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2,991,786

DIAPER CLOTH AND NO-FOLD PANEL DIAPER

Filed April 6, 1959

2 Sheets-Sheet 1

FIG. 1.

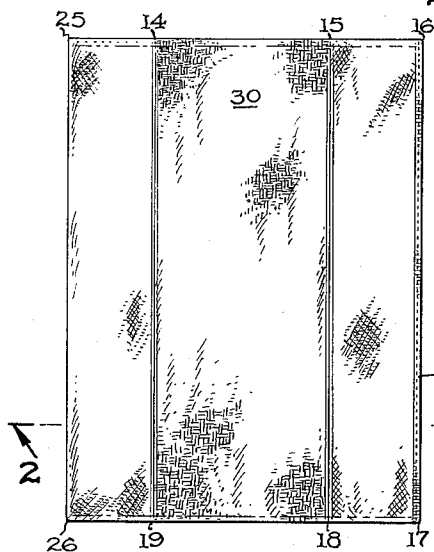


FIG. 2.

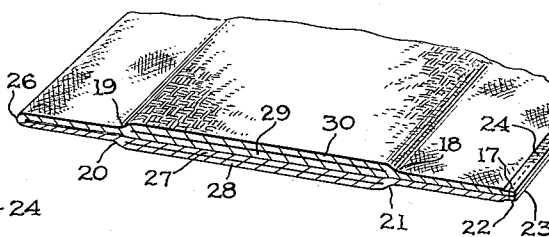
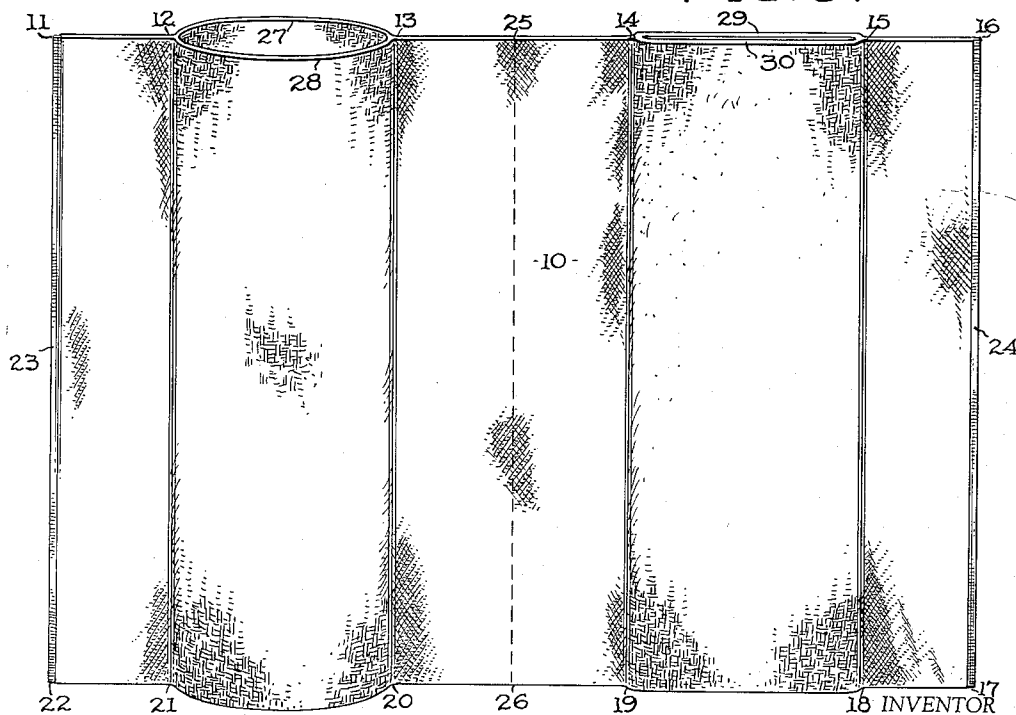


FIG. 3.



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DIAPER CLOTH AND NO-FOLD PANEL DIAPER
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3 Claims. (Cl. 128-284)

This invention relates to cloth particularly intended for use as diapers; to a no-fold panel diaper made therefrom; and this application is a continuation-in-part of my application Serial No. 718,682 filed March 3, 1958, now abandoned.

Heretofore various diaper constructions have been proposed but most of these suffer from one or more of the disadvantages of requiring folding before application to the baby; lack of absorptive power; and excessive bulkiness for the intended use.

By the present invention I have, for the first time, provided a novel cloth suitable for the making of a no-fold panel diaper which requires no folding before application to the baby; which has absorptive capacities in excess of 300% against the dry weight thereof; and which is not bulky and is easily applied to and comfortable on the baby.

The novel cloth of the present invention and the no-fold panel diaper made therefrom are capable of various mechanical embodiments two of which are shown in the accompanying drawings to illustrate the present invention. These illustrative embodiments of the present invention should in no way be construed as defining or limiting the same and reference should be had to the appended claims to determine the scope of the present inventive concept.

In the accompanying drawings, in which like reference characters indicate like parts, FIG. 1 is a view of a finished no-fold panel diaper in accordance with an embodiment of the present invention;

FIG. 2 is a cross sectional view on the line 2-2 of the embodiment of FIG. 1;

FIG. 3 is a view of the cloth of the present invention from which the diaper of FIGS. 1 and 2 was made; and

FIG. 4 is a view of another embodiment of the present invention.

Referring now more particularly to FIG. 3, it will there be seen that the diaper cloth of the present concept shown generally at 10 includes a left panel section 11, 12, 21, 22, having a selvedge edge 23 and is of any suitable weave such as bird's-eye weave. Woven integrally with panel 11, 12, 21, 22 along line 12, 21 is tubular panel 27, 28 which is woven by a high harness dobby loom and panel 27, 28, is of suitable weave, and is formed of more absorptive thread than is panel 11, 12, 21, 22.

Woven integrally with tubular panel 27, 28 along line 13, 20 is panel 13, 14, 19, 20 of suitable width and of similar weight and weave to panel 11, 12, 21, 22. A second tubular panel 29, 30 is woven integrally with panel 13, 14, 19, 20 along line 14, 19 and is similar to tubular panel 27, 28 both in weave and in width. A right panel 15, 16, 17, 18 is woven integrally with tubular panel 29, 30 along line 15, 18 and is identical with panel 11, 12, 21, 22 both in weave and weight and is finished with a selvedge edge 24.

In forming the no-fold panel diaper of FIG. 1 the cloth described with respect to FIG. 3 is cut to suitable length across the warp and is then folded along center line 25, 26 to bring selvedge edges 23 and 24 into coincidence. Straight seams are then formed along the lines 25, 11 and 25, 16 and along lines 26, 22 and 26, 17 to form a bag open at the selvedge edges 23 and 24. The selvedge edges 23 and 24 are sewn together forming the no-fold panel diaper of FIG. 1.

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A suitable diaper in accordance with FIG. 1 is 14½ inches wide and 21½ inches long. To form such a diaper panel 11, 12, 21, 22 and panel 15, 16, 17, 18 should be 4 inches wide; panel 13, 14, 19, 20 should be 8 inches wide; and tubular panels 27, 28 and 29, 30 should be 7½ inches wide. Although these dimensions are used in the present concept it is understood that these dimensions should be adaptable to conform to the size of the user.

If a coarse yarn dobby weave is employed, panels 11, 12, 21 and 22 and 15, 16, 17 and 18 may have from fifty to seventy ends of 14/1 to 24/1 cotton in the warp and thirty-six to fifty picks of 10/1 to 17.25/1 cotton soft twist filling. Tubular panels 27, 28 and 29, 30 may have twenty-five to thirty-five ends of 4/1 to 6/1 cotton in the warp and eighteen to twenty-five picks of 10/1 to 17.25/1 cotton soft twist filling per side of tube or panel. The yarn twist multiplier in both warp and filling should be between 3.00 and 3.75. Panel 13, 14, 19, 20, as pointed out above, is of the same weave and weight as panels 11, 12, 21, 22 and 15, 16, 17, 18. The diaper formed of coarse yarn dobby cloth of this weight and weave has absorptive capacities in excess of 300% against its dry weight as proved by impartial tests of a commercial testing company.

In a specific embodiment of the cloth described above a bird's-eye weave was employed having sixty ends of 20/1 cotton in warp and forty picks of 10/1 soft twist cotton filling in the edge and central panels and the tubular panels had thirty ends of 4/1 cotton in the warp and twenty picks of 10/1 soft twist cotton filling per side.

In the embodiment of FIG. 4 side panel 11, 12, 21, 22 with its selvedge edge 23 is woven as above described for the embodiment of FIGS. 1-3. In this embodiment, however, tubular panel 27, 28, woven as above described, is provided with an integral center ply 31 to provide a triple layer absorptive center panel for the diaper. Central panel 13, 14, 19, 20 is woven as above described for the embodiment of FIGS. 1-3 but a medial cutting strip 32 is provided between panel 13, 25, 26, 20 and the next adjacent panel 25, 14, 19, 26 so that as many diapers can be woven as the width of the loom will accommodate, the diapers being subsequently separated along the cutting strips and cut to suitable length across the warp. While FIG. 4 shows two diapers across the width of the material it is to be understood that any convenient number may be woven as a unit and then separated as above described.

The diaper of the embodiment of FIG. 4 requires no folding and subsequent sewing along overlaid selvedge edges as in the embodiment of FIGS. 1-3. The triple layer center panel exhibits unexpected absorptive capacity when the cloth is a coarse yarn dobby weave in which panels 11, 12, 21, 22 and 13, 25, 26, 20 may have from 56-58 warp ends and from 40-54 filling picks; in which the triple center panel 27, 28, 31 may have from 28-36 warp ends in each and panels 27 and 28 may have from 16-22 picks and ply 31 may have from 8-10 picks. The yarn sizes in the side panels may range from 14/1-24/1 cotton in the warp and 10/1-17.25/1 soft twist cotton filling while the yarn sizes in the triple center panel 27, 28, 31 may range from 4/1-8/1 soft twist cotton in the warp and 10/1-17.25/1 soft twist cotton filling.

A specific construction of the embodiment of FIG. 4 having unexpected absorptive qualities has in the side panels 46 ends of 20/1 cotton and 48 picks of 10/1 soft twist cotton and in panels 27 and 28 32 ends of 6/1 soft twist cotton and 19 picks of 10/1 soft twist cotton while layer 31 has 32 ends of 6/1 soft twist cotton and 10 picks of 10/1 soft twist cotton.

For the embodiment of FIG. 4 the yarn twist multiplier for all yarns is from 3.00 to 3.75.

It should now be apparent that the present invention in every way satisfies the several objectives discussed above by providing a highly absorptive no-fold diaper which need not be folded before application to the baby and which is not bulky and uncomfortable for the baby.

Changes in or modifications to the above described illustrative embodiment of this invention may now be suggested to those skilled in the art without departing from the present inventive concept. Reference should therefore be had to the appended claims to determine the scope of this invention.

What is claimed is:

1. A no-fold diaper comprising side panels of coarse yarn dobby weave, an intervening highly absorptive central tubular panel having at least three layers woven integrally with said side panels, at least a portion of each of the side panels at least at one end thereof being of width substantially one-half of that of the central panel, said side panels having approximately fifty eight to sixty-eight ends of 14/1 to 24/1 cotton in the warp and approximately forty to fifty-four picks of 10/1 to 17.25/1 cotton soft twist filling, each of the layers of said tubular panel having approximately twenty eight to thirty-six ends of 4/1 to 8/1 cotton in the warp and approximately eight to twenty-two picks of 10/1 to 17.25/1 cotton soft twist filling woven integrally with said side panels, the picks of the side panels being divided among the three layers of the central panel in such proportion that the

number of picks in each outer layer of the central panel substantially exceeds the number of picks in the intermediate layer, whereby the tubular panel is sufficiently porous to pass gases and provides surface flexibility and maximum absorptive capacity, each of the end edges of the layers forming the tubular central panel being secured together respectively.

2. The combination set forth in claim 1 in which each of said side panels has sixty-four ends of 20/1 cotton and forty-eight picks of 10/1 soft twist cotton, each of the two outer layers of said tubular panel has thirty-two ends of 6/1 cotton and nineteen picks of 10/1 soft twist cotton and the intermediate layer of said tubular panel has thirty-two ends of 6/1 cotton and ten picks of 10/1 soft twist cotton.

3. The combination set forth in claim 1 in which the width of each of the side panels along its entire length is substantially one-half the width of the central panel.

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UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 2,991,786

July 11, 1961

John L. Sullivan

It is hereby certified that error appears in the above numbered patent requiring correction and that the said Letters Patent should read as corrected below.

Column 2, line 56, for "56-58" read -- 58-68 --;
line 67, for "46" read -- 64 --.

Signed and sealed this 3rd day of April 1962.

(SEAL)
Attest:

ERNEST W. SWIDER
Attesting Officer

DAVID L. LADD
Commissioner of Patents