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(54) **ADJUSTABLE MATTRESS STRUCTURE**

(57) An adjustable mattress structure comprises a mattress body in which there are a plurality of hollow bases, a plurality of elastic support units, a plurality of adjustable positioning boards and a plurality of spring positioning bodies. Each of the elastic support units consists of a first encapsulated elastomer and a second encapsulated elastomer. The first encapsulated elastomer depends on spring positioning bodies to be fixed on one of the hollow bases so that the second encapsulated elastomer extends inside the hollow base. Each of the adjustable positioning boards is fixed inside a hollow base and used to receive a second encapsulated elastomer; the adjustable positioning boards in the hollow bases are situated at distinct positions by which the adjustable positioning boards make the elastic support units generate distinct resilient bearing capacities for adjustable mattress firmness supporting a body curve.

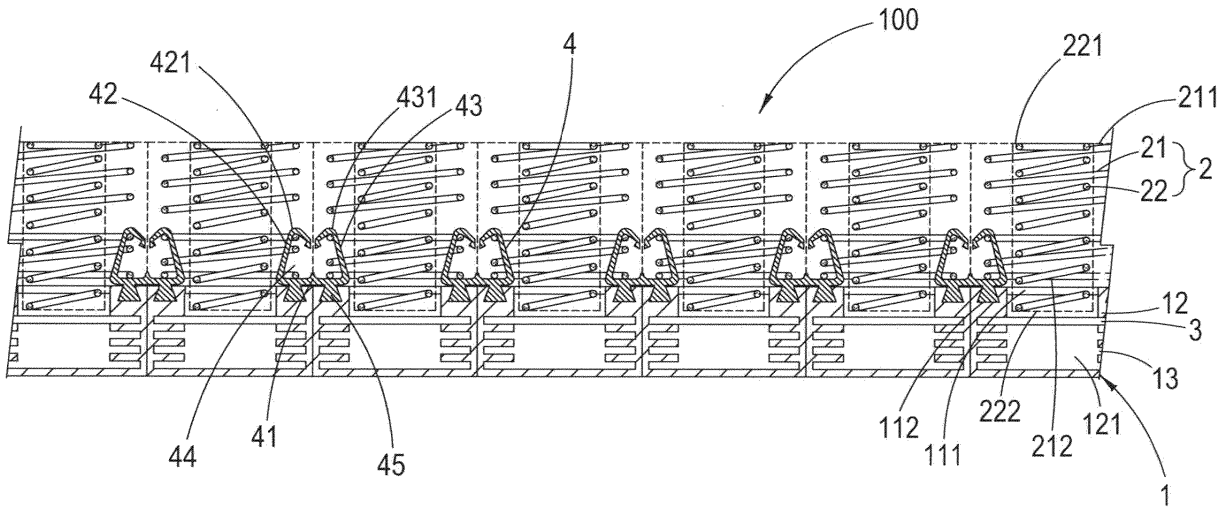


FIG.2

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Description

BACKGROUND OF THE INVENTION

1. Field of the Invention

[0001] The present disclosure relates to an adjustable mattress structure, particularly an mattress structure with an adjustable-firmness mattress body for supporting a user's body curve by means of a distance changed between an adjustable positioning board inside a hollow base and a second encapsulated elastomer.

2. Descriptions of the Related Art

[0002] A spring mattress available in the market comprises pads, a spring frame and a mattress encasement. The pads are stacked on the spring frame's top and bottom edges; the mattress encasement covering the pads and the spring frame is a package-like body with an opening. A spring mattress is developed after the spring frame along with the pads stacked on the spring frame's top and bottom edges are placed into the mattress encasement and the opening on the mattress encasement is seamed.

[0003] The spring frame in the above spring mattress comprises several barrel-shaped pocket springs, each of which is a tubular body made of non-woven fabric and including a spring internally. As spring units, all adjacent barrel-shaped pocket springs which are arranged lengthwise and widthwise for tubular bodies connected to one another are elastically compressed and deformed under stress applied on the spring frame upward and downward. As such, the spring frame which matches the body curve of a user lying down a spring mattress is elastically deformed.

[0004] The spring frame, however, is poorly adjusted because all spring units which refer to a user's body curve for elastic deformation perform identical elasticity rather than flexibly adjusted elasticity based on a user's sleeping preference or habit at a mattress surface. Thus, elastomers compressed inside a conventional spring mattress on which a user's weight is sustained do not support a user effectively.

[0005] The applicant of the present invention has submitted the China Patent Application No.201010259987 titled "Mattress Structure" (hereunder referred as "the quoted application") on August 23, 2010, which is technically characterized in: comprising a fixation board fixed within the mattress body, at least a first elastomer being installed on the fixation board and an elastomer accommodation hole being configured at the bottom end of the first elastomer; a second elastomer installed correspondingly to the elastomer accommodation hole on the movable board below the fixation board, and at least one set of lifting devices installed at the bottom of the movable board, such that, through such lifting devices, upon moving up the movable board towards the fixation board, the second elastomer on the movable board can move up through the elastomer accommodation hole so as to increase the elastic supportive force of the mattress; in addition, by means of the up/down movement of the second elastomer, it is possible to achieve the objective of elasticity adjustment in the mattress.

[0006] It can be appreciated that the aforementioned quoted application is essentially characterized in electrical adjustments, rather than manual adjustments, which differs from the present application with respect to the integral structure thereof; accordingly, to effectively reduce total costs, the applicant alternatively devoted relevant research and development efforts on spring beds featuring manual elasticity adjustments.

[0007] To overcome the above problem, a preferable solution in the present disclosure indicates a mattress structure is divided into several lengthwise components in which a distance between an adjustable positioning board and an encapsulated elastomer is adjusted so that a user's body curve is flexibly supported by elasticity at different positions on a mattress body.

SUMMARY OF THE INVENTION

[0008] The present disclosure describes an adjustable mattress structure based on a plurality of well-arranged hollow bases, each of which accommodates an adjustable positioning board at a distinct height for a relative distance between the adjustable positioning board and a second encapsulated elastomer and adjustable elasticity of elastic support units supporting a body curve.

[0009] The adjustable mattress structure having a mattress body according to the present invention comprises: a plurality of hollow bases arranged to constitute the length and the width of the mattress body, wherein each of the hollow bases includes at least a top surface and a front surface, with the top surface and the front surface both further having an opening penetrating to the interior of the hollow base, and a number of left-right corresponding slide seats are respectively installed from top to bottom on the two sidewalls of the interior in the hollow base; a plurality of elastic support units, with each of which including a first encapsulated elastomer and a second encapsulated elastomer, wherein the first encapsulated elastomer and the second encapsulated elastomer both have a top and a bottom, the second encapsulated elastomer is located inside the first encapsulated elastomer, and the bottom of the second encapsulated elastomer is allowed to extend beyond the bottom of the first encapsulated elastomer; in addition, the first encapsulated elastomer is arranged and fixed on the top surface of the hollow base such that the bottom of the second encapsulated elastomer enters into the opening on the top surface of the hollow base; and a plurality of adjustable positioning boards, each of which penetrates via the opening on the front surface of the hollow base and is fixed onto the slide seat on the two sides of the interior within the hollow base, such that each hollow base is equipped

with an adjustable positioning board placed under the bottom of the second encapsulated elastomer, and the height of the adjustable positioning board within each hollow base can be adjusted.

[0010] In an embodiment, the first encapsulated elastomer includes at least a spring wrapped by an encapsulation package and the second encapsulated elastomer includes at least a spring wrapped by an encapsulation package, such that the tops of the first encapsulated elastomer and the second encapsulated elastomer mutually adjoin thereby allowing the second encapsulated elastomer to suspend within the first encapsulated elastomer.

[0011] In an embodiment, the length of the second encapsulated elastomer is greater than which of the first encapsulated elastomer, the diameter of the second encapsulated elastomer is smaller than which of the first encapsulated elastomer, and, upon being installed inside the first encapsulated elastomer, the second encapsulated elastomer is kept at a certain distance from the first encapsulated elastomer.

[0012] In an embodiment, a spacer member is attached between two neighboring hollow bases thereby eliminating noises possibly caused by frictions between the two neighboring hollow bases.

[0013] In an embodiment, an elastic carrier can be integrated with the interior of the hollow base and whose two ends can be respectively fixed to the two opposite sides of the long sides in the hollow base, such that the elastic carrier is situated at the topmost end inside the hollow base and above the highest slide seat, and the elastic carrier is applied to receive the second encapsulated elastomer so that the elastic carrier can catch the second encapsulated elastomer when the second encapsulated elastomer falls thereby preventing the second encapsulated elastomer from directly falling onto the button surface of the hollow base and blocking the adjustable positioning board from completely sliding into the hollow base.

[0014] In an embodiment, a positioning slot is configured at the periphery of the opening in the top surface of the hollow base, and the positioning slot can be combined and positioned to the bottom of the first encapsulated elastomer thereby allowing the first encapsulated elastomer to be positioned at the periphery of the opening in the hollow base.

[0015] In an embodiment, a clamping member is installed at the periphery of the opening in the top surface of the hollow base, and the clamping member can be clasped to a coil near the bottom of the first encapsulated elastomer thereby allowing the first encapsulated elastomer to be fixedly positioned at the periphery of the opening in the hollow base.

[0016] The adjustable mattress structure having a mattress body according to the present invention comprises: a plurality of hollow bases arranged to constitute the length and the width of the mattress body, wherein each of the hollow bases includes at least a top surface and a front surface, with the top surface and the front surface both further having an opening penetrating to the interior of the hollow base, and a number of left-right corresponding slide seats are respectively installed from top to bottom on the two sidewalls of the interior of the hollow base, and a sliding groove is configured respectively at the two ends of the openings in the top surface; a plurality of elastic support units, with each of which including a first encapsulated elastomer and a second encapsulated elastomer, wherein the first encapsulated elastomer and the second encapsulated elastomer both have a top and a bottom, the second encapsulated elastomer is located inside the first encapsulated elastomer, and the bottom of the second encapsulated elastomer is allowed to extend beyond the bottom of the first encapsulated elastomer; in addition, the first encapsulated elastomer is arranged and placed on the top surface of the hollow base such that the bottom of the second encapsulated elastomer enters into an opening in the top surface of the hollow base; a spring positioning body having a locating part, and a first elastic fastener and a second elastic fastener extend from the two sides of the locating part, wherein the tops of the first elastic fastener and the second elastic fastener are respectively provided with a fastening block, a fastening space is formed between the first elastic fastener and the second elastic fastener, and two sliding parts extend from the bottom end of the locating part in the spring positioning body, thus that the two sliding parts of the spring positioning body respectively slide into the sliding grooves in the top surfaces of two adjacent hollow bases and are fixed to the two sides of the opening so that the two adjacent hollow bases are not separated from each other, and the fastening blocks of the first elastic fastener and the second elastic fastener are respectively clasped to one side of two adjacent first encapsulated elastomers such that the two adjacent first encapsulated elastomers are positioned inside the fastening space of the spring positioning body thereby allowing the first encapsulated elastomers to be securely fixed onto the top surface of the hollow base; and a plurality of adjustable positioning boards, each of which penetrates via the opening in the front surface of the hollow base and is fixed onto the slide seat on the two sides of the interior within the hollow base, such that each hollow base is equipped with an adjustable positioning board which is placed under the bottom of the second encapsulated elastomer, and the height of the adjustable positioning board within each hollow base can be adjusted.

[0017] In an embodiment, a spacer member extends downwards between the two sliding parts of the spring positioning body and is located between the two adjacent hollow bases in order to prevent noises caused by frictions between the two adjacent hollow bases.

[0018] In an embodiment, the sliding parts of the spring positioning bodies and the sliding grooves in the hollow bases are configured as mutually matchable dove-shaped grooves.

BRIEF DESCRIPTION OF THE DRAWINGS

[0019]

FIG. 1 is a perspective view of an adjustable mattress structure.
FIG. 2 is a sectional view illustrating partial components of an adjustable mattress structure.
FIG. 3 is a sectional view illustrating partial components of an adjustable mattress structure.
FIG. 4 is a schematic view illustrating a spacer member at a spring positioning body in an adjustable mattress structure.
FIG. 5 is a schematic view illustrating an elastic carrier integrated with an adjustable mattress structure.
FIG. 6 is a schematic view illustrating an adjustable mattress structure in another embodiment.
FIG. 7 is a schematic view illustrating an adjustable mattress structure in a further embodiment.
FIG. 8 is a schematic view illustrating an adjustable mattress structure in service.

Description of the reference numerals

[0020]

100 mattress body
1 hollow bases
11 top surface
111 openings
112 sliding grooves
113 positioning slot
114 clamping member
12 front surface
121 opening
13 slide seat
2 elastic support unit
21 first encapsulated elastomer
211 top
212 bottom
22 second encapsulated elastomer
221 top
222 bottom
3 adjustable positioning board
4 spring positioning bodies
41 locating part
42 first elastic fastener
421 fastening block
43 second elastic fastener
431 fastening block
44 fastening space
45 sliding parts
46 spacer member
5 mattress encasement
6 elastic carrier
7 user

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0021] The technical contents, features and effects related to an adjustable mattress structure are clearly presented in preferred embodiments and accompanying drawings.

[0022] Referring to FIGS. 1, 2 and 3 which illustrate partial components of an adjustable mattress structure. As shown in these figures, the adjustable mattress structure comprises a mattress body 100 in which there are a plurality of hollow bases 1, a plurality of elastic support units 2, a plurality of adjustable positioning boards 3 and a plurality of spring positioning bodies 4. The hollow bases 1 are arranged in place for development of the length and the width of the mattress body 100. Each of the hollow bases 1 has a top surface 11 on which openings 111 are designed and an front surface 12 on which an opening 121 is designed and is internally connected through the openings 111, 121. At both sides of an opening 111 on the top surface 11 are opened two sliding grooves 112; on both lateral walls inside the hollow base 1 are designed several slide seats 13 symmetrically arranged from top to bottom for development of a positioning mechanism by which an adjustable positioning board 3 is adjusted in height.As shown in FIGS. 1 to 3, an adjustable positioning board 3, which slips into slide seats 13 through an opening 121 on an front surface 12 of a hollow base 1, is coupled with and positioned in the slide seats 13 according to an optional height. As such, the adjustable positioning boards 3 in all hollow bases 1 are situated at same or distinct heights.

[0023] As shown in FIGS. 1 to 3, an elastic support unit 2 placed on the top surface 11 of a hollow base 1 comprises a first encapsulated elastomer 21 on which there are a top 211 as well as a bottom 212 and a second encapsulated elastomer 22 on which there are a top 221 as well as a bottom 222. The top 221 of the second encapsulated elastomer 22 joins the top 211 of the first encapsulated elastomer 21 so that the second encapsulated elastomer 22 is suspended and positioned in the first encapsulated elastomer 21 and allows the bottom 222 to extend from the bottom 212 of the first encapsulated elastomer 21.

[0024] Moreover, second encapsulated elastomers 22 suspended in first encapsulated elastomers 21 are an example in a preferred embodiment which does not limit claims herein. A design of second encapsulated elastomers 22 held in first encapsulated elastomers 21 should be incorporated in claims herein.

[0025] As shown in FIGS. 1 to 3, a first encapsulated elastomer 21 (a second encapsulated elastomer 22) illustrates at least a spring is wrapped in an encapsulated package. (In FIGS. 1 to 3, an encapsulated package made of non-woven fabric or other textile materials is indicated with dotted lines in which coil icons as a spring are wrapped.)

[0026] The spring positioning body 4 comprises a lo-

cating part 41 from which a first elastic fastener 42 and a second elastic fastener 43 at both sides extend: the first elastic fastener 42 and the second elastic fastener 43 at tops are provided with a fastening block 421 and a fastening block 431, respective; the first elastic fastener 42 and the second elastic fastener 43 develop a fastening space in between; the spring positioning body 4 comprises two sliding parts 45 extending from the bottom of the locating part 41. The spring positioning body 4 allows two sliding parts 45 to slip into the sliding grooves 112 on the top surfaces 11 of two adjacent hollow bases 1 and be positioned beside the openings 111 so that the two adjacent hollow bases 1 are not separated from each other. Moreover, the fastening block 421 on the first elastic fastener 42 (the fastening block 431 on the second elastic fastener 43) clasps one side of one in two adjacent first encapsulated elastomers 21 so that the two adjacent first encapsulated elastomers 21 are positioned in the fastening space 44 of the spring positioning body 4. As such, a first encapsulated elastomer 21 is stably fixed on the top surface 11 of a hollow base 1, a second encapsulated elastomers 22 extends into the hollow base 1 through an opening 111 on the top surface of the hollow base 1, and each elastic support unit 2 is positioned on the top surface 11 of a hollow base 1.

[0027] When the elastic support unit 2 is placed on the top surface 11 of the hollow base 1, the bottom 212 of the first encapsulated elastomer 21 contacts the top surface 11 of the hollow base 1 and the bottom 222 of the second encapsulated elastomer 22 penetrates the opening 111 on the top surface 11 of the hollow base 1 and is situated above or resisted by the adjustable positioning board 3.

[0028] As shown in FIG. 1, two adjacent hollow bases 1, which have been linked and positioned by sliding parts 45 of spring positioning bodies 4 when all elastic support units 2 are placed on top surfaces 11 of the hollow bases 1, combine each other. Based on the above mechanism, a mattress body 100 which is covered with a mattress encasement 5 can be developed finally.

[0029] Referring to FIG. 4 which illustrates a layer of spacer member 46 adheres to two adjacent hollow bases 1 or a layer of spacer member 46 between two sliding parts 45 of a spring positioning body 4 extends downward in order to avoid friction-induced noise between two adjacent hollow bases 1. Other structural components identical to those in FIG. 3 are not further explained.

[0030] Referring to FIG. 5. Different from FIGS. 1 to 3, FIG. 5 illustrates an elastic carrier 6 integrated with a hollow base 1 internally has two ends fixed at two opposite sides of the hollow base 1 lengthwise and is situated at the topmost end inside the hollow base 1 and above highest slide seats 13. The elastic carrier 6 is used to receive second encapsulated elastomers 22, which are moving downward and not sinking to the bottom of the hollow base 1 directly, and prevent an adjustable positioning board 3 from slipping into the hollow base 1 completely. Moreover, a second encapsulated elastomer 22 which is pressed downward under stress overcomes elasticity of the elastic carrier 6, keeps moving downward and resists an adjustable positioning board 3 without failure of any initial function. Other structural components identical to those in FIGS. 1 to 3 are not further explained.

[0031] Additionally, the sliding parts 45 of spring positioning bodies 4 correspondingly slide inside but do not directly deviate from the sliding grooves 112 which are designed as dove-shaped grooves on the hollow base 1.

[0032] Referring to FIG. 6. different from FIGS. 1 to 3, FIG. 6 illustrates no spring positioning body 4 but a positioning slot 113 around an opening 111 at the top surface 11 of a hollow base 1 directly. The bottom 212 of a first encapsulated elastomer 21 is directly coupled with and positioned in the positioning slot 113 so that the first encapsulated elastomer 21 is peripherally positioned at the opening 111 of the hollow base 1. Other structural components identical to those in FIGS. 1 to 3 are not further explained.

[0033] Referring to FIG. 7. different from FIGS. 1 to 3, FIG. 7 illustrates no spring positioning body 4 but a clamping member 114 around an opening 111 at the top surface 11 of a hollow base 1 directly. The clamping member 114 clasps coils of a first encapsulated elastomer 21 near the bottom 212 so that the first encapsulated elastomer 21 is peripherally fixed at the opening 111 of the hollow base 1. Other structural components identical to those in FIGS. 1 to 3 are not further explained.

[0034] As shown in FIG. 8, the first encapsulated elastomers 21 of the elastic support units 2 support weight of a user 7 who lies down the mattress body 100, making the second encapsulated elastomers 22 under stress move downward and resist the adjustable positioning boards 3. Because each of the adjustable positioning boards 3 inside one hollow base 1 is manually adjustable in height based on a body curve, distinct positions (areas) on the body of a user 7 correspond to adjustable positioning boards 3 inside hollow bases 1 at different heights: a second encapsulated elastomer 22 is less elastically compressed when stress is propagated from the top 221 of the second encapsulated elastomer 22 which has the bottom 222 close to the adjustable positioning board 3; a second encapsulated elastomer 2 performs different elasticity by which each elastic support unit 2 generates distinct elastic force when a distance between the bottom 222 of the second encapsulated elastomer 22 and an adjustable positioning board 3, which is moved downward and located at a distinct position in a hollow based 1, is increased. As such, a user 7 whose body curve is adjustably supported by the mattress body 100 based on mattress firmness will sleep comfortably.

[0035] The preferred embodiments hereof should not be taken as examples to restrict the scope of an adjustable mattress structure in the present disclosure. The equivalent changes and modifications made by the skilled person who familiarizes himself with the above technical features and embodiments without departing from the spirit and scope of the present disclosure should

be covered in claims of the patent specification.

Claims

1. An adjustable mattress structure having a mattress body comprises:

   a plurality of hollow bases (1) arranged to constitute the length and the width of the mattress body (100), wherein each of the hollow bases (1) includes at least a top surface (11) and a front surface (12), with the top surface (11) and the front surface (12) both further having an opening (111 - 121) penetrating to the interior of the hollow base 1, and a number of left-right corresponding slide seats (13) are respectively installed from top to bottom on the two sidewalls of the interior in the hollow base (1);
   a plurality of elastic support units (2), with each of which including a first encapsulated elastomer (21) and a second encapsulated elastomer (22), wherein the first encapsulated elastomer (21) and the second encapsulated elastomer (22) both have a top (211 - 221) and a bottom (212 - 222), the second encapsulated elastomer (22) is located inside the first encapsulated elastomer (21), and the bottom (222) of the second encapsulated elastomer (22) is allowed to extend beyond the bottom (212) of the first encapsulated elastomer (21); in addition, the first encapsulated elastomer (21) is arranged and fixed on the top surface 11 of the hollow base 1 such that the bottom (222) of the second encapsulated elastomer (22) enters into the opening (111) on the top surface (11) of the hollow base (1); and
   a plurality of adjustable positioning boards (3), each of which penetrates via the opening (121) on the front surface (12) of the hollow base (1) and is fixed onto the slide seat (13) on the two sides of the interior within the hollow base (1), such that each hollow base (1) is equipped with an adjustable positioning board (3) placed under the bottom (222) of the second encapsulated elastomer (22), and the height of the adjustable positioning board (3) within each hollow base (1) can be adjusted.

2. The adjustable mattress structure according to Claim 1, wherein the first encapsulated elastomer (21) includes at least a spring wrapped by an encapsulation package and the second encapsulated elastomer (22) includes at least a spring wrapped by an encapsulation package, such that the tops (211 - 221) of the first encapsulated elastomer (21) and the second encapsulated elastomer (22) mutually adjoin thereby allowing the second encapsulated elastomer (22) to suspend within the first encapsulated elastomer (21).

3. The adjustable mattress structure according to Claim 1, wherein the length of the second encapsulated elastomer (22) is greater than which of the first encapsulated elastomer (21), the diameter of the second encapsulated elastomer (22) is smaller than which of the first encapsulated elastomer (21), and, upon being installed inside the first encapsulated elastomer (21), the second encapsulated elastomer (22) is kept at a certain distance from the first encapsulated elastomer (21).

4. The adjustable mattress structure according to Claim 1, wherein a spacer member (46) is attached between two neighboring hollow bases (1) thereby eliminating noises possibly caused by frictions between the two neighboring hollow bases (1).

5. The adjustable mattress structure according to Claim 1, wherein an elastic carrier (6) can be integrated with the interior of the hollow base 1 and whose two ends can be respectively fixed to the two opposite sides of the long sides in the hollow base (1), such that the elastic carrier is situated at the topmost end inside the hollow base 1 and above the highest slide seat (13), and the elastic carrier (6) is applied to receive the second encapsulated elastomer (22) so that the elastic carrier (6) can catch the second encapsulated elastomer (22) when the second encapsulated elastomer (22) falls thereby preventing the second encapsulated elastomer (22) from directly falling onto the button surface of the hollow base (1) and blocking the adjustable positioning board (3) from completely sliding into the hollow base (1).

6. The adjustable mattress structure according to Claim 1, wherein a positioning slot (113) is configured at the periphery of the opening (111) in the top surface (11) of the hollow base (1), and the positioning slot (113) can be combined and positioned to the bottom (212) of the first encapsulated elastomer (21) thereby allowing the first encapsulated elastomer (21) to be positioned at the periphery of the opening (111) in the hollow base (1).

7. The adjustable mattress structure according to Claim 1, wherein a clamping member (114) is installed at the periphery of the opening (111) in the top surface (11) of the hollow base (1), and the clamping member (114) can be clasped to a coil near the bottom (212) of the first encapsulated elastomer (21) thereby allowing the first encapsulated elastomer (21) to be fixedly positioned at the periphery of the opening (111) in the hollow base (1).

8. An adjustable mattress structure having a mattress body comprises:

a plurality of hollow bases (1) arranged to constitute the length and the width of the mattress body (100), wherein each of the hollow bases (1) includes at least a top surface (11) and a front surface (12), with the top surface (11) and the front surface (12) both further having an opening (111 - 121) penetrating to the interior of the hollow base (1), and a number of left-right corresponding slide seats (13) are respectively installed from top to bottom on the two sidewalls of the interior of the hollow base (1), and a sliding groove (112) is configured respectively at the two ends of the openings (111) in the top surface (11);

a plurality of elastic support units (2), with each of which including a first encapsulated elastomer (21) and a second encapsulated elastomer (22), wherein the first encapsulated elastomer (21) and the second encapsulated elastomer (22) both have a top (211 - 221) and a bottom (212 - 222), the second encapsulated elastomer (22) is located inside the first encapsulated elastomer (21), and the bottom (222) of the second encapsulated elastomer (22) is allowed to extend beyond the bottom (212) of the first encapsulated elastomer (22); in addition, the first encapsulated elastomer (21) is arranged and placed on the top surface (11) of the hollow base (1) such that the bottom (222) of the second encapsulated elastomer (22) enters into an opening (111) in the top surface (11) of the hollow base (1);

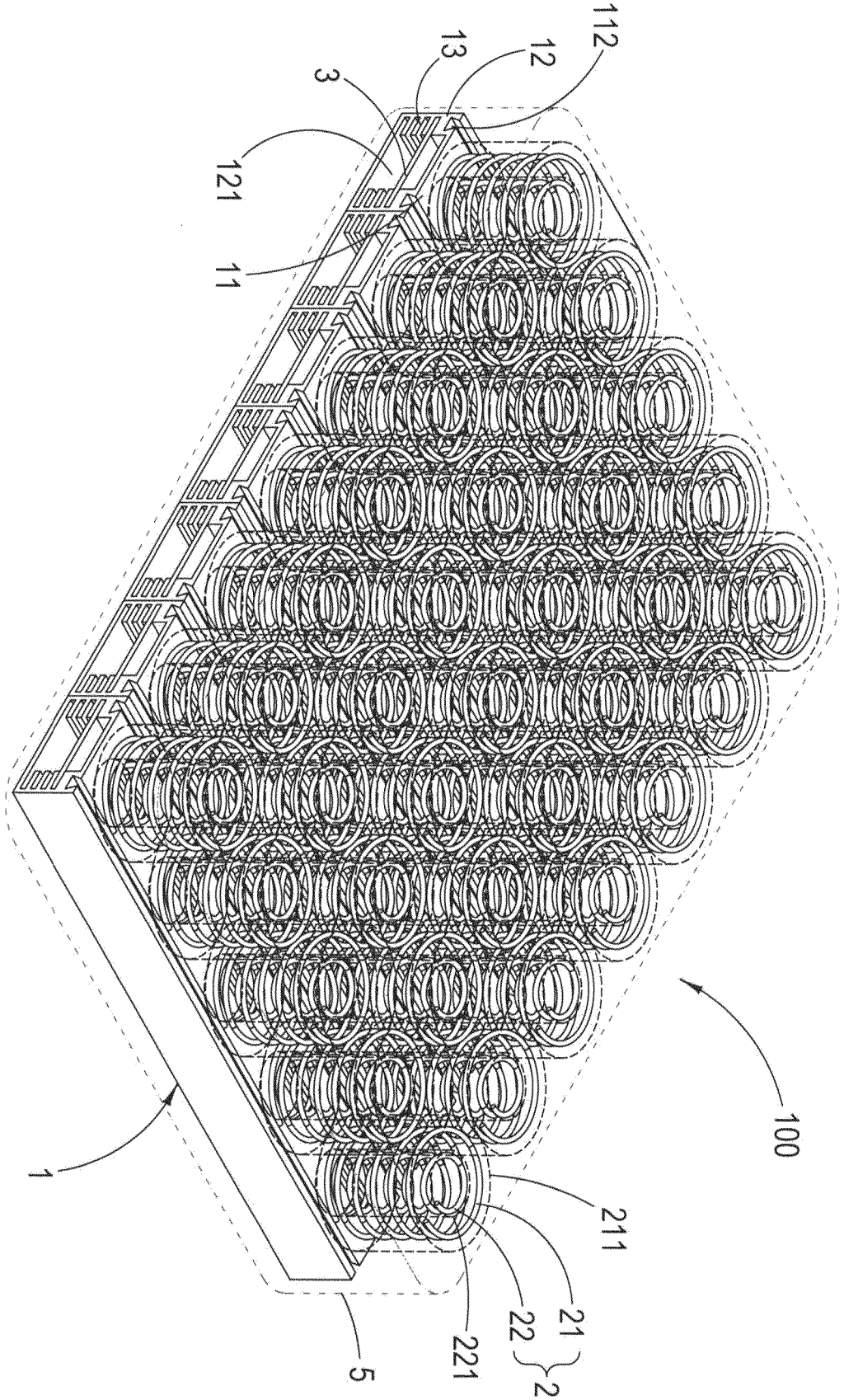
a spring positioning body (4) having a locating part (41), and a first elastic fastener (42) and a second elastic fastener (43) extend from the two sides of the locating part (41), wherein the tops of the first elastic fastener (42) and the second elastic fastener (43) are respectively provided with a fastening block (421 - 431), a fastening space is formed between the first elastic fastener (42) and the second elastic fastener (43), and two sliding parts (45) extend from the bottom end of the locating part in the spring positioning body (4), thus that the two sliding parts (45) of the spring positioning body (4) respectively slide into the sliding grooves (112) in the top surfaces (11) of two adjacent hollow bases (1) and are fixed to the two sides of the opening (111) so that the two adjacent hollow bases 1 are not separated from each other, and the fastening blocks (421, 431) of the first elastic fastener (42) and the second elastic fastener (43) are respectively clasped to one side of two adjacent first encapsulated elastomers (21) such that the two adjacent first encapsulated elastomers (21) are positioned inside the fastening space of the spring positioning body (4) thereby allowing the first encapsulated elastomers (21) to be securely fixed onto the top surface (11) of the hollow base (1); and

a plurality of adjustable positioning boards (3), each of which penetrates via the opening (121) in the front surface (12) of the hollow base (1) and is fixed onto the slide seat (13) on the two sides of the interior within the hollow base (1), such that each hollow base (1) is equipped with an adjustable positioning board (3) which is placed under the bottom (222) of the second encapsulated elastomer (22), and the height of the adjustable positioning board (3) within each hollow base (1) can be adjusted.

9. The adjustable mattress structure according to Claim 8, wherein a spacer member (46) extends downwards between the two sliding parts (45) of the spring positioning body (4) and is located between the two adjacent hollow bases (1) in order to prevent noises caused by frictions between the two adjacent hollow bases (1).

10. The adjustable mattress structure according to Claim 8, wherein the sliding parts (45) of the spring positioning bodies (4) and the sliding grooves (112) in the hollow bases (1) are configured as mutually matchable dove-shaped grooves.

FIG. 1



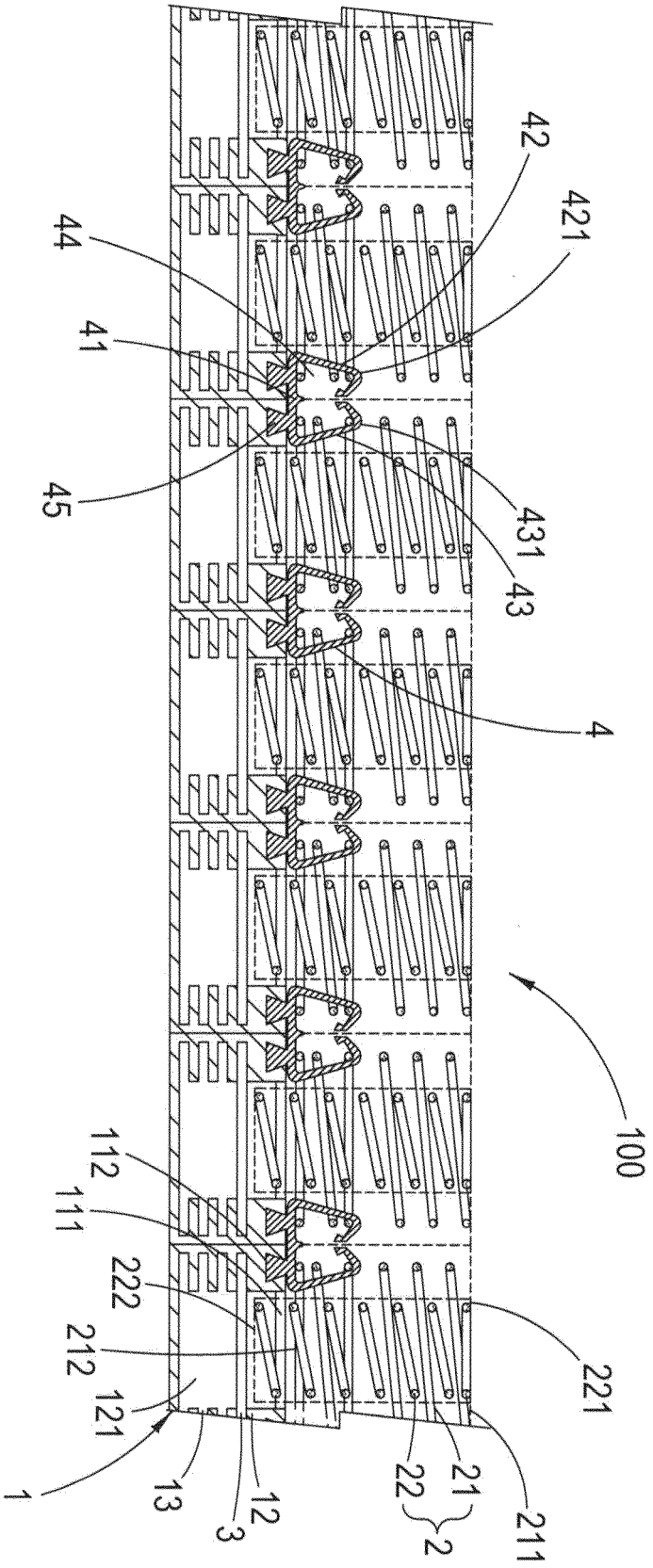

42
421
44
41
45
431
43
4
100
112
111
222
212
121
1
13
12
3
22
21
2
211
221

FIG.2

FIG. 3

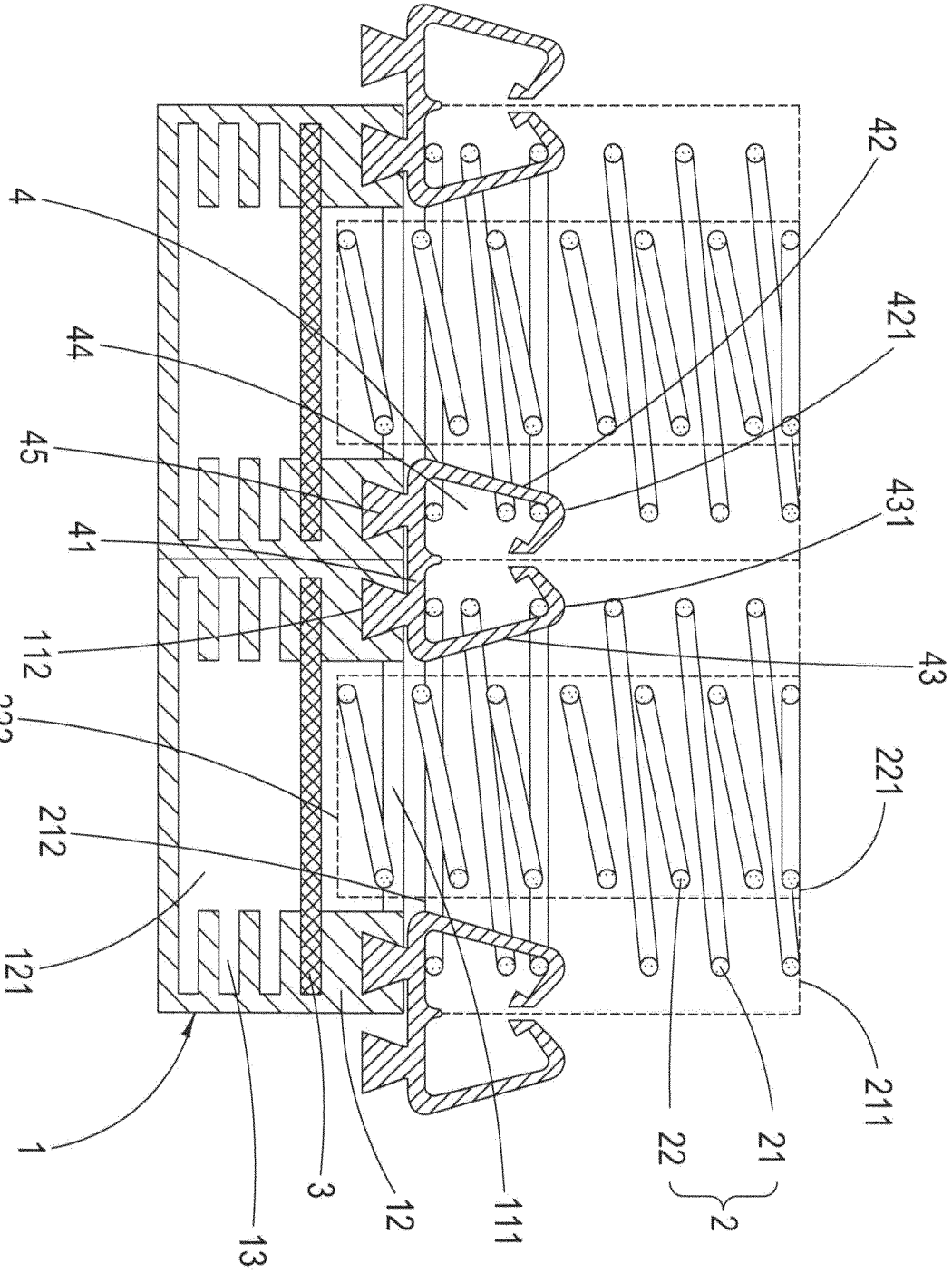
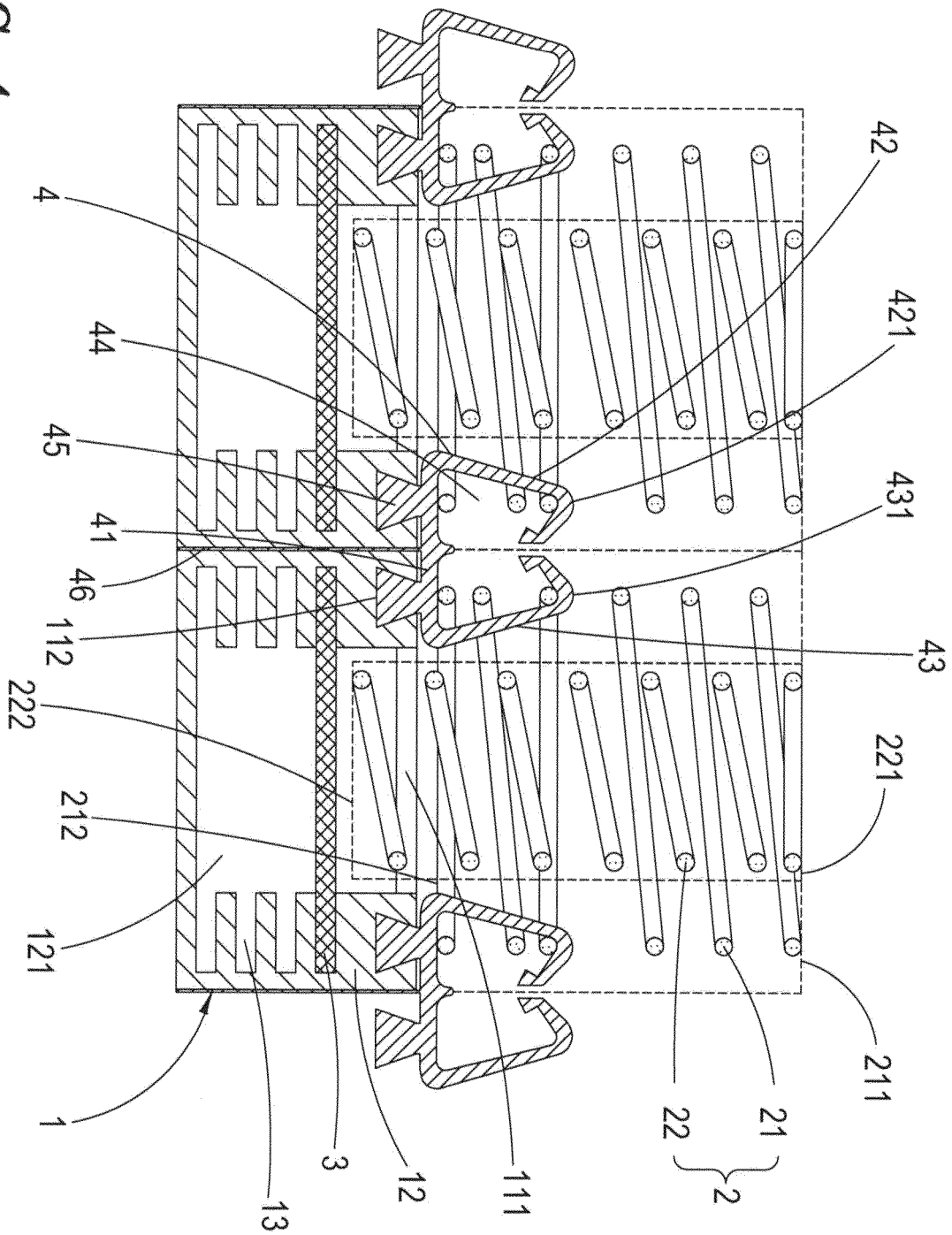


FIG.4


42
4
421
44
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431
41
46
112
43
222
221
212
121
211
1
13
3
12
111
22
21
2

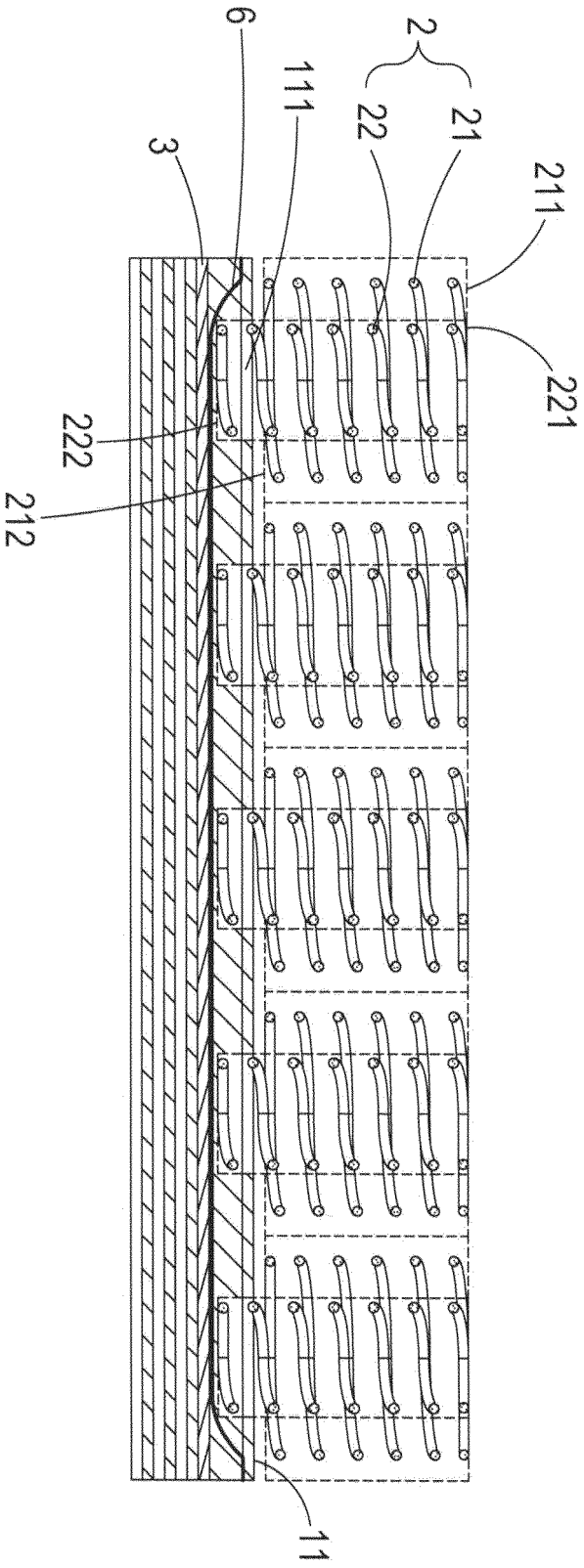


FIG.5

FIG.6

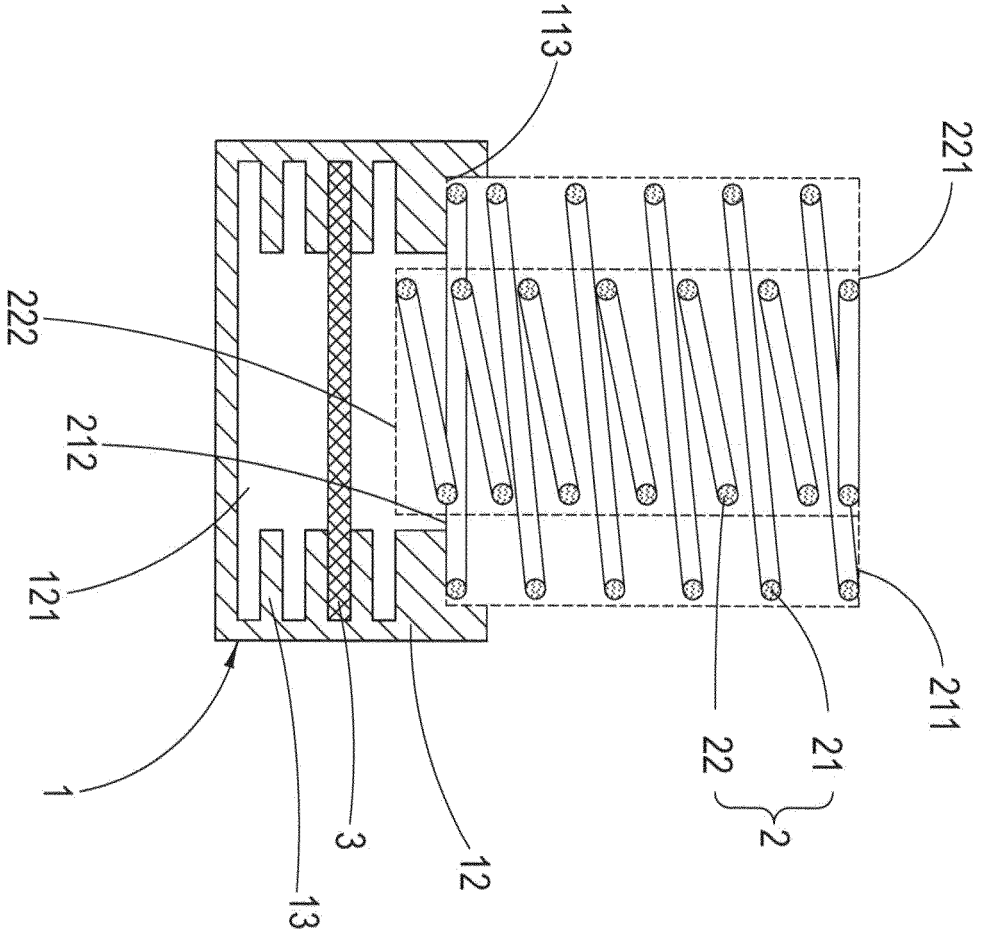
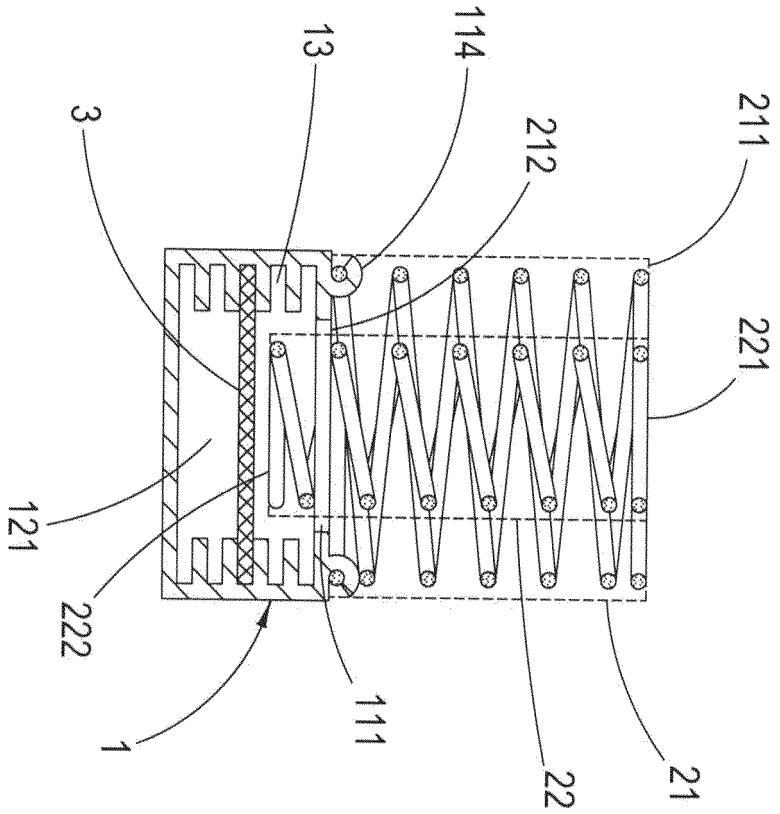


FIG. 7



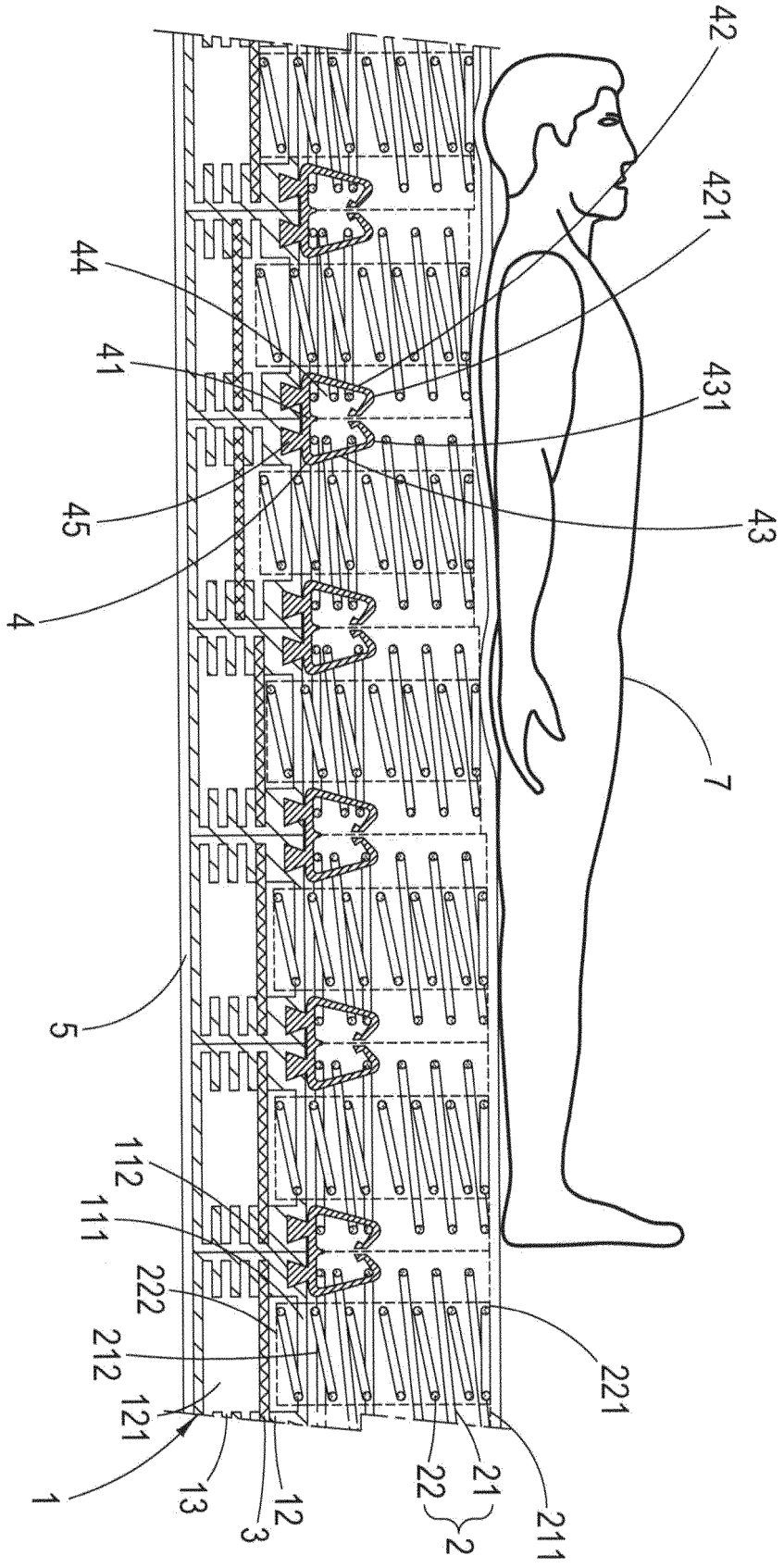

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FIG. 8

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN2015/080567

A. CLASSIFICATION OF SUBJECT MATTER

A47C 27/06 (2006.01) i; A47C 27/07 (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; B66F

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

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

CNABS, CNTXT, VEN, TWABS, CNKI: rise and fall, hard, mattress, mattess, spring, elastomer, elastic, adjust, regulate, lift, height, rigidity

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
E	CN 204654363 U (XU, Hanzhong), 23 September 2015 (23.09.2015), description, paragraphs [0059]-[0071], and figures 1-8	1-10
A	CN 102370367 A (XU, Hanzhong), 14 March 2012 (14.03.2012), description, paragraphs [0025]-[0026], and figures 1-3	1-10
A	CN 101574210 A (ZOU, Hai), 11 November 2009 (11.11.2009), the whole document	1-10
A	CN 101548833 A (CHENG, Xiaojun), 07 October 2009 (07.10.2009), the whole document	1-10
A	CN 201393782 Y (SUZHOU INDUSTRIAL PARK MANDISHIOU MATTRESS CO., LTD.), 03 February 2010 (03.02.2010), the whole document	1-10
A	CN 103429119 A (XU, Hanzhong), 04 December 2013 (04.12.2013), the whole document	1-10
A	DE 202005011214 U1 (SPIROPLEX GMBH), 16 February 2006 (16.02.2006), the whole document	1-10

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

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

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"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

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"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
26 February 2016 (26.02.2016)	**10 March 2016 (10.03.2016)**
Name and mailing address of the ISA/CN: State Intellectual Property Office of the P. R. China No. 6, Xitucheng Road, Jimenqiao Haidian District, Beijing 100088, China Facsimile No.: (86-10) 62019451	Authorized officer **WU, Juan** Telephone No.: (86-10) **62084090**

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN2015/080567

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	NL 8303827 A (EBBINK, T.P.), 03 June 1985 (03.06.1985), the whole document	1-10

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INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/CN2015/080567

Patent Documents referred in the Report	Publication Date	Patent Family	Publication Date
CN 204654363 U	23 September 2015	None	
CN 102370367 A	14 March 2012	CN 102370367 B	10 September 2014
CN 101574210 A	11 November 2009	CN 101574210 B	15 August 2012
CN 101548833 A	07 October 2009	None	
CN 201393782 Y	03 February 2010	None	
CN 103429119 A	04 December 2013	TW 201236608 A	16 September 2012
		CN 103429119 B	17 June 2015
		TW I423777 B	21 January 2014
		WO 2012122717 A1	20 September 2012
DE 202005011214 U1	16 February 2006	EP 1904820 A1	02 April 2008
		WO 2007009586 A1	25 January 2007
NL 8303827 A	03 June 1985	NL 189797 C	02 August 1993
		NL 189797 B	01 March 1993

Form PCT/ISA/210 (patent family annex) (July 2009)

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- CN 201010259987 **[0005]**