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(54) **METHOD FOR CUSTOMIZING AND ASSEMBLING ELASTIC CUSHION FOR USER TO SIT AND LIE ON**

(57) The present invention provides a method for customizing and assembling an elastic pad for user to sit or lie on. The method comprises: acquiring a top cover body and a bottom cover body; acquiring a desired number and a desired type of elastic module layers and elastic pad layers according to demands for softness and hardness; acquiring a side enclosure according to an overall stacking height dimension of the acquired elastic module layers and elastic pad layers; connecting the top cover body with the side enclosure, and connecting the bottom cover body with the side enclosure, and receiving the selected elastic module layers and elastic pad layers in a receiving space jointly defined by the top cover body, the bottom cover body, and the side enclosure. The elastic pad involved in the method according to the present invention is a high-end elastic pad with higher comfort. The method of the present invention allows a user to selectively replace and select partial structures in the elastic pad, thereby allowing the user to customize and assemble an elastic pad that meets his or her own needs.

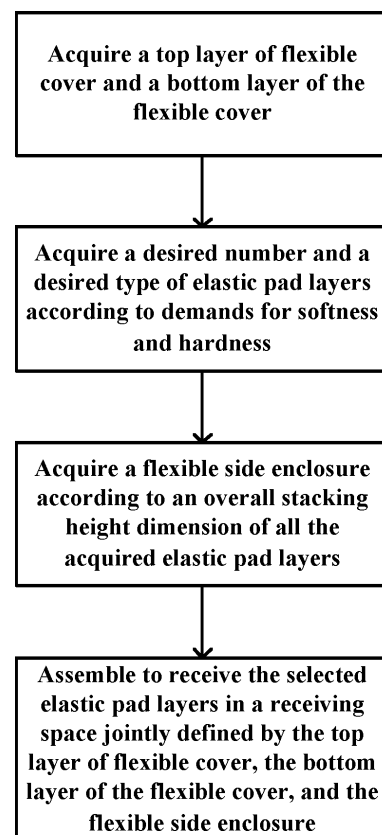


FIG.23

EP 4 397 213 A1

Description

FIELD

[0001] The present invention relates to the field of furniture, and specifically to a method for customizing and assembling an elastic pad for user to sit or lie on.

BACKGROUND

[0002] With the gradual improvement of people's material life, residents' demands for household supplies are also changing. Especially, users are having increasing demands for the products such as mattresses and sofa cushions on which people need to sit or lie for a long time, and the demands also tend to be diversified.

[0003] It should be appreciated that in the current home product market, mattresses are clearly divided into high-end mattresses and low-end mattresses. Low-end mattresses are typically thin in thickness for ease of handling and storage, but do not meet the user's demands for comfort to some extent. However, the high-grade mattress usually has a complex internal structure, exquisite work and large thickness, and the user will feel its superior comfort performance when sitting and lying on such mattresses. However, due to the complexity of its internal structure, the high-end mattress cannot be disassembled. The mattress purchased by the user must be integrated and inseparable. The user will feel inconvenience when handling and storing the mattress. Furthermore, if some of the components of the high-end mattress are aged, the user cannot perform maintenance purposefully and can only discard the whole mattress, which causes some waste.

[0004] Furthermore, the conventional high-end mattresses are all of a one-piece structure, and the user cannot adjust the degree of softness and hardness thereof; if the user desires to obtain a plurality of different experiences, he needs to purchase a plurality of high-end mattresses correspondingly. There are currently no high-end mattresses available on the market for individual customization by users.

[0005] Accordingly, it is desirable to provide a method for customizing and assembling an elastic pad for user to sit or lie on, to at least partially address the above problems.

SUMMARY

[0006] A main object of the present invention is to provide a method for customizing and assembling an elastic pad for user to sit or lie on. The method according to the present invention involves a high-end elastic pad with higher comfort. The method can provide the following convenience for the user: 1. the user may select corresponding parts according to his own needs so as to purposefully produce an elastic pad more suitable for the user's needs in use; 2. if part of the structures of the

elastic pad age, the user may purchase the corresponding parts by himself, and replace aged parts with new parts to continue to use the elastic pad.

[0007] According to an aspect of the present invention, there is provided a method for customizing and assembling an elastic pad for user to sit or lie on, the method comprising:

acquiring a top cover body and a bottom cover body;

acquiring a desired number and a desired type of elastic module layers and elastic pad layers according to demands for softness and hardness, springs in a compressed state in a height direction of the elastic pad being disposed in the elastic module layer;

acquiring a side enclosure according to an overall stacking height dimension of all the acquired elastic pad layers;

connecting the top cover body with the side enclosure, and connecting the bottom cover body with the side enclosure, and receiving the selected elastic pad layers in a receiving space jointly defined by the top cover body, the bottom cover body, and the side enclosure.

[0008] In one embodiment, the step of acquiring the desired number and type of elastic pad layers comprises acquiring at least one elastic buffer layer, and the elastic buffer layer comprising a fabric cover structure and a first-layer structure, a second-layer structure and a third-layer structure in the fabric cover structure, a hardness of the third-layer structure being higher than that of the second-layer structure, a hardness of the second-layer structure being higher than that of the first-layer structure.

[0009] In one embodiment, the step of acquiring at least one elastic buffer layer comprises selecting at least one from a first type of elastic buffer layers and a sixth type of elastic buffer layers based on demands for hardness, wherein

in the first type of elastic buffer layer structure, the second-layer structure is closest to the user and the third-layer structure is farthest from the user;

[0010] In the second type of elastic buffer layer structure, the third-layer structure is closest to the user, and the first-layer structure is farthest away from the user;

[0011] In the third type of elastic buffer layer structure, the first-layer structure is closest to the user, and the second-layer structure is farthest away from the user;

[0012] In the fourth type of elastic buffer layer structure, the second-layer structure is closest to the user and the first-layer structure is farthest from the user;

[0013] In the fifth type of elastic buffer layer structure, the third-layer structure is closest to the user, and the second-layer structure is farthest away from the user;

[0014] In the sixth type of elastic buffer layer structure,

the first-layer structure is closest to the user and the third-layer structure is furthest from the user.

[0015] In one embodiment, the first-layer structure is made of sponge, egg sponge, animal fleece, or latex.

[0016] In one embodiment, the second-layer structure and the third-layer structure are made of sponge.

[0017] In an embodiment, the elastic module layer comprises a plurality of elastic modules which can be arranged in an array in a direction perpendicular to a height direction of the elastic pad to thereby form the elastic module layer, a spring being disposed in each of the elastic modules.

[0018] In one embodiment, each of the elastic modules comprises a conical spring and a spring support receiving and holding the conical spring, the elastic module layer further comprises an elastic module layer bottom layer and a plurality of rigid rail beams disposed on the elastic module layer bottom layer,

the step of acquiring the elastic module layer comprises: mounting the plurality of elastic modules on the plurality of rail beams and sliding the plurality of elastic modules in place along the corresponding rail beams.

[0019] In one embodiment, the elastic module layer bottom layer is integrated on the bottom cover body.

[0020] In one embodiment, each of the rail beams is configured to engage sliding modules on left and right sides thereof, respectively, and the method of acquiring the elastic module layer comprises sliding the elastic modules on the left and right sides of the rail beam along corresponding slide rails independently of each other.

[0021] In one embodiment, each of the rail beams comprises:

a support wall extending from a top side of the rail beam to a bottom side thereof in a vertical direction;

a top engaging portion whose middle is connected to a top side of the support wall, and extends respectively towards left and right sides of the support wall and then bends downwards, thereby forming, at the top of the rail beam, two top-side receiving portions opening downwards;

a bottom engaging portion whose middle is connected to a bottom side of the support wall and extends respectively toward the left and right sides of the support wall and then bends upwards, thereby forming, at the bottom of the rail beam, two bottom-side receiving portions opening upward,

wherein left and right sides of the spring support of each of the elastic modules are each provided with a mating protrusion capable of mating with the top-side receiving portions and bottom-side receiving portions of the rail beam, and the mating protrusions respectively protrude upward from a front surface on both sides of the bottom of the spring support and protrude upward from a bottom surface on both sides

of the bottom of the spring support.

[0022] In one embodiment, each of the rail beams comprises:

a base disposed on the bottom cover body;

a pair of connecting walls extending upward from left and right sides of the base, respectively;

a pair of end walls extending opposite each other from top ends of the pair of connecting walls, a space existing between the pair of end walls,

wherein the base, the pair of connecting walls, the pair of end walls jointly define a pair of receiving portions opening to each other,

wherein both left and right sides of the spring support of each of the elastic modules are provided with a downwardly extending connecting leg, a bottom end of the connecting leg is provided with mating projections extending away from each other, and the mating projections are configured to be capable of engaging the pair of receiving portions of each of the rail beams.

[0023] In one embodiment, a partition wall is provided between the two connecting walls of the base, and a height of the partition wall is smaller than that of the connecting walls.

[0024] In one embodiment, the connecting walls on left and right sides of the base are respectively intermittently disposed in an extension direction of the rail beam, and are staggered from each other.

[0025] In one embodiment, the bottom cover body is further detachably provided with a plurality of sets of rail beam mounting members, each set of rail beam mounting members being disposed at an interval in an extension direction of the rail beam corresponding thereto.

[0026] In one embodiment, each of the rail beam mounting members is fixed on the top surface of the bottom cover body by ultrasonic welding, riveting or adhesion.

[0027] In one embodiment, each of the rail beam mounting members comprises a mounting member projection located at a top thereof, the mounting member projection projects in a direction perpendicular to the extension direction of the rail beam and parallel to the bottom cover body, a bottom of the rail beam is provided with a mounting receiving portion corresponding to the mounting member projection, the mounting member projection can mate with the mounting receiving portion of the rail beam so that the rail beam can slide relative to the rail beam mounting member in its own extension direction and be mounted in place.

[0028] In one embodiment, each of the rail beams is fixed directly to a top surface of the bottom cover body

by ultrasonic welding, riveting or adhesion.

[0029] In one embodiment, each of the rail beams comprises a plurality of rail beam segments connected successively.

[0030] In one embodiment, a front end of each of the rail beam segments is provided with a forwardly-extending projection, a rear end of each of the rail beam segments is provided with a groove recessed toward inward the rail beam segment, and the projection and groove of adjacent rail beam segments are adapted to mate with each other to connect adjacent rail beam segments together.

[0031] In one embodiment, the step of acquiring the desired number and type of elastic pad layers comprise acquiring an elastic balancing web, and an outer profile of each of the elastic modules is a truncated cone shape, the elastic balancing web is provided with a plurality of openings, a size of the openings coincides with an outer diameter of the elastic modules at a predetermined height, so that the elastic balancing web layer can respectively sleeve the plurality of elastic modules in the openings, thereby associating all the elastic modules.

[0032] In one embodiment, the size of the opening coincides with the outer diameter at the top of the elastic module.

[0033] In one embodiment, the step of acquiring the desired number and desired type of elastic pad layers comprises acquiring at least two elastic pad layers which are different from each other.

[0034] In one embodiment, the method further comprises an accommodating method of accommodating parts constituting the household elastic pad, wherein the accommodating method comprises: rolling and accommodating the top cover body, the bottom cover body, the side enclosure and the elastic pad layer.

[0035] In one embodiment, each of the elastic modules is constructed as a truncated cone structure with an open lower end and a hollow interior, the method further comprises an accommodating method of accommodating parts constituting the household elastic pad, wherein the method comprises: removing all elastic modules from the rail beams and sequentially nestling the elastic modules in a height direction of the elastic modules so that in a nested state, a lower elastic module of adjacent elastic modules is inserted upward into an upper elastic module through an opening at a lower end of the upper elastic module.

[0036] According to another aspect of the present invention, there is provided a method for customizing and assembling an elastic pad for user to sit or lie on, the method comprising:

acquiring a top cover body and a bottom cover body;

acquiring a desired number and a desired type of elastic module layers and elastic pad layers according to demands for softness and hardness, springs in a compressed state in a height direction of the

elastic pad being disposed in the elastic module layer;

connecting the top cover body with the bottom cover body so that the selected elastic module layer and elastic pad layer are received in a receiving space defined by the top cover body and the bottom cover body.

[0037] In one embodiment, the top cover body comprises a skirt portion extending peripherally towards the bottom cover body; and/or

the bottom cover body comprises a skirt portion extending peripherally towards the top cover body,

wherein the method does not comprise a step of acquiring a side enclosure.

BRIEF DESCRIPTION OF THE DRAWINGS

[0038] Reference may be made to preferred embodiments shown in the figures to enable better understanding of the above and other objects, features, advantages and functions of the present invention. The same reference numerals in the figures denote the same parts. Those skilled in the art should appreciate that the figures are intended to schematically illustrate the preferred embodiments of the present invention, and not intended to impose any limitations to the scope of the present invention. All parts in the figures are not drawn to scale.

FIG. 1 is a perspective view illustrating an assembled state of an elastic pad according to an embodiment of the present invention;

FIG. 2 is an exploded perspective view of the elastic pad of FIG. 1;

FIG. 3 is a schematic view of several of elastic pad layers of FIG. 2;

FIG. 4A-FIG. 4G are cross-sectional views of several exemplary configurations of elastic buffer layers.

FIG. 5 is a schematic view of a bottom cover body with elastic modules mounted.

FIG. 6 is a schematic view illustrating the mounting of rail beams on the bottom cover body in one embodiment.

FIG. 7A is a schematic view of a rail beam mounting member of FIG. 6 from a plurality of perspectives;

FIG. 7B and FIG. 7C are schematic views showing the engagement of other two types of rail beam mounting members with the bottom cover body;

FIG. 8 is a schematic view of the rail beams mounted in place;

FIG. 9A is a partially enlarged view of portion A of FIG. 8;

FIG. 9B is a view of an end of the structure of FIG. 9A;

FIG. 10 is a schematic view of a plurality of elastic modules mounted on the bottom cover body, wherein a pair of adjacent elastic modules located on left and right sides of a rail beam are shown in an enlarged manner;

FIG. 11 is a partially enlarged view of a portion B of FIG. 10;

FIG. 12 is a schematic view of rail beams mounted in place on the bottom cover body in an embodiment.

FIGS 13A and FIG. 13B are two possible configurations of the view of the end of any of the rail beams of FIG. 12;

FIG. 14 is a schematic view showing that a plurality of elastic modules are mounted on the bottom cover body in the embodiment, wherein a pair of adjacent elastic modules are shown on the left and right sides of a rail beam in an enlarged manner;

FIG. 15 is a partially enlarged view of a portion C of FIG. 14;

FIG. 16 is a schematic view showing rail beams are mounted in place on the bottom cover body in an embodiment;

FIG. 17 is a front view and a top view of a pair of adjacent rail beam segments of a rail beam;

FIG. 18 is a schematic view showing a plurality of elastic modules are mounted on the rail beams shown in FIG. 16;

FIG. 19 is a partially enlarged view of a portion D in FIG. 18;

FIG. 20 is a schematic view with the elastic pad of FIG. 2 being disassembled and the elastic modules being removed.

FIG. 21 and FIG. 22 are views showing the elastic pad of Fig. 1 is disassembled and accommodated;

FIG. 23 is a flow chart of a method of customizing and assembling an elastic pad according to one embodiment of the present invention.

DETAILED DESCRIPTION OF EMBODIMENTS

[0039] Specific embodiments of the present disclosure will now be described in detail with reference to the figures. What are described herein are only preferred embodiments of the present invention. Those skilled in the art may implement other manners of the present disclosure on the basis of the preferred embodiments, and said other manners also fall within the scope of the present disclosure.

[0040] The present invention provides a method for customizing and assembling an elastic pad. The elastic pad is for example a mattress, a sofa cushion, or other pads for a user to sit and lie on. FIG. 1-FIG. 23 show some preferred embodiments according to the present invention.

[0041] First, it should be noted that directional terms and positional terms mentioned in the present invention should be understood with reference to the embodiments shown in FIG. 1 to FIG. 23. As used herein, the directional terms and positional terms refer to relative directions, relative positions rather than absolute directions and absolute positions between parts.

[0042] Referring first to FIG. 1, an elastic pad in a preferred embodiment of the present invention is a rectangular parallelepiped structure, and "longitudinal direction", "transverse direction" and "height direction" should be understood with reference to the rectangular parallelepiped structure shown in FIG. 1, the longitudinal direction being indicated by D1, the transverse direction being indicated by D2, and the height direction being indicated by D3. For example, rail beams in preferred embodiments of the present invention extend in the transverse direction and spaced apart from one another in the longitudinal direction. The "left and right sides" of a part refer to both sides of the part in the transverse direction. In addition, the present invention also mentions a "peripheral direction". It should be noted that the peripheral direction is not necessarily only applicable to a circular structure. In the structure shown in FIG. 1, the direction in which a plane defined by the transverse direction D2 and the longitudinal direction D1 surrounds the periphery of the elastic pad 100 is referred to as the peripheral direction.

[0043] Referring to FIG. 1, an elastic pad 100 comprises an outer cover 110 and at least one elastic pad layer within an enclosed receiving space defined by the outer cover 110. The outer cover 110 is configured to be removable and comprises a top cover body 102, a bottom cover body 105, and a side enclosure 109 extending integrally in a peripheral direction between the bottom cover body 105 and the top cover body 102. The side enclosure 109 is detachably connected to the top cover body 102 and the side enclosure 109 is detachably connected to the bottom cover body 105. For example, a zipper 101 extending entirely along the entire periphery of the elastic pad is provided between the top cover body 102 and the side enclosure 109, and the zipper 101 extending entirely

along the entire periphery of the elastic pad is also provided between the bottom cover body 105 and the side enclosure 109.

[0044] Referring to FIG. 2, at least one elastic pad layer is removably received within the outer cover 110. The elastic pad 100 of the present embodiment is characterized in that the elastic pad is configured to allow a user to select a desired type and/or a desired number of elastic pads, further select a side enclosure having a height adapted for a total laminated thickness of all the selected elastic pad layers, and assemble the top cover body, the bottom cover body, the selected side enclosure, and the selected elastic pad layers together to obtain the elastic pad.

[0045] The method of customizing and assembling an elastic pad provided by the present embodiment can be first understood with reference to FIG. 1 and FIG. 2, and the process of the method is shown in FIG. 23. Referring to FIG. 1, FIG. 2 and FIG. 23, the method comprises: acquiring a top cover body 102 and a bottom cover body 105; acquiring a desired number and type of elastic pad layers according demands for softness and hardness; acquiring a side enclosure 109 according to an overall laminated height (an overall height of an elastic module layer and the elastic pad layers) dimension of all the obtained elastic pad layers; connecting the top cover body 102 with the side enclosure 109, connecting the bottom cover body 105 with the side enclosure 109, and receiving the selected elastic pad layers in a receiving space jointly defined by the top cover body 102, the bottom cover body 105 and the side enclosure 109.

[0046] Wherein the step of acquiring elastic pad layers comprises: acquiring at least one elastic buffer layer 103; acquiring an elastic module layer and/or acquiring an elastic balancing web layer 104.

[0047] In the step of acquiring at least one elastic pad layer 103, the user can select one or more elastic pads from the following elastic pads according to his demands for softness and hardness: a plurality of elastic buffer layers having different degrees of softness and hardness, and FIGS. 4A-4G give some examples of a plurality of elastic buffer layers having different degrees of softness and hardness. Furthermore, the user can further select one or more elastic pad layers from the following types of elastic pad layer: an elastic module layers mainly consisting of elastic modules, an elastic balancing web layer etc. FIG. 2 and FIG. 3 show a combination of a plurality of elastic pad layers, comprising, from bottom to top, an elastic module layer, an elastic balancing web layer 104 and an elastic buffer layer 103. The arrangement manner of the elastic module layer is shown in detail in FIG. 5-FIG. 19.

[0048] Since the elastic pad of the present invention allows the user to select the type and number of the elastic module layers and the elastic pad layers, an overall stacking height of the elastic module layers and elastic pad layers is uncertain. Therefore, the elastic pad is also collocated with an outer cover side enclosure 109 having

a plurality of height dimensions for selection by the user. Based on this, in the present invention the zipper 101 is provided between the top cover body 102 and the side enclosure 109, and between the bottom cover body 105 and the side enclosure 109.

[0049] It should be appreciated that it is not a conventional arrangement in the art to provide a zipper between the top cover body and the side enclosure. An outer cover of a conventional mattress is usually provided with only one zipper even if the zipper needs to be provided, which on the one hand can save the production process, and on the other hand can avoid possible loss of some of a plurality of parts resulting from the disassembling of the outer cover. Therefore, for elastic pads such as conventional mattresses, it is preferable that no zipper or only one zipper is provided, whereas it is a significantly inferior solution to provide two zippers enabling the cover to be split into three parts. Hence, those skilled in the art are not motivated to modify a conventional mattress outer cover into a solution of arranging a zipper between the top cover body and the side enclosure, and between the bottom cover body and the side enclosure.

[0050] Further referring to FIG. 4A-FIG. 4G, several types of elastic buffer layers having different degrees of softness and hardness are further described. FIG. 4A-FIG. 4G show elastic buffer layers are arranged in a descending order of hardness. The elastic buffer layers of FIG. 4A-FIG. 4G each include a fabric cover structure 1034 made of a non-woven fabric and a three-layer structure covered by the fabric cover structure 1034. A third-layer of structure 1033 of the three layers has a larger hardness than the second-layer structure 1032, which has a larger hardness than the first-layer structure 1031.

[0051] In the elastic buffer layer 1034a shown in FIG. 4A, the first-layer structure 1031 is furthest away from the user, the third-layer structure 1033 is closest to the user, and the second-layer structure 1032 is sandwiched between the first-layer structure 1031 and the second-layer structure 1032. The first-layer structure 1031, the second-layer structure 1032, and the third-layer structure 1033 are all made of sponge.

[0052] In the elastic buffer layer 1034b shown in FIG. 4B, the third-layer structure 1033 is furthest from the user, the second-layer structure 1032 is closest to the user, and the first-layer structure 1031 is sandwiched between the second-layer structure 1032 and the third-layer structure 1033. The first-layer structure 1031, the second-layer structure 1032, and the third-layer structure 1033 are all made of sponge.

[0053] In the elastic buffer layer 1034c shown in FIG. 4C, the first-layer structure 1031 is closest to the user, the third-layer structure 1033 is furthest from the user, and the second-layer structure 1032 is sandwiched between the first-layer structure 1031 and the third-layer structure 1033. The second-layer structure 1032 and the third-layer structure 1033 are made of sponge, and the first-layer structure 1031 is made of latex.

[0054] In the elastic buffer layer 1034d shown in FIG.

4D, the first-layer structure 1031 is closest to the user, the third-layer structure 1033 is furthest from the user, and the second-layer structure 1032 is sandwiched between the first-layer structure 1031 and the third-layer structure 1033. The second-layer structure 1032 and the third-layer structure 1033 are made of sponge, and the first-layer structure 1031 is made of egg sponge.

[0055] In the elastic buffer layer 1034e shown in FIG. 4E, the first-layer structure 1031 is closest to the user, the third-layer structure 1033 is furthest from the user, and the second-layer structure 1032 is sandwiched between the first-layer structure 1031 and the third-layer structure 1033. The first-layer structure 1031, the second-layer structure 1032 and the third-layer structure 1033 are all made of sponge.

[0056] The first-layer structure 1031 in FIG. 4F and FIG. 4G employs animal fluff. In the elastic buffer layer 1034f shown in FIG. 4F, the first-layer structure 1031 is closest to the user, the third-layer structure 1033 is furthest from the user, and the second-layer structure 1032 is sandwiched between the first-layer structure 1031 and the third-layer structure 1033. The second-layer structure 1032, the third-layer structure 1033 are made of sponge, and the first-layer structure 1031 is made of duck down.

[0057] In the elastic buffer layer 1034g shown in FIG. 4G, the first-layer structure 1031 is closest to the user, the third-layer structure 1033 is furthest from the user, and the second-layer structure 1032 is sandwiched between the first-layer structure 1031 and the third-layer structure 1033. The second-layer structure 1032 and the third-layer structure 1033 are made of sponge, and the first-layer structure 1031 is made of goose down.

[0058] In addition to the seven examples of the first elastic pad shown in FIG. 4A-FIG. 4G, the present embodiment continues with the following examples: in a first elastic pad, the first-layer structure is closest to the user, the second-layer structure is farthest away from the user, and the third-layer structure is sandwiched between the first-layer structure and the second-layer structure; in a first elastic pad, the second-layer structure is closest to the user, the first-layer structure is farthest away from the user, and the third-layer structure is sandwiched between the first-layer structure and the second-layer structure; in a first elastic pad, the third-layer structure is closest to the user, the second-layer structure is furthest from the user, and the first-layer structure is sandwiched between the second-layer structure and the third-layer structure. In these examples, the first-layer structure is made of sponge, egg sponge, animal fleece, or latex, and the second and third-layer structures are made of sponge.

[0059] One or more of the exemplary elastic buffer layers described above may be utilized by a user according to his demands for softness and hardness. Alternatively, the user may not select the elastic buffer layer, and only select the elastic module layer and/or elastic balancing web layer.

[0060] FIG. 5 shows an example of obtaining an elastic

module layer. A plurality of elastic modules 106 can be arranged in an array on the bottom cover body 105 in the receiving space along a plane perpendicular to the height direction to thereby constitute an elastic module layer.

Furthermore, the spring in each elastic module is in a compressed state in the height direction. It needs to be appreciated that in the present embodiment, the elastic modules are mounted on the bottom cover body 105, so that the elastic module layer and the bottom cover body 105 are formed as one piece. However, in other embodiments, the elastic module layer may be disposed separately from the outer cover 110, and the elastic module layer may be integrally disposed within or removable from the outer cover 110.

[0061] Returning to the present embodiment, the elastic modules 106 are slidably mounted in place via rail beams 108 provided on the bottom cover body 105, each rail beam 108 extending in a transverse direction. FIG. 6-FIG. 11 show one specific implementation.

[0062] Referring to FIG. 6, each rail beam 108 is removably mounted to the bottom cover body 105 by a set of rail beam mounting members 107, each set of rail beam mounting members 107 being spaced from one another in an extension direction of its corresponding rail beam 108. Each set of rail beam mounting members 107 comprises three rail beam mounting members 107 which are respectively disposed at both ends and at an intermediate position of the rail beam 108.

[0063] The structure of each rail beam mounting member 107 is shown in FIG. 7A. Each rail beam mounting member 107 is provided, at the top thereof, with a mounting projection projecting in a direction perpendicular to the extending direction of the rail beam 108 and parallel to the bottom cover body 105, and a recess 1073 recessed in the longitudinal direction is formed below the projection. In other words, each of the rail beams 108 comprises an upper structure 1071 and a lower structure 1072, a dimension of the upper structure 1071 in the longitudinal direction being larger than that of the lower structure 1072 in the longitudinal direction, so that both longitudinal ends of the upper structure 1071 form the mounting projection with respect to the lower structure 1072. The mounting projection and the recess 1073 therebelow are adapted to cooperate with the rail beam 108.

[0064] Further referring to FIG. 7A, the bottom of the mounting projection is provided with an array of securing bumps 1074 for ultrasonically welding the mounting projection to the bottom cover body 105.

[0065] FIG. 8-FIG. 9B show schematic views after the rail beams 108 are slidably mounted in place in a transverse direction relative to the rail beam mounting members 107. Referring to FIG. 8-FIG. 9B, a bottom of the rail beam 108 is provided with a mounting receptacle 1081 corresponding to a mounting protrusion that can mate with the mounting receptacle 1081 so that the rail beam 108 can slide in its own extension direction relative to the rail beam mounting member 107 and be mounted in place. The mounting receptacle 1081 also actually

forms a snap hook 1086 that snaps into the recess 1073 of the rail beam mounting member 107.

[0066] A body structure of the rail beam 108 (i.e., the structure for mating with the elastic module 106) is also shown in FIG. 9A and FIG. 9B. Each rail beam 108 comprises a support wall 1082 extending from a top side of the rail beam 108 to a bottom side thereof, a top engaging portion 1083, and a bottom engaging portion 1085. The top engaging portion 1083 is connected to a top side of the support wall 1082 and respectively extends towards left and right sides of the support wall 1082 and then bends downwards, so as to form, at the top of the rail beam 108, two top-side receiving portions 1084 opening downwards; the bottom engaging portion 1085 is connected to a bottom side of the support wall 1082 and respectively extends toward the left and right sides of the support wall 1082 and then bends upwards, so as to form, at the bottom of the rail beam 108, two bottom-side receiving portions 1084 opening upward.

[0067] Accordingly, referring to FIG. 10 and FIG. 11, each of the elastic modules 106 comprises a conical spring and a spring support 106 receiving and holding the conical spring, each of left and right sides of the spring support 106 has a mating protrusion 1061 protruding upward from a top surface of a bottom body of the spring support 106 while protruding downward from a bottom surface of the bottom body of the spring support 106 so that the mating protrusion 1061 can be simultaneously received by the top-side receiving portions 1084 and bottom-side receiving portions 1084 of the rail beams 108 on left and right sides of the elastic module 106. That is, both left and right sides of each rail beam 108 are provided with a structure capable of engaging the elastic modules 106 on both left and right sides thereof, respectively, and allowing the two elastic modules 106 on both sides of the rail beam 108 to slide along their respective slide rails independently of each other.

[0068] FIG. 7B and FIG. 7C show examples of other embodiments as alternatives to ultrasonic welding. Referring to FIG. 7B, the rail beam mounting member may be adhesively bonded to the bottom cover body 105, and also comprises an upper structure 1071 and a lower structure 1072 formed with recesses 1073. Referring to FIG. 7C, the rail beam mounting member 107 is riveted to the bottom cover body 105 by rivets 1075, and the rail beam mounting member 107 is likewise provided with a mounting projection and recesses.

[0069] FIG. 13A-FIG. 15 illustrate another alternative embodiment. In this embodiment, both the left and right sides of the spring support of each of the elastic modules 125 have a mating protrusion 1251 that protrude upward from a top surface of a main body of the spring support while protruding downward from a bottom surface of the main body of the spring support, so that the mating protrusion 1251 can be simultaneously received by receiving portions 1212 at top and bottom sides of the rail beams 121 on both the left and right sides of the elastic module (the receiving portion 1212 is formed with a receiving

groove 123 shown in FIG. 13A and 13B). The left and right sides of each rail beam 121 are provided with a structure capable of engaging the elastic modules 125 on the left and right sides thereof, respectively, and allowing the two elastic modules on both sides of the rail beam 121 to slide along their respective slide rails independently of each other.

[0070] However, unlike the previous embodiment, the rail beam in this embodiment is secured directly to the bottom cover body 122 by ultrasonic welding (as shown in FIG. 13A), adhering or riveting with rivets 124 (as shown in FIG. 13B). The present embodiment omits the provision of rail beam mounting members.

[0071] FIG. 16-FIG. 19 illustrate yet another embodiment. Referring first to FIG. 17, each rail beam comprises a plurality of rail beam segments which are sequentially connected in the longitudinal direction. A front end of each rail beam segment is provided with a forward projection and a rear end of each rail beam segment is provided with a forwardly recessed groove, and the projection and groove of adjacent rail beam segments are adapted to mate with each other to connect adjacent rail beam segments together. For example, for adjacent rail beams as shown in FIG. 17, the projection 1312a of a front end of a first rail beam 1312 can extend into the forwardly recessed groove 1311a of the rear end of the second rail beam 1312.

[0072] Referring to FIG. 19, each rail beam comprises: a base 131; a pair of connecting walls extending upward from left and right sides of the base 131, respectively; a pair of end walls extending opposite each other from top ends of the pair of walls. There is a space between each pair of end walls, wherein the base 131, the pair of connecting walls, the pair of end walls jointly define a pair of receiving portions 1313 opening to each other, the receiving portions 1313 being formed with receiving grooves 1314. Accordingly, both left and right sides of the spring support of each elastic module are provided with: a downwardly extending connecting leg; mating projections 1321 extending toward each other from the connecting legs on the left and right sides of the spring support. The receiving grooves 1314 of the pair of receiving portions 1313 of each rail beam can respectively engage corresponding mating projections 1321 of the elastic modules located on the left and right sides of the rail beam. Preferably, a partition wall 1315 is provided between the two connecting walls of the base 131, and the height of the partition wall 131 is less than that of the connecting walls.

[0073] As can be seen by further viewing FIG. 16, the connecting wall provided on the left side of the base 131 is intermittently provided in the longitudinal direction, the connecting wall provided on the right side of the base 131 is intermittently provided in the longitudinal direction, and the connecting wall provided on the left side of the base 131 and the connecting wall provided on the right side of the base 131 are staggered in the transverse direction.

[0074] The above-described connection manners of the elastic modules and the bottom cover body can all be applied to elastic pads that allow the user to customize according to his demands for softness and hardness.

[0075] In addition to the elastic buffer layer 103 and elastic module layer described above, the elastic balancing web layer 104 also has some preferred arrangements. For example, turning back to FIG. 2 and FIG. 3, the elastic balancing web layer 104 is provided with a plurality of openings 1041, wherein the size of the openings 1041 coincides with an outer diameter of the elastic modules 106 at a predetermined height, so that the elastic balancing web layer 104 can respectively sleeve the plurality of elastic modules 106 in the openings 1041, thereby associating all the elastic modules 106. Preferably, the size of the opening 1041 coincides with the outer diameter at the top of the elastic module 106.

[0076] The elastic pad in this embodiment allows the user to disassemble and store it by himself. FIG. 20-FIG. 22 are schematic views showing a disassembling and stowing process.

[0077] First, the user may first remove the outer cover and remove the elastic modules 106 from the rail beams. A state of the elastic pad at this time is shown in FIG. 20.

[0078] Furthermore, each of the elastic buffer layer 103, the top cover body 102, and the side enclosure 109 can be rolled and accommodated. Still further, the rail beam or rail beam mounting member is made of a flexible plastic material to allow the bottom cover body 105 integrated with rail beams to be rolled up and accommodated along a plane perpendicular to the extension direction of the rail beam. After the bottom cover body is rolled and accommodated, the softer rail beams do not puncture the bottom cover body. It may be understood that both the rail beam and the rail beam mounting member are a structure with a certain stable shape, but they themselves are not necessarily very hard; the rail beam and the rail beam mounting member may also be subjected to a certain deformation under a certain external force.

[0079] Referring to FIG. 21, after being separated from one another, the outer cover 110, the elastic buffer layer 103, the elastic modules 106 and the elastic balancing web layer 104 of the elastic pad may be further accommodated in the following steps: stacking the elastic buffer layer 103 and the elastic balancing web layer 104 and rolling and accommodating them together to form a first accommodation roll 120a; separating the top cover body 102, the side enclosure 109 and the bottom cover body 105 from one another (it may be understood that a zipper is provided between the top cover body 102 and the side enclosure 109, and between the side enclosure 109 and the bottom cover body 105) and stacking them, rolling and accommodating them together to form a second accommodation roll 120b.

[0080] Furthermore, each of the elastic modules 106 is constructed in a truncated cone structure with an open lower end and a hollow interior, and a plurality of the elastic modules 106 are constructed to allow the user to

remove all elastic modules 106 from the rail beams and sequentially nestle the elastic modules in a height direction of the elastic modules to form an elastic module accommodation set 120c. In the nested state, a lower elastic module 106 of the adjacent elastic modules 106 is inserted upward into the upper elastic module 106 through an opening at a lower end of the upper elastic module 106.

[0081] Furthermore, the user may place the first accommodation roll 120a, the second accommodation roll 120b and the elastic module accommodation set 120c together in an accommodation box 120. The accommodation box 120 of a corresponding size may be sold or presented together with the elastic pad to allow the user to disassemble and accommodate the elastic pad at home.

[0082] FIG. 22 shows an example of another accommodation manner. Referring to FIG. 19, after being separated from one another, the outer cover 110, the elastic buffer layer 103, the elastic modules 106 and the elastic balancing web layer 104 of the elastic pad may be further accommodated in the following steps: stacking the elastic buffer layer 103, the elastic balancing web layer 104 and the side enclosure 109 and rolling and accommodating them together to form a first accommodation roll 120a; stacking the top cover body 102 and the bottom cover body 105 and rolling and accommodating them together to form a second accommodation roll 120b.

[0083] Furthermore, each of the elastic modules 106 is constructed in a truncated cone structure with an open lower end and a hollow interior, and a plurality of the elastic modules 106 are constructed to allow the user to remove all elastic modules 106 from the rail beams and sequentially nestle the elastic modules in a height direction of the elastic modules to form an elastic module accommodation set 120c. In the nested state, a lower elastic module 106 of the adjacent elastic modules 106 is inserted upward into the upper elastic module 106 through an opening at a lower end of the upper elastic module 106.

[0084] Furthermore, the user may place the first accommodation roll 120a, the second accommodation roll 120b and the elastic module accommodation set 120c together in an accommodation box 120. The accommodation box 120 of a corresponding size may be sold or presented together with the elastic pad to allow the user to disassemble and accommodate the elastic pad at home.

[0085] To sum up, a method of customizing and assembling an elastic pad according to the present embodiment comprises: acquiring a top cover body and a bottom cover body; acquiring a desired number and a desired type of elastic pad layers according to demands for softness and hardness; acquiring a side enclosure according to an overall stacking height dimension of all the acquired elastic pad layers; connecting the top cover body with the side enclosure, and connecting the bottom cover body with the side enclosure, and receiving the selected

elastic pad layer in a receiving space jointly defined by the top cover body, the bottom cover body, and the side enclosure.

[0086] The step of acquiring a desired number and type of elastic pad layer comprises acquiring an elastic buffer layer. The step of acquiring the elastic buffer layer comprises selecting at least one elastic buffer layer from a plurality of elastic buffer layers based on demands for hardness. Examples of the structures of the elastic buffer layers are given in FIG. 4A-FIG. 4G and the related depictions.

[0087] Furthermore, the acquiring the desired number and desired type of elastic pad layers comprises acquiring the elastic module layer. The elastic module layer comprises a plurality of elastic modules, and the plurality of elastic modules can be arranged in an array in a direction perpendicular to the height direction of the elastic pad so as to constitute the elastic module layer. Specific optional structures of the elastic module layer are shown in FIG. 5-FIG. 19.

[0088] Furthermore, the step of acquiring a desired number and type of elastic pads comprises acquiring an elastic balancing web layer. The structure of the elastic balancing web layer is shown in FIG. 2-FIG. 3 and the relevant depictions.

[0089] Furthermore, the method further comprises an accommodating method of accommodating parts constituting the household elastic pad. Referring to FIG. 21 and FIG. 22, the accommodating method comprises: rolling and accommodating the top cover body, the bottom cover body, the side enclosure and the elastic pad. Preferably, each elastic module is constructed in a truncated cone structure with an open lower end and a hollow interior, and the method further comprise: removing all elastic modules from the rail beams, and sequentially nestle the elastic modules in a height direction of the elastic modules so that in the nested state, a lower elastic module of the adjacent elastic modules is inserted upward into the upper elastic module through an opening at a lower end of the upper elastic module.

[0090] Alternatively or additionally, the above method further comprises: implementing the acquisition of the outer cover comprising the bottom cover body, the acquisition of the plurality of elastic modules, the acquisition of the elastic balancing web layer and the acquisition of the elastic buffer layer at different times and positions respectively. For example, if the elastic balancing web layer of the elastic pad ages, the user may purchase the elastic balancing web layer alone to replace the old elastic balancing web layer so that he may continue to use the elastic pad. The same principle applies to the elastic buffer layer, elastic modules, outer cover, etc.

[0091] Also preferably, the step of acquiring the outer cover comprises: selecting a corresponding outer cover according to a desired colour, material and pattern of the elastic pad. The step of acquiring a plurality of elastic modules comprises: selecting corresponding elastic modules according to a desired degree of elasticity and

flexibility of the elastic pad. The step of acquiring an elastic balancing web layer comprises: selecting a corresponding elastic balancing web layer according to the desired degree of elasticity and flexibility. The step of acquiring an elastic buffer layer comprises: selecting a corresponding elastic buffer layer according to the desired degree of elasticity and flexibility.

[0092] Such an arrangement enables the user to purposefully assemble a suitable elastic pad according to his own needs. For example, if a user desires to obtain a soft elastic pad, he may separately purchase an elastic balancing web layer, an elastic buffer layer, an elastic modules, etc. with a high degree of flexibility to assemble the desired soft elastic pad; if the user desires to obtain a hard elastic pad, he may separately purchase an elastic balancing web layer, an elastic buffer layer and elastic modules with a low degree of flexibility so as to assemble and form the desired hard elastic pad; if the user desires to select an outer cover of a different material (e.g., cloth, silk, etc.), he may purchase the outer cover for replacement.

[0093] Another embodiment of the present invention provides an alternative to the elastic pads shown in FIG. 1-FIG. 22. In this alternative, the designed elastic pad is not provided with the side enclosure, and the top cover body comprises a skirt portion extending peripherally toward the bottom cover body; and/or the bottom cover body comprises a skirt portion extending peripherally toward the top cover body. The top cover body and the bottom cover body are joined directly together and define a receiving space. In this alternative, in addition to the differences described above, all other structures (including but not limited to the elastic module layer, the elastic buffer layer, the balancing web layer, rail beam structures on the bottom cover body) and corresponding method may all employ the structures and relevant depictions shown in FIG. 1-FIG. 22, i.e., the structures shown in FIG. 1-FIG. 22 and steps of the method described may be applied to the solution "without a side enclosure". The solution constitutes one embodiment of the present invention.

[0094] As described in the previous embodiments, the side enclosure may have a variety of height dimensions to be selected by the user, so that the side enclosure may be manufactured and sold as a single item. The present invention further provides an embodiment of acquiring the side enclosure in which the acquired separate side enclosure is the side enclosure in the elastic pad according to FIG. 1-FIG. 22.

[0095] Similarly, the elastic pad layer may have a variety of structural arrangements to be selected by the user, so that each elastic pad layer may be manufactured and sold as a separate item. The present invention also provides an embodiment of an elastic pad layer in which the separate elastic pad layer is an elastic buffer layer in an elastic pad according to FIG. 1-FIG. 22, particularly the elastic buffer layer in FIG. 4A-FIG. 4G.

[0096] The elastic pad involved in method of custom-

izing and assembling the elastic pad according to the present invention is a high-end elastic pad with higher comfort. The present invention can provide the following convenience for the user: 1. the user may select corresponding parts according to his own needs so as to purposefully produce an elastic pad more suitable for the user's needs in use; 2. if part of the structures of the elastic pad age, the user may purchase the corresponding parts by himself, and replace aged parts with new parts to continue to use the elastic pad.

[0097] The above depictions of various embodiments of the present invention are provided to those having ordinary skill in the art for depiction purpose, and are not intended to exclude other embodiments from the present disclosure or limit the present disclosure to a single disclosed embodiment. As described above, various alternatives and modifications of the present disclosure will be apparent to those of ordinary skill in the art. Accordingly, although some alternative embodiments have been described in detail, those having ordinary skill in the art will understand or readily develop other embodiments. The disclosure is intended to cover all alternatives, modifications and variations of the present disclosure described herein, as well as other embodiments falling within the spirit and scope of the present disclosure described herein.

Claims

1. A method for customizing and assembling an elastic pad for user to sit or lie on, wherein the method comprises:

acquiring a top cover body and a bottom cover body;
 acquiring a desired number and a desired type of elastic module layers and elastic pad layers according to demands for softness and hardness, springs in a compressed state in a height direction of the elastic pad being disposed in the elastic module layer;
 acquiring a side enclosure according to an overall stacking height dimension of all the acquired elastic pad layers;
 connecting the top cover body with the side enclosure, and connecting the bottom cover body with the side enclosure, and receiving the selected elastic pad layers in a receiving space jointly defined by the top cover body, the bottom cover body, and the side enclosure.

2. The method according to claim 1, wherein the step of acquiring the desired number and type of elastic pad layers comprises acquiring at least one elastic buffer layer, the elastic buffer layer comprising a fabric cover structure and a first-layer structure, a second-layer structure and a third-layer structure in the

fabric cover structure; a hardness of the third-layer structure being higher than that of the second-layer structure, a hardness of the second-layer structure being higher than that of the first-layer structure.

3. The method according to claim 2, wherein the step of acquiring at least one elastic buffer layer comprises selecting at least one from a first type of elastic buffer layers and a sixth type of elastic buffer layers based on demands for hardness, wherein

in the first type of elastic buffer layer structure, the second-layer structure is closest to the user and the third-layer structure is farthest from the user;

in the second type of elastic buffer layer structure, the third-layer structure is closest to the user, and the first-layer structure is farthest away from the user;

in the third type of elastic buffer layer structure, the first-layer structure is closest to the user, and the second-layer structure is farthest away from the user;

in the fourth type of elastic buffer layer structure, the second-layer structure is closest to the user and the first-layer structure is farthest from the user;

in the fifth type of elastic buffer layer structure, the third-layer structure is closest to the user, and the second-layer structure is farthest away from the user;

in the sixth type of elastic buffer layer structure, the first-layer structure is closest to the user and the third-layer structure is furthest from the user.

4. The method according to claim 2, wherein the first-layer structure is made of sponge, egg sponge, animal fleece, or latex.

5. The method according to claim 2, wherein the second-layer structure and the third-layer structure are made of sponge.

6. The method according to claim 1, wherein the elastic module layer comprises a plurality of elastic modules which can be arranged in an array in a direction perpendicular to a height direction of the elastic pad to thereby form the elastic module layer, a spring being disposed in each of the elastic modules.

7. The method according to claim 6, wherein each of the elastic modules comprises a conical spring and a spring support receiving and holding the conical spring, the elastic module layer further comprises an elastic module layer bottom layer and a plurality of rigid rail beams disposed on the elastic module layer bottom layer, the step of acquiring the elastic module layer com-

prises: mounting the plurality of elastic modules on the plurality of rail beams and sliding the plurality of elastic modules in place along the corresponding rail beams.

8. The method according to claim 7, wherein the elastic module layer bottom layer is integrated on the bottom cover body.
9. The method according to claim 7, wherein each of the rail beams is configured to engage sliding modules on left and right sides thereof, respectively, and the method of acquiring the elastic module layer comprises sliding the elastic modules on the left and right sides of the rail beam along corresponding slide rails independently of each other.
10. The method according to claim 9, wherein each of the rail beams comprises:

a support wall extending from a top side of the rail beam to a bottom side thereof in a vertical direction;

a top engaging portion whose middle is connected to a top side of the support wall, and extends respectively towards left and right sides of the support wall and then bends downwards, thereby forming, at the top of the rail beam, two top-side receiving portions opening downwards;

a bottom engaging portion whose middle is connected to a bottom side of the support wall and extends respectively toward the left and right sides of the support wall and then bends upwards, thereby forming, at the bottom of the rail beam, two bottom-side receiving portions opening upward,

wherein left and right sides of the spring support of each of the elastic modules are each provided with a mating protrusion capable of mating with the top-side receiving portions and bottom-side receiving portions of the rail beam, and the mating protrusions respectively protrude upward from a front surface on both sides of the bottom of the spring support and protrude upward from a bottom surface on both sides of the bottom of the spring support.

11. The method according to claim 9, wherein each of the rail beams comprises:

a base disposed on the bottom cover body;
a pair of connecting walls extending upward from left and right sides of the base, respectively;
a pair of end walls extending opposite each other from top ends of the pair of connecting walls, a space existing between the pair of end walls, wherein the base, the pair of connecting walls, the pair of end walls jointly define a pair of re-

ceiving portions opening to each other, wherein both left and right sides of the spring support of each of the elastic modules are provided with

a downwardly extending connecting leg, a bottom end of the connecting leg is provided with mating projections extending away from each other, and the mating projections are configured to be capable of engaging the pair of receiving portions of each of the rail beams.

12. The method according to claim 11, wherein a partition wall is provided between the two connecting walls of the base, and a height of the partition wall is smaller than that of the connecting walls.

13. The method according to claim 11, wherein the connecting walls on left and right sides of the base are respectively intermittently disposed in an extension direction of the rail beam, and are staggered from each other.

14. The method according to claim 9, wherein the bottom cover body is further detachably provided with a plurality of sets of rail beam mounting members, each set of rail beam mounting members being disposed at an interval in an extension direction of the rail beam corresponding thereto.

15. The method according to claim 14, wherein each of the rail beam mounting members is fixed on the top surface of the bottom cover body by ultrasonic welding, riveting or adhesion.

16. The method according to claim 14, wherein each of the rail beam mounting members comprises a mounting member projection located at a top thereof, the mounting member projection projects in a direction perpendicular to the extension direction of the rail beam and parallel to the bottom cover body, a bottom of the rail beam is provided with a mounting receiving portion corresponding to the mounting member projection, the mounting member projection can mate with the mounting receiving portion of the rail beam so that the rail beam can slide relative to the rail beam mounting member in its own extension direction and be mounted in place.

17. The method according to claim 9, wherein each of the rail beams is fixed directly to a top surface of the bottom cover body by ultrasonic welding, riveting or adhesion.

18. The method according to claim 9, wherein each of the rail beams comprises a plurality of rail beam segments connected successively.

19. The method according to claim 18, wherein a front

end of each of the rail beam segments is provided with a forwardly-extending projection, a rear end of each of the rail beam segments is provided with a groove recessed toward inward the rail beam segment, and the projection and groove of adjacent rail beam segments are adapted to mate with each other to connect adjacent rail beam segments together.

20. The method according to claim 6, wherein the step of acquiring the desired number and type of elastic pad layers comprise acquiring an elastic balancing web, and an outer profile of each of the elastic modules is a truncated cone shape, the elastic balancing web is provided with a plurality of openings, a size of the openings coincides with an outer diameter of the elastic modules at a predetermined height, so that the elastic balancing web layer can respectively sleeve the plurality of elastic modules in the openings, thereby associating all the elastic modules.
21. The method according to claim 20, wherein the size of the opening coincides with the outer diameter at the top of the elastic module.
22. The method according to claim 6, wherein the step of acquiring the desired number and desired type of elastic pad layers comprises acquiring at least two different elastic pad layers.
23. The method according to any of claims 2-5, wherein the method further comprises an accommodating method of accommodating parts constituting the household elastic pad, wherein the accommodating method comprises: rolling and accommodating the top cover body, the bottom cover body, the side enclosure and the elastic pad layer.
24. The method according to claim 8, wherein each of the elastic modules is constructed as a truncated cone structure with an open lower end and a hollow interior, the method further comprises an accommodating method of accommodating parts constituting the household elastic pad, wherein the method comprises: removing all elastic modules from the rail beams and sequentially nestling the elastic modules in a height direction of the elastic modules so that in a nested state, a lower elastic module of adjacent elastic modules is inserted upward into an upper elastic module through an opening at a lower end of the upper elastic module.
25. A method for customizing and assembling an elastic pad for user to sit or lie on, wherein the method comprises:

acquiring a top cover body and a bottom cover body;
acquiring a desired number and a desired type

of elastic module layers and elastic pad layers according to demands for softness and hardness, springs in a compressed state in a height direction of the elastic pad being disposed in the elastic module layer;

connecting the top cover body with the bottom cover body so that the selected elastic module layer and elastic pad layer are received in a receiving space defined by the top cover body and the bottom cover body.

26. The method according to claim 25, wherein the top cover body comprises a skirt portion extending peripherally towards the bottom cover body; and/or

the bottom cover body comprises a skirt portion extending peripherally towards the top cover body,
wherein the method does not comprise a step of acquiring a side enclosure.

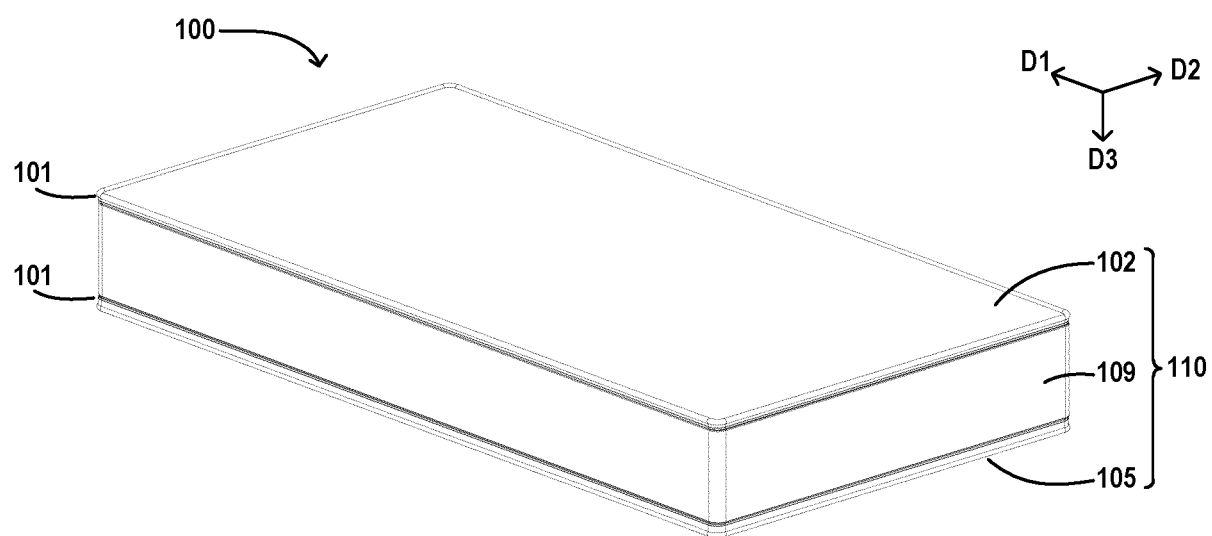


FIG.1

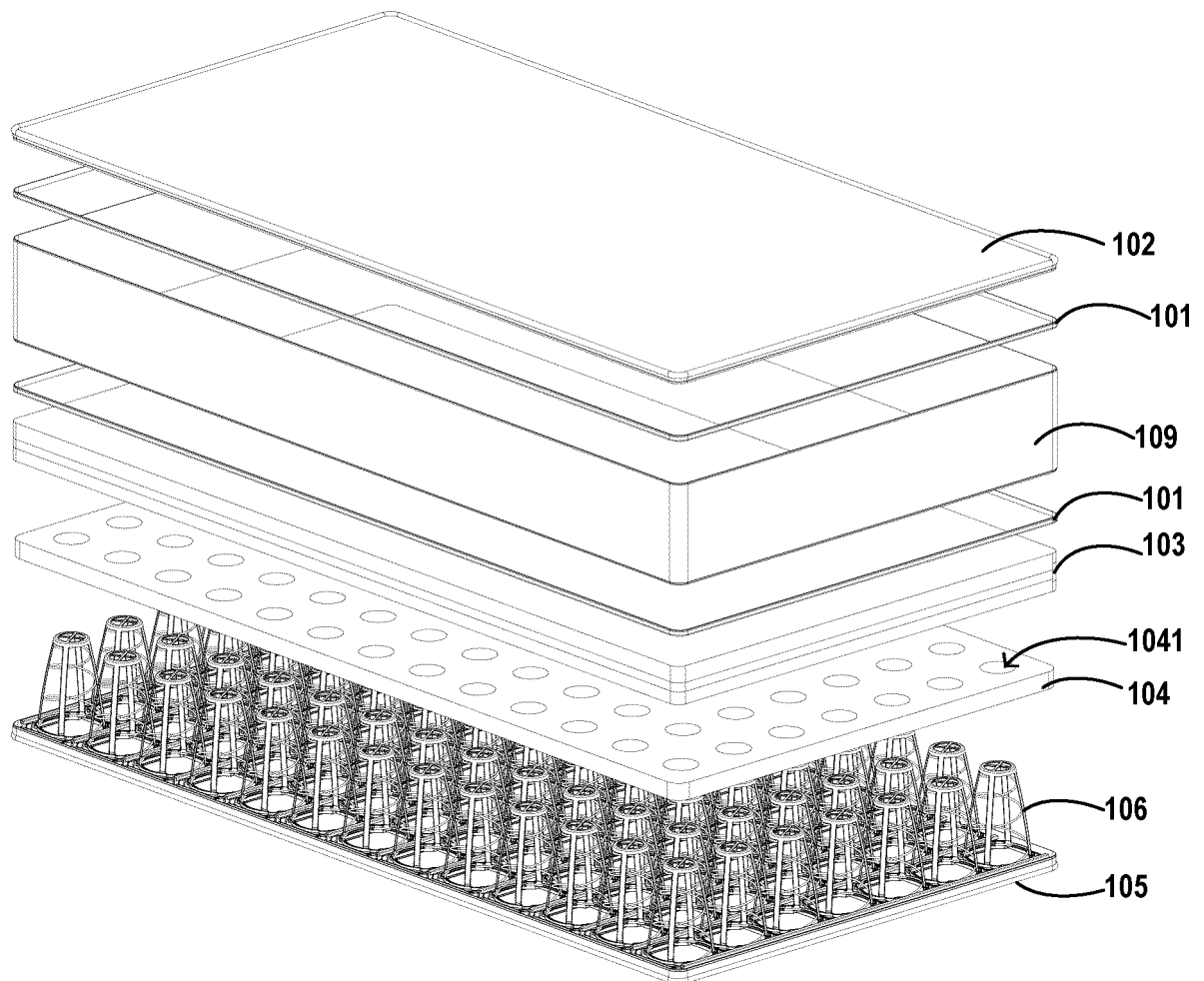


FIG.2

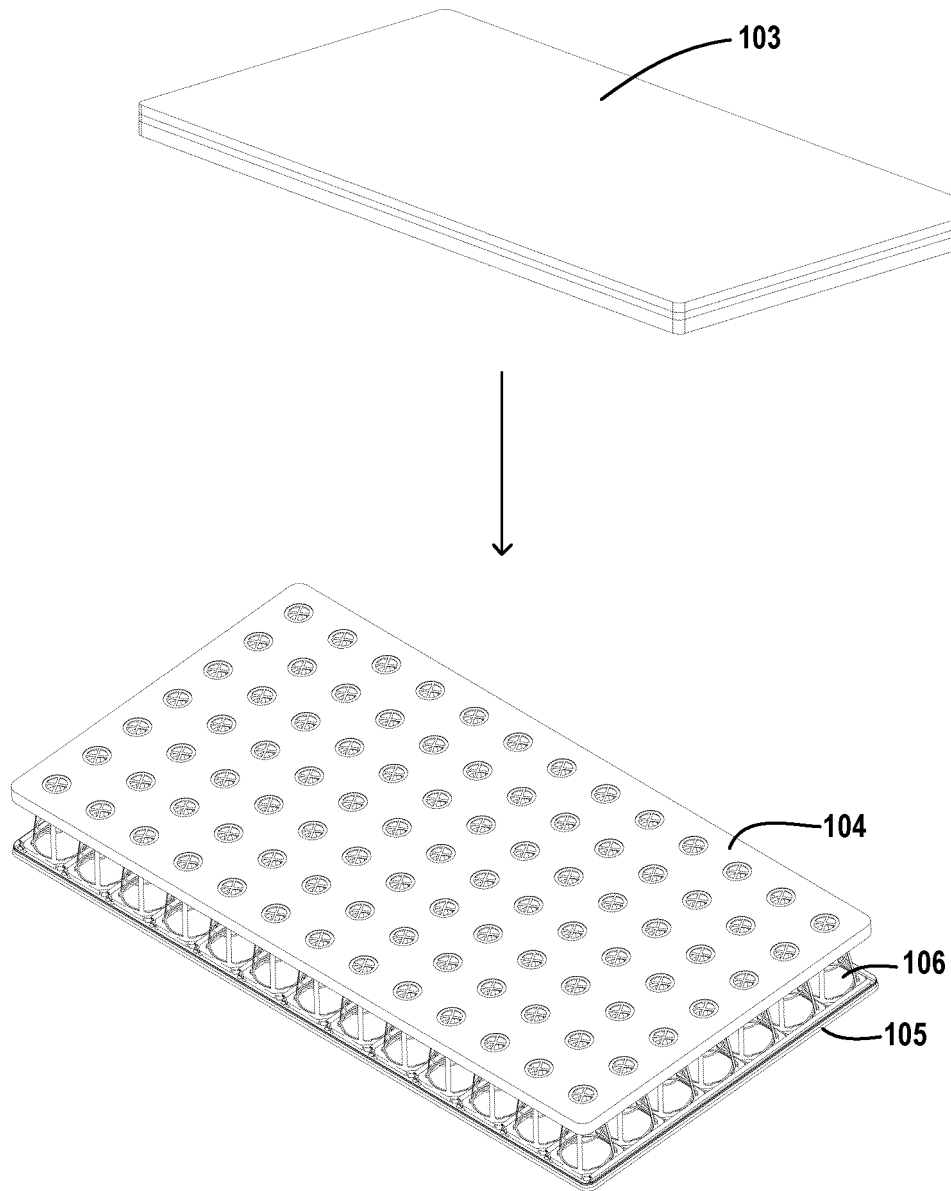


FIG.3

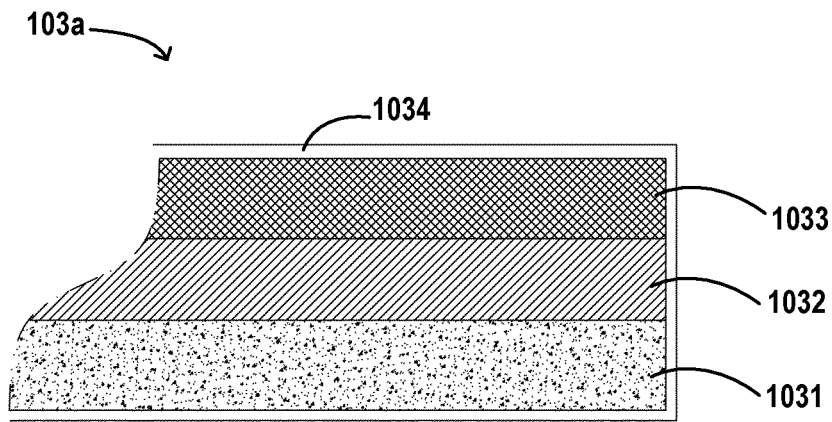


FIG.4A

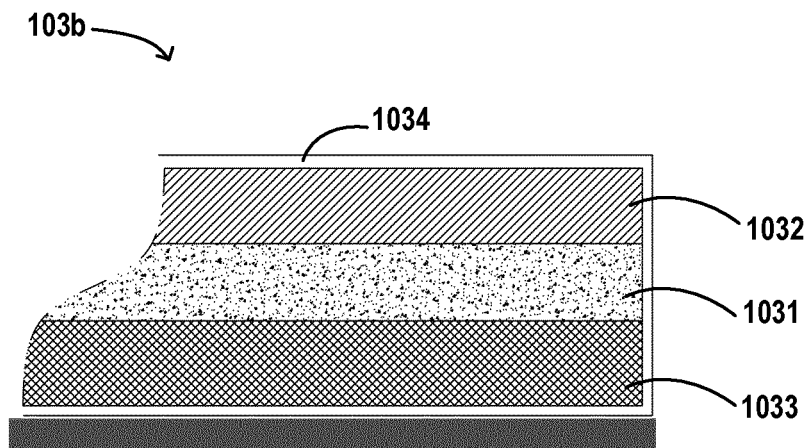


FIG.4B

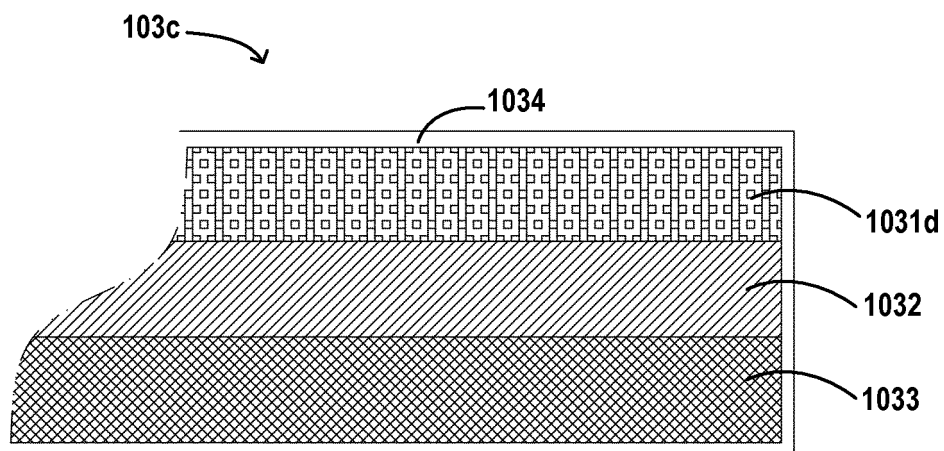


FIG.4C

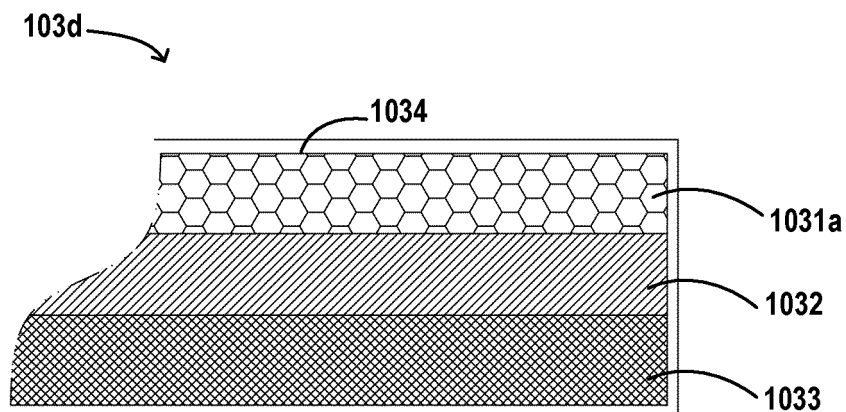


FIG.4D

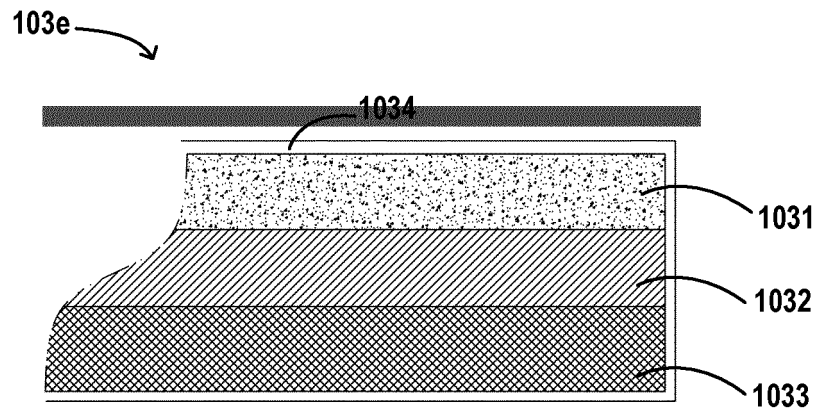


FIG.4E

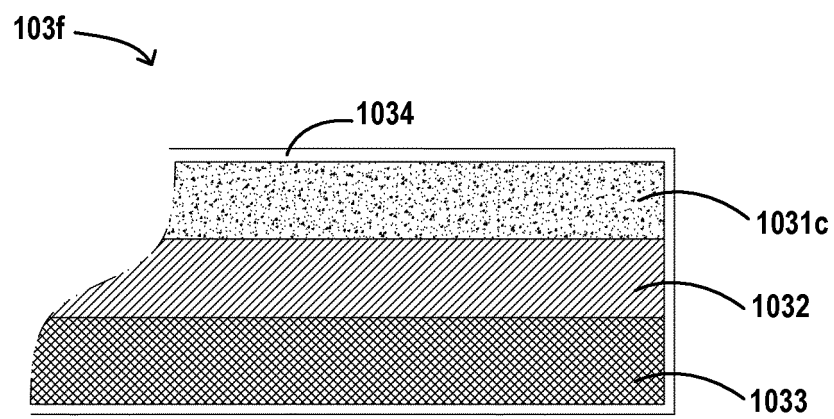


FIG.4F

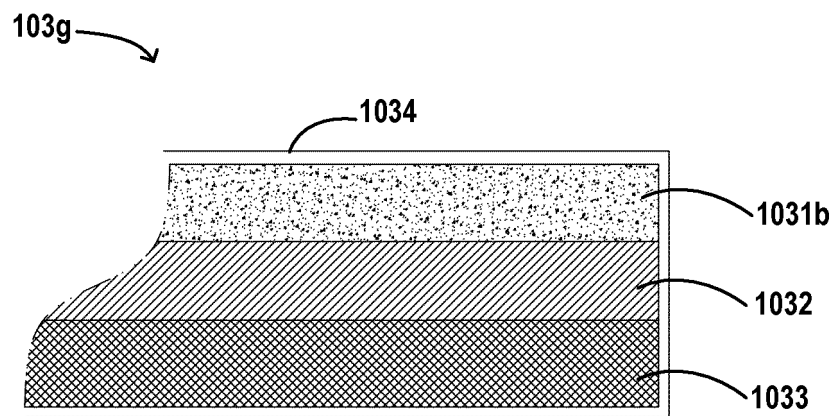


FIG.4G

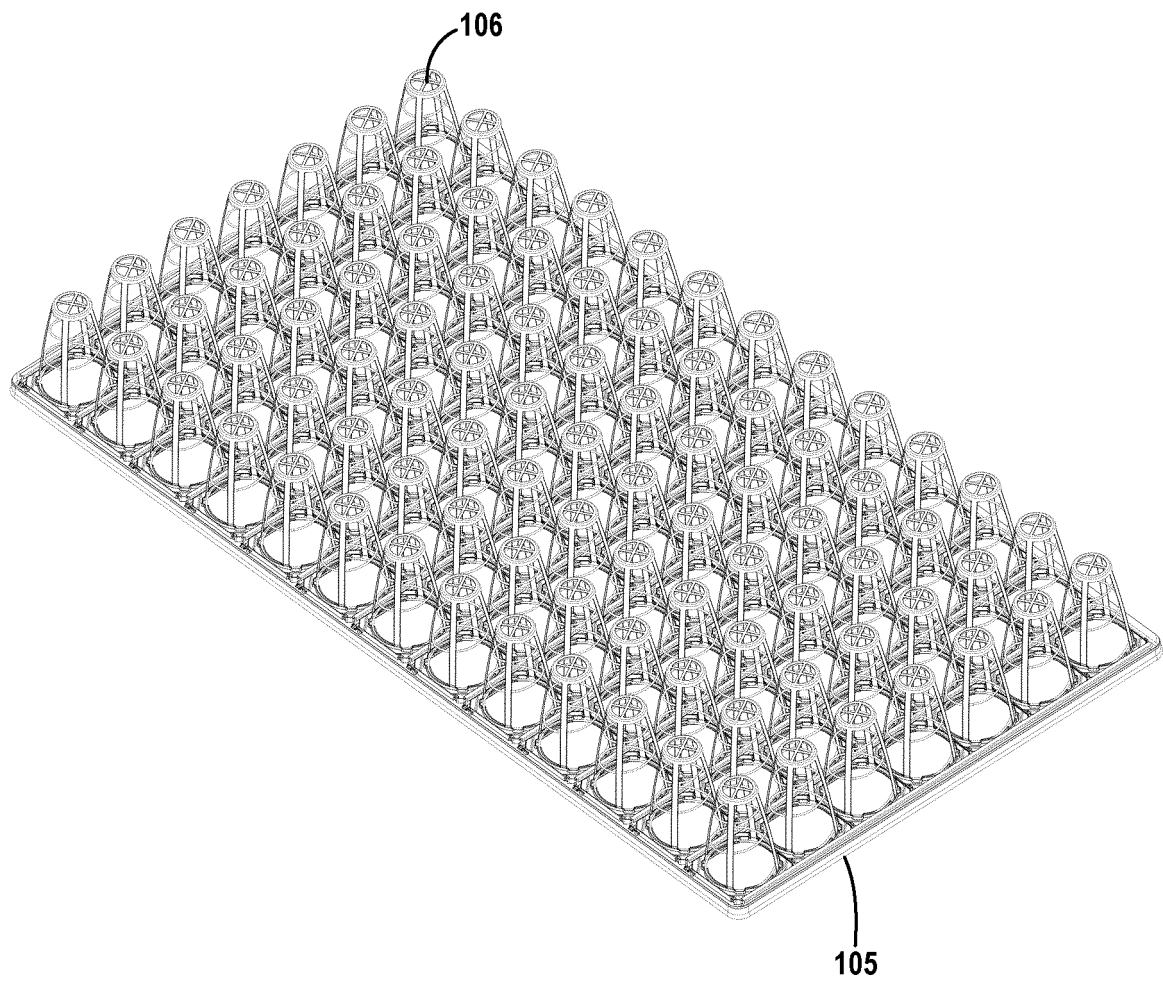


FIG.5

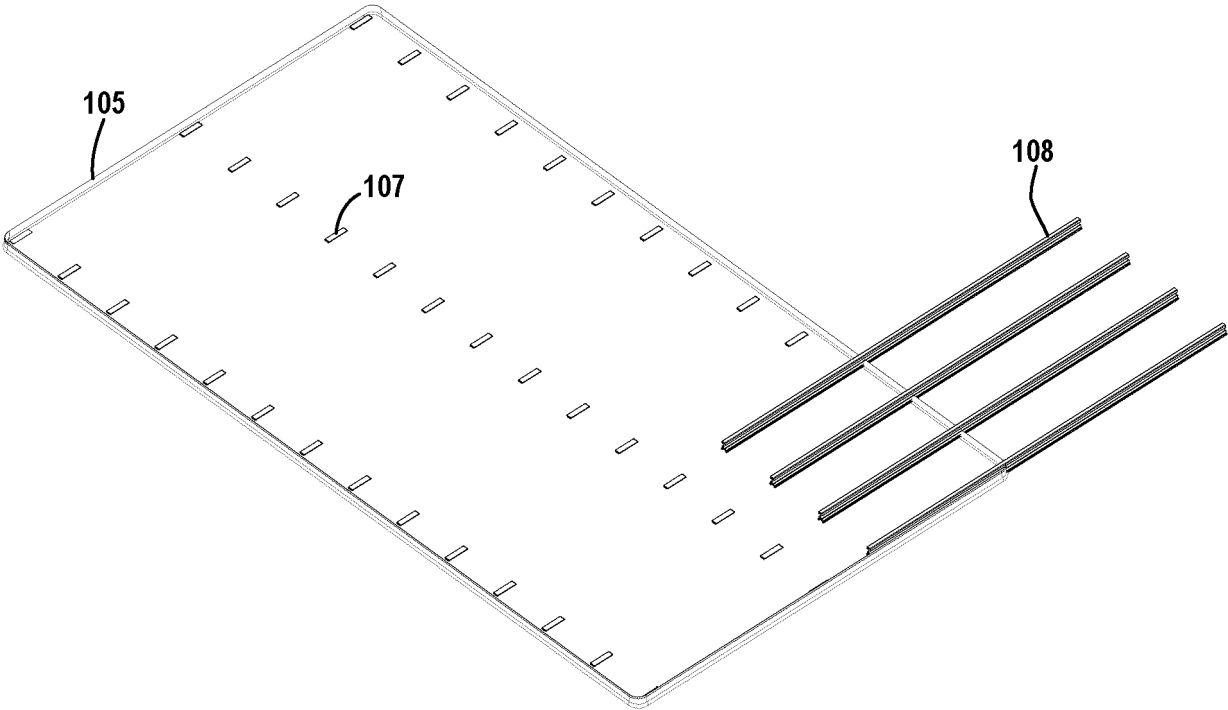


FIG.6

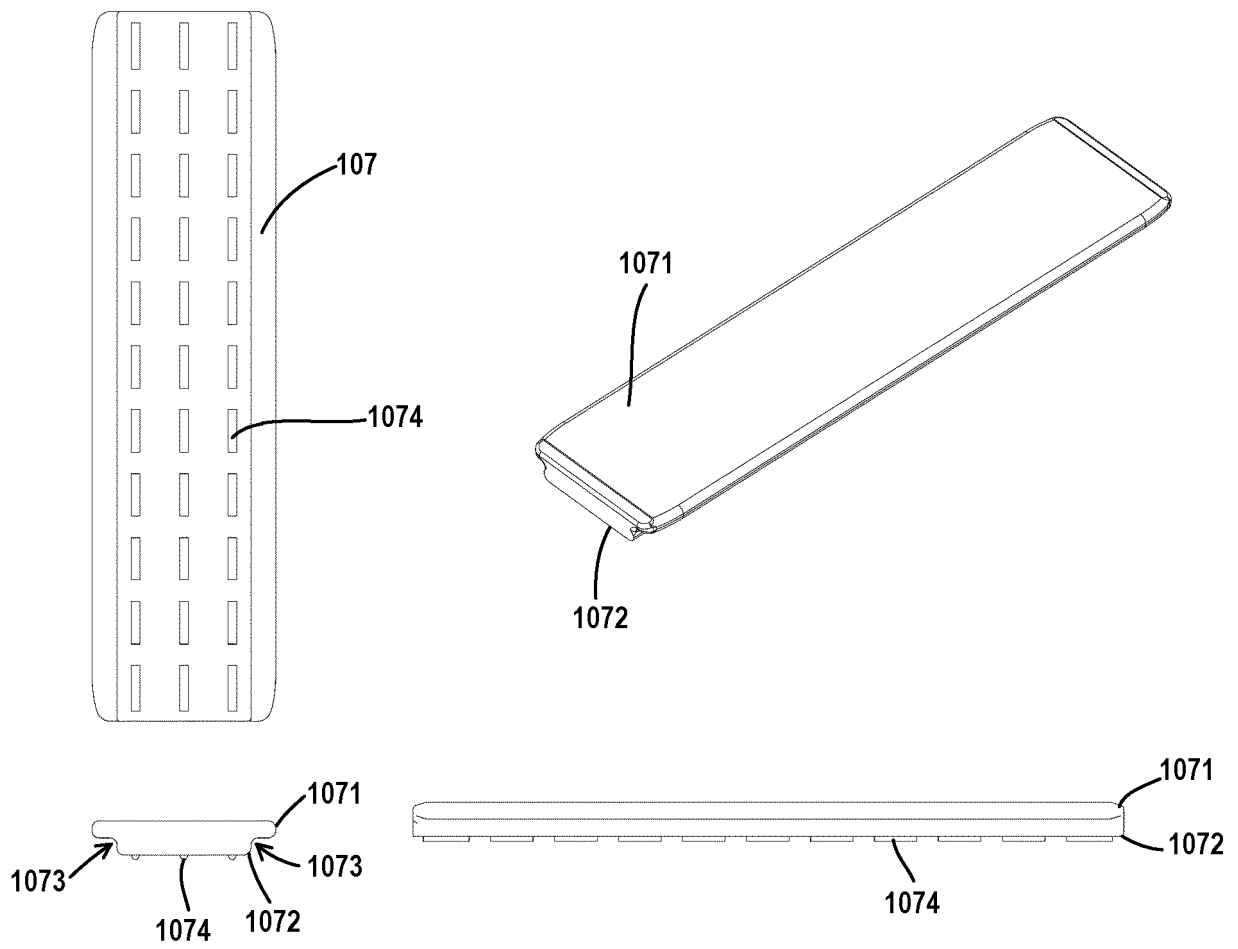


FIG. 7A

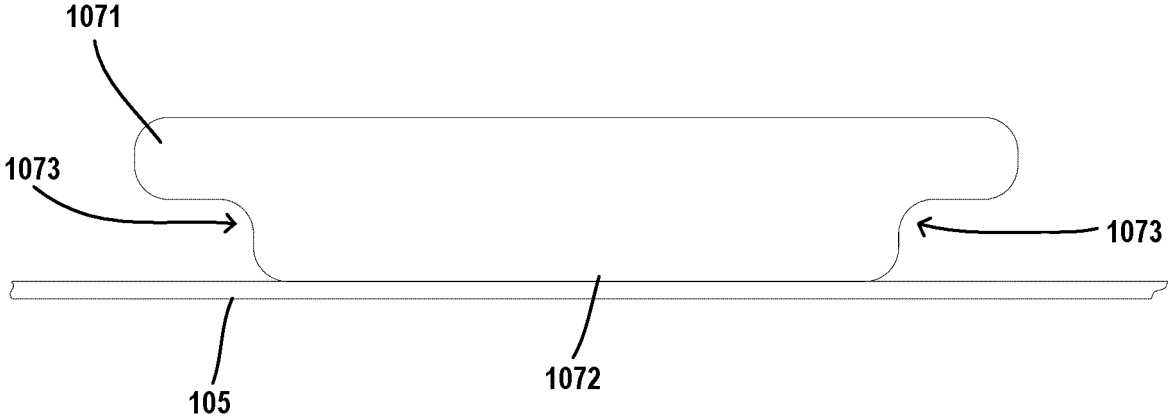


FIG.7B

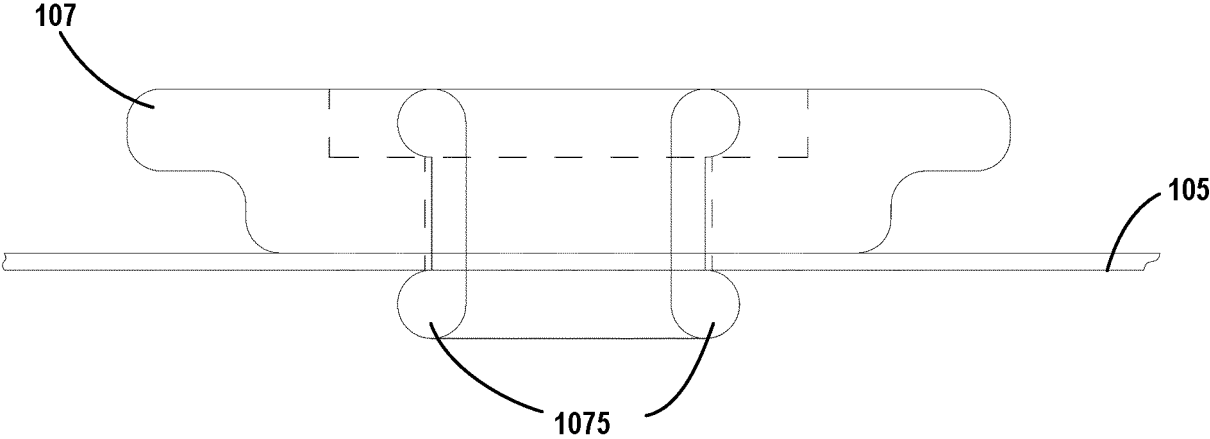


FIG.7C

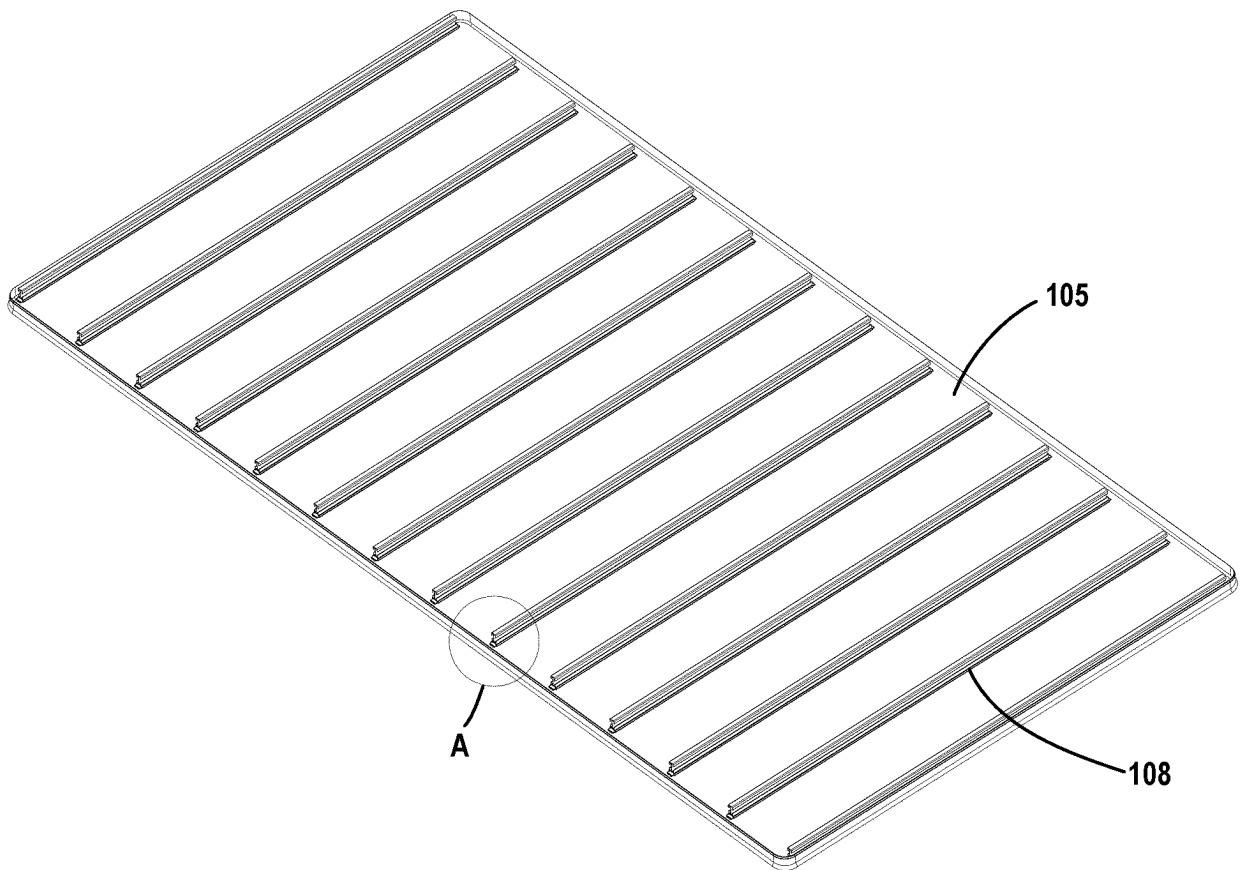
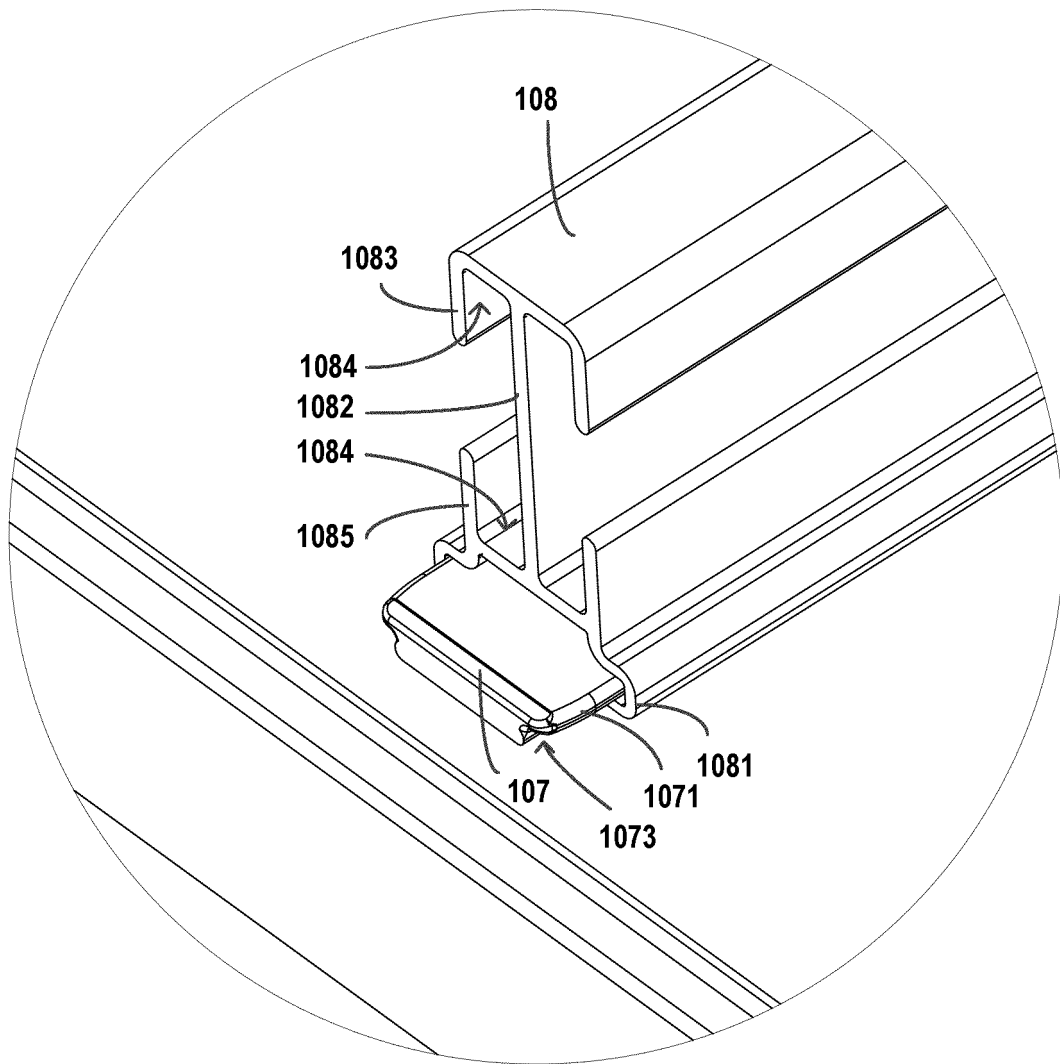


FIG.8



A

FIG.9A

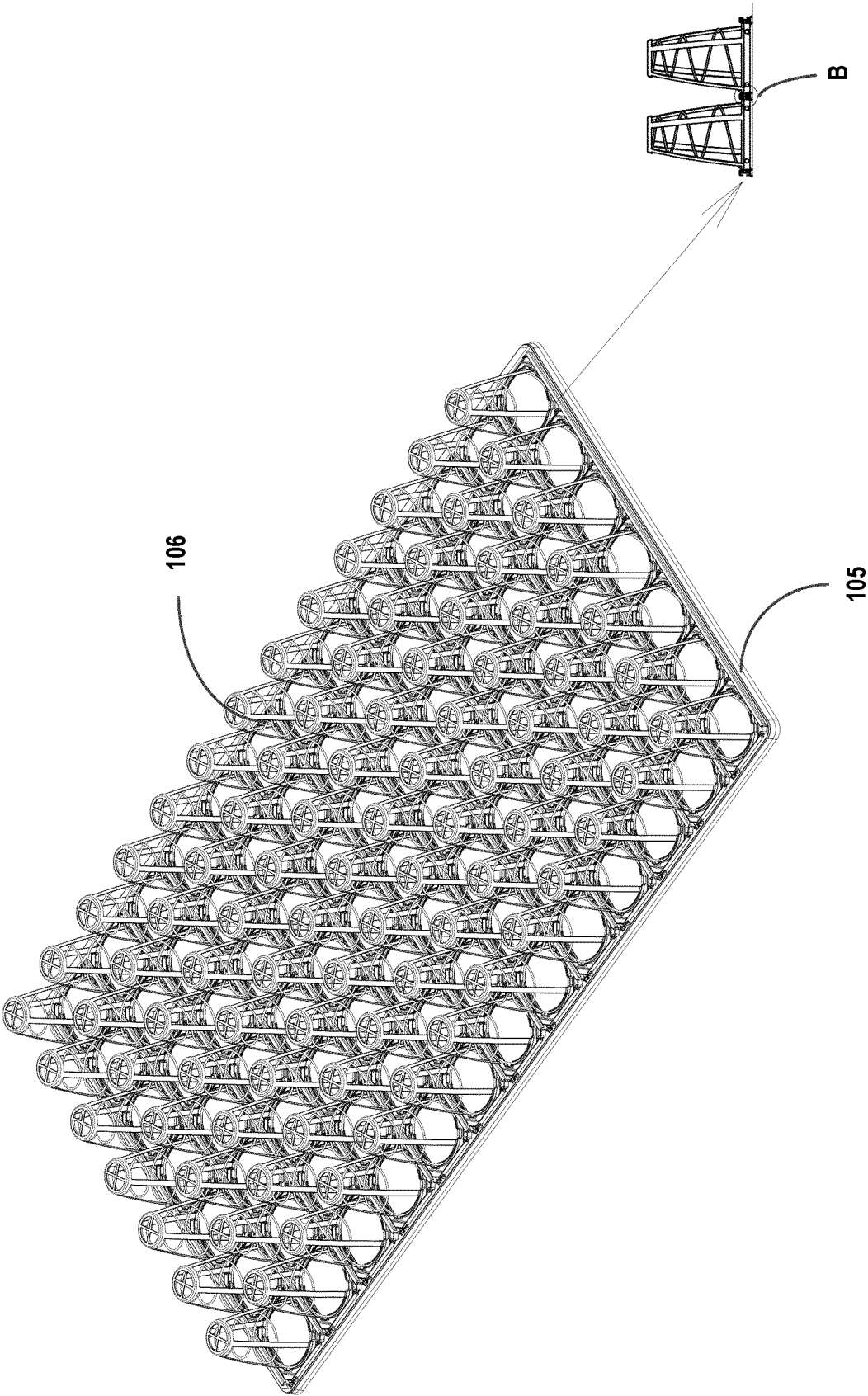
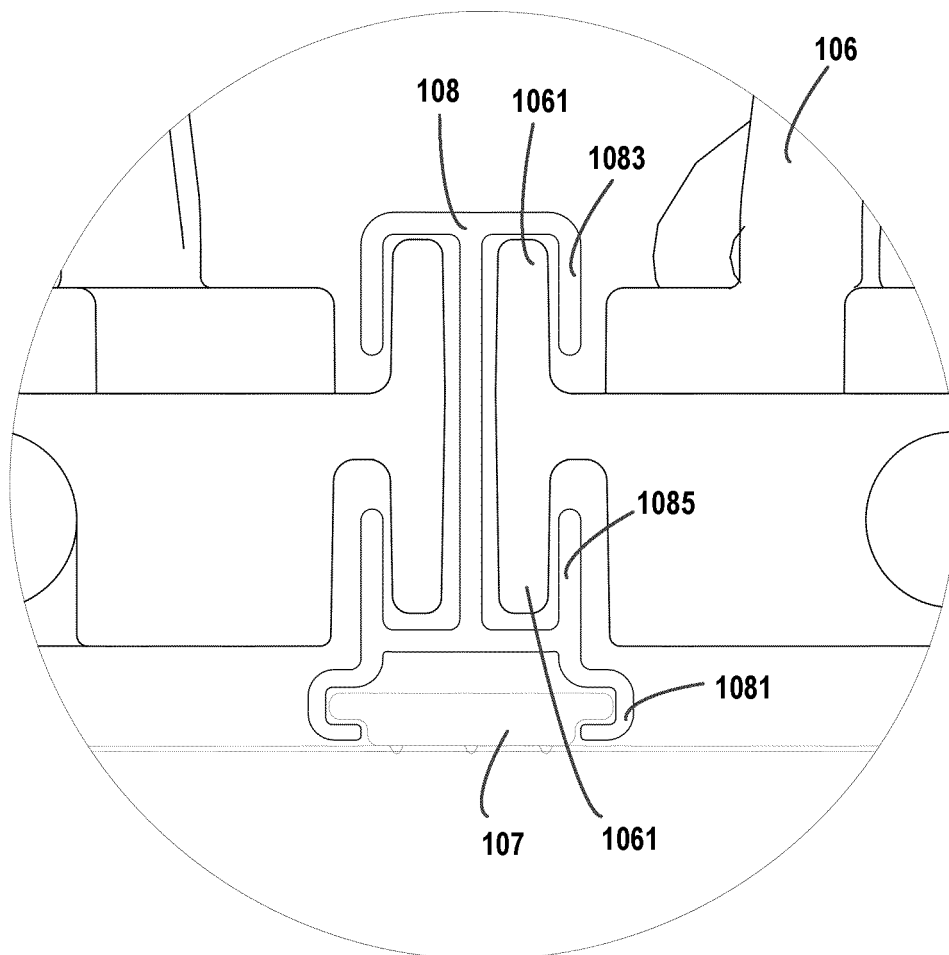


FIG.10



B

FIG.11

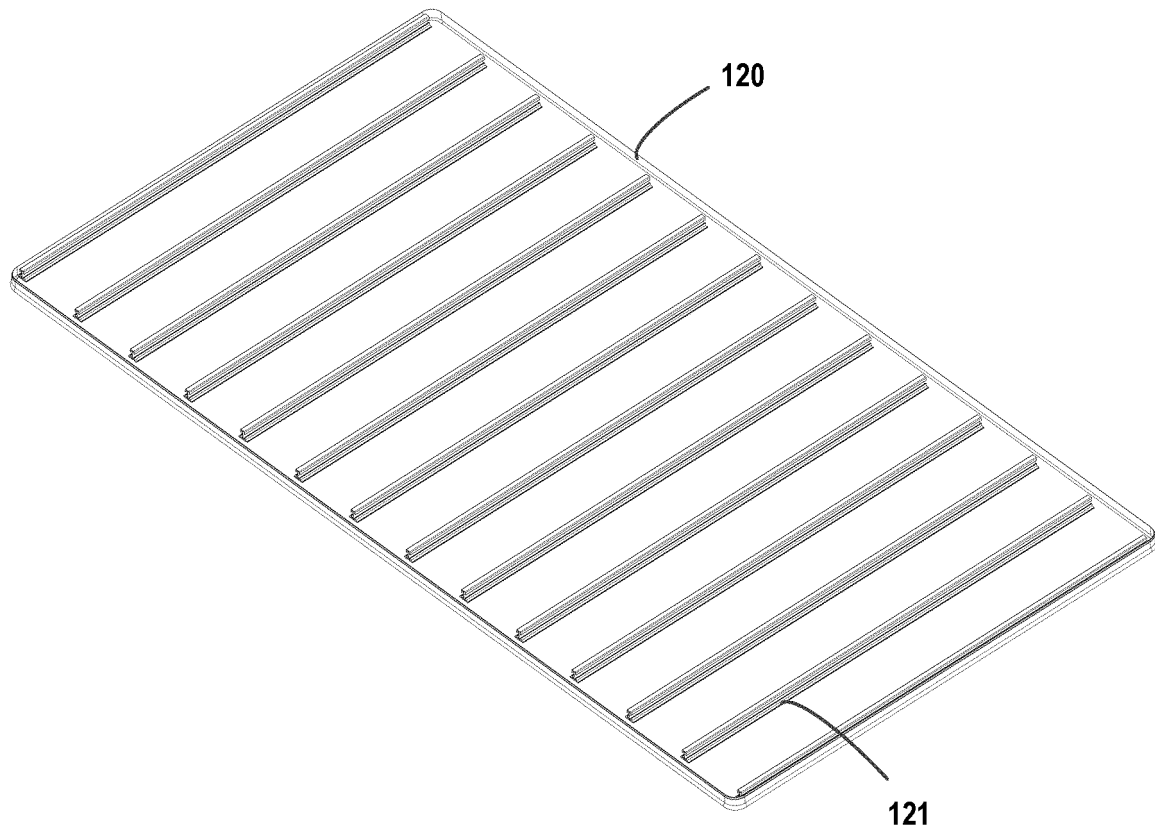


FIG.12

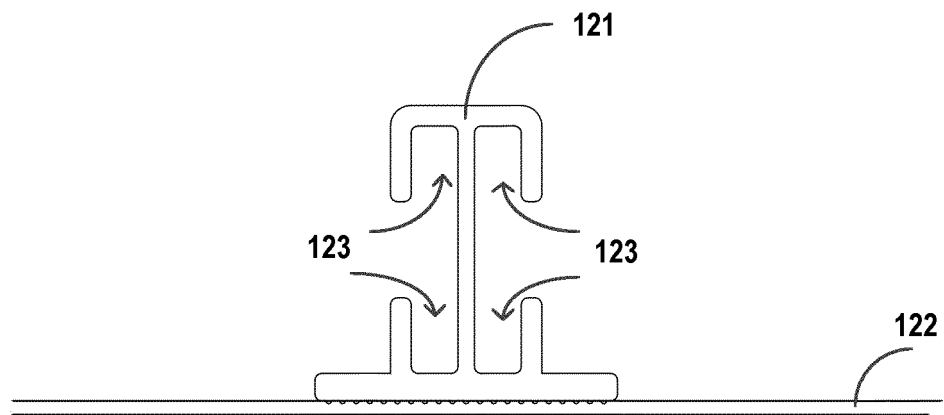


FIG.13A

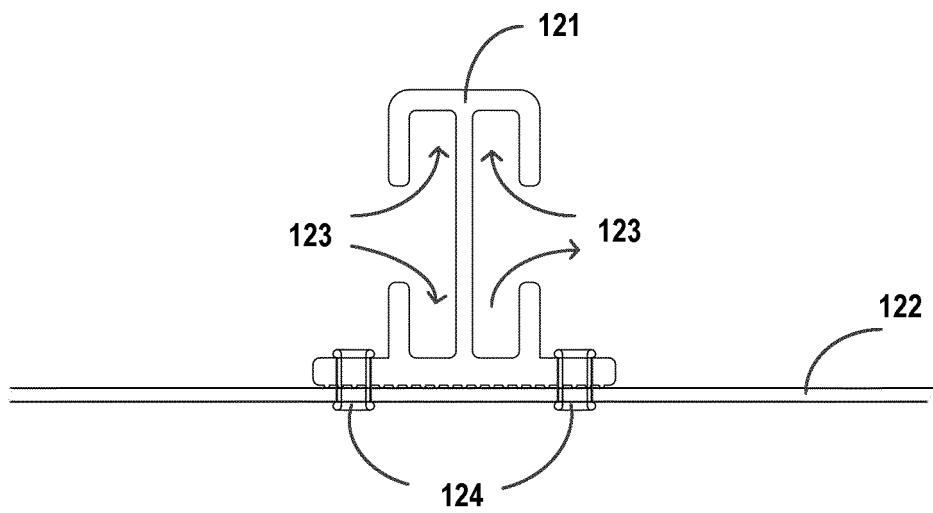


FIG.13B

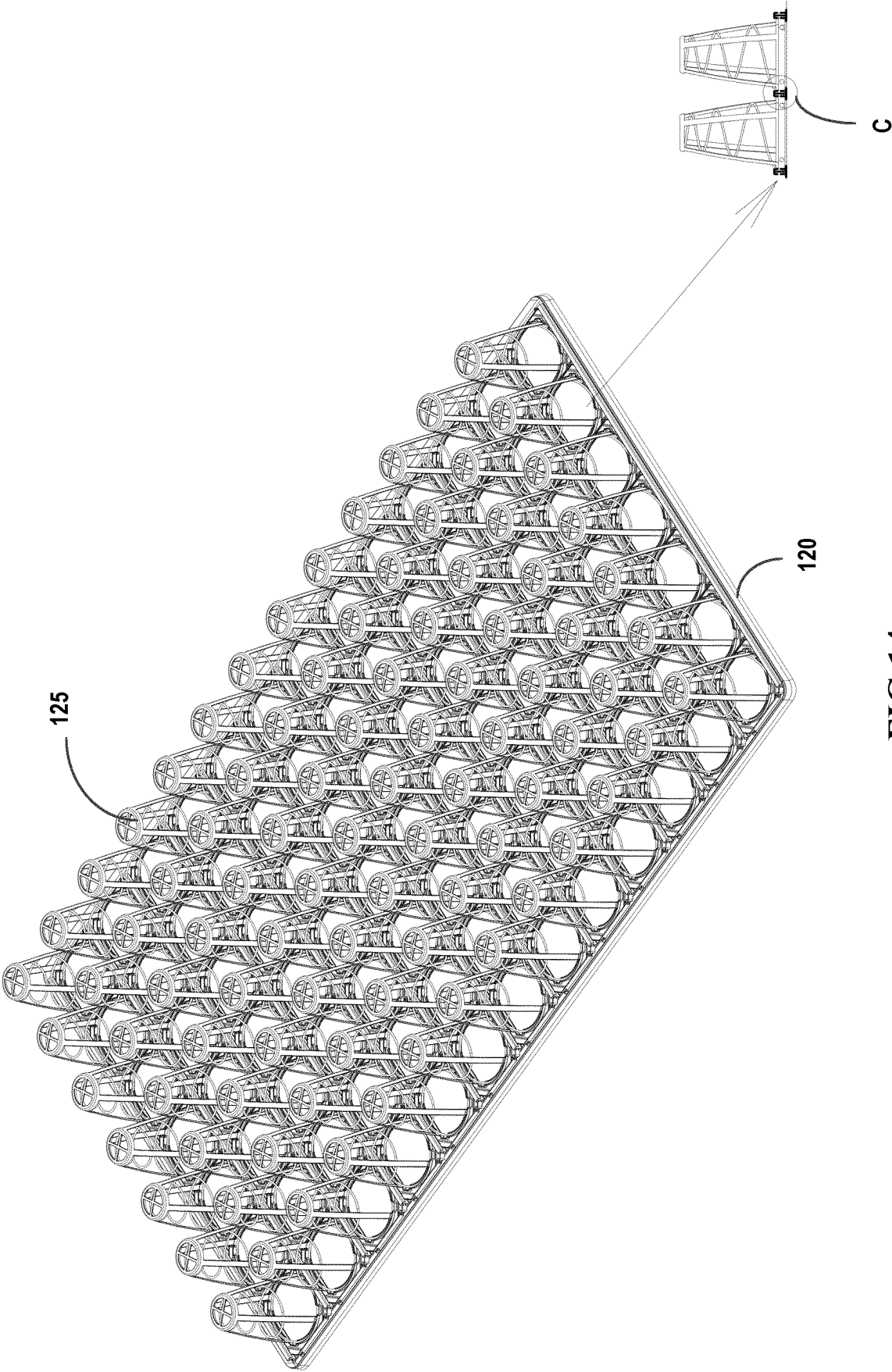


FIG.14

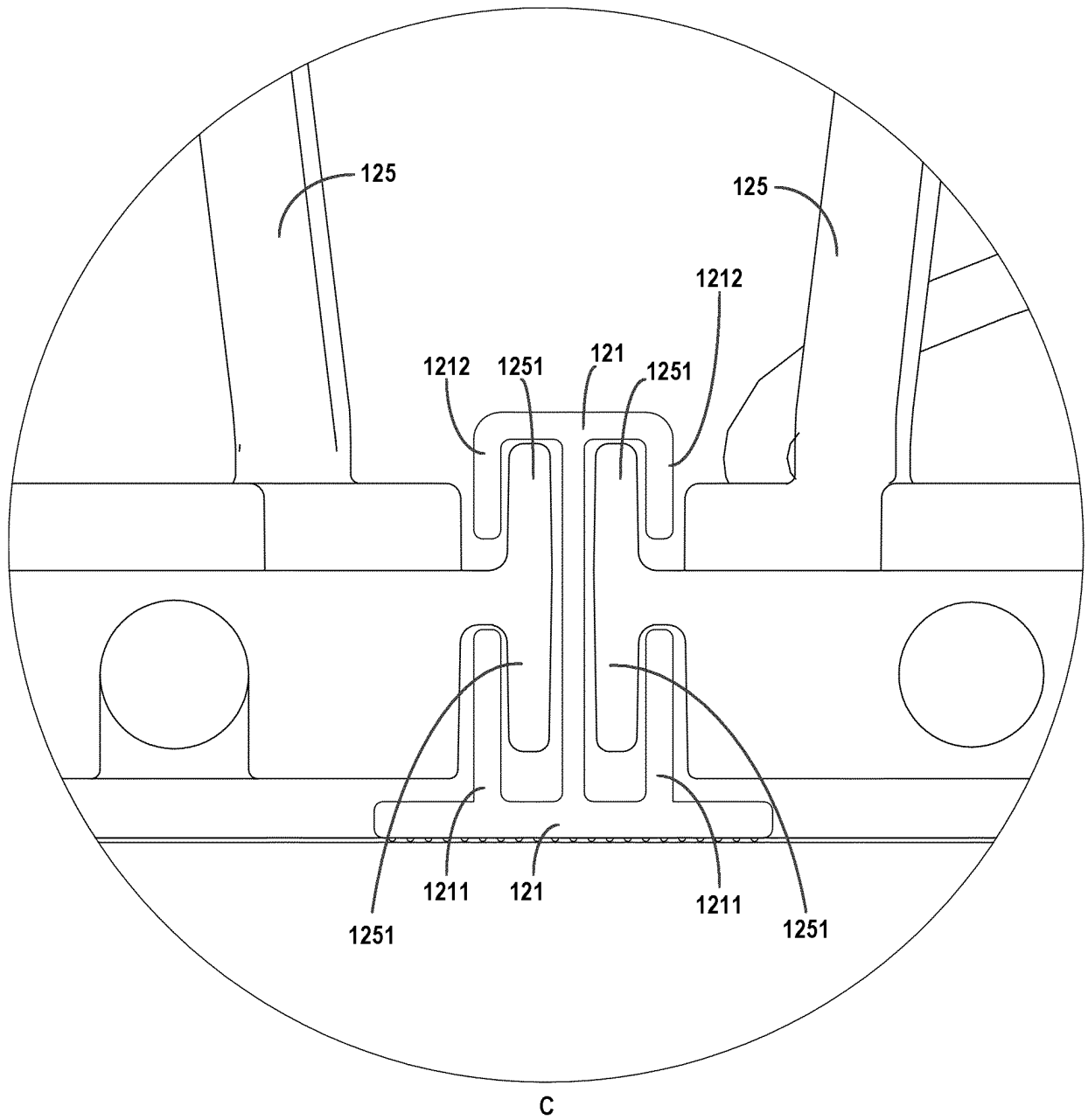


FIG.15

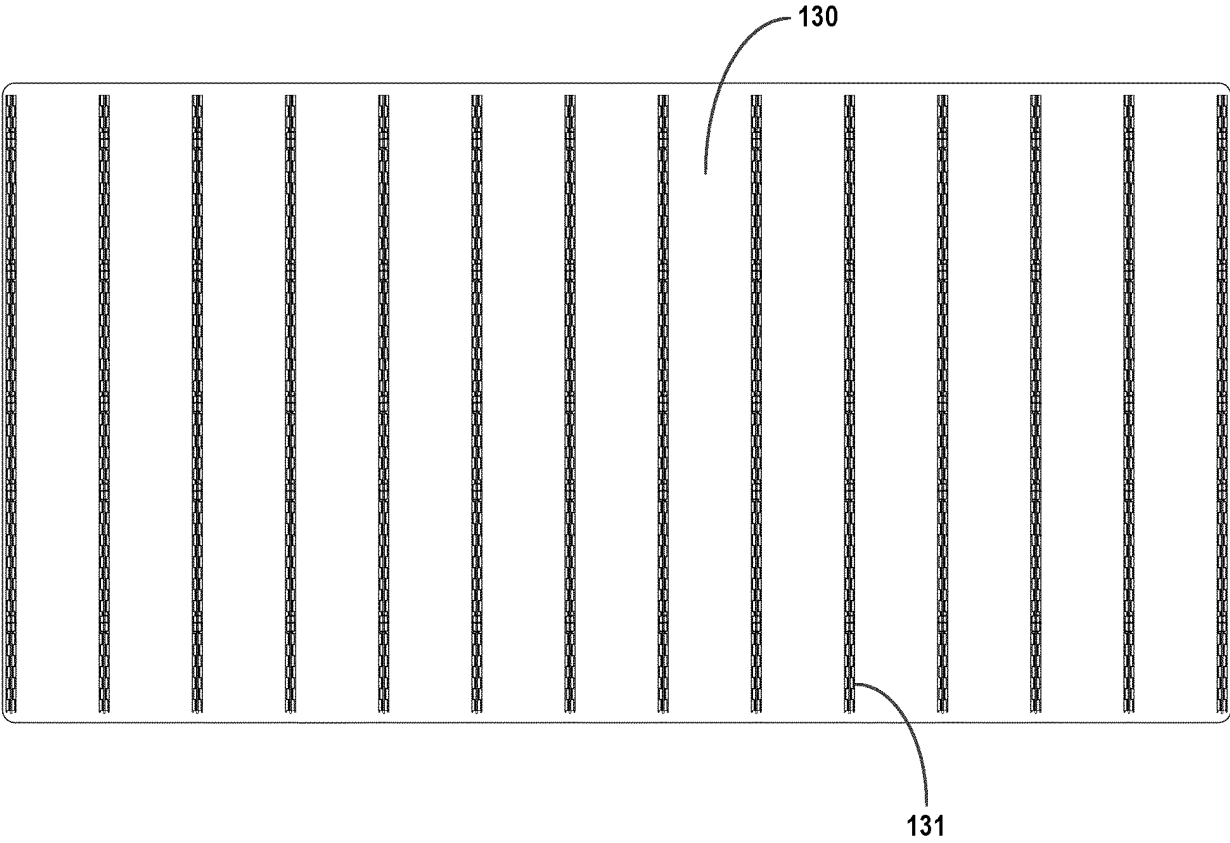


FIG.16

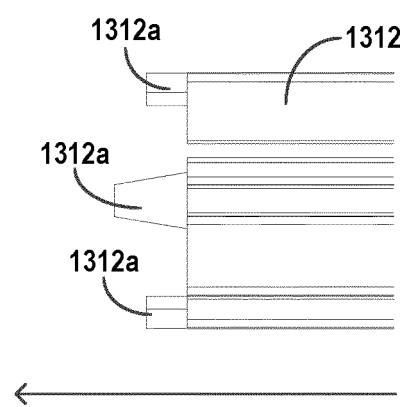
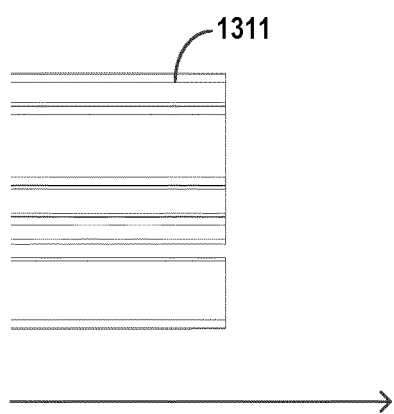
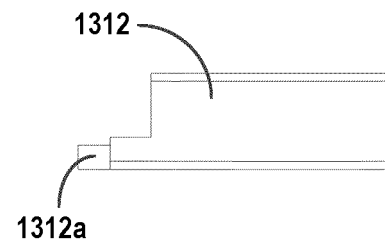
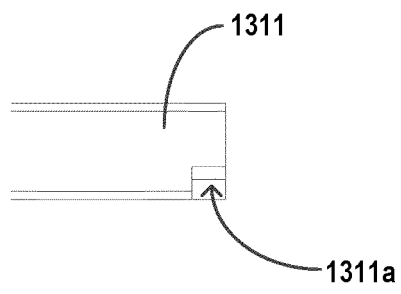


FIG.17

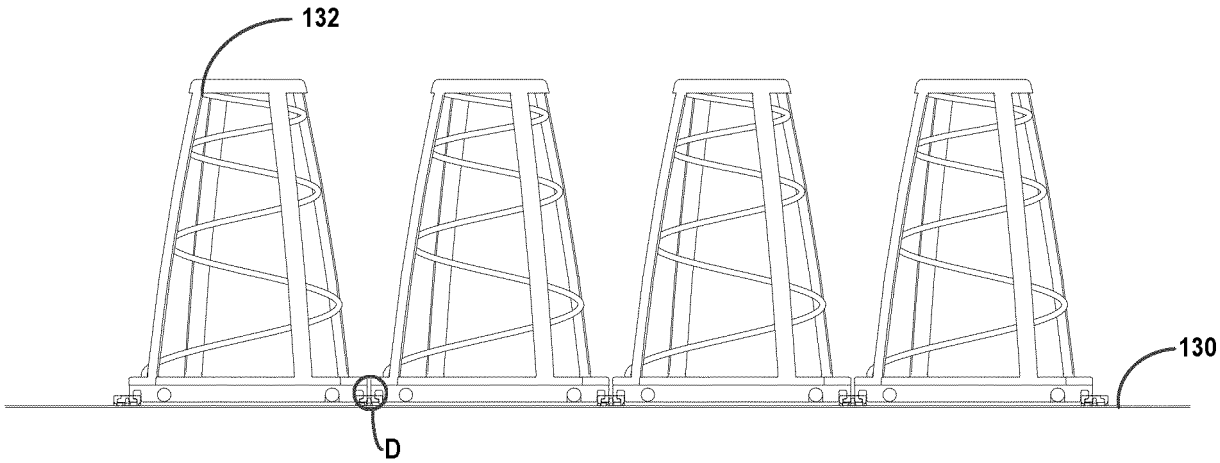


FIG.18

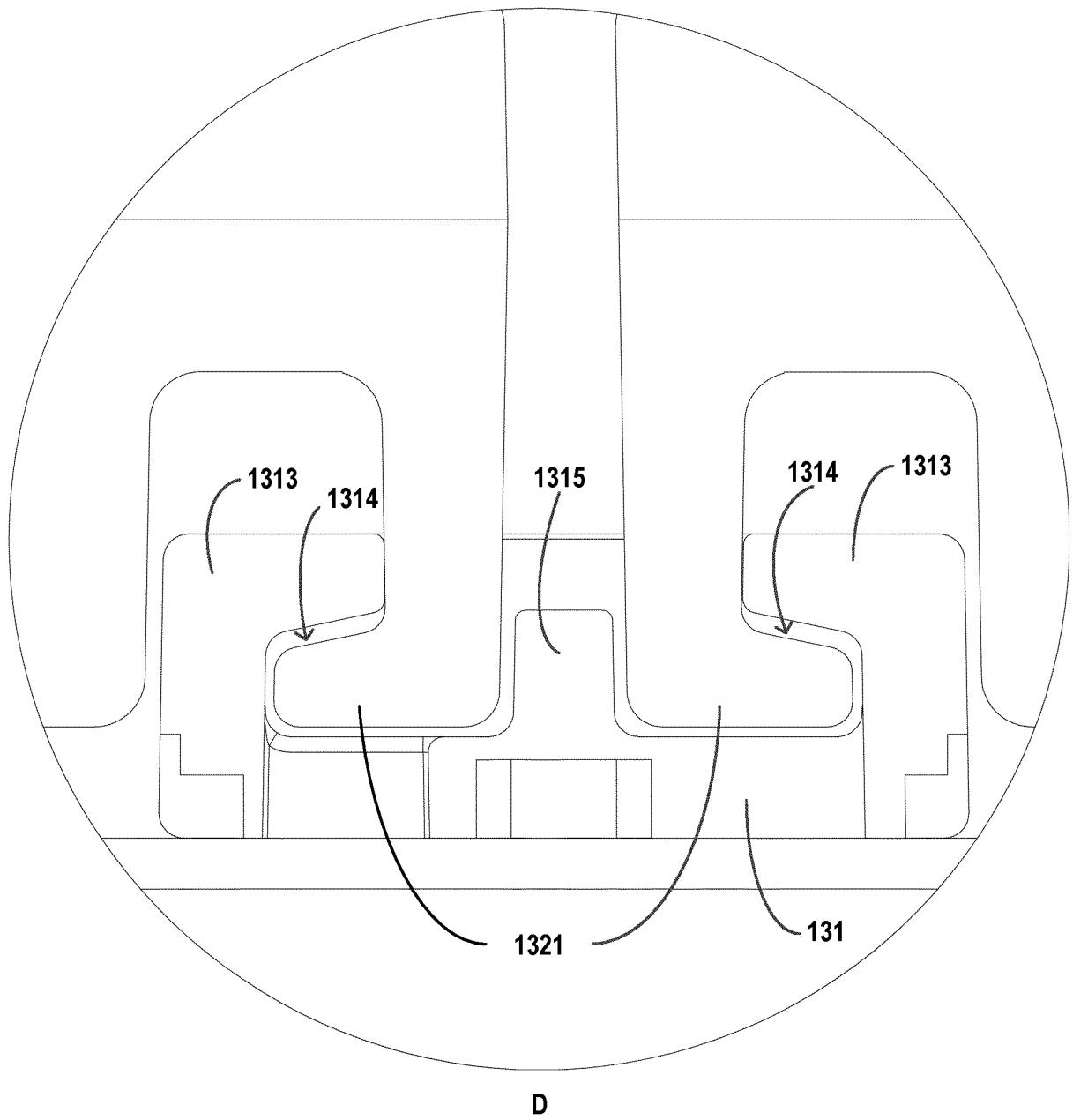


FIG.19

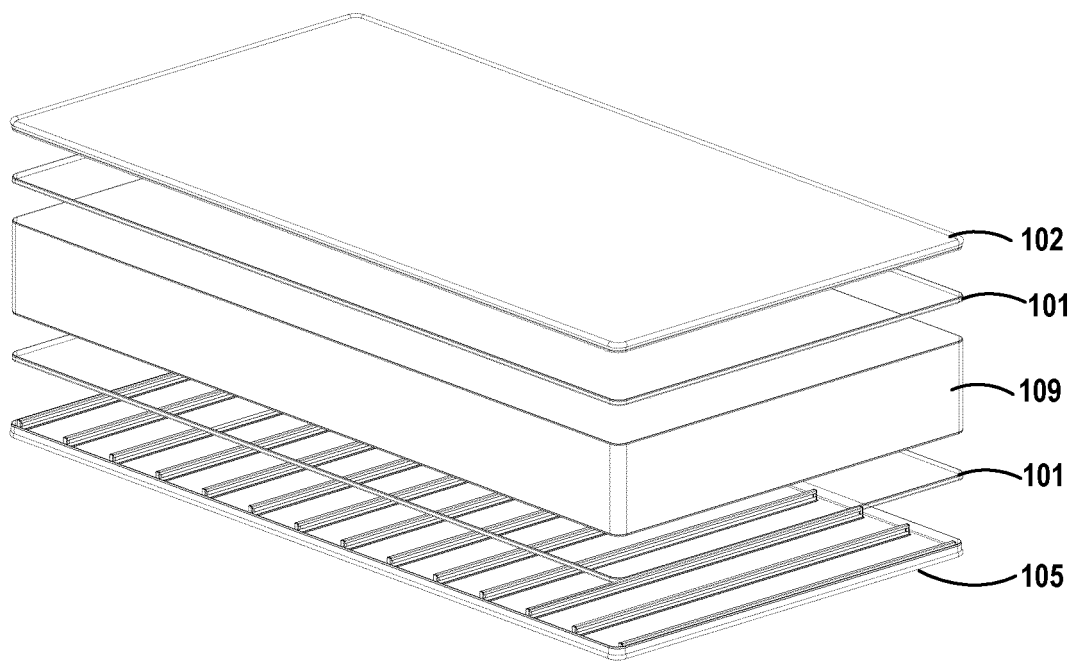


FIG.20

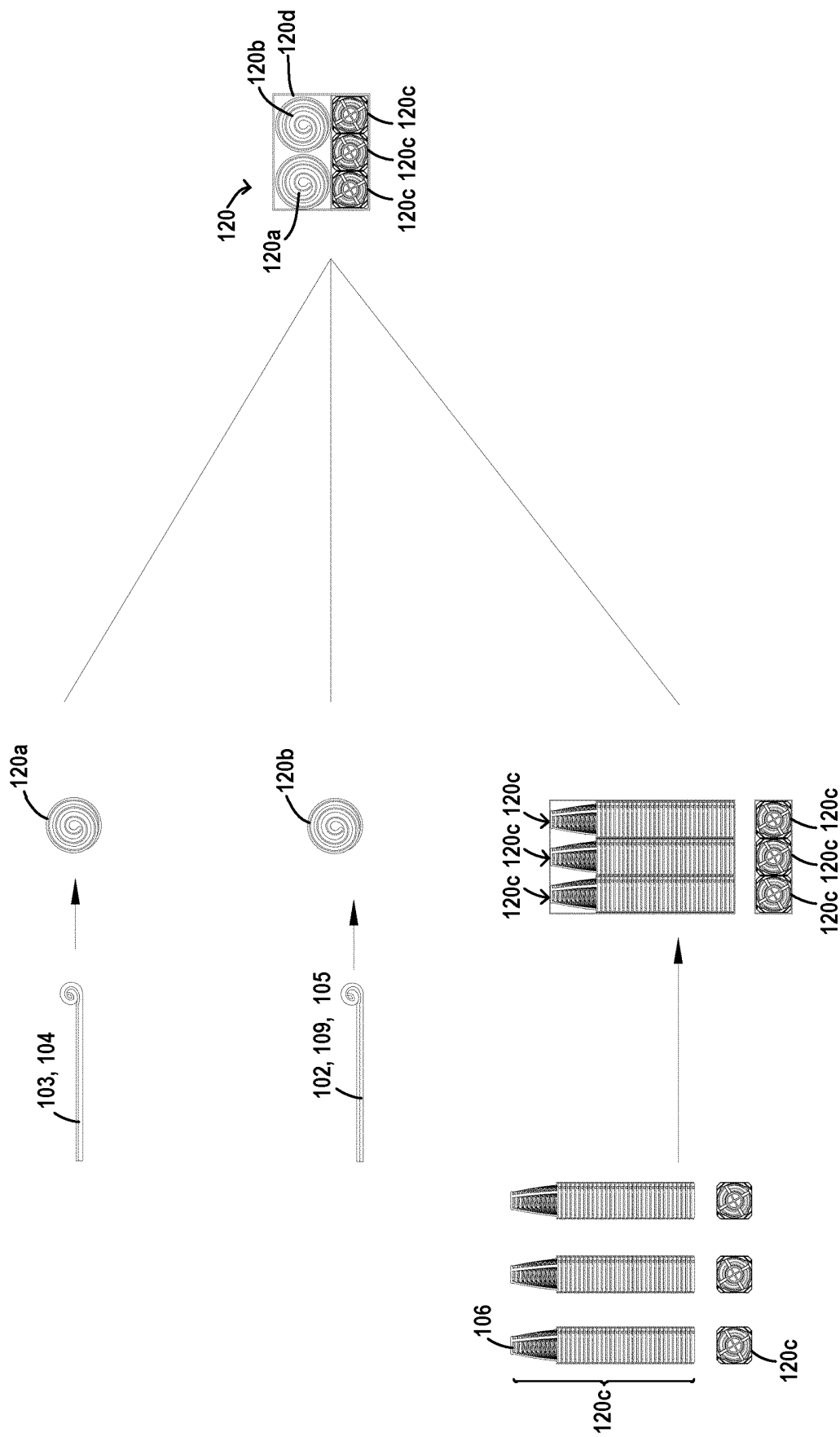


FIG. 21

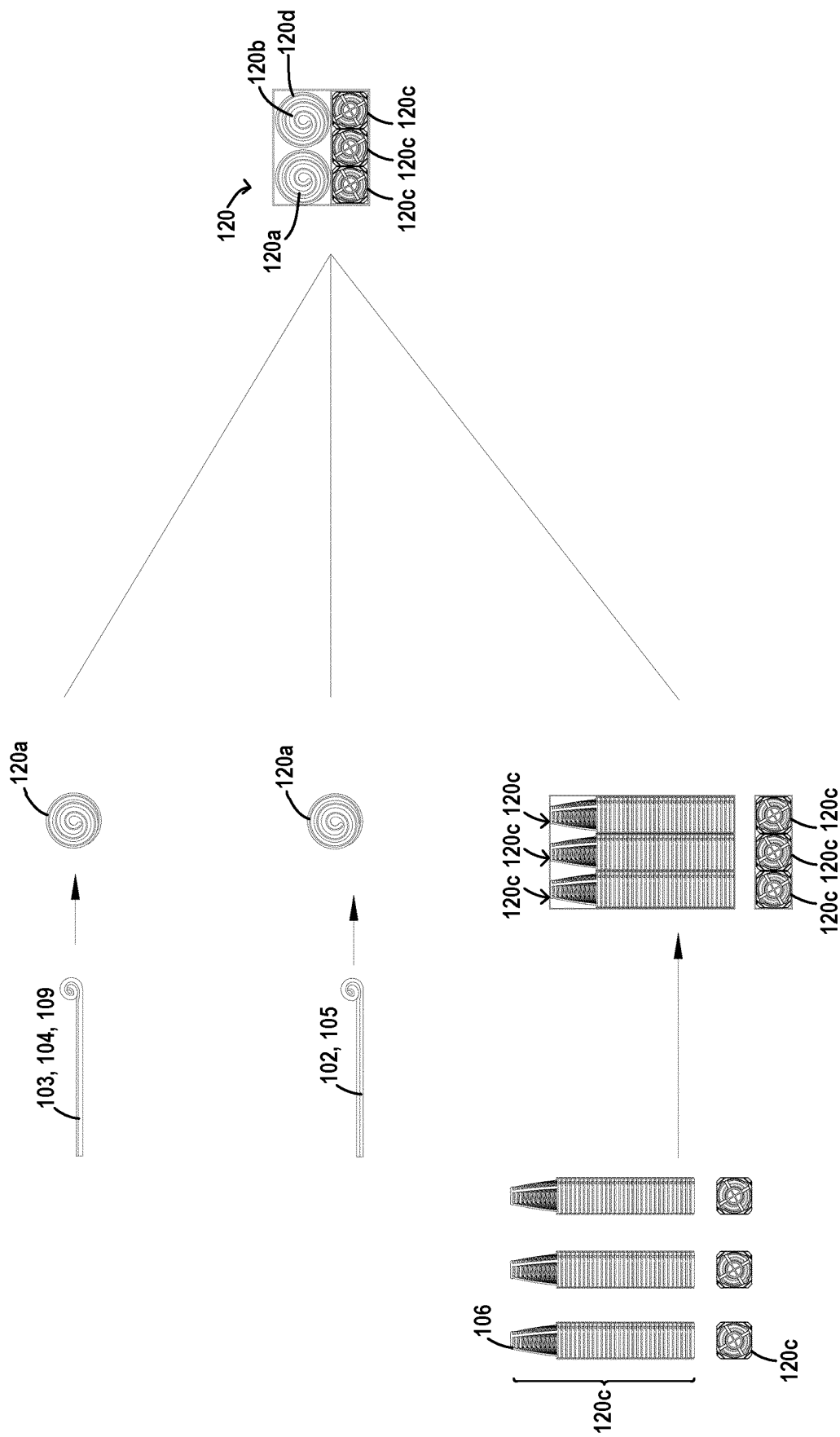


FIG. 22

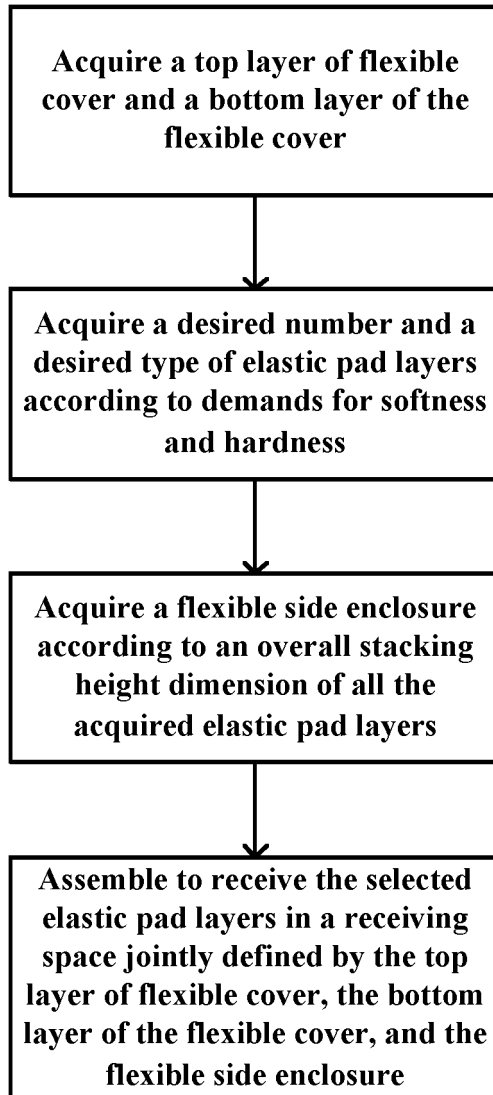


FIG.23

INTERNATIONAL SEARCH REPORT

International application No.

PCT/CN2022/112585

A. CLASSIFICATION OF SUBJECT MATTER A47C 27/05(2006.01)i; A47C 27/00(2006.01)i; B32B 5/18(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, B32B 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) WPI, EPODOC, CNPAT, CNKI: 弹簧, 围挡, 侧挡, 罩, 床垫, 滑道, 拉锁, 硬度, 拉链, 滑轨, 轨道, 底部, spring, side, block+, cover+, mattress, slide, zipper, rail, bottom																		
C. DOCUMENTS CONSIDERED TO BE RELEVANT <table border="1"> <thead> <tr> <th>Category*</th> <th>Citation of document, with indication, where appropriate, of the relevant passages</th> <th>Relevant to claim No.</th> </tr> </thead> <tbody> <tr> <td>X</td> <td>CN 112674538 A (NEW TEC INTEGRATION XIAMEN CO., LTD.) 20 April 2021 (2021-04-20) description, paragraphs [0286]-[0334], and figures 10A-10D, 31A-31C, 35E, 41A, and 50A</td> <td>25, 26</td> </tr> <tr> <td>Y</td> <td>CN 112674538 A (NEW TEC INTEGRATION XIAMEN CO., LTD.) 20 April 2021 (2021-04-20) description, paragraphs [0286]-[0334], and figures 10A-10D, 31A-31C, 35E, 41A, and 50A</td> <td>1-24</td> </tr> <tr> <td>Y</td> <td>CN 202919637 U (CHEN SHOUGUO) 08 May 2013 (2013-05-08) description, paragraph [0019], and figure 1</td> <td>1-24</td> </tr> <tr> <td>Y</td> <td>CN 2803688 Y (LI MINHUA) 09 August 2006 (2006-08-09) specific embodiments, paragraph 1, and figure 1</td> <td>2-5, 23</td> </tr> <tr> <td>A</td> <td>CN 107569000 A (NANJING UNIVERSITY OF SCIENCE AND TECHNOLOGY) 12 January 2018 (2018-01-12) entire document</td> <td>1-26</td> </tr> </tbody> </table>	Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.	X	CN 112674538 A (NEW TEC INTEGRATION XIAMEN CO., LTD.) 20 April 2021 (2021-04-20) description, paragraphs [0286]-[0334], and figures 10A-10D, 31A-31C, 35E, 41A, and 50A	25, 26	Y	CN 112674538 A (NEW TEC INTEGRATION XIAMEN CO., LTD.) 20 April 2021 (2021-04-20) description, paragraphs [0286]-[0334], and figures 10A-10D, 31A-31C, 35E, 41A, and 50A	1-24	Y	CN 202919637 U (CHEN SHOUGUO) 08 May 2013 (2013-05-08) description, paragraph [0019], and figure 1	1-24	Y	CN 2803688 Y (LI MINHUA) 09 August 2006 (2006-08-09) specific embodiments, paragraph 1, and figure 1	2-5, 23	A	CN 107569000 A (NANJING UNIVERSITY OF SCIENCE AND TECHNOLOGY) 12 January 2018 (2018-01-12) entire document	1-26
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A	CN 107569000 A (NANJING UNIVERSITY OF SCIENCE AND TECHNOLOGY) 12 January 2018 (2018-01-12) entire document	1-26																
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Date of the actual completion of the international search 15 October 2022	Date of mailing of the international search report 26 October 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.																	

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INTERNATIONAL SEARCH REPORT

International application No.

PCT/CN2022/112585

C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	CN 108158281 A (ZHENGZHOU SHENDUN INTELLIGENT TECHNOLOGY CO., LTD.) 15 June 2018 (2018-06-15) entire document	1-26
A	CN 112914299 A (QUANZHOU XINHENG OUTDOOR CO., LTD.) 08 June 2021 (2021-06-08) entire document	1-26
A	US 2017311731 A1 (TUALATIN SLEEP PRODUCTS) 02 November 2017 (2017-11-02) entire document	1-26

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INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.

PCT/CN2022/112585

Patent document cited in search report	Publication date (day/month/year)	Patent family member(s)	Publication date (day/month/year)
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		CN 112674541 A	20 April 2021
		CN 112674537 A	20 April 2021
		CN 112674542 A	20 April 2021
		CN 112674535 A	20 April 2021
		CN 112674543 A	20 April 2021
		CN 112674536 A	20 April 2021
		CN 112674544 A	20 April 2021
		CN 112674539 A	20 April 2021
CN 202919637 U	08 May 2013	None	
CN 2803688 Y	09 August 2006	None	
CN 107569000 A	12 January 2018	None	
CN 108158281 A	15 June 2018	None	
CN 112914299 A	08 June 2021	None	
US 2017311731 A1	02 November 2017	WO 2017190158 A1	02 November 2017

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