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## (54) TILE RETAINER

(57) A tile retainer (1), comprising:
a base (11) including a plurality of overflow holes (111);
a partition plate (12) arranged on the base (11) to separate a plurality of tiles (30) disposed on the base (11); and
a pull tab (13) arranged on the partition plate (12);
a press cover (21) equipped with an opening (213) through which the pull tab (13) passes.
The press cover (21) is operated with the base (11) for clamping a plurality of tiles (30) separated by the partition plate (12).

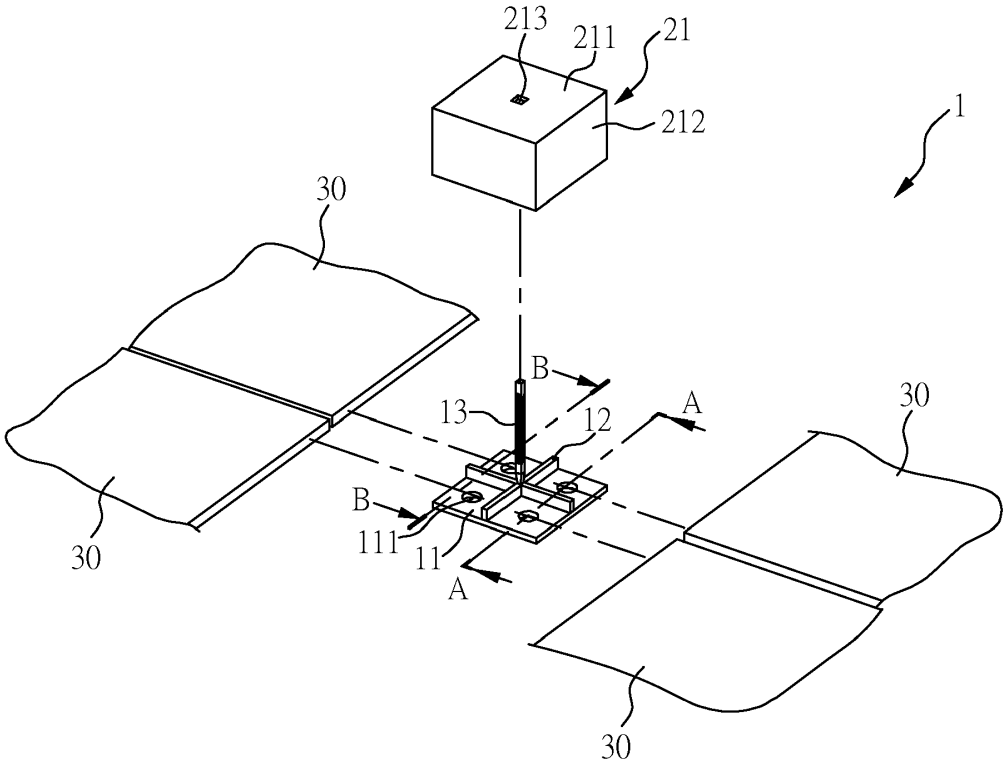


Fig 1

EP 3 511 486 A1

## Description

### CROSS REFERENCE

**[0001]** This application claims the benefits of the Taiwan Patent Application No. 107101372, filed on January 15, 2018, the subject matter of which is incorporated herein by reference.

### BACKGROUND OF THE INVENTION

1. Field of the Invention

**[0002]** The present invention relates to a tile retainer, which not only improves the alignment of tiles on the same horizontal plane, but also helps tiles to be flatly attached on a desired wall surface and strengthens the fixing of tiles.

2. Description of Related Art

**[0003]** Tiles are typically used to decorate the floor and the outside wall of a building. However, it is usually difficult to align the tiles during installation, no matter from what direction.

**[0004]** Fig. 13 is an example of prior art which shows misalignment of a plurality of tiles 30, wherein the gaps s among tiles and the heights of tiles are different from one another so that the tiles are not neat and tidy, resulting in unsatisfactory appearance of outside wall of the building and high risk of tiles peeling off. Therefore, it is desirable to provide an improved tile retainer to install the tiles to mitigate and obviate the aforementioned problems.

### SUMMARY OF THE INVENTION

**[0005]** To achieve the object, the tile retainer of the present invention includes a base, a partition plate and a pull tab. The base includes a plurality of overflow holes. The partition plate is arranged on the base to separate a plurality of tiles disposed on the base. The pull tab is arranged on the partition plate.

**[0006]** According to one embodiment of the present invention, the tile retainer of the present invention fixes a plurality of corners of a plurality of tiles. Once the corners of the tiles are aligned vertically and horizontally, the tiles are aligned with each other accordingly.

**[0007]** According to one embodiment of the present invention, the overflow holes pass through the base to enable slurry to overflow from one surface of the base to another surface of the base.

**[0008]** According to one embodiment of the present invention, the base is rectangular, and the partition plate is a cross-shaped partition plate to separate four tiles. Hence, the four tiles are placed on top of the base to be aligned vertically, and abutted upon the partition plate to be aligned horizontally.

**[0009]** According to one embodiment of the present invention, the overflow holes are distributed symmetrically based on the partition plate.

**[0010]** According to one embodiment of the present invention, the pull tab includes a taper section, and the pull tab is connected with the partition plate through the taper section. The taper section may be broken by rotation to remove the pull tab.

**[0011]** According to one embodiment of the present invention, the tile retainer further includes a press cover equipped with an opening through which the pull tab passes. In addition, the press cover is operated with the base to clamp a plurality of tiles separated by the partition plate. Moreover, the press cover further includes an upper wall and a plurality of side walls. The side walls are perpendicular to and connected with upper wall, and the opening passes through the upper wall. Furthermore, the opening has an oblique inner wall, the pull tab has a saw-toothed outer wall, and the oblique inner wall of the opening matches with the saw-toothed outer wall of the pull tab.

**[0012]** According to one embodiment of the present invention, the pull tab has a pull hole arranged at one end of the pull tab away from the partition plate. The pull hole allows a pivot of the pliers or a connection member extended from the pivot of the pliers to pass through, such that the pivot of the pliers applies force to the pull tab.

**[0013]** Therefore, the tile retainer of the present invention enables the tiles to be vertically and horizontally aligned with each other on the same horizontal plane, and to be flatly attached to the wall surface to which the tiles are fixed, so as to further strengthen the fixing of the tiles.

### BRIEF DESCRIPTION OF THE DRAWINGS

**[0014]**

Fig. 1 is a schematic diagram of the tile retainer according to an embodiment of the present invention;
Fig. 2 is a three-dimensional cross-sectional view taken along the line A-A in Fig. 1;
Fig. 3 is a planar cross-sectional view taken along the line A-A in Fig. 1;
Fig. 4 is a planar cross-sectional view taken along the line B-B in Fig. 1;
Figs. 5, 6, 7 and 8 schematically illustrate the operation of the tile retainer according to an embodiment of the present invention;
Fig. 9 is a perspective view of a wall surface to which the tiles are fixed using the tile retainer according to an embodiment of the present invention;
Fig. 10 is a cross-sectional view taken along the line C-C, using the tile retainer according to an embodiment of the present invention;
Fig. 11 and Fig. 12 schematically illustrate the force application of the tile retainer according to an embodiment of the present invention;

Fig. 13 shows the installed tiles that are not neat and tidy in the prior art;

Fig. 14 is a schematic diagram of the tile retainer according to another embodiment of the present invention, particularly showing a cross-sectional view taken along the line A-A as indicated in Fig. 1; and

Figs. 15, 16 and 17 are schematic diagrams that show different types of the pull part of the present invention.

## DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

**[0015]** Although the present invention has been explained in relation to its preferred embodiment, it is to be understood that many other possible modifications and variations can be made without departing from the spirit and scope of the invention as hereinafter claimed.

**[0016]** Fig. 1 is a schematic diagram of the tile retainer according to an embodiment of the present invention. Fig. 2 is a three-dimensional cross-sectional view taken along the line A-A in Fig. 1. Fig. 3 is a planar cross-sectional view taken along the line A-A in Fig. 1.

**[0017]** Fig. 4 is a planar cross-sectional view taken along the line B-B in Fig. 1. Please refer to Figs. 1 to 4 at the same time.

**[0018]** The tile retainer of the present invention can be divided into a pull part and a press part. The pull part includes a base 11, a partition plate 12 and a pull tab 13. The press part includes a press cover 21. The base 11, the partition plate 12, the pull tab 13 and the press cover 21 may be made by plastic.

**[0019]** The base 11 includes a plurality of overflow holes 111. The overflow holes pass through the base 11, and are adapted for slurry 60 to overflow from one surface of the base 11 to the other surface of the base 11. As a result, if there is a large amount of slurry accumulated on one surface of the base 11, the slurry may overflow through the overflow holes to the other surface of the base 11, so that a plurality of corners of the tile retainer itself are aligned on the same horizontal plane. Accordingly, the plurality of tiles 30 fixed by the tile retainer 1, in particular the corners thereof, are aligned on the same horizontal plane, and thus are flatly attached to the desired wall surface 40.

**[0020]** The partition plate 12 is arranged on the base 11, and is adapted to separate a plurality of tiles 30 arranged on the base 11.

**[0021]** The base 11 is of a rectangle, preferably a square, but other shapes are also possible. The partition plate 12 is substantially a cross-shaped partition plate, preferably a cross-shaped partition plate with equal length, for separating four tiles 30; however, other shapes are also possible. In practice, the thickness of the partition plate may be 3 mm with a height of 8 mm, for example. The four tiles 30 may be placed on the base 11 for alignment on the same horizontal plane, and abutted upon the partition plate 12 so as to be aligned vertically and horizontally. Preferably, the partition plate 12 and the base 11 can be integrally formed into one body. Preferably, the overflow holes 111 are distributed symmetrically based on the partition plate 12, thereby allowing a plurality of tiles 30 to be fixed symmetrically based on the tile retainer 1 of the present invention.

**[0022]** As shown in Fig. 2, the pull tab 13 is arranged on the partition plate 12. In practice, the pull tab 13 may be a cuboid with a length of 3 mm, a width of 3 mm and a height of 60 mm or more, or a cylinder with a diameter of 3 mm and a height of 60 mm or more, but the present invention is not limited thereto. The pull tab 13 enables the user to conveniently pull up the pull part. Preferably, the pull tab 13 and the partition plate 12 are integrally formed into one body. Preferably, the pull tab 13 includes a taper section 131, and the pull tab 13 is connected with the partition plate 12 through the taper section 131. The pull tab 13 may be defined with a recess so as to form the taper section 131. Preferably, the taper section 131 is structured to sustain vertical pulling force but not rotational torque, and has a shape of quadrangle prism or polygonal column, for example. After the tiles 30 are aligned and fixed, the user may rotate the pull tab 13, and the taper section 131 of the pull tab 13 will be unable to sustain the rotational torque and thus is broken, thereby removing the pull tab 13. Figs. 9 and 10 show a situation in which the pull tab 13 has been removed.

**[0023]** With reference to Fig. 1 again, the press cover 21 includes an upper wall 211 and a plurality of side walls 212. The side walls are perpendicular to and connected with the upper wall 211. In practice, the thickness of the upper wall is 2.5 mm and the height of the side wall is 25 mm, but the present invention is not limited thereto. The press cover 21 is equipped with an opening 213 through which the pull tab 13 may pass. In practice, corresponding to the pull tab 13, the opening 213 can be a square opening with a length of 3 mm and a width of 3 mm, or a circular opening with a diameter of 3 mm, but the present invention is not limited thereto. The opening 213 passes through the upper wall 211. The press cover 21 is operated with the base 11 for clamping a plurality of tiles 30 separated by the partition plate 12, as shown in Fig. 3 and Fig. 4.

**[0024]** As shown in Fig. 1, the press cover 21 has a shape of cuboid, or even a shape of cube. However, as long as the press cover 21 is adapted to match the base 11 to apply force, the shape thereof is not limited, and even a cylindrical or elliptical cylinder is acceptable. It is important that the plurality of tiles 30 can be applied with equal force through the press cover 21, and the plurality of tiles 30 can also be applied with equal force through the base 11. Moreover, the points of force application to the plurality of tiles 30 through the press cover 21 must be symmetrical, and the points of force application to the plurality of tiles 30 through the base 11 must also be symmetrical. As a result, it is able to ensure that the plurality of tiles 30 are aligned with each other on the same horizontal plane, and are flatly attached to the wall sur-

face 40 to which the tiles 30 are to be fixed.

**[0025]** The press cover 21 is used for pushing the plurality of tiles 30 downward, and thus it is necessary to prevent the press cover 21 from moving upward in the reverse direction. In this regard, as shown in Fig. 2, preferably, the opening 213 of the press cover 21 may have an oblique inner wall 214, and the pull tab 13 may have a saw-toothed outer wall 132. The oblique inner wall 214 of the opening 213 of the press cover 21 is matched with the saw-toothed outer wall 132 of the pull tab 13, which is particularly shown in the enlarged portion of Fig. 2. Therefore, the press cover 21 may only move downward because of the match between the oblique inner wall 214 and the saw-toothed outer wall 132, and does not move upward in the reverse direction, thereby ensuring the efficiency of the force application. Moreover, the plurality of tiles 30 may be pushed by the press cover 21 and the base 11 of the tile retainer 1 according to the present invention, respectively, so that the plurality of tiles 30 are aligned with each other on the same horizontal plane, and are flatly attached to the wall surface 40 to which the tiles 30 are to be fixed.

**[0026]** Figs. 5, 6, 7 and 8 schematically illustrate the operation of the tile retainer according to an embodiment of the present invention.

**[0027]** Firstly, as shown in Fig. 5, the user applies slurry 60 to the wall surface 40 and places two tiles 30 on the slurry 60 when the slurry 60 remains wet.

**[0028]** Next, as shown in Fig. 6, the tile retainer 1 of the present invention is inserted into the slurry 60 under the two tiles 30 placed, so that the two tiles 30 are disposed on the base 11, and on one side of the partition plate 12 (e.g., the left side or the right side). In practice, the tile retainer 1 may be disposed 3 mm below the tiles, but the present invention is not limited thereto, with the slurry 60 filled therebetween. Subsequently, the slurry 60 is applied on the base 11 and on the other side of the partition plate 12 (correspondingly, for example, the right side or the left side). It is applicable to fully utilize the slurry 60 that overflows from the lower surface of the base 11 to the upper surface of the base 11 through the overflow hole 111.

**[0029]** Next, as shown in Fig. 7, the other two tiles 30 are placed on the base 11 and on the other side (correspondingly, right side or left side) of the partition plate 12. Thus, the four tiles 30 are placed on the base 11 and are separated by the partition plate 12 to be disposed in the upper left, lower left, upper right, and lower right directions, respectively. At this moment, however, the four tiles 30 have not been firmly fixed and are not yet aligned on the same horizontal plane.

**[0030]** Next, as shown in Fig. 8, the press cover 21 is placed over the four tiles 30 in such a manner that the pull tab 13 passes through the opening 213 of the press cover 21.

**[0031]** Next, as shown in Fig. 3 and Fig. 4, force is applied to pull up the pull tab 13 so as to drive the partition plate 12, thereby driving the base 11, and the base 11 pushes up the plurality of tiles 30. At the same time, force is applied to press down the press cover 21, and the press cover 21 pushes down the plurality of tiles 30. The plurality of tiles 30 are clamped by the press cover 21 and the base 11, and are pushed by the press cover 21 and the base 11 at the same time, so that the tiles are aligned with each other on the same horizontal plane and flatly attached to the wall surface 40 to which the tiles 30 are to be fixed. Specifically, the plurality of surfaces of the tiles 30 that are exposed to the outside are of the same height H, as shown in Fig. 10.

**[0032]** Fig. 9 is a perspective view of a wall surface 40 to which the tiles 30 are fixed using the tile retainer 1 according to an embodiment of the present invention. Fig. 10 is a cross-sectional view taken along the line C-C, using the tile retainer 1 according to an embodiment of the present invention.

**[0033]** As shown in Figs. 9 and 10, after completing the fixing of the tiles 30, the user may remove the press cover 21. The press cover 21 may be reused. Therefore, as can be seen, the press part including the cover 21, and the pull part including the base 11, the partition plate 12, and the pull tab 13 are selectively present in a separated manner.

**[0034]** In addition, the user may rotate the pull tab 13, and the taper section 131 of the pull tab 13 will be unable to sustain the rotational torque and thus is broken, thereby removing the pull tab 13. Therefore, as shown in Figs. 9 and 10, the base 11 and the partition plate 12 of the tile retainer 1 according to the present invention will be retained on the wall surface 40 to be decorated by the tiles without being removed. Specifically, the base 11 is retained under the plurality of tiles 30, and the partition plate 12 is retained among the seams 31 of the plurality of tiles 30.

**[0035]** Fig. 11 and Fig. 12 schematically illustrate the force application of the tile retainer 1 according to an embodiment of the present invention.

**[0036]** As shown in Fig. 11, the user may use a tool to simultaneously provide the pressing force to the press cover 21 and the pulling force to the pull tab 13. For example, with the use of pliers 50, the end portion 511 of the lever 51 of the pliers 50 is abutted upon the press cover 21, and the pull tab 13 is fixed to the pivot 52 of the pliers 50. Preferably, the pull tab 13 may have a pull hole 133 arranged at one end thereof away from the partition plate 12, and the pull hole 133 allows the pivot 52 of the pliers 50 or the connection member 53 (e.g., hook) extended from the pivot 52 of the pliers 50 to pass through, so that the pivot 52 of the pliers 50 applies force on the pull tab 13.

**[0037]** As shown in Fig. 12, when the pliers 50 are closed by a scissor movement, the end portion 511 of the lever 51 of the pliers 50 will press down the press cover 21, while the pivot 52 of the pliers 50 will pull up the pull tab 13. The press cover 21 pushes the plurality of tiles 30 downward, and the pull tab 13 drives the partition plate 12, thereby driving the base 11 to push the

plurality of tiles 30 upward. The plurality of tiles 30 are clamped by the press cover 21 and the base 11, and are pushed by the press cover 21 and the base 11, respectively, resulting in that the tiles are aligned with each other on the same horizontal plane.

**[0038]** In another embodiment of the present invention, as shown in Fig. 14, the pull tab 13 of the pull part of the tile retainer 1 may have a threaded outer wall 134, corresponding to the press cover 21 of the press part that is provided with a threaded hole 215, so that the press cover 21 may be easily fastened to the pull part, However, after the tiles 30 are flatly pressed, the press cover 21 will be removed together with the pull tab 13. Similar to the previous embodiment, the press part of this embodiment is still suitable for repeated use. Moreover, in this embodiment, the way of locking by the threaded hole 215 is a reversible procedure, and thus the user can fasten the press part to the pull part or separate the two at any time if required, thereby increasing the degree of freedom in construction.

**[0039]** In another embodiment of the present invention, the different types of the pull part are as shown in Figs 15, 16 and 17, adapted for different requirement of the tile arrangement for easier tile installation, wherein the tile retainer 1' in Fig. 15 is equipped with cross-shaped partition plate, and in Figs. 16 and 17 is equipped with T-shaped partition plate which adapted to separate two or three tiles (tiles are not shown in the figures). In one embodiment, thanks to the T-shaped partition plate and the flexibility of the pull tab arrangement, the head of T-shape (close to the side of the pull tab in Fig. 16) is able to realize different tiles arrangement from the tile retainer equipped with cross-shaped partition plate, open more possibility of the way of tiles installation. Moreover, as shown in Fig. 17, the arrangement of the pull tab for this type of tile retainer is adapted for the installation against the wall while the press part will not be obstructed by the wall and the pull part can still be fastened, so as to enable the tiles to be aligned with each other and to be flatly attached to the wall surface to which the tiles are fixed.

**[0040]** In summary, the tile retainer of the present invention is able to enable the tiles to be aligned with each other on the same horizontal plane, and to be flatly attached to the wall surface to which the tiles are fixed, so as to further strengthen the fixing of the tiles.

**[0041]** Although the present invention has been explained in relation to its preferred embodiments, it is to be understood that the embodiments, given above, are proposed for exemplification rather than for limitation, and that the present invention can be implemented, through many other possible modifications and variations in line with the features of the present invention. The scope of the present invention, as hereinafter claimed, covers the method and structure previously described, and the equivalents therewith.

## Claims

1. A tile retainer (1), **characterized in** comprising:

   a base (11) including a plurality of overflow holes (111);
   a partition plate (12) arranged on the base (11) to separate a plurality of tiles (30) disposed on the base (11); and
   a pull tab (13) arranged on the partition plate (12) .

2. The tile retainer (1) as claimed in claim 1, **characterized in that** the tile retainer (1) fixes a plurality of corners of a plurality of tiles (30).

3. The tile retainer (1) as claimed in claim 1, **characterized in that** the overflow holes (111) pass through the base (11) to enable slurry (60) to overflow from one surface of the base to another surface of the base.

4. The tile retainer (1) as claimed in claim 1, **characterized in that** the base (11) is a rectangle, and the partition plate (12) is a cross-shaped partition plate to separate four tiles (30); or a T-shaped partition plate to separate two or three tiles (30).

5. The tile retainer (1) as claimed in claim 1, **characterized in that** the overflow holes (111) are distributed symmetrically based on the partition plate (12) .

6. The tile retainer (1) as claimed in claim 1, **characterized in that** the pull tab (13) includes a taper section (131), and the pull tab (13) is connected with the partition plate (12) through the taper section (131).

7. The tile retainer (1) as claimed in claim 1, **characterized in** further comprising a press cover (21) equipped with an opening (213) through which the pull tab (13) passes.

8. The tile retainer (1) as claimed in claim 7, **characterized in that** the press cover (21) is operated with the base (11) for clamping a plurality of tiles (30) separated by the partition plate (12).

9. The tile retainer (1) as claimed in claim 7, **characterized in that** the press cover (21) including an upper wall (211) and a plurality of side walls (212) perpendicular to and connected with the upper wall (211), and the opening (213) passes through the upper wall (211).

10. The tile retainer (1) as claimed in claim 7, **characterized in that** the opening (213) has an oblique inner wall (214), the pull tab (13) has a saw-toothed outer wall (132), and the oblique inner wall (214) of

the opening (213) matches with the saw-toothed outer wall (132) of the pull tab (13).

**11.** The tile retainer (1) as claimed in claim 1, **characterized in that** the pull tab (13) has a pull hole (133) arranged at one end of the pull tab (13) away from the partition plate (12).

**12.** The tile retainer (1) as claimed in claim 7, **characterized in that** the press cover (21) is equipped with a threaded hole (215), the pull tab (13) has a threaded outer wall (134), and the threaded hole (215) matches with the threaded outer wall (134) of the pull tab (13).

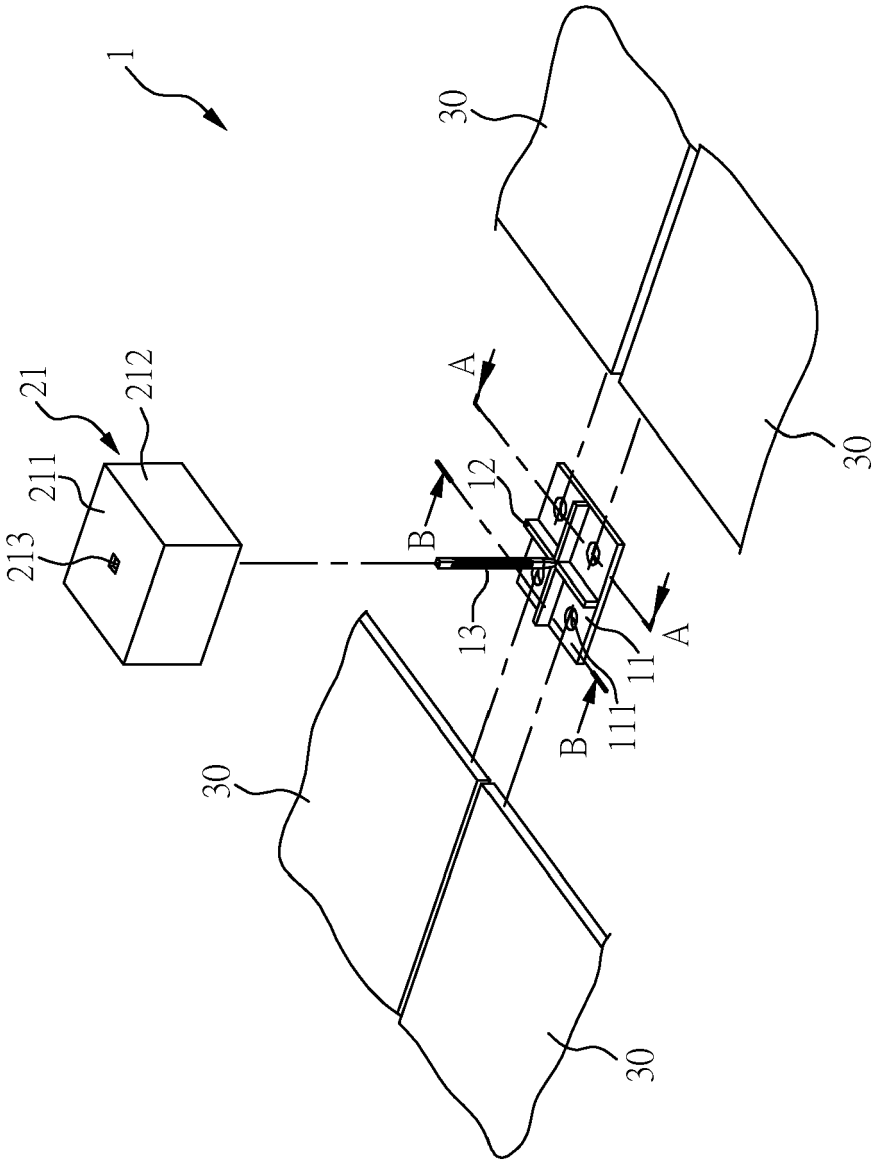


Fig 1

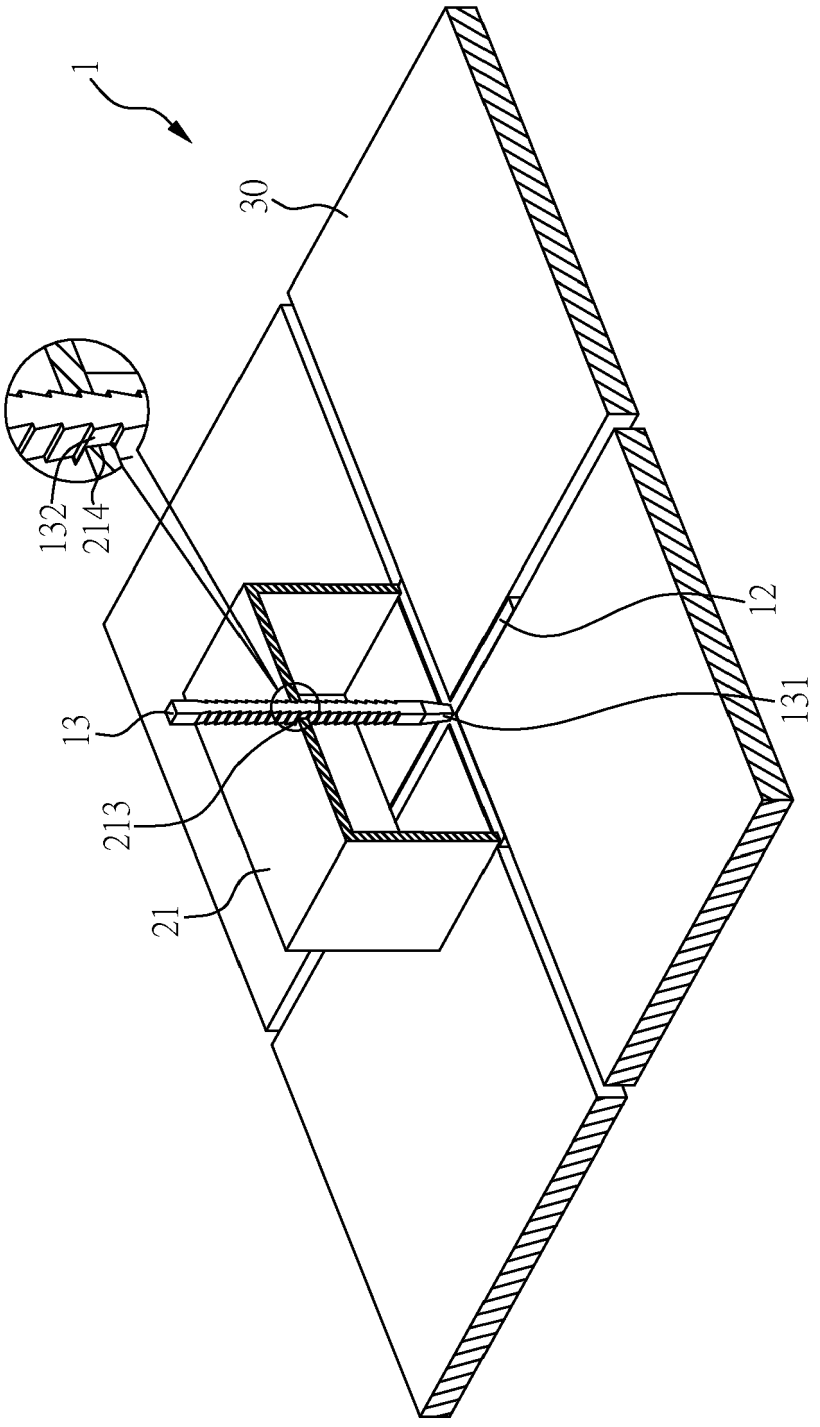


Fig 2

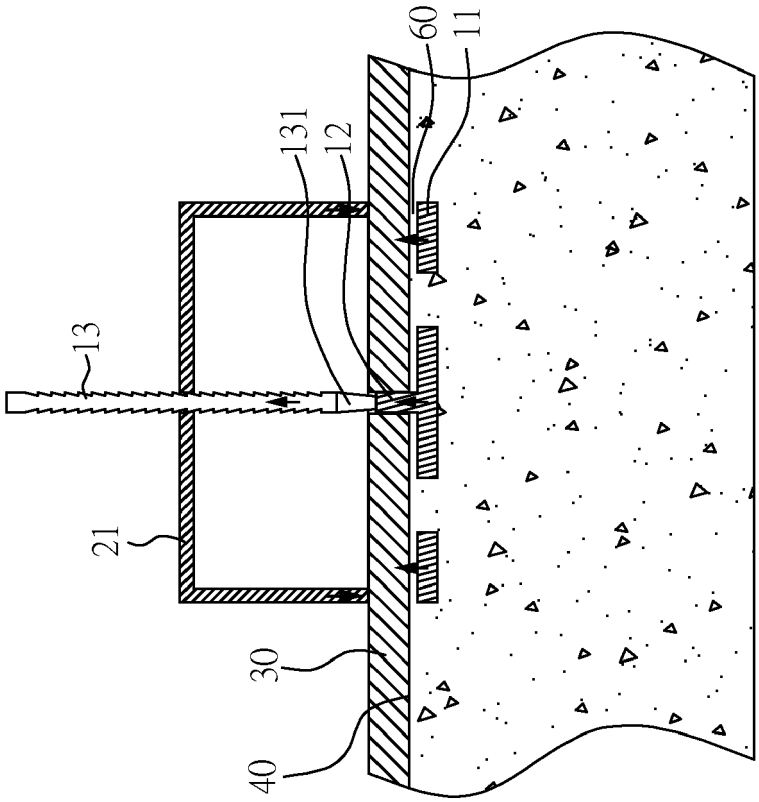


Fig 3

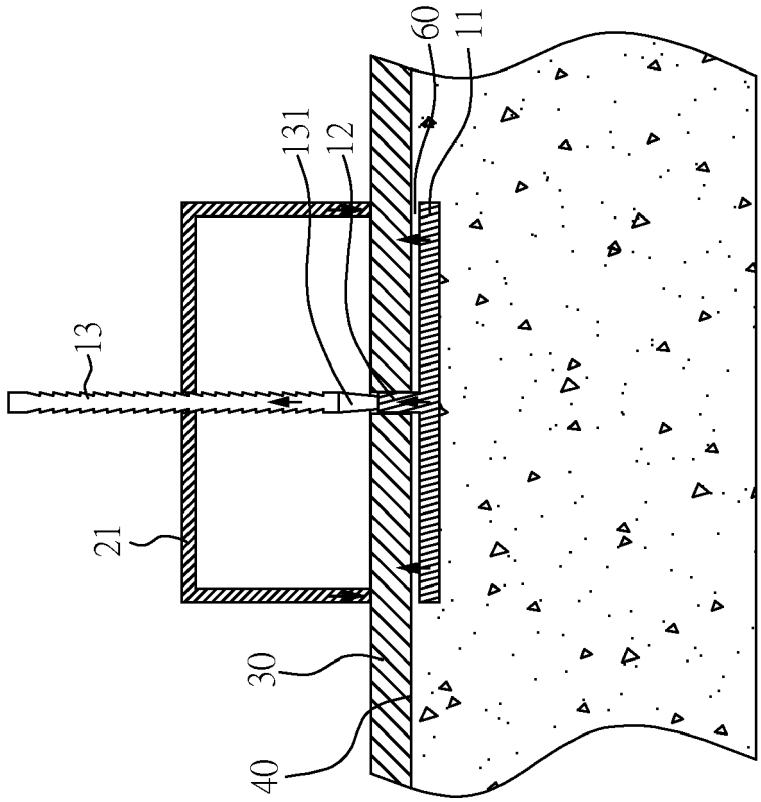


Fig 4

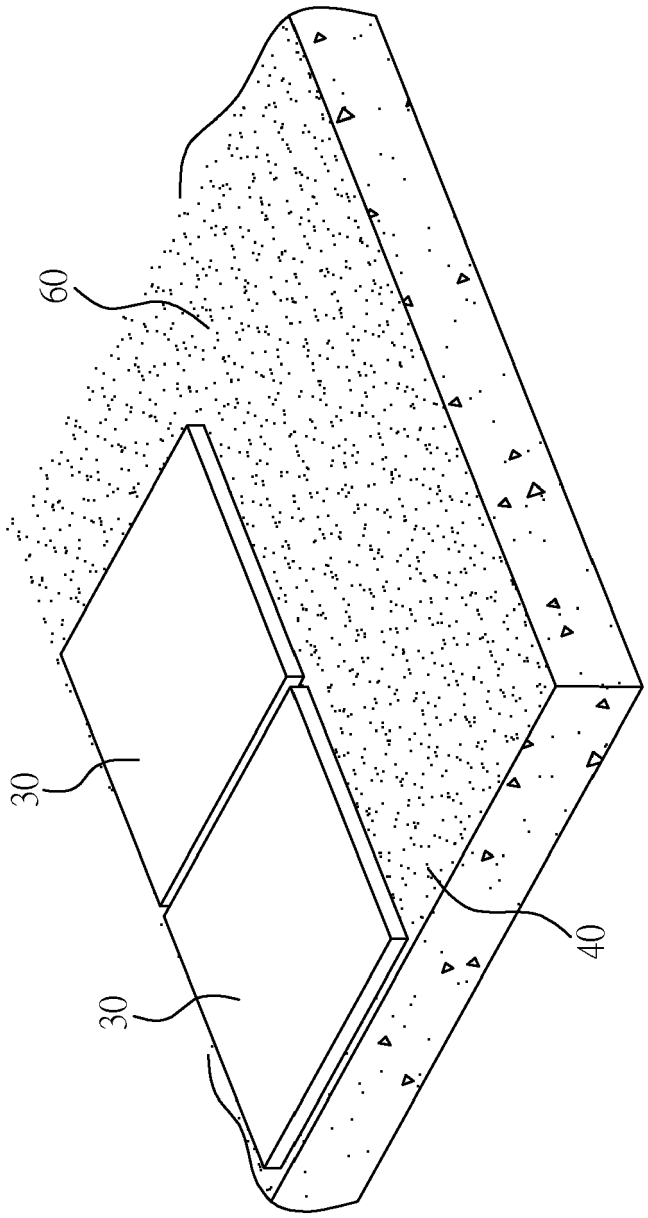


Fig 5

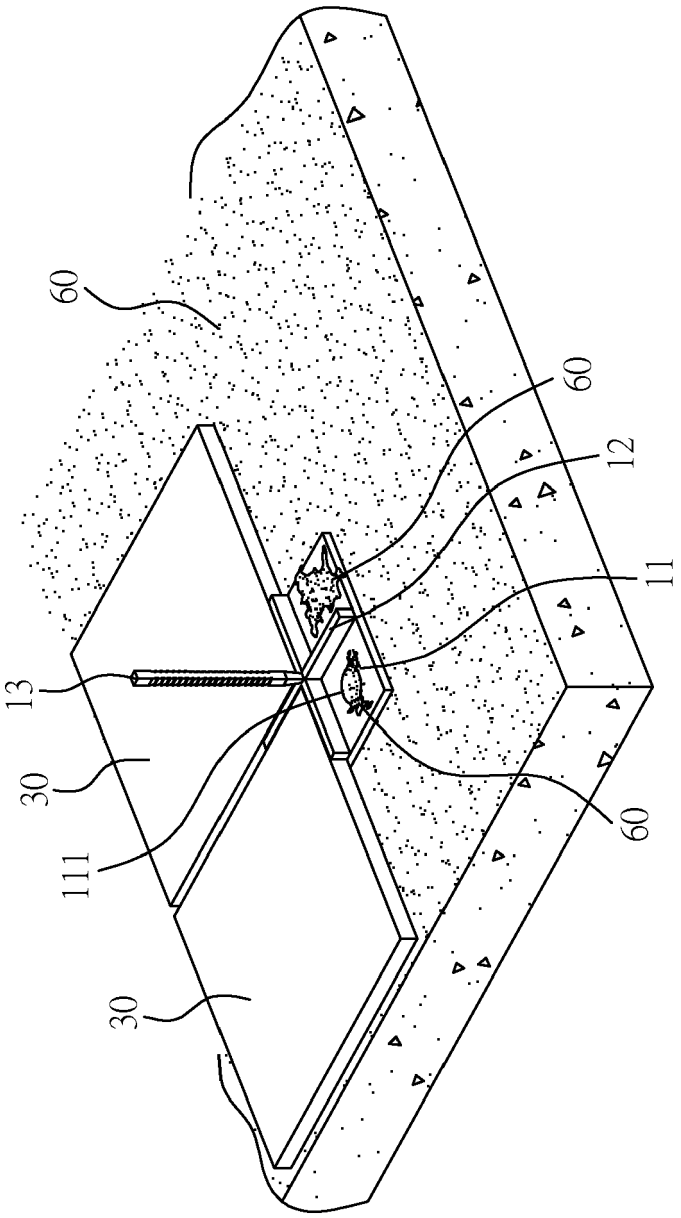


Fig 6

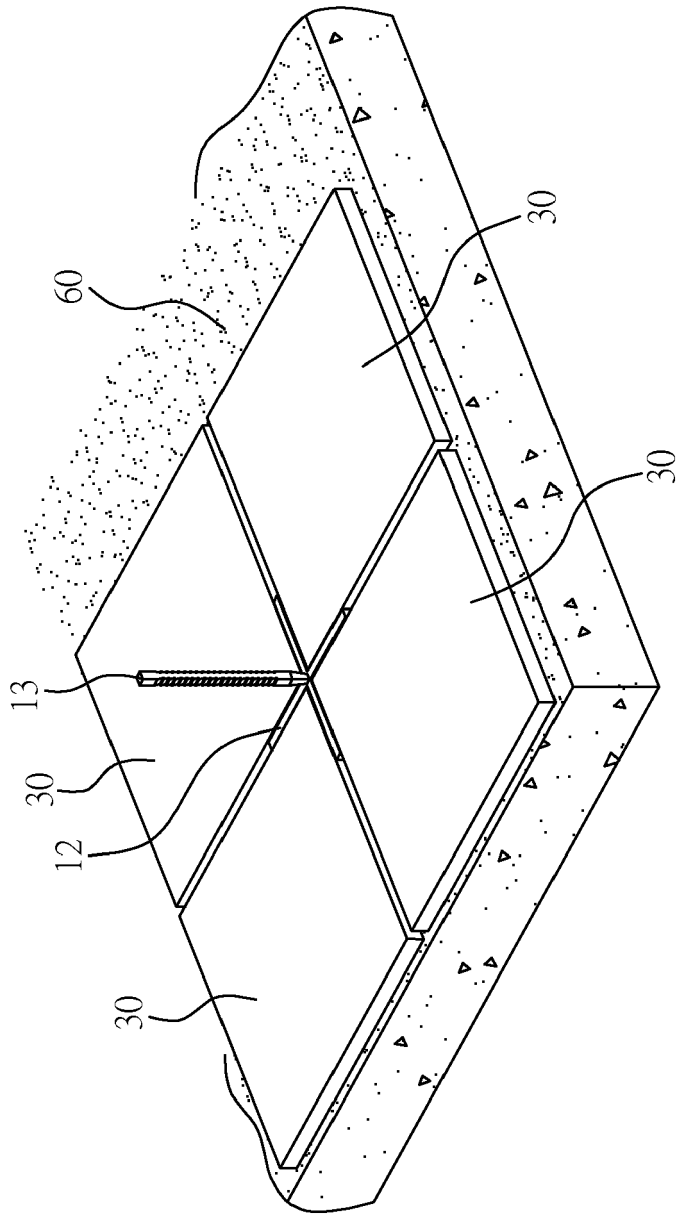


Fig 7

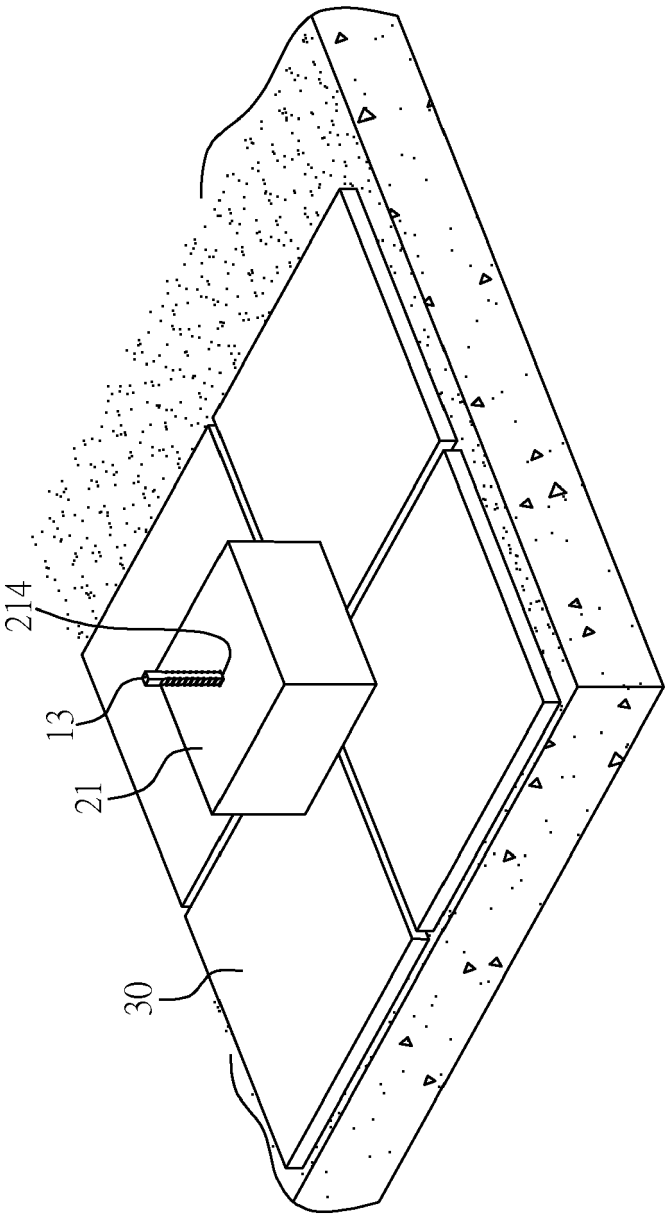


Fig 8

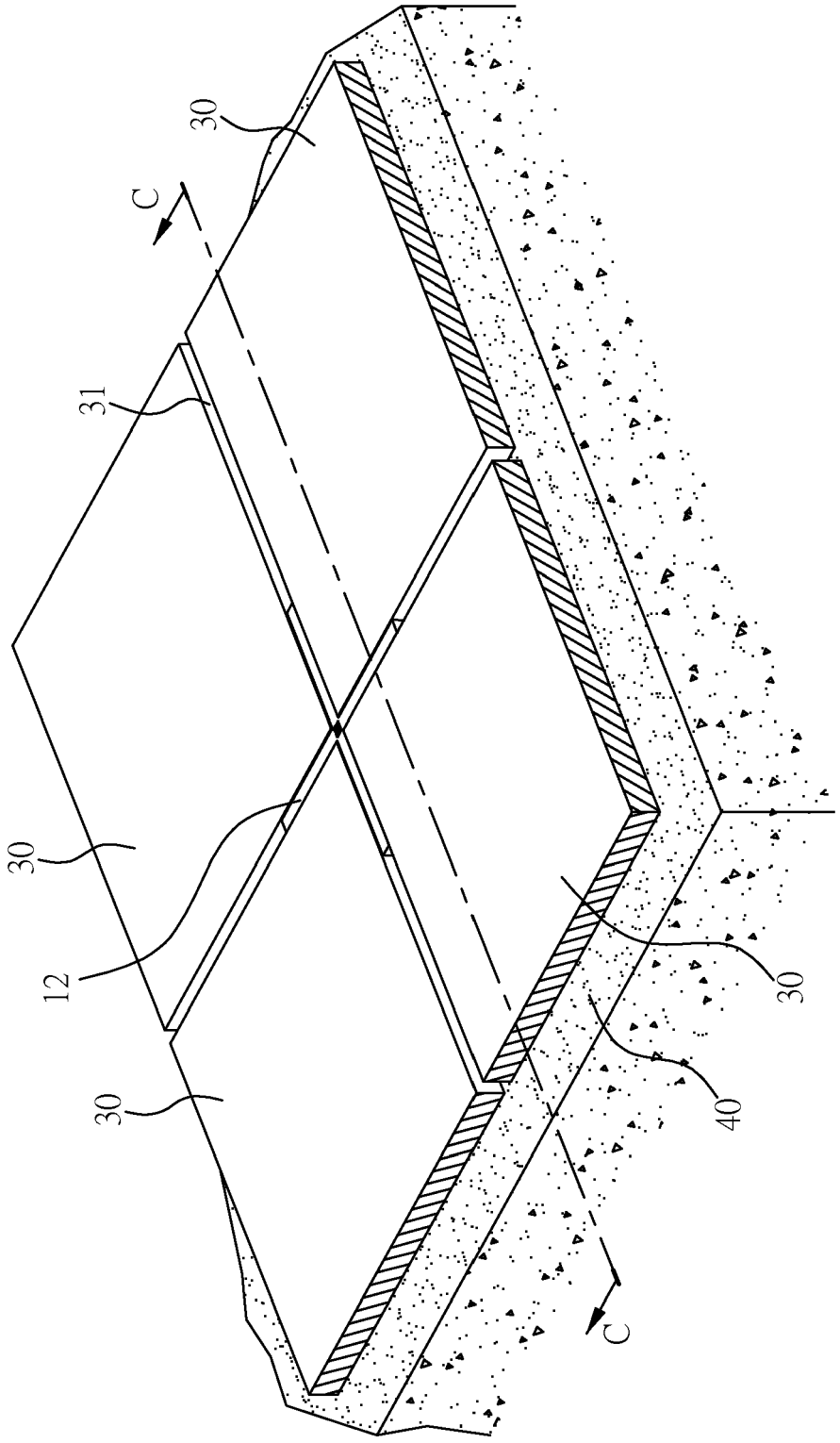


Fig 9

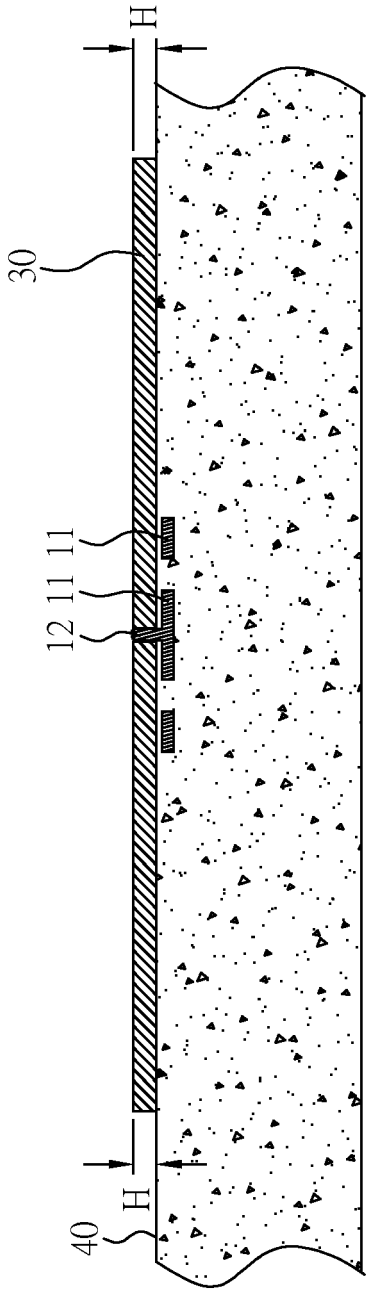


Fig 10

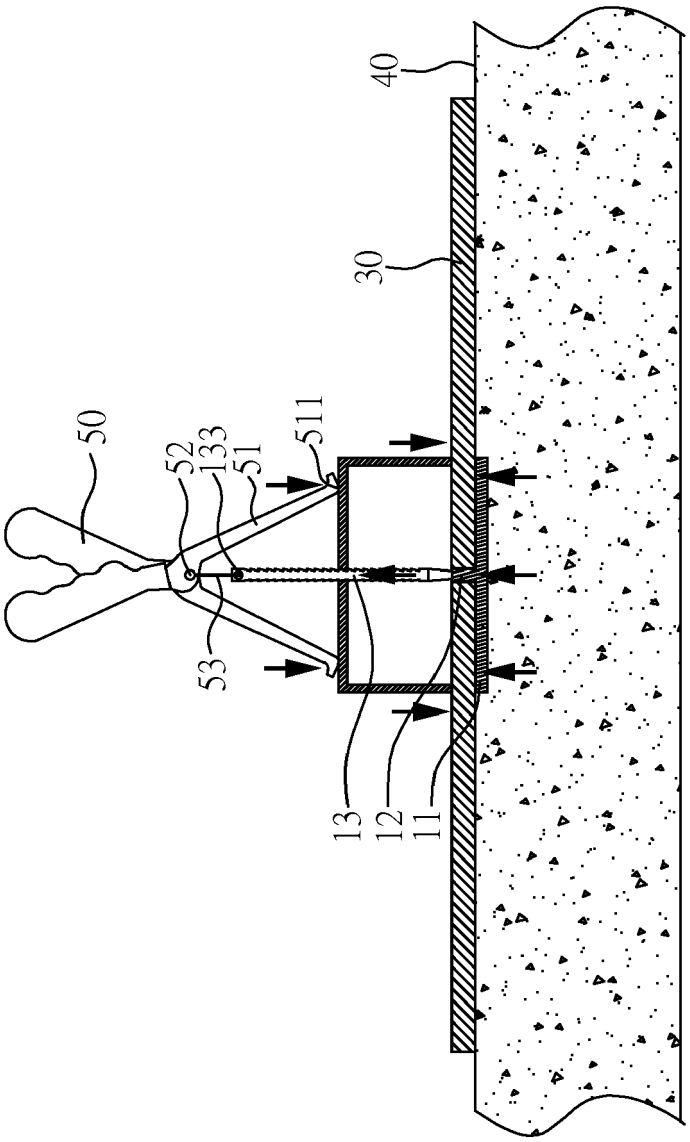


Fig 11

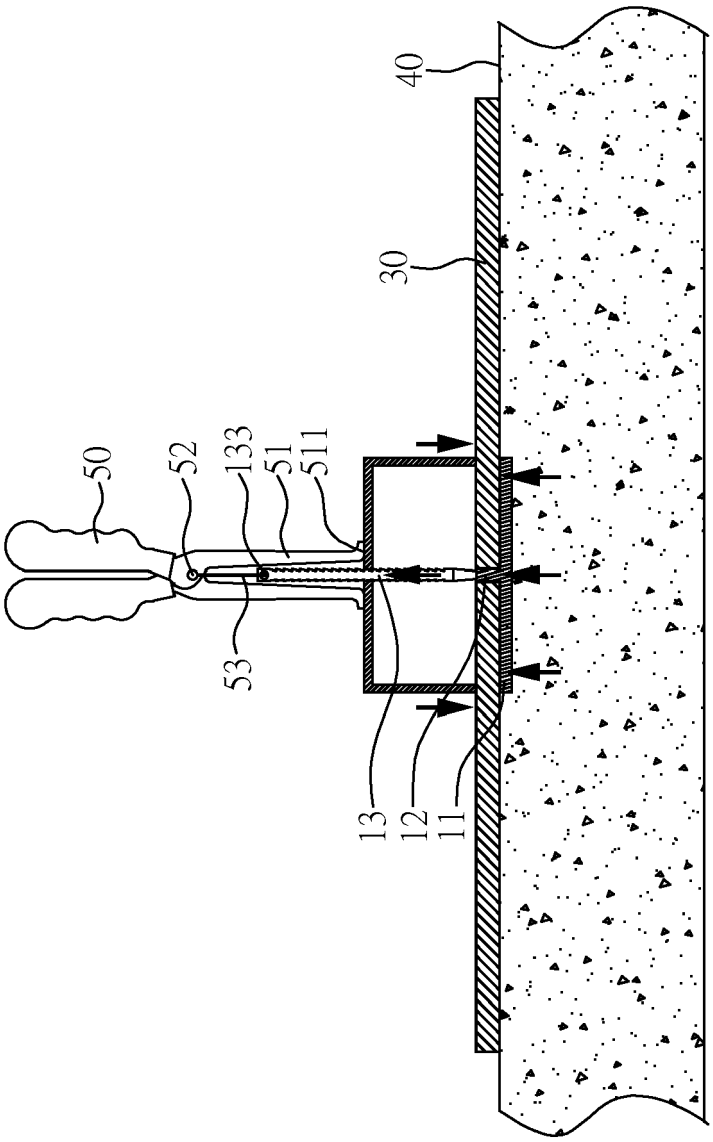


Fig 12

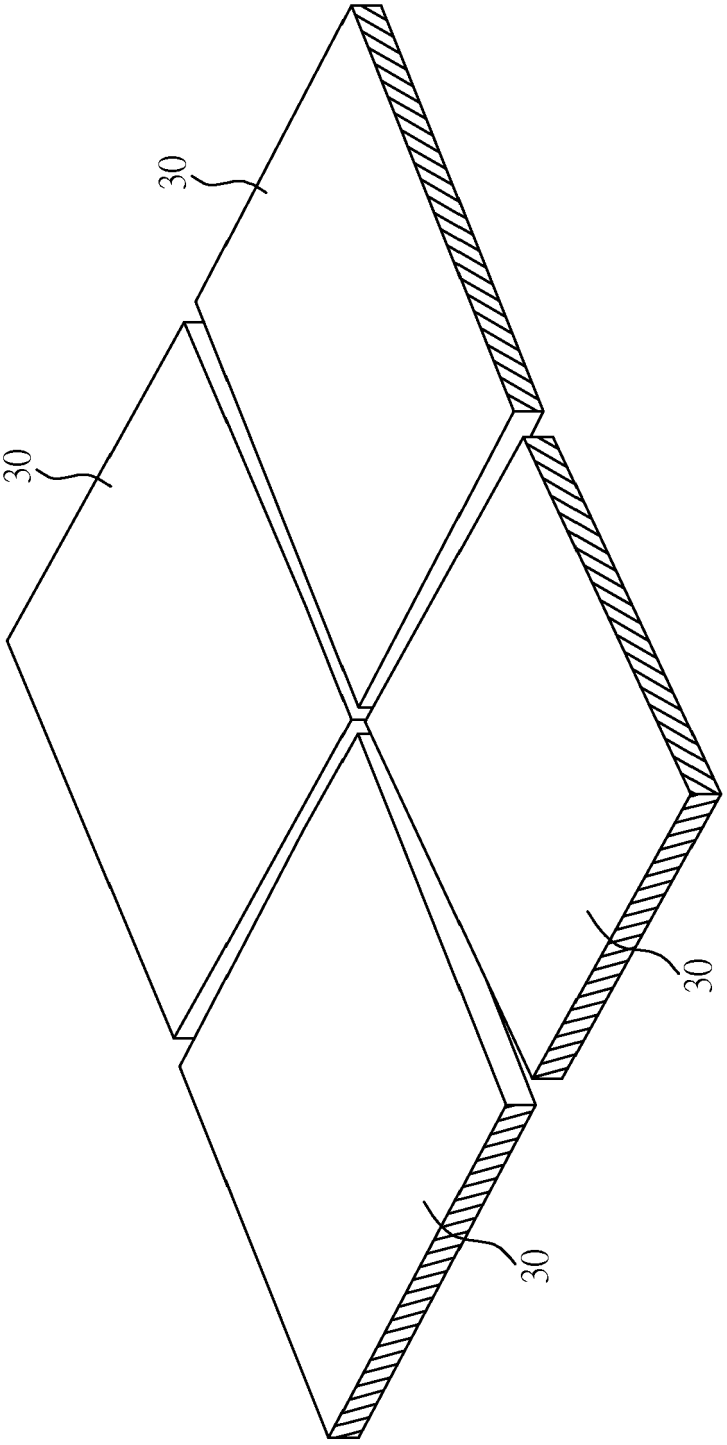


Fig 13 (Prior art)

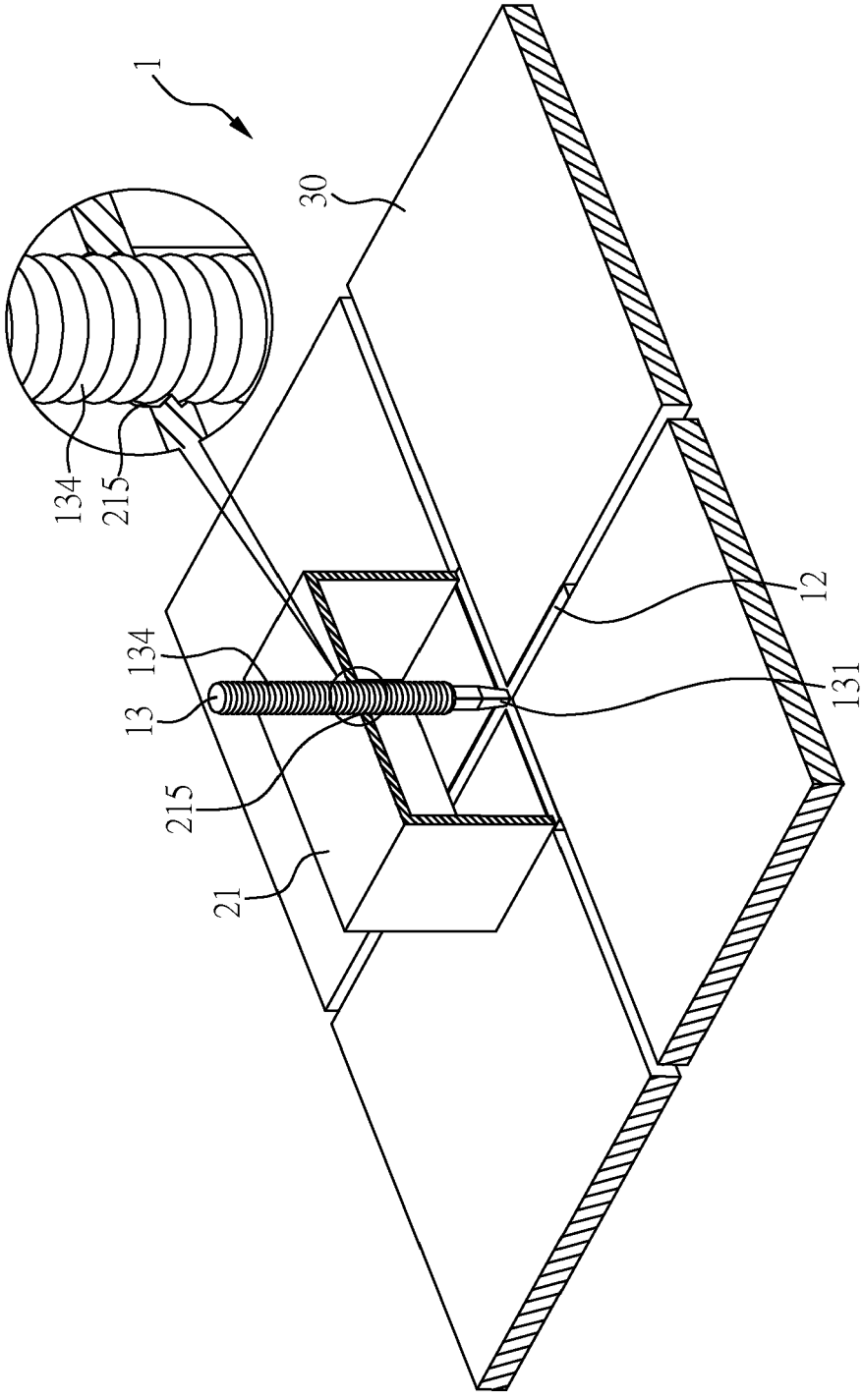


Fig 14

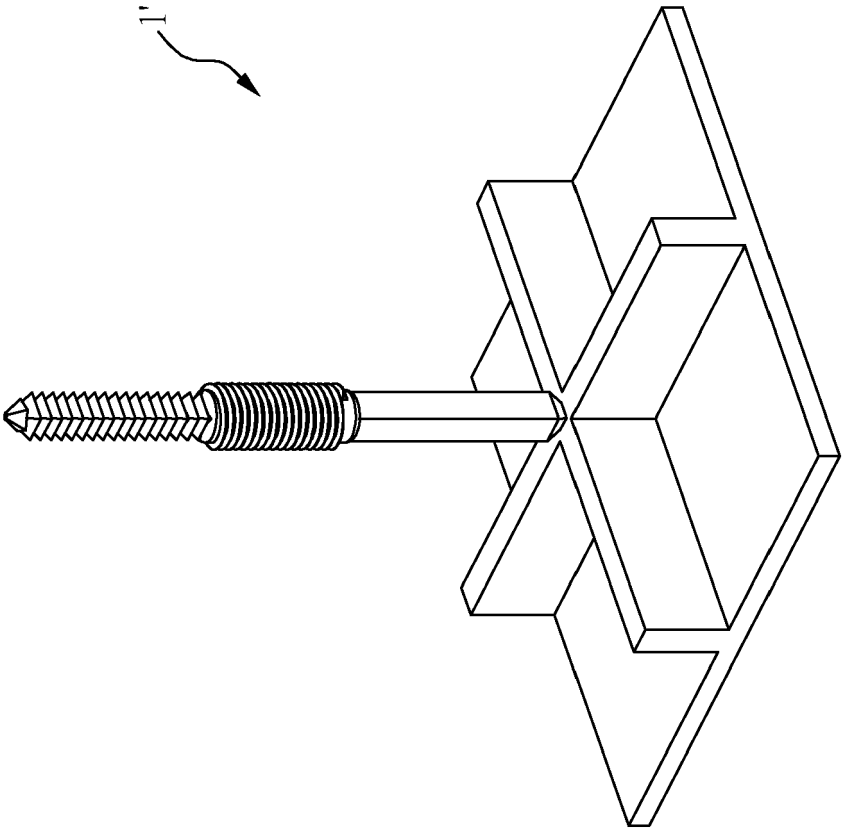


Fig 15

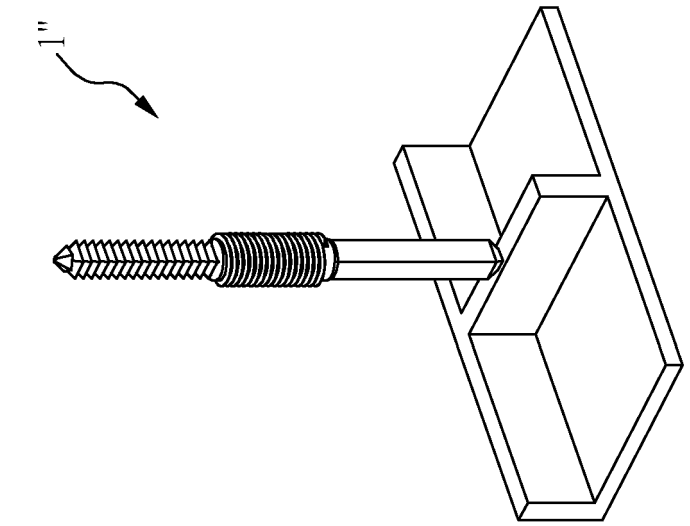


Fig 17

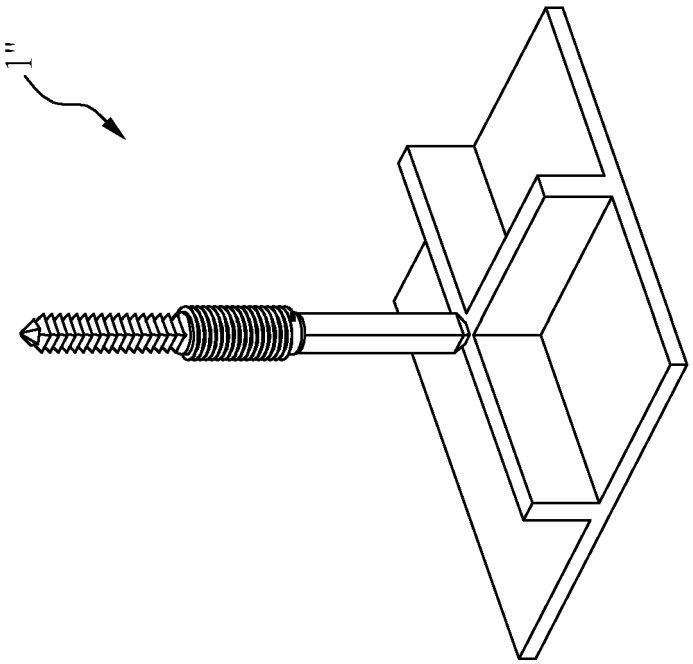


Fig 16

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# EUROPEAN SEARCH REPORT

Application Number
EP 18 18 8897

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E04F

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| Munich | 6 March 2019 | Warthmüller, Almut |

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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