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(54) PRECISION TILE LAYING SYSTEM

PRÄZISIONSFLIESENVERLEGESYSTEM

SYSTÈME DE PRÉCISION POUR LA POSE DE CARRELAGES

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WO-A1-2016/189423 **JP-A- 2010 203 048**
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Description

FIELD OF THE INVENTION

[0001] The present invention has as object a precision system which includes at least one precision device, such as a knob, for use in an assembly for spacing and levelling tiles during their laying.

[0002] The term "knob" in this description refers to an element that can be manipulated by a user during the tile laying phases, alternatively known in the sector as "tie rod".

[0003] The term "tiles" is to be understood as including in this description all types of flat elements capable of forming a floor, not excluding briquettes, and the like.

KNOWN PRIOR ART

[0004] As is well known, the laying of tiles involves the laying of an adhesive material on the surface to be covered and the subsequent arrangement of the tiles according to a desired geometry. In the vast majority of cases, space is left between adjacent tiles, commonly called "gap".

[0005] One of the most difficult operations to perform during installation is to align the tiles correctly, i.e. to ensure the consistency of the gaps between adjacent tiles.

[0006] Moreover, another complex operation is to create a correct planar arrangement of the tiles, in order to guarantee a constant level of the covering surface.

[0007] For several years now, to facilitate installation, well-known devices have been used to ensure the constant width of the gaps between the tiles and, at the same time, to level out the tiles evenly.

[0008] A first device, made from two plastic components, is shown for example in patent application WO2009/022359.

[0009] The first of these components consists of a base to be placed on the surface to be covered with tiles. The base has a cross-shaped appendix (or linear or halfcross appendix) on the inside of which are placed the corner portions of four contiguous tiles. The thickness of the arms of the cross determines the width of the gaps between these tiles. Several of these devices are used, with the various bases arranged in the intersections of groups of four contiguous and facing tiles.

[0010] In this way, the tiles are arranged parallel to each other and spaced constantly. From the centre of the cross of the appendix, a threaded column or stem develops upwards.

[0011] The second component consists of a tightening knob (or tie rod), the knob being centrally pierced and threaded and attached to be screwed on the column threaded of the base.

[0012] Screwing this knob, it goes down to press on the corners of the tiles present on the base, which therefore tend to assume a coplanar attitude, bringing the tiles to a common level. This adaptation operation is carried

out with all the various devices in the corner areas of all the tiles, which therefore take on an overall coplanar configuration. When the floor is finished, the knob and appendix are removed and the base remains incorporated in the covered surface, with the parts of the gaps hidden by the grout: it is sufficient to kick the knob in the direction of the gap.

[0013] A further example is patent application PD2011A000295.

[0014] Other products not dissimilar to these are present on the market.

[0015] However, it is noted that all the systems listed have a common disadvantageous defect.

[0016] During installation, the so-called tie rod or knob, or the part of the device used to screw the threaded base, fully covers the view of the gaps underneath the tiles, thus not allowing the user to be sure that the work is well done, even forcing it to make continuous unscrewing to ensure that the tiles are perfectly matched.

[0017] In addition, all the products listed above are overpriced, considering the number of pieces to be used per square meter, in the ratio of expenditure per square meter to the price of the tile itself and of labour. In short, in the case of the known technique, the percentage of incidence of the cost of the product is very high compared to the final price of the work.

[0018] Document WO 2016/189423 discloses a levelling spacer device for laying slab-shaped products for covering surfaces which comprises:

- 30 - a base, positionable posteriorly of a laying surface of at least two slab-shaped products adjacent and flanked with respect to a flanking direction;
- 35 - a separator element which rises from the base and is squared to the base, and is able to contact, on opposite sides, lateral facing flanks of the two flanked slab-shaped products;
- 40 - a threaded shank which rises from the separator element with a screwing axis thereof perpendicular to the base;
- 45 - a presser element screwable to the threaded shank by means of a nut screw, wherein the nut screw is defined by separate and elastically yielding portions of a helix, which portions are able to engage the threaded shank in a pawl coupling following a set reciprocal axial translation between the threaded shank and the presser element, and
- 50 - a collar coaxially rotatably associated to an end of the presser element facing towards the base.

[0019] Document EP 2 241 702 A2 discloses a device having a first lower substantially flat body, which has in its upper part a flexible post with a narrowed or weakened portion and a second upper body with the passage for receiving and securing said post. The flexible post, which has a rectangular cross section, has in its main surfaces respective mutually opposed toothings, which teeth are offset in the lengthwise direction and the passage of the

second body has two latching pawls mutually opposed, so that in the operative position of the devices, the teeth of the flexible post engage in an alternate form with said latching pawls. The second body has a bell like hollow form with a lower widened contact mouth or border. The second body may optionally be transparent.

[0020] Document EP 2 549 030 discloses a device for laying of tiles, that comprises a base from which a vertical blade centrally protrudes, the base being adapted to be housed in the joint obtained between two or more adjacent tiles. The blade supports a threaded stem in upper position and is connected on the bottom with said base by means of a lower end with thinned section suitable to act as tearing line.

[0021] The device further comprises a knob consisting in a cylindrical cover provided with a central cylindrical conduit with internal threaded walls, adapted to receive, by means of a helical coupling, the threaded stem provided in upper position.

[0022] A main purpose of the present invention is to allow the user to have a complete view of the work that is being done, giving the possibility to the same, to carry out a much more precise work in the shortest time possible.

[0023] Another purpose of the present invention is to describe a device that allows a faster and more precise positioning of the same during the work phases.

[0024] A further important purpose of the present invention is to propose a device that allows to significantly reduce the working times with obvious economic saving in terms of working hours for those who commission the installation and consequent saving of time for the user.

BRIEF SUMMARY OF THE INVENTION

[0025] These and other aims that will be clear during the description are achieved by an innovative precision tile laying system according to claim 1.

[0026] This hole includes at least further notches to allow the quick coupling of this knob on said threaded stem, to allow a quick coupling of said knob on said threaded stem and therefore on said tiles; in this case the knob is pushed directly along the body of the threaded stem until in contact with the surface of the tiles without screwing the knob on the threaded stem, but forcing it into place, thus achieving a rapid forced sliding. In this way, at least two different choices to put the system in position quickly and effectively are advantageously provided.

[0027] In a particularly advantageous way, these variants can both be included in the same form of construction of the innovative system and be used as an alternative to each other at the user's convenience.

[0028] In other forms of alternative production, the variants may not be included in the same production variant.

[0029] In any case, in an advantageous and innovative way both these variants allow to considerably speed up the working times as understandable to any expert in the

sector.

[0030] An advantage of the invention is given by the fact that the at least partial transparency of the body of the knob allows to remedy the defects of the known technique, in particular allows the skilled person to see the gaps between the tiles at all stages of their installation.

[0031] This knob also includes, in a position opposite to said top surface, a perimetral edge configured with a surface capable of coming into contact with the said tiles.

[0032] A further significant advantage of the present invention is, as mentioned, the possibility of quick coupling of the innovative device described in the present invention.

[0033] According to a form of realization of the present invention, the body of said knob is substantially completely transparent.

[0034] In this description, with the adjective 'transparent' it is meant a sufficient degree of transparency to allow an operator to see or glimpse the edges of the tiles during installation and the relative gaps between them.

[0035] According to a preferred form of realization of the present invention precision system, in the top surface of the precision device or innovative knob, defined from now on for convenience only knob, are obtained said flexible fins preferably defined by notches, where said flexible fins are designed to enlarge the hole during the tightening phase of the knob, in this case, in a preferred form of realization, the thickness of the top surface, which will also be the thickness of the fins obtained from them, can be realized so as to give flexibility to the movement of insertion of the knob of the stem, so in some forms of realization can be for example less than the form of realization with a hole including a thread as described above.

[0036] A particular innovative advantage of this solution is therefore given by the fact that the use of the product is faster and more effective than the known technique, as it avoids the screwing of the knob, because the fins pre-cut on the top of the knob allow to push the same until it touches the tiles, thus allowing in a particularly advantageous and innovative way a quick coupling of the knob that allows a significant reduction in working time.

[0037] According to another form of realization of the present invention, the threaded portion inside the hole is configured in such a way as to allow the tightening of the leveling screw for the tiles by making, for example, only one half turn of the knob.

[0038] The advantage of this form of construction is precisely the fact that the tightening of the leveling screw is obtained by making only half a turn to the knob using the internal thread to the hole of the top surface so that it can be tightened more quickly and immediately without the possibility of error. (This is obviously a preferred form of realization, nothing will be taken away from the invention by tightening the knob with a quarter turn, 2/3 turn or a full turn etc.).

[0039] According to a form of realization of the present

invention, the material in which the body is made e.g. of a "cup" shape is preferably chosen from transparent virgin polypropylene, polycarbonate, transparent polystyrene, polymethyl methacrylate (PMMA), polyethylene terephthalate (PET), polyvinyl chloride (PVC) or combinations thereof, or other materials suitable for the purpose.

[0040] An advantage of this solution is that it allows a wide choice of materials to realize the transparency of the knob.

[0041] Further characteristics and advantages of the invention can be deduced from the dependent claims.

BRIEF DESCRIPTION OF THE FIGURES

[0042] Further characteristics and advantages of the invention will be evident from the reading of the following description provided as an example and not limited to some forms of realization of the present invention, with the help of the figures illustrated in the attached tables, where:

Figure 1 represents a perspective view of a realization form of the knob device according to a preferred embodiment of the invention; and

Figure 2 represents a top view of the knob of Figure 1; and

Figure 3 represents a top view of a possible application of a knob device embodiment form of figures 1-2; and

fig. 4 shows a detail of a preferred form of realization of the knob of the innovative system described in this invention.

DETAILED DESCRIPTION OF SOME EMBODIMENTS OF THE PRESENT INVENTION

[0043] The references used here are for convenience only and therefore do not limit the scope of protection.

[0044] Figure 1 shows, in perspective view, a particularly preferred form of realization of the precision system and in particular of the knob 10 according to a preferred realization of the present invention.

[0045] Knob 10 is suitable for use in a system for spacing and levelling 20 tiles during their installation.

[0046] Knob 10 is intended to be used in cooperation with a base 30 equipped with a threaded stem; this set of elements is also referred to here as "leveling screw", so that this innovative precision system includes at least said knob 10 and said base 30 comprising at least said threaded stem.

[0047] The base 30 and the threaded stem are known in themselves in the field and in Figure 3 is represented for simplicity only the trace of the base 30 under the tiles 20 during the laying.

[0048] Knob 10 comprises a body 12 with a top surface 14 in which a hole 16 is cut. Preferably, the body 12 of the knob 10 has a substantially "cup" conformation and

is equipped with an external surface in which there are highlighted relief portions 13 and recessed portions 13' to facilitate the grip of the knob 10.

[0049] On the top surface 14 of the knob 10, in some preferred embodiments, flexible fins 15 defined by notches 17 are provided, wherein the above flexible fins 15 are designed to enlarge the hole 16 during the tightening phase of the knob 10. Inside the hole 16 of the top surface 14 of the body 12 there is a threaded portion 22 that allows the tightening of the leveling screw for tiles 20. This threaded portion, preferably of thickness S, as shown in detail in fig. 4; in a particularly advantageous way, the threaded portion 22 in an embodiment form can be made to engage with the threaded stem, said threaded stem (not represented here because it is known in itself) is in the present form of construction however advantageously treated with polishing and chrome to present a low surface roughness to allow as little friction as possible when screwing the hole 16 of knob 10 with said threaded stem so that the knob 10 in a particularly advantageous and innovative way self-tightens thanks to its weight on said threaded stem independently up to the base of the threaded stem in contact with the tiles.

[0050] The threaded portion 22 inside the hole 16 is configured in some embodiment forms in a particularly advantageous way so as to allow the tightening of the leveling screw for tiles 20 by making only half a turn to the knob 10.

[0051] According to the present invention, the cup body 12 includes, in a position opposite to the said top surface 14, a perimetral edge 18 acting as a contact surface 18' with the tiles 20.

[0052] The perimetral edge 18 is equipped with an external surface in which there are relief portions 19 and recessed portions 19'.

[0053] According to the present invention, the cup body 12 of knob 10 is at least partially transparent.

[0054] The material in which the cup body 12 is made can preferably be chosen from transparent virgin polypropylene, polycarbonate, transparent polystyrene, polymethylmethacrylate (PMMA), polyethylene terephthalate (PET), polyvinyl chloride (PVC) or combinations thereof.

[0055] The use of knob 10 is as follows: the base 30 of the threaded stem is placed on the floor (on the previously laid adhesive for tiles), then the tiles 20 (in the example four tiles) are positioned on their supporting surface, the edges 31 are aligned with each other so as to leave gaps F formed between the tiles 20. Then knob 10 is placed on the threaded stem (not represented for simplicity).

[0056] The fact that the body 12 of the knob 10 is transparent or at least partially transparent at least insofar as this transparency allows an operator to see or at least glimpse the edges 31 of the tiles 20 during installation facilitates advantageously its use.

[0057] Then, in a preferred form, the knob 10 is simply let go and will self-tighten itself by means of thread 22

that will engage with the specially treated threaded stem, until it reaches the base of the threaded stem 30 positioning itself precisely on the tiles 20.

[0058] Alternatively, even with this first form of construction, or in a second form of construction, if there are fins 15 on the knob 10 (as mentioned above the flexible fins may or may not be present), the knob 10 is pushed in a substantially vertical down along the stem thread without screwing, but using the slots 17 in the top surface 14 of the cup body 12 that open the flexible fins 15, widening the hole 16. (This operation and the one described above are considerably faster than the corresponding screwing operations of the known technique, thus bringing a considerable technical advantage).

[0059] Only in the final clamping phase, in some forms of embodiment of the precision system for tile laying, is it necessary to have, for example, just half a turn of the knob 10 using the internal thread 22 to the hole 16 of the top surface.

[0060] In the form of embodiment of in which in a particularly advantageous way the knob 10 thanks to said notches 17 basically self-screws on the threaded stem, the weight of the knob 10 is properly calibrated to screw on the stem in order to couple with the knob in this way, herein the knob ends its run on the surface of the tiles 20 remaining advantageously in place before the final tightening.

[0061] With the final tightening in an advantageous way, the knob 10 is placed with its own contact surface 18' of the perimetral edge 18 in contact with the face in view of the tiles 20 with the desired pressure, so as to make the latter planar. This is done for all the tiles to be laid.

[0062] Once the adhesive has solidified, the knob 10 is removed and the threaded stem is separated from the base 30 using well-known points having facilitated breakage.

[0063] It appears evident that said innovative precision system for tile laying allows to solve all the cited known art problems, variants in the form of the knob and/or of the threaded stem, materials that make up the parts, type of coupling between the parts, colour, thickness of the components, methods of assembly and installation of the components, etc., are to be considered included in the object of the present invention; therefore, obviously, modifications or improvements can be made to the invention as described, dictated by contingent or particular reasons, without, however, going beyond the scope of the invention as claimed below.

Claims

1. A precision tile laying system comprising at least one knob (10) for use in an assembly for spacing and levelling tiles during their laying, and a base (30) comprising at least one threaded stem adapted to be positioned at the crossing of two or more tiles

(20), wherein said knob (10) comprises at least one body (12) provided with at least one top surface (14) in which at least one hole (16) is formed, said hole (16) comprising a threaded portion (22) at least to engage with said threaded stem, said knob (10) comprising in a position opposite to said top surface (14), a perimetral edge (18) acting as a contact surface (18') with the tiles (20), the knob (10) screwing on said stem up to the base (30) of the threaded stem getting in contact with the tiles (20) and unscrewing to adjust the levelling of the tiles (20), **characterized in that** the body (12) of said knob (10) is at least partially transparent in such a way as to allow an operator to see or at least glimpse the edges (31) of the tiles (20) during installation.

2. The precision tiling system according to claim 1, wherein the body (12) of said knob (10) is totally transparent.
3. The precision tiling system according to the preceding claims, wherein said threaded portion (22) allows the clamping of a levelling screw for the tiles (20).
4. The precision tiling system according to claim 3, wherein the threaded portion (22) inside the hole (16) is configured so as to clamp the levelling screw for the tiles (20) by making only one half turn to the knob (10).
5. The precision tiling system according to claim 1, wherein the body (12) of the knob (10) has a cup configuration.
6. The precision tiling system according to the preceding claims, wherein the material in which the body (12) of the knob (10) is made is selected from transparent virgin polypropylene, polycarbonate, transparent polystyrene, polymethylmethacrylate (PMMA), polyethylene terephthalate (PET), polyvinylchloride (PVC) or combinations thereof.
7. The precision tiling system according to claim 1, wherein the body (12) of the knob (10) is provided with an external surface in which there are relief portions (13) and recessed portions (13') to facilitate the grip of the knob (10).
8. The precision tiling system according to the preceding claims, wherein said threaded rod stem is treated with polishing and chroming to present a low surface roughness to allow less friction when screwing the knob hole with said threaded stem, to allow the knob (10) to self-screw on said threaded rod in an autonomous manner until the knob is in contact with the tiles.
9. The precision tiling system according to claim 1,

wherein in the top surface (14) of the body (12) flexible fins (15) defined by carvings (17) are formed, wherein said flexible fins (15) enlarge the hole (16) during the tightening of the knob (10).

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Patentansprüche

1. Ein Präzisionsfliesenverlegesystem beinhaltet in einer Baugruppe mindestens einen Knopf (10) zur Abstandshalter-Anordnung für die Nivellieren von Fliesen während ihres Verlegens, und eine Basis (30), die mindestens einen Gewindeschafft umfasst, der geeignet ist, an der Kreuzung von zwei oder mehr Fliesen (20) positioniert zu werden, wobei der Knopf (10) mindestens einen Körper (12) umfasst, der mit einer oberen Fläche (14) versehen ist und mindestens ein Loch (16) aufweist, dieses Loch (16) ist mit einem Gewindeabschnitt (22) versehen zumindest zum Eingriff mit dem Gewindeschafft, wobei der Knopf (10) auf den Stab geschraubt wird, bis die Basis (30) des Gewindestabs in Kontakt mit den Fliesen (20) kommt und abgeschraubt wird um die Nivellierung der Fliesen (20) einzustellen **dadurch gekennzeichnet, dass** der Körper (12) des besagten Knopfes zumindest teilweise transparent ist, um es einer Bedienungsperson zu ermöglichen, die Ränder (31) der Fliesen (20) während der Installation sehen oder zumindest flüchtig zu sehen.
2. Das Präzisionsfliesenverlegesystem nach Anspruch 1, wobei der Körper (12) des Knopfes (10) vollständig transparent ist.
3. Das Präzisionsfliesenverlegesystem nach den vorhergehenden Ansprüchen wobei der Gewindeabschnitt (22) das Festklemmen einer Nivellierschraube für die Fliesen (20) ermöglicht.
4. Das Präzisionsfliesenverlegesystem nach Anspruch 3, wobei der Gewindeabschnitt (22) im Inneren des Lochs (16) so konfiguriert ist, dass er die Nivellierungsschraube für die Fliesen (20) festklemmt, indem er nur eine halbe Drehung an dem Knopf (10) macht.
5. Das Präzisionsfliesenverlegesystem nach Anspruch 1, wobei der Körper (12) des Knopfes (10) eine Schalenkonfiguration hat.
6. Das Präzisionsfliesenverlegesystem nach den vorhergehenden Ansprüchen, wobei das Material, aus dem der Körper (12) des Knopfes (10) hergestellt ist, ausgewählt ist aus transparentem unbehandeltem Polypropylen, Polycarbonat, transparentem Polystyrol, Polymethylmethacrylat (PMMA), Polyethylenerephthalat (PET), Polyvinylchlorid (PVC) oder Kombinationen davon.

7. Das Präzisionsfliesenverlegesystem nach Anspruch 1, wobei der Körper (12) des Knopfes (10) mit einer äußeren Oberfläche versehen ist, in der Reliefabschnitte (13) und vertiefte Abschnitte (13') vorhanden sind, um den Griff des Knopfes (10) zu erleichtern.

8. Das Präzisionsfliesenverlegesystem nach den vorhergehenden Ansprüchen, wobei der Gewindestangenschaft mit Polieren und Verchromen behandelt ist, um eine geringe Oberflächenrauhigkeit zu zeigen, um weniger Reibung zu ermöglichen, wenn das Knaufloch mit dem Gewindeschafft verschraubt wird, um den Knopf (10) zu ermöglichen, die Gewindeschafft autonom selbst aufzuschrauben, bis der Knopf in Kontakt mit den Fliesen ist.
9. Das Präzisionsfliesenverlegesystem nach Anspruch 1, wobei in der oberen Oberfläche (14) des Körpers (12) durch Schnitzereien (17) definierte flexible Rippen (15) ausgebildet sind, wobei die flexiblen Rippen (15) das Loch (16) vergrößern während des Anziehens des Knopfes (10).

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Revendications

1. A système de pose de carrelage de précision comprenant au moins une poignée (10) destinée à être utilisée dans un ensemble d'écartement et de mise à niveau des carrelages lors de leur pose, et une base (30) comprenant au moins une tige filetée apte à être positionnée au croisement de deux ou plusieurs carreaux (20), où ladite poignée (10) comprend au moins un corps (12) pourvu d'au moins une surface supérieure (14) dans laquelle au moins un trou (16) est formé, ledit trou (16) comprenant une partie filetée (22) au moins pour venir en prise avec ladite tige filetée, la poignée (10) se vissant sur ladite tige jusqu'à la base (30) de la tige filetée entrant en contact avec les carreaux (20), et se dévissant pour régler le nivellation des carreaux (20) **caractérisée en ce que** le corps (12) de ladite poignée est au moins partiellement transparent de manière à permettre à un opérateur de voir ou au moins entrevoir les bords (31) des carreaux (20) lors de la pose.
2. Le système de pose de carrelage de précision selon la revendication 1, dans laquelle le corps (12) de ladite poignée (10) est totalement transparent.
3. Le système de carrelage de précision selon les revendications précédentes, dans lesquelles ladite partie filetée (22) permet le serrage d'une vis de nivellation pour les carreaux (20).
4. Le système de pose de carrelage de précision selon la revendication 3, dans laquelle la partie filetée (22)

à l'intérieur du trou (16) est configurée de manière à serrer la vis de nivellation des carreaux (20) en ne faisant faire qu'un demi-tour à la poignée (10).

5. Le système de pose de carrelage de précision selon la revendication 1, dans laquelle le corps (12) de la poignée (10) a une configuration en coupelle. 5
6. Le système de pose de carrelage de précision selon les revendications précédentes, dans lesquelles le matériau dans lequel le corps (12) de la poignée (10) est réalisé est sélectionné parmi le polypropylène vierge transparent, le polycarbonate, le polystyrène transparent, le polyméthylméthacrylate (PMMA), le polyéthylène téréphthalate (PET), le chlorure de polyvinyle (PVC) ou leurs combinaisons. 10 15
7. Le système de pose de carrelage de précision selon la revendication 1, dans laquelle le corps (12) de la poignée (10) est pourvu d'une surface externe dans laquelle se trouvent des parties en relief (13) et des parties en creux (13') pour faciliter la préhension de la poignée (10). 20
8. Le système de pose de carrelage de précision selon les revendications précédentes, dans lesquelles ladite barre de tige filetée est traitée par polissage et chromage pour présenter une faible rugosité de surface pour permettre moins de frottement lors du visage du trou de la poignée avec ladite tige filetée, pour permettre à la poignée (10) de s'auto-visser sur ladite barre filetée de manière autonome jusqu'à ce que la poignée soit en contact avec les carreaux. 25 30
9. Système de pose de carrelage de précision selon la revendication 1, dans laquelle dans la surface supérieure (14) du corps (12) des ailettes flexibles (15) définies par des gravures (17) sont formées, où lesdites ailettes flexibles (15) agrandissent le trou (16) lors du serrage de la poignée (10). 35 40

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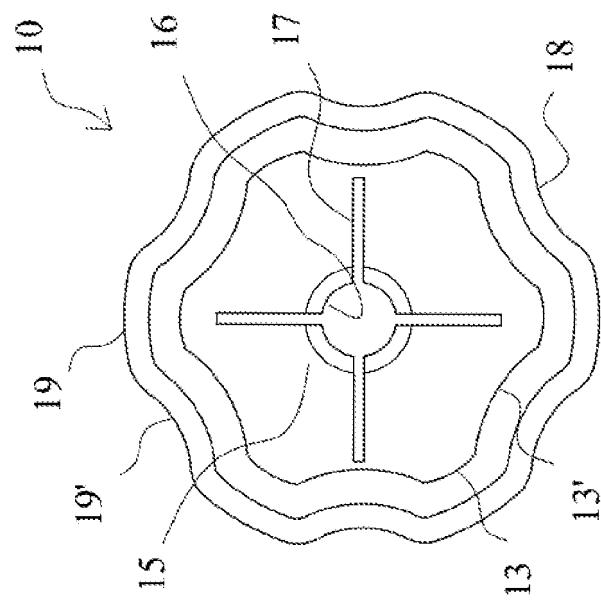


FIG.2

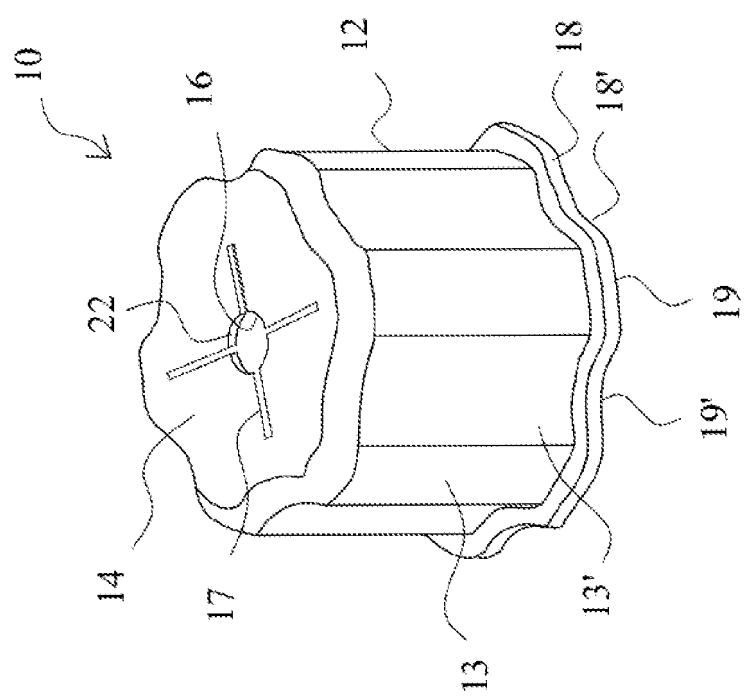
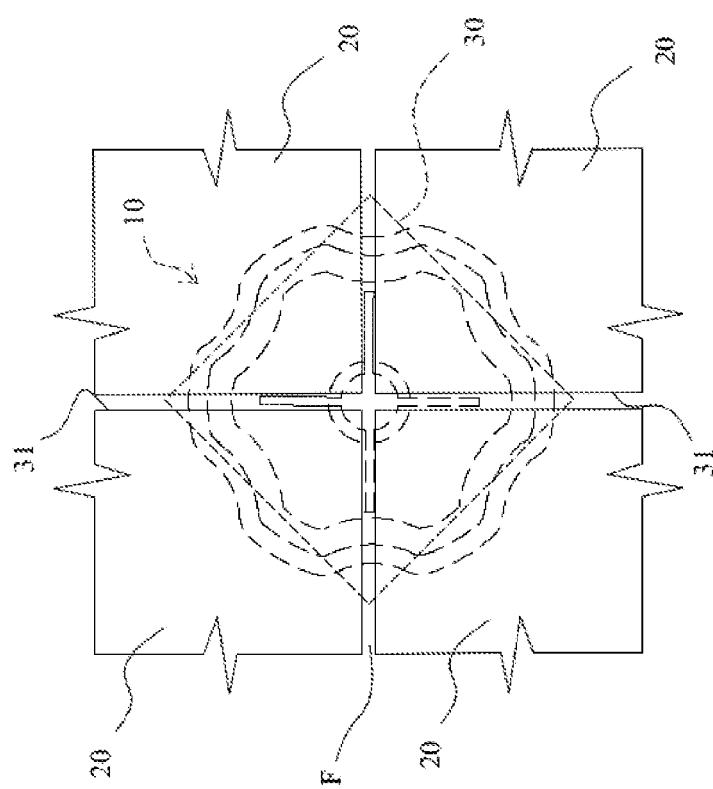
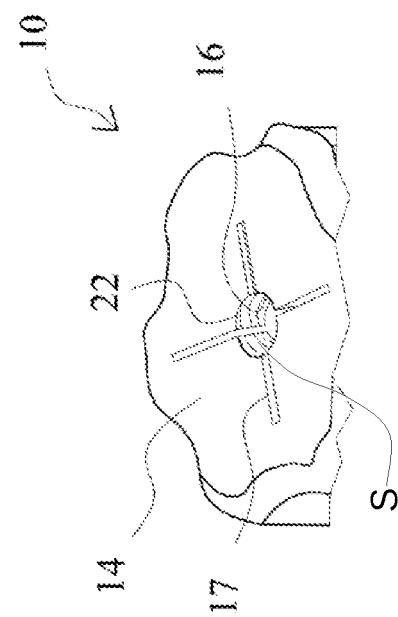


FIG.1



REFERENCES CITED IN THE DESCRIPTION

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