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NOTICE OF ENTITLEMENT

We, MOLNLYCKE AB of S-405 03, Göteborg, Sweden being the applicant in respect of Application No. 10802/95 state the following:-

The Person nominated for the grant of the patent has entitlement from the actual inventors listed on the Patent Request form by assignment.

The person nominated for the grant of the patent is the applicant of the application listed in the declaration under Article 8 of the PCT.

The basic application listed on the request form is the first application made in a Convention country in respect of the invention.

MOLNLYCKE AB
By our Patent Attorneys,
WATERMARK PATENT & TRADEMARK ATTORNEYS


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Lynn P. Stafford
Registered Patent Attorney

5 June 1997



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DISPOSABLE DIAPER HAVING ELASTICIZED LEG CUFFS
- International Patent Classification(s)
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9303748 15.11.93 SE SWEDEN
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- (56) Prior Art Documents
US 4854989
US 4718901
US 2063677
- (57) Claim

1. A disposable diaper comprising an absorbent core disposed between a facing sheet and backing sheet, said diaper having a generally hour glass shape with a narrow centrally disposed crotch portion, a front waist portion at one transverse end region of said crotch portion and a rear waist portion at the other transverse end region of said crotch portion, said waist portions being wider than said crotch portion and said waist portions being provided with fastening means for fastening the diaper around a wearer, said fastening means on said front waist portion having a predetermined width (a) and said fastening means on said rear waist portion having a predetermined width (b), said diaper further comprising prestretched elastic means disposed along longitudinal edge portions of said diaper for providing predetermined gathered and substantially non-gathered regions along said edge portions, characterized in that said elastic means extend along substantially the entire length of said longitudinal edge portions from said fastening means on said front waist portion to said fastening means on said rear waist portions, and in that the percentage ratio of the width (a) of the fastening means on said front waist portion to the width (b) of the fastening means on said rear waist portion lies between 10% and 30%.



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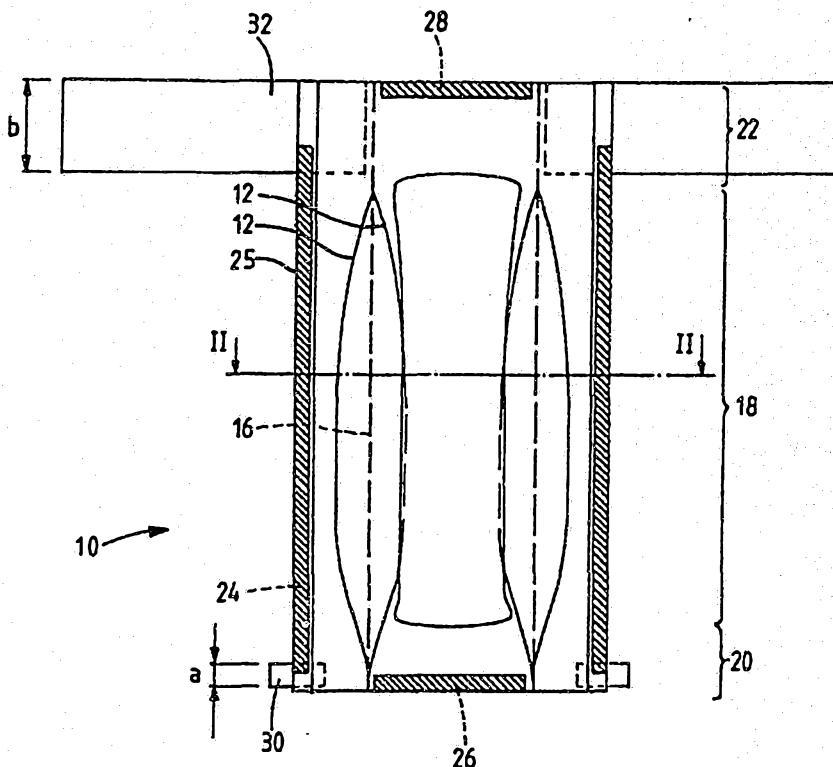
(51) International Patent Classification ⁶ : A61F 13/15 // 13/56		A1	(11) International Publication Number: WO 95/13772
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680966

(54) Title: DISPOSABLE DIAPER HAVING ELASTICIZED LEG CUFFS

(57) Abstract

A disposable diaper (10) is disclosed in which the elastic (24) which provides elasticized leg cuffs extends along substantially the entire length of each of the longitudinal edge portions (25) of the diaper between fastening means (30, 32) on front and rear waist portions (20, 22 resp.) for fastening the diaper around a wearer.



P22088.31PCT AH

1995-09-01

TITLE: Disposable diaper having elasticized leg cuffs

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TECHNICAL FIELD:

The present invention relates to a disposable diaper
~~having elasticized leg cuffs .~~
~~according to the preamble of claim 1.~~

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BACKGROUND OF THE INVENTION:

For reasons of comfort and fit, it is nowadays common to provide diapers in different sizes. For example, infants' diapers are available in a certain range of sizes including newborn, toddler, etc. For adults suffering from
15 incontinence, due to the large disparity in the size of adults as well as the various absorption requirements placed on the diapers, a wide range of different sized diapers is required. In terms of cost-effectiveness, it is optimal to have a single size which conforms to most
20 adults.

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In order to reduce the risk of leakage, it is known to provide diapers with elasticized leg cuffs. Typical of such diapers are those disclosed in US-A-4 437 860, US-A-4 486 192, GB-B-2 143 115, US-A-4050462, SE-B-446939 and GB-A-2063677. In these known diapers, the elastic ribbon in the elasticized leg cuffs extends along each longitudinal edge portion of the diaper in the vicinity of the crotch portion of the diaper. At either end of the crotch portion, wider waist portions are provided within which the elastic ribbon terminates at a distance from the longitudinal edge portion of the diaper. Fastening means such as hook-and-loop fasteners are provided at the longitudinal edge portions of the waist portions for fastening the diaper around the
35 wearer.



AMENDED SHEET

SUMMARY OF THE INVENTION:

It is an object of the present invention to provide a disposable diaper which may be comfortably worn by persons of differing size.

This object is achieved in accordance with the present invention by a disposable diaper comprising an absorbent core disposed between a facing sheet and backing sheet, said diaper having a generally hour glass shape with a narrow centrally disposed crotch portion, a front waist portion at one transverse end region of said crotch portion and a rear waist portion at the other transverse end region of said crotch portion, said waist portions being wider than said crotch portion and said waist portions being provided with fastening means for fastening the diaper around a wearer, said fastening means on said front waist portion having a predetermined width (a) and said fastening means on said rear waist portion having a predetermined width (b), said diaper further comprising prestretched elastic means disposed along longitudinal edge portions of said diaper for providing predetermined gathered and substantially non-gathered regions along said edge portions, characterized in that said elastic means extend along substantially the entire length of said longitudinal edge portions from said fastening means on said front waist portion to said fastening means on said rear waist portions, and in that the percentage ratio of the width (a) of the fastening means on said front waist portion to the width (b) of the fastening means on said rear waist portion lies between 10% and 30%.

Preferred embodiments of the present invention are detailed in the dependent claims.

BRIEF DESCRIPTION OF THE DRAWINGS:

The invention will be described in greater detail in the following by way of example only and with reference to the attached drawings, in which:



Fig.1 is a plan view of an absorbent article in accordance with the present invention having elasticized leg cuffs, the article being illustrated during a stage of the manufacturing process, and

5 Fig.2 is a partial sectional perspective view taken substantially along the line II-II of Fig. 1, though with the article in a finished condition.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS:

In the drawing, an absorbent article in the form of a disposable diaper is
 10 generally denoted by reference numeral 10. For reasons of clarity, the diaper 10 is shown in Fig. 1 in a stage occupied by the diaper during its manufacture. Accordingly, reference numeral 12 denotes joining lines, for example glue lines or heat bonding lines, about which the diaper is gathered in a manner known per se to form a pair of inner cuffs 14 (Fig. 2) through which an elastic chord 16
 15 runs. Due to the gathering of the diaper about the



joining lines 12, the diaper adopts a generally hour glass shape with a narrow centrally disposed crotch portion 18 and wider front and rear waist portions 20, 22 respectively at transverse end regions of the crotch portion.

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The diaper 10 is provided with prestretched elastic means 24 disposed along longitudinal edge portions 25 of the diaper. Advantageously, the waist portions 20, 22 may be provided with transversely extending elastic means 26, 28 respectively.

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To permit the diaper to be fastened around a wearer, fastening means are provided at the waist portions. As illustrated in Fig. 1, the front waist portion 20 which would normally be disposed at the front of the wearer may be provided with a pair of fastening means such as hook members 30, with each hook member 30 extending substantially perpendicularly from the longitudinal edge portion 25 of the diaper. The fastening means may further comprise a belt 32 extending substantially perpendicularly from the rear waist portion 22 which portion, during use, is normally disposed at the back of the wearer. As illustrated in Fig. 1, the belt may be in two halves, with each half extending from the opposed longitudinal edge portions 25 of the diaper. The two belt halves are intended to pass around the waist of the wearer and are fastened together at the front of the wearer by any suitable means such as a hook and loop fastener. Preferably, the belt is made from a nonwoven material which acts as a loop fastener for the hook members 30.

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The structure of the diaper of Fig. 1 will be more easily understood from the partial sectional view through the crotch portion 18, as illustrated in Fig. 2. In keeping with the present invention, the diaper 10 has a generally hour glass shape and includes a facing sheet 34, a backing

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sheet 36 and an absorbent core 38 sandwiched between the facing and backing sheets 34, 36 respectively. The specific components used to form the illustrated diaper may be any of the types commonly used for such purposes. For example, the facing sheet 34 may be any soft flexible liquid permeable material such as a nonwoven fibrous web having a basis weight of around 20 g/m². The backing sheet 36 is made from a liquid impermeable material such as a thin (for example 20 μ) plastic film of polyethylene, polypropylene, polyvinylchloride or the like. The absorbent core 38 may comprise wood pulp fibres, air-laid tissue, various superabsorbent materials, etc.

As mentioned above with reference to Fig. 1, prestretched elastic means 24 are disposed along the longitudinal edge portions 25 of the diaper. As clearly shown in Fig. 2, the elastic means 24 may be in the form of an elongate elastic ribbon. The elastic ribbon is preferably relatively wide, for example between 1 and 2 cm, preferably about 1.5 cm, so as to reduce the tendency for the leg cuff to mark the wearer. The elastic ribbon may be incorporated in the diaper in any known manner, though preferably in the manner disclosed in our copending Swedish patent application No. 9303746-3 with the title "Disposable diaper having elasticized leg cuffs".

In accordance with the present invention, the elastic means 24 extend along substantially the entire length of the longitudinal edge portions 25 between the fastening means on the front and rear waist portions 20, 22 respectively. This implies that when the diaper is being fastened to the wearer, a tensioning force exerted during the fastening operation on the fastening means 30 on the front waist portion 20 will directly cause the elastic means 24 to expand, thereby ensuring a tighter fit of the leg cuffs about the wearer.



To further enhance the comfort of the wearer of the diaper, it is advantageous if the fastening means 32 on the rear waist portion 22 present a relatively large engagement surface for receiving the fastening means on the front waist portion 20. Thus, the fastening means 30 on the front waist portion 20 preferably project substantially perpendicularly from the longitudinal edge portions 25 of the diaper, with the fastening means having a predetermined width a. Similarly, the fastening means 32 on the rear waist portion 22 project substantially perpendicularly from the longitudinal edge portions 25 of the diaper, with these fastening means having a predetermined width b. The percentage ratio of the width a of the fastening means 30 on the front waist portion 20 to the width b of the fastening means 32 on the rear waist portion 22 preferably lies between about 10% and about 30%, most preferably about 25%.

When the fastening means 30 on the front waist portion 20 comprise a pair of opposed hook members, their width a may be between about 15 mm and about 45 mm, preferably about 30 mm.

When the fastening means 32 on the rear waist portion 22 are a pair of opposed loop fasteners, the width b may be between about 50 mm and about 150 mm, preferably about 120 mm. Advantageously, the opposed loop fasteners are in the form of a nonwoven belt, though they may comprise regions of hook-engaging material affixed to or incorporated in the rear waist portion 22.

Thus, when the diaper is being fastened around a wearer, tension is applied to the fastening means 30 on the front waist portion 20 until the leg elastic 24 is sufficiently stretched. The fastening means 30 can then be affixed to the fastening means 32 on the rear waist portion. The

tension can be readily adjusted by moving the fastening means 30 over the width of the fastening means 32 on the rear waist portion.

- 5 The present invention is not restricted to the embodiments described above and illustrated by way of example in the drawings, but may be varied within the scope of the appended claims. It is to be understood that the term "diaper" is intended to encompass absorbent articles of the
- 10 type disclosed in the appended claims which are worn by infants and adults alike. The terms "front" waist portion and "rear" waist portion denote the positioning of these portions during normal intended use of the diaper, though it is conceivable that these portions be reversed, e.g.
- 15 that hook members be provided on the "rear" waist portion and loop fasteners on the "front" waist portion. It will be apparent to the skilled person that suitable fastening means other than hook and loop fasteners, e.g. releasable adhesives, may be employed

THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:

1. A disposable diaper comprising an absorbent core disposed between a facing sheet and backing sheet, said diaper having a generally hour glass shape with a narrow centrally disposed crotch portion, a front waist portion at one transverse end region of said crotch portion and a rear waist portion at the other transverse end region of said crotch portion, said waist portions being wider than said crotch portion and said waist portions being provided with fastening means for fastening the diaper around a wearer, said fastening means on said front waist portion having a predetermined width (a) and said fastening means on said rear waist portion having a predetermined width (b), said diaper further comprising prestretched elastic means disposed along longitudinal edge portions of said diaper for providing predetermined gathered and substantially non-gathered regions along said edge portions, characterized in that said elastic means extend along substantially the entire length of said longitudinal edge portions from said fastening means on said front waist portion to said fastening means on said rear waist portions, and in that the percentage ratio of the width (a) of the fastening means on said front waist portion to the width (b) of the fastening means on said rear waist portion lies between 10% and 30%.
2. The disposable diaper according to claim 1, wherein the percentage ratio of the width (a) of the fastening means on said front waist portion to the width (b) of the fastening means on said rear waist portion is 25%.
3. The disposable diaper according to claims 1 or 2, characterized in that said elastic means is an elastic ribbon.
4. The disposable diaper according to claims 1 or 2, characterized in that said fastening means on said front waist portion project substantially perpendicularly from said longitudinal edge portions of said diaper.



5. The disposable diaper according to claims 1 or 2, characterized in that said fastening means on said rear waist portion project substantially perpendicularly from said longitudinal edge portions of said diaper.
6. The disposable diaper according to claim 4, characterized in that said fastening means on said front waist portion are a pair of oppose hook members, the width (a) of which lies between 15 mm and 45 mm.
7. The disposable diaper according to claim 6, wherein the width (a) of which is 30 mm.
8. The disposable diaper according to claim 5, characterized in that said fastening means on said rear waist portion are a pair of opposed loop fasteners, the width (b) of which lies between 50 mm and 150 mm.
9. The disposable diaper according to claim 8, wherein the width (b) of which is 120 mm.
10. The disposable diaper according to claims, 8 or 9, characterized in that said opposed loop fasteners are in the form of a nonwoven belt.

DATED THIS 5TH DAY OF JUNE, 1997

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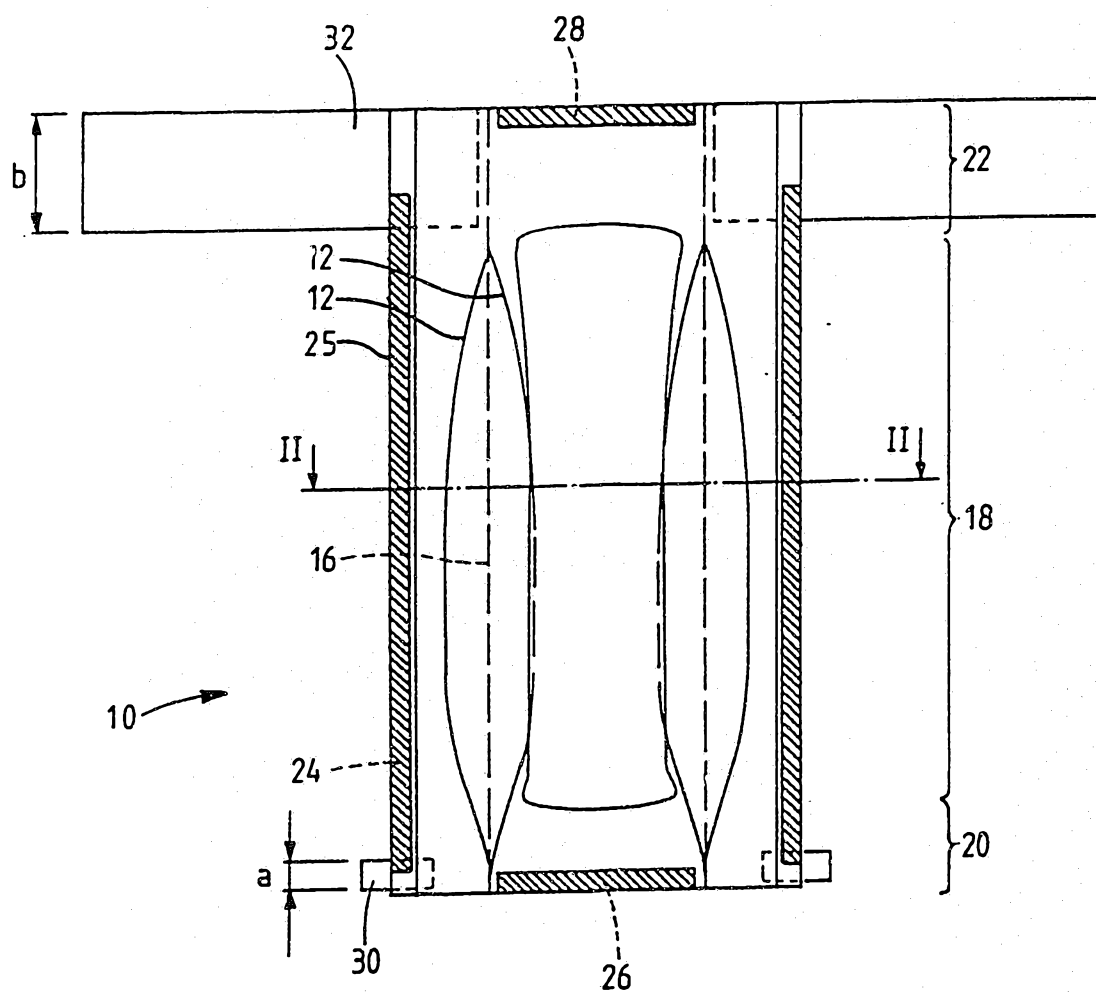


Fig.1

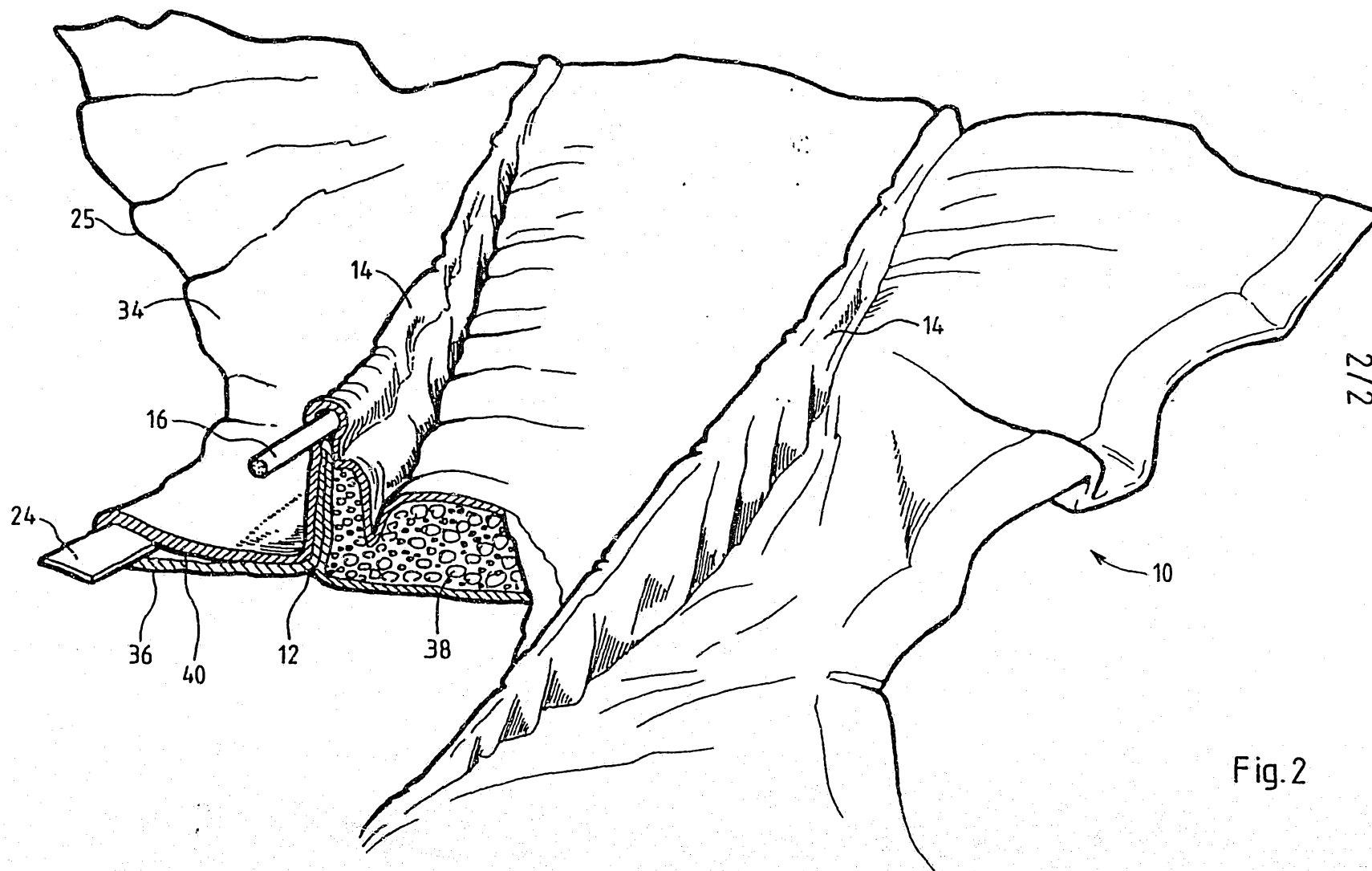


Fig. 2

INTERNATIONAL SEARCH REPORT

International application No.

PCT/SE 94/01066

A. CLASSIFICATION OF SUBJECT MATTER

IPC6: A61F 13/15 // A61F 13/56

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC6: A61F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE,DK,FI,NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US, A, 4050462 (LIN-SUN WOON ET AL.), 27 Sept 1977 (27.09.77), column 4, line 30 - line 34, figure 1	1-8
Y	---	1-8
Y	SE, B, 446939 (DUNI BILA AB), 20 October 1986 (20.10.86), figures 1,3	1-8
Y	GB, A, 2063677 (COLGATE-PALMOLIVE), 10 June 1981 (10.06.81), figures 1,2	1-8

☒ Further documents are listed in the continuation of Box C.☒ See patent family annex.

* Special categories of cited documents:

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "B" earlier document but published on or after the international filing date
- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance: the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance: the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search

Date of mailing of the international search report

20 February 1995

22 -02- 1995

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INTERNATIONAL SEARCH REPORT

International application No.

PCT/SE 94/01066

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	GB, A, 2112270 (COLGATE-PALMOLIVE COMPANY), 20 July 1983 (20.07.83), figures 1,2 -----	1-8

INTERNATIONAL SEARCH REPORT
Information on patent family members

09/02/95

International application No.
PCT/SE 94/01066

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US-A- 4050462	27/09/77	AU-B- 498267 AU-A- 2367977 CA-A- 1095653 DE-A- 2712069 FR-A,B- 2345955 GB-A- 1561021 JP-C- 1395627 JP-A- 52120045 JP-B- 61056321 NL-A- 7702759	22/02/79 05/10/78 17/02/81 13/10/77 28/10/77 13/02/80 24/08/87 08/10/77 02/12/86 03/10/77
SE-B- 446939	20/10/86	EP-A,B- 0229753 SE-A- 8302927 US-A- 4718901 US-A- 4854989 WO-A- 8602530	29/07/87 25/11/84 12/01/88 08/08/89 09/05/86
GB-A- 2063677	10/06/81	AU-B- 532029 AU-A- 6466680 BE-A- 886447 CA-A- 1143506 CH-A,B- 653876 DE-A- 3039940 FR-A,B- 2471149 JP-C- 1762714 JP-B- 3076941 JP-A- 56091002 NL-A- 8005688	15/09/83 11/06/81 01/04/81 29/03/83 31/01/86 04/06/81 19/06/81 28/05/93 09/12/91 23/07/81 01/07/81
GB-A- 2112270	20/07/83	AU-B- 559903 AU-A- 9117182 BE-A- 895270 CA-A- 1183306 CH-A,B- 658575 DE-A- 3244235 FR-A,B- 2517521 JP-C- 1710881 JP-B- 3076942 JP-A- 58149304 NL-A- 8204738 US-A- 4643728	26/03/87 16/06/83 07/06/83 05/03/85 28/11/86 18/08/83 10/06/83 11/11/92 09/12/91 05/09/83 01/07/83 17/02/87