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(54) **ELASTIC MODULE HAVING BOTTOM PLATE CONNECTING STRUCTURE, AND ELASTIC MAT**

(57) Disclosed are two groups of elastic modules having a bottom plate connecting structure, and an elastic mat, wherein the elastic module having the bottom plate connecting structure comprises an elastic assembly, a bottom plate, and a fixing assembly. The elastic assembly comprises multiple spring units, each fixing assembly comprises a connecting column and a bearing piece matched with the connecting column,

and the elastic assembly and the bottom plate are matched and connected by means of the fixing assembly. The bottom portions of all spring units of the elastic assembly are connected to the bottom plate by means of the fixing assembly, and the bottom plate positions the spring units and fixes the spring units in place, thus improving the stability of the elastic assembly and the elastic mat.

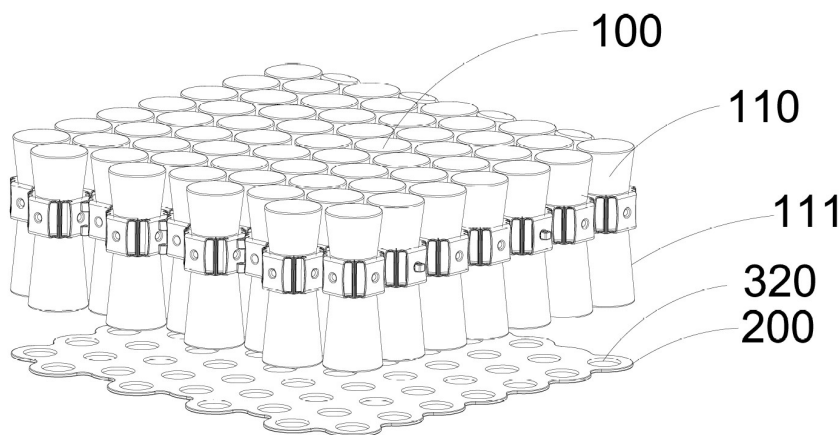


FIG.1

Description

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application claims priority to Chinese Patent Application No. 2023234132910, filed on December 14, 2023, entitled "Elastic Module Having Bottom Plate Connecting Structure and Elastic Pad", submitted to the China National Intellectual Property Administration, the content of Chinese Patent Application is incorporated into this application herein by reference.

FIELD OF THE DISCLOSURE

[0002] The present application belongs to the field of furniture, and specifically relates to an elastic module having a bottom plate connecting structure and an elastic pad.

BACKGROUND OF THE DISCLOSURE

[0003] Various functional layers of a traditional elastic pad are wrapped together, and such a closed elastic pad is difficult to disassemble and assemble, has a fixed size, and is difficult to clean. To address the above technical problems, a common improvement method is to make different functional layers of the elastic pad detachably connected, or to split the elastic pad into a plurality of modules that can be spliced in a transverse direction, each module comprising a plurality of functional layers wrapped together. In the above improvement methods, a plurality of spring units are still wrapped, and the convenience of disassembly and assembly still needs to be improved.

[0004] To address the above problems, the applicant has proposed in its prior application an elastic pad in which the spring units are directly connected, without wrapping and fixing the plurality of spring units, each spring unit of the elastic pad is connected at middle portions of the spring units, bottoms of the spring units are not fixed, and stability of the elastic pad can be further improved.

BRIEF SUMMARY OF THE DISCLOSURE

[0005] The purpose of the present application is to overcome the defects of the existing techniques and provide an elastic module having a bottom plate connecting structure and an elastic pad.

[0006] The technical solutions of the present application are as follows:

An elastic module having a bottom plate connecting structure, comprises an elastic assembly, a bottom plate, and a fixing assembly;
Wherein, the elastic assembly comprises a plurality of spring units;
The fixing assembly comprises connecting posts

and receiving members cooperating with the connecting posts, the fixing assembly is respectively provided on bottoms of the spring units and the bottom plate, and the spring units and the bottom plate are connected through the fixing assembly;
In the above technical solution, the bottom plate is connected to the elastic assembly through the fixing assembly, and the bottom plate performs a positioning function for each of the spring units in the elastic assembly, thereby improving stability of the elastic module.

[0007] In a preferred embodiment of the present application, a spring unit is a pocket spring, the pocket spring comprises a spring, a top cap, a base, and a fabric bag wrapped around an outside of the spring and located between the top cap and the base, and a connecting post or a receiving member is provided on the base.

[0008] Further preferably, a height of the fabric bag is smaller than an original length of the spring, and a bottom surface of the fabric bag is under tension.

[0009] A matrix arrangement of the spring units comprises a staggered manner or an aligned manner by arranging adjacent springs.

[0010] Further preferably, the base comprises an abutting ring extending upwardly, and the abutting ring and a distal end of the base form a step, and the spring abuts the annular step.

[0011] In a preferred embodiment of the present application, a side of the bottom plate is provided with a splicing structure, and two of the bottom plates can be connected through the splicing structure. In the above technical solution, the bottom plates are detachably connected to each other, and a shape and a size of the bottom plates can be adjusted according to the elastic assembly.

[0012] In a preferred embodiment of the present application, a snap-fitting member has a transverse snap-fitting structure and a longitudinal snap-fitting structure, two adjacent bottom plate units are respectively connected through the transverse snap-fitting structure and the longitudinal snap-fitting structure, and snap-fitting directions of the transverse snap-fitting structure and the longitudinal snap-fitting structure form an included angle. Further preferably, the included angle is 45° to 135°. In the above technical solution, because the snap-fitting member snap-fits the bottom plate units in two different directions, it has relatively high connection reliability.

[0013] In a preferred embodiment of the present application, the elastic module further comprises a snap fastener, the snap fastener has at least two snap-fitting sub-members, and the splicing structure is a snap-fitting female member cooperating with the snap-fitting sub-members. In the above technical solution, the bottom plates are respectively snap-fitted with one of the snap-fitting sub-members on the snap fastener through

the snap-fitting female member, thereby realizing connection between the bottom plates, which is simple and convenient to operate.

[0014] In a preferred embodiment of the present application, all the spring units in the elastic assembly are connected to the bottom plate through the fixing assembly. In the above technical solution, each of the spring units is fixed to the bottom plate, so that a connection between the elastic assembly and the bottom plate has relatively high structural reliability.

[0015] In a preferred embodiment of the present application, the fixing assembly is provided at bottoms of the spring units at a periphery of the elastic assembly and on the bottom plate at positions corresponding to the spring units at the periphery of the elastic assembly. In another preferred embodiment of the present application, the fixing assembly is provided at a periphery of the bottom plate and at the bottoms of the spring units at positions corresponding to the periphery of the bottom plate. In the above technical solutions, the bottom plate and the spring units are partially connected, which further simplifies the operation while having relatively high connection reliability.

[0016] In a preferred embodiment of the present application, the bottom plate is a rigid plate. In the above technical solution, when the bottom plate is a rigid plate, the rigid plate can perform a supporting function for the elastic assembly.

[0017] An elastic pad, comprises the above-mentioned elastic module with the bottom plate connecting structure.

[0018] The advantageous effects of the present application are:

1. In the elastic module having the bottom plate connecting structure provided by the present application, the spring units of the elastic assembly are connected to the bottom plate through the fixing assembly, and the bottom plate positions and fixes the spring units, thereby improving stability of the elastic assembly and the elastic pad.

2. In a preferred implementation, the bottom plate is a rigid plate, and when the elastic assembly or the elastic pad is placed on a shelf with relatively large gaps, since the rigid plate abuts the spring units, the spring units can undergo elastic deformation without being affected by the gaps, thereby providing good support performance.

3. In another elastic module having the bottom plate connecting structure provided by the present application, the bottom plates can be connected through the splicing structures provided on the sides of the bottom plates, so that the bottom plates can be assembled according to the fixing requirements of the elastic assembly.

BRIEF DESCRIPTION OF THE DRAWING

[0019]

FIG. 1 is a schematic diagram of an elastic assembly and a bottom plate of Embodiment 1 of the present application;

FIG. 2 is a top view of an elastic module having a bottom plate connecting structure of Embodiment 1 of the present application;

FIG. 3 is a bottom view of the elastic module having the bottom plate connecting structure of Embodiment 1 of the present application;

FIG. 4 is a structural schematic diagram of a spring unit of Embodiment 1 of the present application, wherein part A is a sectional view;

FIG. 5 is an enlarged view of part A in Fig. 4;

FIG. 6 is a bottom view of a connecting post of Embodiment 1 of the present application;

FIG. 7 is a longitudinal sectional view of the spring unit of Embodiment 1 of the present application;

FIG. 8 is a structural schematic diagram of a spring unit of Embodiment 2 of the present application;

FIG. 9 is a sectional view of a receiving member on a bottom plate of Embodiment 2 of the present application;

FIG. 10 is a top view of a connecting post of Embodiment 2 of the present application;

FIG. 11 is a structural schematic diagram of a spring unit of Embodiment 3 of the present application, wherein part B is a sectional view;

FIG. 12 is an enlarged view of part B in Fig. 10;

FIG. 13 is an enlarged view of part E in Fig. 10;

FIG. 14 is a sectional view of a receiving member on a bottom plate of Embodiment 3 of the present application;

FIG. 15 is a top view of the receiving member of Embodiment 3 of the present application;

FIG. 16 is a sectional view of a receiving member on a bottom plate of Embodiment 4 of the present application;

FIG. 17 is a top view of the receiving member of Embodiment 4 of the present application;

FIG. 18 is a schematic diagram of an elastic assembly and a bottom plate of Embodiment 5 of the present application;

FIG. 19 is an enlarged view of part C in Fig. 17;

FIG. 20 is a bottom view of an elastic module having a bottom plate connecting structure of Embodiment 5 of the present application;

FIG. 21 is a structural schematic diagram of an elastic module of Embodiment 6 of the present application;

FIG. 22 is a structural schematic diagram of a bottom plate of Embodiment 6 of the present application;

FIG. 23 is an enlarged view of part D in Fig. 21;

FIG. 24 is a schematic diagram of an elastic mod-

ule of Embodiment 7 of the present application;
 FIG. 25 is a structural schematic diagram of a snap fastener of Embodiment 7 of the present application;
 FIG. 26 is a bottom view of the snap fastener shown in FIG. 25;
 FIG. 27 is a front view of the snap fastener shown in FIG. 25;
 FIG. 28 is a side view of the snap fastener shown in FIG. 25;
 FIG. 29 is a schematic diagram of mounting positions of a bottom plate and the snap fastener of Embodiment 7 of the present application;
 FIG. 30 is an enlarged view of part F in Fig. 29;
 FIG. 31 is an enlarged view of part G in Fig. 29;
 FIG. 32 is a schematic diagram of splicing units connected by the snap fasteners in Embodiment 7 of the present application;
 FIG. 33 is a schematic diagram of the splicing unit in Embodiment 7 of the present application;
 FIG. 34 is a structural schematic diagram of a top of a knob in Embodiment 8 of the present application;
 FIG. 35 is a structural schematic diagram of the knob shown in FIG. 35 after being turned upside down;
 FIG. 36 is a side view schematic diagram of the knob;
 FIG. 37 is a structural schematic diagram of a bottom plate of Embodiment 8;
 FIGS. 38-40 are structural schematic diagrams of bottom plates of different lengths of Embodiment 8 of the present application;
 FIGS. 41 and 42 are structural schematic diagrams of different splicing methods of Embodiment 8 of the present application;
 FIG. 43 is a schematic diagram of bottom plate splicing in Embodiment 9 of the present application, wherein connecting posts are provided only on the splicing units located at a periphery of a bottom plate;

[0020] Reference numerals in the drawings: 100-elastic assembly; 110-spring unit; 111-fabric bag; 112-spring; 113-base; 114-abutting sheet; 115-top cap; 116-connecting seat; 200-bottom plate; 215-splicing unit; 220-splicing structure; 221-first side edge; 222-second side edge; 223-first male member; 224-snap-fitting arm; 225-first female member; 226-handle; 227-second male member; 228-second female member; 229-embedded fitting groove; 230-knob; 231-T-shaped clamping leg; 310-connecting post; 311-first end; 312-abutting portion; 313-buckling portion; 314-inverted hook; 320-receiving member; 321-buckling opening; 322-large circular hole; 323-small circular hole; 324-tab; 400-snap fastener; 410-elastic snap-fitting portion; 411-spring; 420-embedded fitting portion; 421-projection.

DETAILED DESCRIPTION OF THE EMBODIMENTS

[0021] The technical solutions of the present application will be further illustrated and described below through specific embodiments. Wherein, the "preset movement direction" referred to in the present application means a direction in which a connecting post enters a receiving member, and the "upper" as a direction referred to in the present application means a direction from a bottom plate towards an elastic assembly in an elastic module having a bottom plate connecting structure. The "lower" or "bottom" as a direction referred to in the present application means a direction from the elastic assembly towards the bottom plate in the elastic module having the bottom plate connecting structure.

EMBODIMENT 1

[0022] Please refer to FIG. 1, an elastic module having a bottom plate connecting structure comprises an elastic assembly 100 constructed by a plurality of spring units 110, a bottom plate 200, and a fixing assembly for connecting the elastic assembly 100 and the bottom plate 200. Wherein, the elastic assembly 100 is constructed by the plurality of spring units 110, and the fixing assembly comprises connecting posts 310 (not shown in figures) and receiving members 320, in the present embodiment, the receiving members 320 are openings on the bottom plate 200.

[0023] In the present embodiment, the bottom plate 200 is a rigid plastic plate, and the bottom plate 200 can provide good positioning and support for the elastic assembly. In other feasible implementations, the bottom plate 200 can also be made of other rigid materials, such as metal, wood, etc., or the bottom plate 200 can also be flexible, such as fabric, flexible plastic, etc., and the flexible bottom plate 200 has a weaker abutting effect on the spring units 110, but it can still function to fixedly connect bottoms of the spring units 110, thereby improving stability of the elastic assembly.

[0024] The spring units 110 are independent pocket springs, and as shown in FIG. 7, a spring unit 110 comprises a top cap 115 and a base 113, a fabric bag 111 or other flexible material is fixedly connected to the top cap and the base to wrap a spring 112, and the connecting posts 310 are connected to the bottoms of the spring units 110 through an opening provided on the base. In the present embodiment, a height of the fabric bag 111 is smaller than an original height of the spring 112, and at this time, the spring 112 is in a pre-compressed state, correspondingly, the spring 112 exerts pressure on the base 113 and the top cap 115 to enable the fabric bag 111 to be in a tensioned state (i.e., a bottom surface of the fabric bag is under tension). The base 113 of each of the spring units 110 is disposed with a connecting post 310 (not shown in the figures), and with reference to FIGS. 2 and 3, it can be seen that a number and a position of the receiving members 320

correspond to the spring units 110. In other possible implementations, the receiving members 320 or the connecting posts 310 can also be provided only on some of the spring units 110, such that only some of the spring units 110 are connected to the bottom plate 200, and since the spring units are connected by providing connecting seats 116 at middle portions, as a result, it is not necessary to connect them to the bottom receiving members 320 one by one, and stability is still maintained.

[0025] Specifically, as can be seen from FIGS. 4-6, the connecting post 310 has a first end 311 cooperating with a receiving member 320 and an opposite second end 314. In the present embodiment, the second end 314 is an inverted hook, and the second end 314 and the first end 311 are respectively provided in two opposite directions of the base of the spring unit. The first end 311 is provided with an abutting portion 312, and the abutting portion 312 is four arc-shaped abutting surfaces pairwise opposite to each other, a middle of the first end 311 comprises openings to provide clearance for the abutting portion 312.

[0026] During a process of connecting the connecting post 310 to the receiving member 320, since a maximum outer diameter of the abutting portion 312 is larger than an inner diameter of the receiving member 320, the abutting portion 312 is squeezed to drive the first end 311 to elastically deform towards a center, and when the connecting post 310 enters the receiving member 320, the abutting portion abuts an inner wall of the receiving member 320, and the connecting post 310 and the receiving member 320 are in an interference fit. The interference fit makes a connection between the connecting post 310 and the receiving member 320 more stable, and in other feasible implementations, the connecting post 310 and the receiving member 320 can also be in a clearance fit, in this case, the elastic assembly 100 and the bottom plate 200 are easy to separate, but the bottom plate 200 can still position and fix the spring units 110.

EMBODIMENT 2

[0027] In another feasible implementation, as shown in FIGS. 8-10, the connecting posts 310 are provided on the bottom plate 200, and the receiving members 320 are provided on the bases 113 of the spring units 110. The first end 311 of the connecting post 310 forms a buckling portion 313, and the buckling portion 313 is four buckling arms configured to be elastically deformable, a gap is formed between two of the buckling arms, so that the buckling arms are elastically deformed inwards. The receiving member 320 is provided on the base 113 of the spring unit 110, and the receiving member 320 extends towards an upper end of the spring to form a hollow accommodating channel, an inner diameter of the accommodating channel is equal to or slightly smaller than an outer diameter of the buck-

ling portion 313 of the connecting post 310, and an entrance of the receiving member 320 forms a buckling opening 321 having an inner diameter smaller than the inner diameter of the accommodating channel. After the first end 311 enters the accommodating channel of the receiving member 320, the buckling portion 313 cooperates with the buckling opening 321 to connect the spring unit 110 and the bottom plate 200.

EMBODIMENT 3

[0028] As shown in FIGS. 11-15, similar to the above embodiments, the spring unit 110 is a wrapped spring, and it comprises a spring 112, a top cap 115, a fabric bag 111, and a base 113. The fabric bag 111 is wrapped around an outside of the spring 112, and the top cap 115 and the base 113 are disposed at two ends of the spring 112. The connecting post 310 is disposed on the base 113 of the spring unit 110. The base 113 comprises an abutting ring 114 extending upwardly, and the abutting ring 114 and a distal end of the base 113 form a step, and the spring 112 abuts the annular step.

[0029] The receiving members 320 are disposed on the bottom plate 200. Wherein, a distal end of the first end 311 of the connecting post 310 forms a buckling portion 313, and an interior of the receiving member 320 forms an accommodating cavity, an entrance of the receiving member 320 forms a gourd-shaped buckling opening 321, and the buckling opening 321 is constructed by a large circular hole 322 and a small circular hole 323 intersecting each other, wherein, a diameter of the large circular hole 322 is larger than a maximum diameter of the buckling portion 313, and a diameter of the small circular hole 323 is between the maximum diameter and a minimum diameter of the buckling portion 313, a chord length at a junction of the large circular hole 322 and the small circular hole 323 is slightly smaller than the minimum diameter of the buckling opening 321. The buckling portion 313 enters the accommodating cavity from the large circular hole 322, and then it slides towards the small circular hole 323, and when the buckling portion 313 passes the junction of the large circular hole 322 and the small circular hole 323, the junction slightly deforms, so that the buckling portion 313 enters the small circular hole 323 and is buckled to the small circular hole 323.

EMBODIMENT 4

[0030] As shown in FIGS. 16 and 17, the same as the spring units 110 in Embodiment 3, the connecting posts 310 are provided on the spring units 110, and the difference between Embodiment 4 and Embodiment 3 is that the receiving members 320 are provided on the bottom plate 200, and an interior of the receiving member 320 forms an accommodating cavity, the buckling opening 321 of the receiving member 320 is a circular opening, and a plurality of tabs 324 are provided along an edge

of the circular opening and extending toward a center, the tabs 324 can deform when the buckling portion 313 enters or is pulled out to enable the connecting post 310 and the receiving member 320 to be buckled or separated.

EMBODIMENT 5

[0031] The structure of the spring units 110 is the same as in Embodiment 2, and Embodiment 5 shows another implementation of the connecting posts 310, the connecting posts 310 are provided on a frame, and in Embodiment 5, as shown in FIGS. 18-20, the bottom plate 200 is a mesh-like frame structure constructed by hard steel wires, wherein, the steel wire mesh-like structure is raised at intersection points to form the connecting posts 310, and an arrangement of the intersection points of the steel wire mesh-like frame structure is the same as an arrangement of the spring units 110, when the elastic assembly 100 is mounted on the bottom plate 200, each of the spring units 110 cooperates with the connecting post 310 through the receiving member 320 (not shown in the figures, please refer to Embodiment 2) provided at the bottom of the spring unit 110.

EMBODIMENT 6

[0032] In Embodiment 6, as shown in FIG. 21, the bottom plate 200 is constructed by splicing units 215, and a side of a splicing unit 215 comprises a splicing structure 220, the splicing units 215 are connected through the splicing structures 220 to form the bottom plate 200, and the connecting posts 310 are provided on the splicing units 215 located at an outermost periphery of the bottom plate 200, which can cooperate with the receiving members 320 (not shown in the figures) at the bottoms of the spring units 110 to connect the bottom plate 200 and the spring units 110.

[0033] As shown in FIGS. 22 and 23, each of the splicing units 215 in the present embodiment is provided with four of the splicing structures 220, and the splicing structure 220 has a protruding portion protruding outward from a circumference of the bottom plate 200, the protruding portion has a first side edge 221 and a second side edge 222, and the first side edge 221, the second side edge 222, and a chord of the bottom plate 200 roughly form a triangle. The first side edge 221 protrudes to form a first male member 223, and an end of the second side edge 222 away from the first side edge 221 extends to form a snap-fitting arm 224, the snap-fitting arm 224 is recessed to form a first female member 225 cooperating with the first male member 223, and the first male member 223 and the first female member 225 form a transverse snap-fitting structure of the present embodiment, the first male member 223 and the first female member 225 of the splicing structure 220 can be respectively snap-fitted

with the first female member 225 and the first male member 223 of the splicing structures 220 on another ones of the bottom plate 200, thereby restricting relative movement of two of the bottom plates 200 in a splicing direction. An end of the snap-fitting arm 224 away from the bottom plates 200 extends in a direction away from the first side edge 221 to form a handle 226, and by pressing the handle 226, the snap-fitting arm 224 can move in a direction away from the first side edge 221, facilitating entry of the first male member 223 into the first female member 225.

[0034] A middle portion of the second side edge 222 away from the first side edge 221 protrudes outward to form a triangular second male member 227, and a middle portion of the second side edge 222 adjacent to the first side edge 221 is recessed inward to form a second female member 228 configured to cooperate with the second male member 227. The second male member 227 and the second female member 228 form a longitudinal snap-fitting structure of the present embodiment, and the second male member 227 and the second female member 228 of the splicing structure 220 can be respectively snap-fitted with the second female member 228 and the second male member 227 of the splicing structures 220 on another ones of the bottom plates 200, thereby restricting relative movement of two of the bottom plates 200 in an elastic force direction of the spring units 110.

[0035] In the present embodiment, each of the bottom plates 200 can only abut one of the spring units 110, and in other possible implementations, the bottom plates 200 have a plurality of positions abutting the spring units 110.

EMBODIMENT 7

[0036] As shown in FIGS. 24-33, the bottom plate 200 is constructed by splicing units 215, and a side of a splicing unit 215 comprises a splicing structure 220, the splicing units 215 are connected through cooperation of the splicing structures 220 and snap fasteners 400 to form the bottom plate 200.

[0037] Specifically, as shown in FIGS. 25-27, a snap fastener 400 in the present embodiment comprises two elastic snap-fitting portions 410 arranged along a first direction, and the two elastic snap-fitting portions 410 extend and retract in the first direction through springs 411, when the two elastic snap-fitting portions 410 both contract towards an interior of the snap fastener 400, the snap fastener 400 is roughly circular. In addition, the snap fastener 400 further comprises two embedded fitting portions 420 along a second direction perpendicular to the first direction, and each of the embedded fitting portions 420 have two projections 421 protruding downward from a top surface of the snap fastener 400.

[0038] As shown in FIGS. 29-31, the splicing structure 220 comprises a notch recessed from the side of the splicing unit 215, and when the splicing structures

220 of two of the splicing units 215 are aligned, upper parts of two of the notches are roughly circular, matching a shape of the snap fastener 400, and lower parts of the two of the notches match the two elastic snap-fitting portions 410. In addition, the lower part of the notch comprises two embedded fitting grooves 229 located on two sides of a symmetry axis thereof, and each of the embedded fitting grooves 229 cooperates with a projection 421.

[0039] Next, please refer to FIG. 31, and when it is necessary to splice the two of the splicing units 215, the notches of the splicing structures 220 of two are first aligned, then the elastic snap-fitting portions 410 of the snap fastener 400 are pressed and the snap fastener 400 is placed into the notches of the splicing structures 220. At this time, the two projections 421 of each of the fitting portions 420 are respectively embedded in the embedded fitting grooves 229, thereby realizing splicing of the two of the splicing units 215.

[0040] As shown in FIG. 33, in the present embodiment, the splicing units 215 comprise the connecting posts 310, and the bottom plate 200 can be connected to each of the spring units 110 abutting the bottom plate 200 through the fixing assembly. In other possible implementations, it is sufficient that only some positions on the bottom plate 200 comprise the connecting posts 310 or the receiving members 320, for example, in the bottom plate 200 shown in FIG. 33, the connecting posts 310 are provided only at a periphery of the bottom plate.

EMBODIMENT 8

[0041] As shown in FIGS. 35-42, the bottom plate 200 is constructed by splicing units 215, and a side of a splicing unit 215 comprises a splicing structure 220, the splicing units 215 are connected through cooperation of the splicing structures 220 and knobs 230 to form the bottom plate 200.

[0042] As shown in FIGS. 35-37, a bottom surface of a knob 229 comprises two symmetrical T-shaped clamping legs 231. The splicing structure 220 is a sliding slot provided at an edge of the splicing units 215 and is interlocked with a T-shaped clamping leg 231, and a width of the sliding slot gradually narrows along a rotation direction of the knob 230, by respectively inserting the two T-shaped clamping legs 231 of the knob 230 into widest parts of the sliding slots of adjacent two of the splicing units 215 and rotating the knob 230 until the T-shaped clamping legs 231 are limited by narrowest parts of the sliding slots, splicing of the adjacent two of the splicing units 215 can be achieved.

[0043] The splicing units 215 are square or elongated, and they are provided with one or more connecting posts 310. The one or more connecting posts 310 correspond to the spring units 110 one by one. FIGS. 37-39 show three kinds of bottom plates 200 with different lengths, and in other possible implementations, a

length of the bottom plate 200 can be changed as required. FIGS. 40 and 41 show different combinations and splicing methods of the above multiple splicing units 215.

EMBODIMENT 9

[0044] As shown in FIG. 3, the difference between the present embodiment and Embodiment 8 is that the connecting posts 310 are provided only on the splicing units 215 located at a periphery of the bottom plate 200.

[0045] The above are only preferred embodiments of the present application and shall not be used to limit the scope of implementation of the present application. That is, equivalent changes and modifications made according to the patent scope of the present application and the content of the description shall still fall within the scope covered by the present application.

INDUSTRIAL APPLICABILITY

[0046] The present disclosure discloses two sets of elastic modules having bottom plate connecting structures and elastic pads, wherein an elastic module having a bottom plate connecting structure comprises: an elastic assembly, a bottom plate, and a fixing assembly. Wherein, the elastic assembly comprises a plurality of spring units, the fixing assembly comprises connecting posts and receiving members cooperating with the connecting posts, and the elastic assembly and the bottom plate are connected by cooperation of the fixing assembly. A bottom of each of the spring units of the elastic assembly is connected to the bottom plate through the fixing assembly, and the bottom plate positions and fixes the spring units, thereby improving the stability of the elastic assembly and the elastic pad, and having industrial applicability.

Claims

1. An elastic module having a bottom plate connecting structure, **characterized in that**, it comprises an elastic assembly, a bottom plate, and a fixing assembly;

wherein, the elastic assembly is constructed by a plurality of spring units arranged in a matrix arrangement; and

the fixing assembly comprises a plurality of connecting posts and receiving members cooperating with the connecting posts, the fixing assembly is respectively provided on bottoms of the spring units and the bottom plate, and the bottom plate and at least some of the spring units are connected through the fixing assembly.

2. The elastic module having the bottom plate connecting structure according to claim 1, **characterized in that**, a spring unit is a pocket spring, the pocket spring comprises a spring, a top cap, a base, and a fabric bag wrapped around an outside of the spring and located between the top cap and the base, and a connecting post or a receiving member is provided on the base. 5
3. The elastic module having the bottom plate connecting structure according to claim 2, **characterized in that**, a height of the fabric bag is smaller than or equal to an original height of the spring, and the matrix arrangement of the spring units comprises a staggered manner or an aligned manner by arranging adjacent springs. 10
4. The elastic module having the bottom plate connecting structure according to claim 2 or 3, **characterized in that**, the base comprises an abutting ring extending upwardly, the abutting ring and a distal end of the base form a step, and the spring abuts the annular step. 20
5. The elastic module having the bottom plate connecting structure according to claim 1, **characterized in that**, the bottom plate is constructed by splicing units, a side of a splicing unit comprises a splicing structure, adjacent ones of the splicing units are connected through cooperation of the splicing structures. 25 30
6. The elastic module having the bottom plate connecting structure according to claim 5, **characterized in that**, the splicing structure has a transverse snap-fitting structure and a longitudinal snap-fitting structure, snap-fitting directions of the transverse snap-fitting structure and the longitudinal snap-fitting structure form an included angle, and adjacent two of the splicing units are connected through the transverse snap-fitting structure and the longitudinal snap-fitting structure. 35 40
7. The elastic module having the bottom plate connecting structure according to claim 5, **characterized in that**, the bottom plate further comprises a snap fastener, the snap fastener has at least two snap-fitting sub-members, and the splicing structure is a snap-fitting female member cooperating with the snap-fitting sub-members. 45 50
8. The elastic module having the bottom plate connecting structure according to claim 1, **characterized in that**, the spring units in the elastic assembly are connected to the bottom plate through the fixing assembly. 55
9. The elastic module having the bottom plate connecting structure according to claim 1, **characterized in that**, the fixing assembly is provided on bottoms of the spring units located at a periphery of the elastic assembly and on the bottom plate at positions corresponding to the spring units located at the periphery of the elastic assembly.
10. The elastic module having the bottom plate connecting structure according to claim 1, **characterized in that**, the fixing assembly is provided on a periphery of the bottom plate and on bottoms of the spring units at positions corresponding to the periphery of the bottom plate.
11. The elastic module having the bottom plate connecting structure according to claim 1, **characterized in that**, the bottom plate is a rigid plate.
12. An elastic pad, **characterized in that**, it comprises the elastic module having the bottom plate connecting structure according to any one of claims 1 to 11.

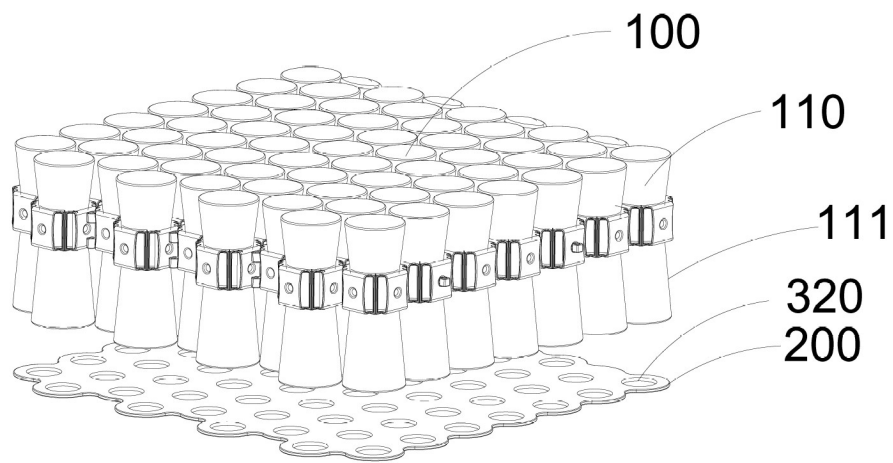


FIG.1

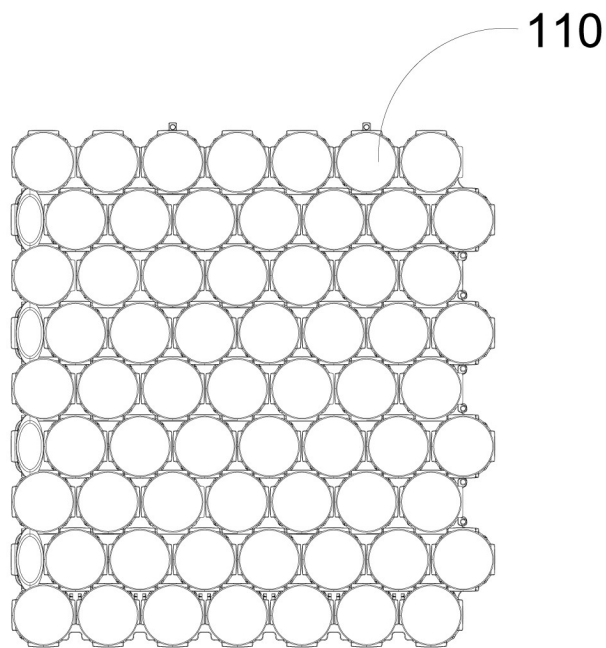


FIG.2

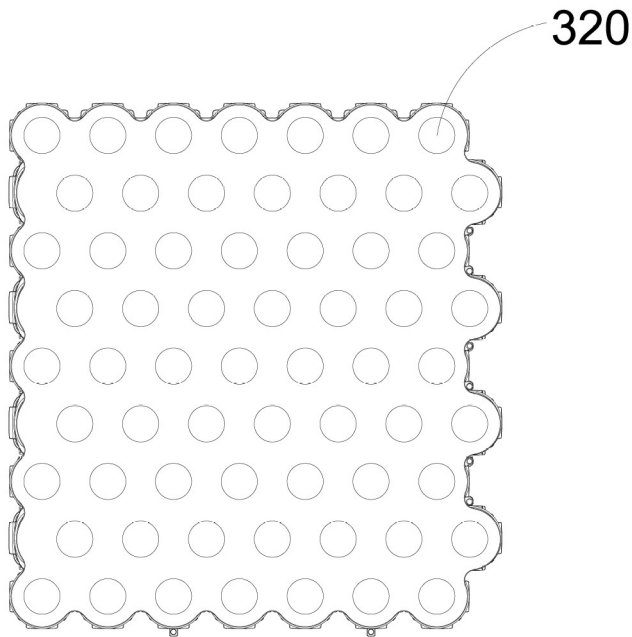


FIG.3

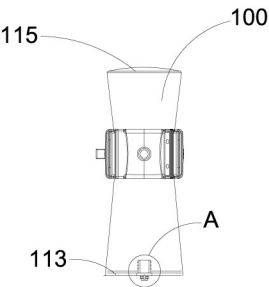


FIG.4

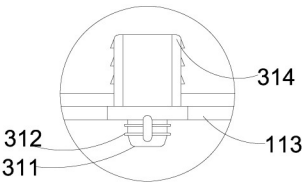


FIG.5

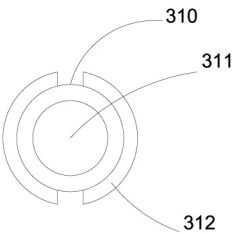


FIG.6

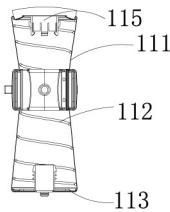


FIG.7

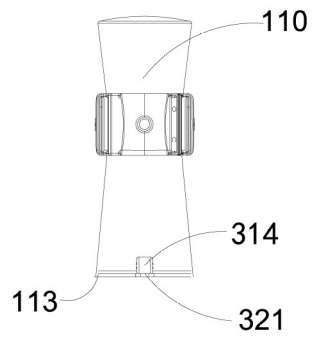


FIG. 8

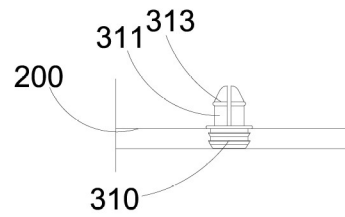


FIG. 9

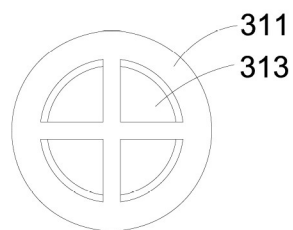


FIG. 10

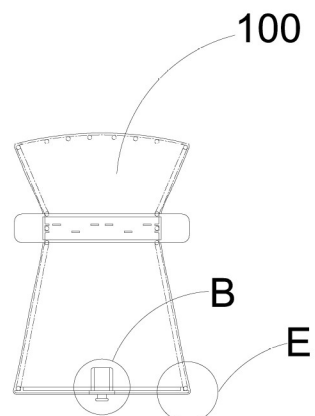


FIG. 11

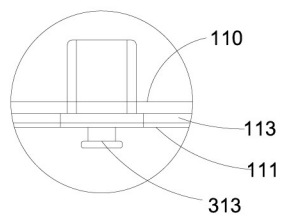


FIG. 12

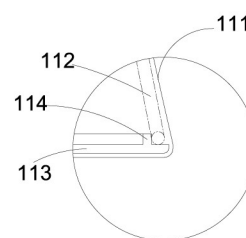


FIG. 13

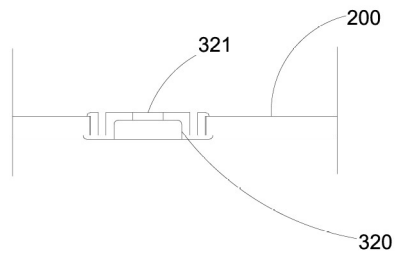


FIG. 14

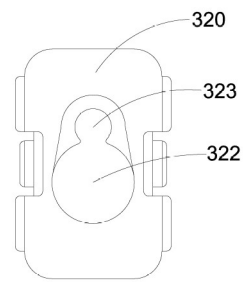


FIG. 15

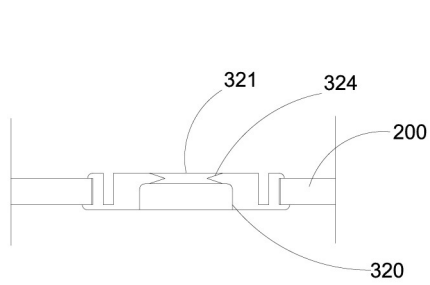


FIG. 16

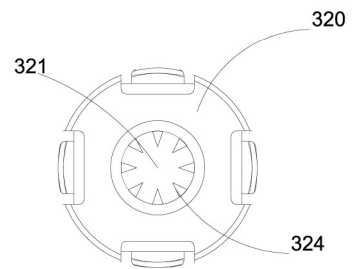


FIG. 17

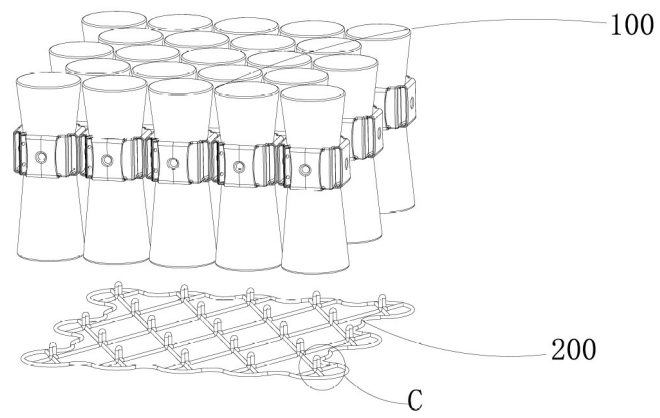


FIG. 18

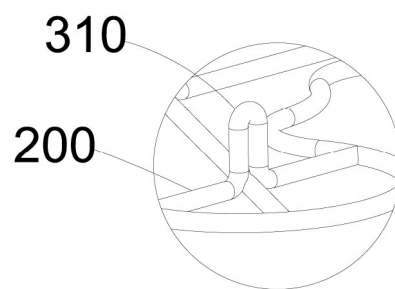


FIG. 19

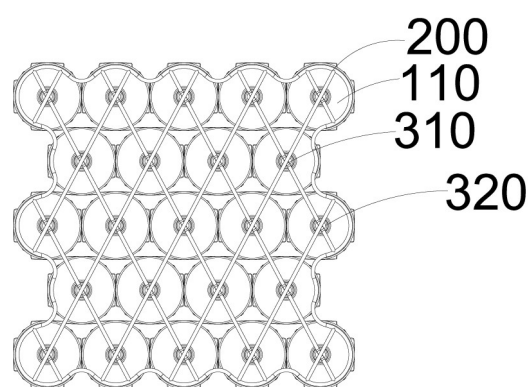


FIG. 20

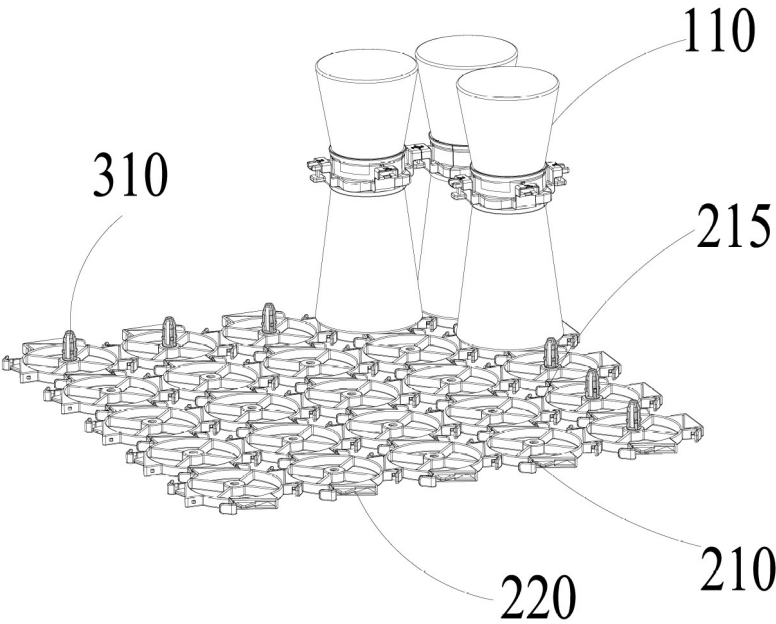


FIG. 21

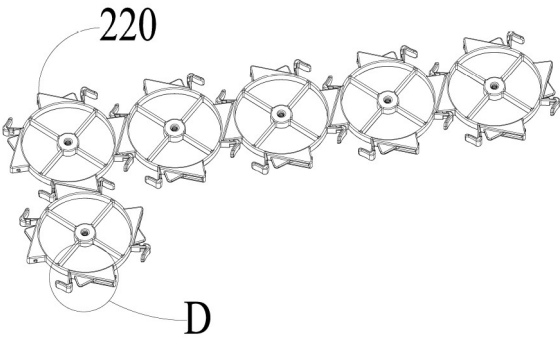


FIG. 22

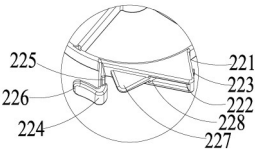


FIG. 23

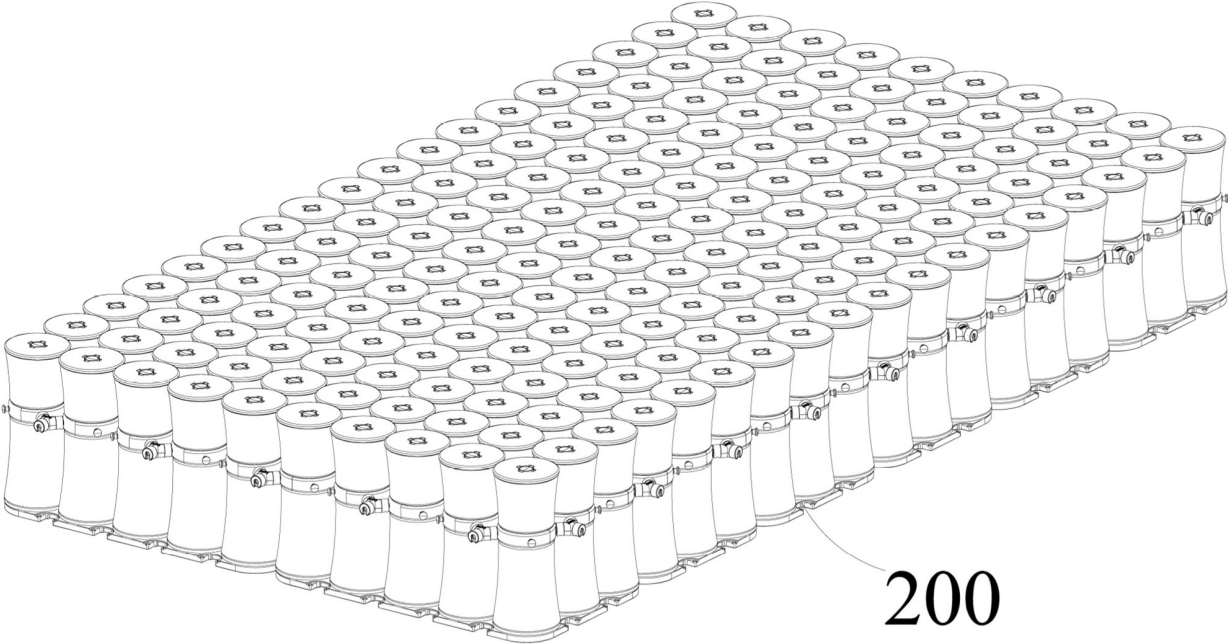


FIG.24

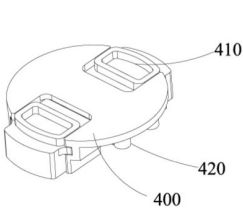


FIG.25

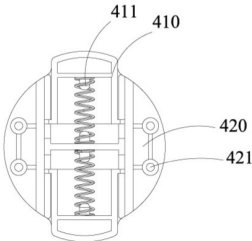


FIG.26

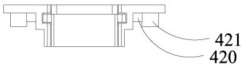


FIG.27

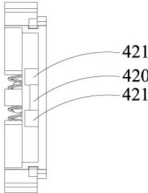


FIG.28

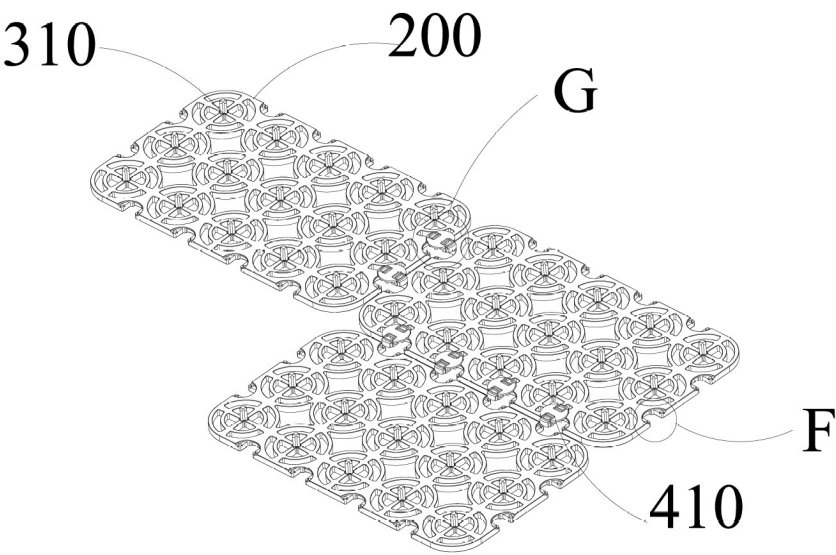


FIG. 29

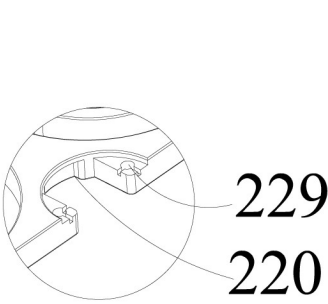


FIG. 30

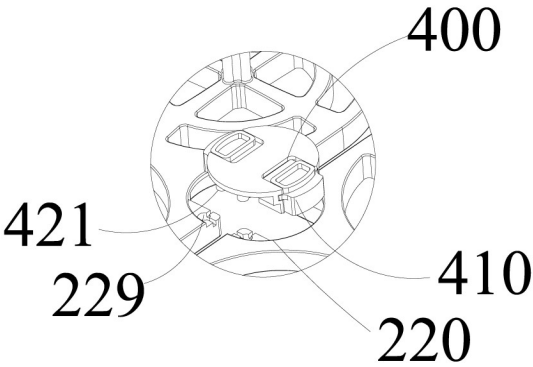


FIG. 31

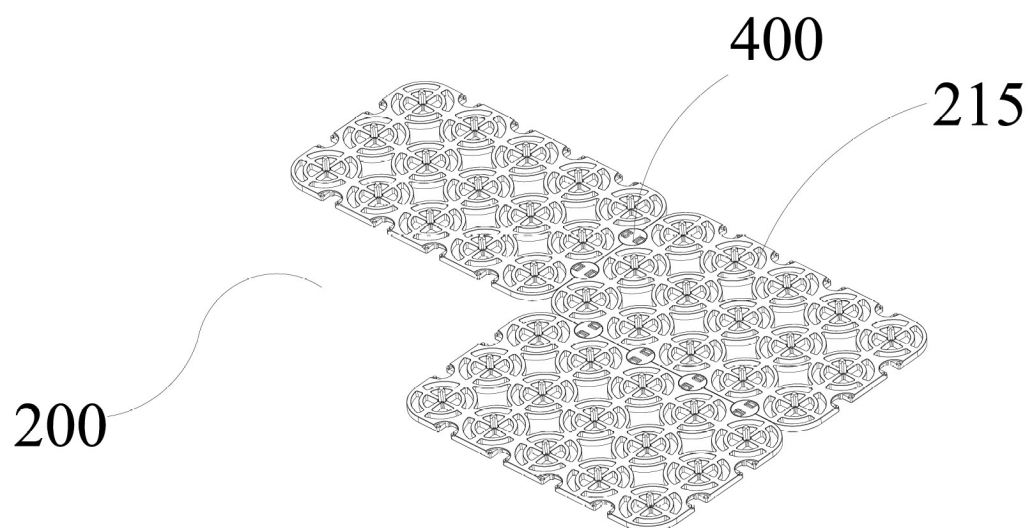


FIG. 32

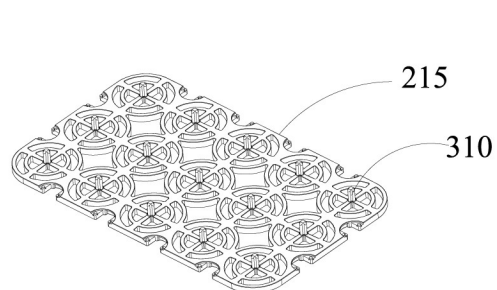


FIG. 33

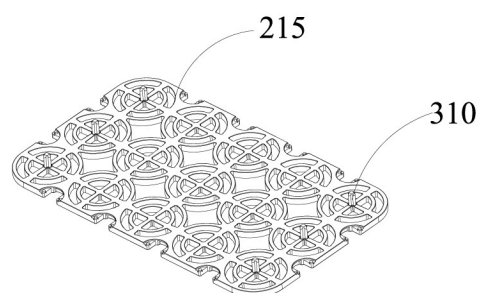


FIG. 34

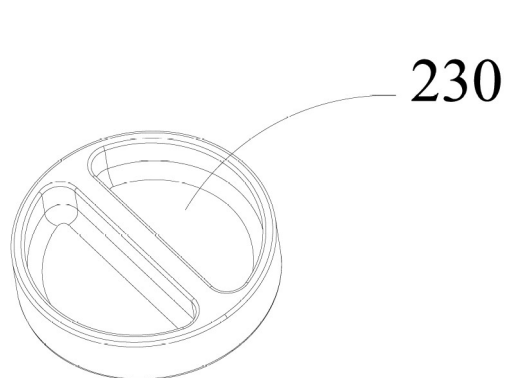


FIG.35

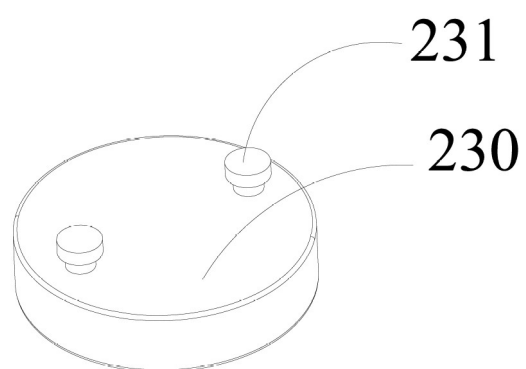


FIG.36

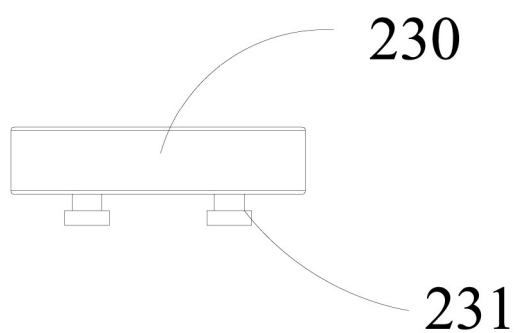


FIG.37

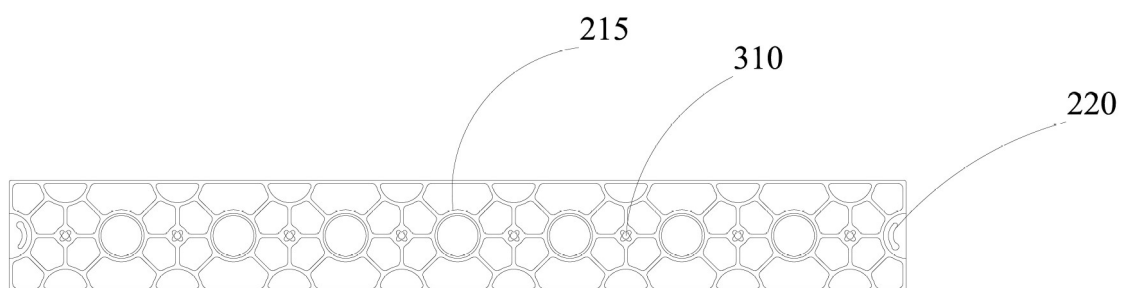


FIG.38

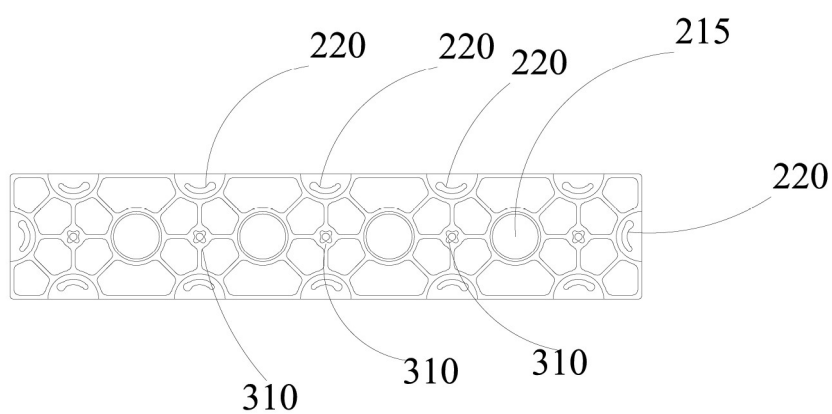


FIG.39

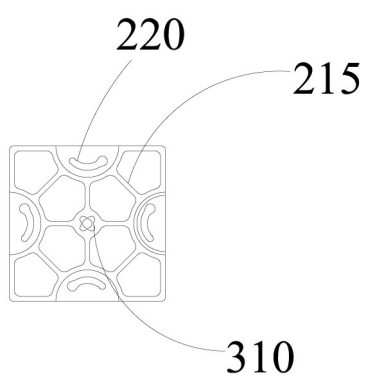


FIG.40

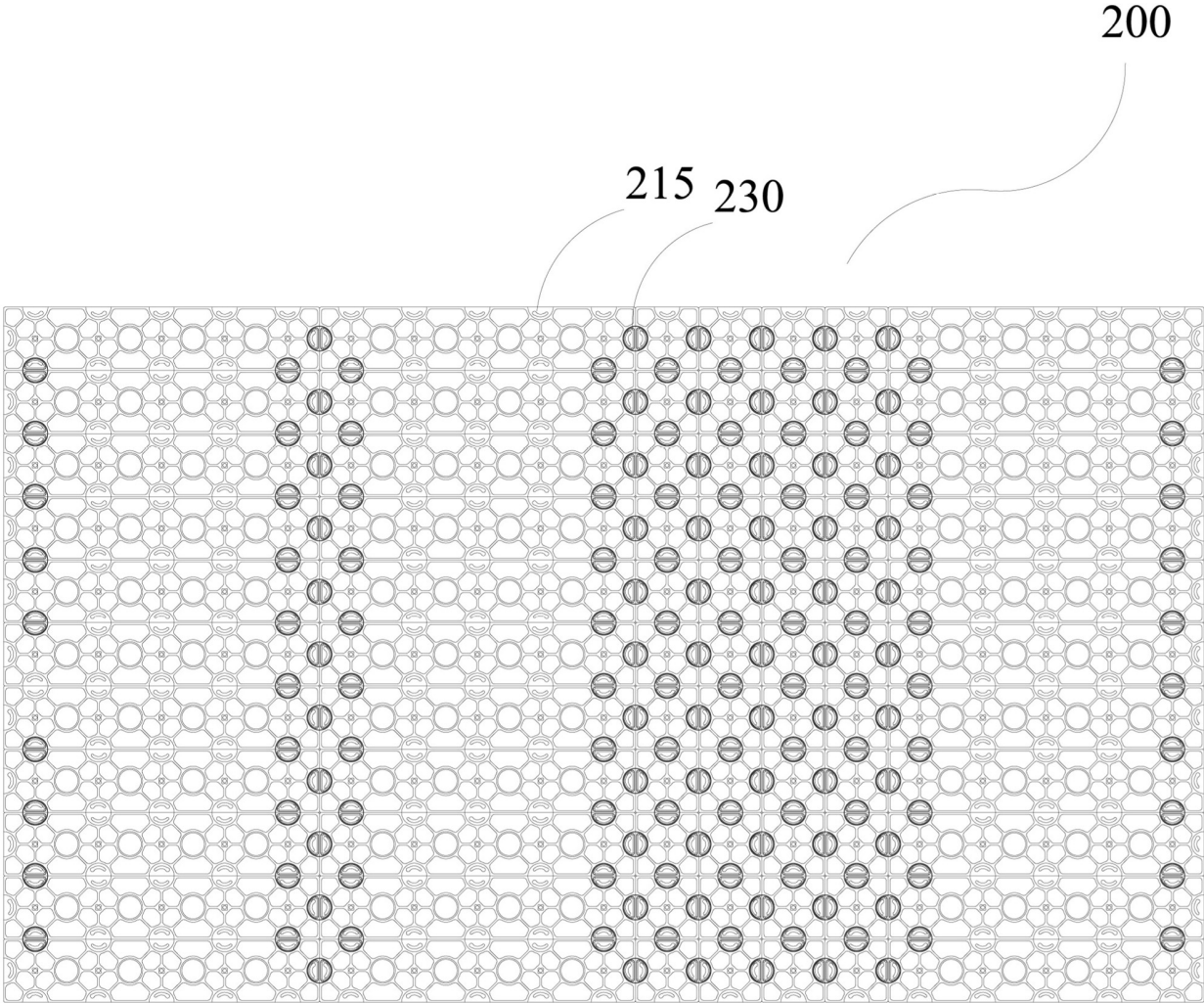


FIG.41

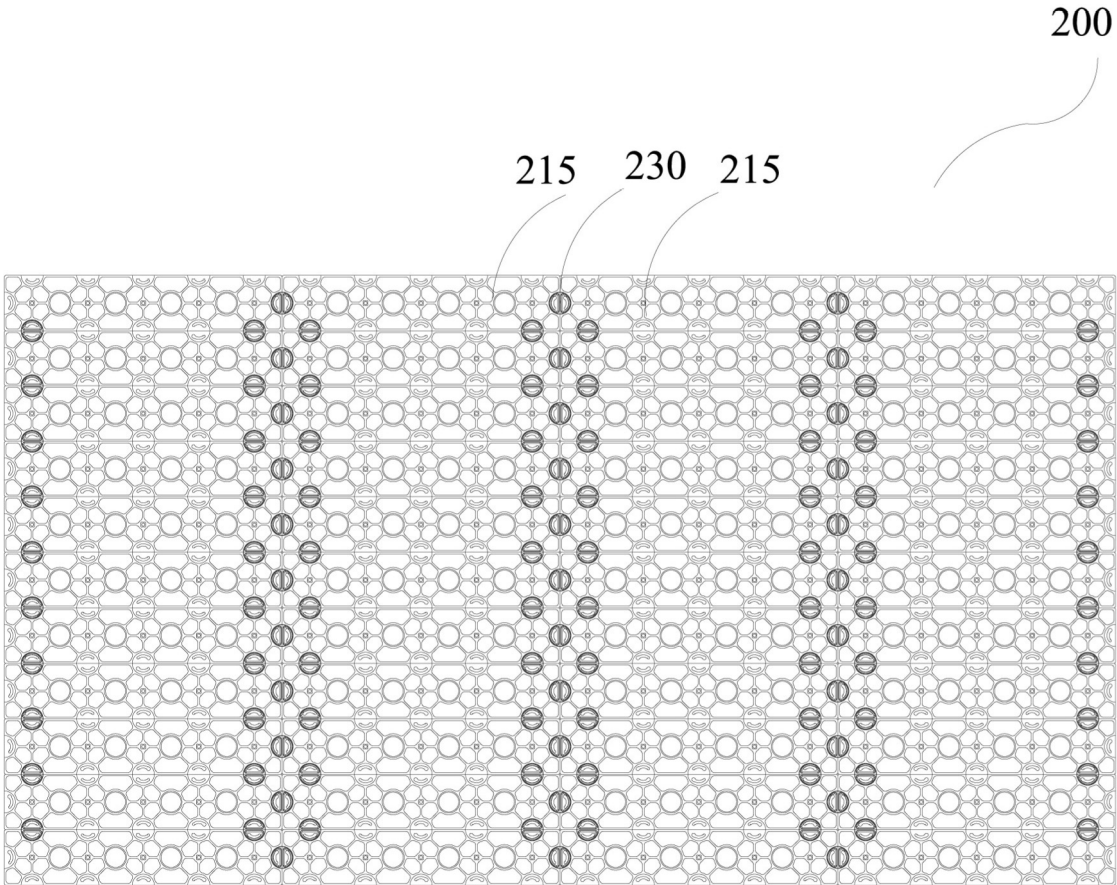


FIG.42

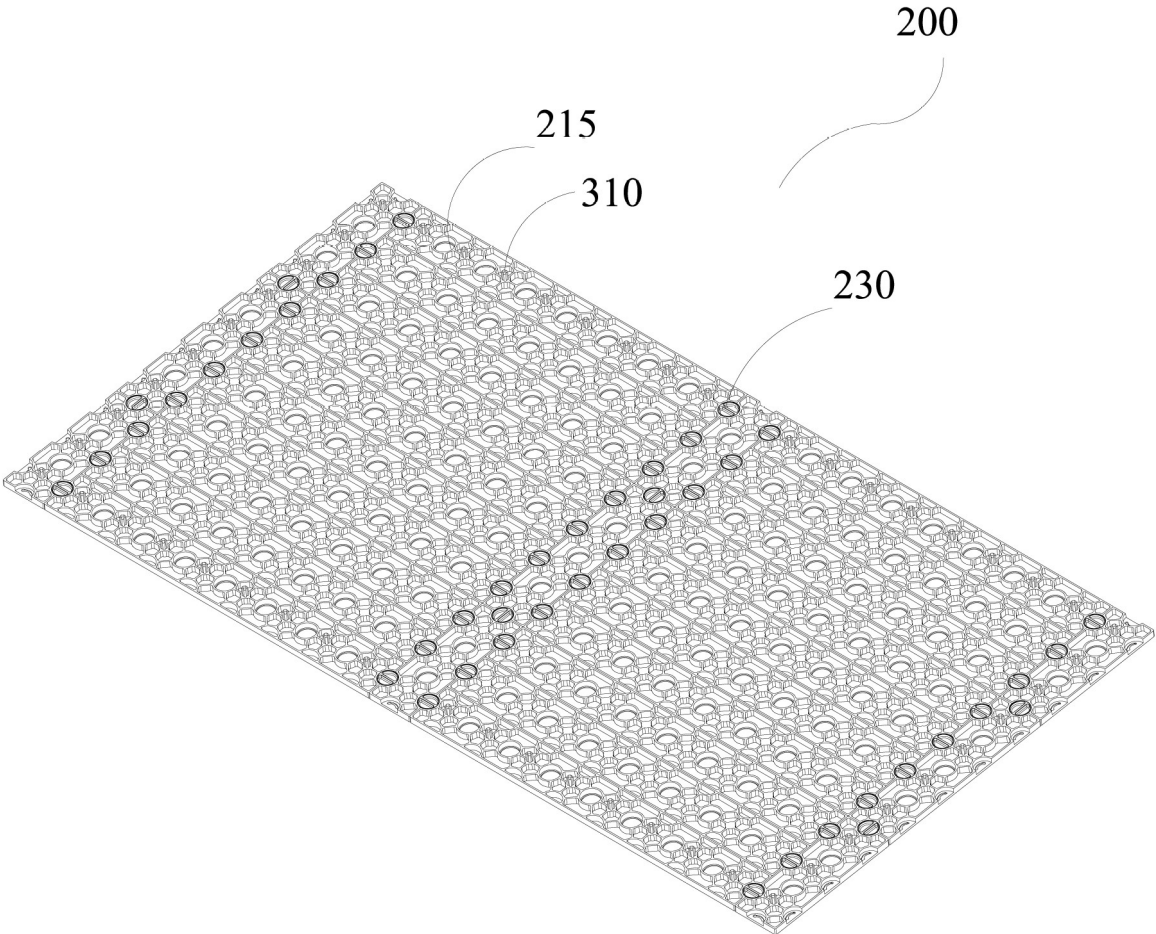


FIG.43

INTERNATIONAL SEARCH REPORT

International application No.

PCT/CN2024/138644

A. CLASSIFICATION OF SUBJECT MATTER

A47C27/06(2006.01)i; A47C27/07(2006.01)i; A47C23/053(2006.01)i

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC: A47C

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

CNTXT, DWPI, ENTXTC, WPABSC, CNKI: 弹性模块, 弹簧床, 弹性垫, 弹簧单元, 底座, 固定, 卡合, 卡扣, 拼接, elastic module, spring bed, elastic mat, spring unit, base, fix+, snap+, stitch+

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
PX	CN 221949541 U (NEW TEC INTEGRATION XIAMEN CO., LTD.) 05 November 2024 (2024-11-05) description, paragraphs [0049]-[0067], and figures 1-21	1-12
X	CN 220045390 U (NEW TEC INTEGRATION XIAMEN CO., LTD.) 21 November 2023 (2023-11-21) description, paragraphs [0032]-[0050], and figures 1-6	1-12
A	CN 115813150 A (NEW TEC INTEGRATION XIAMEN CO., LTD.) 21 March 2023 (2023-03-21) entire document	1-12
A	CN 115670171 A (NEW TEC INTEGRATION XIAMEN CO., LTD.) 03 February 2023 (2023-02-03) entire document	1-12
A	CN 112674540 A (NEW TEC INTEGRATION XIAMEN CO., LTD.) 20 April 2021 (2021-04-20) entire document	1-12

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"A" document defining the general state of the art which is not considered to be of particular relevance	"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
"D" document cited by the applicant in the international application	"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
"E" earlier application or patent but published on or after the international filing date	"&" document member of the same patent family
"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	

Date of the actual completion of the international search 16 January 2025	Date of mailing of the international search report 23 January 2025
Name and mailing address of the ISA/CN China National Intellectual Property Administration (ISA/CN) China No. 6, Xitucheng Road, Jimenqiao, Haidian District, Beijing 100088	Authorized officer Telephone No.

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN2024/138644

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C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	KR 20210124678 A (LG ELECTRONICS INC.) 15 October 2021 (2021-10-15) entire document	1-12
A	US 2016353899 A1 (XU HANZHUANG) 08 December 2016 (2016-12-08) entire document	1-12

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.

PCT/CN2024/138644

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CN	221949541	U	05 November 2024	None			
CN	220045390	U	21 November 2023	None			
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				GB	2619789	A	20 December 2023
				US	2023404280	A1	21 December 2023
				WO	2023241038	A1	21 December 2023
				DE	102023108621	A1	28 December 2023
				JP	2023184434	A	28 December 2023
				AU	2023201544	A1	18 January 2024
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REFERENCES CITED IN THE DESCRIPTION

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