

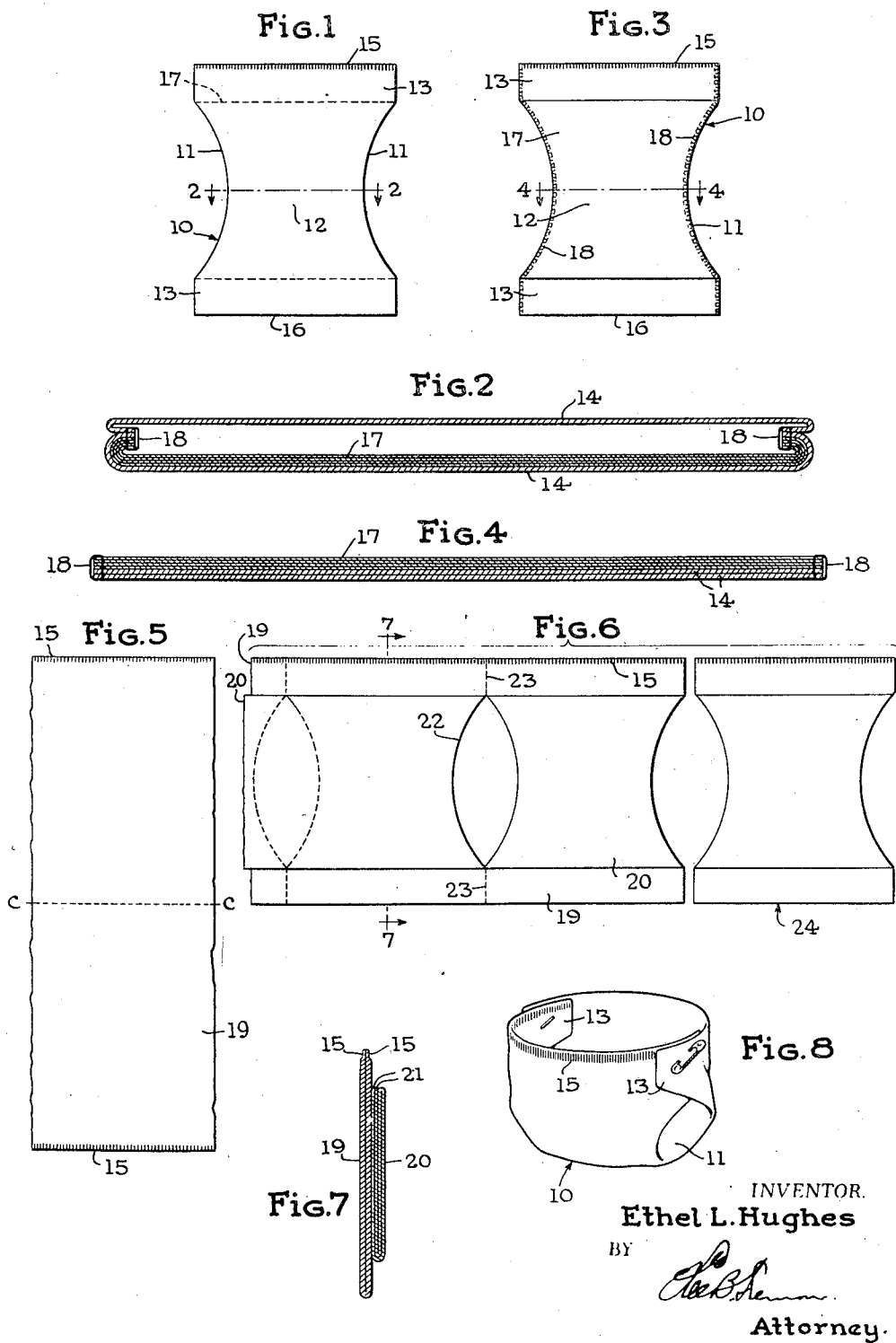
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DIAPER

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DIAPER

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This invention relates to body garments and more particularly to infants' diapers. This application is a continuation-in-part of my copending application Serial No. 720,616, now abandoned.

The conventional diaper consists of a square or rectangular strip of cloth which is folded one or more times, before fastening onto an infant, to provide several thicknesses of material throughout. Such a diaper is somewhat difficult to apply, both because of the necessity of folding it to proper size and shape and because of its undue bulk, when folded, about the waist portion. Additionally, such a diaper, when applied, not only does not utilize the available material to afford maximum protection where needed, but also does not fit snugly nor comfortably. The inherent disadvantages of the conventional diaper have led to the development of various types of diapers which not only require no folding for application, but also fit more snugly and more comfortably. In general, these improved diapers are formed with one or more layers of fabric permanently secured together and shaped to conform to the contour of an infant's body. Furthermore, the central portion of such diapers usually is provided with a concealed absorbent pad or additional thicknesses of absorbent material, in order to give additional protection where needed, namely, the crotch region.

These improved diapers, however, have not been entirely successful for several reasons. First of all, such diapers contain exposed edge seams where the several thicknesses of cloth are stitched together. These exposed seams unduly chafe the tender skin of an infant, particularly when wet. Secondly, such diapers present a laundering problem since the inner surfaces of the several layers of fabric, and particularly the absorbent pad or additional thicknesses of material in the crotch region, are difficult both to clean and to dry. In some instances, in order to facilitate laundering, the absorbent pad is exposed and detachable, which is a nuisance. In other instances, the pad is disposable, i. e. intended for one time use, which is expensive, particularly for larger families.

Accordingly, it is an object of this invention to provide an inexpensive, unitary, form-fitting diaper which requires no folding for use; which provides a maximum of protection where needed, with a minimum of bulk in other areas; which may be laundered easily and effectively; and which contains no exposed seams to chafe an infant.

It is another object of this invention to provide

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a simple process for making a diaper which embodies this invention with a minimum of material wastage.

Other objects and advantages of the invention will be evident from the following description and accompanying drawings in which:

Figure 1 is a plan view of a diaper embodying this invention;

Figure 2 is a cross-sectional view taken on line 2—2 of Figure 1;

Figure 3 is a plan view of the diaper illustrated in Figure 1 showing the diaper turned inside out for laundering;

Figure 4 is a cross-sectional view taken on line 4—4 of Figure 3;

Figure 5 is a fragmentary plan view of a portion of a strip of diaper fabric used in the manufacture of a diaper embodying this invention;

Figure 6 is a plan view illustrating several steps in the process of manufacturing a diaper embodying this invention;

Figure 7 is a cross-sectional view taken on line 7—7 of Figure 6; and

Figure 8 is a perspective view of the diaper illustrated in Figure 1 showing its shape when worn by an infant.

Referring now to Figures 1 and 2, there is shown a diaper 10, generally rectangular in shape and having opposed recesses 11 in the opposite side edges thereof. The recesses 11 preferably are arcuate, as shown, but since the purpose of such recesses is to render the garment form-fitting in use, as best shown in Figure 8, the exact shape of the recesses may be varied so long as the central portion 12 of the diaper is somewhat narrower in width than the end portions 13.

The diaper comprises two plies 14 of soft absorbent sheet material, preferably a woven fabric such as smooth-surfaced cotton toweling although any suitable fabric may be used. The edges of the plies 14 at one end of the diaper preferably are formed with selvages 15 to prevent unravelling. At the other end 16 of the diaper, the plies 14 are integral so that the plies may be formed by folding a single thickness of diaper cloth, as later described.

Disposed between the plies 14 is an absorbent pad 17, substantially coextensive with the central portion 12 of the diaper. The pad 17 preferably comprises a plurality of layers of soft absorbent mesh-like fabric, such as gauze or cheese-cloth. The absorbent qualities of such material provide added protection where needed, while its mesh-like nature permits of easy cleaning and rapid drying in a laundering process. The side

edges of the pad 17 preferably register with and are secured to the side edges of the plies 14, while the end edges of the pad are free and extend parallel to the end edges of the plies. In order to eliminate unnecessary bulkiness about the waist of the diaper when worn, the pad preferably is somewhat shorter than the plies and disposed centrally thereof. As shown in the drawings, the pad 17 extends substantially throughout the length of the recesses 11. It will be understood, however, that the pad may be of the same length as the plies.

The marginal portions of the side edges of the plies 14 and the pad 17 are intumed, as shown in Figure 2, and secured together e. g. by a row of running stitches 18, such as chain, overcast, or blanket stitches, or by equivalent securing means (not shown), such as a suitable waterproof adhesive. It is to be noted that the rough seam so formed is concealed between and completely covered by the plies 14. Hence, the diaper contains no exposed seams to chafe the tender skin of an infant when worn. The selvedge edges 15 of the plies are not joined together.

The diaper, above described, is of substantially sack-like formation having an open mouth provided at one end, i. e. that end at which the plies are provided with selvages 15. Hence, the diaper is adapted to be readily turned inside out (as shown in Figure 3) for laundering, thus exposing the pad 17 on one or the other plies 14 exteriorly of the diaper in order to facilitate the washing and drying thereof. It is to be noted that in this laundering position of the diaper, both cleaning and drying fluids may pass freely between the pad 17 and its underlying ply 14.

The plies 14 may also be formed with selvages at both end edges and be joined together only at their side edges, to thus form a diaper having two open ends, not shown. Such a diaper may be turned inside out from either end and possibly affords slightly more rapid drying, after washing, than a diaper having but one open end. The latter, i. e. the first described, type of diaper is preferred, however, for manufacturing reasons, as later described.

Referring now to Figures 5, 6 and 7, which illustrate various stages of the manufacturing process, the diaper may be made from a strip 19 of diaper cloth of a standard width. Such cloth usually and preferably has selvages 15 on both its longitudinal edges. The strip 19 is folded over along its longitudinal centerline *c-c* to provide two thicknesses of the cloth, as shown in Figures 6 and 7. A strip 20 of absorbent pad material, of somewhat less width than the folded strip 19 of diaper cloth, is laid centrally along the folded cloth. The pad material preferably comprises a plurality of thicknesses (four as shown in the drawings) of gauze, the advantages of which have been mentioned heretofore. The pad material may be formed, for example, by twice folding a strip of gauze of the same width as the strip 19 of diaper cloth. Such gauze strip also usually and preferably has selvages 21 on both its longitudinal edges. An elongated transversely-disposed symmetrical opening or cutout 22, of a length approximating the width of the strip 20 of pad material, then is formed in the superimposed strips 19 and 20. Although other shapes are satisfactory, the cutout 22 preferably is elliptical and disposed midway between the longitudinal edges of the folded strip 19. The strips 19 and 20 are then severed along transverse lines 23 which are aligned with the major

axis of the elliptical cutout 22. The cutout forming and fabric severing operations are repeated at suitable uniform intervals (as indicated by the dotted lines at the left of Figure 6) along the length of the strips to form a plurality of diaper blanks 24, one of which is shown at the right of Figure 6. It will be understood that the cutout forming and fabric severing operations also may be performed simultaneously at a plurality of positions along the strips 19 and 20. The blanks 24 then are secured together along their side edges to join the two thicknesses of diaper cloth and the pad material, as shown in Figure 3. The resulting sack-like structure is turned inside out to dispose the pad material and the seams between the two thicknesses of diaper cloth to form a completed diaper, as shown in Figure 1.

The application of the improved diaper to an infant needs little explanation. The recesses 11 in the opposite side edges of the diaper lessen the bulk of the garment when the central portion 12 thereof is disposed between the legs of an infant. The resulting narrower crotch portion of the diaper, although not bulky, affords sufficient absorption in the area where needed because of the pad 17. The wider end portions 13 of the diaper are adapted to be disposed about the waist of the wearer with their side edges overlapped and conventionally pinned or otherwise secured together, as illustrated in Figure 8.

It is obvious that various changes in the specific embodiment of the invention which has been described and illustrated will be evident to one skilled in the art. Therefore, the invention embraces all modifications which come within the spirit and scope of the following claims.

I claim:

1. A diaper comprising: at least two generally-rectangular, substantially coextensive, continuous plies of soft absorbent sheet material secured together along two opposite edges, said plies being free of attachment to each other inwardly of the line of securement along their edges and along at least one edge portion; and a flat pad of absorbent material substantially coextensive with the central portion of said plies and secured therebetween, said diaper being adapted to be turned inside out through said one unsecured edge portion to expose said pad in order to facilitate laundering.

2. A diaper comprising at least two generally-rectangular, substantially coextensive, continuous plies of soft absorbent sheet material secured together along two opposite edges; and a flat pad of absorbent material coextensive with at least the central portion of said plies and disposed therebetween, two opposite edges of said pad being substantially in register with and secured to said opposite edges of said plies, said plies being free of attachment to each other and to said pad inwardly of the line of securement along their edges and along at least one edge portion so that said diaper may be turned inside out through said one unsecured edge portion to expose said pad in order to facilitate laundering.

3. A diaper comprising: at least two generally-rectangular, substantially coextensive, continuous plies of soft absorbent sheet material secured together along three edges to form an open-ended sack-like structure, said plies being free of attachment to each other inwardly of the line of securement along their edges; and a flat pad of absorbent material substantially coextensive with the central portion of said plies and secured there-

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between, said diaper being adapted to be turned inside out through its open end to expose said pad in order to facilitate laundering.

4. A diaper comprising: at least two generally-rectangular, substantially coextensive, continuous plies of soft absorbent sheet material secured together along two opposite edges and integral along a third edge to form an open-ended sack-like structure; and a flat pad of absorbent material coextensive with at least the central portion of said plies and disposed therebetween, two opposite edges of said pad being substantially in register with and secured to said opposite edges of said plies, said plies being free of attachment to each other and to said pad inwardly of the line of securement along said opposite edges and inwardly of said third edge so that said diaper may be turned inside out through its open end to expose said pad in order to facilitate laundering.

5. A diaper comprising: at least two generally-rectangular, substantially coextensive, continuous plies of soft absorbent sheet material, the marginal portions of two opposite edges of said plies being intumed; securing means disposed between said plies and joining said intumed portions to form a concealed seam; and a flat pad of absorbent material substantially coextensive with at least the central portion of said plies and disposed therebetween, the marginal portions of two opposite edges of said pad being intumed substantially in register with said marginal portions of the opposite edges of one of said plies and secured thereto by said securing means, said plies being free of attachment to each other and to said pad

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inwardly of the line of securement along their edges and along at least one edge portion so that said diaper may be turned inside out through said one unsecured edge portion to expose said pad in order to facilitate laundering.

6. An article of manufacture for use as a diaper comprising: at least two generally-rectangular, substantially coextensive, continuous plies of soft absorbent sheet material secured together along two opposite edges, said plies being free of attachment to each other inwardly of the line of securement along their edges and along at least one edge portion; and a flat pad of absorbent material substantially coextensive with the central portion of said plies and secured in exterior overlying relation with one of said plies, said article, for use as a diaper, being adapted to be turned inside out through said one unsecured edge portion to dispose said pad between said plies.

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