.



3. A urine-absorbent bag according to Claim 1, wherein the elasticized sheet is liquid-impermeable.

4. A urine-absorbent bag according to Claim 1, wherein the elasticized sheet is formed as a nonwoven fabric lying at the outermost location of the rear section is bent inwardly of the bag along the edge of the opening.

5. A urine-absorbent bag according to Claim 2, wherein the liquid-absorbent core is provided with compressed grooves extending from the opening toward the bottom of the bag.

6. A urine-absorbent bag according to Claim 4, wherein the elasticized sheet is formed with the nonwoven fabric and an elastic member extending along and secured to the free end of the nonwoven fabric in an elastically contractible condition.