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SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO
Radicacion : 00073416 00000004 Folios: 2
Fecha (HR): 2002-10-08 16:10:05
Tramite : 002 PATENTES D 1 REGISTRAR/ 536 PETICION
Dependencia: 0020 DIVISION DE NUEVAS CREACIONES

Señores
SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO
DIVISION DE NUEVAS CREACIONES
E. S. D.

REF.: Expediente No. 00 073.416 solicitud de Patente a nombre de
KIMBERLY – CLARK WORLDWIDE, INC.

RAMIRO CASTRO DUQUE, vecino de Bogotá, portador de la tarjeta profesional No. 1003 del Consejo Superior de la Judicatura, obrando como apoderado de la Sociedad **KIMBERLY – CLARK WORLDWIDE, INC.**, según lo acredita el documento de poder protocolizado en la Secretaría General bajo el No. 17397, de acuerdo con el Artículo 44 de la Decisión 486 de la Comisión de la Comunidad Andina, me permito solicitar que se examine si la invención contenida en la solicitud en referencia es patentable.

De acuerdo con lo anterior, me permito anexar el recibo oficial de caja No. 02-67,137 por valor de \$318.000.

Señor Superintendente,


RAMIRO CASTRO DUQUE
C.C. No. 170.322 de Bogotá
Código 340
T.P. No.1003 del C.S.J.
Cra 7 No. 16-56 Piso 9

Octubre 08, 2002
CPB/hsr

Industria y Comercio

SUPERINTENDENCIA

MIT : 000176089-2

SUPERINTENDENCIA Y COMERCIO

Radicacion : 00073/16 00000004

Folios: 2

Fecha (REO): 2002-10-08 16:10:05

Tramite : 000 PATENTES 1 REGISTRO/ 538 PETICION

Dependencia: 0020 DIVISION DE NUEVAS CREACIONES

RECIBO OFICIAL DE CAJA : 02 - 67,137
FECHA : OCTUBRE 7 DE 2002

***** CONSIGNACION *****

DEPOSITANTE	TIPO PAGO	BANCO	CUENTA	No. PAGO	FECHA PGO	Vr. PAGO
BRIGARD & CASTRO LTDA	CONSIGNACION	BANCO POPULAR	030-00110-6	1323047	07/10/2002	1,695,000.00
BRIGARD & CASTRO LTDA	CONSIGNACION	BANCO POPULAR	030-00110-6	1323048	07/10/2002	10,340,000.00

***** CONCEPTO *****

CANT.	CONCEPTO	TOTAL CONCEPTO
1	50005-01-01 SOLICITUDES	
	83 EXAMEN DE PATENTABILIDAD DE INVEN	318,000.00
	TOTAL :	318,000.00

SOM: TRESCIENTOS DIEZ Y OCHO MIL PESOS

RESPONSABLE : _____

RECIBO DE CAJA APLICADO AL EXPEDIENTE No. _____

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128 119

**SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO
DIVISIÓN DE NUEVAS CREACIONES**

2020

Bogotá, D. C., 13 de Octubre de 2005

Doctor

RAMIRO CASTRO DUQUE

Representante **KIMBERLY - CLARK WORLDWIDE**

ASUNTO

Radicación No. **00-73416**

Trámite **002**

Evento **001**

Actuación **430**

Oficio

Folios **045**

9923

Como resultado del examen de fondo, realizado con fundamento en el artículo 45 de la Decisión 486 de la Comisión de la Comunidad Andina, se le comunica

1) Documentos estudiados:

- a) Para el presente estudio se tendrán en cuenta el capítulo descriptivo, comprendido en los folios 5 a 31 de la solicitud en estudio.
- b) Para el presente estudio se tendrán en cuenta los dibujos comprendidos en los folios 52 a 59 de la solicitud en estudio.
- c) Para el presente estudio se tendrá en cuenta el capítulo reivindicatorio que comprende 20 reivindicaciones en los folios 32 a 38 de la solicitud en estudio.
- d) Conforme lo establece los artículos 9, 10 y 11 de la decisión 486 de la Comisión de la Comunidad Andina, la presente solicitud en estudio fue presentada el 27 de septiembre de 2000, y en el momento de la radicación NO se reclamo prioridad alguna.

2) Objeto de la invención

- a) Las reivindicaciones 1 a 20 de la solicitud en estudio se refieren a:

- i) (1.-) Un artículo absorbente que comprende: a) una porción frontal que tiene un primer extremo, un segundo extremo, un primer borde lateral y un segundo borde lateral; b) primera y segunda secciones laterales agarradas en forma liberable a la dicha porción frontal, cada una de las dichas primera y segunda secciones laterales que tiene un borde exterior; c) una porción posterior que tiene un primer extremo, un segundo extremo y primer y segundo bordes laterales, dicha porción posterior que está dividida en una primera sección y una segunda sección, dicha primera sección que tiene una longitud L2 perpendicularmente medida desde dicho primer extremo de dicha

porción posterior hacia una línea dirigida paralela a ella, dicha longitud L2 que es igual o mayor que 5,0 cm, y dicha segunda sección que tiene una longitud L3 medida perpendicularmente desde dicho segundo extremo a dicha línea dirigida paralela a dicho primer extremo, dicha longitud L3 que es igual o mayor que 2,5 cm, dicha segunda sección que tiene un primer borde lateral y un segundo borde lateral y una primer área A1 y una segunda área A2, dicha primer área A1 que representa un área limitada por dichos primer y segundo bordes laterales, dicho segundo extremo y dicha línea dirigidos paralelos a dicho primer extremo, dicha segunda área A2 que representa un área limitada por las primera y segunda líneas, dichos segundo extremo y dicha línea dirigidos paralelos a dicho primer extremo, dichas primera y segunda líneas que están dirigidos perpendiculares a dicho segundo extremo en los puntos donde los primer y segundo bordes laterales interceptan dicho segundo extremo, dichas primera y segunda líneas que interceptan la dicha línea dirigidos paralelos a dicho primer extremo y dicha segunda sección que tiene una relación A1/A2 que varía dentro del rango de desde entre 1,3 a 3,5; d) una porción de entrepierna que conecta dicha porción frontal a dicha porción posterior; y e) un absorbente asegurado a por lo menos una de dichas porciones frontal, posterior o de entrepierna, y cada uno de dichos bordes exteriores de dicha primera y segunda secciones laterales que está asegurado a uno de dichos primer y segundo bordes laterales de dicha porción posterior para formar un artículo similar a pantaloncito que tiene una abertura de cinta y un par de aberturas de piernas.

ii) (10.-) Un artículo absorbente que comprende...

iii) (15.-) Un artículo absorbente que comprende...

- b) Los anteriores productos buscan artículos absorbentes desechables más cómodos para los usuarios.
- c) Según la Clasificación Internacional de Patentes, la codificación para esta solicitud corresponde a: A 61F 13/15

3) Claridad de la Solicitud

- a) El artículo 30 de la Decisión 486 de la Comisión de la Comunidad Andina establece que

"Las reivindicaciones definirán la materia que se desea proteger mediante la patente. Deben ser claras y concisas y estar enteramente sustentadas por la descripción. Las reivindicaciones podrán ser independientes o dependientes. Una reivindicación será independiente cuando defina la materia que se desea proteger sin referencia a otra reivindicación anterior. Una reivindicación será dependiente cuando defina la materia que se desea proteger refiriéndose a una reivindicación anterior. Una reivindicación será dependiente cuando defina la materia que se desea proteger refiriéndose a una reivindicación anterior.- Una reivindicación que se refiera a dos o más reivindicaciones anteriores se considerará reivindicación dependiente múltiple."

El capítulo reivindicatorio no es claro toda vez que no se precisa la materia sobre la cual se solicita protección. Como se explicará en el punto 4), la presente solicitud no posee unidad de invención, por lo que no está definida la materia sobre la cual se solicita protección.

De acuerdo a lo anterior, el capítulo reivindicatorio no cumple con el requisito de claridad de acuerdo a lo establecido en el Art. 30 de la Decisión 486.

4) Evaluación de la Unidad de Invención

El artículo 25 de la Decisión 486 de la Comisión de la Comunidad Andina establece

"La solicitud de patente sólo podrá comprender una invención o un grupo de invenciones relacionadas entre sí, de manera que conformen un único concepto inventivo"

La presente solicitud carece de unidad de invención toda vez que configura **TRES** diferentes objetos. Aunque se dirigen a **artículos absorbentes desechables** la definición de la materia que caracteriza a cada una de las reivindicaciones independientes (1, 10 y 15) es muy diferente entre sí. Esto permite afirmar que no se trata del mismo producto. Todo el problema radica en configurar varias reivindicaciones independientes con materia diferente. El solicitante debe establecer una sola reivindicación independiente dirigida al **producto** en la forma más simple de la solicitud de invención. Partiendo de allí establecer reivindicaciones dependientes que amplíen esa forma más simple hasta su forma más compleja.

De acuerdo a lo anterior, la presente solicitud no cumple con el requisito de unidad de invención de acuerdo al Art. 25 de la Decisión 486.

5) Determinación del Estado de la Técnica

El artículo 16 de la Decisión 486 de la Comisión establece:

"El estado de la técnica comprenderá todo lo que haya sido accesible al público por una descripción escrita u oral, utilización, comercialización o cualquier otro medio antes de la fecha de presentación de la solicitud de patente o, en su caso, de la prioridad reconocida."

"Sólo para el efecto de la determinación de la novedad, también se considerará dentro del estado de la técnica, el contenido de una solicitud de patente en trámite ante la oficina nacional competente cuya fecha de presentación o de prioridad fuese anterior a la fecha de presentación o de prioridad de la solicitud de patente que se estuviese examinando, siempre que dicho contenido este incluido en la solicitud de fecha anterior cuando ella se publique o hubiese transcurrido el plazo previsto en el artículo 40."

Consultadas las bases de datos y los archivos con que cuenta la entidad, especialmente bajo las clasificaciones **A 61 F 13/15** y las más cercanas a ellas, se encontró que antes del 27 de septiembre de 2000 (fecha para determinar el

estado de la técnica) habían sido publicados los documentos que se enumeran en la siguiente tabla los cuales se relacionan con artículos absorbentes desechables

De acuerdo con o establecido en el artículo 16 se determinó el estado de la técnica y se encontró el siguiente antecedente:

Nº	Documento	Título	Fecha de Publicación
D1	US 4908243	Combination diaper and training pants	1990.03.06
D2	GB 2294865	A panty type sanitary napkin	1995.11.03
D3	EP 450541	Stretchable shaped absorbent garment	1991.10.09

6) Evaluación de los requisitos de patentabilidad

El artículo 14 de la Decisión 486 de la Comisión de la Comunidad Andina establece:

"Los Países Miembros otorgarán patentes para las invenciones, sean de producto o procedimiento, en todos los campos de la tecnología, siempre que sean nuevas tengan nivel inventivo y sean susceptibles de aplicación industrial".

En cumplimiento con este artículo, se procedió a evaluar los requisitos de novedad, nivel inventivo y aplicación industrial con el fin de establecer la patentabilidad de la Invención reivindicada en la solicitud en estudio.

a) Evaluación del Nivel Inventivo

El art. 18 de la Decisión 486 de la Comisión de la Comunidad Andina establece:

"Se considerará que una invención tiene nivel inventivo, si para una persona del oficio normalmente versada en el arte en la materia técnica correspondiente, esa invención no hubiese resultado obvia ni se hubiese derivado de manera evidente del estado de la técnica".

El documento D1 relaciona en esencia todas las partes que el solicitante para Colombia desea proteger. No se observan explícitamente los mismos intervalos que la solicitud colombiana, pero para un técnico medio resultaría obvio entender que dichos intervalos se derivan fácilmente de la técnica usual y de documentos como D1.

Observaciones similares pueden derivarse de D2 y D3. Dichos documentos muestran artículos absorbentes que contemplan las mismas partes y de donde se pueden derivar las relaciones que se reivindican.

b) Resumen

En conclusión los requisitos de patentabilidad de la presente solicitud se podrían ver afectados así:

Nº	D cumento	Relvindicaciones afectadas	Requisito que afecta
D1	US 4908243	1 – 20	Nivel Inventivo
D2	GB 2294865	1 – 20	Nivel Inventivo
D3	EP 450541	1 – 20	Nivel inventivo

7) Notificación

En cumplimiento del artículo 45 de la Decisión 486 de la Comisión de la Comunidad Andina, se le indica que dentro del término de sesenta días contados a partir de la fecha de la notificación de la presente comunicación debe responder a la notificación. En caso de no dar respuesta al presente requerimiento, o si a pesar de la respuesta subsistieran los impedimentos para la concesión, se denegará la patente.

Notifíquese el presente oficio conforme a lo dispuesto por el numeral 5.2, literal e) del capítulo quinto del título primero de la Circular Única N° 10 de 2001


ALIX CARMENZA CÉSPEDES DE VERGEL
Jefe División de Nuevas Creaciones

El anterior requerimiento fue notificado por fijación en la lista, de fecha

27 oct. 2003

Concepto Técnico N°	EXAMINADOR TÉCNICO Código No.	EXAMINADOR JURÍDICO Código No.
1607	202003	

122-131

United States Patent [19]
Dravland

[11] Patent Number: 4,906,243
[45] Date of Patent: Mar. 6, 1990

- [54] COMBINATION DIAPER AND TRAINING PANTS
[76] Inventor: Mary Dravland, 2611 Moeller Dr., Hamilton, Ohio 45014
[21] Appl. No.: 181,597
[22] Filed: Feb. 2, 1988
[51] Int. Cl.⁴ A61F 13/16
[52] U.S. Cl. 604/394; 604/385.2
[58] Field of Search 604/393, 394, 358, 378, 604/385.1, 385.2, 386, 387, 397, 400, 401
[36] References Cited

4,182,334	1/1980	Johnson	604/385.2
4,300,563	11/1981	Brookfield	604/385.1
4,319,508	2/1982	Bolick	604/385.2
4,516,975	5/1983	Mitchell	604/385
4,573,987	3/1986	Lamb, Jr.	604/378
4,578,073	3/1986	Dymart et al.	604/385.2
4,596,568	6/1986	Frug	604/378
4,610,680	9/1986	LaFleur	604/385
4,610,682	9/1986	Kopp	604/385
4,615,695	10/1986	Cooper	604/385
4,619,649	10/1986	Roberts	604/385
4,642,819	2/1987	Ales et al.	604/385
4,671,793	6/1987	Huhta et al.	604/385
4,704,116	11/1987	Enloe	604/385.2
4,731,070	3/1988	Koci	604/385.1

U.S. PATENT DOCUMENTS

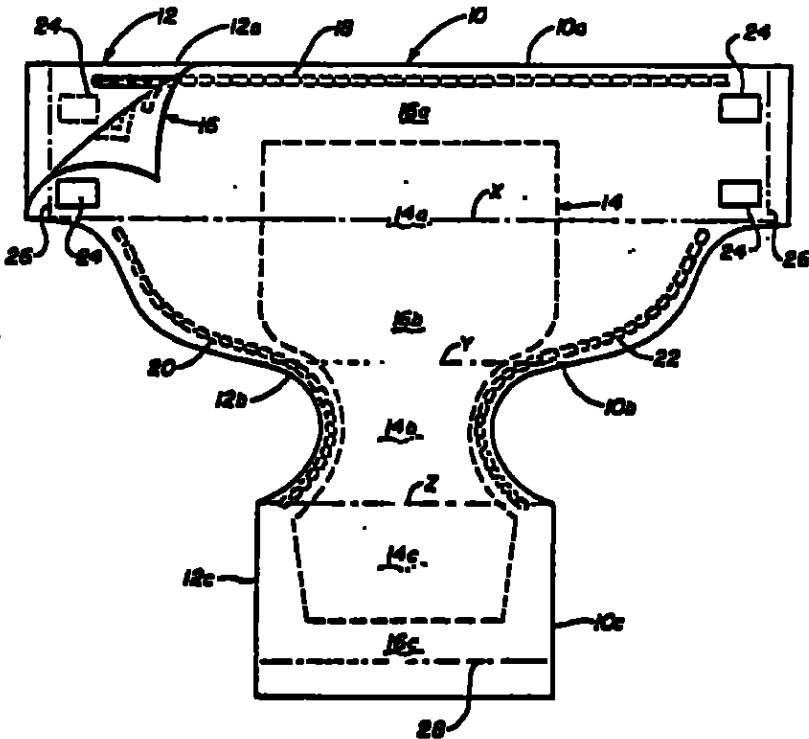
Re. 30,057	7/1979	Schear	604/378
D. 249,280	9/1978	Bannelos	604/385.1
1,971,671	8/1934	Alcop	604/397
2,141,103	12/1938	Eller et al.	604/394
2,290,110	7/1942	McGraw	604/385.1
2,577,398	12/1951	Blake	604/394
2,581,904	1/1952	Burns	604/394
2,638,899	5/1953	Amberian	604/401
2,890,700	6/1959	Lönberg-Holm	604/378
2,898,912	8/1959	Adams	604/397
2,936,564	10/1960	Ohara	604/397
3,077,193	2/1963	Mann	604/401
3,530,859	9/1970	Helmowitz	604/378
3,744,494	7/1973	Marsan	604/385.1
3,776,232	12/1973	Schear	604/385.1
3,776,233	12/1973	Schear	604/385.1
3,860,004	1/1975	Nystrand	604/385.1
3,881,488	5/1975	Delanty et al.	
3,882,871	5/1975	Taniguchi	604/371
4,051,854	10/1977	Aaron	604/397
4,108,179	8/1978	Schear	604/385.1

Primary Examiner—C. Fred Rosenbaum
Assistant Examiner—Sharon Rose

[57] ABSTRACT

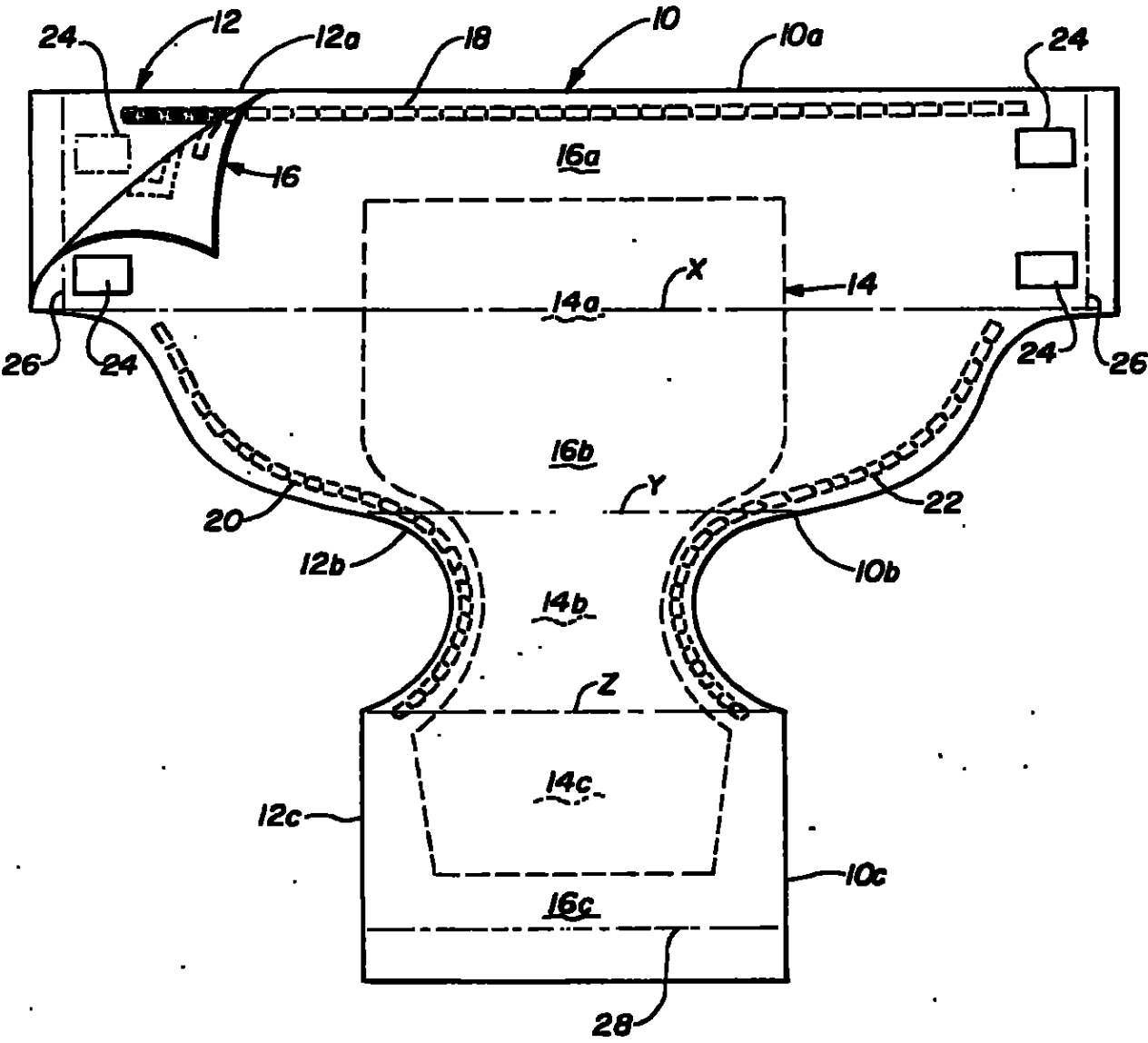
A garment comprising combination diaper and training pants includes an outer layer formed of water impervious material, an inner liner formed of thin absorbent material, and a core formed of water absorbent material sandwiched between the outer layer and the inner liner. The garment has a back section, a front section and an intermediate section. The back section of the garment extends partially around the waist of a wearer and is fastened to the front section. The intermediate section of the garment is generally hourglass shaped with a special contour to cover the wearer's seat and crotch areas without excessive bulkiness in the crotch area while forming a pocket in the garment adjacent the seat area for collecting waste.

4 Claims, 2 Drawing Sheets



123-132

Fig. 1



124 133

Fig. 2

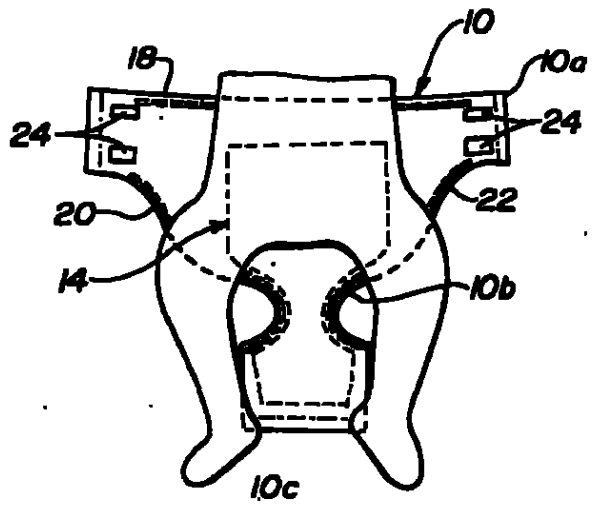


Fig. 3

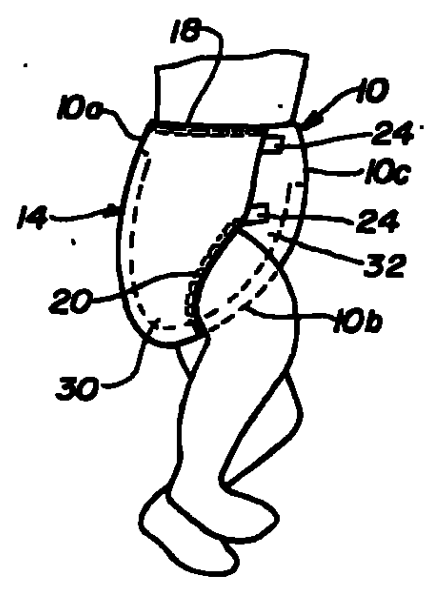
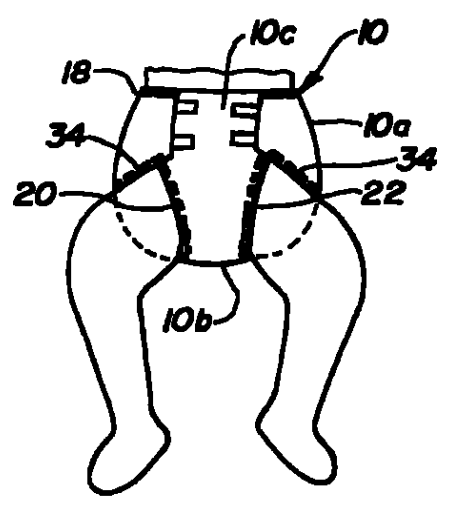


Fig. 4

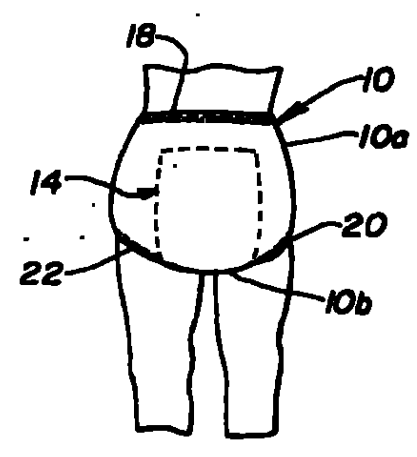


Fig. 5

COMBINATION DIAPER AND TRAINING PANTS

BACKGROUND OF THE INVENTION

This invention relates generally to garments and, in particular, to an improved combination diaper and training pants which may be worn by children from birth through toilet training and by adults.

U.S. Pat. No. 4,615,695 to R. M. Cooper discloses a combination diaper training pant for children and adults which includes a water absorbent padding disposed between a water absorbing inner liner and a water resistant outer layer. Since the garment disclosed by Cooper is intended for universal use, it is often uncomfortable to the wearer. For example, the leg openings of the Cooper garment are not properly contoured and the crotch is too bulky. U.S. Pat. Nos. 4,516,975 to D. J. Mitchell and U.S. Pat. No. 4,573,987 to K. A. Lamb, Jr. disclose reusable diapers which are also uncomfortable to the wearer due to their improperly contoured leg openings and bulkiness in the crotch area. Conventional training pants must be removed by pulling them down on the wearer's body thus presenting the problem of solid waste leaking out.

SUMMARY OF THE INVENTION

It is an object of the present invention to provide an improved combination diaper and training pants which fits comfortably on the wearer but which may be quickly and easily removed from the wearer in the same manner as a diaper.

It is another object of the present invention to provide an improved combination diaper and training pants which has properly contoured leg openings and is less bulky in the crotch area of the wearer.

It is a further object of the present invention to provide an improved combination diaper and training pants which includes a pocket formed adjacent the seat area of the wearer for collecting waste without creating too much bulk.

Another object of the present invention is to provide an improved combination diaper and training pants having inverted V-shaped leg openings in the front allowing freer forward and upward movement of the legs of the wearer and less bulk under clothing.

The present invention accomplishes these objects by providing a garment comprising combination diaper and training pants including a back section of generally rectangular shape in plan view, a front section of generally rectangular shape in plan view, and an intermediate section of generally hourglass shape in plan view extending between the back and front sections. The back section extends around the waist of a wearer and is fastened to the front section. The intermediate section covers the seat and crotch areas of the wearer while forming a pocket in the garment adjacent the seat area of the wearer for collecting waste. The intermediate section of the garment has a first relatively large area in plan view adjoining the back section thereof and a second relatively small area in plan view adjoining the front section thereof. The first relatively large area is defined by radially convex side edges whereas the second relatively small area is defined by radially concave side edges.

In the preferred embodiment of the present invention, the combination diaper and training pants includes an outer layer formed of water impervious material, an inner liner formed of thin absorbent material, and a core

formed of water absorbent material sandwiched between the outer layer and the inner liner. The outer layer and the inner liner both include back, front and intermediate portions corresponding in shape to the back, front and intermediate sections, respectively, of the garment. A first elastic strip extends across the back portion of the outer layer, and second and third elastic strips extend along the sides of the intermediate portion of the outer layer. The core includes a back portion of generally rectangular shape in plan view, a front portion of generally trapezoidal shape in plan view, and a contoured intermediate portion extending between the back and front portions thereof.

DESCRIPTION OF THE DRAWINGS

FIG. 1 is a plan view of a combination diaper and training pants according to the preferred embodiment of the present invention;

FIG. 2 is a schematic plan view of the combination diaper and training pants of FIG. 1 positioned underneath the body of an infant;

FIG. 3 is a schematic front view of the combination diaper and training pants of FIG. 1 after being secured on the body of an infant;

FIG. 4 is a schematic side view of the combination diaper and training pants of FIG. 1 after being secured on the body of an infant; and

FIG. 5 is a schematic back view of the combination diaper and training pants of FIG. 1 after being secured on the body of an infant.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring to FIG. 1, a garment 10 comprising combination diaper and training pants according to the preferred embodiment of the present invention includes an outer layer 12, a core 14, and an inner liner 16. The outer layer 12 is formed of water impervious material, the core 14 is formed of water absorbent material, and the inner liner 16 is formed of thin absorbent material.

The garment 10 includes a back section 10a, an intermediate section 10b, and a front section 10c. In plan view as seen in FIG. 1, the back section 10a is generally rectangular in shape, the intermediate section 10b is generally hourglass shaped, and the front section 10c is generally rectangular in shape. The intermediate section 10b has a first relatively large area in plan view adjoining the back section 10a and a second relatively small area in plan view adjoining the front section 10c. As seen in FIG. 1, the first relatively large area of the intermediate section 10b lying between lines x and y is defined by radially convex side edges whereas the second relatively small area of the intermediate section 10b lying between lines y and z is defined by radially concave side edges.

The outer layer 12 has a back portion 12a, an intermediate portion 12b, and a front portion 12c corresponding in shape to the back section 10a, intermediate section 10b, and front section 10c, respectively, of the garment 10. The core 14 has a back portion 14a that is generally rectangular, a contoured intermediate portion 14b, and a front portion 14c that is generally trapezoidal shaped. The inner liner 16 has a back portion 16a, an intermediate portion 16b, and a front portion 16c which are identical in shape to the back portion 12a, the intermediate portion 12b and the front portion 12c, respectively, of the outer layer 12.

126 135

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The garment 10 is assembled by utilizing conventional means such as double sided adhesive tape or glue to attach an elastic strip 18 across the back portion 12a of the outer layer 12 and to attach elastic strips 20, 22 along the side edges of the intermediate portion 12b of the outer layer 12. The elastic strips 20, 22 are stretched between the back and front portions 12a, 12c of the outer layer 12 thereby contracting and distorting the garment intermediate section 10b to create a pocket 30 (FIG. 4) for collecting liquid and solid waste and to also create a channel 32 (FIG. 4) for directing the flow of liquid waste into the pocket 30. The core 14 is then fastened to the outer layer 12 by conventional means such as double sided adhesive tape or glue. Finally, the inner layer 16 is secured to the outer layer 12 by suitable means so that the core 14 is sandwiched between the outer layer 12 and the inner liner 16. The garment 10 is completed by attaching tape tabs 24 to the back portion 16a of the inner liner 16 by providing fold lines 26, 28 on the outer layer 12 and the inner liner 16.

The manner in which the garment 10 is secured on the body of a wearer such as an infant is illustrated in FIGS. 2-5. The back section 10a extends partially around the infant's waist and the tape tabs 24 are extended to secure the back section 10a to the front section 10c. The intermediate section 10b covers the infant's seat and crotch areas, and the front section 10c partially covers the infant's abdominal area. The hourglass shaped contour of the intermediate section 10b results in less bulk between the infant's legs while the elastic strips 20, 22 contract and distort the intermediate section 10b thereby forming pocket 30 and channel 32 adjacent the seat and crotch areas, respectively, of the infant as seen in FIG. 4. The pocket 30 collects solid and liquid waste, and the channel 32 directs the flow of liquid waste into the pocket 30. The intermediate section 10b is also hourglass shaped to provide inverted V-shaped leg openings 34 (FIG. 3) in the front allowing freer forward and upward movement of the infant's legs and less bulk under clothing.

Once the garment 10 is secured on the infant's body as shown in FIGS. 2-5, it may be slipped up and down with ease due to the elastic strips 18, 20, 22 to serve as training pants. The intermediate section 10b fits snugly around the infant's legs to prevent liquid waste from leaking out of the garment 10 while collecting liquid and solid waste in the pocket 30 which is formed adjacent the infant's seat area.

It will be understood that the garment 10 of the present invention may be made in different sizes to fit infants, toddlers and even adults. The garment 10 could also be constructed such that the core 14 may be removed when soiled and replaced with a new clean one.

The present invention thus provides combination

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wearer with properly contoured leg openings and less bulk in the wearer's crotch area.

While the preferred embodiment of the present invention has been disclosed herein, it will be understood that the following claims also cover other embodiments of the present invention.

What is claimed is:

1. A garment comprising combination diaper and training pants including a back section of generally rectangular shape in plan view, a front section of generally rectangular shape in plan view, an intermediate section of generally hourglass shape in plan view extending between said back and front sections, said back section extending around the waist of a wearer and being fastened to said front section, and said intermediate section covering the seat and crotch areas of the wearer while forming a pocket in the garment adjacent the seat area of the wearer for collecting waste;

said intermediate section having a first relatively large area in plan view adjoining said back portion and a second relatively small area in plan view adjoining said front section, said first relatively large area being defined by radially convex side edges, and said second relatively small area being defined by radially concave side edges;

said combination diaper and training pants including an outer layer formed of water impervious material, an inner liner formed of thin absorbent material, and a core formed of water absorbent material sandwiched between said outer layer and said inner liner;

said outer layer and said inner liner both including back, front and intermediate portions corresponding in shape to said back, front and intermediate sections, respectively, of the garment; and

a first elastic strip extending across an upper edge of said back portion of said outer layer, and second and third elastic strips stretched along the opposite convex and concave side edges of said intermediate portion of said outer layer thereby contracting and distorting said intermediate section to form said pocket for collecting solid and liquid waste and to also form a channel adjacent the crotch area of the wearer for directing liquid waste into said pocket.

2. The garment of claim 1; wherein said core includes a back portion of generally rectangular shape in plan view, a front portion of generally trapezoidal shape in plan view, and a contoured intermediate portion extending between said back and front portions thereof.

3. The garment of claim 2, further comprising tape tabs mounted on said back portion of said inner liner for releasably fastening said back section of the garment to said front section thereof.

4. The garment of claim 1, wherein said core is removable and replaceable.

* * * * *

127 126

(12) **UK Patent Application** (18) **GB** (11) **2 294 865** (13) **A**

(43) Date of A Publication 15.05.1998

(21) Application No 9522598.6

(22) Date of Filing 03.11.1995

(30) Priority Data

(31) 9403832

(32) 03.11.1994

(33) SE

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(51) INT CL⁸

A41B 9/14, A61F 13/72

(52) UK CL (Edition O)

A3V V1B3A1 V6C4 V6H1

(56) Documents Cited

GB 2244422 A

GB 2238839 A

GB 1198002 A

GB 0744880 A

US 4560391 A

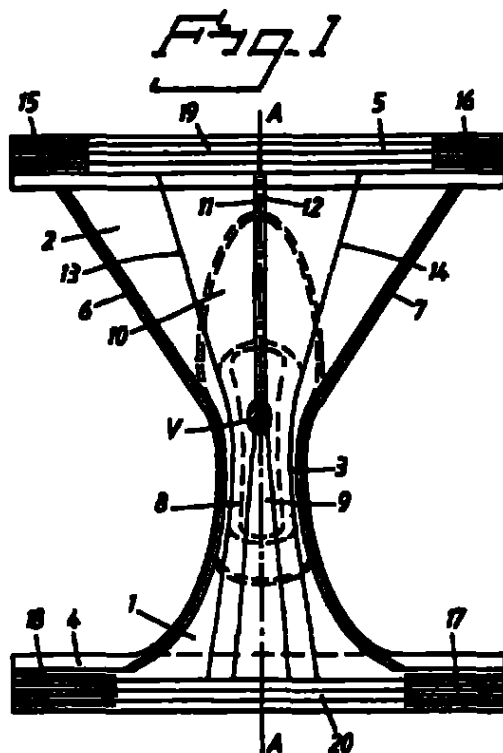
(58) Field of Search

UK CL (Edition O) A3V

INT CL⁸ A41B 9/00 9/04 9/12 9/14, A61F 13/72

(54) A panty-type sanitary napkin

(57) A pants-type sanitary napkin or incontinence guard for women, comprises a front part (1), a back part (2) and an intermediate crotch part (3). The opposing side parts (15, 18 and 16, 17 respectively) of the front part and the back part are joined together and comprise an elastically stretchable waist border or edge (4, 5) which extends peripherally around the free end-edges of the front and the back napkin parts. When no load acts on the napkin the elasticated waist border has a greater resistance to stretch in parts (15 - 18) thereof than in remaining parts. Elastication is also provided at 6, 7, 11, 12, 13 and 14.



GB 2 294 865 A

At least one drawing originally filed was informal and the print reproduced here is taken from a later filed formal copy.

1 / 2

Fig. 1

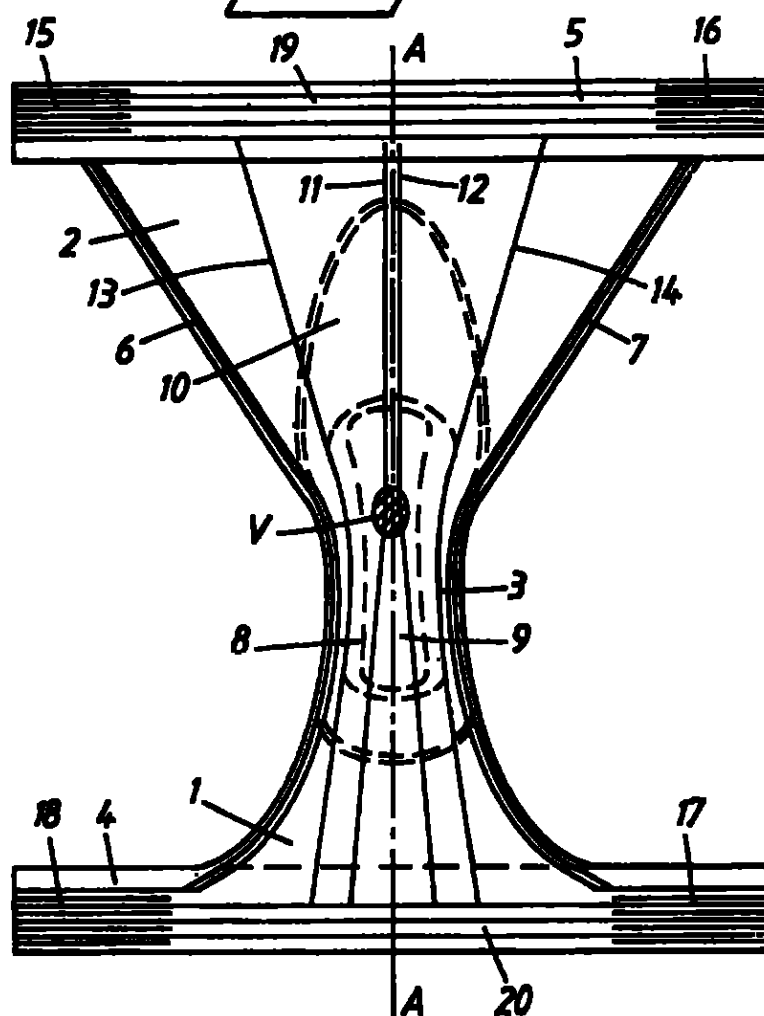


Fig. 2

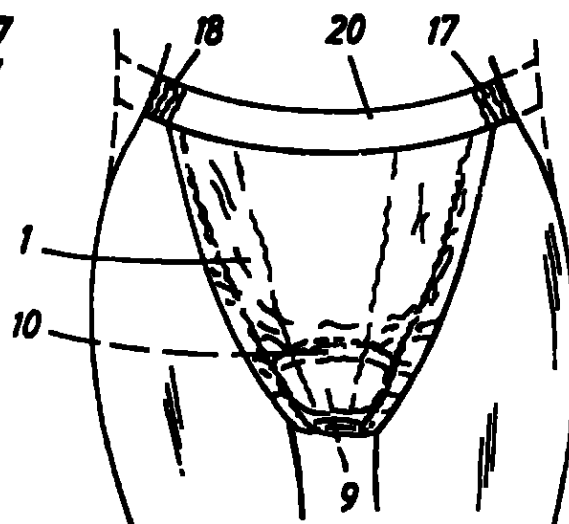


Fig. 3

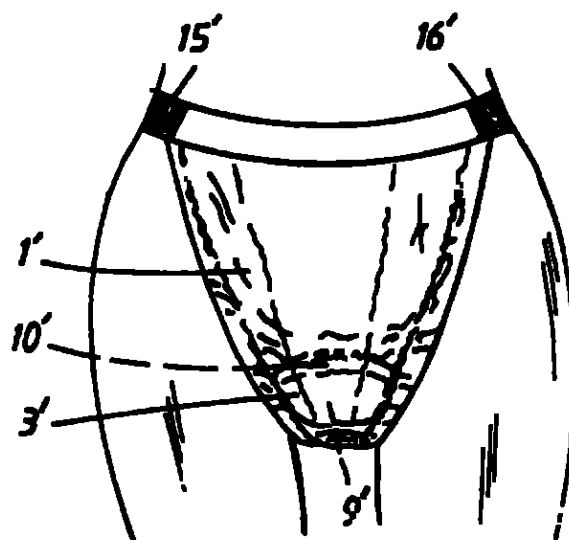
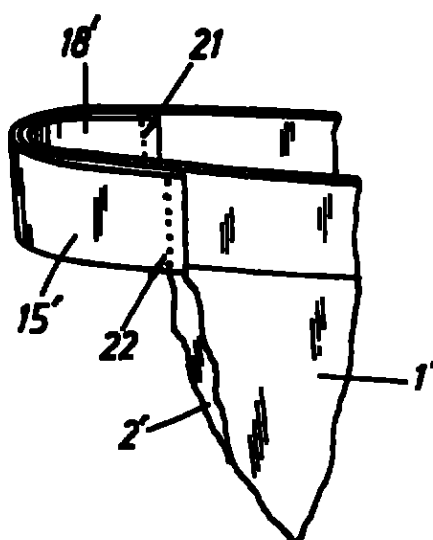


Fig. 4



A PANTY-TYPE SANITARY NAPKIN

The present invention relates to a panty-type sanitary napkin
r an incontinence guard for women, comprising a front part,
5 a back part and an intermediate crotch part, wherein opposing
side parts of the front and back parts are joined together,
and which further comprises an elastically stretchable waist
border or edge which extends peripherally around the free end-
edges of the front and back napkin parts.

10

The reason why sanitary napkins leak is often because the
absorbent body of the napkin is not initially positioned
correctly, or because the absorbent body is moved out of its
correct position while in use. It is therefore very important
15 that the panty-napkin combination fits well on the wearer, if
reliability against leakage is to be achieved. In the case of
panty-type sanitary napkins, i.e. panties having an integrated
absorbent body, the absorbent body will be positioned correct-
ly when putting on the napkin, provided that the napkin
20 properly fits the wearer. However, the shapes of the bodies
of women who use pants-type sanitary napkins vary greatly. For
instance the waist measurements of some wearers will vary
while having the same buttock sizes, depending on whether the
wearer has a straight figure or a more pronounced female shape
25 with broad hips and a narrow waist, and consequently it is
difficult to produce pants-type sanitary napkins in a model
or a size which will ensure a good fit on users of all sizes.
Another problem with poorly fitting napkins is that the folds
and wrinkles caused by contraction of the elastic in the
30 packaged state of the napkin are not smoothed out when putting
on the napkin. These folds and wrinkles can be seen through
the overlying garments of thin or slender users, thereby
causing the user embarrassment.

35 The object of the present invention is to solve these pr -
blems.

This object is achieved in accordance with the invention with a pants-type sanitary napkin or an incontinence guard for women of the kind defined in the introduction which is characterized in that when the napkin is free of load, the waist border will have a greater resistance to stretch in those parts of the border that are located in the side parts than in remaining parts. Thus, those parts of the waist border which have a lower stretch resistance will be stretched first, while those parts which have a greater stretch resistance will only be stretched when necessary. It is therewith possible to ensure a good fit for both users who have a straight figure and those who have broad hips and narrow waists. One advantage afforded in this regard is that fewer models or sizes need be produced in order to accommodate variations in the body shapes of the users while providing a good and snug fit.

According to one preferred embodiment of the pants-type sanitary napkin, the elastic waist border has the form of an elastic band or tape which is fastened while in a stretched state to the free end-edges of the front and back napkin parts and has in those band parts which are located in the side parts of the napkin have a stronger elasticity, or exert a greater elastic strength, than the remainder of the band, and the mutually opposing side edges of the front and back napkin parts are spaced from one another and joined together through band parts of stronger elasticity. The band may advantageously be comprised of a two-layer material which includes one elastic layer and one layer of non-elastic material, said layers being mutually joined in a more sparse bonding pattern in those parts of the band that are located in the side parts of the front and back napkin parts than in the remainder of the band. Alternatively, the band may be comprised of two different materials each having a different elastic strength or degree of elasticity.

According to a second embodiment, the waist elastic is comprised of a plurality of elastic threads which are fastened

to the free edges of the front and back napkin parts with the threads in a pre-stretched state, wherein a larger number of threads are mounted in the side parts of the front and back napkin parts than in the remainder of the napkin.

5

According to a third embodiment of the invention, the side parts of the front and back napkin parts are spaced from one another and mutually joined by means of an elastically stretchable band, while the remainder of the waist border or edge has a much lower degree of elastic stretchability than the elastic stretchability of the band.

10

The invention will now be described with reference to the accompanying drawings, in which

15

Fig. 1 illustrates from above a preferred embodiment of an inventive pants-type sanitary napkin, and shows the napkin in a final stage of manufacture prior to joining the front and back napkin parts together;

20

Fig. 2 is a front view of the napkin shown in Fig. 1 worn by a user, after having joined the front and back parts together;

25

Fig. 3 is a view similar to Fig. 2 and shows a second embodiment of an inventive pants-type sanitary napkin; and

Fig. 4 is a schematic perspective view of one side part of the napkin shown in Fig. 3.

30

Fig. 1 illustrates one embodiment of a pair of inventive sanitary panties or pants-type sanitary napkin in a stage of manufacture prior to joining together the front and back waist parts of the napkin. The illustrated napkin includes a front part 1, a back part 2 and an intermediate crotch part 3. The napkin also includes waist elastic which in the illustrated case is comprised of elastic bands 4, 5 which extends along respective edges of the waist-forming parts of the front and

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the back napkin parts, and also includes leg elastic in the form of elastic threads 6, 7 which extend along the side edges of the napkin between the elastic bands 4, 5. In the case of the illustrated embodiment, two elastic threads are disposed along each side edge of the napkin, although it will be understood that the leg elastic may instead consist in fewer or more threads, or in elastic tape, bands or the like. The Figure also shows in broken lines an absorbent body 8 which is firmly secured to the napkin. The illustrated absorbent body 8 is comprised of a primary absorbent pad 9 and a secondary absorbent pad 10 and is particularly suited for night wear.

The illustrated napkin is also provided with two elastic threads 11, 12 which extend between the elastic bands 4 and 5 of the front and back napkin parts 1, 2 respectively, symmetrically in relation to a central longitudinal line A-A along the napkin. The threads 11, 12 extend from the waist edge or rear edge of the back part 2 parallel with the longitudinal line of the napkin and close proximity of one another, up to a region V in the crotch part 3, this region being located at the user's midriff when the napkin is worn. The threads 11, 12 thereafter diverge from the region V and continue to the waist edge or front edge of the front napkin part 1.

When using a pants-type sanitary napkin constructed in accordance with the embodiment shown in Fig. 1, the parts of the threads 11, 12 that diverge away from the region V will strive to give the absorbent body 8 a basin-like shape within this region, this basin-like shape conforming well with the anatomy of the wearer in said region. The parts of the threads 11, 12 that extend rearwardly and parallel with one another from the region V strive to press a corresponding central part of the absorbent body in between the buttocks of the wearer when the napkin is in use, thereby bringing the absorbent body into positive abutment with the wearer's body, at least within

the crotch part and at the beginning of the back napkin part, therewith making the napkin safe against leakage from the rear of the napkin.

5 The napkin illustrated in Fig. 1 also includes elastic threads 13, 14 which are located laterally outside the threads 11, 12 and which extend between the front and the back napkin parts, wherein the threads in the front part are mutually convergent and the threads in the back part are mutually divergent. These
10 threads also follow the outer contours of the sides of the primary absorbent pad 9 along a greater part of their longitudinal extension. The threads 13, 14 thus ensure that the side edges of the primary absorbent pad will be pressed into tight abutment with the user's body, and will also assist in
15 ensuring that the secondary absorbent pad will conform to the shape of the user's body. It should be mentioned in this regard that the secondary absorbent pad is thin and very flexible and is intended to provide an additional safety zone for absorbing any leakage that may occur when the absorbent
20 body is used over a long period, for instance over the whole of one night, and the absorbent capacity of the secondary absorbent pad is therefore relatively small.

The absorbent body used with the illustrated pants-type
25 sanitary napkin is fastened to the napkin in the manufacturing stage illustrated in Fig. 1, in which the aforescribed elastic elements are in a stretched state. When manufacture of the napkin is complete, the elastic elements will strive to contract to a tensionless state. This results in the
30 formation of folds or pleats in those regions of the napkin which lie outside the primary absorbent pad 9, and the threads will contract in these regions to an essentially tensionless state. This contraction of the napkin is counteracted by the primary absorbent pad 9 within the region of said pad, to a
35 greater or a lesser extent depending upon the stiffness of the pad. Present-day thin absorbent bodies are very flexible and will therefore be folded or pleated by the elastic threads,

although full contraction of the threads is prevented. Thus, when the user puts on the napkin, any folds or wrinkles in the absorbent pad 9 will be smoothed out and the pad will lie in abutment with the wearer's body as a result of the elastic force exerted by the threads 11-14. Because of the wearer's anatomy, the absorbent pad 9 will obtain a concave basin-like shape from the region V and forwardly thereof, therewith causing the contraction force exerted by the threads 11-14 in this region to strive to retain the basin-like shape, while those parts of the absorbent pad 9 which lie along the threads will be pressed into sealing abutment with the wearer's body. The parallel parts of the elastic threads 11, 12 also ensure that the part of the absorbent pad 9 which lies rearwardly of the region V will be deformed so as to conform to the anatomy of the user in this region, so that the part of the absorbent body or pad that lies between the user's buttocks will be in sealing abutment with the user's body. In addition to ensuring that the side edges of the absorbent pad 9 will lie in sealing abutment with the wearer's body, the threads 13, 14 also function to prevent folds or bulges forming in the napkin or in the secondary absorbent pad.

The pants-type sanitary napkin illustrated in Fig. 1 is preferably comprised of two layers, which are joined together in some suitable way, for instance by gluing, and the elastic devices are disposed between these layers and fastened thereto by gluing or by welding with ultrasound or by heat-welding. The elastic devices may also be sewn to the napkin.

As before mentioned, the absorbent body 8 illustrated in Fig. 1 is comprised of a primary and a secondary absorbent pad 9 and 10 respectively. The primary absorbent pad 9 is constructed in the same way as a conventional absorbent body of a sanitary napkin and therefore has an absorption capacity which is sufficient to handle the fluid discharged by the wearer over the time period for which the napkin is intended to be used, for instance over a whole night. the absorbent body or

pad may, for instance, comprise one or more layers of compressed cellulose fluff with or without an admixture of superabsorbent material. The primary absorbent pad 9 may advantageously comprise one or more layers of roll material, i.e. absorbent material which has been pre-compressed and treated so as to enable the material to be rolled onto storage reels. Such absorbent pads may be very thin and highly flexible while still having sufficient absorption capacity for use as a night napkin. The secondary absorbent pad 10 has a much larger extension than the primary pad and extends rearwardly over a large part of the back part of the napkin. The primary purpose of the secondary absorbent pad is to enhance security against leakage and the pad will have a given absorption capacity commensurate with this purpose. To this end, the secondary pad may be comprised of tissue, nonwoven or some other roll material. The secondary absorbent pad 10 will also preferably include means for preventing fluid, liquid, from spreading over the surface of the pad. Such barriers may be obtained, for instance, by pleating or creasing the material layer, or with the aid of barrier welds. The use of nonwoven material which includes fibres of so-called superabsorbent material is also conceivable, this material binding the absorbed liquid chemically. However, the secondary absorbent pad will generally have the same flexibility as the material from which the napkin is made, so as to make the napkin comfortable to wear. The secondary absorbent pad must therefore be very thin and will consequently have a highly limited absorption capacity.

The absorbent body 8 comprised of the primary and the secondary absorbent pads is enclosed conventionally between a liquid permeable casing sheet and a liquid-impermeable, conveniently air-permeable backing sheet which, in use, lies against the panty part of the napkin.

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The aforescribed pants-type sanitary napkin is constructed in accordance with Swedish Patent Application No. 9303284-5.

In order for the napkin to function in the intended manner when used, it is essential that the waist elastics 4, 5 are able to hold the napkin in place on the wearer. Furthermore, it is essential to the aforesaid functions of the elastic threads 11-14 that the front and the back napkin parts are stretched laterally when putting on the napkin.

To ensure this, the waist elastics 4, 5 have different degrees of elasticity, or different elastic strengths, in different parts thereof. This is achieved in the Fig. 1 embodiment by virtue of providing the elastic waist bands 4, 5 with more pre-stretched elastic threads in the side parts 15-18 of said elastic than in the central parts 19, 20 thereof. As a result, the side parts will have a greater resistance to stretch than the remaining parts of the waist elastic. Thus, when putting on the pants-type sanitary napkin shown in Fig. 1, the central parts 19, 20 will be stretched first while the side parts 15-18 will only be stretched when the central parts of said elastic have been stretched to an extent at which the combined elastic strength of the outwardly stretched threads in the central parts 19, 20 is equal to the combined elastic strength of the threads in the side parts 15-18. This ensures that the front and back napkin parts will be stretched in the manner intended before any appreciable stretching of the side parts 15-18 of the waist elastic 4, 5 takes place. Any folds or creases in the front and back napkin parts will also be smoothed out in this way.

Fig. 2 illustrates schematically the pants-type napkin shown in Fig. 1 when worn by a user. Certain parts of the body contours of a user having broad hips and a narrow waist are shown in full lines. As indicated in the Figure, the central parts 19, 20 of the waist elastic are almost stretched to the full, whereas the side parts 15-18 have only been stretched to an insignificant extent. The broken lines in Fig. 2 are intended to show the body contours of a user whose bottom is of the same width as the first-mentioned user, but who has a

straight figure. The additional stretch in the waist elastic required for a user of this shape is achieved through the medium of the side parts 15-18 of the elastic.

5 In the case of the aforescribed embodiment, it is only the stretch resistance of the side parts that differs from the stretch resistance of the remainder of the waist elastic. It will be understood, however, that it is also possible to vary the stretch resistance in other parts of the waist elastic,
10 for instance so that the elastic in the front part of the napkin will be stretched before the elastic in the back part thereof, or so that the stretch resistance will decrease continually towards the centre part of the waist elastic in the front and/or back part of the napkin.

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In the described embodiment, the different degrees of elasticity, or elastic strength, in different parts of the waist elastic has been achieved by mounting a different number of elastic threads of one and the same kind in different parts
20 of the border elastic 4, 5. It will be understood, however, that the different degrees of elasticity can be achieved in other ways, for instance by using elastic threads of mutually different spring characteristics in different parts of the waist elastic or to compose the waist elastic of different
25 elastic materials.

Figs. 3 and 4 illustrate a second embodiment of an inventive pants-type sanitary napkin in which the stretch resistance of the side parts of the waist elastic is twice that of an
30 elastic which is comprised of the same material, this being achieved by virtue of using doubled elastic material in said side parts. Such waist elastic can be used with particular benefit in a pants-type sanitary napkin, which is normally manufactured by placing the napkin components on a moving,
35 flat web of material, wherein the individual napkin blanks are cut from the web in a final stage of manufacture and the side parts of the blank cut-outs are joined together to form the

finished pants-type napkin. The desired higher stretch resistance in the side parts of the waist elastic can be achieved readily by giving those parts of the waist elastic that extend out from the front and back parts of the napkin dimensions which will cause the outwardly projecting parts to overlap when joining the waist elastic in the side parts and therewith joining the pants-type napkin together in its entirety. The napkin shown in Fig. 3 differs from the napkin shown in Figs. 1 and 2 solely by the different construction of the side parts. Those reference signs used in Figs. 1 and 2 have been used in Figs. 3 and 4 with the addition of a prime to identify corresponding components. Fig. 4 illustrates on side part of the pants-type napkin and also shows that the parts 15', 18' have been overlapped when joining the napkin together. Naturally, in order for the overlapped parts 15', 18' of the waist elastic to function as an elastic unit, it is necessary to join both ends of the overlapped parts together, for instance by means of a weld join 21, 22 at each end. In addition to affording the advantage of a greater stretch resistance in the mutually overlapping parts of the elasticated waist border, it will also afford the advantage of a strong and aesthetically attractive join in the side parts of the pants-type sanitary napkin. The opposite side part of the napkin is constructed in the same manner.

The waist elastic used in a pants-type sanitary napkin according to the invention may also have the form of the elastic band taught by SE-B-500 791. This specification describes an elastic band or tape which is comprised of a first layer of elastic material and a second layer of material which is practically inelastic in comparison with the first layer. Different degrees of elasticity or elastic strengths are obtained in different parts of the band, by joining the two layers together in different bonding patterns.

It will be understood that the invention can also be applied with pants-type sanitary napkins of a type different to those

described in the exemplifying embodiments, for instance of the type in which the waist elastic includes elastic threads which are fastened to the outer casing sheets and which do not include the separate elastic bands included in the illustrated
5 embodiments, or in pants-type sanitary napkins in which the side edges of the front and the back napkin parts are joined directly one to the other. Even though it is unnecessary from the aspect of leakage safety or absorption for the front and back napkin parts to extend laterally outwards, the user feels
10 that the napkin fits more snugly when the napkin includes such a feature, which is important from the comfort aspect. The invention is therefore restricted solely by the content of the following Claims.

CLAIMS

1. A pants-type sanitary napkin or incontinence guard for women, comprising a front part (1), a back part (2) and an intermediate crotch part (3), wherein the opposing side parts (15, 18 and 16, 17 respectively) of the front part and the back part are joined together, and further comprising an elastically stretchable waist border or edge (4, 5) which extends peripherally around the free end-edges of the front and the back napkin parts, characterized in that when no load acts on the napkin the elasticated waist border has a greater resistance to stretch in parts (15-18) thereof that are located in the side parts than in remaining parts.
2. A napkin according to Claim 1, in which the waist elastic has the form of an elastic band or tape (4, 5) which is fastened in a stretched state to the free end-edges of the front and back napkin parts (1, 2), characterized in that the elastic band or tape includes in the side parts of the napkin parts (15-18) which have a greater elastic strength than the remainder of the band.
3. A napkin according to Claim 2, characterized in that opposing side edges of the front and back napkin parts (1, 2) are spaced apart and joined together through the medium of said band parts (15-18) of greater elastic strength.
4. A napkin according to Claim 2 or 3, characterized in that the band is comprised of two layers of material, of which one is an elastic layer and the other is an essentially non-elastic layer, and in that the layers are joined together in a sparser bonding pattern in those parts of the band that are located in the side parts of the front and the back napkin parts than in the remainder of said band.
5. A napkin according to Claim 2 or 3, characterized in that the band is comprised of two different materials having

mutually different elastic strengths.

6. A napkin according to Claim 1, characterized in that the waist elastic (4, 5) includes a plurality of elastic threads which are fastened in a pre-stretched state to the free edges of the front and back napkin parts (1, 2); and in that the side parts (15-18) of the front and the back napkin parts have a larger number of threads than the remainder of the waist elastic.

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7. A napkin according to Claim 1, characterized in that the side parts of the front and the back napkin parts are spaced apart and joined together by means of an elastically stretchable band; and in that the remainder of the waist elastic has insignificant elastic stretchability in comparison with the elastic stretchability of the band.

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8. A pants-type sanitary napkin or incontinence guard for women comprising a front part (1'), and back part (2') and an intermediate crotch part (3'), and an elastically stretchable waist border or edge which extends peripherally around the free end-edges of the front and back napkin parts, characterized in that the waist border includes parts (15', 18') which project out from the side edges of the back and the front napkin parts and which overlap one another and are joined together along join lines (21, 22) at respective ends of the outwardly projecting parts.

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9. A pants-type sanitary napkin as claimed in claim 1 substantially as hereinbefore described with reference to and as illustrated in Figures 1 and 2, or in Figures 3 and 4 of the accompanying drawings.

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Publication number: **0 450 541 A2**

EUROPEAN PATENT APPLICATION

Application number: 91105104.3

Int. Cl.⁵: A61F 13/15

Date of filing: 28.03.91

Priority: 02.04.90 US 504158

Date of publication of application:
08.10.91 Bulletin 91/41

Designated Contracting States:
BE DE FR GB IT LU NL

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Stretchable shaped absorbent garment.

A stretchable absorbent garment having a fluid-pervious inner layer, an outer layer, and an absorbent structure located between said inner and outer layers, and at least two generally parallel elastomeric

strands stretch bonded to the garment along its length such that when in a relaxed state, all of the above described elements are reduced in length.

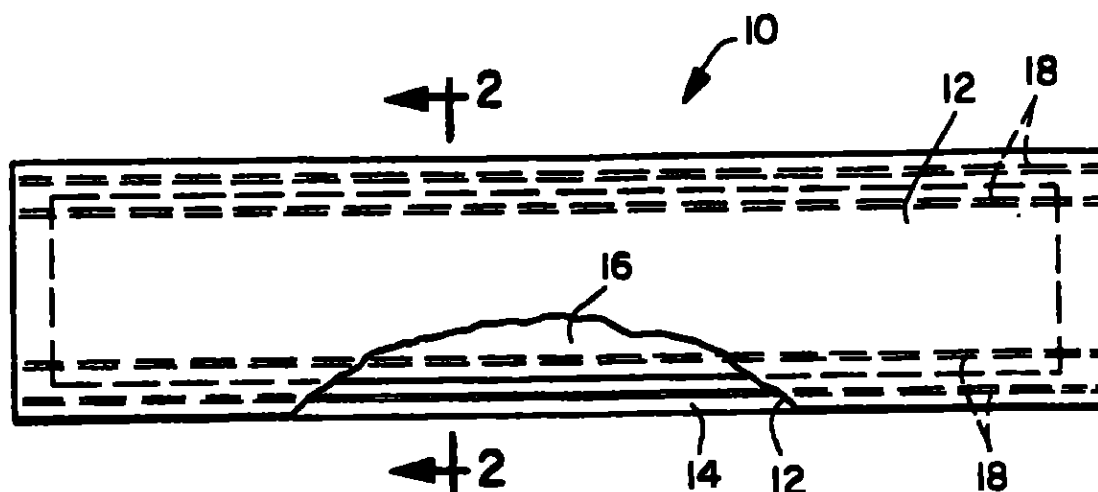


FIG. 1

BACKGROUND OF THE INVENTION**FIELD OF THE INVENTION**

The present invention relates to an absorbent garment suitable for use in absorbing body fluids. Specifically, the present invention relates to a stretchable shaped absorbent garment.

DESCRIPTION OF THE RELATED ART

It has been recognized that introducing a degree of stretchability into personal care products such as diapers, sanitary napkins, adult incontinent products and the like can provide said products with certain benefits. For example, U.S. Patent No. 2,808,459 issued December 30, 1958 to Sobelson describes a stretchable, reusable cotton diaper. Stretchability is imparted to the cotton fabric by the presence of longitudinal and transverse elastic stitching. The stitching is described as imparting longitudinal curvature and transverse curvature to the diaper. This curvature is described as producing a diaper formed permanently in the shape required for use.

U.S. Patent No. 3,371,868, issued March 5, 1968 to Johnson, is directed to a sanitary napkin employing a nonwoven fabric with machine direction elasticity as a cover. The described fabric comprises a nonwoven web of fibers having a plurality of elastic means, in extended condition, secured to the web. Upon their release, the fabric contracts in the length direction and is characterized by a plurality of substantially parallel buckled areas having improved bulk.

U.S. Patent No. 4,808,984 issued August 19, 1988 to Wideman is directed to a bulked web composite and method of making the same. Described is a composite formed by adhering a reticulated web of elastic material to at least one gatherable web whereby, upon release of the tensioning forces, the gatherable web is gathered by the reticulated web to form a bulked web composite. It is generally described that the reticulated web of the elastic material is elongated by differentially tensioning it, thus forming a composite having greater bulk corresponding to those areas of the reticulated web which are placed under a greater tensioning force.

U.S. Patent No. 4,847,134 issued July 11, 1989 to Fahrenkrug, et al. is directed to a stretchable absorbent undergarment. Described is a stretchable undergarment comprising a body-side layer, a liquid impervious outer layer, an absorbent layer and a stretchable layer. The stretchable layer comprises a continuous layer of stretchable material which may be perforated. The perforations render the elastomeric layer permeable. The elastomeric

layer can be stretch bonded to the other layers such that upon relaxation the stretchable layer forms a plurality of rugosities in the body-side layer, outer layer and absorbent medium.

From the above, it can be seen that in the past, when stretchable materials were employed in absorbent products, they often imparted stretchability to only one component (e.g., the cover) of the absorbent product. While certain advantages can be brought to the absorbent products through the use of such stretchable materials, the use of such materials as only a single component of the product prevented such products from achieving certain other advantages. Moreover, even when stretchability was imparted to an entire absorbent product, such as in U.S. Patent No. 4,847,134, such products are not believed to have been developed to their greatest extent. For example, in U.S. Patent No. 4,847,134, the use of the stretchable web may, in some instances, adversely affect the absorption of body fluids depending on the placement of the stretchable layer within the absorbent product and its ability to pass a fluid.

SUMMARY OF THE INVENTION

It is desirable to provide a stretchable absorbent garment for absorbing body liquids. It is further desired that the absorbent product be easily manufactured and that the inducement of stretchability not unacceptably deleteriously affect the absorbent capability of the garment.

Further, it is desirable to produce a stretchable absorbent garment which is capable of being shaped to conform to the body of a user. Moreover, it is desirable to provide stretchable attachment means integrally attached to the garment which attachment means are capable of holding the garment in place during use. It is further desired that the stretchable garment be generally soft to the touch, comfortable to wear during use, breathable, have soft body-contact surfaces and provide an acceptable degree of absorption capability without being unduly bulky or noticeable when worn under clothing. It is to these goals that the present invention is directed.

The present invention is directed to a stretchable absorbent garment. The garment includes a fluid-pervious inner layer, an outer layer, an absorbent structure sandwiched between said inner and outer layers, and at least two generally parallel elastomeric strands stretch bonded to the garment along its length such that, when in a relaxed state, the elastomeric strands reduce the length of the inner layer, outer layer and absorbent structure across the width of the garment. Because the garment, including the absorbent structure, is stretchable, the garment is self adjusting in fit and is

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generally capable of concentrating the absorbent structure in the needed area to the greatest extent possible.

In another aspect, the present invention concerns a stretchable, shaped absorbent garment having stretchable attachment means attached integrally thereto. Because the attachment means are stretchable, they are capable of infinite adjustment on users of different shapes and sizes to provide the best fit possible. In another aspect, the present invention is directed to a stretchable absorbent garment which is capable of being shaped both along its length and width by selectively placing the stretchability imparting elastomeric strands in different locations along the width and throughout the thickness of the garment, all of the elastomeric strands extending along at least a portion of the length of the garment.

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 is a top plan view of one embodiment of a stretchable absorbent garment according to the present invention in a stretched state.

Figure 2 is a cross section of Figure 1 taken along line 2-2.

Figure 3 is a top plan view of one embodiment of a stretchable absorbent garment according to the present invention in a stretched state.

Figure 4 is a cross section of the garment of Figure 3 taken along line 4-4.

Figure 5 is a side elevational view of the garment illustrated in Figure 3 with the garment in a stretched state.

Figure 6 is a side elevational view of the garment illustrated in Figure 5 in a relaxed state.

Figures 7 through 10 are exploded transverse end views of different preferred embodiments of garments according to the present invention.

Figure 11 is a perspective view of the garment illustrated in Figure 10.

Figure 12 is a top plan view of another embodiment according to the present invention illustrating the presence of attachment means integrally formed with the garment.

Figure 13 is a cross section of the garment illustrated in Figure 12 taken along line 13-13.

Figure 14 is a cross section of the garment illustrated in Figure 12 taken along line 14-14.

Figure 15 is a top plan view of another embodiment according to the present invention indicating an alternative method of forming attachment means.

Figure 16 illustrates the garment illustrated in Figure 15 in a relaxed state.

Figure 17 is a front perspective view of the garment illustrated in Figure 12 in use about the body of a wearer.

Figure 18 is a rear perspective view of the garment illustrated in Figure 12 in use about the body of a wearer.

Figure 19 is a perspective view of a stretchable absorbent garment according to one embodiment of the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

The present invention is directed to a stretchable absorbent garment. The entire garment is capable of being stretched and, in a relaxed state, contracts to form a garment having a reduced length with a plurality of rugosities extending generally across the width of the garment. The garment has a length, a width, and a thickness and comprises (a) a fluid-pervious inner layer having a length and a width; (b) an outer layer having a length and a width; (c) an absorbent structure having a length and a width, said absorbent structure being located between said inner and outer layers; and (d) at least two generally parallel elastomeric strands stretch bonded to the garment along substantially its entire length such that, when in a relaxed state, said elastomeric strands reduce the length of said inner layer, outer layer and absorbent structure across the width of the garment.

The invention can best be understood by reference to the drawings wherein Figure 1 illustrates a top plan view of one embodiment of a garment 10 according to the present invention in a stretched state. The garment 10 comprises a fluid-pervious inner layer 12, an outer layer 14, and an absorbent structure 16 located between the inner layer 12 and outer layer 14. The inner layer 12 is generally adapted to contact the skin of a wearer. Accordingly, the inner layer 12 is generally fluid-pervious and capable of passing body liquids at a rate generally sufficient to prevent leakage from the garment when in use. The absorbent structure 16 is capable of absorbing a body liquid such as urine or other body discharges. The outer layer 14 may be a generally soft, almost clothlike material to provide a pleasant feel to the product or, may be in the form of a fluid-impervious material to prevent passage of body liquids externally of the garment 10.

Elastomeric strands 18 extend along the length of the garment in a generally parallel relationship to one another. At least two and desirably at least four elastomeric strands are present in the garments according to the present invention. Preferably, a plurality of elastomeric strands are present in the garments and are spaced generally across the entire width of the garment. The elastomeric strands are stretch bonded to the garment such that, in a

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relaxed state, the elastomeric strands contract and thus reduce the length of the inner layer 12, outer layer 14, and absorbent structure 16 across the width of the garment.

As used herein, the term "elastomeric" refers to a material or composite which can be elongated by at least 25 percent of its relaxed length and which will recover, upon release of the applied force, at least 10 percent of its elongation. It is generally preferred that the elastomeric strands be capable of being elongated by at least 100 percent, more preferably by at least 300 percent, of its relaxed length and recover, upon release of an applied force, at least 50 percent of its elongation.

Further, as used herein, the term "stretch bonded" refers to the situation wherein an elastomeric strand is bonded to the garment while said elastomeric strand is elongated at least about 25 percent of its relaxed length. Preferably, the term "stretch bonded" refers to the situation wherein the elastomeric strand is elongated at least about 100 percent, more preferably at least about 300 percent, of its relaxed length when it is bonded to the garment according to the present invention.

Finally, the term "bonded" refers to the joining, adhering, connecting, attaching, or the like of two materials to one another. As used herein, two elements will be considered to be bonded together when they are bonded directly one to another or indirectly such as when one of the elements is directly bonded to a third element which is in turn bonded to the other element.

As a general rule, it is desirable that the inner layer, outer layer and absorbent structure, and preferably all the elements of the garment be bonded together such that, when in a relaxed state, the elastomeric strands cause the inner layer, outer layer and absorbent structure, and preferably all of the elements of the garment to be reduced in length across the width of the garment. This reduction in length forms a plurality of rugosities in the garment generally perpendicular to the elastomeric strands. Since the inner layer, outer layer and absorbent structure are all reduced in length, it follows that they all contain a plurality of rugosities as a result of their reduced length. The garment is suitably reduced in length at least about 40 percent, preferably at least about 65 percent. That is, if the garment has a length of 50 inches in a stretched condition, in a relaxed condition its length is reduced at least about 40 percent (20 inches) thus making the garment about 30 inches in length.

It is particularly desired that the absorbent structure be reduced in length (gathered) by the elastomeric strands when the garment is in a relaxed state. Preferably, the absorbent structure is reduced in length across its entire width. By forming the garment such that the absorbent structure

is reduced in length, more of the absorbent structure can be concentrated in the area where body fluids will be applied to the garment. Additionally, since the absorbent structure is capable of expanding longitudinally under an applied stretching force, the garment will adjust in length to fit a wide variety of users. Nonetheless, while the garment may be in a more extended state for certain users, the greatest possible amount of absorbent structure, for that user, will still generally be located in the area where it is most necessary. Because the garment is, in use, generally under an applied force and stretched to at least some degree, the presence of the elastomeric strands cause the garment, including the absorbent structure, to ride close against the body of a wearer. Thus, the garment is not as noticeable under clothing as known garments having an absorbent structure which does not contract along its length to adjust to the body of a wearer but instead, bunches and appears baggy when worn under clothes.

Figure 2 is a cross section of the garment illustrated in Figure 1 taken along line 2-2 of Figure 1. As can be seen from reference to Figure 2, absorbent structure 16 is located between the inner layer 12 and the outer layer 14. The outermost elastomeric strands 18 are stretch bonded to the inner layer 12 and the outer layer 14. The inner two elastomeric strands 18 are stretch bonded to the outer layer 14 and absorbent structure 16. In this manner, the inner layer 12, outer layer 14, and absorbent structure 16 will all be reduced in length along their width and form rugosities along their surface as the elastomeric strands are relaxed to a non-tensioned state.

Figures 3 and 4 illustrate a second embodiment of the present invention. With reference to Figure 3, a garment 20, is illustrated having an inner layer 22, an outer layer 24, and an absorbent structure 26 located between the inner layer 22 and the outer layer 24. In the embodiment of the present invention illustrated in Figures 3 and 4 the absorbent structure 26 comprises an upper layer 28, adapted to rapidly receive a discharged body fluid, a lower layer 30 adapted to primarily store a discharged body liquid and a fluid-impervious layer 32 adapted to prevent passage of a body fluid into lower layer 24 and externally of the garment 20.

Elastomeric strands 34 are stretch bonded along substantially the entire length of the garment. In the illustrated embodiment, the outermost elastomeric strands 34 are stretch bonded to the inner layer 22 and outer layer 24. The inner elastomeric strands are stretch bonded to the outer layer 24 and to the absorbent structure 26, specifically to the fluid-impervious layer 32 of absorbent structure 26. In order to ensure that all of the components of the garment 20 contract in length

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upon relaxation of the elastomeric strands 34, it is generally preferred that all of the elements be bonded to one another. Thus, it is preferred that the three elements of the absorbent structure 28 be bonded to one another and that the absorbent structure in turn be bonded to either or both of the outer layer 24 and inner layer 26. As is known to those skilled in the art, such bonding can be done with adhesives, heat, needling, ultrasonically, or the like. As will be described in greater detail below, the upper layer 28 and lower layer 30 of absorbent structure 28 are generally porous fiber matrices. Due to the fibrous nature of the upper layer 28 and lower layer 30, said layers may be frictionally bonded to one another such that the interlocking of the fibers of the two components are sufficient to cause both components to contract in length when the garment is in the relaxed state.

Generally, it is desirable that the fluid-pervious inner layer be soft and have a generally clothlike feel, thus enhancing the comfort of a wearer. The inner layer may be a nonwoven web of synthetic or natural fibers or a blend thereof, a plastic film with perforations, an expanded plastic webbing material, a scrim material, or a woven material such as cotton or rayon. Preferably, the inner layer is spunbonded polyethylene or spunbonded polypropylene having a basis weight of about 0.2 to about 1.0 oz/yd². More preferably, the inner layer is spunbonded polypropylene having a basis weight of from about 0.2 to about 1.0 oz/yd². The material of which the inner layer will be made for any specific embodiment or variation can vary depending on the exact properties and characteristics desired of the inner layer. Generally, it is desired that the inner layer be hydrophobic and have high fluid transfer rates. When the inner layer is hydrophobic it tends not to hold fluid thus presenting a dryer surface for contacting the skin of a wearer. A high fluid transfer rate allows the inner layer to pass a discharged body fluid rapidly to prevent leakage from the garment. To achieve these characteristics, the inner layer can be treated with surfactants to adjust its hydrophobicity and fluid transfer rate and it may also be selectively embossed or apertured with discrete slits or holes extending therethrough to adjust its fluid transfer rate.

The absorbent structure is suitably any single or multilayered structure capable of absorbing discharged body fluids. Desirably, the absorbent structure is capable of absorbing a discharged body fluid at a rate generally equal to or greater than the rate at which said body fluid is discharged. Typically, the absorbent structure comprises at least one layer of an airlaid cellulosic fiber such as that commonly referred to as wood pulp fluff. Conventional airlaid cellulosic fiber layers can have a density ranging from about 0.05 to about

0.30 grams per cubic centimeter, measured under a load of 0.2 pounds per square inch, and are sufficiently flexible to readily conform to the body of a wearer. The absorbent structure may also comprise a coform material formed from a mixture of cellulosic fibers and synthetic polymer fibers. The coform material may be in replacement of or in addition to the layer of cellulosic fibers described above. For example, the coform material may comprise an airlaid blend of cellulosic fibers and meltblown polyolefin fibers, such as polyethylene and polypropylene fibers. It is generally preferred that the absorbent structure have at least one layer which has a tendency to draw a discharged body fluid away from the wearer and through and away from the inner layer such that the inner layer, in contact with the body of a wearer, tends to maintain a relatively dry feel.

The absorbent structure may also include an effective amount of an inorganic or organic high-absorbency material to enhance the absorptive capacity of the absorbent structure. For example, the absorbent structure can include 5 to 85 weight percent of high-absorbency material and preferably includes about 10 to 30 weight percent of the high-absorbency material to provide more efficient performance. Suitable inorganic high-absorbency materials include, for example, absorbent clays and silica gels. Organic high-absorbency materials can include natural materials such as agar, pectin, guar gum, and peat moss, as well as synthetic materials such as synthetic hydrogel polymers. Such hydrogel polymers include, for example, carboxymethylcellulose, alkali metal salts of polyacrylic acid, polyacrylamides, polyvinyl alcohol, ethylene maleic anhydride copolymers, polyvinyl ethers, hydroxypropyl cellulose, polyvinyl morpholinone, polymers and copolymers of vinyl sulfonic acid, polyacrylates, polyacrylamides, polyvinyl pyridine, and the like. Other suitable polymers include hydrolyzed acrylonitrile grafted starch, acrylic acid grafted starch, and isobutylene maleic anhydride copolymers and mixtures thereof. The hydrogel polymers are preferably lightly crosslinked to render the material substantially water insoluble. Crosslinking may, for example, be by irradiation or by covalent, ionic, Van der Waals or hydrogen bonding. Suitable high-absorbency materials are available from various commercial vendors, such as Dow Chemical Company, Hoechst Celanese Corporation, Allied Colloid, and Stockhausen. Typically, the high-absorbency material is capable of absorbing at least about fifteen times its weight in a 0.8 weight percent aqueous solution of sodium chloride and preferably is capable of absorbing at least about 25 to 50 times its weight in a 0.9 weight percent aqueous solution of sodium chloride.

The high-absorbency material can be distrib-

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uted or otherwise incorporated into the absorbent structure employing various techniques. For example, the high-absorbency material can be substantially uniformly distributed in a layer of airlaid cellulosic fibers or coform material when such layers are present in the absorbent structure. The material can also be non-uniformly distributed among the fibers to form, for example, a generally continuous gradient with either an increasing or decreasing concentration of high-absorbency material through the thickness of the absorbent structure. Alternatively, the high-absorbency material can comprise one or more discrete layers or stripes selectively segregated from the other materials of the absorbent body. When the absorbent structure comprises a layer of airlaid cellulosic fibers, an optional hydrophilic tissue wrap may be present to help maintain the integrity of the airlaid fibrous structure. The tissue wrap typically comprises an absorbent cellulosic material such as creped wadding or a high wet-strength tissue.

In the embodiment of the present invention illustrated in Figures 3 and 4, the absorbent structure is a two-layer structure comprising an upper layer 28 and a lower layer 30. The upper layer 28 is designed to rapidly accept, temporarily hold, and subsequently release a body fluid. Specifically, it is desired that the upper layer be able to absorb discharged body fluids from the inner layer at the rate and volume said fluids are discharged. Then, it is desired that the upper layer be able to temporarily hold and subsequently release such absorbed fluid into the lower layer 30. After the upper layer has released the fluid into lower layer 30, upper layer 28 is ready to receive another insult of discharged body fluid. As a general rule, the upper layer will have a larger average pore size than the lower layer.

Exemplary of materials suitable for use as the upper layer 28 in a two-layer absorbent structure are needle entangled fibers (e.g., polyester fibers, rayon fibers, etc.), bonded fibers (e.g., polyester fibers, rayon fibers, etc.) and the like. Bonded polyester fibers suitable for use as the upper layer 28 are commercially available from Sackner Products, Grand Rapids, MI under the trade designation SH 88 Resinated Polyester Padding. The upper layer suitably has a thickness of from about 0.04 to about 1.0 inch, preferably from about 0.125 to about 0.75 inch, a density of from about 0.001 grams per cubic centimeter to about 1.0 grams per cubic centimeter.

The outer layer suitably comprises a soft, non-woven material with a clothlike feel. Exemplary of suitable materials for use as the outer layer are spunbonded polypropylene, polyethylene, polyesters, and the like. Also suitable for use are melt-blown polyolefins such as polyethylene, poly-

propylene and other meltblown thermoplastic materials such as polyesters. When spunbonded polypropylene or polyethylene are employed, the outer layer will generally be fluid-permeable.

In order to prevent a discharged body fluid from passing external of the garment, it is desirable to incorporate a fluid-impermeable layer into the garment. Exemplary of suitable fluid-impermeable layers are polyolefin films such as a film of polyethylene or polypropylene. It is possible to form the outer layer from a fluid-impermeable material thus obviating the necessity of incorporating a separate fluid-impermeable layer in the garment. However, softness of the garment is enhanced by having the outer layer comprise a nonwoven material with clothlike feel.

The elastomeric strands may be a single preferably threadlike length of elastomeric material or may be comprised of a plurality of threadlike lengths of elastomeric material. The strands generally have a transverse cross sectional area within the range of from about 0.005 to about 1.0 square millimeter, preferably from about 0.01 to about 0.8 square millimeter.

A variety of commercially available elastomeric materials can be used to form the elastomeric strands. Exemplary of suitable elastomeric materials from which the elastomeric strands may be formed are natural rubber, butyl rubber, or other synthetic rubber, urethane elastomeric material such as that available from B. F. Goodrich Company under the trademark TUFTANE, spun urethane elastomeric material such as spandex, and elastomeric material available from the H. B. Fuller Company under the tradename FULLASTIC. The latter material is based upon thermoplastic elastomeric copolymers of the A-B-A type such as those available from Shell Chemical under the trademark KRATON which have a rubbery mid-block such as butadiene or isoprene and polystyrene end blocks and is especially useful because it is a self-adhesive material and can be applied to the garment without additional adhesive between the elastomeric strands and the other elements of the garment.

The generally parallel elastomeric strands, as illustrated in Figures 1 through 4, extend along substantially the entire length of the garment. In some instances, it may be desirable to have one or more elastomeric strands extend only along a partial length of the garment. This will be discussed in more detail below. For ease of manufacture, it is desirable that all of the elastomeric strands extend along the length of the garment and that there be no elastomeric strands in the transverse direction.

The various components of the garment are assembled together employing conventional techniques. For example, the components may be at-

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tached to one another employing thermal or sonic bonds, or mechanical fasteners such as snaps or clips. Alternatively, the components can be attached with adhesives, such as hot melt pressure-sensitive adhesives. The adhesives can be applied by employing conventional techniques such as by spraying droplets or filaments of adhesives. In the shown embodiments of the invention, the components are assembled employing an adhesive oriented along the length dimension of the garment.

The length of the outer and inner layers (prior to attachment of the elastomeric strands) will generally be within the range of from about 15 to about 80 inches, preferably from about 20 to about 65 inches. The width of the outer and inner layers will generally be within the range of from about 4 to about 8 inches, preferably from about 5 to about 7 inches. The length and width of the inner and outer layers may be the same or different. The length of the absorbent structure (prior to attachment of the elastomeric strands) will generally be within the range of from about 12 to about 25 inches, preferably from about 16 to about 20 inches. The width of the absorbent structure will generally be within the range of from about 2 to about 7 inches, preferably from about 3 to about 5 inches. As a general rule, the length and width of the absorbent structure will be less than the length and width of at least one of the outer or inner layers, preferably less than both the outer and inner layers.

In a relaxed state, the garment suitably has a length within the range of from about 5 to about 50 inches, preferably from about 7 to about 25 inches; and a width of from about 3 to about 8 inches, preferably from about 5 to about 6 inches.

Applicants have discovered a number of advantages which are achievable in the garments of the present invention. Referring now to Figures 5 and 6, Figure 5 is a side elevational view of the longitudinal side of the garment illustrated in Figures 3 and 4 in an elongated tensioned state. Figure 6 is a side elevational view of garment 20 in a relaxed state. Reference to Figure 6 illustrates the extent to which the relaxed garment possesses a series of transverse rugosities. The area of garment 20 generally indicated by number 38 corresponds to the rugosities formed by allowing upper layer 28 of absorbent structure 26 to contract to a relaxed state. Due to the very open porous nature of upper layer 28, a billowy appearing set of rugosities is formed. The area of garment 20 generally represented by number 36 corresponds to lower layer 30 of absorbent structure 26 in a relaxed state. Due to the fact that, in the illustrated embodiment, lower layer 30 comprises an airlaid web of cellulosic fluff having a less porous nature than upper layer 28, lower layer 30 forms a less billowy appearing set of rugosities. The portion of

garment 20 generally represented by the number 40 represents the rugosities formed in the area of the garment where the inner layer 22 is adhered directly to outer layer 24. Due to the thin, clothlike nature of inner layer 22 and outer layer 24, uniform appearing rugosities are formed. Due to the fact that the absorbent structure is less wide than the inner and outer layers and the elastomeric strand closest to the longitudinal edge of garment 20 is set back from the exact edge of the garment, the garment is found to possess, in a relaxed state, a ruffled appearance along its outer longitudinal edges. This ruffle contributes to the delicate appearance of the garment and increases the comfort to a wearer.

As can be seen from reference to Figure 6, in a relaxed state, garment 20 possesses a longitudinal curve. The longitudinal curve of the garment is caused by the presence of the stretch bonded elastomeric strands. Specifically, the curve is caused by the fact that there is differential tensioning in the strands as a result of the location of the various strands in the garment. Specifically, assuming a constant tension on all the elastomeric strands, those strands at the outer longitudinal edges of the garment which are located between the inner layer 22 and the outer layer 24 exert a greater contractive force due to the fact that inner layer 22 and outer layer 24 are relatively easily gathered to form the rugosities. In contrast, those elastomeric strands located between the fluid-imperious layer 32 of the absorbent structure 26 and the outer layer 24, are able to contract to a lesser degree due to the fact that they must contract the absorbent structure 26 which is harder to gather due to its mass and thickness. Accordingly, due to the different degree of contraction between the inner elastomeric strands and the outer elastomeric strands, the longitudinal ends and edges of the garment tend to be pulled upwardly and inwardly, thus producing the illustrated curvature.

This differential tensioning may be induced, as described above, by the location of the elastomeric strands, or it may be induced or enhanced by differentially tensioning the strands prior to stretch bonding the strands to the garment. Alternatively, strands having different contractive forces can be employed to enhance this differential tensioning effect.

Applicants have discovered that in many instances it is desirable to impart a particular shape to the garments according to the present invention. The elastomeric strands present in the garments of the present invention can be positioned in different locations along the length and throughout the thickness of the garments. Accordingly, it is possible to achieve different garment shapes. The ability to shape the garment 20 can significantly increase the

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performance and comfort of the garment.

Without intending to exhaust all possibilities, Figures 7 through 10 illustrate exploded transverse end views showing several possible locations of the various elements of garments according to the present invention. Referring to Figure 7, the elastomeric strands 42 are located beneath an absorbent structure 44 which in turn is sandwiched between an inner layer 46 and an outer layer 48. As referenced in connection with Figure 8, such a structure produces a garment having the outer longitudinal ends thereof curved upwardly and inwardly.

Referring to Figure 8, elastomeric strands 50 are located above absorbent structure 52 which is in turn sandwiched between an inner layer 54 and an outer layer 56. Such an arrangement has been found to produce a garment wherein the longitudinal end of the garment tends to curve downward and inward, thus producing the mirror image curve of the garment of Figure 7. Again, this shaping ability results from the specific location of the elastomeric strands.

Referring to Figure 9, two sets of elastomeric strands are present with the sets being located at different positions throughout the thickness of the garment. The elastomeric strands 58 are located beneath an absorbent structure 60 while elastomeric strands 62 are located above the absorbent structure 60. Strands 58 and 62 and absorbent structure 60 are sandwiched between an inner layer 64 and an outer layer 66. The arrangement illustrated in Figure 9 has been found to produce a garment having the longitudinal ends of the garment curved upwardly and inwardly as with Figure 7 but has further been found to produce a more pronounced upward and inward curve along the transverse edges of the garment. Thus, the arrangement illustrated in Figure 9 has been found to produce a garment having a pocket configuration. Such a garment has been found to be particularly well adapted, from a performance and comfort standpoint, for use on humans.

It is believed that the location of the elastomeric strands throughout the thickness of the garment contributes to both the longitudinal and transverse curvature of the garment. One particularly advantageous aspect of the present invention is the ability to achieve transverse curvature of the garment without having elastomeric strands extend transversely across the width of the garment. Since the length of the garment often corresponds to the machine direction of the garment during formation, avoiding the necessity of having transverse (cross direction) elastomeric strands simplifies the manufacturing process.

Figure 10 illustrates yet another preferred embodiment of the present invention. In Figure 10,

inner layer 68 and a two component outer layer 70 enclose an absorbent structure comprising an upper layer 72, a lower layer 74, and a fluid-impervious layer 76. A first set of elastomeric strands 78 are located between the two components of outer layer 70. The elastomeric strands 78 are located in the central portion of the transverse cross section of the garment generally beneath the entire three layer absorbent structure. A second set of elastomeric strands 80 are located immediately beneath the inner layer 68. As can be seen from reference to Figure 10, the inner two strands 80a of elastomeric strands 80 are located on the outer transverse edges of upper layer 72 and are sandwiched between lower layer 74 and inner layer 68. Elastomeric strands 80a may be full or only partial length strands. For example, the elastomeric strands 80a may extend generally only along the length of the absorbent structure. The elastomeric strands 80b are located on the outer transverse edges of lower layer 74 and are sandwiched between inner layer 68 and fluid-impervious layer 76. The remaining elastomeric strands 80c and 80d are located on the outer transverse edge of fluid-impervious layer 76 and are sandwiched between inner layer 68 and outer layer 70.

The particular arrangement of elements illustrated in Figure 10 has been found to produce a garment having a particularly pronounced longitudinal and transverse curve. The presence of such curvature produces a garment which is improved from a performance and comfort standpoint.

The garment illustrated in Figure 11 is a perspective view of the embodiment illustrated in Figure 10. As can be seen from reference to Figure 11, the garment possesses a definite pocket shape. A garment such as that illustrated in Figure 11 can be attached, in use, in a variety of manners. For example, an adhesive strip may be applied along the outer surface of the outer layer with the garment being held in position by attachment to the underclothing of a wearer. Alternatively, the adhesive material may be replaced with a frictional material which similarly holds the garment in position due to friction created between the garment and the underclothing of a wearer.

In another aspect, the present invention concerns a garment such as that described above further comprising integral attachment means. Such a garment is illustrated in Figure 12. With reference to Figure 12, a garment 82 is provided, said garment comprising an inner layer 84, an outer layer 86, and an absorbent structure comprising a fluid-impervious layer 88, a lower layer 90 and an upper layer 92. The garment further comprises a plurality of elastomeric strands 94 extending in a generally parallel relationship along the entire length of garment 82 and a pair of elastomeric strands 95

extending in a generally parallel relationship along only a partial length of garment 82. Again, the elastomeric strands 94 and 95 are stretch bonded to garment 82.

As can be seen from reference to Figure 12, the absorbent structure is located generally at one longitudinal end section of garment 82. The other longitudinal end section comprises an extended area of inner layer 84 and outer layer 86 with stretch bonded elastomeric strands 94 sandwiched therebetween. Attachment means 96 and 98 are suitably formed by making a longitudinal slit 100 in the longitudinal end section of garment 82 generally opposite the absorbent structure. This produces two strips of a clothlike nonwoven material (inner layer 84 and outer layer 86) with at least one elastomeric strand stretch bonded to said nonwoven material. In a relaxed state, the attachment means 96 and 98 will constrict longitudinally thus forming a plurality of rugosities in their outer surface. By locating the elastomeric strands 94 slightly inward of the outer transverse edges of the attachment means 96 and 98, and forming slit 100 such that the elastomeric strands closest to slit 100 are set back slightly from slit 100 both the outer and inner edges of the attachment means 96 and 98 will have a ruffled appearance. The width of the longitudinal end section from which the attachment means is formed is desirably generally the same as the width of the longitudinal end of the garment on which the absorbent structure is located.

A reinforcing means 101 is present on garment 82. The reinforcing means 101 is located generally at one end of slit 100 and serves to prevent inadvertent lengthening of slit 100 during use of the garment. The reinforcing means 101 may comprise any material with sufficient strength to serve the above purpose and which is capable of being bonded to the garment. Exemplary of suitable material from which to form the reinforcing means are polymeric films such as polyethylene; woven and nonwoven fabrics, hot melt adhesives and the like.

Figure 13 is a cross-sectional view of Figure 12 taken along line 13-13. Figure 14 is a cross-sectional view of Figure 12 taken along line 14-14.

Figure 15 illustrates another preferred embodiment of the present invention further comprising attachment means. In the embodiment illustrated in Figure 15, attachment means 102, 104, 106 and 108, similar to attachment means 96 and 98 of Figure 12 are formed in both longitudinal ends of the garment with the absorbent structure 110 being located generally in the middle of the garment. Longitudinal slits 112 and 114 are formed at each longitudinal end of the garment to form the attachment means 102, 104, 106, and 108. Reinforcing means 116, 118 are illustrated at the ends of both of the slits which ends are closest to the absorbent

structure. Figure 16 illustrates a top plan view of the garment illustrated in Figure 15 in a relaxed condition.

In use, the attachment means can be fitted with mechanical fasteners such as tapes, hook and loop type fasteners, buttons, hooks, and the like in order to fasten the garment about the hips and waist of a wearer.

Figures 17 and 18 illustrate the garment illustrated in Figure 12 in use about the waist and hips of a wearer. Specifically, Figure 17 is a front perspective view of the garment 82 in use on a wearer. As can be seen from reference to Figure 17, attachment means 96 and 98 extend generally around the hips of a wearer and fasten to the opposite longitudinal end of garment 82. In the specific embodiment illustrated in Figures 17 and 18, a hook and loop type fastener have been attached to the garment. Specifically, a hook type fastener 120 has been attached to attachment means 96 with a loop type fastener 122 having been attached to the opposite longitudinal end of garment 82. Figure 18 is a rear perspective view of the garment 82 being held in place by attachment means 96 and 98.

While not illustrated, it is evident that when the embodiment shown in Figures 15 and 16 is in place on a wearer the opposite ends of the garment will meet on the hips of the wearer. Thus, rather than the mechanical fasteners fastening together on the front of a wearer as illustrated in Figures 17 and 18, mechanical fasteners on the garment illustrated in Figures 15 and 16 would fasten together on the outside of a wearer's hips.

While the attachment means illustrated in Figures 12 - 18 have been shown to have been formed integrally with the garment, it is understood that the attachment means described above could be formed separately and integrally attached to a garment such as that illustrated in Figure 11 to form a garment similar to that illustrated in Figure 12, 17 and 18. One advantage of forming the attachment means separately and attaching them to a garment as illustrated in Figure 11 is that the elastomeric strands present in the attachment means could be varied in location, number, strength, and the like from that present in the portion of the garment containing the absorbent structure.

Additionally, while the free end of the attachment means illustrated in Figures 12, 17 and 18 are shown to be capable of being releasably attached to the garment by mechanical fasteners, it is within the scope of the present invention to have the attachment means be permanently fixed to the garment at both ends. Such an embodiment is illustrated in Figure 19. The garment illustrated in Figure 19 would be applied to a wearer by having the wearer step through the openings 124, 126 and

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pulling the garment up over the wearer's legs until the garment is in proper position for use.

While this invention has been described as having a preferred embodiment, it shall be understood that it is capable of further modifications. Thus, this application is intended to cover any variations, uses or adaptations of the invention following the general principles thereof, and including such departures from the present disclosure as come within known or customary practice in the art to which this invention pertains and fall within the limits of the following claims.

Claims

1. A stretchable shaped absorbent garment having a length, a width, and a thickness, said garment comprising:
 - (A) a fluid-perVIOUS inner layer having a length and a width;
 - (B) an outer layer having a length and a width;
 - (C) an absorbent structure having a length and a width, said absorbent structure being located between said inner and outer layers; and
 - (D) at least two generally parallel elastomeric strands stretch bonded to said garment along substantially its entire length; such that, when in a relaxed state, said elastomeric strands reduce the length of said inner layer, outer layer, and absorbent structure across the width of the garment.
2. A garment according to Claim 1 wherein said inner layer is a soft, clothlike, nonwoven material.
3. A garment according to Claim 2 wherein said outer layer is a soft, clothlike, nonwoven material.
4. A garment according to Claim 3 wherein the width of said absorbent structure is less than the width of at least one of said inner or outer layers.
5. A garment according to Claim 4 wherein the width of said absorbent structure is less than the width of both of said inner and outer layers.
6. A garment according to Claim 1 wherein, in a relaxed state, said elastomeric strands reduce the length of said inner layer, outer layer, and absorbent structure across the width of the garment by at least about 40 percent.
7. A garment according to Claim 1 wherein said absorbent structure comprises a layer of cellulosic fibers and a high-absorbency material.
8. A garment according to Claim 7 wherein said absorbent structure further comprises a layer which is capable of rapidly absorbing a liquid, temporarily holding said liquid and subsequently releasing said liquid.
9. A garment according to Claim 1 wherein said garment further comprises a fluid-imperVIOUS layer located between said absorbent structure and said outer layer.
10. A garment according to Claim 1 wherein said garment comprises a plurality of generally parallel elastomeric strands spaced generally across the entire width of the garment.
11. A garment according to Claim 1 wherein said elastomeric strands are located in different positions throughout the thickness of said garment.
12. A garment according to Claim 1 wherein said elastomeric strands are generally spaced across the entire width of said garment.
13. A garment according to Claim 1 wherein the garment has a longitudinal curve.
14. A garment according to Claim 13 wherein said garment has a transverse curve.
15. A garment according to Claim 1 wherein at least one of said elastomeric strands is stretch bonded to said absorbent structure.
16. A garment according to Claim 1 further comprising attachment means for holding said garment in place during use, said attachment means comprising at least two strips of a clothlike nonwoven material and at least one elastomeric strand stretch bonded to said nonwoven material.
17. A garment according to Claim 1 wherein at least one of said outer or inner layers defines an end section at one longitudinal end of said garment, said end section having a width and a length and having at least two generally parallel elastomeric strands stretch bonded along its length, said end section being slit along its length to form attachment means for holding said garment in place during use.
18. A garment according to Claim 17 further com-

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prising reinforcement means attached to said end section.

19. A garment according to Claim 17 wherein said outer or inner layers define two end sections, one end section being located at each longitudinal end of said garment, said end sections having a width and a length and having at least two generally parallel elastomeric strands stretch bonded along their length, said end sections being slit along their length to form attachment means for holding said garment in place during use.

20. A garment according to claim 17 wherein the width of said end section is generally equal to the width of the garment.

21. A garment according to Claim 1 wherein a relaxed state, the elastomeric strands do not substantially reduce the width of the garment.

22. The garment according to claim 18 wherein said strips of nonwoven material have opposed longitudinal ends, one end being releasably attachable to said garment.

23. The garment according to claim 18 wherein said strips of nonwoven material have opposed longitudinal ends, both ends being integrally attached to said garment.

24. A stretchable shaped absorbent garment having a length, a width, and a thickness, said garment comprising:

(A) a fluid-permeable inner layer having a length and a width;

(B) an outer layer having a length and a width and being formed from a soft, cloth-like, nonwoven material;

(C) an absorbent structure having a length and a width, said absorbent structure comprising a layer of cellulosic fibers and a high-absorbency material and being located between said inner and outer layers;

(D) a fluid-impermeable layer located between said absorbent structure and said outer layer; and

(E) at least four generally parallel elastomeric strands stretch bonded to said garment along substantially its entire length; such that, when in a relaxed state, said elastomeric strands reduce the length of said inner layer, outer layer, absorbent structure, and fluid-impermeable layer across the width of the garment by at least about 40 percent.

25. A method for forming a shaped absorbent garment said garment comprising a fluid-impermeable inner layer having a length and a width, an outer layer having a length and a width, and an absorbent structure having a length and a width said absorbent structure being located between said inner layer and said outer layer; the steps of the method comprising:

(A) stretch bonding at least four generally parallel, elastomeric strands to said garment along substantially its entire length, at least two of said strands being positioned in different locations throughout the thickness of the garment; and

(B) bonding the inner layer, outer layer, and absorbent core to one another.

26. The method according to claim 25 wherein the garment is void of transverse elastomeric strands.

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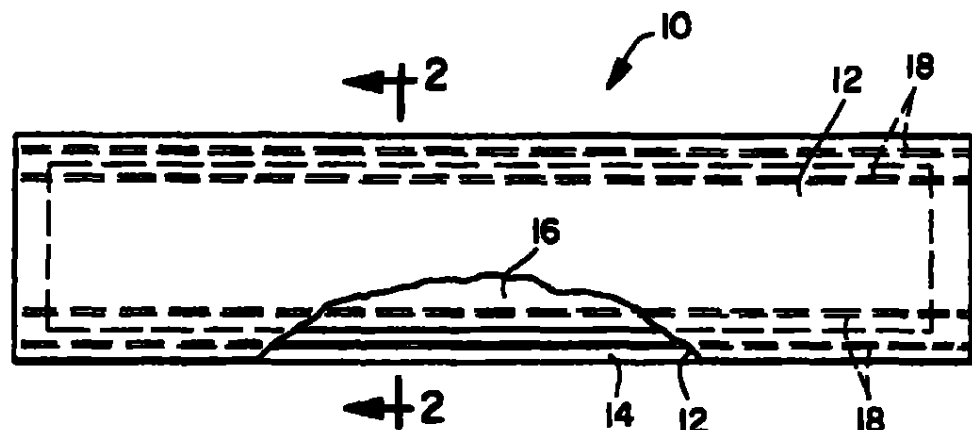


FIG. 1

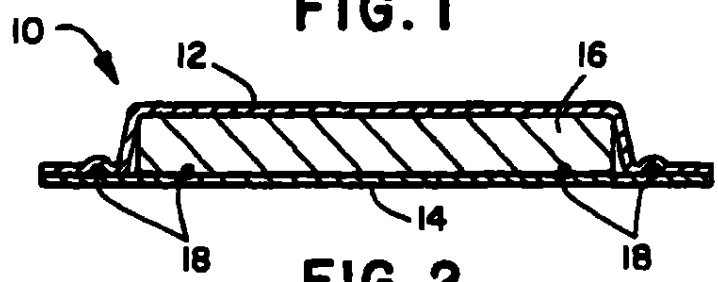


FIG. 2

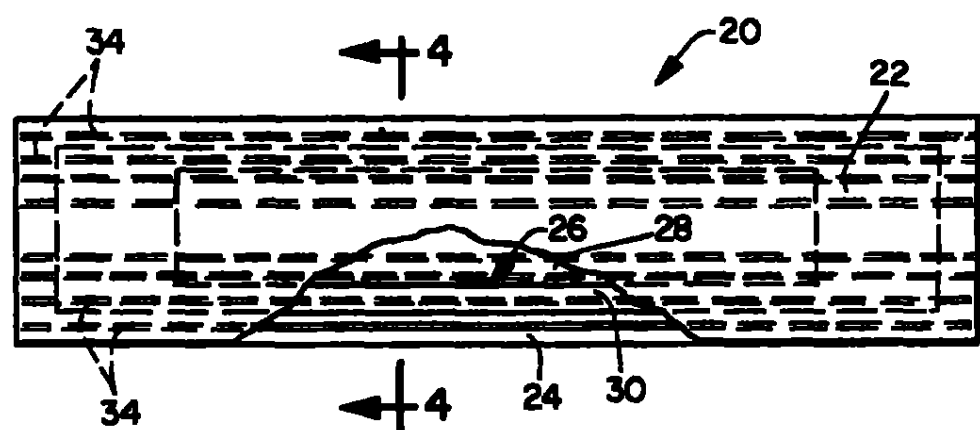


FIG. 3

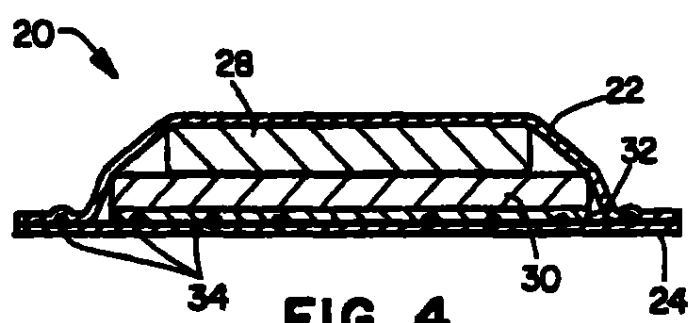
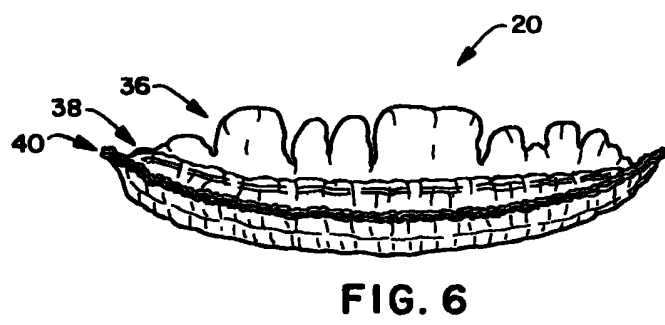
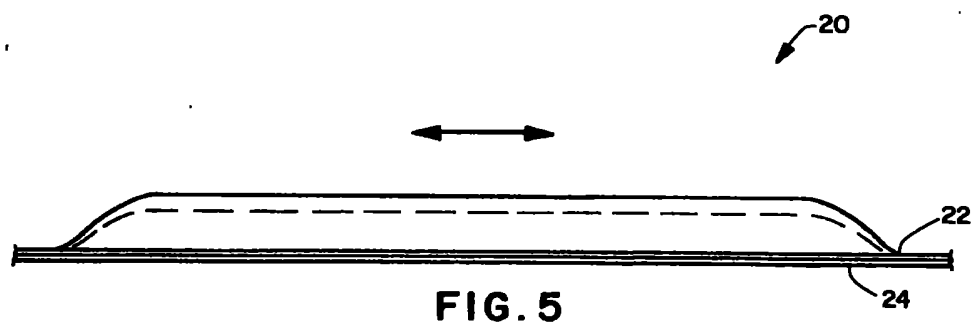


FIG. 4



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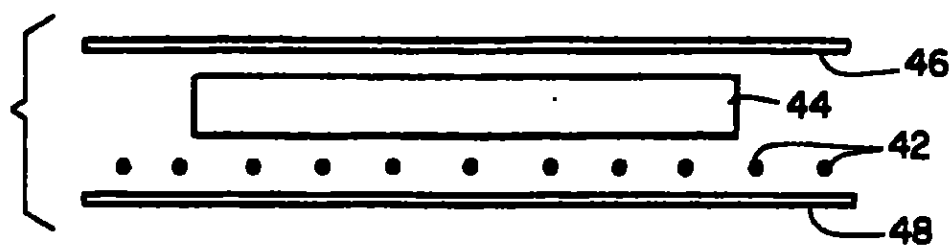


FIG. 7

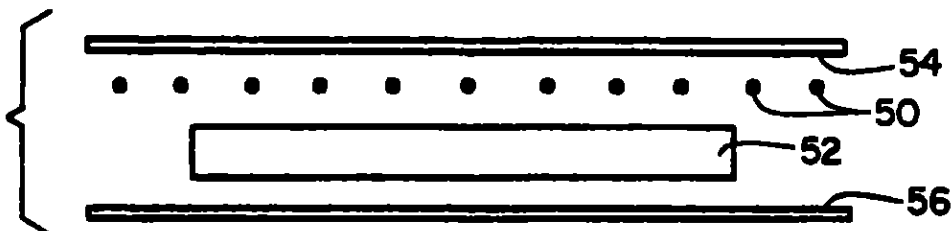


FIG. 8



FIG. 9

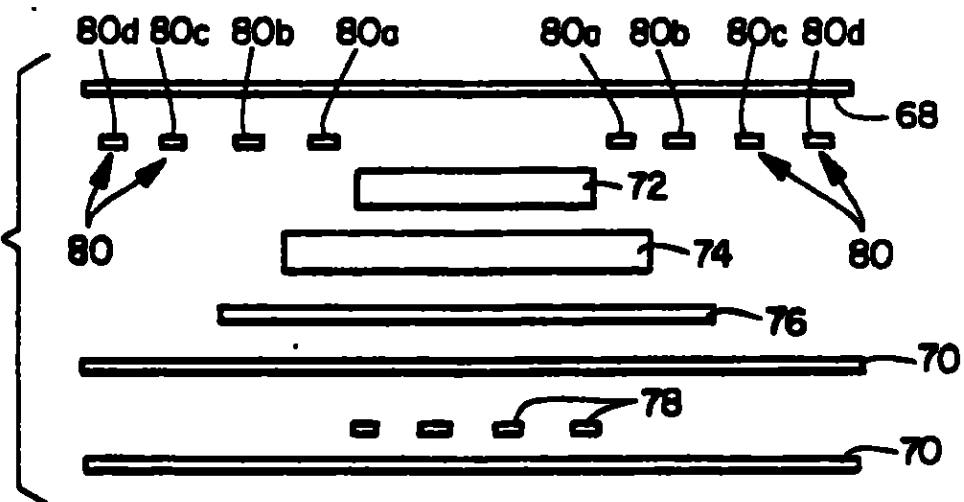


FIG. 10

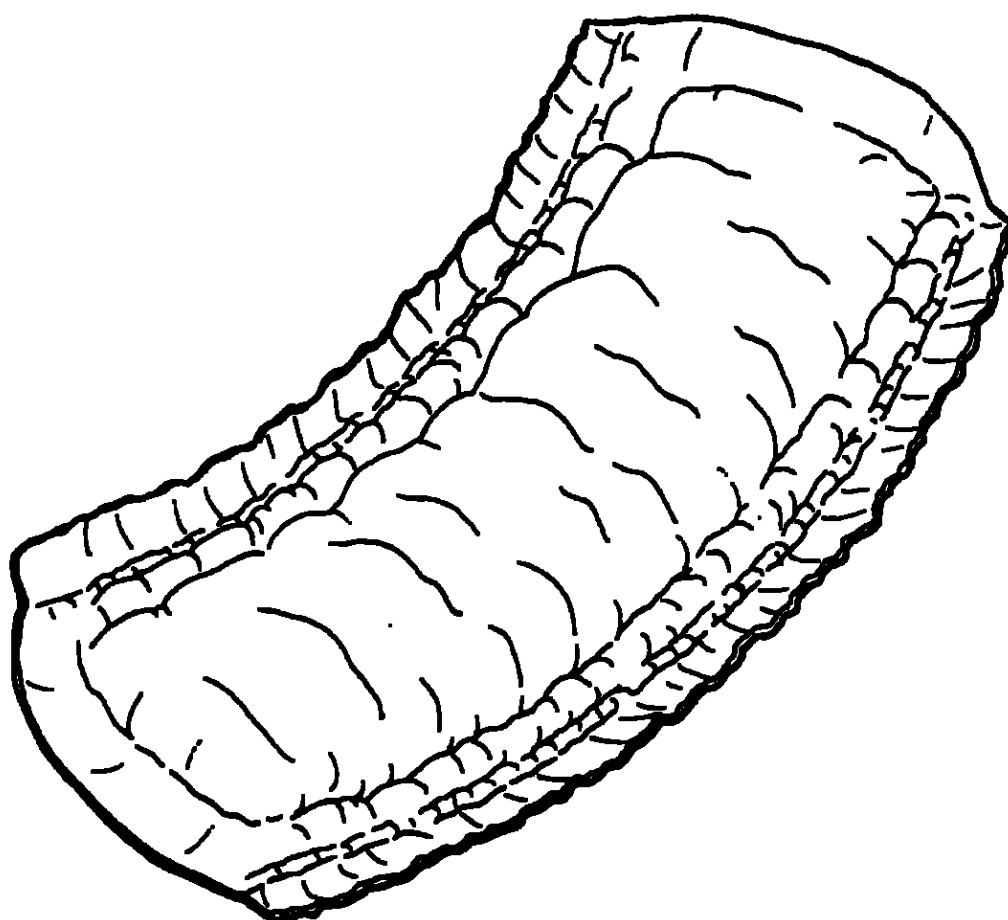


FIG. II

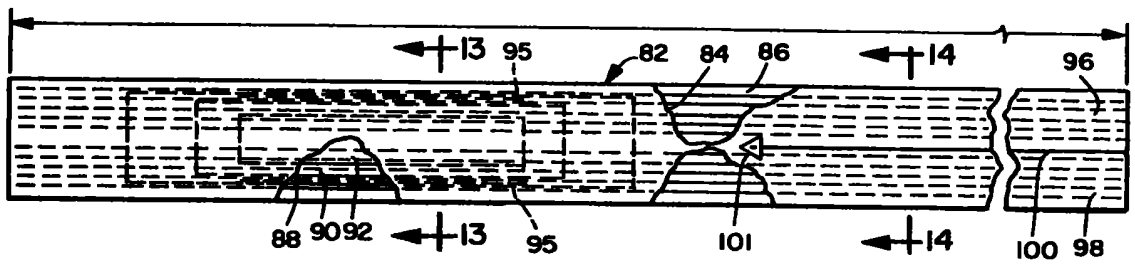


FIG. 12

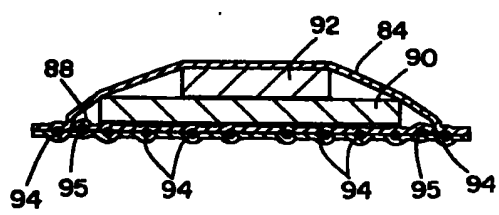


FIG. 13

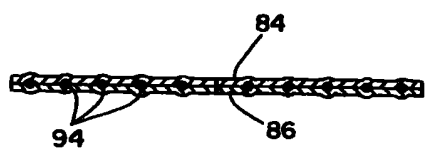


FIG. 14

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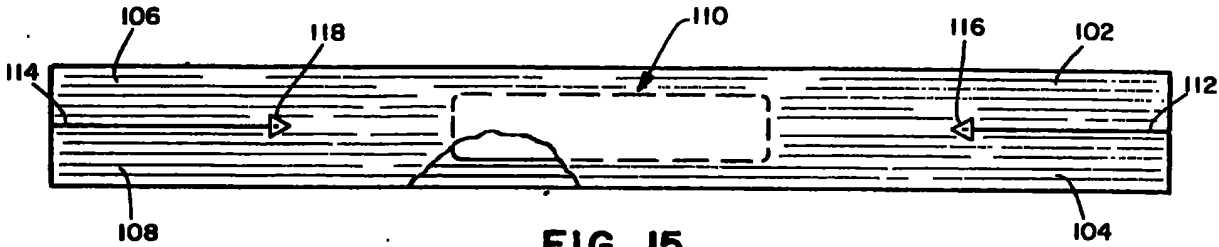


FIG. 15



FIG. 16

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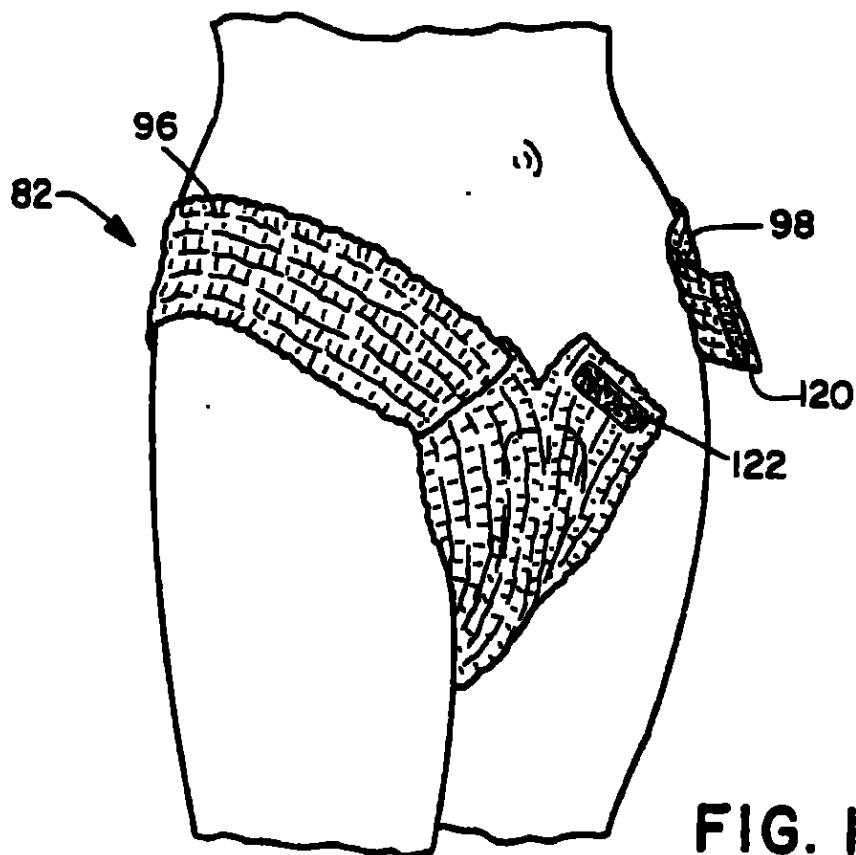


FIG. 17

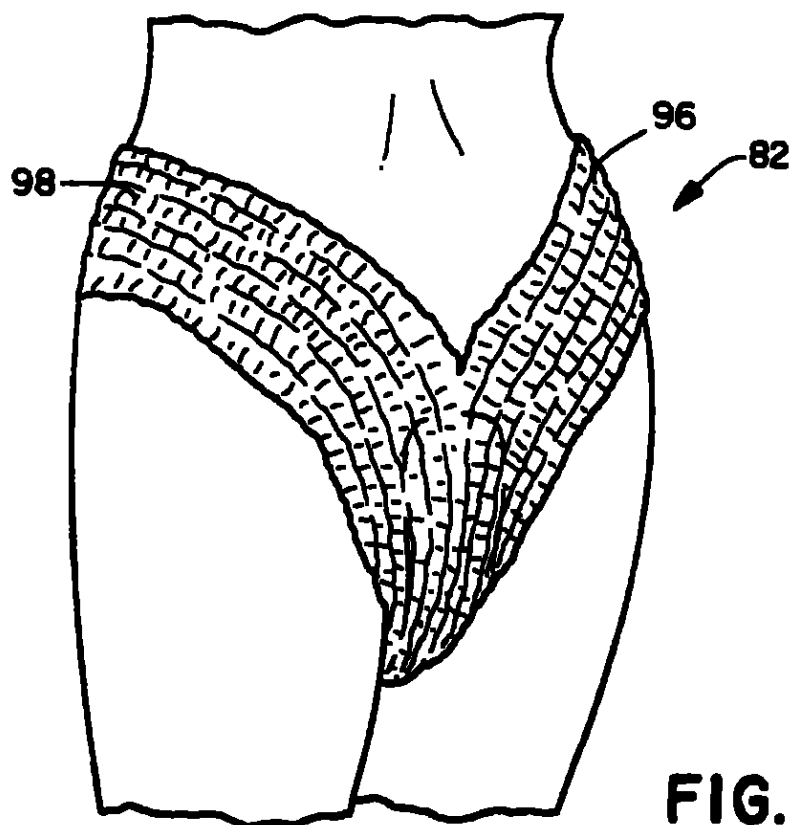


FIG. 18

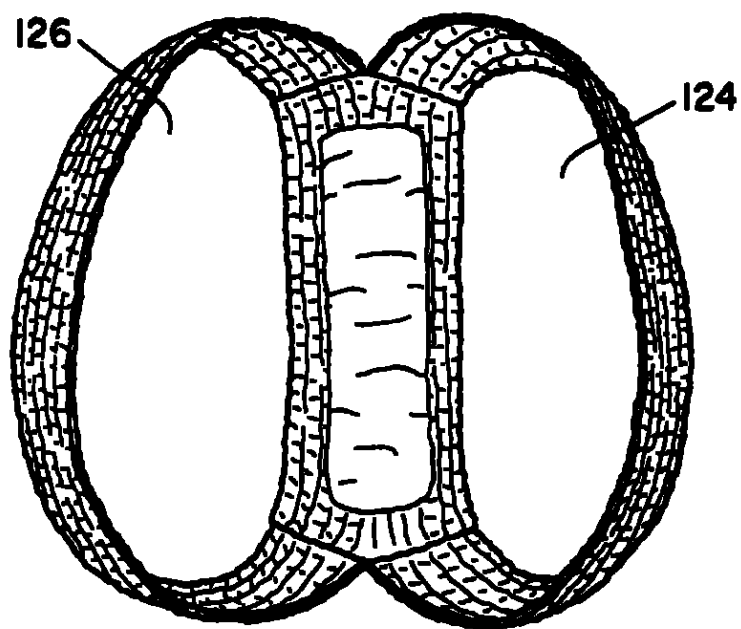


FIG. 19

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SUPERINTENDENCIA DE INDUSTRIA Y C MERO

RADICACIÓN: 0-73416

EDICTO No. 2920

LA SECRETARÍA GENERAL AD-HOC
HACE SABER:

Que esta Superintendencia profirió Resolución No. 1992 de 31-ENE-2006. Que el contenido de la parte resolutive es como sigue: El Superintendente de Industria y Comercio.

RESUELVE

ARTICULO PRIMERO: Negar el privilegio de patente de invención para la solicitud correspondiente a 'ARTICULO ABSORBENTE QUE TIENE UN MECANISMO RESUJETABLE'.

ARTICULO SEGUNDO: Notificar personalmente el contenido de la presente resolución al doctor Ramiro Castro Duque, o a quien haga sus veces, en su calidad de apoderado de Kimberly-Clark Worldwide, Inc., entregándole copia de la misma, advirtiéndole que contra ella procede el recurso de reposición interpuesto ante el Superintendente de Industria y Comercio, al momento de la notificación o dentro de los 5 días hábiles siguientes a ella.

NOTIFÍQUESE Y CUMPLASE
Dada en Bogotá, D.C., a los 31 ENE. 2006

EL SUPERINTENDENTE DE INDUSTRIA Y COMERCIO,


JAIME RUBIO ESCOBAR

Para notificar a los interesados, se fija el presente EDICTO en lugar visible al público en la SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO, por el término de (10) diez días hábiles contados a partir de las 8:30 a.m. de hoy.

Secretaría General Ad-Hoc 21-FEB-2006
Secretaría General Ad-Hoc
EDICTO No. 2920

Esta edicto se desfilja hoy 06-MAR-2006 a las cinco (5:00 p.m.)