(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) **EP 4 477 798 A2**

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
18.12.2024 Bulletin 2024/51

(21) Application number: **24181581.0**

(22) Date of filing: **12.06.2024**

(51) International Patent Classification (IPC):
E01C 5/20 *(2006.01)* ***E01C 9/00*** *(2006.01)*

(52) Cooperative Patent Classification (CPC):
E01C 9/004; E01C 5/20

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC ME MK MT NL NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA
Designated Validation States:
GE KH MA MD TN

(30) Priority: **12.06.2023 BE 202305480**

(71) Applicant: **Ecco bv**
9820 Merelbeke (BE)

(72) Inventor: **Slabbinck, Chris**
9820 Merelbeke (BE)

(74) Representative: **Brantsandpatents bv**
Pauline Van Pottelsberghelaan 24
9051 Ghent (BE)

(54) **GROUND GRID WITH IMPROVED COUPLING SYSTEM**

(57) The present invention relates to a ground grid for supporting and retaining ground coverings, comprising a base plate and an open-cell structure, wherein the sides of the cell structure comprise a coupling system to connect adjacent ground grids to each other, wherein the coupling system comprises a male coupling element and a female coupling element, wherein each side comprises one or more male coupling elements and/or one or more female coupling elements, wherein the male coupling element of the ground grid can be connected to the female coupling element of an adjacent ground grid, and wherein the female coupling element of the ground grid can be connected to the male coupling element of an adjacent ground grid, wherein the female coupling element is formed by a T-shaped recess in the side of the cell structure, which recess extends through the base plate and the cell structure. The invention also relates to a method for connecting two or more ground grids.

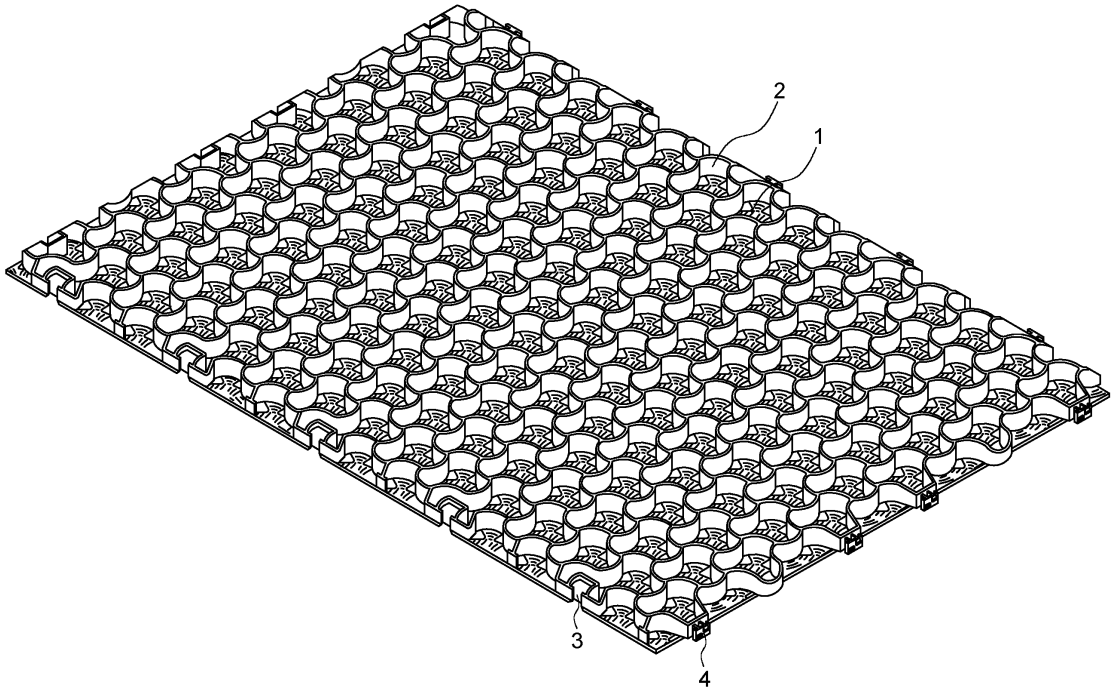

FIG. 1

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Description

TECHNICAL FIELD

[0001] The invention relates to a ground grid for supporting and retaining ground coverings. In particular, these ground grids are ideally suited for the construction of footpaths and/or carriageways, parking lots, driveways and the like.

PRIOR ART

[0002] Ground grids and/or gravel plates, also known as ground mats and/or gravel mats, are known devices for supporting ground coverings. When constructing driveways, footpaths, parking lots and the like, an aesthetic gravel layer is often chosen that will be supported by a gravel mat. These known gravel mats, however, entail many problems. A problem with the known gravel mats is that they fall short in one or more areas compared to the needs in practice, both for placing, transporting and for effectively putting the gravel mats into use.

[0003] On the one hand, if gravel is the ground covering in question, the pebbles are often loosely spread in large and/or flexible cells and, for example, a parking lot loses part of the covering gravel layer every day due to traffic moving over the gravel layer. Moreover, the gravel will often arrange itself in a certain way due to the flexibility in the known gravel mats, for example through said traffic, causing the gravel to move out of the flexible cells and accumulate, creating bare spots where there is insufficient gravel present.

[0004] Although less problematic, the same issue is also present with earth ('soil') as a filler for the ground grid. Especially in situations where there is a lot of movement (such as driveways, but also golf courses, parks, etc.), it happens that soil is moved and taken along by traffic or other manipulations. In this way, it is also possible to use thin layers of soil (with grass, for example) as ground covering, without it having to be constantly replenished or re-laid. Again to prevent the above problems, the current invention offers a solution.

[0005] On the other hand, the load-bearing capacity or structural strength is often limited with known ground mats. The existing ground mats use an overly simplistic structure, which requires too much volume of material to achieve the desired load-bearing capacity, thus drastically reducing water permeability and/or capacity.

[0006] Known ground grids also do not have a good coupling system, it is often not reliable and too difficult to use. When connecting the ground grids it is often necessary that there must still be some freedom of movement towards and away from each other, for example when expanding/contracting due to temperature changes, sudden impacts, and the like. Known systems are often too limitedly linked, causing the structure to come apart on its own, or the systems are so complicated that placing them is very difficult and time-consuming. Many known systems have no margin for relative motion between the grids, which can lead to rupture.

[0007] Finally, known ground mats cannot be stacked or stored efficiently. In practice, a large quantity of grids will often be needed to cover a field or location, it must also be possible to transport them as efficiently as possible. However, the grids are rarely equipped for this because known ground grids have very far-protruding couplings with often sharp edges, and thus take up additional space in transport. Known ground mats will often be very flexible, meaning that they cannot be moved in an ergonomic manner due to the discomfort in holding due to the flexibility of the ground mat.

[0008] The present invention aims to solve at least some of the above problems or drawbacks. The aim of the invention is to provide a method which eliminates those disadvantages.

SUMMARY OF THE INVENTION

[0009] In a first aspect, the present invention relates to a device according to claim 1.

[0010] Preferred forms of the device are presented in claims 2 to 14.

[0011] The ground grid comprises a base plate and an open-cell structure. First, the base plate will provide stability. Furthermore, the base plate includes circulation holes that ensure better drainage and air circulation. This can help drain water that accumulates under the ground grid. This reduces the risk of rotting and also reduces the chance of algae or mosses forming on the ground grid and/or on the ground covering supported by the ground grid.

[0012] Next, the side walls include a coupling system. The major advantage of the invention concerns a ground grid with an improved coupling system, which coupling system comprises a female and a male coupling element. This coupling system offers several advantages. Firstly, it provides a secure connection between two adjacent ground grids, as the male and female parts fit together to form a firm interlock. This can contribute to a sturdier construction and reduces the chance of loosening or deformation of the parts.

[0013] Secondly, it is easier to attach two adjacent ground grids together because the male and female parts are specifically designed to fit together easily. This can reduce the time required to attach the ground grids together and can also increase the precision of the connection. The big advantage is that the female coupling element includes a recess through the cell structure and through the base plate, which will ensure that two adjacent grids 'interlock' in multiple ways and effortlessly. Firstly, a male coupling element can be positioned through a slope in the female coupling element, secondly, a female coupling element can also be slid over a male coupling element to establish a connection. This results in a very fast assembly of the ground grids on the one hand, but also a very fast disassembly, because the

ground grids can be released and put together again with a simple movement.

[0014] Furthermore, the open-cell structure has a pattern, the preferably tessellating pattern has several advantages. The cells of the open-cell structure are suitable for containing a filling material, preferably a ground covering, such as soil (with grass), gravel, pebbles or other aggregates. Among other things, the stability of the ground grid will increase, because the chosen ground covering will fit together in a certain way. Furthermore, it will help keep the ground coverings in place and prevent them from shifting or falling out of the ground grid. In this way, the ground grid guarantees sufficient support for loads (people, light vehicles, etc.), with also sufficient resistance to point loads by choosing optimal dimensions of the openings at the top. The shape of the open-cell structure also plays an important role in the growth and development of vegetation. This shape is specifically designed to support the soil in the cell while keeping it loose. This is necessary to keep the soil airy and to provide a healthy environment for plant growth. Another important factor is the expansion potential of the individual cells within this shape. This means that the cells are able to move and stretch along under pressure, making them more resistant to torsional loads and more elastic. This makes the open-cell structure less susceptible to cracks and breakage, and it will have a longer lifespan.

[0015] In a second aspect, the present invention concerns a method according to claim 15.

[0016] This method is particularly advantageous because it provides a quick and easy way to connect multiple ground grids together, reducing installation and maintenance time. The minimum angle will ensure that the connection of the ground grids is effortless.

DESCRIPTION OF THE FIGURES

[0017]

Figure 1 shows a perspective view of a ground grid according to an embodiment of the present invention.

Figure 2 shows a detailed representation of a top view of a ground grid according to an embodiment of the present invention.

Figure 3 shows a top view of a female coupling element according to an embodiment of the present invention.

Figure 4 shows a perspective view of a female coupling element according to an embodiment of the present invention.

Figure 5 shows a cross-sectional view of a female coupling element according to an embodiment of the present invention.

Figure 6 shows a front view of a female coupling element according to an embodiment of the present invention.

Figure 7 shows a top view of a male coupling element according to an embodiment of the present invention.

Figure 8 shows a perspective view of a male coupling element according to an embodiment of the present invention.

Figure 9 shows a cross-sectional view of a male coupling element according to an embodiment of the present invention.

Figure 10 shows a front view of a male coupling element according to an embodiment of the present invention.

DETAILED DESCRIPTION

[0018] Unless otherwise defined, all terms used in the description of the invention, including technical and scientific terms, have the meanings as commonly understood by a person skilled in the art to which the invention pertains. For a better understanding of the description of the invention, the following terms are explained explicitly.

[0019] In this document, "a" and "the" refer to both the singular and the plural, unless the context presupposes otherwise. For example, "a segment" means one or more segments.

[0020] The terms "comprise," "comprising," "consist of," "consisting of," "provided with," "include," "including," "contain," "containing," are synonyms and are inclusive or open terms that indicate the presence of what follows, and which do not exclude or prevent the presence of other components, characteristics, elements, members, steps, as known from or disclosed in the prior art.

[0021] Quoting numeric intervals by the endpoints includes all integers, fractions, and/or real numbers between the endpoints, including those endpoints.

[0022] In a first aspect, the invention concerns a ground grid for supporting and retaining ground coverings.

[0023] In a preferred embodiment, the ground grid comprises a base plate, which base plate has a top side and a bottom side.

[0024] In a further preferred embodiment, the base plate is substantially flat and substantially rectangular. In this way the ground grid can be used when constructing load support structures, where this often concerns an underlying flat structure that must be constructed over a larger surface. The rectangular shape allows multiple ground grids to be placed abutting each other to form a larger structure. In addition, one of the practical applications is to provide a water-permeable layer for parking lots, patios and the like, where a flat substructure will

normally be preferred for this. It goes without saying that both the shape, substantially rectangular, and the profile, substantially flat, can be adapted to the needs of a user. In another embodiment, the ground grid can, for example, be triangular and have a varying thickness of the ground grid.

[0025] In a further preferred embodiment, the base plate is provided with at least one circulation hole per cell of the cell structure. The circulation holes ensure better drainage and air circulation. This can help drain water that accumulates under the ground grid. This reduces the risk of rotting and also reduces the chance of algae or mosses forming on the ground grid and/or on the ground covering supported by the ground grid.

[0026] In a preferred embodiment, the ground grid comprises an open-cell structure. Which open-cell structure has a top side and a bottom side, on opposite sides of the cell structure. Multiple walls connect the top and bottom. The bottom of the cell structure is provided on the top of the base plate. Furthermore, the cell structure includes at least four sides.

[0027] In a further preferred embodiment, the sides of the cell structure comprise a coupling system, which coupling system is suitable for coupling adjacent ground grids with each other. The coupling system comprises a male coupling element and a female coupling element, wherein each side comprises one or more male coupling elements and/or one or more female coupling elements. The male coupling element of the ground grid is connectable to the female coupling element of an adjacent ground grid, and the female coupling element of the ground grid is connectable to the male coupling element of an adjacent ground grid. The male and female parts are specifically designed to fit together easily. This reduces the time required to attach the parts together.

[0028] In a preferred embodiment, the coupling system comprises a female coupling element. The female coupling element is formed by a T-shaped recess in the side of the cell structure, which recess extends through the base plate and the cell structure. By using a T-shaped recess, the female coupling element can form a sturdy and reliable connection with a male coupling element. This reduces the chance of loosening or deformation of the ground grids. The big advantage here is that the recess goes through both the cell structure and the base plate, which means that adjacent ground grids can be connected to each other in several ways. A male coupling element can be slid into the female coupling element from both the top and the bottom.

[0029] In another preferred embodiment, the female coupling element is formed by a T-shaped recess in the side of the cell structure, which recess only extends through the cell structure. In this way, the male coupling element can be inserted into the female coupling element via the top.

[0030] In another preferred embodiment, the female coupling element is formed by a T-shaped recess in the side of the base plate, which recess only extends through the base plate. In this way, the male coupling element can be inserted into the female coupling element via the bottom.

[0031] In a further preferred embodiment, the recess is surrounded by three walls, wherein a main wall is substantially parallel to the side of the cell structure, wherein the main wall comprises a sloping slope, where the slope slopes from the top to the bottom. Preferably, the main wall has a vertical piece at the bottom and/or at the top, wherein the slope is provided between the bottom and the top of the main wall. This configuration of three walls strengthens the design of the female coupling element. The slope will ensure that the male coupling element is easy to slide in, which means that it is self-explanatory how a male coupling element and a female coupling element should be slid together. It will also significantly reduce the time to lay a series of ground grids.

[0032] In a further preferred embodiment, the slope has an angle of at least 25° with respect to the base plate, preferably at least 30°, preferably at least 35°, preferably at least 40°, preferably at least 45°, preferably at least 50°, preferably at least 55°, preferably at least 60°. The researchers have found that this angle is an optimal angle, making sliding the male coupling element into the female coupling element very efficient, error-free and simple.

[0033] In a further preferred embodiment, the main wall has four quadrants and further comprises at least two teeth, an upper tooth and a lower tooth. The upper tooth is preferably in the non-directly adjacent quadrant with respect to the quadrant in which the lower tooth is positioned. By positioning the teeth in non-directly adjacent quadrants, the teeth of an adjacent grid will fit nicely. The provided teeth improve the grip between two adjacent ground grids, reducing the chance of slipping or loosening. The contact surface between the coupling elements will decrease, which reduces friction and reduces the risk of wear and increases the efficiency of the coupling.

[0034] In a further preferred embodiment, the upper tooth is divided into an upper half and a lower half, wherein the upper half of the upper tooth comprises a sloping surface towards the top of the cell structure, wherein the lower half lies substantially parallel to the main wall of the upper tooth. A major advantage of the sloping surface is that it is easier to connect adjacent grids. The teeth of the adjacent ground grid click effortlessly into the intended, identical teeth of the provided ground grid.

[0035] In a further preferred embodiment, the lower tooth is also divided into an upper half and a lower half, wherein the lower half of the lower tooth comprises a sloping surface towards the underside of the cell structure, wherein the upper half lies substantially parallel to the main wall of the lower tooth.

[0036] In a preferred embodiment, the coupling system comprises a male coupling element. The male coupling element concerns a T-shaped profile that extends over at least part of the height, preferably the entire height, of the ground grid, corresponding to the T-shaped recess

of the female coupling element, the male coupling element comprising a flat plate and at least one arm, where the flat plate is parallel to the side of the cell structure, wherein the flat plate is connected to the side of the cell structure via the at least one arm. The T-shaped profile of the male coupling element fits perfectly into the T-shaped recess of the female coupling element, creating a sturdy and reliable connection between the two elements. The T-shaped profile of the male coupling element is shaped in such a way that it is very easy to insert the male coupling element into the T-shaped recess of the female coupling element, making installation easier. The at least one arm present in the male coupling element connects the flat plate to the side of the open-cell structure, increasing the stability of the entire coupling system. The coupling system will fit nicely, but also has freedom of movement to prevent breaking of the connection between two adjacent ground grids.

[0037] In a further preferred embodiment, the flat plate has folded edges that point towards the side of the cell structure. The folded edges will mainly provide a strong connection between the male and female coupling elements. The folded edges will serve as an additional locking system so that a connection will never accidentally break. The folded edges also ensure that any sharp edges are avoided, increasing the safety of the person operating the coupling system. Preferably, the folded edges are only provided on the lateral sides of the flat edge, namely the sides that extend from the bottom to the top of the base plate, since the anchoring in the female coupling element is effected on these sides.

[0038] In a further preferred embodiment, the flat plate has a contact side pointing away from the side of the cell structure, wherein the contact side comprises four quadrants, and further comprises at least two teeth, an upper tooth and a lower tooth, wherein the upper tooth is in the non-directly adjacent quadrant with respect to the quadrant in which the lower tooth is positioned.

[0039] In a further preferred embodiment, the upper tooth is divided into an upper half and a lower half, wherein the upper half of the upper tooth comprises a sloping surface towards the top of the cell structure, wherein the lower half lies substantially parallel to the contact side of the upper tooth. A major advantage of the sloping surface is that it is easier to connect adjacent grids. The teeth of the adjacent ground grid click effortlessly into the intended, identical teeth of the provided ground grid.

[0040] In a further preferred embodiment, the lower tooth is also divided into an upper half and a lower half, wherein the lower half of the lower tooth comprises a sloping surface towards the underside of the cell structure, wherein the upper half lies substantially parallel to the contact side of the lower tooth.

[0041] In a further preferred embodiment, the teeth of the male coupling element and teeth of the female coupling elements form a locking system, suitable for locking two adjacent ground grids.

[0042] In a preferred embodiment, the cell structure is a tessellating pattern. The tessellating pattern has several advantages. Among other things, it can increase the stability of the grid, because, for example, stones fit together in a certain way. It will also help keep the chosen ground coverings in place and prevent them from shifting or falling out of the grid. In this way, the grid guarantees sufficient support for loads (people, light vehicles, etc.), with also sufficient resistance to point loads by choosing optimal dimensions of the openings at the top. The cells of the open-cell structure are suitable for containing a filling material, preferably a ground covering, such as soil, grass, plants, gravel, pebbles or other aggregates.

[0043] In a further preferred embodiment, the cell structure is formed by a plurality of cells, preferably the cell structure has at least 4 cells, preferably at least 6 cells, preferably at least 8 cells, preferably at least 10 cells, preferably at least 15 cells, preferably at least 20 cells, preferably at least 25 cells, preferably at least 30 cells, preferably at least 35 cells, preferably at least 40 cells, preferably at least 45 cells, preferably at least 50 cells, preferably at least 55 cells, preferably at least 60 cells, preferably at least 65 cells, preferably at least 70 cells, preferably at least 75 cells, preferably at least 80 cells, preferably at least 85 cells, preferably at least 90 cells, preferably at least 95 cells, preferably at least 100 cells, preferably at least 110 cells, preferably at least 120 cells, preferably at least 130 cells, preferably at least 140 cells, preferably at least 150 cells.

[0044] In a further preferred embodiment, each cell is formed by curved walls. Preferably, a cell comprises at least 4 curved walls, preferably at least 5, preferably at least 6, preferably at least 7, preferably at least 8, preferably at least 9, preferably at least 10. Preferably, the walls of the cell structure are curved in an alternating manner, with one wall being convexly curved and the other being concavely curved. This creates a unique combination of concave and convex shape, resulting in increased strength and stiffness of the cell structure. Preferably, the walls of the cell are inseparably connected to each other, so that together they form a closed cell. This results in a strong and intact cell wall that provides protection to the contents of the cell and also contributes to the stability and integrity of the entire cell structure. More preferably, the cell structure has an open top and bottom.

[0045] Preferably, the walls have a thickness of at least 1.0 mm, preferably at least 1.1 mm, preferably at least 1.2 mm, preferably at least 1.3 mm, preferably at least 1.4 mm, preferably at least 1.5 mm, preferably at least 1.6 mm, preferably at least 1.7 mm, preferably at least 1.8 mm, preferably at least 1.9 mm, preferably at least 2.0 mm, preferably at least 2.1 mm, preferably at least 2.2 mm, preferably at least 2.3 mm, preferably at least 2.4 mm, preferably at least 2.5 mm, preferably at least 2.6 mm, preferably at least 2.7 mm, preferably at least 2.8 mm, preferably at least 2.9 mm, preferably at least 3.0 mm. Preferably, the walls of the cell structure have a thickness of at most 10 mm, preferably at most 9.0 mm,

preferably at most 8.0 mm, preferably at most 7.0 mm, preferably at most 6.0 mm, preferably at most 5.0 mm, preferably at most 4.5 mm, preferably at most 4.0 mm, preferably at most 3.9 mm, preferably at most 3.8 mm, preferably at most 3.7 mm, preferably at most 3.6 mm, preferably at most 3.5 mm, preferably at most 3.4 mm, preferably at most 3.3 mm, preferably at most 3.2 mm, preferably at most 3.1 mm. Even more preferably, the thickness of the walls of the cell structure is between at least 1.0 mm and at most 10 mm, even more preferably between at least 1.2 mm and at most 8.0 mm, even more preferably between at least 1.4 mm and at most 8.0 mm, even more preferably between at least 1.6 mm and at most 6.0 mm, even more preferably between at least 1.8 mm and at most 4.0 mm and in particular between at least 2.0 mm and at most 3.1 mm.

[0046] Preferably, each cell has a center point. The walls are preferably positioned at least 15 mm from the center point, preferably at least 20 mm, preferably at least 25 mm, preferably at least 30 mm, preferably at least 35 mm, preferably at least 40 mm, preferably at least 45 mm, preferably at least 50 mm.

[0047] In a further preferred embodiment, the cell has a cross-section, where the cross-section of a cell is measured from a wall to an opposite wall at the widest point of the cell. Preferably each cell has a diameter of at least 50 mm, preferably at least 55 mm, preferably at least 60 mm, preferably at least 65 mm, preferably at least 70 mm, preferably at least 75 mm, preferably at least 80 mm, preferably at least 85 mm, preferably at least 90 mm, preferably at least 95 mm, preferably at least 100 mm, preferably at least 110 mm, preferably at least 120 mm, preferably at least 130 mm, preferably at least 140 mm, preferably at least 150 mm, preferably at least 160 mm, preferably at least 170 mm, preferably at least 180 mm, preferably at least 190 mm, preferably at least 200 mm.

[0048] The shape of the open-cell structure plays an important role in the growth and development of vegetation. This shape is specifically designed to support the soil in the cell while keeping it loose. This is necessary to keep the soil airy and to provide a healthy environment for plant growth. Another important factor is the potential for expansion and deformation of the individual cells within this shape. This means that the cells are able to move and stretch along under pressure, making them more resistant to torsional loads and more elastic. This makes the cell structure less susceptible to cracks and breakage, and it will have a longer lifespan.

[0049] In a second aspect, the invention concerns a method for connecting two or more ground grids.

[0050] In a preferred embodiment the method comprises the steps of:

a. providing a ground grid comprising a female coupling element;
b. providing a ground grid comprising a male coupling element;
c. positioning the ground grid with the male coupling element at an angle of at least 25° with respect to the ground grid with the female coupling element;
d. sliding the male coupling element into the female coupling element.

[0051] In a preferred embodiment, the method is carried out using ground grids according to the first aspect of the invention.

[0052] This method is particularly advantageous because it provides a quick and easy way to connect multiple ground grids together, reducing installation and maintenance time. The minimum angle, of preferably at least 25°, will ensure that the connection of the ground grids takes place without any difficulty.

[0053] In what follows, the invention is described by means of non-limiting examples or figures illustrating the invention, which are not intended or should be interpreted as limiting the scope of the invention.

DESCRIPTION OF THE FIGURES

[0054] Figures 1 and 2 show a ground grid according to an embodiment of the present invention.

[0055] The ground grid comprises a base plate 1 and an open-cell structure 2. The base plate 1 has a top side and a bottom side. Furthermore, the base plate is provided with several circulation holes 9. The circulation holes take various shapes, from long slots to circular perforation holes. The open-cell structure 2 also includes a top and a bottom, on opposite sides of the open-cell structure 2, with multiple walls connecting the top and bottom. The bottom of the open-cell structure 2 is provided on the top of the base plate 1. The open-cell structure 2 comprises at least four sides. The terms bottom, top and sides are aimed at the practical positioning of a ground grid and are not limiting in any sense. The open-cell structure 2 preferably comprises a tessellating pattern. A coupling system is provided on said sides. This coupling system comprises a female coupling element 3 and a male coupling element 4. Each side comprises several female coupling elements 3 or male coupling elements 4. The male coupling elements 4 can be connected to the female coupling elements 3 of an adjacent ground grid, and also the female coupling elements 3 can be connected to the male coupling elements 4 of an adjacent ground grid. The ground grid preferably has a length of approximately 115 cm, a width of approximately 80 cm, and a height of approximately 3 cm.

[0056] Figures 3, 4, 5 and 6 show detailed views of a female coupling element according to an embodiment of the present invention.

[0057] The female coupling element 3 is formed by a T-shaped recess 12 in the side of the cell structure, which recess extends through the base plate 1 and the open-cell structure 2. The T-shaped recess 12 is surrounded by three walls, one of which is a main wall 10. The main wall 10 is positioned substantially parallel to the side of

the cell structure 2. The main wall 10 comprises a sloping slope 11, where the slope 11 slopes from the top to the bottom. Furthermore, the main wall 10 comprises a vertical piece 14, said vertical piece being positioned on the underside of the main wall 10. The slope 12 will be positioned between the top of the main wall 12 and the vertical piece 14 of the main wall 12. The slope 12 preferably has an angle α of 45° with respect to the base plate 1. Furthermore, the vertical piece 14 of the main wall 12 can be divided into four quadrants and further comprises two teeth, of which an upper tooth 5 and a lower tooth 6. The teeth form a locking system that holds adjacent grids firmly together. The upper tooth 5 is located in the non-directly adjacent quadrant with respect to the quadrant in which the lower tooth 6 is positioned. The upper tooth 5 is divided into an upper half and a lower half, wherein the upper half of the upper tooth 5 comprises a sloping surface towards the top of the cell structure. The lower half lies substantially parallel to the main wall of the upper tooth. The lower tooth 6 is also divided into an upper half and a lower half, wherein the lower half of the lower tooth 6 comprises a sloping surface towards the underside of the cell structure. The upper half lies substantially parallel to the main wall 12 of the lower tooth 6.

[0058] Figures 7, 8, 9 and 10 show detailed views of a male coupling element according to an embodiment of the present invention.

[0059] The male coupling element 4 is mainly formed by a T-shaped profile 15 that extends over at least part of the height, preferably the entire height, of the ground grid. This T-shaped profile 15 corresponds to the T-shaped recess 12 of the female coupling element 3. The male coupling element 4 comprises a flat plate 16 and two arms 18, wherein the flat plate 16 is parallel to the side of the cell structure 2, wherein the flat plate 16 is connected to the side of the cell structure 2 via the two arms 18. Furthermore, the flat plate 16 comprises folded edges 19 that point towards the side of the cell structure 2. The flat plate 12 has a contact side 17, pointing away from the side of the cell structure 2. This contact side comprises four quadrants, and further comprises two teeth, an upper tooth 7 and a lower tooth 8. The upper tooth 7 is in the non-directly adjacent quadrant with respect to the quadrant in which the lower tooth 8 is positioned. The upper tooth 7 is divided into an upper half and a lower half, wherein the upper half of the upper tooth 7 comprises a sloping surface towards the top of the cell structure 2. The lower half lies substantially parallel to the contact side of the upper tooth 7. The lower tooth 8 is divided into an upper half and a lower half, wherein the lower half of the lower tooth 8 comprises a sloping surface towards the underside of the cell structure 2. The upper half lies substantially parallel to the contact side 17 of the lower tooth 8. The teeth of the male coupling element 4 and teeth of the female coupling element 3 form a locking system, suitable for locking two adjacent ground grids.

1= base plate
2= cell structure
3= female coupling element
4= male coupling element
5= upper tooth female coupling element
6= lower tooth female coupling element
7= upper tooth male coupling element
8= lower tooth male coupling element
9= circulation holes
10= main wall
11= slope
12= T-shaped recess
13= angle slope
14= vertical piece of the main wall
15= T-shaped profile
16= flat plate male coupling element
17= contact side flat plate
18= arm
19= folded edges/lateral edges

Claims

1. Ground grid for supporting and retaining ground coverings, comprising:

- a base plate, comprising a top side and a bottom side;
- an open-cell structure, comprising a top and a bottom, on opposite sides of the cell structure, with multiple walls connecting the top and bottom; wherein the bottom of the cell structure is provided on the top of the base plate, wherein the cell structure comprises at least four sides.

characterized in that the sides of the cell structure comprise a coupling system to connect adjacent ground grids to each other, wherein the coupling system comprises a male coupling element and a female coupling element, wherein each side comprises one or more male coupling elements and/or one or more female coupling elements, wherein the male coupling element of the ground grid can be connected to the female coupling element of an adjacent ground grid, and wherein the female coupling element of the ground grid can be connected to the male coupling element of an adjacent ground grid, wherein the female coupling element is formed by a T-shaped recess in the side of the cell structure, which recess extends through the base plate and the cell structure.

2. The ground grid according to claim 1, wherein the recess is surrounded by three walls, wherein a main wall is substantially parallel to the side of the cell structure, wherein the main wall comprises a sloping slope, where the slope slopes from the top to the bottom.

3. The ground grid according to claim 2, wherein the main wall comprises a vertical piece at the bottom and/or at the top, wherein the slope is provided between the bottom and the top of the main wall.

4. The ground grid according to any of the preceding claims 2 or 3, wherein the slope has an angle of at least 25° with respect to the base plate, preferably at least 45°.

5. The ground grid according to claim 2, wherein the main wall comprises four quadrants, and further comprises at least two teeth, an upper tooth and a lower tooth, wherein the upper tooth is in the non-directly adjacent quadrant with respect to the quadrant in which the lower tooth is positioned.

6. The ground grid according to claim 5, wherein the upper tooth is divided into an upper half and a lower half, wherein the upper half of the upper tooth comprises a sloping surface towards the top of the cell structure, wherein the lower half lies substantially parallel to the main wall of the upper tooth.

7. The ground grid according to claim 5, wherein the lower tooth is divided into an upper half and a lower half, wherein the lower half of the lower tooth comprises a sloping surface towards the underside of the cell structure, wherein the upper half lies substantially parallel to the main wall of the lower tooth.

8. The ground grid according to any of the preceding claims 1 to 7, wherein the male coupling element concerns a T-shaped profile that extends over at least part of the height, preferably the entire height, of the ground grid, corresponding to the T-shaped recess of the female coupling element, the male coupling element comprising a flat plate and at least one arm, where the flat plate is parallel to the side of the cell structure, wherein the flat plate is connected to the side of the cell structure via the at least one arm, wherein the flat plate comprises folded edges pointing towards the side of the cell structure.

9. The ground grid according to claim 8, wherein the flat plate comprises a contact side pointing away from the side of the cell structure, wherein the contact side comprises four quadrants, and further comprises at least two teeth, an upper tooth and a lower tooth, wherein the upper tooth is in the non-directly adjacent quadrant with respect to the quadrant in which the lower tooth is positioned.

10. The ground grid according to claim 9, wherein the upper tooth is divided into an upper half and a lower half, wherein the upper half of the upper tooth comprises a sloping surface towards the top of the cell structure, wherein the lower half lies substantially parallel to the contact side of the upper tooth.

11. The ground grid according to claim 9, wherein the lower tooth is divided into an upper half and a lower half, wherein the lower half of the lower tooth comprises a sloping surface towards the underside of the cell structure, wherein the upper half lies substantially parallel to the contact side of the lower tooth.

12. The ground grid according to any of the preceding claims 1 to 11, wherein the teeth of the male coupling element and teeth of the female coupling elements form a locking system, suitable for locking two adjacent ground grids.

13. The ground grid according to any of the preceding claims 1 to 12, in which the cell structure concerns a tessellating pattern.

14. The ground grid according to any of the preceding claims 1 to 13, wherein the base plate is substantially flat and substantially rectangular, wherein the base plate is provided with at least one circulation hole per cell of the cell structure.

15. Method for connecting two or more ground grids, preferably according to any of the preceding claims 1 to 14, comprising the steps of

a. providing a ground grid comprising a female coupling element;
b. providing a ground grid comprising a male coupling element;
c. positioning the ground grid with the male coupling element at an angle of at least 25° with respect to the ground grid with the female coupling element;
d. sliding the male coupling element into the female coupling element.

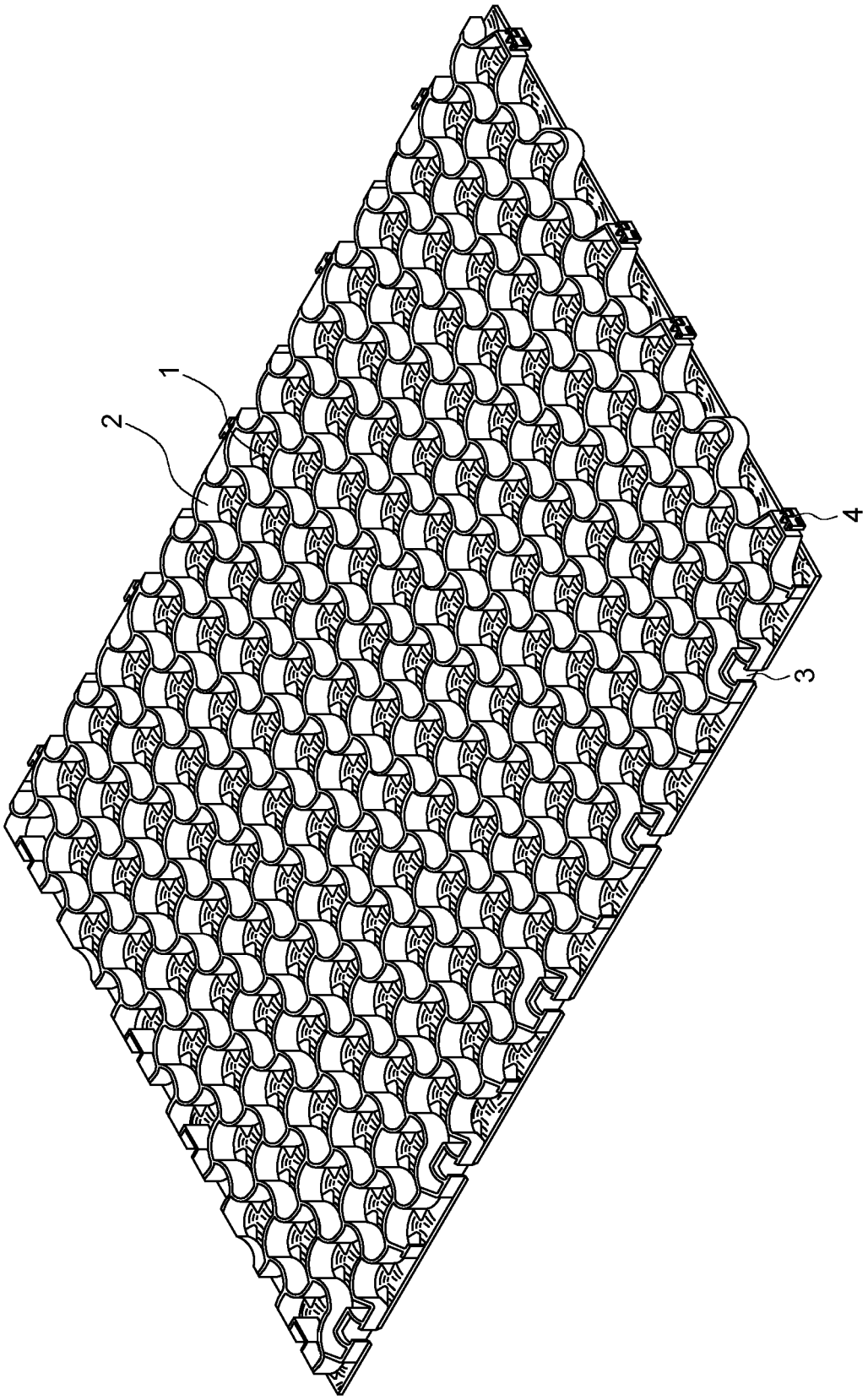

FIG. 1

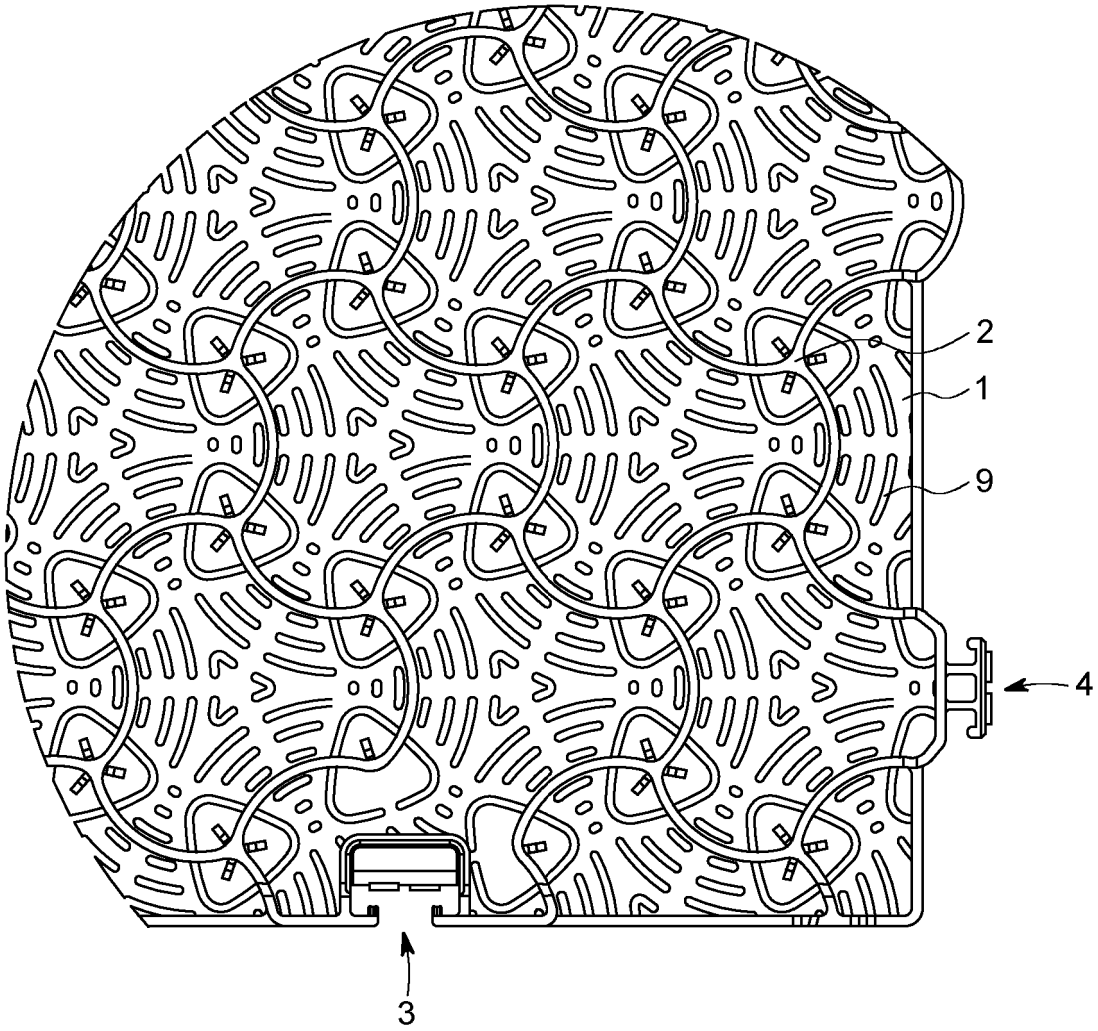

FIG. 2

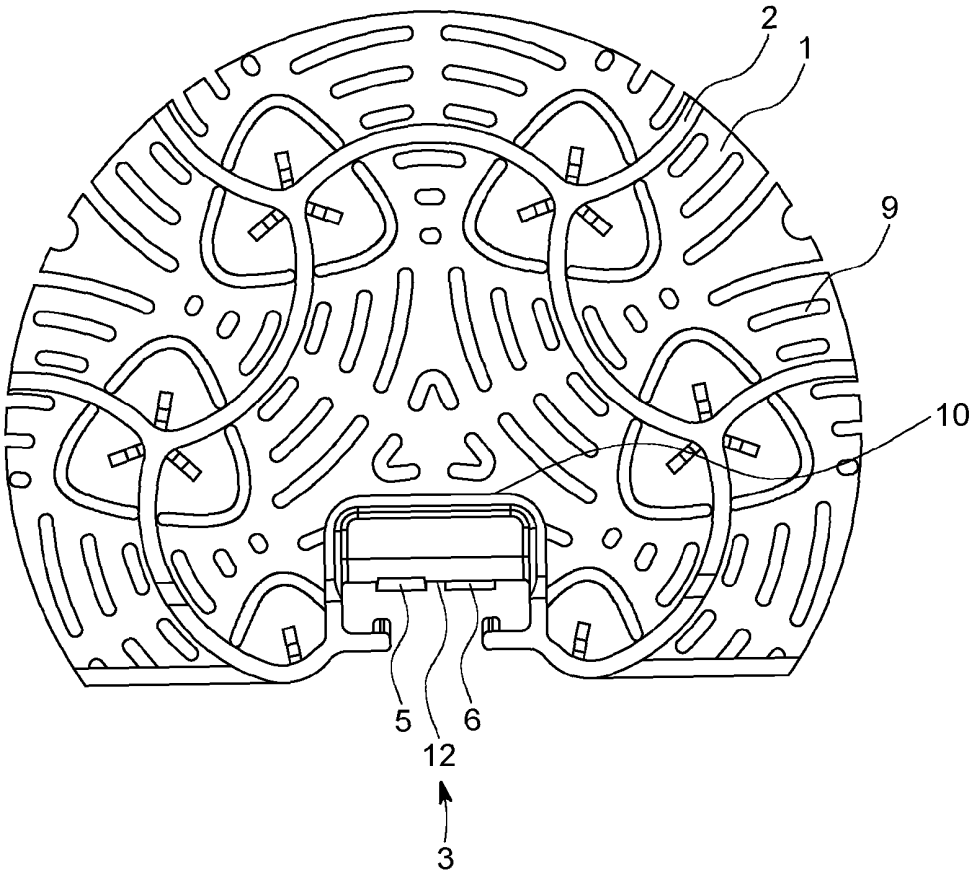

FIG. 3

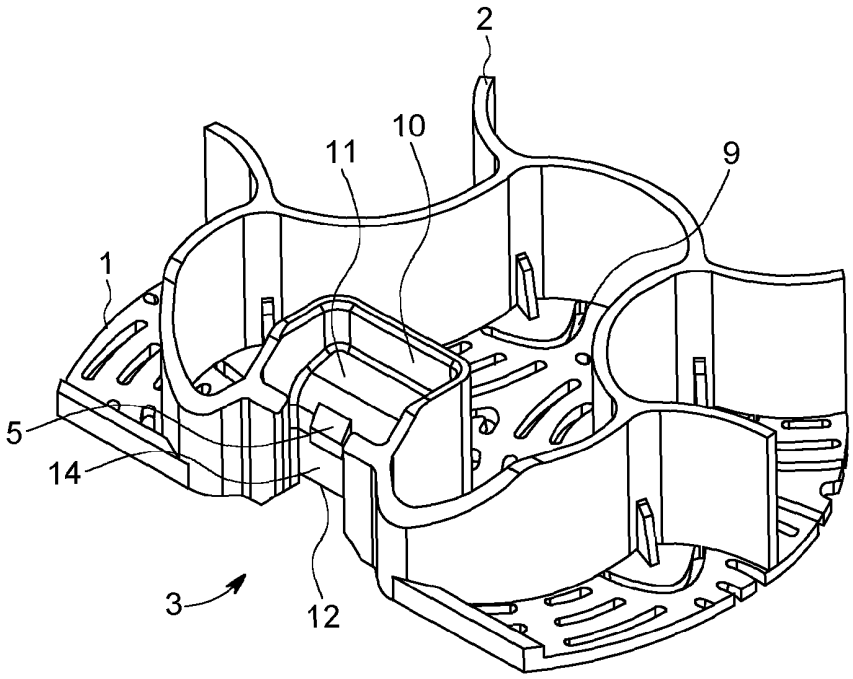

FIG. 4

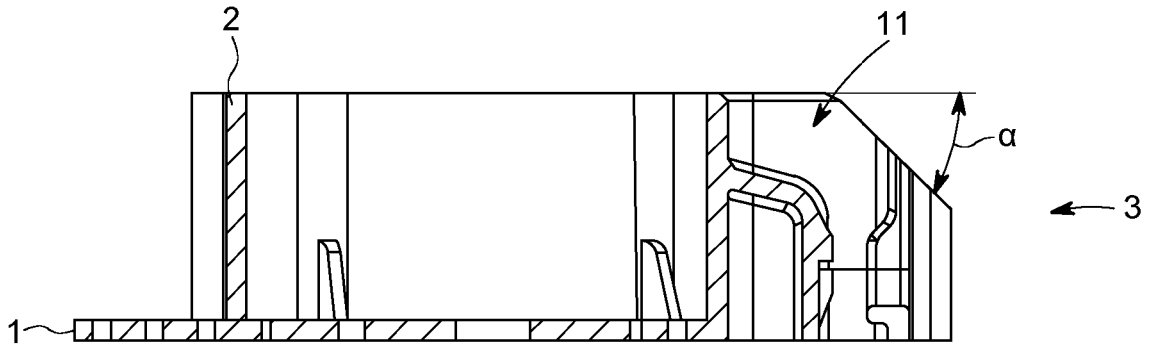

FIG. 5

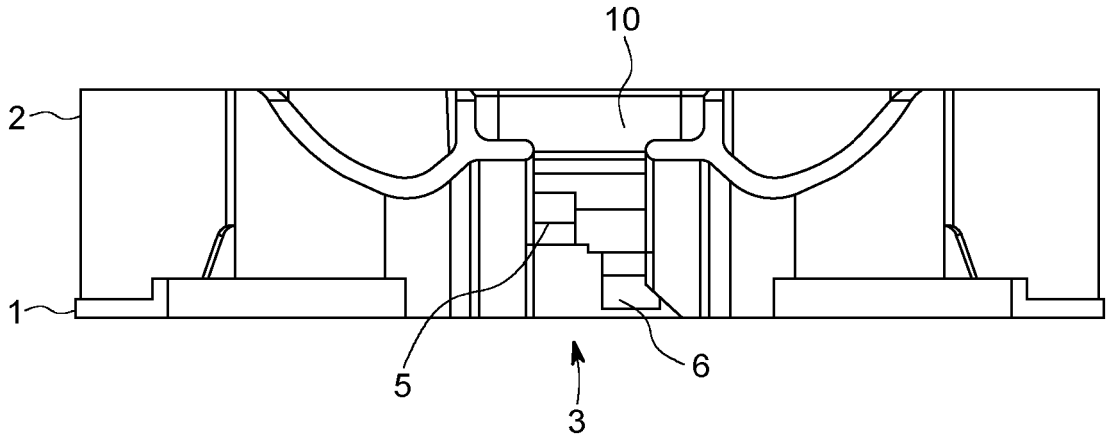

FIG. 6

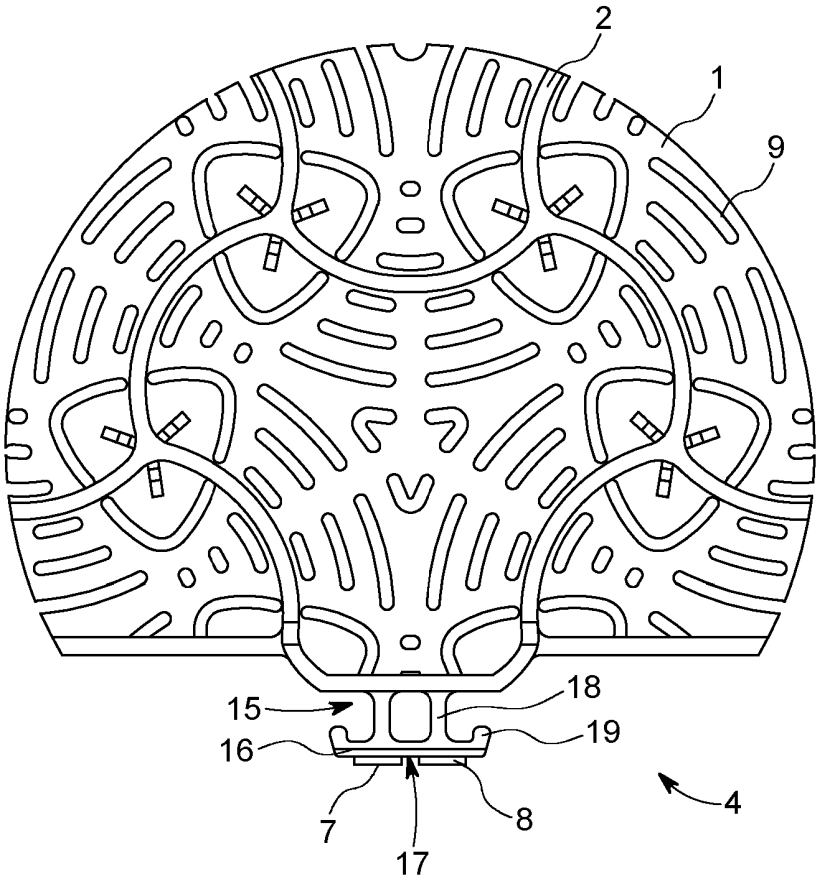

FIG. 7

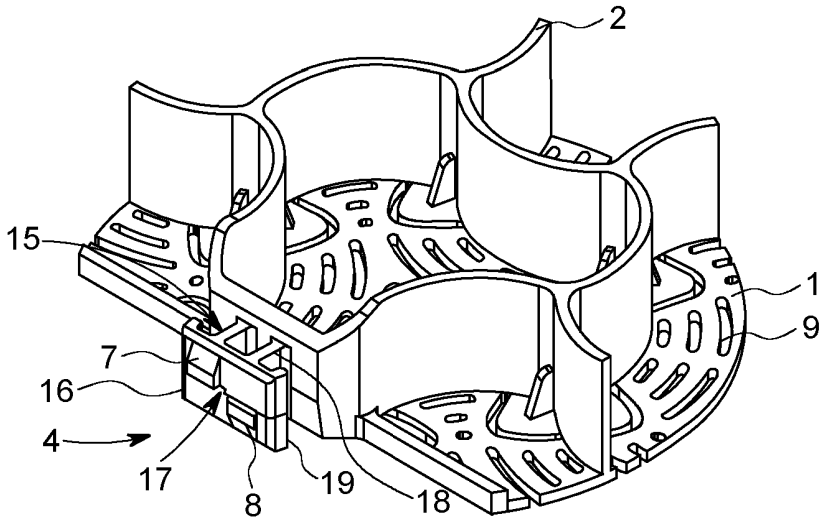

FIG. 8

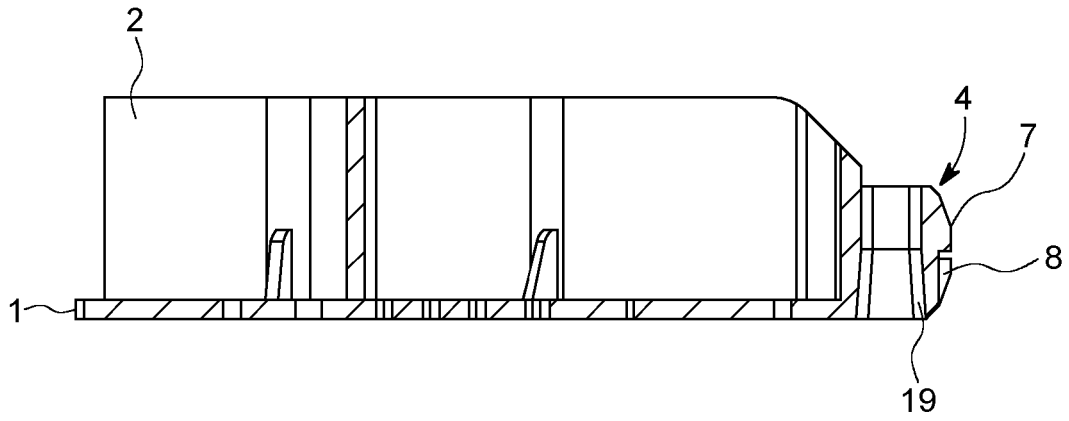

FIG. 9

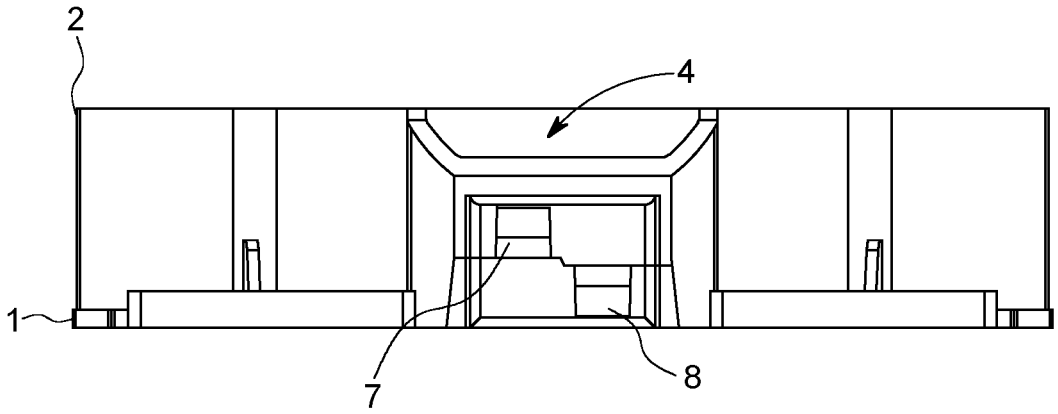

FIG. 10