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(54) SUPPORTING SYSTEM FOR RAISED FLOORS AND FLOOR OBTAINED BY SAID SUPPORTING SYSTEM

(57) The present invention refers to a supporting system for raised floorings made of wooden planks and to the relative flooring obtained by using said supporting system.

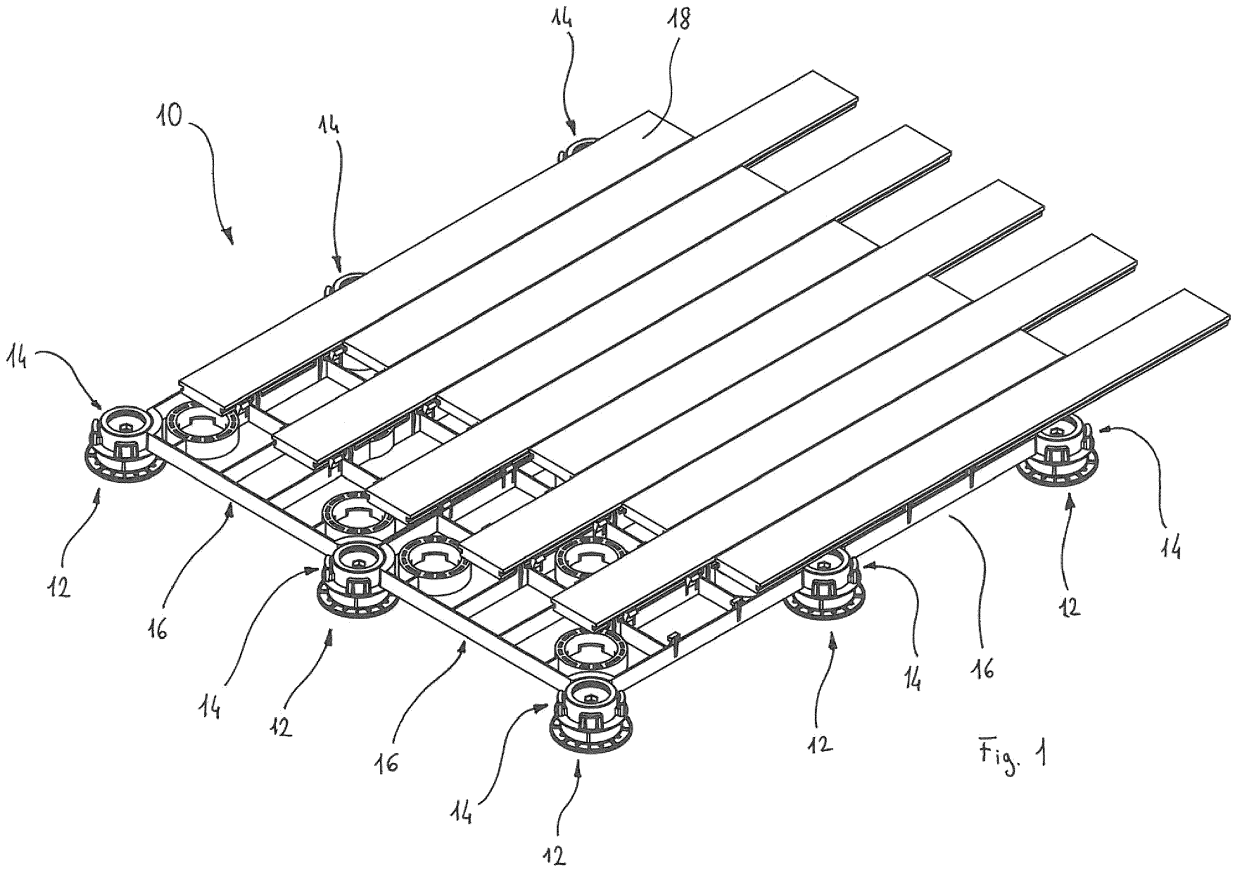

Fig. 1

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Description

[0001] The present invention refers in general to a supporting system for raised floorings and to the relative flooring obtained by using said system. More particularly, the present invention refers to a supporting system for floorings made of wooden planks or planks of other materials and to a flooring comprising said system and the wooden planks or planks made of other materials.

[0002] The raised floorings are systems of elevated flooring in which the treading area rests on a structure elevated from the ground. Accordingly, an inspectionable technical room is obtained between the bottom and the treading plane. The technical room can be used, for example, for the passage of cables.

[0003] As is known, there exist several types of raised floorings but none of them allows to realize a stable wooden surface, for example by using wooden planks.

[0004] In fact, the structures used until today do not allow to stably fix the wooden planks to the possible lower supports, so that over time it is possible the formation of clearances that make the entire flooring unstable.

[0005] An aim of the invention is, therefore, to carry out a supporting system for raised floorings made of wooden planks or planks made of a similar material in order to overcome the problems of the prior art.

[0006] Another aim of the invention is to provide a supporting system for raised floorings obtained with wooden planks, in which system the wooden planks are tightly coupled to the lower supporting structure.

[0007] Another aim of the invention is to provide a supporting system for raised floorings made of wooden planks, which system is easy to carry out and, at the same time it is strong and stable.

[0008] All the aims and still others are achieved according to the invention by a supporting system for planks made of wood or similar material to obtain floorings raised with respect to a reference ground, said supporting system comprising at least one grid to which the planks are coupled, each plank having symmetrical lateral edges comprising a lower portion projecting laterally and an upper portion projecting laterally beyond said lower portion so as to form a recess between the upper portion and the lower portion.

The supporting system is characterized by the fact that the grid comprises a reticular structure from which at least one interlocking tooth and at least one mushroom-shaped tooth protrude.

The one or more interlocking teeth comprise a vertical projection from which an orthogonal projection extends orthogonally while the one or more mushroom-shaped teeth comprise a stem and a head, and are arranged on the reticular structure at a center distance from the respective interlocking tooth equal to the width of the plank.

The head is shaped as a slide coupling element on the side facing the at least one interlocking tooth; the mushroom-shaped tooth has, on the opposite side to the interlocking tooth, a homologous profile to the shape of the lower portion of the lateral edges of the planks, so that once a first plank has been blocked by the interlocking tooth on one side, and by the mushroom-shaped tooth on the other side, a second plank connected to the grid through the profile of the same mushroom-shaped tooth blocks any movement of the same mushroom-shaped tooth avoiding any displacements of the first plank.

[0009] Through this configuration, in order to remove a plank from the supporting structure, it is necessary to remove the plank fixed immediately after the plank to be removed because the plank fixed immediately after the plank to be removed blocks the adjacent mushroom-shaped teeth between the two planks in question.

[0010] Advantageously, the supporting system according to the invention provides that the at least one interlocking tooth may be arranged in correspondence of the lateral edge of the grid and at least one slide tooth is arranged, at the same height, on the opposite edge of the lateral edge so that if more grids are placed side by side, the slide tooth abuts on the interlocking tooth.

[0011] In this way, the locking continuity of the planks is maintained also between adjacent grids since the interlocking tooth of the next grid blocks in position the slide tooth of the front grid.

[0012] Besides, the grid may comprise at least one circular crown body to which a support may be connected in order to lift the grid from the reference ground.

[0013] Advantageously, an arched angular body may be comprised for each of the four corners of the grid, so that a support may be coupled to it.

[0014] In addition, the support may consist of a circular crown element and four arc bodies, all bodies being protruding from a base plate, centrally holed; four arched seats may be formed in the circular crown body to receive the four arc bodies of the support so as to obtain a stable connection.

[0015] Likewise, a seat may be formed in the arched angular bodies to receive an arc body of the support so as to obtain a fixing of the support also along the perimeter of the grid.

[0016] Advantageously, the supporting system may comprise a foot formed by a base from which a threaded trunk rises, so that said foot may be coupled with the support, internally threaded, and the height of the support from the reference ground may be varied.

[0017] The stem of each mushroom-shaped tooth is inclined toward the interlocking tooth to which the plank may be coupled in cooperation with the same mushroom-shaped tooth so as to assist the elastic effect of the tooth in the clip interlocking phases.

[0018] Each mushroom-shaped tooth and/or each interlocking tooth may comprise a vertical reinforcing rib to strengthen the various teeth.

[0019] The aims of the invention are reached by a flooring comprising a supporting system according to the present invention and at least one plank with symmetrical lateral edges comprising a lower portion projecting laterally and an upper portion projecting laterally beyond the

same lower portion so as to form a recess between the upper portion and the lower portion.

[0020] Further features and details of the invention will be better understood from the following specification which is provided by way of a non-limiting example as well as from the annexed drawings, wherein:

Figure 1 is an axonometric top view of a supporting system according to the invention, formed by a set of adjacent grids on which wooden planks are fixed;
Figure 2 is a side view of the supporting system in Figure 1, in which only one grid is visible;
Figure 3 is an axonometric top view of the grid in Figure 2;
Figure 4 is a top view of the grid in Figure 2;
Figure 5 is a side view of the grid in Figure 2, sectioned according to a plane A-A indicated in Figure 4;
Figure 6 is a side view of the grid in Figure 4.

[0021] With reference to the annexed figures, in particular Figure 1 and 2, reference number 10 denotes a supporting system for raised floorings made of wooden planks 18 or planks made of a similar material.

[0022] The supporting system 10 comprises a series of feet 12 screwed in respective supports 14 that in turn are fixed to one or more grids 16. The grid comprises protruding elements that block in position the planks 18 forming the visible flooring.

[0023] Each foot 12 is formed by a base 20 from which a threaded trunk 22 rises.

[0024] Each support 14 is formed by a circular crown element 24 and four arc bodies 26, all bodies being protruding from a base plate 28, holed centrally.

[0025] The four arc bodies 26 are arranged around the circular crown element 24 at a short distance from such element, and are separated from one another by an angle of 90 degrees.

[0026] The circular crown element 24 is internally threaded to screw the threaded trunk 22 of the foot 12. Through this threaded coupling it is possible to adjust the height of the support 14 from a lower support surface on which the base 20 of the foot 12 abuts.

[0027] Each grid 16, shown separately in Figures 3 to 6, comprises a reticular structure 30 formed by a series of strips, more precisely four first parallel strips 32 (only one of them being indicated in Figure 3) and six second parallel strips 34 (only one of them being indicated in Figure 3) which are orthogonal to the four first parallel strips 32.

[0028] Accordingly, the reticular structure 30 has a quadrangular shape, peripherally defined by two first strips 32 and two second strips 34.

[0029] At the four corners of the reticular structure 30, the strips 32, 34 are joined together by arched angular bodies 36 which are internally hollow so as to obtain, in each of them, a seat 38 adapted to receive an arc body 26 of a support 14.

[0030] Besides, five circular crown bodies 40, 42 are arranged inside the perimeter of the reticular structure 30 and are integral to one or more of the second strips 34. More precisely, a first circular crown body 40 is disposed substantially at the center of the reticular structure 30 while each of the remaining four second circular crown bodies 42 is disposed at a corner of the reticular structure, adjacent to a respective arched angular body 36.

[0031] Since each circular crown body 40, 42 is hollow, it is possible to obtain four arched seats 44 which are angularly spaced by 90 degrees and have a conformation homologous to the seat 38 of each arched angular body 36.

[0032] A support 14 may be coupled to each arched angular body 36 and to each circular crown body 40, 42.

[0033] More particularly, in the case of the arched angular bodies 36, an arc body 26 of the support 14 may be received in the seat 38 while a part of the circular crown element 24 of the same support 14 abuts substantially on the external lateral surface of the same arched angular body 36.

[0034] In the case of the circular crown bodies 40, 42, each of the four arc bodies 26 of a support 14 is inserted into the respective arched seat 44 and the entire circular crown element 24 of the same support 14 abuts substantially on the lateral external surface of the same circular crown body 40,42.

[0035] The presence of the five circular crown bodies 40, 42 and the four arched angular bodies 36 allows to arrange one or more supports 14 to support a grid 16, such supports being positioned according to the different needs.

[0036] For example, in the case of grids to be arranged centrally to the floor, it is preferable to position supports 14 at the corners of each grid 16, coupled with the four arched angular bodies 36. In this way, a support 14 may be coupled to four different grids 16 with a minimum use of supports 14.

[0037] On the contrary, in the case it is necessary to cut one or more grids when the support structure to be obtained is adjacent to a wall, it is possible to use the circular crown bodies 40, 42 remained in the grid itself in order to couple the supports 14 to the grid 16.

[0038] Besides, each grid 16 comprises a series of protruding bodies adapted to hold the planks 18, all protruding bodies being connected to the second strips 34 also by means of a strengthening rib provided on each body.

[0039] The protruding bodies are of three different types: interlocking teeth 46, slide teeth 48 and mushroom-shaped teeth 50.

[0040] The interlocking teeth 46 include a vertical projection 52 which ends with an orthogonal projection 54 having a rectangular profile and a development perpendicular to the vertical projection 52. The interlocking teeth 46 are arranged in pairs on each of the second strips 34, except for one of the two second peripheral strips 34 from which, however, two slide teeth 48 protrude.

[0041] All the interlocking teeth 46 have the relative orthogonal projection 54 directed towards the second pe-

ripheral strip 34 from which the two slide teeth 48 protrude.

[0042] The interlocking teeth 46 depart from the second strips 34 alternately just inside and just outside of the two first central strips 32, as shown in Figures 3 and 4.

[0043] The two slide teeth 48, as visible in Figure 6, comprise a vertical rise 56 from which a slide element 58 protrudes which is directed towards the inside of the grid 16.

[0044] The mushroom-shaped teeth 50 comprise a stem 60 which rises slightly tilted vertically and on which a head 62 is arranged which consists, on the one side, of a slide element which is analogous to that of the slide teeth 48, and on the other side, of two slide bodies with an upper surface which is less inclined with respect to the one of the slide element.

[0045] Precisely, the two slide bodies with less inclined upper surface are directed towards the second strip 34 provided with the two slide teeth 48.

[0046] The mushroom-shaped teeth 50 are arranged in pairs in combination with the interlocking teeth 46 and are therefore provided on each of the second strips 34, with the exception of the second peripheral strip 34 from which the two slide teeth 48 protrude.

[0047] In particular, the mushroom-shaped teeth 50 alternate with the interlocking teeth 46 alternately just inside and just outside of the two first central strips 32, as shown in Figures 3 and 4.

[0048] As visible in Figure 2, the wooden planks 18 to be coupled to the previously described supporting system have a symmetric lateral profile that develops with a protruding upper portion of rectangular shape and a protruding lower portion with a slightly inclined edge so as to obtain a cavity of rectangular shape between the two portions.

[0049] The fixing procedure to fix the wooden planks to the supporting system 10, once completed, provides that a first plank is placed according to an inclination on the grid 16 so that, once inclined, its longest edge abuts on the interlocking teeth 46 and the relative orthogonal projections 54 of rectangular profile are received in the lateral recess of the edge of the plank.

[0050] The opposite part of the plank 18, which is not yet restrained, is subsequently pushed down so as to slip on the slide element of the head 62 of the mushroom-shaped teeth 50, so that at first, the stem 60 bends slightly and then, the slide element is arranged in the lateral recess of the edge of the plank.

[0051] In this way, the plank 18 is restrained between the interlocking teeth, on the one side, and the mushroom-shaped teeth 50, on the other side.

[0052] The next plank 18 has to be fixed immediately alongside the previously fixed plank. Indeed, with a motion analogous to that of the previously coupled plank, it is possible to obtain a surface continuity and above all, since the edge of the second plank 18 has a lower projection of homologous shape to that of the lower portion of the mushroom-shaped tooth 50 on which it abuts, the edge of the second plank 18 makes impossible any displacement of the same mushroom-shaped tooth 50.

[0053] When the last plank is mounted on the last place of the grid 16, the slide teeth 48 block said plank in the same way as the mushroom-shaped teeth 50 because the same slide teeth 48 of a grid abut on the interlocking teeth 46 of the adjacent grid 16.

[0054] Essentially, in order to remove a plank, it is necessary to remove the plank fixed immediately after the plank to be removed since the subsequently mounted plank blocks the mushroom-shaped teeth 50 adjoining between the two planks, or the slide teeth 48 and the adjacent interlocking teeth 46, in the case of teeth between two different grids.

[0055] Accordingly, through the configuration of the teeth 46, 48, 50, the planks are stably blocked, which does not occur in the already known solutions in which over time it is possible the formation of clearances that make the floor unstable.

[0056] Besides, other variants and implementation methods are possible which are to be considered as included in the scope of protection defined by the following claims.

[0057] For example, a grid can comprise a different number of teeth 46, 48 50, which are still positioned according to the previously described alternations and successions.

Claims

1. Supporting system (10) for planks (18) made of wood or similar material to obtain floors raised with respect to the reference ground, said supporting system comprising at least one grid (16) to which the planks (18) are coupled, each plank (18) having symmetrical lateral edges comprising a lower portion projecting laterally and an upper portion projecting laterally beyond the same lower portion so as to form a recess between the upper portion and the lower portion,
characterized by the fact that
the grid (16) comprises a reticular structure (30) from which the following elements protrude:

    - at least one interlocking tooth (46) comprising a vertical projection (52) from which an orthogonal projection (54) extends orthogonally;
    - at least one mushroom-shaped tooth (50) comprising a stem (60) and a head (62) and arranged on the reticular structure (30) at a distance from the at least one interlocking tooth (46) equal to the width of the plank (18)

    said head (62) being shaped as a slide coupling element on the side facing the at least one interlocking tooth (46); said mushroom-shaped tooth (50) having, on the opposite side to the interlocking tooth (46), a homologous profile to the shape of the lower portion

of the lateral edges of the planks so that once a first plank has been blocked by the interlocking tooth (46) on one side, and by the mushroom-shaped tooth (50) on the other side, a next plank (18) connected to the grid through the profile of the same mushroom-shaped tooth (50) blocks any movement of the same mushroom-shaped tooth (50) avoiding any displacements of the first plank.

2. Supporting system (10) according to the preceding claim, wherein at least one interlocking tooth (46) is arranged in correspondence of the lateral edge of the grid (16) and at least one slide tooth (48) is arranged, at the same height, on the opposite edge of the lateral edge so that if more grids are placed side by side, the slide tooth (48) abuts on the interlocking tooth (46).

3. Supporting system (10) according to one of the preceding claims, wherein the grid comprises at least one circular crown body (40, 42) to which a support (14) is connectable in order to lift the grid from the reference ground.

4. Supporting system (10) according to the preceding claim, wherein an arched angular body (36) is comprised for each of the four corners of the grid (16).

5. Supporting system (10) according to one of claims 3 or 4, wherein the support (14) consists of a circular crown element (24) and four arc bodies (26), all bodies being protruding from a base plate (28), centrally holed, and wherein in the circular crown body (40, 42) four arched seats (44) are formed to receive the four arc bodies (26) of the support (14).

6. Supporting system (10) according to one of claims 3 or 4, wherein a seat (38) is formed in the arched angular bodies (36) to receive an arc body (26) of the support (14).

7. Supporting system (10) according to one of claims 3 to 6, wherein a foot (12) is comprised and consists of a base (20) from which a threaded trunk (22) rises, so that said foot (12) may be coupled with the support (14), internally threaded, and the height of the support (14) from the reference ground may be varied.

8. Supporting system (10) according to one of the preceding claims, wherein the stem (60) of each mushroom-shaped tooth (50) is inclined toward the interlocking tooth (46) to which the plank (18) may be coupled in cooperation with the same mushroom-shaped tooth (50).

9. Supporting system (10) according to one of the preceding claims, wherein each mushroom-shaped tooth (50) and/or each interlocking tooth (46) comprise a vertical reinforcing rib.

10. Floor comprising a supporting system (10) according to one of the preceding claims and at least one plank (18) with symmetrical lateral edges comprising a lower portion projecting laterally and an upper portion projecting laterally beyond the same lower portion so as to form a recess between the upper portion and the lower portion.

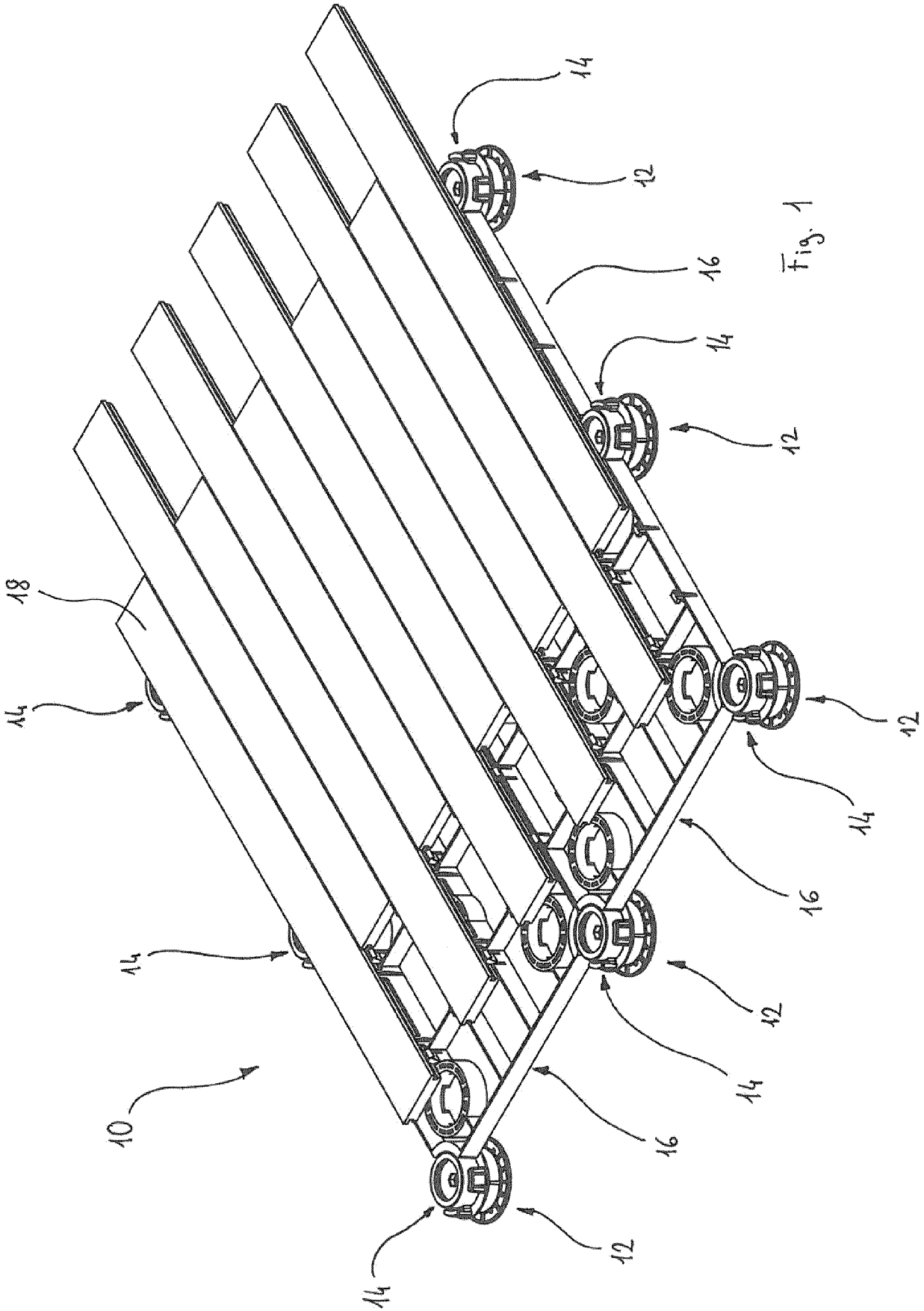

Fig. 1

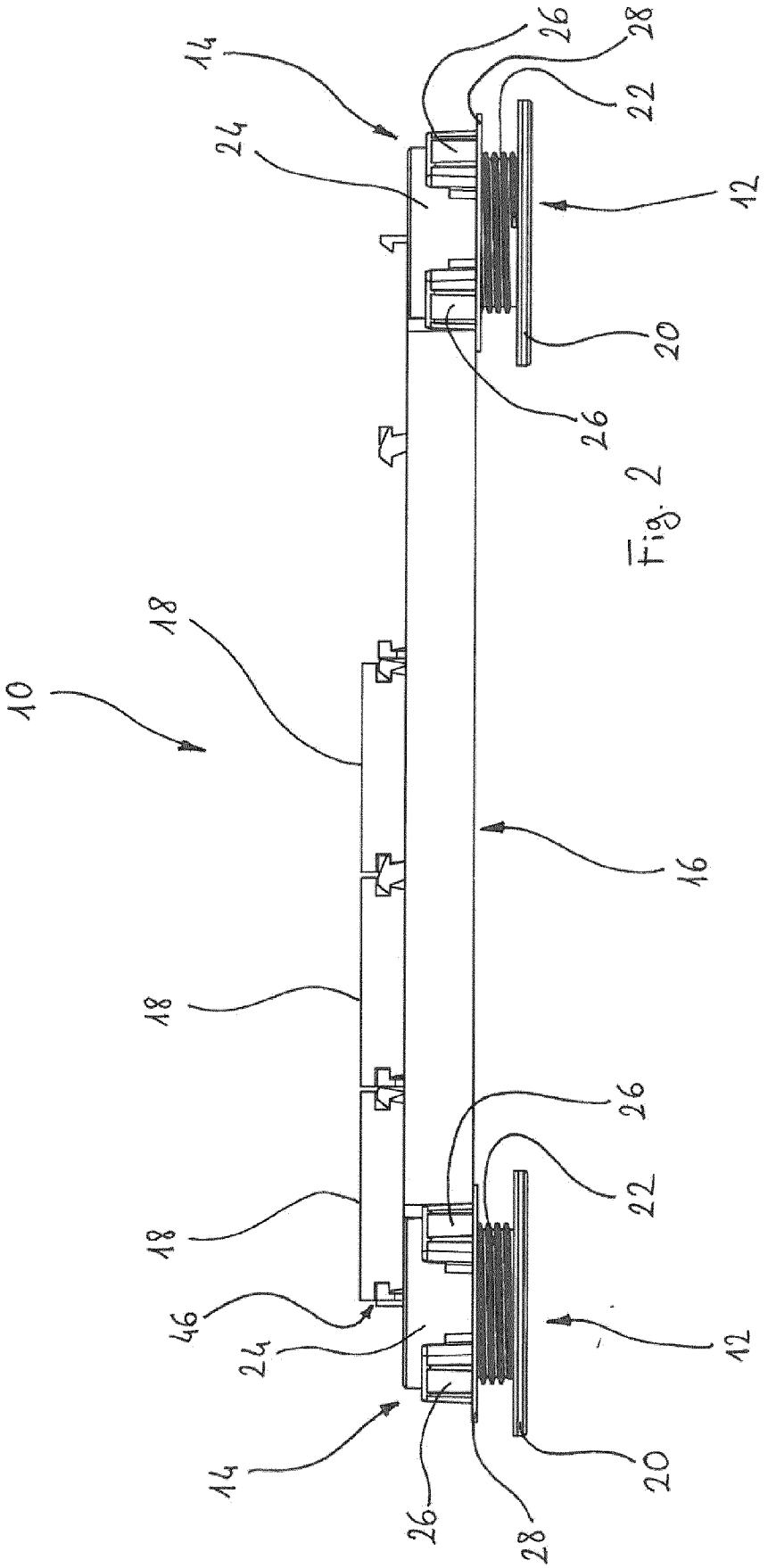

Fig. 2

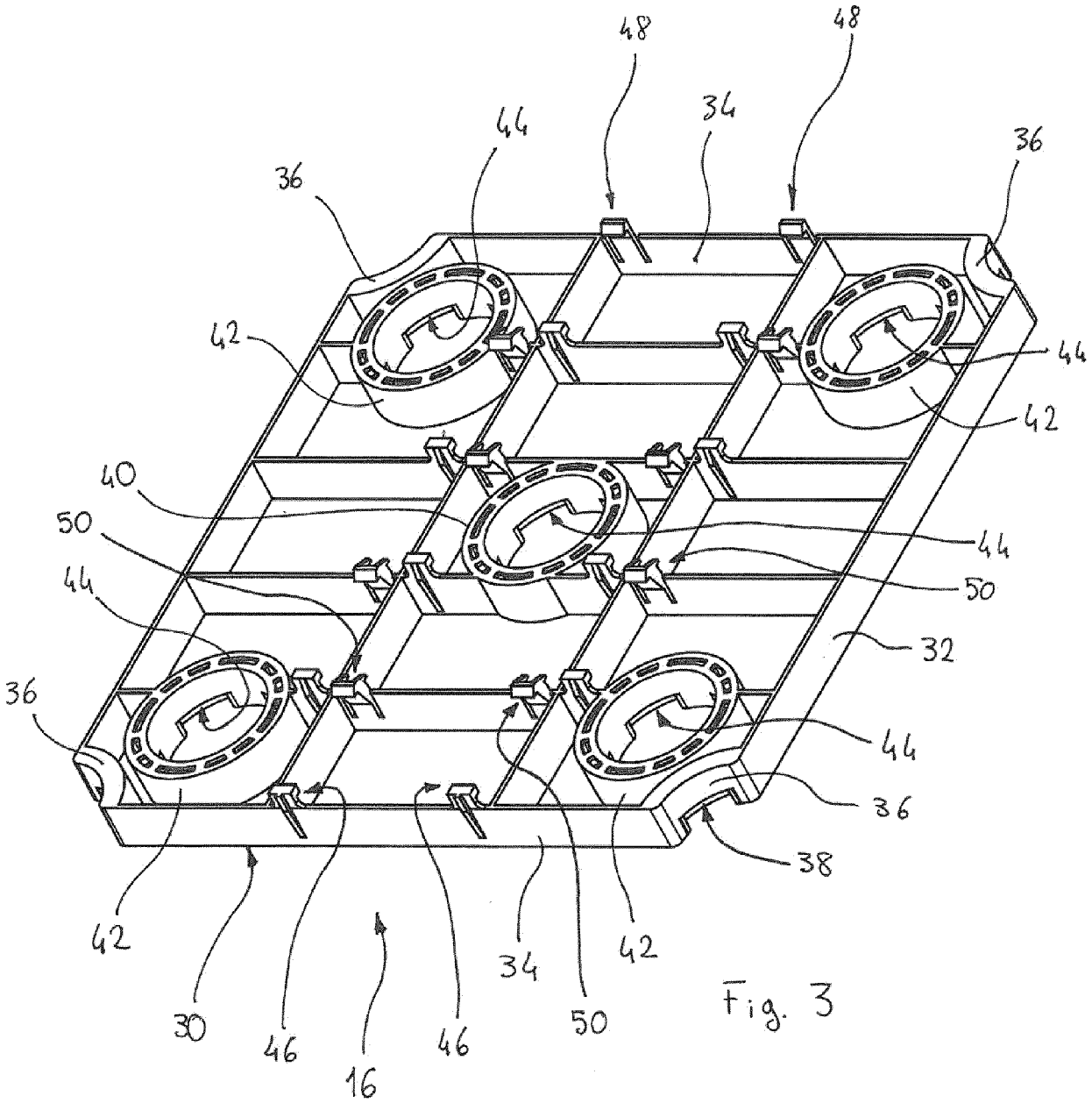
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Fig. 3

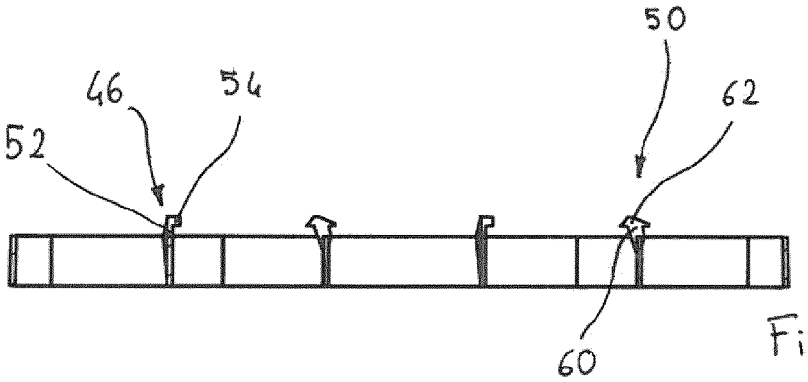

Fig. 5

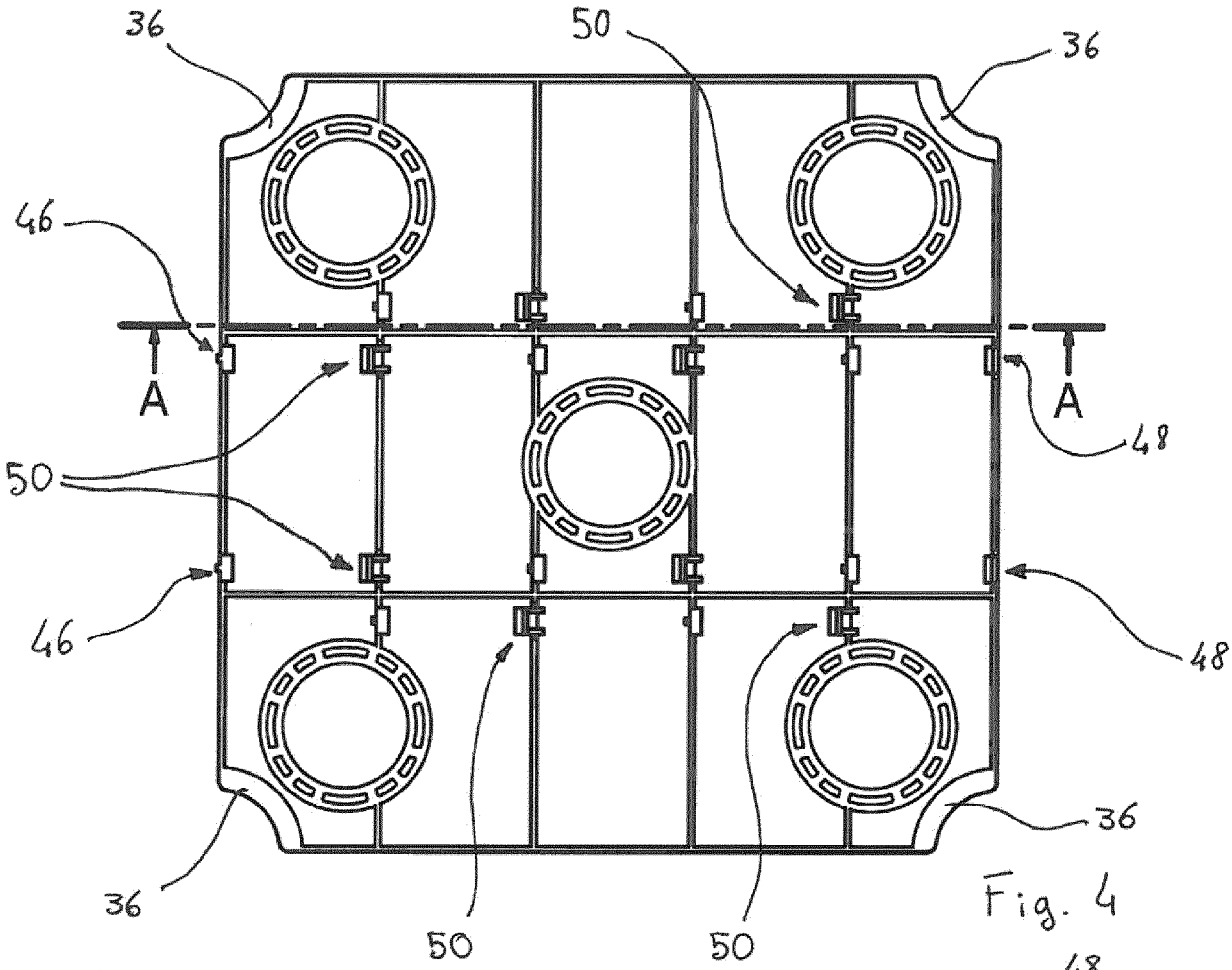

Fig. 4

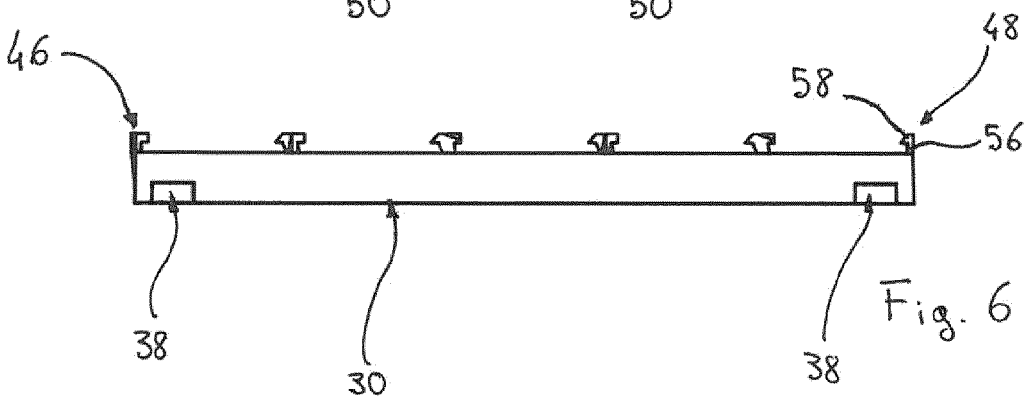

Fig. 6

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EUROPEAN SEARCH REPORT

Application Number
EP 17 15 1622

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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	3 April 2017	Estorgues, Marlène

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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