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(71) Applicant: **New-Tec Integration (Xiamen) Co., Ltd.**
Xiamen, Fujian 361100 (CN)

(72) Inventor: **LENG, Luhao**
Xiamen, Fujian 361005 (CN)

(74) Representative: **Zacco Sweden AB**
P.O. Box 5581
Löjtnantsgatan 21
114 85 Stockholm (SE)

(54) **ELASTIC MODULE BALANCE CUSHION, ELASTIC CUSHION, AND FURNITURE**

(57) The present disclosure relates to the field of furniture, and particularly to a balancing pad in use with elastic modules, an elastic pad and a furniture. The balancing pad comprising a base plate and a plurality of limit bosses arranged to space apart from each other on and protrude from a plate surface of the base plate, the plurality of limit bosses form a plurality of receiving spaces spaced apart from each other, and each of the plurality of receiving spaces is configured to receive corresponding elastic modules of an elastic base pad so as to constrain the movement of the corresponding elastic modules in a transverse direction of the base plate. As such, when assembled to form the elastic pad, the balancing pad may be laid on the elastic base pad having the plurality of elastic modules, and a portion of the elastic modules may be received in the respective corresponding receiving space to constrain the movement of the respective elastic modules in the transverse direction, thereby effectively improving the stability of the elastic pad when being subjected to a pressure, Therefore, the elastic pad has better comfort.

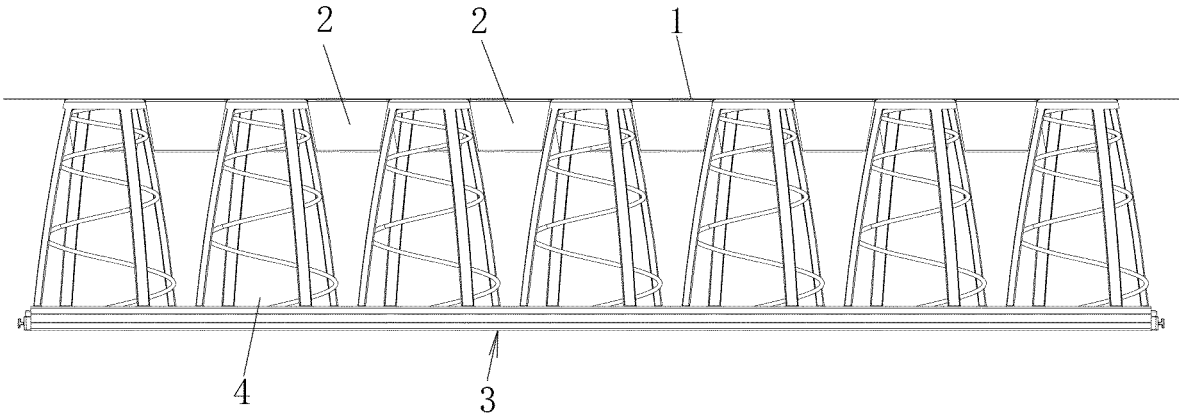

Fig. 6

EP 4 385 367 A1

Description

FIELD

[0001] The present disclosure relates to the field of furniture, and particularly to a balancing pad in use with elastic modules, and an elastic pad and a furniture comprising the same.

BACKGROUND

[0002] Furniture such as beds is an indispensable object in people's life. Most of the conventional large-sized furniture is not easily disassembled or not easily restored after disassembly. However, with the development of modern life, it is required furniture especially such as beds are able to be disassembled and assembled more and more frequently to meet the needs of population migration and field leisure. During transportation, it is very difficult to disassemble and assemble the beds, resulting in that the beds which are still in use are sometimes discarded to reduce the transportation burden.

[0003] A bed normally consists of a bed frame, an elastic pad, and an outer cover. A conventional elastic pad is usually one-piece, non-detachable and integral pad formed from a plurality of superimposed layers and springs. The integral pad is large in size and is not easy to be disassembled and stored.

[0004] A conventional separately-pocketed spring mattress is intended to avoid two or more people lying in bed at the same time from affecting each other (e.g., if a weight difference between individuals is relatively large, one of them will inevitably affect the other when turning over or moving the body). In this type of mattresses, each spring is individually packaged in a pocket or sleeve made of a nonwoven fabric or other material. The spring pockets are arranged in a pattern and then the outside of the arranged set of spring pockets is covered by a whole piece of foam rubber by adhesion, gluing or the like to form a furniture pad or a desired elastic pad in the form of the furniture pad. However, the separately-pocketed spring mattress is still an integral product that cannot be disassembled and is not easily transported. In addition, in the separately-pocketed spring mattress, non-woven fabrics used for wrapping the pocketed springs are adhered to each other, and when the mattress is pressed, the plurality of pocketed springs cannot move up and down separately, thereby affecting the comfort of the mattress.

[0005] Additionally, the conventional mattresses also have a disadvantage that they are not easy to clean. For a typical mattress, only the outer cover is often removable, and the sponge portion cannot be removed and not easily cleaned. Even though some treated sponges might have a certain anti-mite effect, since the mattress might be usually used for years, the sponge portion that is not easily cleaned might cause a large hygienic hazard.

SUMMARY

[0006] To address at least some of the problems existing in the prior art products, one of the objects of the present disclosure is to enable an elastic pad to have better comfort.

[0007] In order to achieve the above object, the present disclosure provides a balancing pad in use with elastic modules, comprising a base plate and a plurality of limit bosses arranged to space apart from each other on and protrude from a plate surface of the base plate, wherein the plurality of limit bosses form a plurality of receiving spaces spaced apart from each other, and each of the plurality of receiving spaces is configured to receive a corresponding elastic module of an elastic base pad so as to constrain a movement of the corresponding elastic module in a transverse direction of the base plate.

[0008] In this technical solution, the plurality of limit bosses are arranged to space apart from each other on and protrude from a plate surface of the base plate, and the plurality of limit bosses form the plurality of receiving spaces spaced apart from each other, and each of the plurality of receiving spaces can receive a corresponding elastic module of the elastic base pad so as to constrain the movement of the elastic modules in the transverse direction of the base plate. In this way, when assembled to form the elastic pad, the balancing pad in use with the elastic modules may be laid on the elastic base pad having the plurality of elastic modules, and a portion of the elastic modules may be received in the respective receiving spaces. At this time, due to a transverse buffering and restricting effect of the limit bosses, when the elastic pad is pressed to compress the respective elastic modules, the limit bosses may effectively constrain the movement of the elastic modules in the transverse direction (i.e., in a direction parallel to the base plate), so as to effectively prevent the elastic modules from tilting as receiving a force, thereby effectively maintaining the support stability of the elastic modules. Therefore, when laid on the elastic base pad, the balancing pad in use with the elastic modules can constrain the movement of the respective elastic modules in the transverse direction, thereby effectively improving the stability of the elastic pad when being subjected to a pressure. As such, the elastic pad according to the disclosure may have better comfort.

[0009] In some embodiments, a cross-sectional size of each of the plurality of limit bosses is gradually reduced in a direction away from the base plate so that an inner size of the receiving space is gradually reduced in a direction closer to the base plate.

[0010] In some embodiments, each of the plurality of limit bosses is formed as a truncated body.

[0011] In some embodiments, the based plate is made of flexible material.

[0012] In some embodiments, each of the plurality of limit bosses is made of elastic material and formed as an elastic body.

[0013] In some embodiments, the elastic body comprises a flexible outer sleeve and an elastic member disposed within the flexible outer sleeve, wherein one end of the flexible outer sleeve is connected to the base plate, and the other end of the flexible outer sleeve extends away from the base plate.

[0014] In some embodiments, the flexible outer sleeve and the base plate are formed from the same material.

[0015] In some embodiments, the flexible outer sleeve is a nonwoven fabric sleeve, and the base plate is a nonwoven fabric plate.

[0016] In some embodiments, one end of the elastic member is connected to the plate surface of the base plate, and the other end of the elastic member is connected to an end cap at an end of the flexible outer sleeve far away from the plate surface so that the elastic member is in a pre-compressed state.

[0017] In some embodiments, an outer peripheral profile of the elastic member is pressed against an inner peripheral surface of the outer sleeve.

[0018] In some embodiments, the elastic member is a spring.

[0019] In some embodiments, the plurality of limit bosses comprise a plurality of first limit bosses and a plurality of second limit bosses, wherein each of the receiving spaces is surrounded by the plurality of first limit bosses and the plurality of second limit bosses arranged alternately in sequence, wherein each of the first limit bosses is surrounded by the second limit bosses of surrounding receiving spaces.

[0020] In some embodiments, a plurality of first-row limit bosses and second-row limit bosses arranged alternately in sequence are provided on a plate surface of the base plate, wherein each row of the first-row limit bosses comprises a plurality of first limit bosses and second limit bosses adjacent alternately in sequence in the row direction; each row of the second-row limit bosses comprises a plurality of second limit bosses arranged apart from each other at an interval in the row direction, the interval being one said second limit boss; wherein each second limit boss in each row of said second-row limit bosses is aligned with each said first limit boss of an adjacent row in a column-wise direction, such that the interval serves as the receiving space.

[0021] In addition, the present disclosure provides an elastic pad comprising an elastic base pad and a balancing pad according to the above-described embodiments, wherein the elastic base pad comprises a plurality of elastic modules, wherein the balancing pad is laid on the elastic based pad, and the plurality of elastic modules are received in the respective receiving spaces, and wherein the limit bosses can constrain movement of the elastic modules in a transverse direction.

[0022] As described above, since the balancing pad constrains the movement of the elastic modules in the transverse direction when laid on the elastic base pad, the stability of the elastic pad when subjected to a pressure can be effectively improved so that the elastic pad exhibit better comfort.

[0023] In some embodiments, the elastic module is formed in a truncated cone shape and is made to contact at least one limit boss in a form of a truncated cone.

[0024] In some embodiments, the elastic pad further comprises a flexible pad and an outer cover, wherein the flexible pad is laid on the base plate, and the outer cover covers the flexible pad and wraps around the balancing pad, the flexible pad and at least a part of the elastic base pad.

[0025] Finally, the present disclosure provides a furniture comprising the above-described elastic pad. As stated above, the comfort of the furniture is significantly improved.

[0026] In addition, the furniture includes, but is not limited to, mattresses, sofas, chairs, sofa beds, soft-packaged benches, and the like.

[0027] It is evident that elements or features described in a single embodiment above may be used alone or in combination in other embodiments.

BRIEF DESCRIPTION OF THE DRAWINGS

[0028] In the figures, sizes and proportions do not represent sizes and proportions of actual products. The figures are merely illustrative, and certain unnecessary elements or features have been omitted for the sake of clarity.

FIG. 1 schematically illustrates a perspective view of a bottom view of an balancing pad according to a preferred embodiment of the present disclosure.

FIG. 2 schematically illustrates a bottom view of the balancing pad of FIG. 1.

FIG. 3 schematically illustrates a side view of the elastic modular balance pad of FIG. 1, wherein a limit boss in a structural form is shown;

FIG. 4 schematically illustrates an exploded perspective view of an elastic pad according to a preferred embodiment of the present disclosure, wherein some other components of the elastic pad are omitted in order to clearly show the balancing pad and an elastic base pad.

FIG. 5 schematically illustrates a perspective view of an assembled elastic pad of FIG. 4.

FIG. 6 schematically illustrates a side view of the elastic pad of FIG. 5;

FIG. 7 schematically illustrates a bottom structure of the elastic pad of FIG. 5;

FIG. 8 schematically illustrates a bottom view of a cross-section of a position of the elastic pad of FIG. 5;

FIG. 9 schematically illustrates a perspective view of an elastic pad according to a preferred embodiment of the present disclosure, wherein a portion of an outer cover is omitted to clearly show an inner structure of the elastic pad.

FIG. 10 schematically illustrates an elastic module of an elastic base pad of the elastic pad of FIG. 4.

Description of Reference Numerals

[0029] 1-base plate, 2-limit boss, 3-elastic base pad, 4-elastic module, 5-receiving space, 6-flexible outer sleeve, 7-elastic member, 8-first limit boss, 9-second limit boss, 10-first row of limit bosses, 11-second row of limit bosses, 12-elastic pad, 13-balancing pad, 14-flexible pad, 15-outer cover, 6-conical spring, 17-spring support.

DETAILED DESCRIPTION OF EMBODIMENTS

[0030] Hereunder, the present disclosure will be described in detail with reference to the accompanying drawings. What have been described herein are merely preferred embodiments according to the present disclosure. Those skilled in the art can conceive of other ways of implementing the present disclosure on the basis of the preferred embodiments, and said other ways also fall within the scope of the present disclosure.

[0031] FIG. 1, FIG. 2 and FIG. 3 schematically illustrate a balancing pad 13 in use with elastic modules according to a preferred embodiment of the present disclosure. With reference to FIG. 1, FIG. 2 and FIG. 3, the balancing pad 13 provided by the disclosure comprises a base plate 1 and a plurality of limit bosses 2, wherein the plurality of limit bosses 2 are arranged to space apart from each other on and protrude from a plate surface of the base plate 1, for example, the base plate 1 comprises a first plate surface and a second plate surface which are opposite in a thickness direction of the base plate, the plurality of limit bosses 2 are arranged on the first plate surface and extend away from the base plate 1, the plurality of limit bosses 2 form a plurality of receiving spaces 5 spaced apart from each other, and each of the plurality of receiving space 5 is configured to receive corresponding elastic modules 4 of an elastic base pad 3 so as to constrain the movement of the corresponding elastic modules 4 in a transverse direction of the base plate.

[0032] In this technical solution, the plurality of limit bosses 2 are arranged to space apart from each other on and protrude from a plate surface of the base plate 1, and the plurality of limit bosses 2 form the plurality of receiving spaces 5 spaced apart from each other, and the plurality of receiving spaces 5 can receive corresponding elastic modules 4 of the elastic base pad 3 so as to constrain the movement of the corresponding elastic modules 4 in the transverse direction of the base plate 1. In this way, when assembled to form the elastic pad 12, the balancing pad 13 may be laid on the elastic base pad 3 having the plurality of elastic modules 4, and a portion of the elastic modules 4 may be received in the respective corresponding receiving space 5. At this time, due to a transverse buffering and limiting action of the limit bosses 2, when the elastic pad 12 is pressed to compress the elastic modules 4, the limit bosses 2 may effectively constrain the movement of the elastic modules 4 in the transverse direction (i.e., in a direction parallel to the base plate 1), so as to effectively prevent the elastic modules 4 from tilting as receiving a force, thereby effectively maintaining the support stability of the elastic modules 4. Therefore, when laid on the elastic base pad 3, the balancing pad 13 constrains the movement of the respective elastic modules 4 in the transverse direction, thereby effectively improving the stability of the elastic pad 12 when being subjected to a pressure, so that the elastic pad 12 has better comfort.

[0033] In addition, the balancing pad may be used to make elastic pads for furniture.

[0034] In addition, in the balancing pad 13, the limit bosses 2 may be connected on the plate surface on one side of the base plate 1 by adhesion, ultrasonic welding, loop-and-hook connection or in other manners. In addition, the number of limit bosses 2 may be determined according to the number of elastic modules 4, and therefore, the present disclosure does not limit the specific number of limit bosses 2.

[0035] In addition, in some embodiments, since the limit bosses 2 protrude from the plate surface on one side of the base plate 1, sizes of cross-sections of the limit bosses 2 may be the same in the protruding direction, so that an internal transverse dimension of the receiving spaces 5 may be made the same in the protruding direction, so that a portion of the elastic modules 4 may abut against the base plate 1 after entering the receiving space 5. Alternatively, in other embodiments, the cross-sectional size of the limit boss 2 may be stepped in the protruding direction, so that a stop step may be formed in the receiving space 5. As such, a portion of the elastic module 4 may abut against the stop step after entering the receiving space 5. Alternatively, in other embodiments, referring to FIG. 1, FIG. 2 and FIG. 3, the cross-sectional size of each of the limit bosses 2 is gradually reduced in a direction away from the base plate 1 (in the protruding direction). For example, as shown in FIG. 3, the limit boss 2 may be formed as a frustum so that the inner size of the receiving space 5 is gradually reduced in a direction closer to the base plate 1, and a portion of the elastic module 4 may abut against a tapered outer peripheral surface of the frustum after entering into the receiving space 5. Alternatively, the elastic module 4 may be formed as a frustum body whose conical surface slope may be the same as the conical surface slope of the frustum, so that a portion of the frustum body may form a conical surface fit with the frustum in the receiving space 5 in a form-fitting manner, a portion of the elastic module 4 may be more stably and reliably received in the receiving space 5, and the balancing pad 13 provides

a more stable and reliable constraint for the elastic module 4.

[0036] In addition, when the limit boss 2 is formed as a frustum, the frustum may have a variety of shapes, for example, the frustum may be a polygonal frustum such as a quadrangular frustum. Alternatively, in an alternative embodiment, as shown in FIG. 1, FIG. 2 and FIG. 3, the limit boss 2 is formed as a truncated cone. Accordingly, the elastic module 4 may be formed as a truncated cone. As such, referring to FIG. 2, FIG. 4, FIG. 6, FIG. 7 and FIG. 8, when the truncated cone enters the receiving space 5, the conical surface of the truncated cone will form a conical surface fit with conical surfaces of the surrounding truncated cones. The conical surface fitting may not only limits the elastic module 4 in the transverse direction as well as the protruding direction (a direction perpendicular to the transverse direction), so that the elastic module 4 may be constrained more stably and reliably.

[0037] In addition, in some embodiments, the base plate 1 may not deform when the elastic pad is subjected to a pressure, for example, the base plate 1 may be a plastic plate having a predetermined thickness. Alternatively, in other embodiments, the base plate 1 is made of a flexible material, so that the base plate 1 is formed as a flexible body, that is, when the elastic pad is subjected to a pressure, the base plate 1 will flexibly deform to provide buffering, thereby further enabling the limit bosses to constrain the movement of the elastic modules 4 in the transverse direction, and effectively improving the stability of the elastic pad 12 when subjected to a pressure, so that the elastic pad 12 presents better comfort.

[0038] In addition, the base plate 1 may be a plastic cloth having a predetermined thickness, or may be a silica gel pad, or may be a cloth layer. Certainly, the base plate 1 may be a single layer or may be multiple layers which are sequentially laminated and connected. For example, when the base plate 1 is a cloth layer, it may include a single layer of canvas, or may include multiple layers of non-woven fabrics which are sequentially stacked. The multiple cloth layers may be joined together by an adhesive or ultrasonic welding.

[0039] In addition, in some embodiments, the limit boss 2 may not elastically deform when the elastic pad is pressed, for example, the limit boss 2 may be a plastic truncated cone. Alternatively, in an alternative embodiment, the limit boss 2 is made of an elastic material such that the limit boss 2 is formed as an elastic body. In this way, after the balancing pad is laid on the elastic base pad 3 to form the elastic pad 12, when the elastic pad is subjected to a pressure, the elastic module 4 will be correspondingly compressed to provide support. At this time, since the limit boss 2 is formed as an elastic body, the elastic body will elastically deform to a certain degree to provide buffering, thereby further constraining the movement of the elastic modules 4 in the transverse direction, and effectively improving the stability of the elastic pad 12 when subjected to a pressure. Therefore, the elastic pad 12 presents better comfort.

[0040] In addition, the elastic body may be of various types, for example, one type of elastic body may be a silica colloid, or another type of elastic body may be a sponge, for example, a sponge with a high elasticity. The sponge is easy to shape into a desired shape, low in cost, and easy to breathe. Alternatively, referring to FIG. 3, in other types of elastic bodys, the elastic body may include a flexible outer sleeve 6 and an elastic member 7 disposed within the flexible outer sleeve 6. One end of the flexible outer sleeve 6 is connected to the base plate 1 and the other end of the flexible outer sleeve 6 extends away from the base plate 1. The flexible outer sleeve 6 can flexibly deform and can increase a contact area with the elastic module 4, thereby better limiting the movement of the elastic module 4 in the transverse direction. In this way, after the balancing pad is laid on the elastic base pad 3 to form the elastic pad 12, when the elastic pad is subjected to a pressure, the elastic module 4 will be correspondingly compressed to provide support. At this time, the elastic member 7 elastically deforms to a certain degree and causes the flexible outer sleeve 6 to elastically deform to provide buffering, thereby further constraining the movement of the elastic modules 4 in the transverse direction, and effectively improving the stability of the elastic pad 12 when subjected to a pressure. Therefore, the elastic pad 12 presents better comfort.

[0041] Additionally, in some embodiments, the flexible outer sleeve 6 and the base plate 1 may be formed from different materials. For example, the flexible outer sleeve 6 may be formed of a plastic cloth and the base plate 1 may be formed of a silicone pad. Alternatively, in other embodiments, the flexible outer sleeve 6 and the base plate 1 are formed from the same material. In this way, being made from the same material, the flexible outer sleeve 6 and the base plate 1 may be connected easily, and the cost may be reduced.

[0042] In addition, in some embodiments, the flexible outer sleeve 6 is a non-woven fabric sleeve, the base plate 1 is a non-woven fabric plate, and the non-woven fabric sleeve and the non-woven fabric plate may be connected by sewing, adhesion or ultrasonic welding. In addition, the nonwoven fabric may enable the balancing pad to have good resistance against moisture and air permeability, and the nonwoven fabric may make the balancing pad more flexible and lighter, which can further enhance the comfort of the elastic pad.

[0043] Additionally, in some embodiments, the elastic member 7 may be in a natural state within the flexible outer sleeve 6 when not subjected to a pressure. Alternatively, in other embodiments, with reference to FIG. 3, one end of the elastic member 7 is connected to the plate surface of the base plate 1, and the other end of the elastic member 7 is connected to an end cap at an end of the flexible outer sleeve 6 far away from the plate surface so that the elastic member 7 is in a pre-compressed

state. In this way, by means of the flexible outer sleeve 6 and the base plate 1, the elastic member 7 may be made in a pre-compressed state while itself has a certain elastic strength. As such, better elastic limitation may be further provided to the elastic modules 4.

[0044] In addition, in some embodiments, an outer peripheral profile of the elastic member 7 wrapped within the flexible outer sleeve 6 may keep a gap with a side sleeve wall of the flexible outer sleeve 6. Alternatively, in other embodiments, with reference to FIG. 3, the outer peripheral profile of the elastic member 7 is pressed against an inner peripheral surface of the outer sleeve. As such, the elastic member 7, e.g., the elastic member 7 in the pre-compressed state, may make the flexible outer sleeve 6 in a tensioned state, such that the outer peripheral surface of the flexible outer sleeve 6 can better contact with the elastic modules 4 to better limit the elastic modules 4 in the transverse direction.

[0045] In addition, the elastic member 7 may be of various types, for example, in some embodiments, the elastic member 7 may be a silicone body such as a silicone truncated cone. Alternatively, in other embodiments, the elastic member 7 is a spring that provides good pre-compression strength and transverse limitation. The spring may be an equal-diameter spring, or may be a truncated cone-shaped spring as shown in FIG. 3. For example, when the truncated cone-shaped spring is used, the flexible outer sleeve 6 made of a non-woven fabric may be truncated cone-shaped, thereby forming the limit boss 2 as a truncated cone body.

[0046] In addition, in the balancing pad 13 of the present disclosure, the number and arrangement manner of the limit bosses 2 may be determined according to actual needs, and are not specifically limited in the present disclosure. For example, in some embodiments, each receiving space 5 may be enclosed by independent limit bosses 2 which are not shared by other receiving spaces. Alternatively, in other embodiments, with reference to FIG. 2 and FIG. 8, adjacent receiving spaces 5 may share some limit bosses 2. For example, the limit boss 2 may comprise a plurality of first limit bosses 8 and a plurality of second limit bosses 9, wherein each receiving space 5 is surrounded by the plurality of first limit bosses 8 and the plurality of second limit bosses 9 arranged alternately in sequence, wherein each of the first limit bosses 8 is surrounded by the second limit bosses 9 of the surrounding multiple receiving spaces 5. In this way, each first limit boss 8, while used to enclose the receiving space 5, is also enclosed at a center by the surrounding second limit bosses 9, so that each first limit boss 8 may limit the surrounding second limit bosses 9 in the transverse direction, thereby enabling the second limit bosses 9 to more stably and reliably constrain the elastic module 4 entering the receiving space 5 in the transverse direction.

[0047] In addition, in some embodiments, the plurality of first limit bosses 8 and the plurality of second limit bosses 9 may not be arranged in rows and columns on the base plate 1. Alternatively, in other embodiments, with reference to FIG. 2 and FIG. 8, a plurality of first-row limit bosses 10 and second-row limit bosses 11 arranged alternately in sequence are provided on a plate surface on one side of the base plate 1, wherein each row of the first-row limit bosses 10 comprises a plurality of first limit bosses 8 and second limit bosses 9 adjacent alternately in sequence in the row direction; each row of the second-row limit boss 11 comprises a plurality of second limit bosses 9 arranged apart from each other at an interval in the row direction, the interval being one second limit boss 9; wherein each second limit boss 9 in each row of second-row limit bosses 11 is aligned with each first limit boss 8 of an adjacent row in a columnwise direction such that the interval serves as the receiving space 5. Thus, as shown in the figure, four first limit bosses 8 and four second limit bosses 9 are squarely arranged to together enclose a receiving space 5, the four first limit bosses 8 are respectively at four corner positions, and the first limit boss 8 at each corner position is enclosed in the middle by the four second limit bosses 9 of surrounding receiving spaces 5, so that adjacent receiving spaces 5 can share some of the first limit bosses 8 and the second limit bosses 9, thereby better constraining the movement of the elastic modules 4 in the transverse direction by virtue of such a constraining structure between the limit bosses.

[0048] In addition, referring to FIG. 4, FIG. 5, FIG. 6, FIG. 7 and FIG. 8, the present disclosure provides an elastic pad 12 including an elastic base pad 3 and the above-described balancing pad 13, wherein the elastic base pad 3 comprises a plurality of elastic modules 4, wherein the balancing pad 13 is laid on the elastic based pad 3, and the plurality of elastic modules 4 are received in respective receiving spaces 5, and wherein the limit bosses can constrain movement of the elastic modules 4 in the transverse direction.

[0049] As described above, since the balancing pad constrains the movement of the elastic modules in the transverse direction when laid on the elastic base pad, the stability of the elastic pad when subjected to a pressure can be effectively improved so that the elastic pad exhibit better comfort.

[0050] In addition, the elastic module 4 may have various shapes, for example, the elastic module 4 may be in the shape of a cylinder, a truncated cone or a column. In some embodiments, referring to FIG. 6, the elastic module 4 is formed in a truncated cone shape and is made to contact at least one limit boss 2 in a form of a truncated cone, so that the elastic module 4 has a truncated cone shape and is received in the receiving space 5; a conical surface of the truncated cone-shaped elastic module 4 and the limit boss 2 in the form of the truncated cone have the same slope, so as to form a conical surface fit with a shape-fitting manner therebetween, so that a part of the elastic module 4 can be fitted more stably and reliably in the receiving space 5, and the balancing pad 13 provides a more stable and reliable constraint to the elastic module 4.

[0051] In addition, the elastic module 4 may be of various types, for example, the elastic module 4 may be a column-shaped elastic block such as a rubber block. Alternatively, referring to FIG. 10, the elastic module 4 may include a spring bracket 17 and a conical spring 16 disposed in the spring bracket 17. At this time, the elastic based pad 4 may include a foldable mounting support, the elastic bracket 17 is used to detachably mount the elastic module 4 to the foldable mounting support. In this way, a plurality of elastic modules 4 may be mounted to the foldable mounting supports by means of respective spring brackets 17, and then the balancing pad 13 may be laid on the elastic modules 4 so that a portion of each elastic module 4 enters and gets positioned in the corresponding receiving space 5. Upon disassembly, the balancing pad 13 is removed, and then the elastic modules 4 are removed from the foldable mounting supports and sequentially nested and stacked together, and then the foldable mounting supports are folded. Therefore, the elastic pad 12 can be easily detached, and the removed elastic modules can be compressed or stacked and nested together, thereby greatly saving the storage and transportation space, and facilitating cleaning.

[0052] In addition, referring to FIG. 9, the elastic pad further includes a flexible pad 14 and an outer cover 15, wherein the flexible pad 14 is laid on the base plate 1, and the outer cover 15 covers the flexible pad 14 and wraps around the balancing pad 13, the flexible pad 14 and at least a part of the elastic base pad 3. For example, the outer cover 15 may wrap the elastic base pad 3 and the balancing pad 13 entirely, thereby enhancing the aesthetic appearance of the elastic pad 12. The outer cover 15 may enclose at least a portion of the elastic base pad 3 and the balancing pad 13 by a removable connection structure such as a zipper or a loop-and-hook. The flexible pad 14 may be a silicone pad or a cotton pad or a sponge pad such as a highly elastic sponge pad, or may be a flexible pad of other materials.

[0053] In addition, the present disclosure provides a furniture comprising the above-described elastic pad 12. As stated above, the comfort of the furniture is significantly improved. Such furniture includes, but is not limited to, mattresses, sofas, chairs, sofa beds, soft-packaged benches, and the like.

[0054] 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. A balancing pad in use with elastic modules, comprising a base plate (1) and a plurality of limit bosses (2) arranged to space apart from each other on and protrude from a plate surface of the base plate (1), the plurality of limit bosses (2) form a plurality of receiving spaces (5) spaced apart from each other, and each of the plurality of receiving spaces (5) is configured to receive a corresponding elastic modules (4) of an elastic base pad (3) so as to constrain the movement of the corresponding elastic modules (4) in a transverse direction of the base plate.

2. The balancing pad in use with elastic modules according to claim 1, wherein a cross-sectional size of each of the plurality of limit bosses (2) is gradually reduced in a direction away from the base plate (1) so that an inner size of the receiving space (5) is gradually reduced in a direction closer to the base plate (1).

3. The balancing pad in use with elastic modules according to claim 2, wherein each of the plurality of limit bosses (2) is formed as a truncated body.

4. The balancing pad in use with elastic modules according to claim 1, wherein the based plate (1) is made of flexible material.

5. The balancing pad in use with elastic modules according to any of claims 1-4, wherein each of the plurality of limit bosses (2) is made of elastic material and formed as an elastic body.

6. The balancing pad in use with elastic modules according to claim 5, wherein the elastic body comprises a flexible outer sleeve (6) and an elastic member (7), the elastic member (7) is disposed within the flexible outer sleeve (6), wherein one end of the flexible outer sleeve (6) is connected to the base plate (1), and the other end of the flexible outer sleeve extends away from the base plate (1).

7. The balancing pad in use with elastic modules according to claim 6, wherein the flexible outer sleeve (6) and the base plate (1) are formed from the same material.

8. The balancing pad in use with elastic modules according to claim 7, wherein the flexible outer sleeve (6) is a nonwoven fabric sleeve, and the base plate (1) is a nonwoven fabric plate.

9. The balancing pad in use with elastic modules according to claim 6, wherein one end of the elastic member (7) is connected to the plate surface of the base plate (1), and the other end of the elastic member (7) is connected to an end cap at an end of the flexible outer sleeve (6) far away from the plate surface so that the elastic member (7) is in a pre-compressed state.

10. The balancing pad in use with elastic modules according to claim 6, wherein an outer peripheral profile of the elastic member (7) is pressed against an inner peripheral surface of the flexible outer sleeve.

11. The balancing pad in use with elastic modules according to claim 6, wherein the elastic member (7) is a spring.

12. The balancing pad in use with elastic modules according to claim 1, wherein the plurality of limit bosses (2) comprise a plurality of first limit bosses (8) and a plurality of second limit bosses (9), wherein each of the receiving spaces (5) is surrounded by the plurality of first limit bosses (8) and the plurality of second limit bosses (9) arranged alternately in sequence, wherein each of the first limit bosses (8) is surrounded by the second limit bosses (9) of surrounding multiple receiving spaces (5).

13. The balancing pad in use with elastic modules according to claim 12, wherein a plurality of first-row limit bosses (10) and second-row limit bosses (11) arranged alternately in sequence are provided on a plate surface on one side of the base plate (1), wherein

each row of the first-row limit bosses (10) comprises a plurality of first limit bosses (8) and second limit bosses (9) adjacent alternately in sequence in a row direction;
each row of the second-row limit bosses (11) comprises a plurality of second limit bosses (9) arranged apart from each other at an interval in the row direction, the interval being one said second limit boss (9);
wherein each said second limit boss (9) in each row of said second-row limit bosses (11) is aligned with each said first limit boss (8) of an adjacent row in a columnwise direction such that the interval serves as the receiving space (5).

14. An elastic pad (12), comprising

an elastic base pad (3) comprising a plurality of elastic modules (4);
the balancing pad (13) in use with elastic modules according to any of claims 1-13;
wherein the balancing pad (13) is laid on the elastic based pad (3), and the plurality of elastic modules (4) are received in the respective receiving spaces (5), and wherein the limit bosses (2) can constrain the movement of the elastic modules (4) in a transverse direction.

15. The elastic pad according to claim 14, wherein the elastic module (4) is formed in a truncated cone shape and is made to contact at least one limit boss (2) in a form of a truncated cone.

16. The elastic pad according to claim 14 or 15, wherein the elastic pad further comprises a flexible pad (14) and an outer cover (15), wherein the flexible pad (14) is laid on the base plate (1), and the outer cover (15) covers the flexible pad (14) and wraps around the balancing pad (13), the flexible pad (14) and at least a part of the elastic base pad (3).

17. A furniture, comprising the elastic pad (12) according to any of claims 14-16.

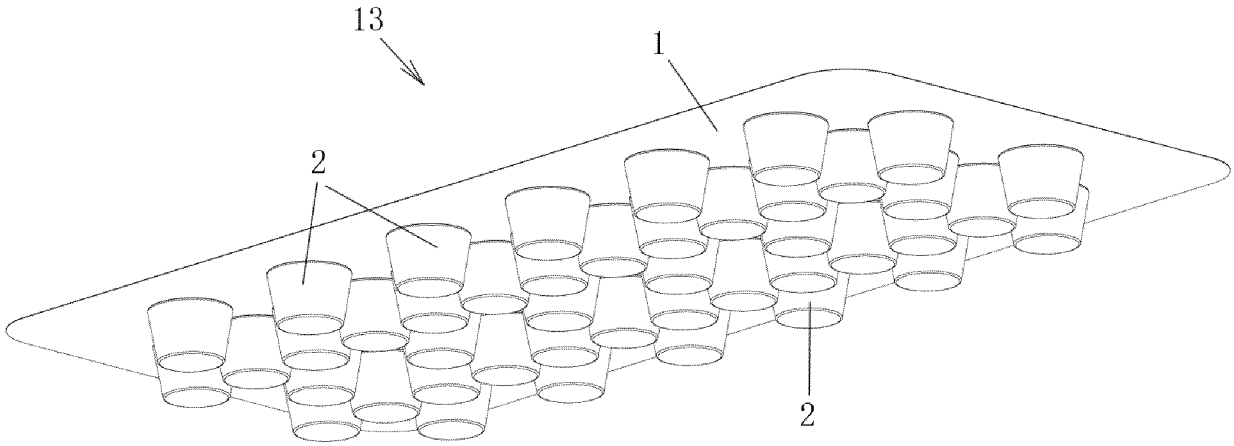

Fig. 1

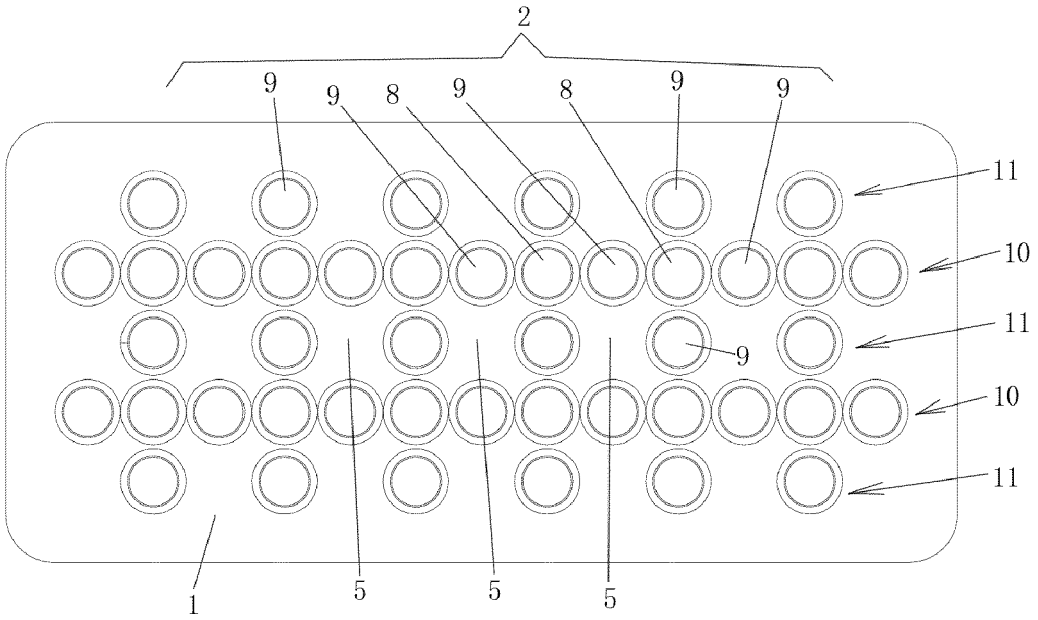

Fig. 2

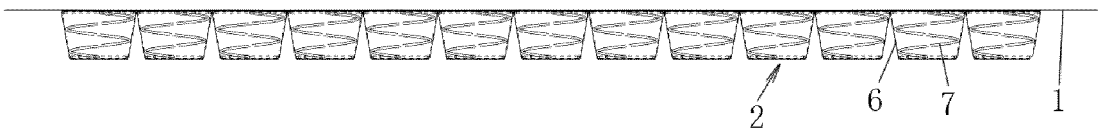

Fig. 3

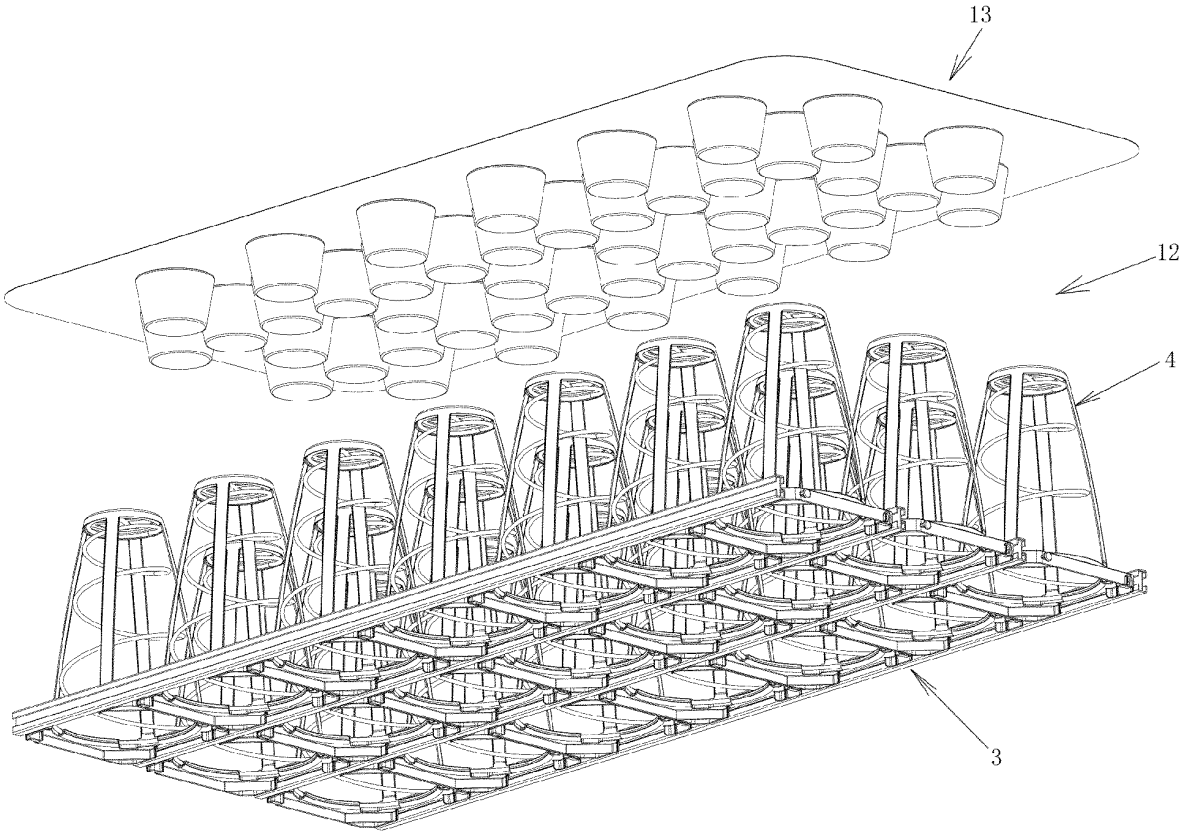

Fig. 4

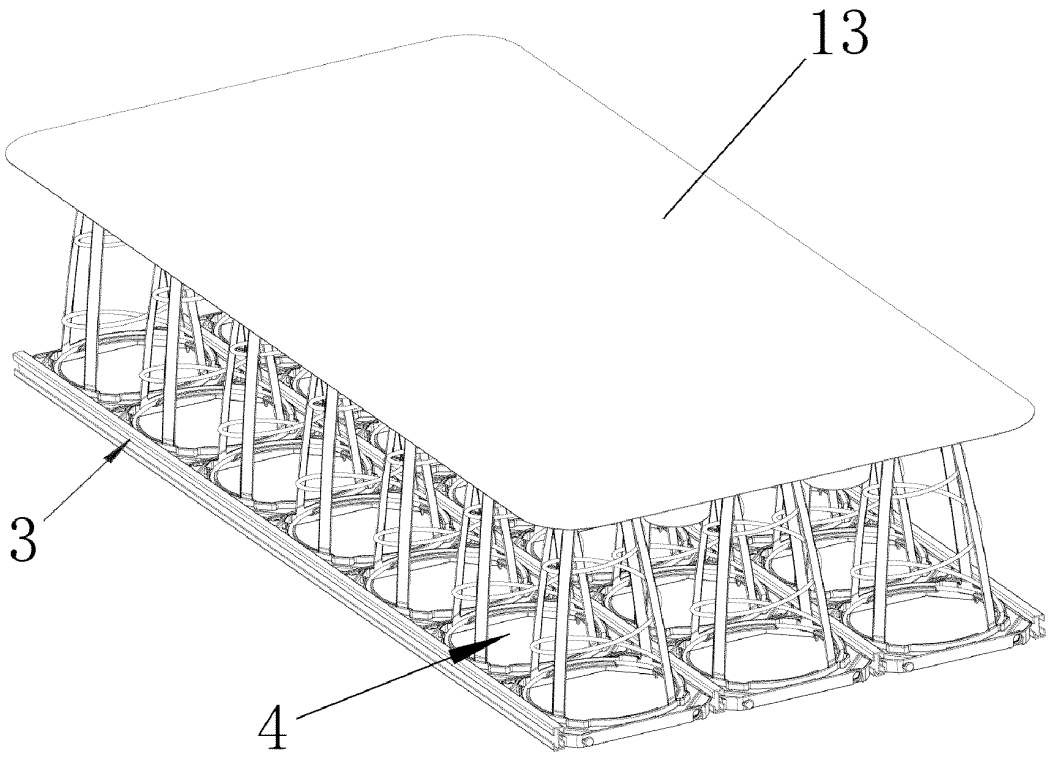

Fig. 5

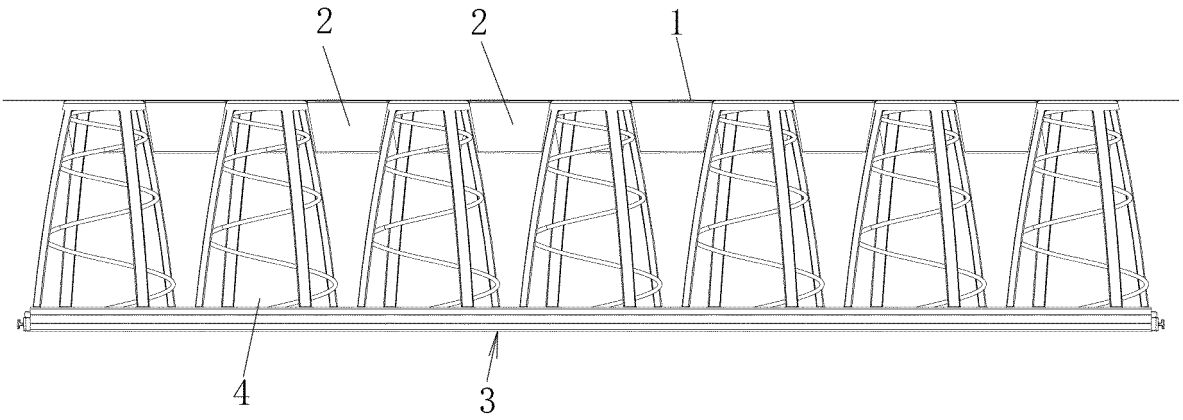

Fig. 6

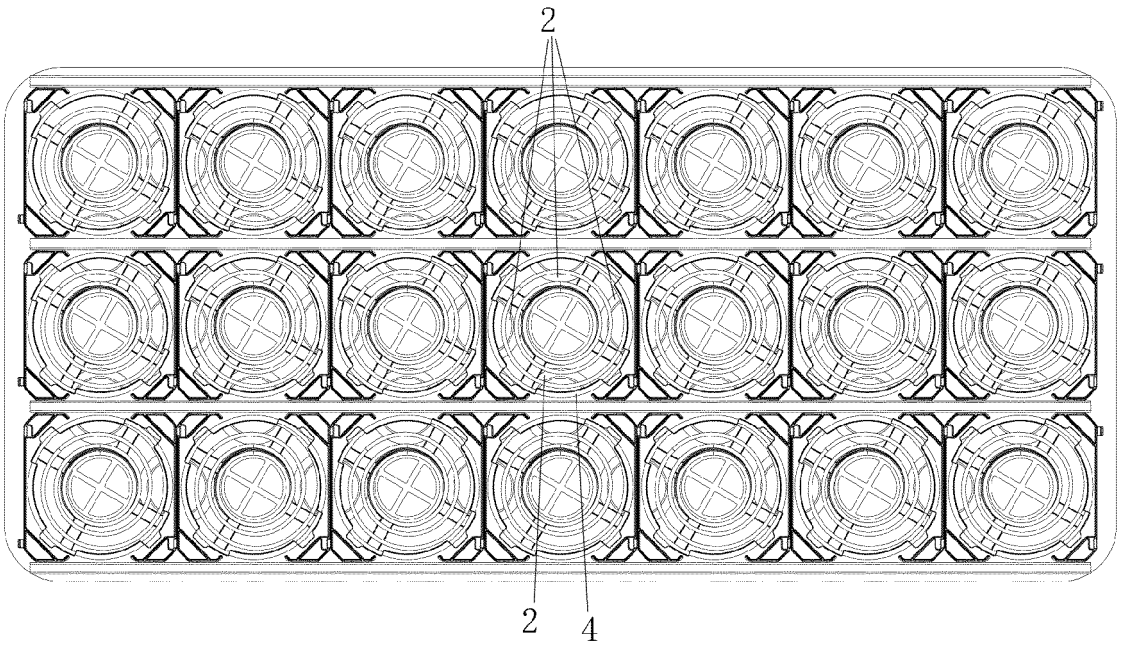

Fig. 7

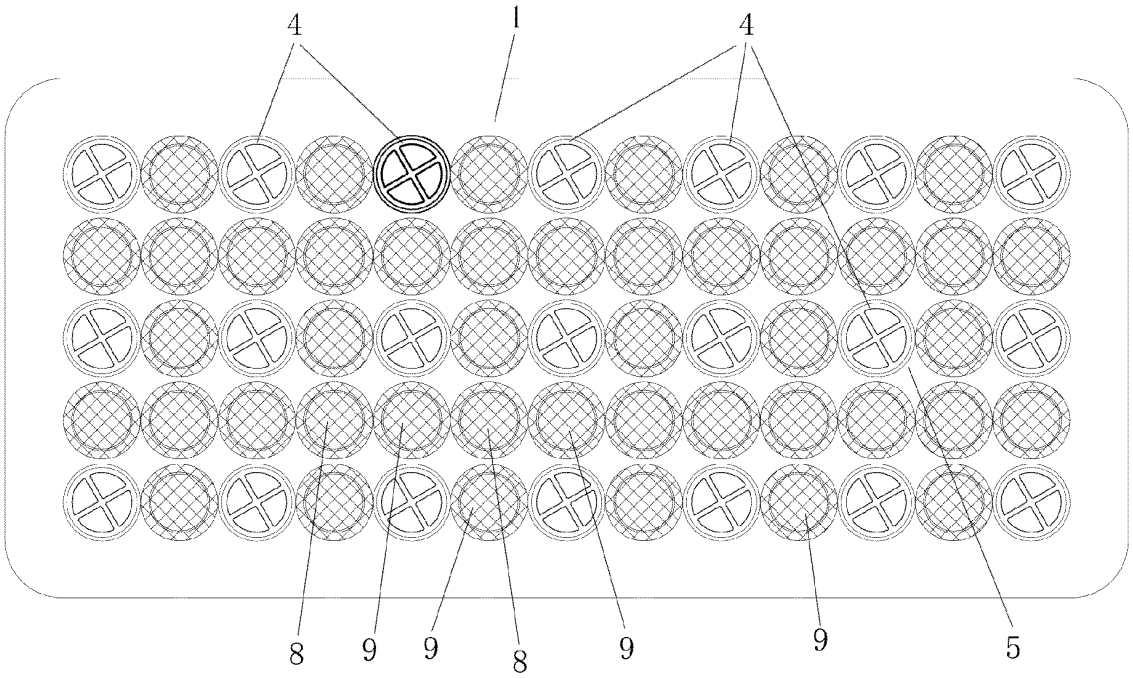

Fig. 8

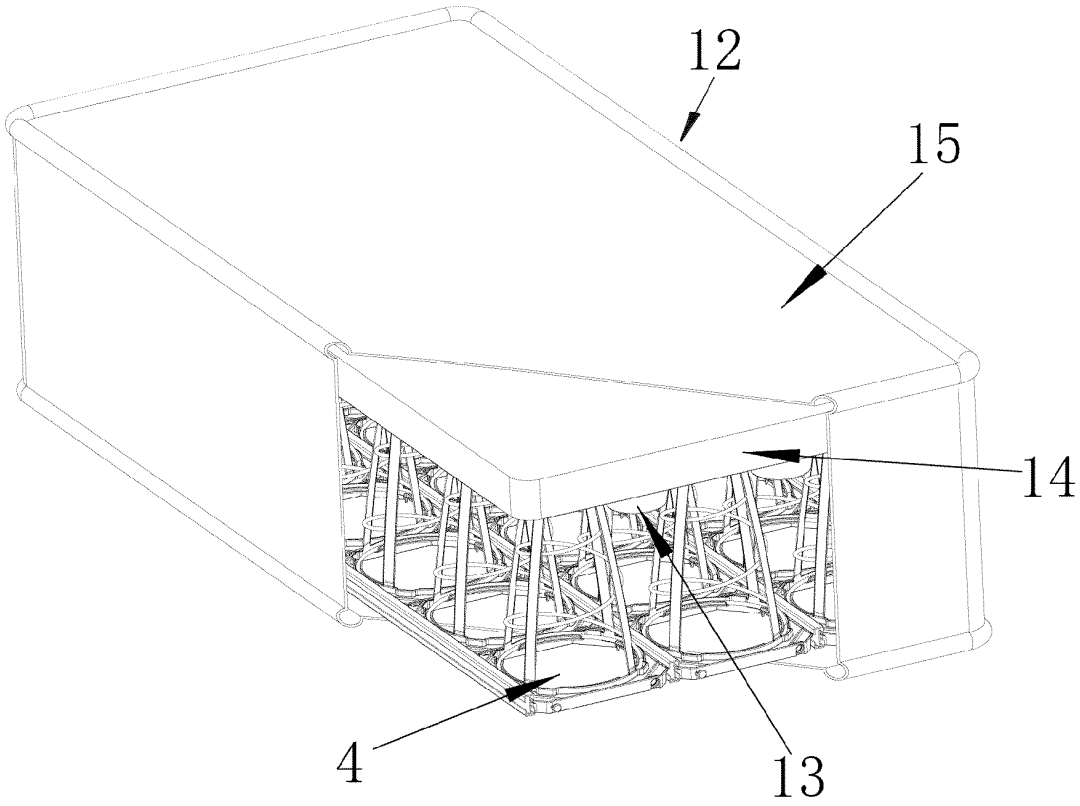

Fig. 9

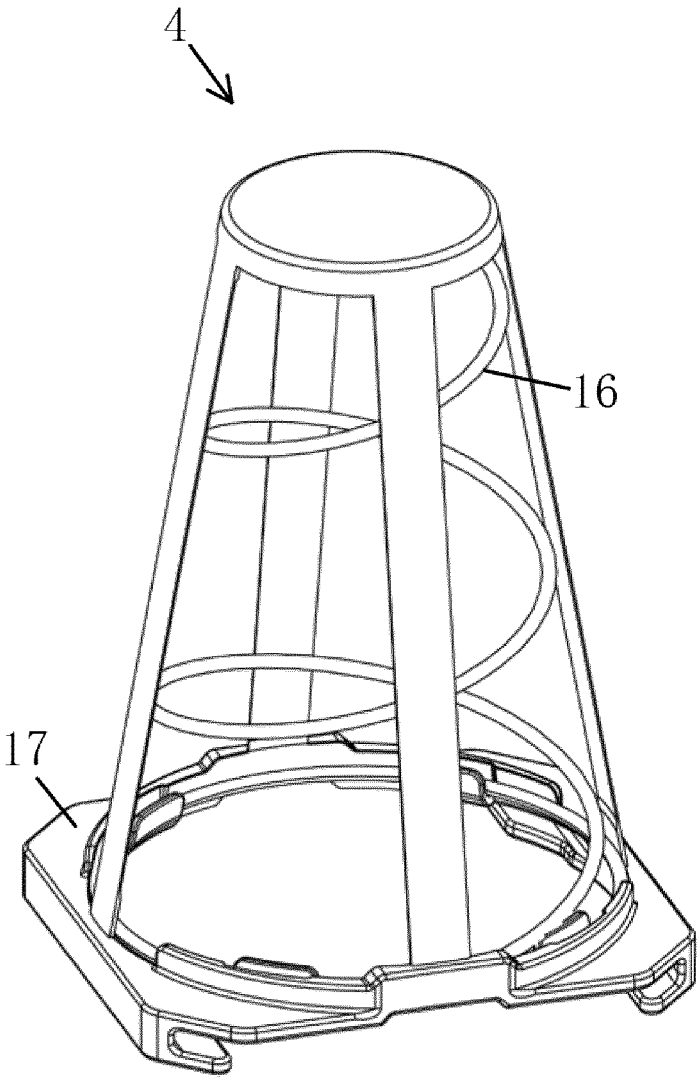

Fig. 10

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN2022/110296

A. CLASSIFICATION OF SUBJECT MATTER

A47C 27/05(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)

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)

CNTXT, CNABS, ENTXTC, VEN: 垫, 床垫, 平衡垫, 孔, 腔体, 容纳, 弹性, 弹簧, contain, spring, elastic, hole, chamber, mattress

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	CN 112674541 A (NEW TEC INTEGRATION XIAMEN CO., LTD.) 20 April 2021 (2021-04-20) claims 1-27, and figures 41A-41D	1-17
X	CN 213757509 U (XILINMEN FURNITURE CO., LTD.) 23 July 2021 (2021-07-23) description, paragraphs 0003-0024, and figures 1-2	1-17
A	CN 205457541 U (FUJIAN QUANZHOU DAFUHAO FURNITURE CO., LTD.) 17 August 2016 (2016-08-17) entire document	1-17
A	US 2012096649 A1 (FUKANO MICHIHIRO et al.) 26 April 2012 (2012-04-26) entire document	1-17
A	JP 2010131037 A (FRANCE BED CO., LTD.) 17 June 2010 (2010-06-17) entire document	1-17
A	EP 2422656 A1 (NITORI HOLDINGS CO., LTD.) 29 February 2012 (2012-02-29) entire document	1-17

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

* Special categories of cited documents:
"A" document defining the general state of the art which is not considered to be of particular relevance
"E" earlier application or patent but published on or after the international filing date
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
"O" document referring to an oral disclosure, use, exhibition or other means
"P" document published prior to the international filing date but later than the priority date claimed
"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
19 September 2022	**28 September 2022**
Name and mailing address of the ISA/CN **China National Intellectual Property Administration (ISA/CN)** **No. 6, Xitucheng Road, Jimenqiao, Haidian District, Beijing 100088, China** Facsimile No. **(86-10)62019451**	Authorized officer Telephone No.

Form PCT/ISA/210 (second sheet) (January 2015)

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/CN2022/110296

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				JP	2010252937	A	11 November 2010
				KR	20120006055	A	17 January 2012

Form PCT/ISA/210 (patent family annex) (January 2015)