

Description

[0001] The present invention relates to a sanitary napkin in accordance with the enclosed claim.

[0002] The introductory portion of said claim is based on US-A-4,589,876. This document discloses a sanitary napkin comprising a central absorbent pad and flaps extending from each longitudinal edge of the central absorbent pad. The flaps comprise a multilayer structure having a flap topsheet, a flap absorbent core and a flap backsheet. The flap topsheet is formed from a conventional liquid permeable material used to form the topsheet of the sanitary napkin such as woven and non-woven polyester, polypropylene, nylon and rayon. As is well known to those of ordinary skill in the art, these materials are nonelastic. The flap backsheet is constructed of the same materials used to construct the backsheet of the sanitary napkin including embossed or non-embossed polyethylene fibers and laminated tissue. These materials are also nonelastic. The flap absorbent core is made from the same materials that can be used to make the central absorbent core including layers of tissue paper or fibrated communication pulp. As is well known to those of ordinary skill in the art, these materials are nonelastic.

[0003] GB-A-2 168 253 discloses a sanitary napkin with flaps extending upwardly from each of said longitudinal sides of an absorbent element. Both of said flaps comprises a longitudinally extending resilient portion. The liquid-impermeable backsheet of said napkin is provided with said upwardly extending sides forming thin liquid-impermeable upwardly folded side flaps which extend beyond the absorbent core along the lateral edges of the core. Strips of elastic material are affixed to the backsheet material. Prior to fixing, the strips are stretched to 150-300% of their original length. The strips are placed at a distance of 1 to 5 mm from the outer edge of the side flaps. The elastics act as folding means and keep the backsheet side flaps in said upwardly folded configuration and in part a boat-like curvature to the absorbent core. Instead of elastic strips, other elastic means, like heat-shrinkable tape or elastic glue, may be used.

[0004] Many of today's sanitary napkins are equipped with "side-protecting" flaps, or wings, that extend laterally from the longitudinal sides of a central absorbent. See Mattingly, U.S. Patent No. 4,608,047, McNair, U.S. Patent No. 4,589,876. These napkins typically function by having their users bend the lateral flaps downward along straight parallel hinge lines. Unfortunately, however, the crotch portion of most undergarments is concavely contoured to conform to the legs of the wearer. Thus, in order to accommodate a comfortable fit, only a portion of the side of the napkin has side protection. Accordingly, a need exists for a sanitary napkin that offers sanitary protection substantially along the entire longitudinal length of the napkin without substantially deforming the undergarment.

[0005] To achieve the afore-mentioned object, the present invention is characterized by the features of the single claim,

[0006] These flaps can be, but are not necessarily limited to, extensions of the cover and backing of the absorbent element, and are also referred herein as "flap portions" of the napkin. The flaps and/or flap portions are designed to fold smoothly over the exterior of the panty and then to expand to conform with the contour of the crotch portion of the panty. Adequate expandability is achieved if the material used to effect this feature can elongate at least 110%, preferably about 150% of its prestretched length.

[0007] Thusly, the design flaw of the prior art, that only the center portion of the napkin offers the side protection of wings, can be overcome. This invention further provides for the contouring of the flaps of a sanitary napkin along the curved line of the crotch. If the flaps of a prior art napkin were extended from the transverse ends at the top end and the bottom of the central absorbent, the flap would be too wide at the center portion of the crotch resulting in "bunching" of the panty and attendant discomfort. The flap portions of this invention, on the other hand, are expandable and are readily adapted to the contour of the panty without bunching. Additionally, the longitudinally extending sides of the absorbent element, which can comprise extensions of the impervious and pervious surfaces of the absorbent element, are concavely configured and extended laterally to more appropriately conform to the contour of the panty crotch.

[0008] Accordingly, the long felt need of providing sanitary protection substantially along the entire longitudinal edges of sanitary napkins is provided. The flap portions of this invention are made expandable by using an elastic type element, by slitting an extension of the cover or barrier, or both, or by using an accordion or pleated flap material.

[0009] It is therefore an object of this invention to provide a sanitary napkin that more completely follows the contour of the crotch portion of the panty it is attached to.

[0010] It is still another object of this invention to provide a sanitary napkin which can be folded smoothly around the crotch portion of a panty in comfortable fashion.

[0011] With these and other objects in view, which will become apparent to one skilled in the art as the description proceeds, this invention resides in the novel construction, combination and arrangement of parts substantially as hereinafter described and more particularly defined in the attached claim.

BRIEF DESCRIPTION OF THE DRAWINGS

[0012] The accompanying drawings illustrate a complete embodiment of the invention according to the best mode for the best practical application of the principles

thereof, and in which:

FIG. 1: is a planar view of the body-facing side of a sanitary napkin embodiment of this invention illustrating flexible flap portions extending along the longitudinal sides of the napkin;

FIG. 2: is a perspective view of the application of the sanitary napkin embodiment of FIG. 1, illustrating how the flexible flap portions are folded around the crotch portion of the undergarment.

FIG. 3: is a planar view of the body-facing side of another sanitary napkin embodiment of this invention illustrating elastic stretch elements disposed within the flexible flap portions;

FIG. 4: is a perspective view illustrating the application of the sanitary napkin embodiment of FIG. 3 and further illustrating how the elastic elements are stretched;

FIG. 5: is a planar view of the body-facing side of another sanitary napkin embodiment of this invention illustrating flexible flap portions containing slits for enabling these portions to expand; and

FIG. 6: is a perspective view of the application of the sanitary napkin of FIG. 5 illustrating how the flexible flap portions, including their slits, can be expanded to fold around the outer crotch portion of an undergarment.

DESCRIPTION OF THE INVENTION

[0013] With reference to the drawings, and particularly FIGS. 1 and 2 thereof, there is shown a preferred sanitary napkin 100 having an absorbent element 20 having longitudinally extending side, transverse ends, a body-facing side and an undergarment facing side. The flaps of this embodiment 10 extend laterally from each of the longitudinal sides of the absorbent element and at least one of these flaps comprises a longitudinally extending resilient portion for permitting this flap to expand longitudinally when folded over a side of a crotch portion of an undergarment 25.

[0014] As described by the embodiments of FIGS. 1, 3, 5, both of the flaps of the napkins of this invention can comprise longitudinally resilient flap portions 10, 30, and 50, which are ideally disposed substantially along the entire longitudinal sides of the napkins 100, 200, and 300. As illustrated, the flaps and resilient portions thereof 10, 30, 50 comprise concave configured portions of the outwardly extending sides of the napkins 100, 200, and 300.

[0015] In order to accomplish the preferred "fit" of this invention, the flap portions of these napkins 100, 200, and 300, preferably comprise stretchable material, including but not limited to elastic, perforated thermoplastic and pleated materials. If a thermoplastic material is selected for the flexible flap portion, it can comprise an extended portion of the body-facing side or panty-facing side of the absorbent element 20, 40, or 60. In

each of the selected embodiments, the flap portions should be expandable to about 110% to 200%, preferably about 130% to 175%, and most preferably to about 150% of their original or unstretched length. As used herein the "length" of the flap portions refers to a flap measurement taken substantially parallel with the longitudinal sides of the absorbent element 20, 40, or 60.

[0016] Referring now to FIGS. 2, 4 and 6, the napkins 100, 200 of this invention can be novelly applied to the panty 25 by disposing their panty facing side onto the panty 25, and then folding the flaps over the sides of the crotch portion of the panty 25. In the preferred methods of this invention, the flaps are folded to substantially protect the entire longitudinal sides of the absorbent elements 20, 40 and 60.

[0017] In the preferred constructions, the absorbent elements 20, 40 and 60 contain conventional resilient material for enabling the napkins 100, 200, and 300 to bend easily without excessive distortion. Such materials include compacted cellulosic fibers and hydrocolloidal material such as those described by Kopolow, U.S. Patent No. 4,551,142, which is herein incorporated by reference. The preferred absorbent elements 20, 40, and 60 can be approximately 10,16-30,48 cm (4-12 inches) long, preferably about 20,32 - 27,94 cm (8-11 inches). They generally comprise a core, which preferably is made of loosely associated absorbent hydrophilic materials such as cellulose fibers, wood pulp, regenerated cellulose or cotton fibers, and/or other materials generally known in the art. The absorbent element 20, 40 or 60 may be either rectangular or shaped.

[0018] As is customary in the art, covering the body-facing side of these napkins 100, 200 and 300 are body-fluid pervious surfaces. These body fluid pervious surfaces can be made of a resilient, relatively non-absorbing fluid pervious material. This material is provided for comfort and conformability and directs fluid to an underlying layer, for example wood pulp, which retains such fluid. These surfaces may be woven or non-woven material pervious to body fluid. Furthermore, they should retain a little or no fluid in their structure to provide a relatively dry surface next to the skin. Generally, the fluid permeable surfaces are a single, rectangular sheet of material having a width sufficient to cover the body-facing side of the absorbent elements 20, 40 and 60. Preferably, the fluid pervious surfaces are longer than the core so as to form end tabs, which may be sealed with other pervious or non-pervious layers to fully enclose the cores. The fluid pervious surfaces are preferably made of fibers or filaments of thermoplastic polymers such as polyethylene or polypropylene or apertured polymeric film.

[0019] Underlying the core of the absorbent elements 20, 40, and 60 can be another layer of absorbent material to provide additional resiliency to the product. This layer can extend beyond the longitudinal sides of the absorbent core to entrap any body fluid which escapes from the sides of the absorbent elements 20, 40 and 60.

This layer may also be substantially wider than the core of the absorbent elements 20, 40 and 60 and may extend into the flaps. The absorbent layer may comprise a thin, absorbent layer of material such as tissue, fabric, or the like, made of cellulosic fibers. Because such material is provided as a safety measure and is only required to contain escaped fluid, it need not be very absorbent at all, and, in fact, may be comprised of any capillary or cellular system including hydrophobic material. However, the preferred material is a hydrophilic fabric comprised of cellulosic fibers such as wood pulp tissue or other suitable hydrophilic woven or non-woven material. The preferred tissue has the advantage of providing resiliency and conformability to the product.

[0020] The sanitary napkins 100, 200, and 300 of this invention further can include body-fluid impervious surfaces on their undergarment-facing sides. The impervious surfaces will preferably allow the passage of air and moisture vapor while blocking the passage of fluid to the outer surface. The impervious surfaces may be heat sealed or fastened by way of adhesives to a core or to a core wrapped in a pervious surface cover. The impervious surfaces may comprise any thin, flexible, body fluid impermeable material such as, a polymeric film, for example, polyethylene, polypropylene, cellophane or even a normally fluid pervious material that has been treated to be impervious, such as impregnated fluid repellent paper or non-woven fabric material. In the most preferred embodiments of this invention, the impervious surfaces include a plastic film of polyethylene of a bi-component films such as an EVA/PE coextruded film.

[0021] The expandable flap portions 10, 30, and 50 of this invention are made of a stretchable, flexible material. The stretchability can be obtained by an elastic-type element 32, such as that described in FIG. 3. Similarly the requisite stretchability may be obtained by providing slits or perforations, as described in FIGS. 5 and 6, in an extension of the cover and/or barrier of the absorbent element 60. Alternatively, this flexibility can be incorporated into the napkins by using a polymeric foam, i.e. polyurethane foam, or an accordion-pleated flap material, such as that described in FIGS. 1 and 2. The percent elongation required depends upon the width of the flaps employed, and generally the flexible flaps 10, 30 and 50 should accommodate an elongation of about 110-200%, preferably about 125- 175%, and most preferably about 150% of their original length.

[0022] Although preferably not including absorbent pulp materials, the flaps 10, 30, and 50 of this invention can also include a body fluid impervious backing such as the materials described in connection with the above-mentioned body-fluid impervious surfaces. It is also expected that the flaps 10, 30 and 50 can comprise body fluid pervious covers, much like the above-mentioned body-fluid pervious layers, and absorbent tissues disposed between their covers and their backings. In addition, it is preferred that the flaps 10, 30, and 50 of

this invention contain absorbent tissue with sufficient capillary action to retain small quantities of escaped liquid. This tissue can be heat sealed or adhesively sealed around the edges of the flaps 10, 30, and 50 with the preferred impervious backings and body fluid pervious covers of the flaps 10, 30, and 50 to form absorbent areas.

[0023] Also included with this invention are attachment adhesives which can be made of any known, pressure-sensitive adhesive material. As used herein, the term "pressure-sensitive" refers to any releasable adhesive or releasable tenacious means. Adhesive compositions suitable for sanitary napkins, include, for example, the water-based, pressure-sensitive adhesives such as acrylate adhesives. Alternatively, the adhesive may comprise rapid setting thermoplastic "hot-melt", rubber adhesives, or two-sided adhesive tape. As is customary in the art, a preferred kraft paper release strip can also be applied to these adhesive compositions to protect them prior to use.

[0024] From the foregoing it can be realized that this invention provides improved side-protection for winged sanitary napkins. Although various embodiments have been illustrated, this was for the purpose of describing, but not limiting, the invention. Various modifications, which will become apparent to one skilled in the art, are within the scope of this invention described in the attached claim.

Claims

1. A sanitary napkin (100; 200; 300) comprising:

- (a) an absorbent element (20; 40; 60) having longitudinally extending sides, transverse ends, a bodyfacing side and a side facing a crotch portion of a panty, the crotch portion having concavely contoured edges;
- (b) flaps (10; 30; 50) extending laterally along each of said longitudinal sides of said absorbent element (20; 40; 60), said flaps being adapted to be folded over the concavely contoured portion of said panty; characterized in that:
- (c) said flaps (10; 30; 50) comprise outwardly extending concave sides;
- (d) both of said flaps comprise a longitudinally extending resilient portion for permitting said portion to expand longitudinally;
- (e) said portions being expandable longitudinally to about 110-200% of their original length to substantially conform to the contoured edges and to provide lateral protection without bunching of the panty when folded over the concavely contoured edges of the panty.

This layer may also be substantially wider than the core of the absorbent elements 20, 40 and 60 and may extend into the flaps. The absorbent layer may comprise a thin, absorbent layer of material such as tissue, fabric, or the like, made of cellulosic fibers. Because such material is provided as a safety measure and is only required to contain escaped fluid, it need not be very absorbent at all, and, in fact, may be comprised of any capillary or cellular system including hydrophobic material. However, the preferred material is a hydrophilic fabric comprised of cellulosic fibers such as wood pulp tissue or other suitable hydrophilic woven or non-woven material. The preferred tissue has the advantage of providing resiliency and conformability to the product.

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- (c) said flaps (10; 30; 50) comprise outwardly extending concave sides;
- (d) both of said flaps comprise a longitudinally extending resilient portion for permitting said portion to expand longitudinally;
- (e) said portions being expandable longitudinally to about 110-200% of their original length to substantially conform to the contoured edges and to provide lateral protection without bunching of the panty when folded over the concavely contoured edges of the panty.



Patentansprüche

1. Hygienische Binde (100; 200; 300), umfassend:

- (a) ein absorbierendes Element (20; 40; 60) mit sich längs erstreckenden Seiten, querverlaufenden Enden, einer dem Körper zugewandten Seite und einer dem Schritteil eines Slips zugewandten Seite, wobei der Schritteil konkav geformte Ränder hat; 5
- (b) Klappen (10; 30; 50), die sich seitlich jeder Längsseite des absorbierenden Elements (20; 30; 40) erstrecken, wobei die Klappen um den konkav konturierten Abschnitt des Slips herum geschlagen werden können; 10
- dadurch gekennzeichnet, daß 15
- (c) die Klappen (10; 30; 50) sich nach außen erstreckende, konkave Seiten haben;
- (d) beide Klappen einen sich längs erstreckenden, elastischen Abschnitt aufweisen, der sich längs dehnen kann; 20
- (e) die längs dehnbaren Abschnitte bis etwa 110 bis 200 % ihrer ursprünglichen Länge dehnbar sind, um sich im wesentlichen den konturierten Rändern anzupassen und seitlichen Schutz zu bieten, ohne den Slip zusammen zu drücken, wenn sie um die konkav konturierten Ränder des Slips herumgeschlagen werden. 25

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Revendications

1. Une serviette hygiénique (100 ; 200 ; 300) comprenant :

- (a) un élément absorbant (20 ; 40 ; 60) ayant des côtés s'étendant de façon longitudinale, des extrémités transversales, un côté faisant face au corps et un côté faisant face à une partie d'entrejambes d'un slip, la partie d'entrejambes ayant des bords concaves; 35
- (b) des pattes (10 ; 30 ; 50) s'étendant latéralement à partir de chacun desdits côtés longitudinaux dudit élément absorbant (20 ; 40 ; 60), lesdits rabats étant adaptés pour être repliés sur la partie concave dudit slip ; 40
- caractérisée en ce que : 45
- (c) lesdites pattes (10 ; 30 ; 50) comprennent des côtés concaves s'étendant vers l'extérieur; 50
- (d) les deux pattes comprennent une partie élastique s'étendant de façon longitudinale permettant à ladite partie de s'étendre de façon longitudinale; 55
- (e) lesdites parties sont expansibles longitudi-

nalement jusqu'à environ 100 - 200 % de leur longueur d'origine afin de se conformer substantiellement aux bords concaves et pour fournir une protection latérale sans que le slip ne bouchoonne lors du pliage sur les bords concaves du slip.

