653633

AUSTRALIA

PATENTS ACT 1990

NOTICE OF ENTITLEMENT

I, **Trevor S. Bennett,** the applicant/Nominated Person in respect of Application No. 24688/92 state the following:-

The Nominated Person is entitled to the grant of the patent because the Nominated Person is the inventor.

The Nominated Person is entitled to claim priority from the application listed in the declaration under Article 8 of the PCT because the Nominated Person made the application listed in the declaration under Article 8 of the PCT, and because that application was the first application made in a Convention country in respect of the invention.

DATED this SEVENTEENTH day of MARCH 1994

.....

a member of the firm of DAVIES COLLISON CAVE for and on behalf of the applicant(s)

(DCC ref: 1651205)

AU9224688

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INFLATABLE LEG-SUPPORTING BOLSTER

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(56) Prior Art Documents
AU 89294/91 A61G 7/075
US 5012539

(57) Claim

1. An inflatable leg-supporting bolster adapted to rest upon a surface for engagement by and support of the legs of a person lying in a supine position on the surface; the bolster having a pair of flexible side panels (10), each side panel having an identical shape including a plurality of intersecting edges arranged about its periphery; the bolster further having a flexible sheet (11) with laterally-spaced parallel side edges extending between transverse end edges, the sheet (11) being sealed to itself across its end edges and being sealed to the edges of the side panels along its respective side edges to complete a sealed inflatable structure by forming a circumferential support extending between the side panels (10); the bolster having air valve means (24) for selectively admitting or releasing air within the bolster;

the bolster being characterized by:

the circumferential support including a base area (14) and two upwardly-inclined areas (15, 16) that intersect one another at a right angle across an upper apex;

horizontal ribbing means (18) in the form of a flexible web having transverse ends fixed to the side panels (10) at locations spaced from ~~the~~ seams joining the side panels (10) and the base area (14) of the sheet (11) for

.../2

defining and maintaining the lateral separation between the side panels (10) when the bolster is inflated;

upright ribbing means (21) in the form of a plurality of flexible webs having lower ends fixed along spaced distances to the base area (14) and upper ends fixed to one upwardly-inclined area (15, 16) of the sheet (11) for defining and maintaining the vertical separations between the base area (14) and upwardly-inclined areas (15, 16) of the sheet (11) when the bolster is inflated and for defining spaced transverse ridges in the base area (14) and two upwardly-inclined areas (15, 16) of the sheet (11), the flexible webs of the upright ribbing means (21) being aligned transversely relative to the side panels (10) and extending across the full inner widths of the sheet (11) between the side panels (10); and

whereby the bolster, when inflated, can rest upon a surface while supported by the base area (14) and with the side panels (15, 16) in spaced parallel positions holding the sheet in a configuration exposing the upwardly-inclined areas of the sheet for engagement by the legs of a supine user, the horizontal and upright ribbing means combining to provide accurate horizontal and vertical dimension control to maintain the shape of the bolster while supporting the legs of the supine user.

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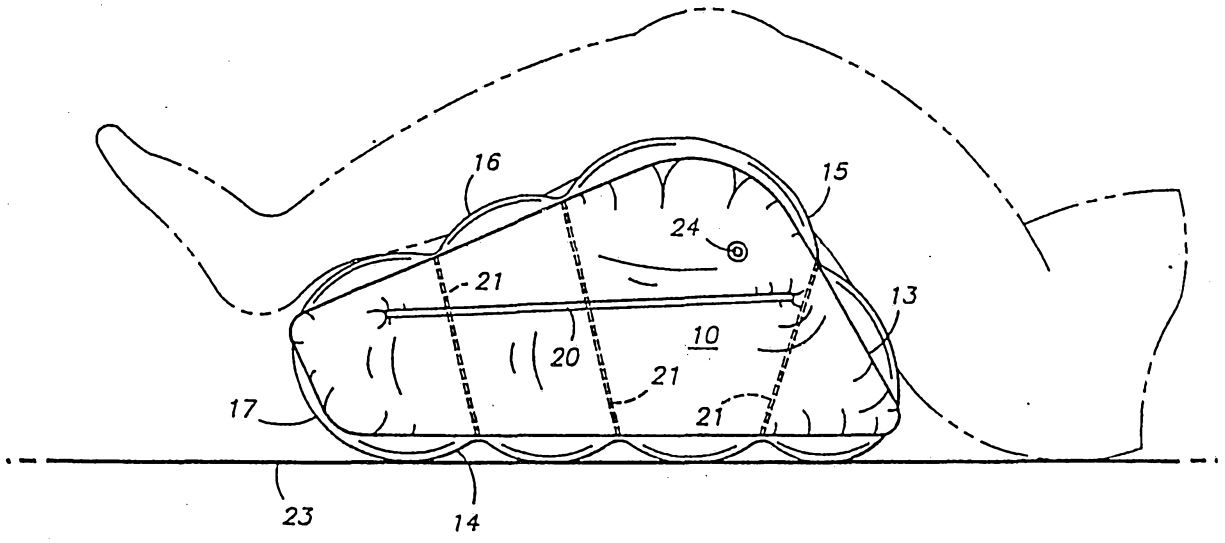
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(54) Title: INFLATABLE LEG-SUPPORTING BOLSTER



(57) Abstract

An inflatable leg-supporting bolster includes a pair of flexible side panels (10) joined to opposite side edges of a connecting flexible sheet (11) that encircle them. A horizontal web (18) and a plurality of upright webs (21) are provided at the interior of the bolster to define lateral and upright configurations required for proper leg support when used by a person lying in a supine position.

INFLATABLE LEG-SUPPORTING BOLSTER

Technical Field

This disclosure pertains to leg-supporting bolsters for persons lying in a supine position on a horizontal surface. Such bolsters are well known as therapeutic devices to relieve lower back pain.

Background Art

Solid bolsters cut from resilient foam have been used for many years to assist in relieving lower back pain. Such bolsters are available in a variety of shapes and sizes. They are typically sold as generic products in foam shops. Such bolsters have solid trapezoidal configuration that includes upwardly-inclined surface areas exposed across the top of the bolster and intersecting one another at a right angle. One of these areas intersects the base of the bolster at an acute angle and obtuse for engagement by the legs.

One difficulty with foam bolsters is the inherent bulk of material required to support the legs of a user. Such bolsters cannot be easily carried or shipped from one location to another. In addition, the foam material must be relatively stiff in order to provide the required support for the weight of the user's legs. The foam material will not be compressed uniformly about the leg surfaces engaging the bolster, which eventually interferes with circulation of blood through the legs during its use. In addition, foam bolsters must be provided in several sizes so as to meet the dimensional requirements of various users.

Another prior product designed for such leg support is known as the "Waverly Wedge." It comprises a planar inflatable member having transverse tubes and bendable along a transverse line to form inclined areas defined by tension straps extending between the respective ends of the device. This structure requires rather substantial interior air pressure in order to be self-supporting over the spaced straps. It lacks lateral stability and, if not properly inflated, will not attain the proper upright configuration for use as a leg support.

U.S. Patent No. 3,680,918 to Briggs discloses an air cushion which can be mounted on an external frame. The air cushion has upper and lower outer faces and a serpentine-shaped intermediate partition. Partial spaced webs are connected between the intermediate partition and one of the outer faces. A German Document No. 8810361 discloses an inflatable bolster having longitudinal

ridges aligned in parallel with its side panels. The inflatable devices of these documents have drawbacks in that they lack effective lateral and longitudinal support.

The present invention was designed to provide a portable bolster that can be readily packed in luggage for travel purposes and which does not require substantial storage or closet space in the home when it is not in use. As a result of this development effort, it was discovered that the inflatable product could be adapted to the dimensional needs of a wide range of people, while maintaining both upright and lateral stability for support purposes. This stability is provided by a unique combination of horizontal and upright ribbing members within the bolster.

Brief Description of the Drawings

Preferred embodiments of the invention are described below with reference to the following accompanying drawings.

Fig. 1 is a side elevation view of the inflated bolster, the outline of a user's legs being illustrated in dashed lines;

Fig. 2 is a side elevation view of the bolster alone;

Fig. 3 is a plan view;

Fig. 4 is a longitudinal sectional view taken along line 4-4 in Fig. 3; and

Fig. 5 is a horizontal sectional view taken along line 5-5 in Fig. 2.

Best Mode for Carrying Out the Invention

The drawings illustrate the inflated condition of the present bolster. Its inflatable nature enables it to be configured for use by introduction of air, using the light-duty pump or one's mouth. The bolster can be readily deflated when not in use, and will store in a relatively small space for travel or storage purposes.

The bolster comprises a pair of flexible side panels 10. Each of the side panels 10 has an identical shape. The boundary of each side panel 10 includes a plurality of intersecting edges that define the longitudinal cross-sectional exterior shape of the inflated bolster. As shown, the side panels 10 have four intersecting edges arranged about their respective peripheries in a trapezoidal configuration.

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The bolster is completed by a flexible sheet 11. The sheet 11 has laterally-spaced parallel side edges extending between transverse end edges. Sheet 11 is sealed to its self across its end edges along a transverse seam 12 (Fig. 5). It is also sealed to the edges of the side panels along its respective side edges to form a peripheral seam 13 about each side of the bolster. The seams 13 complete a sealed inflatable structure for the bolster by forming a circumferential support extending between the side panels 10. This circumferential support presented by sheet 11 includes a bottom base area 14, and two upwardly-inclined areas 15 and 16. The areas 15 and 16 intersect one another at an upper apex. The angle of intersection between them is a right angle. The angle of intersection between area 15 and the base area 14 is an angle greater than 45° (preferably 65°), while the angle between the area 16 and base area 14 is an angle less than 45° (preferably 25°). In the preferred form of this invention, there is also provided a relieved section 17 along the sheet 11, which serves to suspend the feet of a user elevationally above a supporting surface for the bolster, as indicated in Fig. 1.

Horizontal ribbing means is joined across the side panels 10 for defining their lateral separation when the bolster is inflated. The horizontal ribbing means is illustrated as a rectangular flexible web 18. Web 18 has opposed transverse ends fixed to the respective side walls 10 along seams shown at 20. The seam 20 between the transverse ends of web 18 and side walls 10 are positioned at locations spaced from the seams joining the side walls 10 and the base area 14 of sheet 10. Web 18 extends across the full inner widths of the side walls 10 between the seams joining the side walls 10 and the upwardly-inclined areas 15, 16 of sheet 10. As can be seen in Figs. 2 and 4, the elevation of web 18 is approximately half that of the elevation of the apex formed between the sheet 11 and the supporting side walls 10.

The upright ribbing means is illustrated as a plurality of flexible webs 21. Each web 21 has a lower end and an upper end fixed respectively across the full inner width of the base area 14 and one of the upwardly-inclined areas 15, 16 of sheet 10. Horizontal web 18 is slitted, as shown at 22, to freely surround the individual upright webs 21. There is no structural connection between the webs 18 and 21 in the illustrated embodiment, although such connections can be provided if desired.

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The upright webs 21 are joined to the base area 14 of sheet 10 across longitudinal parallel seams which are spaced at approximately equal distances along the bottom of the bolster. This equal spacing helps to assure the presentation of co-planar surfaces across the bottom of the bolster, which are adapted to rest on an upwardly-facing horizontal support surface indicated by line 23 in Fig. 1. Similarly, the longer of the two upwardly-inclined areas 16 is intersected by two or more upright webs 21. They also are located at equal distances along the length of area 16. The resulting transverse ribs in the inflated structure will therefore present coplanar surface areas for engagement by the legs of a user. The single upright web 21 extending to the upwardly-inclined area 15 of sheet 10 intersects it substantially at its midpoint, also providing coplanar surfaces along the resulting ribs in the inflated structure.

A conventional air valve 24 can be provided at any suitable location about the bolster. Air can be delivered to the bolster by a pump or by manual blowing. Air valve 24 can be released to deflate the bolster prior to folding it for storage or travel purposes.

Besides portability and light weight, the inflated bolster has the advantage of being adjustable to accommodate a reasonable range of body sizes. By directing more or less air to the interior of the bolster, one can make it somewhat smaller or larger to fit the size of a particular user. In a bolster having a height of approximately 9", a variable size range of approximately 2" is practical by control of inflation pressure.

The inflated bolster is designed to be used by one resting on a mattress or floor in a supine position. The bolster relieves the normal stress applied to the lower back area and helps to maintain flexibility and relieve localized pain in the lower areas of the spine. The bolster is also useful to provide support for the legs of a woman in the later stages of pregnancy. It promotes circulation, provides back support and elevates the legs. Foam bolsters are not acceptable for this purpose because they are typically too rigid and tend to interfere with circulation of blood in the legs.

While designed particularly for the use shown in Fig. 1, the present bolster can also be used as a back rest cushion. When so used, the short side of the bolster presented by upwardly inclined area 15 serves as the bottom surface and the base area 14 serves as an inclined back rest when the bolster is positioned with its area 16 against a vertical wall or furniture surface.

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Claims

1. An inflatable leg-supporting bolster adapted to rest upon a surface for engagement by and support of the legs of a person lying in a supine position on the surface; the bolster having a pair of flexible side panels (10), each side panel having an identical shape including a plurality of intersecting edges arranged about its periphery; the bolster further having a flexible sheet (11) with laterally-spaced parallel side edges extending between transverse end edges, the sheet (11) being sealed to itself across its end edges and being sealed to the edges of the side panels along its respective side edges to complete a sealed inflatable structure by forming a circumferential support extending between the side panels (10); the bolster having air valve means (24) for selectively admitting or releasing air within the bolster;

the bolster being characterized by:

the circumferential support including a base area (14) and two upwardly-inclined areas (15, 16) that intersect one another at a right angle across an upper apex;

horizontal ribbing means (18) in the form of a flexible web having transverse ends fixed to the side panels (10) at locations spaced from ~~the~~ seams joining the side panels (10) and the base area (14) of the sheet (11) for defining and maintaining the lateral separation between the side panels (10) when the bolster is inflated;

upright ribbing means (21) in the form of a plurality of flexible webs having lower ends fixed along spaced distances to the base area (14) and upper ends fixed to one upwardly-inclined area (15, 16) of the sheet (11) for defining and maintaining the vertical separations between the base area (14) and upwardly-inclined areas (15, 16) of the sheet (11) when the bolster is inflated and for defining spaced transverse ridges in the base area (14) and two upwardly-inclined areas (15, 16) of the sheet (11), the flexible webs of the upright ribbing means (21) being aligned transversely relative to the side panels (10) and extending across the full inner widths of the sheet (11) between the side panels (10); and

whereby the bolster, when inflated, can rest upon a surface while supported by the base area (14) and with the side panels (15, 16) in spaced parallel positions holding the sheet in a configuration exposing the upwardly-inclined areas of the sheet for engagement by the legs of a supine

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user, the horizontal and upright ribbing means combining to provide accurate horizontal and vertical dimension control to maintain the shape of the bolster while supporting the legs of the supine user.

2. The bolster of claim 1, further characterized by:

the flexible webs of the upright ribbing means (21) being independent and separate from the flexible web of the horizontal ribbing means (18).

3. The bolster of claim 1, further characterized by:

the horizontal ribbing means (18) extending parallel to the base area (14) across the full inner widths of the side panels (10) between the seams joining the side panels (10) and the upwardly-inclined areas (15, 16) of the sheet.

4. The bolster of claim 1, further characterized by:

the side panels (10) having four intersecting edges; and

the circumferential support including a relieved section (17) interposed between the base (14) and one of the upwardly-inclined areas (16).

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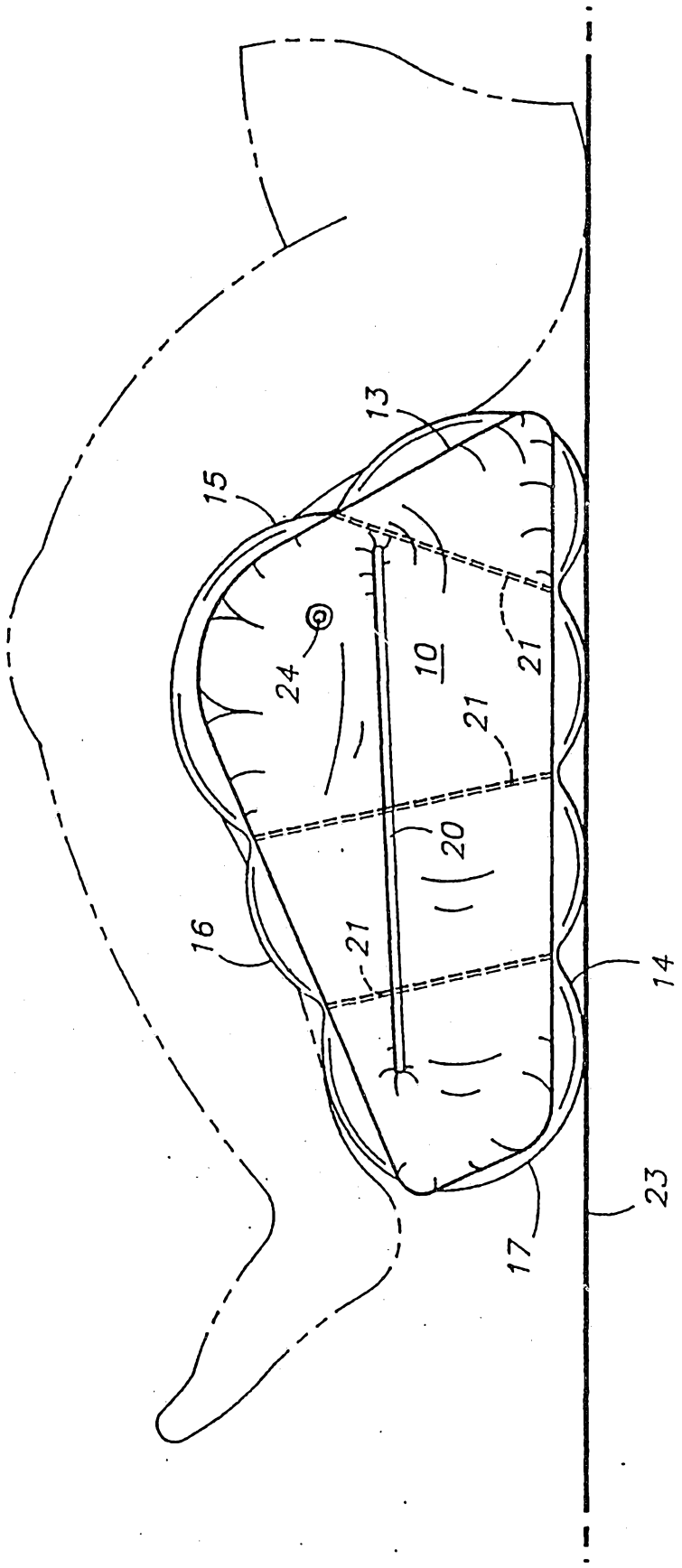


FIG II

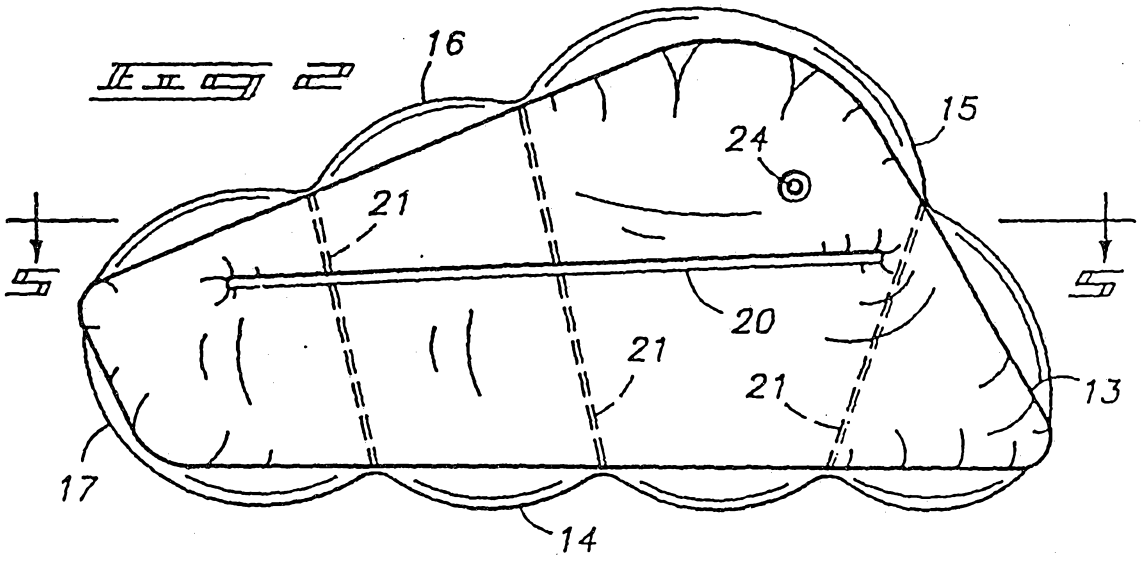


Fig 2

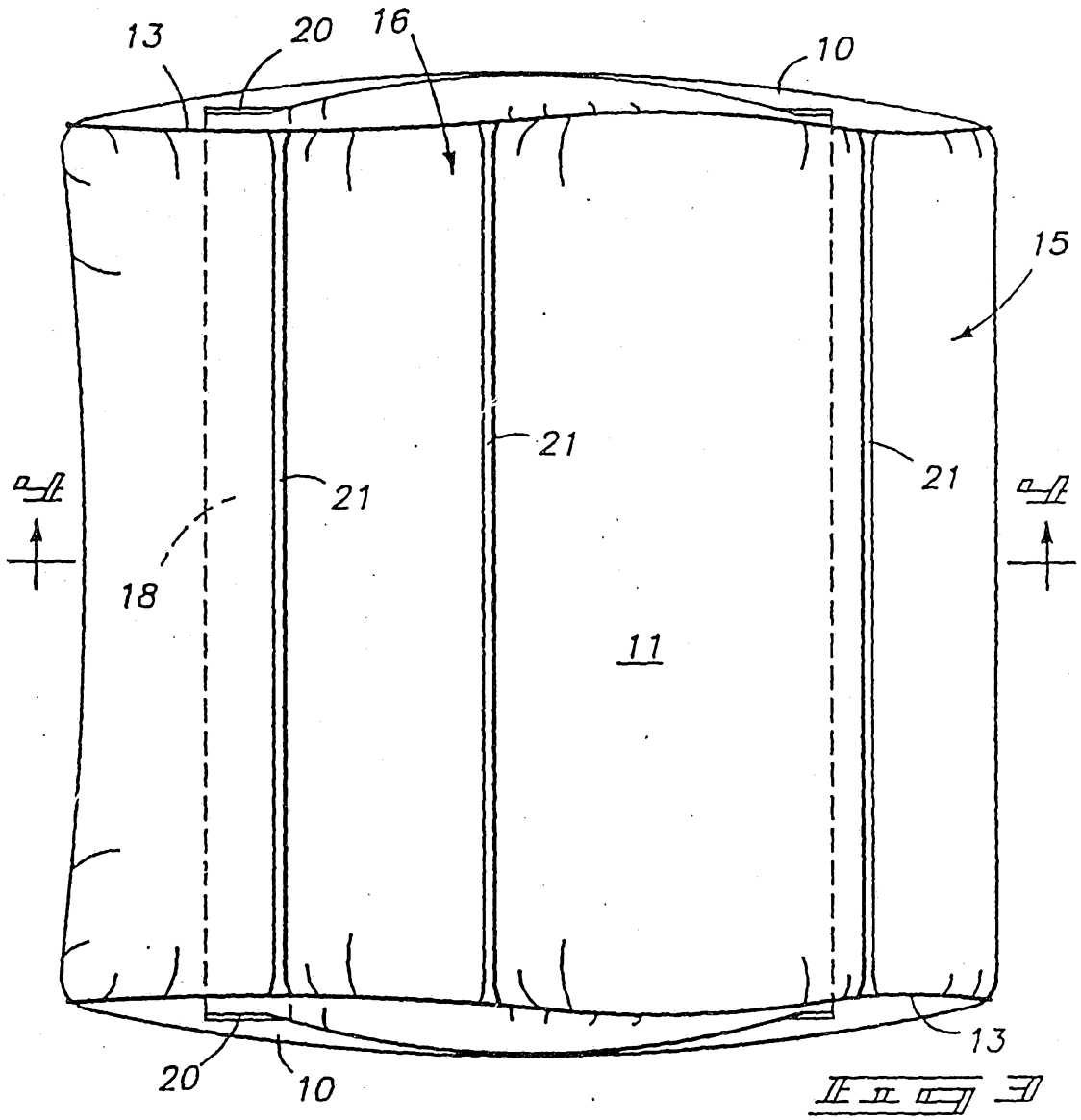
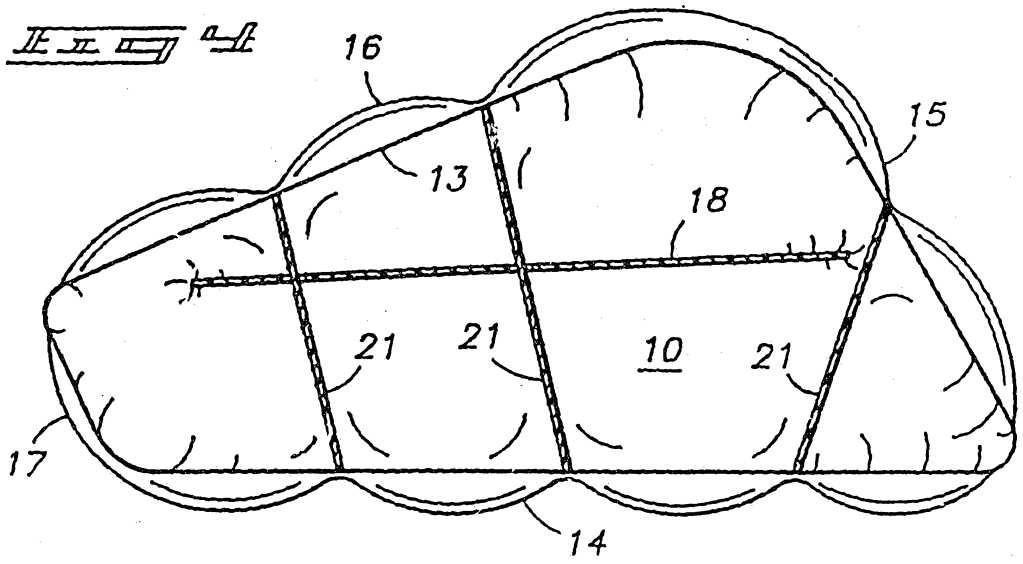


Fig 3

Fig 4


16
15
13
18
21
21
10
21
17
14

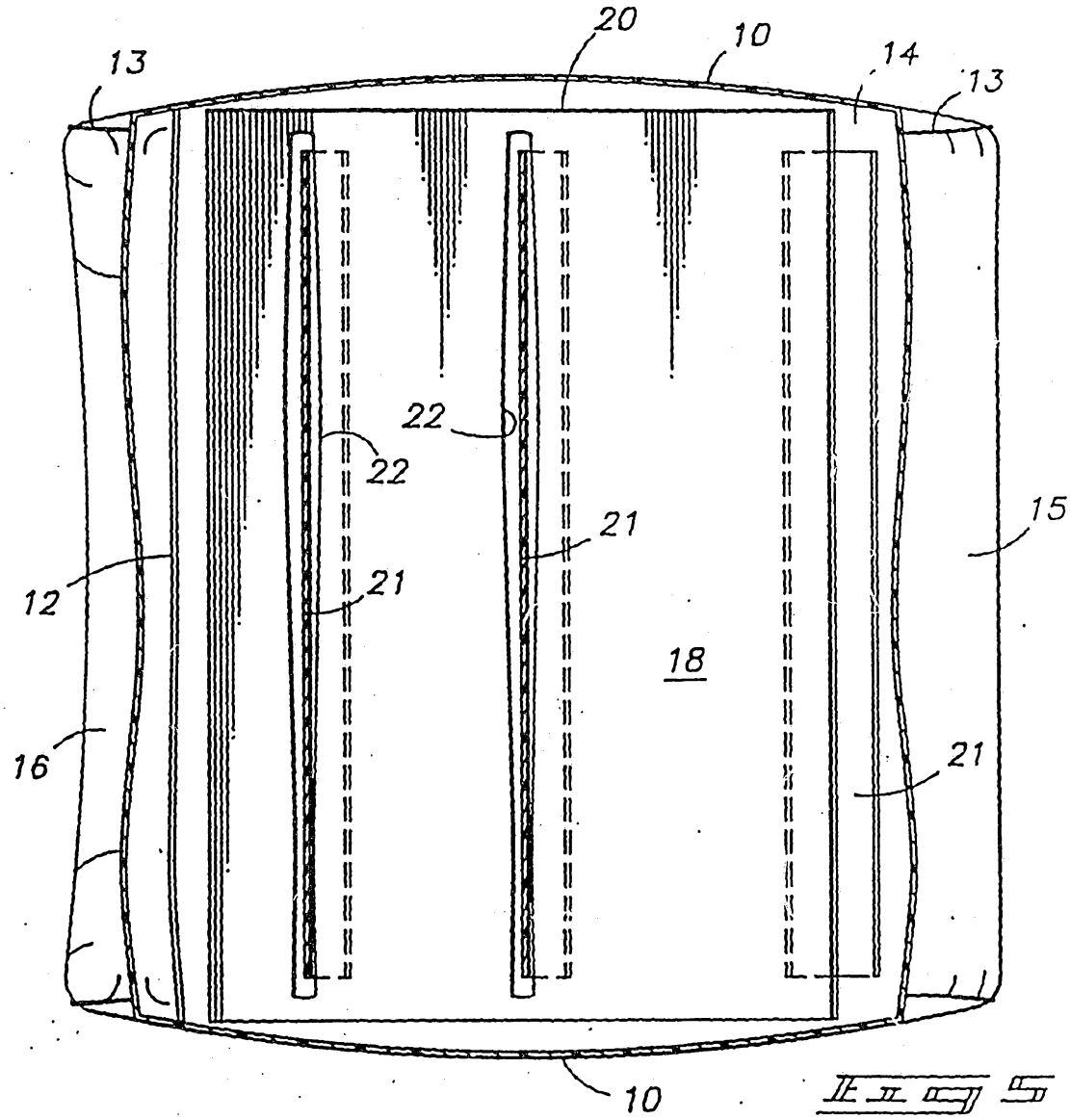

20
10
13
14
13
22
22
21
15
12
21
18
16
21
10

Fig 5

INTERNATIONAL SEARCH REPORT

International Application No PCT/CA 92/00369

I. CLASSIFICATION OF SUBJECT MATTER (if several classification symbols apply, indicate all)[6]

According to International Patent Classification (IPC) or to both National Classification and IPC

Int.Cl. 5 A61G7/075

II. FIELDS SEARCHED

Minimum Documentation Searched[7]

Classification System	Classification Symbols
Int.Cl. 5	A61G ; A47C ; A47G

Documentation Searched other than Minimum Documentation to the Extent that such Documents are Included in the Fields Searched[8]

III. DOCUMENTS CONSIDERED TO BE RELEVANT[9]

Category °	Citation of Document, [11] with indication, where appropriate, of the relevant passages [12]	Relevant to Claim No.[13]
Y	US,A,4 092 750 (ELLIS) 6 June 1978	1,6
A	see column 6, line 4 - line 66; figures 11-13	2-5

Y	DE,U,8 810 361 (LECHNER) 24 November 1988 see page 9, line 20 - page 10, line 7; figures	1,6

A	US,A,5 012 539 (GRIGG) 7 May 1991 see the whole document	1

A	DE,U,8 625 090 (HELF) 21 January 1988 see page 5, line 9 - line 16; figure 2	1

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° Special categories of cited documents :[10]

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" 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

"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

IV. CERTIFICATION

Date of the Actual Completion of the International Search	Date of Mailing of this International Search Report
11 NOVEMBER 1992	24. 11. 92
International Searching Authority	**Signature of Authorized Officer**
EUROPEAN PATENT OFFICE	BAERT F.

III. DOCUMENTS CONSIDERED TO BE RELEVANT (CONTINUED FROM THE SECOND SHEET)

Category °	Citation of Document, with indication, where appropriate, of the relevant passages	Relevant to Claim No.
A	US,A,4 675 930 (SARGENT CLEMENT) 30 June 1987 see column 3, line 67 - column 4, line 12; figure 2	1
A	US,A,3 680 918 (BRIGGS) 1 August 1972 see column 5, line 41 - line 54; figure 9	1

ANNEX TO THE INTERNATIONAL SEARCH REPORT ON INTERNATIONAL PATENT APPLICATION NO. CA 9200369 SA 63740

This annex lists the patent family members relating to the patent documents cited in the abo ..tioned international search report. The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information. 11/11/92

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US-A-4092750	06-06-78	None	
DE-U-8810361	24-11-88	None	
US-A-5012539	07-05-91	None	
DE-U-8625090	21-01-88	None	
US-A-4675930	30-06-87	None	
US-A-3680918	01-08-72	None	