

[54] RE-USEABLE DIAPER WITH INTEGRAL MOISTURE CONFINING MEANS

[76] Inventor: Paul L. Sherman, 119 W. 23rd St., New York, N.Y. 10011

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[58] Field of Search..... 128/287, 290 R, 296

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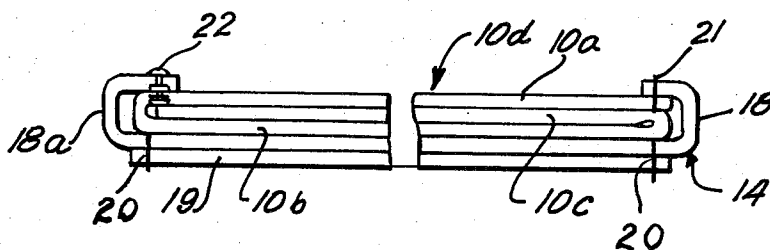
Primary Examiner—Lucie H. Laudenslager
 Attorney, Agent, or Firm—Howard E. Thompson, Jr.

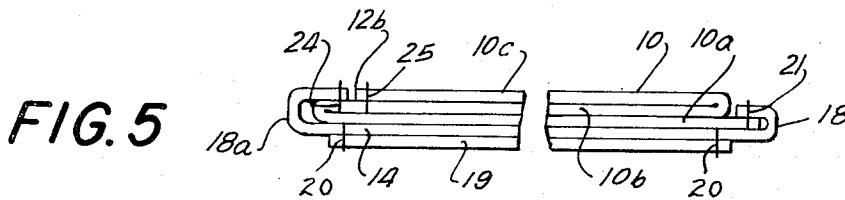
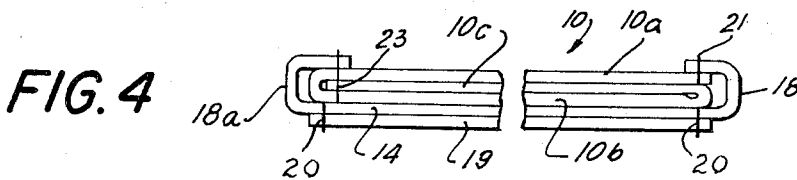
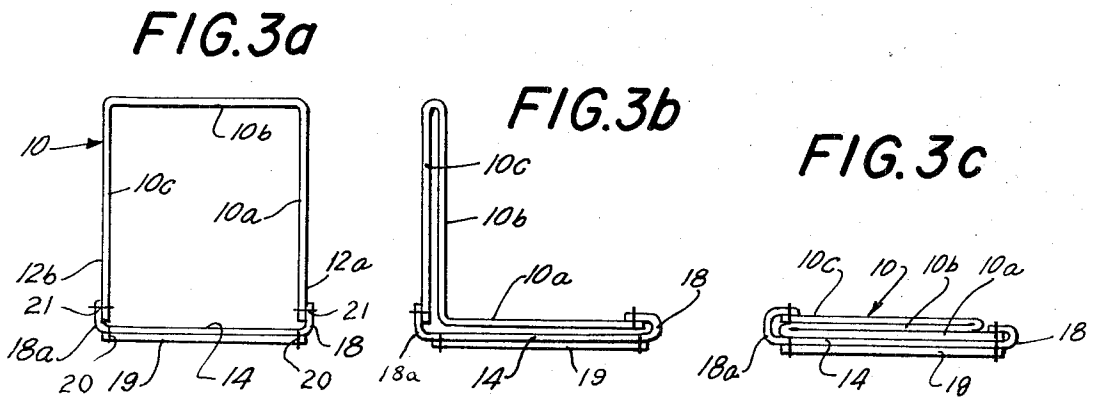
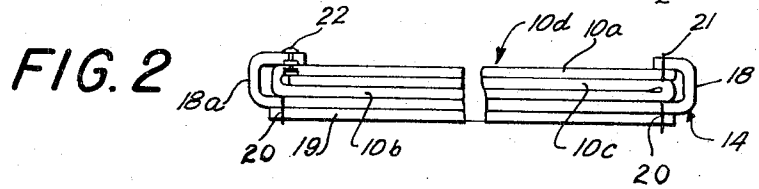
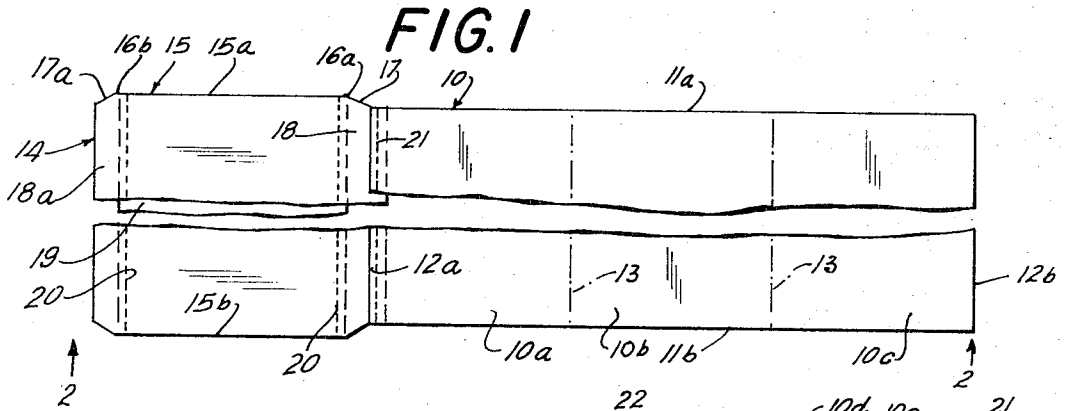
[57] ABSTRACT

A re-useable diaper comprising a multilayered pad of absorbent fabric joined along at least one side thereof to a larger panel of flexible waterproof material provides moisture confining means which keeps the outer, and suitably ornamented, surface of the diaper dry during intended use, while at the same time facilitating easy and repeated laundering for re-use. The larger panel is of greater dimension both front to back and side to side than the pad of absorbent material to confine moisture of even a very wet diaper.

The absorbent pad is preferably fashioned from an elongated rectangular blank folded on itself to provide the plurality of layers in the pad, and several means of joining the pad and waterproof panel provide a pre-folded, ready to use assemblage, while still permitting free detergent and rinsing action on all surfaces when laundering.

14 Claims, 7 Drawing Figures





RE-USEABLE DIAPER WITH INTEGRAL MOISTURE CONFINING MEANS

This invention relates to a re-useable diaper with integral moisture confining means and constitutes a further refinement and improvement on the re-useable diaper disclosed and claimed in my copending application Ser. No. 186,988 issuing March 6, 1973 as U.S. Pat. No. 3,719,189.

In said copending patent there is disclosed the basic concept of providing non-wicking means between an inner absorbent pad and an outer fabric or decorative panel, and a flexible waterproof overlay disposed between the absorbent pad and outer panel as the diaper is assembled for use. The preferred adaptation disclosed therein employed a separate flexible plastic sheet as the waterproof overlay.

While practical from the standpoint of ease of laundering, since the plastic sheet is handled separately, this approach leaves something to be desired from the standpoint of convenience in use. Frequently the changing of diapers must be done under hurried, awkward, or otherwise adverse conditions, when it may be difficult or impossible to properly position a separate plastic inlay to provide its intended moisture retaining effect.

A modification disclosed in said copending application involves the bonding of a thin plastic film to the non-wick and outer panel portions of the assemblage. While this avoids the trouble of positioning a separate plastic inlay with each use as above described, it creates a new problem in that a bonded assemblage which will have the desired flexibility for comfortable use will not withstand the number of repeated launderings expected in a conventional re-useable diaper.

The improved diaper of the present invention overcomes these problems and provides an essentially leak-proof diaper which is easily laundered for repeated re-use and which at the same time provides a unitary assemblage as readied for use facilitating quick and easy adjustment to the body of the wearer even under adverse conditions.

Regarded in certain of its aspects the improved diaper of the present invention comprises a multi-layered pad of absorbent fabric joined at least along one side thereof to a larger panel of flexible waterproof material providing moisture confining means which keeps the outer and suitably ornamented surface of the diaper dry during intended use, while at the same time facilitating easy and repeated laundering for re-use. The larger panel is of greater dimension both front to back and side to side than the pad of absorbent material to confine moisture of even a very wet diaper.

The absorbent pad is preferably fashioned from an elongated rectangular blank folded on itself to provide a plurality of layers in the pad, and various means of joining the pad and waterproof panel provide a prefolded ready to use assemblage, while still permitting free detergent and rinsing action on all surfaces when laundering.

The construction of the improved diaper will be readily understood from a consideration of the following description in conjunction with the accompanying drawing in which preferred adaptations and modes of assembly have been illustrated with the various parts thereof identified by suitable reference characters in the several views and in which:

FIG. 1 is a plan view showing the basic structural arrangement of components of the diaper;

FIG. 2 is an enlarged view of the diaper shown in FIG. 1 taken in the direction of the arrows 2—2 and indicating one manner of prefolding of the diaper;

FIGS. 3a, b and c show an open loop assemblage of the diaper illustrated in FIG. 1 and the manner of prefolding the same;

FIG. 4 is a view similar to FIGS. 2 and 3a showing the modified form of prefolded assemblage; and

FIG. 5 is a view similar to FIG. 4 showing a further modified form of prefolded assemblage.

As shown in FIGS. 1 and 2 of the drawing, the improved diaper construction in accordance with the present invention comprises an elongated blank 10 of generally rectangular contour fashioned from conventional absorbent diaper fabric. The width between edges 11a and 11b will be appropriate to accommodate the sized individual for which the diaper is intended and the length between ends 12a and 12b is such that folding along dotted lines 13 to superimpose panels 10a, 10b and 10c provides an absorbent pad of the desired width for intended users of the diaper. While folding to provide 3 superimposed panels has been illustrated it will be understood that the length between edges 12a and 12b can be increased if desired to provide one or more additional superimposable panels.

The end 12a of blank 10 is secured to one edge of a blank 14 of non-wicking material which may be flexible plastic sheeting, flexible impregnated fabric sheeting, or combinations thereof which provide both resistance to passage of moisture through the surface and resistance to passage of moisture by wicking action along the plane of blank 14. By way of illustration the panel 14 can be fashioned from the type plastic sheeting used in waterproof over pants worn over conventional diapers by infants and invalids.

The blank 14 has a central portion 15 the edges 15a and 15b of which are spaced apart slightly more than the edges 11a, 11b of blank 10, to provide full coverage of the folded blank 10 as the diaper assemblage is arranged upon a wearer with the blank 14 externally of the assemblage. The width of the portion 15 between points 16a, 16b should be approximately equal to or slightly greater than the width of the folded panels 10a, 10b, 10c; and the sides of the blank 14 are preferably tapered as seen at 17 throughout a narrow panel 18 which extends between the enlarged portion of blank 14 and blank 10. The opposite side of the enlarged portion 15 of blank 14 preferably includes a similar extension 18a having tapered edges 17a for use in pre-folded assemblages of the diaper as hereinafter described.

Externally of the enlarged portion of blank 14 is a decorative outer panel 19 of suitably colored or characterative fabric which becomes the outer and visible surface of the diaper as worn. The decorative panel 19 can be secured to the blank 14 in various ways as by stitching along its side edges as seen at 20 or, if interchangeable decorative panels 19 are desired snap fasteners or other detachable mounting means can be substituted for the stitching 20. The blank 14 and panel 19 are preferably left unattached along edges 15a and 15b so that the layers can separate for free detergent and rinsing action when laundering.

The blank 14 has been shown as secured to the blank 10 by a line of stitching 21, but here again it will be understood that snap fasteners or other detachable cou-

pling means can be employed. In this connection it should be pointed out that, with the new diaper construction being intended as an indefinitely re-usable diaper, it is recognized that all components may not be equally resistant to the type of handling and detergents to be encountered in repeated laundering. While the blank 10 should easily withstand 100 or more washings the blank 14 could show damage or deterioration after somewhat fewer washings. It is therefore contemplated that marketing of the new diaper construction would include marketing of replacement blanks 14 to be secured by stitching or other fastening means to the still useable blank 10.

In fact, the use of snap fasteners or other detachable coupling means between the blanks 10 and 14 permits flexibility in use in that a slightly soiled or damp folded blank 10 could be removed and replaced by a fresh blank 10 permitting reuse of the assemblage 14, 19 several times between needed washings. The inner surface of the blank 14 could be simply wiped off with a damp cloth and dried between such repeated uses so that the frequency of washings of this assemblage could be dictated more by the extent to which the outer surface of decorative panel 19 may have become soiled in use.

As shown in FIG. 2 one form of prefolding of the assemblage as shown in FIG. 1 can comprise merely folding panel 10c upon panel 10b, folding this assemblage upon 10a, and then folding the three-layer assemblage onto blank 14 in alignment with the enlarged portion 15 thereof. The extension 18a can then be simply folded onto the then inner surface 10b (as seen in FIG. 2) of the folded blank 10 and held in position by the pinning or otherwise securing of the diaper to the wearer. To facilitate handling of the prefolded assemblage, however, snap fasteners 22 can be employed to detachably join the edge of extension 18b to the point of folding between panels 10a and 10b as shown in FIG. 2.

The construction as described in connection with FIGS. 1 and 2 is considered the most versatile adaptation of the invention and the adaptation which facilitates easiest laundering since as laundered the blank 10 becomes fully extended for thorough detergent and rinsing actions. This adaptation, however, does call for a complete refolding after each laundering; and it is well known that those involved with the care and use of diapers welcome relief from this type of time consuming activity. In this connection it is significant to note that the improved diaper construction lends itself to various forms of preassemblage to minimize such handling as diapers are laundered and prepared for reuse.

In FIG. 3 and the separate views *a*, *b* and *c* thereof, there is shown an adaptation in which the edges 18, 18a of blank 14 are joined respectively to the ends 12a, 12b so that panels 10a, 10b and 10c together with blank 14 form an open loop as seen in FIG. 3a. This open loop assemblage permits free access to all surfaces for detergent and rinsing action yet it will be seen from the showings in FIGS. 3b and 3c that this loop is very easily folded by superimposing one of the panels 10a on blank 14 while at the same time bringing panels 10b and 10c into closely parallel relation to each other, and then together folding panels 10b and 10c onto panels 10a to provide the assemblage shown in FIG. 3c.

In the adaptation shown in FIG. 3, the blank 10 is preferably joined to the blank 14 with stitching as

shown, but if replacement of the panel 14 should become necessary it would be a simple matter to stitch ends 12a, 12b of the still useable blank 10 to a new blank 14. In this adaptation, however, the stitching could be replaced by snap fasteners or other detachable couplings so that the blanks 10 and 14 could be laundered separately and refolded after assemblage following the sequence shown in FIGS. 3a, b and c.

In the modifications shown in FIGS. 4 and 5 all components of the basic structure are identified by the same reference characters as used in FIGS. 1 and 2. In FIG. 4 a prefolded assemblage is shown in which the free edge of extension 18a of blank 14 is stitched through all three panels 10a, b, and c as shown at 23. In this connection it will be noted that the slight spacing between the looped portions 18, 18a of blank 14 and the folded blank 10 permit the assemblage to open up as a relatively large ring, thus facilitating application of the stitching 23 by using a suitable foot-off-the-arm sewing machine. Furthermore, this ability to open as a loop also permits the panels 10a, b and c to separate, one from the other to facilitate free detergent and rinsing action on all surfaces as the assemblage is being laundered. After laundering, it will be apparent that a simple insertion of the hand between folds of panels 10a and 10b will easily realign these panels in the assemblage.

In FIG. 5 a further modification is shown in which the free edge of extension 18a of blank 14 is joined as by stitching 24 to blank 10 at the juncture between panels 10b and 10c; and end 12b of blank 10 can be left detached, with panel 10a merely folded on 10b, or if desired a line of stitching 25 can join end 12b to panel 10b. Either way it will be apparent that the several layers will be free to separate one from the other to permit free detergent and rinsing action while at the same time requiring a minimum of effort to restore the assemblage to the intended use configuration.

As previously mentioned in connection with FIGS. 1 and 2, the panel 19 as shown in FIGS. 3, 4 and 5 can if desired be detachably secured to the blank 14. Similarly, detachably fastening means can be employed in joining the blanks 10 and 14 at the locus of stitchings 21, 23 and 24. In such event, with respect to the showing in FIG. 4 the stitching 23 would extend only through folded panels of the blank 10, with detachable fasteners arranged in alignment therewith to couple the free edge of extension 18a to panel 10c.

As originally supplied, and as readied for re-use after launderings, it will be apparent that the improved diaper provides an easily handled unitary assemblage which, as affixed to the wearer, provides both ample reception for moist deposits and effective confinement of such deposits so that the outer surface of the assemblage remains dry from one diaper change to another. The improved construction therefore provides in the reuseable diaper, intended for many launderings, much of the convenience in use of the on-use disposable diapers which have become so popular in recent years.

Furthermore, the improved construction avoids a major drawback of the disposable diaper, namely, the accentuation of the growing solid waste disposal problem. There will, of course, continue to be instances in which the use of disposable diapers will be preferred in spite of adding to the solid waste disposal problem. It is believed, however, that the improved diaper of the present invention provides such a combination of con-

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venience in use, and ease of laundering and readying for re-use, that many people currently using disposable diapers exclusively would switch to the improved re-useable diaper, when commercially available, for regular day-to-day use, and resort to the one-use disposable diapers primarily during periods of travel and other emergency situations where laundering facilities may be unavailable or impractical.

Various changes and modifications in the re-useable diaper as herein disclosed may occur to those skilled in the art, and to the extent that such changes and modifications are embraced by the appended claims it is to be understood that they constitute part of the present invention.

I claim:

1. A re-useable diaper with integral moisture retaining means comprising a multilayered pad of absorbent fabric joined along at least one side thereof to one edge of a larger panel of flexible waterproof material, the outer surface of said larger panel carrying a smaller decorative panel adapted to substantially align with said pad when the pad is superimposed on the inner surface of said waterproof panel, side portions of said waterproof panel being folded around and superimposed on innermost side edges of said pad thereby providing moisture retaining sides to the assembled diaper, and means positioning the opposed edge of said waterproof panel with respect to said pad.

2. A re-useable diaper as defined in claim 1 wherein said absorbent pad comprises an elongated rectangular blank of diaper fabric foldable on itself to provide at least three superimposed panels, and one end of said blank being integrally joined to one edge of said waterproof panel.

3. A re-useable diaper as defined in claim 2 wherein the opposed edge of said waterproof panel is secured to a spaced portion of said foldable fabric blank whereby said waterproof panel is fixedly positioned with respect to both sides of said pad.

4. A re-useable diaper as defined in claim 2 wherein the opposed edge of said waterproof panel is secured to the opposed end of said blank, whereby the folded assemblage can open to a large loop facilitating free de-

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tergent and rinsing action during laundering.

5. A re-useable diaper as defined in claim 2 wherein the opposed edge of said waterproof panel is joined to foldable diaper blank at the remote edge of the panel thereof to which the first named edge of said waterproof panel is joined.

6. A re-useable diaper as defined in claim 5 wherein the other two panels of said foldable blank are secured together to form a closed loop.

7. A re-useable diaper as defined in claim 6 wherein said closed loop is disposed externally of said first named panel of the foldable blank.

8. A re-useable diaper as defined in claim 6 wherein said closed loop is disposed between said first named panel of the foldable blank and said waterproof panel.

9. A re-useable diaper as defined in claim 2 wherein the interfolded panels of said blank, at the edge thereof remote from the juncture with said first named edge of the waterproof panel are stitched together to thereby impart a closed loop configuration to the remainder of said foldable blank, and the opposed edge of said waterproof panel is secured to said interfolded panels substantially at the point where said panels are stitched together.

10. A re-useable diaper as defined in claim 1 wherein said decorative panel is detachably secured to said waterproof panel.

11. A re-useable diaper as defined in claim 1 wherein at least one edge of said waterproof panel is detachably secured to said pad of absorbent fabric.

12. A re-useable diaper as defined in claim 1 wherein both edges of said waterproof panel are secured to said pad of absorbent fabric.

13. A re-useable diaper as defined in claim 1 wherein both edges of said waterproof panel are detachably secured to said pad of absorbent fabric.

14. A re-useable diaper as defined in claim 1 wherein both edges of said waterproof panel are detachably secured to said pad of absorbent fabric, and said decorative panel is detachably secured to said waterproof panel.

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