Office de la Propriété Intellectuelle du Canada
Un organisme d'Industrie Canada

Canadian Intellectual Property Office
An agency of Industry Canada

CA 2148440 C 2007/03/13

(11)(21) 2 148 440

(12) BREVET CANADIEN
CANADIAN PATENT

(13) C

(22) Date de dépôt/Filing Date: 1995/05/02

(41) Mise à la disp. pub./Open to Public Insp.: 1995/11/04

(45) Date de délivrance/Issue Date: 2007/03/13

(30) Priorité/Priority: 1994/05/03 (US08/237,073)

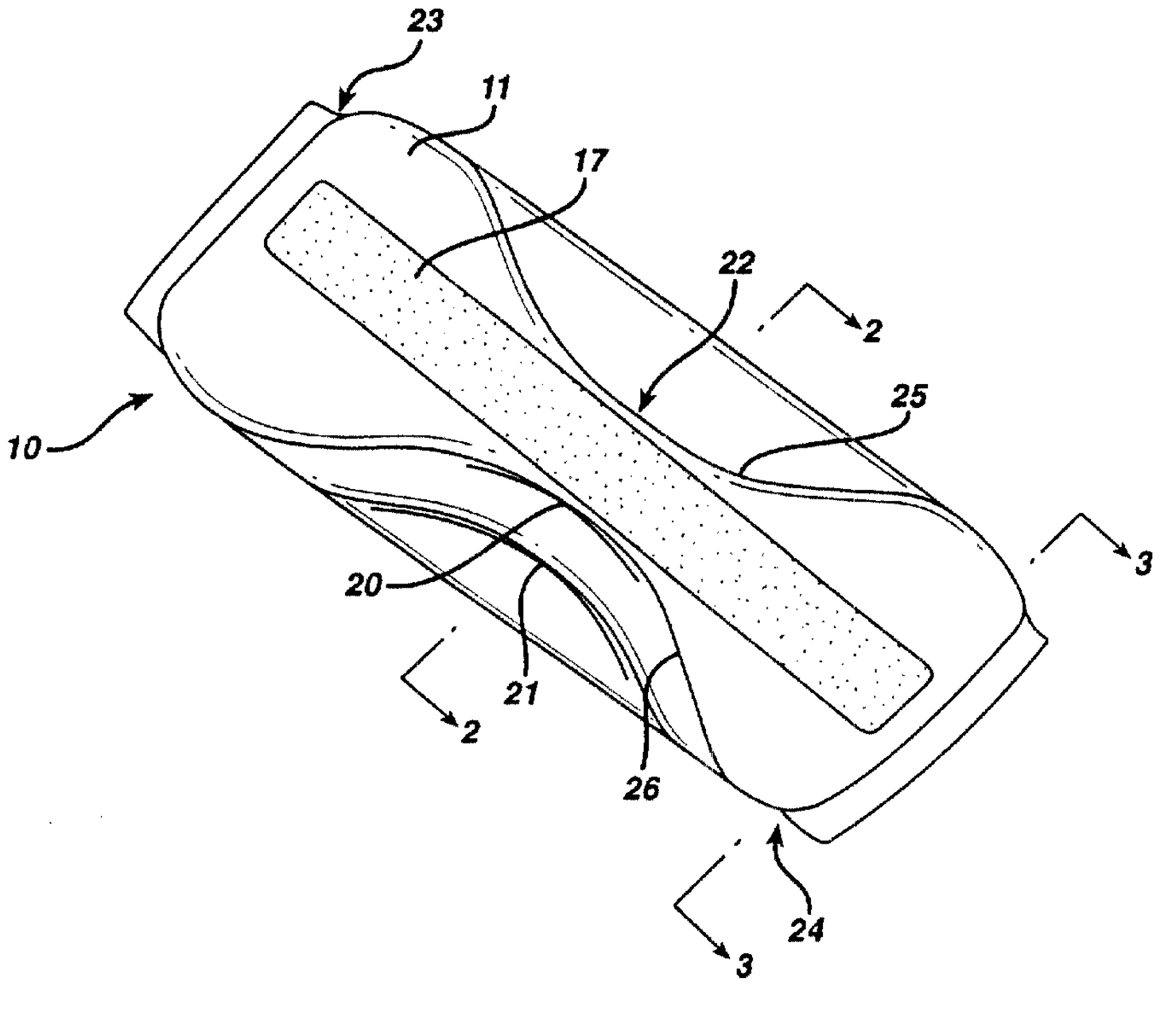
(51) Cl.Int./Int.Cl. *A61F 13/45* (2006.01),
A61F 13/472 (2006.01)

(72) Inventeurs/Inventors:
FOLEY, THEODORE, US;
WORRINGER, JENNIFER R., US;
GRUNHAUS, LEVI, US

(73) Propriétaire/Owner:
MCNEIL-PPC, INC., US

(74) Agent: SMART & BIGGAR

(54) Titre : PRODUIT ABSORBANT EPOUSANT LES CONTOURS DU CORPS
(54) Title: ABSORBENT PRODUCT CONFIGURED TO CONFORM TO BODY SHAPE



(57) Abrégé/Abstract:
Absorbent products, such as sanitary napkins, are disclosed which are specially configured to minimally interact with the distorting and compressing mass and pressures of the inside of a wearer's thighs. The products utilize an absorbent pad comprising a top, body-facing portion and a bottom, garment-facing portion, wherein the top portion is generally rectangular and the bottom portion is configured to be narrower in width at its center than at its transverse ends.

ABSTRACT OF THE INVENTION

Absorbent products, such as sanitary napkins, are disclosed which are specially configured to minimally interact with the distorting and compressing mass and pressures of the inside of a wearer's thighs. The products utilize an absorbent pad comprising a top, body-facing portion and a bottom, garment-facing portion, wherein the top portion is generally rectangular and the bottom portion is configured to be narrower in width at its center than at its transverse ends.

2148440

ABSORBENT PRODUCT CONFIGURED TO CONFORM TO BODY SHAPE

Background of the Invention

This invention relates to an absorbent product, especially a sanitary napkin, configured to interact minimally with the distorting and compressing mass and pressures of the inside of the wearer's thighs.

It is widely believed that the performance of an absorbent product, such as a sanitary napkin, can be enhanced by improving the contact of the napkin with the wearer's perineal area. This contact with the perineum can be broadly described as "product fit." Interaction between the napkin and the inside of the wearer's thighs can cause the napkin to move when the wearer walks, thus reducing product fit.

The lateral compression forces applied by the wearer's thighs can also cause the product to "collapse," thereby providing a smaller target zone for deposition of fluid and providing less coverage of the undergarment. Product collapse is more prevalent with thick, or full size, sanitary napkins than it is with thin or ultrathin products. It is believed that this is the case because there is little room between the inside of the thighs for a full thickness pad while there exists much more room further up from the inside of the thighs in the proximity of the perineal floor, which comprises the area between the "leg creases" or the point of juncture between the leg and torso. However, full size napkins are designed to be adhered to the inside of the wearer's

underwear and, usually, there is a gap between the perineal floor and the underwear. Thus, there is often no other place for the napkin to be worn other than between the wearer's thighs. Thick napkins can also have comfort problems in addition to the performance problems described above. The movement of the napkin, its excess mass, and its abrasive interaction with the thighs can be a source of discomfort to the wearer.

Thin napkins have been developed and sold which tend to be more comfortable and tend to move less than thick napkins. Further, due to their thin profile, thin napkins are more discretely worn than full size napkins. Also, as stated above, thin napkins are not subject to the same problems of product collapse as full size napkins. However, many consumers still prefer the feeling of security they get from wearing thick napkins.

There is, therefore, a need for a discrete, thick, full protection sanitary napkin that provides the wearer with a feeling of security and is shaped to conform to the wearer's thighs, while still maximizing contact with the perineum, and minimizing product distortion caused by the pressures exerted by the wearer's thighs.

Some have tried to solve these problems by providing napkins in which the body-facing surface of the napkin is shaped to contact the user's body. Lassen et al., in U.S. 4,804,380, disclose a three dimensionally shaped sanitary napkin which has been mechanically shaped by folding, molding or other techniques so that it has a raised portion located

within the back one-half to two-thirds of the device that functions to cause the pad to readily fit and generally align itself with the wearer's anatomy.

U.S. 4,433,972 to Malfitano discloses a sanitary napkin in which the absorbent pad assembly comprises two pads, a relatively large pad of wood fluff or like absorbent material, and a substantially diamond shape second pad of lesser dimensions seated on said first pad and facing the wearer. The patent teaches that the diamond shaped portion of the pad engages the vaginal area of the user.

Others have tried to solve these problems by providing napkins with an essentially hourglass shape. U.S. 4,639,254 to LeGault et al. discloses a three-dimensionally hourglass-shaped sanitary napkin with a cellulose fluff insert that is contoured or outwardly bulging on the baffle side to create a thicker region near the center of the hourglass.

U.K. Patent Application GB 2 191 098A discloses hourglass shaped napkins in which the center portion of the body-facing surface of the pad is raised.

U.S. 4,770,657 to Ellis et al. discloses a curved elongate absorbent pad having a liquid impermeable backing, an upper reinforcing absorbent member, a reservoir absorbent member and a liquid permeable body-side member. The lower absorbent reservoir member is hourglass or dog-bone shape. The pad is preferably curved, by the inclusion of elastic, to conform to the wearer's body.

U.S. 4,687,478 to Van Tilburg discloses a sanitary napkin purported to provide panty coverage comprising an

hourglass shaped absorbent having flaps extending from the edges which bend around and attach to the outer crotch portion of the wearer's undergarment.

U.S. 4,795,453 to Wolfe discloses a napkin having a "dogbone" shaped absorbent with a thicker middle bridge portion connecting planar end pieces. However, coverage is maintained by filling in the edges of the center portion of the "dogbone" with a soft and absorbent material. Although the edge material may be softer than the absorbent core of the pad, thigh interference would still be expected.

U.S. 4,631,062 to Lassen et al. discloses a labial pad having an anatomically conformable configuration with a generally ovate geometry. It is comprised of a fluid absorbent body in which the posterior region of the top, body-facing surface has raised profile for projection within the vestibule intermediate the labia majora.

U.S. 4,701,177 to Ellis et al. discloses a curved absorbent pad in which the absorbent member is shaped generally in a manner that provides a narrower middle portion of absorbent material. The middle portion is also preferably thicker than the absorbent portions at the ends of the pad. The pad is curved to conform to the pudendum.

U.S. 4,848,572 to Herrera discloses a sanitary napkin having a curved, trapezio-pyramidal shape closely complementary to the female anatomy. The napkin has a voluminous and thick orthocentral portion which tapers down to the sides and ends of the napkin.

U.S. 5,043,206 to Ternstrom discloses an absorption

body intended for articles such as diapers, sanitary napkins and the like having a soft, T-shaped, first layer intended to be placed against the wearer's body and a second, heavily compressed layer having a width fitting the wearer's crotch.

U.S. 5,092,860 to Pigneul discloses a sanitary napkin characterized by the inclusion in its upper body contacting side of two series of discrete indentations. One series of indentations is positioned adjacent to one of the longitudinal edges of the absorbent core and the other series of indentations is positioned adjacent to the opposite longitudinal edge of the absorbent core.

Summary of the Invention

This invention relates to a novel configuration for absorbent products which minimally interacts with the distorting and compressing mass and pressures of the inside of the user's thighs, thereby resulting in a comfortable napkin that covers the perineal area and fits the inner thigh space efficiently and without excess material. More specifically, this invention relates to an absorbent product for use in absorbing human exudates, comprising

a liquid permeable, body-facing cover;

a liquid impermeable backing; and

an absorbent pad disposed therebetween, said absorbent pad comprising a top, body-facing portion and a bottom, garment-facing portion; said top portion being generally rectangular; and said bottom portion being configured to be narrower in width, and preferably thicker at its center than

74484-79

at its transverse ends. Such a product provides the non-interfering fit and non-collapsing benefits of a thin napkin while it can also provide the feeling of security and the absorbing benefits of a full thickness napkin.

This invention also relates to the specially configured absorbent pad of this invention which can be used in a variety of absorbent products.

According to one aspect of the present invention, there is provided an absorbent product for use in absorbing human exudates, comprising a liquid permeable, body-facing cover; a liquid impermeable backing; and an absorbent pad disposed therebetween, said absorbent pad comprising a top, body-facing portion and a bottom, garment-facing portion having a center and transverse ends; said top portion being generally rectangular; said bottom portion being configured to be narrower in width at its center than at its transverse ends.

According to another aspect of the present invention, there is provided an absorbent pad having a body-facing surface, a garment-facing surface, a center and longitudinal ends, wherein said body-facing surface is generally rectangular and wherein said garment-facing surface is narrower in width at its center than at its longitudinal ends.

Brief Description of the Drawings

Figure 1 is a perspective view of a sanitary napkin of this invention, with the garment-facing surface of the napkin facing upwards.

Figures 2 and 3 are cross-sectional views of the sanitary napkin of Figure 1.

74484-79

Detailed Description of the Invention

This invention is susceptible of embodiment in many different forms. A preferred embodiment is shown in the drawings and is described in detail below. This disclosure is considered to be an example of the invention and is not intended as limiting of the scope of the invention.

Figures 1, 2 and 3 illustrate how the bottom part of the absorbent pad in a sanitary napkin of this invention has been "carved out" to match the configuration of the thighs of the wearers. This design is new and unexpectedly different from the prior art. Previous inventions directed to fitting the perineal area focused on mirroring the contours of the perineal surface rather than the volume of the

subparineal-interthigh space.

Referring to the Figures, there is shown a sanitary napkin 10 of this invention, with the garment-facing surface 11 of the napkin facing upwards. The napkin comprises a liquid impermeable backing 12 and a liquid permeable cover 13. As shown in the illustrated embodiment, the liquid permeable cover 13 is wrapped around the entire napkin; however, in another embodiment the liquid impermeable backing 12 could form the garment-facing surface of the product and the liquid permeable cover 13 could be provided on the body-facing surface only, on the body-facing surface and sides of the product, or on the body-facing surface, sides and a portion of the garment-facing surface.

Between the backing 12 and cover 13 is the absorbent pad 14 comprising a body-facing portion 15 and a garment-facing portion 16. The body-facing portion 15 is generally rectangular. "Generally rectangular" means generally, but not necessarily rectangular, i.e., having transverse edges shorter than longitudinal edges. The garment-facing portion 16 is essentially "carved out" to be narrower in width at the longitudinal center of the pad 22 than at its transverse ends 23 and 24.

The carved out portion of the pad can be either symmetric or non-symmetric from front to back (longitudinally).

As shown in Figure 1, the longitudinal edges 25 and 26 of the bottom, garment-facing portion of the absorbent pad are concave. Typical, preferred shapes for the carved-out

bottom portion of the pad are hourglass and dog-bone shapes. While the carved out section could be in the form of a series of complex curves to exactly match the configuration of the inner thighs, it is more convenient with respect to mold and tooling design to produce the product by considering the shape to be a constant radius of curvature approximating the user's thighs. In one preferred embodiment, the radius of curvature at the upper edge of the curve, represented in Figure 1 by arc 20, is slightly less than the radius of curvature at the lower edge of the curve, represented by arc 21. This results in the garment facing portion 16 tapering toward the body-facing portion 15, rather than there being a straight edge. For example, the radius of curvature represented by 20 might be approximately five inches, and the radius of curvature at 21 might be approximately seven inches. Alternatively, the radius of curvature at 21 could also be five inches but the center point from which the radius is struck could be moved closer to the pad.

The thickness of the pad, that is the z-directional distance between the body-facing surface and the garment-facing surface, should preferably be sufficient to fill any space between the inside of the wearer's underwear and the perineum. Typically, this thickness should be from about 0.6 to about 2 inches. Preferably, it should be from about 0.6 to about 1.1 inches. Also, as stated above, in a preferred embodiment, the thickness of the pad should taper from the center section to the longitudinal and transverse ends to improve fit and to allow the product to be worn more discrete-

ly.

The absorbent pad 14 may be made from conventional ground wood pulp. Preferably, however, the body-facing portion 15 is stabilized, e.g., by compression of the pulp to a higher density or by inclusion of a material having higher dry or wet stability, or both. Examples of such materials are compressed sphagnum moss, compressed superabsorbent composite, or hydrophilic foams such as aminoether polymer foams or hypol polyurethane foam. Additionally, the body-facing portion 15 of the pad may be stabilized by inclusion of long staple length hydrophilic or hydrophobic fibers blended with the pulp or short staple length synthetic wood pulp. The staple fibers are preferably at least partially thermoplastic and the blend is thermally bonded for maximum stability against collapse when wetted.

The garment-facing, or sculpted, portion 16 of the absorbent pad may also be made of wood pulp or stabilized materials described above. Since it will tend to stay drier than the upper portion and will be subjected to less forces, it is not as important that the lower portion be stabilized. The absorbent pad may be a single, unitary structure or may comprise two pad portions adjacent to one another and optionally adhered with construction adhesives, etc., to form a unitary structure. The shaped portion of the absorbent pad may be formed from a pulp pad by molding and forming means known in the art, such as vacuum molding or die cutting. Such processes are described in U.S. Patent 5,004,579 (Wislinski et al.).

The liquid impermeable backing 12 will generally comprise a fluid impervious material such as polyethylene or polypropylene. As shown in the figures, the liquid impermeable layer is preferably formed to the same configuration as the lower portion of the absorbent pad. This can be accomplished by either thermal or mechanical means or a combination thereof, such as vacuum forming. Alternatively, however, the impermeable backing and optional cover overlaying the backing may loosely cover the garment-facing surface of the absorbent pad, not adhering to the carved-out shape of the pad.

The liquid permeable cover 13 will generally comprise a film or fabric having a high degree of moisture permeability. For example, the fabric may be comprised of fibrous material made from polyester, polyethylene, polypropylene, bicomponent fiber, nylon, rayon, or the like. The most suitable fabrics have unusually high elongation, loft, softness and drape characteristics. Films which are perforated or noncontinuous are also satisfactory. Though the cover is moisture permeable, it is preferably of the type which after permeation of the moisture, prevents strike-back of the body fluid when the absorbent structure is approaching saturation.

Attachment means 17 serve to securely adhere the product to the wearer's undergarment. The attachment means may comprise one or more adhesive lines covered with release strips (not shown) which, when peeled from the adhesive strips, leave the adhesive tacky. Alternatively, the attachment means may comprise pressure-sensitive adhesive tape, said

tape having a first face permanently adhered to the garment-facing surface 11 of the product and an opposite second face adapted to be temporarily attached to the wearer's garment.

THE EMBODIMENTS OF THE INVENTION IN WHICH AN EXCLUSIVE PROPERTY OR PRIVILEGE IS CLAIMED ARE DEFINED AS FOLLOWS:

1. An absorbent product for use in absorbing human exudates, comprising

a liquid permeable, body-facing cover;

a liquid impermeable backing; and an absorbent pad disposed therebetween, said absorbent pad comprising a top, body-facing portion and a bottom, garment-facing portion having a center and transverse ends;

said top portion being generally rectangular; said bottom portion being configured to be narrower in width at its center than at its transverse ends.

2. An absorbent product of claim 1, wherein said bottom portion is thicker at its center than at its transverse ends.

3. An absorbent product of claim 1, wherein the longitudinal edges of said bottom portion are concave.

4. An absorbent product of claim 1, wherein said bottom portion of said absorbent pad is hourglass-shaped.

5. An absorbent product of claim 1, wherein said bottom portion of said absorbent pad is dog-bone shaped.

6. An absorbent product of claim 1, wherein said bottom portion of said absorbent pad tapers into said top portion of

said absorbent pad.

7. An absorbent product of claim 1, wherein said top portion of said absorbent pad is a stabilized pulp pad.

8. An absorbent product of claim 1, wherein said absorbent pad is a unitary structure.

9. An absorbent product of claim 1, wherein said top and bottom portions of said absorbent pad are separate and different.

10. An absorbent product of claim 1, which is a sanitary napkin.

11. An absorbent pad having a body-facing surface, a garment-facing surface, a center and longitudinal ends, wherein said body-facing surface is generally rectangular and wherein said garment-facing surface is narrower in width at its center than at its longitudinal ends.

12. An absorbent pad of claim 11, wherein the pad is thicker at its center than at its longitudinal ends.

13. An absorbent pad of claim 11, wherein the longitudinal edges of said bottom portion are concave.

14. An absorbent pad of claim 11, wherein said bottom

portion of said absorbent pad is hourglass-shaped.

15. An absorbent pad of claim 11, wherein said bottom portion of said absorbent pad is dog-bone shaped.

16. An absorbent pad of claim 11, wherein said bottom portion of said absorbent pad tapers into said top portion of said absorbent pad.

17. An absorbent pad of claim 11, wherein said top portion of said absorbent pad is stabilized pulp.

18. An absorbent pad of claim 11, wherein said absorbent pad is a unitary structure.

19. An absorbent pad of claim 11, wherein said top and bottom portions are separate and different.

SMART & BIGGAR
OTTAWA, CANADA

PATENT AGENTS

2148440

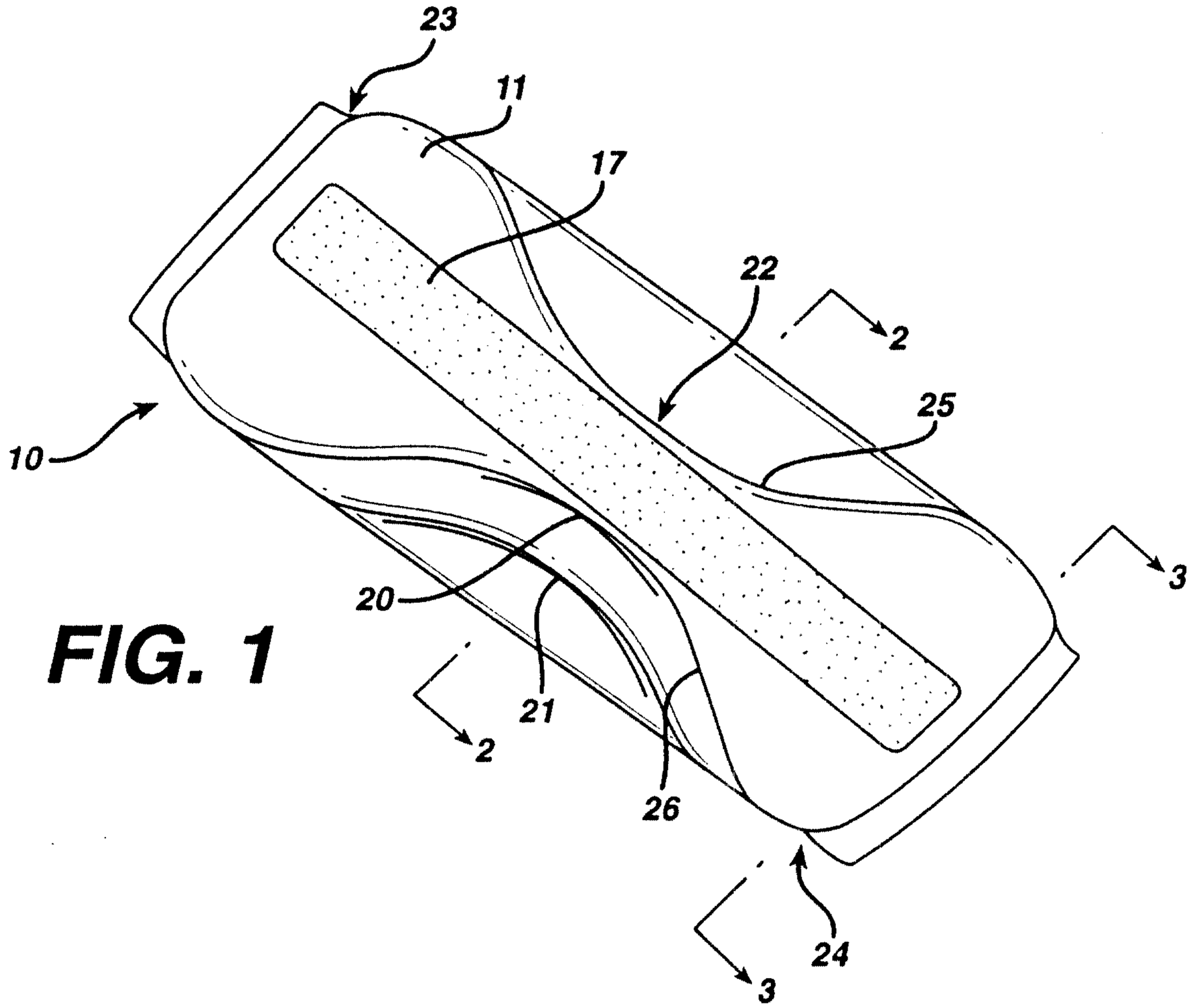


FIG. 1

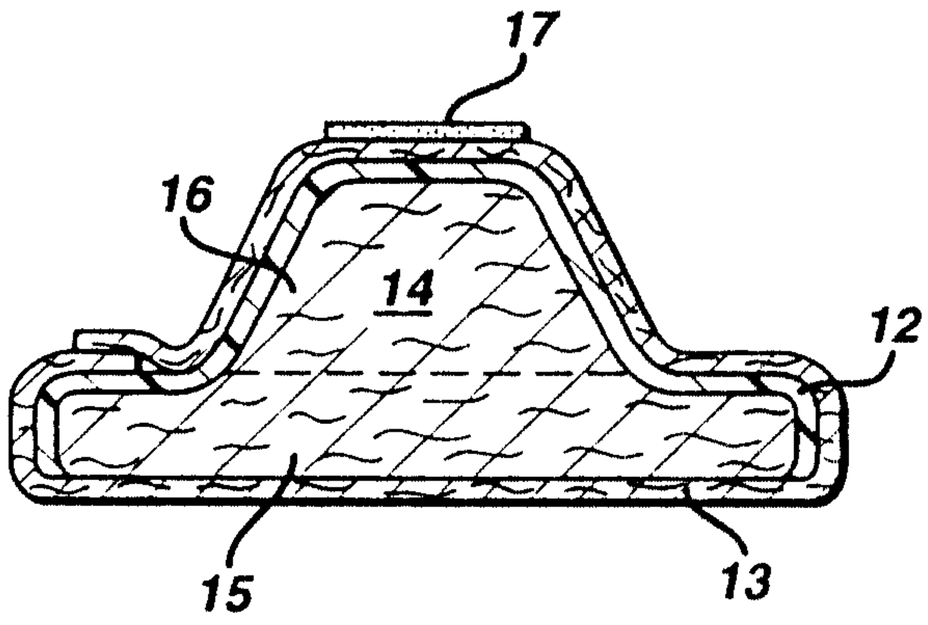


FIG. 2

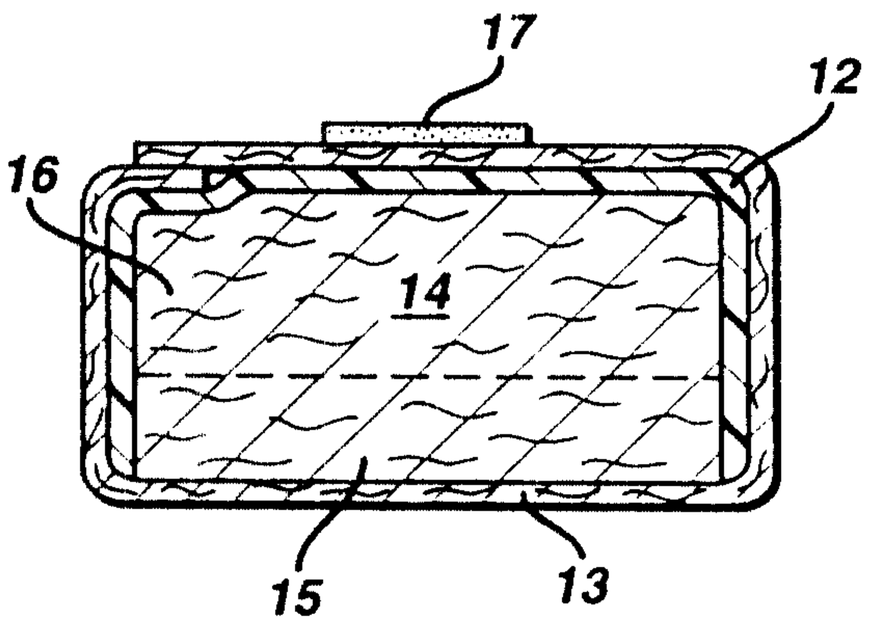
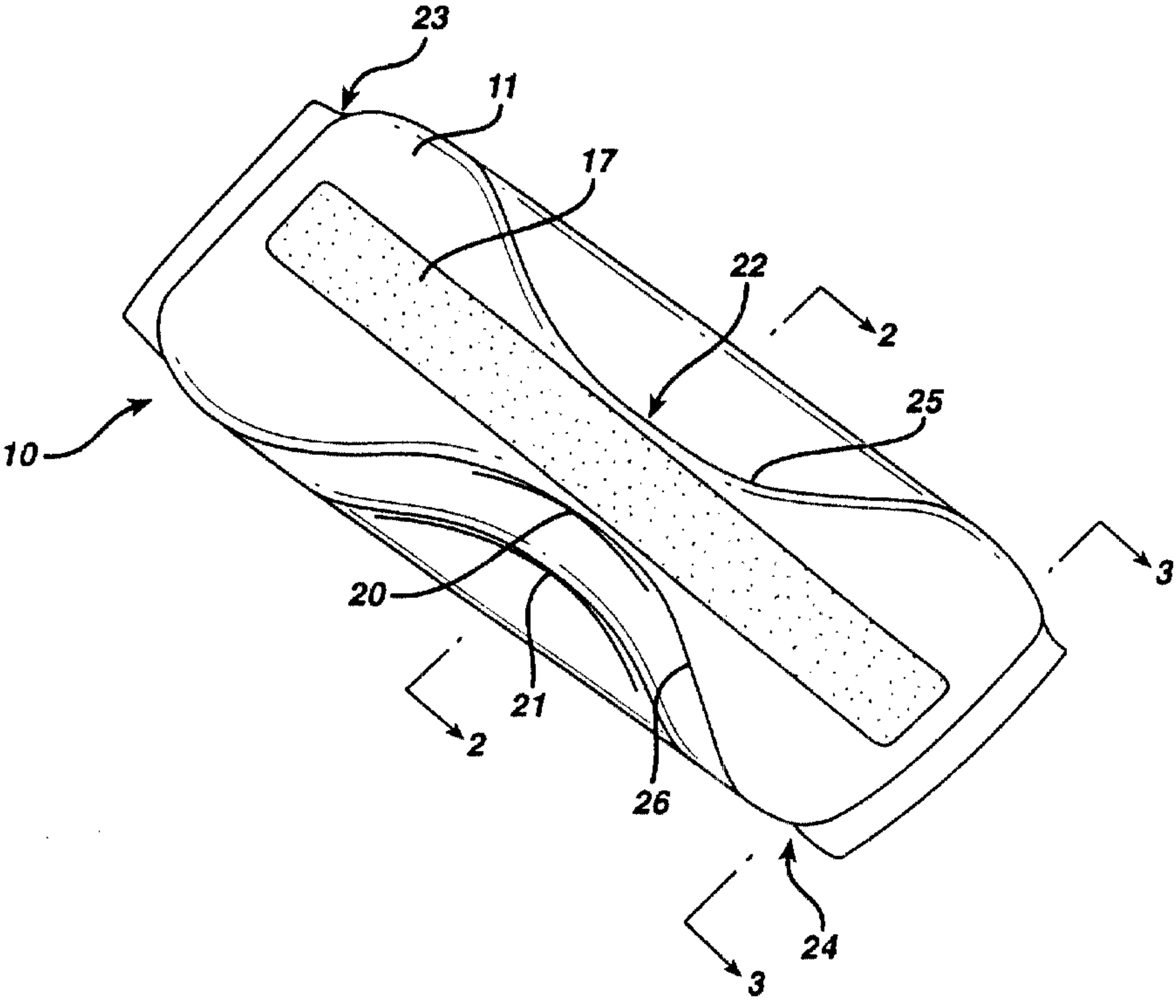


FIG. 3

Patent Agents
Smart & Biggar


23
11
17
22
2
25
10
20
21
2
26
3
24
3