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A. A. STONEHILL

2,312,501

SANITARY NAPKIN

Filed Feb. 26, 1940

Fig. 1.

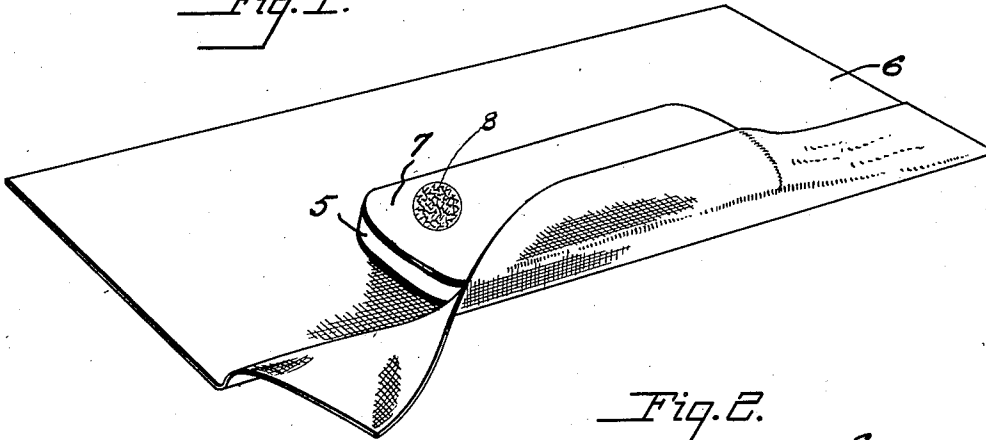


Fig. 2.

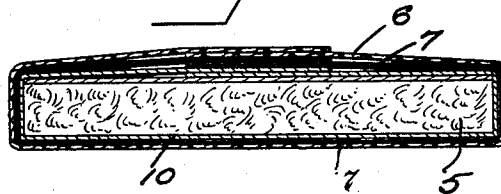


Fig. 3.

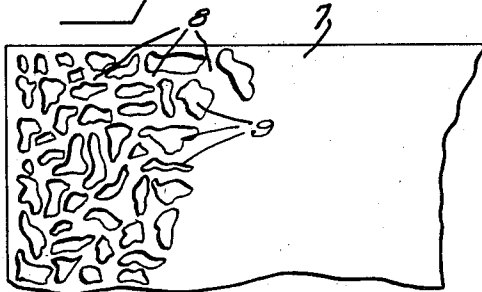


Fig. 4.

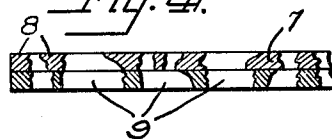
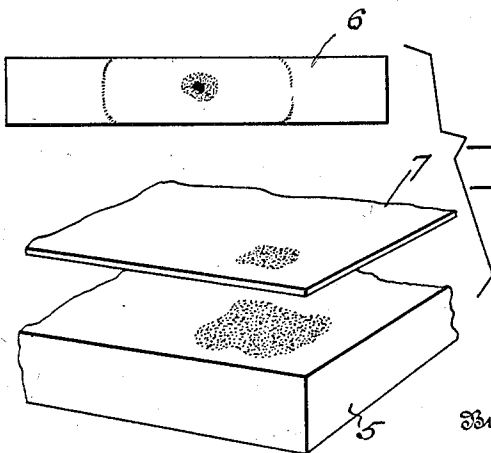


Fig. 5.



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UNITED STATES PATENT OFFICE

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SANITARY NAPKIN

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Application February 26, 1940, Serial No. 320,965

1 Claim. (Cl. 128—290)

The invention relates to sanitary napkins of the readily disposable type and comprises the improvements hereinafter described and claimed.

In that type of napkin it is conventional practice to employ safeguards to prevent the absorbed material from striking clear through the pad. A common expedient for this purpose is a fluid-impermeable sheet or covering. For example, it has been proposed to surround the absorbent pad with filmy sheets of absorbent material, including tenuous sheets of paper derived from pulp wood, the facing material on one side of the pad being substantially impermeable to fluids by reason of a solid surface application of a wax or other substance having fluid repellent properties. It also has been proposed to incorporate baffles in the absorbent pad. It also has been proposed to restrict the diffusion of fluid in a lateralwise direction by spaced apart longitudinal compressions of the facing sheet or sheets in order to induce diffusion along the lines of compression. But the permissible degree of compression failed to make the lines sufficiently absorbent and greater compression was not feasible because it would interfere with the running of the napkin machine. Moreover, safeguarded napkins, as heretofore constructed, are not reversible and a tell-tale adjunct is necessary to insure that they are used the right way.

Objects of the invention are to obviate the difficulties and disadvantages of the old practice; to provide for wrapping the absorbent pads of sanitary napkins in a simple and efficient way and in such way as to reduce bulk and other conditions which impair the softness of the napkin and its body-conforming characteristic; and to provide for wrapping the absorbent pads in such way that absorption is practically instantaneous so that the surface wetting is very definitely localized or confined to the point of contact.

In short, the nature of my invention proceeds upon the principle that by applying a sheet of cellulosic tissue of marked porosity, and whose fibers only are fluid repellent, directly upon an absorbent pad or filling surface-contacting fluid will pass freely through the pores or permeable areas defined by the interlaced or framing fibers thereby following a definite pattern and, aided by capillary action, will be speedily transferred to and absorbed by the pad. While the invention contemplates the use of several of such sheets I would here remark that excellent results have followed the use of a single sheet, the transfer

of fluid to and its absorption by the pad being practically instantaneous.

It is also a merit of the invention that, by covering both faces of the napkin with tissue of the kind and in the manner indicated, the napkin will be reversible in the sense that there is no right or wrong side.

The nature, characteristic features and scope of the invention more readily will be understood from the following detailed description, taken in connection with the accompanying drawing, forming a part hereof, wherein—

Figure 1 is a perspective view of a sanitary napkin with the gauze casing opened up to disclose the pad and the improved facing or protecting sheet.

Fig. 2 is a sectional view of a pad faced on both sides whereby it is usable either way.

Fig. 3 is a magnified view of a porous sheet of cellulosic tissue, the framing fibers of which are fluid repellent in accordance with the invention.

Fig. 4 is a somewhat exaggerated section of a modification in which several sheets or plies are employed.

Fig. 5 is a diagrammatic or exploded view showing how fluid contacting the dressing is limited to the point of contact and transferred in a definite pattern to the absorbent pad or filling.

Referring more particularly to Fig. 1, there is shown a well-known type of sanitary napkin of the readily disposable type comprising an absorbent pad or filling 5, and a gauze casing 6 which surrounds the pad and provides end tabs therefor, as usual. In accordance with the invention the pad is intimately faced with one or more protecting sheets 7 on that side which in use is applied next the person. It may here be remarked that by facing both sides, as shown in Fig. 2, the pad is rendered reversible in the sense that it may be used with confidence with either side next the person.

Protecting element 7 is a highly tenuous sheet of cellulosic tissue of marked porosity which is in intimate contact with one or both faces of the pad and which by reason of its inherent flimsy structure and its intimacy with the pad, readily adapts itself to any surface irregularities thereof.

As shown more particularly in Fig. 3 the cellulosic tissue is characterized by a framing structure of interlaced fibers 8 and interspersed pores 9 of no particular systematic order of arrangement except insofar as they are defined by and follow the general scheme or pattern of the lattice structure. It is to be understood then that the fibers 8 are fluid repellent and the intervening

areas are not fluid repellent but are inherently such as to permit fluid readily to strike through them and be immediately absorbed by the pad. In short, the intimacy of the facing sheet with the absorbent pad and the high degree of capillary action resulting from such structure and arrangement are such that in use a definite pattern is etched by fluid contacting the facing sheet and ensuing flow will follow the pattern into the pad as shown in Fig. 5. It results that with pad facing sheets of this kind there can be no serious side travel of fluid and, hence, no staining of apparel.

The fibrous structure of the highly porous tissue may be treated to make it fluid repellent in various ways. For example, by the application of a rosin size which may be either a liquid size with solids up to seventy per cent, or a dry size with solids up to ninety-five per cent to ninety-eight per cent. Both the liquid size and the dry size can be made with either soda or potash and are available containing various quantities of free rosin. Any grade of rosin may be used from B wood rosin to WW gum. The usual grade, however, is FF wood and F, G, or H gum. Or I may employ waxine sizes. These sizes are essentially combinations of unsaponifiable wax and rosin size. Other materials may be added, such as fatty acid soaps, saponifiable waxes, gums, etc. The solids content is normally between thirty per cent and fifty per cent. The wax rosin ratio may be varied within wide limits as may the ratio of free and unsaponified rosin. The wax used will range from low melting point scale wax to high melting point amorphous wax. In some cases mineral oil may be used. Or I may use a size of the substantially all-wax type. These sizes are dispersions of unsaponified wax and contain little or no rosin.

In general there are two types, emulsions which are broken by acids and salts and in which the emulsifying agent is usually a fatty acid soap; and acid stable emulsions such as emulsions not precipitated by acids or hard water and suitable for surface application.

In applying the invention to sanitary napkins of the type (see Ritter Patent No. 1,850,033) in which the absorbent pad is enveloped in a vest or wrapper 10 formed of more or less absorbent material, such as bibulous paper, it will be understood that the protecting sheet or sheets will be positioned externally and in intimate facial association with the vest; or, in a continuation of the inventive thought, the vest itself may well function as a protecting element by constructing and arranging it so that its outermost sheet or sheets are as hereinbefore described.

While the improved protecting media is useful and highly efficient with any usual type of absorbent pad or filling, it is preferred to use a filling of the fluff type because that type of filling has a high degree of conformability and, hence, is more comforting in service.

What I claim as new is:

A sanitary napkin of the disposable type comprising an absorbent pad, means to control dispersion of the fluid absorbed by said pad comprising a sheet of tenuous porous cellulosic paper tissue having a fluid repellent size thereon providing moisture repellent framing fibers defining disconnected porous areas operative to transmit fluids through said sheet of tissue while substantially preventing lateral dispersion of said fluids, and an outer covering surrounding said pad and control means.

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