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(54) **Mattress Arrangement**

Matratzenanordnung

Agencement de matelas

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## Description

**[0001]** The invention relates to a mattress arrangement in particular to be used as therapeutic mattress to support body portions of a patient.

**[0002]** Patients who are not able to move themselves in a bed need to be turned from time to time in order to prevent pressure sores (decubitus). Instead and/or additional to turning a patient pressure sores may be prevented by applying cushions, in particular support cushions under certain body parts to take away pressure from other body parts, namely those, in which usually pressure sores develop. Instead of using support pillows arranged on or beneath a conventional mattress to support certain body parts US 5,172,439 A discloses a therapeutic mattress overlay. This mattress overlay comprises a first layer and a second layer disposed beneath the first layer and in laminar juxtaposition therewith such that the second layer may be configured to provide an area of increased thickness to support an anatomical body portion. With this mattress overlay the area of increased thickness, which conventionally has been provided by a pillow may be provided by way of rolling the second mattress layer. This mattress layer is covered by the first layer, on which the patient rests. The second layer is part of the first layer or according to another embodiment disclosed attached to the first layer. In the part of this mattress overlay, in which the first and second mattress layers are not attached to one another the second layer may be rolled up to create the area of increased thickness. The mattress overlay as such is to be arranged on top of a conventional mattress.

**[0003]** EP 1,034,767 A2 describes a similar mattress arrangement. In contrast to the mattress overlay disclosed in US 5,172,439, the top mattress and the bottom mattress are not united in the disclosed mattress arrangement. Further, the bottom mattress layer is made up of a plurality of discrete elongate portions extending longitudinally of the mattress arrangement. The elongate portions may individually or together be rolled up in order to create an area of increased mattress thickness for the support of a body portion. For an facilitated easy rolling up of more than one elongate portions these are fastenable together.

**[0004]** Instead of using a foldable second mattress layer arranged beneath a top mattress layer in order to build areas of increased thickness supporting certain body parts wedges may be used. The use of such wedges is disclosed for example in DE 10 2006 0317 092 A1. Compared to folding of a mattress layer the wedges have a defined geometry and simply need to be arranged under a top mattress layer. These are typically used under a conventional mattress. When using wedges in order to change the topography of the top side of a mattress the mattress used needs to be lifted in order to introduce the wedge. Usually mattresses, in particular high quality mattresses are rather heavy in weight. Therefore, it may sometimes not be easy for a single person to bring the

wedge into position. Due to the rolling up of the second layer forming mattress layers with a mattress arrangement as disclosed in EP 1,034,767 A2 it is encountered that the upper layer tends to move in respect to the lower layer thus also changing the position of support. This, though, is not intended. In US 5,172,439 the supporting areas may only be created in the defined zones in respect to the length of the mattress, in which the layers are parted.

**[0005]** DE 94 13 504 U1 discloses a mattress arrangement having two flat mattress modules in a loose arrangement to each other. The thickness and the hardness of the mattress modules increases from the top mattress module to the lower mattress module. With such mattress arrangement relief of the backbone is achieved as well as a support effect for an individual body zone support. According to one embodiment of this prior art the two mattress modules may be fastened to each other, whereas the fastening means may be connected to the sides of a covering enclosing the mattress. This document discloses, only to use two mattress modules for a mattress arrangement and specifically points out the advantages of a two layer system compared to mattress systems comprising more than two mattress modules.

**[0006]** A similar mattress arrangement is further disclosed in US 6,115,861. This mattress arrangement comprises a mattress foundation like box springs, a stationary deck of a bed, an articulating deck of a bed or the like. The mattress foundation is not a mattress module. On top of this foundation is a mattress and on top of that a pillow top. Thus, US 6,115,861 also discloses a mattress arrangement comprising two mattress layers. Neither DE 94 13 504 U1 nor US 6,115,861 are designed, that one layer or part of it should be formed in order to create a support area for a certain body zone.

**[0007]** It thus is an object of the invention to provide an improved mattress arrangement in particular in such a way, that the drawbacks of the prior art described are omitted at least in part.

**[0008]** The present invention alleviates the above-mentioned deficiencies by way of a mattress arrangement comprising at least two mattress modules, whereas each mattress module is made up of a resilient module body and a covering enclosing the module body, and whereas the mattress modules of the mattress arrangement are detachably fastened to each other by way of fastening means and each mattress module comprises one or more first fastening means connected to complementary second fastening means of another mattress module of the arrangement, whereas the individual mattress modules of the mattress arrangement differ from one another by way of their geometries and/or their hardness and/or their durability and/or their covering and/or any other feature having influence on the functionality, whereas the mattress arrangement comprises three basically flat mattress modules and whereas the bottom module is a weight-support module and thus shows a higher hardness, the top module is a layer module and

is thus softer, and the forming module is sandwiched between the top module and the bottom module to be brought into different shapes for supporting a body part resting on the top surface of the top mattress module.

**[0009]** This mattress arrangement combines a wide-spread variability of combining several individual mattress modules to make up an individually different mattress arrangement. By individually selecting certain mattress modules a mattress arrangement may be supplied which is individually adapted to the needs of a patient. Furthermore, the mattress arrangement supplied to a patient may be altered in the way of supporting of certain body parts. The individual mattress modules each have a covering enclosing a resilient module body. The hardness and the durability of this module body is adapted to the intended use of this mattress module. Thus, the module body of some mattress modules may be softer than others. The covering of each mattress module makes handling of such mattress modules easier, in particular also in respect of cleaning and/or disinfecting them. Further, the covering may be used to attach grips or the like. Further, the individual mattress modules of such mattress arrangement comprise first and/or second fastening means in order to fasten one mattress module to another mattress module. Fastening the individual mattress modules to one another gives the mattress arrangement, built up of at least two mattress modules, the required shape stability. The fastening means of the mattress modules are intended for detachably fastening the mattress modules to one another. Providing detachable fastening means makes it easy to configure a mattress arrangement and/or to change the mattress arrangement. Such a mattress arrangement is thus the result of a modular mattress system comprising several different mattress modules, which differ in geometry and/or hardness and/or durability and/or covering or in at least one other feature having influence on the functionality or purpose of the mattress arrangement. When using the term geometry in respect of the individual mattress modules this term not only covers the geometry as such but also the size of the mattress modules. By supplying a variety of different mattress modules any mattress arrangement may be created simply by combining different individual mattress modules to form one mattress arrangement. Therefore, the individual needs of a patient may be encountered in a most individual way.

**[0010]** To fasten the individual mattress modules to one another virtually any suitable fastening means may be used. This term comprises the use of fastening means being part of or attached to the mattress modules to be fastened to one another. Fastening means in the terminology of this dis-closer also comprises means that keep the individual mattress modules of a mattress arrangement in form and shape, without that the mattress modules are directly fastened to one another. Such means may be understood as a fastening blanket or plaid covering a mattress arrangement and holding the mattress modules in place by way of its sideflaps. Fastening two

mattress modules to one another may be achieved by using buttons, velcro or zippers to give some examples. The fastening means are preferably arranged on the sidewalls of a mattress module or attached to an edge, preferably to a longitudinal edge of such module. Such arrangement is preferred, because then access is easy to the fastening means, in particular for detaching them from one another. The fastening means comprise first and second fastening means, whereas the first fastening means are arranged on one mattress module and the second fastening means are arranged on the other mattress module to be fastened to the first mattress module.

**[0011]** For more comfort of the person resting on top of the mattress arrangement a flexible fitted sheet may be placed on top of the top mattress module of the mattress arrangement. Such sheet is a stretch-fit-sheet and provides a wrinkle free surface. Such flexible fitted sheet may be fastened to the top mattress module by extending around the corners of the mattress module. By way of another embodiment such flexible fitted sheet is used as a fastening blanket as described before but provides on top of holding the individual mattress modules in their intended arrangement and thus fastening the mattress modules to provide a wrinkle or crease free surface, on which a patient may rest.

**[0012]** In another embodiment fastening means are provided pair-wise to define a set of fastening means. These are made up of each a first and a second fastening means provided on one mattress module whereas the complementary fastening means pair is arranged in a complementary manner on said other mattress module. Further, it is possible to arrange one part of the fastening means on a flap attached to one mattress module, for example the upper one, and extending to the sidewall of the mattress module arranged adjacent, for example below to this mattress module. The second fastening means are preferably arranged on the sidewall of that second mattress module. The flap may be limited in its size to carry the first fastening means and to reach to the second fastening means supplied on the second mattress module. A flap may also be arranged in a curtain-like circumferential manner or along the longitudinal sides on an upper mattress module to cover the fastening means and/or the joint between the upper mattress module and the one arranged beneath this. In case more than two mattress module layers and/or mattress module elements are used, such curtain-like flap can extend in its height to the sidewall of the lowest mattress module thus covering all joints. The intention of such flaps is to prevent for example cleaning liquids to enter between two mattress modules. Further, using such flaps covers the fastening means. Further, such one or more flaps can be arranged detachable to the top mattress module.

**[0013]** According to a further embodiment one or more of the mattress modules have second fastening means arranged in different heights on the sidewall. This gives the possibility to fasten the first fastening means on the mattress module in different heights on the sidewall on

the second mattress module. With such arrangement the hardness of the combined mattress module is adjustable due to a possible pre-compression of the module bodies when the tighter fastening position is used, in particular of the module body with the second fastening means.

**[0014]** The coverings of the module body as such are typically designed to be easy cleaned, in particular disinfected. It is possible to have one or both facing sides of two mattress modules arranged on top of each other covered or provided with anti-slip means, which could be an anti-slip coating applied to the covering.

**[0015]** In the following the invention will be described with reference to the figures accompanied. In these:

**Fig. 1** shows schematically different geometries of mattress modules, which may be combined to a mattress arrangement,

**Fig. 2** shows a side view of a further embodiment of two mattress modules,

**Fig. 3** shows a side view of a bed with a mattress arrangement made up of mattress modules as depicted in figure 1,

**Fig. 4** shows a partial front side view of a further mattress arrangement,

**Fig. 5a, 5b** show a perspective schematic view of a further mattress module arrangement (figure 5a) and a topside view of a mattress module of the mattress arrangement of figure 5a, and

**Fig. 6** shows the mattress arrangement of figure 5a (uppermost sketch) and by way of example different arrangements to be built with this mattress arrangement.

**[0016]** Figure 1 shows by way of example different mattress modules 1, 2, 3, 4, 5. The mattress modules 1, 2, 3, 4, 5 differ in their geometry and/or their size and/or in the hardness or durability of their module body. The module body of each mattress module 1, 2, 3, 4, 5 is made up of a resilient material typically used for mattress applications, such as foam, latex, pocket springs, gel, polyester fibers or the like. The module bodies of the individual mattress modules 1, 2, 3, 4, 5 are adapted in respect of the before mentioned features to the intended use of the individual module 1, 2, 3, 4, 5. Each mattress module 1, 2, 3, 4, 5 is enclosed by a covering. The covering used could be any flexible material to cover the individual module body. In a preferred embodiment the covering is a fabric, in particular coated with a breathable, impervious, elastic coating, for example made of polyurethane. The covering enclosing the module body of each mattress module 1, 2, 3, 4, 5 is adapted to the size of the module body. Attached to the covering of each

mattress module 1, 2, 3, 4, 5 are fastening means to fasten one mattress module to another mattress module. In the depicted embodiments of figure 1 zippers are used as fastening means. On the longitudinal edges of each mattress module 1, 2, 3, 4, 5 one half of a zipper is arranged. The positions of the zipper parts are indicated in figure 1 with the mattress modules 1, 2, 3, 4, 5 by the black line marked with reference numeral 6 with mattress module 1. The zipper parts 6 attached to the covering of the mattress module 1 are arranged along the longitudinal lower edges 7 in two individual sections. The mattress module 1 is a mattress module to be used as a top layer of a mattress arrangement. Therefore, the zipper parts 6 are arranged on both bottom longitudinal edges 7. The module body of this mattress module 1 shows an elasticity for comfortable laying. The module body of the mattress module 1 could be described with soft.

**[0017]** The size of the mattress module 1 is adapted to fill the laying surface of a bed.

**[0018]** Further mattress modules, not depicted in figure 1 are part of the mattress module system. These mattress modules have the same size like the mattress module 1 but differ from the mattress module 1 by their hardness and possibly their thickness. In order to have a base mattress layer as a support the module body of such a mattress module is harder. Such mattress module shows zipper parts its top longitudinal edges. These zipper parts are complementary to the zipper parts of mattress module 1, so they may be put together with the zipper parts of mattress module 1 in order to fasten these two modules with one another. Still further mattress modules of the same size as mattress module 1 are provided to be part of a mattress arrangement, which are sandwiched between a top layer mattress module and a bottom layer mattress module and to be used as a forming layer in order to roll and/or fold or otherwise deform this mattress module to provide one or more mattress areas of increased thickness to support certain body parts of a patient resting on the top mattress module. Therefore, such mattress module has a module body adapted to be folded and/or rolled and/or otherwise to be deformed without breaking.

**[0019]** By way of example the mattress module 2 depicted in figure 1 has a smaller size in the length of the mattress module 1. The mattress module 2 is approximately two thirds of the length of mattress module 1. Further mattress modules with other lengths, for example half the length of mattress module 1 may be provided. Still further, mattress modules with only part of the width of the mattress module 1 may be provided.

**[0020]** Mattress modules 3, 4 are provided as wedges with different wedge geometry and/or different hardness of their module bodies. The wedges 3, 4 carry on their wedge edges 8, 8.1 zipper parts. This enables the wedges 3, 4 to be fastened to a top layer mattress module and/or lower layer mattress module. Again with the mattress modules 3, 4 the zipper parts are attached to the covering. By way of example mattress module 5 is a sup-

port cushion with a semi-circular cross section. The mattress module 5 carries on its bottom side edges zipper parts 6.

**[0021]** In order to build a mattress arrangement individual mattress modules as for example depicted in figure 1 are combined and fastened to each other. It is not always necessary to fasten all mattress modules to one another as long as the mattress modules fastened to each other hold the mattress module not fastened and most probably arranged intermediate of two other mattress modules in place.

**[0022]** Figure 2 shows another embodiment of two mattress modules 9, 10, which are in respect of their module body and their covering manufactured as the mattress modules described to figure 1. The mattress modules 9, 10 differ in their fastening means to fasten one mattress module to another mattress module. Instead of zippers as used with mattress modules 1, 2, 3, 4, 5 the mattress modules 9, 10 may be fastened to one another using velcro fastening means. The mattress module 9 carries a number of flaps 11, whereas on the backside of the flaps 11 the hook fastening part of a velcro fastening means are supplied. Attached to the sidewall covering of the mattress module 10 the loop fastening parts 12 of a velcro fastening means are supplied. The flaps 11 and the loop part 12 are arranged on the longitudinal side of the mattress modules 9, 10.

**[0023]** Further mattress modules with complementary hook and loop parts of a velcro fastening means are part of the mattress module system, of which in figure 2 only two modules are depicted.

**[0024]** Figure 3 shows a mattress arrangement 13 arranged on a bed 14, typically used in hospitals. The mattress arrangement 13 is resting on a mattress support 15 of the bed 14. The mattress arrangement 13 itself is made up of four different mattress modules  $M_1$ ,  $M_2$ ,  $M_3$ ,  $M_4$ . Mattress module  $M_1$  is a base mattress module, of which the hardness of its module body shows a certain hardness to be able to be used as a support layer. Mattress module  $M_2$  is the top mattress module of the mattress arrangement 13 and thus providing with its top side the laying surface, on which the patient rests. The module body of mattress module 2 is thus designed accordingly soft. Sandwiched between mattress module  $M_1$  and mattress module  $M_2$  is a third mattress module  $M_3$ . Mattress module  $M_3$  is used as a forming layer to create a certain topography of the upper side laying surface of mattress module  $M_2$  for the support of a body part when deformed. As depicted in figure 3 mattress module  $M_2$  is rolled up at one end.

**[0025]** Further integrated into the mattress arrangement 13 is mattress module  $M_4$ , which is a wedge sandwiched between the top end of mattress module  $M_2$  and mattress module  $M_3$ .

**[0026]** The mattress modules  $M_1$ ,  $M_2$ ,  $M_3$ ,  $M_4$  each have a module body and a covering as described to mattress modules 1, 2, 3, 4, 5 of figure 1. Further, the mattress modules  $M_1$ ,  $M_2$ ,  $M_3$ ,  $M_4$  each have complementary fas-

tening means so the individual mattress modules  $M_1$ ,  $M_2$ ,  $M_3$ ,  $M_4$  may be securely detachably fastened to one another. Fastening the mattress modules  $M_1$ ,  $M_2$ ,  $M_3$ ,  $M_4$  to one another keeps the mattress arrangement 13 in shape and form. The fastening means of these mattress modules  $M_1$ ,  $M_2$ ,  $M_3$ ,  $M_4$  are basically zippers. Further velcro fasteners are provided. In the depicted embodiment, the mattress module  $M_2$  carries on its longitudinal bottom edge a zipper part, which is fastened to the complementary zipper part arranged on the top longitudinal edge of mattress module  $M_3$ . The zipper is marked with  $Z_1$  in figure 3. The zipper  $Z_1$  is open from the top right end of mattress modules  $M_2$  and  $M_3$  to introduce the wedge mattress module  $M_4$ . Mattress module  $M_4$  is held in place by way of an anti-slip coating applied to the top and the bottom surface of its covering. For further fastening mattress module  $M_2$  to mattress module  $M_3$  velcro fasteners  $V_1$ ,  $V_2$  are positioned at the end of zipper  $Z_1$  (velcro fastener  $V_1$ ) and at the end of the wedge module  $M_4$ . Mattress module  $M_3$  is fastened to mattress module  $M_1$  by a zipper  $Z_2$ . Zippers  $Z_1$  and  $Z_2$  extend about two thirds along the length of the longitudinal edges of mattress modules  $M_1$ ,  $M_2$ ,  $M_3$ . The velcro fasteners  $V_1$ ,  $V_2$  are provided in such a way, that mattress module  $M_2$  carries a flap 16 with the hook parts, whereas the longitudinal extension of the flaps 16 reach to the sidewall of mattress module  $M_1$ . Mattress module  $M_1$  and mattress module  $M_3$  are provided with loop parts attached to the sidewalls and covered by the flaps 16 in figure 3. With such flap arrangement it is possible to fasten mattress module  $M_2$  directly to mattress module  $M_1$ , which in particular is useful, when mattress module  $M_3$  is rolled up with its end as depicted in figure 3. Then mattress module  $M_2$  may also be directly fastened to mattress module  $M_1$ . The same may also be achieved using zippers.

**[0027]** It will be apparent to anybody skilled in the art that, when providing a modular mattress system as described, it is not only easy to provide a different mattress arrangement adapted to the individual needs of supporting a patient, but changing a mattress arrangement is also easily achieved. The coverings of the individual mattress modules are easily cleaned and/or disinfected.

**[0028]** Figure 4 shows a front side partial view of another mattress arrangement 17 with three mattress modules  $M_5$ ,  $M_6$ ,  $M_7$  which are fastened to each other by zippers  $Z_3$ ,  $Z_4$ . The mattress modules  $M_5$ ,  $M_6$ ,  $M_7$  may possibly have the same properties like the mattress modules  $M_1$ ,  $M_2$ ,  $M_3$ . Further to the embodiment depicted in figure 3 the mattress arrangement 17 shows a flap 18 extending along its longitudinal sides. The flap 18 is used as a covering for zippers  $Z_3$ ,  $Z_4$  and the joints between the individual mattress modules  $M_5$ ,  $M_6$ ,  $M_7$ . The flap 18 not only serves to provide a uniform outer appearance of the side of the mattress arrangement 17 but also that liquids or other impurities do not come in contact with the zippers  $Z_3$ ,  $Z_4$  or enter in between the individual mattress modules.

**[0029]** Figure 5a shows another mattress arrangement

19 made up of three individual mattress modules. The mattress modules making up the mattress arrangement 19 are similar to the mattress module  $M_1$ ,  $M_2$ , and  $M_3$ . The wide dark lines in figure 5a depict the placement of zippers, with which the individual mattress modules of the mattress arrangement 19 are fastened to each other. In order to depict the zip placements of each mattress module of the mattress arrangement 19 figure 5b shows a top view of the top layer mattress module of the mattress arrangement 19. From this it may be seen, that at one end, which is most probably to be used as the heel end of the mattress arrangement the zip extends along the whole width of the mattress module. It is also to be seen, that the zips along the longitudinal sides of the mattress modules of the mattress arrangement 19 are lead around the head end corner of each mattress module.

**[0030]** Schematically in figure 6 different arrangements of the mattress arrangement 19 are depicted. The top graphical display of figure 6 shows the mattress arrangement in a side elevational view. The other graphic representations show possible arrangements of the mattress arrangement 19. The second top picture shows for example the mattress arrangement 19 with a rolled up section of the middle mattress module, which is rolled up from the heel end side to increase elevation of the legs. In the third top picture the mattress arrangement 19 is shown with a folded heel end of the middle mattress module in order to relieve the heels of pressure. The other depicted arrangements include different wedges to be used on the head end, sandwiched between the top layer mattress module and the second layer mattress module and another heel end mattress module, which is arranged below the heel end of the mattress arrangement 19.

**[0031]** From the description of the mattress arrangements it will be obvious for a person skilled in the art, that the mattress module either rolled or folded up as depicted from the heel side may also be deformed in any other manner in order to achieve a certain support to a body part of a person resting on the mattress arrangement. If thus would easily be possible to roll or fold up a forming mattress module also from its longitudinal side or in a diagonal direction. Due to the fastening of the mattress modules, at least of the two mattress modules sandwiching the deformed module this forming mattress module stays in its intended shape.

**[0032]** The individual mattress modules in the mattress arrangement 19 depicted in figure 6 are fastened to each other by way of the zips schematically shown in figure 5a and 5b. The wedges depicted in figure 6 are not necessarily fastened with zips to the adjacent mattress modules.

**[0033]** Preferably the top fabric of the top mattress module of each mattress arrangement described is of the multi-stretch, wipe clean, waterproof, vapor permeable, PU coated knitted nylon type. The base of all mattress modules of the mattress arrangements described are made up of a non-slip fabric. In particular with the use of such non-slip fabric on the base of each mattress

module and possibly also on the top of the intermediate and lower mattress module prevent wedges from slipping out and folded or rolled or otherwise deformed intermediate layers to stay in form besides that the mattress modules or at least some of them are fastened to each other for example by way of zips.

**[0034]** For a person skilled in the art it will be apparent, that from the disclosure of the mattress system and mattress arrangement, respectively, a wide variety of embodiments are possibly to be created without leaving the scope of the claims. As such it will be apparent for a person skilled in the art, that it would very well be possible to provide a mattress arrangement in which one or more wedges may be arranged underneath the lowest mattress module or sandwiched in between two mattress modules for example the mattress modules  $M_2$  and  $M_3$  extending parallel to the longitudinal extension of the mattress modules. Such wedge would have a short lateral extension and would be used to support the back of a person laying on top of the mattress arrangement when resting on his side. The wedge is fastened to one or both adjacent mattress modules. Thus, the wedge will not slip out of its indent position and keep the patient securely supported.

**[0035]** The term comprises and comprising used in the claims and the specification is not to be understood as a term limiting the mattress module to those features mentioned, but is to be understood that such mattress modules may have these features possibly together with further features.

## Reference Numerals

### [0036]

|        |                     |
|--------|---------------------|
| 1      | mattress module     |
| 2      | mattress module     |
| 3      | mattress module     |
| 4      | mattress module     |
| 5      | mattress module     |
| 6      | zipper part         |
| 7      | edge                |
| 8, 8.1 | edge                |
| 9      | mattress module     |
| 10     | mattress module     |
| 11     | flap with hook part |
| 12     | loop part           |

|                                 |                      |
|---------------------------------|----------------------|
| 13                              | mattress arrangement |
| 14                              | bed                  |
| 15                              | mattress support     |
| 16                              | flap                 |
| 17                              | mattress arrangement |
| 18                              | flap                 |
| 19                              | mattress arrangement |
| M <sub>1</sub> - M <sub>7</sub> | mattress module      |
| V <sub>1</sub> - V <sub>3</sub> | velcro fastener      |
| Z <sub>1</sub> - Z <sub>4</sub> | zipper               |

### Claims

1. Mattress arrangement comprising at least three mattress modules (1, 2, 3, 4, 5; M<sub>1</sub>, M<sub>2</sub>, M<sub>3</sub>, M<sub>4</sub>; M<sub>5</sub>, M<sub>6</sub>, M<sub>7</sub>; 9, 10), whereas each mattress module (1, 2, 3, 4, 5; M<sub>1</sub>, M<sub>2</sub>, M<sub>3</sub>, M<sub>4</sub>; M<sub>5</sub>, M<sub>6</sub>, M<sub>7</sub>; 9, 10) is made up of a resilient module body and a covering enclosing the module body, and whereas the mattress modules (1, 2, 3, 4, 5; M<sub>1</sub>, M<sub>2</sub>, M<sub>3</sub>, M<sub>4</sub>; M<sub>5</sub>, M<sub>6</sub>, M<sub>7</sub>; 9, 10) of the mattress arrangement (13, 17, 19) are detachably fastened to another by way of fastening means (V<sub>1</sub> - V<sub>3</sub>; Z<sub>1</sub> - Z<sub>4</sub>) and each mattress module (1, 2, 3, 4, 5; M<sub>1</sub>, M<sub>2</sub>, M<sub>3</sub>, M<sub>4</sub>; M<sub>5</sub>, M<sub>6</sub>, M<sub>7</sub>; 9, 10) comprises one or more first fastening (V<sub>1</sub> - V<sub>3</sub>; Z<sub>1</sub> - Z<sub>4</sub>) means connected to complementary second fastening (V<sub>1</sub> - V<sub>3</sub>; Z<sub>1</sub> - Z<sub>4</sub>) means of another mattress module (1, 2, 3, 4, 5; M<sub>1</sub>, M<sub>2</sub>, M<sub>3</sub>, M<sub>4</sub>; M<sub>5</sub>, M<sub>6</sub>, M<sub>7</sub>; 9, 10) of the arrangement (13, 17, 19), whereas the individual mattress modules (1, 2, 3, 4, 5; M<sub>1</sub>, M<sub>2</sub>, M<sub>3</sub>, M<sub>4</sub>; M<sub>5</sub>, M<sub>6</sub>, M<sub>7</sub>; 9, 10) of the mattress arrangement (13, 17, 19) differ from one another by way of their geometries and/or their hardness and/or their durability and/or their covering and/or any other feature having influence on the functionality, whereas the mattress arrangement (13, 17, 19) comprises three basically flat mattress modules (M<sub>1</sub>, M<sub>2</sub>, M<sub>3</sub>; M<sub>5</sub>, M<sub>6</sub>, M<sub>7</sub>) and whereas the bottom module (M<sub>1</sub>, M<sub>7</sub>) is a weight-support module and thus shows a higher hardness, the top module (M<sub>2</sub>, M<sub>5</sub>) is a layer module and is thus softer, and the forming module (M<sub>3</sub>, M<sub>6</sub>) is sandwiched between the top module (M<sub>2</sub>, M<sub>5</sub>) and the bottom module (M<sub>1</sub>, M<sub>7</sub>) to be brought into different shapes for supporting a body part resting on the top surface of the top mattress module (M<sub>2</sub>, M<sub>5</sub>).
2. Mattress arrangement according to claim 1, **characterized in that** the mattress modules (1, 2, 3, 4, 5;

M<sub>1</sub>, M<sub>2</sub>, M<sub>3</sub>, M<sub>4</sub>; M<sub>5</sub>, M<sub>6</sub>, M<sub>7</sub>) each have first and second fastening means arranged adjacent to each other to define a set of fastening means.

3. Mattress arrangement according to claim 1 or 2, **characterized in that** the first fastening means are arranged on a flap (11) attached to the covering of the mattress module (9), whereas the second fastening (12) means are arranged on the side wall of the covering of the second mattress module (10).
4. Mattress arrangement according to one of claims 1 to 3, **characterized in that** the fastening means are buttons, velcro or the like.
5. Mattress arrangement according to claim 1, **characterized in that** fastening means are detectable zippers (Z<sub>1</sub>, Z<sub>4</sub>), preferably arranged along edges of the individual mattress modules (1, 2, 3, 4, 5; M<sub>1</sub>, M<sub>2</sub>, M<sub>3</sub>, M<sub>4</sub>; M<sub>5</sub>, M<sub>6</sub>, M<sub>7</sub>), whereas a first mattress module carries one part of the zipper and a second mattress module connected to the first mattress module carries the other complementary part of this zipper.
6. Mattress arrangement according to one of claims 1 to 5, **characterized in that** the top mattress (M<sub>5</sub>) module has a flap (18) along its longitudinal extension extending in height at least over the fastening means (Z<sub>3</sub>) to fasten this mattress module (M<sub>5</sub>) to the adjacent lower mattress module (M<sub>6</sub>) and the joint between said mattress modules (M<sub>5</sub>, M<sub>6</sub>).
7. Mattress arrangement according to claim 6, **characterized in that** the flap (18) extends over all fastening means arranged beneath the top layer mattress module (M<sub>5</sub>) and the joint between the lowest mattress module (M<sub>7</sub>) and the one arranged on top of that mattress module (M<sub>6</sub>).
8. Mattress arrangement according to one of claims 1 to 7, **characterized in that** the mattress arrangement (13, 17) comprises one or more non-flat mattress modules (M<sub>4</sub>) arranged beneath a top mattress module (M<sub>2</sub>).
9. Mattress arrangement according to one of claims 1 to 8, **characterized in that** the mattress arrangement (13, 17) may be fastened to a conventional mattress.
10. Mattress arrangement according to one of claims 1 to 9, **characterized in that** the bottom side of a top layer mattress module and/or the top side of the mattress module arranged beneath this top layer module are provided with anti-slip means, preferably an anti-slip coating applied to the covering.

## Patentansprüche

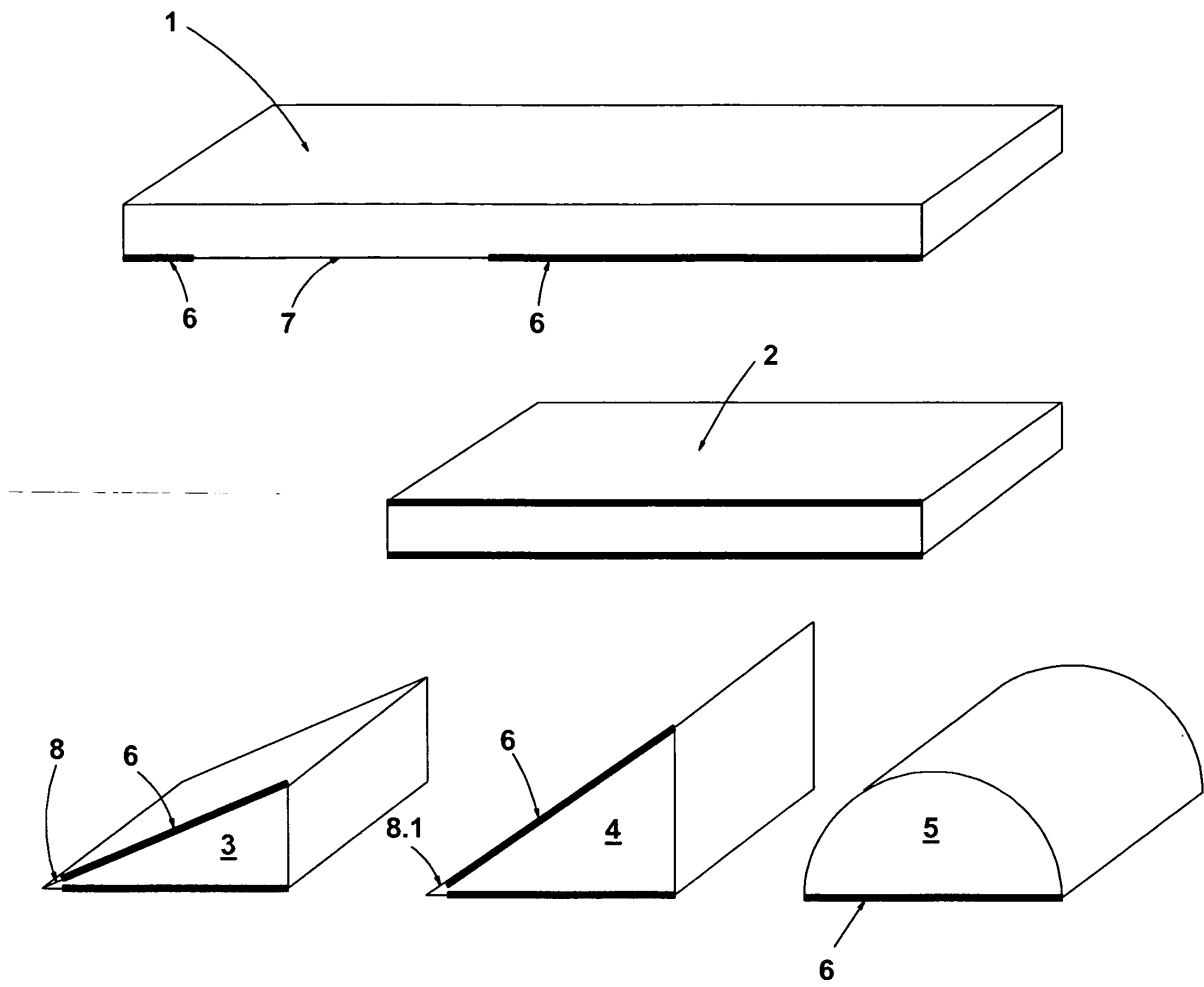
1. Matrazenanordnung umfassend mindestens drei Matratzenmodule (1, 2, 3, 4, 5; M<sub>1</sub>, M<sub>2</sub>, M<sub>3</sub>, M<sub>4</sub>, M<sub>5</sub>, M<sub>6</sub>, M<sub>7</sub>; 9, 10), wobei jedes Matratzenmodul (1, 2, 3, 4, 5; M<sub>1</sub>, M<sub>2</sub>, M<sub>3</sub>, M<sub>4</sub>, M<sub>5</sub>, M<sub>6</sub>, M<sub>7</sub>; 9, 10) aus einem elastischen Modulkörper und einer Abdeckung besteht, die den Modulkörper einschließt, und wobei die Matratzenmodule (1, 2, 3, 4, 5; M<sub>1</sub>, M<sub>2</sub>, M<sub>3</sub>, M<sub>4</sub>, M<sub>5</sub>, M<sub>6</sub>, M<sub>7</sub>; 9, 10) der Matrazenanordnung (13, 17, 19) lösbar durch Befestigungsmittel (V<sub>1</sub> - V<sub>3</sub>; Z<sub>1</sub> - Z<sub>4</sub>) miteinander befestigt sind, und wobei jedes Matratzenmodul (1, 2, 3, 4, 5; M<sub>1</sub>, M<sub>2</sub>, M<sub>3</sub>, M<sub>4</sub>, M<sub>5</sub>, M<sub>6</sub>, M<sub>7</sub>; 9, 10) ein oder mehrere erste Befestigungsmittel (V<sub>1</sub> - V<sub>3</sub>; Z<sub>1</sub> - Z<sub>4</sub>) umfasst, die mit komplementären zweiten Befestigungsmitteln (V<sub>1</sub> - V<sub>3</sub>; Z<sub>1</sub> - Z<sub>4</sub>) eines anderen Matratzenmoduls (1, 2, 3, 4, 5; M<sub>1</sub>, M<sub>2</sub>, M<sub>3</sub>, M<sub>4</sub>, M<sub>5</sub>, M<sub>6</sub>, M<sub>7</sub>; 9, 10) der Anordnung (13, 17, 19) verbunden sind, wobei die einzelnen Matratzenmodule (1, 2, 3, 4, 5; M<sub>1</sub>, M<sub>2</sub>, M<sub>3</sub>, M<sub>4</sub>, M<sub>5</sub>, M<sub>6</sub>, M<sub>7</sub>; 9, 10) der Matrazenanordnung (13, 17, 19) sich voneinander durch ihre Geometrie, und/oder ihre Härte und/oder ihre Strapazierfähigkeit und/oder ihre Abdeckung und/oder jedes Merkmal, das sich auf die Funktionalität auswirkt, unterscheiden, wobei die Matrazenanordnung (13, 17, 19) drei im Wesentlichen flache Matratzenmodule (M<sub>1</sub>, M<sub>2</sub>, M<sub>3</sub>; M<sub>4</sub>, M<sub>5</sub>, M<sub>6</sub>, M<sub>7</sub>) umfasst und das Bodenmodul (M<sub>1</sub>, M<sub>7</sub>) ein gewichtsstützendes Modul ist und daher eine höhere Härte aufweist, das obere Modul (M<sub>2</sub>, M<sub>5</sub>) ein Liegemodul ist und daher weicher ist, und das formende Modul (M<sub>3</sub>, M<sub>6</sub>) sandwichartig zwischen dem oberen Modul (M<sub>2</sub>, M<sub>5</sub>) und dem Bodenmodul (M<sub>1</sub>, M<sub>7</sub>) angeordnet ist, damit es in verschiedene Formen gebracht werden kann, um ein auf der Oberseite des oberen Matratzenmoduls (M<sub>2</sub>, M<sub>5</sub>) befindliches Körperteil zu tragen.
2. Matrazenanordnung nach Anspruch 1, **dadurch gekennzeichnet, dass** jedes Matratzenmodul (1, 2, 3, 4, 5; M<sub>1</sub>, M<sub>2</sub>, M<sub>3</sub>, M<sub>4</sub>, M<sub>5</sub>, M<sub>6</sub>, M<sub>7</sub>; 9, 10) erste und zweite Befestigungsmittel hat, die nebeneinanderliegend angeordnet sind, um einen Satz von Befestigungsmitteln zu bilden.
3. Matrazenanordnung nach Anspruch 1 oder 2, **dadurch gekennzeichnet, dass** die ersten Befestigungsmittel auf einer Lasche (11), die an der Abdeckung des Matratzenmoduls (9) befestigt ist, angeordnet sind, wobei die zweiten Befestigungsmittel (12) an einer Seitenwand der Abdeckung des zweiten Matratzenmoduls (10) befestigt sind.
4. Matrazenanordnung nach einem der Ansprüche 1 bis 3, **dadurch gekennzeichnet, dass** die Befestigungsmittel Knöpfe, Klettverschlüsse oder dergleichen sind.
5. Matrazenanordnung nach Anspruch 1, **dadurch gekennzeichnet, dass** Befestigungsmittel wahrnehmbare Reißverschlüsse (Z<sub>1</sub>, Z<sub>4</sub>) sind, die vorzugsweise entlang von Kanten der individuellen Matratzenmodule (1, 2, 3, 4, 5; M<sub>1</sub>, M<sub>2</sub>, M<sub>3</sub>, M<sub>4</sub>, M<sub>5</sub>, M<sub>6</sub>, M<sub>7</sub>) angeordnet sind, wobei ein erstes Matratzenmodul einen Teil des Reißverschlusses trägt und ein zweites Matratzenmodul, das mit dem ersten Matratzenmodul verbunden ist, den anderen komplementären Teil des Reißverschlusses trägt.
6. Matrazenanordnung nach einem der Ansprüche 1 bis 5, **dadurch gekennzeichnet, dass** das oberste Matratzenmodul (M<sub>5</sub>) entlang seiner Längserstreckung eine Lasche (18) mit einer Höhe aufweist, die sich zumindest über das Befestigungsmittel (Z<sub>3</sub>) erstreckt, um dieses Matratzenmodul (M<sub>5</sub>) mit dem angrenzenden unteren Matratzenmodul (M<sub>6</sub>) und dem Spalt zwischen den Matratzenmodulen (M<sub>5</sub>, M<sub>6</sub>) zu befestigen.
7. Matrazenanordnung nach Anspruch 6, **dadurch gekennzeichnet, dass** die Lasche (18) sich über alle Befestigungsmittel erstreckt, die unterhalb des oberen Schicht-Matratzenmoduls (M<sub>5</sub>) und der Verbindung zwischen dem untersten Matratzenmodul (M<sub>7</sub>) und dem oberen Matratzenmodul (M<sub>6</sub>) angeordnet sind.
8. Matrazenanordnung nach einem der Ansprüche 1 bis 7, **dadurch gekennzeichnet, dass** die Matrazenanordnung (13, 17) ein oder mehrere, nicht flache Matratzenmodule (M<sub>4</sub>) umfasst, die unterhalb eines oberen Matratzenmoduls (M<sub>2</sub>) angeordnet sind.
9. Matrazenanordnung nach einem der Ansprüche 1 bis 8, **dadurch gekennzeichnet, dass** die Matrazenanordnung (13, 17) an einer konventionellen Matratze befestigbar ist.
10. Matrazenanordnung nach einem der Ansprüche 1 bis 9, **dadurch gekennzeichnet, dass** die Unterseite eines oberen Matratzenmoduls und/oder die Oberseite des unterhalb dieses oberen Moduls angeordneten Matratzenmoduls mit rutschhemmenden Mitteln versehen ist, vorzugsweise mit einer an der Abdeckung angeordneten rutschhemmenden Beschichtung.

## Revendications

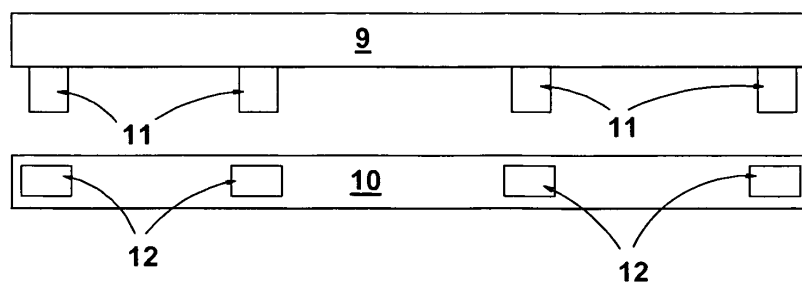
1. Agencement de matelas comportant au moins trois éléments de matelas (1, 2, 3, 4, 5, M<sub>1</sub>, M<sub>2</sub>, M<sub>3</sub>, M<sub>4</sub>, M<sub>5</sub>, M<sub>6</sub>, M<sub>7</sub>, 9, 10), chacun des éléments de matelas (1, 2, 3, 4, 5, M<sub>1</sub>, M<sub>2</sub>, M<sub>3</sub>, M<sub>4</sub>, M<sub>5</sub>, M<sub>6</sub>, M<sub>7</sub>, 9, 10) étant composé d'un corps élastique et d'une couverture entourant ledit corps, les éléments de matelas (1, 2,



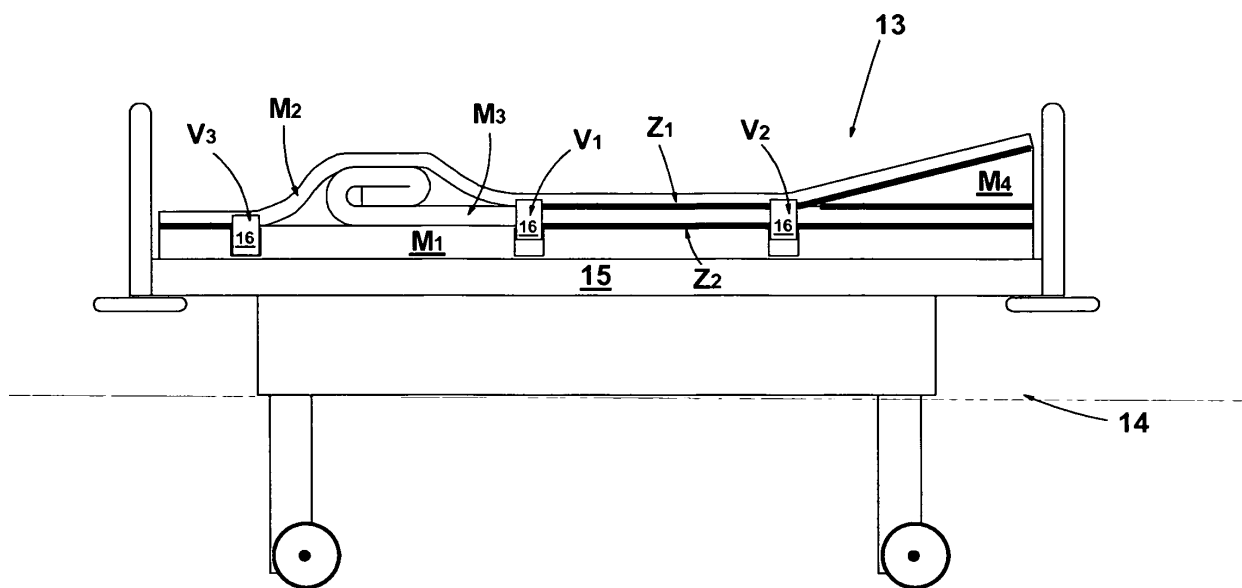
- 3, 4, 5, M<sub>1</sub>, M<sub>2</sub>, M<sub>3</sub>, M<sub>4</sub>, M<sub>5</sub>, M<sub>6</sub>, M<sub>7</sub>, 9, 10) de l'agencement de matelas (13, 17, 19) étant reliés les uns aux autres de manière amovible par l'intermédiaire de moyens de fixation (V<sub>1</sub>-V<sub>3</sub>; Z<sub>1</sub>-Z<sub>4</sub>) et chaque élément de matelas (1, 2, 3, 4, 5, M<sub>1</sub>, M<sub>2</sub>, M<sub>3</sub>, M<sub>4</sub>, M<sub>5</sub>, M<sub>6</sub>, M<sub>7</sub>, 9, 10) comportant un ou plusieurs premiers moyens de fixation (V<sub>1</sub>-V<sub>3</sub>; Z<sub>1</sub>-Z<sub>4</sub>) reliés à des deuxième moyens de fixation complémentaires (V<sub>1</sub>-V<sub>3</sub>; Z<sub>1</sub>-Z<sub>4</sub>) d'un autre élément de matelas (1, 2, 3, 4, 5, M<sub>1</sub>, M<sub>2</sub>, M<sub>3</sub>, M<sub>4</sub>, M<sub>5</sub>, M<sub>6</sub>, M<sub>7</sub>, 9, 10) de l'agencement (13, 17, 19), les éléments de matelas individuels (1, 2, 3, 4, 5, M<sub>1</sub>, M<sub>2</sub>, M<sub>3</sub>, M<sub>4</sub>, M<sub>5</sub>, M<sub>6</sub>, M<sub>7</sub>, 9, 10) de l'agencement de matelas (13, 17, 19) se distinguant les uns des autres par leur géométrie et/ou leur dureté et/ou leur tenue dans le temps et/ou leur couverture et/ou tout autre caractéristique ayant une influence sur la fonctionnalité, l'agencement de matelas (13, 17, 19) comportant trois éléments de matelas essentiellement plats (M<sub>1</sub>, M<sub>2</sub>, M<sub>3</sub>, M<sub>4</sub>, M<sub>5</sub>, M<sub>6</sub>, M<sub>7</sub>), l'élément de base (M<sub>1</sub>, M<sub>7</sub>) étant un support de charge et présentant de ce fait une dureté plus importante, l'élément supérieur (M<sub>2</sub>, M<sub>5</sub>) étant un couchage et de ce fait plus mou, et l'élément souple (M<sub>3</sub>, M<sub>6</sub>) inséré entre l'élément supérieur (M<sub>2</sub>, M<sub>5</sub>) et l'élément de base (M<sub>1</sub>, M<sub>7</sub>) pouvant prendre différentes formes pour recevoir un corps reposant sur la surface supérieure de l'élément de matelas supérieur (M<sub>2</sub>, M<sub>5</sub>).
2. Agencement de matelas selon la revendication 1, **caractérisé en ce** les éléments de matelas (1, 2, 3, 4, 5, M<sub>1</sub>, M<sub>2</sub>, M<sub>3</sub>, M<sub>4</sub>, M<sub>5</sub>, M<sub>6</sub>, M<sub>7</sub>) comportent chacun des premiers et des deuxième moyens de fixation qui sont disposés de manière adjacente les uns par rapport aux autres pour former un ensemble de moyens de fixation.
  3. Agencement de matelas selon la revendication 1 ou la revendication 2, **caractérisé en ce que** les premiers moyens de fixation sont disposés sur un volet (11) fixé à la couverture de l'élément de matelas (9), les seconds moyens de fixation (12) étant disposés sur la paroi latérale de la couverture du deuxième élément de matelas (10).
  4. Agencement de matelas selon l'une des revendications 1 à 3 **caractérisé en ce que** les moyens de fixation sont des boutons, du velcro ou similaires.
  5. Agencement de matelas selon la revendication 1, **caractérisé en ce que** les moyens de fixation sont des fermetures rapides (Z<sub>1</sub>, Z<sub>4</sub>) apparentes de préférence disposés le long des bords des éléments de matelas individuels (1, 2, 3, 4, 5, M<sub>1</sub>, M<sub>2</sub>, M<sub>3</sub>, M<sub>4</sub>, M<sub>5</sub>, M<sub>6</sub>, M<sub>7</sub>), un premier élément de matelas recevant une partie de la fermeture rapide et un deuxième élément de matelas relié au premier élément de matelas recevant l'autre partie de cette fermeture rapide.
  6. Agencement de matelas selon l'une des revendications 1 à 5, **caractérisé en ce que** l'élément de matelas supérieur (M<sub>5</sub>) comporte un volet (18) le long de son extension longitudinale s'étendant en hauteur au moins au delà des moyens de fixation (Z<sub>3</sub>) pour relier cet élément de matelas (M<sub>5</sub>) à l'élément de matelas inférieur adjacent (M<sub>6</sub>) et joindre lesdits éléments de matelas (M<sub>5</sub>, M<sub>6</sub>).
  7. Agencement de matelas selon la revendication 6, **caractérisé en ce que** le volet (18) s'étend au-delà de l'ensemble des moyens de fixation qui sont disposés en dessous de l'élément de matelas supérieur (M<sub>5</sub>) et de la jonction entre l'élément de matelas (M<sub>7</sub>) le plus bas et celui qui est disposé sur le dessus de l'élément de matelas (M<sub>6</sub>).
  8. Agencement de matelas selon les revendications 1 à 7, **caractérisé en ce que** l'agencement de matelas (13, 17) comporte un ou plusieurs éléments de matelas non plats (M<sub>4</sub>) qui sont disposés en dessous d'un élément de matelas supérieur (M<sub>2</sub>).
  9. Agencement de matelas selon l'une des revendications 1 à 8, **caractérisé en ce que** l'agencement de matelas (13, 17) peut être relié à un matelas de type conventionnel.
  10. Agencement de matelas selon l'une des revendications 1 à 9, **caractérisé en ce que** le fond d'un élément de matelas supérieur de couchage et/ou la partie supérieure de l'élément de matelas qui est disposé sous cet élément de matelas supérieur de couchage comportent des moyens anti-glissement, de préférence une couche antiglissante qui est appliquée sur la couverture.



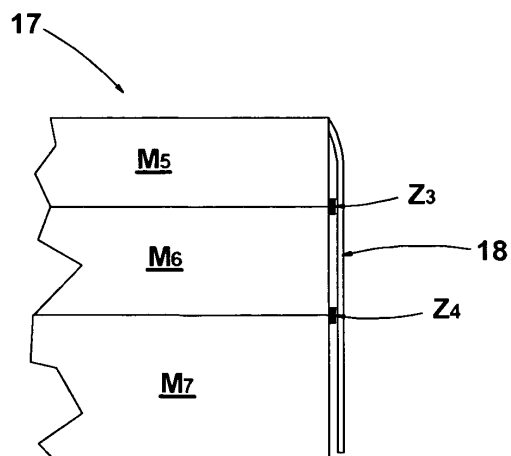
**Fig. 1**



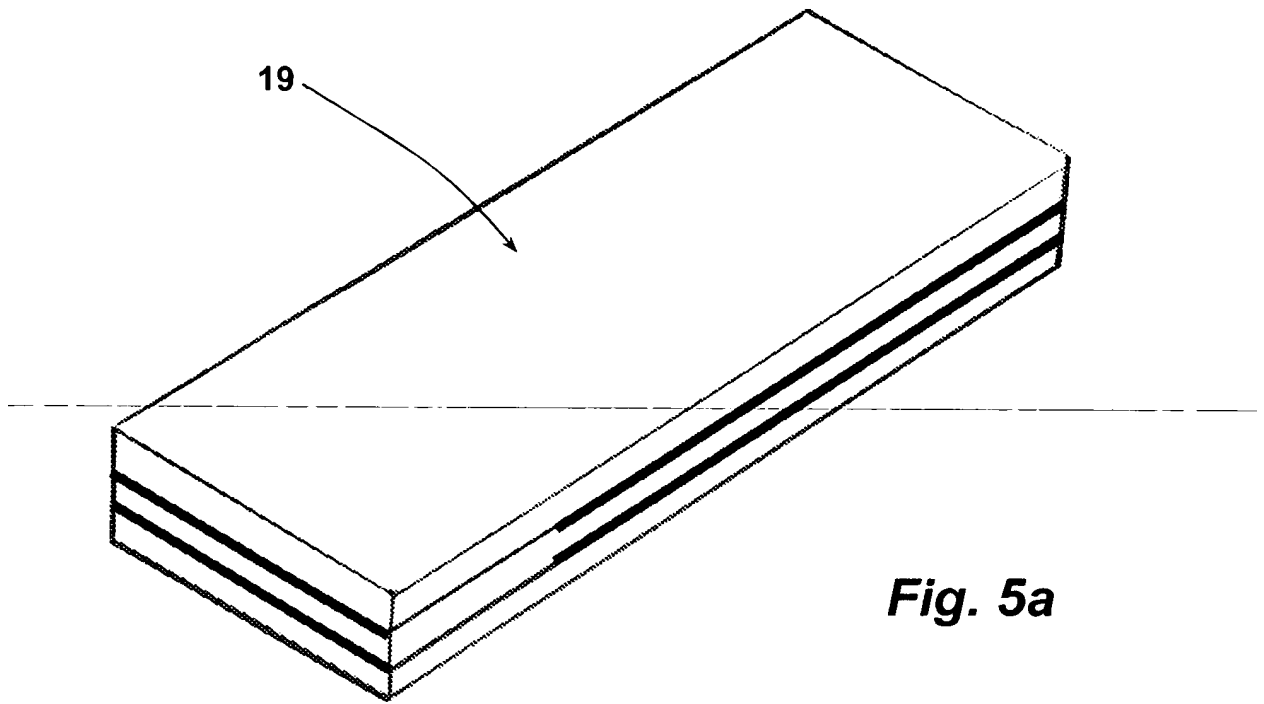
**Fig. 2**

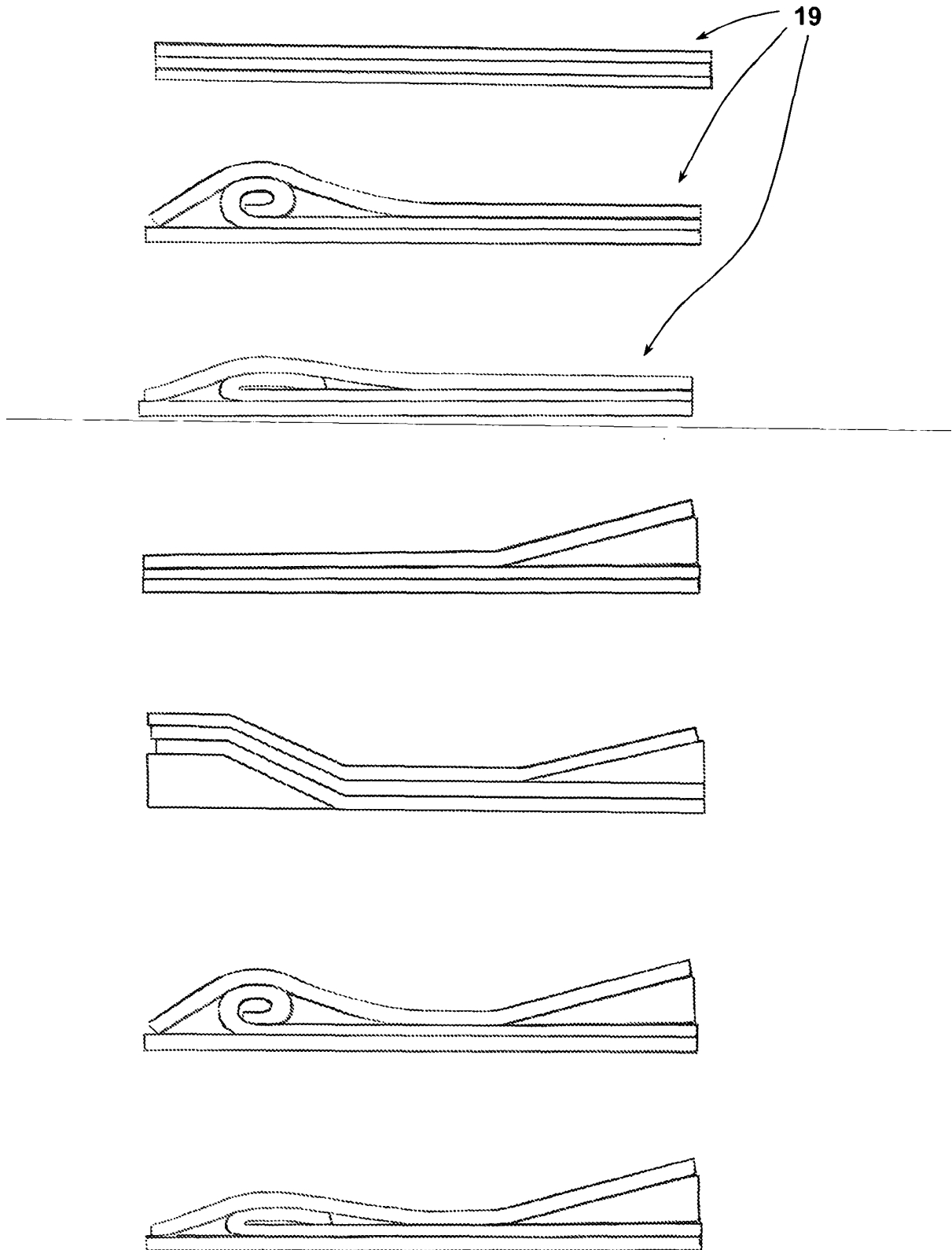


**Fig. 3**



**Fig. 4**





**Fig. 6**

**REFERENCES CITED IN THE DESCRIPTION**

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