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SANITARY NAPKIN

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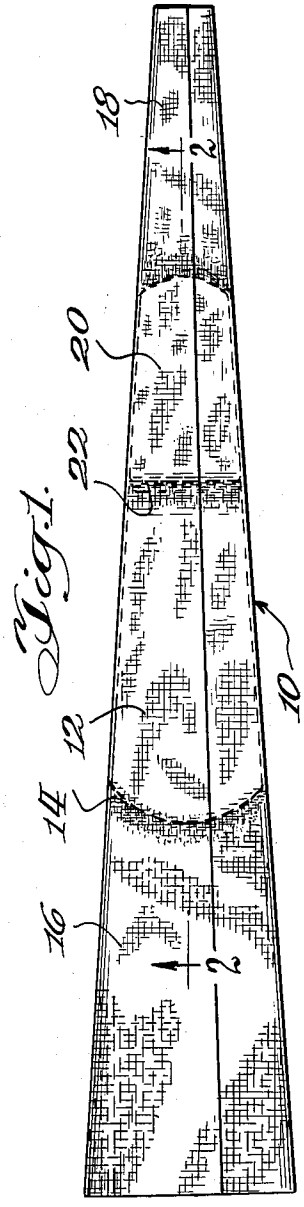

Fig. 1.

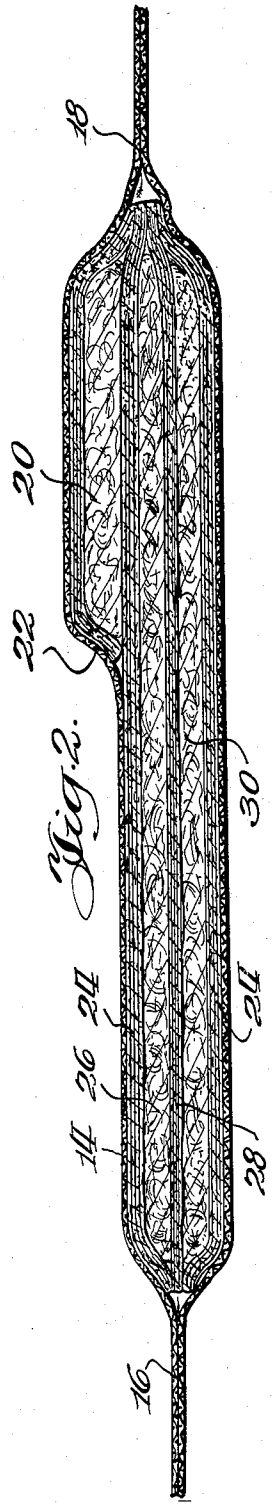

Fig. 2.

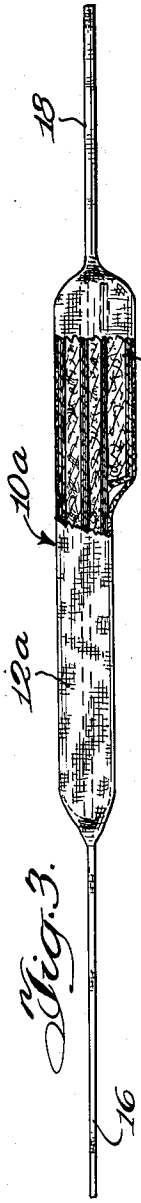

Fig. 3.

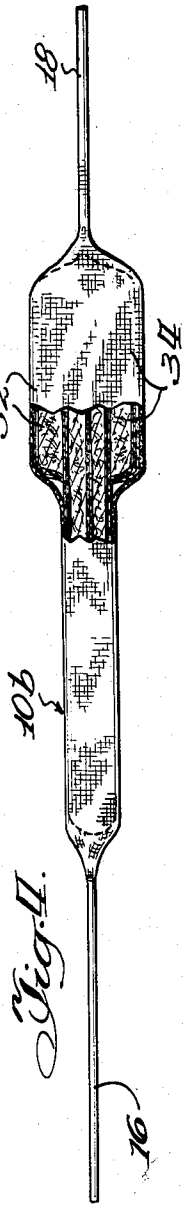

Fig. 4.

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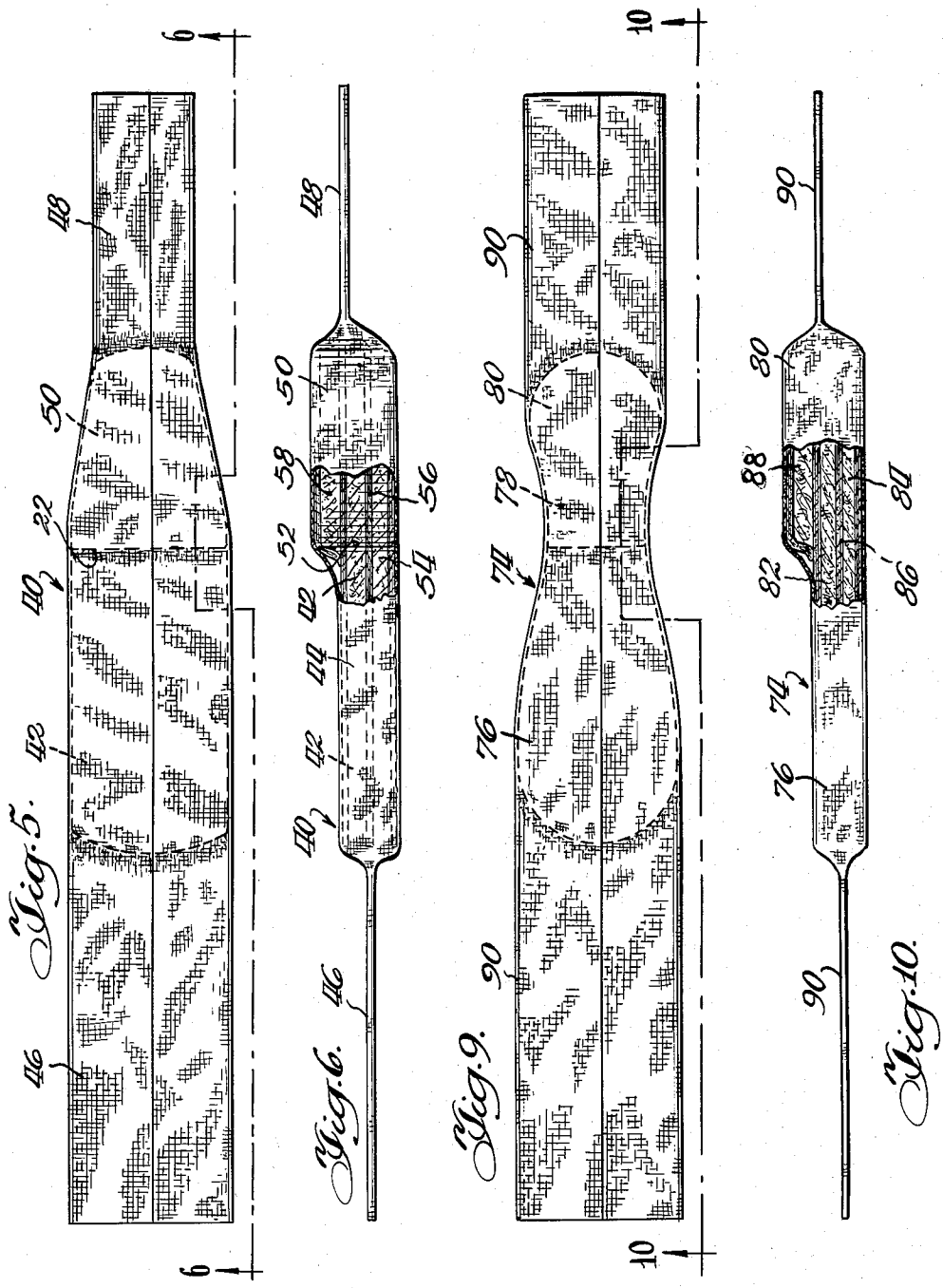

Fig. 5.

Fig. 6.

Fig. 9.

Fig. 10.

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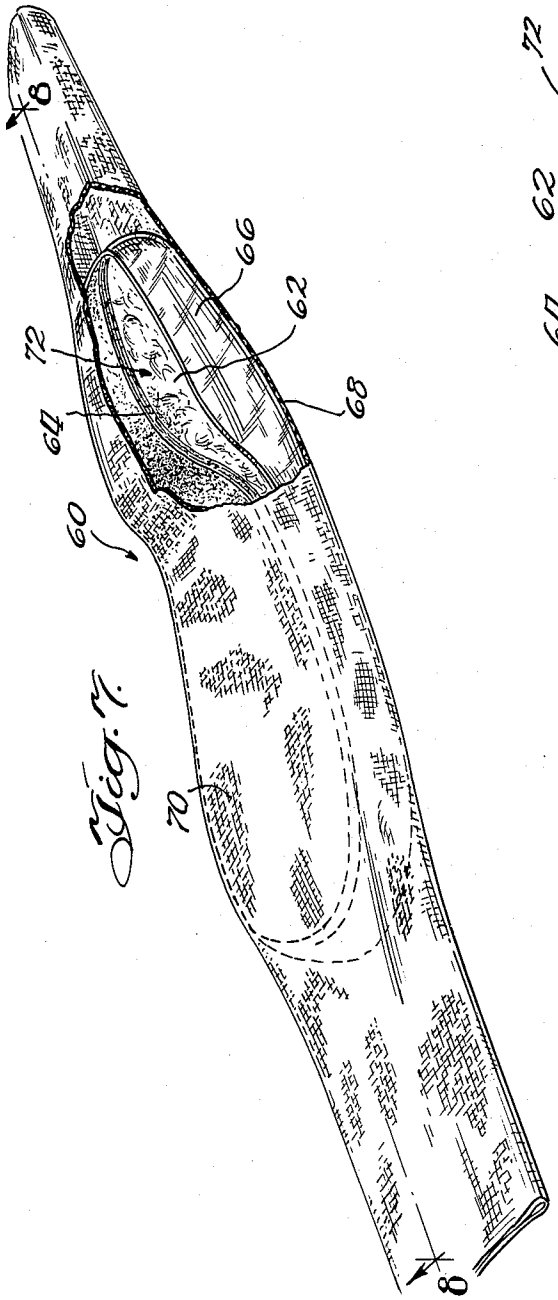

Fig. 7.

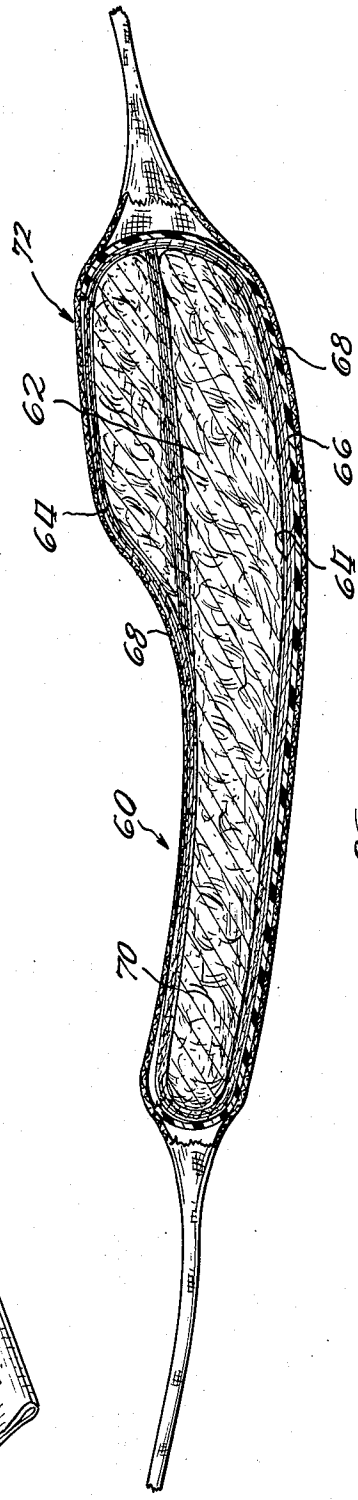

Fig. 8.

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SANITARY NAPKIN

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This invention relates to improvements in sanitary napkins.

The primary object of the invention is to improve the fluid absorptive characteristics of a sanitary napkin of fully or semi-tapered configuration in plan, through redistribution of the fluid absorbent material thereof in a manner to provide optimum positioning of said material during use.

A further object is to provide an improved sanitary napkin, the configuration of which assures both optimum efficiency and user comfort regardless of whether the user is in a standing or sitting position or lying down.

Other objects and advantages will become apparent to persons skilled in the art upon examination of the drawings and description, as will various modifications and adaptations of the concepts herein taught.

In the drawings, in which like parts are identified by the same reference numerals,

FIG. 1 illustrates in plan a sanitary napkin of generally wedge or trapezoid configuration incorporating the inventive concepts;

FIG. 2 is an enlarged longitudinal section taken along line 2—2, FIG. 1;

FIG. 3 illustrates, partially in longitudinal section, a napkin construction incorporating an alternative embodiment of the invention;

FIG. 4 is a view similar to FIG. 2, but illustrating a napkin incorporating still another embodiment of the invention;

FIG. 5 illustrates in plan a partially tapered napkin incorporating the invention;

FIG. 6 is a side elevation, partially in longitudinal section, taken along line 6—6, FIG. 5;

FIG. 7 illustrates in perspective a napkin constructed in a manner to incorporate still another embodiment of the invention;

FIG. 8 is a longitudinal section along line 8—8, FIG. 7;

FIG. 9 illustrates a somewhat "dumbbell" shaped napkin, incorporating a further embodiment of the invention;

FIG. 10 is a side elevation, partially in longitudinal section, of the napkin of FIG. 9.

While it is known to construct sanitary napkins in a manner to position major fluid absorbent elements in positions believed optimum in respect to the source of fluid flow, prior art constructions, while possibly effective when the user is, for instance, in a standing position, are generally less effective when the user is either in a sitting position or lying down. It is known, for example, to concentrate a major portion of the fluid absorbent material within a central portion of the napkin as, for example, in the configuration of an elongated hump or ridge.

A generally flat and readily deformable napkin is, when worn, both transversely curved in the form of an inverted U while also being upwardly curved in respect to the longitudinal axis thereof. The resulting configuration, which can perhaps be described as saddle-like, results in satisfactory positioning of the major fluid absorbent elements when the user is in a standing position. However, when worn in a sitting or lying down position, the relationship between fluid source and napkin is such as to promote very substantial fluid migration toward the rear of the napkin, with resulting saturation of that portion while the central and forward portions thereof remain relatively non-saturated. For the above stated reasons known napkin constructions have proved incapable of optimum performance throughout the entire range of body positions. The concepts herein taught result in optimum perofrmance of improved napkins of the tapered or semi-tapered type, regardless of whether the user is in a standing, sitting or lying down position.

FIGS. 1 and 2 illustrate a sanitary napkin of the fully tapered type, generically designated 10. Napkin 10 comprises an absorbent pad-like element 12 enclosed in a fluid permeable wrapper 14 having portions 16, 18 extending beyond opposite ends of pad 12 to provide tab ends which serve as fastening means during use. As worn, pad 12 diverges forwardly continuously from the rear tab end 18 to the front tab end 16, hence assuming pad 12 to be of substantially uniform thickness throughout the length thereof, the fluid absorbent capacity of pad 12 gradually increases in the forward direction. While fully tapered napkins are preferred by some users, it is evident that the anatomical design and attendant user comfort is obtained at the expense of minimum absorbent capacity at the rear of the napkin. Since as above stated applicant has determined from extensive panel testing that major fluid migration is toward the rear rather than the front of the napkin, especially when users are in the sitting position or lying down, it is evident that such migration is directed primarily to portions of pad 12 offering minimum fluid absorbent capacity.

As best shown at FIG. 2, applicant's concept is directed to increasing the fluid absorbent capacity of the napkin throughout the rear portion of pad 12 toward which major fluid migration is directed. To effect that purpose, a supplemental highly absorbent element 20 is positioned above the main body of pad 12 with pad 20 extending coextensively with the main body of pad 12 from the rear margin thereof forwardly of the pad to terminate at 22. The exact construction of pad 12 is not critical in respect to the teachings of the present invention, and may consist of several layers of creped wadding 24 positioned directly underneath wrapper material 14; a fluff-like fibrous batt 26 positioned immediately beneath wadding layers 24; a baffle or equalizing element 28 immediately below batt 26; and a lower batt 30 immediately below baffle 28. Such construction is well known in the art and is utilized both in napkins of the fully or semi-tapered type as well as in napkins of the conventional elongated rectangular shape in plan.

Supplemental absorbent element 20 may consist of a fibrous batt of a construction similar to elements 25, 30 or alternately may consist of a plurality of creped wadding sheets or of other suitable material. Preferably, element 20 is disposed in contiguous engagement with and directly above creped wadding sheets 24. The pad assembly is maintained in form sustaining assembly by wrapper material 14 which snugly encloses pad 12. The provision of auxiliary pad 20 substantially increases the total absorbent capacity of the rear portion of pad 12 without altering the fully tapered configuration, in plan,

as viewed in FIG. 1, thus retaining the benefits of the fully tapered configuration.

FIG. 3 illustrates an alternate embodiment of the invention wherein a fully tapered napkin 10*a* includes a pad 12*a* similar to pad 12 of the FIGS. 1 and 2 construction but differing therefrom by a provision along the bottom surface of pad 12*a*, supplemental pad 20*a* which may, except for its position, be identical to supplemental pad 20. As is evident, the total absorbent capacity of napkin 10*a* will be increased throughout the rearwardmost portion thereof in the same manner as in the construction of FIGS. 1 and 2, and while the napkin contour in plan is still unaltered, alteration of the contour and elevation is effective along the bottom of the napkin rather than along the top thereof as in the FIGS. 1 and 2 construction.

FIG. 4 illustrates a further embodiment of the invention wherein the napkin 10*b* which may be of a construction similar to the above described in connection with FIGS. 1, 2 and 3, differs therefrom by a provision in the rearward portion thereof, that being a supplemental upper pad 32 and the lower supplemental pad 34. As is evident, the total fluid absorbent capacity of napkin 10*b*, throughout the rear end portion thereof has thus been increased to an even greater extent than either of the constructions shown in FIGS. 2 and 3.

FIGS. 5 and 6 illustrate a semi-tapered napkin, generically designated 40, which includes a main absorbent pad 42 enclosed in a wrapper material 44 which also extends from both ends of pad 42 to form tab ends 46, 48. Pad 40, while of rectangular configuration in plan throughout a portion of the length thereof, leads into a semi-tapered portion 50 forming the rear portion of the napkin. Pad 42 may comprise a pair of fluff batts 52, 54 and an intermediate baffle 56 in accordance with known practice in the art. The improvement thereto comprises the addition of a supplemental fluid absorbent element 58, placed as in the construction above described, to extend coextensively of a rear end portion of pad 42 to increase the total fluid absorbent capacity of that portion also in the manner above described.

FIG. 7 illustrates in perspective a contoured or shaped napkin 60 of arcuate configuration as viewed in elevation. As illustrated in longitudinal section, FIG. 8, napkin 60 may consist of a major inner element 62 of fluff or the like which may, if desired, be internally reinforced in a known manner to hold its shape while remaining highly fluid absorbent. Element 62 may be enclosed by one or more sheets of creped wadding 64 which, in turn, are enclosed throughout the bottom and side surfaces thereof by a fluid impervious baffle element 66 such as a sheet plastic element, with the above described assembly being maintained snugly wrapped by a suitable fluid pervious material 68. As viewed in FIGS. 7 and 8, napkin 60 is adapted to be worn with the tapering but vertically thickened portion shown at the right in a rearward direction during use. As shown in FIG. 7, napkin 60, as viewed in plan, gradually tapers in the rearward or right-hand direction with the forward portion 70 of substantially uniform thickness leading into a substantially thickened portion 72 which extends throughout the rearward napkin portion. While the construction shown in FIGS. 7 and 8 thus differ substantially from the constructions above described and illustrated in FIGS. 1 through 6, the total fluid capacity of the converging rearward portion is thus maintained adequate to insure optimum fluid absorbency during use while providing a construction of a transverse width which gradually increases towards the front of the napkin.

A further alternate napkin construction incorporating the concept herein taught is illustrated in plan and in longitudinal section, respectively, in FIGS. 9 and 10. Napkin 74, of generally "dumbbell" shape in plan, includes a front end portion 76 which converges rearwardly to define a neck-like portion 78 of lesser width, which leads into a rear portion 80 of increased width in respect to neck portion 78, though of lesser width than front portion 76, and preferably of a width about two-thirds that of portion 76. FIG. 10 illustrates the main pad as comprising fluff batts 82, 84, an intermediate baffle 86, an auxiliary pad 88 coextensive with the rear portion and part of the neck portion of the main pad assembly, and a suitable wrapper 90 enclosing and maintaining the elements in unitary assembly. Other constructions incorporating the invention will be apparent to persons skilled in the art.

In the claims:

1. A sanitary napkin comprising a fluid absorbent element of tapered configuration in plan and a fluid permeable wrapper snugly enclosing said element and extending from opposite ends thereof, said fluid absorbent element being of substantially greater thickness throughout an area starting near the narrow end thereof and terminating short of the longitudinal midpoint, than throughout the remaining portion of the napkin.

2. A sanitary napkin comprising a fluid absorbent element and a fluid permeable wrapper enclosing said element and extending from opposite ends thereof to provide fastening means, said element being gradually tapered in width from one to the opposite end thereof and of substantially uniform thickness throughout a major portion of greatest element width and of substantially greater thickness throughout the remaining area of minimum element width than throughout said major portion of said element.

3. The device of claim 2 wherein said element consists of alternate layers of creped wadding and fluff extending the length of said element and a supplemental layer of creped wadding and fluff superimposed thereon and extending from the minimum width end of said element toward the end of maximum width a distance of less than one half the length of said element to provide said portion of greatest thickness.

4. In a sanitary napkin, the combination with a fluid absorbent element of tapered configuration in plan with resulting end portions of maximum and minimum width, respectively, said element being of substantially uniform thickness throughout an area adjacent the end of greatest width and extending toward the end of minimum width throughout a major portion of the element, the remaining portion of said element being substantially thicker than said area of greatest width, said thicker element portion comprising portions disposed both above and below said portion of uniform thickness.

5. A preformed contoured sanitary napkin including a fluid absorbent element and a fluid permeable wrapper snugly enclosing said element and extending from opposite ends thereof, said element being of arcuate configuration in elevation and tapered in plan from one to the opposite end thereof and being thicker throughout the end portion thereof of minimum width than the portion of maximum width.

6. The device of claim 5 wherein said absorbent element consists of a layer of fibrous fluff of substantial thickness enclosed in plural sheets of creped wadding and a supplemental layer of fibrous fluff overlying a portion of said first mentioned layer in the area of minimum width and enclosed in plural sheets of creped wadding, and a fluid permeable wrapper enclosing said assembly of creped wadding enclosed fluff elements and extending beyond the opposite ends of said first mentioned fluff layer to provide a pair of tab ends.

7. A sanitary napkin comprising an elongate fluid absorbent element and a fluid permeable wrapper snugly engaging said element and extending from opposite ends thereof, said element being provided with arcuately concave sidewall portions positioned in registry transversely of the napkin to define a necked-down portion intermediate the ends thereof, said element being thicker throughout the area extending from a position adjacent said

necked-down portion throughout one end of the element than the remainder of the absorbent element to provide increased fluid absorbent capacity throughout said thickened portion.

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