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(54) Method for the manufacturing of mattresses or similar, especially made of latex, by means of the reversible combination of component modules, and mattresses or similar thus obtained

(57) The present invention relates to a method for the manufacturing of a mattress or similar, which comprises the following steps: realization or component modules of at least one part of the mattress, in said modules holes and slots being made; realization of elastic joints suitable for being inserted in said slots or holes; combination of said modules by the reversible insertion of the elastic joints in said slots or holes of the modules.

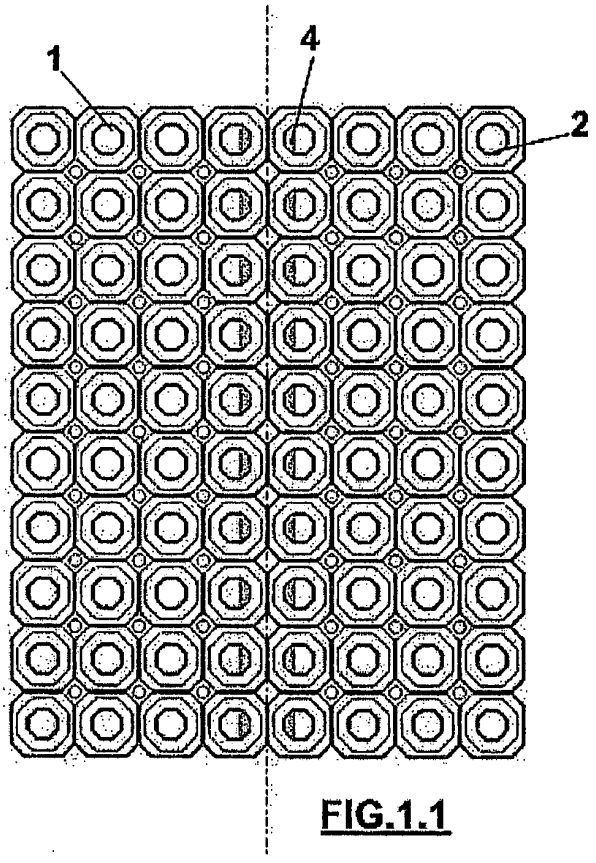

FIG.1.1

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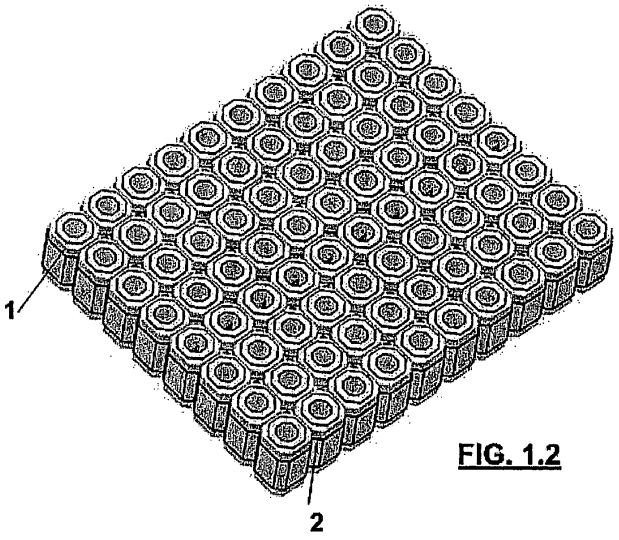

FIG. 1.2

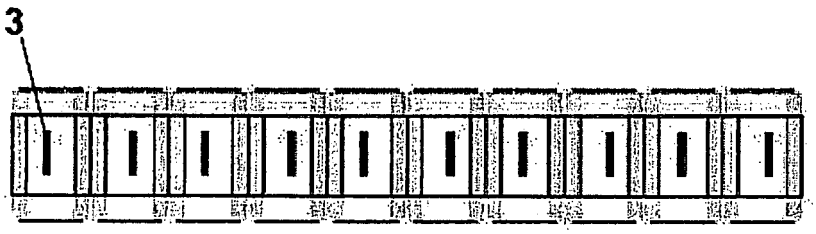

FIG. 1.3

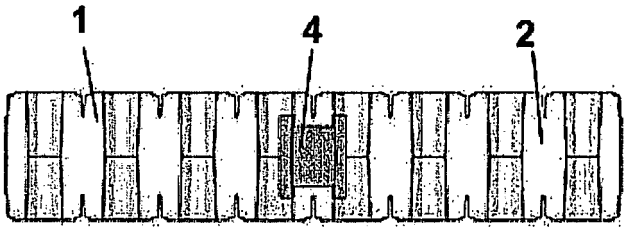

FIG. 1.4

Description

Application field of the invention

[0001] The present invention relates to a method for the manufacturing of mattresses or similar, especially made of latex, by means of the reversible combination of component modules, and mattresses or similar thus obtained.

Description of the prior art

[0002] The need for varying the performance properties of mattresses and similar is known in the art, in order to comply with the human anatomy, by realizing different parts of them with different compliance, density or other. For example, it is useful that the mattress part corresponding to the area around the shoulder is more compliant, in order to allow a more comfortable position of the pelvis, by letting the shoulders sink deeply into the mattress, while the area corresponding to the pelvis receives a higher support.

[0003] Latex mattresses have now been used for many years for their high performance and durability.

[0004] The realization of mattresses using modular elements made of latex foam or other material, joined together by means of adhesives of various type, in order to vary the characteristics of the different parts of the mattress, is known in the art.

[0005] These realization methods, however, have a number of drawbacks. For example, the products obtained not reversible, since the different parts are stuck together and cannot be divided anymore without ruining the product itself. The mattresses thus obtained are not suitable to comply with the need of flexible and dynamic products.

[0006] Moreover the employment of adhesives may cause problems of eco-compatibility and allergic reactions.

Summary of the invention

[0007] Therefore the aim of the present invention is to overcome all the drawbacks mentioned above and to provide a method for manufacturing mattresses or similar, preferably but not exclusively made of latex foam or other compound material, being modular and with different shapes and dimensions, wherein the different modules are connected in a reversible way by means of joints made of latex foam or of other material, in order to obtain products which are more comfortable, flexible, dynamic and assembled in a completely reversible way.

[0008] The subject of the present invention is a method for the manufacturing of a mattress or similar, **characterized in that** it comprises the following steps:

- realization of component modules of at least one part of the mattress, in said modules slots or holes being made,
- realization of elastic joints suitable for being inserted in said slots or holes;
- joining said modules by means of the reversible insertion of the elastic joints in said slots or holes of the modules.

[0009] The present invention relates also to a mattress, or a pillow, or an armchair, or a sofa with possibly a built-in bed, obtained by means of said method.

[0010] The subject of the present invention is in particular a method for the manufacturing of mattresses or similar, especially made of latex, by means of the reversible combination of component modules, and mattresses or similar thus obtained.

Brief description of the Figures

[0011] Further purposes and advantages of the present invention will become clear from the following detailed description of a preferred embodiment (and relative alternative embodiments) and the drawing that is attached hereto, which is merely illustrative and not limitative, in which:

figures 1.1 and 1.2 show a first embodiment of the present invention with modular elements horizontally connected by means of joints in the direction of the length of the mattress, respectively in a plan and in a perspective view;
figures 1.3 and 1.4 show side sections of the first embodiment;
figure 2 shows the joint applied to the embodiment in figure 1;
figures 3.1 and 3.2 show a second embodiment of the present invention with modular elements vertically connected by means of joints in the direction of the height of the mattress, respectively in connection position and in an exploded view;
figure 4 shows the joint applied to the embodiment in figure 3.

Detailed description of preferred embodiments of the invention

[0012] The subject of the present invention is a method for the manufacturing of mattresses obtained by horizontally and/or vertically combining modular elements made of latex foam or other material, joined together by elastic joints made of latex foam or of other material of different dimension and geometries which, being inserted in appropriate slots made in the modules, realize the reversible combination and may perform in a different way according to the comfort characteristics that are wanted.

[0013] Figures 1.1 and 1.2 show a first embodiment of at least one part of the mattress, by placing, side by side, two modules 1, 2 having a honeycomb configuration comprising hollow cells. The two modules are connected

to each other along the broken line of figure 1.1.

[0014] The modules 1 and 2 may be realized with different colours, mechanical properties, performance properties, dimensions. They are preferably made of latex or latex foam, with natural or synthetic compound.

[0015] On the side surface of the modules, at least on the sides that are in contact with each other, slots 3 of the vertical cut type (fig. 1.3) are made, one slot for each external cell of the module itself.

[0016] The connection between the modules (fig 1.4) is obtained by insertion, in the slots matching between adjacent modules, of appropriate joints 4, one of them being shown in fig. 2. The joint 4 is made of a part in the middle having a regular elongated shape, to which two lateral ends 4.1 having an expanded section, larger than the one in the middle, are connected. When the joint is inserted, its middle part fills the slots of the corresponding matching cells of the two modules, while the side ends having a larger section expand in the cavities of the two matching cells, keeping them firmly connected.

The joint may be made of latex or of other material preferably elastic.

[0017] This way two modules may be placed side by side and connected in order to obtain structures of mattresses of different configuration and dimensions.

[0018] The joints may be easily removed, for example in order to substitute a module, thus obtaining the reversibility of the connection.

[0019] Figures 3.1 and 3.2 represent a second embodiment of at least one part of the mattress by means of the connection of modules 5 and 6 by means of a second embodiment of the joint 7. The modules are vertically connected in the direction of the height of the mattress.

[0020] The joint 7 is made by an enlarged middle part which may be shaped in different ways: for example in the figures it has a cylindrical shape, but for example it may also have a round shape. From the middle part of the joint two extensions 9, 10 branch off, suitable for being completely inserted in corresponding holes 8 made in the two modules in order to join them. The two modules embody two corresponding layers in the structure of the mattress.

[0021] As for the previous embodiment, the modules 5 and 6 may have different color, mechanical properties, performance properties and dimensions, and are preferably made of latex or latex foam, having natural or synthetic compound.

[0022] Also the joint 7 may be made of latex or of other material preferably elastic. The elastic joint thus positioned allows to obtain a rotational movement of the upper module with respect to the lower module, thus facilitating the adaptation of the mattress to the anatomic curves of the user.

[0023] Also in this case more modules may be placed side by side and connected in order to obtain structures of mattresses having different configuration and dimensions. Moreover the joints may be easily removed, for example in order to replace a module, thus obtaining the reversibility of the connection.

[0024] This second embodiment also allows to cross join more modules, by using for example the method described for the first embodiment, namely by employing elastic joints in order to obtain an horizontal reversible connection of the modules.

[0025] Therefore it is generally possible to obtain a mattress, partially or as a whole, by placing the modules side by side and by placing layers one on top of the other in horizontal and/or vertical direction, according to any of the configurations of the two alternative embodiments described above.

[0026] By means of the two embodiments described above, it is possible to obtain different forms of reversible connection among modules composing a determined structure, for example a mattress: the combination of the modules may take place horizontally in order to obtain the same layer, in the direction of the length of the mattress, or vertically in order to obtain different layers, in the direction of the height of the mattress.

[0027] In the vertical case, the joint has also the function to space out the modules, and therefore has an impact on the performance, giving to the structure lightness and softness, because when the two modules are far from the joint, the relative part of the mattress has a certain rigidity, which may change when the two parts are in contact because they are pressed again each other so that the joint disappears between them. In this case the joint may also reciprocally orient the two parts, making them pivot.

[0028] The mattress thus obtained may more easily comply with the shape of elastic frames which are not flat, but undulated, for example in order to create different positions, also for being sit, and to facilitate the adaptation to the anatomic curves of the person laying on it.

[0029] It is therefore possible to replace areas of the mattress which are damaged for different reasons, and change along time the areas of the mattress by replacing the modules, when the anatomic needs of the user change.

[0030] The method for the manufacturing of mattresses according to a possible alternative embodiment of the invention comprises the following steps:

- Realization of the modules (semi-finished products) made of latex foam that will form the mattress, the modules being obtained by the injection or the vulcanization of latex foams having determined composition and density; the module are realized by compounds of different composition and density, possibly added with specific colours, in order to show by means of the colour the different performance properties, or with additives able to give particular performance properties, such as the self extinguishing; the modules or part of them possibly being realized also in any other material.
- Realization of elastic joints made of latex foam or of any other material.

- Assembling of the modules by means of the insertion of the elastic joints in the appropriate housings in order to obtain the reversible connection.

[0031] This system for horizontally or vertically joining modules by means of joints may be applied in mattresses, pillows and in other products such as armchairs, sofas, or sofa beds.

[0032] Further alternative embodiments of the method described above are possible, for example by envisaging that the two embodiments of the method described above can be used in the opposite way, namely by realizing vertical connections with the first method and horizontal connections with the second one.

[0033] From the description set forth above it will be possible for the person skilled in the art to embody the invention with no need of describing further details.

[0034] In particular for the production of the semi-finished products it is possible to employ machines and devices of the type known.

Claims

1. Method for the manufacturing of a mattress or similar, **characterized in that** it comprises the following steps:

   - realization of component modules of at least one part of the mattress, in said modules slots or holes being made,
   - realization of elastic joints suitable for being inserted in said slots or holes;
   - joining said modules by means of the reversible insertion of the elastic joints in said slots or holes of the modules.

2. Method for the manufacturing of a mattress or similar as in claim 1, wherein said modules (1, 2) are made with a honeycomb configuration comprising hollow cells; in the side surface of the modules, at least on the sides that are in contact with each other, slots (3) of the vertical cut type being made.

3. Method for the manufacturing of a mattress or similar according to claim 2, wherein said elastic joints (4) comprise a part in the middle having regular elongated shape, to which two lateral ends having an expanded section are connected, so that, when said elastic joints are inserted into the slots, said part in the middle fills the slots of the corresponding matching cells of the modules, while the side ends expand in the cavities of the two matching cells, keeping them firmly connected.

4. Method for the manufacturing of a mattress or similar as in claim 1, wherein said modules (5, 6) comprise holes (8) at least on the sides that are in contact with each other.

5. Method for the manufacturing of a mattress or similar as in claim 4, wherein said elastic joints (7) comprise an enlarged part in the middle, from which two extensions (9, 10) branch off suitable for being completely inserted in said holes (8) in order to join the relative modules in a pivoted way.

6. Method for the manufacturing of a mattress or similar as in any of the previous claims, wherein said mattress or similar is obtained by means of any combination of said component modules, placing them side by side and/or one on top the other.

7. Mattress or similar, obtained by means of the method of any of the previous claims.

8. Pillow obtained by means of the method of any of the claims from 1 to 6.

9. Armchair obtained by means of the method of any of the claims from 1 to 6.

10. Sofa or sofa-bed obtained by means of the method of any of the claims from 1 to 6.

11. Elastic joint for the reversible connection of component modules of a mattress or similar according to any of the previous claims.

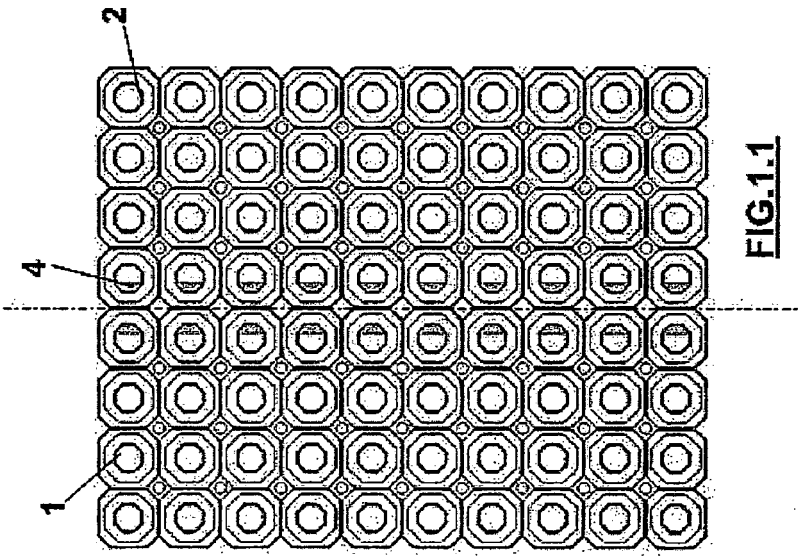

FIG.1.1

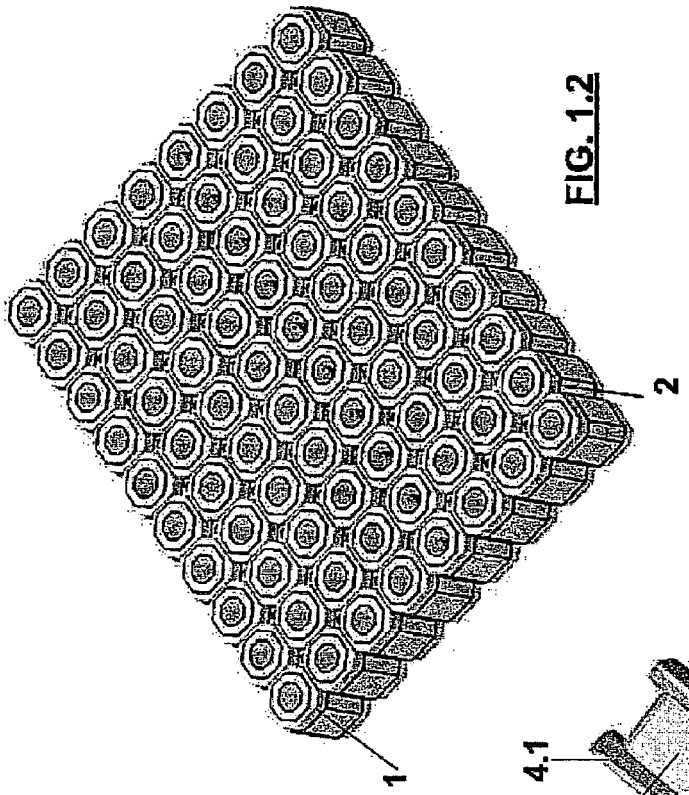

FIG. 1.2

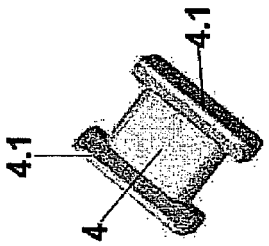

FIG. 2

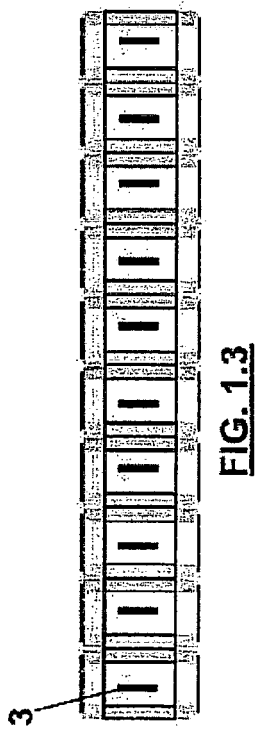

FIG. 1.3

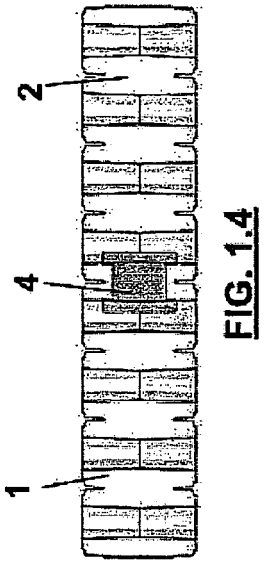

FIG. 1.4

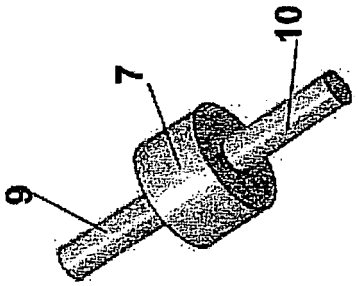

FIG. 4

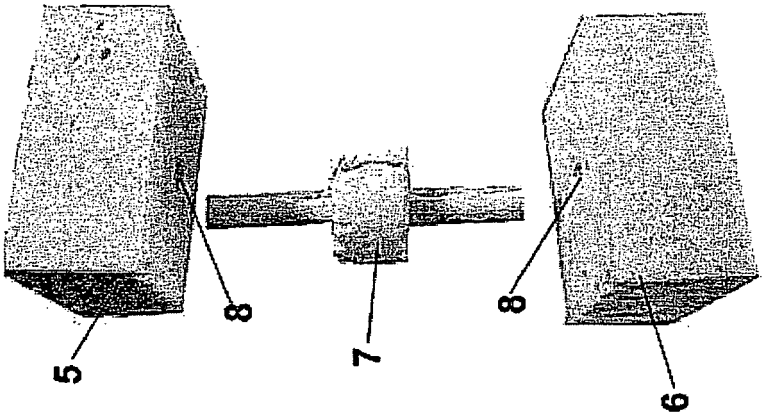

FIG. 3.2

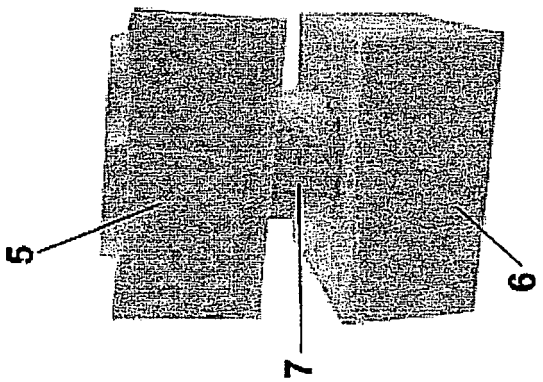

FIG. 3.1

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EUROPEAN SEARCH REPORT

Application Number
EP 09 42 5176

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 1 878 363 A (FOSSATI VALENTINO [IT]) 16 January 2008 (2008-01-16) * abstract * * figures 1-4 *	1,4-7	INV. A47C27/00
X	WO 2008/102034 A (BLANCO MORENO SONIA [ES]; SALAS CASILLAS PATRICIA [ES]) 28 August 2008 (2008-08-28) * abstract; figures *	1,4,6-11	
X	EP 0 414 586 A (GEN FRANCAISE DE LITERIE SA [FR]) 27 February 1991 (1991-02-27) * abstract * * column 3, line 7 - column 3, line 13 * * column 10, line 19 - column 10, line 45 * * figures 4-6 *	1,4,6-11	
Y		2	
Y	US 2008/113143 A1 (TAYLOR DAVID STIRLING [GB]) 15 May 2008 (2008-05-15) * abstract * * figures 1,2 *	2	TECHNICAL FIELDS SEARCHED (IPC) A47C
A	EP 0 651 959 A (TOEDTER MANFRED [DE]) 10 May 1995 (1995-05-10) * abstract; figures *	1-11	

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	22 October 2009	MacCormick, Duncan

CATEGORY OF CITED DOCUMENTS

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