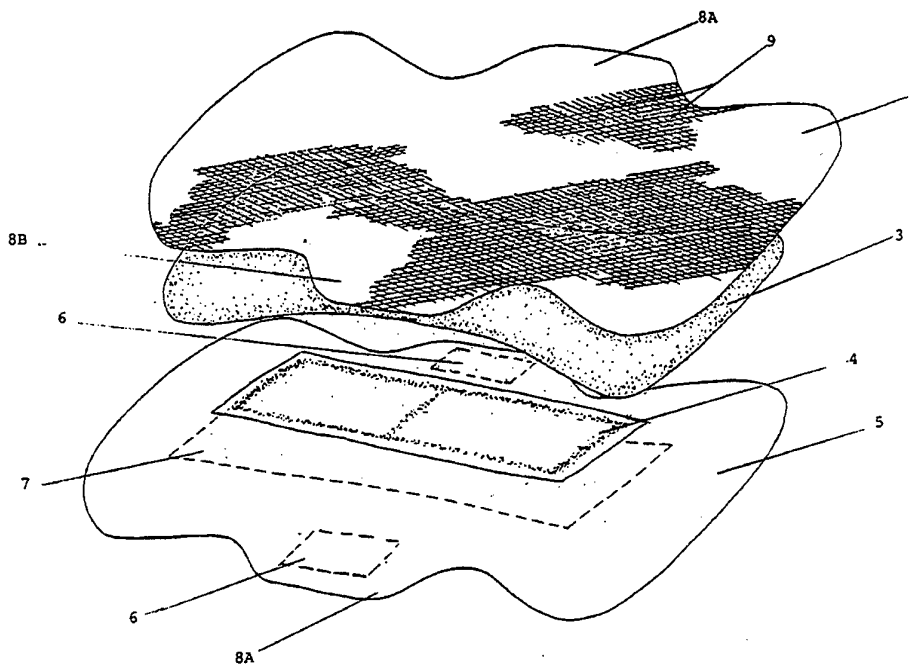




## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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<p>(21) International Application Number: PCT/US94/03327</p> <p>(22) International Filing Date: 28 March 1994 (28.03.94)</p> <p>(30) Priority Data: PI 9301708 30 April 1993 (30.04.93) BR</p> <p>(71) Applicant (for all designated States except US): MCNEIL-PPC, INC. [US/US]; Van Liew Avenue, Milltown, NJ 08850 (US).</p> <p>(72) Inventor; and (75) Inventor/Applicant (for US only): COSTA, Rogerio [BR/BR]; Rua Coronel Jose Vicente, 485, 12600-Lorena, SP (BR).</p> <p>(74) Agents: CIAMPORCERO, Audley, A., Jr. et al.; Johnson &amp; Johnson, One Johnson and Johnson Plaza, New Brunswick, NJ 08933 (US).</p>	<p>(81) Designated States: AT, AU, BB, BG, BY, CA, CH, CN, CZ, DE, DK, ES, FI, GB, GE, HU, JP, KG, KP, KR, KZ, LK, LU, LV, MD, MG, MN, MW, NL, NO, NZ, PL, PT, RO, RU, SD, SE, SI, SK, TJ, TT, UA, US, UZ, VN, European patent (AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG).</p> <p><b>Published</b> With international search report.</p>	

(54) Title: FEMININE SANITARY NAPKIN



## (57) Abstract

A feminine sanitary napkin is presented (1), for external use, thin and flexible but with a high capacity of menstrual flow absorption, allowing it to be used even by women with a heavy menstrual flow. Said sanitary napkin (1) looks initially as a thick pad, looking reliable to the eye as regards its absorption capacity, but it becomes a thin, flexible pad when worn. This is achieved by means of a device made-up of an air or gas retention bag (5) - soluble upon contact with aqueous liquids, such as urine, blood, vaginal exudates, sweat, and others - placed below the absorbent layer (3) of the sanitary napkin (1).

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-1-

"FEMININE SANITARY NAPKIN"

GROUND'S FOR THE INVENTION

Scope of invention

5           This invention regards a feminine sanitary napkin, for external use, and more specifically a thin, flexible, feminine sanitary napkin, with a high degree of absorption capacity and making users, particularly those with a heavy menstrual flow, feel comfortable, secure and self-confident.

10                           Description of the former technique employed  
              Various types of absorbent products, for external use, have been known for a long time as designed to absorb bodily fluids, such as menstrual flow, urine and faeces.

15   As a rule, external use sanitary absorbent pads, such as sanitary napkins for absorption of menstrual flow, are classified according to their absorption capacity. Those designed for absorption of a heavy menstrual flow are generally thick and bulky, as

20

opposed to those for absorption of a reduced menstrual flow which are thin, more flexible, and generally more comfortable than those designed for a heavier flow absorption.

5           The disadvantage of thick and bulky sanitary napkins, which are adequate for absorption of a heavy menstrual flow, is that they are obtrusive, preventing use of long pants or tight bermudas, or even swimsuits. Moreover, sanitary napkins of this type are subject to  
10 the pressure of user's thighs, starting from the side borders and towards the central part, causing leakage, mainly through the lateral borders, and staining  
panties, thus causing an uncomfortable feeling

          The development of highly absorbent products  
15 allowed for manufacture of feminine sanitary napkins, for external use, which were very thin by also with a high absorption capacity, capable of being worn even by women with a heavy menstrual flow.

          Even so, manufacturers of external use  
20 sanitary napkins found that consumers with a heavy menstrual flow do not trust thin sanitary napkins, not even those with an excellent absorption capacity. In spite of the disadvantages of the thick and bulky absorbents they continue to be chosen by consumers.

25           It is therefore desirable to develop a feminine sanitary napkin that would combine a visual

appearance of a thick absorbent -- making user feel safe as regards its absorption capacity --, with the quality of actually being a thin, flexible sanitary napkin, with a high degree of absorption of menstrual flow -- allowing it to be used even by those women with a heavy menstrual flow, moreover providing users with a feeling of comfort and security.

Thus the purpose of this invention is to present a sanitary napkin for external use that shows itself, before use, as a thick sanitary napkin and that upon intake of the first menstrual flow becomes a thin sanitary napkin. In this manner, it eliminates the inconveniences and disadvantages of sanitary napkins employing the former technique.

Above mentioned objectives are achieved by a new sanitary napkin that has an air bag soluble upon contact with aqueous liquids. This bag, in a preferred mode, is placed under the absorbing layer. In an alternative mode of the invention it also has lateral wings that fully embrace users' underpants, lengthwise, thus avoiding that the pad may roll up or be displaced, so as to avoid side leakage.

#### Summary of the invention

According to this invention, a feminine sanitary napkin is presented, for external use, preferably provided with a very thin layer of absorbent

material that offers a high degree of absorption and a bag capable of retaining air or gas but which is soluble when in contact with aqueous liquids, such as urine, blood, vaginal exudates, sweat and others.

5           The purpose of the air bag is to make the sanitary napkin look thicker and, consequently, safer. However, this characteristic of actual thickness is undesirable, since thick sanitary napkins are uncomfortable and present various disadvantages, as  
10 above mentioned.

So, the air bag makes the sanitary napkin look thicker but only temporarily, since the bag dissolves itself upon its contact with the first menstrual flow and the sanitary napkin becomes a thin  
15 sanitary napkin, with the advantages of this type of absorbent pad.

Besides the advantages of a thin, flexible sanitary napkin, the sanitary napkin subject matter of this invention may also, in an alternative mode of this  
20 invention, include side wings that embrace the full length of external sides of users' underpants, thus avoiding any possibility of side leakage.

Brief description of drawings

For a better understanding of the detailed  
25 description hereinafter contained of the invention in

-5-

its preferred mode, please refer also to the enclosed drawings, where:

Figure 1 is a top view of the sanitary napkin subject matter of this invention; and

5 Figure 2 is an exploded view illustrating the various layers of the sanitary napkin subject matter of this invention.

Detailed description of the preferred mode

10 Figures 1 and 2 illustrate the sanitary napkin (1) subject matter of this invention, which includes a permeable sheet of the top coating (2), an absorbent material layer (3), an air retention bag (4), an impermeable lining as underneath coating (5) and self-sticking parts (6,7) located in the lower part of  
15 the impermeable coating (5).

According to an alternative mode of this invention, the sanitary napkin (1) may further include a second layer of absorbent material (not shown in said Figures).

20 The sanitary napkin (1) of this invention also included two side wings (8A, 8B) which are integrated to the top coating sheet and the lining of the underneath coating (2,5). The purpose of said wings is to enfold lengthwise the internal sides of users'  
25 underpants, to avoid side leakage.

-6-

The permeable sheet of the top coating (2) may be of a permeable or impermeable material, made of fabric, or non fabric material, foam, plastic or others, as long as it permits the flowing through of liquids and, preferably, it may be made of an impermeable plastic film with small orifices (9) through all of its surface, allowing the menstrual flow to pass through, towards the absorbent layer (3). These small orifices (9) are somewhat conical, which makes the inflow easier and an outflow more difficult, thus avoiding any contact of menstrual flow with user's body.

The absorbent layer (3) may be, for instance, made of paper with a high content of super-absorbent polymer.

For the highest absorption level, two further absorbent layers may also be used, with the first layer preferably possessing a higher horizontal spreading capacity, allowing for a more homogeneous distribution of the liquid matter along the sanitary napkin and reducing any risk of leakage.

Thus the absorbent layer (3) or the absorbent layers may be made of any liquid absorbent material among those well known in the area, capable of absorbing and retaining the menstrual flow. These absorbent materials include crushed wooden pulp,



-7-

absorbent foams, synthetic fibers, polymeric fibers, gelatinizing agents of hydrogel forming polymer, and others. The absorbent layer may have any shape.

However, in a preferred mode, the absorbent layer (3)

5 may have a rectangular shape, gradually decreasing sideways towards the average point measured on a line alongside the longitudinal length, and with curved ends, which gives it a bone shape. This shape permits a better adjustment between user's thighs.

10 The air bag (4) may be placed anywhere between the top coating sheet (2) and the impermeable lining of the underneath coating (5). In the case of using a single absorbent layer, the bag (4) may be placed on top of or below said layer. But according to

15 the preferred mode, the bag (4) is placed beneath the absorbent material. This bag (4) has the capacity to retain air or gas that help eliminating or disguising odors, that means, flower fragrance impregnated air or

20 any gas that is capable of neutralizing the menstrual blood smell. However, this bag (4) is soluble upon contact with aqueous liquids, such as urine, blood, vaginal exudates, sweat and others. This bag (4) may be made of any materials such as polyvinyl alcohol, starch

25 film with a high amylose content, plastified films of ethylene polyoxide, plastified films of polyvinyl pyrrolidone, any combination of them and any other

water-soluble materials. The gas or air retention bag (4) may be manufactured in any size or shape, it may be single or multiple, that means, a set of small interconnected bubbles, but in the preferred mode it follows approximately the shapes and dimensions of the absorbent layer (3).

The impermeable lining of the underneath coating (5) may be of plastic material and must present the same pattern as the top coating permeable sheet (2), that means, a rectangular shape with rounded corners and two wings (8A, 8B) which are also rounded and that extend out from the side portions. After the sanitary napkin (1) is assembled, according to the correct order of absorbent layer (3) or layers and air retention bag (4), the top coating sheet (2) is fixed, through hot pressure, to the impermeable lining of the underneath coating (5), alongside all of the external limits.

The impermeable lining (5) further presents self-sticking parts or adhesive strips (6,7) alongside its longitudinal extension and on its side wings (8A, 8B), in order to hold the sanitary napkin (1) fixed to user's underpants.

It may thus be noted that this invention introduces a fine, flexible sanitary napkin (1), which may even be used by women with a heavy menstrual flow

and that it further presents characteristics of reliability as regards the absorption capacity of the product, without hampering its characteristics of comfort, unobtrusiveness, and others.

5           Once one specific mode of this invention has been described and illustrated for understanding purposes, it must be clear to all those skilled in the area to which it relates that many variations and modifications may be made and added, without however  
10           evading the scope of the invention, as defined in enclosed claims.

-10-

WHAT IS CLAIMED IS

1. Feminine sanitary napkin, for external use, including:

- a top coating sheet (2);
- 5 - an absorbent material layer with liquid (3); and
- an impermeable lining as underneath coating (5),

distinguished by the fact that includes, as  
10 an addition, at least one inside bag (4) for retention of air or gas, made of a material that is soluble when in contact with aqueous liquids.

2. Sanitary napkin, pursuant to claim 1, distinguished by the fact that the air or gas retained  
15 within the retention bag (4) may include flower essence impregnated air or a gas for neutralizing menstrual blood odors.

3. Sanitary napkin, pursuant to claim 1, distinguished by the fact that materials that are  
20 soluble upon contact with aqueous liquids include polyvinyl alcohol, starch films with a high amylose

-11-

content, plastified films of ethylene polyoxide, plastified films of polyvinyl pyrrolidone, any combination of them and any other water-soluble materials.

5           4. A sanitary napkin, pursuant to claim 1 or 3, distinguished by the fact that the aqueous liquids include blood, urine, vaginal exudates, sweat and others.

10           5. Sanitary napkin, pursuant to claim 1, distinguished by the fact that it also presents two wings (8A, 8B) which extend themselves from the side portions of said napkin (1) and which are built in an integral manner into the body of the sanitary napkin (1) itself.

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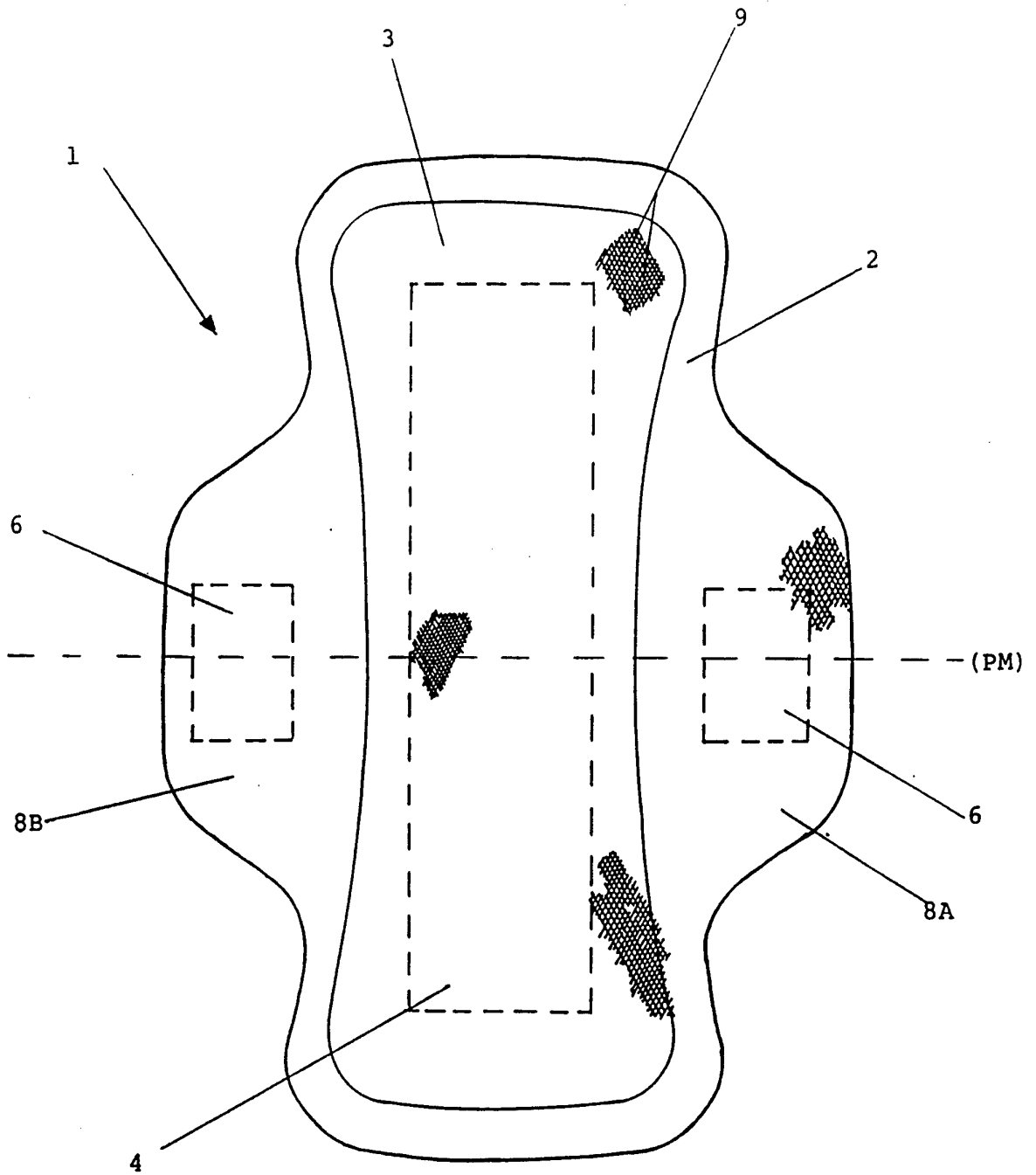


FIG. 1

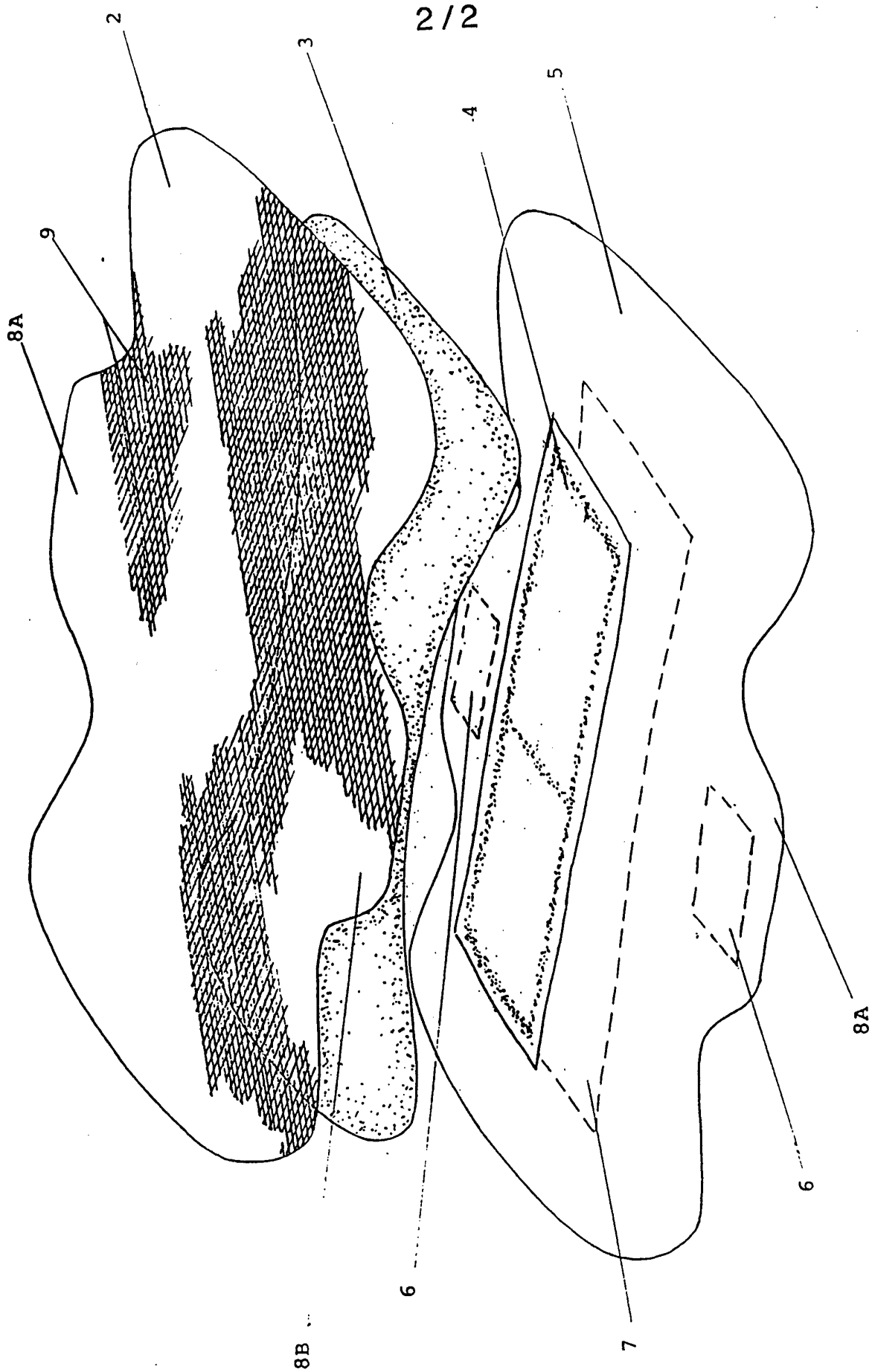


FIG. 2

INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US94/03327

<b>A. CLASSIFICATION OF SUBJECT MATTER</b> IPC(5) :A61F 13/15, 13/20 US CL :604/364 According to International Patent Classification (IPC) or to both national classification and IPC		
<b>B. FIELDS SEARCHED</b> Minimum documentation searched (classification system followed by classification symbols) U.S. : 604/358-360, 363, 364, 385.1 Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched NONE Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) NONE		
<b>C. DOCUMENTS CONSIDERED TO BE RELEVANT</b>		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US, A, 2,940,449, (L. G. THOMPSON), 14 June 1960. See figures.	1-5
A	US, A, 3,490,454, (A. GODFARB ET AL.), 20 January 1970. See Fig. 3 and detailed description.	1-5
A	US, A, 3,691,271, (CHARLE ET AL.), 12 September 1972. See the Abstract.	1-5
A	US, A, 4,911,701, (MAVINKURVE), 27 March 1990. See figures and Abstract.	5
<input type="checkbox"/> Further documents are listed in the continuation of Box C. <input type="checkbox"/> See patent family annex.		
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Name and mailing address of the ISA/US Commissioner of Patents and Trademarks Box PCT Washington, D.C. 20231 Facsimile No. (703) 305-3230		Authorized officer <i>Allen M. Zuttarelli</i> FOR P. ZUTTARELLI Telephone No. (703) 305-3055