

[54] **DIAPER GARMENT WITH INTERLEAVED LINER HAVING NON-WICKING PROTECTIVE PANELS**

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Related U.S. Application Data

[63] Continuation-in-part of Ser. No. 214,974, Jan. 8, 1972, Pat. No. 3,771,524, which is a continuation-in-part of Ser. No. 74,013, Sept. 21, 1970, Pat. No. 3,667,466.

[52] U.S. Cl. **128/287**

[51] Int. Cl. **A41b 13/02**

[58] Field of Search 128/284, 286, 287, 288

[56] **References Cited**

UNITED STATES PATENTS

2,545,674	3/1951	Ralph.....	128/287
3,180,335	4/1965	Duncan et al.	128/287
3,430,629	3/1969	Murphy	128/284

3,543,756 12/1970 Murphy et al. 128/284

Primary Examiner—Charles F. Rosenbaum

[57]

ABSTRACT

A moisture-impervious snap-on retainer comprising a generally rectangular main body panel with side and end flaps on one side defining a reservoir, and an absorbent liner comprising a rectangular pad underlying said flaps, and protective panels joined to the pad between said side flaps and overlying the side flaps, both to minimize contact with the wearer and to frictionally hold the liner against slipping relative to the retainer. The protective panels are composed of non-wicking or hydrophobic material which will not conduct liquid laterally across the side flaps from the pad, and thus remain dry, being protected from direct exposure to the pad by the impervious side flaps. In one embodiment, the protective panels are the opposite edge portions of a single sheet glued to the pad between the side flaps, and in another embodiment, they are separate strips similarly glued to the pad.

9 Claims, 5 Drawing Figures

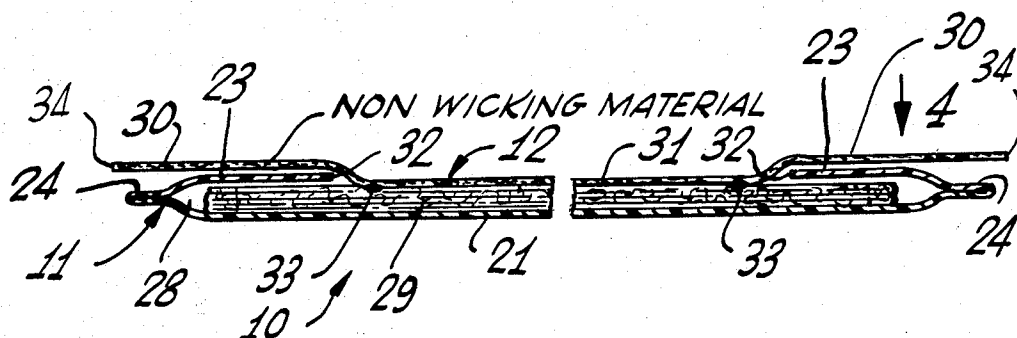


Fig. 1

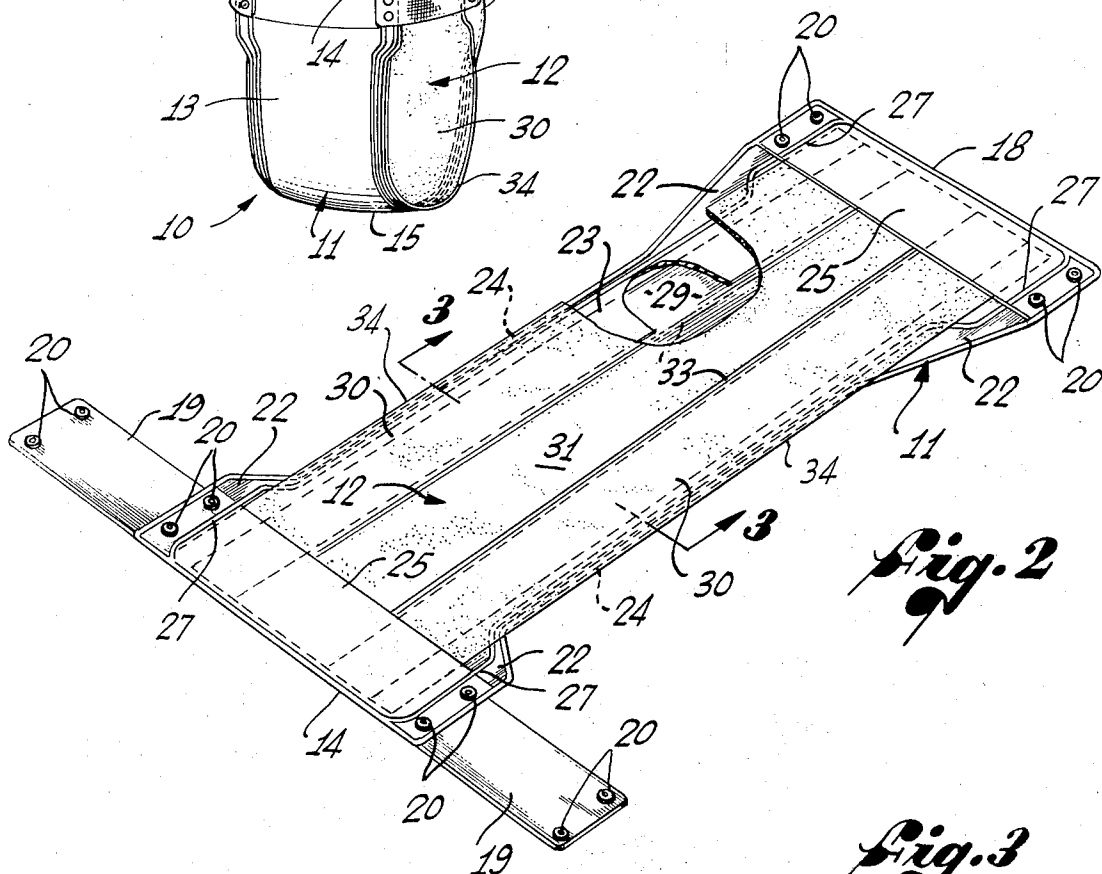
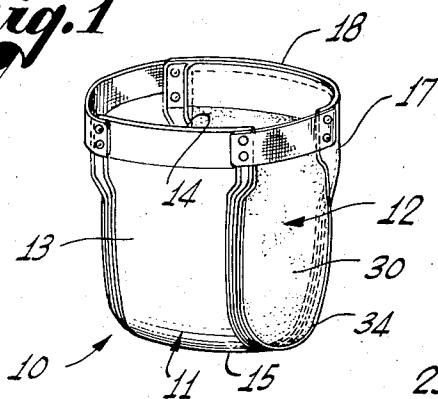


Fig. 2

Fig. 3

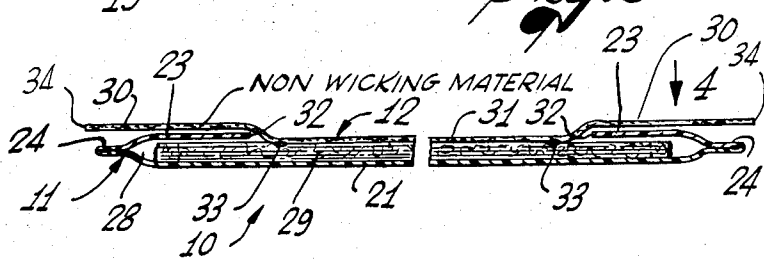


Fig. 5

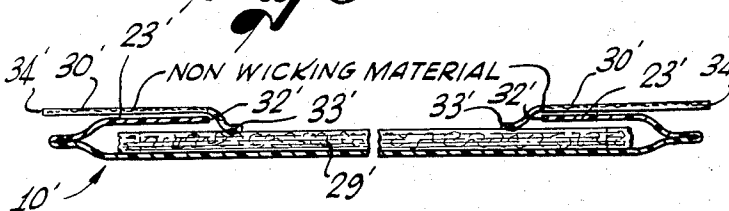
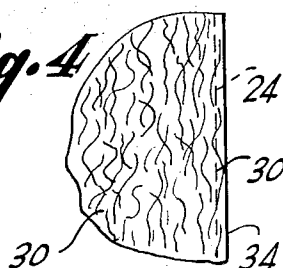


Fig. 4



DIAPER GARMENT WITH INTERLEAVED LINER HAVING NON-WICKING PROTECTIVE PANELS

CROSS REFERENCE TO RELATED APPLICATION

This is a continuation-in-part of copending application Ser. No. 214,974, filed Jan. 8, 1972, now U.S. Pat. No. 3,771,524, entitled DIAPER GARMENT WITH INTERLEAVED LINER AND RETAINER, which was a continuation-in-part of application Ser. No. 74,013, filed Sept. 21, 1970, now U.S. Pat. No. 3,667,466.

BACKGROUND OF THE INVENTION

This invention relates to diaper garments for incontinents, and has particular reference to an absorbent diaper liner and to the combination of such a liner with a moisture-impervious outer garment which serves as a reusable retainer for the liner.

Various types of diaper garments have been provided for infants, young children, and other incontinents, including adults, and typically comprise one or more sheets of absorbent material such as cloth or disposable paper, adapted to be fitted through the crotch area and secured about the wearer's waist, and an outer protective covering of moisture-impervious material. This covering may be in the form of waterproof pants, a modified snap-on retainer of vinyl or the like, or simply an exterior impervious sheet secured to the absorbent material and pinned in place with the material.

An example of a simple disposable diaper, shown in Pat. No. 3,426,756, has an absorbent pad enclosed in an envelope formed by a liquid-permeable facing sheet on one side and by a polyethylene backing sheet on the other side. This diaper is generally rectangular, but is centrally cinched into a gathered form in the crotch area, and has been quite popular as an inexpensive, disposable diaper.

More sophisticated, comfortable and effective diaper garments are shown in Pat. Nos. 2,575,164, 2,545,674, and 3,441,025. In the former, an absorbent pad is retained removably in a reusable snap-on retainer having an outer panel that is wider at its ends than in the crotch area, and an arrangement of flaps and sidewalls which forms an open-sided reservoir of considerable depth between the flaps and the outer panel, for holding the absorbent pad.

The other two patents disclose diaper garments having reusable moisture-impervious retainers with outer panels adapted to be snapped around a wearer, and with sheets of absorbent material fitted removably into the retainers and held in place by side and end flaps overlying the pads in basically flat, facing relation therewith, to define flat, virtually planar, moisture-retaining reservoirs between the planes of the flaps and the outer panels. The absorbent sheets may be composed of disposable material, or they may be composed of material suitable for laundering and reuse.

With the foregoing diaper garments in which absorbent material is held in reusable retainers for easy removal after use, and with other garments of the same general type, two primary problems have been encountered. First, it has been difficult to prevent the absorbent material from slipping within the retainer, with a resulting tendency to "bunch" or gather in the crotch area. This tendency may be counteracted by tapering the absorbent material and the retainer, by folding the

ends of the absorbent material over with the end flaps of the retainer, or by special detent arrangements which interlock the absorbent material and the retainer.

In addition, the moisture-impervious materials used for the retainers are significantly "harder" in surface finish, and to the extent that a retainer contacts the wearer's skin, it provides a source of discomfort and sometimes even skin irritation. This problem exists with the portion of the retainer forming the flaps which overlie the absorbent material along the edges of the retainer to hold the material in the reservoir defined between flaps and the outer, main body panel of the retainer.

A significant reduction in the problems of discomfort and skin irritation was accomplished with the diaper garment disclosed in my application, Ser. No. 214,974, filed Jan. 8, 1972, by providing protective panels of soft absorbent material along the longitudinal edges of the absorbent liner, for overlying the side flaps of the retainer and minimizing contact between the hard retainer material and the wearer's skin. In addition, the interleaving of the liner and its protective panels with the retainer resists slipping of the liner within the retainer, in use, for further increased comfort and improved integrity of the reservoir.

SUMMARY OF THE INVENTION

The present invention resides in a further improvement in a diaper liner of the type disclosed in the aforesaid application, which not only provides the interleaved liner and retainer, with the advantages of that arrangement, but also has the additional advantages of maintaining the protective panels dry, or substantially so, for increased comfort and virtual elimination of any possibility of dampening the outer clothes of the wearer by transmission of moisture through the protective panels.

This is accomplished by making the protective panels of so-called non-wicking, moisture permeable material, that is, material that will pass liquid through from one side of a sheet to the other, but will not transmit the liquid edgewise along the sheet. Such material also has been called "hydrophobic".

When protective panels of this material are separated from the marginal portions of the liner by impervious flaps, and joined to the liner between the flaps, they remain dry in the areas overlying the flaps. Moisture cannot reach the protective panels through the flaps, and cannot be transmitted through the panels from the central portion of the liner.

The preferred embodiment uses a single sheet of non-wicking material, of substantially the same size and shape as the liner, the sheet being joined to the central portion of the liner between the side flaps, preferably by one or more lines of adhesive cement. This embodiment is particularly well suited for use with disposable liners of cellulose fluff, where the full sheet helps to hold the shape of the liner. An alternative embodiment uses two strips of non-wicking material, glued to the liner along the inner edges of the side flaps.

Other aspects and advantages of the invention will become apparent from the following detailed description, taken in conjunction with the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of a diaper garment embodying the novel features of the present invention, showing the garment in the shape it has while being worn;

FIG. 2 is an enlarged plan view of the garment of FIG. 1, laid out in flat condition with the liner in the retainer, with parts broken away for clarity of illustration;

FIG. 3 is an enlarged, break-away cross-section taken along line 3—3 of FIG. 2 with the parts spaced apart for clarity of illustration;

FIG. 4 is an enlarged fragmentary plan view taken in the area of the arrow 4 in FIG. 3 showing the nature of the preferred material; and

FIG. 5 is a view similar to FIG. 3, showing an alternative embodiment.

DETAILED DESCRIPTION

As shown in the drawings for purposes of illustration, the invention is embodied in a diaper garment, indicated generally by the reference number 10, of the type comprising a repeatedly usable, moisture-impervious retainer 11 and a readily insertible and removable absorbent liner 12 which is fitted in the retainer to be held thereby in the shape shown in FIG. 1 while the garment is worn by an infant or other incontinent person. The garment is generally U-shaped in use, having a front side 13 (FIG. 1) adapted to be disposed against the abdomen of the wearer with a front end 14 adjacent the wearer's waist, a central crotch portion 15 for extending between the legs of the wearer, and a rear side 17 for extending upwardly to the level of the front end, and terminating in a rear end 18. Belt-type straps 19, preferably of elastic material, are secured to the sides of the retainer adjacent the front and rear ends thereof by snap fasteners 20 and extend around the waist of the wearer, as shown in FIG. 1, to hold the garment 10 comfortably in place.

Thus, it will be seen that the garment 10 employs the general combination of elements described in Pat. No. 2,545,674, and is intended for use in the same general manner. The retainer 11 is made of moisture-impervious sheet material such as vinyl plastic, and has an elongated, generally rectangular main body panel 21 (FIG. 3) which flares outwardly to an increased width on both sides adjacent each end 14, 18 to form front and rear pairs of laterally projecting tabs 22 (FIG. 2) on which the snap fasteners 20 are mounted. Elongated side flaps 23, also composed of impervious material such as vinyl plastic, overlie the side marginal portions of the main body panel and are sealed to this panel along the edges 24 thereof. These flaps, which may be substantially parallel, are of the same length as the main panel 21 and are considerably narrower than one-half its width, so as to be spaced apart to leave a gap of substantial width along the center of the retainer. They are arranged to lie flat against the main panel when there is no liner 12 in the retainer.

At each end 14, 18 of the retainer 11, an end flap 25 of impervious material extends across the retainer and is sealed across the end thereof and also at 27 to the two laterally projecting tabs 22 at that end. The seals 27 between the tabs and the ends of the end flaps are spaced laterally outwardly from the side flaps 23 so that the end flaps loosely overlie the side flaps.

With this arrangement, it will be seen that the retainer 11 defined a virtually planar reservoir between the main panel 21 and the flaps 23 and 25, the reservoir being indicated in FIG. 3 by the reference number 28. The absorbent liner 12 is disposed in, and virtually fills, this reservoir, in flat, generally planar condition, to receive and hold waste from the wearer.

In general, the liner 12 comprises a pad or panel 29 sized and shaped to fit within the reservoir 28 and to substantially cover the inside surface of the main body panel 21. With a rectangular main body panel, the pad also should be rectangular, and thus has side and end marginal portions which are disposed under the side and end flaps 23 and 25 of the retainer 11 when the garment 10 is assembled. Various absorbent materials presently are available for use as diaper liners, including launderable cloth, disposable paper, cellulose fluff and the like, and one or more backing sheets (not shown) may be added in a conventional way to increase the absorbent capacity of the garment.

As shown most clearly in FIG. 3, the liner 12 also has two protective panels 30 which overlie the side flaps 23, the latter thus being interleaved with the liner 12 between the marginal portions of the pad 29 and the protective panels. These protective panels minimize or eliminate contact of the side flaps 23 with the wearer's skin, and also cooperate with the underlying portions of the pad in frictionally gripping the side flaps to resist slipping of the liner relative to the retainer.

In accordance with the present invention, the protective panels 30 are composed of non-wicking fabric which will not conduct moisture from the exposed portion of the pad across the side flaps 23, and which thus remains dry in use, at least as long as the reservoir 28 is not filled beyond the absorptive capacity of the pad. An example of such non-wicking material is non-woven polyester material having a random or chaotic distribution of fibers, but it is to be understood that other non-wicking materials are known and are in use by the trade, in different circumstances and for different purposes. It is believed that the term hydrophobic also may be used in specifying these materials.

In the preferred form shown in FIGS. 2 and 3, the protective panels 30 are the opposite longitudinal edge portions of a single sheet 31 of non-wicking material having substantially the same size and shape as the liner pad 29. This sheet is secured to the pad between the free inner edges 32 of the side flaps, preferably by one or more lines 33 of adhesive cement. Hot-melt glue is preferred. Herein, a line of cement is applied closely adjacent each inside edge, but far enough inwardly from the latter to permit free assembly of the garment 10 with the liner 12 in interleaved relation. The lines 33 of cement may be either continuous or interrupted.

This embodiment is particularly well-suited for use as a disposable liner, with a pad 29 composed of cellulose fluff. The central portion of the non-wicking sheet 31 does not interfere with the passage of liquid to the pad, and assists in maintaining the pad in shape, and in protecting against premature disintegration.

In the enlarged view of the presently preferred non-wicking polyester material shown in FIG. 4, which is magnified somewhat beyond actual size, it can be seen that the fibers are truly random in their arrangement. The outer edges 34 of the protective panels 30 may be spaced inwardly from the outer edges 24 of the side flaps 23, completely cover the side flaps, for full pro-

tection against rubbing contact of the retainer material with the skin. For optimum comfort, the protective panels may even project slightly beyond the side flaps, to curl around the edges of the retainer in the crotch area.

Shown in FIG. 5 is an alternative embodiment 10 which is the same as the preferred embodiment except that the protective panels 30' are separate strips of non-wicking material, joined to the pad along two lines 33' just inside the free edges 32' of the side flaps 23'. In all other respects, this embodiment can be the same.

Thus, the alternative embodiment does not cover and protect the exposed central portion of the pad 29', and it requires the positioning of two separate strips 30' during manufacture, a factor that can complicate manufacturing procedures. There is an advantage, however, in that less non-wicking material is used.

From the foregoing, it will be seen that the present invention provides an improved diaper garment of the interleaved type, which has the significant advantage of maintaining the protective panels dry in normal usage, for increased comfort of the wearer. This advantage is the result of a combination of the non-wicking protective panels, with interleaved side flaps of moisture-impervious material, so that the composition of the panels prevents transmission of moisture laterally through the panels, and the side flaps prevent direct exposure of the undersides of the panels to moisture.

It also will be evident that, while two specific embodiments have been illustrated and described, various modifications and changes may be made without departing from the spirit and scope of the invention.

I claim:

1. In a diaper garment comprising:

- a moisture-impervious diaper retainer having an elongated main body panel, and a pair of moisture-impervious side flaps overlying the longitudinal side edge portions of said body panel and having outer edges joined to the body panel along the longitudinal side edges thereof, said side flaps having inner edges that are spaced apart to leave the central portion of said body panel uncovered; and
- an absorbent diaper liner removably held in said retainer in interleaved relation therewith, and including an elongated panel of absorbent material disposed against said main body panel and having side marginal portions disposed beneath said side flaps;

the improvement which comprises:

- a sheet of non-wicking, moisture-pervious material of approximately the same size and shape as said absorbent panel disposed in overlying relation with said central portion and with said side flaps;
- said sheet having side edge portions separated from said side marginal portions of said panel by said side flaps and thereby protected against moisture from said side marginal portions;
- and means joining said sheet to said central portion as part of said diaper liner for insertion in and removal from said retainer with said absorbent panel.

2. A diaper garment as defined in claim 1 in which said joining means comprise lines of adhesive between said sheet and said central portion, extending along the inner edges of said side flaps.

3. A diaper garment as defined in claim 1 in which said side edge portions completely cover said side flaps and project beyond the longitudinal side edges thereof to curl around said retainer in the crotch area of the wearer.

4. In a diaper garment comprising

- a moisture-impervious diaper retainer having an elongated main body panel, and a pair of moisture-impervious side flaps overlying the longitudinal side edge portions of said body panel and having outer edges joined to the body panel along the longitudinal side edges thereof, said side flaps having inner edges that are spaced apart to leave the central portion of said body panel uncovered; and
- an absorbent diaper liner removably held in said retainer in interleaved relation therewith, and including an elongated panel of absorbent material disposed against said main body panel and having side marginal portion disposed beneath said side flaps;

the improvement which comprises:

- elongated protective panels of moisture-pervious fabric overlying said side flaps and covering the latter from the inner edges toward the outer edges thereof, said protective panels being joined to said absorbent liner as parts thereof, whereby the liner is in interleaved relation with said side flaps, and said moisture-pervious fabric being of the non-wicking type which will not conduct moisture laterally through the fabric along said side flaps, thereby providing a fabric covering for said side flaps that is protected by the side flaps from moisture held by said liner.

5. A diaper garment as defined in claim 4 in which said protective panels are the opposite edge portions of a single sheet of said non-wicking, moisture-pervious fabric, of substantially the same size and shape as said absorbent panel, and joined to the central portion of the absorbent panel between the inner edges of said side flaps.

6. A diaper garment as defined in claim 5 in which said single sheet is joined to said absorbent panel by adhesive cement along each of said inner edges.

7. A diaper garment as defined in claim 4 in which said protective panels are two elongated strips of said non-wicking, moisture-impervious fabric, each having an inner margin overlying and joined to said absorbent panel along one of said inner edges.

8. A diaper garment as defined in claim 4 in which said non-wicking, moisture-pervious material is a non-woven polyester material having a chaotic distribution of fibers.

9. A diaper garment as defined in claim 4 in which said protective panels completely cover said side flaps.

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