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(54) **ELASTIC MATTRESS**

(57) The present disclosure relates to the field of elastic mattresses and provides an elastic mattress comprises a base layer, a plurality of elastic modules and a pad layer, wherein the base layer comprises a first surface and a second surface opposite to each other in a height direction of the elastic mattress, the plurality of elastic modules are detachably arranged on the second surface and are configured to directly contact the ground, and the pad layer is arranged on the first surface. Since the plurality of elastic modules are arranged on the

second surface of the base layer and can directly contact the ground, this can effectively reduce the number of components of the elastic mattress, and can simplify the structure of the elastic mattress, thereby lowering the cost of the elastic mattress. Moreover, as the pad layer is arranged on the first surface of the base layer and thus can be removed from the latter, this can achieve efficient transportation of the elastic mattress and reduce the space for storage. In addition, the elastic mattress can also provide a high comfort.

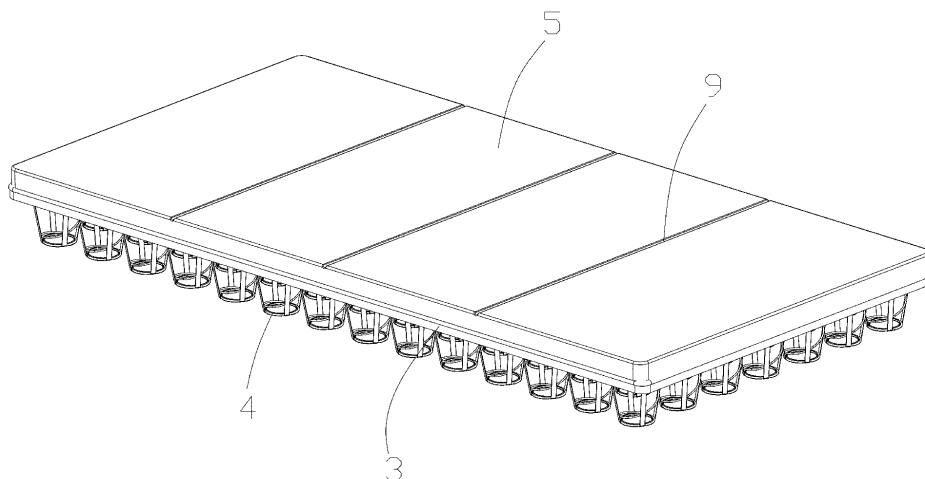


Fig. 1

Description

TECHNICAL FIELD

[0001] The present disclosure relates to the field of elastic mattresses, and in particular, to an elastic pads.

BACKGROUND

[0002] Furniture like beds and sofa beds are essentials in the daily life of human, most of which are provided with elastic pads. The elastic pads generally have a certain elasticity to provide an elastic support when people are lying on the beds or sofa beds. As such, the elastic pads can provide a higher comfort than a hard pad.

[0003] The existing elastic pad is typically a non-detachably integrated and enclosed pad consisting of a base layer, a spring layer, a sponge overlay and an enclosed side surrounding cover. Specifically, the spring layer is disposed on the base layer, the sponge overlay is disposed on the spring layer, and the enclosed side surrounding cover are connected between the sponge overlay and the base layer, thereby forming a closed space. However, in actual use, such an elastic mattress incurs a high cost, is inconvenient in transportation, and often occupies a large space during storage.

SUMMARY

[0004] In view of at least some problems existing in the prior art, the objective of the present disclosure is to lower the cost of the elastic mattress, facilitate to the transportation of the elastic mattress, reduce the storage space, and improve the breathability of the elastic mattress, while ensuring the comfort of the elastic mattress.

[0005] In order to fulfil the above objective, the present disclosure provides an elastic mattress, comprising a base layer, a plurality of elastic modules and a pad layer, wherein the base layer comprises a first surface and a second surface opposite to each other in a height direction of the elastic mattress, the plurality of elastic modules are detachably arranged on the second surface and are configured to directly contact the ground, and the pad layer is arranged on the first surface; and wherein no side enclosures are provided at the periphery of the elastic mattress, thereby forming an elastic mattress with fully open sides, without having side enclosures.

[0006] In the technical solution according to the present disclosure, the plurality of elastic modules are detachably arranged on the second surface of the base layer and can directly contact the ground, and no side enclosures are provided at the periphery of the elastic mattress. Thus, an elastic mattress with fully open sides is formed, without having any side enclosures. This can effectively reduce the number of components of the elastic mattress, and can simplify the structure of the elastic mattress, thereby lowering the cost of the elastic mattress and improving the breathability of the elastic

mattress. Due to the fact that no side enclosures are provided at the periphery of the elastic mattress, the elastic mattress has an internal structure with a transparent space, so that the elastic mattress has a ventilated, breathable internal structure and is thus suitable for outdoor use. Moreover, since the pad layer is arranged on the first surface of the base layer and can be removed from the latter, the formed elastic mattress is convenient for transportation and can effectively reduce the storage space thereof. In addition, the elastic mattress can also provide a high comfort.

[0007] In some embodiments, the pad layer and the base layer are connected via a connecting structure arranged therebetween.

[0008] In some embodiments, the connecting structure is a hook-and-loop fastener arranged on the first surface of the base layer and/or a lower surface of the pad layer.

[0009] In some embodiments, the pad layer is a foldable or rollable pad layer.

[0010] In some embodiments, the pad layer comprises a plurality of elastic pad blocks arranged in a length direction of the elastic mattress, and the elastic pad blocks adjacent to each other are connected via a flexible portion.

[0011] In some embodiments, the flexible portion comprises grooves formed on an upper surface and/or a lower surface of the pad layer and extending along a width direction of the elastic mattress.

[0012] In some embodiments, the base layer is a flexible base layer, and the plurality of elastic modules can be removed from the second surface and then nested together.

[0013] In some embodiments, the second surface of the base layer is provided with a plurality of positioning rails that are spaced apart in a length direction of the elastic mattress, each of the positioning rails extending along a width direction of the elastic mattress, and an installation zone for receiving the elastic modules is formed between the positioning rails adjacent to each other, and wherein each of the elastic modules is configured to be slidable in the width direction of the elastic mattress from either one end of the adjacent positioning rails onto the adjacent positioning rails, and then slide in place along the positioning rails, such that each of the installation zones are arranged with the plurality of elastic modules.

[0014] In some embodiments, an outer edge of the second surface is disposed with stop edges extending a predetermined height in the height direction of the elastic mattress, and the plurality of the positioning rails are located between the stop edges, so that the elastic modules are kept in position by the stop edges in the width direction of the elastic mattress.

[0015] In some embodiments, the stop edge is a rectangular stop edge extending along a periphery of the outer edge of the second surface, and the rectangular stop edge is a flexible body and is kept a predetermined distance away from an outer peripheral surface of the

base layer.

[0016] Obviously, elements or features as described in any one embodiment can be used, alone or in combination, in other embodiment(s).

BRIEF DESCRIPTION OF THE DRAWINGS

[0017] Dimensions and proportions in the drawings do not represent the dimensions and proportions of actual products. The drawings are only provided illustratively, and some unnecessary elements or features are omitted therefrom for clarity.

Fig. 1 is a perspective view exemplarily showing an elastic mattress according to an embodiment of the present disclosure.

Fig. 2 is a schematic view of a front side structure of the elastic mattress in Fig. 1.

Fig. 3 is an exploded view of the elastic mattress in Fig. 1.

Fig. 4 is a schematic view of arranging elastic modules on a second surface of a base layer during assembling of the elastic mattress in Fig. 1.

Fig. 5 is a schematic view of arranging all the elastic modules on the base layer in Fig. 4 and then flipping to make all the elastic modules contact the ground.

Fig. 6 is a schematic view of arranging a pad layer on a first surface of the base layer in Fig. 5.

Reference signs

[0018] 1 - first surface, 2 - second surface, 3 - base layer, 4 - elastic module, 5 - pad layer, 6 - hook-and-loop fastener, 7 - elastic pad block, 8 - upper surface, 9 - groove, 10 - positioning rail, 11 - installation zone, 12 - stop edge.

DETAILED DESCRIPTION OF EMBODIMENTS

[0019] Reference now will be made to the drawings to describe in detail an elastic mattress according to the present disclosure. What will be described herein only cover preferred embodiments of the present disclosure, and those skilled in the art would envision, on the basis of the preferred embodiments, other possible manners which also fall into the scope described herein.

[0020] Referring to Figs. 1-6, the elastic mattress provided by the present disclosure comprises a base layer 3, a plurality of elastic modules 4, and a pad layer 5, wherein the base layer 3 comprises a first surface 1 and a second surface 2 opposite to each other in the height direction (i.e. a vertical direction of the graphical interface of Fig. 2) of the elastic mattress, the plurality of elastic modules 4

are detachably arranged on the second surface 2 and are configured to directly contact the ground when use, and the pad layer 5 is disposed on the first surface 1, and wherein no side enclosures are provided at the periphery of the elastic mattress, thereby forming an elastic mattress with fully open sides, that is, without having side enclosures. During the actual use of the elastic mattress, the second surface 2 of the base layer 3 faces downwards to cause one end (i.e. lower end of each elastic module) of the plurality of elastic modules 4 to directly contact the ground. As would be appreciated, the number of the elastic modules 4 could be set according to the actual use need. Then, a user can lie on the pad layer 5.

[0021] In the technical solution according to the present disclosure, the plurality of elastic modules 4 are detachably arranged on the second surface 2 of the base layer 3 and can directly contact the ground, and no side enclosures are provided at the periphery of the elastic mattress. Thus, an elastic mattress with fully open sides is formed, without having any side enclosures, thereby omitting the arrangement of side enclosures around the plurality of elastic modules 4 and the base layer 3, i.e., the elastic mattress has fully open sides. This can effectively reduce the number of components of the elastic mattress, and can simplify the structure of the elastic mattress, thereby lowering the cost of the elastic mattress, and improving the breathability of the elastic mattress. Due to the fact that no side enclosures are provided at the periphery of the elastic mattress, the elastic mattress has an internal structure with a transparent space, so that the elastic mattress has a ventilated, breathable internal structure and is thus suitable for outdoor use. Moreover, since the pad layer 5 is arranged on the first surface 1 of the base layer 3 when use and then can be removed from the first surface 1 when store, the formed elastic mattress is convenient for transportation and can effectively reduce the storage space thereof. In addition, the elastic mattress can also provide a high comfort.

[0022] For the elastic mattress, in some embodiments, the pad layer 5 can be laid over the first surface of the base layer 3, and there is no connecting structure disposed therebetween. In this way, during storage, the pad layer 5 can be removed and stored separately, which can effectively facilitate transportation of the elastic mattress while reducing the space for storage. Alternatively, in some embodiments, the pad layer 5 and the base layer 3 are connected via the connecting structure disposed therebetween. With the connecting structure, the stability of the pad layer 5 on the base layer 3 can be enhanced while the comfort of use can be improved. In particular, when the plurality of elastic modules are in contact with an uneven floor, the integrity and the comfort of the elastic mattress can be further improved, to thus prevent the pad layer 5 from translating a certain amount relative to the base layer 3 if shakes are generated by a user on the pad layer 5.

[0023] For the elastic mattress, it is worth noting that

the connecting structure between the pad layer 5 and the base layer 3 may be of various types. For example, for a type of the connecting structure, the connecting structure is a snap structure including a male snap and a female snap mating with each other. For instance, the female snap of the snap structure may be formed on the pad layer 5, and the male snap thereof may be formed on the base layer 3. Through the snap fitting of the female snap and the male snap, the pad layer 5 can be stably and reliably connected onto the base layer 3. For another example, for a further type of the connecting structure, referring to Fig. 3, the connecting structure is a hook-and-loop fastener 6 disposed on the first surface 1 of the base layer 3 and/or the lower surface of the pad layer 5. For instance, hook-and-loop fasteners 6 are provided at a plurality of corresponding positions on the first surface 1 of the base layer 3 while hook-and-loop fasteners 6 are also disposed at a plurality of corresponding positions on the lower surface of the pad layer 5. Through the mating of the hook-and-loop fasteners 6 on the two surfaces, the pad layer 5 can be stably and reliably connected onto the base layer 3. Alternatively, hook-and-loop fasteners 6 are provided at a plurality of positions on the first surface 1 of the base layer 3, in this way, the lower surface of the pad layer 5 can directly adhere to the plurality of hook-and-loop fasteners 6, to connect stably and reliably the pad layer 5 onto the base layer 3.

[0024] In the elastic mattress, the pad layer 5 may be of various type. For example, the pad layer 5 may be a hard pad layer. For ease of storage, the hard pad layer may comprise a plurality of pad layer blocks that can be spliced together via a snap or hook-and-loop structure, or other connecting structure. Alternatively, the pad layer 5 may be a foldable or rollable pad layer. For example, the pad layer 5 may be a soft pad layer that can be folded or rolled up. For another example, the pad layer 5 may be an elastic pad layer that can be folded or rolled up. The elastic pad layer can cooperate with a plurality of elastic modules to improve the elasticity and comfort of the elastic mattress. When folded or rolled up, the elastic pad can be further compressed to reduce the storage volume. The pad layer 5 may be a sponge pad or a silicone pad.

[0025] In order to facilitate storage of the pad layer 5, in some embodiments, the pad layer 5 comprises a plurality of elastic pad blocks 7 arranged in the length direction of the elastic mattress, wherein the adjacent elastic pad blocks 7 are connected via a flexible portion, to allow the adjacent elastic pad blocks to be stacked or rolled up. In this way, during storage, the plurality of elastic pad blocks 7 can be folded or rolled up. During use, since the plurality of elastic pad blocks 7 are connected via flexible portions, it is only required to unfold the plurality of elastic pad blocks 7, without assembling each elastic pad block 7 separately. For example, in some embodiments, the plurality of elastic pad blocks 7 may be sponge pad blocks or silicon pad blocks.

[0026] In addition, the flexible portion may be of various

types. For example, for a type of the flexible portion, the flexible portion may be a connecting cloth. For instance, a cloth cover comprises a plurality of receiving spaces spaced apart, wherein the connecting cloth (i.e. the connecting portion) between the receiving spaces acts as the flexible portion, and each pad block 7 can be encapsulated in the respective receiving spaces. Alternatively, for a further type of the flexible portion, the flexible portion is formed by a portion of the pad layer 5, and referring to Figs. 1 and 2, the flexible portion comprises grooves 9 formed on the upper surface 8 and/or the lower surface of the pad layer 5 and extending along the width direction of the elastic mattress. Figs. 1 and 2 show that the grooves 9 are formed on the upper surface 8 of the pad layer 5. In other words, the grooves 9 divide the pad layer 5 into a plurality of elastic pad blocks 7, and with the grooves 9, the plurality of elastic pad blocks 7 can be folded or rolled up for storage.

[0027] In some embodiments, the base layer 3 may be a hard base layer. Alternatively, in some embodiments, the base layer 3 is a flexible base layer, and the plurality of elastic modules 4 can be detachably arranged on the second surface 2, wherein the plurality of elastic modules 4 can be removed from the second surface 2 and then nested together. In the storage state, the plurality of elastic modules 4 are nested together, thus significantly reducing the occupied space and facilitating transportation. Moreover, the flexible base layer can also allow the plurality of elastic modules 4 to better adapt to the undulations of the ground, thus improving the stability of the elastic mattress.

[0028] In addition, the plurality of elastic modules 4 can be arranged on the second surface 2 in multiple manners. For example, in a manner, one end of the elastic module 4 is provided with an adhesive layer that can be attached to the second surface 2. Alternatively, in a further manner, referring to Figs. 3 and 4, the second surface 2 of the base layer is provided with a plurality of positioning rails 10 that are spaced apart in a length direction of the elastic mattress, each of the positioning rails extending along a width direction of the elastic mattress, and an installation zone 11 for receiving the elastic modules is formed between adjacent positioning rails 10, wherein, each elastic module 4 is configured to form a sliding fit with the adjacent positioning rails 10 from either one end of the adjacent positioning rails 10 and to slide onto the adjacent positioning rails 10 in the width direction of the elastic mattress. Each elastic module 4 then can slide into place along the positioning rails 10, such that each of the installation zones 11 are arranged with the plurality of elastic modules 4. During assembly, the required number of elastic modules 4 can slide into and be connected in each installation zone 11, such that the required number of elastic modules 11 can be connected stably and reliably onto the second surface 2. During storage, it is only required to slide the respective elastic modules 4 out of the respective installation zones 11. For example, the respective removed elastic modules 4 can be nested

together in sequence.

[0029] In some embodiments, in order to further improve the overall stability of all the elastic modules 4, referring to Fig. 4, an outer edge of the second surface 2 is disposed with stop edges 12 extending a predetermined height in the height direction of the elastic mattress, the plurality of positioning rails 10 are located between the stop edges 12, so that the elastic modules 4 are kept in position by the stop edges 12 in the width direction of the elastic mattress. In this way, due to the stopping effect of the stop edges 12, the overall stability of all the elastic modules 4 can be improved significantly.

[0030] In order to further improve the stability of the stop edge 12, in some embodiments, the stop edge 12 is a rectangular stop edge extending along the periphery of the outer edge of the second surface 2, wherein the rectangular stop edge is a flexible body and is kept a predetermined distance away from the outer peripheral surface of the base layer 3. In this way, due to the pulling and limiting effect of the peripheral sidewalls of the rectangular stop edge, the rectangular stop edge can be stably kept in a vertical state, thereby limiting stably and reliably all the elastic modules 4 as a whole. The pulling and limiting effect of the rectangular stop edge is prominent particularly for a flexible stop edge. Since the rectangular stop edge is kept a predetermined distance away from the outer peripheral surface of the base layer 3, the flexible stop edge can be more easily kept in a vertical state unless it is manually pulled to take and place the plurality of elastic modules 4. This cannot only facilitate storage of the base layer 3, but can also allow the elastic modules 4 to slide into the respective installation zones 11 by pulling the flexible stop edge outwards when the elastic modules 4 are assembled.

[0031] In addition, the elastic module 4 may be a spring module, or may be a rubber column module.

[0032] When used as a temporary mattress in outdoor camping, dormitories, offices or households if guests visit, the elastic mattress has more prominent advantages of having a low cost, facilitating transportation and assembling, and occupying a small space.

[0033] For example, in some embodiments, referring to Fig. 4, during use, the elastic modules 4 nested together can be removed and then slide between the respective positioning rails 10 of the second surface 2 of the base layer 3 such that the required number of elastic modules 4 can be arranged in each installation zone 11, and, thereafter, can be flipped over to cause all the elastic modules 4 into contact with the ground or the floor. As shown in Fig. 5, the pad layer 5 can be connected onto the first surface 1 of the base layer 3 via the hook-and-loop fastener 6, as shown in Fig. 6, thereby allowing for quick and easy assembling of the elastic mattress shown, as shown in Fig. 1.

[0034] The scope of protection of the present disclosure is defined only by the appended claims. Given the teaching of the present disclosure, those skilled in the art could easily envision using alternative structures of those

disclosed herein as feasible alternative embodiments, and combining the embodiments disclosed herein to form new embodiments, which should all fall into the scope defined by the appended claims.

Claims

1. An elastic mattress, comprising:

a base layer (3) comprising a first surface (1) and a second surface (2) opposite to each other in a height direction of the elastic mattress;
a plurality of elastic modules (4) detachably arranged on the second surface (2) and being configured to directly contact the ground; and
a pad layer (5) arranged on the first surface (1); wherein no side enclosures are provided at the periphery of the elastic mattress, thereby forming an elastic mattress with fully open sides.

2. The elastic mattress of claim 1, wherein the pad layer (5) and the base layer (3) are connected via a connecting structure arranged therebetween.

3. The elastic mattress of claim 2, wherein the connecting structure is a hook-and-loop fastener (6) arranged on the first surface (1) of the base layer (3) and/or a lower surface of the pad layer (5).

4. The elastic mattress of claim 1, wherein the pad layer (5) is a foldable or rollable pad layer.

5. The elastic mattress of claim 4, wherein the pad layer (5) comprises a plurality of elastic pad blocks (7) arranged in a length direction of the elastic mattress, and the elastic pad blocks (7) adjacent to each other are connected via a flexible portion.

6. The elastic mattress of claim 5, wherein the flexible portion comprises grooves (9) formed on an upper surface (8) and/or a lower surface of the pad layer (5) and extending along a width direction of the elastic mattress.

7. The elastic mattress of claim 1, wherein the base layer (3) is a flexible base layer, and the plurality of elastic modules (4) can be removed from the second surface (2) and then nested together.

8. The elastic mattress of any of claims 1-7, wherein the second surface (2) of the base layer (3) is provided with a plurality of positioning rails (10) that are spaced apart in a length direction of the elastic mattress, each of the positioning rails (10) extending along a width direction of the elastic mattress, and an installation zone (11) for receiving the elastic modules is formed between the positioning rails (10)

adjacent to each other, and wherein each of the elastic modules (4) is configured to be slidable in the width direction of the elastic mattress from either one end of the adjacent positioning rails (10) onto the adjacent positioning rails (10), and then slide in place along the positioning rails (10), such that each of the installation zones (11) are arranged with the plurality of elastic modules (4).

9. The elastic mattress of claim 8, wherein an outer edge of the second surface (2) is disposed with stop edges (12) extending a predetermined height in the height direction of the elastic mattress, and the plurality of the positioning rails (10) are located between the stop edges (12), so that the elastic modules (4) are kept in position by the stop edges in the width direction of the elastic mattress.
10. The elastic mattress of claim 9, wherein the stop edge (12) is a rectangular stop edge extending along a periphery of the outer edge of the second surface (2), and wherein the rectangular stop edge is a flexible body and is kept a predetermined distance away from an outer peripheral surface of the base layer (3).

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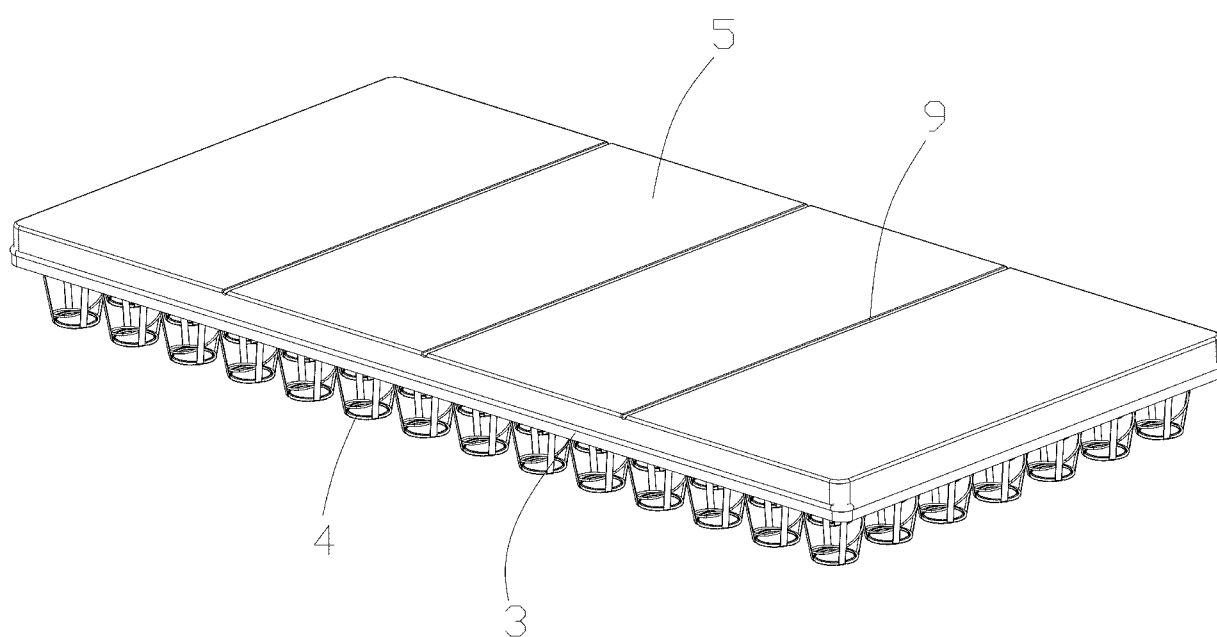


Fig. 1

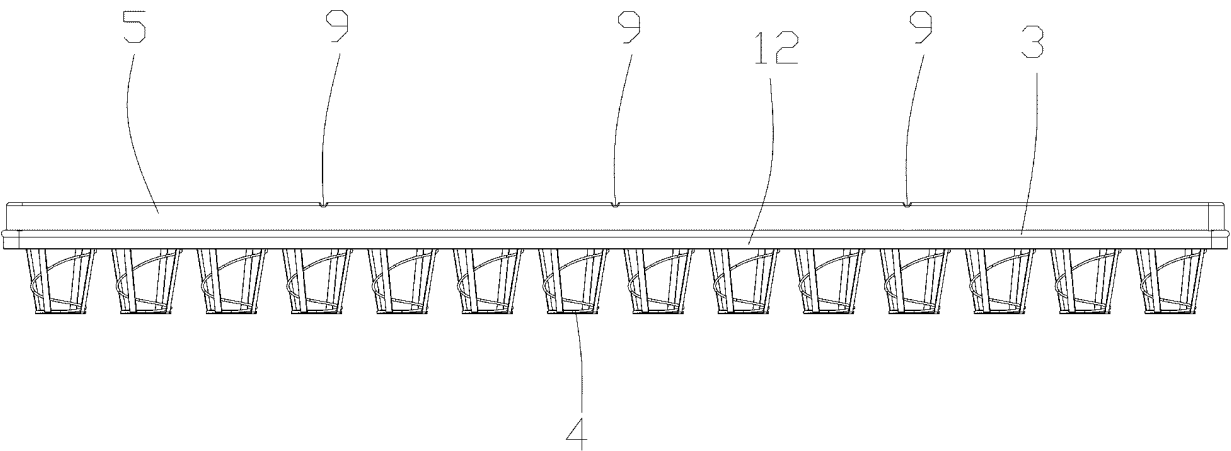


Fig. 2

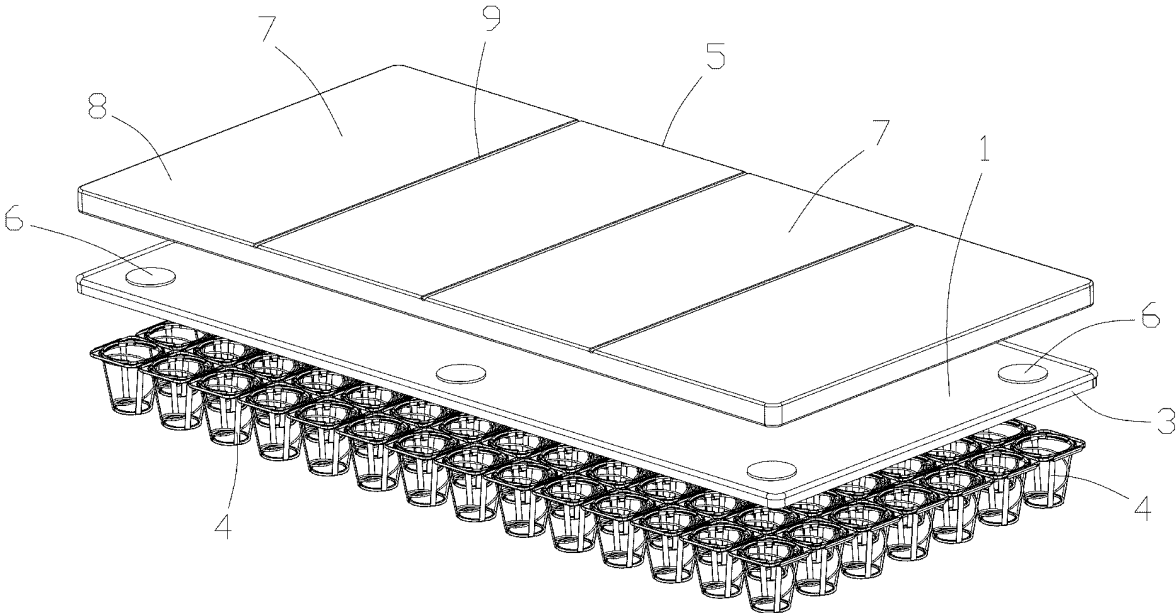


Fig. 3

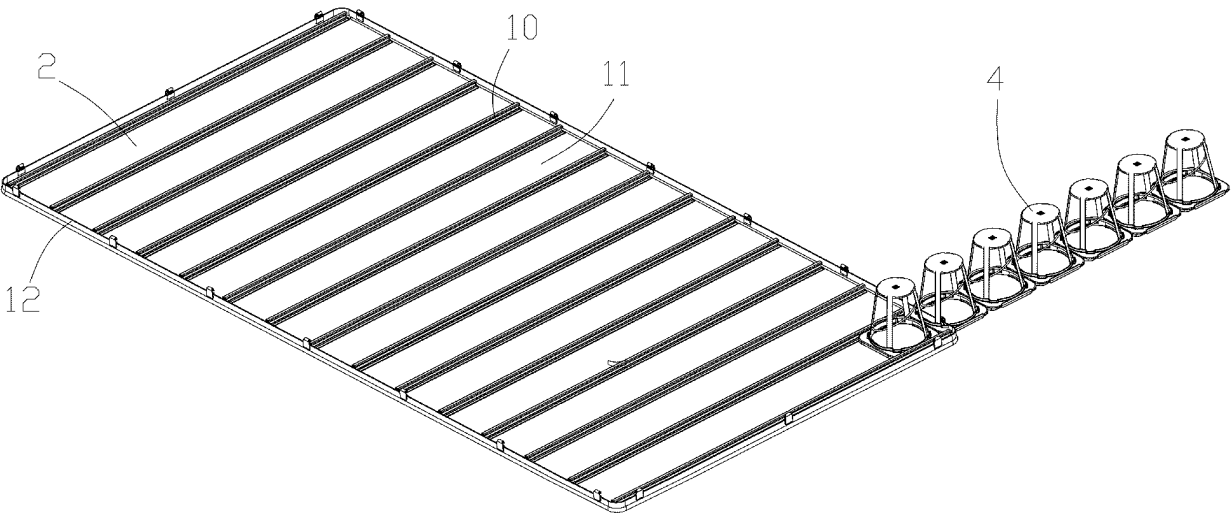


Fig. 4

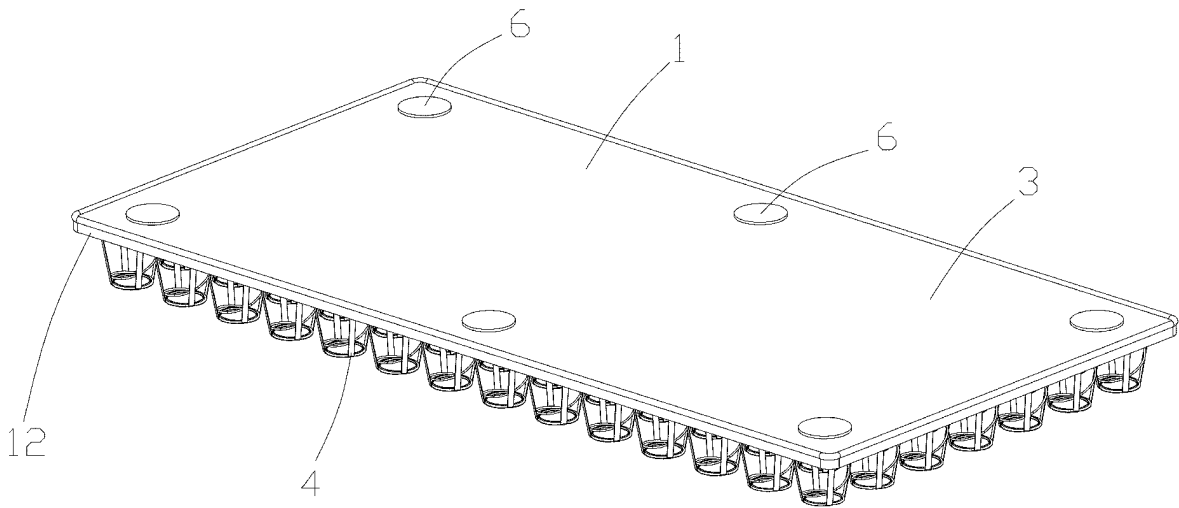


Fig. 5

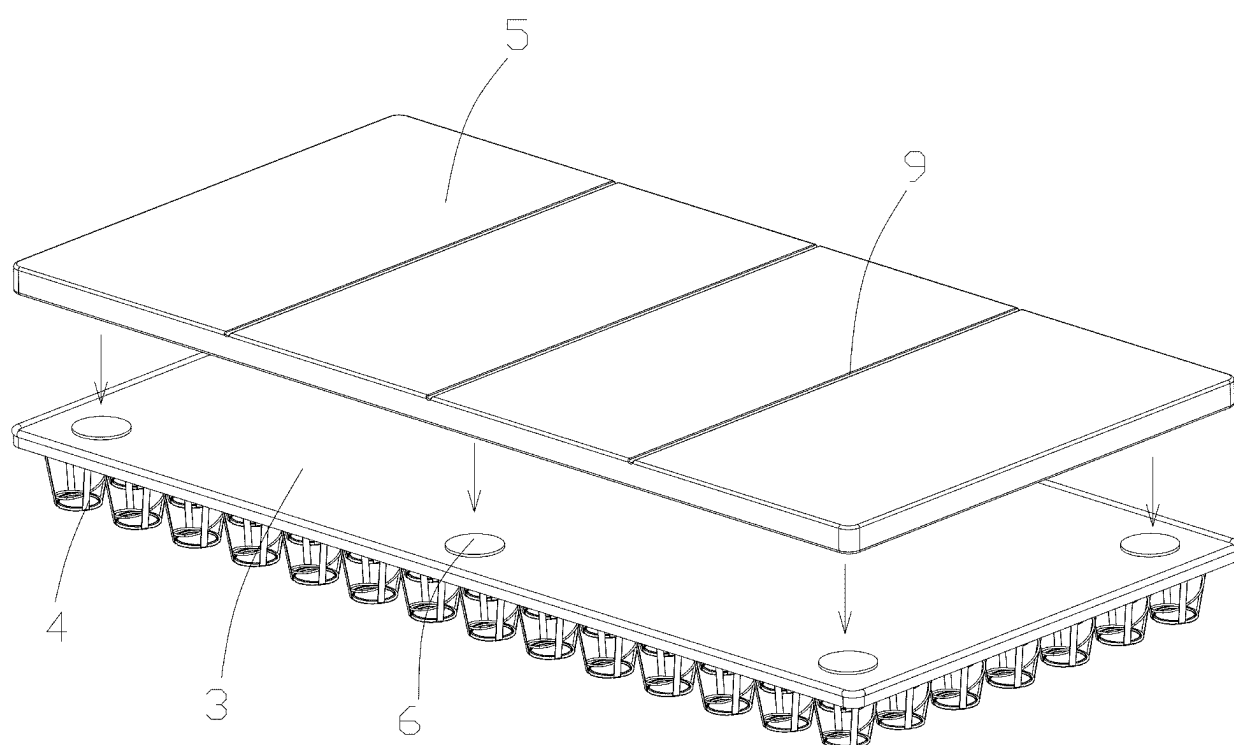


Fig. 6

INTERNATIONAL SEARCH REPORT

International application No.

PCT/CN2023/071821

A. CLASSIFICATION OF SUBJECT MATTER

A47C27/06(2006.01)i

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)

IPC A47C

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)

CNABS, CNTXT, CNKI, VEN: U型, 侧, 侧面, 侧围挡, 拆卸, 床垫, 弹, 弹簧, 弹性, 弹性模块, 挡, 垫, 挂钩, 卡扣, 冷璐浩, 冷璐浩, 模块, 魔术贴, 围栏, 止挡, 止挡边, 组装, elastic mattress, base, layer, modules, detachably, plurality, simpl+

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☒ Further documents are listed in the continuation of Box C.
 ☒ See patent family annex.

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|---|--|
| * Special categories of cited documents: | "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 |
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| Date of the actual completion of the international search 12 May 2023 | Date of mailing of the international search report 13 May 2023 |
| Name and mailing address of the ISA/CN China National Intellectual Property Administration (ISA/CN) China No. 6, Xitucheng Road, Jimenqiao, Haidian District, Beijing 100088 | Authorized officer Telephone No. |

Form PCT/ISA/210 (second sheet) (July 2022)

INTERNATIONAL SEARCH REPORT

International application No.

PCT/CN2023/071821

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