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(71) Applicant: **Nautilus NFC Co., Ltd.**
Taipei City (TW)

(72) Inventor: **WU, Chun-Yin**
Dongguan City, Guangdong (CN)

(74) Representative: **Pallini Gervasi, Diego et al**
Notarbartolo & Gervasi GmbH
Bavariaring 21
80336 Munich (DE)

(54) **PIVOTAL COMBINATION PAVEMENT**

(57) A combination pavement (10) has multiple pavement units (11) and at least one connection element (12). Each pavement unit (11) has a board body (111), two first through holes (112), and two openings (114). The board body (111) has two ends along a first direction. The first through holes (112) are defined through the board body (111) along a second direction. The openings (114) are defined respectively in the two ends of the board

body (111) and communicate respectively with the first through holes (112). Each connection element (12) has two pivotal segments (121) and a connection segment (122). The pivotal segments (121) are respectively mounted rotatably in the first through holes (112) in adjacent two of the pavement units (11). The connection segment (122) is connected between the pivotal segments (121) and is held in corresponding openings (114).

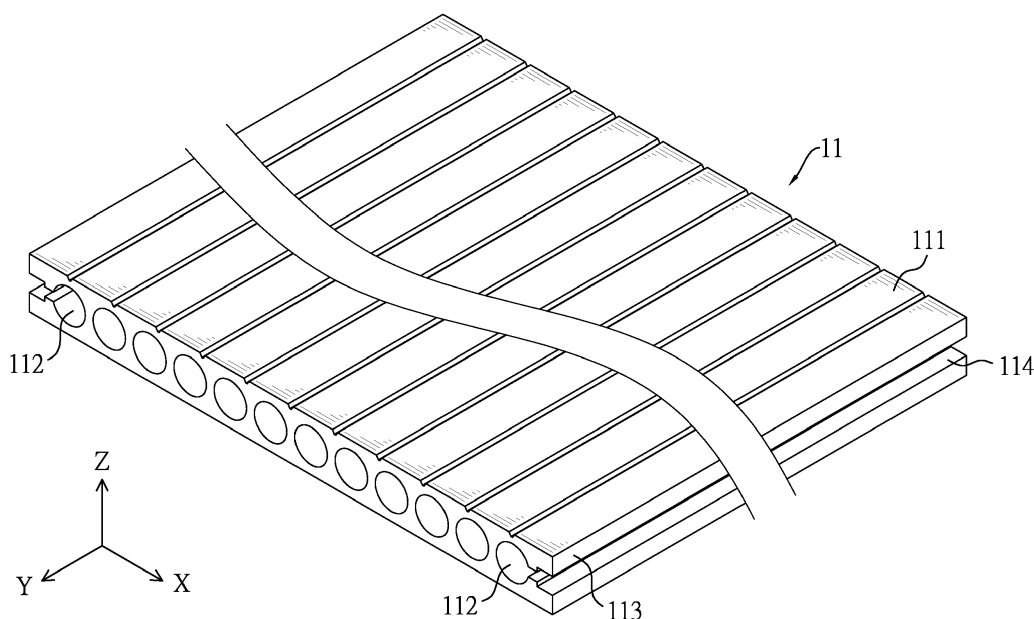


FIG. 1

Description

1. Field of the Invention

[0001] The present invention relates to a combination pavement, and more particularly to a pivotal combination pavement.

2. Description of Related Art

[0002] A combination pavement is paved on the ground or a lawn to allow pedestrians to walk on the combination pavement without stepping on the lawn or the muddy ground. With reference to Figs. 10 and 11, a conventional combination pavement comprises multiple pavement units 30 combined with each other. Each pavement unit 30 has a rectangular board body. The board body has at least one engaging protrusion 301 and at least one engaging recess 302 formed respectively on the sides of the board body. With the engagement between the engaging protrusions 301 and the engaging recesses 302 in the board bodies, the pavement units 30 are combined with each other to form a pavement.

[0003] However, in general, the ground or the lawn is not smooth, and the combination pavement has flat surfaces. Therefore, when the conventional combination pavement is paved on the ground or the lawn, gaps will be formed between the combination pavement and the ground or the lawn because the ground or lawn is not smooth. When a pedestrian steps on the pavement at a position below which a gap is formed, the pedestrian easily falls down.

[0004] To overcome the shortcomings, the present invention tends to provide a pivotal combination pavement to mitigate or obviate the aforementioned problems.

[0005] The main objective of the invention is to provide a pivotal combination pavement that can be smoothly paved on the ground or a lawn to prevent gaps from generating between the pavement and the ground or the lawn.

[0006] The combination pavement has multiple pavement units and at least one connection element. Each pavement unit has a board body, two first through holes, and two openings. The board body has two ends along a first direction. The first through holes are defined through the board body along a second direction that is perpendicular to the first direction and are adjacent respectively to the two ends of the board body. The openings are defined respectively in the two ends of the board body, extend along the second direction, and communicate respectively with the first through holes. Each one of the at least one connection element is connected between adjacent two of the pavement units and has two pivotal segments and a connection segment. The pivotal segments are respectively mounted rotatably in one of the first through holes in one of the adjacent two of the pavement units and a corresponding one of the first through holes in the other one of the adjacent two of the

pavement units. The connection segment is connected between the pivotal segments and is held in corresponding two of the openings in the adjacent two of the pavement units.

[0007] Other objects, advantages and novel features of the invention will become more apparent from the following detailed description when taken in conjunction with the accompanying drawings.

10 IN THE DRAWINGS

[0008]

Fig. 1 is a perspective view of a pavement unit of a combination pavement in accordance with the present invention;

Fig. 2 is a partially exploded perspective view of a combination pavement in accordance with the present invention;

Fig. 3A is an operational cross sectional side view of the combination pavement in Fig. 2;

Fig. 3B is an enlarged cross sectional side view of the combination pavement in Fig. 3A;

Fig. 4 is an operational cross sectional side view of the combination pavement in Fig. 2, shown paved on an unsmooth ground;

Fig. 5 is an enlarged cross sectional side view of a combination pavement including a first embodiment of a board body in accordance with the present invention;

Fig. 6 is an enlarged side view of the board body of the combination pavement in Fig. 5;

Fig. 7 is an enlarged side view of a second embodiment of the board body of the combination pavement in accordance with the present invention;

Fig. 8 is an enlarged side view of a third embodiment of the board body of the combination pavement in accordance with the present invention;

Fig. 9 is a partial perspective view of another embodiment of a combination pavement in accordance with the present invention;

Fig. 10 is a top view of a conventional combination pavement; and

Fig. 11 is an enlarged cross sectional side view of the combination pavement in Fig. 10.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENT

[0009] With reference to Figs. 1 and 2, a combination pavement 10 in accordance with the present invention comprises multiple pavement units 11 and at least one connection element 12.

[0010] Each pavement unit 11 comprises a board body 111, two first through holes 112, and two openings 114. The board body 111 has two ends 113 along the X direction. The first through holes 112 are defined through the board body 111 along the Y direction that is perpen-

dicular to the X direction and are adjacent respectively to the two ends 113 of the board body 111. The openings 114 are defined respectively in the two ends 113 of the board body 111, extend along the Y direction, and communicate respectively with the first through holes 112.

[0011] The at least one connection element 12 is mounted between the pavement units 11 to connect the pavement units 11 with each other to form an elongated combination pavement 10. Each one of the at least one connection element 12 is connected between adjacent two of the pavement units 11 and comprises two pivotal segments 121 and a connection segment 122. The pivotal segments 121 are respectively mounted rotatably in one of the first through holes 112 in one of the adjacent two of the pavement units 11 and a corresponding one of the first through holes 112 in the other one of the adjacent two of the pavement units 11. The connection segment 122 is connected between the pivotal segments 121 and is held in corresponding two of the openings 114 in the adjacent two of the pavement units 11.

[0012] With reference to Figs. 2, 3A, and 3B, to assemble the combination pavement 10, the board bodies 111 of two pavement units 11 are abutted on each other by the ends 113 of the board bodies 111, and the corresponding openings 114 in the abutting ends 113 communicate with each other. The pivotal segments 121 of one connection element 12 are inserted respectively into the corresponding first through holes 112 in the pavement units 11, and the connection segment 122 of the connection element 12 is simultaneously inserted into the corresponding openings 114. Accordingly, the two pavement units 11 can be pivotally connected with each other by the connection element 12. Thus, an elongated combination pavement 10 can be assembled by connecting multiple pavement units 11 with the connection elements 12.

[0013] With reference to Figs. 3A and 3B, when the combination pavement 10 is paved on a flat ground 20, the pavement units 11 connected by the connection elements 12 can abut smoothly on the flat ground 20.

[0014] With reference to Fig. 4, when the pavement 10 is paved on an unsmooth ground 20A or lawn, the pavement units 11 can be slightly pivoted relative to each other to conform to the unsmooth ground 20A or lawn. Accordingly, the pavement 10 can also abut smoothly on the unsmooth ground 20A or lawn, thereby avoiding forming gaps between the pavement 10 and the ground 20A or lawn.

[0015] With reference to Fig. 2, each pavement unit 11 may further have multiple second through holes 115 defined through the board body 111 of the pavement unit 11 along the Y direction and arranged at evenly spaced intervals between the first through holes 112 of the pavement unit 11. With the arrangement of the second through holes 115, the weight of the pavement unit 11 can be effectively reduced.

[0016] With reference to Figs. 2 and 3A, the board body 111 of each pavement unit 11 has a first surface 116 and

a second surface 117 defined along the Z direction that is perpendicular to the Y and X directions. Each pavement unit 11 further has multiple grooves 118 defined in the first surface 116 along the Y direction and arranged at evenly spaced intervals along the X direction. With the arrangement of the grooves 118, an anti-slipping effect is provided to prevent pedestrians from falling down.

[0017] Preferably, the first through holes 112 in each pavement unit 11 are circular in cross section. The pivotal segments 121 of each one of the at least one connection element 12 are tubular and circular in cross section. Each opening 114 of each pavement unit 11 has a width W1 smaller than a diameter of each pivotal segment 121 of each one of the at least one connection element 12. In addition, the connection segment 122 of each one of the at least one connection element 12 has a thickness T smaller than the width W1 of the openings 114 of each pavement unit 11.

[0018] With reference to Fig. 5, each pivotal segment 121A of each connection element 12A has a rib 123 formed radially on the pivotal segment 121A and abutting on an inner surface of a corresponding one of the first through holes 112. Accordingly, the connection between the pavement unit 11 and the connection element 12A can be enhanced.

[0019] With reference to Fig. 6, each opening 114A of each pavement unit 11A comprises a first segment 1141 and a second segment 1142. The first segment 1141 of each opening 114A of each pavement unit 11A is located between the second segment 1142 of the opening 114A and a corresponding one of the first through holes 112 of the pavement unit 11A. The first segment 1141 has a width W2 smaller than a width W3 of the second segment 1142 of the opening 114A.

[0020] With reference to Fig. 7, each opening 114B of each pavement unit 11B has a width gradually increasing from an end adjacent to a corresponding one of the first through holes 112 in the pavement unit 11B to an end opposite the corresponding first through hole 112.

[0021] With reference to Fig. 8, each opening 114C of each pavement unit 11C has a first side 1143 and a second side 1144. The first side 1143 is adjacent to the first surface 116 of the board body 111, is stepped in shape, and includes a first segment 1145 and a second segment 1146. The second segment 1146 is more adjacent to the first surface 116 of the board body 111 of the pavement unit 11C than the first segment 1145 is. The second side 1144 is adjacent to the second surface 117 of the board body 111, is inclined, and has a first end and a second end. The first end is adjacent to a corresponding one of the first through holes 112 of the pavement unit 11C. The second end is away from the corresponding first through hole 112 and is more adjacent to the second surface 117 of the board body 111 of the pavement unit 11C than the first end is.

[0022] With reference to Fig. 9, the board body 111 of each pavement unit 11D further has multiple studs 119 formed on and protruding from the second surface of the

board body 111 and arranged in a matrix. Accordingly, when the pavement is paved on the ground or the lawn, the studs 119 can be inserted into the ground or the lawn. Accordingly, the arrangement of the pavement on the ground or the lawn is stable.

Claims

1. A combination pavement (10) comprising:

multiple pavement units (11) each having

a board body (111) having two ends along a first direction;
two first through holes (112) defined through the board body (111) along a second direction that is perpendicular to the first direction and being adjacent respectively to the two ends of the board body (111);
two openings (114) defined respectively in the two ends of the board body (111), extending along the second direction, and communicating respectively with the first through holes (112); and

at least one connection element (12), each one of the at least one connection element (12) connected between adjacent two of the pavement units (11) and comprising

two pivotal segments (121) respectively mounted rotatably in one of the first through holes (112) in one of the adjacent two of the pavement units (11) and a corresponding one of the first through holes (112) in the other one of the adjacent two of the pavement units (11);
a connection segment (122) connected between the pivotal segments (121) and held in corresponding two of the openings (114) in the adjacent two of the pavement units (11).

2. The combination pavement as claimed in claim 1, wherein each pavement unit (11) further has multiple second through holes (115) defined through the board body (111) of the pavement unit (11) along the second direction and arranged at evenly spaced intervals between the first through holes (112) of the pavement unit (11).

3. The combination pavement as claimed in claim 1, wherein the board body (111) of each pavement unit (11) has a first surface (116) and a second surface (117) defined along a third direction that is perpendicular to the first and second directions; and

each pavement unit (11) further has multiple grooves (118) defined in the first surface (116) along the second direction and arranged at evenly spaced intervals along the first direction.

4. The combination pavement as claimed in claim 1, wherein the first through holes (112) in each pavement unit (11) are circular in cross section; the pivotal segments (121) of each one of the at least one connection element (12) are tubular and circular in cross section; and each opening (114) of each pavement unit (11) has a width smaller than a diameter of each pivotal segment (121) of each one of the at least one connection element (12).

5. The combination pavement as claimed in claim 4, wherein the connection segment (122) of each one of the at least one connection element (12) has a thickness smaller than the width of the openings (114) of each pavement unit (11).

6. The combination pavement as claimed in claim 1, wherein each pivotal segment (121A) of each one of the at least one connection element (12A) has a rib (123) formed on the pivotal segment (121A) and abutting on an inner surface of a corresponding one of the first through holes (112) in a corresponding one of the pavement units (11).

7. The combination pavement as claimed in claim 1, wherein each opening (114A) of each pavement unit (11A) comprises a first segment (1141) and a second segment (1142); the first segment (1141) of each opening (114A) of each pavement unit (11A) is located between the second segment (1142) of the opening (114A) and a corresponding one of the first through holes (112) of the pavement unit (11A); and the first segment (1141) of each opening (114A) of each pavement unit (11A) has a width smaller than a width of the second segment (1142) of the opening (114A).

8. The combination pavement as claimed in claim 1, wherein each opening (114B) of each pavement unit (11B) has a width gradually increasing from an end adjacent to a corresponding one of the first through holes (112) in the pavement unit (11B) to an end opposite the corresponding first through hole (112).

9. The combination pavement as claimed in claim 1, wherein the board body (111) of each pavement unit (11C) has a first surface (116) and a second surface (117) defined along a third direction that is perpendicular

to the first and second directions; and
each opening (114C) of each pavement unit (11C)
has

a first side (1143) being adjacent to the first sur- 5
face (116) of the board body (111) of the pave-
ment unit (11C), being stepped in shape, and
including a first segment (1145) and a second
segment (1146) that is more adjacent to the first 10
surface (116) of the board body (111) of the
pavement unit (11C) than the first segment
(1145) is; and
a second side (1144) being adjacent to the sec- 15
ond surface (117) of the board body (111) of the
pavement unit (11C), being inclined, and having
a first end adjacent to a corresponding one of
the first through holes (112) of the pavement unit 20
(11C) and a second end away from the corre-
sponding first through hole (112), wherein the
second end is more adjacent to the second sur- 25
face (117) of the board body (111) of the pave-
ment unit (11C) than the first end is.

10. The combination pavement as claimed in claim 3, 25
wherein the board body (111) of each pavement unit
(11D) further has multiple studs (119) formed on and
protruding from the second surface (117) of the
board body (111) and arranged in a matrix.

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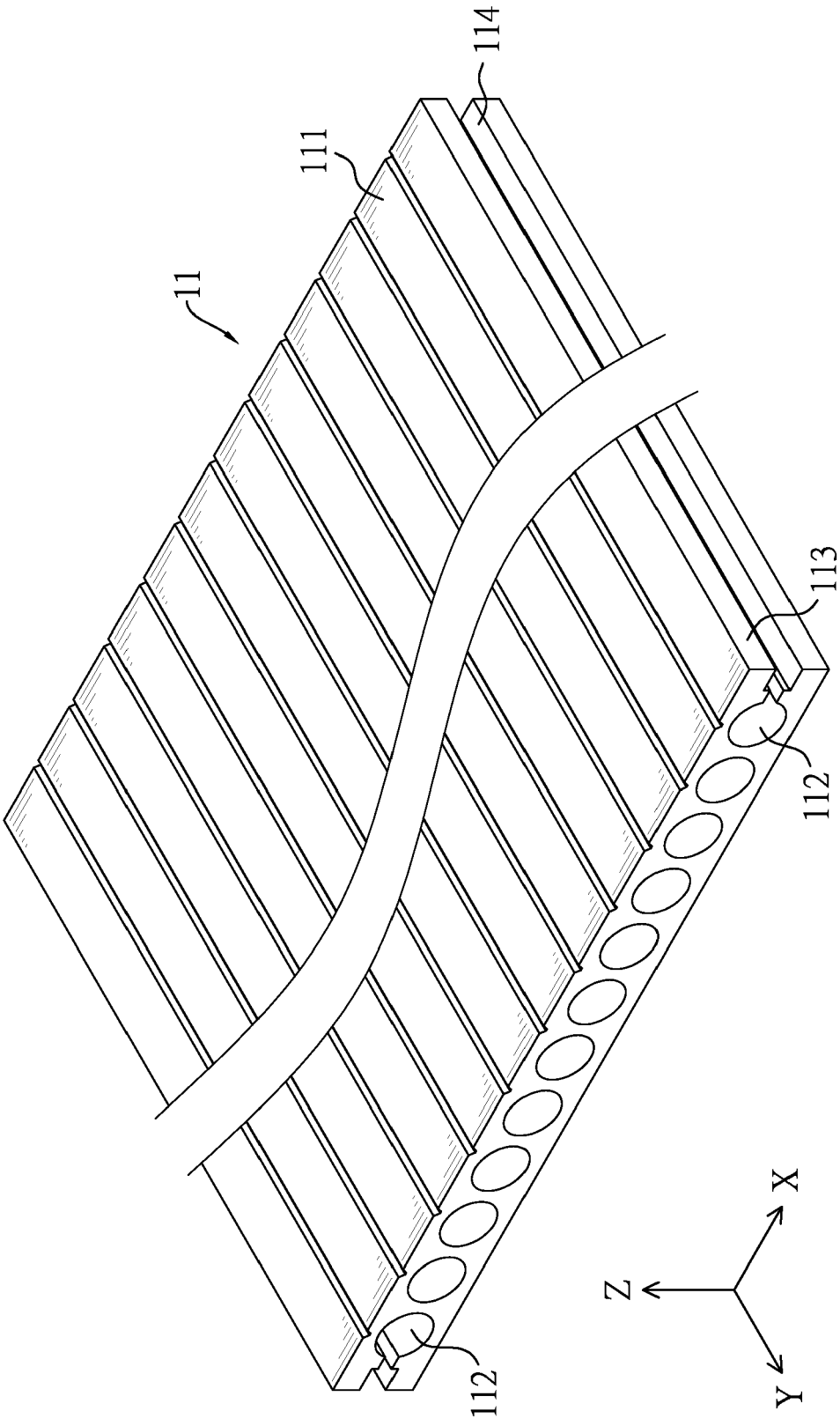


FIG. 1

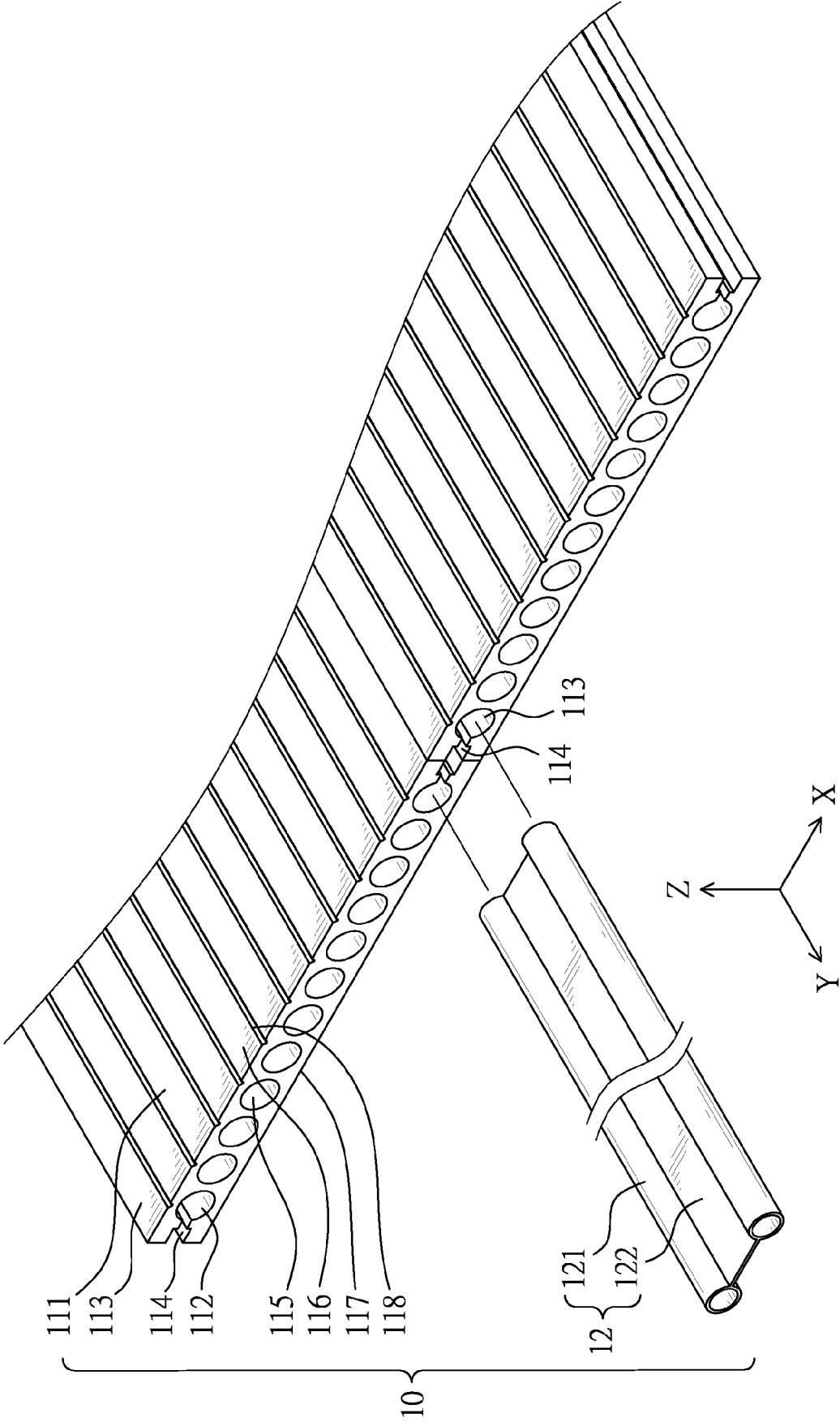


FIG. 2

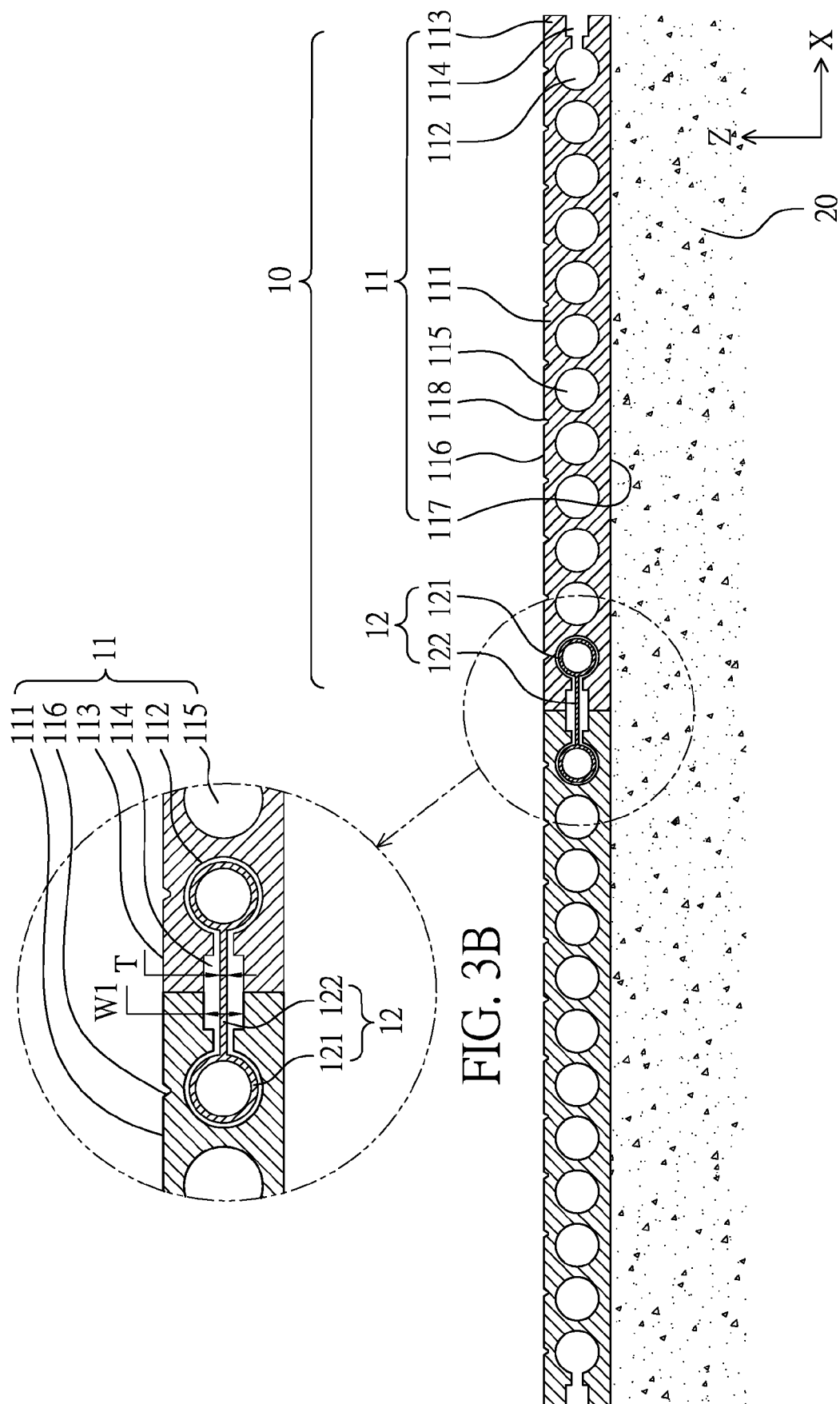


FIG. 3A

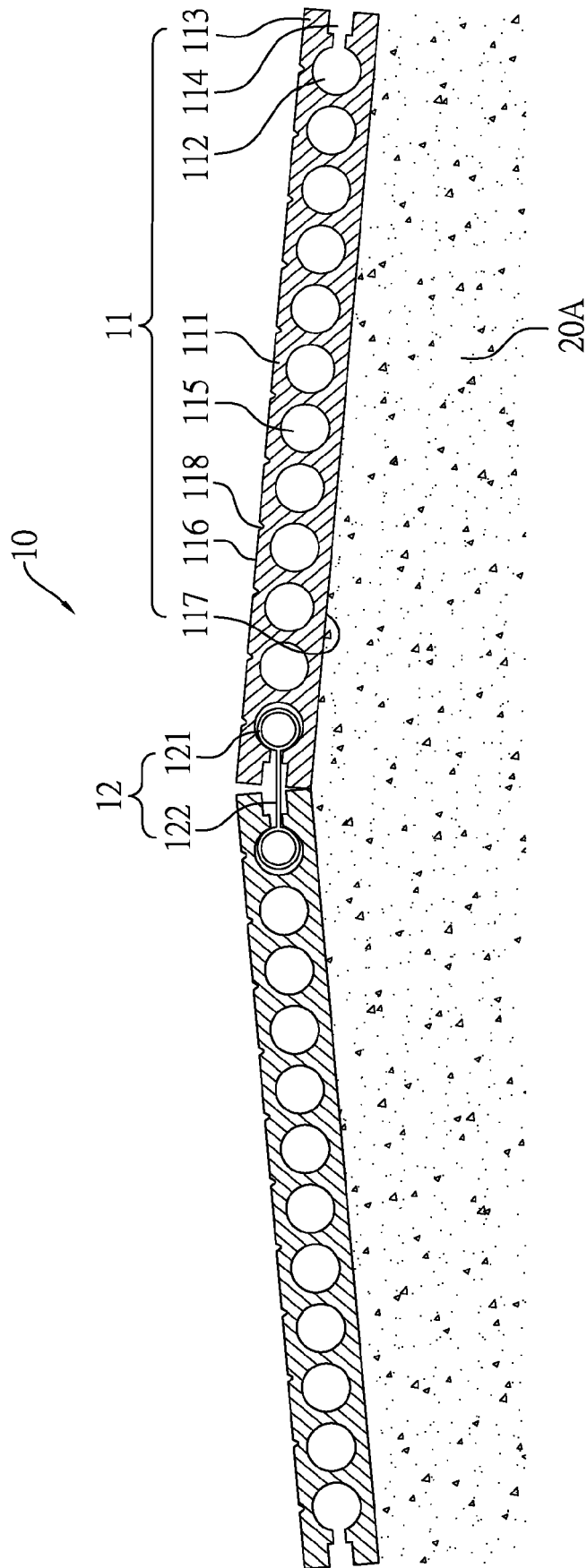


FIG. 4

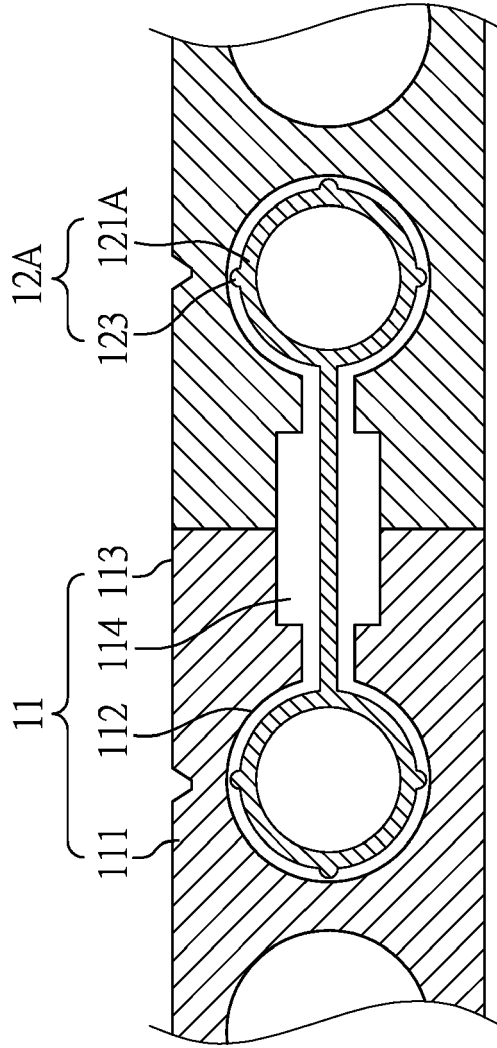


FIG. 5

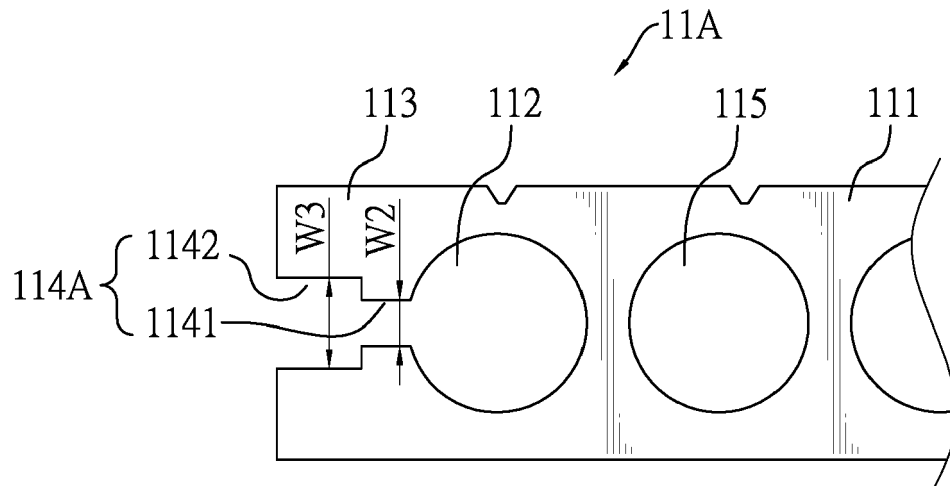


FIG. 6

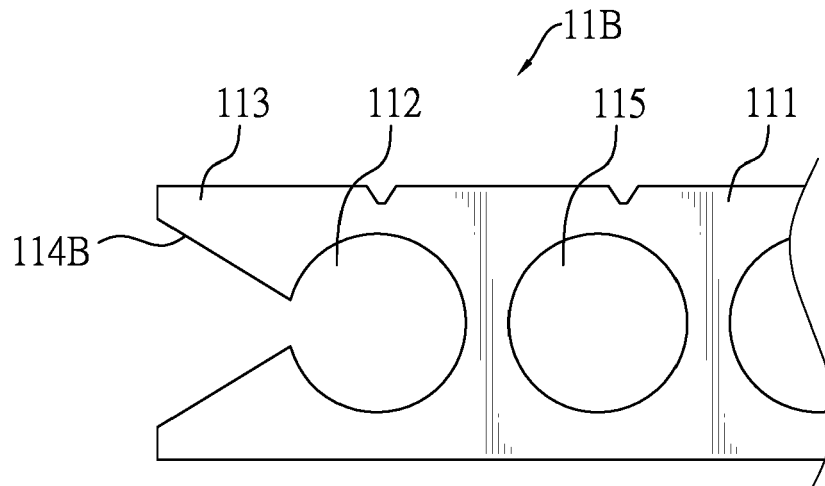


FIG. 7

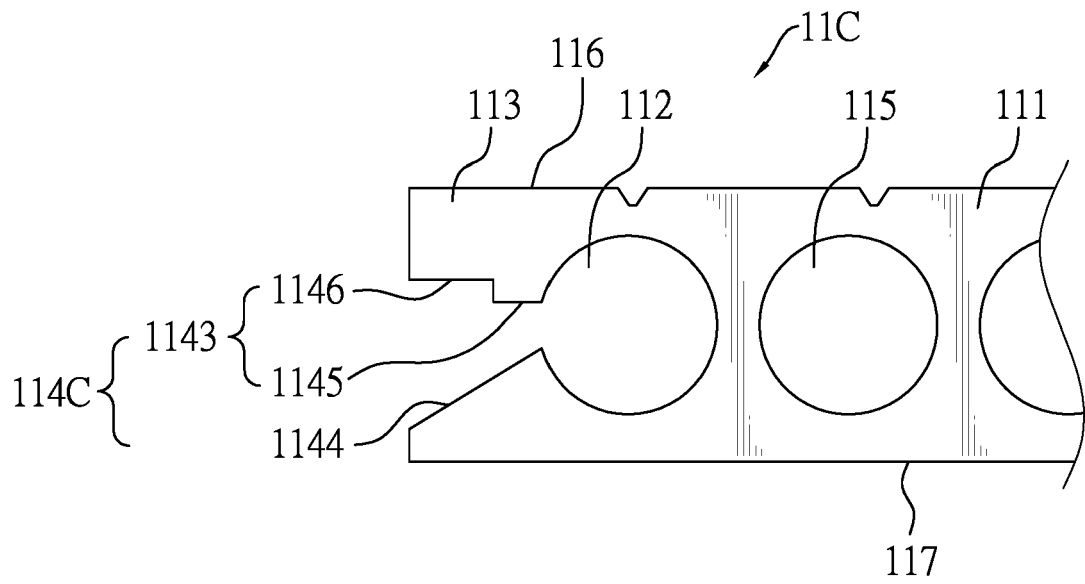


FIG. 8

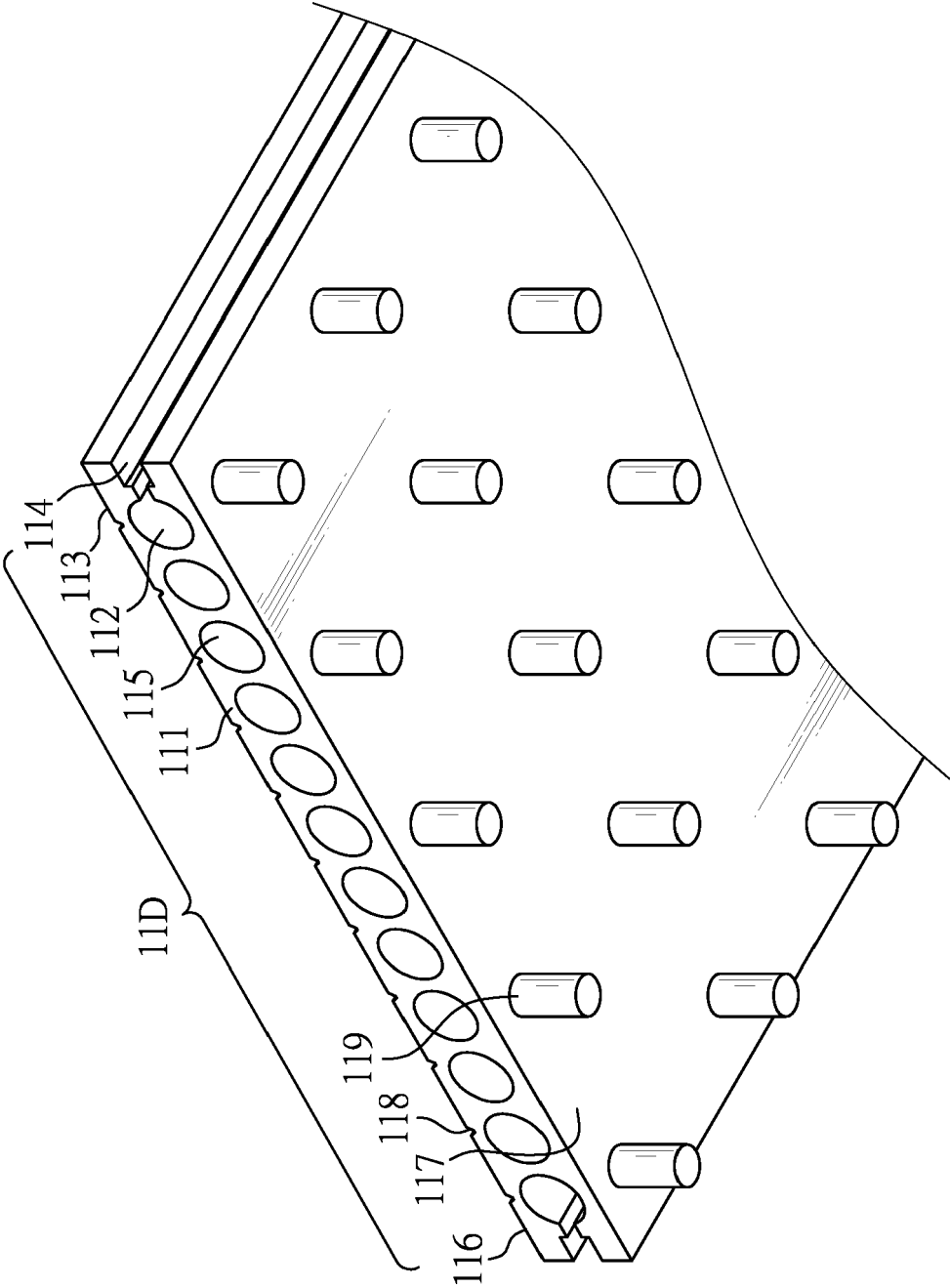


FIG. 9

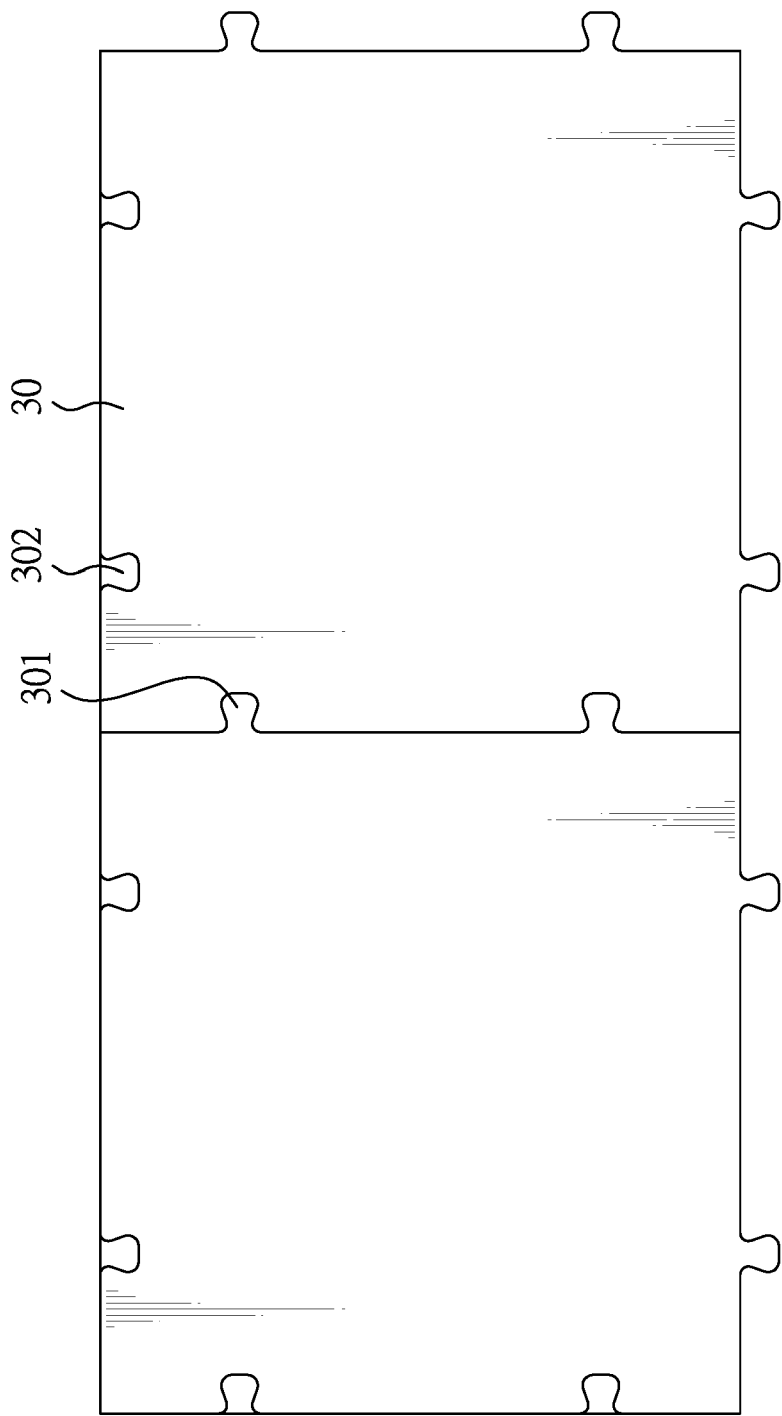


FIG. 10

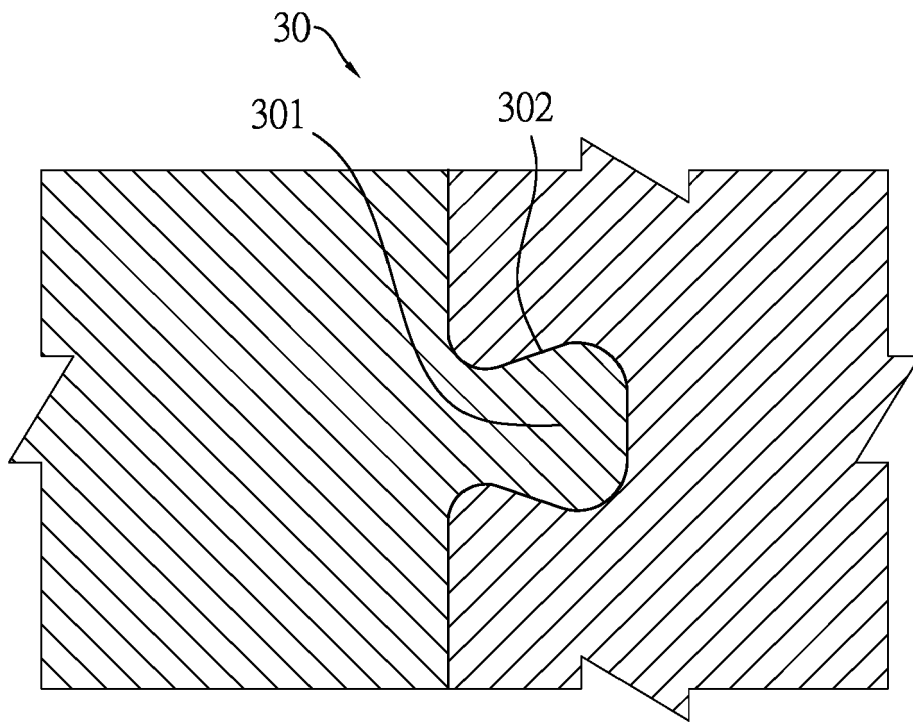


FIG. 11



EUROPEAN SEARCH REPORT

 Application Number
 EP 17 16 7469

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Place of search Munich		Date of completion of the search 28 September 2017	Examiner Kremsler, Stefan
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**ANNEX TO THE EUROPEAN SEARCH REPORT
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5 This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
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28-09-2017

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