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(54) **Sliding mat**

(57) To facilitate movement over a base both for severely ill patients as well as for their nurses or assistants there is provided a mat comprising two side by side arranged strips (1,2) connected together along a part of their length where each strip (1,2) is at free end of its longitudinal portion (3,5) provided with a transversal portion (4,6), the transversal portion (4) of the first strip (1) overlapping at least partially the transversal portion (6) of the second strip (2).

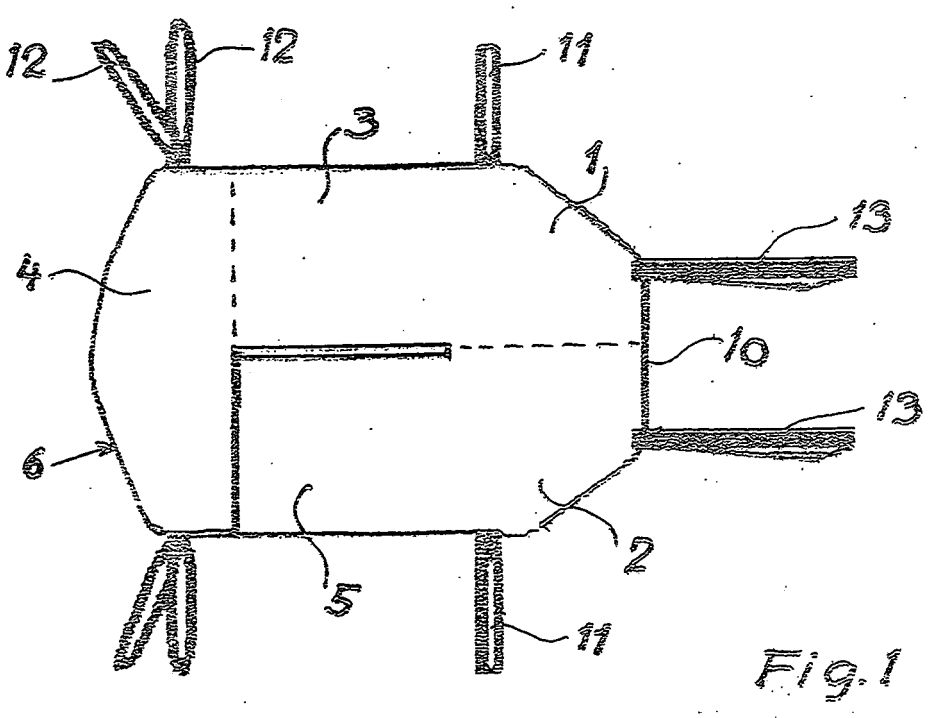


Fig. 1

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## Description

### Technical Field

**[0001]** The invention relates to sliding mat for moving a patient on a base comprising two side by side arranged strips connected together along a part of their length, the mat having its surface for a contact with the base surface made of material with small frictional resistance.

### Background of the Invention

**[0002]** It has always been a problem to move people who are ill or disabled in such an extend they are not capable of move themselves not only on a floor but even when lying on a bed. It is a task of a nurse or an assistant to such a person to help the person to achieve a suitable position or to restore the proper position. Even if a bed is designed to enable a person either to lie in a supine position or to sit, it is always necessary to help the person to feel comfortable. Any fold on a bed sheet my cause bedsore resulting in further problems. During positioning of the bed or because of raised pillow or a bolster or even due to his own weight the patient may slip down to a footboard. A long-lasting contact of feet of the patient with the board may also cause a bedsore with known consequences. To help such a patient is a very difficult task for two or even more assistants, as they should not make the situation for the patient even worse. In a case when there is only one person available to help, especially when the patient remains at his home, to say nothing about patients the weight of which exceeds a standard, the said task is nearly out of capabilities of the assistant. Just to push or pull a patient along his bed is for the patient very painful and may cause further medical complications. In order to minimize an effort of an assistant and excessive pain for the patient some means have been proposed and applied.

**[0003]** From the paper US 2918681 there is known a device comprising a system of rollers arranged in parallel and covered by a continuous band. Such a device is useful for transporting a patient from one base, usually a bed, to another one. A similar solution is described in the paper US 3769642. A proposed device employs a sheet or continuous band of doth or similar material wide enough to span a body of a patient and a gurney alongside to which the patient is to be transferred with at least a portion of the sheet on the bed doubled back toward the gurney. The patient is moved to lie on the doubled portion and by pulling the edge of the top layer the patient is moved. Though both devices facilitate the transport of a patient they provide no comfort for both the patient and the assisting person. In the paper DE 19725293 there is discussed an apparatus comprising a harness to be fastened under arms of a patient and a driving unit connected with the harness. By activation of the driving unit the patient lying on his back is moved head-forward. Such an apparatus works only in one direction and its application must be painful for the patient. Moreover by all the presented systems a patient rests with his full weight on a bed sheet and while moved his body is exposed to high friction forces. This fact may cause a bedsore or severe injury of a skin already suffering from a bedsore further resulting in dangerous infections. From the paper DE 102005026653 there is known a device including a mat two thirds of which is divided. A small frictional resistance is generated between the mat and the surface of a bed since the mat is made from a firm sliding fabric that does not adhere to other surfaces. An assistant may thus easily overcome the frictional resistance even is a parson lying on the mat is motionless and even rather heavy. Nevertheless such a mat because of the partial lengthwise partition does not offer a stabile and firm support to the body of the moved patient and may get loose in undesirable moment.

**[0004]** It is an object of the invention to solve the problem of moving a person which is not able of self motion and remove problems connected with known solutions.

### Disclosure and Object of the Invention

**[0005]** The object of the invention is achieved by a sliding mat comprising two side by side arranged strips connected together along a part of their length, the mat having its surface for a contact with the base surface made of material with small frictional resistance as designed in accordance present invention wherein each strip is at free end of its longitudinal portion provided with a transversal portion, while the transversal portion of the first strip overlaps at least partially the transversal portion of the second strip. In a preferred embodiment the longitudinal and the transversal portions of each strip are arranged in an L-type configuration. Further in accordance with the present invention each strip is at its bottom surface provided with at least one first strap arranged in the strip longwise direction and at least one second strap arranged in the strip crosswise direction. Similarly each of the transversal portions is at its bottom surface provided with a third strap arranged in a longwise direction of the transversal portion. Preferably at least one end of each strap projects out of the mat. Still further in accordance with the present invention the straps are covered by low frictional resistance material provided at the bottom surface of the strips and at the bottom surface of both transversal portions. In a preferred embedment each strap may have its free ends in a form of a loop and/or a handgrip in another preferred embodiment the free ends of third straps located at the same side of the mat are provided with mutually corresponding parts of connecting means.

**[0006]** The presented invention provides for a mat which provides for a regardful and painless movement of paralyzed, disabled or severely ill persons along a bed or a similar base. Simultaneously the mat facilitates the task for the personnel, a nurse or any other assistant even when there is only one such assisting person. More-

over the mat according the invention is not heavy, therefore easy to transport and allows for a simple installation and removal and is easy to dean after any application.

Brief Description of the Drawings

**[0007]** By way of examples the invention will be now described with reference to the accompanying drawings, where

Fig. 1 presents a top view on a mat with 8 handling loops,
Fig. 2 shows the mat according to Fig. 1 as viewed from the bottom side with the straps completed by a loop at free ends of the straps,
Fig. 3 offers a top view on a mat similar to the one according Fig. 1 but with free ends of second and third straps in a form of handgrips,
Fig. 4 shows a mat with rounded corners and handgrips and
Figs. 5a, 5b and 5c illustrate consecutive removal of the mat after completion of manipulation with a patient.

Description of Preferred Embodiments

**[0008]** Referring to Figs. 1 and 2 there is shown a mat consisting of two side by side arranged and along a part of their length mutually connected a first strip 1 and a second strip 2. At free end of a longitudinal portion 3 of the first strip 1 there is arranged a first transversal portion 4 and similarly the free end of a longitudinal portion 5 of the second strip 2 is provided with a second transversal portion 6. Both transversal portions 4,6 are so positioned that when installed the first transversal portion 4 overlaps the second transversal portion 6. In a preferred embodiment each longitudinal portion 3,5 and adjacent transversal portion 4,6 are arranged in an L-configuration. Nevertheless the mat shall perfectly fulfil its task even when both respective portions do not mutually overlap completely or they are not arranged in a proper L-configuration an angle between their lengthwise axes even significantly differing from ninety degrees. Both strips 1, 2 as well as both transversal portions 4,6 are made of a firm water resistant textile enabling to wash the mat after use. The top surface should be soft to allow for a comfort of a person lying on the mat. On the bottom surface the strips and the transversal portions are covered by material featuring low friction resistance allowing for a smooth move on a base. The term base here represents a bed, a gurney, a table or even a floor as the case may be.

**[0009]** The embodiment of the mat according the invention shown on Figs. 1, 2 and 3 has substantially a shape of a rectangle with cut off corners, while in the embodiment presented in Fig. 4 the mat has a shape resembling an oval, where both the head and feet side are shaped in continuous curve.

**[0010]** In the whole description of the invention numbering of individual parts of the mat only suits to better understanding of the description and has no influence upon the invention as such. By a term "top surface" of a mat or stripes there is meant the mat surface which a patient is in a contact with, while a term "bottom surface" relates to a mat surface facing a base on which the mat is arranged on. The term head side applies for the side of a mat at which a person lying on a mat rests with his head, while the opposite part is called a feet side. The term longitudinal direction goes from the head side towards feet side and the transversal direction leads across it.

**[0011]** As seen from Fig. 2 each strip 1,2 is at its bottom surface provided with one first strap 7 arranged in the strip lengthwise direction and one second strap 8 arranged in the strip crosswise direction. When appropriate there can be used more first straps 7 and also more second straps 8 as presented in the discussed example. Analogously each of the transversal portions 4,6 is at its bottom surface provided with a third strap 9 which is arranged in a longwise direction of respective transversal portion 4,6.

**[0012]** The first, second and third straps 7,8,9 are fully covered by a material of low frictional resistance which is arranged at the bottom surface of both the strips 1,2 as well as on bottom of both transversal portions 4,6. Therefore in praxis, quite to the contrary to Fig. 2, the straps 7,8,9 are not only invisible but first of all do not obstruct by manipulation with a person lying on the mat. Such an arrangement is simpler than straps 7,8,9 made of special material of low frictional resistance.

**[0013]** In the presented embodiments the second strap 8 extends along the whole width of both strips 1,2, the third straps 9 leads along the whole length of the transversal portions 4,6 and the free ends 11 of the second straps 8 as well as free ends 12 of the third straps 9 project out of the mat of both its sides. The first straps 7 extend from the head side 10 of the mat down along the strips 1,2 up to the third straps 9, while each of them has only one free end 13 projecting out at the head side 10 of the mat, nevertheless the first strap 7 may have also second free end projecting out of the mat at the side opposite the mat head side 10. In the embodiment according to Figs. 1 and 2 free ends 11,12,13 of all the straps 6,7,8 form a loop, while in the embodiment according to Fig. 3 only the free ends 13 of the first straps 7 form a loop, while all the free ends 11,12 of the second and third straps 8,9 alongside the mat have a form of a handgrip. Free ends 11,12,13 of all the straps 6,7,8 may have also other form as presented here or any other distribution of the two preferred shapes.

**[0014]** The described arrangement of the traps 7,8,9 practically along the whole length of each strap 7,8,9 and loops and/or handgrips at free ends of the straps 7,8,9 provide for firm support for manipulation with the mat, even when rather heavy person are concerned.

**[0015]** To further improve the manipulation with the mat occupied by a person the free ends 12 of third straps

9 located at the same side of the mat and extending practically in parallel, are provided with mutually corresponding parts of connecting means, which make of each pair of strap free ends one unit. Good examples of applicable connecting means for the purpose are Velcro or poppers or any other similar means for connecting two loops or grips together.

**[0016]** The mat according the invention is applied in the following way.

**[0017]** As seen from Fig. 5a, the mat is inserted under a person lying on a base 14. To do so the mat is rolled in a crosswise direction with each pair of third strap 9 free ends at each side of the mat bound together by connecting means. Then the person is turned at his side and the rolled up mat is put along the body 15, unrolled and the body is turned back so the person rests on a mat lying on his back. All the free ands of all the traps 7,8,9 are loose. The person rests on the mat with a crown of his head, full trunk, both arms and upper part of his legs. Then by pulling the straps 7,8,9 the body 15 can be moved along the base 14 in a desired direction.

**[0018]** To remove the mat, see Figs. 5b and 5c, it is necessary to unbound the overlapping transversal portions 4,6 and by pulling both third straps 9 by their free ends 12 sideways, the transversal portions 4,6 as well as the free longitudinal portions 3,5 of both strips 1,2 are withdrawn from under the trunk of the body 15. Finally by pulling both first straps 7 by their free ends 13 the mat is completely removed from under the lying body 15. All the above described steps can be exercised by one nursing person without an excessive effort.

## Claims

1. Sliding mat for moving a patient on a bed comprising two side by side arranged strips (1,2) connected together along a part of their length, the mat having its surface for a contact with the base surface made of material with small frictional resistance, **characterised in, that** each strip (1,2) is at free end of its longitudinal portion (3,5) provided with a transversal portion (4,6), the transversal portion (4) of the first strip (1) overlapping at least partially the transversal portion (6) of the second strip (2).

2. Sliding mat according to claim 1, wherein the longitudinal and the transversal portions (3,5;4,6) of each strip (1,2) are arranged in an L-type configuration.

3. Sliding mat according to claim 1 or 2, wherein each strip (1,2) is at its bottom surface provided with at least one first strap (7) arranged in the strip longwise direction and at least one second strap (8) arranged in the strip crosswise direction and each of the transversal portions (4,6) is at its bottom surface provided with at least one third strap (9) arranged in the transversal portion longwise direction while at least one end of each strap (7,8,9) projects out of the mat.

4. Sliding mat according to claim 3, wherein the straps (7,8,9) are covered by low frictional resistance material arranged at the bottom surface of the strips (1,2) and both transversal portions (4,6).

5. Sliding mat according to claim 3 or 4, wherein each strap (7,8,9) has its free ends in a form of a loop and/or a handgrip.

6. Sliding mat according to claim 3 or 4 or 5, wherein the free ends of third straps (9) located at the same side of the mat are provided with mutually corresponding parts of connecting means.

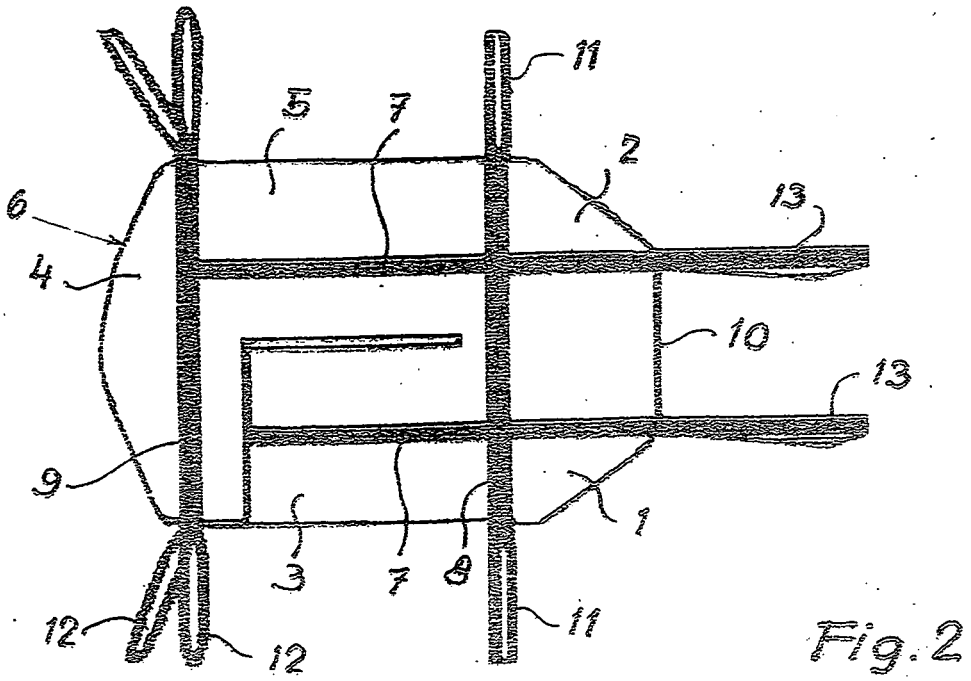


Fig. 2

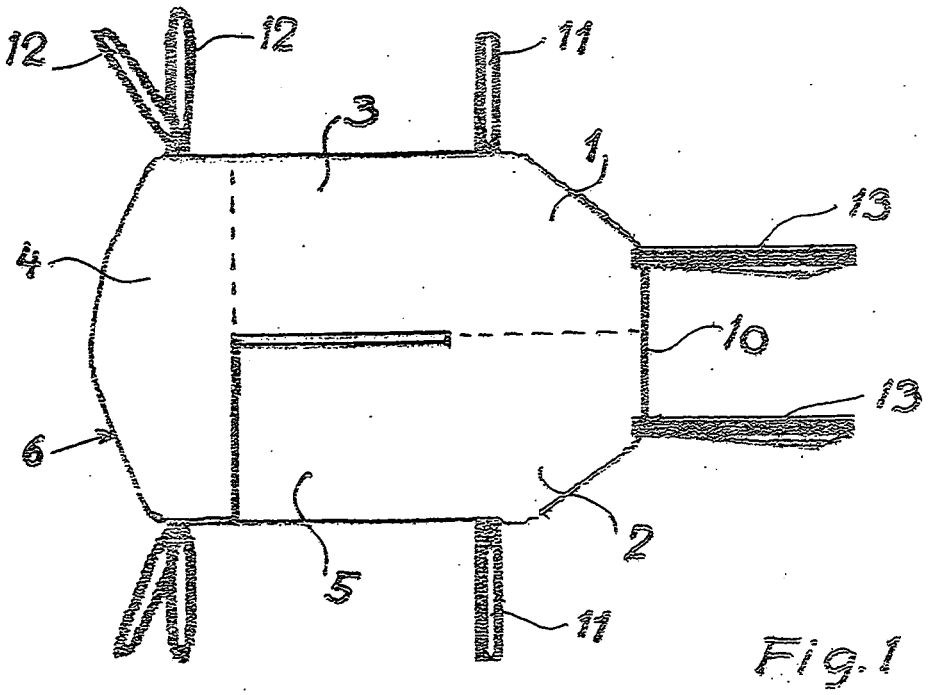


Fig. 1

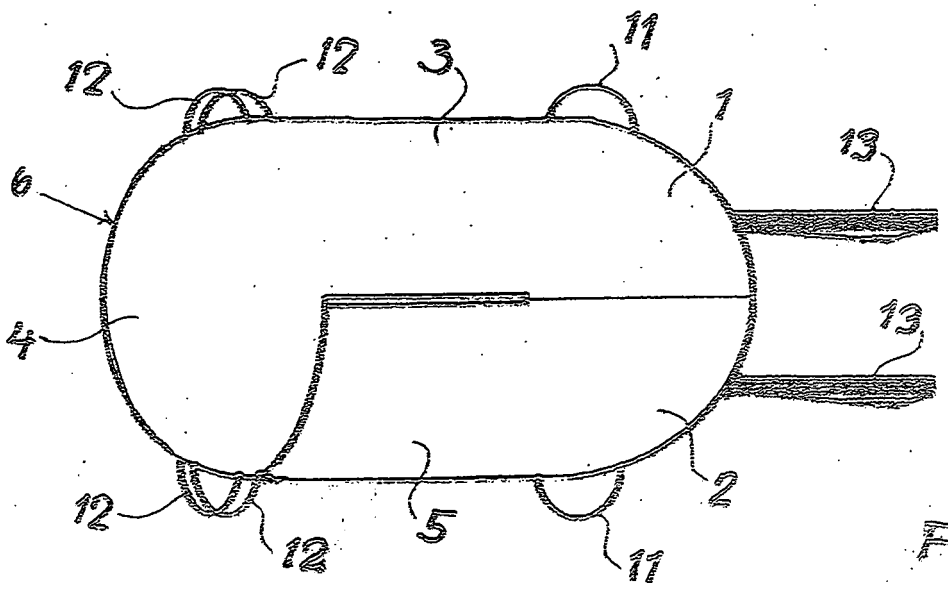


Fig. 4

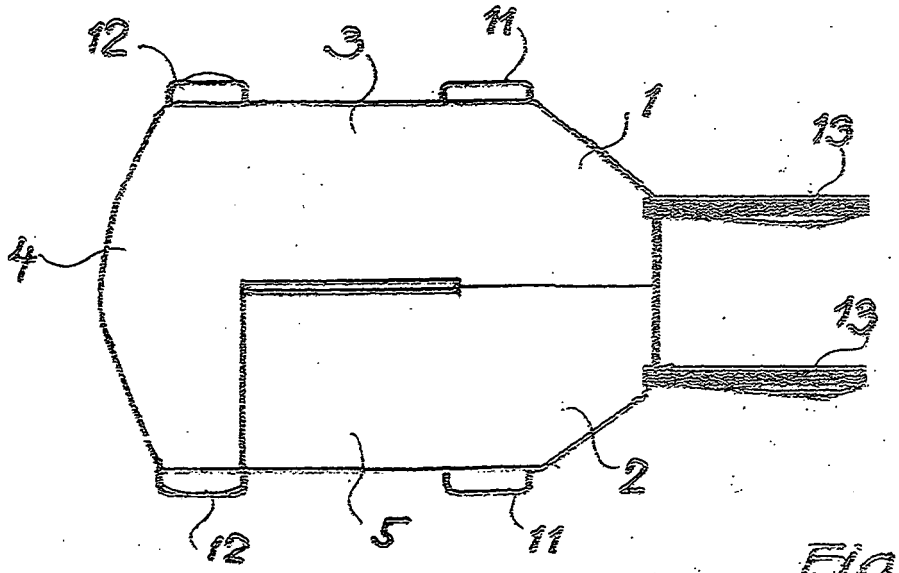


Fig. 3

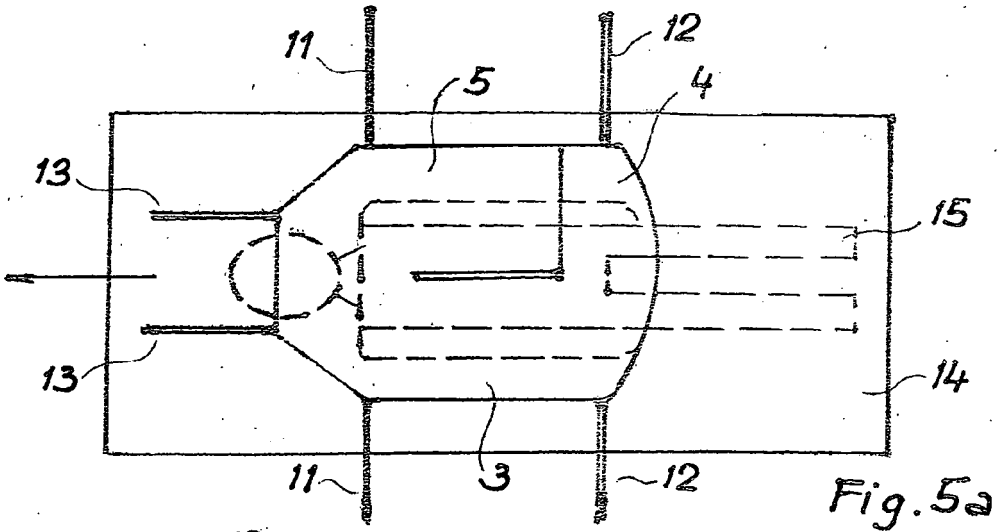


Fig.5a

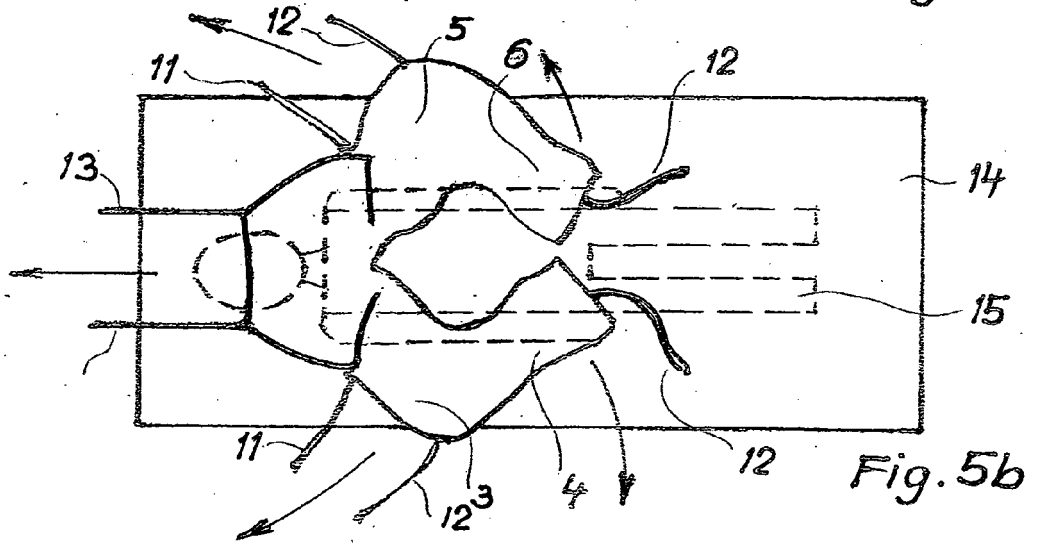


Fig.5b

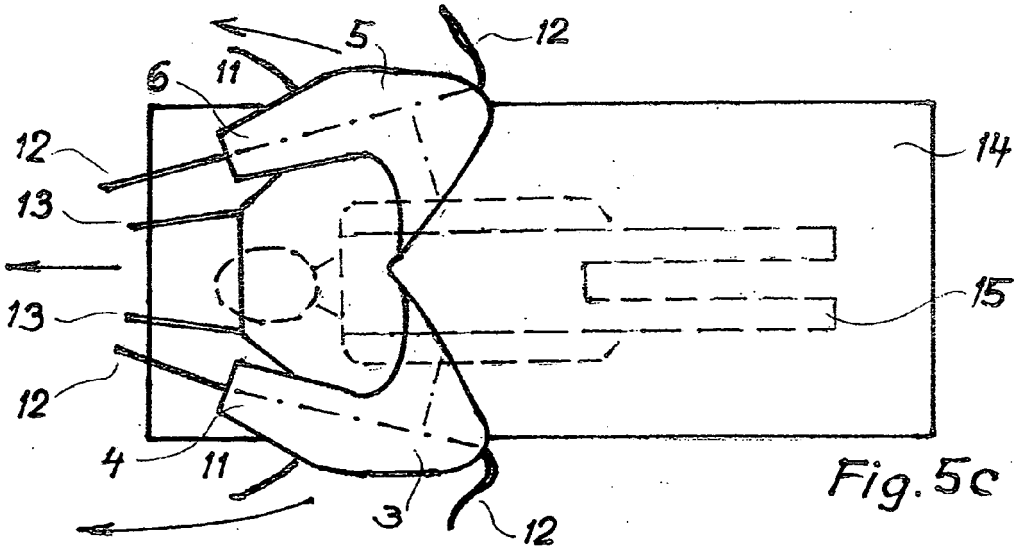


Fig.5c

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# EUROPEAN SEARCH REPORT

Application Number
EP 10 01 6120

## DOCUMENTS CONSIDERED TO BE RELEVANT

| Category | Citation of document with indication, where appropriate, of relevant passages | Relevant to claim | CLASSIFICATION OF THE APPLICATION (IPC) |
|---|---|---|---|
| X | EP 0 439 808 A1 (SCHNITZLER ALOIS [DE]) 7 August 1991 (1991-08-07) * column 17, line 56 - column 18, line 11; figures 20-22 * | 1,2 | INV. A61G7/10 |
| A,D | DE 10 2005 026653 A1 (BARTEK MARTA [DE]) 21 December 2006 (2006-12-21) * page 22 - page 29; figures 1-4 * | 1,3-5 | |
| A | US 2002/029417 A1 (WALKER LUCINDA B [US]) 14 March 2002 (2002-03-14) * page 33; figures 1,8,12 * | 1,3,5,6 | |
| A | US 2009/183309 A1 (STINSON HEATHER [US]) 23 July 2009 (2009-07-23) * paragraph [0014] - paragraph [0016]; figure 1 * | 1,3,5,6 | |

TECHNICAL FIELDS SEARCHED (IPC)

A61G

The present search report has been drawn up for all claims

| Place of search | Date of completion of the search | Examiner |
|---|---|---|
| The Hague | 4 May 2011 | Sommer, Jean |

CATEGORY OF CITED DOCUMENTS

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EPO FORM 1503 03.82 (P04C01)

## ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 10 01 6120

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04-05-2011

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EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

## REFERENCES CITED IN THE DESCRIPTION

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