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APPROVED FOR THE ACTS 3
ALLOWED..... 3.490

PATENT APPLICATION FORM
COMMONWEALTH OF AUSTRALIA

59 6708
Regulation 9

Patents Act 1952

We, DARLINGTON FABRICS CORPORATION

of 1359 Broadway, New York, New York 10018, U.S.A.

hereby apply for the grant of a Standard Patent for an invention
entitled ~~AN IMPROVED ARTICLE~~ ~~UNDER~~ PROTECTIVE UNDERGARMENT FOR
RETENTION OF BODY FLUIDS
which is described in the accompanying complete specification.

For a Convention application - details of basic application-

<u>Number</u>	<u>Country</u>	<u>Date of Application</u>
152,182	U.S.A.	4 February 1988

Our address for service is ARTHUR S. CAVE & CO., Patent and Trade
Mark Attorneys, Level 10, 10 Barrack Street, Sydney, New South
Wales, Australia 2000.

Dated this 6th day of February, 1989.

DARLINGTON FABRICS
CORPORATION
By Its Patent Attorneys,
ARTHUR S. CAVE & CO.

J.G. Siely
J.G. SIELY F.I.P.A.A.

To:
Commissioner of Patents

ARTHUR S. CAVE & CO.
PATENT AND TRADE MARK ATTORNEYS
SYDNEY



CONVENTION APPLICATION BY A COMPANY

FORM 8 - REGULATION 12 (2)

AUSTRALIA PATENTS ACT 1952

DECLARATION IN SUPPORT OF A CONVENTION APPLICATION FOR A PATENT

(a) Here insert (in full) Name of Company.

In support of the Convention Application made by (a) DARLINGTON FABRICS CORPORATION

(b) Here insert Title of Invention.

(hereinafter referred to as "Applicant") for a patent for an invention entitled: (b) PROTECTIVE UNDERGARMENT FOR RETENTION OF BODY FLUIDS

(c) and (d) Here insert Full Name and Address of Company Official authorised to make declaration.

I, (c) [Signature] of (d) 1359 Broadway, New York, New York

do solemnly and sincerely declare as follows:

1. I am authorised by Applicant to make this declaration on its behalf.

(e) Here insert Basic Country followed by date of Basic Application.

2. The basic Application(s) as defined by section 141 of the Act was / were made in (e) UNITED STATES on the 4th day of FEBRUARY 1988

(f) Here insert Full Name(s) of Applicant(s) in Basic Country.

by (f) LEONARD J. RAUTENBERG

in on the day of 19

by

in on the day of 19

by

in on the day of 19

by

(g) Here insert (in full) Name and Address of actual inventor or inventors.

3. (g) LEONARD J. RAUTENBERG, residing at West Creek Farms Road, Sands Point, New York 11050, U.S.A.

is/are the actual inventor(s) of the invention and the facts upon which Applicant is entitled to make the Application are as follows:

See reverse side of this form for guidance in completing this part.

By virtue of Assignment dated 29 February 1988, from the actual inventor to the Applicant company.

4. The basic Application(s) referred to in paragraph 2 of this Declaration was/were the first Application(s) made in a Convention country in respect of the invention, the subject of the Application.

DECLARED at New York

this 29th day of December 1988

(h) Personal Signature of Declarant (c) (no seal, witness or legalisation).

(h)

[Signature]

(12) PATENT ABRIDGMENT **(11) Document No. AU-B-29661/89**
(19) AUSTRALIAN PATENT OFFICE **(10) Acceptance No. 598708**

(54) Title
NAPPY

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(57) Claim

1. A re-usable garment to be worn on the lower part of the body for the retention of body fluids, comprising:

a body portion of a breathable, elastic, fiber-containing material and a crotch portion; said body portion having a waist opening and said body portion and crotch portion forming leg openings, said crotch portion being sewn to said body portion; and

said crotch portion being liquid-proof, breathable and elastic for the retention of body fluids and including a laminated fabric having a liquid-proof, breathable, elastic thermoplastic film inner layer and a breathable, stretch, fiber-containing material outer layer having substantial elastic qualities, said film of said film layer being a polymer film having a thickness less than 1.0 mil and having elastic qualities comparable to said stretch material; and an adhesive bonding said film layer to said layer of stretch material, said adhesive being present in substantially discontinuous segments; the material of said ^{body} portion and the material of said crotch portion outer layer being substantially similar so as to provide a uniform outer appearance of the garment similar to that of a conventional undergarment.

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AUSTRALIA

PATENTS ACT 1952

COMPLETE SPECIFICATION

(ORIGINAL)

FOR OFFICE USE

Application Number:
Lodged:

Complete Specification Lodged:
Accepted:
Published:

This document contains the
amendments made under
Section 19 and is correct for
printing

Priority:
Related Art:

TO BE COMPLETED BY APPLICANT

Name of Applicant: DARLINGTON FABRICS CORPORATION
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AUSTRALIA

Complete Specification for the invention entitled AN IMPROVED
ARTICLE — PROTECTIVE UNDERGARMENT FOR RETENTION OF BODY FLUIDS

The following statement is a full description of this invention
including the best method of performing it known to me:-



FIELD OF THE INVENTION

The present invention relates to protective undergarments and, more particularly, to an undergarment which incorporates a liquid-proof or liquid-resistant crotch portion.

BACKGROUND OF THE PRESENT INVENTION

Incontinence is a condition of particularly sensitive nature, but should not be a debilitating one. Using a hypothetically perfect optimal garment, the incontinent individual should be able to function normally, comfortably and without constant worry about embarrassing leakage of urine. Garments currently on the market which attempt to solve this problem lack some crucial aspect of comfort-retention balance, namely, they do not afford optimal liquid-retention and comfort to the wearer.

The comfort of the optimal incontinent undergarment includes four aspects: good fit, elasticity, breathability and discreetness. A well-fitting elastic undergarment will stretch adequately to accommodate to the wearer comfortably, yet it clings to the skin sufficiently to maintain fluid retention. Elasticity makes movement easier and more comfortable to the wearer, as well as minimizing garment shifting during significant movement. Breathability indicates a water-vapor transmitting garment enabling the user's body moisture to escape (but at the same time affording protection against escape of liquid if the garment is liquid-proof), as well as promoting hygiene by keeping the crotch area dry. Discreetness is assured by the softness and drape which renders it silent as opposed to a plastic diaper or

~~or~~ non-woven paper diaper which is audible when the user moves. Further, in this regard, the nearer the garment appears outwardly to be an ordinary undergarment (i.e., a woman's elastic brief or panties, for example), the more appealing and discreet the garment is.

The retentive aspect of the optimal incontinent undergarment includes: snugness, liquid penetration-resistance, and adaptability to use with an absorbent crotch pad or pads. Because prior garments of this type were not well fitting, they were not well adapted for use for the related purpose as a retainer of absorbent pads for women's menstrual flow.

Garments on the market typically have one or two of the above features, however, there are none having all of the features required for an optimum protective garment.

It is accordingly an object of the present invention to provide an undergarment, specifically, one to be worn on the lower body for retention of body fluids which is comfortable, well fitting and discreet.

It is also an object of the present invention to provide such an undergarment for retention of body fluids which is liquid-proof, elastic and breathable.

It is another object of the present invention to provide an undergarment for retention of body fluids which is snug, liquid-resistant or liquid-proof and adapted to be used with an absorbent crotch shield.



It is a further object of the present invention to provide an undergarment for retention of body fluids which is durable and does not have a tendency to deteriorate during ordinary use, including machine washing and drying.

It is yet another object of the present invention to provide an undergarment which will accept disposable absorbent shields for women's menstrual flow.

It is to be understood that the terms "stretch" and "elastic" are used interchangeably in this specification.

SUMMARY OF THE INVENTION

~~In accordance with the invention, a garment is to be worn on the lower part of the body for the retention of body fluids, comprises a body portion and a crotch portion. The body portion has a waist opening and the body portion and crotch portion form leg openings. Means are disposed, at least in the crotch portion, for the retention of body fluids. The means are liquid-proof, breathable and elastic.~~

In one form of the invention, the means includes a laminated fabric, the fabric including a liquid-proof, breathable stretch thermoplastic film layer and a breathable elastic fiber-containing material layer. The film layer is disposed inside the garment when the garment is worn.

For a better understanding of the present invention, reference is made to the following description and accompanying drawings, while the scope of the present invention will be pointed out in the appended claims.



In accordance with the invention, there is provided a re-usable garment to be worn on the lower part of the body for the retention of body fluids, which comprises:

a body portion of a breathable, elastic, fiber-containing material and a crotch portion; said body portion having a waist opening and said body portion and crotch portion forming leg openings, said crotch portion being sewn to said body portion; and

said crotch portion being liquid-proof, breathable and elastic for the retention of body fluids and including a laminated fabric having a liquid-proof, breathable, elastic thermoplastic film inner layer and a breathable, stretch, fiber-containing material outer layer having substantial elastic qualities, said film of said film layer being a polymer film having a thickness less than 1.0 mil and having elastic qualities comparable to said stretch material; and an adhesive bonding said film layer to said layer of stretch material, said adhesive being present in substantially discontinuous segments; the material of said ^{body} portion and the material of said crotch portion outer layer being substantially similar so as to provide a uniform outer appearance of the garment similar to that of a conventional undergarment.

The invention, in its preferred features, will now be detailedly described with reference to the accompanying illustrative drawings. In the drawings:



~~BRIEF DESCRIPTION OF THE DRAWINGS~~

In the drawings:

Figure 1 represents a frontal view of a undergarment in accordance with the invention;

Figure 2 illustrates an absorptive pad for use with the undergarment of Fig. 1;

Figure 3 illustrates a side sectional view taken along 3-3 of Fig. 1; and

Figure 4 represents a plan view of the crotch portion of the undergarment shown in Fig. 1.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring initially to Fig. 1, an undergarment is shown there, 10, with a body portion 11 and a crotch portion 12. The body portion 11 is preferably a spandex fiber-containing stretch fabric, typically knitted, while the crotch portion 12 is composed of a laminate having a fabric similar to the stretch fabric of the body portion 11 on the outside of the crotch area, while a thermoplastic stretch film 16 is disposed in the crotch area on the inside of the garment.

The undergarment contains a waist portion 15 and leg portions 13 having elastic leg bands 14 for improving the liquid retention capabilities of the garment. The waist 15 also includes an elastic band as is typical in this garment.

The garment is designed to enhance both the liquid retention capabilities of the garment, as well as the overall attractiveness. It is specially designed and constructed to provide



optimal service for use with an absorptive pad 20 as shown in Fig. 2. The key to the garment is the crotch portion 12. This is constructed especially as a laminate having an outer layer 17 made of a stretch fiber-containing material (preferably a knit material) which is bonded to a thermoplastic stretch film by a suitable adhesive. Such laminate is elastic, breathable and liquid resistant or liquid-proof. A suitable laminate is described in ^{U.S. patent No. 4,761,324,} ~~application Serial No. 068,907,~~ filed June 24, 1987, the disclosure of which is incorporated herein by reference. The laminate described in that application includes a layer of stretch material having substantial elastic qualities and a polymer film having a thickness less than 1.0 mil. The film is breathable and water-resistant and has elastic qualities comparable to the stretch material. For the garment described herein, polyurethane film having an 0.8 mil thickness is preferred.

The pad is a standard absorptive pad, such as made by a company called ICD, under the brand name "SURETYS". The crotch area is designed to accommodate the size of the pad and to allow for the best retention/comfort qualities of the garment. Figure 3 illustrates the disposition of pad 20 in the crotch area of the garment 10 when worn.

The retention capabilities of the leg band, crotch and pad system depend on the use of a properly tensioned leg band. If the leg band is not snug enough, liquid retention will not be at



an optimum level. If the band is too tight, discomfort will be caused to the wearer.

The making of the garment requires special attention in that fabrics of two different types are used in the crotch and body portions. Certain parts of the garment require shirring, particularly in the crotch area. Because of the unusual characteristics of the laminated fabric used in the crotch, special ballpoint needles must be used to prevent cutting of the laminate, maintain uniform stitch size and reduce thread breakage. The machines used in sewing the garment must be run at speeds substantially below that used in conventional manufacturing procedures.

Three different types of threads are used in the garment: (1) regular nylon thread for additional strength; (2) stretch nylon thread for stretchability as well as strength and softness; and (3) polyester thread for durability.

Further, all machine feeder plates and presser feeds must be specially Teflon[®] coated in order to join the laminated fabric of the crotch portion with the conventional nylon/spandex of the body portion.

In addition to providing the liquid retention capability to the crotch area, the film layer of the laminate also acts as a more secure place to fasten the underside of the shield, which ordinarily contains an adhesive strip (not shown). This prevents sliding of the shield when being worn.

In typical production, the garment is made in three sizes designated medium, large/extra large, and 2x/3x. The various preferred dimensions of these garments are as follows:

- (a) Leg openings: medium - 8 inches
large/extra large - 8 1/2 inches
2x/3x - 9 inches
- (b) Side seam: medium - 9 1/4 inches
large/extra large - 9 1/2 inches
2x/3x - 10 1/2 inches
- (c) Waist: medium - 11 inches
large/extra large - 12 inches
2x/3x - 13 inches

The crotch is usually the same for all three sizes. From front to back, designated "D" in Fig. 4, the preferred dimension is 11 1/4 inches; the center part, designated "C" in Fig. 4, has a preferred dimension of 5 1/2 inches, the point to point dimension on the garment, designated "A" in Fig. 4, is preferably 8 3/4 inches; for the back of the crotch, designated "B" in Fig. 4, the dimension is 10".

The garment may be constructed in various ways without departing from the invention. For example, the crotch area may be constructed with a flap which is secured by Velcro brand strips. While this variation may be inappropriate for a ladies' garment, since it may detract from the overall sleekness of the garment, it may be particularly useful in a male undergarment of this type.

While the garment is primarily intended as an incontinent garment, as has already been mentioned, it may be used with an appropriate absorbent pad for women having their menstrual flow.

Again, while the garment has been designed for incontinent persons or typically older people, it may also be worn by children who are bed wetters or have difficulty retaining their urine.

While the foregoing description and drawings represent the preferred embodiments of the present invention, it will be obvious to those skilled in the art that various changes and modifications may be made therein without departing from the true spirit and scope of the present.

The claims defining the invention are as follows:

1. A re-usable garment to be worn on the lower part of the body for the retention of body fluids, comprising:

a body portion of a breathable, elastic, fiber-containing material and a crotch portion; said body portion having a waist opening and said body portion and crotch portion forming leg openings, said crotch portion being sewn to said body portion; and

said crotch portion being liquid-proof, breathable and elastic for the retention of body fluids and including a laminated fabric having a liquid-proof, breathable, elastic thermoplastic film inner layer and a breathable, stretch, fiber-containing material outer layer having substantial elastic qualities, said film of said film layer being a polymer film having a thickness less than 1.0 mil and having elastic qualities comparable to said stretch material; and an adhesive bonding said film layer to said layer of stretch material, said adhesive being present in substantially discontinuous segments; the material of said ^{body} portion and the material of said crotch portion outer layer being substantially similar so as to provide a uniform outer appearance of the garment similar to that of a conventional undergarment.

2. A garment as claimed in claim 1, wherein said stretch fiber-containing material layer is a knitted construction.

3. A garment as claimed in claim 1, including disposable shield means inserted in said crotch area, for absorption of body fluids.

4. A garment as claimed in claim 1, including elastic bands disposed along said leg openings for securing said leg openings against a leg when the garment is worn in order to prevent leakage of body fluids through said leg openings.

5. A garment as claimed in claim 1, wherein said body portion is a stretch fabric of knitted construction.

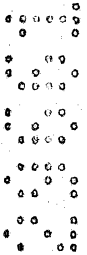
6. A garment as claimed in claim 1 and substantially as herein described with reference to any one of the accompanying drawings.

DATED this 26th day of February, 1990.

DARLINGTON FABRICS CORPORATION

By Its Patent Attorneys

ARTHUR S. CAVE & CO.



29661/89

