June 6, 1939. T. J. SWARTZ 2,161,539

DIAPER

Filed April 15, 1938

Fig. 1.

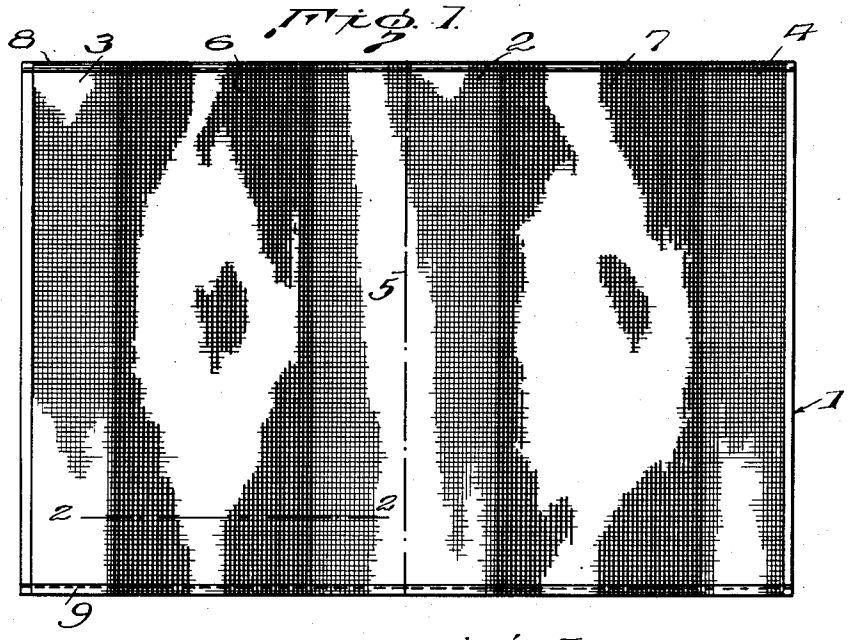


Fig. 5.

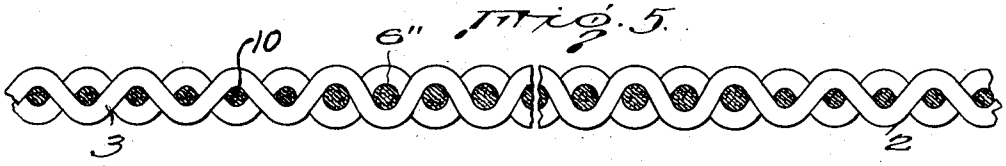


Fig. 4.

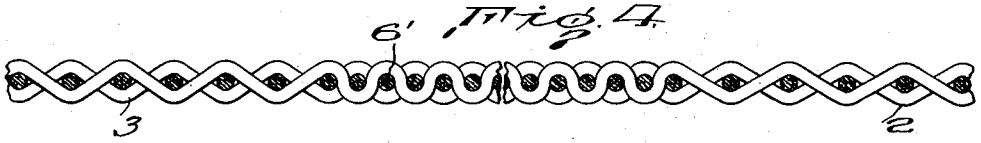
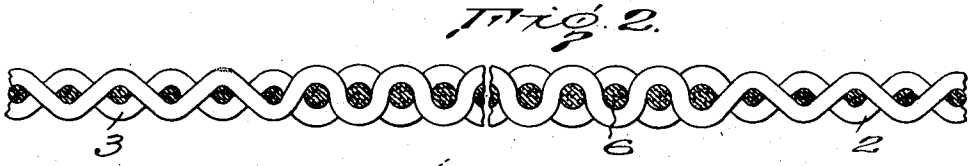


Fig. 2.



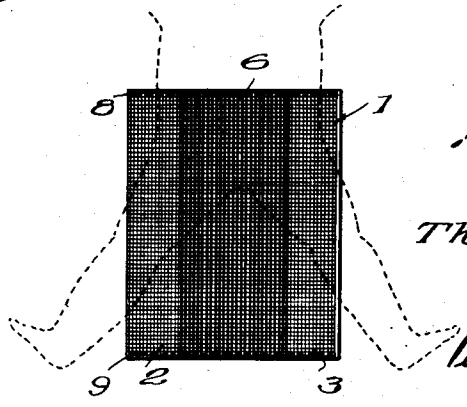


Fig. 3.

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DIAPER

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Application April 15, 1938, Serial No. 202,327

5 Claims. (Cl. 139—383)

The present invention relates to a baby diaper and particularly to such a diaper which will have greater absorptive properties at the places where such properties are most needed, but will not be unduly bulky when applied to a baby.

The ordinary baby diaper now in common use comprises a piece of birdseye or other cloth of uniform weave in both the warp and weft. The most satisfactory way of applying such diapers to babies is to fold them along a central line so that the folded diaper is of double thickness. The baby is then laid upon the diaper with its waist portion overlying one end of the folded diaper and with the other end thereof lying beneath the baby's legs. The lower end of the diaper is then pulled up between the baby's legs and the corners of that end secured to the corners of the other end at the side of the waist portion of the baby. As the lower end of the diaper is pulled up between the baby's legs, the side portions thereof are crowded in between the baby's legs.

In order to render diapers more absorptive and less bulky between the baby's legs, it has been proposed to quilt or otherwise provide a thicker diaper and to make it more or less form-fitting. It also has been proposed to provide a diaper with a central portion having a pile which will render that part more absorptive. However, diapers so constructed are difficult to properly wash, and when they are quilted it is very difficult to thoroughly dry them. For those and other reasons such diapers have not been entirely satisfactory and, in addition, due to their high cost, have never come into general use. In order for a diaper to be in general demand by the masses it must be priced reasonably. The diaper as set forth herein will cost less than most diapers in general use today.

I have found that the ordinary baby diaper may be rendered more absorptive without the above disadvantages by so altering the weave of the cloth from which the diaper is made that the absorptivity of the diaper is increased at those places where it is most needed. A diaper so woven may have the absorptive capacity of an ordinary diaper of substantially larger size. For example, I have found that a diaper approximately 19" x 27" and constructed as hereinafter disclosed will not only have a total absorptive capacity at least equal to that of a diaper 27" square made from the same material but woven from yarns of uniform size and of the size such as are now used in weaving the usual type of diaper, but will have an effective absorptive capacity of a diaper of much larger size due to the fact that the absorptive capacity of the diaper is much greater at those places where that property is most needed. As the overall area of the diaper will be less, the present diaper will be more comfortable to the baby and will present a more satisfactory appearance.

More specifically, my invention comprises a baby diaper having sections or areas in which the warp yarns preferably are heavier and more absorptive and lie closer together than the yarns in the other sections of the diaper. However, it is not necessary that the warp yarns be both heavier and more absorptive and lie closer together, as improved results may be obtained if the warp yarns are of uniform size throughout the diaper and merely lie closer together at the aforesaid sections, or if the yarns at those sections merely are larger or more absorptive and are spaced a distance substantially equal to the spacing of the warp yarns at the other sections of the diaper.

The sections or areas of the diaper which have increased absorptive properties preferably lie on cpposite sides of a central line so that when the diaper is folded those sections will lie over one another. Those sections or areas also are preferably spaced from the side edges of the diaper so that when the diaper is folded the superposed areas will lie at the middle of the folded diaper, in one direction, and when the diaper is applied to a baby will extend through the crotch.

The invention will be further described in connection with the accompanying drawing but it is to be understood that such further illustration and explanation is by way of exemplification, and that the invention is not limited thereto, except as may be specifically set forth in the sub-joined claims.

In the drawing:

Fig. 1 is a plan view of a baby diaper embodying my invention;

Fig. 2 is an enlarged diagrammatic sectional view on line 2—2 of Fig. 1, with a part broken away;

Fig. 3 is a view showing the manner in which the diaper is applied to a baby; and

Figs. 4 and 5 are views similar to Fig. 2 but showing modified weaves for the diaper.

The diaper 1 may be of birdseye, gauze, flannel, dobby weave, or of any other cloth suitable for use in baby diapers, and preferably is rectangular in shape and formed from a piece of material of any desired size, e. g., a piece approximately 21" long cut from material 27" wide. After hemming the length will be approximately 19",

although the width will not be diminished because the sides have selvage edges.

The diaper preferably has a central section 2 and end sections 3 and 4 in which both the warp and the weft yarns are of substantially the same size and weight and run the same number of ends as in diapers now in common use. Between the central section 2 and each of the end sections 3 and 4, and preferably substantially equi-distant from a central line 5 on which the diaper is adapted to be folded before it is fastened about a baby, the diaper has sections 6 and 7 which possess greater and quicker absorptive capacities than the sections 2, 3 and 4. Such increased absorptive properties may be imparted to those sections by using a heavier or more absorptive yarn in the warp of those portions, by using a yarn in the warp of those sections which is of the same size as the yarns used in the warp of the sections 2, 3 and 4 but with the yarns of those sections spaced closer together, or by using both heavier or more absorptive warp yarns and spacing them closer together in those sections.

Preferably the warp yarns of the sections 6 and 7 are both more absorptive and spaced closer together because it is under such circumstances that maximum absorptivity is imparted to those sections. Fig. 2 diagrammatically illustrates a diaper woven with such yarns in the sections 6 and 7.

If the sections 2, 3 and 4 are woven from 30's yarns running 56 ends in the warp, the sections 6 and 7 may be woven with 15's yarn in the warp running 112 ends. However, the exact number of ends or size of the warp yarns is not critical as long as the weave of the sections 6 and 7 is such as to render those sections more absorptive than the sections 2, 3 and 4.

When a diaper woven as set forth above is to be placed about a baby, it may be folded on the central line 5 so that the more absorptive section 6 overlies and coincides with the more absorptive section 7 at the other side of the diaper. As shown in Fig. 3, the baby is then laid upon the folded diaper with its body extending lengthwise of the more absorptive superposed sections 6 and 7 and with one end of the folded diaper lying beneath the waist section of the baby. The other end of the diaper is then pulled up between the legs of the baby and the corners of that end pinned or otherwise fastened to the corners of the other end of the folded diaper at the sides of the waist section of the baby. When thus applied, the superposed, more absorptive sections 6 and 7 form a central band running from the waist line of the baby at its front downwardly through its crotch and then upwardly to the waist line at the back so that the portions possessing the more absorptive properties lie at the places where most needed.

Due to the fact that the diaper in its finished condition will be only 19 inches in length, there will be less bulkiness at the waist section with the result that the diaper not only will be more comfortable for the baby but will present a neater appearance. However, the total absorptive capacity of the diaper is not diminished, but actually is greater than an ordinary diaper 27 inches square.

As the areas 6 and 7 are spaced from the side edges of the diaper, and the band of greater absorptivity lies along the longitudinal center of the folded diaper, the side edges which have to be crowded in between the baby's legs when the diaper is applied are of normal thickness and weight and add no bulkiness between the baby's legs.

In Fig. 4 I have shown a diagrammatic sectional view of a diaper in which the warp yarns of the more absorptive sections or areas, one of which, 6', is shown, are of the same size as those in the less absorptive sections or areas but run 112 ends while the yarns in the less absorptive sections or areas run only 56 ends.

In Fig. 5, the warp yarns in the more absorptive sections or areas, one of which, 6'', is shown, are larger and more absorptive than the warp yarns of the less absorptive sections or areas but run the same number of ends as in the less absorptive sections or areas. Thus if the warp yarns 10 of the less absorptive areas are 30's, the warp yarns of the more absorptive sections or areas may be 15's.

The arrangement of the more absorptive sections or areas of diapers made in accordance with the forms of the invention diagrammatically illustrated in Figs. 4 and 5 is the same as in the diaper shown in Fig. 1.

Reference is made herein to a diaper made from material 27'' wide and finished 19'' long. However, it is to be understood that the invention is not limited to diapers of that particular width or length, and diapers embodying the invention may also be made in 24'', 30'' or any other desired width, with each of a different or of the same length.

Tests made on a diaper woven in accordance with the present invention disclosed that the sections or areas of greater absorptivity were 35% stronger in the filling and 83% in the warp than the sections or areas of less absorptivity, which latter sections or areas were of the exact quality and weave of a standard birdseye diaper. The heavier sections or areas also gave 27% quicker absorbency. Thus it will be seen that a diaper made in accordance with the present invention has all of the advantages of the common form of diaper now in use and in addition permits the use of a smaller diaper which actually possesses greater absorptive properties, and is stronger at those places where absorptivity and strength are most needed.

I claim:

1. A baby diaper having two sections of greater absorptivity than other sections of the diaper located at opposite sides of and substantially equidistant from a line on which the diaper may be folded before being applied to a baby, said sections being spaced apart an appreciable distance and composed of yarns of greater absorptivity extending in one direction, said sections of greater absorptivity also being spaced, respectively, an appreciable distance from opposite side edges of the diaper so that when the diaper is folded on said line said sections will be superposed and lie inwardly an appreciable distance from opposite sides of the folded diaper.

2. A woven diaper having two sections in which the weave is such as to provide a greater amount of material in said sections than in other sections of the diaper, said sections being spaced apart an appreciable distance and located at opposite sides of a line on which the diaper may be folded before being applied to a baby, said sections which include the greater amount of material also being spaced, respectively, an appreciable distance from opposite side edges of the diaper so that when the diaper is folded on said line one of said sections including a greater amount of material will

overlie the other of said sections including a greater amount of material.

3. A woven baby diaper having two sections in which the yarns extending in one direction are spaced closer together than the corresponding yarns in other sections of the diaper to make said sections in which the yarns are spaced closer together more absorptive than the other sections of the diaper, said sections in which the yarns extending in one direction are spaced closer together being spaced apart an appreciable distance and being located at opposite sides of a line on which the diaper may be folded before being applied to a baby, said sections in which the yarns extending in one direction are spaced closer together also being spaced, respectively, an appreciable distance from opposite side edges of the diaper so that when the diaper is folded on said line one of said sections in which the yarns extending in one direction are spaced closer together will overlie the other of said sections in which the yarns are spaced closer together.

4. A woven baby diaper having two sections in which the yarns extending in one direction are larger than the corresponding yarns in other sections of the diaper to make said sections in which the yarns are larger more absorptive than the other sections of the diaper, said sections in which the yarns extending in one direction are larger being spaced apart an appreciable distance and being located at opposite sides of a line on which the diaper may be folded before being applied to a baby, said sections in which the yarns extending in one direction are larger also being spaced, respectively, an appreciable distance from opposite side edges of the diaper so that when the diaper is folded on said line one of said sections in which the yarns extending in one direction are larger will overlie the other of said sections in which the yarns are larger.

5. A woven baby diaper having two sections in which the yarns extending in one direction are larger and spaced closer together than the corresponding yarns in other sections of the diaper to make said sections in which the yarns are larger and spaced closer together more absorptive than the other sections of the diaper, said sections in which the yarns extending in one direction are larger and spaced closer together being spaced apart an appreciable distance and being located at opposite sides of a line on which the diaper may be folded before being applied to a baby, said sections in which the yarns extending in one direction are larger and spaced closer together also being spaced, respectively, an appreciable distance from opposite side edges of the diaper so that when the diaper is folded on said line one of said sections in which the yarns extending in one direction are larger and spaced closer together will overlie the other of said sections in which the yarns are larger and spaced closer together.

THOMAS J. SWARTZ.