

[54] **CATAMENIAL NAPKIN**

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[51] **Int. Cl.**.....**A61f 13/16**
[58] **Field of Search**.....128/290, 296;
19/144, 144.5

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[57] **ABSTRACT**

A catamenial napkin having an outer non-compressed layer of fluid absorbent material and an inner core of highly compressed fluid absorbent material enclosed therein. The napkin preferably is V-shaped in cross section and is arch-shaped in its longitudinal direction by die compression. When the inner core is wetted, it swells and dynamically expands the outer non-compressed layer in all directions and thereby adjusts itself to each wearer.

7 Claims, 10 Drawing Figures

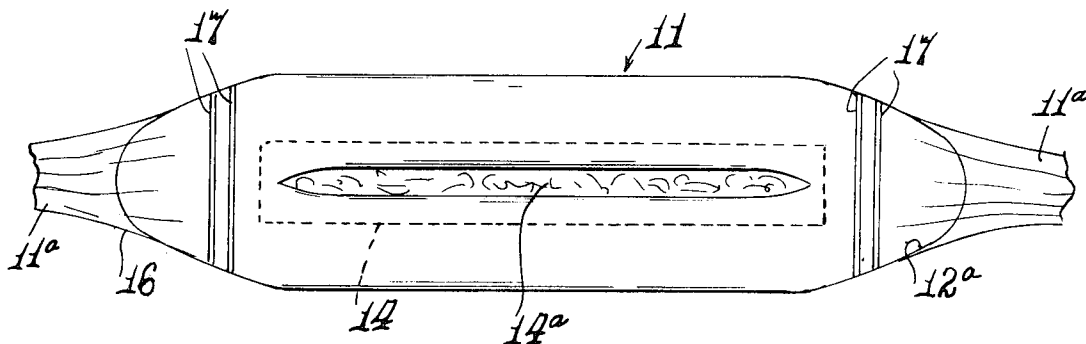


Fig. 1

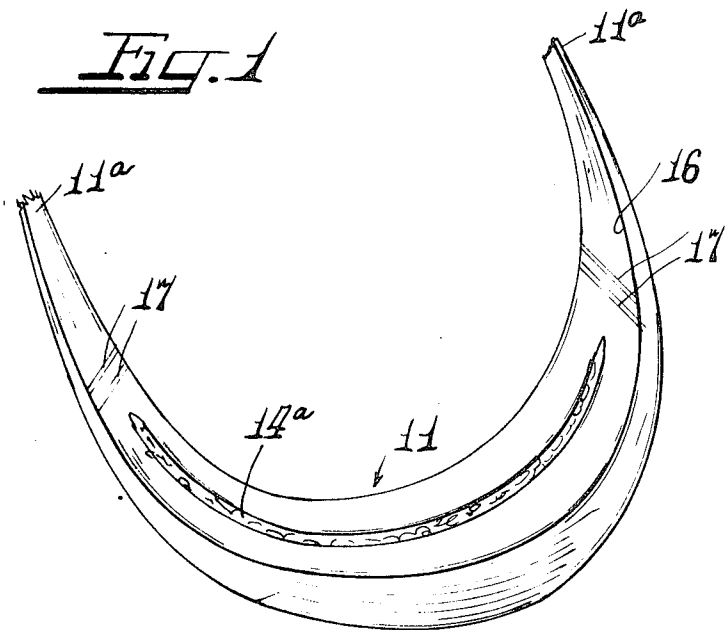


Fig. 2.

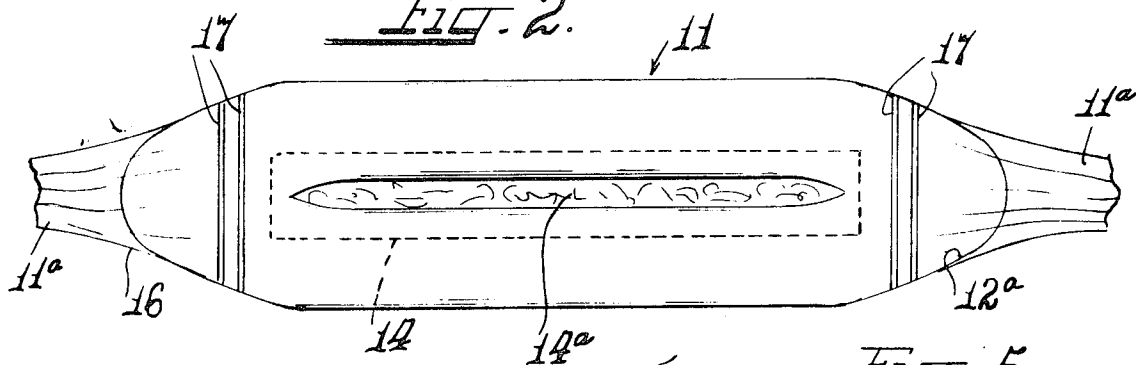


Fig. 4.

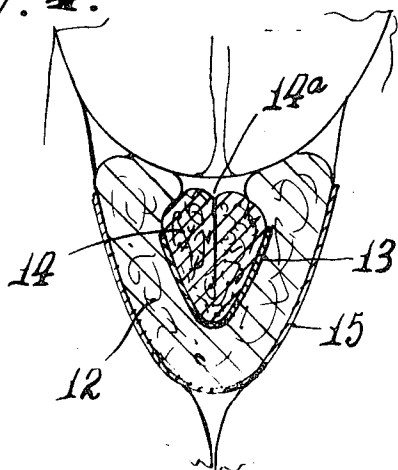
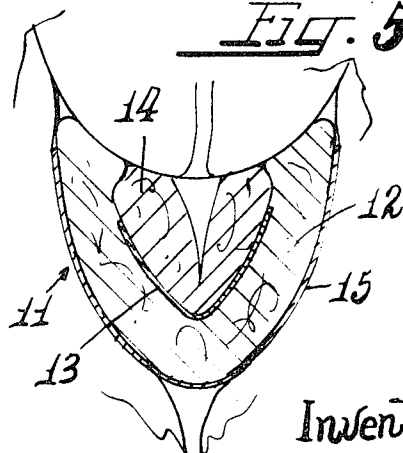


Fig. 5.



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Fig. 3.

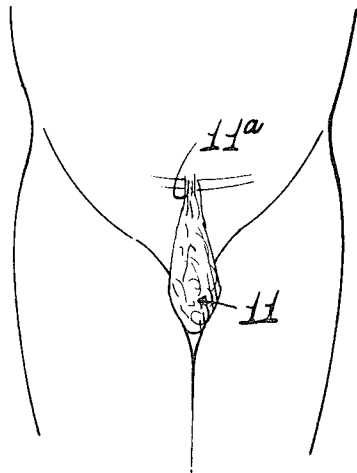


Fig. 6.

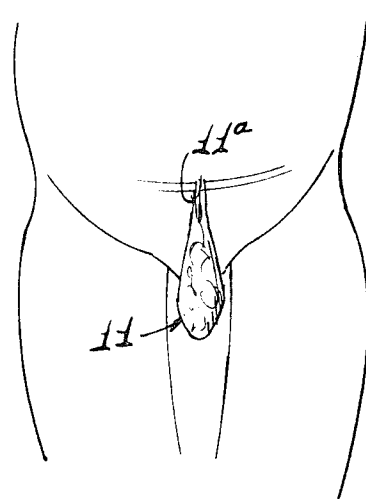


Fig. 7.

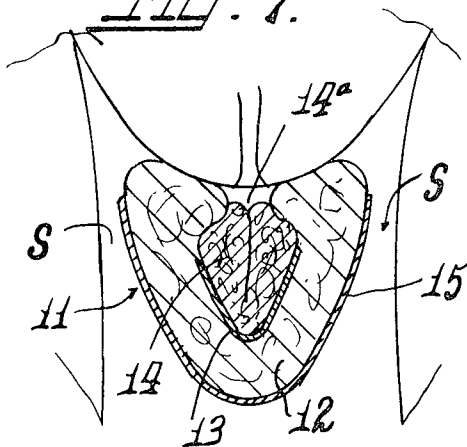


Fig. 8.

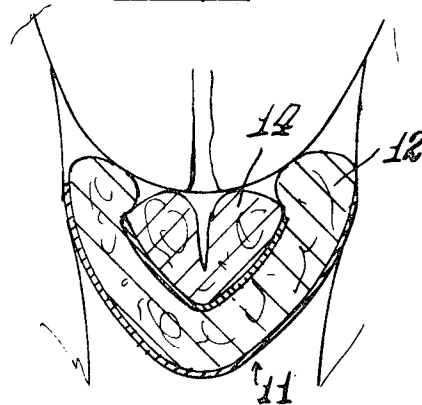


Fig. 9.

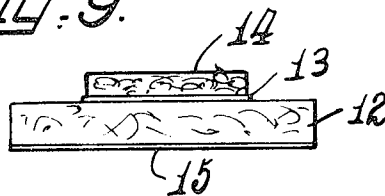
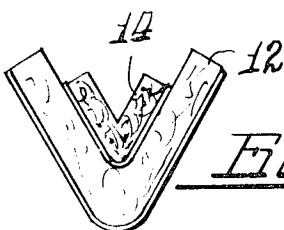


Fig. 10.

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CATAMENIAL NAPKIN

The invention relates to improvements in sanitary napkins and to the method of fabrication, and is particularly concerned with a catamenial napkin generally of V-shape in cross-section and arch-shaped in its longitudinal direction. The napkin has an inner or central core of highly compressed fluid absorbent material which is at least partially enclosed in an outer covering of non-compressed fluid absorbent material.

More specifically, the invention relates to the critical arrangement of a highly compressed layer of fluid absorbent material which is substantially enclosed in an outer or covering layer of non-compressed fluid absorbent material in such manner that when the napkin is fitted for use, initial menstrual fluid absorption directs itself within the inner compressed layer so as to cause same to expand dynamically and actively effect a spreading of the covering layer into a wide V-shaped form that conforms by expansion, substantially to the particular anatomy of the wearer. As a consequence there is total absorption by the inner absorbent layer or core before there is any passage and absorption of fluids into the outer layer, and the said outer layer therefore remains substantially dry until near the very end of the useful life of the napkin.

In many known earlier types of catamenial napkins it was customary to provide an elongated pad that is flat or substantially flat throughout its length and which is devoid of any means to control the flow direction of menstrual waste fluids with the result that such napkins become prematurely saturated long prior to their intended useful life; or they overflow principally in the direction of their side edges thus causing the wearer to experience a feeling of wetness long before the useful life of the napkin is attained. In fact, such sidewise flow or run-off is enhanced in such prior flat napkins owing to the generation of lateral wrinkles in the effective surface of the napkin resulting from its being arched as it is applied to conform to the curvature of the crotch and perineum of the wearer.

The napkin formed by the present method avoids all of the foregoing objectionable characteristics.

In particular, the napkin produced by the present method of manufacture is initially formed flat as it comes from a conventional napkin forming machine. It is subsequently molded by heated dies, into a V-shape cross-section and into an exaggerated arch configuration in a longitudinal direction, so as to eliminate the generation of lateral wrinkles when it is applied to the perineum. A further step in the fabrication of the herein disclosed napkin is the generation of one or more lateral grooves or creases by heat, moisture, and compression, inwardly of each end of the napkin. The end portions can therefore be easily folded over inwardly to facilitate packaging while preserving the exaggerated arcuate U form of the central portion of the napkin during packaging and storage.

It is therefore an object of the invention to provide an improved sanitary napkin.

Another object is to provide a napkin with internal means adapted to absorb initial menstrual flow before there is any substantial absorption of menstrual flow by the remaining outer portion thereof.

Another object is to provide a napkin critically fabricated of multiple layers of absorbent material at least one of which is highly compressed and longitudinally

positioned as an expandable central core capable of swelling and expanding when wetted.

Another object is to provide a napkin with an inner compressed highly expansible core of fluid absorbent material capable, when wetted, of dynamically or forcefully expanding its outer confining less absorptive layer in all directions.

Another object is to provide a napkin which possesses maximum absorptive properties and so constructed as to direct menstrual fluids initially into the interior thereof.

Another object is to provide a menstrual napkin of the character referred to which is not expensive or difficult to manufacture, and which is very comfortable to wear and efficient in use.

Other objects and advantages of the invention will become apparent with reference to the following description and accompanying drawing:

In the drawings:

FIG. 1 is a perspective view of the highly arched napkin embodying the features of the invention.

FIG. 2 is a top plan view thereof.

FIG. 3 is an elevational view of the napkin applied to an obese person.

FIG. 4 is a transverse sectional view of the napkin applied as shown in FIG. 3, before it becomes wetted.

FIG. 5 is a view similar to FIG. 4, showing the napkin wetted and expanded and thereby fitting itself into the particular open spaces of the anatomy.

FIG. 6 is a view similar to FIG. 3, illustrating a body with spaced apart thighs.

FIG. 7 is a transverse sectional view of the napkin as applied to the FIG. 6 type of body.

FIG. 8 is a view similar to FIG. 7, showing the napkin wetted and expanded to fill anatomy spaces.

FIG. 9 is a transverse sectional view of the layers of material before folding.

FIG. 10 is a similar view showing the layers partially folded.

The catamenial napkin formed by the herein disclosed method and structured as also disclosed herein, is best shown in FIG. 1. This napkin comprises a body 11 of layers of highly absorbent material, such as cotton, paper fluff, crepe wadding, or similar material of a type commonly used for absorptive purposes and including connecting end tabs 11a.

The napkin may be flat or substantially flat but preferably is formed by the application of heat, moisture and compression, into the exaggerated U-shaped longitudinal arch as shown. Specifically, the napkin includes a flat elongated body 12 of soft non-woven moisture absorbent material. Arranged on one face of the body 12 is a layer of moisture impervious material 13 over which is placed a layer or pad 14 of highly compressed fluid absorbent material. As illustrated in FIGS. 9 and 10, this assemblage is initially fashioned into a longitudinal V-shape as shown in FIG. 10, and is subsequently formed into the shape illustrated in FIG. 4 by pressing the longitudinal margins of the body 12 into overlapping position with respect to the edges of pad 14 so as to substantially enclose said pad, leaving exposed only a narrow longitudinal central topside area indicated at 14a (FIGS. 2 and 4). Arranged on the underside of the outer layer 12 is a sheet of moisture impervious material 15. This formation may be accomplished with folding compression dies assisted by controlled moisture and heat.

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As previously noted the napkin, formed as described in the preceding paragraph, is enclosed in a thin gauze 16 which provides end securing tabs 11a. The whole preferably is then formed, as by molding, into the aforesaid exaggerated arcuate configuration so as to eliminate the generation of lateral wrinkles when the napkin is applied to the body. Representative apparatus for arching the napkin is disclosed in my pending application Ser. No. 92,108, filed Nov. 23, 1970. Such apparatus also generates one or more lateral creases 17 inwardly of each end of the napkin so that the tapered end portions 12a of body 12, may be folded over upon the body to facilitate packaging, storage, and convenience of handling.

It should be evident that the napkin provided will fit into the crotch and perineum of a wearer without the generation of lateral wrinkles because of its pre-fit and pre-contoured configuration. Further, when the napkin is fitted in place, as illustrated in FIG. 3, the exposed central area 14a of the inner compressed pad or expandable core 14, being recessed slightly from the top of the napkin, will position itself to fit the vaginal orifice and is in substantial alignment with the female vaginal cleft or outlet. Because of this exact alignment, all initial flow of waste fluids is absorbed within the inner core 14. This core will become wetted long before there is any wetting of the outer layer 12 owing to the presence of the moisture impervious layer 13 between them. This layer 13 may be perforated to assist progressive flow of fluids from the core 14, after it is saturated, into the outer layer 12. However, as the core becomes wetted it expands dynamically to cause the outer layer 12 to be forced outwardly, widening the V-shape, as illustrated in FIG. 5, so as to conform substantially with the specific anatomy and empty spaces of the wearer. This expansion takes place gradually as total absorption of the core is approached so that the outer layer can adjust and insinuate itself to all irregular and specific surrounding anatomy. Thus the napkin will assume a self-adjusting function toward a perfect fit and there is no strike through and no feeling of wetness prior to total absorption within the napkin. Such strike-through is of course further impeded by the presence of the impervious layer 15.

The representative illustrations in FIGS. 6, 7 and 8 are illustrative of the napkins use and function when worn by one having spaced apart thighs. As best shown in FIG. 7, when the napkin is dry as when initially applied, there is a space S between the napkin sides and the thighs. When wetted, as shown in FIG. 8, the nap-

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kin has expanded to substantially fill the space between the thighs and thus prevent spill-over.

Although I have described a preferred embodiment of my invention, in considerable detail, it will be understood that the description thereof is intended to be illustrative, rather than restrictive, as details of the structure may be modified or changed without departing from the spirit or scope of the invention. Accordingly, I do not desire to be restricted to the exact construction and method of production described.

I claim:

1. A sanitary napkin comprising an outer substantially rectangular layer of soft moisture absorbent material, a substantially rectangular layer of highly compressed moisture absorbent material arranged on one face of the outer layer, said compressed layer being substantially smaller than the outer layer, and the margins of the outer layer being disposed to overlie the margins of the layer of highly compressed absorbent material to thereby leave a small area of the compressed inner layer exposed.

2. The napkin recited in claim 1, in which the napkin is formed substantially triangular in shape in cross-section so that said highly compressed layer upon being wetted will expand and forcefully spread the sides of the outer layer apart into a substantially wide V-shape.

3. The napkin recited in claim 1, in which the napkin is sharply curved in a longitudinal direction and the small exposed area of; the compressed layer is located; on the concave side of the napkin along its longitudinal axis.

4. The method of fabricating a sanitary napkin comprised of an outer layer of soft fluid absorbent material and an inner core of highly compressed fluid absorbent material smaller in size than the outer layer, said method consisting of forming the napkin into a longitudinal V-shape and folding the longitudinal margins of the outer layer over the inner core to substantially conceal same.

5. The method recited in claim 4 with the added step of arching the napkin in a longitudinal direction with the exposed areas of the inner core visible on the concave surface.

6. The method recited in claim 4, with the added step of arranging a layer of moisture impervious material between said inner and outer layers.

7. The method recited in claim 4, with the added step of arranging a layer of moisture impervious material over the exposed face of the outer layer.

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