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(54) **SYSTEM FOR THE CONSTRUCTION OF BLOCK PAVINGS**

(57) System (1) for the creation of block pavings, comprising a plurality of modules (2), intended to be laid on the surface on which the paving is intended to be created, placed next to each other so as to obtain a sort of lattice. Each of the modules (2) includes a base (3), comprising a lower surface (4) resting on the surface intended for the creation of the paving, and a housing (5), open at the top. Each of the modules (2) also includes a block (6), inserted inside the housing (5), comprising, in turn, at least one face (7) intended to constitute the external surface (8) of the paving to be created. The base (3) of each of the modules (2) includes fastening means (9), of a removable type, to the bases (3) of the adjacent modules (2).

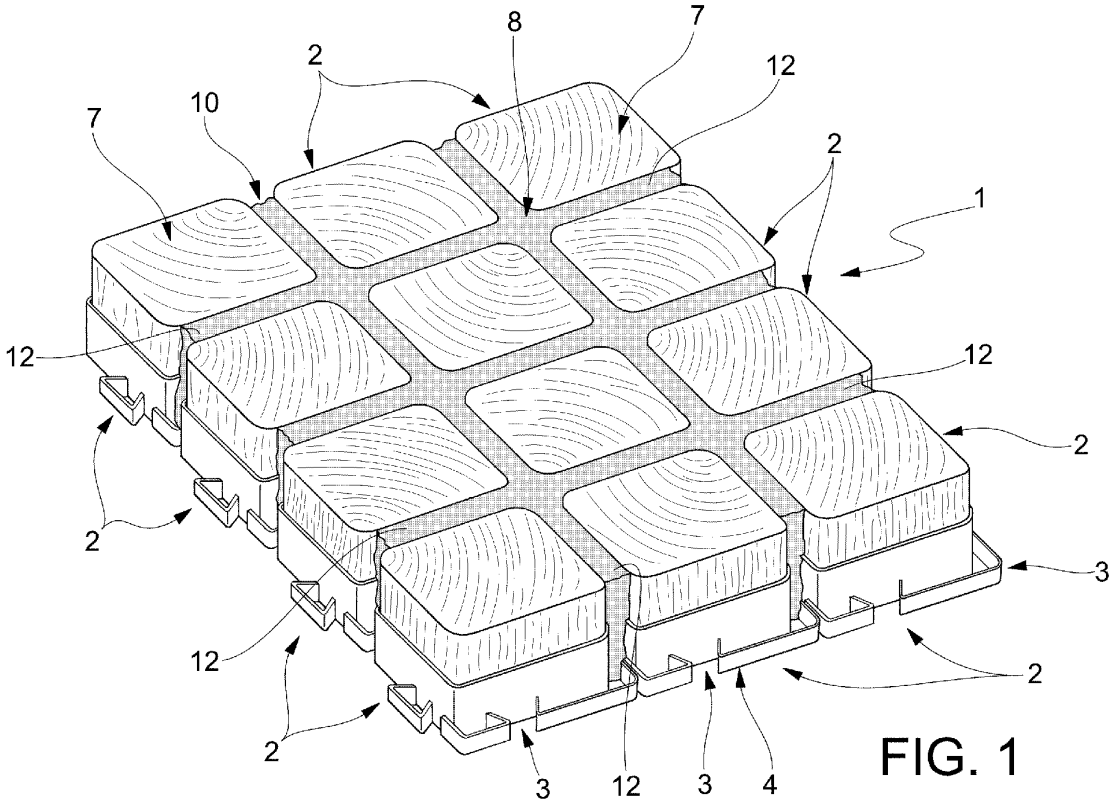

FIG. 1

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Description

TECHNICAL FIELD OF THE INVENTION

[0001] The present invention concerns a system for the construction of block pavings.

BACKGROUND ART

[0002] The traditional cobblestone pavements include blocks of leucitite, a rock of volcanic origin typical of the Colli Albani and Viterbo areas, rough-hewn in the shape of a truncated pyramid measuring approximately 12 x 12 x 18 cm, placed together and laid dry on a bed of sand and/or pozzolana.

[0003] Some contemporary and commercial versions of this type of flooring involve the use of blocks of various sizes (usually with a side not exceeding 12 cm, and a height of 6-8 cm), not rough-hewn in the shape of a pyramid.

[0004] As alternatives to traditional cobblestone paving, there are outdoor paving made with wooden cubes or blocks placed side by side.

[0005] In more detail, some known floorings include blocks made up of wooden parallelepipeds, for example with a base of 10 x 14 cm.

[0006] In some cases, these are blocks of reclaimed oak wood (for example, from old railway sleepers).

[0007] The applicant had the opportunity to test a flooring version with blocks of autoclave-treated pine wood, with a base size of 9 x 9 cm, and a depth varying from 5 to 9 cm.

[0008] The results of the tests carried out by the applicant are satisfactory, and the system can be easily implemented by anyone.

[0009] However, this system has some drawbacks, which are clarified below.

[0010] Firstly, the height of the blocks of 5 cm is not sufficient to guarantee their optimal stability in particularly dry conditions.

[0011] In fact, the sand and the wood tend to shrink: this allows the blocks greater freedom of movement, with the risk of them becoming loose from their respective seats.

[0012] It is therefore necessary, to obtain the best results, to use blocks with a height of at least 9 cm.

[0013] Furthermore, it has been observed that the installation works very well on a concrete screed, while it is more problematic on a so-called stabilized mix where, in the absence of a complex drainage system, there is a risk of significant movements (in particular, lifting) of the system itself.

AIMS OF THE INVENTION

[0014] The technical aim of the present invention is to improve the state of the art in the sector of systems for creating block paving.

[0015] Within such technical aim, it is an object of the present invention to develop a system for the construction of block paving which allows the previously mentioned drawbacks to be overcome.

[0016] Another aim of the present invention is to make available a system for the construction of block paving which is an alternative to existing systems.

[0017] Another object of the present invention is to devise a system for the construction of block paving having limited thickness.

[0018] A further object of the present invention is to develop a system for the construction of block paving that is easy to install and remove, even in public areas without damaging the underlying surface.

[0019] Another object of the present invention is to make available a system for the creation of block paving with simple installation on various types of supports. Another object of the present invention is to create a reliable and resistant block paving system.

[0020] This aim and these objects are achieved by the system for the construction of block pavings according to the attached claim 1.

[0021] The system according to the invention includes a plurality of modules, intended to be laid on the surface on which the paving is intended to be created, placed next to each other so as to obtain a sort of grid.

[0022] Each of the modules comprises, in turn, a base, comprising a lower surface resting on the surface intended for the creation of the paving, and a housing, open at the top.

[0023] Each of the modules also includes a block, inserted inside the housing, comprising, in turn, at least one face intended to constitute the external surface of the paving to be created.

[0024] The base of each of the modules includes means of attachment, of a removable type, to the bases of the adjacent modules.

[0025] Thanks to this measure, the system can be installed easily and quickly on surfaces of various types, and can be removed equally easily when its presence is no longer necessary.

[0026] According to a further aspect of the invention, the system also includes a material to fill the spaces between adjacent modules, suitable for creating joints between the aforementioned faces of the module blocks.

[0027] The polymeric material, inserted in the spaces provided between adjacent modules, gives stability and resistance to the system, as well as allowing for high customization thanks to the choice of colors of the material.

[0028] Preferably, the filling material is polymeric sand.

[0029] The dependent claims refer to preferred and advantageous embodiments of the invention.

BRIEF DESCRITPION OF THE DRAWINGS

[0030] The characteristics of the invention will be better understood by any person skilled in the art from the fol-

lowing description and the attached drawings, given as a nonlimiting example, in which:

figure 1 is a detailed axonometric view of the system for the construction of block paving according to the invention;
figure 2 is a detailed axonometric view of the system, without the filling material for greater clarity;
figure 3 is a perspective view of one of the modules of the system according to the invention;
figure 4 is a perspective view, from a different angle, of the housing of one of the system modules;
figure 5 is a detailed plan view of the system according to the invention, without the filling material for greater clarity;
figure 6 is a detailed plan view of another embodiment of the system according to the invention, without the filling material for greater clarity;
figure 7 is a detailed photograph of the system according to the invention;
figure 8 is a perspective view of two modules of the system according to the invention, in a further embodiment;
figure 9 is a perspective view of a series of modules of the system, according to the embodiment of figure 8, constrained and linked so as to cover a curved or irregular background.

DETAILED DESCRIPTION OF THE INVENTION

[0031] With reference to the attached figure 1, the number 1 generally indicates a system for the creation of block paving according to the present invention.

[0032] System 1 includes a plurality of modules 2 (figure 3), intended to be laid on the surface on which the paving is intended to be created.

[0033] The modules 2, in more detail, are placed next to each other in order to obtain a sort of grid.

[0034] According to an aspect of the invention, each of the modules 2 includes a base 3 (figure 4).

[0035] The base 3 of each of the modules 2 includes a lower surface 4, for resting on the surface intended for the creation of the paving.

[0036] The base 3 of each of the modules 2 also includes a housing 5, open at the top. According to another aspect of the invention, each of the modules 2 also includes a block 6, inserted - in use - inside the housing 5.

[0037] The block 6, in turn, includes at least one face 7, intended to constitute (together with the faces 7 of the other blocks 6) the external surface 8 of the paving to be created.

[0038] According to a further aspect of the invention, the base 3 of each of the modules 2 also includes mutual fastening means 9, of a removable type, to the bases 3 of the adjacent modules 2.

[0039] According to yet another aspect of the invention, the system 1 also includes a filling material 10 of the spaces 11 (see in particular figure 2) included between adjacent modules 2.

[0040] The aforementioned filling material 10 is suitable for creating joints 12 interposed between the faces 7 of the blocks 6 of the modules 2 intended to create the external surface 8 of the paving.

[0041] The 12 joints, for example, can have dimensions of 1 cm wide and 4 cm deep. More in detail, the base 3 of each of the modules 2 includes a bottom 13, and perimeter walls 14, connected to the bottom 13, which define the aforementioned housing 5 for the insertion of the respective block 6.

[0042] The bottom 13 includes, in turn, a central opening 15.

[0043] The fastening means 9 of each of the bases 3 comprise first coupling elements 16 and second coupling elements 17, associated with the perimeter walls 14 of the base 3 of each of the modules 2.

[0044] In particular, the aforementioned first coupling elements 16 and second coupling elements 17 are configured to mutually couple.

[0045] More in detail, the first coupling elements 16 of a base 3 are configured to couple with the second coupling elements 17 of an adjacent base 3.

[0046] The first coupling elements 16 and the second coupling elements 17 have complementary geometries.

[0047] More specifically, the first coupling elements 16 include lateral projections associated with respective perimeter walls 14 of each base 3.

[0048] The second coupling elements 17, however, include respective lateral frame sections 18, also associated with respective perimeter walls 14 of each base 3, which define respective recesses 19.

[0049] These recesses 19 are shaped, in fact, so as to house the first coupling elements 16 to obtain a safe and stable connection between adjacent bases 3.

[0050] In an embodiment of the invention of particular practical interest, the base 3 of each of the modules 2 includes four perimeter walls 14 which form - when the aforementioned base 3 is observed in plan view - a square (or possibly also a rectangle).

[0051] Correspondingly, block 6 of each module 2 also has a parallelepiped shape, with a square or rectangular base.

[0052] For example, the dimensions of each block 6 can be 9 x 9 cm (base) and 4 cm (height).

[0053] The second coupling elements 17 therefore include, in this embodiment, two lateral frame sections 18 - which therefore define respective recesses 19, or seats - provided along two adjacent perimeter walls 14 of each base 3.

[0054] The aforementioned two lateral frame sections 18 are mutually connected, that is, in other words they constitute, in fact, a single continuous section of frame which surrounds two adjacent perimeter walls 14 of each base 3.

[0055] Furthermore, in this embodiment, the fastening means 9 comprise two first coupling elements 16 provided along the two respective remaining perimeter walls

14, also adjacent to each other, of each base 3.

[0056] According to a further aspect of the invention, the first coupling elements 16 and the second coupling elements 17 are substantially shaped like a dovetail (and therefore with complementary shapes to each other).

[0057] In other words, the first coupling elements 16 are made up of dovetail-shaped protrusions, while the second coupling elements 17 include recesses 19, also in the shape of a dovetail, of dimensions suitable for housing the first coupling elements 16.

[0058] This measure therefore makes it possible to obtain a safe and stable mutual connection between the bases 3 of the adjacent modules 2.

[0059] As can be seen, in particular, in figures 2 and 5, the fastening means 9 between the bases 3 of the adjacent modules 2 are configured - thanks, above all, to the shape and dimensions of the lateral frame sections 18 - in such a way as to guarantee a certain distance between the bases 3 of the modules 2 themselves, and therefore between the respective blocks 6.

[0060] The lateral frame sections 18 of the second coupling elements 17, and the first coupling elements 16 are, in particular, defined by further walls 20 which develop from the perimeter walls 14 of each of the bases 3; these further walls 20 are lower in height than the aforementioned perimeter walls 14.

[0061] Furthermore, both the lateral frame sections 18 of the second coupling elements 17 and the first coupling elements 16 conform respective lower portions 21, which are flat and coplanar to the bottom 13 of the base 3.

[0062] According to another aspect of the invention, the bottom 13 and/or the first coupling elements 16 and/or the second coupling elements 17 comprise respective drainage holes 22.

[0063] In particular, the drainage holes 22 can be provided in the lower portions 21 of the first coupling elements 16 and in the lateral frame sections 18 of the second coupling elements 17.

[0064] The drainage holes 22 have the function of facilitating the flow of water from the various modules 2 of system 1.

[0065] In an embodiment of the invention of particular practical interest, the base 3 of each of the modules 2 is made of injection molded plastic.

[0066] Furthermore, in a preferred form of the invention, the block 6 of each of the modules 2 is made of a material chosen from wood, concrete, terracotta.

[0067] For example, each block 6 could be made of autoclaved pine wood.

[0068] According to yet another aspect of the invention, the filling material 10 of the spaces 11 defined between the blocks 6 of the modules 2 comprises polymeric sand.

[0069] This polymeric sand could be of various colors to increase the decorative potential of system 1.

[0070] In an embodiment of the invention, illustrated in detail in figure 6, the system 1 can include a perimeter curb 23, which surrounds the modules 2 of the system 1 (all or only some of them).

[0071] The perimeter curb 23 can have the function of finishing and/or containing the filling material 10 of system 1.

[0072] The perimeter curb 23 includes a plurality of segments 24; the segments 24 can be associated with the bases 3 of the modules 2.

[0073] The segments 24 are arranged adjacent to each other, so as to obtain a substantially continuous structure.

[0074] Some of the segments 24, if designed to be installed at the corners of the system 1, can have a rounded end, as shown schematically in the aforementioned figure 6.

[0075] Each of the segments 24 includes a respective lateral protrusion 25, or a respective indentation 26 (depending on the positions of the various segments 24 with respect to the modules 2); each protrusion 25, or indentation 26, has an identical, or substantially identical, shape to that of each of the first coupling elements 16, or of the second coupling elements 17, of the bases 3.

[0076] In this way, each of these protrusions 25 of the segments 24 is suitable to engage in a respective recess 19 of a second coupling element 17 of one of the bases 3 of the system 1, so as to obtain a stable constraint of the perimeter curb 23 to the bases 3; or, each indentation 26 is suitable for housing a respective first coupling element 16 of one of the bases 3.

[0077] The perimeter curb 23 can be made of molded plastic, as are the bases 3 of the modules 2, or of another suitable material (for example, chosen for particular aesthetic reasons).

[0078] The segments 24 can be made with the respective external sides having an angle to the ground less than 90°, for anti-stumbling purposes.

[0079] Another embodiment of system 1 according to the invention is illustrated in figures 8, 9.

[0080] This embodiment differs from the previous embodiment in that the lower portion 21 of the lateral frame sections 18 also extends to the recesses 19 of the second coupling elements 17, so as to obtain, also at each of these, some respective bottom walls.

[0081] The lower portions 21 extended to the recesses 19 also include respective drainage holes 22.

[0082] Thanks to this extension of the lower portion 21 - as shown, in particular, in figure 9 - the system can be easily installed in ground conditions with an irregular or curved surface.

[0083] In fact, each lower portion 21 of each recess 19 constitutes a support surface for the corresponding first coupling element 16, so that the mutual bond between two adjacent modules 2 is made more stable, and the risk of accidental detachment is limited.

[0084] More in detail, in practice each lower portion 21 of a module 2 limits the possible relative rotation of the adjacent module 2, so as to prevent the overall concatenation of the modules 2 from taking on unexpected or irregular shapes, as shown in the aforementioned figure 9.

[0085] It has thus been seen how the invention

achieves the proposed objects.

[0086] The system allows obtaining significant advantages both in terms of the quality of the result (as can be seen in the photograph in figure 7) and in terms of its installation method.

[0087] In fact, the system can be easily set up on various types of substrates, for example a rigid substrate such as screed, concrete, asphalt, stone, or a stabilized substrate. The system can be customized in various ways, thanks to the choice of the material of the various blocks 6 (which, naturally, can be identical to each other, but also different) and as regards the choice of the filling material 10.

[0088] The system is considerably more limited in thickness than known installations. Furthermore, thanks to the particular and innovative conformation of the fastening means 9, it can be installed easily and quickly, and equally removed, without ruining the underlying surface.

[0089] The present invention has been described according to preferred embodiments, but equivalent variations can be conceived without departing from the scope of protection offered by the following claims.

Claims

1. System (1) for the construction of block pavings, comprising:

   a plurality of modules (2), intended to be laid on the surface on which the paving is intended to be built, placed next to each other so as to obtain a sort of grid;
   each of said modules (2) comprising a base (3), comprising a lower surface (4) resting on said surface intended for creating the paving, and a housing (5), open at the top;
   each of said modules (2) further comprising a block (6), inserted inside said housing (5), comprising, in turn, at least one face (7) intended to constitute the external surface (8) of the paving to be realized;
   said base (3) of each of said modules (2) comprising fastening means (9), of a removable type, to the bases (3) of the adjacent modules (2);
   wherein said base (3) of each of said modules (2) includes a bottom (13) and perimeter walls (14) which define said housing (5),
   wherein said fastening means (9) comprise first coupling elements (16) and second coupling elements (17), associated with said perimeter walls (14) of said base (3) of each of said modules (2), said first coupling elements (16) and said second coupling elements (17) being configured to mutually couple;
   wherein said first coupling elements (16) and said second coupling elements (17) have complementary geometries, said first coupling elements (16) comprising lateral projections associated with respective perimeter walls (14) of said base (3),
   said second coupling elements (17) comprising respective lateral frame sections (18), associated with respective perimeter walls (14) of said base (3), which define respective recesses (19), said recesses (19) being shaped so as to house said first coupling elements (16);
   characterized in that said lateral frame sections (18) of said second coupling elements (17), and said first coupling elements (16), conform respective lower portions (21), flat and coplanar to said bottom (13) of said base (3), and by the fact that said lower portions (21) include respective drainage holes (22).

2. System (1) according to claim 1, in which said lower portion (21) of said lateral frame sections (18) also extends to the recesses (19) of said second coupling elements (17), so as to obtain, even at each of said recesses (19), respective bottom walls.

3. System (1) according to claim 2, in which said lower portion (21) extended to said recesses (19) includes respective drainage holes (22).

4. System (1) according to one of the previous claims, in which said base (3) of each of said modules (2) includes four perimeter walls (14) which conform, when said base (3) is observed in plan, a square or a rectangle, said second coupling elements (17) comprising two lateral frame sections (18), defining the respective recesses (19), provided along two perimeter walls (14) adjacent to each other of said base (3), said fastening means (9) further comprising two first coupling elements (16) provided along the two respective remaining perimeter walls (14), also adjacent to each other, of said base (3).

5. System (1) according to one of the previous claims, in which said first coupling elements (16) comprise dovetail-shaped protrusions, while said second coupling elements (17) comprise recesses (19), also dovetail-shaped, of dimensions suitable for housing said first coupling elements (16).

6. System (1) according to one of the previous claims, wherein said bottom (13) includes drainage holes (22).

7. System (1) according to one of the previous claims, wherein said base (3) of each of said modules (2) is made of injection molded plastic.

8. System (1) according to one of the previous claims,

in which said block (6) of each of said modules (2) is made of a material chosen from wood, concrete, terracotta.

9. System (1) according to one of the previous claims, comprising at least one filling material (10) of the spaces (11) included between adjacent modules (2), suitable for creating joints (12) interposed between said faces (7) of said blocks (6) of said modules (2).

10. System (1) according to the previous claim, in which said filling material (10) comprises polymeric sand and/or granulates, possibly of various colours.

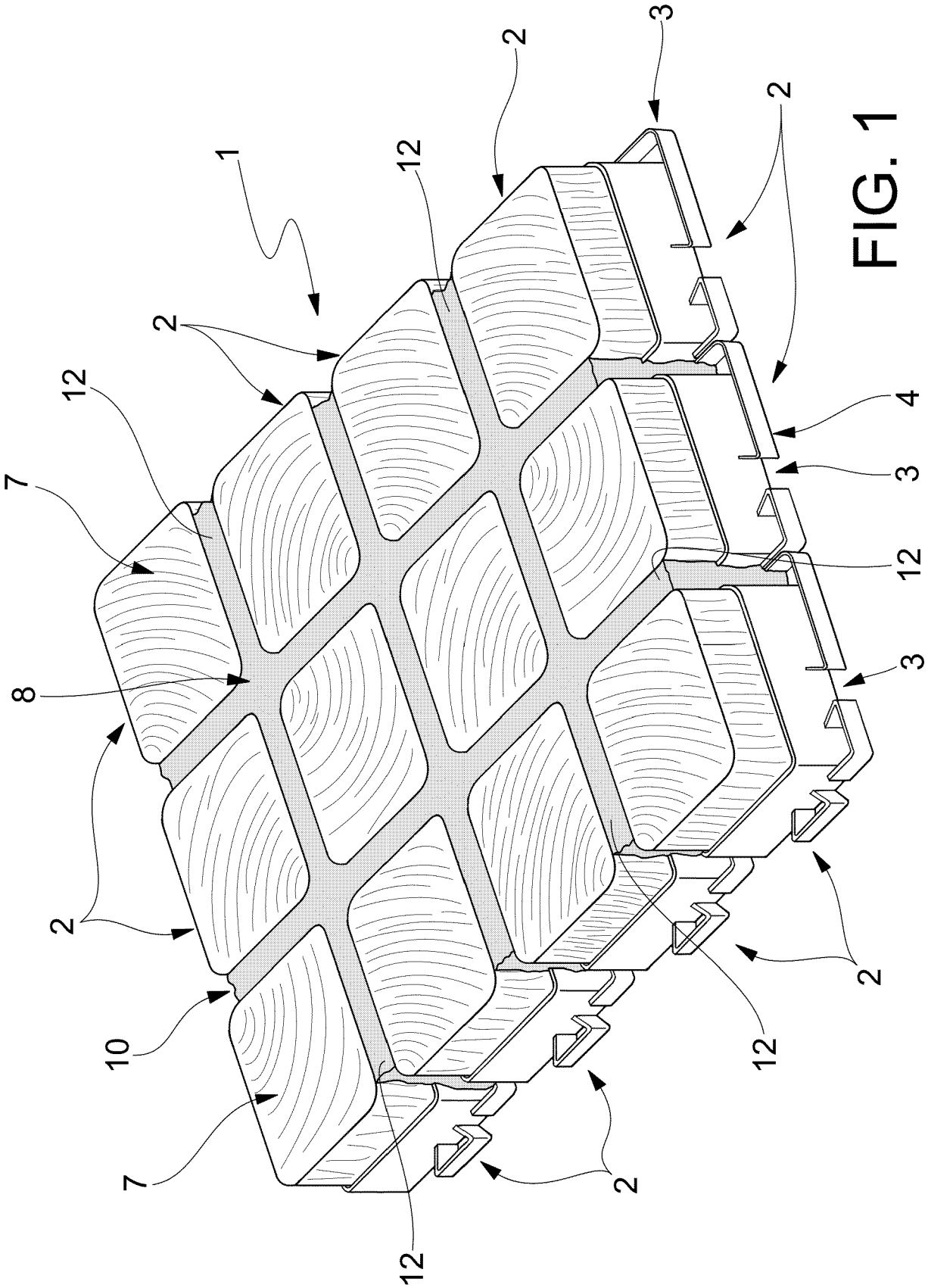

FIG. 1

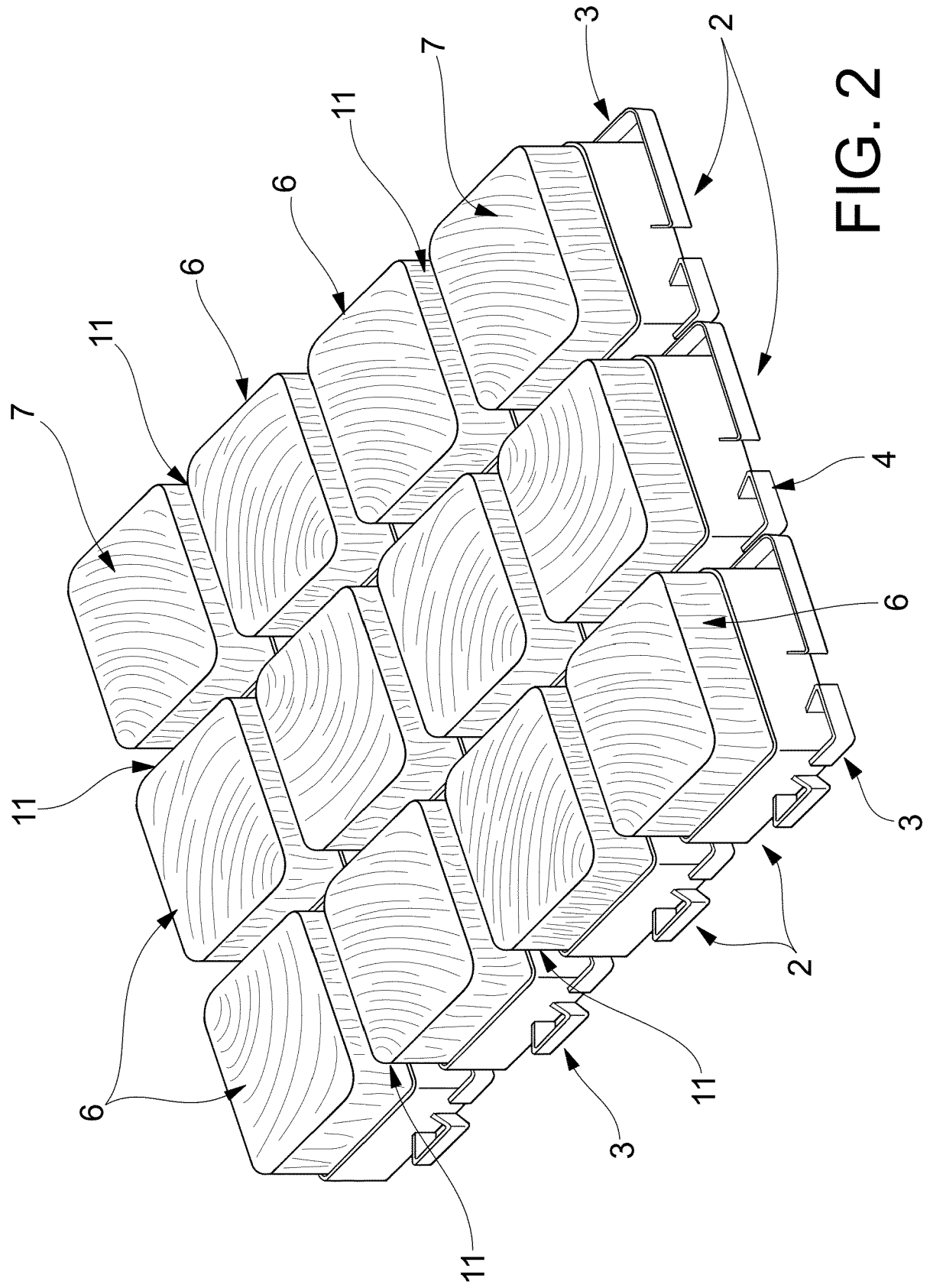

FIG. 2

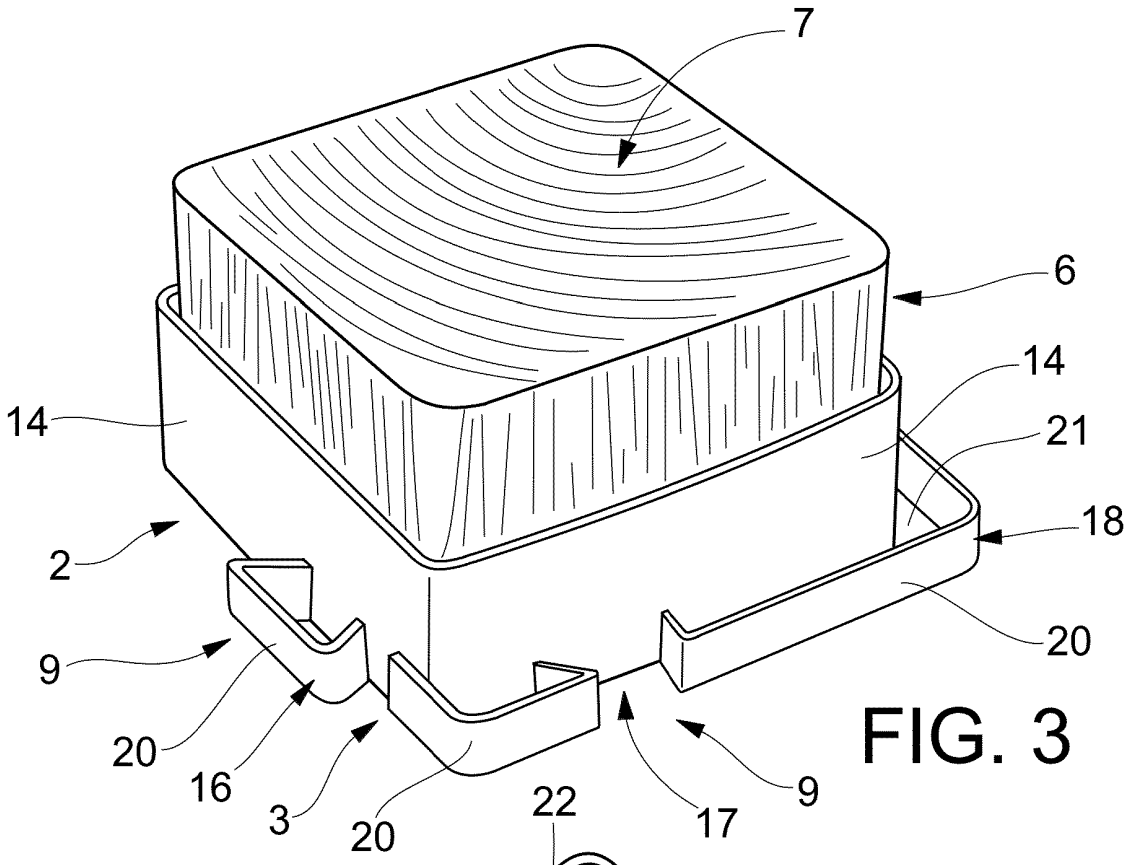
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FIG. 3

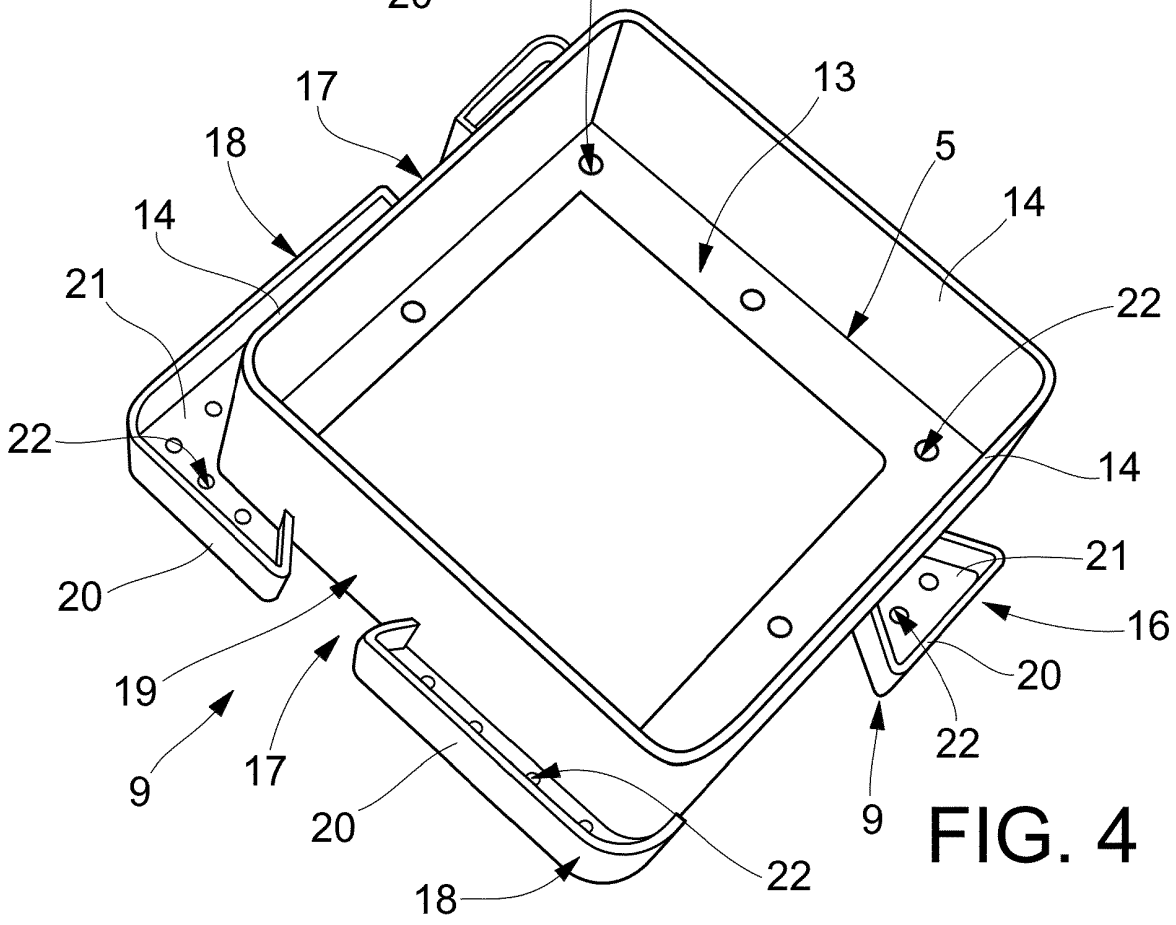
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FIG. 4

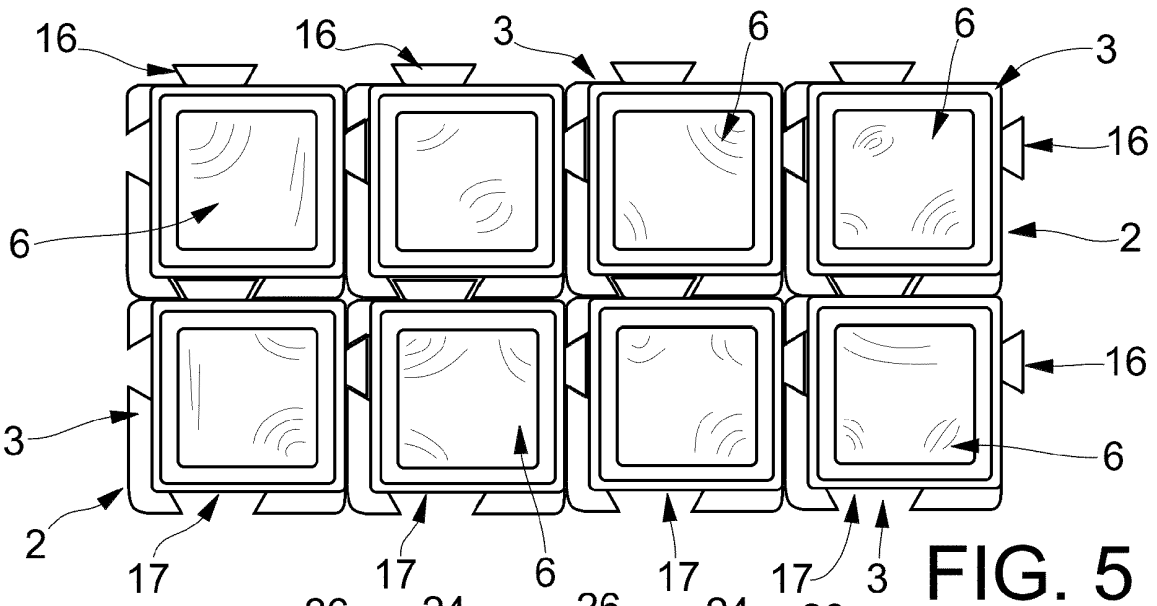

FIG. 5

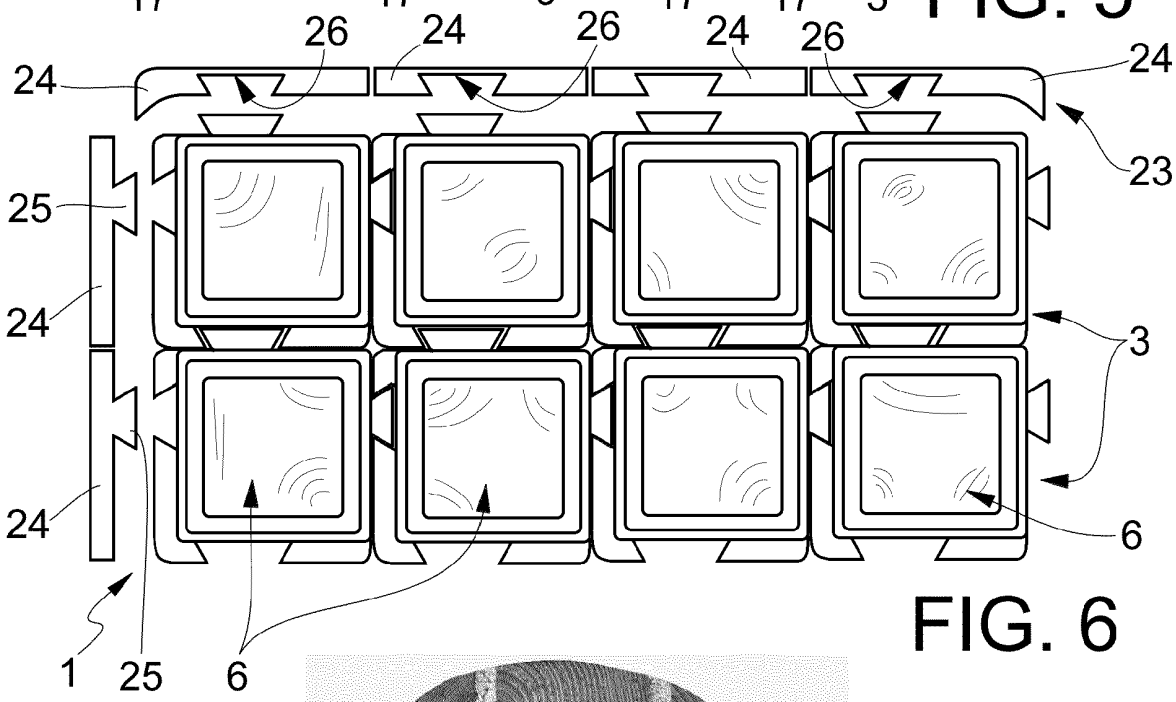

FIG. 6

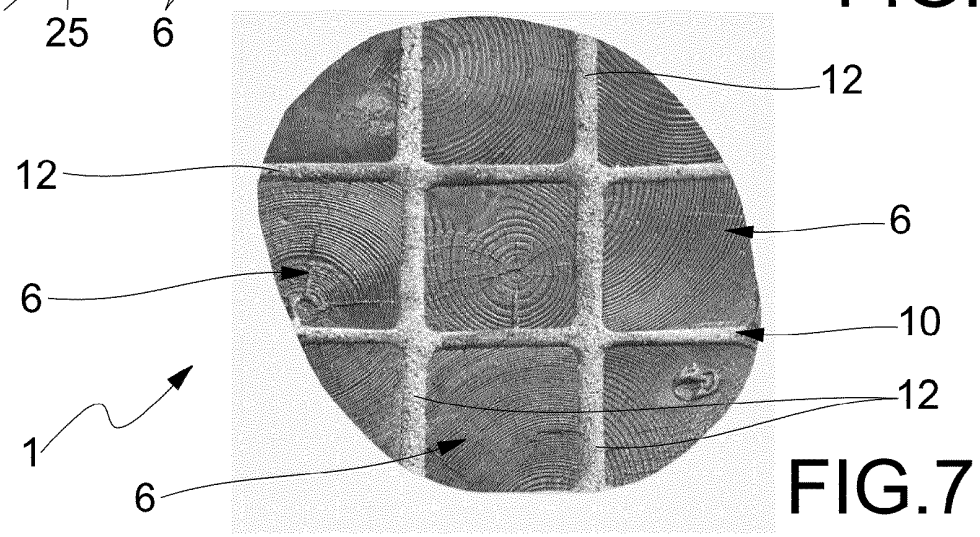

FIG.7

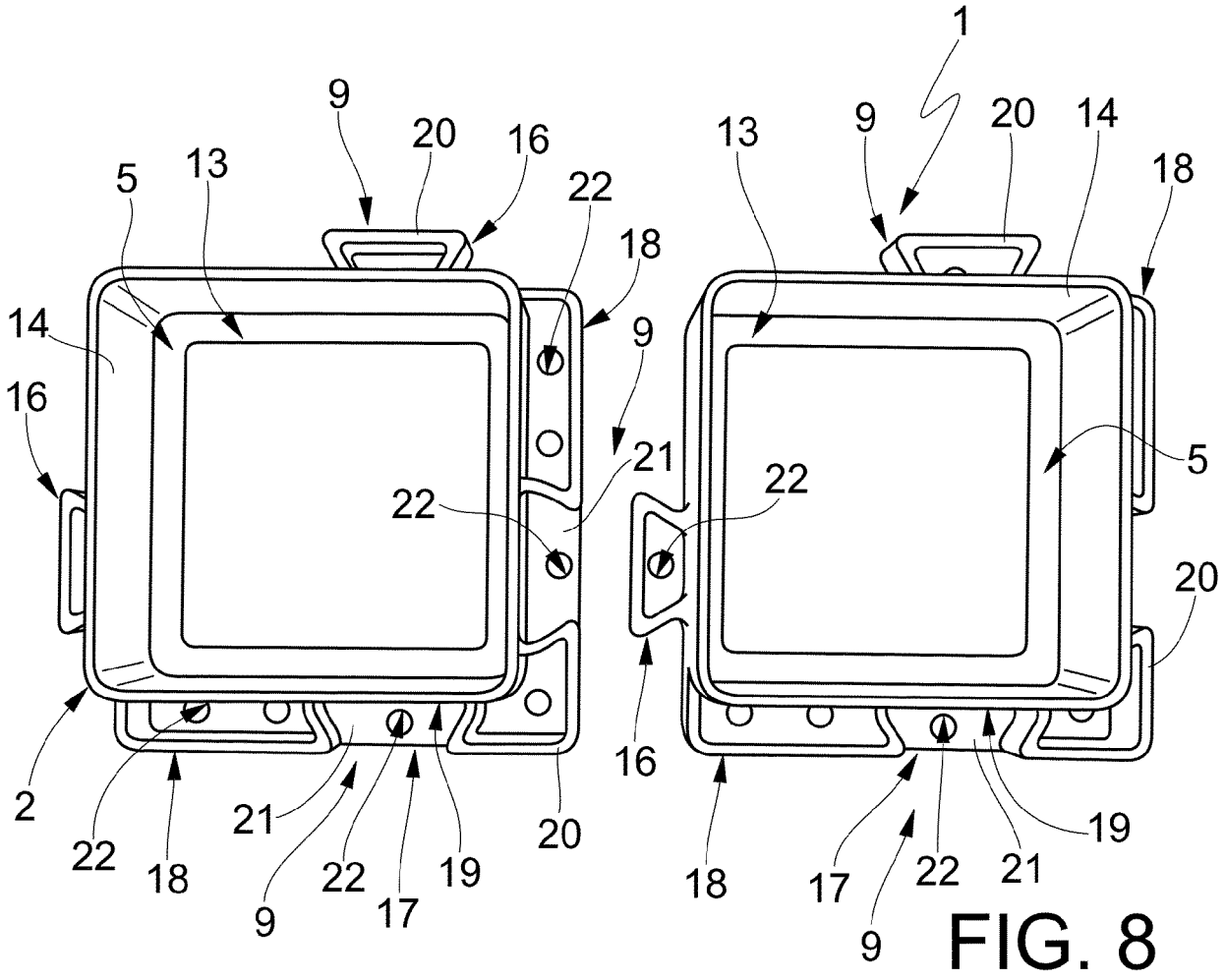
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FIG. 8

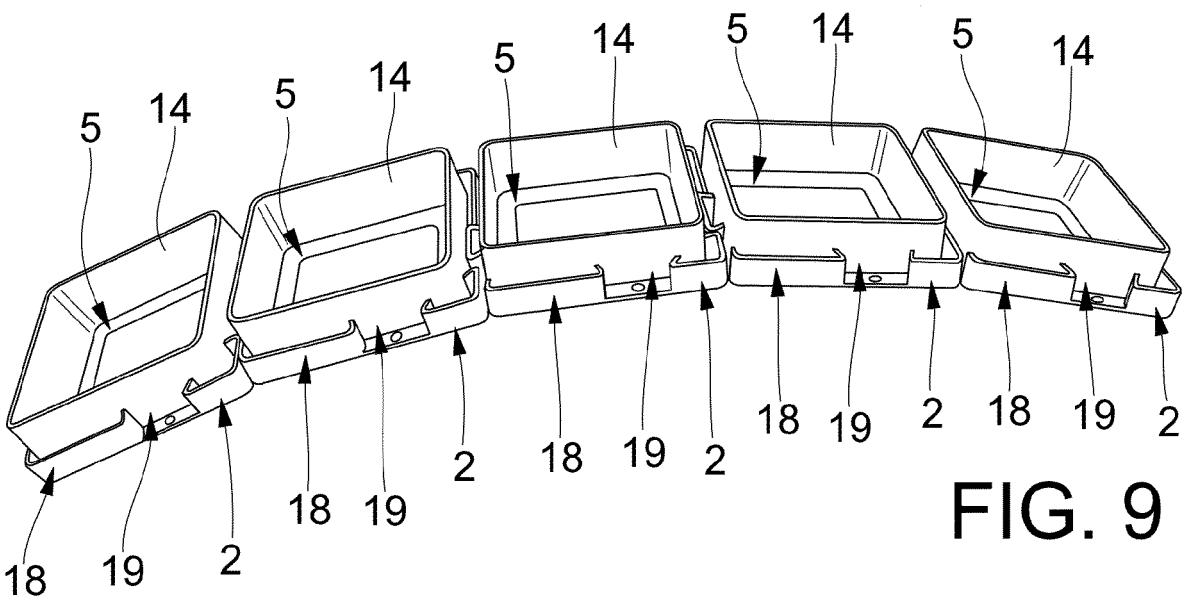
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FIG. 9

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EUROPEAN SEARCH REPORT

Application Number
EP 24 17 5935

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	GB 2 605 789 A (JAKE ALEXANDER OLDHAM [GB]) 19 October 2022 (2022-10-19) * page 19, lines 1-26; figures *	1-10	INV. E01C5/00 E01C5/20
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A	US 2023/016172 A1 (BENNINGA SIEVERT JAN [NL]) 19 January 2023 (2023-01-19) * the whole document *	1-10	

TECHNICAL FIELDS SEARCHED (IPC)

E01C

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	30 August 2024	Durrenberger, Xavier

CATEGORY OF CITED DOCUMENTS

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