

ESCOBAR - URIBE ASOCIADOS

A B O G A D O S

Carrera 11A No. 94-76 Of. 305 - P.O. Box 94948, Bogotá, Colombia, S.A.

Tels.: (571) 6162051 - 6162061 - 6161859 - 6161869

Fax: (571) 6161889

As. 2470/P.

SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO DIVISIÓN DE NUEVAS CREACIONES

E. S. D.

Ref.: Expediente No. **02-041.784**

Solicitud de Patente a nombre de
McNeil-PPC, Inc.

SUPERINDUSTRIA Y COMERCIO
Radicacion : 02041784 00000003 Folios: 2
Fecha (ARD): 2004-08-03 16:06:48
Tramite : 002 PATENTES D 1 REGISTRO/ 538 PETICION
Dependencia: 2020 DIVISION DE NUEVAS CREACIONES

Yo, **JIMENA ESCOBAR URIBE**, identificada como aparece al pie de mi firma, domiciliada en Bogotá, en la Carrera 11 A No. 94-76 Of. 305, obrando como apoderada de la sociedad **McNeil-PPC, Inc.**, domiciliada en Skillman, New Jersey, Estados Unidos de América, solicitante de la patente de la referencia, pido a usted que se proceda a examinar si la invención, cuya patente se tramita en el expediente de la referencia, es patentable.

Adjunto al presente memorial el recibo No. 04 - 56,945 de julio 16, 2004, por la suma de \$353.000.00, con lo cual queda cubierta la tasa oficial correspondiente a dicho estudio.

Señor Superintendente,


JIMENA ESCOBAR URIBE

C.C. 39.779.452 de usaquén

T.P. 68.228

Cod. 5376

JEU/ra.

2470

127

126

SUPERINDUSTRIA Y COMERCIO
Radicacion : 02041784 00000003 Folios: 2
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Dependencia: 2000 DIVISION DE NUEVAS CREACIONES

NIT : 800176089-2

RECIBO OFICIAL DE CAJA : 04 - 56,945
FECHA : JULIO 16 DE 2004

***** CONSIGNACION *****

DEPOSITANTE	TIPO PAGO	BANCO	CUENTA	No. PAGO	FECHA PGO	Vr. PAGO
ESCOBAR URIBE ASOCIADOS	CONSIGNACION	BANCO POPULAR	050-00110-6	23288128	16/07/2004	8,936,000.00

***** CONCEPTO *****

CANT.	RENTISTICO	CONCEPTO	TOTAL CONCEPTO
1	50005-01-01 SOLICITUDES	85 EXAMEN DE PATENTABILIDAD DE INVEN	353,000.00
TOTAL :			\$ 353,000.00

SON: TRESCIENTOS CINCUENTA Y TRES MIL PESOS

RESPONSABLE :



RECIBO DE CAJA APLICADO AL EXPEDIENTE No. _____

DIVISION DE NUEVAS CREACIONES

RADICACIÓN EXPEDIENTE No. **02- 41784**

EL EXTRACTO DE LA PRESENTE SOLICITUD DE **PATENTE DE INVENCION** FUE PUBLICADO

EN LA GACETA DE PROPIEDAD INDUSTRIAL No **538**, DE FECHA **31 DE MARZO DE 2004**, EL

TERMINO HABIL SEÑALADO POR LA LEY EXPIRA EL **01 DE JULIO DE 2004**.

NOTA: Dentro del plazo de los seis (6) meses siguientes a partir de la fecha de publicación en la gaceta de Propiedad Industrial, deberá solicitar y cancelar el examen de patentabilidad so pena de que la solicitud caiga en abandono, de acuerdo con lo establecido en el Artículo 44 de la Decisión 486/2000.

SE PRESENTARON OPOSICIONES POR PARTE DE TERCEROS.

SI _____

NO **X** _____

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

2020

Bogotá, D. C., 24 de Marzo de 2006

Doctora

JIMENA ESCOBAR URIBE

Representante **McNEIL – PPC, Inc.**

ASUNTO	Radicación No.	02-41784
	Trámite	002
	Evento	001
	Actuación	430
	Oficio	3751
	Folios	113

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 7 a 22 de la solicitud en estudio.
- b) Para el presente estudio se tendrán en cuenta los dibujos comprendidos en los folios 27 a 34 de la solicitud en estudio.
- c) Para el presente estudio se tendrá en cuenta el capítulo reivindicatorio que comprende 12 reivindicaciones en los folios 23 a 25 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 16 de mayo de 2002, y en el momento de la radicación **SI** se reclamo prioridad de las primeras solicitudes presentadas en Estados Unidos US 09/863529 y 09/962425.

2) Objeto de la invención

- a) Las reivindicaciones 1 a 12 de la solicitud en estudio se refieren a un artículo absorbente que se adapta a un usuario que comprende: A. una silueta que comprende: (i) un primer extremo, (ii) un segundo extremo, en donde el segundo extremo se encuentra en relación opuesta al primer extremo, y (iii) un primer borde que se extiende longitudinalmente, opuesto a un segundo borde que se extiende longitudinalmente, los extremos que se extienden longitudinalmente conectan el primer y el segundo extremos; B. una porción con capas que comprende: (i) un núcleo absorbente y (ii) una hoja de respaldo; C. medios para doblar una porción del artículo absorbente entre al menos uno de los bordes que se extiende

- b) El anterior producto busca mejorar las características de artículos absorbentes desechables.
- c) Según la Clasificación Internacional de Patentes, la codificación para esta solicitud corresponde a: A 61 F 13/15

3) Claridad de la Solicitud

- a) El artículo 28 de la Decisión 486 de la Comisión de la Comunidad Andina de Naciones establece

"La descripción deberá divulgar la invención de manera suficientemente clara y completa para su comprensión y para que una persona capacitada en la materia técnica correspondiente pueda ejecutarla"

La descripción no es clara toda vez que la palabra "silueta" no es la más apropiada para describir el objeto de la solicitud.

La palabra "silueta" según el diccionario de la real academia significa:

- 1. f. Dibujo sacado siguiendo los contornos de la sombra de un objeto.
- 2. f. Forma que presenta a la vista la masa de un objeto más oscuro que el fondo sobre el cual se proyecta.
- 3. f. Perfil.

De acuerdo a lo que el solicitante quiere proteger, no se trata de un dibujo (definición 1), ni se trata de una forma que proyecta un objeto (definición 2), ni se trata del perfil de un objeto (definición 3)

Por tanto dicha palabra es inapropiada para describir la solicitud. El solicitante deberá replantearla y colocar una que se ajuste más a los elementos técnicos del artículo absorbente.

De la misma forma, el título de la solicitud no es el mejor, toda vez que la palabra "adaptables" puede referir muchas características técnicas diferentes. Por lo tanto, se hace necesario hacer un poco más explícito el título con la menor cantidad de palabras posibles. Se sugiere "...adaptables a varias prendas..."

- b) 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

El capítulo reivindicatorio no es claro toda vez que:

- i) Las reivindicaciones 1 y 7 son iguales, por lo que no es lógico realizar un análisis repetido para una reivindicación. Se sugiere eliminar dicha reivindicación 7 y dejar solo la número 1 como independiente.
- ii) Las reivindicaciones 6 y 12 son inadmisibles, toda vez que cuando reivindican color en la presente solicitud, son un mero elemento decorativo más no un elemento técnico distintivo. Por tanto, inadmisibles para una solicitud de patente.
- iii) La palabra 'silueta' no es la más adecuada para describir la presente solicitud tal como se enunció en el aparte de descripción.

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) 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 23 de mayo de 2001 (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 que se pueden plegar.

De acuerdo con lo 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	DE 198 34785	Die folgenden Angaben sind den vom Anmelder eingereichtein Unterlagen entnommen	2000.02.17
D2	EP 1 008 333	Disposable body fluids absorbent article	2000.06.14
D3	WO 96 02217	Pre-folded absorbent articles having improved fit	1996.02.01
D4	WO 00 13633	Absorbent product with laterally movable portions	2000.03.16
D5	US 5 704 929	Absorbent article having selectively alterable dimensions	1998.01.06
D6	US 5728 085	Method for the manufacturing of an absorbent structure and an absorbent structure and an absorbent article comprising an absorbent structure manufactured according to this method	1998.03.17
D7	WO 95 15139	Absorbent article with asymmetric shape for proved protection	1995.06.08

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 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 de la novedad y el del Nivel Inventivo

El art. 16 de la Decisión 486 de la Comisión de la Comunidad Andina establece:

“Una invención se considerará nueva cuando no está comprendida en el estado de la técnica.” “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 prioridad de la solicitud de patente que se estuviese examinando, siempre que dicho contenido esté incluido en la solicitud de fechas de prioridad cuando ella se publique o hubiese transcurrido el plazo previsto en el artículo 40.”

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

"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".

Se puede afirmar que cualquier artículo absorbente involucra un contorno (aquí mal llamado silueta) con dos extremos y en donde los extremos se encuentran en relación opuesta, y unos bordes que se extienden longitudinalmente, opuestos uno del otro, y donde dichos extremos de los bordes que se extienden longitudinalmente se conectan con los extremos del contorno; esto se puede observar en cualquier documento incluyendo los citados aquí.

Igual que lo anterior, cualquier artículo absorbente posee una porción con capas que incluye un núcleo absorbente y una hoja de respaldo;

D1 en sus columnas 2 a 4 muestra como al menos uno de los bordes que se extiende longitudinalmente y al menos uno de los extremos se puede doblar. Sería prácticamente lo mismo que el solicitante desea proteger.

D2 también relaciona formas de doblar el artículo absorbente, tal como se enunciaría en la presente solicitud. Obsérvense los dibujos.

D3 enumera específicamente formas de doblar un artículo absorbente desechable.

D4 muestra pliegues que permiten que se ajuste el artículo absorbente, tal como lo pide el solicitante en le presente documento.

D5 relaciona varios pliegues que permiten que el artículo se adapte al usuario y a la ropa que usa. Lo mismo que en la presente solicitud.

D6 y D7, al igual que todos los anteriores, relacionan todos los elementos que el solicitante desea proteger.

Por lo anterior, la presente solicitud no tendría las características para que se le concediera el privilegio solicitado.

b) Resumen

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

Nº	Documento	Reivindicaciones afectadas	Requisito que afecta
D1	DE 198 34785	1 - 12	Novedad
			Nivel inventivo
D2	EP 1 008 333	1 - 12	Novedad
			Nivel inventivo
D3	WO 96 02217	1 - 12	Novedad
			Nivel inventivo
D4	WO 00 13633	1 - 12	Novedad
			Nivel inventivo
D5	US 5 704 929	1 - 12	Novedad
			Nivel inventivo
D6	US 5728 085	1 - 12	Novedad
			Nivel inventivo
D7	WO 95 15139	1 - 12	Novedad
			Nivel inventivo

6) 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

30 MAR. 2006

Concepto Técnico N°	EXAMINADOR TÉCNICO Código No.	EXAMINADOR JURÍDICO Código No.
470	202003	

13
TBS



①⑨ **BUNDESREPUBLIK
DEUTSCHLAND**



**DEUTSCHES
PATENT- UND
MARKENAMT**

⑫ **Offenlegungsschrift**
⑩ **DE 198 34 785 A 1**

⑤① Int. Cl.⁷:
A 61 F 13/56
A 61 F 13/15

②① Aktenzeichen: 198 34 785.5
②② Anmeldetag: 1. 8. 1998
④③ Offenlegungstag: 17. 2. 2000

DE 198 34 785 A 1

⑦① Anmelder:
Anic, Monika, 78554 Aldingen, DE; Walther, Karina,
78554 Aldingen, DE

⑦④ Vertreter:
Patentanwälte Westphal, Mussnug & Partner,
78048 Villingen-Schwenningen

⑦② Erfinder:
gleich Anmelder

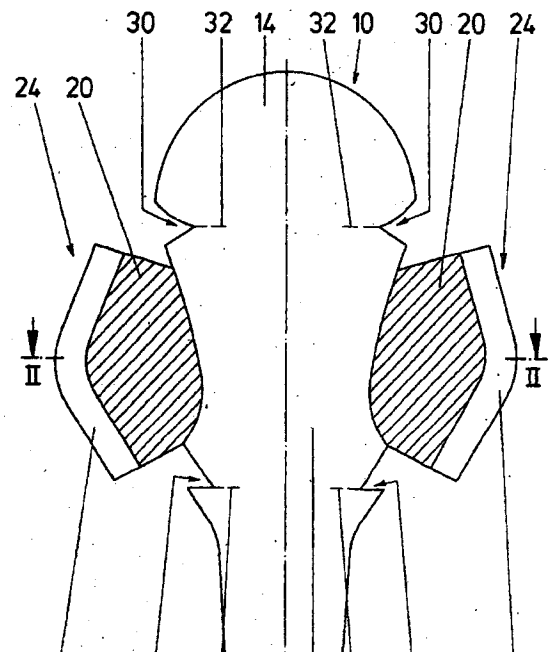
⑤⑥ Entgegenhaltungen:
DE 296 00 384 U1
GB 21 95 541 A
US 57 13 886
US 56 69 898
US 49 40 462
EP 08 38 205 A2
WO 97 39 713 A1
WO 96 10 974 A1

Die folgenden Angaben sind den vom Anmelder eingereichten Unterlagen entnommen

Prüfungsantrag gem. § 44 PatG ist gestellt

⑤④ Hygienische Schutzeinlage für Slips o. dgl.

⑤⑦ Die hygienische Schutzeinlage (10) weist eine an die individuellen Bedürfnisse anpassbare Gestaltung auf. Einerseits kann die Schutzeinlage (10) einen dehnbaren Bereich (20) aufweisen, durch welchen die Flächen der Schutzeinlage (10) bei einem entsprechenden Ziehen am dehnbaren Bereich (20) vergrößerbar ist. Unabhängig hiervon kann die Schutzeinlage auch mit einer oder mehreren Sollknickstellen (30, 32) versehen sein, damit sich beim Tragen der Schutzeinlage (10) diese an die individuelle Körperform der Trägerin der Schutzeinlage (10) anpasst. Obwohl beide Maßnahmen voneinander unabhängig sind, ist es vorteilhaft, diese miteinander in der erfindungsgemäßen Schutzeinlage (10) zu kombinieren.



98 34 785 A 1

Beschreibung

Die Erfindung betrifft eine hygienische Schutzeinlage für Slips oder dergleichen mit einer dem individuellen Bedürfnissen angepassten Kontur, wobei die Schutzeinlage eine saugfähige Lage zur Aufnahme von Körperflüssigkeit und eine Befestigungseinrichtung aufweist zur vorübergehenden Befestigung der Schutzeinlage auf dem Slip oder dergleichen.

Solche hygienische Schutzeinlagen sind hinlänglich bekannt. Sie bestehen regelmäßig aus mindestens drei Schichten, nämlich einer oberen saugfähigen Lage aus Zellulose, einer darunter angeordneten Klebschicht und einer Schutzfolie, die vor Gebrauch von der Klebschicht abzuziehen ist.

Den meisten erhältlichen hygienischen Schutzeinlagen ist gemeinsam, dass diese eine Außenkontur aufweisen, die dem individuellen Bedürfnissen nicht optimal gerecht wird. Die meisten Schutzeinlagen sind nämlich mindestens annähernd rechteckförmig gestaltet mit einer Abrundung im vorderen und hinteren Bereich. Die sich gegenüberliegenden Längsränder verlaufen zumeist gerade. Allerdings sind mittlerweile auch solche hygienische Slipseinlagen im Handel, die leicht konkav ausgebildete Längsränder aufweisen. Aber auch diese Slipseinlagen sind für die unterschiedlichsten Bedürfnisse und Körperformen nicht optimal gestaltet. Da es sich bei den Slipseinlagen jedoch um ein Massenprodukt handelt, haben offensichtlich die Hersteller übersehen, dass ein Bedürfnis besteht, die Slipseinlage den individuellen Bedürfnissen der jeweiligen Trägerin anpassbar zu gestalten.

So sind mittlerweile unterschiedlichste Typen von Unterwäsche in Gebrauch, wie z. B. herkömmliche Unterhosen, Slips, Stringtangas und Bodies. Diese verschiedenen Arten von Unterwäsche zeichnen sich durch unterschiedlich breite Stege aus, die das Gesäßteil der Unterwäsche mit dem Vorderteil verbinden. Die bisher bekannten hygienischen Schutzeinlagen sind diesen unterschiedlichen Bedürfnissen nicht anpassbar.

Aus dem Deutschen Gebrauchsmuster No. 90 15 194 sind bereits hygienische Schutzeinlagen mit unterschiedlichsten Außenkonturen beschrieben. Neben einer ovalen Kontur wird eine rautenförmige Kontur und auch eine sich von vorn nach hinten bzw. von hinten nach vorne verengende Kontur vorgeschlagen. Vorgeschlagen wird auch eine dreieckförmige Form der Schutzeinlage.

Nachteilig an den in dem Deutschen Gebrauchsmuster 90 15 194 beschriebenen Schutzeinlagen ist jedoch ebenfalls der Umstand, dass mit der Wahl einer der Schutzeinlage deren äußere Form für ein und allemal festgelegt ist. Eine Anpassung an die individuellen Bedürfnisse des Benutzers oder der Benutzerin der Schutzeinlage ist damit nur durch die bestimmte Wahl der Form der Schutzeinlage sichergestellt. Eine Veränderung der Form ist nicht mehr möglich.

Hier setzt die vorliegende Erfindung an.

Die Erfindung hat das Ziel, eine hygienische Schutzeinlage anzugeben, die an die individuellen Bedürfnisse eines Benutzers anpassbar ist.

Dieses Ziel wird durch eine hygienische Schutzeinlage mit den Merkmalen des Anspruchs 1 oder mit den Merkmalen des Anspruchs 7 gelöst.

Weiterbildungen der Erfindung sind Gegenstand der Unteransprüche.

Die erfindungsgemäße hygienische Schutzeinlage sieht also im Wesentlichen zwei unabhängig voneinander einsetzbare Maßnahmen vor, die jedoch vorzugsweise miteinander

ren bzw. unteren Rändern einen dehnbaren Bereich aufweist, durch welchen die Fläche der Schutzeinlage bei entsprechendem Ziehen an dem dehnbaren Bereich vergrößerbar ist.

Die zweite hiervon unabhängige Maßnahme, die vorzugsweise mit der vorgenannten Maßnahme kombinierbar ist, besteht darin, dass die Schutzeinlage mit einer oder mehreren Sollknickstellen versehen ist zum Knicken der Schutzeinlage in vorgegebenen Bereichen beim Tragen der Schutz-

einlage. In einer Weiterbildung der Erfindung ist vorgesehen, dass diese hygienische Schutzeinlage, die als Slipseinlage oder auch als hygienische Binde ausgestaltet sein kann, Knautschzonen aufweist. Diese Knautschzonen sind im Vergleich zum übrigen Bereich der Schutzeinlage deutlich dünner ausgebildet, so dass sich der Slip oder dergleichen der Schutzeinlage und somit der Körperform der Trägerin optimal anpassen kann.

Die erfindungsgemäße hygienische Schutzeinlage besteht im Wesentlichen aus einem Mittlenbereich und einem an diesem Mittlenbereich anschließenden vorderen Bereich sowie hinteren Bereich. Die Schutzeinlage kann in einer oder mehreren Grundgrößen gefertigt werden und dank des Vorsehens der dehnbaren Bereiche und Knautschzonen an alle gängigen Slipformen und Größen nachträglich angepasst werden.

Der erfindungsgemäß vorgesehene dehnbare Bereich der Schutzeinlage besteht vorzugsweise aus elastischem Material, das beim Ziehen an diesem Material eine Verlängerung bzw. Streckung des Materials zulässt. Vorzugsweise ist dieser dehnbare Bereich an Befestigungsklappen der Schutz-

einlage angeformt. Solche Befestigungsklappen müssen nicht notwendigerweise vorgesehen sein, sind jedoch vorteilhaft dann, wenn insbesondere Stringtangas, also Slips mit sehr dünnen Stegen, getragen werden und auf diesen Stegen die Slipseinlage angebracht werden soll. Die Befestigungsklappen dienen zum zusätzlichen Befestigen der Schutzeinlage an der Außenseite des Slips. Diese Befestigungsklappen können ganz oder teilweise mit Klebstoff oder sonstigen Befestigungselementen ausgestattet sein.

Die Erfindung wird nachfolgend im Zusammenhang mit drei Figuren anhand von zwei Ausführungsbeispielen näher erläutert. Es zeigen:

Fig. 1 ein erstes Ausführungsbeispiel einer hygienischen Schutzeinlage nach der Erfindung in Draufsicht,

Fig. 2 eine Schnittansicht der Schutzeinlage von Fig. 1 entlang der Schnittlinie II-II und

Fig. 3 die Draufsicht auf ein zweites Ausführungsbeispiel einer hygienischen Schutzeinlage.

In den nachfolgenden Figuren bezeichnen, sofern nicht anders angegeben, gleiche Bezugszeichen gleiche Teile mit gleicher Bedeutung.

In Fig. 1 ist ein erstes Ausführungsbeispiel einer hygienischen Schutzeinlage nach der Erfindung in Draufsicht dargestellt. Die Schutzeinlage ist als Slipseinlage ausgebildet und mit dem Bezugszeichen 10 versehen und in etwa im Maßstab 1 : 1 dargestellt. Die Schutzeinlage 10 weist einen zentralen Mittlenbereich 12 auf, an den sich oben ein vorderer Bereich 14 und unten ein hinterer Bereich 16 anschließt. Der zentrale Mittlenbereich 12 ist annähernd rechteckförmig gestaltet, wobei die beiden sich gegenüberliegenden Längsseiten konkav und damit nach innen gebogen gekrümmt sind. Der vordere Bereich 14 ist etwa halbkreisförmig gestaltet und der hintere Bereich 16 etwas schmaler als der zentrale Mittlenbereich 12 und mindestens annähernd

finden sich Sollknickstellen, die beim Tragen der Schutz-
einlage 10 ein definiertes Abbiegen an diesen Sollknickstellen
zulassen.

Die Sollknickstellen zwischen dem Mittenbereich 12 und
dem vorderen Bereich 14 bzw. dem Mittenbereich 12 und
dem hinteren Bereich 16 sind durch Perforationslinien 32
realisiert. Obwohl die Perforationslinie 32 sich quer über die
gesamte Schutzeinlage 10 erstrecken kann, kann diese, wie
dargestellt, auch unterbrochen sein.

Um ein definiertes Knicken an diesen Sollknickstellen
weiter zu erleichtern, können, wie dargestellt, gegenüberlie-
gend dreieckförmige Einkerbungen 30 an den Rändern der
Schutzeinlage 10 vorgesehen sein.

Obwohl die in Fig. 1 dargestellte Schutzeinlage 10 mit
dem zentralen Mittenbereich 12, dem vorderen Bereich 14
und dem hinteren Bereich 16 sowie den Perforationslinien
32 und den Einkerbungen 30 bereits ihre Funktion zur Auf-
nahme von Körperflüssigkeiten beim Aufbringen an Slips
oder dergleichen erfüllt, ist die Schutzeinlage 10 durch
dehnbare Bereiche 20 ergänzt. Diese dehnbaren Bereiche 20
sind im Ausführungsbeispiel von Fig. 1 an den beiden
Längsseiten des zentralen Mittenbereiches 12 "flügel-
förmig" angeformt. Diese schmetterlingsartig angeformten
dehnbaren Bereiche 20 sind von einem nicht dehnbaren
Rand 22 begrenzt. Der schmetterlingsartig gestaltete dehn-
bare Bereich 20 mit angrenzendem Rand 22 bildet zugleich
jeweils einen Befestigungsflappen 24, um die Schutzeinlage
an dem Slip in einfacher Weise befestigen zu können. Hier-
auf wird weiter unten noch näher eingegangen.

Der dehnbare Bereich 20 ist so gestaltet, dass bei einem
Ziehen an diesem Bereich 20 die Oberfläche des dehnbaren
Bereichs 20 und damit die gesamte Oberfläche der Schutz-
einlage 10 vergrößert wird. Hierdurch ist sichergestellt, dass
die Trägerin der Schutzeinlage durch Ziehen an dem dehn-
baren Bereich 20 insgesamt die Schutzeinlage vergrößern
kann. Hierdurch ist eine optimale Anpassung der Schutz-
einlage auf den Steg der Unterwäsche, auf den die Schutz-
einlage aufgesetzt wird, möglich.

Wird beispielsweise die Schutzeinlage von Fig. 1 auf den
Steg eines String-Tangas und damit auf einen verhältnismä-
ßig schmalen Steg aufgesetzt, so werden die flügelartigen
Befestigungsflappen 24 mit dem dehnbaren Bereich 20 und
dem sich anschließenden Rand 22 einfach umgeklappt, so
dass sich der Steg des String-Tangas zwischen der Unter-
seite der Schutzeinlage und den umgeklappten Befesti-
gungsflappen 24 befindet. Wird die Schutzeinlage dagegen
auf Stegen von breiteren Unterwäschen, zum Beispiel Bo-
dies oder dergleichen, aufgesetzt, kann durch ein Ziehen an
den dehnbaren Bereichen 20 dafür gesorgt werden, dass der
gesamte Steg des Bodies oder dergleichen von der Schutz-
einlage abgedeckt ist. Ein optimaler Schutz der Unterwä-
sche einerseits und eine maximale Sicherheit für die Träge-
rin ist hiermit sichergestellt.

Fig. 2 zeigt die Schnittansicht der Schutzeinlage 10 von
Fig. 1 entlang der dort angedeuteten Schnittlinie II-II. Die
Schutzeinlage 10 weist drei aufeinanderliegende Schichten
auf, nämlich eine oberste Lage A, die aus saugfähigem Ma-
terial zur Aufnahme von Körperflüssigkeit besteht. Im All-
gemeinen wird diese saugfähige Lage A eine Lage aus Zel-
lulosematerial sein. Die saugfähige Lage weist in den dehn-
baren Bereichen 20 ein Material auf, das ebenfalls sehr
saugfähig ist, jedoch elastisch bzw. dehnbar. Dieser Bereich
ist in Fig. 2 mit dem Bezugszeichen B markiert. Zweckmä-
ßigerweise ist der dehnbare Bereich 20 ebenfalls aus Zelu-
losematerial gestaltet, jedoch anders strukturiert, so dass

bzw. Haftschrift versehen. Auf dieser Klebeschicht C befin-
det sich eine Schutzfolie D, die vor Gebrauch der Schutz-
einlage 10 abziehen ist, damit die Klebeschicht C wirken
kann.

Eine andere Gestaltungsmöglichkeit besteht darin, die
Klebeschicht lediglich unterhalb der mit A bezeichneten Be-
reiche der Schutzeinlage 10 vorzusehen und damit nicht un-
terhalb der dehnbaren Bereiche 20.

Fig. 3 zeigt ein zweites Ausführungsbeispiel einer
Schutzeinlage 10. Diese Schutzeinlage 10 entspricht weitge-
hend der in Fig. 1 dargestellten Schutzeinlage 10. Allerdings
verfügt diese Schutzeinlage 10 über Knautschzonen 50, die
an den sich gegenüberliegenden Längsseiten des zentralen
Mittenbereichs 12 der Schutzeinlage 10 befinden. Diese
Knautschzonen 50 erstrecken sich über die gesamte Länge
der Längsseiten des Mittenbereichs 12 und sind sehr schmal
gestaltet. Die Knautschzonen 50 sind sehr dünnwandig ge-
staltet, so dass sich an diesem Bereich die Schutzeinlage 10
falten kann. Die Folge ist, dass sich der Steg der Unterwä-
sche, auf den die Schutzeinlage 10 aufgebracht ist, der
Schutzeinlage und damit der Körperform anpasst und nicht
umgekehrt, wie bei den Schutzeinlagen der bisherigen Art.
Die Schutzeinlage selbst wird durch das Vorsehen dieser
Knautschzonen weniger zerknautscht.

Bezugszeichenliste

- 10 Hygienische Schutzeinlage
- 12 Mittenbereich
- 14 vorderer Bereich
- 16 hinterer Bereich
- 20 dehnbarer Bereich
- 22 nicht dehnbarer Rand
- 24 Befestigungsflappen
- 30 Einkerbungen
- 32 Sollknicklinien
- 50 Sollknautschbereich
- II-II Schnittlinie
- A Zellstofflage
- B Knautschteil der Zellstofflage
- C Klebschichtlage, Haftlage
- D Schutzfolie

Patentansprüche

1. Hygienische Schutzeinlage für Slips oder derglei-
chen mit einer den individuellen Bedürfnissen ange-
passten Kontur, wobei die Schutzeinlage (10) eine
saugfähige Lage (A) (Zellstofflage) zur Aufnahme von
Körperflüssigkeit und eine Befestigungseinrichtung
(24) aufweist zur vorübergehenden Befestigung der
Schutzeinlage (10) auf dem Slip oder dergleichen, **da-
durch gekennzeichnet**, dass die Schutzeinlage (10)
mindestens teilweise an ihren seitlichen und/oder obo-
ren bzw. unteren Rändern einen dehnbaren Bereich
(20) aufweist, durch welchen die Fläche der Schutz-
einlage (10) bei einem entsprechenden Ziehen am dehnba-
ren Bereich (20) vergrößerbar ist.
2. Hygienische Schutzeinlage nach Anspruch 1, da-
durch gekennzeichnet, dass der dehnbare Bereich (20)
ebenfalls mit einer saugfähigen Lage (A) versehen ist
3. Hygienische Schutzeinlage nach Anspruch 1 oder 2,
dadurch gekennzeichnet, dass der dehnbare Bereich
(20) jeweils an den zwei sich gegenüberliegenden
Längsseiten der Schutzeinlage (10) angeordnet ist.
4. Hygienische Schutzeinlage nach einem der Ansprüche

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Befestigungslappens (24) der Schutzeinlage (10) sind, wobei der mindestens eine Befestigungslappen (24) an einer der Längsseiten der Schutzeinlagen (10) angeordnet ist.

5. Hygienische Schutzeinlage nach Anspruch 4, dadurch gekennzeichnet, dass zwei Befestigungslappen (24) vorgesehen sind, von denen jeweils einer an einer der beiden Längsseiten der Schutzeinlage (10) angeordnet ist.

6. Hygienische Schutzeinlage nach Anspruch 4 oder 5, dadurch gekennzeichnet, dass der oder die dehnbaren Bereiche (20) in dem Befestigungslappen (24) mindestens teilweise von einem nicht dehnbaren Rand (22) begrenzt sind.

7. Hygienische Schutzeinlage nach einem der Ansprüche 1 bis 6 und insbesondere nach dem Oberbegriff des Anspruchs 1, dadurch gekennzeichnet, dass die Schutzeinlage (10) mit einer oder mehreren Sollknickstellen (30, 32) versehen ist zum Knicken der Schutzeinlage (10) in vorgegebenen Bereichen beim Tragen der Schutzeinlage (10).

8. Hygienische Schutzeinlage nach Anspruch 7, dadurch gekennzeichnet, dass die Schutzeinlage (10) einen Mittenbereich (12), einen vorderen Bereich (14) und einen hinteren Bereich (16) aufweist, und dass der Mittenbereich (12) vom vorderen Bereich (14) und hinterem Bereich (16) durch jeweils vorgesehene Sollknickstellen (30, 32) getrennt ist.

9. Hygienische Schutzeinlage nach Anspruch 7 oder 8, dadurch gekennzeichnet, dass die Sollknickstelle durch eine Perforationslinie (32) in der saugfähigen Lage (A) gebildet ist.

10. Hygienische Schutzeinlage nach einem der Ansprüche 7 bis 9, dadurch gekennzeichnet, dass die Sollknickstellen (30, 32) durch gegenüberliegende Einkerbungen (30) gebildet sind.

11. Hygienische Schutzeinlage nach einem der Ansprüche 1 bis 10, dadurch gekennzeichnet, dass mindestens der Mittenbereich (12) der Schutzeinlage (10) jeweils an seinen Seitenrändern einen Sollknautschbereich (50) aufweist.

12. Hygienische Schutzeinlage nach Anspruch 11, dadurch gekennzeichnet, dass der Sollknautschbereich (50) dünnwandiger als die übrigen Bereiche (12, 14, 16, 20, 22) der Schutzeinlage (10) ausgebildet ist.

13. Hygienische Schutzeinlage nach einem der Ansprüche 1 bis 12, dadurch gekennzeichnet, dass die Schutzeinlage (10) auf ihrer Rückseite mit einer Klebeschichtlage (C) oder Haftlage versehen ist, und dass diese Klebeschichtlage (C) oder Haftlage von einer Schutzfolie (D) vor Gebrauch der Schutzeinlage (10) bedeckt ist.

Hierzu 2 Seite(n) Zeichnungen

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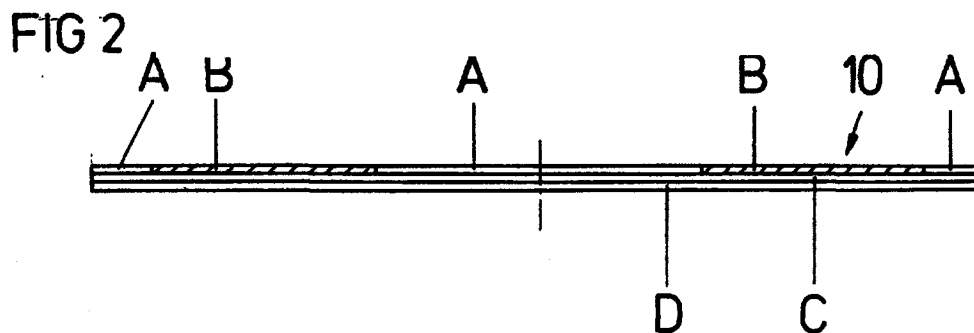
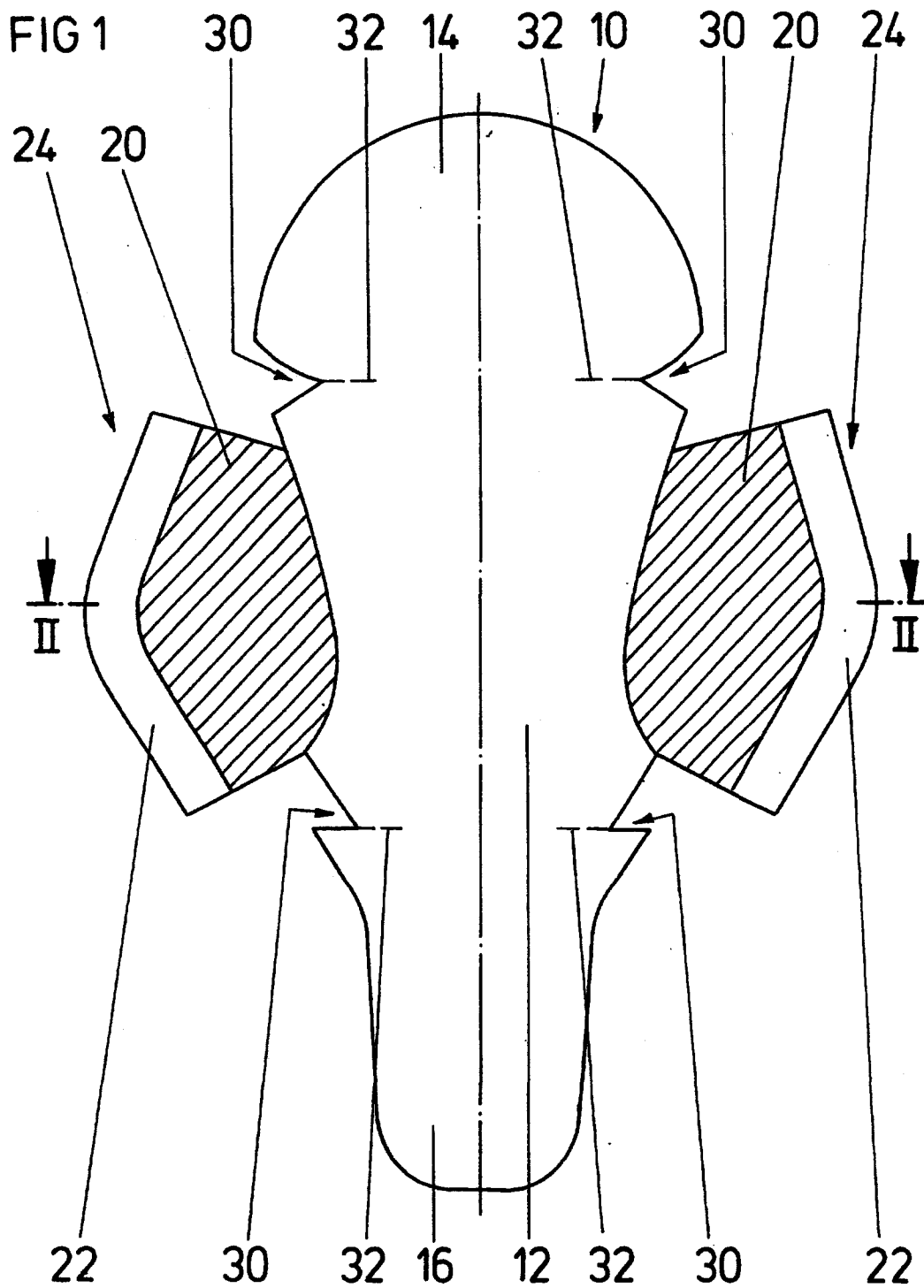
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ZEICHNUNGEN SEITE 1

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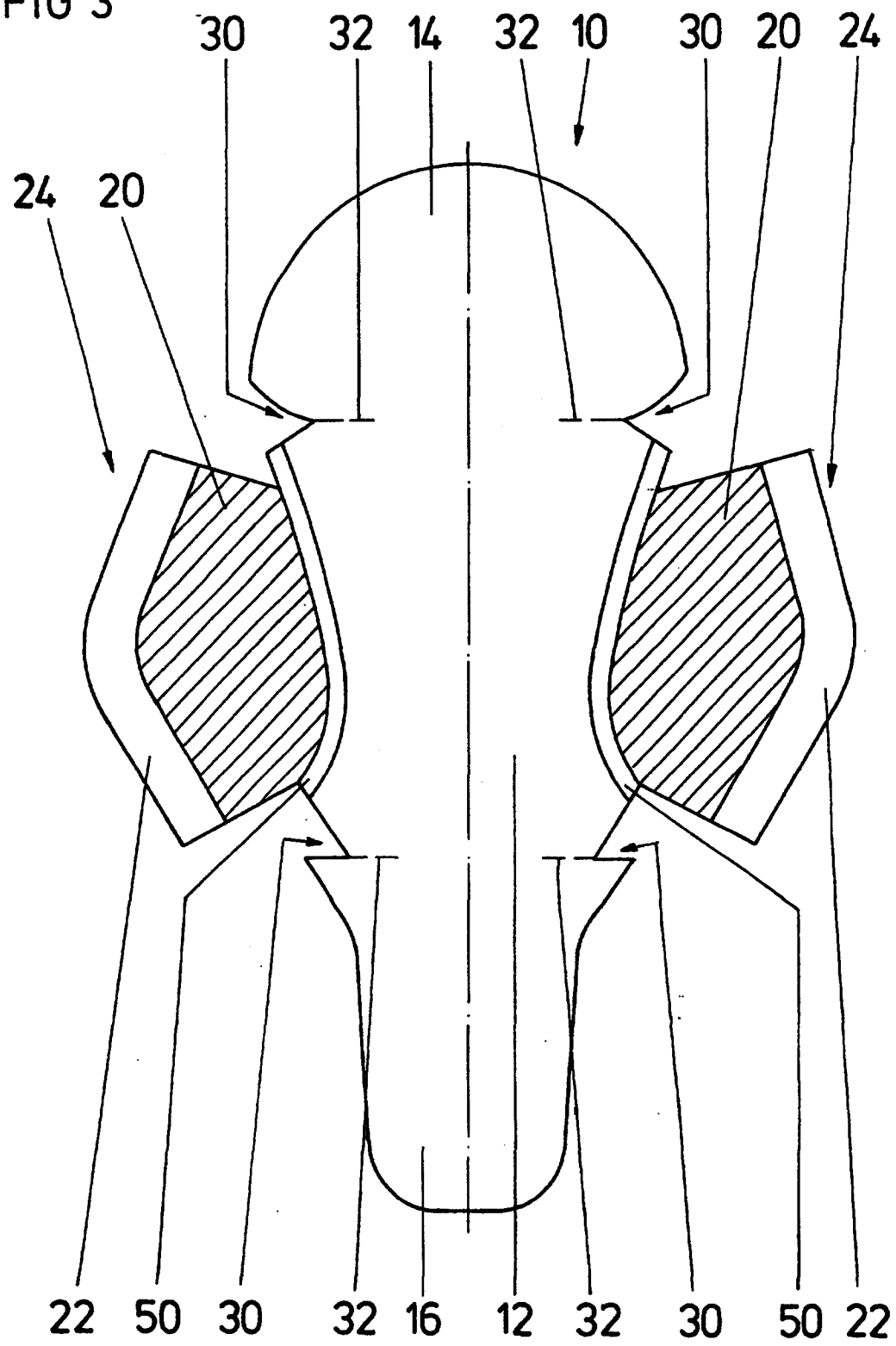


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FIG 3





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- Kumasaka, Yoshinori, c/o Technical Center Mitoyo-gun, Kagawa-ken 769-1602 (JP)
- Inoue, Yasushi, c/o Technical Center Mitoyo-gun, Kagawa-ken 769-1602 (JP)
- Otsubo, Toshifumi, c/o Technical Center Mitoyo-gun, Kagawa-ken 769-1602 (JP)

(30) Priority: 11.12.1998 JP 35339698

(71) Applicant: UNI-CHARM CORPORATION
Kawanoe-shi Ehime-ken (JP)

(74) Representative: Parry, Christopher Stephen
Saunders & Dolleymore,
9 Rickmansworth Road
Watford, Herts. WD1 7HE (GB)

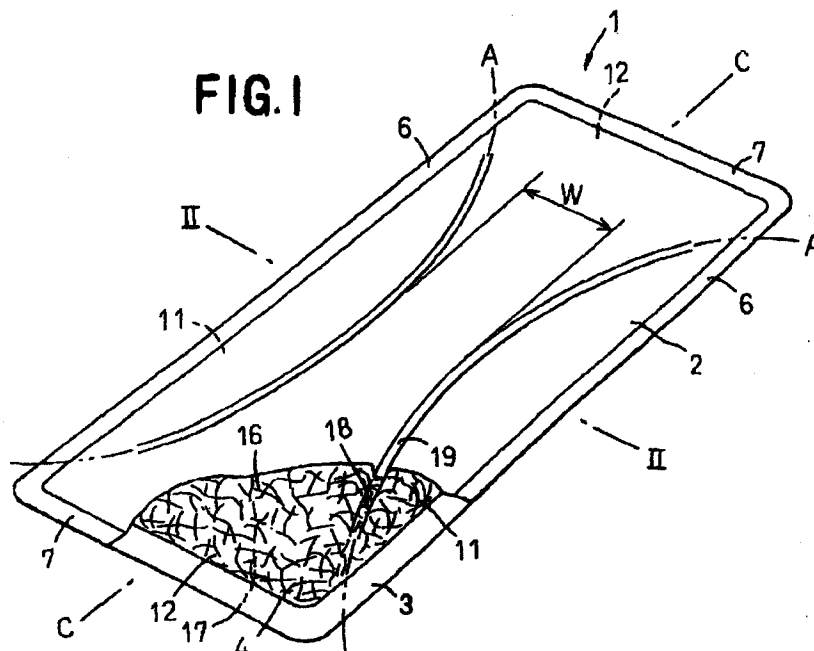
(72) Inventors:
• Shimoe, Nariaki, c/o Technical Center Mitoyo-gun, Kagawa-ken 769-1602 (JP)

(54) Disposable body fluids absorbent article

(57) A disposable body fluid absorbent article includes, a liquid-absorbent core 4, the core 4 is provided in the vicinity of opposite side edges 11 extending in parallel to each other in a longitudinal direction thereof with depressed regions 18 tapering from an upper surface

16 toward a lower surface 17 of the core 4 and extending along a pair of imaginary lines A-A extending in the longitudinal direction so as to describe convex curves respectively facing a center line C-C bisecting a width of the core 4.

FIG. 1



Description

[0001] The present invention relates to a disposable body fluids absorbent article such as a disposable diaper, a sanitary napkin or the like.

[0002] Japanese Utility Model Application Disclosure Gazette (Kokai) No. Heil-141707, Japanese Utility Model Application Disclosure Gazette (Kokai) No. Hei2-84623 and Japanese Patent Application Disclosure Gazette (Kokai) No. Hei9-51913 disclose a disposable diaper including grooves each extending through a liquid-absorbent core in the direction of its thickness or grooves dividing the liquid-absorbent core in a plurality of sections in the transverse direction of the absorbent core. Along these grooves, topsheet and backsheet of the diaper are bonded to each other and thereby to define bottoms of the respective grooves.

[0003] Japanese Utility Model Application Publication (Kokoku) No. Hei5-39691 and Japanese Patent Application Disclosure Gazette (Kokai) No. Hei9-108262 disclose a sanitary napkin having a liquid-absorbent core compressed in the direction from a topsheet toward a backsheet or in the reverse direction to form grooves extending in the longitudinal direction of the napkin. The liquid-absorbent core presents a remarkably high density along bottoms of the grooves.

[0004] Of the prior art as has been described above, the case in which the topsheet and the backsheet are bonded to each other to define the bottoms of the respective grooves can not free from any apprehension that an amount of body fluids flowing into the grooves might stay and give a wearer of the article such as a diaper a feeling of wetness due to which the wearer's discomfort increases. This is for the reason that the liquid-absorbent core of a disposable diaper or a sanitary napkin generally has a limited thickness and the side walls of the grooves are correspondingly limited in a total surface area even if the grooves are intended to absorb the amount of body fluids flowing into them.

[0005] Fig. 7 is a sectional view showing the napkin 101 described in the Japanese Utility Model Application Publication Gazette (Kokoku) No. Hei5-39691 taken in the transverse direction of the napkin 101. It is possible for the case of the napkin 101 to solve the problem that an amount of body fluids may stay in the grooves 102 since the liquid-absorbent core 104 underlies the bottoms 103 of the respective grooves 102. However, the regions of the liquid-absorbent core 104 immediately underlying the bottoms 103 have been compressed to have relatively high density and rigidity of the core 104 is correspondingly high in the regions. To alleviate an adverse effect of the relatively high density, a measure has generally been adopted such that the opposite side walls 106 of the respective grooves 102 are tapered toward the bottoms 103 to describe a U- or V-shape in the section of the liquid-absorbent core 104 in the vicinity of each groove 102.

[0006] The napkin 101 of Fig. 7 formed on both side

regions with such grooves 102 can not smoothly placed against a crotch region of the wearer with the napkin 1 being curved over its full width substantially in an inverted U-shape. On the contrary to the napkin 101 of Fig. 7, the napkin may be formed on its both side regions with the grooves by compressing the napkin from the backsheet toward the topsheet to facilitate the napkin to crook or curve over its full width substantially in an inverted U-shape. However, there is still an apprehension that the bottoms of the respective grooves having relatively high rigidity might directly stimulate soft skin of the wearer's crotch region. In addition, it is impossible for such napkin to offer desired function and effect of preventing any amount of menstrual discharge from leaking sideways by receiving and absorbing the amount of menstrual discharge flowing on the topsheet transversely of the napkin in the grooves.

[0007] In view of the problem as has been described above, it is a principal object of this invention to provide an improved a disposable article such as a sanitary napkin facilitating the article to curve over its full width with the topsheet defining the outside and eliminating an apprehension that the napkin curved in this manner might stimulate the wearer's skin.

[0008] According to the present invention, there is provided a disposable body fluids absorbent article adapted to be placed against a crotch region of a wearer to absorb body fluids, comprising a liquid-absorbent core configured substantially in a narrow rectangle longitudinally oriented along the crotch region and having an upper surface covered with a liquid-pervious topsheet and a lower surface, and the liquid-absorbent core being provided in the vicinity of opposite side edges extending in a longitudinal direction thereof with depressed regions tapering from the upper surface toward the lower surface and lying along a pair of imaginary lines extending in the longitudinal direction so as to describe convex curves respectively facing a center line bisecting a width of the liquid-absorbent core.

[0009] According to one embodiment of the present invention, the depressed regions continuously extend along the imaginary lines.

[0010] According to another embodiment of the present invention, the depressed regions intermittently extend along the imaginary lines.

[0011] According to still another embodiment of the present invention, the liquid-absorbent core contains a fibrous component and a density of the fibrous component in the depressed regions is equal to or lower than a density of the fibrous component in the remaining region.

[0012] According to further another embodiment of the present invention, the liquid-absorbent core further contains superabsorptive polymer particles distributed only in a region defined inside the imaginary lines about the center line.

Fig. 1 is a perspective view showing a partially cut-

away sanitary napkin constructed according to the present invention;

Fig. 2 is a sectional view taken along a line II-II in Fig. 1;

Fig. 3 is a view similar to Fig. 2 showing the sanitary napkin as it is put on a wearer's body;

Fig. 4 is a view similar to Fig. 1 showing a sanitary napkin according to one embodiment of the present invention;

Fig. 5 is a view similar to Fig. 1 showing a sanitary napkin according to another embodiment of the present invention;

Fig. 6 is a view similar to Fig. 2 showing a sanitary napkin according to still another embodiment of the present invention; and

Fig. 7 illustrates a typical napkin of prior art in its transverse section.

[0013] Details of a disposable body fluids absorbent article according to the present invention will be more fully understood from the description given hereunder with reference to the accompanying drawings which illustrate the sanitary napkin as a specific embodiment of the present invention.

[0014] A sanitary napkin 1 shown by Fig. 1 in a partially cutaway perspective view comprises a liquid-perVIOUS topsheet 2, a liquid-imperVIOUS backsheet 3 and a liquid-absorbent core 4 disposed between the topsheet 2 and the backsheet 3. The topsheet 2 and the backsheet 3 extend outward beyond a peripheral edge of the liquid-absorbent core 4 and are put flat and bonded together along the extension.

[0015] The napkin 1 is substantially configured in a narrow rectangle defined by opposite side edges 6 extending in longitudinal direction and opposite ends 7 extending in transverse direction. The liquid-absorbent core 4 is also configured in a narrow rectangle defined by opposite side regions 11 and opposite end regions 12, of which the upper surface 16 is covered with the topsheet 2 and the lower surface 17 is covered with the backsheet 3. The upper surface 16 is formed with a pair of first grooves 18 extending along a pair of imaginary lines, for example, lines A-A as seen in Fig. 1, describing convex curves respectively facing a center line C-C bisecting a width of the napkin 1. The topsheet 2 is formed with a pair of second grooves 19 depressed and curved in coincidence with the pair of first grooves 18. The minimum dimension W by which the pair of first grooves 18 are spaced from each other transversely of the napkin 1 is preferably in a range of 20 - 40 mm.

[0016] Fig. 2 is a sectional view taken along a line II-II bisecting a length of the napkin 1. The liquid-absorbent core 4 may have a thickness gradually decreasing from its transversely middle region toward the opposite side edges of the napkin 1 or may have a substantially uniform thickness except the regions defined by bottoms 21 of the first grooves 18 in which the thickness of the core 4 is abruptly decreased. Specifically, the thickness

of the core 4 is approximately 1 - 15 mm in the transversely middle region and 10 - 80 % thereof in the regions defined by the bottoms 19. Each of the first grooves 18 has a width W of approximately 1 - 10 mm at its open top from which the first groove 18 is tapered toward its bottom 21. A depth of the first groove 18 gradually decreases from its longitudinally middle region toward its longitudinally opposite ends until the groove 18 disappears.

[0017] The liquid-absorbent core 4 comprises hydrophilic fibers such as fluff pulp or hydrophobic fibers treated to become hydrophilic of 100 - 40 % by weight, superabsorptive polymer particles of 0 - 60 % by weight and hydrophobic fibers of 0 - 20 % by weight. The core 4 has a remarkably low rigidity at the respective bottoms 21 of the first grooves 18 due to particular thickness and composition in these regions. A fiber density in the regions defined by the bottoms 21 is equal to or lower than that in the remaining region and an amount of the polymer particles in the regions defined by the bottoms 21 is equal to or less than that in the remaining region. More preferably, the polymer particles are distributed only in the region extending from the respective imaginary lines A-A to the center line C-C of the core 4 and not distributed in the regions defined by the bottoms 21. By distributing the polymer particles in this manner, it is possible to avoid an apprehension that the polymer particles might absorb a partial amount of menstrual discharge and consequently form gel blocks. Such gel blocks might obstruct a smooth movement of menstrual discharge in transverse direction of the core 4. It is not apprehended also that the first grooves 18 might be filled up with the polymer particles swollen by absorption of menstrual discharge.

[0018] The topsheet 2 is made of a liquid-perVIOUS nonwoven fabric or a porous plastic film and may be intermittently bonded to the upper surface 16 of the core 4, if desired. The backsheet 3 is made of a liquid-imperVIOUS plastic film and may be intermittently bonded to the lower surface 17 of the core 4, if desired. The backsheet 3 is applied on its lower surface with adhesive 23 by which the napkin 1 is fastened to an undergarment worn by a wearer and the adhesive 23 is covered with a release paper 24.

[0019] Fig. 3 is a view similar to Fig. 2 showing the napkin 1 as put on the wearer's body. The napkin 1 is fastened by means of the adhesive 23 to the inner surface of the undergarment 24 on a crotch region thereof and placed against a crotch region 27 of the wearer. As seen in Fig. 3, the napkin 1 is put on the wearer's body so that the napkin describes an inverted U-shape with the topsheet 2 defining the outer side thereof. With the napkin 1 according to the present invention, the opposite side regions 11 of the core 4 easily crook or curve downward along the first grooves 18 having a relatively low density and thereby ensure a good fitting to the wearer's crotch region without giving the wearer any feeling of incompatibility. Along the first grooves 18, the

amount of menstrual discharge flowing thereinto can be absorbed by the core 4 through the topsheet 2 on opposite side walls 28 as well as on the bottoms 21 of the first grooves 18.

[0020] Fig. 4 is a view similar to Fig. 1 showing one embodiment of the present invention. According to the embodiment, the core 4 of the napkin 1 is formed with a plurality of first depressions 28 intermittently arranged along the pair of imaginary lines A-A and the topsheet 2 is formed with a plurality of second depressions 29 arranged in close contact with the first depressions 28, respectively. The first and second depressions 28, 29 replace the first and second grooves 18, 19 in Fig. 1. The individual depressions are shaped to be circular or oval. Each of the first depressions 28 has a dimension substantially corresponding to the dimension of the first groove 18 as measured transversely of the napkin 1 and has a depth which is also substantially corresponding to the depth of the first groove 18.

[0021] Fig. 5 is a view similar to Fig. 1 showing a napkin according to another embodiment of the present invention. Similarly to the case as has been described in reference with Fig. 1, the napkin 1 according to the embodiment has a pair of first grooves 18 and the corresponding pair of second grooves 19 extending transversely of the napkin 1. The embodiment differs from the case of Fig. 1 in that the grooves 18, 19 formed on both sides of the napkin 1 come in contact on the center line C-C so that the grooves 18, 19 on both sides describe together a curved X-shape. In other words, the first and second grooves 18, 19 extend transversely of the napkin 1 along a pair of imaginary curves A-A which are convex toward the center line C-C.

[0022] Fig. 6 is a view similar to Fig. 2 showing a napkin 1 according to still another embodiment of the present invention. The napkin 1 differs from the precedent embodiments in that the topsheet 2 is not formed with the pair of second grooves 19 to be aligned with the pair of first grooves 18 formed, also in the case of the napkin 1, on the core 4 and merely covers the respective open tops of the first grooves 18. The napkin 1 according to the embodiment also is easily deformable in the inverted U-shape as the napkin 1 is put on the wearer's body. However, it is apprehended that the napkin 1 might be less reliable than the napkin 1 of Fig. 1 in its function and effect to prevent the partial amount of menstrual discharge flowing on the topsheet 2 transversely of the napkin 1 from leaking sideways by receiving such amount of menstrual discharge in the pair of second grooves 19 and absorbing this through the bottoms as well as through the opposite side walls of the second grooves 19.

[0023] While the present invention has been described hereinabove by way of example in the form of sanitary napkin 1, it should be understood that the present invention is not limited to the sanitary napkin and applicable also to the other various disposable garments such as disposable diaper and disposable under-

garment particularly for persons suffering from incontinence.

[0024] The disposable body fluids absorbent article according to the present invention is provided on both sides of the liquid-absorbent core with the depressions tapering from the upper surface toward the lower surface of the liquid-absorbent core so that the body fluids may be absorbed through the bottoms as well as through the opposite side walls of these depressions. This unique arrangement is effective to avoid an apprehension that the body fluids might stay in these depressions and give the garment wearer undesirable feeling of high wetness and discomfort due to such feeling of high wetness. Furthermore, a rigidity of the liquid-absorbent core is remarkably lower along the bottoms of the respective depressions than in the vicinity thereof. Such unique distribution of the rigidity facilitates the liquid-absorbent core to crook or curve along the depressions over a full width of the core substantially in the inverted U-shape as the napkin is put on the wearer's body.

Claims

1. A disposable body fluids absorbent article adapted to be placed against a crotch region of a wearer to absorb body fluids, comprising a liquid-absorbent core configured substantially in a narrow rectangle longitudinally oriented along said crotch region and having an upper surface covered with a liquid-perVIOUS topsheet and a lower surface, and said liquid-absorbent core being provided in the vicinity of opposite side edges extending in a longitudinal direction thereof with depressed regions tapering from said upper surface toward said lower surface and lying along a pair of imaginary lines extending in said longitudinal direction so as to describe convex curves respectively facing a center line bisecting a width of said liquid-absorbent core.
2. The article according to Claim 1, wherein said depressed regions continuously extend along said imaginary lines.
3. The article according to Claim 1, wherein said depressed regions intermittently extend along said imaginary lines.
4. The article according to Claim 1, wherein said liquid-absorbent core contains a fibrous component and a density of said fibrous component in said depressed regions is equal to or lower than a density of said fibrous component in the remaining region.
5. The article according to Claims 1, wherein said liquid-absorbent core further contains superabsorp-

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tive polymer particles distributed only in a region defined inside said imaginary lines about said center line.

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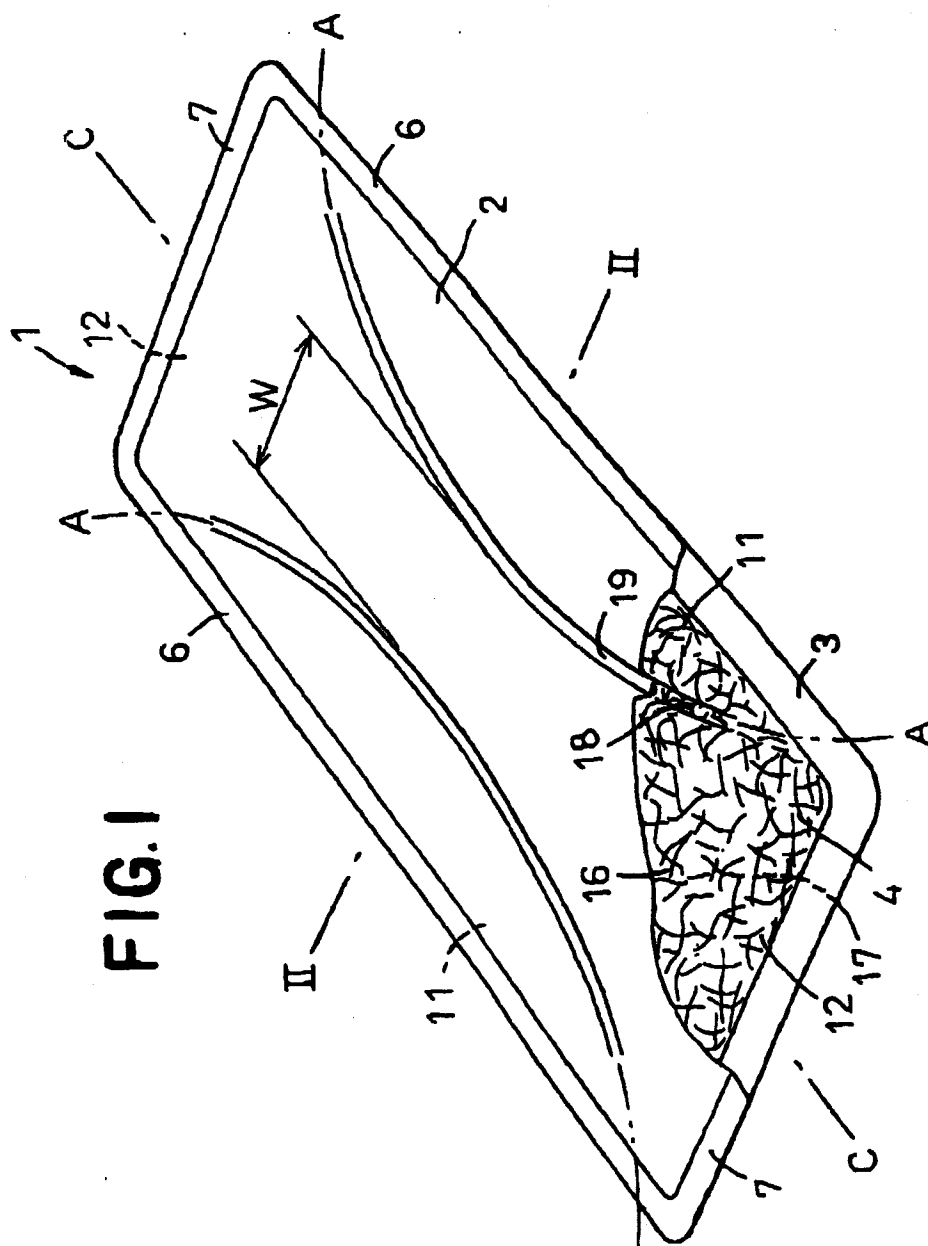


FIG. I

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FIG.2

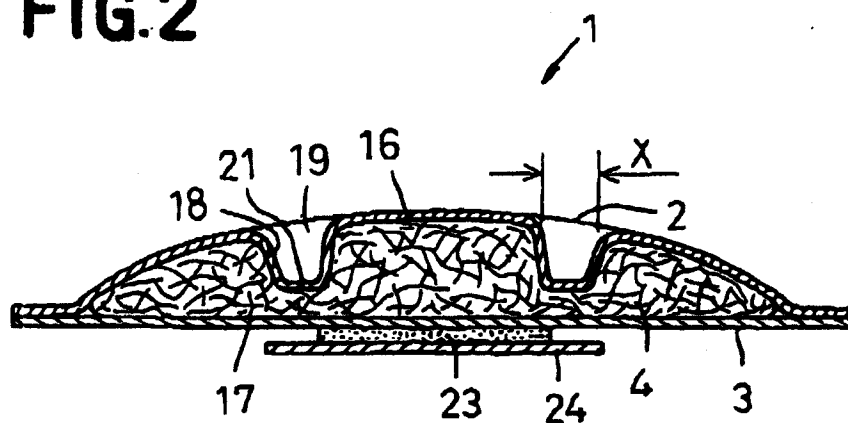
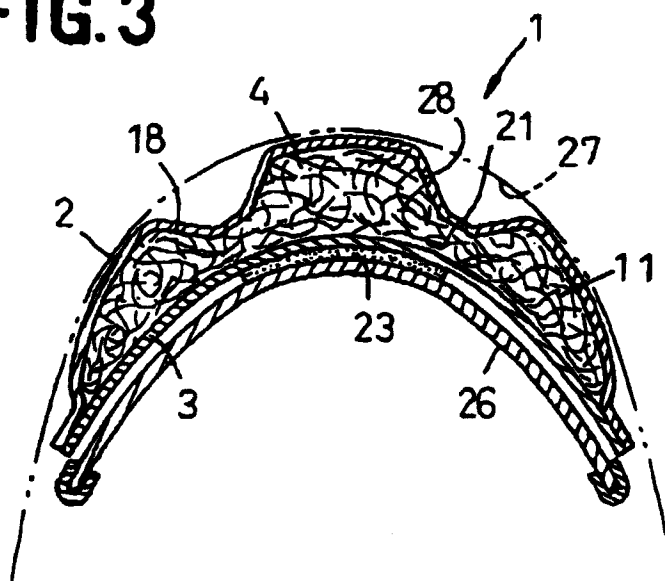


FIG.3



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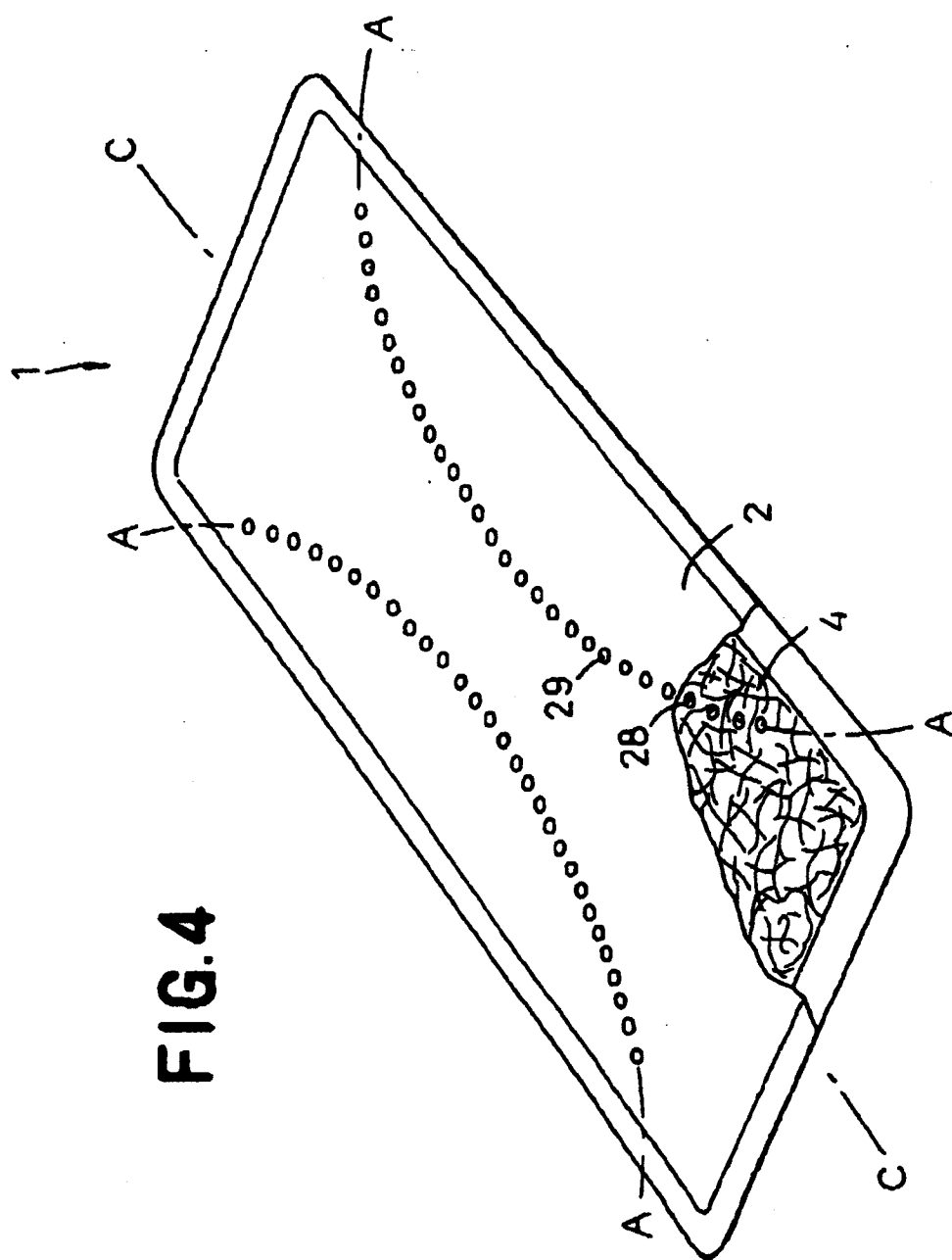


FIG. 4

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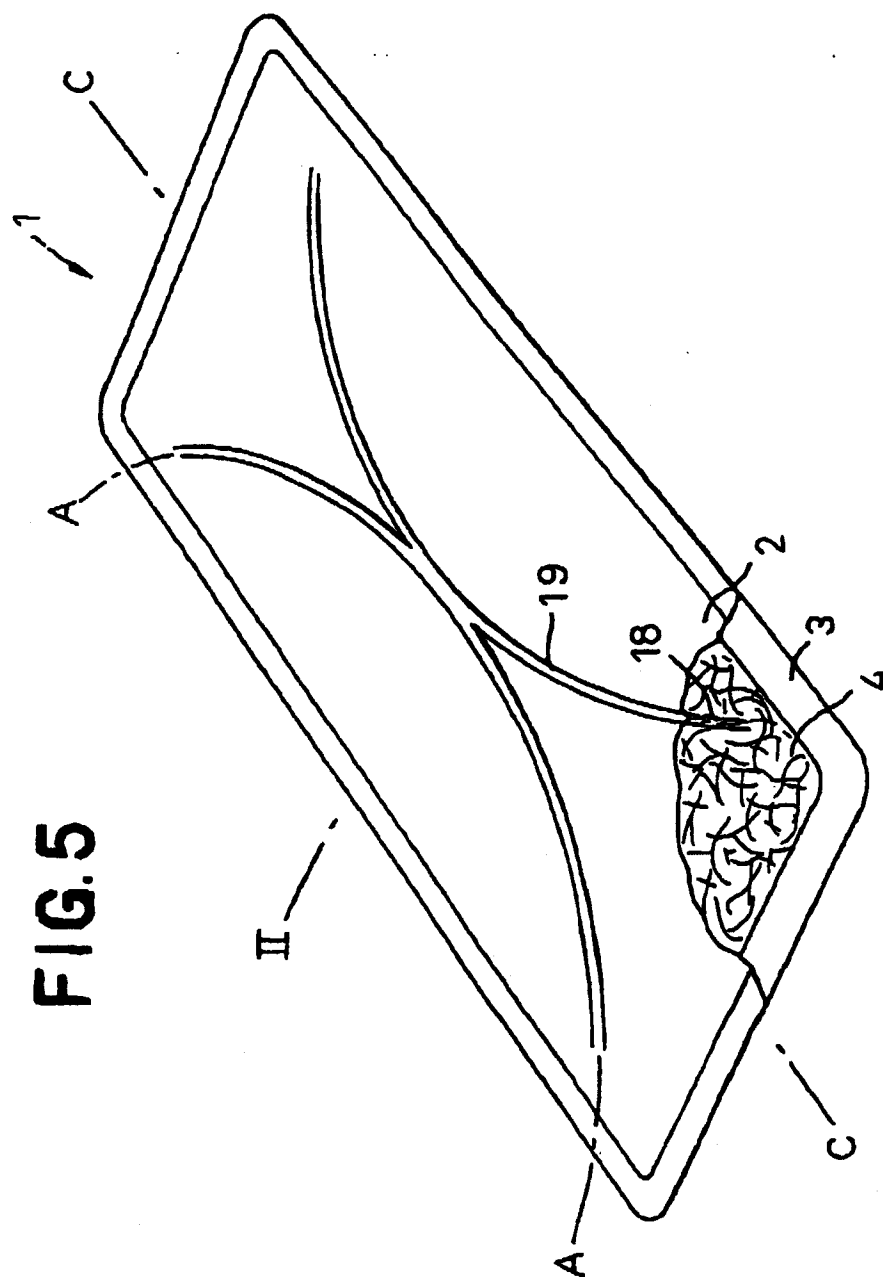


FIG. 5

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FIG.6

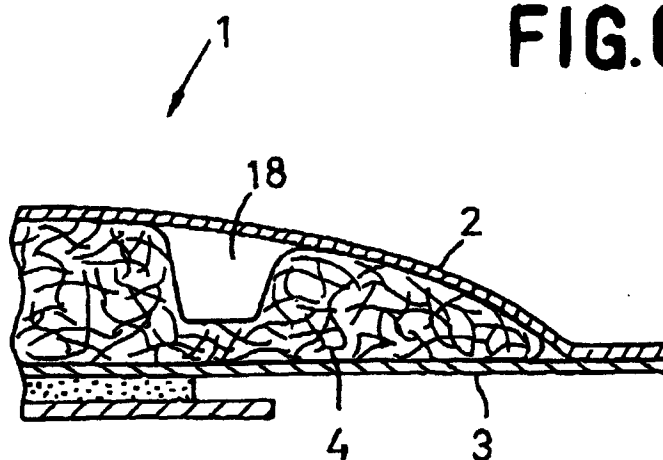
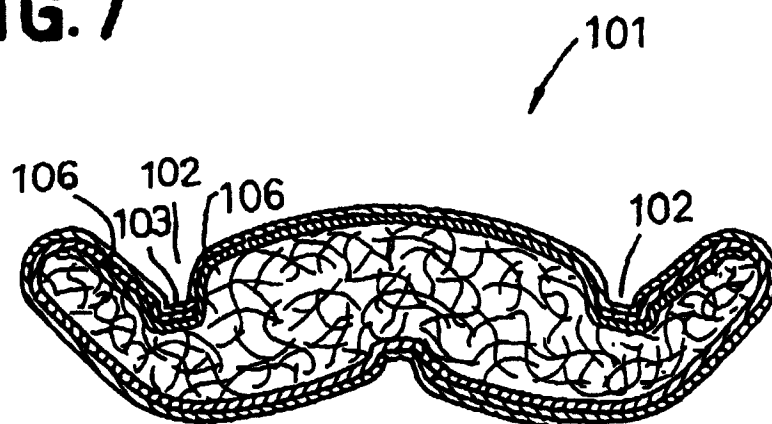


FIG.7



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(71) Applicant: THE PROCTER & GAMBLE COMPANY
[US/US]; One Procter & Gamble Plaza, Cincinnati, OH
45202 (US).

(72) Inventors: VISSCHER, Ronald, Bosman; 829 Kingfisher,
Cincinnati, OH 45246 (US). BUELL, Kenneth, Barclay;
218 Brocdorf Drive, Cincinnati, OH 45215 (US). OSBORN,
Thomas, Ward, III; 400 Deanview Drive, Cincinnati, OH
45224 (US).

(74) Agents: REED, T., David et al.; The Procter & Gamble
Company, 5299 Spring Grove Avenue, Cincinnati, OH
45217 (US).

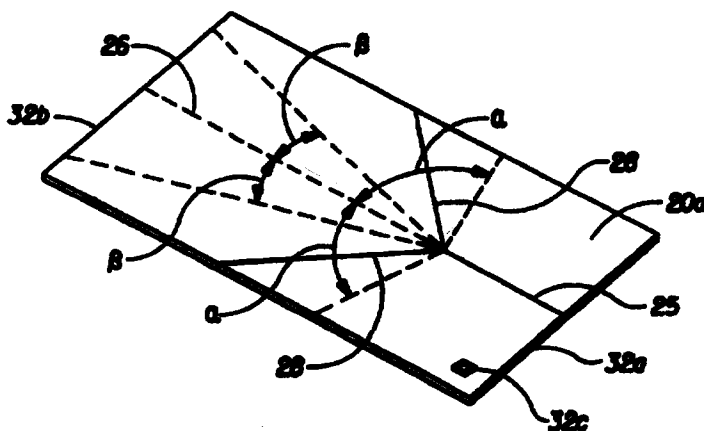
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(57) Abstract

The present invention relates to absorbent articles comprising a plurality of bend lines which are predisposed on either or both ends of the article to bend upon encountering the lateral compressive forces caused by the thighs of the wearer, the bend lines comprising, a main rear bend line centrally and longitudinally disposed on the article beginning at a point about one-eighth to about one-half of the distance away from the front edge and extending toward the back edge of the article; a main front bend line or lines centrally and longitudinally disposed on the article beginning about the front edge and extending up to the beginning point of the main rear fold line, or comprising two parallel fold lines longitudinally disposed on the article beginning at about the front edge and extending to about the beginning of the main rear bend line, or comprising two parallel bend lines longitudinally disposed on the article beginning at about the front edge and extending for about one-fourth to about two-thirds of the full length of the article from the front edge; and two rearwardly diverging bend lines starting at about the beginning point of the main rear fold line, the rearwardly diverging fold lines extending toward each side of the longitudinal edges of the article, the rearwardly diverging bend lines each forming an angle with the longitudinal centerline of from about 10° to about

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PRE-FOLDED ABSORBENT ARTICLES HAVING IMPROVED FIT

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TECHNICAL FIELD

The present invention relates to absorbent articles having a plurality of bend lines, specifically female sanitary napkins. Particularly
10 the present invention relates to sanitary napkins offering enhanced fit and potentially reduced leakage through a distinct pattern of embossed channels, folds, or creases which are activated through compression by the thighs of the wearer to generate a specific pad configuration.

BACKGROUND OF THE INVENTION

15 With respect to sanitary napkins, at least three general classes of design exists. One such design includes those sanitary napkins which are generally cupped or boat-shaped and which are intended to catch menses as it runs or drips from the vaginal orifice. Sanitary napkins of this class are disclosed in U.S. Pat. No. 4, 655,759, entitled "Reduced
20 Leakage Menstrual Pad With Built-in Fold Lines", Romans-Hess et al., issued on April 7, 1987.

A second class of design includes those that are raised upwardly or humped in their medial portions so to be near or in contact with the pudendal region when worn. Sanitary napkins of this class are
25 disclosed in U.S. Pat. No. 4,701,177, entitled "Three-Dimensional Shaped Feminine Pad With Narrow, Absorbent Center and Winged Edges", Ellis et al., issued on Oct. 20, 1987.

The third class of sanitary napkin design includes those that are not predisposed to have a trough or a hump shape when worn, but
30 instead have a more or less rope-like shape when worn. Such sanitary napkins typically have a fluff pulp absorbent core surrounded by flexible outer wraps. When the sanitary napkin is subjected to compressive forces from the wearer's thighs, the fluff pulp core simply compacts or bunches into an arbitrary, but generally rope-like shape. Sanitary
35 napkins of this class are disclosed in U.S. Pat. No. 4,687,478, entitled "Shaped Sanitary Napkin With Flaps", Van Tilburg, issued on Aug. 18, 1987. Attempts have been made to prevent the bunching effect of

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such compaction type sanitary napkins by providing them with a form-retaining member. Such sanitary napkins are disclosed in U.S. Pat. No. 4,195,634, entitled "Sanitary Napkin with Resilient Stiffening Means", DiSalvo et al., issued on April 1, 1980.

5 All of the above references are herein incorporated by reference in their entirety.

While the sanitary napkins and other devices discussed above do provide some measure of success in absorbing and containing body exudates, they fail to provide a sanitary napkin which closely conforms
10 to and fits the cross-sectional outline of the pudendal region as soon as applied without requiring the usual bending, twisting or other adjustments or manipulations. Also, they fail to provide a sanitary napkin which will always retain such conformity simply due to its reformable and resilient characteristics.

15 Therefore, the object of the present invention is to provide an absorbent article which closely conforms to and fits the cross-sectional outline of the external surfaces of the pudendal region.

Therefore, the object of the present invention is to provide an absorbent article, preferably an ultra thin napkin for panties, with a
20 plurality of bend lines (i.e., embossed channels, folds and/or creases), with a body facing surface wherein the body facing surface has both a convex upward configuration and a convex downward configuration when the napkin is subjected to the lateral compressive forces of the wearer's thighs. Preferably the absorbent article has a plurality of
25 predisposed bend regions.

Another object of the present invention is to provide an absorbent article, preferably an ultra thin napkin, with a plurality of bend lines (i.e., embossed channels, folds and/or creases), with a body facing surface, wherein the body facing surface is "V" or "U" shaped in
30 the front region and inverted "V" or "U" shaped in the rear region when the napkin is subjected to the lateral compressive forces of the wearer's thighs. Preferably the absorbent article has a plurality of pre-established bend lines, has a uniform thickness of from about 1mm to about 13mm, preferably from about 2mm to about 8mm and is
35 substantially rectangular, with rounded corners.

SUMMARY OF THE INVENTION

- 3 -

The present invention relates to a sanitary absorbent article, i.e., a sanitary napkin and/or a liner for panties, which is structurally predisposed to form a transverse flexure line which relieves and controls the stress of upward rear folding and downward frontal cupping.

Specifically the present invention relates to absorbent articles comprising:

- A. a liquid pervious topsheet;
- B. a liquid impervious backsheet joined with the topsheet;
- C. an absorbent element between the topsheet and the backsheet;

wherein the article has a body surface, a garment surface, a front edge, a back edge, two longitudinal edges, a longitudinal centerline within the plane of the sanitary napkin which is aligned with a vertical plane which bisects a standing wearer into left and right halves when the article is worn, and wherein the article has a plurality of bend lines which are predisposed to form a different configuration with the lateral compressive forces caused by the thighs of the wearer, the bend lines comprising:

a main rear bend line centrally and longitudinally disposed on the article beginning at a point about one-eighth to about one-half, preferably about 2" or one-fourth to about one-half, more preferably about one-third to about one-half, of the distance away from the front edge and extending toward the back edge of the article, preferably extending at least about two-thirds of the way or more from the front edge to the back edge of the article;

a main front bend line or lines centrally and longitudinally disposed on the article beginning at about the front edge and extending up to about the beginning point of the main rear bend line, or comprising two parallel fold lines longitudinally disposed on the article beginning at about the front edge and extending to about the beginning of the main rear bend line, or comprising two parallel bend lines longitudinally disposed on the article beginning at about the front edge and extending for about one-fourth to about two-thirds of the full length of the article from the front edge; and

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two rearwardly diverging bend lines starting at about the beginning point of the main rear fold line, the rearwardly diverging bend lines extending toward each side of the longitudinal edges of the article, the rearwardly diverging bend lines each forming an angle with the longitudinal centerline of from about 10° to about 80°, preferably from about 15° to about 60°, more preferably from about 20° to about 45°; and

wherein the main rear bend line is folded outwardly so that the portions of the garment surface on opposite sides of the main rear bend line are brought closer together; and the main front bend line or lines and the two rearwardly diverging bend lines are folded inwardly so that the portions of the body surface on opposite sides of the main front bend line and the two rearwardly diverging bend lines are brought closer together. Preferably, the article has an indicia located on the body surface side of the article (described hereinafter) toward the front edge.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a plain view of the sanitary napkin 20 of the present invention in its flat out state with the body-contacting surface, 20a, oriented towards the viewer.

FIG. 2 is a cross-sectional view of the sanitary napkin 20 taken along line 2-2 of FIG. 1.

FIG. 3 is a plain view of the sanitary napkin with the bend lines illustrated.

FIG. 4 is a plain view of the sanitary napkin with the bend lines illustrated.

FIG. 5 is a perspective view of the pad under lateral compression to show the configuration formed by the pad.

FIG. 6 is a perspective view of the pad under lateral compression to show the configuration formed by the pad.

DETAILED DESCRIPTION

Articles of the present invention can be made by constituents which are well known in the art. Also, methods and apparatus for assembling catamenials are also known in the art. Not intending to be limiting, the following exemplifies the articles of the present invention.

The present invention relates to a sanitary absorbent article, i.e., a sanitary napkin and/or a liner for panties, which is structurally predisposed to form a transverse flexure line which relieves and

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controls the stress of upward rear folding and downward frontal cupping.

Specifically the present invention relates to absorbent articles comprising:

- 5 A. a liquid pervious topsheet;
 B. a liquid impervious backsheet joined with the
 topsheet;
 C. an absorbent element between the topsheet and the
 backsheet;
- 10 wherein the article has a body surface, a garment surface, a front edge,
a back edge, two longitudinal edges, a longitudinal centerline within the
plane of the sanitary napkin which is aligned with a vertical plane which
bisects a standing wearer into left and right halves when the article is
worn, and wherein the article has a plurality of bend lines which are
15 predisposed to form a different configuration with the lateral
compressive forces caused by the thighs of the wearer, the bend lines
comprising:
- a main rear bend line centrally and longitudinally disposed on the
article beginning at a point about one-eighth to about one-half,
20 preferably about 2" or one-fourth to about one-half, more
preferably about one-third to about one-half, of the distance
away from the front edge and extending toward the back edge of
the article, preferably extending at least about two-thirds of the
way or more from the front edge to the back edge of the article;
- 25 a main front bend line or lines centrally and longitudinally
disposed on the article beginning at about the front edge and
extending up to about the beginning point of the main rear bend
line, or comprising two parallel fold lines longitudinally disposed
on the article beginning at about the front edge and extending to
30 about the beginning of the main rear bend line, or comprising two
parallel bend lines longitudinally disposed on the article beginning
at about the front edge and extending for about one-fourth to
about two-thirds of the full length of the article from the front
edge; and
- 35 two rearwardly diverging bend lines starting at about the
beginning point of the main rear fold line, the rearwardly
diverging bend lines extending toward each side of the

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longitudinal edges of the article, the rearwardly diverging bend lines each forming an angle with the longitudinal centerline of from about 10° to about 80°, preferably from about 15° to about 60°, more preferably from about 20° to about 45°; and

- 5 wherein the main rear bend line is folded outwardly so that the portions of the garment surface on opposite sides of the main rear bend line are brought closer together; and the main front bend line or lines and the two rearwardly diverging bend lines are folded inwardly so that the portions of the body surface on opposite sides of the main front bend
10 line and the two rearwardly diverging bend lines are brought closer together. Preferably, the article has an indicia located on the body surface side of the article (described hereinafter) toward the front edge.

- As used herein, the term "absorbent article" refers to devices which absorb and contain body exudates, and, more specifically, refers
15 to devices which are placed against or in proximity to the body of the wearer to absorb and contain the various exudates discharged from the body. A "unitary" absorbent article refers to absorbent articles which are formed of separate parts united together to form a coordinated entity so that they do not require separate manipulative parts like a
20 separate holder and pad. A preferred embodiment of a unitary disposable absorbent article of the present invention is the catamenial pad, sanitary napkin 20, shown in Figure 1. As used herein, the term "sanitary napkin" refers to an absorbent article which is worn by females adjacent to the pudendal region, generally external to the
25 urogenital region, and which is intended to absorb and contain menstrual fluids and other vaginal discharges from the wearer's body (e.g., blood, menses, and urine). As used herein, the term "pudendal" refers to the externally visible female genitalia. It should be understood, however, that the present invention is also applicable to other feminine
30 hygiene or catamenial pads such as pantliners, or other absorbent articles such as incontinence pads, and the like.

- Figure 1 is a plain view of the sanitary napkin 20 of the present invention in its planar state with portions of the structure being cut-away to more clearly show the construction of the sanitary napkin 20
35 and with the portion of the sanitary napkin 20 which faces or contacts the wearer, oriented towards the viewer. As shown in Figure 1, the sanitary napkin 20 preferably comprises a liquid pervious topsheet 22, a

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liquid impervious backsheet 23 joined with the topsheet 22, an absorbent core 24 positioned between the topsheet 22 and the backsheet 23.

5 The sanitary napkin 20 has two surfaces, a body-contacting surface or "body surface" 20a and a garment surface 20b. The sanitary napkin 20 is shown in Figure 1, Figure 3, and Figure 4, as viewed from its body contacting surface 20a. The body contacting surface 20a is intended to be worn adjacent to the body of the wearer while the garment surface 20b is on the opposite side and is intended to be placed adjacent to the wearer's undergarments when the sanitary napkin 20 is worn. The sanitary napkin 20 has two centerlines, a longitudinal centerline L and a transverse centerline T. The term "longitudinal", as used herein, refers to a line, axis or direction in the plane of the sanitary napkin 20 that is generally aligned with (e.g., approximately parallel to) a vertical plane which bisects a standing wearer into left and right body halves when the sanitary napkin 20 is worn. The terms "transverse" or "lateral" as used herein, are interchangeable, and refer to a line, axis or direction which lies in the plane of the sanitary napkin 20 that is generally perpendicular to the longitudinal direction.

Figure 1 also shows that the sanitary napkin 20 has a periphery 30, which is defined by the outer edges of the sanitary napkin 20 in which the longitudinal edges are designated 31 and the end edges are designated 32, the front edge being 32a and the back edge being 32b. An indicia 32c is located on the body surface 20a in the area anywhere from the front edge to one-fourth of the length of the article away from the front edge. The indicia 32c is any type of marking or designation (i.e. any small shape or design allows the wearer to know which end edge is the front edge so that they can properly position the article initially and properly wear the article.

While the topsheet, the backsheet, and the absorbent core may be assembled in a variety of well known configurations (including so called "tube" products or side flap products), preferred sanitary napkin configurations are described generally in U.S. Patent 4,950,264, "Thin, Flexible Sanitary Napkin," Osborn, issued on August 21, 1990; U.S. Patent 4,425,130, "Compound Sanitary Napkin," DesMarais, issued on January 10, 1984; U.S. Patent 4,321,924, "Bordered Disposable

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Absorbent Article," Ahr, issued on March 30, 1982; U.S. Patent 4,589,876, "Shaped Sanitary Napkin With Flaps", Van Tilburg, issued on August 18, 1987. Each of these patents are incorporated herein by reference.

5 Figure 1 shows a preferred embodiment of the sanitary napkin 20 in which the topsheet 22 and the backsheet 23 have length and width dimensions generally larger than those of the absorbent core 24. The topsheet 22 and the backsheet 23 extend beyond the edges of the absorbent core 24 to thereby form not only portions of the periphery
10 but also side flaps or wings 34.

Figure 2 is a cross-sectional view of the sanitary napkin 20 taken along section line 2-2 of Figure 1. Figure 2 shows the secondary topsheet 27, just below the topsheet 22. The wing 34 is an extension of the topsheet 22. The fastening means 36 together with the release
15 liner 37 maintains the article in place so that it can perform its intended function.

Figure 3 and Figure 4 are also plain views of the sanitary napkin 20 of the present invention with the portion of the sanitary napkin 20 which faces or contacts the wearer, oriented toward the viewer. The
20 main front bend line 25 begins at the front edge 32a and extends to about the beginning point of the main rear bend line 26. The two rearwardly diverging bend lines 28 also begin at about the beginning point of the main rear fold line 26, extending towards the back edge 32b. The rearwardly diverging bend lines 28 each form an angle with
25 the longitudinal centerline L of from about 10°, the angle represented by β , to about 80°, the angle represented by α , in Figures 3 and 4.

Figure 4 represents a sanitary napkin 20 where the main front bend line 25 comprises two parallel fold lines longitudinally disposed on the article.

30 Figure 5 and Figure 6 are side views of a preferred folded sanitary napkin 20, which is 8 inches long with rounded corners wherein β is approximately 20°.

The topsheet 22 is compliant, soft feeling, and non-irritating to the wearer's skin. Further, the topsheet 22 is liquid pervious permitting
35 liquids (e.g., menses and/or urine) to readily penetrate through its thickness. A suitable topsheet 22 is manufactured from a wide range of materials such as woven and nonwoven materials, polymeric

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materials such as apertured formed thermoplastic films, apertured plastic films, apertured hydroformed thermoplastic films; reticulated thermoplastic films; and thermoplastic scrims, porous films, reticulated foams, etc. Suitable woven and nonwoven materials can be comprised of natural fibers (e.g., wood or cotton fibers), synthetic fibers (e.g., polymeric fibers such as polyester, polypropylene, or polyethylene fibers) or from a combination of natural and synthetic fibers. The preferred topsheets of the present invention are described in detail in U.S. Patent No. 4,342,314 entitled "Resilient Plastic Web Exhibiting Fiber-Like Properties," Radel et al., issued on August 3, 1982, which is herein incorporated by reference in its entirety, especially column 4, line 41 to column 6, line 44. The preferred method of making the topsheets of the present invention is disclosed in U.S. Pat. No. 4,637,819, Ouellette et al., issued on Jan. 20, 1987, which is herein incorporated by reference.

The preferred apertured topsheets of the present invention are pervious to body exudates and yet are non-absorbent and have a reduced tendency to allow liquids to pass back through and rewet the wearer's skin. Thus, the surface of the apertured topsheet which is in contact with the body remains dry, thereby reducing body soiling and creating a more comfortable feel for the wearer.

Other formed films are described in U.S. Patent 3,929,135, entitled "Absorptive Structures Having Tapered Capillaries," Thompson, issued on December 30, 1975; U.S. Patent 4,324,246 entitled "Disposable Absorbent Article Having A Stain Resistant Topsheet", Mullane, et al., issued on April 13, 1982; U.S. Patent 4,463,045 entitled "Macroscopically Expanded Three-Dimensional Plastic Web Exhibiting Non-Glossy Visible Surface and Cloth-Like Tactile Impression", Ahr et al., issued on July 31, 1984; and U.S. 5,006,394 "Multilayer Polymeric Film", Baird, issued on April 9, 1991. Each of these patents are incorporated herein by reference in their entirety. Other preferred topsheets for the present invention are the formed film described in one or more of the above patents and marketed on sanitary napkins by The Procter & Gamble Company of Cincinnati, Ohio as "DRI-WEAVE".

In a preferred embodiment of the present invention, the body surface of the topsheet is hydrophilic so as to help liquid to transfer

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through the topsheet faster than if the body surface was not hydrophilic. This will diminish the likelihood that menstrual fluid and perspiration will flow off the topsheet rather than flowing into and being absorbed by the absorbent core. In a preferred embodiment, surfactant is incorporated into the polymeric materials of the formed film topsheet such as is described in U.S. Patent Application Serial No. 07/794,745, "Absorbent Article Having A Nonwoven and Apertured Film Coversheet," Aziz, et al., filed on November 19, 1991, which is incorporated herein by reference in its entirety.

Alternatively, the body surface of the topsheet can be made hydrophilic by treating it with a surfactant such as is described in the above referenced U.S. 4,950,254, incorporated herein by reference.

The absorbent core 24 may be any absorbent means which is capable of absorbing or retaining liquids (e.g., menses and/or urine). The absorbent core 24 may be manufactured in a wide variety of sizes and shapes (e.g., rectangular, oval, hourglass, asymmetric, etc.) and from a wide variety of liquid-absorbent materials commonly used in sanitary napkins and other absorbent articles such as comminuted wood pulp which is generally referred to as airlaid. Examples of other suitable absorbent materials include creped cellulose wadding; meltblown polymers including conform; chemically stiffened, modified or cross-linked cellulosic fibers; synthetic fibers such as crimped polyester fibers; peat moss; tissue including tissue wraps and tissue laminates; absorbent foams; absorbent sponges; superabsorbent polymers; absorbent gelling materials; or any equivalent material or combinations of materials, or mixtures of these. The configuration and construction of the absorbent core may also be varied (e.g., the absorbent core may have varying caliper zones) (e.g., profiled so as to be thicker in the center), hydrophilic gradients, superabsorbent gradients, or lower density and lower average basis weight acquisition zones; or may comprise one or more layers or structures. The total absorbent capacity of the absorbent core should, however, be compatible with the design loading and the intended use of the sanitary napkin. Further, the size and absorbent capacity of the absorbent core may be varied to accommodate different uses such as incontinence pads, pantliners, regular sanitary napkins, or overnight sanitary napkins. Preferably the

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absorbent articles of the present invention are sanitary napkins which are uniform in thickness.

Exemplary absorbent structures for use as the absorbent core of the present invention are described in U.S. Patent 4,950,264 entitled
5 "Thin, Flexible Sanitary Napkin", Osborn, issued on August 21, 1990; U.S. Pat. No. 4,610,678, entitled "High-Density Absorbent Structures", Weisman et al., issued Sept. 9, 1986; U.S. Pat. No. 4,834,735, entitled
"High Density Absorbent Members Having Lower Density and Lower Basis Weight Acquisition Zones", Alemany et al., issued on May 30,
10 1989; European Patent Application No. 198,683, P&G, Duenk, et al., published on October 22, 1986, all of which are incorporated herein by reference in their entirety.

The backsheet 23 and the topsheet 22 are positioned adjacent the garment surface 20b and the body surface 20a, respectively, of the
15 absorbent core 24 and are preferably joined thereto and to each other by attachment means (not shown) such as those well known in the art. For example, the backsheet 23 and/or the topsheet 22 may be secured to the absorbent core 24 or to each other by a uniform continuous layer of adhesive, a patterned layer of adhesive, or an array of separate lines,
20 spirals, or spots of adhesive. Adhesives which have been found to be satisfactory are manufactured by H. B. Fuller Company of St. Paul, Minnesota under the designation HL-1258 or H-2031. The attachment means will preferably comprise an open pattern network of filaments of adhesive as is disclosed in U.S. Patent 4,573,986 entitled "Disposable
25 Waste-Containment Garment", which issued to Minetola, et al. on March 4, 1986, and which is incorporated herein by reference. An exemplary attachment means of an open pattern network of filaments comprises several lines of adhesive filaments swirled into a spiral pattern such as illustrated by the apparatus and method shown in U.S.
30 Patent 3,911,173 issued to Sprague, Jr. on October 7, 1975; U.S. Patent 4,785,996 issued to Zieker, et al. on November 22, 1978; and U.S. Patent 4,842,666 issued to Werenicz on June 27, 1989. Each of these patents are incorporated herein by reference in their entirety. Alternatively, the attachment means may comprise heat bonds,
35 pressure bonds, ultrasonic bonds, dynamic mechanical bonds, or any other suitable attachment means or combinations of these attachment means as are known in the art.

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The backsheet 23 is impervious to liquids (e.g., menses and/or urine) and is preferably manufactured from a thin plastic film, although other flexible liquid impervious materials may also be used. As used herein, the term "flexible" refers to materials which are compliant and will readily conform to the general shape and contours of the human body. The backsheet 23 prevents the exudates absorbed and contained in the absorbent core 24 from wetting articles which contact the sanitary napkin 20 such as pants, pajamas and undergarments. The backsheet 23 may thus comprise a woven or nonwoven material, polymeric films such as thermoplastic films of polyethylene or polypropylene, or composite materials such as a film-coated nonwoven material. Preferably, the backsheet is a polyethylene film having a thickness of from about 0.012 mm (0.5 mil) to about 0.051 mm (2.0 mils). Exemplary polyethylene films are manufactured by Clopay Corporation of Cincinnati, Ohio, under the designation P18-0401 and by Ethyl Corporation, Visqueen Division, of Terre Haute, Indiana, under the designation XP-39385. The backsheet is preferably embossed and/or matte finished to provide a more clothlike appearance. Further, the backsheet 23 may permit vapors to escape from the absorbent core 24 (i.e., breathable) while still preventing exudates from passing through the backsheet 23.

In use, the sanitary napkin 20 can be held in place by any support means, fastening means, or attachment means well-known for such purposes. Preferably, the sanitary napkin is placed in the user's undergarment or panty and secured thereto by a fastener such as an adhesive. The adhesive provides a means for securing the sanitary napkin in the crotch portion of the panty. Thus, a portion or all of the outer surface of the backsheet 23 is coated with adhesive. Any adhesive or glue used in the art for such purposes can be used for the adhesive herein, with pressure-sensitive adhesives being preferred. Suitable adhesives are Century A-305-IV manufactured by the Century Adhesives Corporation of Columbus, Ohio; and Instant Lock 34-2823 manufactured by the National Starch and Chemical Company of Bridgewater, NJ. Suitable adhesive fasteners are also described in U.S. Patent 4,917,697 incorporated herein by reference. Before the sanitary napkin is placed in use, the pressure-sensitive adhesive is typically covered with a removable release liner 37 in order to keep the adhesive

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from drying out or adhering to a surface other than the crotch portion of the panty prior to use. Suitable release liners are also described in the above-referenced U.S. Patent 4,917,697. Any commercially available release liners commonly used for such purposes can be utilized herein. Non-limiting examples of suitable release liners are BL30MG-A Silox E1/O and BL30MG-A Silox 4P/O both of which are manufactured by the Akrosil Corporation of Menasha, WI. The sanitary napkin 20 of the present invention is used by removing the release liner and thereafter placing the sanitary napkin in a panty so that the adhesive contacts the panty. The adhesive maintains the sanitary napkin in its position within the panty during use.

In a preferred embodiment of the present invention, the sanitary napkin has two flaps 34 each of which are adjacent to and extend laterally from the side edge of the absorbent core. The flaps are configured to drape over the edges of the wearer's panties in the crotch region so that the flaps are disposed between the edges of the wearer's panties and the thighs. The flaps serve three purposes. First, the flaps help to prevent soiling of the wearer's body and panties by menstrual fluid, preferably by forming a double wall barrier along the edges of the panty. Second, the flaps are preferably provided with attachment means on their garment surface so that the flaps can be folded back under the panty and attached to the garment facing side of the panty. In this way, the flaps serve to keep the sanitary napkin properly positioned in the panty.

The flaps can be constructed of various materials including materials similar to the topsheet, backsheet, core, or combination of these materials, but preferably is constructed of the topsheet materials. Further, the flaps may be a separate element attached to the main body of the napkin or can comprise extensions of the topsheet and backsheet (i.e., unitary). A number of sanitary napkins having flaps suitable or adaptable for use with the sanitary napkins of the present invention are disclosed in U.S. 4,687,478 entitled "Shaped Sanitary Napkin With Flaps", which issued to Van Tilburg on August 18, 1987; U.S. 4,589,876 entitled "Sanitary Napkin", which issued to Van Tilburg on May 20, 1986; and U.S. 4,608,047, entitled "Sanitary Napkin Attachment Means", which issued to Mattingly on August 26, 1986, all of which are incorporated herein by reference in their entirety.

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In a preferred embodiment of the present invention, an acquisition layer(s) 27 may be positioned between the topsheet and the absorbent core. The acquisition layer 27 may serve several functions including improving wicking of exudates over and into the absorbent core. There are several reasons why the improved wicking of exudates is important, including providing a more even distribution of the exudates throughout the absorbent core and allowing the sanitary napkin 20 to be made relatively thin. (The wicking referred to herein may encompass the transportation of liquids in one, two or all directions (i.e., in the x-y plane and/or in the z-direction). The acquisition layer may be comprised of several different materials including nonwoven or woven webs of synthetic fibers including polyester, polypropylene, or polyethylene; natural fibers including cotton or cellulose; blends of such fibers; or any equivalent materials or combinations of materials. Examples of sanitary napkins having an acquisition layer and a topsheet are more fully described in U.S. 4,950,264 issued to Osborn. All of the above references are incorporated herein by reference.

In a preferred embodiment, the acquisition layer may be joined with the topsheet by any of the conventional means for joining webs together, most preferably by fusion bonds.

While particular embodiments of the present invention have been illustrated and described, various other changes and modifications can be made without departing from the spirit and scope of the invention. Therefore the claims cover all such changes and modifications that are within the scope of this invention.

WHAT IS CLAIMED IS:

1. An absorbent article comprising a liquid pervious topsheet, a liquid impervious backsheet joined with the topsheet, an absorbent element between the topsheet and the backsheet wherein the article has a body surface, a garment surface, a front edge, a back edge, two longitudinal edges, a longitudinal centerline within the plane of the sanitary napkin which is aligned with a vertical plane which bisects a standing wearer into left and right halves when the article is worn, and wherein the article has a plurality of bend lines which are predisposed on either or both ends of the article to bend upon encountering the lateral compressive forces caused by the thighs of the wearer, the bend lines, on at least one end of the article, characterized in that:

(A) a main rear bend line centrally and longitudinally disposed on the article beginning at a point about one-eighth to one-half of the distance away from the front edge and extending toward the back edge of the article;

(B) a main front bend line or lines centrally and longitudinally disposed on the article beginning at the front edge and extending up to the beginning of the main rear bend line, or comprising two parallel fold lines longitudinally disposed on the article which begin at the front edge and extend to the beginning of the main rear bend line, or comprising two parallel bend lines longitudinally disposed on the article beginning at the front edge and extend from one-fourth to two-thirds of the full length of the article from the front edge; and

(C) two rearwardly diverging bend lines starting at the beginning of the main rear bend line, the rearwardly diverging bend lines extending toward each side of the longitudinal edges of the article, the rearwardly diverging bend lines each forming an angle with the longitudinal centerline from 10° to 80°;

wherein the main rear bend line folds outwardly so that the portions of the garment surface on opposite sides of the main rear bend line are brought closer together; and the main front bend line or lines and the two rearwardly diverging bend lines fold inwardly so that the portions of the body surface on opposite sides of the main front bend line and the two rearwardly diverging bend lines are brought closer together.

2. The article of Claim 1 wherein the bend lines are pre-established fold lines.

3. The article of Claim 2 wherein the fold lines form a "V" or "U" shape with the main front bend line and an inverted "V" or "U" shape with the main rear bend line.

4. The article of Claim 2 wherein the main rear fold line begins at a point 2" or one-fourth to one-half of the distance away from the front edge and extends to the rear edge of the article; the main front fold line begins at the front edge and extends up to the beginning point of the main rear fold line; and wherein the two rearwardly diverging fold lines start at the beginning point of the main rear fold line, the rearwardly diverging fold lines each forming an angle with the longitudinal centerline of from about 15° to about 60°.

5. The article of Claim 2 wherein the main rear fold line begins at a point about one-third to about one-half of the distance away from the front edge and extends to about the rear edge of the article; the main front fold line begins at about the front edge and extends up to about the beginning point of the main rear fold line; and wherein the two rearwardly diverging fold lines start at about the beginning point of the main rear fold line, the rearwardly diverging fold lines each forming an angle with the longitudinal centerline of from about 15° to about 60°.

6. The article of either Claims 4 or Claim 5 wherein the main front fold line comprises two parallel fold lines.

7. The article of any one of Claims 4-6 wherein the rearwardly diverging fold lines each form an angle with the longitudinal centerline of from 20° to 45°.

8. The article of any one of the preceding claims wherein the thickness of the article is from 1mm to 13mm.

9. The article of any one of the preceding claims wherein the thickness of the article is uniform throughout its length.

10. The article of Claim 1 wherein the bend lines are pre-established embossed channels.

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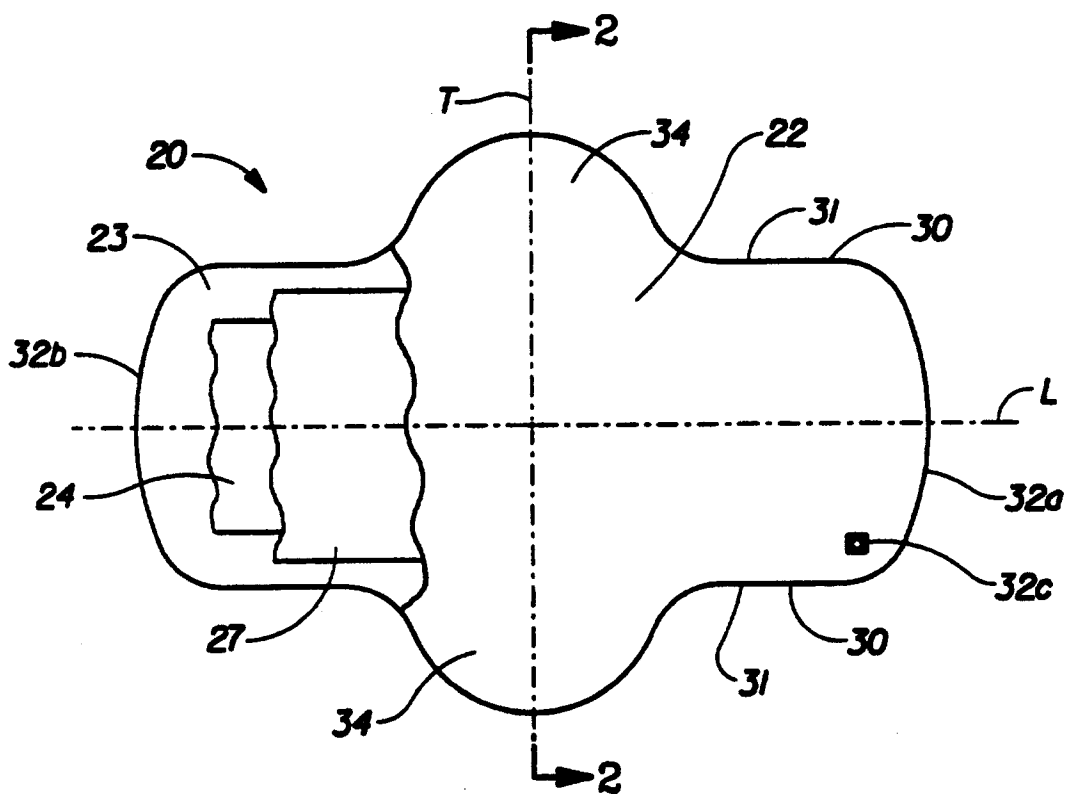


Fig. 1

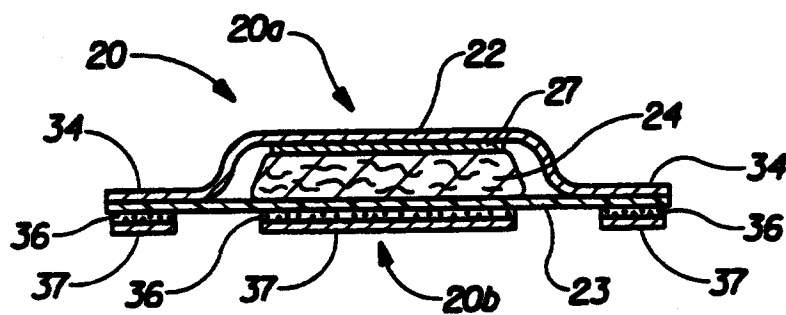


Fig. 2

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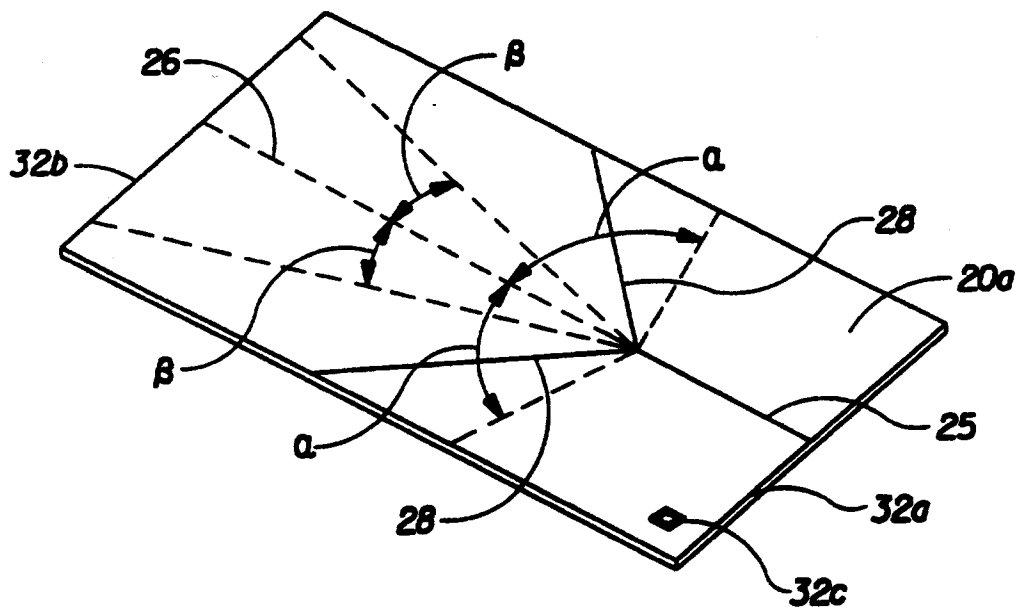


Fig. 3



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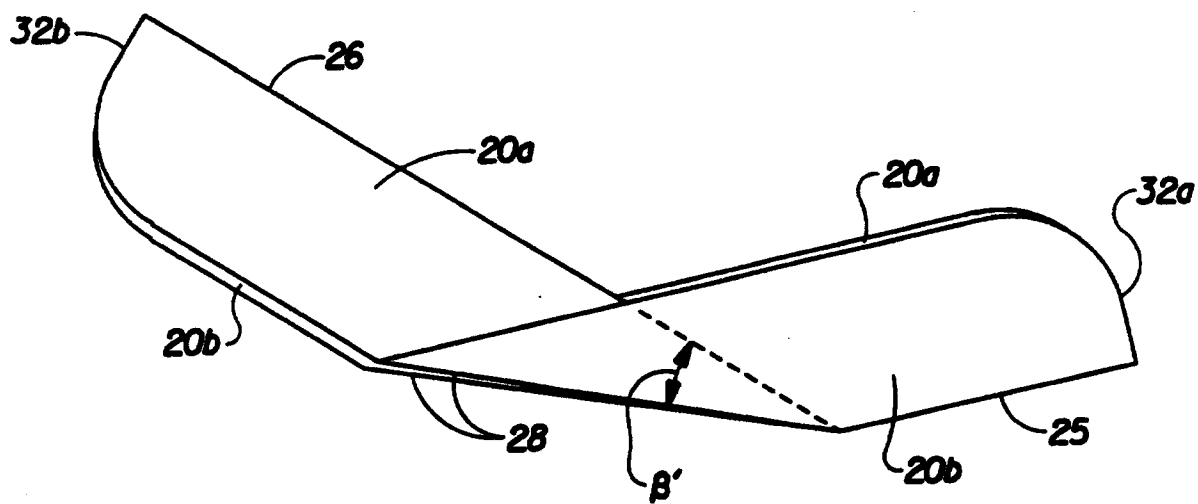


Fig. 5

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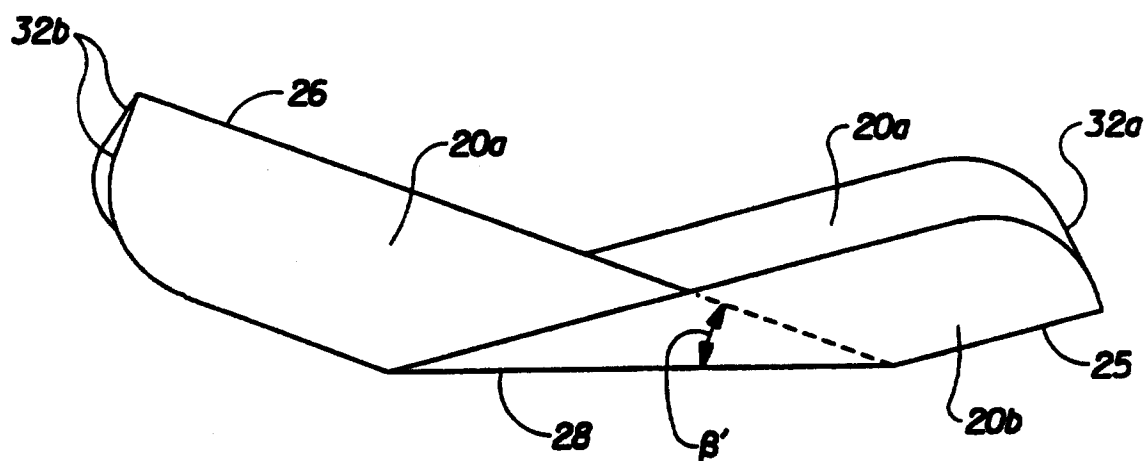


Fig. 6

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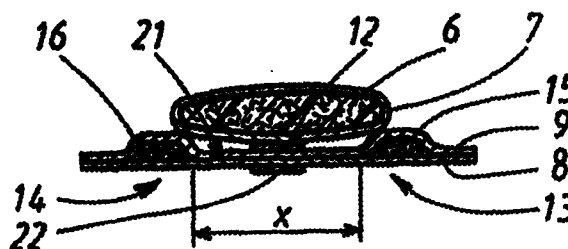
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(21) International Application Number: PCT/SE99/01404 (22) International Filing Date: 19 August 1999 (19.08.99) (30) Priority Data: 9802986-1 4 September 1998 (04.09.98) SE (71) Applicant (for all designated States except US): SCA HYGIENE PRODUCTS AB [SE/SE]; S-405 03 Göteborg (SE). (72) Inventors; and (75) Inventors/Applicants (for US only): ELFSTRÖM, Anna-Carin [SE/SE]; Krossholmsvägen 60, S-423 38 Torslanda (SE). RÖNNBERG, Peter [SE/SE]; Råvekärrsgatan 265, S-431 33 Mölndal (SE). (74) Agents: ANDERSSON, Per et al.; Albihns Patentbyrå Göteborg AB, P.O. Box 142, S-401 22 Göteborg (SE).	(81) Designated States: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG). Published With international search report. Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.	

(54) Title: ABSORBENT PRODUCT WITH Laterally MOVABLE PORTIONS

(57) Abstract

Absorbent product (1; 101, 201) such as an incontinence pad, for absorbing bodily exudates, the absorbent product having a central absorbent portion (2; 102; 202) and a fluid-impermeable back sheet. The central absorbent portion (2; 102; 202) is attached to two lateral portions (13, 14; 113, 114; 213, 214) by means of a joining area (21) which includes at least the back sheet. In the product, the stiffness of each lateral portion (13, 14; 113, 114; 213, 214) and the central portion (2; 102; 202) is much greater than the stiffness of the joining area to thereby allow the lateral portions to move laterally with respect to the central portion when the central portion is held against movement. In this way, the lateral portions are given freedom to move in at least a lateral direction whilst the central portion can be fixed to a user's undergarment.



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Title: Absorbent product with laterally movable portions

Field of the invention:

5 The present invention relates to an absorbent product such
as an incontinence pad, a sanitary pad, a diaper, another
absorbent garment, or an absorbent inlay for such a
garment, or the like, for absorbing bodily exudates. In
particular, but not exclusively, the invention relates to
10 absorbent products which are disposable after use (i.e. of
the type which have materials which are not intended to be
washed and used several times). Still more particularly,
the invention relates to incontinence products, especially
for use by adults, primarily but not exclusively for adult
15 feminine use.

Background to the invention:

Typically, absorbent products of the above-mentioned type
have an absorbent core surrounded by an envelope comprising
a fluid-impermeable sheet or layer (commonly referred to as
20 a back sheet) and a fluid-permeable sheet or layer
(commonly referred to as a liner, top sheet or bodyside
layer). In order to provide relatively fixed positioning of
such products with respect to the wearer's undergarment,
friction-increasing means, such as one or more strips of
25 pressure sensitive adhesive or the like, are applied to the
outer surface of the back sheet. The presence of the
friction-increasing means helps to inhibit movement of the
absorbent product with respect to the undergarment by
frictional engagement therewith. Prior art products of the
30 this type are known in the art.

It is also known to provide prior art absorbent products with elastication in the areas of the product adjacent the wearer's legs. In such a way a better, or tighter, fit of the product can be achieved and prevention of leakage of bodily fluids is improved. However, in many types of absorbent product, the elastication can be problematic.

In a feminine incontinence pad, for example, during the wearer's movements (such as walking or sitting down), a further problem may arise since the outer surface of the central part of the absorbent product is held essentially in place against the wearer's undergarment by friction (with or without a friction-increasing means being used) and also against the wearer's genitals by friction, whilst the edge portions of the absorbent product are further held by friction against the inner regions of the thighs for example. Thus when the wearer moves, although elastication (if present) may provide a reasonable seal against leakage while still allowing for movement, the wearer may experience discomfort due to the opposing forces at the central portion and the outer portions, which tends to twist the product. Additionally, a further problem may arise in that, due to the wearer's movements, openings at the side edges of the product may indeed be created, or enlarged (if openings are already present), which can lead to undesirable leakage.

The aforementioned problem is often made worse by the use of the aforementioned friction-increasing means, such as pressure-sensitive adhesive, on the back sheet of absorbent products for fixing the central position of the product with respect to the undergarment. This is because slippage between the product and the wearer's undergarment is substantially prevented. However, such friction-increasing means is generally desirable, per se, since there are other

advantages in maintaining the central part of the product in a fixed position in the undergarment.

5 Additionally, since the human anatomy varies greatly, also in the crotch region where said absorbent products are worn, it is desirable to create absorbent products which can adopt different dimensions (e.g. different lateral widths).

10 An object of the invention is therefore to create a product which allows for movement of the side portions relative to the central portion, in particular when the central part of the product is fixed to said undergarment.

15 Such movement allowance may be largely a lateral movement allowance, although a longitudinal relative movement allowance may also be provided. In particular therefore, a further object of the invention is to provide an absorbent product which has means allowing a significant variation in the width thereof (i.e. in the lateral direction of the product), whilst preferably also providing some degree of longitudinal relative movement.

20 It is furthermore not only desirable that the product is able to adopt different lateral widths, but also that it should be able to adopt these different widths in an automatic manner during use, so as to adapt to any variations in, for example, the distance between the
25 wearer's thighs as a result of body movements (e.g. walking). Where such adaptation is provided, the absorbent product is more easily able to prevent leakage of bodily fluids at the sides, since the lateral portions of the product can be held in contact with the user's body (e.g.
30 the user's thighs).

It is therefore another object of the invention to provide an absorbent product which can adapt its width automatically to the width dimensions of the wearer.

5 A further problem which presents itself in absorbent products is that the bodily fluid to be absorbed by the product is absorbed at only the upper absorbent surface of the product. Thus, where the flow volume is large and quick, such as with flash incontinence, the absorption characteristics of the absorbent material at the bodyside
10 surface of the product may be such that the absorbent material cannot absorb the fluid fast enough. If such is the case, the fluid can overflow laterally over the edges of the absorbent core. This increases the danger of leakage if the overflow fluid cannot be contained within the side
15 regions of the product to allow sufficient time for absorption. Although the core can be made wider to help alleviate this problem, a wider core implies extra material costs and weight.

20 It is therefore a further object of the invention to provide an absorbent product which preferably has improved absorption characteristics and, in particular, a better rate of absorption.

25 In order that absorbent products conform better to the shape of users, and in particular to the shape of a user's genitals, it is often desirable to form absorbent products with a bowl or basin shape therein. Such a shape improves comfort.

30 Prior art solutions to said problem involve manufacturing methods including moulding articles into a basin-shape, or methods in which basin-shaped inserts are fitted into the absorbent products to hold said products in the desired shape. Further solutions are known in which parts of the

sides of said products are provided with elastication to pull the product into the desired shape. However products formed in these ways typically involve manufacturing complications. Moreover such products do not naturally lie flat unless forces are applied to them to hold them flat, which can lead to packaging difficulties.

A further object of the present invention is therefore preferably to provide an absorbent product having a basin-shaped form therein, in a way which provides an improvement over the prior art. Similarly, said product should be capable of being manufactured as a substantially flat article, yet simply transformable into a basin-shape.

Further problems which can be solved by this invention with respect to known absorbent products will become apparent from the following description.

Summary of the invention:

The present invention provides a solution to the aforementioned objects. A solution to at least some of the above objects is provided by an absorbent product having the features defined in claim 1.

Preferred features of the invention are defined in the dependent claims.

It should be understood that the term "friction-increasing means" as used herein, is intended to imply either a surface texture, or a formation on, or coating of, or treatment of, a sheet or layer which has the effect of increasing the resistance of the sheet (and thus the absorbent product) to movement with respect to a user's undergarment, or alternatively with respect to a liner chassis, when in contact therewith. A pressure-sensitive adhesive is a suitable example of such a friction-

increasing means, although different types of adhesive or other sheet treatments will be apparent to a skilled man.

Where particular dimensions are specified in the following description, it will be clear to the skilled man that the widths and lengths of the various components may also be varied in order to suit the particular circumstances. For example, the width and length of the friction-increasing means may vary widely, although typically the width of bands of adhesive may vary between about 4 mm up to several centimetres.

The expression "substantially void of the absorbent and/or hydrophobic material of said central and lateral portions", as used to describe the joining area in the present invention, is intended to distinguish three distinct and separated absorbent portions in the product, yet to allow very thin sheets of absorbent material to be present in the joining zone. Thus the word "substantially" in said expression is used to take account of the case where, for example, the material of the top sheet is itself absorbent. A further case which is intended to be accounted for by this expression is where a very thin sheet of absorbent material is present in the joining zone (i.e. a sheet which is less than about 10% of the thickness of the lateral absorbent portions).

Similarly where the stiffness of the lateral portions and the central portion are described as having a stiffness which is "much greater" than that of the joining zone, this is intended to mean that the stiffness of each of the central and lateral zones is at least 30% greater, preferably 50% greater and more preferably approaching values lying between 80% to 95% greater than the stiffness of the joining area. Any suitable measurement method may be used to arrive at such values, such as the modified ASTM D

4032-82 Circular Bend Procedure described in EP-A-0 336 578 for example.

5 The significance of the stiffness being "much greater" is such that a very low force is presented against lateral forces which operate to move the lateral portions of the product towards the central absorbent portion. Thus, normally, the joining area (i.e. one or more areas joining lateral portions of the product to the central portion) will simply consist of the top sheet and back sheet of the product. These sheets are preferably in direct facing relationship, preferably a contacting relationship, and more preferably a directly-joined contacting relationship, with no additional absorbent or non-absorbent (e.g. hydrophobic) material therebetween.

15 Brief description of the drawings:

The invention will now be explained in more detail with reference to certain non-limiting embodiments thereof and with the aid of the accompanying drawings, in which:

20 Fig. 1 is a plan view of an incontinence pad embodying the present invention, with the body-facing side of the product shown uppermost,

Fig. 2 is a cross-sectional view taken on line II-II in Fig. 1,

25 Fig. 3 is a plan view of a similar product to that shown in Fig. 1, in which elastics have been added at the outer edges of the lateral portions and the central portion is positioned entirely between the lateral (absorbent) portions.

Fig. 4 is a cross-sectional view taken on line IV-IV in Fig. 3.

5 Fig. 5 shows a plan view of a further embodiment of the invention, in which two longitudinal pleats have been arranged.

Fig. 6 shows a cross section through line VI-VI in Fig. 5,

10 Fig. 7 shows the product of Fig. 6 in a state where the two pleats have been opened out to form the product into a basin shape.

Fig. 8 shows a sketch indicating the relative movement directions of the three absorbent parts of the product.

15 In the figures, the cross-sectional views are not drawn to scale for reasons of clarity and thus many parts thereof would appear to be relatively far thinner and normally closer together in practice.

Detailed description of preferred embodiments:

20 The absorbent product 1 in Fig. 1 is a feminine incontinence pad, or sanitary pad, embodying the present invention. In the plan view shown, the product is in a substantially flat condition. The longitudinal direction of the product runs from the top to the bottom of the page while the lateral direction runs across the width of the product, generally perpendicular to the longitudinal direction.

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The product has a central absorbent portion indicated generally by the arrow 2. The central portion 2 contains

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a central core 3 of absorbent material with two straight and generally parallel outer longitudinal edges 4, 5 and two end edges. However, the central portion 2 may have other shapes with curved longitudinal edges. The central portion comprises a core of absorbent material 6 (see Fig. 2), such as cellulose pulp, surrounded on all sides by a single liquid/fluid-permeable layer 7. The material of layer 7 can be any suitable permeable material, but particularly those which are comfortable against the skin such as non-woven materials. Non-woven materials of the spunbond type are suitable, such as for example a PP spunbond having a surface weight of 22 gm².

The absorbent portion 2 is positioned generally midway between the outer edges of the product 1. The central absorbent portion has an upper body-facing surface and an opposite lower surface.

The product has a single back sheet layer 8, made of liquid/fluid-impermeable and substantially non-elastic material. Materials for such sheets are well known in the art and do not require detailed description. The back sheet 8 should however preferably also have good resistance to tearing and a material such as a polyethylene sheet as used in current absorbent products would therefore be suitable. In certain cases however, elastic materials may be used for the back sheet (and/or top sheet), especially where increased relative longitudinal movement between the central and lateral portions is desired (see below explanation with respect to Fig. 8 for example).

Attached to one side of back sheet 8, at least at the outer periphery thereof, is a fluid-permeable sheet or layer 9. The body-facing side (upper side as depicted) of sheet 9 is connected by suitable means such as adhesive 12 to the sheet 7. The adhesive is shown in Fig. 1 to be present in

three locations along the centreline of the product, although different arrangements may be envisaged, such as a single line of adhesive. The adhesive may be permanent or instead of a type which allows release of the joined components without destroying the material sheets 7 and 9.

The longitudinal outer peripheral edges of the absorbent product 1 are denoted 10 and 11 respectively.

Two lateral portions, generally denoted 13 and 14, are provided below the central absorbent portion 2 and to the sides of its longitudinal axis. These portions may be absorbent or non-absorbent portions, depending on the desired result. The lateral absorbent portions may thus include absorbent material 15, 16 (such as the type used for the central absorbent portion, for instance cellulose fluff), which performs the function of being absorbent and providing a stiffening of the lateral portions. The lateral portions may however instead include non-absorbent and preferably hydrophobic material, which serves to provide stiffening of the lateral portions as well as serving the function of preventing fluid from entering the outer lateral parts of the product. A convenient form of hydrophobic material in such a case would be hydrophobic foam material, which is well known to the man skilled in the art.

In the following, the lateral portions will however be described generally with reference to "absorbent" portions, although hydrophobic non-absorbent portions alone, or even together with the absorbent portions, can be used in the lateral portions of the following embodiments.

The lateral portions 13, 14 have inner longitudinally extending edges 17, 18. The outer edges of the absorbent

material of the lateral portions are denoted 19 and 20 respectively.

The thickness of the absorbent material 15, 16 may vary considerably. Preferably it lies in a range of between 5% and 20% of the central absorbent material 6 thickness. However, the thickness may also be equal to the thickness of the central absorbent core material 6. Thickness will depend largely on the use to which the product is put and since the lateral portions will be a secondary contact surface for exudate flow, they may be designed to be thinner. Since the absorbent material pieces 6, 15 and 16 are all separate, there is no difficulty during production in providing them with different thicknesses and/or absorbent (and/or non-absorbent) materials having differing characteristics.

As will be apparent from the description of the product structure in Figs. 1 to 4 below, a greater absorption rate can be provided compared to absorbent products only having fluid entry via the upper surface, and thus since overflow over the central portion 2 will not always occur, the absorbent portions 15, 16 and 115, 116 can also be kept very thin, of the order of 1 to 4 mm thickness for example (as measured optically in the uncompressed state). However, the stiffness will still be much greater than that of the joining area.

As shown in Fig. 1, the absorbent portions 15, 16 are formed as two substantially half hourglass shapes having straight longitudinal inner edges 17, 18 and curved outer edges 19, 20 respectively. This shape is not a requirement, but is merely preferable for reasons of body comfort.

A joining area indicated by arrow 21, comprises an area of the top sheet 9 and back sheet 8 material extending over a

width approximately equal to "x" as shown in Fig. 2. In this joining area, there is no absorbent material of the central absorbent core or the lateral portions between the top 9 sheet and the back sheet 8. Although the top sheet 9 itself may exhibit some limited absorbency, this is negligible compared to that of the absorbent material 6 for example and thus the joining area can be described as being substantially void of the absorbent material of the central and lateral absorbent portions.

The thickness of the sheets 8 and 9 is as generally used in the art in current commercial products and, as such, the joining area has substantially no self-supporting characteristics (apart from at the locations where the adhesive 12 attaches the central portion 2 to the top sheet 9). In this regard it should also be remarked that there is only a connection of the central part 2 with the top sheet 9 at the central adhesive location 12. Thus, the joining area is free to deform easily by being squashed or crumpled together when the lateral portions 13 and 14 move laterally towards and away from the longitudinal centreline. Similarly, due to the fact that only a central line of adhesive is used in this embodiment, the joining area 21 on either side of the adhesive 12 presents only a low resistance to small longitudinal relative movement between the central and lateral absorbent portions. Thus, allowance for lateral and longitudinal movement has been provided, whilst the central absorbent area can remain still (or as in practice, fixed against a user's undergarment). In this way it will be apparent that the lateral portions can stay in good sealing contact with the user's thighs, or outer groin regions, during body movements causing width changes in said groin region.

In the joining area 21, the top sheet 9 and the back sheet 8 are preferably attached to one another, either locally

just inside the inner longitudinal edges 17, 18 of the lateral portions, or over a wider area between these two edges.

As a simplification of the above embodiment to aid understanding, the same lateral movements have been illustrated in Fig. 8. Fig. 8 namely shows five sections A to E in plan view. Sections A and C are intended to represent the lateral absorbent portions 13, 14 of the above embodiment, section B is intended to represent the part of the central absorbent portion 2 which is attached by adhesive 12 to sheet 9 and sections D and E represent the joining area on either side of the adhesive 12. As will be apparent herefrom, the central section B can remain fixed, whilst the sections A and C can move laterally inwardly and out again, and also longitudinally relative to the section B. These movement directions are shown by the arrows in Fig. 8. As will be clear from this figure, the length (laterally) of the material in the joining area will determine the lateral inward movement that is possible. Typically a length (laterally) of the joining zone would be between preferably about 0.5 cm to 4 cm, but more preferably between 1 cm to 4 cm.

Thus, when section B is secured (against a user's undergarment) sections A and C can move laterally, as well as (to a lesser degree) longitudinally.

In Fig. 2, reference numeral 22 denotes a strip of pressure sensitive adhesive or the like, used to secure the central section of the product to a user's undergarment (not shown) by acting as a friction-increasing means. However, no friction-increasing means is required and the lateral movement (width adaptation) will function equally without such means.

Figs. 3 and 4 shows a similar embodiment to that in Figs. 1 and 2, where like features are represented by the same reference numerals raised by 100. In this embodiment the absorbent core is made narrower and longitudinal elastics 123, 124 have been added. Additionally, the adhesive has been represented by a continuous section 112.

Due to the narrower central absorbent portion, the outer longitudinal edges of the central portion lie inside the longitudinal edges 117 and 118 of the lateral absorbent portions. In this way, the product will be flatter and neater.

In both embodiments shown in Figs. 1 and 2 and Figs. 3 and 4 respectively, the construction allows fluid exudates to penetrate not only the upper surface of the central absorbent and lateral portions, but also to enter the central absorbent portion via its sides and lower surface. Such an arrangement improves absorption rate in the case of exudate flows which cannot be handled purely by the upper surface.

The elastics 123, 124 in Fig. 3 may be arranged to help form a slightly basin-shaped product and also to form better sealing at the edges of the product. This elastics also provides a certain force tending keep the lateral portions extended away from each other. Thus, when a user is wearing the article and the user's movements require inward and outward lateral movements, the elastics will assist in providing the outward lateral movement, whilst the body movements will provide the inward forces which cause wrinkling or crumpling of the joining area when moving to a narrow width. In this way, the product is able to automatically adjust to varying widths during movement.

Similarly, due to the connections described above with reference to Fig. 8, some independent longitudinal movement of the lateral portions 113, 114 with respect to the central portion 102 will also be possible.

5 In the embodiment of Figs. 5, 6 and 7, only two sheets are used to envelope the three separate absorbent sections 206, 215, 216, namely top sheet 209 and back sheet 208. A material saving results compared to the previous
10 embodiments and the production process can be simplified in certain respects.

In the flat form of the product as shown in Fig. 5 and 6, two folded areas 229, 230 in the form of pleats are depicted. These folded areas 229, 230 form two joining
15 portions and together comprise the joining area of the lateral absorbent portions to the central absorbent portion.

Each of the two folded (in this case pleated) portions 229, 230 are prevented (i.e. sealed) from opening at their longitudinally outer end regions, by heat seal lines,
20 adhesive lines 225, 226, 227, 228, or the like.

Such an arrangement has the advantage that a bowl shape or basin shape is given to the product when the two lateral portions 213 and 214 are moved laterally outwardly to open the pleats, although due to the sealing at the end regions,
25 the possibility of longitudinal relative movement is essentially lost. However, as will be apparent, automatic lateral width adaptation will still be provided. Such can be enhanced by use of elastics (not shown) as in the previous embodiment.

30 The aspect of forming a bowl-shaped product is fulfilled when the ends are joined at 225-228 and the lateral

portions 213, 214 pulled out in a direction as shown by lateral outward forces (arrows "Y") on the lateral portions. Said forces will cause the pleats 229, 230 to open out fully in the central region thereof and by a gradually lesser degree along their length up to the areas of the end seals 225-228, whilst the central absorbent portion 2 has no lateral forces applied thereto by said pleat-opening movements. Since the edges 231 and 232 of the pleats however are required to assume a greater length when forces are applied in the direction of arrows Y, the lateral portions 213, 214 attached to the edges 231, 232 will be caused to assume a hollow, arcuate half-bowl or half-basin shape on either side of the longitudinal centreline. In this way, as the outer edges 210, 211 are moved further apart, the product takes on a whole hollow basin shape with curvature both in the lateral as well as in the longitudinal directions. Opening of the pleats in this way produces the basin-shape shown in the cross-sectional view in Fig. 7 for example.

Thus, by this simple arrangement and simple outward force application, the flat product can also be transformed into a basin-shaped product.

If elastication (not shown in this embodiment) is used in the outer edge parts of the lateral portions 213, 214, the elastic will stretch slightly during outward lateral movement. Thus the elastic will provide a certain holding force causing the basin-shaped product to try and maintain the basin shape. However, lateral forces which may be applied by the wearer on the side portions of the article will cause the lateral portions to move inwardly slightly and thus decrease the width of the product. Thus, an automatically variable and width-adapting product is obtained which will have a resilient force therein attempting to maintain its shape.

From the above it will be clear that where friction-increasing means 222 is applied to the central portion 202 for frictional contact with a wearer's undergarment (not shown), this part can remain stable and fixed to the user's undergarment, while the two lateral portions 17 and 18 can move laterally independently of the central portion 2. In this way, better leakage sealing is provided while still maintaining the product in place and in a basin-shape.

It should also be understood that features described in the aforementioned embodiments are intended to be able to form further embodiments of the product shown in Figs. 5 to 7 and such embodiments will be implicit to the skilled man. No further explanation of such is therefore required.

It should be noted that whilst the top sheet and back sheet layers 208, 209, each preferably consist of one single sheet only of thin material, each may include more than one sheet or a laminated structure as long as the overall stiffness does not allow the joining area to prevent lateral and longitudinal movement. Such principles also apply to the previous embodiments of this invention.

Although the invention has been described above with reference to several preferred embodiments thereof, the scope of the invention is not limited thereto but is instead defined by the full scope of the appended claims.

CLAIMS

1. Absorbent product (1; 101, 201) such as an incontinence pad, sanitary pad, diaper, other absorbent garment, absorbent inlay or the like for absorbing bodily exudates, wherein said absorbent product comprises a substantially central absorbent portion (2; 102; 202) and at least a fluid-impermeable back sheet (8; 108; 208), **characterized in that** said central absorbent portion (2; 102; 202) is attached to two laterally-separated lateral portions (13, 14; 113, 114; 213, 214) by means of a joining area (21) which includes at least said back sheet, and in that the stiffness of each of said lateral portions (13, 14; 113, 114; 213, 214) and of said central portion (2; 102; 202) is much greater than the stiffness of said joining area to thereby allow said lateral portions to move laterally with respect to said central portion when said central portion is held against movement.
2. Absorbent product according to claim 1, **characterized in that** said central absorbent portion (2; 102; 202) comprises an absorbent core (6; 106; 206), and in that said lateral portions (13, 14; 113, 114; 213, 214) comprise stiffening material (15, 16; 115, 116; 215, 216) held between a permeable top sheet (9; 109; 209) and said back sheet, and in that said joining area (21) comprises said top sheet (9; 109; 209) and said back sheet (8; 108; 208) and is void of the material of said absorbent core (6, 106, 206) and said stiffening material (15, 16; 115, 116; 215, 216) of said lateral portions (13, 14; 113, 114; 213, 214).

CLAIMS

1. Absorbent product (1; 101, 201) such as an incontinence pad, sanitary pad, diaper, other absorbent garment, absorbent inlay or the like for absorbing bodily exudates, wherein said absorbent product comprises a substantially central absorbent portion (2; 102; 202) and at least a fluid-impermeable back sheet (8; 108; 208), characterized in that said central absorbent portion (2; 102; 202) is attached to two laterally-separated lateral portions (13, 14; 113, 114; 213, 214) by means of a joining area (21) which includes at least said back sheet, and in that the stiffness of each of said lateral portions (13, 14; 113, 114; 213, 214) and of said central portion (2; 102; 202) is much greater than the stiffness of said joining area to thereby allow said lateral portions to move laterally with respect to said central portion when said central portion is held against movement.
2. Absorbent product according to claim 1, characterized in that said central absorbent portion (2; 102; 202) comprises an absorbent core (6; 106; 206), and in that said lateral portions (13, 14; 113, 114; 213, 214) comprise stiffening material (15, 16; 115, 116; 215, 216) held between a permeable top sheet (9; 109; 209) and said back sheet, and in that said joining area (21) comprises said top sheet (9; 109; 209) and said back sheet (8; 108; 208) and is void of the material of said absorbent core (6, 106, 206) and said stiffening material (15, 16; 115, 116; 215, 216) of said lateral portions (13, 14; 113, 114; 213, 214).

3. Absorbent product according to claim 2, **characterized in that** said top sheet (9, 109, 209) and said back sheet (8; 108; 208) are joined to each other over a substantial portion of said joining area (21).

5 4. Absorbent product according to any one of the preceding claims, **characterized in that** said lateral portions (13, 14; 113, 114; 213, 214) contain absorbent material (15, 16; 115, 116; 215, 216) to thereby form two lateral absorbent portions, said absorbent material being positioned between
10 said top sheet and said back sheet, and in that said joining area (21) is substantially void of the absorbent material of said central and lateral absorbent portions.

15 5. Absorbent product according to any one of claims 2 or 3, **characterized in that** said lateral portions (13, 14; 113, 114; 213, 214) contain hydrophobic material (15, 16; 115, 116; 215, 216) to thereby form two lateral stiffened hydrophobic portions, said hydrophobic material being positioned between said top sheet and said back sheet, and
20 in that said joining area (21) is substantially void of the absorbent material of said central portion and said hydrophobic material of said lateral portions.

25 6. Absorbent product according to any one of claims 2 to 5, **characterized in that** the joining area (21) of said top sheet (9; 109; 209) and said back sheet (8; 108; 208) comprises only said top sheet and said back sheet material.

30 7. Absorbent product according to any one of claims 2 to 6, **characterized in that** said joining area (21) is a continuous area of the back sheet (8; 108) and said top sheet (9; 109) positioned between said lateral portions (13, 14; 113, 114).

8. Absorbent product according to any one of claims 2 to 7, characterized in that said joining area is formed as two joining portions (229, 230) each lying on a respective side of said central absorbent portion (202), and in that the material of each of said lateral portions (215, 216) and said central absorbent portion (206) are enclosed between the top sheet (209) and the back sheet (208).

9. Absorbent product according to claim 8, characterized in that each of said joining portions (229, 230) is formed as a longitudinally folded portion, and in that the longitudinal outer end regions of each folded portion are sealed (225-228) against opening at said end regions.

10. Absorbent product according to claim 9, characterized in that each of said longitudinally folded portions is formed as a longitudinal pleat in the back sheet and top sheet.

11. Absorbent product according to any one of the preceding claims, characterized in that friction-increasing means (22; 122; 222) are provided on said back sheet (8; 108; 208), said friction-increasing means being arranged to increase frictional contact forces between said backsheet and a wearer's undergarment.

12. Absorbent product according to claim 11, characterized in that said friction-increasing means is a pressure-sensitive adhesive.

13. Absorbent product according to claim 11 or 12, characterized in that said friction-increasing means is provided on said fluid-impermeable back sheet at a location on said back sheet beneath said central absorbent portion (2; 102, 202), so as to allow said central absorbent portion to be positionally fixed with respect to a user's

undergarment whilst allowing said lateral portions to move at least laterally with respect to said central absorbent portion.

5 14. Absorbent product according to any one of the preceding claims, **characterized in that** the material (15, 16; 115, 116; 215, 216) comprised in said lateral portions (13, 14; 113, 114; 213, 214) is less than 50% of the thickness of the absorbent material (6; 106; 206) of said central absorbent portion (2; 102; 202).

10 15. Absorbent product according to any one of the preceding claims, **characterized in that** the material (15, 16; 115, 116; 215, 216) comprised in said lateral portions (13, 14; 113, 114; 213, 214) is between 5% and 20% of the thickness of the absorbent material (6; 106; 206) of said central
15 absorbent portion (2; 102; 202).

20 16. Absorbent product according to any one of the preceding claims, **characterized in that** the material (15, 16; 115, 116; 215, 216) comprised in each of said lateral portions (13, 14; 113, 114; 213, 214) has a half hour-glass shape with a generally straight inner edge (17, 18; 117, 118; 217, 218) and a curved outer edge (19, 20; 119, 120; 219, 220), said curved outer edge of each of said half hour-glass shapes lying laterally outwardly and the straight inner edge thereof lying inwardly, such that the straight
25 edges of each of said lateral portions face one another.

30 17. Absorbent product according to any one of the preceding claims, **characterized in that** each of said lateral portions is provided with generally longitudinally arranged elastication means (123, 124), said elastication means being positioned so as to allow longitudinal extension, and said elastication means being located proximate the

longitudinally-central part of the outer edge (19, 20; 119, 120; 219, 220) of each lateral portion.

18. Absorbent product according to any one of the preceding claims, **characterized in that** said central absorbent portion (2; 102) contains absorbent material (6; 106) which is surrounded on all sides by a fluid-permeable, preferably non-woven, sheet (7; 107).

19. Absorbent product according to any preceding claim, **characterized in that** the material of the joining area (21) provided for connecting each of said lateral portions to said central portion has a length in the lateral direction such that when said joining area material is in an extended state, the longitudinal inner edge (117, 118; 217, 218)) of each lateral absorbent portion (113, 114; 217, 218) lies laterally outside the outer longitudinal edges (104, 105; 204, 205) of said central absorbent portion (102; 202).

20. Absorbent product according to any one of the preceding claims, **characterized in that** the longitudinal edges (4, 5; 104, 105) of the central absorbent portion (2; 102) and a part of the lower surface of the central absorbent portion, which part extends laterally inwardly from each of said longitudinal edges of the central absorbent portion up to an attachment location (12; 112) with the material of the joining area (21), present a surface for direct absorption of fluids into the central absorbent portion, such that said central absorption portion can absorb fluid not only from above, but also from below and at the sides thereof.

21. Absorbent product according to any one of the preceding claims, **characterized in that** in a flattened state of said product, said two lateral portions (13, 14) at least partially underlie the lower surface of said central portion (102).



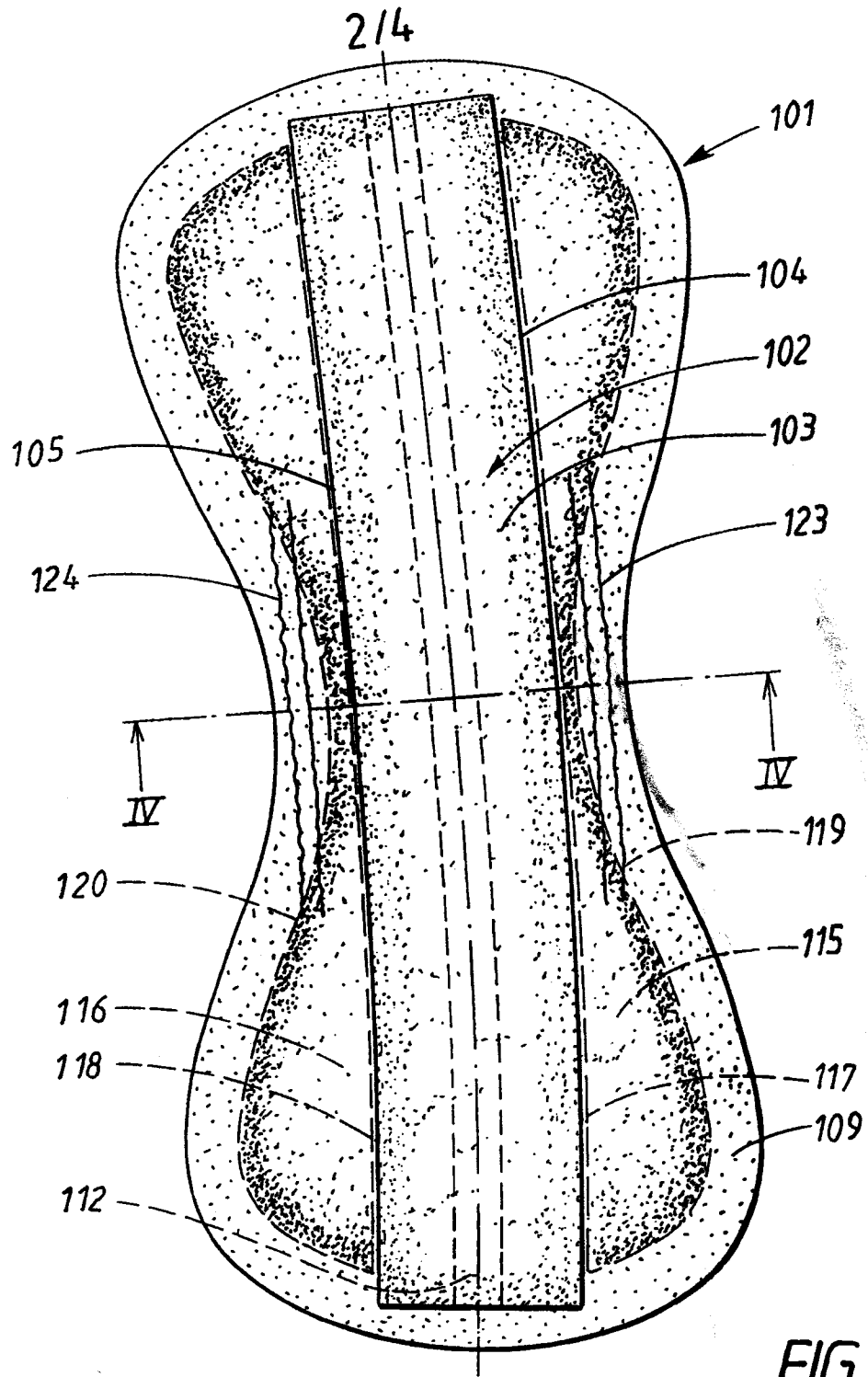


FIG. 3

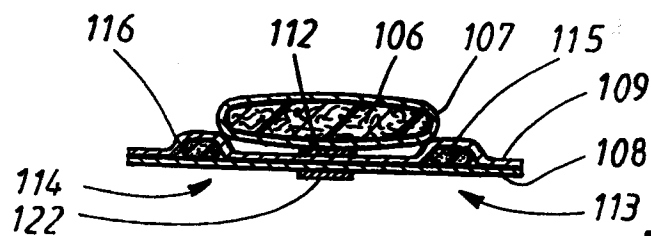


FIG. 1