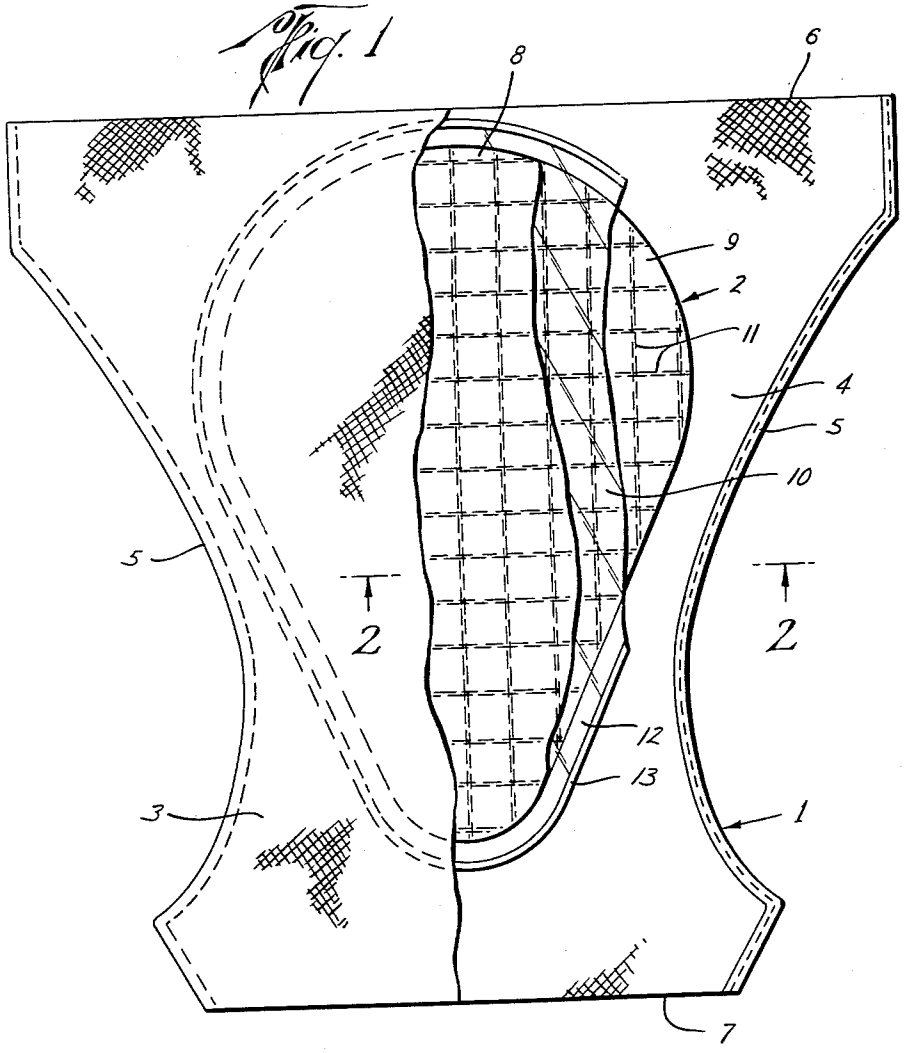
April 5, 1960 F. F. DEXTER 2,931,360

DIAPER

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Fig. 1



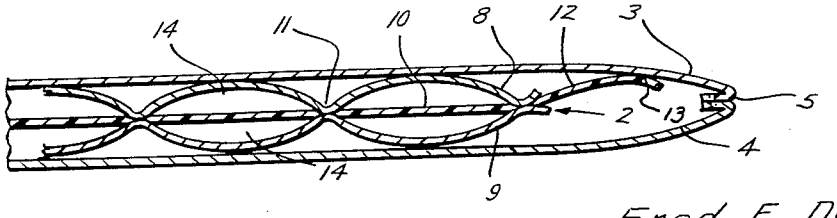


Fig. 2

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This invention relates to a new and improved diaper garment.

Efforts to include a waterproof layer or barrier within a composite diaper garment have been confined to disposable type diapers because conventional fabric diapers of the reusable type are subjected to frequent washing and drying processes. It has been found that the water-resistant characteristics of most fabrics chemically impregnated for that purpose is destroyed by frequent washing and that while many plastic films are satisfactory water barriers, the high temperature necessary to sterile washing and machine drying causes most plastics to flow, stiffen and even disintegrate. Consequently, mothers who normally use the conventional fabric diapers are compelled to place a waterproof plastic or rubber pants over the diaper in order to avoid undesirable spreading of moisture. Such moisture-proof pants ordinarily require separate hand washing because of the inability of the materials to withstand the high temperature used even in conventional home washers and/or driers. Moreover, such waterproof pants, being in intimate contact with the baby's legs and waist, prevent circulation of air and confine therein the strong, irritating ammonia which frequently causes irritation and chafing of the baby's skin.

It is, therefore, an object of my invention to provide a diaper garment having a unitary moisture-proof layer of a material with a high flow point.

It is a further object of my invention to provide a diaper having a plastic waterproof moisture-block insulated from contact with the baby's skin by outside layers of fabric.

It is a further object of my invention to provide a composite diaper formed of layers of fabric and a pliable plastic sheet and which will not wrinkle and pucker despite uneven shrinkage of the parts.

Further objects and advantages of my invention will become apparent when the following specification is read in connection with the accompanying drawings wherein:

Fig. 1 is a plan view in partial section of my diaper showing the various layers of which it is constructed; and

Fig. 2 is a partial section view taken along line 2—2 of Fig. 1.

Referring now to the drawings, my diaper includes a diaper body 1 and an inner composite insert 2. The diaper body 1 comprises two outer fabric sheets 3 and 4 secured together, as by stitching, along their side edges 5. The diaper body 1 may be formed by folding over a single sheet, the fold constituting the top edge 6. Preferably, the bottom edges 7 of outer sheets 3 and 4 are left unattached to facilitate manufacture by permitting formation of the side seams 5 and insert with the inside of the diaper turned outward. Moreover, the open end 7 permits circulation of air through the interior of the diaper body 1 to facilitate drying. Secured to one of the sheets 3 of the diaper body is my composite moisture barrier insert pad 2 comprising two panels 8 and 9 of absorbent diaper fabric between which is secured a waterproof film or dam 10.

At the outset, it should be emphasized that the material of the dam member 10 must have certain minimum characteristics to satisfy the requirements of diaper use. For example, besides being waterproof they must have a high melting point on the order of 340° to 360° Fahrenheit. I have found that home and laundry driers generally heat to within the range of 225° to 275° but that their metal parts often heat up to 325°. Obviously, any plastic or synthetic that will melt, burn or disintegrate when held in contact with the metal parts of a washer, drier, ironer or the like will be wholly unsatisfactory for use in a diaper which must necessarily undergo hundreds of washing and drying cycles. For use in my invention, I have found a polyvinyl chloride film manufactured by the Goodyear Tire & Rubber Company and sold under the trademark "Vita-film" to be quite satisfactory.

The manner in which the various layers are secured together is of particular significance to my invention. First, the composite insert pad 2 is formed by inserting the high flow point plastic film 10 between the two absorbent fabric panels 8 and 9 and applying a heating element (not shown) of controlled temperature to the laminated structure to cause both surfaces of the plastic film 10 to flow into sealing engagement with the adjacent absorbent panels 8 and 9. Particularly, the sealing is accomplished along a plurality of longitudinal and transverse strips 11 arranged in crisscross pattern, the fabric panels 8 and 9 being secured to the plastic film 10 so that a marginal portion 12 extends beyond the fabric panels 8 and 9 around their entire periphery. Then, the insert pad 2 is secured to the body 1 of the diaper by sealing only the marginal strip 12 of the synthetic film 12 directly to only one outer sheet 3 or 4 as by the application of heat only the peripheral line 13. This is of particular importance since diaper materials inherently have a high co-efficient of shrinkage while, of course, the waterproof synthetic film 10 does not. Consequently, the relative change in dimensions, and this may be substantial, is absorbed by the inherent pliability of the unrestrained marginal strip 12 of the plastic film 10 and no wrinkling or puckering is produced in either outer sheet, even that one 3 to which it is attached. On the other hand, uneven shrinkage between the layers 8, 9 and 10 of the composite insert is employed to advantage in my diaper. The checkerboard pattern produced by the crisscross strip sealing 11 previously described will pucker after shrinkage to produce a fluffy, quilted highly absorbent series of cells 14 producing enlarged air spaces between the plastic film 10 and the outer absorbent panels 8 and 9 to increase absorbency and to facilitate drying.

When the composite insert 2 is in place and the outer sheets 3 and 4 stitched together the resultant diaper has many inherent advantages not found in conventional diaper garments. Inasmuch as the moisture-proof film 10 is sealed between two absorbent panels 8 and 9 and the composite insert is, in turn, attached between the two outer sheets 3 and 4, there is an equal amount of absorbency on either side of the waterproof film 10. Consequently, either outer panel 3 or 4 can be applied with equal efficacy to the baby. Moreover, it should be noted that no portion of the plastic waterproof insert can contact the baby's skin. Consequently, the baby is not subjected to any irritation that might otherwise be caused if touched by the plastic sheet. This has a twofold advantage. Further, the natural porosity of the fabric which insulates the baby from contact with the plastic permits circulation of air through the diaper and, therefore, prevents entrapment of harmful ammonia. Moreover, the fabric in direct contact with the baby permits the eventual spread of moisture through capillary action

to the edges 5, 6 and 7 of the diaper to warn mother when a change is in order. Thus, the moisture barrier 10 prevents the immediate penetration of moisture but does not preclude its detection prior to a harmful accumulation thereof.

While I have described the illustrated embodiment of my invention in some particularity, obviously many modifications will occur to those skilled in the art and I do not intend to limit myself to the precise details shown and described, but claim as my invention all embodiments and modifications coming within the scope of the appended claims.

Having described my invention, I claim:

1. A washable diaper garment comprising first and second outer sheets of absorbent fabric material, and a composite moisture-block insert between facing surfaces of said first and second outer sheets, said insert including first and second fabric panels and a waterproof pliable film, said waterproof film being secured throughout its area between said first and second absorbent panels with a peripheral border thereof extending beyond said first and second panel, and means securing said border to only the facing surface of said first outer fabric sheet.

2. A washable diaper as defined in claim 1 wherein said panels and said waterproof film are joined in spaced line attachment over the adjacent areas thereof.

3. A washable diaper garment as defined in claim 1 wherein said waterproof film is of a plastic material having a characteristic flow point in excess of 325° F.

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