March 7, 1961 E. DUDLEY 2,973,760

SANITARY NAPKIN

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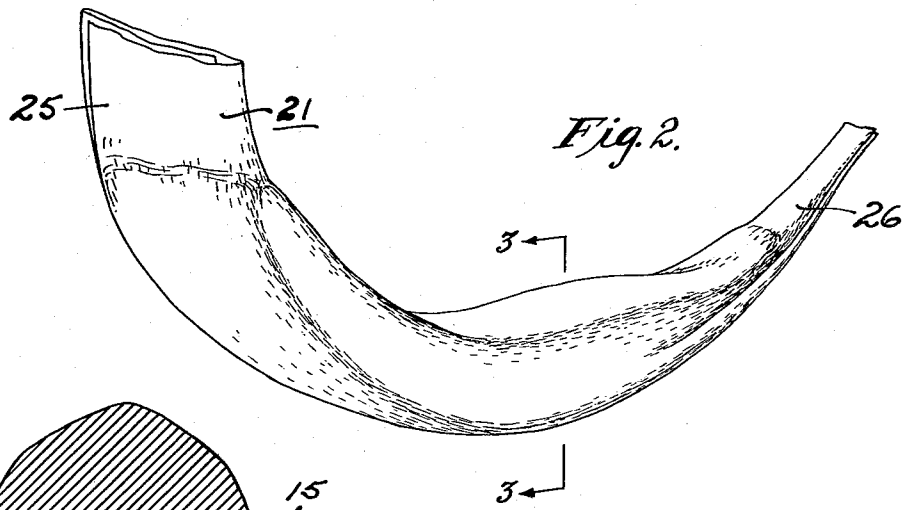


Fig. 2.

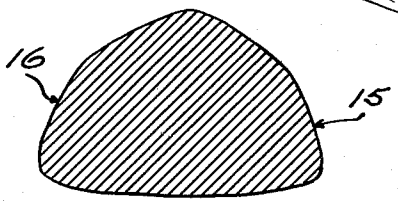


Fig. 3.

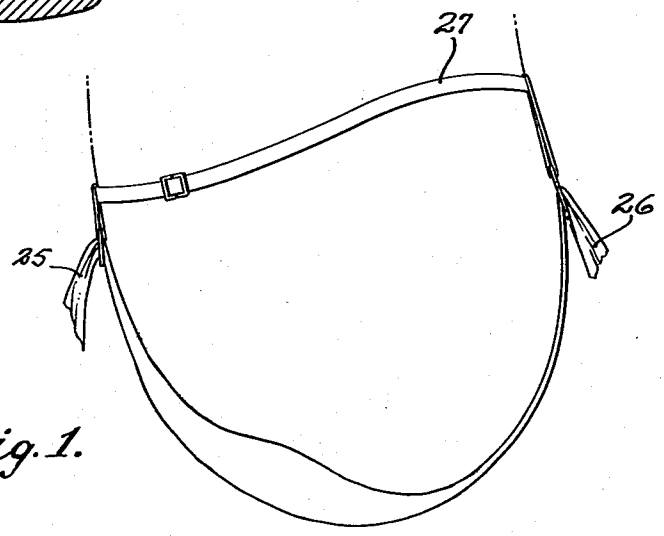


Fig. 1.

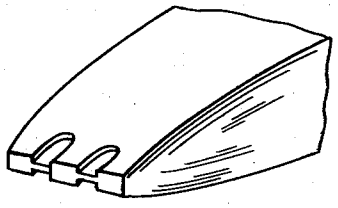


Fig. 11.

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SANITARY NAPKIN

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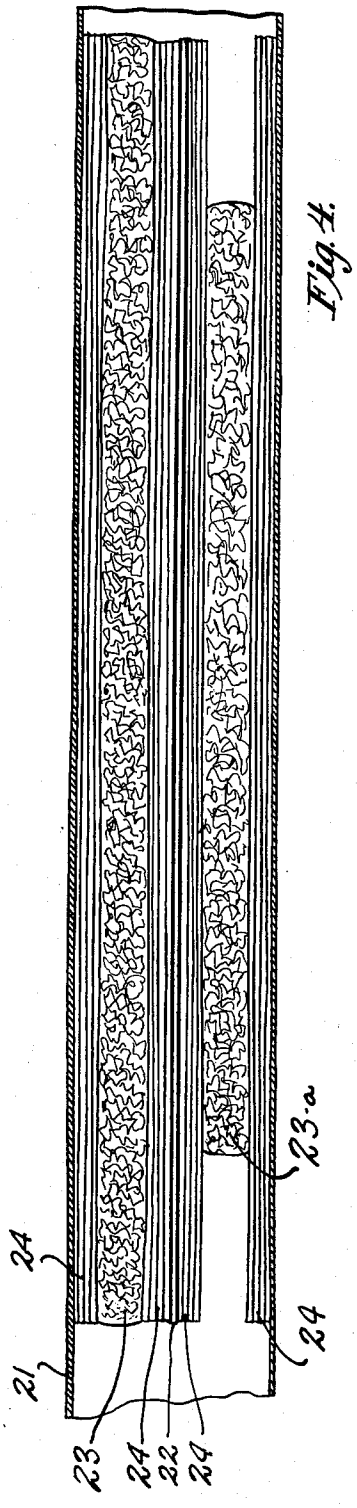


Fig. 4.

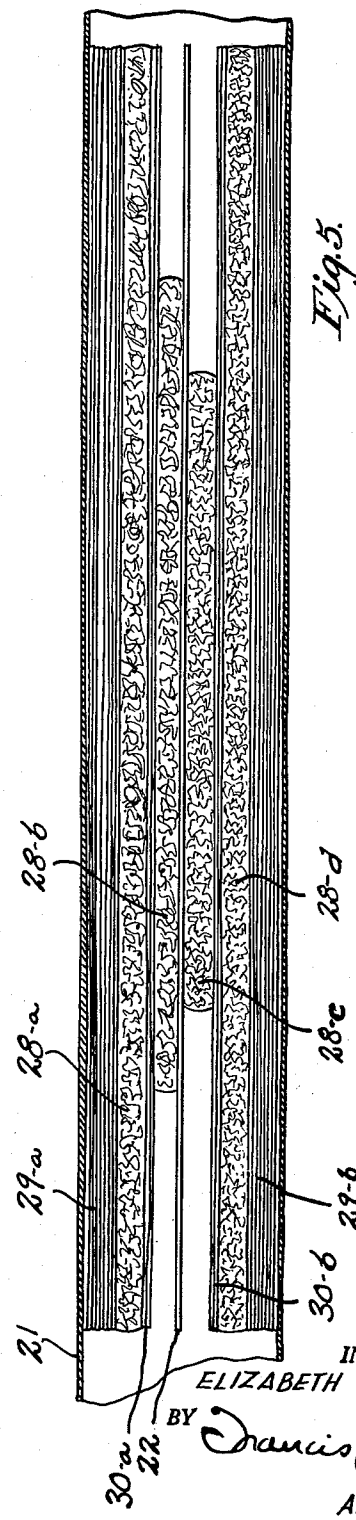


Fig. 5.

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SANITARY NAPKIN

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Fig. 6.

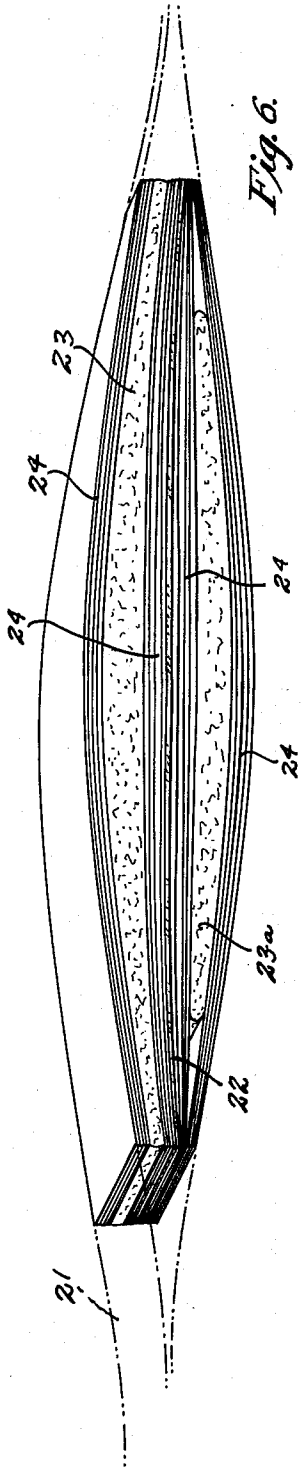
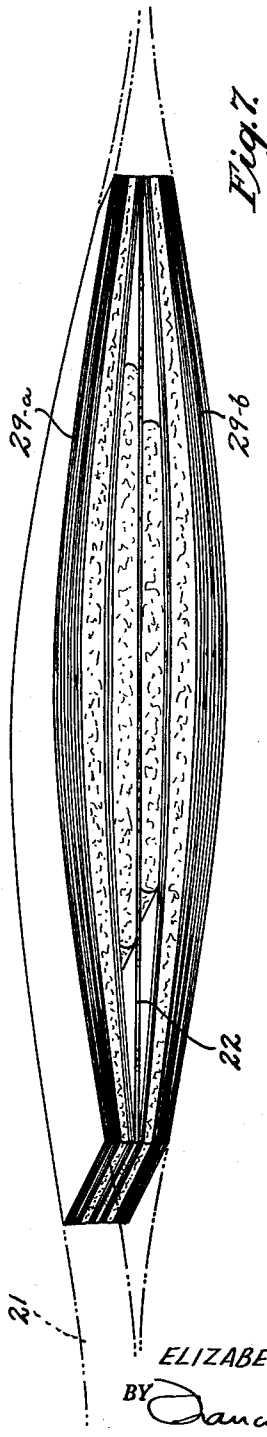


Fig. 7.



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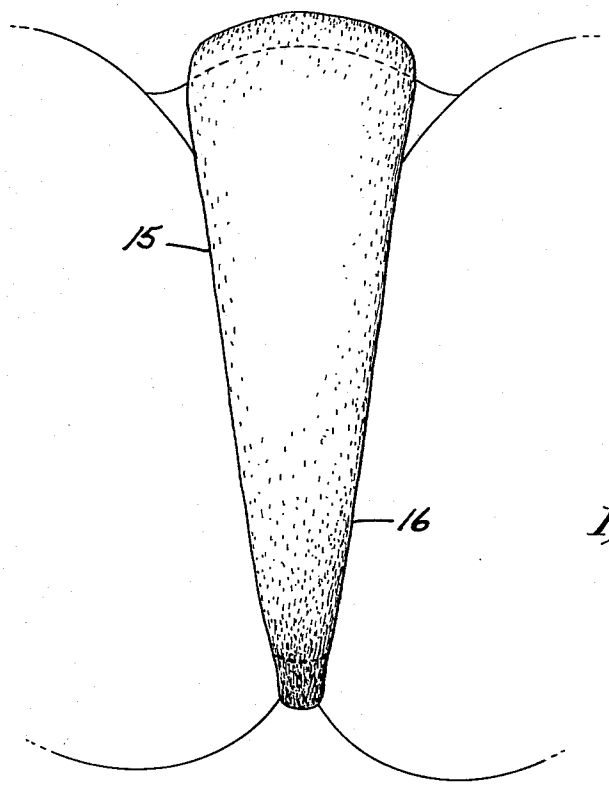


Fig. 8.

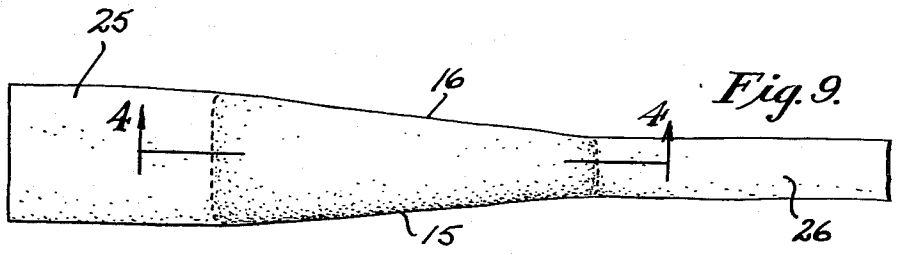


Fig. 9.

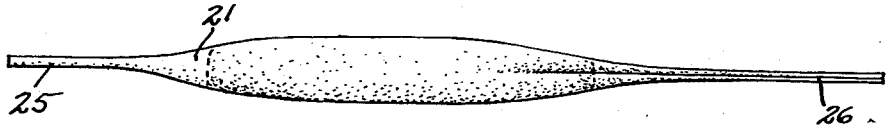


Fig. 10.

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2,973,760

SANITARY NAPKIN

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Filed June 30, 1958, Ser. No. 745,544

2 Claims. (Cl. 128—287)

The present invention relates to catamenial devices and particularly to that type which is a sanitary napkin in pad form rather than in tampon form.

One object of the present invention is to provide a new and different pad type of sanitary napkin.

Another object of this invention is to provide a sanitary napkin pad which conforms to the female anatomy to provide more comfort and utility.

Another object of the invention is to provide a napkin that will not slip out of place while worn.

A further object of the invention is to provide a napkin which will give the user security against "strike through" to the underside of the pad while in use.

An additional object of the invention is to provide a sanitary pad that will not fold, distort or collapse in use.

Another object of the invention is to provide a sanitary napkin pad which is more comfortable than present commercial napkins when worn.

Another object of the present invention is to provide a sanitary napkin which is more efficient because of the positioning of the components of the pad.

Another object of the present invention is to provide a sanitary napkin wherein either side may be worn against the body with complete security.

Another object of the present invention is to provide a sanitary napkin which will remain firm without bunching when worn.

Another object of the present invention is to provide a sanitary napkin which is substantially invisible when worn.

Further objects will be apparent by reference to the appended specification, claims and drawings.

Catamenial devices have long been known and used but it is a relatively short time ago that the sanitary napkin which is in general use today was developed. The disposable sanitary napkin of the pad type, which is the most popular type, was first marketed some time after the turn of the century. These disposable sanitary napkins are usually made of highly absorbent cellulose material generally rectangular in shape and relatively wide and also relatively thin in cross section and can be produced on high speed machinery capable inexpensively of fabricating large quantities of such napkins. However, it has been observed that these pads often fold and distort in use with consequent "bunching" and discomfort and loss of efficiency. The reason for this is that they are not adapted to the female anatomy. Such pads, being relatively thin in cross section and having a semi-permeable barrier, are susceptible to "strike through" in use with the consequent soiling of clothing.

Therefore, the art is replete with suggestions and disclosures of new and varied forms of sanitary napkins to overcome this problem, but the capital equipment necessary to manufacture sanitary napkins is expensive and not readily changed to make new types. Moreover, it is only recently that the sanitary napkin manufacturers have been in a position to advertise their product in the popular press and magazines and therefore the successful marketing of any new form or type of sanitary napkin has been extremely difficult. The napkin of the present invention overcomes the defects of prior catamenial devices and can be manufactured rapidly and at low cost with relatively inexpensive machinery.

For the purpose of illustrating the invention, there are shown in the accompanying drawings forms thereof which are at present preferred, although it is to be understood that the various instrumentalities of which the invention consists can be variously arranged and organized and that the invention is not limited to the precise arrangements and organizations of the instrumentalities as herein shown and described.

In the drawings, wherein like reference characters indicate like parts:

Figure 1 is a side elevational view illustrating the sanitary napkin of the present invention as it may appear when supported by a belt.

Figure 2 is a perspective view of the sanitary napkin of the present invention disposed in a generally curved shape which illustrates the conformation of the napkin as it is worn.

Figure 3 represents a vertical cross-sectional view taken generally along line 3—3 of Figure 2 and, without showing the details of construction, illustrating the general outline of the napkin as worn.

Figure 4 is a vertical cross-sectional view taken along line 4—4 of Figure 9 with the component parts disposed in extended position more clearly to illustrate the relationship of the components.

Figure 5 is a vertical cross-sectional view, similar to Figure 4 but showing another embodiment of the present invention.

Figure 6 is a perspective view of the napkin of Figure 4 showing the component parts as they might be assembled and with the cover or envelope illustrated by dash-dot lines.

Figure 7 is a perspective view similar to Figure 6 illustrating the embodiment shown in Figure 5.

Figure 8 is a bottom plan view of the napkin illustrating its shape, as worn.

Figure 9 is a top plan of the napkin shown prior to use.

Figure 10 is a side elevational view of the napkin of Figure 9.

Figure 11 is a fragmentary perspective view of an end of the napkin pad showing embossments which may be used to hold the plies of the pad together.

With reference to the drawings and particularly to Figures 3, 8 and 9, it is to be noted that the napkin of the present invention has side edges 15 and 16 which are not parallel to form a pad which is a truncated triangle or elongated trapezoid. This is clearly shown in Figures 8 and 9. Furthermore, the napkin is formed so that it does not collapse or bunch and the vertical cross-sectional view of the napkin, when worn, is also generally triangular, as shown in Figure 3.

It has been found particularly desirable that the napkin, when worn, conform generally to the shape defined by the body in the area of the female genitalia. This is illustrated in Figures 1, 2 and 8. More particularly it is important that the napkin be pre-formed to this shape so as to eliminate any compressing or bulking or bunching of the napkin into the desired shape while it is being worn. As mentioned above, sanitary napkins of the past have been relatively wide and flat, with generally parallel side edges. Such napkins did not conform to the shape of the female anatomy and, when worn, were of necessity compressed or bunched together between the legs in the anal region and were uncomfortable and in many cases were used in a manner not con-

templated by the manufacturer as a result of such compression or compacting.

The generally trapezoidal or triangular shape of the napkin of the present invention is particularly constructed and designed to avoid the deficiencies of the devices of the prior art and to be comfortable and effective when worn.

The structure of the napkin which accomplishes this end is illustrated more particularly in Figures 4 to 7 inclusive. That embodiment of the napkin which is illustrated in Figure 4 includes an outer cover **21** which may be of gauze, non-woven fabric or a similar type of reinforced absorbent material. This cover **21** is primarily an envelope for retaining the component parts of the napkin therein but is also used as the means of securing the napkin in place to a belt **27**, as illustrated in Figure 1, and hence must be relatively strong and have sufficient tensile strength to withstand the rigors of normal use.

The napkin of the present invention also includes an impervious generally central or medial strip **22** which extends fully from side to side and from end to end as shown clearly in Figures 6 and 7. This strip **22** is a fluid barrier and may consist of a thin sheet of polyethylene or a thin sheet of paper having a polyethylene coating thereon. Thus the barrier **22** effectively divides the napkin into two separate areas, one on each side of the medial strip and each of which area is adequate, in terms of its absorptive capacity and volume satisfactorily to provide the protective services required of a sanitary napkin.

Referring to Figure 4, the napkin on each side of the barrier **22** consists of a generally central portion **23** or **23–*a*** composed of an absorbent material called fluff which is made by grinding highly purified wood cellulose in a hammer mill and forming a batt of the resultant product. Such material has capacity to retain large volumes of fluid and provides necessary bulk and volume. It is preferred that one of such batts **23–*a*** be shorter in length than the other **23**, so that the vertical dimension of the napkin may taper toward its ends, as illustrated in Figures 1, 6 and 10. Although such tapering is not essential to the function of the napkin it is desirable from a comfort standpoint and also so as to render the napkin generally inconspicuous when worn.

On each side of each of the batts **23** and **23–*a*** there are disposed a number of layers of creped wadding **24**. Creped wadding is generally understood in the papermaking art to mean a sheet of tissue paper creped, when dry, on a so-called Yankee Dryer and generally such creped wadding has a basis weight of from 8 to 15 pounds per ream and a stretch value exceeding 10%. It is made from highly purified cellulose fiber and is extremely absorbent while yet possessing certain capillarity or directional characteristics and strength which assist in the rapid distribution of the menstrual fluid to the absorbent portions of the napkin on the same side of the barrier **22**. This characteristic is particularly desirable in the early stages of menstrual flow where the volume of fluid may be quite high and the need arises for effective absorptive use of all portions of the napkin on the side nearest the body of the wearer.

It can be understood by referring to Figures 6 and 7 that each napkin of the present invention is, in reality, a double faced napkin with the absorptive portions on each side of the medial strip **22** effectively functioning as a single napkin and of sufficient capacity to handle necessary fluid discharge.

More importantly, however, the composition of the pad provides a structure which is two sided and hence the pad may be worn with either of the two major surfaces facing inwardly. The barrier strip **22**, which is as wide and as long as the widest and longest dimensions of the pad, and hence has its edges coextensive with the outer edges of the pad, as shown clearly in Figures 6 and 7 affords complete protection against "strike-through" and the two-sided construction of the napkin makes it unnecessary to identify one or the other of the two sides as being the side which should be disposed against the body since either side may be worn in contact with the body.

Still more importantly, the side of the napkin which does not directly receive the menstrual discharge and hence does not collapse because of being softened by the menstrual fluid operates as a supporting means and shape-retaining means, as is more clearly illustrated in Figures 2, 3 and 8. It has been found to be psychologically important from the standpoint of feel and appearance as well as structurally necessary, utility wise, to provide a pad which affords adequate bulk and capacity and the napkin of the present invention provides these features even though at first glance it appears substantially narrower than the napkins of the past. The napkin of the present invention is pre-formed to conform to the female anatomy and is constructed, in such shape, to provide adequate absorptive and protective characteristics. Therefore, the pad may be somewhat less flexible than prior pads because its shape is correct and it does not become compacted in the anal region where protection is not an issue as do the thin, wide napkins of the prior art. Thus the present napkin functions properly without distortion. The portion of the napkin not receiving the fluid below the barrier **22** remains dry and retains its original shape, as shown in Figure 3, while yet permitting the upper portion to follow the contours of the famale anatomy as shown in Figures 1, 2 and 3. The lower portion of the napkin which is shielded from overflow of menstrual fluid by the barrier **22** retains its generally trapezoidal shape and supports the barrier strip **22** in proper position where it functions to protect the clothing of the wearer.

It will be noted from the foregoing that the napkin, though generally narrower, is appreciably thicker than the napkins of the prior art, thus providing a structure which has adequate absorptive capacity on either side of the barrier strip while also insuring that the napkin will fit properly and comfortably without distortion or compacting. In fact, the napkin, because of its shape and size, conforms to body contours and does not move out of place when worn. Although, by way of illustration, the napkins, as manufactured, are generally 1¼ inches thick at the central portion, material settling or compacting during shipment may change this dimension somewhat. However, the average napkin, prior to use, and hence in its unused state, will provide an absorbent structure having, at a density of approximately .035 gram per cubic centimeter of volume, a total weight of approximately 10 grams, exclusive of the cover.

Further, by way of illustration, the napkin of the present invention may be about 2½ inches wide at the front and about 1⅛ inches wide at the rear portion, and about 8 inches long. It will also be noted from Figures 1 and 2 that the napkin is intended to be worn with the wider portion toward the front and at a slightly higher elevation than the narrower terminal portion. This insures a more comfortable napkin and places the absorptive portions in a position more adequately to receive the menstrual fluid and eliminating unnecessary, uncomfortable and unused material near the rectal opening.

With reference to Figures 9 and 10 it can be seen that the frontal portion **25** of the cover **21** is somewhat shorter than the rearward portion **26** of the same cover. When such terminal portions **25** and **26** are affixed to the supporting belt **27**, as shown in Figure 1, the napkin of the present invention quite naturally and automatically is positioned properly on the body. The wider strip **25** also helps in identification of front and back portion and aids in proper placement against the body. The cover **21** is preferably formed with reinforcing strands which are disposed diagonally across the pad (not extending longitudinally) so as to minimize the tendency to "rope" or irritate the body while yet providing a strong support and secure retainer for the absorbent portions of the pad.

In the embodiment illustrated in Figures 5 and 7 the

medial strip 22 is still centrally disposed within the cover 21 and substantially equal amounts of absorptive material are disposed on each side of the medial strip. However, in this embodiment, the fluff is disposed in four separate batts, with somewhat thinner batts 28–*a* and 28–*b* on one side of the strip 22 and batts 28–*c* and 28–*d* on the other side of the barrier. Layers of creped wadding 29–*a* separate the batt 28–*a* from the cover and, similarly, layers of creped wadding 29–*b* separate the batt 28–*d* from the cover 21. Layers of creped wadding 30–*a* and 30–*b* separate the batts 28–*a* and 28–*b* and the batts 28–*c* and 28–*d* respectively.

The absorptive capacity of the napkin shown in Figure 4 is substantially the same as the absorptive capacity of the napkin of Figure 5, the principal difference in structure being the arrangement and number of the layers of creped wadding and the fluff batts and the principal reason for the difference in the two napkins is with respect to the flow distributing characteristics.

Figures 6 and 7 illustrate the manner in which the components of Figures 4 and 5, respectively, are assembled so that the napkin has a generally tapered or feathered edge at each end so as to render the napkin less conspicuous when worn. The components may also be secured together at the end by suitable means such as adhesive or embossments (as illustrated in Figure 11) which not only assist in maintaining the plies in position during assembly and particularly keep the barrier strip 22 from shifting during use and hence fully protect the side of the pad not against the body, but also assist in preserving the feathered edge or taper referred to above. Each of the layers of each napkins is, however, shaped to the generally trapezoidal conformation illustrated in Figure 9 so as to provide a thick, but narrow, structure at the central portion and thus afford the highly absorptive and yet form retaining structure which is deemed so desirable. In this way there is a greater amount of absorbent material located where it is most needed while yet providing reduced thickness at the two ends, which contributes to comfort. At the same time, the wider forward end provides more absorptive capacity than the narrow rearward end and this is found to be particularly important in view of the fact that the direction of the menstrual flow is toward the center and front of the pad due to the forward slant of the channel delivering the menstrual fluid, and thus the pad of the present invention disposes the absorptive material in the most effective position.

The present invention may be embodied in other specific forms without departing from the spirit or essential attributes thereof, and it is therefore desired that the present

embodiment be considered in all respects as illustrative and not restrictive, reference being had to the appended claims rather than to the foregoing description to indicate the scope of the invention.

Having described my invention, what I claim as new and desire to protect by Letters Patent is the following:

1. A relatively thick and narrow double faced sanitary napkin having a configuration which conforms to the female anatomy by being generally trapezoidal in the direction of its long axis and being thicker at the central portion than at the ends to provide a double longitudinal taper, said napkin including a soft, strong, pervious cover and a pad assembly of absorbent material comprising a plurality of layers of fluff and a plurality of layers of creped wadding, said absorbent material being distributed in approximately equal amounts at the opposite faces of an impervious generally central barrier, said barrier having its edges coextensive with the widest and longest components of the pad, whereby the fluff and the wadding on only one face of said barrier absorb menstrual fluid during use and the fluff and wadding on the opposite face of said barrier remain dry and firm.

2. A relatively thick and narrow double faced sanitary napkin having a configuration which conforms to the female anatomy by being generally trapezoidal in the direction of its long axis and being thicker at the central portion than at the ends to provide a double longitudinal taper, said napkin including a soft, strong, pervious cover and a pad assembly of absorbent material comprising a plurality of layers of fluff and a plurality of layers of creped wadding, said absorbent material being distributed in approximately equal amounts at the opposite faces of an impervious generally central barrier, said barrier having its edges coextensive with the widest and longest components of the pad and being secured to the material adjacent the barrier to prevent lateral movement of the barrier within the pad, whereby the fluff and the wadding on only one face of said barrier absorb menstrual fluid during use and the fluff and wadding on the opposite face of said barrier remain dry and firm.

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