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(54) BOARD FOR THE LATERAL TRANSFER OF PATIENTS

(57) Comprising a main body (1), flat, rigid or substantially rigid, which defines a top surface (2), a bottom surface (3) and rounded side edges (4) that join said surfaces (2, 3), and a tubular cover (5) that partially wraps the main body (1).

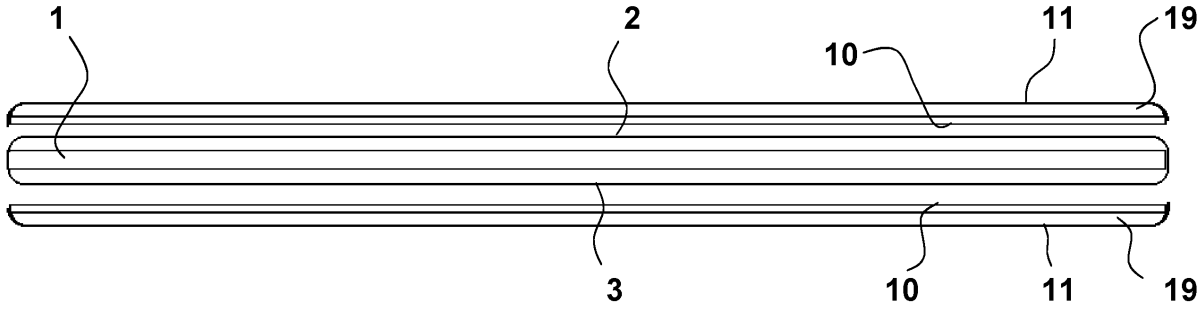

FIG. 3

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Description

[0001] Board for lateral transfer of patients, of the type comprising a main body, flat, rigid or substantially rigid, that defines a top surface, a bottom surface and rounded side edges that join said surfaces, and a tubular cover that partially wraps the main body, characterised in that it comprises at least one fabric arranged between the main body and the tubular cover, and in that said fabric has two surfaces: a first that is joined to the main body and a second which, once the first surface is attached to the main body, remains facing the tubular cover with which it comes into contact, at least partially, when transferring the patient, with said second surface comprising a sliding material, with said fabric occupying at least one part of the surface that covers the tubular cover.

BACKGROUND TO THE INVENTION

[0002] Some boards are known in the state of the art that comprise a main body without sliding properties, which is covered with a tubular cover the inner surface of which is in contact with the main body and the whole ensemble is sliding.

[0003] When transferring the patient from the board to a bed, the tubular cover moves with respect to the main body and moves the patient as if it were a conveyor belt, from the table to the bed.

[0004] So along these lines the German Patent DE3806470 "GLEITVORRICHTUNG" is known, from the year 1988, in the name of ERNST WALSER KUNSTSTOFFWERK, which relates to a sliding apparatus for transporting patients that basically comprises a base and a sliding cover that defines a friction force between both elements and which is overcome by an operator when there is a patient on the sliding cover. Subsequently it indicates that the static friction coefficient between both elements is <=0.1.

[0005] Also European Patent EP2470344 "PASSENGER TRANSPORTATION DEVICE", from the year 2000, in the name of Mr. Humbert GOCKEL-BOHNER, which relates to a board for transporting patients comprising a rigid body, around which a continuous sliding cover is arranged, wherein the main body comprises a foam that has been thermally treated under pressure, with closed pores and impermeable, with said foam having a density of 50 kg/m^3 or more. In the second claim it indicates a density of 60 kg/m^3.

[0006] Part of the state of the art is Patent US8096003 "TRANSPORTING DEVICE FOR PATIENTS", from the year 2009, in the name of SAMARIT MEDICAL INDUSTRIES, INC., which relates to an apparatus for transporting people using little force. This patent like the previous ones comprises a sliding cover, and in this case the base comprises lid-like ends to provide rigidity.

BRIEF DESCRIPTION OF THE INVENTION

[0007] This application falls within the boards for transferring patients in medical services in general, such as hospitals, ambulances, etc.

[0008] The nearest document is German Patent DE3806470.

[0009] Said patent describes a sliding cover that wraps the base, and which rotates when the patient is pushed. In one of its dependent claims it refers to the possibility that the base be a sliding base.

[0010] That board solves the problem of facilitating moving the patient from a board to a bed, via a conveyor belt type system.

[0011] The drawbacks of that board are various. On the one hand it is necessary to manufacture a sliding cover every time, which increases the price of said cover. This also means that if disposable covers are used, since they have sliding properties, their price increases, and so they are not useful.

[0012] The problem is that said board, in the event that it slides, since the friction is so low (friction coefficient lower than or equal to 0.1), it implies that the patient who is on the sliding cover, is out of control, in a very quick movement that accelerates thanks to the force of the operators or nurses on the patient.

[0013] In fact, the same problem occurs with document EP2470344 which, as shown in their promotional material and adverts, requires pushing the patient, which means these boards are not suitable when the patient has serious injuries, because a push by the nurse or operator can cause the patient injury.

[0014] The inventor has developed a new board that allows on the one hand to change the cover, which as it does not slide, i.e. that a cover without sliding properties can be used with low friction providing it is tubular, therefore reduces the costs and adds specific properties to the cover like impermeability or anti-stain treatments. Disposable tubular covers can be provided, which means that they can be changed every time they are used, which improves hygiene measures. And even very economical covers, or covers with very specific technical characteristics depending on the intended use.

[0015] Also the patient is more controlled when is moved. If we look, as mentioned in the descriptions of the two patents mentioned above, the operator pushes the patient. In fact this is shown particularly in the demo videos and promotional material, particularly with the second patent. In this invention a technique can be used to cover said cover with a bed sheet on which the patient is placed and to extending said bed sheet instead of pushing the patient; this way,

the movement is gentler and more controlled. This allows patients with serious injuries to be transferred without any problem.

[0016] An object of the present invention is a board for lateral transfer of patients, of the type comprising a main body, flat and rigid, or substantially rigid, which defines a top surface, a bottom surface and rounded side edges that join said surfaces, and a tubular cover that partially wraps the main body, characterised in that it comprises at least one fabric arranged between the main body and the tubular cover, and in that said fabric has two surfaces: a first which is joined to the main body and a second which, once the first surface is attached to the main body, remains facing the tubular cover with which it comes into contact, at least partially, when transferring the patient, with said second surface comprising a sliding material, and with said fabric occupying at least one part of the surface that the tubular cover covers.

BRIEF DESCRIPTION OF THE DRAWINGS

[0017] To facilitate the explanation attached to this specification there are six sheets of drawings representing a practical embodiment, which is provided as a non-limiting example of the scope of this invention:

- Figure 1 is a plan view of the object of this invention,
- Figure 2 is a view of Figure 1 without the tubular cover,
- Figure 3 is a front exploded view of Figure 2,
- Figure 4 is a detail of Figure 1, specifically of the notch area,
- Figure 5 is a perspective view of an example with two halves, and
- Figure 6 is a view of Figure 5, without the tubular cover.

SPECIFIC EMBODIMENT OF THIS INVENTION

[0018] Figure 1 shows a main body 1, a fabric 19, a handle 9 and a tubular cover 5.

[0019] Figure 2 represents the main body 1, the second surface 11 of the fabric and the handle 9.

[0020] Figure 3 illustrates the main body 1, the top surface 2, the bottom surface 3, the fabric 19 with its first surface 10 and its second surface 11.

[0021] Figure 4 illustrates the main body 1, the second surface 11 of the fabric, a rounded side edge 4 and a guiding notch 7.

[0022] Figure 5 shoes the main body 1, with its first half 1 a and its second half 1 b, the tubular cover 5, the fabric 19 and the handles 9.

[0023] Lastly, Figure 6 represents the main body 1, with its first half 1 a and its second half 1 b, the second surface 11 of the fabric, a portion 8 and the handles 9.

[0024] So, in the specific embodiment, the board for lateral transfer of patients would comprise a main body 1, flat, which is the main structure on which the patient is placed.

[0025] Said main body 1 defines a top surface 2, a bottom surface 3 and rounded side edges 4. The side edges 4 join the surfaces 2, 3.

[0026] The top 2 and bottom 3 surfaces, in principle are identical, even when they have been differentiated in this specification to facilitate the comprehension thereof.

[0027] The main body 1 can be rigid, for example made of wood, or substantially rigid, for example made of a polyethylene foam to confer a light weight to the main body 1. When defined substantially reference is made to the rigidity displayed before the patient is placed on the main body 1, the main body 1 is shown rigid, but when is subject to the weight of the patient, it loses part of said rigidity by sag. Obviously it depends on the weight of the patient, as the main body 1 will not behave the same way for a small child as for a 100 kg adult.

[0028] So the inventor understands that substantially rigid would include, for example, a polyethylene foam with a density of at least 35 kg/m^3, even when in this embodiment, considering an adult man of average age, the density would be between 55 and 60 kg/m^3.

[0029] It also comprises a tubular cover 5, on which the patient to be moved is placed.

[0030] Between the main body 1 and the tubular cover 5 a fabric 19 has been arranged. Said fabric 19 has two surfaces. A first 10 that is joined to the main body 1, by procedures known per se and which are not claimed, like gluing or thermofusion, and a second surface 11 (Fig. 3).

[0031] Once the first surface 10 is attached to the main body 1, the second surface 11 remains on the outside, i.e. facing the tubular cover 5 with which it comes into contact, at least partially, when the patient is transferred. In other words, at least when the patient is on the tubular cover 5. Also said second surface 11 is made of a sliding material, such as for example, a polyamide with sliding properties, like Teflon.

[0032] The fabric 19 occupies at least the equivalent to a part of the surface occupied by the tubular cover 5, even when due to easy manufacturing and advantages to be explained later, in this embodiment the whole of the top surface

2 and the bottom surface 3 of the main body 1 will be covered with said fabric 19.

[0033] Once the patient has been placed on the main body 1 covered by the fabric 19 and wrapped partially by the tubular cover 5, as the fabric 19 comprises a sliding material on its second surface 11, this means that when the patient is moved, for example, to a hospital bed, when moving the patient, for example using a sheet, the friction of said patient against the tubular cover causes resistance to the movement, but at the same time said tubular cover 5 does not find any resistance because fabric 19 on its second surface 11 comprises a sliding material whereby the tubular cover 5 moves, turning around fabric 19.

[0034] Said movement of the tubular cover 5 with respect to the second surface 11 of fabric 19 and the main body 1 is greater than that produced by the patient with the tubular cover 5, due to the friction between the patient and the tubular cover 5. This means that the patient is always controlled more, i.e. the patient is not pushed because it is not necessary to overcome a great friction force, since the fabric 19 allows the movement of the tubular cover 5 and also the effort to be made is smaller.

[0035] To facilitate the task, it has optionally been envisaged that the rounded side edges 4 also comprise fabric 19, this facilitates the unit's sliding movement even more if necessary.

[0036] In certain cases, for example patients with infectious diseases, it can be convenient that the tubular cover 5 be disposable, and this can be done without any problems in this invention, because the tubular cover 5 can be of any kind, as it does not need to be special, because the sliding element is found in the fabric 19 which is joined to the main body 1, and so replacing the tubular cover 5 does not affect the fabric 19.

[0037] Another option is that to avoid fabric 19 staining by body fluids, it has been envisaged that said tubular cover 5 be impermeable, something which the current configuration allows without increasing costs. Also, the efficiency could be increased by welding the seams with high frequency welders, which prevents said fluids from passing through the seams.

[0038] The top surface 2 and the bottom surface 3 of the main body have been covered with fabric 19 because this increases the controlled sliding of the board.

[0039] If we observe the distribution of friction between the background and the elements we observe the following:

Friction	DE3806470	EP2470344	Application
Patient/cover	X / √	X / √	X/X
Cover/Main body	√/√	√/X	N/A
Cover/Fabric	N/A	N/A	X/√
Main body/Sheet	√/X	X/X	N/A
Fabric/Sheet	N/A	N/A	√/X or X/X
Cover/Sheet	√/X	√/X	X/X

[0040] Where the symbol "X" indicates that there is friction and the "√" symbol indicates that there is no friction (hardly).

[0041] As can be seen as there are fewer sliding options in this application, the patient is always more controlled, because the actual friction will prevent the patient from falling due to an uncontrolled sliding action.

[0042] If we analyse the case of the patient with respect to the cover, the friction in the case of the two quoted documents is partial, i.e.: the cover slides and the body of the patient, on the other hand, does not cause any friction. In the case of this application, there is friction between both bodies, that of the cover 5 and that of the patient, neither of them has sliding properties, this means that the patient has a greater resistance to overcome with respect to the cover, which prevents the patient being moved involuntarily or even falling because of the lack of friction, as indicated above.

[0043] As for the cover 5 and the main body 1, the German document indicates that minimum friction is sought between them both, in fact in the best embodiment they both slide. In the European patent is it only the cover 5 that slides. Finally, in this case it is not applicable, i.e.: this combination does not occur because the cover 5 does not slide on the main body 1, but on fabric 19.

[0044] The following line refers to the friction between the cover 5 and the fabric 19, which does not occur in any of the two prior documents, because it has not been envisaged, but it does occur in the present invention, and it is the object thereof. The advantage obtained is that the patient moves equally but in a more controlled manner as per the explanation, there is no fear of the patient falling and also the patient's body is not pushed, whereas it is in the embodiments of the prior documents.

[0045] Between the main body and the sheet (if a bed sheet is used), in the case of the German document the main body would slide, in the case of the European document both bodies would put up resistance, and this option is not viable for the specific embodiment of this invention, because the main body 1 would not come into contact with the sheet,

but with the fabric 19 instead.

[0046] In the following line in the table, as the other two documents do not have fabric 19, it is not applicable. Fabric 19 is important in this invention because it is the element that helps the cover 5 to slide.

[0047] Finally, the issue of the friction between the cover 5 and the possible sheet, in this application there is mutual friction, but neither of the two elements have sliding properties, and the opposite occurs in the quoted documents (the European and German patent) where both have a sliding cover.

[0048] This leads to the advantages mentioned above both in terms of saving costs and moving the client, and the patient is not pushed and at all times patient movement is controlled.

[0049] Also, the circumstances arise wherein even though there is more friction, in this application the operator does not push the patient as does happen in the two background documents, instead he can use a second sheet and the movement is not to push but to pull in the same sense the advancement patient, which prevents putting hands on patients with serious injuries, and it is much easier to move the patient.

[0050] The inventor has found the tubular cover 5 made from a combination of PES fabric with PVC coating, to be advantageous.

[0051] Due to the fact that maximum lightweight is sought, to help the hospital staff and prevent injuries to them, the main body 1 is made of a polyethylene foam, which in this case confers great lightweight and strength. The density of said polyethylene foam as explained above can be different types, depending on the weight of the patient, but if an average aged male about 80 kg in weight is taken as a reference, the density would be 60 kg/m^3.

[0052] On at least one of the rounded side edges 4 a guiding notch 7 has been made, along the surface where the tubular cover 5 turns. This is done to make it easier to guide the tubular cover 5. Said tubular cover 5 can be a little loose, this way, the guiding notch 7 makes the tubular cover 5 always operable.

[0053] As shown in Figures 5 and 6 there is the option of making the boards longer. To do this it has been envisaged that the main body 1, comprises at least two halves, a first 1 a and a second 1 b joined together by a portion 8, which acts as a hinge, so that the first half 1 a can be folded onto the second half 1b.

[0054] Sometimes, it may be very convenient to not move the patient and keep him/her on the board. This way, the main body 1, the fabric 19 and the tubular cover 5 have been made in a material which is radiotransparent, so that it can be used to take X-rays for example.

[0055] The handles 9, in this invention are for transporting or hanging the board but not for transporting the patient.

[0056] This invention describes a new board for lateral transfer of patients. The examples mentioned herein do not limit the invention, and therefore it can have various applications and/or adaptations, all included within the scope of the following claims.

Claims

1. Board for lateral transfer of patients, of the type comprising a main body (1), flat, substantially rigid, which defines a top surface (2), a bottom surface (3) and rounded side edges (4, 6) that join said surfaces (2, 3), and a tubular cover (5) that partially wraps the main body (1), **characterised in that** it comprises at least on fabric (19) arranged between the main body (1) and the tubular cover (5), and **in that** said fabric (19) has two surfaces:

   - a first (10) that is joined to the main body (1) and
   - a second (11) which, once the first surface (10) is attached to the main body (1), remains facing the tubular cover (5) with which it comes into contact, at least partially, when transferring the patient, with said second surface (11) comprising a sliding material, with said fabric (19) occupying at least a part of the surface that covers the tubular cover (5).

2. Board, according to claim 1, **characterised in that** the second surface (11) of the fabric (19) is a polyamide with sliding properties.

3. Board, according to claim 1 or 2, **characterised in that** the whole of the top surface (2) and the whole of the bottom surface (3) are covered by the fabric (19).

4. Board, according to the claim 1 or 2, **characterised in that** the tubular cover (5) is disposable.

5. Board, according to the claim 1 or 2 or 3, **characterised in that** said tubular cover (5) is impermeable.

6. Board, according to claim 5, **characterised in that** the tubular cover (5) is made from a combination of PES fabric with PVC coating.

7. Board, according to claim 1, **characterised in that** the main body (1) is made from a polyethylene foam.

8. Board, according to claim 1, **characterised in that** on at least one of the rounded side edges (4, 6) a guiding notch (7) for the tubular cover (5) has been made.

9. Board, according to claim 1, **characterised in that** the main body (1), comprises at least two halves, a first (1 a) and a second (1 b) joined by a portion (8) like a hinge.

10. Board, according to any of the preceding claims, **characterised in that** it is radiotransparent.

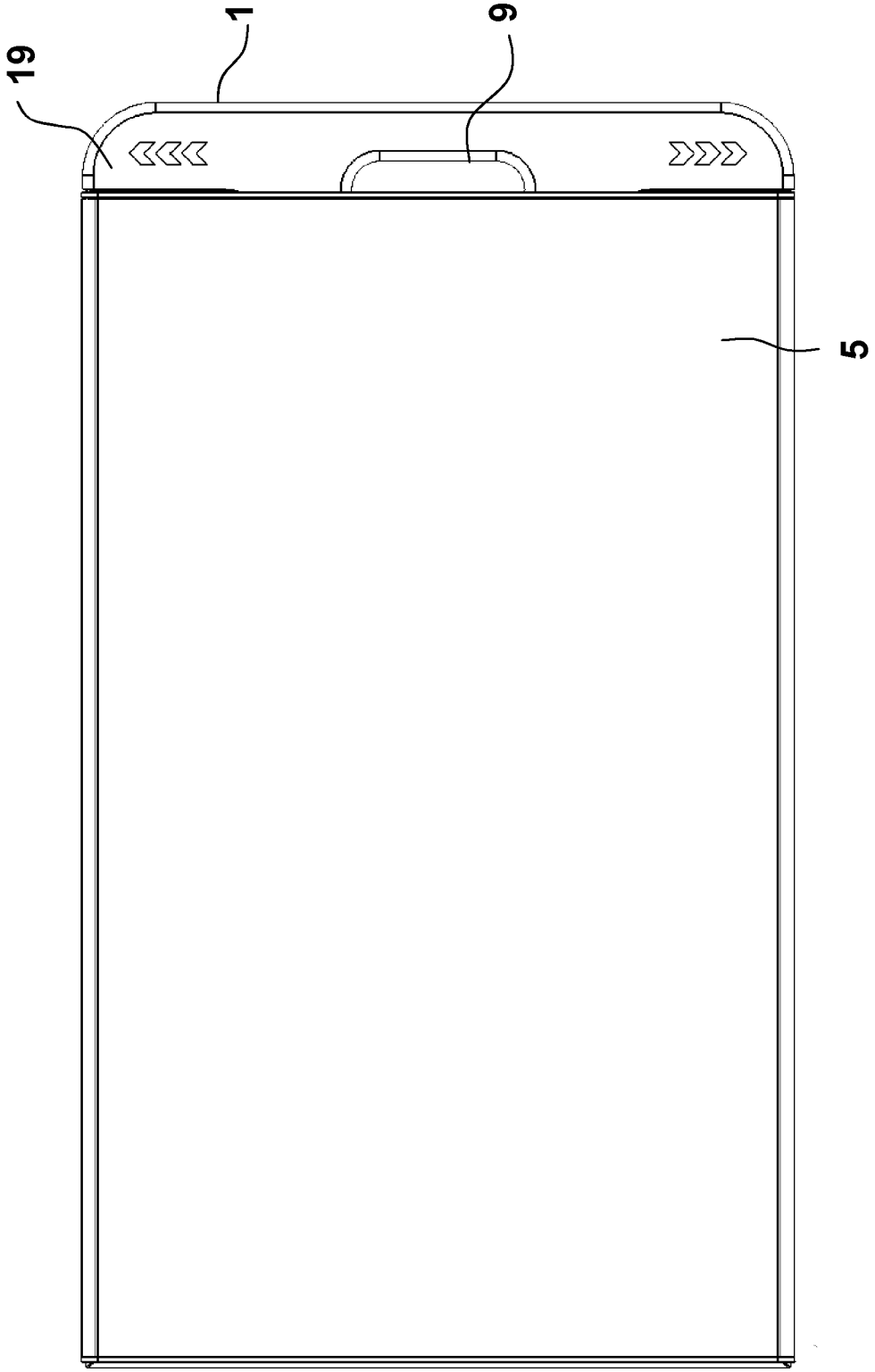

FIG. 1

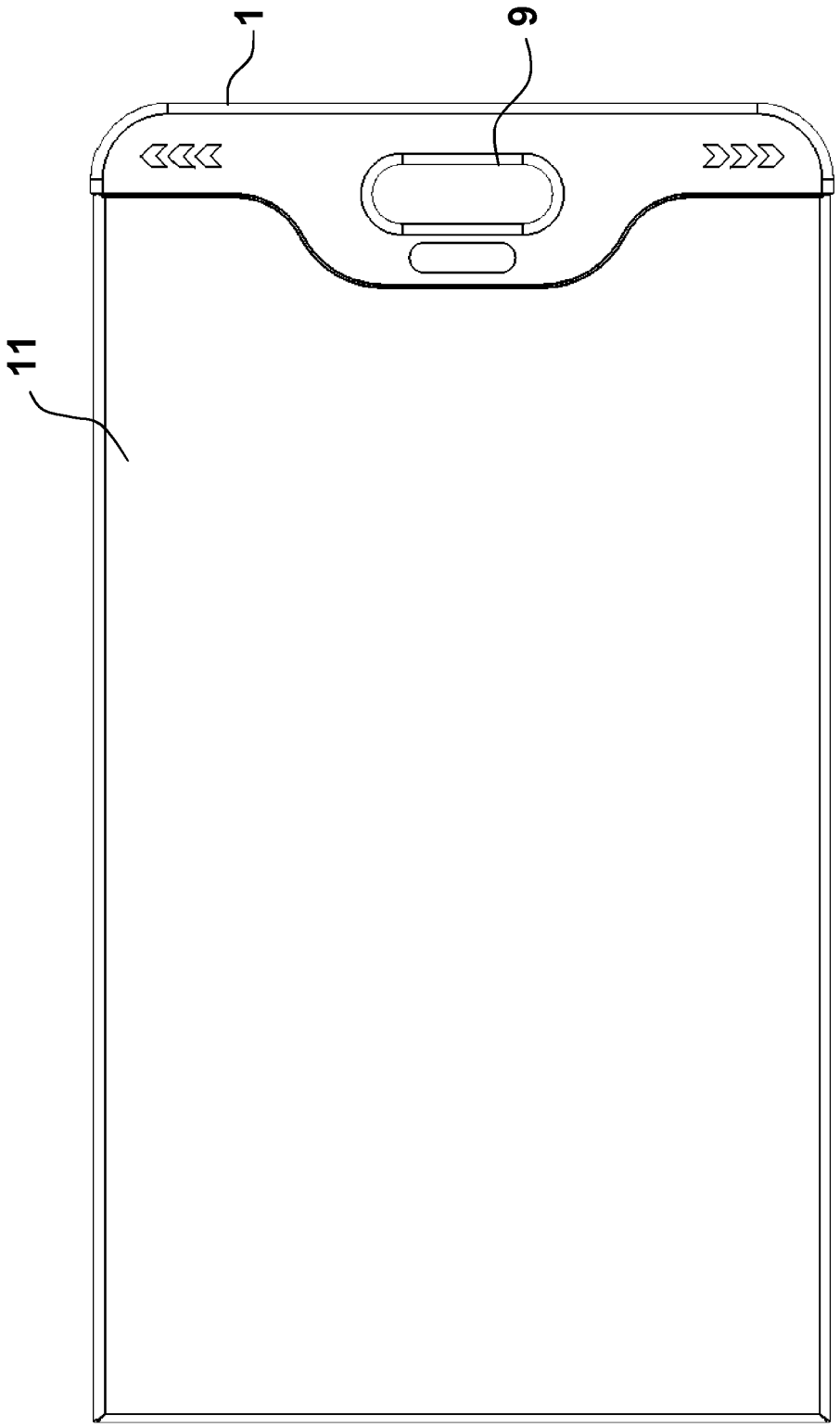

FIG. 2

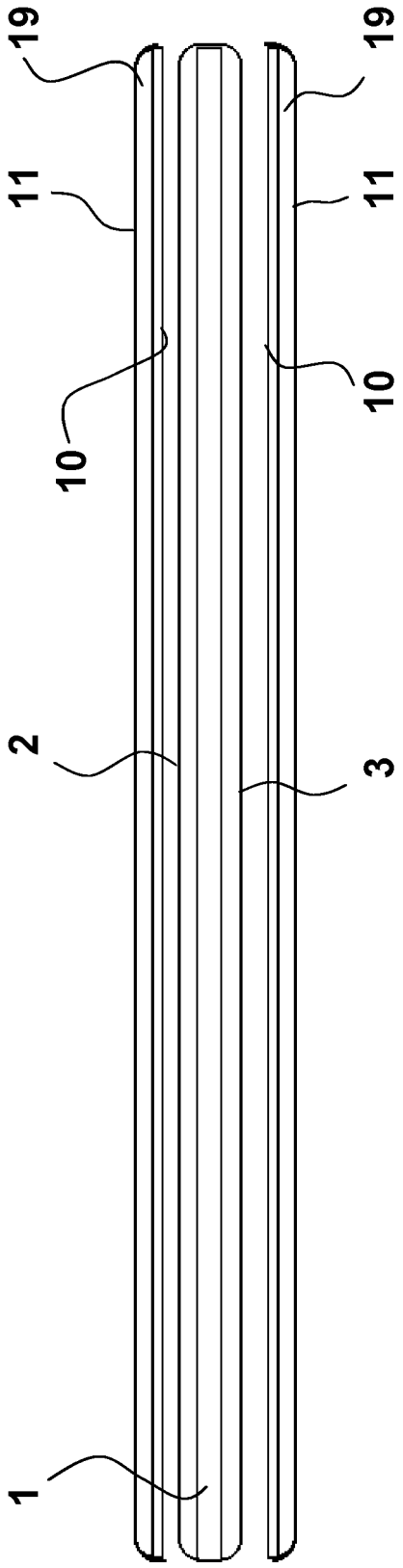

FIG. 3

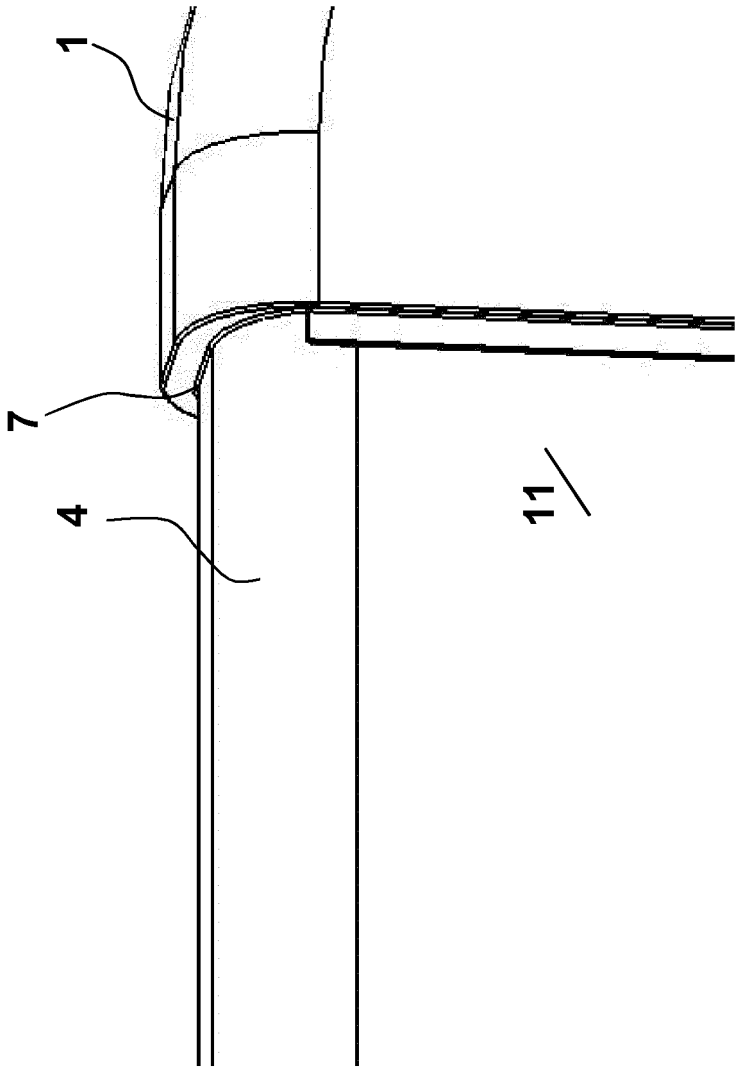

FIG. 4

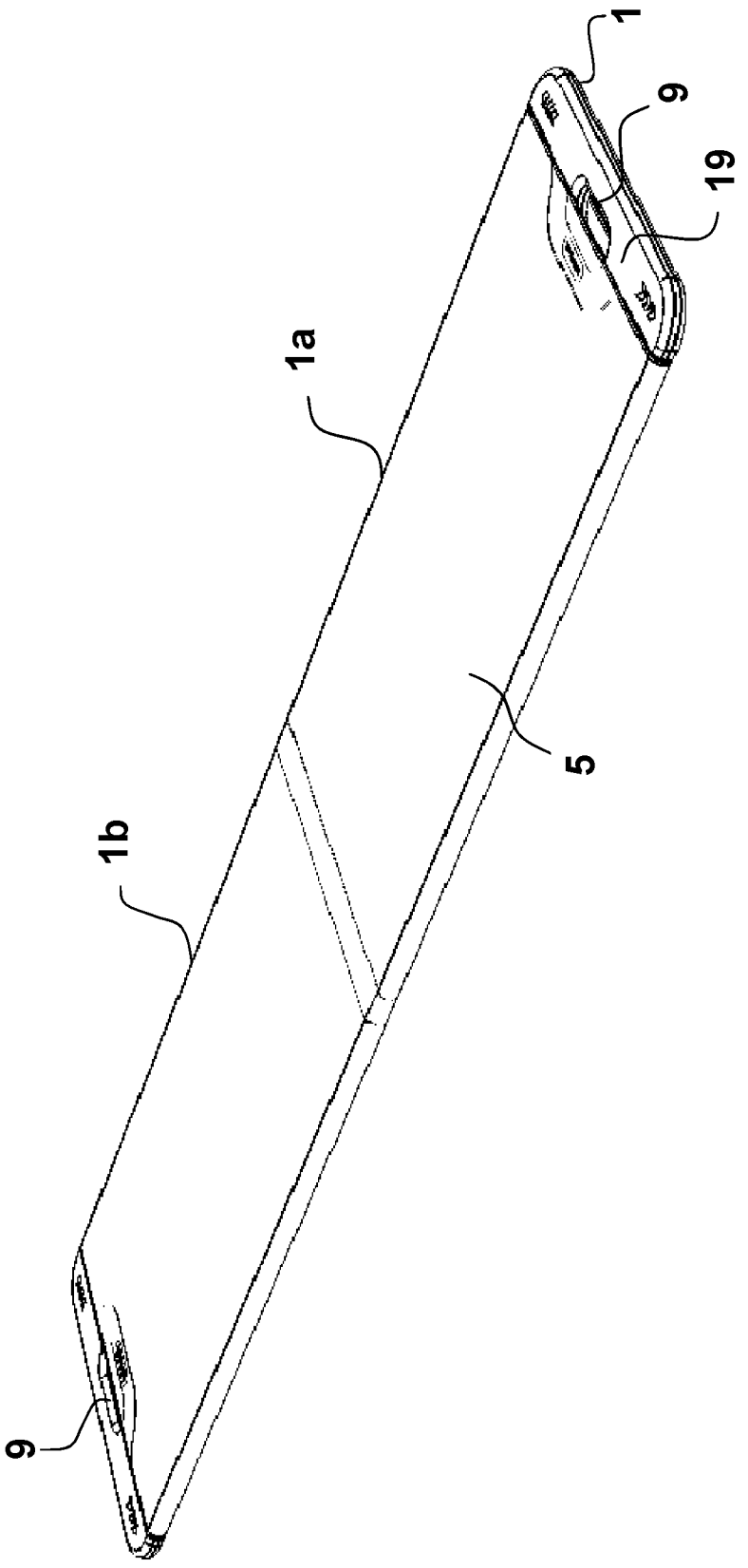

FIG. 5

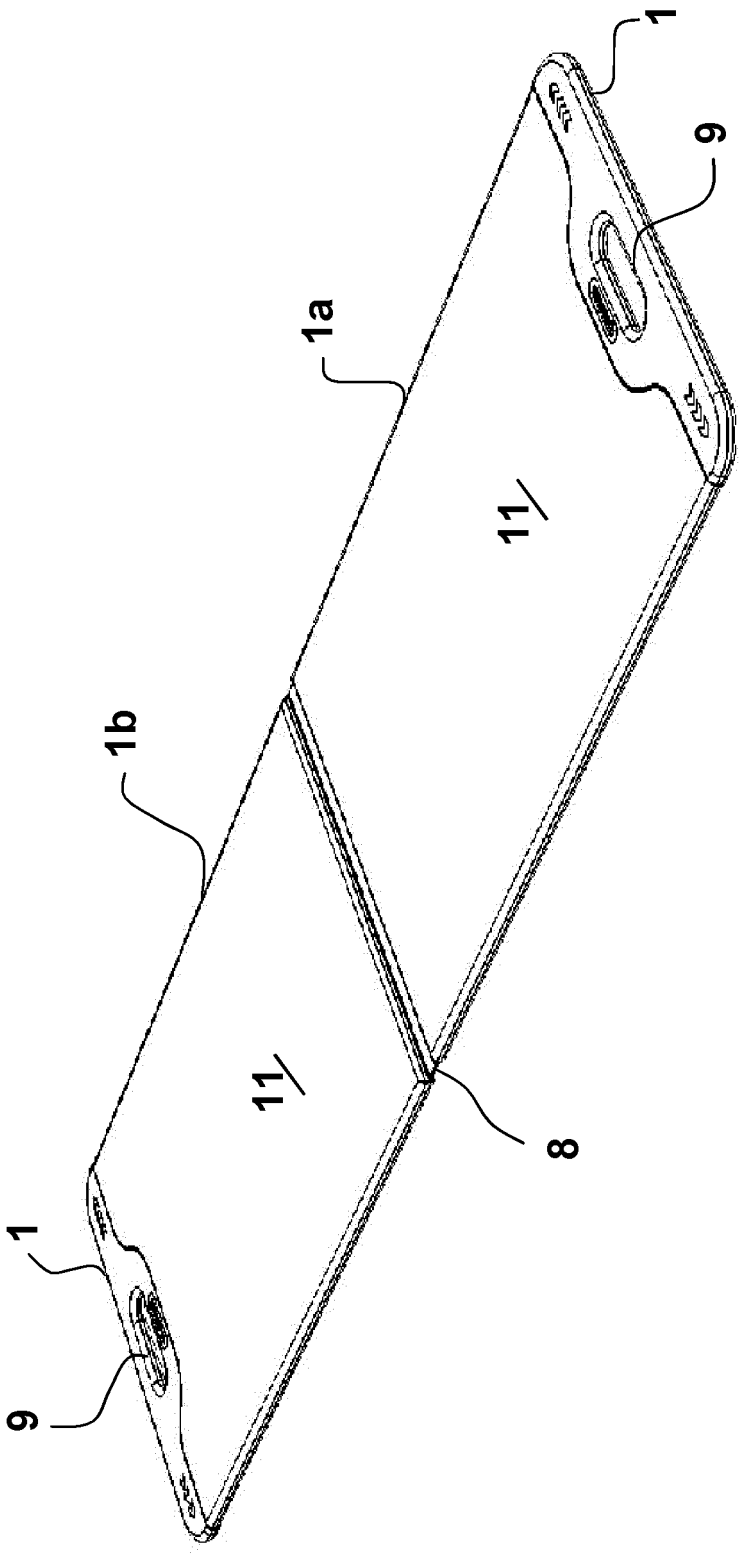

FIG. 6

INTERNATIONAL SEARCH REPORT

International application No
PCT/ES2015/070009

A. CLASSIFICATION OF SUBJECT MATTER
INV. A61G7/10
ADD.

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)
A61G

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

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	DE 88 16 024 U1 (CORVETTE FLUIDTECHNIK GMBH) 9 February 1989 (1989-02-09)	1-7,9,10
Y	page 2, line 8 - line 20; figure 2	8

Y	US 8 096 003 B2 (SCHUSTER JUERG O [CH]) 17 January 2012 (2012-01-17) cited in the application figures	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

"E" earlier application or patent but published on or after the international filing date

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"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
3 September 2015	14/09/2015

Name and mailing address of the ISA/	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Godot, Thierry

Form PCT/ISA/210 (second sheet) (April 2005)

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/ES2015/070009

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
DE 8816024 U1	09-02-1989	NONE	
US 8096003 B2	17-01-2012	AT 512654 T	15-07-2011
		CA 2680995 A1	23-04-2010
		DE 102008052968 B3	08-04-2010
		EP 2179716 A2	28-04-2010
		US 2010101019 A1	29-04-2010

Form PCT/ISA/210 (patent family annex) (April 2005)

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- DE 3806470 **[0004] [0008] [0039]**
- EP 2470344 A **[0005] [0013] [0039]**
- US 8096003 B **[0006]**