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SUPERINDUSTRIA Y COMERCIO
Radicacion : 00063065 00000004 Folios: 2 S.A.
Fecha (AMB): 2002-11-25 16:58:13)
Trámite : 002 PATENTES D 1 REGISTRO/ 530 PETITION 7976
Remedios: PARA INVENCIÓN DE NUEVAS CREACIONES 12700

AS: 83.018

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

REF.: Expediente No. 00 063.065 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. 02-77,416 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

Noviembre 21, 2002
CPB/hsr

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Industria y Comercio
SUPERINTENDENCIA

NIT : 800176089-2

SUPERINDUSTRIA Y COMERCIO

Radicacion : 00063065 00000004

Folios: 2

Fecha (AMD): 2002-11-25 16:50:13

Tramite : 002 PATENTES D 1 REGISTRO/ 538 PETICION
CADA DISTINGUO DE MARCA REGISTRADA

RECIBO OFICIAL DE CAJA : 02 - 77,416
FECHA : NOVIEMBRE 20 DE 2002

***** CONSIGNACION *****

DEPOSITANTE	TIPO PAGO	BANCO	CUENTA	No. PAGO	FECHA PGO	Vr. PAGO
BRIGARD & CASTRO LTDA	CONSIGNACION	BANCO POPULAR	050-00110-6	7316842	19/11/2002	33,082,000.00

***** CONCEPTO *****

CANT. REENTISTICO	CONCEPTO	TOTAL CONCEPTO
1 50005-01-01 SOLICITUDES	112 PTC CAP-I EXAMEN DE PATENTIBILIDA	318,000.00
	TOTAL :	\$ 318,000.00

SOM: TRESCIENTOS DIEZ Y OCHO MIL PESOS

RESPONSABLE : _____

RECIBO DE CAJA APLICADO AL EXPEDIENTE No. _____

Carrera 13 No. 27-00 Pisos 5, 7 y 10
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Bogotá, D.C., Colombia

SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO
DIVISI N DE NUEVAS CREACIONES

2020
Bogotá, D.C., 1 de julio de 2005

Doctor
RAMIRO CASTRO DUQUE
Apoderado

Oficio No. " 05637

ASUNTO	Radicación	00-63065
	Trámite	002
	Evento	001
	Actuación	430
	Folios	020

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

- Para el presente estudio se tuvo en cuenta el capítulo descriptivo que se encuentra en los folios 53 a 76, los dibujos que se encuentran en los folios 86 a 93 y 436 a 437 y el capítulo reivindicatorio que se encuentra en los folios 77 a 83 que comprende veinte (20) reivindicaciones.
- De acuerdo con el folio 433 de la solicitud en estudio, no se considerará la prioridad reivindicada sobre la solicitud de Estados Unidos No. 60/150,327 del 23 de agosto de 1999 y tampoco se considerará la prioridad reivindicada sobre la solicitud de Estados Unidos No. 09/637,430 del 11 de agosto de 2000.

2. Objeto de la invención

- La invención propuesta se relaciona con un artículo absorbente resujetable que exhibe mejorado ajuste al cuerpo. Más específicamente, esta invención se relaciona con un artículo absorbente resujetable desechable dimensionado para tener ciertas proporciones entre ciertas secciones que mejoran el ajuste al cuerpo y reducir el inconveniente de escape de fluidos.

En la reivindicación independiente 1 se define un artículo absorbente resujetable que comprende:

- a) Una porción frontal que tiene una sección central que incluye primer y segundo bordes laterales, primera y segunda secciones laterales cada uno colocados adyacente a uno de los primer y segundo bordes laterales y cada una de las primera y segunda secciones laterales que está unida en forma liberable a la sección central, casa una de las secciones laterales que tiene un borde exterior, y la porción frontal que tiene un primer extremo y un segundo extremo;

- b) Una porción posterior que tiene un primer extremo, un segundo extremo y primer y segundo bordes laterales, la porción posterior que está dividida en una primera sección y una segunda sección, la primera sección que tiene una longitud L_2 medida perpendicularmente desde el primer extremo de la porción posterior a una línea dirigida paralela a ella, la longitud L_2 que es igual o mayor de 9 cm, y la segunda sección que tiene una longitud L_2 medida perpendicularmente desde el segundo extremo hasta la línea dirigida paralela hacia el primer extremo, la longitud L_3 que es igual o mayor de 2,5 cm, la segunda sección que tiene un primer borde lateral y un segundo borde lateral y una primer área A_1 y una segunda área A_2 , la primer área A_1 que representa un área ligada por los primer y segundo bordes laterales, el segundo extremo y la línea dirigida paralela hacia el primer extremo, la segunda área A_2 que representa un área ligada por las primera y segunda líneas, el segundo extremo y la línea dirigida paralela hacia el primer extremo, las primera y segunda líneas dirigidas perpendiculares al segundo extremo en los puntos donde los primer y segundo bordes laterales interceptan el segundo extremo, las primera y segunda líneas que interceptan la línea dirigida paralela hacia el primer extremo, y la segunda sección que tiene una porción A_1/A_2 que varía dentro del rango de entre 1,3 a 3,5;
- c) Una porción de entrepierna que conecta la porción frontal a la porción posterior; y
- d) Un absorbente asegurado a por lo menos una de las porciones frontal, posterior o de entrepierna, y cada uno de los bordes exteriores de las primera y segunda secciones laterales de la porción frontal que están aseguradas a uno de los primer y segundo bordes laterales de la porción posterior para formar un artículo similar a un pantalón que tiene una abertura de cintura y un par de aberturas de pierna.

En la reivindicación independiente 10 se define un artículo absorbente resujetable que comprende:

- a) Una porción frontal que tiene una sección central que incluye primer y segundo bordes laterales, primera y segunda secciones laterales cada una colocada adyacente a uno de los primer y segundo bordes laterales y cada una de las primera y segunda secciones laterales que está agarrada en forma liberable a la sección central, cada una de las secciones laterales que tiene un borde exterior, y la porción frontal que tiene un primer extremo y un segundo extremo;
- b) Una porción posterior que tiene un primer extremo, un segundo extremo y primer y segundo bordes laterales, la porción posterior que está dividida en una primera sección y una segunda sección, la primera sección que tiene una longitud L_2 medida perpendicularmente desde el primer extremo de la porción posterior a una línea dirigida paralela a ella, la longitud L_2 que es igual o mayor de 10 cm, y la segunda sección que tiene una longitud L_3 medida perpendicularmente desde el segundo extremo hasta la línea dirigida paralela hacia el primer extremo, la longitud L_3 que es igual o mayor de 7,5 cm, la segunda sección que tiene un primer borde lateral y un segundo borde lateral y una primer área A_1 y una segunda área A_2 , la primer área A_1 que representa un área ligada por los primer y segundo bordes laterales, el segundo extremo y la línea dirigida paralela hacia el primer extremo, la segunda área A_2 que representa un área ligada por los primer y segundo bordes laterales, el segundo extremo y la línea dirigida paralela hacia el primer extremo, la segunda área A_2 que representa un área ligada por las primera y segunda líneas, el segundo extremo y la línea dirigida paralela hacia el primer extremo, las primera y segunda líneas que se dirigen perpendiculares al segundo extremo en los puntos donde los primer y segundo bordes laterales interceptan el segundo extremo,

las primera y segunda líneas que interceptan la línea dirigida paralela hacia el primer extremo, y la segunda sección que tiene una proporción A_1/A_2 que varía dentro del rango de entre 1,7 a 2,5;

- c) Una porción de entrepierna que conecta la porción frontal a la porción posterior;
- d) Un forro permeable a líquidos asegurado a por lo menos una de las porciones frontal, posterior o de entrepierna; y
- e) Un absorbente colocado debajo del forro, y cada uno de los bordes exteriores de las primera y segunda secciones laterales de la porción frontal que están asegurados a uno de los primer y segundo bordes laterales de la porción posterior para formar un artículo similar a un pantalón que tiene una abertura de cintura y un par de aberturas de pierna.

En la reivindicación independiente 15 se define un artículo absorbente resujetable que comprende:

- a) Una porción frontal que tiene una sección central que incluye primer y segundo bordes laterales, primera y segunda secciones laterales cada una colocada adyacente a uno de los primer y segundo bordes laterales y cada una de las primera y secciones laterales que está agarrada en forma liberable a la sección central, cada una de las secciones laterales que tiene un borde exterior, y la porción frontal que tiene un primer extremo y un segundo extremo;
- b) Una porción posterior que tiene un primer extremo, un segundo extremo y primer y segundo bordes laterales, la porción posterior que está dividida en una primera sección y una segunda sección, la primera sección que tiene una longitud L_2 medida perpendicularmente desde el primer extremo de la porción posterior a una línea dirigida paralela a ella, la longitud L_2 que es igual o mayor de 7,5 cm, múltiples hilazas elásticas que se extienden transversalmente a través de la primera sección desde el primer borde lateral al segundo borde lateral, y la segunda sección que tiene una longitud L_3 medida perpendicularmente desde el segundo extremo hasta la línea dirigida paralela hacia el primer extremo, la longitud L_3 que es igual o mayor de 10 cm, la segunda sección que tiene un primer borde lateral y un segundo borde lateral y una primer área A_1 y una segunda área A_2 , la primer área A_1 que representa un área ligada por los primer y segundo bordes laterales, el segundo extremo y la línea dirigida paralela hacia el primer extremo, la primer área A_1 que es igual o mayor de 175 cm², la segunda área A_2 que representa un área ligada por las primera y segunda líneas, el segundo extremo y la línea dirigida paralela hacia el primer extremo, las primera y segunda líneas dirigidas perpendiculares al segundo extremo en los puntos donde los primer y segundo bordes laterales interceptan el segundo extremo, las primera y segunda líneas que interceptan la línea dirigida paralela hacia el primer extremo, y la segunda sección que tiene una proporción A_1/A_2 que varía dentro del rango de entre 2,0 a 2,3;
- c) Una porción de entrepierna que conecta la porción frontal a la porción posterior;
- d) Un forro permeable a líquidos asegurado a por lo menos una de las porciones frontal, posterior o de entrepierna; y
- e) Un absorbente colocado debajo del forro, y cada uno de los bordes exteriores de la primera y segunda secciones laterales de la porción frontal aseguradas a uno de los primer y segundo bordes laterales de la porción posterior para formar un artículo similar a un pantalón que tiene una abertura de cintura y un par de aberturas de pierna.

- Se afirma que algunos de los artículos absorbentes desechables del arte previo son difíciles de quitar del cuerpo del usuario. Muchos no tienen un mecanismo resujetable que permite ajustar el artículo fácilmente durante el uso o se quite fácilmente del cuerpo del usuario antes de que el producto sea desechado permanentemente mientras mantiene un ajuste como de ropa interior, pantaloncitos de entrenamiento, etc. Algunos de los productos desechables comerciales de hoy no se conforman bien al cuerpo humano y este pobre ajuste aumenta el inconveniente de la probabilidad de escape de fluido cuando el producto es llevado puesto. Por consiguiente, permanece una necesidad de un artículo absorbente desechable que tenga un mecanismo resujetable que proporcionará el ajuste mejorado al cuerpo humano y reducirá el inconveniente de escape de fluidos.
- El objeto de la invención definido se catalogó como **A61F 13/15**, según la Clasificación Internacional de Patentes (IPC).

3. Claridad de la solicitud

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 que se refiera a dos o más reivindicaciones anteriores se considerará una reivindicación dependiente múltiple".

- El capítulo reivindicatorio incluye tres reivindicaciones independientes para definir el artículo absorbente reajutable. No obstante, dada la naturaleza de la invención, se puede realizar una definición clara empleando tan solo una reivindicación independiente.

El empleo de más de una reivindicación independiente para la misma categoría se realiza cuando no es posible definir la invención completamente con una sola. Pero dado el presente caso sí es posible emplear solo una. Esto mejoraría la claridad de la invención.

- Las reivindicaciones independientes no son concisas sobre todo en la incorporación de características de configuración.

Según se observa, las características que parecen resolver el problema enunciado corresponden a la configuración y/o disposición de elementos convencionales como en este caso, la porción posterior del artículo absorbente resujetable. No obstante, las reivindicaciones independientes incluyen tanta información que hacen poco clara la definición de la invención.

Para subsanar el problema de concisión, se recomienda que en las reivindicaciones solamente se incluya la información esencial y más importante. Pero si el señor solicitante considera que toda la información es esencial entonces por lo menos deberían incluirse números entre paréntesis (coherentes con los dibujos) después de nombrar cada parte del artículo absorbente para mejorar la inteligibilidad de la propuesta.

- En conclusión, el capítulo reivindicatorio no cumpliría con el requisito de claridad de acuerdo con el art. 30 de la Decisión 486. Por lo tanto, se recomienda realizar las modificaciones pertinentes según las observaciones incluidas y allegar un nuevo capítulo reivindicatorio con tales modificaciones.

4. 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 esté incluido en la solicitud de fecha anterior cuando ella se publique o hubiese transcurrido el plazo previsto en el artículo 40."

- Se consultaron las bases de datos con que cuenta y tiene acceso la entidad y se consideró el **23 de agosto del 2000** como fecha para investigar el estado de la técnica.
- De acuerdo con lo establecido en el artículo 16 se determinó el estado de la técnica y se encontraron los siguientes antecedentes:

No.	Documento No.	Título	Fecha de Publicación
1	US5527302	"CONFORMABLE ABSORBENT ARTICLE"	18 de junio de 1996
2	US4906243	"COMBINATION DIAPER AND TRAINING PANTS"	6 de marzo de 1990

5. 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 de 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.

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 la materia técnica correspondiente, esa invención no hubiese resultado obvia ni se hubiese derivado de manera evidente del estado de la técnica."

Respecto al estado de la técnica:

- En el documento **US5527302** (llamado de aquí en adelante D1) se divulga un artículo absorbente ajustable que tiene una hoja superior diseñada para realizar un contacto total del cuerpo del usuario para así mejorar el desempeño, manejo y contención de los residuos corporales. El manejo y contención de residuos es mejorado por varios elementos estructurales que pueden ser utilizados individualmente o colectivamente.

Algunos de estos elementos son un bolsillo de contención formado entre la hoja superior y posterior, una abertura en la hoja superior para recibir los residuos a través de él, un par de aletas de contención y un par de aletas laterales, y una hoja posterior expandible para retener tales residuos.

- En el documento **US4906243** (llamado de aquí en adelante D2) se divulga una prenda desechable que comprende la combinación de un pañal y un calzón de entrenamiento que incluye una capa externa formada de materiales impermeables al agua, una capa interna formada de un material absorbente delgado, y un cuerpo formado de un material absorbente de agua entre la capa externa y la más interna.

La prenda tiene una sección trasera, una frontal y una intermedia. La sección trasera del calzón se extiende parcialmente alrededor de la cintura del usuario y es sujetado a la sección frontal. La sección intermedia del calzón tiene generalmente forma de reloj de arena con un contorno especial para cubrir el trasero del usuario y áreas de entrepierna sin volumen excesivo en ellas mientras forma un bolsillo en el calzón adyacente al área cubierta para recoger los residuos.

Respecto a la solicitud en estudio:

- El técnico de nivel medio versado en la materia encargado de resolver el problema puede ser un ingeniero químico que labore en la industria de artículos absorbentes y que atienda a planes de mejoramiento continuo normalmente establecidos en las empresas.
- El artículo absorbente resujetable definido en las reivindicaciones de la solicitud se caracterizan mediante la estructura de poseer una porción frontal, una porción posterior, una porción de entrepierna y un absorbente, y además mediante detalles relacionados con las dimensiones de cada una de las porciones.

Desde el punto de vista estructural, es decir, al analizar básicamente que el artículo absorbente resujetable de la propuesta posee una porción frontal, una porción posterior, una porción de entrepierna y un absorbente asegurado, se entiende que tal estructura es conocida por un técnico de nivel medio versado en la materia que tenga acceso a D1 o D2.

Ahora bien, en la propuesta se incluyen características dimensionales particulares para la porción posterior y la porción frontal. Se mencionan bordes laterales y extremos, secciones en las cuales se dividen tales porciones según longitudes definidas y áreas definidas. No obstante, los artículos de D1 o D2 también incluyen características de los bordes, extremos y secciones que presenta por el hecho de poseer zona posterior, frontal y de entrepierna.

La propuesta se diferencia con respecto a D1 o D2 en que ella presenta medidas y proporciones de longitud y área definidas y específicas que no aparecen en el arte previo. No obstante, tal diferencia se encuentra en el plano de la definición de las dimensiones de los artículos, cosa que tendría en cuenta un técnico de nivel medio versado en la materia con conocimientos básicos particularmente cuando va a desarrollar diferentes tallas para diferentes usuarios.

Según lo analizado, si un técnico de nivel medio versado en la materia tuviera en cuenta las enseñanzas de D1 o D2, combinado con sus conocimientos básicos en materia de dimensionar un artículo de buen ajuste al usuario, podría realizar artículos equivalentes al de la propuesta en estudio.

Por lo anterior, se puede afirmar que proponer un artículo absorbente resugetable que presente porciones definidas mediante las dimensiones de longitud y área que conforman sus secciones, no presenta un efecto sorprendente que evidencie un salto tecnológico respecto al arte previo.

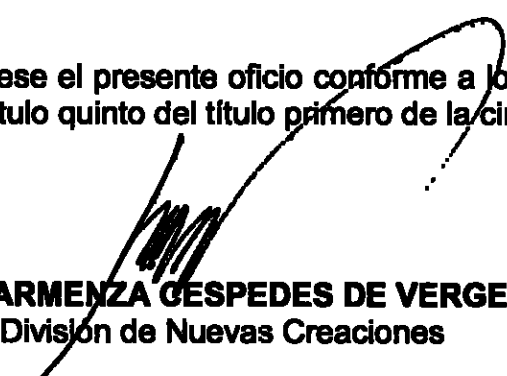
- Por lo anteriormente expuesto, la invención definida por las reivindicaciones 1 a 20 de la solicitud, podría verse afectada en su nivel inventivo ya que se deriva de manera evidente del estado de la técnica y puede ser obvia para un técnico de nivel medio versado en la materia. Por tanto, no cumpliría con las disposiciones del artículo 18 de la Decisión 486 de la Comisión de la Comunidad Andina.
- En conclusión, los requisitos de patentabilidad de la presente solicitud se encuentran afectados así:

No.	Documento	Reivindicaciones Afectadas	Requisito que afecta
1.	US5527302	1 – 20	Nivel Inventivo
2.	US4906243	1 – 20	Nivel Inventivo

Se anexan los apartes principales de las anterioridades en el documento adjunto.

En cumplimiento del artículo 45 de la Decisión 486 de la Comisión de la Comunidad Andina, se le indica que debe dar respuesta dentro del término de sesenta días contados a partir de la fecha de notificación de la presente comunicación. 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 en el numeral 5.2, literal e), del capítulo quinto del título primero de la circular única No. 10 de 2001.


ALIX CARMENZA GESPEDES DE VERGEL
Jefe de División de Nuevas Creaciones

El anterior requerimiento fue notificado por fijación en lista, de fecha 17 JUL. 2005

CONCEPTO TECNICO No. 973	EXAMINADOR TECNICO Código No. 202042
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438



US005527302A

United States Patent [19]
Endres et al.

[11] **Patent Number:** **5,527,302**
[45] **Date of Patent:** **Jun. 18, 1996**

- [54] **CONFORMABLE ABSORBENT ARTICLE**
- [75] **Inventors:** Dan D. Endres, Appleton; Timothy J. Blenke; Robert E. Vogt, both of Neenah; Georgia L. Zehner, Larsen; Steven H. Levine, Neenah; David P. Klempkowski, Appleton; John P. Vukos; Mary A. Bruemmer, both of Neenah, all of Wis.
- [73] **Assignee:** Kimberly-Clark Corporation, Neenah, Wis.
- [21] **Appl. No.:** 14,045
- [22] **Filed:** Feb. 5, 1993

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3,805,790 4/1974 Kaczmarzyk et al. 128/290 R

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- Related U.S. Application Data**
- [63] **Continuation of Ser. No. 826,309, Jan. 24, 1992, abandoned, which is a continuation of Ser. No. 432,867, Dec. 19, 1989, abandoned.**
- [51] **Int. Cl.⁶** A61F 13/15
- [52] **U.S. Cl.** 604/385.1; 604/385.2; 604/391; 604/382
- [58] **Field of Search** 604/358, 385.1, 604/385.2, 378-384, 386, 391

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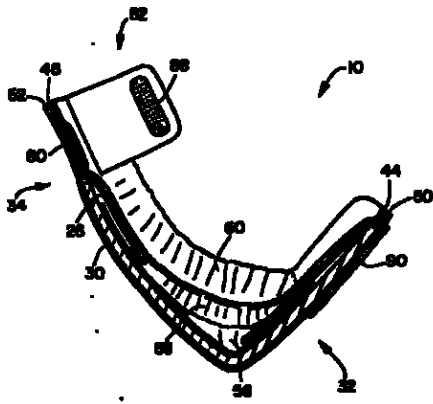
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[57] **ABSTRACT**

A conformable absorbent article has a topsheet that is designed to substantially fully contact the body of the wearer to provide improved performance in managing and containing body wastes. Management and containment of body wastes are improved by several structural elements that can be utilized individually or collectively. Some of these elements are a waste-containment pocket formed between the topsheet and backsheet, an opening in the topsheet for receiving body wastes therethrough, a pair of containment flaps and a pair of side flaps, and an expandable backsheet to retain body wastes therein.

16 Claims, 7 Drawing Sheets



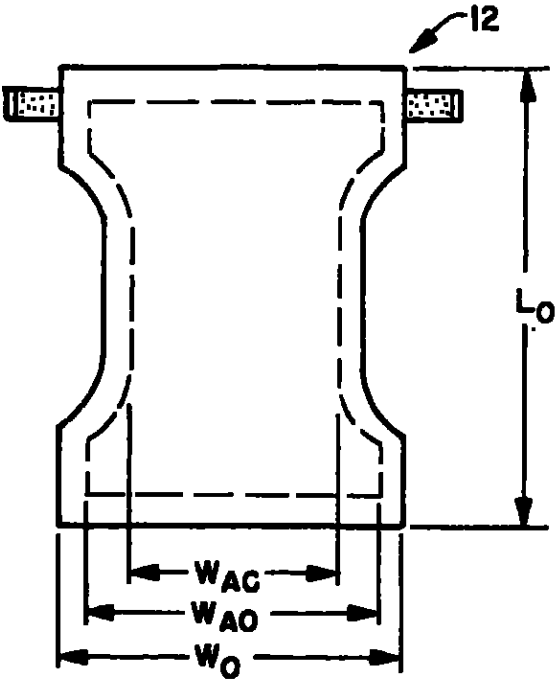


FIG. 1 (PRIOR ART)

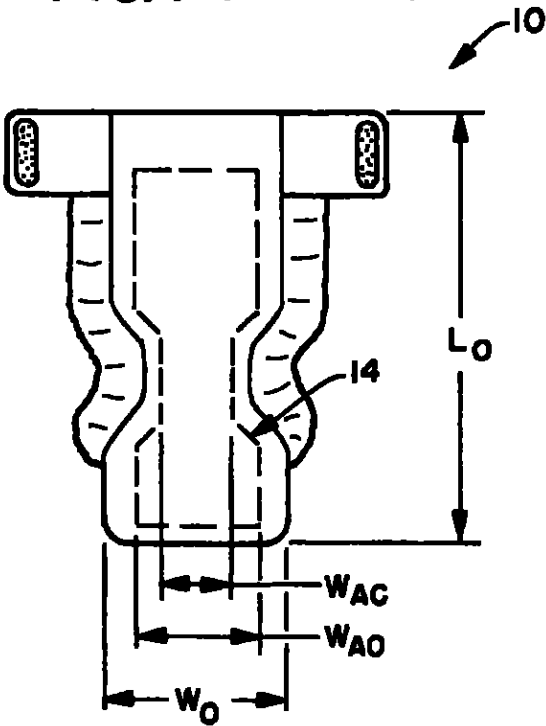


FIG. 2

441

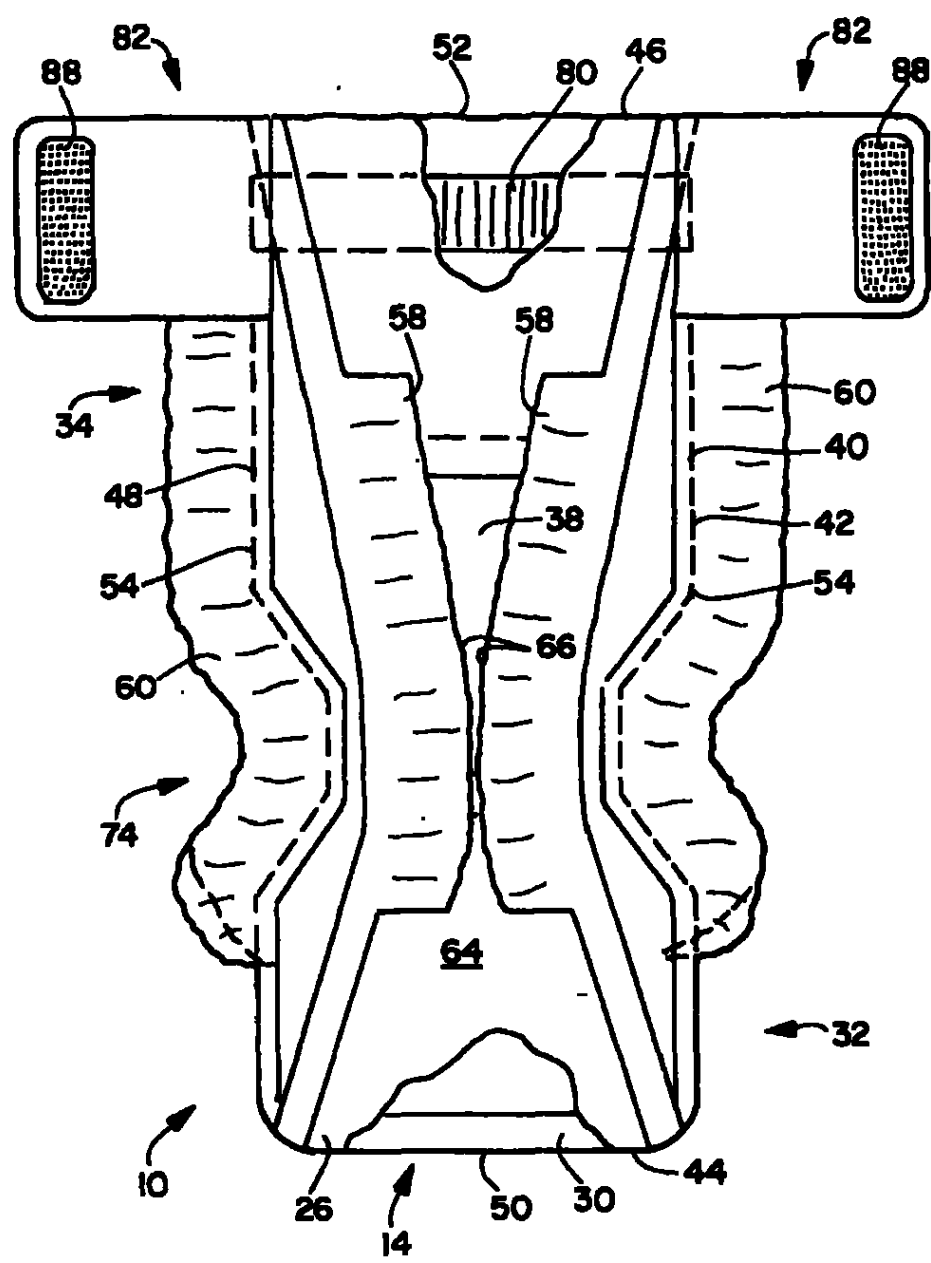


FIG. 8

CONFORMABLE ABSORBENT ARTICLE

BACKGROUND OF THE INVENTION

This is a continuation of application Ser. No. 07/826,309 filed on Jan. 24, 1992 which is a continuation of Ser. No. 07/452,867 filed on Dec. 19, 1989, both now abandoned.

This invention pertains to absorbent articles, and more particularly to an improved disposable absorbent article that easily and closely conforms to the body, specifically in the perineum area, of the wearer to provide improved performance in managing and containing body wastes.

Currently, disposable absorbent articles find wide spread use in infant, child, and adult incontinence care, and have generally replaced reusable cloth absorbent articles. A typical disposable absorbent article is a three-layered composite structure comprising a topsheet material, a backsheet material, and an absorbent material disposed therebetween.

One problem with current absorbent articles is the amount of skin area within the article that is exposed to body waste material. For example, current baby diapers are generously cut wider in the crotch area to assist in urine and BM management. This results in excess material bunching together between the legs, which can be extremely uncomfortable to the wearer. This bunching of material is further exacerbated by the elastication of the diaper edges. Consequently, the topsheet is prevented from being in close contact with the perineum area, thereby resulting in loss of management and containment of the flow of waste material between the body orifices and topsheet surface which in turn results in the spreading of waste material along the topsheet surface and against the wearer's skin.

Another problem with current absorbent articles is that leg movements over a period of time against the excess material between the legs can cause the absorbent to break apart, thereby decreasing its absorbent effectiveness.

Yet another problem with excess material between the legs is that the churning movement of the legs on the bunched-up material in the crotch causes the article to be pulled down from the crotch area, thereby further increasing the bunching problem and exposing additional skin area to fecal matter.

Still another problem is that excess material between the legs allows shifting or moving of the article in the crotch area, thereby further increasing problems with skin exposure to waste.

These problems generally result in skin dermatitis, skin hydration, and/or messy clean-ups.

SUMMARY OF THE INVENTION

In one embodiment of the invention, there is provided a disposable absorbent article comprising a liquid permeable topsheet having a topsheet peripheral measurement, and a liquid impermeable backsheet having a backsheet peripheral measurement that is greater than the topsheet peripheral measurement. The topsheet periphery and the backsheet periphery are joined together to form a waste containment pocket therebetween. The liquid permeable topsheet has an opening therein and is adapted to substantially fully contact the body of the wearer.

In another embodiment of the invention, there is provided a disposable absorbent article comprising a liquid permeable topsheet, a liquid impermeable backsheet, and an absorbent material disposed between the topsheet and backsheet, a pair of containment flaps positioned near the lateral sides of the topsheet, and a

pair of side flaps positioned near the lateral sides of the topsheet.

In yet another embodiment of the present invention, there is provided a disposable absorbent article comprising a topsheet having a topsheet peripheral measurement, a backsheet having a backsheet peripheral measurement, and an absorbent structure between the topsheet and the backsheet. The backsheet is expandable so that upon receiving body wastes, the backsheet expands for the containment thereof.

BRIEF DESCRIPTION OF THE DRAWINGS

The above-mentioned and other features and objects of this invention, and the manner of attaining them, will become more apparent and the invention itself will be better understood by reference to the following description of the embodiment of the invention taken in conjunction with the accompanying drawings, wherein:

FIG. 1 is a top plan view of a prior art diaper;

FIG. 2 is a top plan view of a diaper of the present invention;

FIG. 3A is a side view of the prior art diaper in FIG. 1 as it would appear being worn;

FIG. 3B is a front view of the prior art diaper in FIG. 1 as it would appear being worn;

FIG. 4A is a side view of a diaper of the present invention in FIG. 8 as it would appear being worn;

FIG. 4B is a front view of the embodiment of the present invention in FIG. 8 as it would appear being worn;

FIG. 5 is a perspective view of the embodiment of the present invention in FIG. 8 in its relaxed state;

FIG. 6 is an exploded and partially broken-away view of the embodiment of the present invention in FIG. 8;

FIG. 7 is a cross-sectional view of FIG. 5 taken along line 7-7 and viewed in the direction of the arrows; and

FIG. 8 is a top plan view of a diaper of the present invention.

DETAILED DESCRIPTION

The absorbent article of the present invention can be utilized as a baby diaper, adult incontinence garment, feminine care product, and the like. For purposes of the present discussion, the absorbent article will be described in terms of a baby diaper designed to fit a baby weighing between about 12 to about 24 pounds, but it is understood that the features and principles of the present invention apply to other baby sizes. As illustrated in FIGS. 1 and 2, disposable diaper 10 of the present invention is much smaller in size than a conventional diaper 12 of the prior art. Specifically, the overall length, L_o , of diaper 10 of the present invention is about 14 inches to about 15 inches; while the overall length, L_o , of conventional diaper 12 is about 17 inches to about 18 inches. The overall width, W_o , of diaper 10 is about 5 inches to about 8 inches; while the overall width, W_o , of conventional diaper 12 is about 12 inches to about 13 inches. The overall width, W_{AO} , of absorbent structure 14 of diaper 10 is about 4 inches to about 7 inches; compared to the overall width, W_{AO} , of about 10 inches to about 11 inches of conventional diaper 12. The width of the absorbent at the crotch, W_{AC} , of diaper 10 is from about 2 inches to about 3 inches; while the absorbent width at the crotch, W_{AC} , of conventional diaper 12 is about 5 inches to about 6 inches.

Having compared the two diapers in size, a comparison of how they generally fit a baby is illustrated in FIGS. 3A-4B. In FIGS. 3A and 3B, conventional diaper 12 is being worn by a baby having a weight between about 12 to about 24 pounds. As illustrated, topsheet 16, absorbent 18, and backsheet 20 of conventional diaper 12 are bunched up and spaced away from crotch 24 forming a space 22 between crotch 24 and diaper 12. It is this forming of space 22 that causes loss of management and containment of waste material. The waste material spreads along topsheet 16 and contacts a large area of the baby's skin during movement of the baby. The bunching of topsheet 16, absorbent 18, and backsheet 20 at crotch 24 can cause breaking up of the absorbent material from leg movements, drooping of the diaper in the crotch, and shifting of the diaper on the baby.

Referring to FIGS. 4A-B, topsheet 26, absorbent structure 14, and backsheet 30 of diaper 10 of the present invention are positioned in crotch 24 such that topsheet 26 substantially fully contacts the baby, particularly at crotch 24, thereby virtually eliminating or minimizing space 22. Topsheet contact with the body along a line centered or measured through crotch 24 from below the naval to the small of the back is important to positioning an opening or BM containment device in or associated with topsheet 26 relative to the anus to allow containment of feces under topsheet 26 or in the device. It is also important in urine control or management for immediate penetration through topsheet 26, thereby preventing urine from flowing over the topsheet surface. Two methods to obtain the preferred body contact with topsheet 26 are, first, cut and/or elastically narrow topsheet 26 to fit the crotch dimensions; and second, form the absorbent crotch width to have a width from about 2 inches to about 3 inches to allow the diaper to fit up between the baby's legs.

Referring to FIGS. 5 and 6, diaper 10 generally comprises liquid-permeable topsheet 26 having an opening 38 therein, liquid-impermeable backsheet 30, and absorbent structure 14 positioned therebetween.

Topsheet 26 has periphery 40 defined by front longitudinal end 44, back longitudinal end 46, and lateral sides 48. Similarly, backsheet 30 has periphery 42 defined by front longitudinal end 50, back longitudinal end 52, and lateral sides 54. Periphery 42 has a peripheral length or measurement greater than that of periphery 40. Periphery 42 can be made to have a peripheral measurement greater than periphery 40 by making topsheet 26 more narrow than backsheet 30, or more shorter than backsheet 30, or both. When topsheet 26 is joined to backsheet 30 along their respective peripheries 40, 42, waste containment pocket 56 is formed therebetween (FIG. 7). Topsheet 26 and backsheet 30 can be joined or attached in any suitable manner, such as by a line or lines of adhesive bonding, thermal bonding, or ultrasonic bonding, and can be joined at their peripheral edges or slightly inboard thereof, for example, at a distance from about one-eighth inch to about three-eighths inch or more from the peripheral edges.

Absorbent structure 14 is positioned between topsheet 26 and backsheet 30, and is joined or attached to backsheet 30 by any suitable means, such as by lines or a surface spray of adhesive. Waste containment pocket 56 is then defined between absorbent structure 14 and topsheet 26. Waste containment pocket 56 is designed to receive and contain a volume of fecal matter of at least about 150 cubic centimeters.

A dual pair of flaps are also disposed on diaper 10, and are identified as containment flaps 58 and side flaps 60. Within

the context of the present disclosure, the terms "disposed", "disposed on", "disposed with", and any variations thereof, are intended to mean as a minimum that one element can be formed integrally from another element, or one element can be separate structure joined to or placed with or near another element. Side flaps 60 can be formed from extensions of lateral sides 54 of backsheet 30 and/or lateral sides 48 of topsheet 26, or can be separate structural elements attached to backsheet 30 and/or topsheet 26. Preferably, side flaps 60 are made of liquid-impermeable material that is vapor-permeable for increased air circulation in the crotch region, but may be made, if desired, from a liquid and vapor impermeable material or a liquid and vapor permeable material. Side flaps 60 can also have selected portions that are liquid permeable with the remaining portions being liquid impermeable.

Containment flaps 58 are located inboard of side flaps 60, i.e., closer to longitudinal centerline 62 (FIG. 6) than flaps 60. Centerline 62 is illustrated through absorbent structure 14, but is also intended to be the centerline for topsheet 26, backsheet 30, and diaper 10. Containment flaps 58 can be integral extensions of liquid-permeable topsheet 26, or can be separate liquid-permeable elements attached or joined to topsheet 26 inboard of side flaps 60. Flaps 58, 60 border the lateral sides of opening 38, with containment flaps 58 being closer to opening 38 than side flaps 60. Containment flaps 58 can also have selected portions that are liquid permeable with the remaining portions being liquid impermeable. Flaps 58 can also be liquid impermeable.

In one embodiment, containment flaps 58 are separate elements attached or adhered to upper surface 64 of topsheet 26, and side flaps 60 are separate elements attached or adhered between topsheet 26 and backsheet 30. Containment flaps 58 include at least one elastic member 66 in each distal edge portion 68, and preferably at least two or more elastic members 66 in each distal edge portion 68. Elastic members 66 are positioned and secured within respective distal edge portions 68 in a stretched or elastically contractible manner, such that upon relaxing elastic member 66, containment flaps 58 gather or abut as illustrated in FIGS. 5, 7.

In a similar manner, side flaps 60 have elastic members 70 attached in a stretched or elastically contractible condition within respective distal edge portions 72 of side flaps 60. As illustrated in FIG. 6, and with reference to a single side flap 60 since both side flaps are identical, each side flap 60 comprises narrow end portions 76 with intermediate flap portion 78 extending therebetween in a preferably curvilinear fashion to accommodate and correspond to leg cut-outs 74.

One of the important aspects of the present invention is the various methods of disposing side flaps 60 with backsheet 30. In one method of positioning side flap 60 for attachment to backsheet 30, flap 60 is first pleated or elastically gathered, and thereafter attached or joined to backsheet 30 in the pleated or gathered state in a manner that does not pleat or gather backsheet 30. In this fashion, the overall, flattened-out length of intermediate flap portion 78 is longer than the flattened-out distance between points A and B on backsheet 30; points A and B being orthogonal projections of the remote ends of intermediate flap portion 78 on backsheet 30. Thus, upon pressing or flattening backsheet 30 against a flat surface, each intermediate flap portion 78 will have a shirred or ruffled appearance that is complemented by elastic members 70.

Another method of disposing flaps 60 with backsheet 30 is to maintain pleated or elasticized flaps 60 in a stretched-

out state and then attach or join them to backsheet 30 to pleat or gather backsheet 30 upon relaxation thereof.

If desired, side flaps 60 can be designed without narrow end portions 76, and elastic members 70 can be attached the full length of diaper 10. Thereafter, selected portions of elastic members 70 can be de-elasticized by application of heat or other treatment dependent upon the material of which elastic members 70 are made.

Referring to FIGS. 5-8, disposable diaper 10 can also include waist elastics in the longitudinal end portions of front panel 32 and back panel 34. In one embodiment illustrated in FIG. 8, only back waist elastic 80 is joined to back panel 34, and can either be joined between backsheet 30 and topsheet 26 or joined only to backsheet 30 to allow greater elastic retraction. Waist elastic 80 is adhered or joined to back panel 34 in a stretched or elastically contractible condition, so that upon relaxation that portion of back panel 34 is gathered.

A pair of stretchable ears 82 are attached to opposite longitudinal sides of back panel 34, and are preferably in-line with back waist elastic 80. Since both of the stretchable ears 82 are identical, the following description will be made in terms of a single stretchable ear. Stretchable ear 82 comprises stretchable member 84 and stretchable band 86. Stretchable band 86 is connected to member 84 to aid in preventing stress failure to ear 82 and to apply additional elastic reinforcement to the center of ear 82. Both stretchable member 84 and stretchable band 86 are joined between backsheet 30 and topsheet 26, with band 86 preferably disposed on backsheet 30. Stretchable members 84 and/or stretchable bands 86 can be a stretch-bonded laminate.

Preferably, ears 82 are designed and manufactured as a single strip of elastic or stretchable material having the same stretch characteristics as the combination of stretchable member 86 and stretchable band 84.

To fit and maintain disposable diaper 10 on the wearer, a hook-and-loop fastening system is provided with tabs 88 of hook material joined to the side of stretchable member 84 opposite band 86, and panel 90 of loop material joined to backsheet 30. Although hook-and-loop fasteners are preferred, other fastening arrangements can be used, such as tapes, snap fasteners, and the like.

In one embodiment, backsheet 30 is made of a liquid-impermeable material, and preferably a polyethylene film having a thickness of about 1.0 mil, although thicknesses above 0.50 are functional. Backsheet 30 is generally flat, i.e., not pleated or microcreped, and has a peripheral measurement greater than the peripheral measurement of topsheet 26. In joining backsheet 30 and topsheet 26 to form waste containment pocket 56, periphery 42 of backsheet 30 needs to be drawn inwardly to be joined to periphery 40 of topsheet 26. One method of forming backsheet 30 in this manner is by vacuum forming backsheet 30 into a mold of predetermined shape and dimensions that result in waste containment pocket 56 having a preferred shape.

In another embodiment, additional useable volume in waste containment pocket 56 is included by providing (1) a means for the feces to pass through or around the absorbent core, for example, a trapezoidal-shaped hole in the absorbent having a rear width of about 1.5 inches, a front width of about 1 inch, and sloping side lengths of about 4 inches; and (2) an outer barrier sheet, such as backsheet 30, having dimensions longer than the topsheet and absorbent core and having a space formed between backsheet 30 and the absorbent core so as to contain the fecal material between the absorbent and the backsheet.

Other means of providing additional useable volume in pocket 56 by using backsheet 30 include (a) using an embossed film which can expand easily, (b) making the backsheet from a low modulus, easily elongatable film, such as "KRATON" styrene-butadiene elastomer or ethyl vinyl acetate (EVA), (c) creping an ordinary film in the same method that tissue is creped to form creped wadding, (d) forming pleats in the machine direction or cross direction in the backsheet or only portions of the backsheet which can easily expand, and (e) thermal forming a bulge in the crotch area of the backsheet. Alternatively, topsheet 26 can be made of a stretchable material and cut shorter and/or narrower than backsheet 30, and then peripherally joined to backsheet 30 to provide additional useable volume.

The total volume to handle fecal matter should be at least about 150 cubic centimeters. The amount of expandability required in backsheet 30 depends on the desired degree of reduction in fecal smearing, the volume of fecal material the design is intended to handle, and the volume of the hole provided in absorbent 14 when the wearer is in the sitting position. For example, since normally 60 cubic centimeters or less of fecal material would be expelled in one defecation and if the volume of the hole in the absorbent would be about 20 cubic centimeters, then the expandability of the backsheet should handle about 40 cubic centimeters.

In order to provide this volume, experience has shown that a desirable range of expandability of backsheet 30 is from about 20% to about 100%. The exact amount is dependent on a wide range of variables including the baby's position during defecation, tightness of the baby's clothing, viscosity of the fecal material, pressure exerted by the topsheet against the body, resistance of the material to the expansion force of the bowel movement, rate of expulsion of the fecal material from the body and rigidity of the absorbent material. Materials that readily expand about 20% or more under a force of about 25 grams per inch of width or less function adequately and can expand sufficiently to accommodate normal volume bowel movements.

Another method for fecal management would be to have a normal, non-expandable backsheet in combination with an absorbent with a hole in the absorbent; the hole having about 20 cubic centimeters to about 60 cubic centimeters volume. Also required would be a topsheet with a hole or holes sufficient to allow fecal material to pass through, and which substantially fully contacts the body along a line through the crotch from the front end of the diaper to the back. The hole can be covered or masked with an opaque material disposed between the topsheet and absorbent. Within the context of the present disclosure, the term "substantially fully contacts," and any variations thereof, is intended to mean as a minimum that topsheet 26 is sufficiently close to the body to prevent misalignment between the hole in topsheet 26 and the anus. A major portion of the upper surface, i.e., body-facing, surface area of topsheet 26 will be in contact with the skin of the wearer, except those areas of topsheet 26 that overlie the natural crevices or folds of a baby's body, such as the crevice between the baby's buttocks and the folds of skin at the juncture between the inner thighs and crotch. Naturally, if topsheet 26 has a plurality of small holes or a single larger opening therein, topsheet 26 will not contact the skin at those holes or openings. "Substantially fully contacts" can also be defined as that percent of topsheet 26 in contact with skin, for example, about 70% to about slightly less than 100% of topsheet 26 being in contact with the baby's skin.

Backsheet 30 may also be made of other materials that are suitably liquid-impermeable or treated to be so. Examples

are meltblown or film material made of polypropylene or polyolefin copolymers such as ethylene vinyl acetate, ethylene methyl acrylate, ethylene ethyl acrylate, polyvinyl chloride, and the like. Other materials include a single spunbonded layer of the above types of materials, two layers of spunbonded and meltblown materials, or three layers of material of spunbonded-meltblown-spunbonded material, each of which is suitably treated or coated to be liquid-impermeable. These same materials may also be provided in laminate form. The spunbond materials provide an added feature of a cloth-like texture to backsheet 30.

Referring to FIG. 6, backsheet 30 may be made of a material that is not only liquid-impermeable, but also vapor-permeable. Alternatively, backsheet 30 can have a breathable panel 92 positioned adjacent or near longitudinal end 50. As illustrated in FIG. 6, breathable panel 92 and loop panel 90 may be coextensive, such that loop panel 90 forms an outer layer for breathable panel 92. However, it may be preferred that panel 92 and panel 90 be separate, i.e., not coextensive. The plurality of loops on loop panel 90 can function as heat-transfer elements that assist in reducing condensation on the diaper exterior.

Other designs include positioning panel 92 in backsheet 30 adjacent or near back longitudinal end 52, or adjacent or near both back longitudinal end 52 and front longitudinal end 50. Breathable panel 92 has a water vapor transmission rate (WVTR) value of at least about 2000 grams/square meter/24 hours. Preferably, panel 92 has a WVTR of at least about 4000 grams/square meter/24 hours, and more preferably has a WVTR of at least about 5000 grams/square meter/24 hours. Breathable panel 92 has a preferred effective breathable area of about 30 cm² and a preferred range of effective breathable area between about 20 to about 600 cm². The term "effective breathable area" refers to that area of breathable panel 92 that does not have any elements, materials or other structure, whether in particulate or fibrous or other form, obstructing or minimizing it that effectively negate its breathable characteristics.

Breathable panel 92 can comprise a microporous polymer film, such as Grade TMP-1 film manufactured by Mitsui Toatsu Chemical, Inc., Tokyo, Japan; a nonwoven fibrous material, such as a spunbonded or meltblown web composed of synthetic polymer fibers; or a calendared, composite, fibrous web which includes a barrier layer comprising fine fibers and a reinforcing layer comprising coarse fibers. The barrier layer and reinforcing layer are securely bonded together by fusing or adhering the reinforcing fibers into the barrier fibers, and the reinforcing layer is configured to conform to the outwardly facing surface of the composite web. If desired, loop panel 90 can serve as the reinforcing layer of breathable panel 92. For purposes herein, a fiber is "fine" if it has a diameter equal to or less than about 3 microns; and a fiber is "coarse" if it has a diameter equal to or greater than about 15 microns.

Breathable panel 92 has a transverse dimension, relative to longitudinal centerline 62, within the range of about 5 to about 25 centimeters, and a longitudinal dimension within the range of about 3 to about 15 centimeters. Panel 92 extends over about 10% to about 50% of the transverse dimension of absorbent structure 14.

Topsheet 26 can be a liquid-permeable, hydrophilic or hydrophobic material, such as a spunbonded web composed of synthetic polymer filaments; a spunlace web; a spunbond-meltblown web; a meltblown web; or a bonded-carded-web composed of synthetic polymer fibers. Suitable synthetic polymers include polyethylene, polypropylene, polyester,

and nylon. In one embodiment, the polymer filaments have a denier within the range of about 1.5 to about 7 d, and preferably within the range of about 1.2 to about 6.0 d. The filaments are arranged to form a layer having a basis weight within the range of about 10 to about 35 gm/m² (gsm), and preferably a basis weight of about 20 gsm. Topsheet 26 has a bulk thickness within the range of about 0.0140 to about 0.0432 centimeters, and preferably within the range of about 0.0180 to about 0.305 centimeters. The bulk thickness is measured under a restraining pressure of about 0.014 psi.

Topsheet 26 also can be a "KRATON" styrene-butadiene elastomer meltblown/polypropylene spunbond stretch-bonded laminate which has been made wettable by addition of surfactants; a polyurethane spunbond material such as that manufactured by Kanebo Synthetic Fibers Company, Osaka, Japan, and made wettable by addition of surfactants; an elastomeric film made from elastomers such as rubber, latex rubber, polyurethane, "KRATON" styrene-butadiene elastomer, and the like, which has been perforated to allow fluid passage; a polyurethane foam which has been perforated to allow fluid passage; and a nonwoven which has been gathered through the use of elastic or other means, e.g., heat-shrinkable fibers, to produce an elastically stretchable material.

Containment flaps 58 and side flaps 60 can be made of the same material as topsheet 26, and can be integrally formed therefrom or can comprise separate structure joined to topsheet 26 in any suitable manner.

Each containment flap 58 preferably comprises a single layer having a basis weight of about 0.4 ounces per square yard (osy) that is folded upon itself to make a dual-layer flap having a basis weight of about 0.8 osy. For example, containment flaps 58 preferably comprise at least one layer of a nonwoven such as a spunbond, bonded-carded web, or spun-lace material comprised of polymers such as polypropylene, polyethylene, polyester, or nylon. The material is made wettable by the use of surfactants, such as "TRITON" or "AEROSOL OT". An example of such a containment flap is produced by folding a layer of 0.4 osy Triton-treated spunbond polypropylene over an elastomeric material to produce a two-layer flat material.

Elastic members 66 can be any suitable elastic material, such as natural rubber, synthetic rubber, or thermoplastic elastomeric polymers, and can be single or multiple threads or ribbons thereof. Optionally, these materials can be heat-shrinkable or heat-elasticizable. Preferably, elastic members 66 each comprise two strands of 470 Decitex "LYCRA" (Decitex being the weight in grams of a single thread which is 10,000 meters long), and at 90% of ultimate elongation provide a tension between about 25 grams to about 75 grams. The material permits containment flaps 58 to retract from about 30% to about 80% of their elongated length. More preferably, the material has about 50 grams force after one minute hold-time at 90% of ultimate elongation and the ability to retract to at least about 50% of the original length.

Side flaps 60 preferably comprise two layers of 0.8 osy spunbonded polypropylene, and can be liquid permeable, liquid impermeable, or liquid impermeable-vapor permeable. For example, side flaps 60 can comprise at least one layer of a nonwoven, such as a spunbonded, bonded-carded web, or spun-laced material comprised of polymers such as polypropylene, polyethylene, polyester, or nylon. The material is preferably non-wettable (hydrophobic) in nature. This 0.8 osy side flap comprises a layer of 0.8 osy spunbonded polypropylene which is disposed over an elastomeric material to produce a two-layer flap material.

Elastic members 70 can be made of the same material as elastic members 66. Preferably, elastic members 70 each comprise 3 strands of 620 Dectex "LYCRA", and at an elongation of 90% of ultimate elongation provide a tension between about 50 to about 150 grams. The material permits side flaps 60 to retract from about 30% to about 80% of their elongated length. More preferably, the material has about 50 grams force after one minute hold-time at 90% of ultimate elongation and the ability to retract to at least about 45% of the original length.

Stretchable ears 82 can be made of any suitable material having elastic or stretchable properties. Some examples of such materials are a stretch-bonded laminate comprising two gatherable layers of about 0.4 oz polypropylene spunbond having therebetween a layer of meltblown elastic material such as "KRATON" styrene-butadiene elastomer or polyurethane-based polymer. The layer of the elastomer is stretched and then the two layers of polypropylene are joined thereto and upon relaxing the layers, the two polypropylene layers gather. Other stretch-bonded laminates can be produced from elastomeric film such as "KRATON" styrene-butadiene elastomer or urethane, elastomeric ribbons or threads such as "LYCRA", rubber, "PEBAX", urethane, or combinations thereof. The stretchable ears can also comprise alternative elastomeric materials, such as a stretchable urethane foam or polyurethane spunbond fabric similar to that manufactured by Kanebo. The stretchable ears can be made from a single elastomeric fabric or combinations of several elastomeric fabrics.

The position of hook tabs 88 on stretchable ears 82 and the position of loop panel 90 on backsheet 30 are important to the proper functioning of disposable diaper 10. Loop panel 90 should exclude about 1½ inches of the center of backsheet 30 to provide two loop sub-panels 91, 93. Loop sub-panels 91, 93 should be placed about ¼ inch from the lateral sides 54 of backsheet 30. This is designed to ensure engagement between hook tab 88 and loop panel 90 in preferred areas. For example, if hook tabs 88 are positioned too near centerline 62 of backsheet 30, that tension created by stretchable ears 82 can cause (1) the elastic material to stretch beyond its elastic limits, (2) front panel 32 to droop or fold-over, and (3) red-markings on the skin; or if hook tabs 88 engage loop panel 90 too near lateral sides 54, that tension created by stretchable ears 82 can cause red marking on the skin. The loop panel width being larger than the width of the hook tab width allows the user some adjustment for baby waist dimension differences. Proper ear tension will improve attachment between the hooks and loops, and can prevent front panel droop caused by low tensions of about 300 grams or less and red marking of the skin or other irritation caused by high tensions above about 1200 grams. Tensions of at least about 100 grams are required to improve attachment between the hooks and loops. Proper ear tensions fall generally within the range of about 300 grams to about 1200 grams to prevent front panel droop.

Preferably, the width of ears 82 should be about 1.5 inches to about 2.5 inches, and the elastic force band should be preferably about 1.25 inches to about 2.25 inches above the front edge of the absorbent pad.

Ears 82 can be designed with higher tensions through the center and lower tensions outside these higher tension bands. Ears 82 also can be designed with uniform tension throughout the material.

Absorbent structure 14 can comprise surge portion 98 and retention portion 100. Surge portion 98 is in liquid communication with retention portion 100, and temporarily stores

up to about 100% of a liquid insult, and subsequently releases liquid to retention portion 100. As illustrated, surge portion 98 is generally rectangular-shaped having a weight range of about 0.5 to about 15 grams of material and a surface area of about 10 square inches to about 50 square inches, and is positioned between the longitudinal ends of absorbent structure 14 and centered along centerline 62. Surge portion 98 overlies retention portion 100, which is of generally hour-glass shape. Other geometric forms and placements of surge portion 98 and retention portion 100 are contemplated by the present invention, such as surge portion 98 being disposed within retention portion 100 to form a single-layer structure. If desired, surge portion 98 can be joined to retention portion 100 by a bonding and/or fiber entanglement mechanism, such as ultrasonic, adhesive, or thermal bonding, or mechanical or hydraulic needling. Surge portion 98 can extend the full length of absorbent structure 14, or can be shorter in length and disposed in or near the front or back of absorbent structure 14.

Absorbent structure 14 can be manufactured in various shapes and with selected absorbent capacities compatible with the size of and the liquid loading imparted by the intended wearer.

A capillary force differential created at the interface between surge portion 98 and retention portion 100 can improve the characteristics of absorbent structure 14. If surge portion 98 has and maintains relatively lower capillary attraction compared to the capillary attraction of retention portion 100, liquid surges will tend to be desorbed more readily from surge portion 98 into retention portion 100.

Retention portion 100 can comprise various types and mixtures of fibrous material. For example, retention portion 100 may comprise cellulosic fluff, synthetic fibers, absorbent gelling materials in the form of particles, fibers, layers and the like, and various mixtures or blends thereof. Suitable absorbent gelling materials can be inorganic materials such as silica gels, or organic compounds such as cross-linked polymers. Some examples of absorbent gelling material polymers include polyacrylamides, polyvinyl alcohol, polyacrylates, and the like. Other acceptable polymers include acrylonitrile grafted starch, acrylic acid grafted starch, modified carboxy methyl cellulose, and the like.

Retention portion 100 can also comprise a mixture of about 1% to about 30% by weight of an inherently wettable polymer, such as "HYDROFIL", polyester, "PEBAX", or wettable polyethylene or polypropylene; about 5% to about 90% by weight absorbent gelling material; and about 20% to about 80% by weight cellulosic fluff. More preferably, retention portion 100 can be about 2% to about 15% by weight of an inherently wettable polymer, about 15% to about 50% by weight absorbent gelling material, and about 45% to about 70% by weight cellulosic fluff. Retention portion 100 can have a basis weight in the range of about 200 to about 3000 gsm. A preferred range is between about 500 to about 1000 gsm. A more preferred basis weight is about 900 gsm. Retention portion 100 can have a density in the range of about 0.08 to about 0.40 g/cc. A preferred range is between about 0.15 to about 0.30 g/cc. A preferred density is about 0.22 g/cc. With respect to the density measurement of retention portion 100, it is calculated from its basis weight and thickness, and is measured on newly unpacked, unfolded, and desiccated diapers.

Surge portion 98 can comprise the same types of materials as retention portion 100. Preferably, surge portion 98 comprises "HYDROFIL" material having a basis weight between about 100 to about 600 gsm, a density between

about 0.05 to about 0.15 g/cc, and a surface area between about 10 to about 50 square inches, i.e., about 64.5 to about 322 centimeters square. Preferably, surge portion 98 has a basis weight of about 400 gam, a density of about 0.1 g/cc and a surface area of about 25 square inches.

The entire absorbent structure 14 can be wrapped in a hydrophilic web made of the same material as topsheet 26, a wood fiber tissue, or a powder-bonded polycaster carded web having a basis weight between about 15 to about 30 gam.

While this invention has been described as having preferred embodiments, it will be understood that it is capable of further modifications. This application is therefore 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 appended claims.

What is claimed is:

1. A disposable absorbent article, comprising:
 - a liquid permeable topsheet including opposite longitudinal ends and opposite lateral sides, said ends and said sides forming a topsheet periphery having a topsheet peripheral measurement, and
 - a liquid impermeable backsheet including opposite longitudinal ends and opposite lateral sides, said ends and said sides forming a backsheet periphery having a backsheet peripheral measurement greater than said topsheet peripheral measurement, said liquid impermeable backsheet further including a breathable panel positioned adjacent or near a longitudinal end thereof, said topsheet periphery being joined to said greater backsheet periphery to form a waste-containment pocket therebetween,
 - said liquid permeable topsheet substantially fully contacting the body of the wearer when in use, the percentage of said liquid permeable topsheet in contact with the body being greater than about 70 percent,
 - said liquid permeable topsheet further defining a hole sufficient to allow solid fecal matter to pass there-through.
2. The article of claim 1 further comprising an absorbent structure located between said liquid permeable topsheet and said liquid impermeable backsheet, said absorbent structure having an overall width of from about 4 to about 7 inches and comprising a crotch portion having a crotch width of from about 2 inches to about 3 inches.
3. The absorbent article according to claim 1 wherein said backsheet is expandable.
4. The absorbent article according to claim 1 wherein said topsheet is stretchable.

5. The article of claim 1 further comprising an absorbent structure located between said liquid permeable topsheet and said liquid impermeable backsheet, said absorbent structure defining a hole having a volume.

6. The article of claim 5 wherein said hole defined by said absorbent structure has a volume of from about 20 cubic centimeters to about 60 cubic centimeters.

7. A disposable absorbent article, comprising:

a liquid permeable topsheet having opposite lateral sides, a liquid impermeable backsheet including a breathable panel positioned adjacent a longitudinal end thereof, and an absorbent structure being disposed between said liquid permeable topsheet and said liquid impermeable backsheet, said absorbent structure having an overall width of from about 4 to about 7 inches and comprising a crotch portion having a crotch width of from about 2 inches to about 3 inches, whereby said crotch portion fits conformably to the wearer's crotch.

8. The article of claim 7 further comprising a pair of stretchable ears at one longitudinal end of said article, said stretchable ears having one of a plurality of loop members and a plurality of hook members thereon, an opposite longitudinal end of said article having the other of said plurality of loop members and said plurality of hook members thereon.

9. The article of claim 7 wherein said absorbent structure has an overall width less than about 5 inches.

10. The article of claim 7 further comprising a pair of containment flaps positioned at respective ones of said lateral sides of said topsheet, and

a pair of side flaps positioned at respective ones of said lateral sides of said topsheet.

11. The article of claim 10 wherein selected portions of said containment flaps are liquid permeable and remaining portions of said containment flaps are liquid impermeable.

12. The article of claim 10 wherein selected portions of said side flaps are liquid permeable and remaining portions of said side flaps are liquid impermeable.

13. The absorbent article according to claim 7 wherein said backsheet is expandable.

14. The absorbent article according to claim 7 wherein said topsheet is stretchable.

15. The absorbent article according to claim 7 wherein said liquid permeable topsheet defines a hole sufficient to allow solid fecal material to pass therethrough and said absorbent structure defines a hole.

16. The absorbent article according to claim 15 wherein said hole defined by said absorbent structure has a volume of from about 20 to about 60 cubic centimeters.

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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.: 151,597
[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
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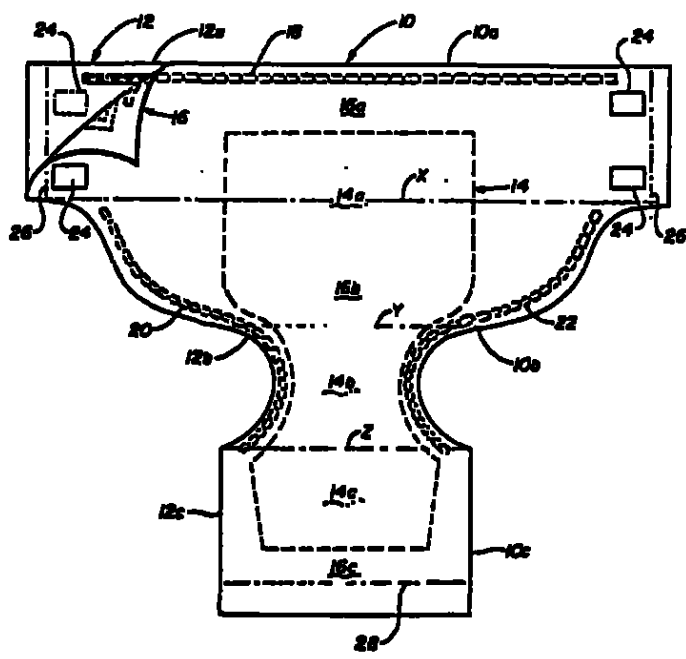
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[57] ABSTRACT

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



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. 4,613,695 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.

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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 diaper and training pants which fits comfortably on a

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.

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SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO

RADICACIÓN: 0-63065

EDICTO No. 15708

**LA SECRETARÍA GENERAL AD-HOC
HACE SABER:**

Que esta Superintendencia profirió Resolución No. 27772 de 24-OCT-2005. 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 RESUJETABLE QUE EXHIBE MEJORADO AJUSTE AL CUERPO".

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 proceda 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

24 OCT. 2005

EL SUPERINTENDENTE DE INDUSTRIA Y COMERCIO,


RAMIRO CASTRO DUQUE

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 10-NOV-2005
Secretaría General Ad-Hoc
EDICTO No. 15708

Este edicto se desfija hoy 24-NOV-2005 a las cinco (5:00 p.m.)