



Europäisches Patentamt
European Patent Office
Office européen des brevets



(11)

EP 1 481 614 A1

(12)

EUROPEAN PATENT APPLICATION

(43) Date of publication:
01.12.2004 Bulletin 2004/49

(51) Int Cl.7: **A47C 31/00**

(21) Application number: **03425785.7**

(22) Date of filing: **05.12.2003**

(84) Designated Contracting States:
**AT BE BG CH CY CZ DE DK EE ES FI FR GB GR
HU IE IT LI LU MC NL PT RO SE SI SK TR**
Designated Extension States:
AL LT LV MK

(72) Inventor: **Ranaldo, Marco**
50041 Calenzano (Firenze) (IT)

(74) Representative: **Lanzoni, Luciano**
c/o BUGNION S.p.A.
Via Goito, 18
40126 Bologna (IT)

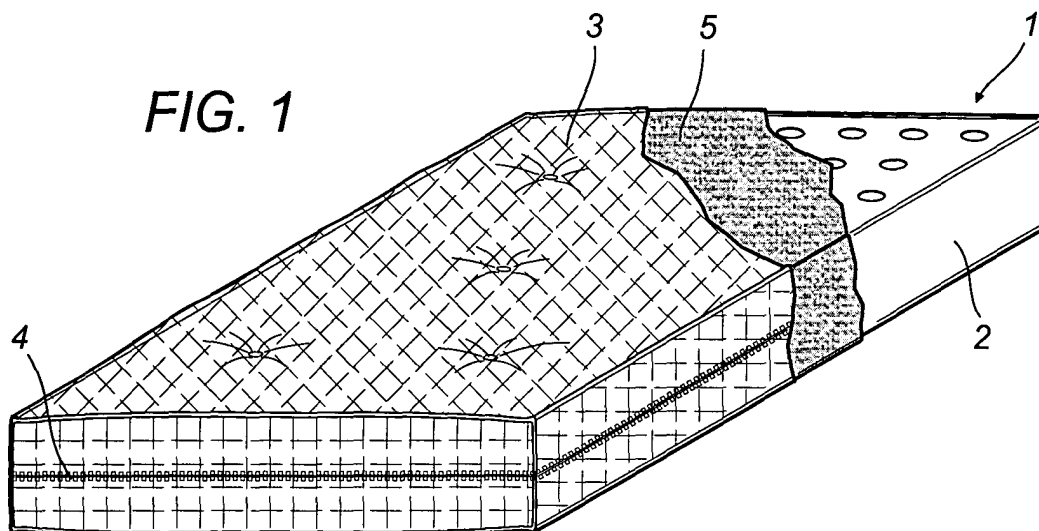
(30) Priority: **26.05.2003 IT BO20030329**

(71) Applicant: **POINTEX S.p.A.**
59100 Prato (IT)

(54) **Cover for a mattress or a seat**

(57) An article (1; 13) for supporting the human body, in particular a mattress (1) or a seat (13), has a panel (2; 14) made of latex foam and shaped to support the body, and an outer cover (3; 15) for the panel (2; 14); between the panel (2; 14) and the outer cover (3; 15) there is at least one fabric (5, 12; 16) having a first side

(7) facing the panel (2; 14) and a second side (8), opposite the first, facing the outer cover (3; 15); at least the first side (7) having a plurality of raised loops (9), arranged according to a plurality of cords (6), or ribs, separated from one another by a predetermined spacing (p), to prevent the fabric (5, 12; 16) and the panel (2; 14) from sliding relative to one another.



EP 1 481 614 A1

Description

[0001] The present invention relates to an article for supporting the human body of the type comprising a shaped panel, hereinafter referred to with the term panel, for supporting the body and an outer cover containing the panel. Depending on the shape of the panel, the article made in accordance with the present invention may be, in particular, a mattress, a seat for a motor vehicle, an armchair, a sofa, etc.

[0002] Recent years have seen a significant increase in the use of foams, latexes and their derivatives, whether synthetic, natural or mixed, for the production of panels of the desired shape.

[0003] Such panels are increasingly appreciated by consumers both because of their hygienic and anallergic characteristics, and because of their capacity for local deformation proportional to the force applied and, therefore, the fact that they anatomically adapt to the shape of the body they support.

[0004] Therefore, in the description below, the term latex is used without distinction to mean both natural and synthetic latex, and so the term latex foam also means polyurethane foam or substantially equivalent materials for the production of the above-mentioned panels.

[0005] Such foams are often used in the production of mattresses, to which the following description refers, without in any way limiting the scope of the present invention.

[0006] Generally speaking, mattresses made of such foams have a removable outer cover, that is to say, their outer cover may be removed for both washing and changing. For this purpose, the outer cover normally has a zip extending along the outer edge of the panel.

[0007] Sometimes, to prevent temporary removal of the outer cover from leaving the panel unprotected, for example against accidental cuts or scrapes, stains, etc., the panel may be contained in a protective inner cover, normally made of fabric such as cotton or, in any case, of a breathable material to promote panel airing.

[0008] The outer cover, also breathable, may consist of a single layer of material, but more often consists of three layers of material, and specifically of one outer layer of superior quality material, which may bear decorative patterns, one inner layer of more economical material, usually a rather thin cotton voile, and one filler layer normally made of polyester, cotton and/or other types of fibres, inserted between the internal and external layers.

[0009] The three layers may be combined, fixing them together by quilting or bonding (a special type of stitching).

[0010] As is known, in order to keep the elasticity of a foam mattress unchanged with the passage of time, the mattress must periodically be turned over and turned through 180° relative to the mesh which supports it. These operations, together with the movements normally made by a sleeping person, very often result in an annoying sliding, due to slipping, of the outer cover rel-

ative to the panel, irrespective of whether or not the panel has the above-mentioned protective inner cover.

[0011] In the former case, the sliding occurs both between the protective inner cover and the panel and between the outer cover and the protective inner cover. However, the sliding between the protective inner cover and the panel is most apparent due to the natural slipperiness of the fabric surface of the protective inner cover in contact with the panel.

[0012] After the sliding and slipping, the outer cover's shape stitching, which defines the shape of the panel on which it is applied, no longer matches the edges of the panel as it should. This is on one hand an aesthetic disadvantage and on the other hand results in unwanted deformation of the panel, with evident serious consequences for its functionality.

[0013] However, due to the significant weight of latex mattresses, in particular double mattresses, and due to the form and structure of the material with which they are made (latex foams) which is not particularly rigid but easily deformed, realigning the outer cover shape stitching with the edges of the panel is very difficult and laborious.

[0014] To solve the above-mentioned problem, outer covers and/or protective inner covers have been proposed which are impregnated on the inside with resins or similar sticky substances. However, resins, whether natural or synthetic, may be toxic, or may cause allergies or intolerances. Moreover, in the long-term such resins may alter the characteristics of the panel, irreversibly damaging it.

[0015] The aim of the present invention is to produce an article for supporting the human body, comprising a shaped panel for supporting the body and a panel outer cover, which overcomes the above-mentioned disadvantages.

[0016] The technical characteristics of the invention, with reference to the above aim, are clearly described in the claims below, in particular claim 1 and, preferably, in any of the claims directly or indirectly dependent on claim 1.

[0017] The advantageous aspects of the invention are more apparent from the detailed description which follows, with reference to the accompanying drawings which illustrate a preferred embodiment of the invention provided merely by way of example without restricting the scope of the inventive concept, and in which:

- Figure 1 is a perspective view, with some parts cut away for clarity, of a first embodiment, consisting of a mattress, of the article made in accordance with the present invention;
- Figure 2 is a cross-section, with some parts cut away for clarity, of the mattress illustrated in Figure 1;
- Figure 3 is a scaled-up view of a detail from Figure 2;
- Figure 4 illustrates a detail of the weave used to pro-

duce the fabric of the article made in accordance with the present invention;

- Figure 5 illustrates one side of the fabric of the article made in accordance with the present invention;
- Figure 6 is a cross-section, with some parts cut away for clarity, of an alternative embodiment of the mattress illustrated in Figure 1; and
- Figure 7 is a perspective view, with some parts cut away for clarity, of a second embodiment, consisting of a motor vehicle seat, of the article made in accordance with the present invention.

[0018] With reference to Figures 1 and 2, the article for supporting the human body disclosed is in the form of a mattress 1 and comprises a shaped panel 2 for supporting the body and a breathable outer cover 3 for the panel 2.

[0019] The mattress 1 has a removable outer cover, that is to say, the outer cover 3 may be removed for easy washing or changing. For this purpose, the outer cover 3 has, for example, a zip 4 extending along the outer edge of the panel 2. Obviously, the zip may be substituted by two Velcro strips or the like.

[0020] As illustrated in Figures 1, 2 and 6, the panel 2 is of the known type and is obtained in the shape of a parallelepiped from a foam material, specifically natural latex or synthetic latex, for example polyurethane.

[0021] The outer cover 3 is also of the known type, and in particular may, without distinction, be of the single-layer or multi-layer type. In the latter case, not illustrated in Figure 2, the outer cover 3 consists of one external layer of fabric, one internal layer of fabric and a thin padding filler layer made of various types of fibres, for example cotton and/or wool, inserted between the internal and external layers.

[0022] Between the panel 2 and the outer cover 3 there is a cotton fabric 5, in particular, as illustrated in Figures 3, 4 and 5, a raised grosgrain fabric, that is to say, having raised cords 6, or ribs, separated from one another by a predetermined spacing p.

[0023] The particular weave of the above-mentioned fabric gives the fabric 5 a certain elasticity even though it is completely made of cotton. Alternatively, the fabric 5 may be made of synthetic fibres, which may be elastic, or a mixture of cotton and synthetic fibres. Whatever the case, the fabric 5 is breathable, to promote panel 2 airing.

[0024] As illustrated in Figure 2, the fabric 5 has a first side 7 facing the panel 2 and a second side 8, opposite to the first, facing the outer cover 3. To be precise, the first side 7, illustrated in detail in Figure 5, is in contact with the panel 2 and the second side 8 is in contact with the outer cover 3.

[0025] According to the particular weave of the velvet illustrated in Figure 4, the second side 8 is substantially smooth, whilst the first side 7 has a plurality of loops 9, forming projections, designed to form the above-mentioned cords 6 and to give the first side 7 a friction coef-

ficient and a roughness which prevent the fabric 5 and the panel 2 from sliding or slipping relative to one another.

[0026] In particular, as illustrated in Figure 3, the cords 6 constitute longitudinal projections which locally deform the panel 2 according to respective lowered zones 10. The longitudinal projections, together with the respective lowered zones 10, form means 11 for anchoring the fabric 5 to the panel 2.

[0027] It should be noticed that the local deformation of the panel 2 is generated by the weight of the fabric 5 and of the outer cover 3, by the force with which the fabric 5 and the outer cover 3 elastically compress the panel 2 and by the latex foam's capacity for local deformation proportional to the force applied, even if the force is of limited intensity. It should also be considered that the weight of the person sleeping on the mattress contributes to increased local deformation of the panel 2.

[0028] The fabric 5 is obtained in the known way, not illustrated, using a machine, not illustrated, comprising two sets of needles. A first set produces the base fabric, in particular the side 8, and a second set produces the loops 9, therefore, the side 7.

[0029] Unlike the first set of needles, a plurality of needles are missing from the second set, according to a succession of gaps arranged according to the above-mentioned spacing p.

[0030] In a first embodiment of the mattress 1, the fabric 5 forms an inner cover for the panel 2. In this case, the outer cover 3 is separate from the inner cover and covers the latter. In other words, when the outer cover 3 is removed, for example so that it can be washed or changed, the panel 2 is still contained in and protected by the inner cover made of the fabric 5.

[0031] Said inner cover may, in turn, be removable.

[0032] In another embodiment of the mattress 1, the fabric 5 is fixed to the inside of the outer cover 3. In this case, the fabric 5 and the outer cover 3 together form a panel 2 cover which, when removed, for example so that it can be washed, leaves the panel 2 bare and unprotected.

[0033] It should be highlighted that Figures 1 and 2 illustrate both of the above-mentioned embodiments. In an alternative embodiment not illustrated, the side 8 of the fabric 5 is substantially the same as the side 7, that is to say, they both have raised cords 6.

[0034] In a third embodiment of the mattress 1, illustrated in Figure 6, the fabric 5 is laid over another fabric 12, in turn encompassing the panel 2 like an inner cover. Said inner cover may or may not be removable.

[0035] The fabric 12 may be of the known type normally used to protect the panel, or substantially smooth on both sides, or, preferably, the same type as the fabric 5.

[0036] In both cases, the fabric 5 is fixed to the inside of the outer cover 3, the side 7 of the fabric 12 is in contact with the panel 2 and the side 7 of the fabric 5 is in contact with the fabric 12.

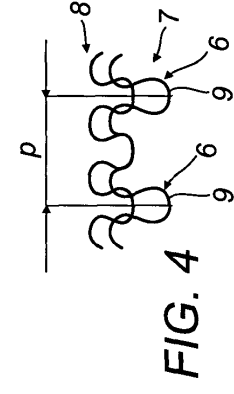
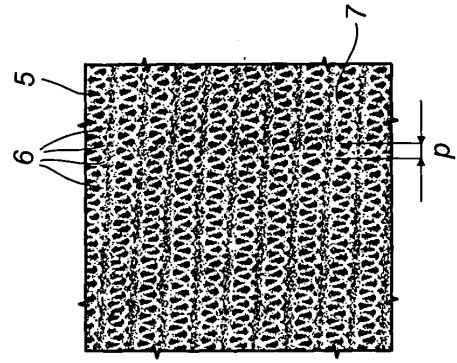
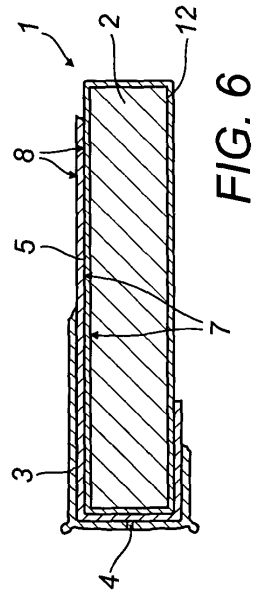
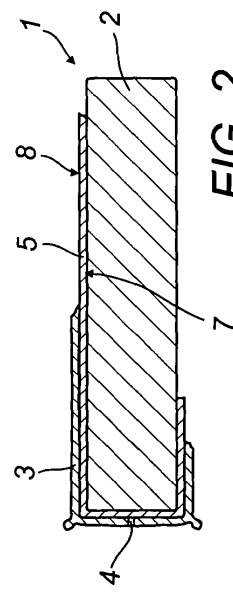
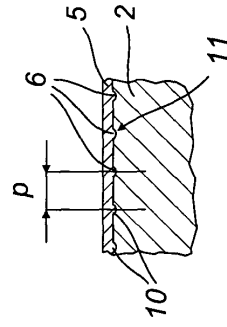
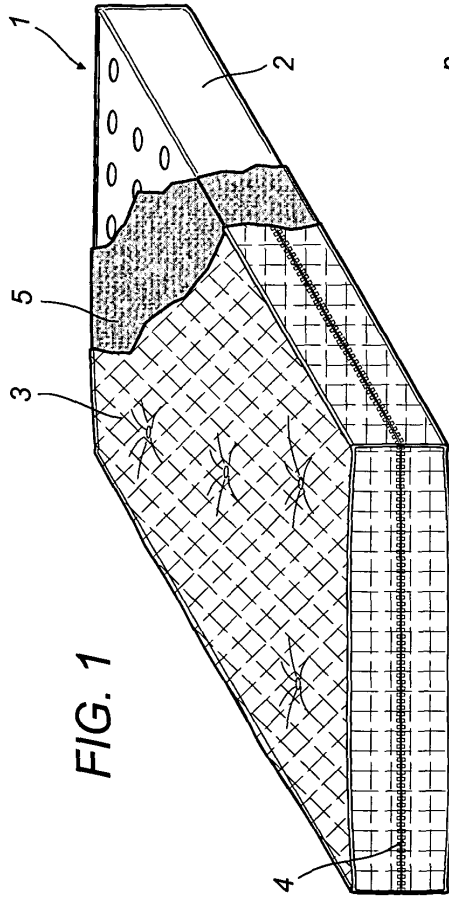
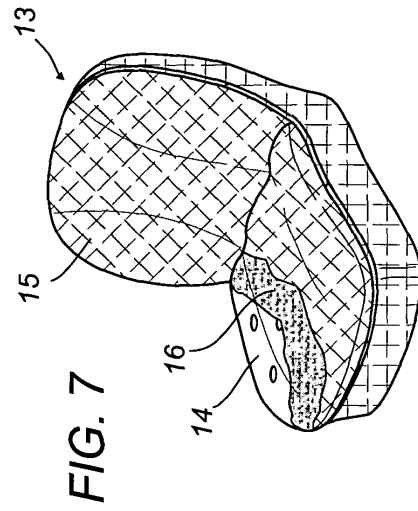
[0037] As already indicated, the present invention is not limited to the production of mattresses, but may also be advantageously applied in the production of other types of articles for supporting the human body. For example, Figure 7 illustrates a motor vehicle seat 13 whose panel 14, like the panel 2, is obtained from a foam material, and whose outer cover 15 covers and protects the panel 14 with a fabric 16 identical to the fabric 5 separating them. In particular, it should be noticed how the natural elasticity of the fabric 16, already highlighted with reference to the fabric 5, allows the fabric 16 to adhere to the panel 14, following its shape perfectly. Again, there may be an alternative embodiment with two fabrics inserted between the panel 14 and the outer cover 15, as described with reference to Figure 6.

[0038] Obvious alternative embodiments of the motor vehicle seat 13 are seats in general and armchairs or sofas in particular.

[0039] The invention described has evident industrial applications and can be subject to modifications and variations without thereby departing from the scope of the inventive concept. All the details of the invention may be substituted by technically equivalent elements.

Claims

1. An article for supporting the human body, comprising a shaped panel (2; 14) for supporting the body and an outer cover (3; 15) for the panel (2; 14); the article (1; 13) being **characterised in that** between the panel (2; 14) and the outer cover (3; 15) there is at least one fabric (5, 12; 16) having a first side (7) facing the panel (2; 14) and a second side (8), opposite the first, facing the outer cover (3; 15); at least the first side (7) being rough.
2. The article according to claim 1, **characterised in that** at least the first side (7) has a plurality of loops (9), forming projections (6), designed to give the first side (7) a predetermined friction coefficient; the loops (9) forming anchoring means (11) designed to prevent the fabric (5, 12; 16) and the panel (2; 14) from sliding relative to one another.
3. The article according to claim 2, **characterised in that** the fabric (5, 12; 16) is a looped or grosgrain fabric having raised cords (6), or ribs, separated from one another by a predetermined spacing (p).
4. The article according to claim 1, **characterised in that** at least the first side (7) has a plurality of projections (6), designed to allow local deformation of the panel (2; 14) according to a plurality of respective lowered zones (10); said projections (6), together with the respective lowered zones (10), forming anchoring means (11) designed to prevent the fabric (5, 12; 16) and the panel (2; 14) from sliding relative to one another.
5. The article according to any of the claims from 1 to 4, **characterised in that** the fabric (5, 12; 16) forms an inner cover for the panel (2; 14); the first side (7) being in contact with the panel (2; 14) and the outer cover (3; 15) being separate from the inner cover and covering the latter.
6. The article according to any of the claims from 1 to 4, **characterised in that** the fabric (5; 16) is fixed to the inside of the outer cover (3; 15); the second side (8) being in contact with the outer cover (3; 15) and the fabric (5; 16) together with the outer cover (3; 15) forming a cover for the panel (2; 14).
7. The article according to any of the claims from 1 to 4, **characterised in that** it comprises a first and a second fabric (5, 12); the first fabric (12) forming a panel (2) inner cover and the second fabric (5) fixed to the inside of the outer cover (3); the first side (7) of the first fabric (12) in contact with the panel (2) and the first side (7) of the second fabric (5) in contact with the first fabric (12).
8. The article according to any of the claims from 1 to 7, **characterised in that** the fabric (5, 12; 16) at least partially consists of cotton or similar fibres.
9. The article according to any of the claims from 1 to 8, **characterised in that** the fabric (5, 12; 16) at least partially consists of synthetic fibres or the like.
10. The article according to any of the claims from 1 to 9, **characterised in that** the fabric (5, 12; 16) is elastic.
11. The article according to any of the claims from 1 to 10, **characterised in that** it is a mattress (1) in which the panel (2) is obtained from a latex foam material.
12. The article according to any of the claims from 1 to 10, **characterised in that** it is a motor vehicle seat (13) in which the panel (14) is obtained from a latex foam material.
13. The article according to any of the claims from 1 to 10, **characterised in that** it is an armchair or a sofa in which the panel is obtained from a latex foam material.
14. The article according to any of the claims from 1 to 13, **characterised in that** the panel (2; 14) is made of latex and its derivatives, whether natural, synthetic or mixed.





European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 03 42 5785

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
X	US 2002/182967 A1 (ERB DAVID F ET AL) 5 December 2002 (2002-12-05)	1,2	A47C31/00
A	* paragraph [0023]; figures 1-3 *	5,9, 12-14	

X	US 3 207 654 A (REILLY WALTER T) 21 September 1965 (1965-09-21)	1,2	
A	* column 2, lines 3-23; figures 1-4 *	5,6,9, 10,12,13	

X	DE 88 04 593 U (EMIG GMBH) 18 August 1988 (1988-08-18)	1	A47C
A	* pages 3-4; figures 1-5 *	5,6,8, 10,11, 13,14	

X	DE 21 46 870 A (STRAEHLE & HESS) 29 March 1973 (1973-03-29)	1	
A	* pages 3-5; figures 1-3 *	3-6, 9-11,14	

The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (Int.Cl.7)
Place of search		Date of completion of the search	Examiner
The Hague		8 September 2004	Vollering, J
CATEGORY OF CITED DOCUMENTS			
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

EPO FORM 1503 03.02 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 03 42 5785

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European 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.

08-09-2004

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 2002182967	A1	05-12-2002	NONE	
US 3207654	A	21-09-1965	NONE	
DE 8804593	U	18-08-1988	DE 8804593 U1	18-08-1988
DE 2146870	A	29-03-1973	DE 2146870 A1	29-03-1973