

July 15, 1958

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2,843,125

SANITARY NAPKIN

Filed Oct. 5, 1955

Fig. 1.

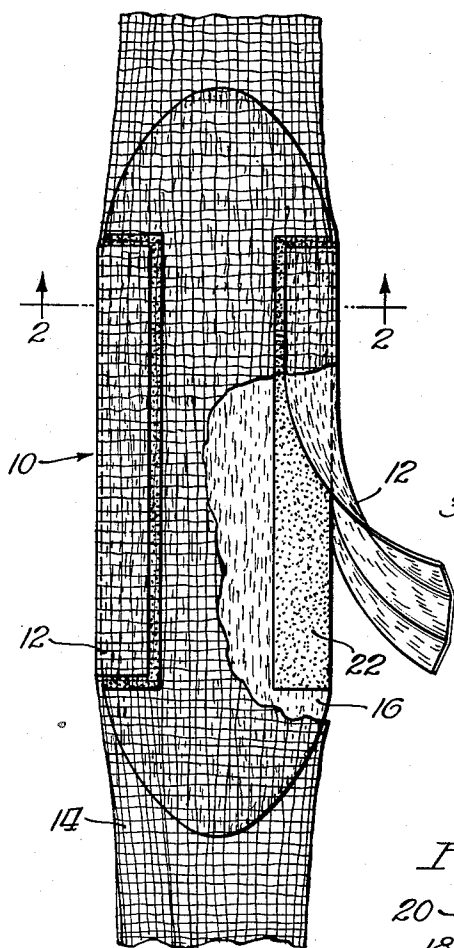


Fig. 3.

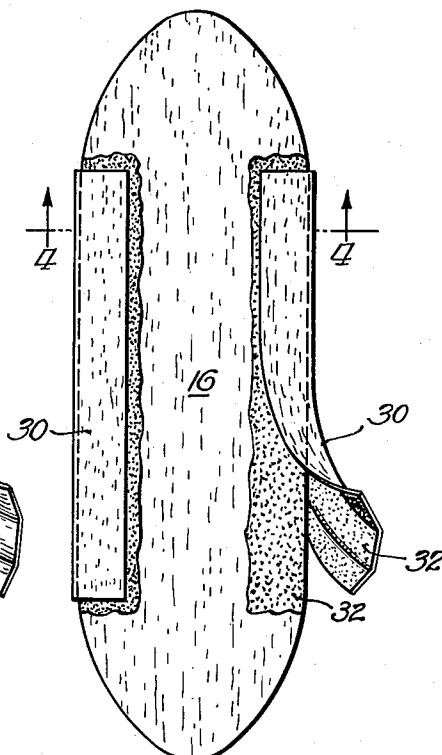


Fig. 4.

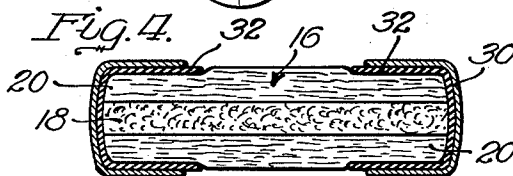


Fig. 2.

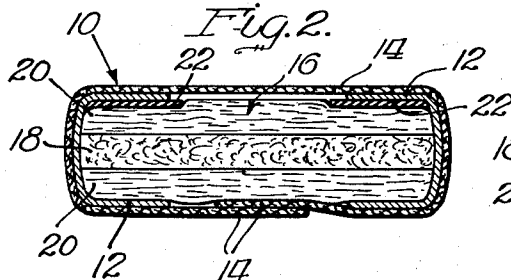
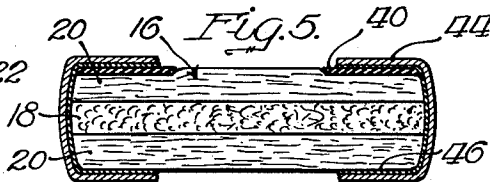


Fig. 5.



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SANITARY NAPKIN

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Application October 5, 1955, Serial No. 538,627

5 Claims. (Cl. 128—290)

The present invention relates generally to an improved form of absorbent pad or bandage, and is particularly directed to a novel form of sanitary napkin and the method of producing such article.

In order to utilize a maximum percentage of the absorptive capacity of an absorbent pad, such as a sanitary napkin, it is necessary to provide means for controlling the flow of the fluids through the pad so that such fluids might be uniformly spread throughout the pad. Further, particularly in sanitary napkins, it is important that the pad readily conform to the wearer's body without chafing or otherwise causing discomfort. One of the means employed in achieving both of these desirable results is the addition of side strips to the edge of the pad, which cushion the edges of the pad and, also, direct the flow lengthwise of the pad of those fluids which reach the edges. These side strips are usually held in place by means of a wrapper of gauze or other pervious material which is disposed around the outside of the pad.

The use of such side strips, however, does not provide a complete solution to the problem of controlling the flow of fluids along the edges of the pad, particularly in that the fluid will frequently strike through such side strips or, if the side strips are sized or otherwise treated to be made fluid-repellant, the fluid will flow over the edges of the strips and collect along the outside surface thereof. In either case, the presence of the fluid along the outer edge of the pad causes staining and considerable discomfort to the wearer of the pad.

It is the primary object of the present invention to provide an improved form of absorbent pad, wherein the deficiencies noted above are eliminated. Additional objects and advantages will become apparent as the disclosure progresses with reference to the accompanying drawings, wherein:

Figure 1 illustrates one embodiment of the invention.

Figure 2 is an enlarged sectional view taken along the line 2—2 in Figure 1.

Figure 3 is a modified form of the invention.

Figure 4 is an enlarged sectional view taken along the line 4—4 in Figure 3.

Figure 5 is a cross-sectional view of a further modification.

In making an absorbent pad or bandage, particularly of the sanitary napkin type, it is important that the fluid absorbed by the pad be prevented from reaching the edges of the pad where it can cause staining and discomfort to the wearer. As a means for preventing these undesirable results and, also, to cushion the edges of the pad, which are usually cut, it has been fairly common heretofore to add side strips which are disposed in marginal overlapping relation to the side edges of the pad. These strips are usually of a soft material, such as a multiply creped tissue or wadding, non-absorbent cotton and the like, and are preferably thin and quite light in weight so as not to add any appreciable bulk or weight to the pad.

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Further, in some instances, there has been provided a fluid repellant surface for the inner face of these side strips, either through use of a separate ply or plies of moisture-proof material adjacent the pad edge or by suitably sizing the inner surface of the side strips with fluid-repellant material. However, it has been found that these known types of side strips are not entirely satisfactory. With the side strips having no fluid-repellant characteristics, there frequently occurs a striking through of the fluid as it spreads along the edge of the pad. Furthermore, while the treated side strips will generally prevent a "strike through" of fluid along the edges from the interior of the pad body, it has been found that any fluid which happens to flow over the surface of the pad and spread to the edge of the side strips will continue over the edge and on to the outer surface of the strips. Consequently, in the latter instance, the fluid collects on the outer surface of the strips and causes staining and discomfort.

The present invention provides a solution to the above problem, generally through the provision of a novel and effective barrier means for preventing fluids from reaching the outer surface of the side strips including the edges. More particularly, with reference to Figures 1 and 2, there is provided an absorbent pad in the form of a sanitary napkin 10 having a pair of side strips 12, and an outer wrapper 14 for enclosing the pad and which provides means for attachment to a belt or the like. The absorbent pad body 16 may be of any suitable form and material, but is illustrated as comprising an insert 18 of comminuted fibrous material, sometimes called "fluff," disposed between multi-ply sheets 20 of creped tissue or "wadding."

The side strips 12 are preferably of multi-ply creped tissue, although other materials of low bulk and having a soft surface might be used. Satisfactory results have been attained with a four-ply sheet of tissue having an uncreped basis weight of between about 5 to 10 pounds per 3000 square feet and a crepe ratio of between 1.2 and 3.0.

In the embodiment of Figures 1 and 2, the opposite marginal portions of one face of the pad body 16 are coated or otherwise treated with a fluid-repellant material, such as wax, paraffin, latex emulsion, rosin size, silicones or the like, over an area 22 somewhat greater but otherwise coextensive with the area to be covered by the side strips 12. The fluid-repellant material may be applied to the pad in any suitable manner, such as by spraying, roller application, or by the addition of a carrier sheet containing the desired amount and area of fluid-repellant material and inserted between the edge of the pad and the side strips. In selecting a suitable fluid repellent material for such use in sanitary napkins, it is preferable that such material be colorless, odorless, non-irritating and solid at body temperature.

Further, it is desirable that the fluid-repellant material thus added to the edges of the pad face and indicated at 22 be confined to the outer surface portion of the pad so as not to interfere with the absorbency and softness of the pad body 16. By so doing, the area between the side strips is left highly absorbent. As indicated above, the fluid-repellant material is distributed over an area 22 which is slightly larger than the area covered by the overlying portion of the side strip 12, in order to most effectively prevent fluid, which spreads along the surface of the pad and toward the side edges, from reaching the edges of the side strips and flowing over the outer surface thereof. However, it should be noted that the major protection afforded by area 22 of fluid-repellant material is along the marginal edge portions of the side strips 12 and, consequently, advantages may be realized by using fluid-repellant material only along such marginal edge portions, or only along

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the inner edge of the side strip, without extending the fluid repellant to the outer edge of the pad as illustrated.

As seen in Figures 1 and 2, the impervious area 22 is formed on the face of the pad body 16 which is to be worn next to the body. Further, such impervious areas on either margin of the pad are spaced apart to leave a large area of highly absorbent material exposed between the treated marginal areas 22. In this way the fluid which initially contacts the center portion of the pad face intermediate the side strips is encouraged to flow through the pad and thereby utilize the maximum absorbency of the pad and is prevented from spreading over the side strips. Accordingly, soft edges are maintained for the pad.

It may be desirable in some instances, such as pads for maternity use, to provide additional protection for the side strips 12 by applying fluid-repellant material to marginal portions of both of the pad surfaces and/or to the side edges of the pad body 16, the complete enclosure of the side edges being illustrated in Figure 4. This form of additional protection will be effective to keep the side strips not only free of the fluids which contact the faces of the pad body 16, but also those fluids which flow to the sides internally of the pad body.

A further embodiment of the invention is illustrated in Figures 3 and 4, wherein a variation in the manner of applying the side strips and fluid-repellant material is offered, as well as the additional protection along the edges of the pad body mentioned above. Although it may be of any suitable construction affording adequate absorbency, the selected pad body is the same as the previously described pad 16 having a layer 18 of fluff disposed between multi-ply creped wadding sheets 20. A pair of side strips 30 are provided for the pad body and these side strips are sized or treated on one surface 32 thereof with a fluid-repellant material, such as wax, paraffin, or other suitable thermoplastic, fluid-repellant substances. The side strips 30 are positioned along the opposite edges of the pad body 16 with the treated surface 32 facing inwardly. Sufficient heat is then applied in any suitable manner, such as by radiation, to cause the thermoplastic sizing material to become fluid. The amount of heat is dependent to some extent on the sizing material used, but it should be sufficient to cause the fluid-repellant material on the side strip to flow beyond the marginal edges of the strips 30 and penetrate at least the outermost ply or surface portion of the absorbent pad body. In this latter respect, it is very desirable to restrict the penetration of the fluid-repellant material into the pad body 16, so that it does not impair the absorbent properties of the pad or affect its softness. Accordingly, the amount of sizing material and the intensity and amount of heat used should be regulated to produce this desired result.

In a particular use of the invention employing side strips treated with wax, satisfactory results were obtained with a four-ply laminated tissue strip containing between 20 and 24 percent, by weight, of wax in the inner ply, 0.5 to 3.0 percent in the second innermost ply, and about 0.5 percent of wax in each of the two outer plies. The wax was applied across the entire surface of the side strip and heat was applied to the pad after the strips were placed along the edges in the manner shown in the drawings. Experimentation with treated side strips applied in this manner indicates that, for sanitary napkins, a practical range for the amount of wax to be used is from about 1 to 25 percent of the weight of the material in the side strips. Furthermore, temperatures between 185° and 260° F. at from about 1 to 20 minutes are sufficient to produce a satisfactory dispersal of the wax in the above described manner. Of course, under some circumstances, it may be expedient to elevate the temperatures above the stated range and shorten the time of heat application. Various suitable thermo-

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plastic materials may be handled in different ways, insofar as the described application of heat is concerned.

The latter described embodiment is particularly adaptable for use in connection with the production of maternity pads which are generally sterilized before they are used. This sterilization procedure usually involves subjecting the pad to heat between 240° and 270° F. at from 20 to 45 minutes. Consequently, it may be desirable in some instances to utilize the sterilization operation to also provide for proper flow and distribution of the fluid-repellant material in the side strips in conformity with the teachings of the present invention. In this respect, it should be noted that the attachment of the side strips in the manner disclosed with respect to Figures 3 and 4, which involves heat, and the subsequent sterilization of such pad may provide excessive penetration of the fluid-repellant material into the pad. Consequently, the utilization of two heating operations should either be avoided, or the quantity of fluid-repellant material used and the intensity of the applied heat should be controlled to avoid such excessive penetration.

It should also be noted that the use of a thermoplastic fluid-repellant material in the side strips and the application of heat to the strips to effect a penetration of such material into the adjacent surface of the pad will result in a bonding of the strips to the pad. Consequently, for bandages, disposable pads and the like additional means for holding the side strips in place, such as the gauze wrapper 14 in Figure 1, may be eliminated if desired.

It is seen, therefore, that there is provided in the present invention a novel and effective means for preventing fluids from collecting along the outer edges of an absorbent pad, where such fluids can cause staining and considerable discomfort. Furthermore, the disclosed means, while providing a fluid-repellant barrier for the side strips of the pad, is also effective to direct the flow of fluids through the thickness of the pad and along the length thereof, so as to thereby utilize the maximum absorptive capacity of the pad, while maintaining soft edges for the pad.

Although shown and described with respect to particular materials and arrangements, it will be seen that the principles of this invention may be employed in other embodiments. For example, the treated side strips 30 in Figures 3 and 4 may be sized or otherwise treated only along the portion engaging one of the pad body surfaces, in the manner of the printed adhesive strip 22 in Fig. 1, or the side strip may be treated with a thermoplastic, fluid-repellant material along the portion engaging one pad surface and the adjoining edge, or along the entire inner surface as described, and retain certain of the advantages of this invention. It will also be apparent that, if desired, the principles of both of the illustrated embodiments in Figures 1 and 3 may be combined to advantage by sizing both the edges of the pad body and the inner surface of the side strips, as shown in Figure 5. In the latter embodiment the pad body 16 is treated along the marginal surface portion 40 with a fluid-repellant material, in a manner similar to that described with respect to Figure 1. Side strips 44, which are also sized or otherwise treated with a fluid-repellant material 46 along their inner surfaces, are then positioned on the pad. As before, the edge of the treated pad surface portion 40 extends inwardly of the overlying edge of the side strip to thereby provide a barrier for such edge. Furthermore, if desired, the pad with the side strips 44 may be subjected to heat to cause the fluid-repellant material on the inner face of the side strips 44 to fuse with the fluid-repellant material on the pad body and bond the side strips to the pad body. Then too, the sized portion 40 of the pad body may be extended to cover the side edges of the pad body 16 and/or the the similar marginal surface portions on the opposite face of the pad body.

Other modifications within the scope of this invention will become apparent to those skilled in the art of form-

ing and using absorbent pads, whether of the bandage or sanitary napkin type.

We claim:

1. In combination with a pad of absorbent material, a pair of side strips disposed along opposite edges of the pad with each of said strips having a longitudinally extending portion thereof disposed in overlying relation to a marginal portion of one surface of said pad, and means providing a coating of fluid-repellant material on said marginal portions of the pad which is disposed between the overlying edge portion of each of said side strips and said pad and which extends beyond said edge portions to prevent the flow of fluid from the absorbent central area of said pad to said edge portions of said side strips.

2. In combination with a pad of absorbent material, a pair of side strips disposed along opposite edges of the pad and having longitudinally extending portions thereof disposed in overlying relation to marginal portions of the upper and lower faces of said pad, and fluid-repellant material disposed between each of said side strips and said pad, said fluid-repellant material extending beyond the margin of each of said side strips to thereby prevent fluid in the pad from reaching the edges of said side strips, and said side strip portions and the underlying areas of fluid-repellant material on the faces of the pad terminating in laterally spaced relation to the longitudinal center line of said pad to thereby provide an area of absorbent material located centrally of the pad.

3. In combination with a pad of fluid-absorbent material, means providing a fluid-repellant barrier along the opposite marginal portions of the pad faces while leaving a substantial area in the center portion of the pad which is free of said fluid-repellant barrier, and a side strip disposed along each of the opposite edge portions of the pad and including strip portions disposed in lapping relation to marginal portions of the upper and lower surfaces of the pad, said lapping portions being less

extensive in their coverage of said pad than said fluid-repellant barrier, whereby the latter prevents fluid in the pad from reaching said side strips.

4. A sanitary napkin comprising a pad body of fluid-absorbent material including one or more plies of creped tissue forming the outer surfaces of said pad body, at least the outer one of said plies having fluid-repellant material disposed along the opposite marginal portions thereof, and a pair of side strips extending along opposite edges of the pad and including portions disposed in lapping relation to the fluid-repellant marginal portions of the pad face, said strip portions covering an area not greater than that of the fluid-repellant portions of the pad face, so that said fluid-repellant material is effective to prevent fluid in the pad from striking said strip portions, and an absorbent wrapper for said pad body extending around said body and maintaining said side strips in position.

5. In combination with a pad of fluid-absorbent material, means providing a fluid-repellant barrier along the opposite marginal portions of the pad faces and the edges of the pad adjacent thereto, while leaving a substantial area in the center portion of the pad which is free of said fluid-repellant barrier, and a side strip disposed along each of the opposite edge portions of the pad and including strip portions disposed in lapping relation to marginal portions of the upper and lower surfaces of the pad, said lapping portions being less extensive in their coverage of said pad than said fluid-repellant barrier, whereby the latter prevents fluid in the pad from reaching said side strips.

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