

# CAVELIER

ABOGADOS

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BOGOTÁ 8, COLOMBIA

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SUPERINDUSTRIA Y COMERCIO

Radicacion : 00098226 00000003

Folios: 2

Fecha (AND): 2003-01-23 16:39:55

Trámite : 002 PATENTES D 1 REGISTRO/ 538 PETICION

~~Dependencia: 2020 DIVISION DE NUEVAS CREACIONES~~

Señora Jefe de la  
DIVISION DE NUEVAS CREACIONES  
Superintendencia de Industria y Comercio  
E. S. D.

TRÁMITE : 002

EVENTO : 001

ACTUACIÓN : 538

Referencia : Expediente No. 00-098226

Asunto : Solicitud de patente para: PRODUCTO  
ABSORBENTE CON CAPACIDAD MEJORADA DE DARSE  
FORMA

Solicitante : SCA HYGIENE PRODUCTS AB

Fecha de solicitud : 28 de diciembre de 2000

Publicada en : la Gaceta No. 518 del 30 de julio de 2002

1. Yo, Emilio FERRERO, identificado como aparece al pie de mi firma, actuando como apoderado en el asunto de la referencia, atentamente, solicito se efectúe el examen de patentabilidad de la solicitud en referencia según lo establecido en el artículo 44 de la Decisión 486 de la Comisión de la Comunidad Andina. Para tal efecto presento junto con este escrito el recibo No. 03-2,535 por valor de \$335.000.00, que corresponde a la tasa fijada según lo dispuesto en la resolución No. 41687 del 24 de diciembre de 2002.

2. Ruego atentamente a la Señora Jefe se sirva ordenar que se anexe este recibo, para que se efectúe dicho examen y se continúe con el trámite de la solicitud.

Bogotá, 23 ENE 2003  
Señora Jefe,



EMILIO FERRERO  
T.P.A. No. 31.929

RECEIVED  
DIVISION OF INVESTIGATION  
U. S. DEPARTMENT OF JUSTICE  
WASHINGTON, D. C.

518 : MANDANTIA      100 : OTMZYB      500 : KIMAT

|            |                          |          |         |       |          |
|------------|--------------------------|----------|---------|-------|----------|
| Forma      | Asociación con capacidad | de       | patente | para: | producto |
| Activo     |                          |          |         |       |          |
| Referencia | Expediente No.           | 03-04232 |         |       |          |

LA SECCION DE ASISTENCIA SOCIAL DEL GOBIERNO FEDERAL DE LOS ESTADOS UNIDOS MEXICANOS

Yo, NARCISO FERRERO, identificado como aparece al pie de esta  
ficha, declaro que el contenido de la presente es la transcripción  
fidel y literal de lo que he oído en el momento de la  
realización de la misma, según se indica en el acta de la  
sesión de la Comisión de la Comunidad Andina. Para tal efecto  
firmo y hago constar el texto No. 03-1-515 por valor de  
\$25.000,00, que corresponde a la tasa legal según lo dispuesto en la  
Ley No. 1544 del 11 de diciembre de 1992.

El presente de la policía  
en este sentido, para que se eleve dicho grado y se continúe en  
el mismo estado a la fuerza hasta un nivel superior que se

1999 347 88

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FEB 16 1964

Y 230 100 22341 Q122

NIT : 800176089-2



SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO

Radicacion : 00098226 00000003

Folios: 2

Fecha (AND): 2003-01-23 16:39:55

Tramite : 002 PATENTES D 1 REGISTRO/ 538 PETICION

Dependencia: 2020 DIVISION DE NUEVAS CREACIONES

RECIBO OFICIAL DE CAJA : 03 - 2,535  
FECHA : ENERO 14 DE 2003

\*\*\*\*\* CONSIGNACION \*\*\*\*\*

| DEPOSITANTE       | TIPO PAGO    | BANCO         | CUENTA      | No. PAGO | FECHA PGO  | Vr. PAGO      |
|-------------------|--------------|---------------|-------------|----------|------------|---------------|
| CAVELIER ABOGADOS | CONSIGNACION | BANCO POPULAR | 050-00110-6 | 3136969  | 14/01/2003 | 26,845,000.00 |

\*\*\*\*\* CONCEPTO \*\*\*\*\*

| CANT. RENTISTICO          | CONCEPTO                             | TOTAL CONCEPTO |
|---------------------------|--------------------------------------|----------------|
| 1 50005-01-01 SOLICITUDES | 95 EXAMEN DE PATENTABILIDAD DE INVEN | 335,000.00     |
|                           | TOTAL :                              | \$ 335,000.00  |

SON: TRESCIENTOS TREINTA Y CINCO MIL PESOS

RESPONSABLE: \_\_\_\_\_

RECIBO DE CAJA APLICADO AL EXPEDIENTE No. \_\_\_\_\_

Carrera 13 No. 27-00 Pisos 5, 7 y 10  
Conmutador 382 0840  
Fax 350 5220  
E-mail: info@sic.gov.co  
www.sic.gov.co  
Bogotá, D.C., Colombia

Colo 11256-001-052-7

# Industria y Comercio

SUPERINTENDENCIA

RECIBO DE PAGAR DE DINERO  
FECHA: 11 DE 2007

SEÑOR DON JUAN PABLO

DEPARTAMENTO DE LA GUAYANA FRANCESA

VALORES RECIBIDOS: CANTIDAD: 100.000.000

FECHA DE EMISIÓN: 11 DE 2007

MONEDA: DOLÁR

SE EMITE EN LA ENTIDAD DE LA GUAYANA FRANCESA

SEÑOR DON JUAN PABLO

RECIBIDO

FECHA DE EMISIÓN: 11 DE 2007

Código 12 No. 27-00-1002-10  
Código 12 No. 27-00-1002-10  
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Código 12 No. 27-00-1002-10

1528-001-02-1

98  
72

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

2020

Bogotá D.C., Septiembre 21 de 2005

Doctor

**EMILIO FERRERO**

Apoderado **SCA HYGIENE PRODUCTS AB**

|               |            |          |      |
|---------------|------------|----------|------|
| <b>ASUNTO</b> | Radicación | 00-98226 |      |
|               | Trámite    | 002      |      |
|               | Evento     | 001      |      |
|               | Actuación  | 430      |      |
|               | Oficio     |          | 8838 |
|               | Folios     |          |      |

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 tuvo en cuenta el capítulo descriptivo, comprendido en los folios 2 a 32 del expediente correspondiente a la solicitud en estudio, tal como fue radicado al inicio del trámite.
- B. Se tomaron en cuenta las figuras de los folios 40 a 44.
- C. El capítulo reivindicatorio tomado en cuenta para el presente estudio comprende 15 reivindicaciones y se encuentran en los folios 33 a 37, tal como fue radicado al inicio del trámite.
- D. Conforme lo establecen 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 28 de diciembre de 2000, en el momento de la radicación se reclamó prioridad. La copia certificada de la solicitud cuya prioridad fue reivindicada (SE 9904835-7 del 29 de diciembre de 1999) aparece junto con la traducción de las reivindicaciones en los folios 54 a 84.

**2. Objeto de la invención:**

- A. Las reivindicaciones 1 a 15 de la solicitud en estudio se refieren a un producto absorbente que tiene una dirección longitudinal y una dirección transversal, dos bordes laterales que se extienden en la dirección longitudinal, dos bordes de extremo que se extienden en la dirección transversal y comprenden una capa de superficie permeable a los líquidos, una capa de superficie impermeable a los líquidos y un cuerpo de absorción dispuesto entre las capas de superficie, el cuerpo de absorción comprende una capa de material absorbente compresible, caracterizado en que la capa de material absorbente compresible tiene por lo menos una porción doblada que se extiende en la dirección longitudinal y en que la porción doblada está parcialmente comprimida. La capa de material absorbente tiene una mayor densidad dentro de la región de la porción doblada. La porción doblada tiene la capacidad de hincharse cuando se somete al humedecimiento o influencia mecánica y de reasumir su forma no comprimida.
- B. El objeto de la solicitud se puede clasificar según la clasificación internacional como A 61 F 13/15.

**3. Claridad de la Solicitud:**

SECRET

CONFIDENTIAL

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1 MAY 1968

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10-11-1964

1. The first step in the process is to identify the problem or issue that needs to be addressed. This involves gathering information and understanding the context of the situation.

2010-2011, the company's net income plunged 45 percent to \$1.1 million from \$2.0 million in 2009-2010, and its operating profit fell 50 percent to \$1.1 million from \$2.2 million in 2009-2010.

[illegible]

1. The applicant is a citizen of the United States of America and is at least 18 years of age at the time of application.

[illegible]

2025/11/01 15:03:03

1. The first step in the process of identifying a problem is to define the problem. This involves identifying the symptoms of the problem and determining the scope of the problem. Once the problem has been defined, the next step is to identify the causes of the problem. This involves identifying the factors that are contributing to the problem and determining the underlying causes. Once the causes have been identified, the next step is to develop a plan of action. This involves identifying the steps that need to be taken to solve the problem and determining the resources that will be needed to implement the plan. Once a plan of action has been developed, the next step is to implement the plan. This involves carrying out the steps that have been identified in the plan and monitoring the progress of the implementation. Finally, the last step in the process is to evaluate the results of the implementation. This involves determining whether the problem has been solved and whether the resources have been used effectively.

[illegible]

10-11-83 at 10:00 AM

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- A. El artículo 28 de la Decisión 486 de la Comisión de la Comunidad Andina establece "la descripción deberá divulgar la invención de una manera suficientemente clara y completa para su comprensión y para que una persona capacitada en la materia técnica correspondiente pueda ejecutarla"

La descripción presenta fallas de transcripción en la primera página en donde la última oración queda sin sentido: "es importante que la persona porción elevada no esté diseñada..."

De acuerdo con lo anterior, la descripción no cumple con el requisito de claridad según lo establecido en el artículo 28 de la Decisión 486.

- B. En el artículo 30 de la decisión 486 de la Comisión de la Comunidad Andina se establece: "Las reivindicaciones definirán la materia que se desea proteger mediante la patente. Deben ser claras y concisas y estar enteramente sustentadas por la descripción. Las reivindicaciones podrán ser independientes o dependientes. Una reivindicación será independiente cuando defina la materia que se desea proteger sin referencia a otra reivindicación anterior. Una reivindicación será dependiente cuando defina la materia que se desea proteger refiriéndose a una reivindicación anterior. Una reivindicación que se refiera a dos o más reivindicaciones anteriores se considerará una reivindicación dependiente múltiple." En el artículo 51 se establece además: "El alcance de la protección conferida por la patente estará determinado por el tenor de las reivindicaciones."

- i. La primera reivindicación presenta un error de transcripción en la última oración de la página 32, folio 33 del expediente: "la capa de material absorbente tiene una mayor densidad dentro de la región de la porción doblada que en las regiones de la capa de material absorbente compresible están localizadas al exterior de la porción doblada." Como se puede leer, dicha oración no tiene mucho sentido debido al mencionado error.
- ii. El solicitante caracteriza el producto absorbente reivindicado por el resultado que pretende alcanzar. En la primera reivindicación se puede leer que "como resultado... la capa de material absorbente tiene una mayor densidad... la porción doblada tiene la capacidad de hincharse cuando se somete al humedecimiento y/o influencia mecánica, y... reasumir su forma no comprimida". En las reivindicaciones se debe caracterizar un producto por la forma o constitución del mismo, las partes que lo componen y todo lo que permita establecer de cómo se llegó a ese resultado. Esto ocasiona que el alcance de la reivindicación incluya no sólo la solución propuesta por el solicitante, sino todas las alternativas presentes o futuras que lleguen a ese resultado.

De acuerdo con lo anterior, el capítulo reivindicatorio no cumple con el requisito de claridad según lo establecido en el artículo 30 de la Decisión 486. El solicitante deberá anexar un nuevo capítulo reivindicatorio con todas las correcciones aquí requeridas.

#### 4. **Determinación del estado de la técnica:**

El artículo 16 de la Decisión 486 de la Comisión establece que: "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."

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

El artículo 28 de la Ley Orgánica de la Administración General del Estado establece que la Administración General del Estado se divide en tres niveles: el central, el regional y el local. La Administración central es la que ejerce las funciones de gobierno y gestión en el ámbito de la Nación. La Administración regional es la que ejerce las funciones de gobierno y gestión en el ámbito de las comunidades autónomas. La Administración local es la que ejerce las funciones de gobierno y gestión en el ámbito de los municipios, provincias y regiones autónomas.

UNITED STATES DEPARTMENT OF AGRICULTURE  
BUREAU OF PLANT INDUSTRY

1. The first step is to identify the problem. In this case, the problem is that the company is not meeting its sales targets. This could be due to a variety of factors, such as poor marketing, poor product quality, or poor customer service.

[illegible]

La primera actividad presentada en el evento fue la conferencia de la Dra. María José Rodríguez, quien abordó el tema de la "Evolución de la literatura latinoamericana en el siglo XX". La Dra. Rodríguez destacó la importancia de la literatura latinoamericana en el contexto global y su evolución a lo largo del tiempo. A continuación, se presentó una obra de teatro titulada "El tiempo de la espera", escrita por el dramaturgo argentino Jorge Luis Borges. La obra fue interpretada por un grupo de actores locales, quienes lograron capturar la esencia de la obra de Borges a través de su actuación. Después de la obra de teatro, se realizó una sesión de preguntas y respuestas con la Dra. Rodríguez, donde se abordaron temas como la influencia de la literatura latinoamericana en la cultura global y el papel de la literatura en la sociedad. El evento concluyó con una recepción donde se sirvió un aperitivo y se pudo hablar con los organizadores y los participantes. El evento fue muy exitoso y logró atraer a un gran número de personas, lo que demuestra el interés de la comunidad por la literatura latinoamericana.

[illegible]

\* The information on this page is for informational purposes only and is not intended to be used for any other purpose.

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El artículo 10 de la Ley sobre el Comercio Exterior de la Unión Europea establece que los Estados miembros de la Unión Europea deben adoptar las medidas necesarias para garantizar que los productos de origen animal que se importan desde terceros países cumplan con los requisitos de seguridad alimentaria y de salud pública de la Unión Europea.

1. The first step in the process of identifying a problem is to determine whether a problem exists. This is often done by comparing current performance with a desired state. If there is a significant difference, a problem is identified.

La fecha para determinar el estado de la técnica es el 29 de diciembre de 1999, tomando en cuenta la prioridad reivindicada.

Consultadas las bases de datos y los archivos con que cuenta la entidad, especialmente bajo las clasificaciones A 61 F 13/15, se encontró que antes del 29 de diciembre de 1999 habían sido publicados los documentos enumerados en la siguiente tabla.

| No. | Documento    | Título                                                                                                  | Fecha de publicación |
|-----|--------------|---------------------------------------------------------------------------------------------------------|----------------------|
| D1  | EP 0 834 296 | Disposable absorbent article having a profiled absorbent structure being capable of self-shaping in use | 1998-04-08           |

5. Evaluación de los requisitos de patentabilidad:

El artículo 14 de la Decisión 486 de la Comunidad Andina establece que: *“Los Países Miembros otorgarán patentes para las invenciones, sean de producto o de procedimiento en todos los campos de la tecnología, siempre que sean nuevas, tengan nivel inventivo y sean susceptibles de aplicación industrial”*.

En cumplimiento del artículo 14 de la Decisión 486, se procedió a evaluar los requisitos de novedad, nivel inventivo y aplicación industrial con el fin de establecer la patentabilidad del objeto de la solicitud reivindicado en la solicitud en estudio.

A. Evaluación de la Novedad:

El artículo 16 de la decisión 486 de la Comisión de la Comunidad Andina establece:

“Una invención se considerará nueva cuando no esté 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.”

A pesar de que el solicitante menciona al documento D1 en el sentido de que el objeto de su solicitud supera al divulgado en dicho documento, la lectura de D1 demuestra que este documento sugiere inequívocamente que el producto absorbente allí divulgado, al igual que el reivindicado en la solicitud estudiada, tiene una capa de material absorbente compresible con una porción que puede ser doblada con una mayor densidad por estar comprimida, y por lo tanto, puede hincharse y de ahí reasumir su volumen anterior a la compresión. Por lo tanto, no se puede considerar nuevo el objeto de la solicitud estudiada. En D1 se sugiere que se tiene una porción doblada de la capa del artículo absorbente.

B. Evaluación del nivel inventivo:

El artículo 18 de la Decisión 486 de la Comisión de la Comunidad Andina dispone que: “Se considerará que una invención tiene nivel inventivo, si para una persona del oficio normalmente versada en la materia técnica correspondiente, esa invención no hubiese resultado obvia ni se hubiese derivado de manera evidente del estado de la técnica”.

El documento D1 afecta así mismo el nivel inventivo del objeto de la solicitud estudiada porque se anticipa a la solución propuesta por el solicitante en el sentido de comprimir una parte del artículo absorbente para que éste cambie de forma en el momento de recibir las descargas. Los detalles que diferencian el objeto reivindicado del artículo divulgado en D1, como las dimensiones de la capa doblada, son derivados de manera evidente del dicho documento D1.

La información contenida en este documento es confidencial y su divulgación a terceros sin el consentimiento expreso de la Oficina de la Secretaría de Estado de la Defensa es estrictamente prohibida.

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| No. | Doc. interno | Titulo                                                         | Fecha de actualización |
|-----|--------------|----------------------------------------------------------------|------------------------|
| 01  | Forma 1      | Forma 1 de la Oficina de la Secretaría de Estado de la Defensa | 2010-01-01             |

### Forma 1 de la Oficina de la Secretaría de Estado de la Defensa

La Oficina de la Secretaría de Estado de la Defensa es el órgano encargado de la gestión y administración de los recursos humanos, financieros y materiales de la Oficina de la Secretaría de Estado de la Defensa.

La Oficina de la Secretaría de Estado de la Defensa es el órgano encargado de la gestión y administración de los recursos humanos, financieros y materiales de la Oficina de la Secretaría de Estado de la Defensa.

### A. Funciones de la Oficina de la Secretaría de Estado de la Defensa

La Oficina de la Secretaría de Estado de la Defensa es el órgano encargado de la gestión y administración de los recursos humanos, financieros y materiales de la Oficina de la Secretaría de Estado de la Defensa.

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La Oficina de la Secretaría de Estado de la Defensa es el órgano encargado de la gestión y administración de los recursos humanos, financieros y materiales de la Oficina de la Secretaría de Estado de la Defensa.

### Forma 1 de la Oficina de la Secretaría de Estado de la Defensa

La Oficina de la Secretaría de Estado de la Defensa es el órgano encargado de la gestión y administración de los recursos humanos, financieros y materiales de la Oficina de la Secretaría de Estado de la Defensa.

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Por lo tanto, la solicitud en estudio no cumple con el requisito de nivel inventiva establecido por el artículo 18 de la Decisión 486.

**C. Resumen**

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

| No. | Documento    | Reivindicaciones afectadas | Requisito afectado        |
|-----|--------------|----------------------------|---------------------------|
| D1  | EP 0 834 296 | 1 a 15                     | Novedad y nivel inventivo |

Se anexa copia de la anterioridad mencionada.

**6. Notificación**

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

Notifíquese el presente oficio conforme a lo dispuesto en el numeral 5.2, literal e) del capítulo quinto del título primero de la circular única No. 10 de 2001.

**ALIX CARMENZA GONZALEZ DE VERGEL**  
Jefe de la División de Nuevas Creaciones

El anterior requerimiento fue notificado por fijación en lista, de fecha 29 SET 2005.

|                                         |                                             |
|-----------------------------------------|---------------------------------------------|
| <b>CONCEPTO TÉCNICO</b><br>Número: 1451 | <b>EXAMINADOR TÉCNICO</b><br>Código: 202043 |
|-----------------------------------------|---------------------------------------------|

~~CONFIDENTIAL~~

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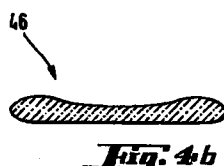
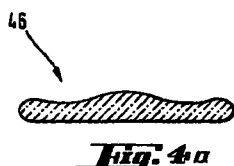
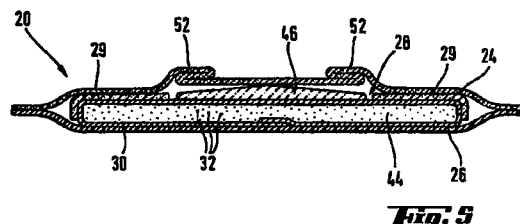
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(54) Disposable absorbent article having a profiled absorbent structure being capable of self-shaping in use

(57) A disposable absorbent article for wearing adjacent a body discharge area having a longitudinal centreline and a lateral centreline orthogonal thereto and defining longitudinal and lateral directions respectively. The disposable absorbent article comprises a liquid pervious topsheet, a backsheet joined to said topsheet and an absorbent core intermediate the backsheet and the topsheet. The absorbent core comprises an expanding layer for expanding the article into a tridimensional structure while being worn by a user. The expanding layer is activated by body fluids and has a predetermined profile in Z-direction in the dry state prior to use. The expanding layer is capable, upon activation by body fluids, of expanding into the predetermined wet profile.



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to articles that have their main extension in one plane. In a preferred embodiment a substantially flat article will have an absorbent core that extends substantially in the X-Y directions, with the dimension which extends in the Z-direction being substantially smaller than the two other dimensions extending in the X and in the Y directions, respectively. This comprises an absorbent core having a thickness that is not constant or, in other words, being shaped in a direction which is orthogonal to the absorbent core itself, provided that the above condition is satisfied. This does not exclude, also, a general curvature of the absorbent core. It will be apparent to the man skilled in the art to which extent products can deviate from absolute flat shape and still benefit from the during the use shaping according to the present invention.

Sanitary napkins with longitudinal side cuffs, which may be optionally elasticated, and sanitary napkins with a moderate curvature are therefore within the scope of the present invention, and their absorbent core can be preferably substantially flat, according to the definition given above.

The term "predetermined profile", as used herein, refers to an expanding layer that comprises zones that, upon activation by body fluids, are capable of expanding more than other zones according to an actual, desired profile, which substantially corresponds to the predetermined profile of the expanding layer in its dry state. The profile achieved by the expanding layer after expansion upon activation by body fluid is the "predetermined wet profile" referred to herein. The term "predetermined profile", therefore, is associated in this context with an actual particular contour of the expanding layer when seen in cross-section in its dry state before activation by body fluids.

The term "use", as used herein, refers to the period of time that starts when the absorbent article is actually put in contact with the anatomy of the user.

The terms "joined" or "affixed", as used herein, encompasses configurations whereby a first member is directly connected to a second member and configurations whereby a first member is indirectly connected to a second member by connecting the first member to intermediate members which in turn are connected to the second member.

Interlabial devices which reside partially within and partially external of the wearer's vestibule are also within the scope of this invention. As used herein, the term "pubental" refers to the externally visible female genitalia and is limited to the labia majora, the labia minora, the clitoris, and the vestibule.

In FIGS. 1 and 2, one preferred embodiment of a sanitary napkin 20 of the present invention is shown. Fig. 1 is a plan view of the sanitary napkin 20 of the present invention in its flat-out state prior to use with portions of the structure being cut-away to more clearly show the construction of the sanitary napkin 20 and with the portion of the sanitary napkin 20 which faces or con-

tacts the wearer oriented towards the viewer. As shown in FIGS. 1 and 2, the sanitary napkin 20 preferably comprises a liquid pervious topsheet 24, a liquid impervious backsheet 26 joined to the topsheet 24, and an absorbent core 28 intermediate the topsheet 24 and the backsheet 26; the absorbent core 28 comprises an expanding layer 46 for expanding the sanitary napkin into a tridimensional structure while being worn by a user.

In a preferred embodiment of the present invention illustrated in FIGS. 1 to 3, the absorbent core 28 comprises the expanding layer 46 and a separate, substantially non expanding absorbent element 44 joined together and in face to face relationship to each other, the expanding layer 46 being positioned between the topsheet 24 and the absorbent element 44.

The absorbent element 44 and the expanding layer 46 may be associated in any suitable manner to form the absorbent core 28. Suitable manners include, but are not limited to, associating the absorbent element 44 and the expanding layer 46 with adhesives such as by spray-gluing or by applying lines or spots of adhesive between them. Alternatively, or additionally, the association between the layers may be achieved by fibre entanglement or by a plurality of discrete fusion bonds.

Alternatively, the expanding layer 46 may constitute the entire absorbent core 28.

The absorbent capacity of the absorbent core 28 should be compatible with the intended body fluid loading for the sanitary napkin 20. Further, the overall absorbent capacity of the absorbent core 28 may be varied to accommodate wearers ranging in the expected amount of body fluid volume. For instance, a different absorbent capacity may be utilized for sanitary napkins intended for day time use as compared with those intended for night time use, or for sanitary napkins intended for use by teenage females as compared with those intended by more mature women.

The sanitary napkin 20 has two surfaces, a body contacting or facing surface, and a garment facing or contacting surface. The absorbent core 28 has corresponding body facing and garment facing surfaces. The sanitary napkin 20 has two centrelines, a longitudinal centreline O-O and a transverse centreline A-A orthogonal thereto. 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 within the plane of the sanitary napkin 20 and is generally perpendicular to the longitudinal direction. The Z-direction is orthogonal both the longitudinal and lateral directions of the sanitary napkin 20 and extends outwardly from the plane of the sanitary napkin 20, which is defined by the longitudinal centreline O-O and the lateral centreline A-

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A. The term "longitudinally oriented" refers to a direction  $\pm 45$  degrees of the longitudinal direction in the plane of the sanitary napkin 20; the term "laterally oriented" refers similarly to any other direction in the plane of the sanitary napkin 20.

The long edges of the sanitary napkin 20, which are aligned with the longitudinal centreline O-O, are the longitudinal side margins of the sanitary napkin 20. The ends of the sanitary napkin 20 joining the longitudinal side margins are the transverse ends of the sanitary napkin 20. Collectively the longitudinal side margins and transverse ends of the sanitary napkin 20 define its periphery. Similarly, the absorbent core 28 of the sanitary napkin 20 has a periphery defined by alternatively disposed longitudinal side margins and transverse ends.

Tridimensional structures of the sanitary napkin 20 are those in which the sanitary napkin structure is caused to expand, at least partially, in the Z-direction, in order to more closely conform to the user's anatomy. Said expansion preferably takes place in a direction that goes from the garment facing surface towards the body facing surface of the sanitary napkin 20. Particularly preferred are tridimensional structures with a convex upward configuration that are inclusive of, but not limited to, inverted U-shapes or inverted V-shapes as seen in lateral direction, with "convex upward configuration" being meant a structure of the sanitary napkin that is convex on its body facing surface. With these configurations the cross-sectional contour of the central portion of the sanitary napkin more closely matches the labia of the typical wearer. Alternative preferred tridimensional structures of the sanitary napkin 20 are W-shapes or inverted W-shapes as seen in lateral direction.

The topsheet 24 is compliant, soft feeling, and non-irritating to the wearer's skin. Further, the topsheet 24 is liquid pervious, permitting liquid to readily penetrate through its thickness. A suitable topsheet 24 may be manufactured from a wide range of materials such as woven and nonwoven materials; polymeric materials such as apertured formed thermoplastic films, apertured plastic films, and hydroformed thermoplastic films; porous foams; reticulated foams; reticulated thermoplastic films; and thermoplastic scrims. Suitable woven and nonwoven materials can be comprised of natural fibres (e.g., wood or cotton fibers), synthetic fibres (e.g., polymeric fibres such as polyester, polypropylene, or polyethylene fibres); or from a combination of natural and synthetic fibres.

A preferred topsheet comprises an apertured formed film. Apertured formed films are preferred for the topsheet because they are pervious to body fluids and yet 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 formed film which is in contact with the body remains dry, thereby reducing body soiling and creating a more comfortable feel for the wearer.

Suitable formed films are described in U.S. Pat. No. 3,929,135, issued to Thompson on December 30, 1975; U.S. Pat. No. 4,324,246, issued to Mullane, et al. on April 13, 1982; U.S. Pat. No. 4,342,314, issued to Radcliff, et al. on August 3, 1982; U.S. Pat. No. 4,463,045, issued to Ahr, et al. on July 31, 1984; and U.S. Pat. No. 5,006,394, issued to Baird on April 9, 1991. A preferred topsheet for the absorbent article of the present invention is a 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 or exposed surface of the formed film topsheet is hydrophilic so as to help liquid transfer through the topsheet faster than if the body surface were not hydrophilic so as to diminish the likelihood that menstrual fluid will flow off the topsheet rather than flowing into and being absorbed by the absorbent core.

The topsheet of the present invention is preferably capable of expanding as the sanitary napkin 20 expands in a tridimensional structure upon absorption of body fluids. This may be achieved when the topsheet is made of a material that is intrinsically extensible under the forces exerted by the expanding layer 46. In a preferred embodiment illustrated in FIGS. 1 and 2 the topsheet 24 is provided with two pleats or folds 52 symmetrically positioned at both sides of the longitudinal centreline O-O and substantially parallel to it. As shown in FIG. 2 the topsheet 24 in each pleat or fold 52 is folded twice on itself toward the longitudinal side margins of the sanitary napkin 20. A single pleat or fold or, alternatively, more than two folds may be also comprised in the topsheet 24 without departing from the scope of the present invention; the pleats or folds may be generally longitudinally or laterally oriented.

The backsheet 26 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 can also be used. In use, the backsheet 26 is interposed between the absorbent core 28 and the user's undergarments. The function of the backsheet 26 is to prevent exudates which may be expelled from or which inadvertently bypass the absorbent core 28 from contacting and soiling the user's undergarments. The backsheet 26 can 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 to about 0.015 mm. The backsheet 26 is preferably embossed and/or matte finished to provide a more clothlike appearance. Further, the backsheet can permit vapors to escape from the absorbent element 26 (i.e., breathable) while still preventing exudates from passing through the backsheet.

In a preferred embodiment of the present invention

the sanitary napkin 20 is also provided with a panty fastening means, not shown in the figures for clarity, which provides means to attach the article to an undergarment. For example the panty fastening means may comprise a mechanical fastener such as hook and loop fasteners such as marketed under the tradename VEL-CRO, snaps or holders. Alternatively, the sanitary napkin 20 is fastened to the undergarment by means of panty fastening adhesive on the backsheet 26. The panty fastening adhesive provides a means for securing the sanitary napkin 20 to the panty and preferably a means for securing the sanitary napkin 20 when soiled to the fold and wrap package for convenient disposal. Typically, at least a portion of the garment facing surface of the backsheet 26 is coated with adhesive to form the panty fastening adhesive. Any adhesive or glue used in the art for such purposes can be used for the panty fastening adhesive herein. Pressure sensitive adhesives are most preferred. Suitable adhesives include Century A-305-IV manufactured by the Century Adhesives Corporation of Columbus, Ohio, and Instant LOK 34-2823 manufactured by the National Starch and Chemical Company of Bridgewater, New Jersey, 3 Sigma 3153 manufactured by 3 Sigma and Fuller H-2238ZP manufactured by the H.B. Fuller Co.

The panty fastening adhesive is typically applied to the backsheet by slot coating or spraying in various distribution patterns, such as e.g. continuous or discontinuous strips, intermittent dots, random patterns spirals.

The panty fastening adhesive is typically covered with a removable release paper or film in order to prevent the adhesive from drying out or adhering to another surface other than the panty prior to use. Any commercially available release paper or film may be used. Suitable examples include BL 30MG-A SILOX E/O and BL 30 MG-A SILOX 4 P/O available from Akrosil Corporation.

If present, as illustrated in FIGS. 1 to 3, the substantially non expanding absorbent element 44 of the absorbent core 28 can comprise any absorbent means which is generally compressible, resilient, non-irritating to the wearer's skin and capable of absorbing and containing body fluids. The absorbent element 44 may be manufactured from a wide variety of liquid absorbent materials commonly used in disposable sanitary napkins, and other disposable absorbent articles. Examples of suitable absorbent materials include comminuted wood pulp (which is generally referred to as airfelt), creped cellulose wadding, modified cross-linked cellulose fibres (such as those described in U.S. Patent No. 5,217,445 issued to Young, et al. on June 8, 1993), capillary channel fibres (that is, fibres having intra-fibre capillary channels such as those described in U.S. Patent No. 5,200,248 issued to Thompson, et al. on April 6, 1993), absorbent foams (such as those described in U.S. Patent No. 5,260,345, issued to DesMarais, et al. on November 9, 1993 and U.S. Patent No. 5,268,244 issued to DesMarais, et al. on December 7, 1993), ther-

mally bonded airlaid materials (such as those material described in U.S. Patent Application Serial No. 08/141,156, entitled "Catamenial Absorbent Structures Having Thermally Bonded Layers For Improved Handling of Menstrual Fluids and Their Use In Catamenial Pads Having Improved Fit and Comfort" filed in the name of Richards, et al. on October 21, 1993), absorbent sponges, synthetic staple fibres, polymeric fibres, hydrogel-forming polymer gelling agents, peat moss, or any equivalent materials or combinations of materials. Suitable absorbent cores comprising foams are described in European Applications 0 598 833, 0 598 823 and 0 598 834.

In the embodiment illustrated in FIGS. 1 to 3, the substantially non expanding absorbent element 44 of the absorbent core 28 comprises an absorbent layer 30 made of a thermally bonded airlaid material longitudinally folded twice on itself and comprising particles 32 of absorbent gelling material therebetween.

As shown in FIGS. 1 and 2 the absorbent core 28 comprises an expanding layer 46 having a predetermined profile in Z-direction in the dry state prior to use for expanding the sanitary napkin 20 into the desired tridimensional structure while the sanitary napkin 20 is being worn. In an embodiment illustrated in FIGS. 1 to 3 the expansion and the final shaping of the sanitary napkin 20 into the tridimensional structure is provided by the swelling, substantially in Z-direction, and into a predetermined wet profile, of the material that constitutes the expanding layer 46 and that is activated during wear by the absorption of body fluids.

The expanding layer 46 can comprise any material that is capable of such swelling in order to shape the sanitary napkin 20 into the desired tridimensional structure.

After the absorption of body fluids and the subsequent swelling into the predetermined wet profile, the material of the expanding layer 46 must be soft, compliant, conformable and resilient. It must be compressible such that it will deform under the relatively small forces that are experienced during normal use. In addition to be compressible, the material of the expanding layer 46 must be flexible and conformable after swelling so it can provide improved fit through the topsheet 24 into and around the wearer's labia and perineum when the tridimensional structure is formed during the wearing time. The ability to follow the topography of the anatomy will provide intimate contact with the exposed genitalia of the female user. This helps provide better fluid transfer from the user into the expanding layer 46. While these characteristics of the expanding layer 46 allow for improved fit, they also cause the product to be both soft and comfortable for the wearer.

It is preferred that the expanding layer 46 forms at least part of the body facing surface of the absorbent core 28. In the embodiment illustrated in FIGS. 1 and 2 the expanding layer 46 is positioned over the absorbent element 44, in face to face relationship with it; it is rec-



tangular and preferably narrower and shorter than the absorbent element 44, as illustrated in FIG. 1, being centered about both the longitudinal and transverse centrelines O-O and A-A. As an alternative, different shapes are also possible for the expanding layer 46, e.g. an hourglass shape.

The expanding layer 46 of the absorbent core 28 has a body facing surface and a garment facing surface, and has a predetermined profile in Z-direction in the dry state prior to use.

The predetermined profile of the expanding layer 46 can be formed either by the body facing surface or by the garment facing surface of the expanding layer 46, or by both of them; in other words either of the facing surfaces of the expanding layer 46 can be profiled, i.e. not planar or not parallel to each other. Preferably the predetermined profile is formed only by the body facing surface of the expanding layer 46.

The predetermined profile in the expanding layer 46 is preferably provided by means of varying thicknesses of the expanding layer 46; the thickness of the expanding layer 46 can vary either in lateral direction, as illustrated in FIGS. 2, 4a, 4b, and 5, or in longitudinal direction, or in both. When the expansion of the expanding layer 46 into the predetermined wet profile takes place during the use of the sanitary napkin 20, substantially in Z-direction and upon activation by absorbed body fluids, it substantially occurs according to the predetermined profile of the expanding layer 46, that is to say, thicker zones of the expanding layer 46 will tend to swell in Z-direction more than thinner zones, after full uniform activation of the expanding layer by body fluids, i.e., after the expanding layer 46 has been completely activated by absorbed body fluids.

The thickness of the expanding layer 46 is therefore not constant throughout the whole surface of the expanding layer 46 itself prior to use, but varies to create said predetermined profile. The predetermined profile must be such that the expanding layer 46, upon activation by absorption of body fluids during the wearing time, expands substantially in Z-direction into said predetermined wet profile in order to shape the sanitary napkin 20 into a tridimensional structure that more closely conforms to the anatomy of the user.

By carefully choosing the predetermined profile of the expanding layer 46 it is possible to have an expanding structure for the sanitary napkin 20 that is not only capable of achieving a closer conformability to the user's anatomy, but that can also provide a quicker reaction to the activation by the first, and possibly small, amount of body fluid that is absorbed. This can be explained since, in addition to the self-conforming capabilities of the material itself that constitutes the expanding layer 46, the swelling of the expanding layer 46 can occur according to a profile that already exist in the structure of the expanding layer 46.

Moreover, the expanding layer 46 with the predetermined profile can show a better ability to form, upon

activation by body fluids, more complex body conforming tridimensional structures, for example those having both a convex and a concave upward configuration, such as W-shapes or inverted W-shapes, as seen in lateral direction.

Preferably, the expanding layer 46 also provides the sanitary napkin 20 of the present invention with a better capability of conforming to the user's anatomy during the use and before activation by body fluids, owing to the predetermined profile that exists in the expanding layer 46 even before any swelling has taken place, and that can provide a closer body contact, while the sanitary napkin 20 is preferably substantially flat prior to use and thin at least until the activation by body fluids.

Preferred predetermined profiles of the expanding layer 46 are those that cause the expanding layer 46, upon activation by body fluids, to expand into the predetermined wet profile itself in order to more closely conform to the user's anatomy. Suitable predetermined profiles of the expanding layer 46 are those illustrated in FIGS. 2 and 5 in which the expanding layer 46 has a predetermined profile, as seen in lateral direction, such that the expanding layer is thicker along the longitudinal axis O-O, and is thinner at its longitudinal side margins; this type of predetermined profile provides the article during the use, upon activation by body fluids, and, to a lesser extent, even before said activation, with a substantially convex upward configuration. Other alternative predetermined profiles can be those illustrated in FIGS. 4a and 4b, which are capable of providing, upon activation by body fluids, W-shaped and inverted W-shaped profiles respectively, as seen in lateral direction.

Particularly, the expanding layer 46 shown in FIG. 4b can expand, upon activation by body fluids, into a predetermined wet profile that provides a sanitary article with a type of longitudinal barriers that can be beneficial for the prevention of side leakage.

Predetermined profiles for an expanding layer 46, as seen in lateral direction, need not be constant along the longitudinal centreline O-O; they can therefore vary along said longitudinal centreline O-O in order to better match the user's anatomy that typically varies from the front portion of the pudendal region, back to the perineum and to the buttocks.

The expanding layer 46 can be provided with the predetermined profile by means of any known method. The expanding layer 46 can be therefore constituted by a single layer featuring the desired predetermined profile, achieved by e.g. carving a thicker layer, or by moulding one according to the preferred profile. Alternatively, the expanding layer 46 can comprise multiple thinner layers having different shapes and dimensions, superimposed and joined to each other in order to form an expanding layer 46 with the desired profile.

The expanding layer 46 has preferably a uniform density, even though different densities can be provided in different zones of the expanding layer 46.

The behaviour of a sanitary napkin 20 comprising

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The following information is provided for the purpose of assisting the user in the selection of the appropriate software for their needs. The information is provided for informational purposes only and is not intended to be a substitute for professional advice. The user should consult with a qualified professional for more information.

1. The first step in the process of creating a new product is to identify a market need. This involves conducting market research to determine what consumers want and what problems they are trying to solve. Once a need is identified, the next step is to develop a concept that addresses this need. This concept should be unique, feasible, and profitable. The third step is to create a prototype of the product. This allows the designer to test the concept and make any necessary adjustments. The fourth step is to conduct a feasibility study. This involves assessing the technical, financial, and market viability of the product. The final step is to develop a business plan. This plan should outline the marketing, sales, and distribution strategies for the product, as well as the financial projections and funding requirements.

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1. The first step in the process of developing a business plan is to conduct a thorough market research. This involves identifying the target market, understanding their needs and preferences, and analyzing the competitive landscape. Market research can be conducted through various methods, including surveys, interviews, and focus groups.

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1. The first step in the process of developing a new product is to identify a market need. This involves conducting market research to determine what consumers want and need. Once a market need is identified, the next step is to develop a concept for a product that meets this need. This concept should be based on the market research and should be feasible and profitable. The third step is to develop a business plan for the product. This plan should outline the marketing strategy, the production process, and the financial projections. Once the business plan is complete, the next step is to secure financing for the product. This can be done through a variety of sources, including banks, venture capitalists, and crowdfunding. Finally, the product is developed and launched into the market. This involves manufacturing the product, distributing it, and promoting it to consumers. The product is then monitored to ensure it is meeting market needs and is profitable.

1. The first step in the process of the development of a new product is the identification of a market need. This is often done through market research, which can be conducted in a number of ways. One way is to conduct a survey of potential customers, asking them about their needs and preferences. Another way is to observe the behavior of potential customers in a retail environment. A third way is to analyze the data from existing products in the market. Once a market need has been identified, the next step is to develop a concept for a new product that meets this need. This is often done through brainstorming sessions with a team of designers and engineers. The concept is then refined through a series of iterations, with each iteration involving a new design and a new set of prototypes. Once a final design has been developed, the next step is to create a prototype of the product. This is often done using a 3D printer or a CNC machine. The prototype is then used to test the product's functionality and to gather feedback from potential customers. Finally, the product is manufactured in a large-scale production run, and is distributed to the market.

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an expanding layer 46 with a predetermined profile is shown in FIGS. 2 and 3 in which the sanitary napkin 20 is illustrated before and after expansion of the expanding layer 46, respectively. FIG. 2 shows the sanitary napkin 20 before the first fluid absorption, with the expanding layer 46 having its predetermined profile prior to swelling. FIG. 3 shows the sanitary napkin 20 expanded into a tridimensional structure after activation of the expanding layer 46 upon absorption of a first amount of body fluid received approximately into the centre of the expanding layer 46. The first release of fluid is rapidly acquired within the expanding layer 46 and causes it to swell in Z-direction increasing its thickness, as can be seen in FIG. 3, into the predetermined wet profile. In the preferred embodiment illustrated in FIG. 3 the topsheet 24 follows the swelling of the expanding layer 46 by straightening out the pleats or folds 52, therefore without restraining the swelling.

The swelling of the expanding layer 46 upon activation by body fluids and according to the predetermined profile gives the sanitary napkin 20 an increased capacity of conforming rapidly and effectively to the user's anatomy.

As an alternate embodiment the expanding layer 46 with the predetermined profile can further comprise, on at least its body facing surface or its garment facing surface, incisions as described in European application EP 96106724.6, or apertures as described in European application EP 96106723.8, or any combination thereof, as e.g. described in European application EP 96110575.6, all applications having the same priority date of 29 April 1996.

According to further alternate embodiments the expanding layer 46 with the predetermined profile can comprise a number of smaller elements that are decoupled from one another and are also coplanar, as described in European patent application EP 96110576.4, or a number of smaller expanding elements decoupled from one another and each being capable of expanding substantially in only one direction, as described in European patent application EP 96110572.3, both applications filed on 1 July 1996.

In a preferred embodiment of the present invention the expanding layer 46 comprises a sheet of compressed regenerated cellulose sponge.

The regenerated cellulose sponge that preferably constitutes the expanding layer 46 is a material that is known in the art; examples of suitable materials are described in U.S. Patent No. 3,954,493, in French Patent Application FR-A-2,203,827, and in European Patent EP-B-0 293 208. The regenerated cellulose sponge is a sponge of a material containing a cellulose skeleton. Examples of such sponges include, in addition to sponges consisting of cellulose itself, sponges consisting of a cellulose derivative as viscose, a cellulose ether and a cellulose ester, and sponges consisting of mixtures of those materials.

By way of example only, a regenerated cellulose

sponge may be prepared from a mixture of a viscose solution with reinforcing fibres and a porogenic compound, e.g. crystals of sodium sulphate decahydrate or of another alkali metal salt with a high content of crystallized water, the final pore dimension being related to that of the salt crystals. The viscose solution may be extruded through an extrusion die of the desired section, then let coagulate. The material is washed with water after regeneration in order to eliminate the salt and other possible soluble compounds, then it is dried and, if necessary, compressed to the desired density.

The compressed regenerated cellulose sponge has a network structure that contains air bubbles created by the elimination of the sodium sulphate crystals.

The compressed regenerated cellulose sponge material is available in various forms, e.g. in layers or sheets of different densities, thicknesses and basis weights; dry densities values for the compressed material used in the present invention are from 0.1 g/cc to 1 g/cc, while thicknesses can range from 0.2 mm to 5 mm.

The swelling upon liquid absorption of the compressed regenerated cellulose sponge material that forms the expanding layer 46 creates a void volume that does not collapse in wet conditions and therefore enables the material to rapidly acquire further releases of fluid and to transmit them to the underlying absorbent element 44 of the absorbent core 28.

In the embodiment illustrated in FIGS. 1 to 3 the total absorbent capacity of the sanitary napkin 20 is provided for by an absorbent core 28 that comprises and expanding layer 46 made of a sheet of compressed regenerated cellulose sponge having a predetermined profile in its dry state before use, and a substantially non expanding absorbent element 44.

In a preferred embodiment of the present invention, which is illustrated in FIGS. 1 and 2, the absorbent core 28 comprises an expanding layer 46 constituted by a sheet of compressed regenerated cellulose sponge with a dry density of 0.5 g/cc; the expanding layer 46 comprises in its dry state prior to use a predetermined profile along a direction that is parallel to the transverse centreline A-A, while it has no such profile in a direction parallel to the longitudinal centreline O-O. Accordingly, the expanding layer 46 has a maximum thickness of 3 mm along its longitudinal centreline O-O, which slopes towards both longitudinal side margins where a thickness of 1 mm is reached. The expanding layer 46 is positioned above the absorbent core 28 in face to face relationship with it. The absorbent layer 30 is 207 mm long and 64 mm wide, and the sheet 46 of compressed regenerated cellulose sponge is 125 mm long and 30 mm wide, being centered about both longitudinal and transverse centrelines O-O and A-A of the sanitary napkin 20. Suitable sheets of compressed regenerated cellulose sponge may be those produced by Spontex France.

The compressed regenerated cellulose sponge sheet that preferably constitutes the expanding layer 46

10. The following information is available for the year ended 31/12/2014:

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is capable of absorbing body fluids quickly with a large increase in its volume, generally from about 2 to 20 times, and usually from 5 to 15 times its volume at the time of the compression. The volume increase substantially corresponds to a swelling in the direction of the compression, that is in the Z-direction in the sanitary napkin 20, into the predetermined wet profile of the expanding layer 46.

The sanitary napkin 20 is produced and packaged as a conventional, substantially flat product, as illustrated in FIGS. 1 and 2. After the sanitary napkin 20 has been worn, as soon as the absorbed body fluids come in contact with the expanding layer 46, this will begin to swell in Z-direction increasing its thickness according to the predetermined profile, as can be seen in FIG. 3; the swelling is therefore more pronounced along the longitudinal centreline O-O of the sanitary napkin 20, in order to more closely conform to the user's anatomy, namely to the groove between the labia majora. The topsheet 24 follows the swelling of the expanding layer 46 by straightening out the pleats or folds 52, therefore increasing its width without restraining the swelling.

The swelling of the compressed regenerated cellulose sponge sheet that constitutes the expanding layer 46 takes place only upon activation by the absorbed fluid, that is only during the use of the sanitary napkin 20 and in close contact with the user's anatomy; the formation of the tridimensional structure can therefore achieve a much better fit with the anatomy of the user, in combination with the preferential swelling into the predetermined wet profile in the expanding layer 46. Moreover, the swelling of the compressed regenerated cellulose sponge sheet 46 may start where it is actually reached by the fluid first, for example at different positions along the longitudinal centreline O-O; the formation of the tridimensional structure may also fit, therefore, the different possible ways in which the body fluids may be released by various users.

The expanding topsheet 24 also provides a comfortable contact with the user's anatomy, without restraining the expansion of the sanitary napkin 20 into the desired tridimensional structure upon activation by body fluids.

The sanitary napkin of the present invention is preferably substantially flat prior to use, and can be therefore manufactured and packaged more easily than a conventional elasticated or pre-formed article. Since the tridimensional structure is formed only during the use, the sanitary napkin of the present invention is also easier to wear. The predetermined profile in the expanding layer 46 does not affect these features of the sanitary napkin 20 and can indeed increase the self conforming capability of the sanitary napkin 20 during the use in the period of time before the activation by body fluids and the subsequent swelling of the expanding layer 46.

The expanding layer 46 for expanding the sanitary napkin 20 into a tridimensional structure during wear may be comprised in the sanitary napkin 20 in any other

suitable position and/or orientation in order to get the desired tridimensional structure, in particular, the expanding layer 46 can form at least part of the garment facing surface of the absorbent core 28.

Whenever desired, any component of the absorbent article 20 can comprise a single layer or, alternatively, multiple layers joined or affixed together to form the component itself.

In an alternate embodiment of the present invention, the sanitary napkin 20 may have two flaps (not shown), 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 wearer's thighs. The flaps serve at least two purposes. First, the flaps help serve 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 facing 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 may be constructed of various materials including materials used for the topsheet 24, backsheet 26, combinations thereof, and may be a laminate having tissue in the centre. Further, the flaps may be a separate element attached to the main body of the sanitary napkin 20 or can comprise extensions of the topsheet 24 and/or backsheet 26. It is recommended, however, that the flaps have a liquid impervious backsheet to prevent body fluids which reach the flaps from soiling the edges of the wearer's panties.

Preferred flaps that are suitable or adaptable to the sanitary napkin 20 of the present invention are disclosed in U.S. Pat. No. 4,687,478 issued to Van Tilburg on Aug. 18, 1987; U.S. Pat. No. 4,589,876 issued to Van Tilburg on May 20, 1986; and U.S. Pat. No. 4,608,047 issued to Mattingly on Aug. 26, 1986.

Optionally, the sanitary napkin 20 may comprise components that naturally wrap the sides of a wearer's panties. Sanitary napkins having components that naturally wrap the sides of a wearer's panties suitable for use with the sanitary napkin 20 of the present invention are disclosed in U.S. Patent Application Serial No. 08/096,121 entitled "Absorbent Article having Panty Covering Components that Naturally Wrap the Sides of Panties", filed July 22, 1993, in the names of Lavash, et al and U.S. Patent Application Serial No. 08/277733 entitled "Absorbent Articles Having Undergarment Covering Components with Zones of Extensibility", filed July 20, 1994, in the names of Weinberger, et al.

An optional component that can be included in the sanitary napkin 20 of the present invention is an odour control means; any suitable odour control means can be incorporated in the sanitary napkin of the present inven-

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1. The first step is to identify the problem. In this case, the problem is that the  
 2. data is not being processed correctly. The second step is to analyze the data.  
 3. The third step is to develop a solution. The fourth step is to implement the solution.  
 4. The fifth step is to evaluate the results. The sixth step is to document the process.

and the fact that the model is not a good fit for the data. The model is not a good fit for the data because the data is not normally distributed. The data is skewed to the right, which means that there are a few high values that are pulling the mean up. This is why the mean is higher than the median. The median is a better measure of central tendency for this type of data.