

Drigard & Castro

Abogados

182
172

SUPERINDUSTRIA Y COMERCIO
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Trámite: 002 PATENTES y 1 REGISTRO 500 PETICION
Dependencia: 2020 DIVISION DE NUEVAS CREACIONES

AS: 84.044

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Señores

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

E. S. D.

REF.: Expediente No. 00 097.170 solicitud de Patente a nombre de
KIMBERLY – CLARK WORLDWIDE, INC.

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

De acuerdo con lo anterior, me permito anexar el recibo oficial de caja No. 02-58,837 por valor de \$318.000.

Señor Superintendente,



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

Septiembre 06, 2002
CPB/hsr

SUPERINDUSTRIA Y COMERCIO

Radicacion : 00097170 00000003 Folios: 2

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Trámite : 002 PATENTES D 1 REGISTRO/ 538 PETICION

Dependencia: 2020 DIVISION DE NUEVAS CREACIONES

NIT : 800176089-2

RECIBO OFICIAL DE CAJA : 02 - 38,837
FECHA : SEPTIEMBRE 4 DE 2002

***** CONSIGNACION *****

DEPOSITANTE	TIPO PAGO	BANCO	CUENTA	No. PAGO	FECHA PAGO	Vr. PAGO
BRIBARD & CASTRO LTDA	CONSIGNACION	BANCO POPULAR	030-00110-6	5163771	04/09/2002	1,390,000.00

***** CONCEPTO *****

CANT.	RENTISTICO	CONCEPTO	TOTAL CONCEPTO
1	30005-01-01 SOLICITUDES	85 EXAMEN DE PATENTABILIDAD DE INVEN	318,000.00
		TOTAL :	318,000.00

SON: TRESCIENTOS DIEZ Y OCHO MIL PESOS

RESPONSABLE : 

RECIBO DE CAJA APLICADO AL EXPEDIENTE No. _____

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

2020

Bogotá D.C., Octubre 26 de 2005

Doctor

RAMIRO CASTRO DUQUE

Apoderado **KIMBERLY – CLARK WORLDWIDE, INC.**

ASUNTO Radicación 00-97170
 Trámite 002
 Evento 001
 Actuación 430
 Oficio
 Folios 013

10305

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 5 a 28 del expediente correspondiente a la solicitud en estudio, tal como fue radicado al inicio del trámite.
- B. Se tuvieron en cuenta los dibujos de los folios 44 a 46.
- C. El capítulo reivindicatorio tomado en cuenta para el presente estudio comprende 32 reivindicaciones y se encuentra en los folios 29 a 34, 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 21 de diciembre de 2000, en el momento de la radicación se reclamó prioridad. Las copias certificadas de la solicitud cuya prioridad fue reivindicada (US 60/171,998 de 1999-12-23 y US 09/729,917 de 2000-12-04) fueron allegadas a esta oficina el 21 de mayo de 2001, es decir cinco meses después de presentada la solicitud. Por haber reivindicado prioridad bajo el convenio de París el solicitante debió haber presentado las copias a más tardar tres meses después de la presentación ante esta Superintendencia. Incluso, si hubiera reivindicado prioridad acogiéndose a la decisión 486, debería haber presentado las copias certificadas 16 meses después de la fecha de la prioridad, es decir a más tardar el 21 de abril de 2001. Por estas razones, la prioridad reivindicada no puede ser tenida en cuenta.

2. Objeto de la Invención:

- A. Las reivindicaciones 1 a 32 de la solicitud en estudio se refieren a: un artículo absorbente para el cuidado personal que comprende: un material de tela no tejida; y un agente reductor colocado sobre y dentro de una porción del material de tela no tejida.
- B. El objeto de la solicitud se puede clasificar según la clasificación internacional como A 61 L 15/42.

3. Claridad de la Solicitud:

- 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"

El título de la solicitud está errado porque incluye la expresión "agentes productores" en lugar de "agentes reductores".

Las unidades de medida deben ser convertidas a unidades del Sistema Internacional.

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. Las reivindicaciones independientes no se encuentran correctamente redactadas. Por su estructura todas las reivindicaciones deben constar de dos partes. Una primera parte, el preámbulo, sirve para situar el objeto de la Invención dentro de un contexto técnico; es lo que se conoce y sobre lo cual no se reclama ningún privilegio. La segunda parte o parte característica, define lo que se considera novedoso y se desea proteger. Estas dos partes están separadas por expresiones como "caracterizado por" o similares. Deben corregirse las reivindicaciones independientes. De otra manera la materia que se desea proteger no queda correctamente definida.

ii. La primera reivindicación es ininteligible. No es clara la expresión "colocado sobre por lo menos uno de sobre y en por lo menos una parte".

iii. El capítulo reivindicatorio carece de concisión al contener más de una reivindicación independiente para la categoría de producto, la primera y la última reivindicaciones. Se debe hacer un uso adecuado de las reivindicaciones dependientes para evitar faltas de concisión.

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"

La fecha para determinar el estado de la técnica es el 21 de diciembre de 2000, sin tomar en cuenta la fecha de la prioridad reivindicada por extemporaneidad en la entrega de copias certificadas de la solicitud original.

Consultadas las bases de datos y los archivos con que cuenta la entidad, especialmente bajo las clasificaciones A 61 L 15/42, se encontró que antes del 21 de diciembre de 2000 habían sido publicados los documentos enumerados en la siguiente tabla.

No.	Documento	Título	Fecha de publicación
D1	US 4,959,060	Body Fluid-adsorbing article	1990-09-25
D2	WO 0000228	Absorbent article including a reducing agent for feces	2000-01-06

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 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 divulga un artículo para absorber fluidos del cuerpo que esté provisto de un miembro absorbente, un material fibroso o de tela no tejida. El miembro absorbente contiene un compuesto reductor. La diferencia entre D1 y el objeto de la solicitud reside en que en el primero el agente reductor está en el miembro absorbente y en el segundo en el material de tela no tejida. No parece haber un nivel inventivo en el objeto de la solicitud porque así como los autores de D1 aplicaron el agente reductor en el miembro absorbente, un técnico medio en la materia habría aplicado el agente reductor en la tela no tejida. Además, no se ha revelado ningún efecto inesperado por parte del solicitante frente a la divulgación de D1.

De la misma manera, los autores de D2 han empleado agentes reductores de la misma

naturaleza que aquellos reivindicados por el solicitante. En la reivindicación 8 del documento D2 se indica que dicho agente reductor está dispuesto en la estructura transportadora del artículo. Luego, un técnico medio habría derivado a partir de dichas enseñanzas la disposición de dicho reductor sobre el material de tela no tejida.

Por lo tanto, la solicitud en estudio no cumple con el requisito de nivel inventivo 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	US 4,959,060	1 a 32	Nivel inventivo
D2	WO 0000228	1 a 32	Nivel inventivo

Se anexa copia de las anterioridades mencionadas.

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 CESPEDES DE VERGEL
Jefe de la División de Nuevas Creaciones

El anterior requerimiento fue notificado por fijación en lista, de fecha 09 NOV. 2005.

CONCEPTO TÉCNICO Número: 1693	EXAMINADOR TÉCNICO Código: 202043
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United States Patent [19]

Shimomura et al.

[11] Patent Number: 4,959,060

[45] Date of Patent: Sep. 25, 1990

[54] BODY FLUID-ADSORBING ARTICLE

[75] Inventors: Tadao Shimomura, Toyonaka;
Nobuyuki Harada; Kazuhiko Ishizaki,
both of Suita, all of Japan

[73] Assignee: Nippon Shokubai Kagaku Kogyo Co.,
Ltd., Osaka, Japan

[21] Appl. No.: 449,456

[22] Filed: Dec. 12, 1989

Related U.S. Application Data

[63] Continuation of Ser. No. 121,275, Nov. 16, 1987, abandoned.

[30] Foreign Application Priority Data

Nov. 17, 1986 [JP] Japan 61-271963
Dec. 16, 1986 [JP] Japan 61-297317
Dec. 17, 1986 [JP] Japan 61-298986

[51] Int. Cl.³ A61F 13/00

[52] U.S. Cl. 604/368

[58] Field of Search 604/368, 358, 363, 366,
604/367, 369, 370, 374

[56] References Cited

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2914386 10/1979 Fed. Rep. of Germany .

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62-225307 10/1987 Japan .

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Primary Examiner—C. Fred Rosenbaum

Assistant Examiner—Kathleen A. Daley

Attorney, Agent, or Firm—Burns, Doane, Swecker &
Mathis

[57] ABSTRACT

A body fluid-absorbing article such as, for example, a disposable diaper is provided with at least one absorbent member comprising 50 to 99% by weight of a fibrous material and 50 to 1% by weight of an absorbent polymer, which absorbent member contains at least one compound (A) selected from the group consisting of sulfur-containing reducing agents, antioxidants, and oxidizing agents. By the action of the compound (A), the swelled gel of the absorbent polymer formed in consequence of absorption of body fluid is prevented from being deteriorated or decomposed by aging.

21 Claims, No Drawings

The sulfur-containing reducing agent which is used as the compound to be contained in the body fluid absorbent member of the present invention is not specifically restricted so long as it is a sulfur compound capable of the reaction of reduction. Examples of the sulfur-containing reducing agent include sulfides such as ammonium sulfide, sodium sulfide, potassium sulfide, and lithium sulfide; hydrosulfides such as sodium hydrosulfide; sulfur oxide compounds such as thiosulfates represented by sodium thiosulfate and potassium thiosulfate, sulfurous acid, sulfites represented by sodium sulfite and potassium sulfite, hydrogen sulfites represented by sodium hydrogen sulfite and potassium hydrogen sulfite, and dithionites represented by hydrosulfite; and mercaptans such as mercaptoethanol, cysteine, and alkyl mercaptans represented by methyl mercaptan, ethyl mercaptan, propyl mercaptan and butyl mercaptan.

The antioxidant to be used as the compound (A) in the present invention is not specifically restricted. Examples of the antioxidant include water-soluble antioxidants such as citric acid, pyrogallol, 1,1-bis(4-hydroxyphenyl)-cyclohexane, hydroquinone, 8-naphthol, and ethyl gallate; phenol type antioxidants such as 2,6-di-*t*-butyl-*p*-cresol and butylated hydroxyanisole; sulfur-containing antioxidants such as thiourea dioxide and dialkyl thiodipropionate; and phosphorus-containing antioxidants such as triphenyl phosphite.

Examples of the oxidizing agent to be used as the compound (A) in the present invention include peroxides such as hydrogen peroxide, sodium peroxide, and barium peroxide; halogens such as fluorine, chlorine, bromine, and iodine; metal salts such as ferric chloride, cupric sulfate, cupric chloride, cupric acetate, and lead (II) acetate; metal oxides such as potassium permanganate, potassium chromate, potassium dichromate, and osmium tetroxide; halogen oxides such as sodium hypochlorite, potassium hypochlorite, sodium chlorite, chlorine dioxide, chloramine T, bleaching powder, perchloric acid, sodium perchlorate, periodic acid, sodium periodate, and potassium periodate; and quinones such as *p*-benzoquinone.

Among the examples of the compound (A) cited above, sulfur-containing reducing agents which are highly effective in preventing the swelled gel of the absorbent polymer formed by absorption of body fluid from being deteriorated with time prove to be particularly desirable.

In the present invention, the compound (A) is desired to be contained in the body fluid absorbent member in an amount in the range of 0.05 to 20 parts by weight, preferably 0.1 to 10 parts by weight, based on 100 parts by weight of the absorbent polymer. If the amount of the compound (A) is less than 0.05 part by weight, it is not enough for the compound (A) to manifest any substantial effect in preventing the swelled gel of the absorbent polymer from being deteriorated with time. If the amount exceeds 20 parts by weight, the excess does not produce any proportionate addition to the effect but rather goes to decreasing the capacity of the absorbent member for absorbing the body fluid. Any deviation from the aforementioned range is not desirable.

The body fluid-absorbing article of the present invention is formed by incorporating the aforementioned compound (A) in at least one body fluid absorbent member which consists of 50 to 99% by weight, preferably 60 to 90% by weight, of a fibrous material and 50 to 1% by weight, preferably 40 to 10% by weight, of an absorbent polymer. The present invention does not

discriminate the body fluid-absorbing article on account of the shape of the absorbent member or the condition of distribution of the components in the absorbent member. It can be produced, therefore, by using any of the conventional methods adaptable for the fabrication of an absorbent polymer in an absorbent member prepared in any form such as sheet or film which is convenient for the manufacture of a body fluid-absorbing article such as, for example, disposable diaper, sanitary napkin, or sweat pad. To be specific, the absorbent member can be obtained by having an absorbent polymer nipped between sheets of fibrous material or by mixing an absorbent polymer with ground fibrous material and subsequently molding the resultant mixture in the form of a sheet.

The means employed for the incorporation of the compound (A) in the absorbent member is not specifically restricted so long as it is capable of depositing the compound (A), preferably uniformly, in the absorbent member lest it should fall off the absorbent member. For example, this incorporation may be accomplished during the course of the manufacture of the absorbent member by simply adding the compound (A) to either of the absorbent polymer and the fibrous material such as paper or pulp which are the components of the absorbent member. This addition of the compound (A) can be attained by directly adding the compound (A) in its unmodified powdery form or by dissolving or dispersing the compound (A) in a suitable vehicle such as water or an organic solvent, spraying the resultant liquid preparation on the absorbent member or impregnating the absorbent member with the liquid preparation, and drying the wet absorbent member, when necessary, to expel the vehicle.

Examples of the method for the incorporation of the compound (A) in the body fluid-absorbent member are as follows:

- (1) A method which causes the compound (A) to be incorporated in the absorbent member after the pattern of sandwich by preparing a mixture of an absorbent polymer with the compound (A) in a powdered form and having the mixture interposed in the form of layer between at least two sheets of the fibrous material.
- (2) A method which causes the compound (A) to be homogeneously incorporated throughout the absorbent member by preparing a mixture of the absorbent polymer, the compound (A) in a powdered form, and short-staple fibers as a fibrous material and air molding the mixture in the form of sheet.
- (3) A method which causes the compound (A) to be contained in layers in the absorbent member by spraying a solution or dispersion of the compound (A) on the absorbent polymer then drying the wet absorbent polymer, when necessary, thereby producing a composite having the compound (A) deposited on the absorbent polymer, and then having this composite interposed between at least two sheets of the fibrous material.
- (4) A method which causes the compound (A) to be uniformly contained in the absorbent member by spraying a solution or dispersion of the compound (A) on the absorbent polymer, then drying the wet absorbent polymer, when necessary, thereby producing a composite having the compound (A) deposited on the absorbent polymer, mixing the composite with short-staple fibers as the fibrous material, and air laying the resultant mixture in the form of sheet.

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130

CONTROL 3

A body fluid-absorbing article (3) for comparison was obtained by following the procedure of Example 15, excepting 1.5 g of the same absorbent polymer (a product marketed under trademark designation of "AQUA-LICK CA") as used in Example 1 was used in the place of 1.5 g of the absorbent (8) of Example 15.

The body fluid-absorbing article (3) for comparison was tested for the ability to hold the absorbed adult urine and for the degree of deterioration of the absorbent polymer by following the procedure of Example 15. The results are shown in Table 2.

EXAMPLE 16

A granular absorbent (9) was obtained by mixing 100 parts of the same absorbent polymer as used in Example 1 with 3 parts of an aqueous 35% hydrogen peroxide solution by spraying.

A body fluid-absorbing article (16) was obtained by following the procedure of Example 15, excepting the absorbent (9) was used in the place of the absorbent (8) of Example 15.

The body fluid-absorbing article (16) was tested for the ability to hold the absorbed adult urine and for the degree of deterioration of the absorbent polymer by following the procedure of Example 15. The results are shown in Table 2.

EXAMPLE 17

An absorbent (10) was obtained by mixing 100 parts of the same absorbent polymer as used in Example 1 with 1 part of ethyl gallate.

A body fluid-absorbing article (17) was obtained by following the procedure of Example 15, excepting the absorbent (10) was used in the place of the absorbent (8) of Example 15.

The body fluid-absorbing article (17) was tested for the ability to hold the absorbed adult urine and for the degree of deterioration of the absorbent polymer by following the procedure of Example 15. The results are shown in Table 2.

EXAMPLE 18

An absorbent member was obtained by spray mixing 100 parts of ground pulp with 5 parts of an aqueous 20% sodium hydrogen sulfite, drying the resultant mixture at 80° C. for 2 hours thereby producing ground pulp having a sulfur-containing reducing agent deposited thereon, mixing 8 g of the ground pulp with 1.5 g of the same absorbent polymer as used in Example 15 in a current of air, then air molding the resultant mixture in the same manner as in Example 15, and compressing the resultant sheet-like web with an embossing roller to a density of 0.07 g/cm³.

A body fluid-absorbing article (18) was obtained by wrapping the absorbent member with tissue paper and interposing the wrapped absorbent member between one polyethylene film and one polypropylene spun-bond non-woven fabric.

The body fluid-absorbing article (18) was tested for the ability to hold the absorbed adult urine and for the degree of deterioration of the absorbent polymer by following the procedure of Example 15. The results are shown in Table 2.

EXAMPLE 19

An absorbent member was obtained by uniformly scattering 1.5 g of the absorbent (1) obtained in Exam-

ple 1 between two sheets of tissue paper 190 mm×140 mm in area, pressing the resultant composite with an embossing roller thereby producing an absorbent polymer sheet (1), and superposing two sheets of ground pulp 190 mm×140 mm in area (having a basis weight of 130 g/m² and a density of 0.1 g/cm³) one each on the opposite sides of the polymer sheet (1).

A body fluid-absorbing article (19) was obtained by interposing the absorbent member between one polyethylene film and one polypropylene spun-bond non-woven fabric.

The body fluid-absorbing article (19) was tested for the ability to hold the absorbed adult urine and for the degree of deterioration of the absorbent polymer by following the procedure of Example 15. The results are shown in Table 2.

EXAMPLE 20

Two sheets of tissue paper 190 mm×140 mm in area (having a basis weight of 20 g/m²) was immersed in an aqueous 0.5% sodium sulfite solution and then dried at 80° C. under a vacuum to produce two sheets of tissue paper having a sulfur-containing reducing agent deposited thereon. The amount of sodium sulfite deposited thereon, determined on the basis of one of the immersed sheets of tissue paper, was found to be 0.02 g. An absorbent polymer sheet (2) was obtained by scattering 1.5 g of the same absorbent polymer as used in Example 1 between the two sheets of tissue paper and then compressing the resultant composite with an embossing roller. An absorbent member was obtained by interposing this polymer sheet (2) between two sheets of ground pulp 190 mm×140 mm in area (having a basis weight of 130 g/m² and a density of 0.1 g/cm³).

A body fluid-absorbing article (20) was obtained by interposing the absorbent member between one polyethylene film and one polypropylene spun-bond non-woven fabric.

The body fluid-absorbing article (20) was tested for the ability to hold the absorbed adult urine and for the degree of deterioration of the absorbent polymer by following the procedure of Example 15. The results are shown in Table 2.

TABLE 2

Body fluid-absorbing article	Amount of adult urine absorbed out (g)	Degree of deterioration of absorbent polymer (Note 1)
Example 15 Article (15)	2.7	O
Control 3 Article (3) for comparison	10.1	X
Example 16 Article (16)	6.7	A
Example 17 Article (17)	1.5	A
Example 18 Article (18)	1.2	O
Example 19 Article (19)	1.5	O
Example 20 Article (20)	2.9	O

(Note 1)

O: Perfectly retained shape of swelled gel.

A: Partially broken shape of swelled gel.

X: Totally broken shape of swelled gel into slurry state.

What is claimed is:

1. A body fluid-absorbing article comprising at least one absorbent member which forms a swelled gel when a body fluid is absorbed, comprising 50 to 99% by weight of a fibrous material and 50 to 1% by weight of an absorbent polymer, wherein said absorbent polymer is at least one member selected from the group consisting of hydrolyzed starch-acrylonitrile graft polymer,

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partially neutralized starch-acrylic acid graft polymer, saponified vinyl acetate-acrylic ester copolymer, hydrolyzed acrylonitrile copolymers, cross-linked hydrolyzed acrylonitrile copolymers, hydrolyzed acrylamide copolymers, cross-linked hydrolyzed acrylamide copolymers, partially neutralized polyacrylic acid, cross-linked partially neutralized polyacrylic acid, and isobutylene-maleic anhydride copolymer, said absorbent member containing at least one species compound (A) selected from the group consisting of sulfur-containing reducing agents, antioxidants, and oxidizing agents, wherein said sulfur-containing reducing agent is at least one member selected from the group consisting of thiosulfates, sulfurous acid, sulfites, hydrogen sulfites dithionites, hydrosulfides, and mercaptans, and said compound (A) being present in a physical mixture with said absorbent polymer in an amount capable of preventing the swelled gel of the absorbent polymer from being deteriorated or decomposed with an elapse of time.

2. An article according to claim 1, wherein said compound (A) is contained in said absorbent member in a ratio falling in the range of 0.05 to 20 parts by weight, based on 100 parts by weight of said absorbent polymer.

3. An article according to claim 1, wherein said compound (A) contains a sulfur-containing reducing agent as an essential component.

4. An article according to claim 3, wherein said compound (A) is a sulfur-containing reducing agent.

5. An article according to claim 4, wherein said sulfur-containing reducing agent is at least one member selected from the group consisting of thiosulfates, sulfites, hydrogen sulfites, and mercaptans.

6. An article according to claim 1, wherein said fibrous material is a cellulosic fiber material.

7. An article according to claim 1, wherein said absorbent polymer is a cross-linked partially neutralized polyacrylic acid.

8. An article according to claim 1, wherein said absorbent polymer and said compound (A) are in the form of a powder mixture interposed between at least two sheets of said fibrous material after the pattern of a sandwich.

9. An article according to claim 1, wherein said absorbent member is an air-molded mixture of said absorbent polymer with said compound (A) in the form of a powder and said fibrous material in the form of short-staple fibers, said absorbent member being in the form of a sheet.

10. An article according to claim 1, wherein said absorbent member is a composite having said compound (A) deposited on said absorbent polymer, said

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composite being interposed between at least two sheets of said fibrous material after the pattern of a sandwich.

11. An article according to claim 1, wherein said absorbent member is an air molded mixture of a composite having said compound (A) deposited on said absorbent polymer and said fibrous material in the form of short-staple fibers, the air molded mixture being in the form of a sheet containing said compound (A) in a uniformly distributed state.

12. An article according to claim 1, wherein said absorbent member comprises at least two sheets of said fibrous material having said compound (A) deposited on said sheets, said absorbent polymer being interposed between said two sheets after the pattern of a sandwich.

13. An article according to claim 1, wherein said absorbent member is an air molded mixture of a composite having said compound (A) deposited on said fibrous material in the form of short-staple fibers and an absorbent polymer said air molded mixture being in the form of a sheet containing said compounds (A) in a uniformly distributed state.

14. An article according to claim 1, wherein said absorbent member comprises at least two sheets of said fibrous material having said compound (A) deposited on said two sheets and said absorbent polymer interposed between said two sheets of said fibrous material after the pattern of a sandwich.

15. An article according to claims 10, 11, 12, 13 or 14, wherein said compound (A) is used in the form of an aqueous solution.

16. An article according to claims 8, 10, 12, or 14, wherein said sheets of fibrous material are made of at least one member selected from the group consisting of ground pulp and tissue paper.

17. An article according to claims 9, 11 or 13, wherein said fibrous material in the form of short-staple fibers is ground pulp.

18. An article according to claim 1, wherein said absorbent member is interposed between a back sheet impervious to body fluid and a top sheet pervious to body fluid.

19. An article according to claim 1, which is a disposable diaper.

20. An article according to claim 1, wherein said absorbent polymer is used in an amount falling in the range of 40 to 10% by weight, based on 60 to 90% by weight of said fibrous material.

21. An article according to claim 1, wherein said compound (A) is contained in said absorbent member in an amount falling in the range of 0.1 to 10 parts by weight, based on 100 parts by weight of said absorbent polymer

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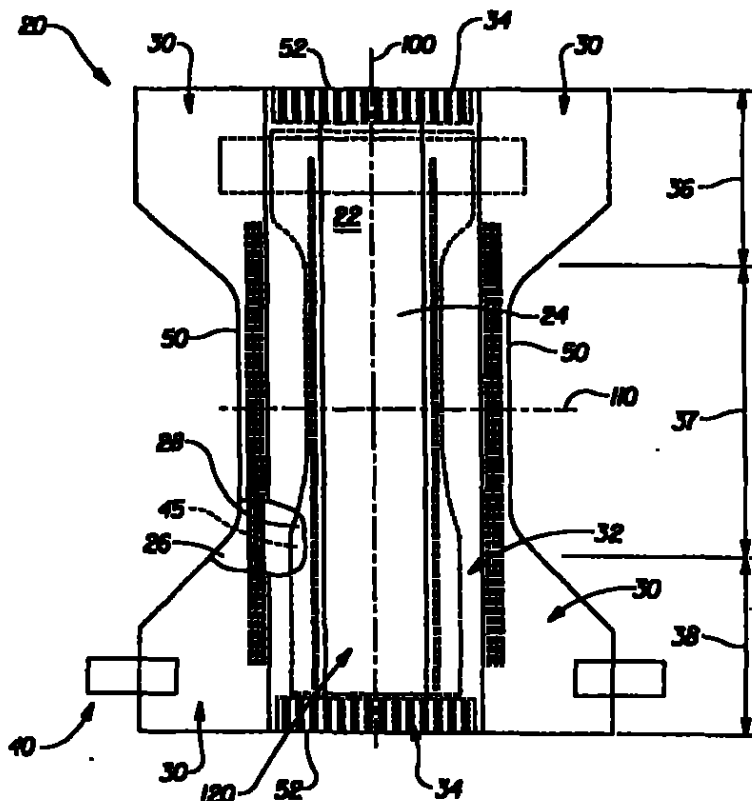
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(54) Title: ABSORBENT ARTICLE INCLUDING A REDUCING AGENT FOR FECES

(57) Abstract

An absorbent article adapted to receive feces having a first waist region, a second waist region opposed to the first waist region, a crotch region disposed between the first waist region and the second waist region, the absorbent article comprising: a liquid pervious topsheet; a liquid impervious backsheet joined to at least a portion of the topsheet; an absorbent core disposed between at least a portion of the topsheet and the backsheet, and an effective amount of a feces reducing agent disposed in the article such that the reducing agent is available to contact at least a portion of the feces deposited in the article.



structure, and dewatered and/or immobilized once it has sufficiently penetrated the structure.

Feces Modifying Agents which act to decrease the viscosity of feces as described above include, but are not limited to, reducing agents. For example, agents that reduce disulfide bonds (-S-S-bonds) as found in colonic mucous (colonic mucous generally comprises macromolecular glycoproteins linked by disulfide bonds) can effect a significant viscosity reduction in feces having high mucous content. While not wishing to be bound by theory, it is believed that reduction of the mucin disulfide bonds (which function as crosslinks between mucin polymer chains) significantly reduces the average molecular weight of the glycoprotein structure in feces such as runny feces to a level well below the "gel point" of the mucin (i.e., long-distance structure becomes impossible due to the relatively small size of the glycoproteins). Exemplary reducing agents include sulfites such as sodium hydrogensulphite, sodium sulfite and sodium dithionite, thiols and thiol alcohols (e.g., 2-mercaptoethanol, dithiothreitol, and dithioerythritol), mercaptoacetic acid, sodium thioglycolate, thiolactic acid, thioglycoamide, glycerol monothioglycolate, borohydrides (e.g., sodium borohydride), ternary amines, thiocyanates such as sodium thiocyanate, thiosulfates such as sodium thiosulfate, cyanides such as sodium cyanide, thiophosphates such as sodium thiophosphate, arsenites such as sodium arsenite, phosphines such as triphenyl phosphine, phenols such as thiophenol and p-nitrophenol, betaines, and others including, but not limited to, lithium aluminumhydride, aluminum chloride, guanidine hydrochloride, stannous chloride, hydroxylamine, and $\text{LiHB}(\text{C}_2\text{H}_5)_3$.

Viscosity reduction performance of a representative reducing agent (mixed with a fecal analog and actual feces as described in the Sample Preparation Method in the Test Methods section below) is illustrated in the data in Table III.

TABLE III

<u>Feces</u> <u>/Fecal</u> <u>Analog</u>	<u>Reducing Agent</u>	<u>Concentration</u> <u>(wt. %)</u>	<u>Treated</u> <u>Feces/Fecal</u> <u>Analog Hardness</u>	<u>% Change in</u> <u>Hardness</u>
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the article as an individual discrete element (e.g., as a fibrous batt or layer within or attached to the article) or may be held in or on a carrier vehicle, such as a lotion or skin care composition (described below), a web, or may be releasably encapsulated in a packet, cell, or envelope structure.

5 In embodiments wherein the FMA is delivered via a skin care composition, it may be soluble in the skin care composition or may be held in suspension or as a simple mixture. Larger FMA particles (e.g., preferably greater than about 250 microns in largest dimension) may be at least partially embedded in or held adhesively by the skin care composition. Some exemplary materials useful in the skin care compositions which may
10 be used in embodiments of the present invention include Category I actives as defined by the U.S. Federal Food and Drug Administration's (FDA) Tentative Final Monograph on Skin Protectant Drug Products for Over-the-Counter Human Use, which presently include: allantoin, aluminum hydroxide gel, calamine, cocoa butter, dimethicone, cod liver oil (in combination), glycerine, kaolin, petrolatum, lanolin, mineral oil, shark liver
15 oil, white petrolatum, talc, topical starch, zinc acetate, zinc carbonate, zinc oxide, and the like. Other potentially useful materials are Category III actives as defined by the U.S. Federal Food and Drug Administration's Tentative Final Monograph on Skin Protectant Drug Products for Over-the-Counter Human Use tentative final monograph on skin protectant drug products for over-the-counter human use, which presently include: live
20 yeast cell derivatives, aldioxa, aluminum acetate, microporous cellulose, cholecalciferol, colloidal oatmeal, cysteine hydrochloride, dexpanthanol, Peruvian balsam oil, protein hydrolysates, racemethionine, sodium bicarbonate, Vitamin A, and the like. Many of the FDA monographed skin care ingredients are currently utilized in commercially available skin care products, such as A and D® Ointment, VASELINE® Petroleum Jelly,
25 DESITIN® Diaper Rash Ointment and Daily Care Ointment, GOLD BOND® Medicated Baby Powder, AQUAPHOR® Healing Ointment, BABY MAGIC® Baby Lotion, JOHNSON'S ULTRA SENSITIVE® Baby Cream, Johnson's baby lotion, lip balms, etc. Other suitable skin care compositions are described in detail in U.S. Patent No. 5,643,588,

What is claimed is:

1. A disposable article adapted to be applied to a wearer's perianal region for receiving feces, the article comprising:

a substrate;

a means for holding the substrate in contact with the wearer perianal region; and

an effective amount of a reducing agent disposed in the article such that the reducing agent is available to contact at least a portion of the feces deposited in the article.

2. An absorbent article adapted to receive feces having a first waist region, a second waist region opposed to the first waist region, a crotch region disposed between the first waist region and the second waist region, the absorbent article comprising:

a liquid pervious topsheet;

a liquid impervious backsheet joined to at least a portion of the topsheet;

an absorbent core disposed between at least a portion of the topsheet and the backsheet, and

an effective amount of a reducing agent disposed in the article such that the reducing agent is available to contact at least a portion of the feces deposited in the article.

3. The absorbent article of any of the preceding claims wherein the reducing agent is selected from the group consisting of: sulfites, thiols, thiol alcohols, mercaptoacetic acid, sodium thioglycolate, thiolactic acid,

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thioglycoamide, glycerol monothioglycolate, borohydrides, ternary amines, thiocyanates, thiosulfates, cyanides, thiophosphates, arsenites, phosphines, phenols, betaines, lithium aluminumhydride, aluminum chloride, guanidine hydrochloride, stannous chloride, hydroxylamine, and $\text{LiHB}(\text{C}_2\text{H}_5)_3$.

4. The absorbent article of any of the preceding claims wherein the reducing agent decreases the viscosity of the feces.
5. The absorbent article of any of the preceding claims wherein the reducing agent decreases the Hardness of the feces reduction by at least about 25% at a concentration of no more than about 5 weight percent, preferably no more than about 1.5 weight percent and more preferably no more than about 0.5 weight percent.
6. The absorbent article of Claim 5 wherein the decrease in Hardness takes place in no more than about 5 minutes, preferably no more than about 3 minutes.
7. The absorbent article of any of the preceding claims wherein the reducing agent is present in a concentration of greater than or equal to about 0.01% by weight of the article.
8. The absorbent article of any of the preceding claims wherein the reducing agent is disposed on a carrier structure.
9. The absorbent article of any of the preceding claims wherein the carrier structure includes a skin care composition, a web or a brush structure.