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(54) **A DEVICE FOR LEVELLING TILES**

VORRICHTUNG ZUM NIVELLIEREN VON FLIESEN

DISPOSITIF DE NIVELLEMENT DE CARREAUX

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Description

[0001] The present invention relates to a device for levelling tiles.

[0002] Devices for levelling tiles, in particular ceramic tiles, especially in the form of tiles of a flooring or coating of a respective room or living space or other setting, are known, which comprise support-plate means for the lower face of corresponding tiles, in particular having an upper face for supporting said lower face of corresponding tiles, knob means for engaging the upper face of the respective tile, i.e., having a lower face adapted to engage said upper face of the respective tile, to make the levelling in height of the connected tiles.

[0003] Said already-known devices for levelling tiles further comprise corresponding connecting means between said plate means and said knob means, in particular extending from, and in one piece with, said plate means and having means for sliding and retaining said knob means for engaging said upper face of the respective tile, and further comprise corresponding breaking means to promote the separation of said connecting means from said plate means, and which are in the form of a weakening cavity provided in said plate means at said connecting means and extending within said plate means starting from the bottom, or lower, face thereof. With said levelling devices that are known so far, a breakage satisfactorily occurs by a flexural stress to that part of the device, which projects from the tiles. The document EP3 524 756 A1 discloses such device according to the preamble of claim 1.

[0004] However, in the field, it would be desirable to have a levelling device available, in which the breakage, between the base plate means and the connecting means of the knob means, occurs in a reliable and easy manner, while avoiding, to the greatest extent possible, premature and unwanted breakages from occurring during the levelling step, resulting in the need to proceed with a cumbersome and undesired repositioning, which, furthermore, involves an excessive expenditure of time.

[0005] Therefore, by the present invention, it is intended to propose a new and alternative solution to the hitherto known solutions, and in particular, the goal is to obviate one or more of the above-mentioned drawbacks or problems, and/or to meet one or more of the needs cited above, and/or which in any case are felt in the art, and in particular evident from what has been set forth above.

[0006] Thus, a device for levelling tiles is provided, in particular ceramic tiles, especially consisting of the tiles of a flooring or coating of a room or other, comprising support-plate means for the lower face of corresponding tiles, in particular having an upper face for supporting said lower face of corresponding tiles, knob means for engaging the upper face of the respective tile, i.e., having a lower face adapted to engage said upper face of the respective tile, connecting means between said plate means and said knob means, in particular extending

from, and in one piece with, said plate means and having means for sliding and retaining said knob means for engaging said upper face of the respective tile, and breaking means for separating said connecting means from said plate means, which are in the form of a weakening cavity provided in said plate means at said connecting means and extending within said plate means starting from the bottom, or lower, face, thereof; characterized in that said weakening cavity has an upper defining face which extends longitudinally and has a corresponding central longitudinal, in particular flat, zone, and opposite longitudinal outermost zones raised with respect to said central zone, i.e., extending in height with respect to said central longitudinal zone towards the corresponding upper surface of said support-plate means for the lower face of corresponding tiles, and extending until reaching, in height, at, or near, the same upper surface of said support-plate means.

[0007] In this manner, it is possible to reduce the flexural resistance at these outermost zones and to promote the breakage and detachment of said connecting means, all of this without unduly weakening the connection of these to the same plate means, hence it is possible to ensure a successful separation breakage while preventing undesired breakages from occurring during the levelling step.

[0008] However, this and other innovative aspects, or respective advantageous implementations, are set out in the attached claims, the specific technical characteristics of which are found, together with corresponding advantages achieved, in the following description, detailing purely exemplary, non-limiting embodiments of the invention, and which is made with reference to the attached drawings, in which:

- Fig. 1A illustrates a schematic, perspective view of a part of a first preferred implementation of a device according to the present invention;
- Fig. 1B illustrates a schematic, top elevational view of a part of the first preferred implementation of a device according to the present invention;
- Fig. 1C illustrates a schematic, front elevational view of a part of the first preferred implementation of a device according to the present invention;
- Fig. 1D illustrates a schematic, top plan view of a part of the first preferred implementation of a device according to the present invention;
- Fig. 1E illustrates a schematic, bottom plan view of a part of the first preferred implementation of a device according to the present invention;
- Fig. 1F illustrates a schematic, vertical sectional view, taken according to the line IF-IF of Fig. 1C, of a part of the first preferred implementation of a device according to the present invention;
- Fig. 1G illustrates a schematic view of an enlarged detail of Fig. 1F;
- Fig. 2A illustrates a schematic, perspective view of a part of a second preferred implementation of a de-

- vice according to the present invention;
- Fig. 2B illustrates a schematic, side elevational view of a part of the second preferred implementation of a device according to the present invention;
- Fig. 2C illustrates a schematic, front elevational view of a part of the second preferred implementation of a device according to the present invention;
- Fig. 2D illustrates a schematic, top plan view of a part of the second preferred implementation of a device according to the present invention;
- Fig. 2E illustrates a schematic, bottom plan view of a part of the second preferred implementation of a device according to the present invention;
- Fig. 2F illustrates a schematic, vertical sectional view, taken according to the line IIF-IIF of Fig. 2C, of a part of the second preferred implementation of a device according to the present invention;
- Fig. 2G illustrates an enlarged detail of Fig. 2F;
- Fig. 3 illustrates a schematic, perspective view of a part of a third preferred implementation of a device according to the present invention;
- Fig. 4A illustrates a schematic, side elevational view of the preferred implementation of a knob used in the device according to the present invention;
- Fig. 4B illustrates a schematic, top plan view of the preferred implementation of a knob used in the device according to the present invention;
- Fig. 4C illustrates a schematic, vertical sectional view of the preferred implementation of a knob used in the device according to the present invention, taken according to the line IVC-IVC of Fig. 4B.

[0009] In the attached figures 1A to 1G, a first preferred implementation of a device 10', 10" for levelling tiles 11, in particular ceramic tiles, especially consisting of the tiles of a flooring or coating of a room or other, is illustrated.

[0010] As can be understood, the device comprises support-plate means 12 for the lower face 111 of corresponding tiles 11, in particular having an upper face 121 for supporting said lower face 111 of corresponding tiles 11, and knob means 14 or 10" for engaging the upper face 112 of the respective tile 11, i.e., having a lower face 141 adapted to engage said upper face 112 of the respective tile 11.

[0011] As illustrated, the device further comprises connecting means 16 between said plate means 12 and said knob means 14, in particular extending from, and in one piece 10' with, said plate means 12, and having means 160 for sliding and retaining said knob means 14 for engaging said upper face 112 of the respective tile 11.

[0012] As illustrated, the device also comprises breaking means 18 adapted to allow, or facilitate, i.e., to trigger, the separation of said connecting means 16 from said plate means 12, which are in the form of a weakening cavity 180 provided in said plate means 12 at said connecting means 16, which extends within said plate means 12, starting from the bottom, or lower, face, 122 of the same plate means 12.

[0013] With advantage, as illustrated, said weakening cavity 180 has an upper defining face 181 which extends longitudinally, which has a corresponding central longitudinal, in particular flat, zone 182, and opposite longitudinal outermost zones 183, 183 raised with respect to said central zone 182, i.e., extending in height with respect to said central longitudinal zone 182 towards the corresponding upper surface 121, of said support-plate means 12 for the lower face of corresponding tiles 11, and extending until reaching, in height, at, or near, the same upper surface 121.

[0014] In accordance with a second and third preferred implementations, which are illustrated in the subsequent figures 2A to 3, it is similarly provided for that the corresponding weakening cavity 180 has an upper defining face 181 which extends longitudinally and which has a corresponding central longitudinal, in particular flat, zone 182, and opposite longitudinal outermost zones 183, 183 raised with respect to said central zone 182, i.e., extending in height with respect to said central longitudinal zone 182 towards a corresponding upper surface 120c of said support-plate means 12 for the lower face of corresponding tiles 11, and extending until reaching, in height, at, or near, the same upper surface 120c, as in any case will be best understood from the following of the present description.

[0015] In this manner, it is possible to reduce the flexural resistance at these outermost zones and to promote the breakage and detachment of said connecting means 16, all of this without unduly weakening the connection of these connecting means 16 with the plate means 12, and thus it is possible to ensure a successful separation breakage, while avoiding that undesired breakages occur during the levelling step of the tiles.

[0016] Advantageously, as can be understood from said figures, and in particular from Fig. 1G, said central longitudinal zone 182 extends planarly, in particular horizontal, in use, and/or parallel to said bottom, or lower, face, 122 of said plate means 12 and/or parallel to said upper face 121 of said plate means 12, i.e., parallel to the upper surface 121 or 120c of the same plate means 12, in particular that it is in substantially perpendicular correspondence to said central longitudinal zone 182 of said longitudinal cavity.

[0017] In an advantageous manner, as can be understood from said figures and in particular from Fig. 1G, said longitudinal outermost zones 183, 183 have a respective arched profile, convex towards said weakening cavity 180.

[0018] In an advantageous manner, as can be understood from said figures and in particular from Fig. 1G, in said upper defining face 181 of said weakening cavity 180, the central, in particular flat, zone 182 has a longitudinal length (l') corresponding to more than 80%, preferably corresponding to more than 90%, of the entire longitudinal length (l) of the same upper defining face 181 of said weakening cavity 180.

[0019] Advantageously, as can be understood from

said figures and in particular from Fig. 1G, in said upper defining face 181 of said weakening cavity 180, said longitudinal outermost zones 183, 183 have the same longitudinal length, or extension.

[0020] In a particularly advantageous manner, as can be understood from said figures and in particular from Fig. 1G, in said upper defining face 181 of said weakening cavity 180, the respective one of said longitudinal outermost zones 183, 183 has a longitudinal length (l") corresponding to less than 10%, preferably corresponding to less than 5%, of the entire longitudinal length (l) of the same upper defining face 181 of the same weakening cavity 180.

[0021] In a particularly advantageous manner, as can be understood from said figures and in particular from the figures 1G and 2G, in said preferred implementations, at the central, in particular flat, zone 182 of the upper defining face 181, the height, or thickness, of said plate means 12, which is inferiorly defined by this zone 182 of the upper defining face 181, ranges between 0.1 mm and 0.8 mm, and preferably ranges between 0.3 mm and 0.6 mm, optimally around 0.4 mm.

[0022] Advantageously, as can be understood from said figures and in particular from Fig. 1G, said weakening cavity 180 provided for in said plate means 12 extends from said bottom, or lower, face, 122 of said plate means 12 and is defined by respectively opposite longitudinal faces 184, 184 and transversal faces 185, 185.

[0023] As can be understood from said figures, in an appreciably advantageous manner, said support-plate means 12 for the lower face of corresponding tiles comprise a thin small plate 125, in particular defining said upper face 121 for supporting said lower face 111 of corresponding tiles 11 and said bottom, or lower, face, 122, which are in particular parallel to each other.

[0024] Said bottom face 122 of said plate means is in particular adapted to be rested on the adhesive retaining material for said tiles 11, in particular for the lower faces 111 of the same tiles 11.

[0025] In an appreciably advantageous manner, as can be understood from the subsequent figures 2A to 2G, relating to a second preferred implementation of a device, and 3, relating to a third preferred implementation of a device, the support-plate means 12 for the lower face 111 of corresponding tiles 11 comprise spacing thickness means 120 between opposite tiles, 11, 11, i.e., between opposite side faces 113, 113 of said tiles 11, in particular said thickness means 120 comprising a plurality of members 120a configured, in plan, in the shape of a T, in the figures 2A to 2G, or cross, illustrated in Fig. 3, which thickness means 120 extend from said upper face 121 of said thin small plate 125.

[0026] As can be understood from the subsequent figures 2A to 2G, relating to a second preferred implementation of a device, and 3, relating to a third preferred implementation of a device, advantageously, the respective member 120a of said thickness means 120 has opposite side faces 120b, 120b, in particular parallel to

each other, of engagement for the corresponding side face 113 of the respective tile 11.

[0027] As can be understood from said figures 1A to 3, said connecting means 16 between said plate means 12 and said knob means 14 comprise a small sheet 161 for the connection to said plate means 12 and the interposition, in use, between corresponding and facing tiles 11, 11 and a rod 162 for sliding and retaining said knob means 14 extending superiorly from said small sheet 161 and in one piece therewith.

[0028] With appreciable advantage, as can be understood from said figures 1A to 1G, in accordance with the first preferred implementation of a device, said small sheet 161, for the connection to said plate means 12 and the interposition between corresponding and facing tiles 11, 11, extends from the upper face 121 of said thin small plate 125.

[0029] With advantage, advantageously, in accordance with the second and third preferred implementations of a device illustrated in the figures 2A to 3, said small sheet 161, for the connection to said plate means 12 and the interposition between corresponding and facing tiles 11, 11, extends from the upper face 120c of said spacing thickness means 120 between opposed tiles, i.e., of corresponding spacing members 120a thereof.

[0030] As can be understood from said figures, said small sheet 161, for the connection to said plate means 12 and the interposition between corresponding and facing tiles, has opposite transverse, longitudinally outermost, faces 161a, 161a, in particular in a perpendicular, or vertically, proximity, i.e., slightly outside, in particular by a measure less than 0.5 mm, said transverse faces 185, 185, which longitudinally define said weakening cavity 180.

[0031] With advantage, as can be understood from said figures, said small sheet 161, for the connection to said plate means 12 and the interposition between corresponding and facing tiles, has opposite longitudinal planar faces 161b, 161b, in particular parallel to each other and defining therebetween the thickness "s" of said small sheet 161 for the connection to said plate means 12.

[0032] As can be understood from said figures 1E and 1F, advantageously, in accordance with the first preferred implementation of a device, the distance b' between the longitudinal faces 184, 184 of said weakening cavity 180, i.e., the width b' of said weakening cavity 180, is greater than the thickness s of said small sheet 161 for the connection to said plate means 12.

[0033] As can be understood from said figures 2E and 2F, in an advantageous manner, in accordance with the second preferred implementation of a device, the distance b" between the longitudinal faces 184, 184 of said weakening cavity 180, i.e., the width b" of said weakening cavity 180, is less than the thickness s of said small sheet 161 for the connection to said plate means 12.

[0034] In an advantageous manner, while not being

particularly illustrated in the attached figures, according to a further embodiment of a device, the distance between the longitudinal faces 184, 184 of said weakening cavity 180, i.e., the width of said weakening cavity 180, is equal, or substantially equal, to the thickness *s* of said small sheet 161 for the connection to said plate means 12.

[0035] As can be understood also with reference to the subsequent figures 4A to 4C, advantageously, said rod 162 for sliding and retaining said knob means 14 is in the form of a threaded stem on which said knob means 14 are screwed and unscrewed, which have a corresponding perpendicular cavity, which is suitably threaded, especially at least in its lower part 140.

[0036] As can be understood from the same figures, in a particularly advantageous manner, said threaded stem 162, of said connecting means 16, extends from an intermediate zone of said small sheet 161 for the connection to said plate means 12, i.e., from a point below the upper edge 161c thereof.

[0037] In a particularly advantageous manner, as can be understood from said figures, in practice, said support-plate means 12 for the lower face of corresponding tiles comprise a lower, in particular flat, face 122, an opposite upper face 121 of support for corresponding tiles and which is preferably flat, and a peripheral edge 123, preferably having a general oval shape.

[0038] As can be understood from said figures, advantageously, said small sheet 161 for the connection to said plate means 12 and the interposition between corresponding and facing tiles has substantially the same thickness or width as the corresponding spacing thickness means 120 between opposite tiles.

[0039] As can be understood from said figures, in an appreciably advantageous manner, said spacing thickness means 120 between opposite tiles, i.e., the members 120a thereof on which said small connecting sheet 161 is placed, have an outermost part 120d of the upper face that is slightly inclined downwards, in particular starting from a zone spaced apart from said weakening cavity 180, especially by an angle ranging between 5° and 15°, preferably of about or equal to 10°.

[0040] In this way, any potential obstacle to the bending required to cause the breakage for the separation of the connecting means 16 from the base small plate 12.

[0041] In an appreciably advantageous manner, as can be understood from said figures 4A to 4C, said knob means 14 for engaging the upper face of said tiles have a main body defining a circumferential part, in particular of a general conical shape 149.

[0042] As can be understood from said figures 4A to 4C, advantageously, said body 149 of said knob means 14 defines an inner surface, in particular of a general conical shape 142, for guiding said perpendicular threaded cavity 140 on said rod, or pivot, 162 for sliding and retaining said knob means 14.

[0043] As can be understood from said figures 4A to 4C, with appreciable advantage, said body 149 of said

knob means 14 has a plurality of, in particular in a number of six, radial fins 143, to be grasped by the user, projecting from said body 149.

[0044] With appreciable advantage, as can be understood from said figures 4A to 4C, said body 149 of said knob means 14 has a sleeve 144 which extends superiorly beyond the conical part of the same body 149 and beyond the upper edge of said radial fins 143.

[0045] Advantageously, the device, i.e., one or more of the components thereof, in particular said plate means 12 and the corresponding connecting means 16, and said knob means 14, is made, or are made, in plastic material, in particular by moulding in a special mould.

[0046] In practice, as is apparent, the technical characteristics illustrated above allow, individually or in a respective combination, achieving one or more of the following advantageous results:

- it is possible to reduce the flexural resistance at these outermost zones and to promote the breakage and detachment of said connecting means without unduly weakening the connection of these to the same plate means;
- it is possible to ensure a successful separation breakage, while preventing undesired breakages from occurring during the levelling step.

[0047] The present invention is susceptible of clear industrial application. Those skilled in the art are further able to devise a number of modifications and/or variations to be made to the same invention, while remaining within the scope of the invention as defined by the appended claims. Furthermore, those skilled in the art will be able to devise further preferred implementations of the invention comprising one or more of the above-illustrated characteristics of the above-mentioned preferred implementation, in particular as set forth in the appended claims. Furthermore, it should also be understood that all the details of the invention can be replaced by technically equivalent elements.

Claims

1. A device (**10'**, **10''**) for levelling tiles (**11**), in particular ceramic tiles, especially consisting of the tiles of a flooring or coating of a room or other, comprising support-plate means (**12**) for the lower face (**111**) of corresponding tiles (**11**), in particular having an upper face (**121**) for supporting said lower face (**111**) of corresponding tiles (**11**), knob means (**14**) for engaging the upper face (**112**) of the respective tile (**11**), i.e., having a lower face (**141**) adapted to engage said upper face (**112**) of the respective tile (**11**), connecting means (**16**) between said plate means (**12**) and said knob means (**14**), in particular extending from, and in one piece (**10'**) with, said plate means (**12**) and having means (**160**) for sliding and

- retaining said knob means (14) for engaging said upper face (112) of the respective tile (11), and breaking means (18) for separating said connecting means (16) from said plate means (12), which are in the form of a weakening cavity (180) provided in said plate means (12) at said connecting means (16) and extending within said plate means (12) starting from the bottom, or lower, face (122) thereof; wherein said weakening cavity (180) has an upper defining face (181) which extends longitudinally and has a corresponding central longitudinal, in particular flat, zone (182), characterized in that said weakening cavity (180) has opposite longitudinal outermost zones (183, 183) raised with respect to said central zone (182), i.e., extending in height with respect to said central longitudinal zone (182) towards the corresponding upper surface (121 or 120c) of said support-plate means (12) for the lower face of corresponding tiles (11), and extending until reaching, in height, at, or near, the same upper surface (121 or 120c) of said support-plate means (12).
2. The device according to claim 1, characterized in that said central longitudinal zone (182) extends planarly, in particular horizontal, in use, and/or parallel to said bottom, or lower, face (122) of said plate means (12) and/or parallel to said upper face (121) of said plate means (12), i.e., parallel to the upper surface (121 or 120c) of said plate means (12), in particular that it is in substantially perpendicular correspondence to said central longitudinal zone (182) of the longitudinal cavity.
 3. The device according to any of the preceding claims, characterized in that said longitudinal outermost zones (183, 183) have a respective arched profile, convex towards said weakening cavity (180).
 4. The device according to any of the preceding claims, characterized in that, in said upper defining face (181) of said weakening cavity (180), the central, in particular flat, zone (182) has a longitudinal length (l') corresponding to more than 80%, preferably corresponding to more than 90%, of the entire longitudinal length (l) of the same upper defining face (181).
 5. The device according to any of the preceding claims, characterized in that, in said upper defining face (181) of said weakening cavity (180), said longitudinal outermost zones (183, 183) have the same longitudinal length, or extension.
 6. The device according to any of the preceding claims, characterized in that, in said upper defining face (181) of said weakening cavity (180), the respective one of said longitudinal outermost zones (183, 183) has a longitudinal length (l') corresponding to less than 10%, preferably corresponding to less than 5%, of the entire longitudinal length (l) of the same upper defining face (181) of the same weakening cavity (180).
 7. The device according to any of the preceding claims, characterized in that at the central, in particular flat, zone (182) of the upper defining face (181), the height or thickness of said plate means (12), which is inferiorly defined by this zone of the upper defining face (181), ranges between 0.1 mm and 0.8 mm, and preferably ranges between 0.3 mm and 0.6 mm, optimally about 0.4 mm.
 8. The device according to any of the preceding claims, characterized in that said weakening cavity (180), provided in said plate means (12), extends from said bottom, or lower, face (122) of said plate means (12) and is defined by respectively opposite longitudinal faces (184, 184) and transverse faces (185, 185).
 9. The device according to any of the preceding claims, characterized in that said support-plate means (12) for the lower face of corresponding tiles comprise a thin small plate (125), in particular defining said upper face (121) of support for said lower face (111) of corresponding tiles (11) and said bottom, or lower, face (122), which are in particular parallel to each other.
 10. The device according to any of the preceding claims, characterized in that the support-plate means (12) for the lower face of corresponding tiles comprise spacing thickness means (120) between opposed tiles, (11, 11), i.e., between opposed side faces (113, 113) of said tiles (11), in particular thickness means (120) comprising a plurality of members (120a) configured, in plan, in the shape of a T, or cross, which thickness means (120) extend from said upper face (121) of said thin small plate (125).
 11. The device according to claim 10, characterized in that the respective members (120a) of said thickness means (120) has opposite side faces (120b, 120b), in particular parallel to each other, of engagement for the corresponding side face (113) of the respective tile (11).
 12. The device according to any of the preceding claims, characterized in that said connecting means (16) between said plate means (12) and said knob means (14) comprise a small sheet (161) for the connection to said plate means (12) and the interposition, in use, between corresponding and facing tiles (11, 11), and a rod (162) for sliding and retaining said knob means (14) extending superiorly from said small sheet (161) and in one piece therewith.

13. The device according to claim 12, characterized in that said small sheet (161), for the connection to said plate means (12) and the interposition between corresponding and facing tiles (11, 11), extends from the upper face (121) of said thin small plate (125).
14. The device according to claim 12, characterized in that said small sheet (161), for the connection to said plate means (12) and the interposition between corresponding and facing tiles (11, 11), extends from the upper face (120c) of said thickness means (120) of spacing between said opposed tiles, i.e., of corresponding spacing members (120a) thereof.
15. The device according to any of the preceding claims 12 to 14, characterized in that said small sheet (161), for the connection to said plate means (12) and the interposition between corresponding and facing tiles, has opposite transverse, longitudinally outermost, faces (161a, 161a), in particular in a perpendicular, or vertically, proximity to, i.e., slightly outside said transverse faces (185, 185), which longitudinally define, said weakening cavity (180).

Patentansprüche

1. Vorrichtung (10', 10") zum Nivellieren von Fliesen (11), insbesondere Keramikfliesen, insbesondere von Fliesen eines Bodenbelags oder einer Raumverkleidung oder dergleichen, mit Mitteln (12) mit einer Auflageplatte für die Unterseite (111) von entsprechenden Fliesen (11), insbesondere mit einer Oberseite (121) zur Auflage der Unterseite (111) von entsprechenden Fliesen (11), mit Knopfmitteln (14) zum Aufstecken auf die Oberseite (112) der jeweiligen Fliesen (11), d. h. mit einer Unterseite (141) zum Aufstecken auf die Oberseite (112) der jeweiligen Fliesen (11), mit Verbindungsmitteln (16) zwischen der Mittel (12) mit einer Platte und den Knopfmitteln (14), insbesondere einstückig (10') mit der Mittel (12) mit einer Auflageplatte und mit Mitteln (160) zum Verschieben und Festhalten der Knopfmittel (14) zum Aufstecken auf die Oberseite (112) der jeweiligen Fliesen (11), und mit einer Brecheinrichtung (18) zum Trennen der Verbindungsmittel (16) von den Plattenmitteln (12), die die Form eines Schwächungshohlraums (180) haben, der in den Plattenmitteln (12) an den Verbindungsmitteln (16) vorgesehen ist und sich von dem Boden bzw. der Unterseite (122) der Plattenmittel (12) in diese hinein erstreckt; wobei der Schwächungshohlraum (180) eine obere Begrenzungsfläche (181) aufweist, die sich in Längsrichtung erstreckt und einen entsprechenden zentralen Längsbereich, insbesondere einen flachen Bereich (182), aufweist, **dadurch gekennzeichnet, dass** der Schwächungshohlraum (180) gegenüberliegende äußerste Längsbereiche (183, 183) aufweist, die in Bezug auf den zentralen Bereich (182) erhaben sind, d. h. sich in Bezug auf den zentralen Längsbereich (182) in der Höhe in Richtung der entsprechenden Oberseite (121 oder 120c) der Mittel (12) mit einer Auflageplatte für die Unterseite der entsprechenden Fliesen (11) erstrecken, bis sie in der Höhe dieselbe Oberseite (121 oder 120c) der Mittel (12) mit einer Auflageplatte erreichen oder in der Nähe dieser liegen.
2. Vorrichtung nach Anspruch 1, **dadurch gekennzeichnet, dass** sich die zentrale Längszone (182) im Gebrauch flach, insbesondere horizontal, und/oder parallel zur Unterseite bzw. unteren Fläche (122) der Plattenmittel (12) und/oder parallel zur Oberseite (121) der Plattenmittel (12) erstreckt, das heißt parallel zur Oberseite (121 oder 120c) der Plattenmittel (12), insbesondere dass sie im Wesentlichen senkrecht zur zentralen Längszone (182) des Längshohlraums steht.
3. Vorrichtung nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** die äußersten Längszonen (183, 183) jeweils ein bogenförmiges Profil aufweisen, das in Richtung des Schwächungshohlraums (180) konvex ist.
4. Vorrichtung nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** in der oberen Begrenzungsfläche (181) des Schwächungshohlraums (180) die zentrale, insbesondere flache Zone (182) eine Längslänge (1') aufweist, die mehr als 80 %, vorzugsweise mehr als 90 %, der gesamten Längslänge (1) derselben oberen Begrenzungsfläche (181) entspricht.
5. Vorrichtung nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** in der oberen Begrenzungsfläche (181) des Schwächungshohlraums (180) die äußersten Längszonen (183, 183) die gleiche Längslänge oder -ausdehnung aufweisen.
6. Vorrichtung nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** in der oberen Begrenzungsfläche (181) des Schwächungshohlraums (180) jeweils eine der äußersten Längszonen (183, 183) eine Längslänge (1') aufweist, die weniger als 10 %, vorzugsweise weniger als 5 %, der gesamten Längslänge (1) derselben oberen Begrenzungsfläche (181) desselben Schwächungshohlraums (180) entspricht.
7. Vorrichtung nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** auf Höhe der mittleren, insbesondere flachen Zone (182) der oberen Begrenzungsfläche (181), die Höhe bzw. Dicke des Plattenmittels (12), das nach

unten durch diese Zone der oberen Begrenzungsfläche (181) begrenzt wird, zwischen 0,1 mm und 0,8 mm, vorzugsweise zwischen 0,3 mm und 0,6 mm, in optimaler Weise bei etwa 0,4 mm, liegt.

8. Vorrichtung nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** der Schwächungshohlraum (180), der in den Plattenmitteln (12) vorgesehen ist, sich von der Unterseite oder der unteren Fläche (122) der Plattenmittel (12) aus erstreckt und durch entsprechende Längsflächen (184, 184) und Querflächen (185, 185) gegenüberliegend begrenzt ist.
9. Vorrichtung nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** die Plattenmittel (12) der Auflage für die Unterseite der entsprechenden Fliesen ein dünnes Plättchen (125) umfassen, das insbesondere die Oberseite (121) der Auflage für die Unterseite (111) von entsprechenden Fliesen (11) und die Boden- oder Unterseite (122) definiert, die insbesondere parallel zueinander sind.
10. Vorrichtung nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** die Plattenmittel (12) der Auflage für die Unterseite von entsprechenden Fliesen Dickenabstandshalter (120) zwischen gegenüberliegenden Fliesen (11, 11), d. h. zwischen gegenüberliegenden Seitenflächen (113, 113) der Fliesen (11), aufweisen, wobei die Dickenabstandshalter (120) insbesondere aus mehreren Elementen (120a) bestehen, die in der Draufsicht die Form eines T oder eines Kreuzes haben und sich von der Oberseite (121) des dünnen Plättchens (125) erstrecken.
11. Vorrichtung nach Anspruch 10, **dadurch gekennzeichnet, dass** die jeweiligen Elemente (120a) der Dickenabstandshalter (120) gegenüberliegende, insbesondere zueinander parallele Seitenflächen (120b, 120b) aufweisen, die dazu bestimmt sind, mit der entsprechenden Seitenfläche (113) der jeweiligen Fliese (11) zusammenzuwirken.
12. Vorrichtung nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** die Verbindungsmittel (16) zwischen den Plattenmitteln (12) und den Knopfmitteln (14) ein Blättchen (161) zur Verbindung mit den Plattenmitteln (12) und zum Einsetzen im Gebrauch zwischen entsprechende und gegenüberliegende Fliesen (11, 11), sowie eine Stange (162) zum Gleiten und Halten der Knopfmittel (14) umfassen, die sich nach oben von dem Blättchen (161) erstreckt und einstückig mit diesem ausgebildet ist.
13. Vorrichtung nach Anspruch 12, **dadurch gekenn-**

zeichnet, dass sich das Blättchen (161), das zur Verbindung mit den Plattenmitteln (12) und zur Zwischenfügung zwischen entsprechenden und gegenüberliegenden Fliesen (11, 11) bestimmt ist, von der Oberseite (121) des dünnen Plättchens (125) erstreckt.

14. Vorrichtung nach Anspruch 12, **dadurch gekennzeichnet, dass** das Blättchen (161), das zur Verbindung mit den Plattenmitteln (12) und zur Zwischenfügung zwischen entsprechenden und gegenüberliegenden Fliesen (11, 11) bestimmt ist, sich von der Oberseite (120c) der Dickenabstandsmittel (120) zwischen den gegenüberliegenden Fliesen, d. h. von den entsprechenden Abstandselementen (120a), erstreckt.
15. Vorrichtung nach einem der vorhergehenden Ansprüche 12 bis 14, **dadurch gekennzeichnet, dass** das Blättchen (161), das zur Verbindung mit den Plattenmitteln (12) und zur Zwischenfügung zwischen entsprechenden und gegenüberliegenden Fliesen vorgesehen ist, gegenüberliegende Querflächen (161a, 161a) aufweist, die in Längsrichtung äußerst und insbesondere senkrecht oder vertikal, nahe, das heißt etwas nach außen versetzt, der Querflächen (185, 185) liegen, die in Längsrichtung den Schwächungshohlraum (180) begrenzen.

Revendications

1. Dispositif (10', 10") pour niveler des carreaux (11), notamment des carreaux en céramique, notamment comprenant des carreaux d'un pavement ou revêtement d'une pièce ou autre, comprenant des moyens (12) avec une plaque de support pour la face inférieure (111) des carreaux correspondants (11), comportant notamment une face supérieure (121) destinée à supporter ladite face inférieure (111) des carreaux correspondants (11), des moyens à bouton (14) destinés à s'engager sur la face supérieure (112) du carreau respectif (11), c'est-à-dire comportant une face inférieure (141) adaptée à s'engager sur ladite face supérieure (112) du carreau respectif (11), des moyens de liaison (16) entre lesdits moyens à plaque (12) et lesdits moyens à bouton (14), s'étendant notamment d'une seule pièce (10') avec lesdits moyens à plaque (12) et comportant des moyens (160) permettant de coulisser et de retenir lesdits moyens à bouton (14) pour s'engager sur ladite face supérieure (112) du carreau respectif (11), et des moyens de rupture (18) pour séparer lesdits moyens de liaison (16) desdits moyens à plaque (12), qui se présentent sous la forme d'une cavité d'affaiblissement (180) prévue dans lesdits moyens à plaque (12) au niveau desdits moyens de liaison (16) et s'étendant à l'intérieur

- desdits moyens à plaque (12) à partir du fond ou de la face inférieure (122) de ceux-ci ; dans lequel ladite cavité d'affaiblissement (180) présente une face de définition supérieure (181) qui s'étend longitudinalement et présente une zone longitudinale centrale correspondante, notamment une zone plate (182), **caractérisé en ce que** ladite cavité d'affaiblissement (180) présente des zones longitudinales opposées (183, 183) les plus extérieures, surélevées par rapport à ladite zone centrale (182), c'est-à-dire s'étendant en hauteur par rapport à ladite zone longitudinale centrale (182) vers la face supérieure correspondante (121 ou 120c) desdits moyens à plaque de support (12) pour la face inférieure des carreaux correspondants (11), et s'étendant jusqu'à atteindre, en hauteur, ou à proximité de la même face supérieure (121 ou 120c) desdits moyens à plaque de support (12).
2. Dispositif selon la revendication 1, **caractérisé en ce que** ladite zone longitudinale centrale (182) s'étend plate, notamment horizontalement, en utilisation, et/ou parallèlement à ladite face de fond, ou inférieure (122) desdits moyens à plaque (12) et/ou parallèlement à ladite face supérieure (121) desdits moyens à plaque (12), c'est-à-dire parallèlement à la face supérieure (121 ou 120c) desdits moyens à plaque (12), notamment **en ce qu'**elle se trouve dans une correspondance sensiblement perpendiculaire par rapport à ladite zone longitudinale centrale (182) de la cavité longitudinale.
 3. Dispositif selon l'une quelconque des revendications précédentes, **caractérisé en ce que** lesdites zones longitudinales (183, 183) les plus extérieures présentent un profil arqué respectif, convexe vers ladite cavité d'affaiblissement (180).
 4. Dispositif selon l'une quelconque des revendications précédentes, **caractérisé en ce que**, dans ladite face supérieure de définition (181) de ladite cavité d'affaiblissement (180), la zone centrale (182), notamment plane, présente une longueur longitudinale (1') correspondant à plus de 80 %, de préférence à plus de 90 %, de la longueur longitudinale totale (1) de la même face supérieure de définition (181).
 5. Dispositif selon l'une quelconque des revendications précédentes, **caractérisé en ce que**, dans ladite face supérieure de définition (181) de ladite cavité d'affaiblissement (180), lesdites zones longitudinales (183, 183) les plus extérieures présentent la même longueur longitudinale, ou extension.
 6. Dispositif selon l'une quelconque des revendications précédentes, **caractérisé en ce que**, dans ladite face supérieure de définition (181) de ladite cavité d'affaiblissement (180), respectivement l'une desdites zones longitudinales (183, 183) les plus extérieures présente une longueur longitudinale (1') correspondant à moins de 10 %, de préférence correspondant à moins de 5 %, de la longueur longitudinale totale (1) de la même face supérieure de définition (181) de la même cavité d'affaiblissement (180).
 7. Dispositif selon l'une quelconque des revendications précédentes, **caractérisé en ce qu'**au niveau de la zone centrale (182), notamment plane, de la face supérieure de définition (181), la hauteur ou l'épaisseur desdits moyens à plaque (12), qui est délimitée inférieurement par cette zone de la face supérieure de définition (181), est comprise entre 0,1 mm et 0,8 mm, et de préférence entre 0,3 mm et 0,6 mm, de manière optimale autour de 0,4 mm.
 8. Dispositif selon l'une quelconque des revendications précédentes, **caractérisé en ce que** ladite cavité d'affaiblissement (180), ménagée dans lesdits moyens à plaque (12), s'étend depuis ladite face de fond, ou inférieure (122) desdits moyens à plaque (12) et est définie par des faces longitudinales (184, 184) et transversales (185, 185) opposées respectivement.
 9. Dispositif selon l'une quelconque des revendications précédentes, **caractérisé en ce que** lesdits moyens de support à plaque (12) pour la face inférieure des carreaux correspondants comprend une plaquette mince (125), définissant notamment ladite face supérieure (121) de support pour ladite face inférieure (111) des carreaux correspondants (11) et ladite face de fond, ou inférieure (122), qui sont notamment parallèles entre elles.
 10. Dispositif selon l'une quelconque des revendications précédentes, **caractérisé en ce que** lesdits moyens de support à plaque (12) pour la face inférieure des carreaux correspondants comprend des moyens d'espacement d'épaisseur (120) entre des carreaux opposés (11, 11), c'est-à-dire entre des faces latérales opposées (113, 113) desdits carreaux (11), les moyens d'épaisseur (120) comprenant notamment une pluralité d'éléments (120a) configurés, en plan, en forme de T ou de croix, lesquels éléments d'épaisseur (120) s'étendent depuis ladite face supérieure (121) de ladite plaquette mince (125).
 11. Dispositif selon la revendication 10, **caractérisé en ce que** les éléments respectifs (120a) desdits moyens d'espacement (120) présentent des faces latérales opposées (120b, 120b), notamment parallèles entre elles, destinées à s'accoupler avec la face latérale correspondante (113) du carreau respectif (11).
 12. Dispositif selon l'une quelconque des revendications

précédentes, **caractérisé en ce que** lesdits moyens de liaison (16) entre lesdits moyens à plaque (12) et lesdits moyens à bouton (14) comprennent une petite feuille (161) pour la liaison avec lesdits moyens à plaque (12) et l'interposition, en utilisation, entre des carreaux correspondants et en vis-à-vis (11, 11), et une tige (162) pour coulisser et retenir lesdits moyens à bouton (14) s'étendant supérieurement à partir de ladite petite feuille (161) et d'une seule pièce avec celle-ci.

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13. Dispositif selon la revendication 12, **caractérisé en ce que** ladite petite feuille (161), destinée à la liaison avec lesdits moyens à plaque (12) et à l'interposition entre des carreaux correspondants et en vis-à-vis (11, 11), s'étend depuis la face supérieure (121) de ladite plaquette mince (125).

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14. Dispositif selon la revendication 12, **caractérisé en ce que** ladite petite feuille (161), destinée à la liaison avec lesdits moyens à plaque (12) et à l'interposition entre des carreaux correspondants et en vis-à-vis (11, 11), s'étend depuis la face supérieure (120c) desdits moyens d'épaisseur (120) d'espacement entre lesdits carreaux opposés, c'est-à-dire d'éléments d'espacement correspondants (120a) de ceaux-ci.

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15. Dispositif selon l'une quelconque des revendications 12 à 14, **caractérisé en ce que** ladite petite feuille (161), destinée à la liaison avec lesdits moyens à plaque (12) et à l'interposition entre des carreaux correspondants et en vis-à-vis, présente des faces transversales opposées (161a, 161a), longitudinalement les plus extérieures, notamment perpendiculairement ou verticalement, à proximité, c'est-à-dire légèrement à l'extérieur, desdites faces transversales (185, 185) qui définissent longitudinalement ladite cavité d'affaiblissement (180).

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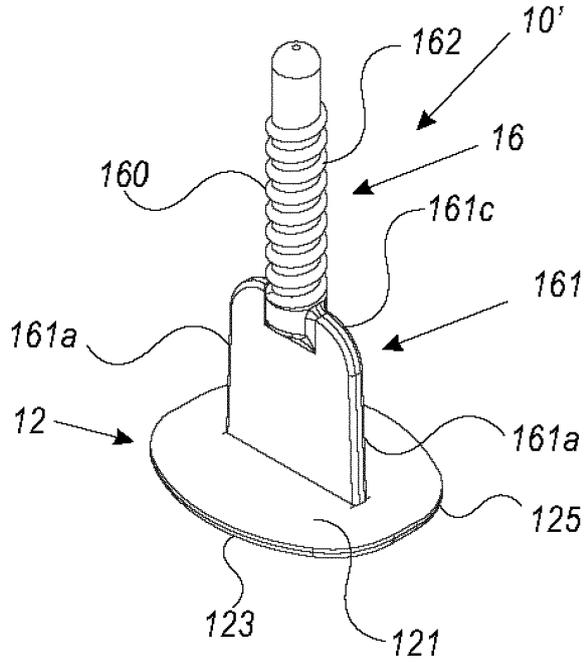


FIG. 1A

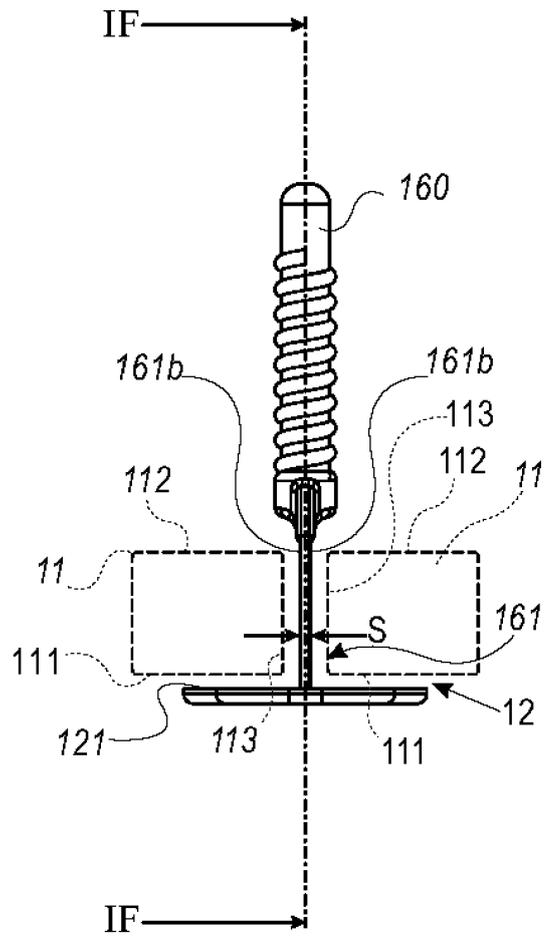


FIG. 1C

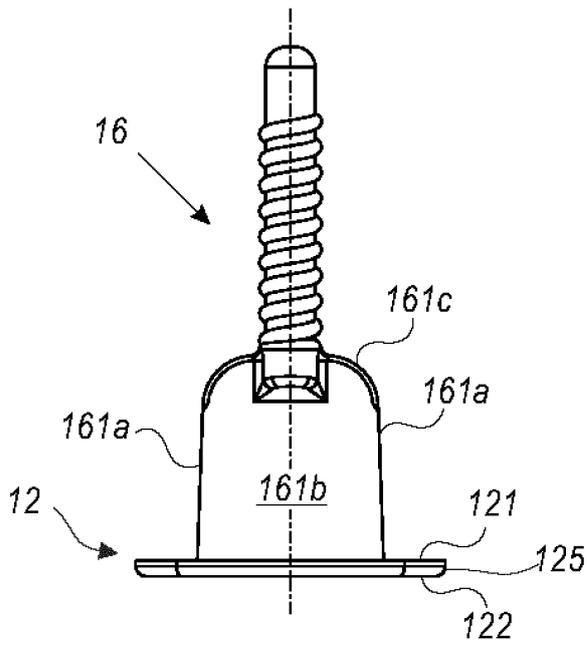


FIG. 1B

FIG. 1D

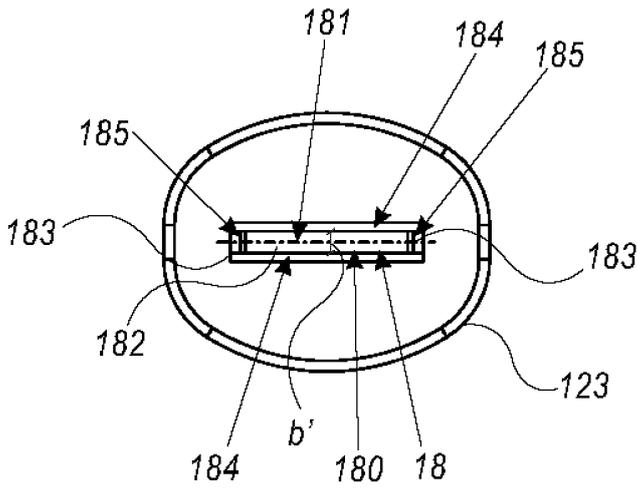
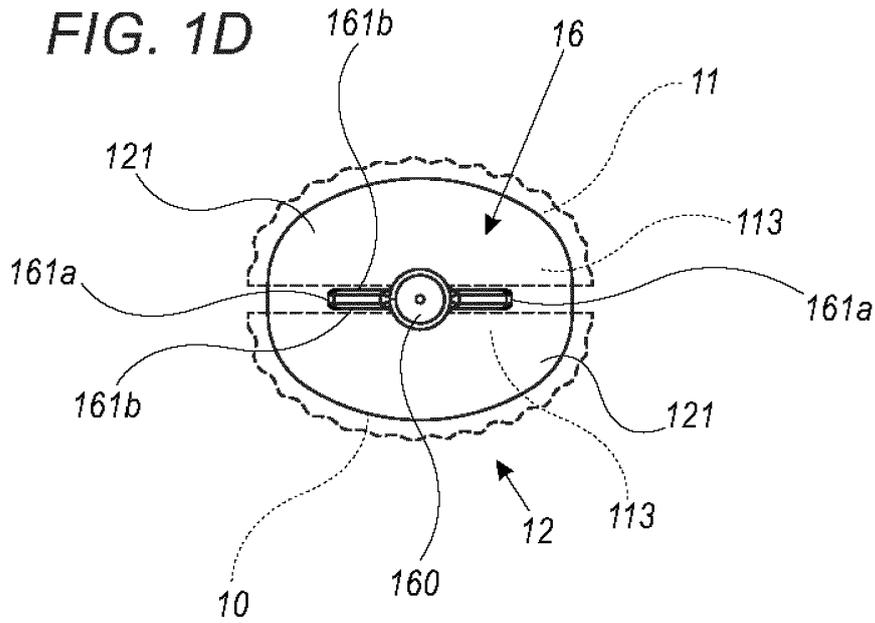


FIG. 1E

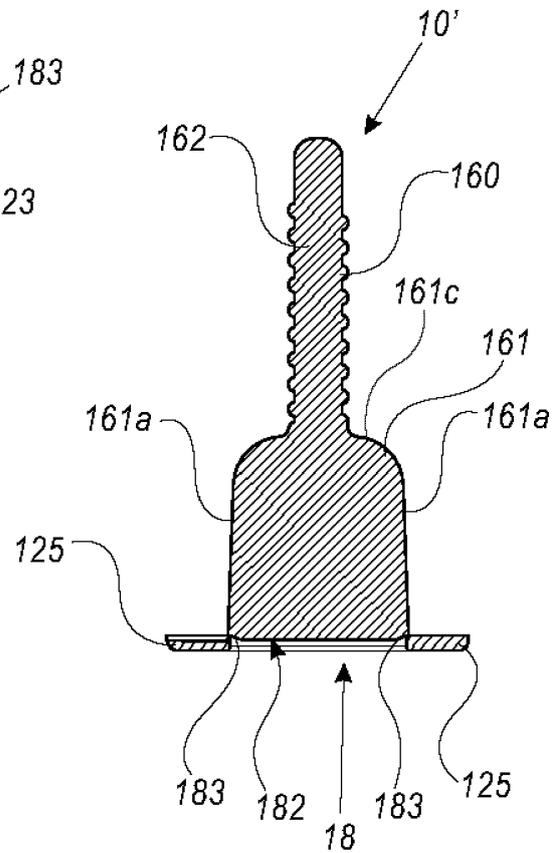


FIG. 1F

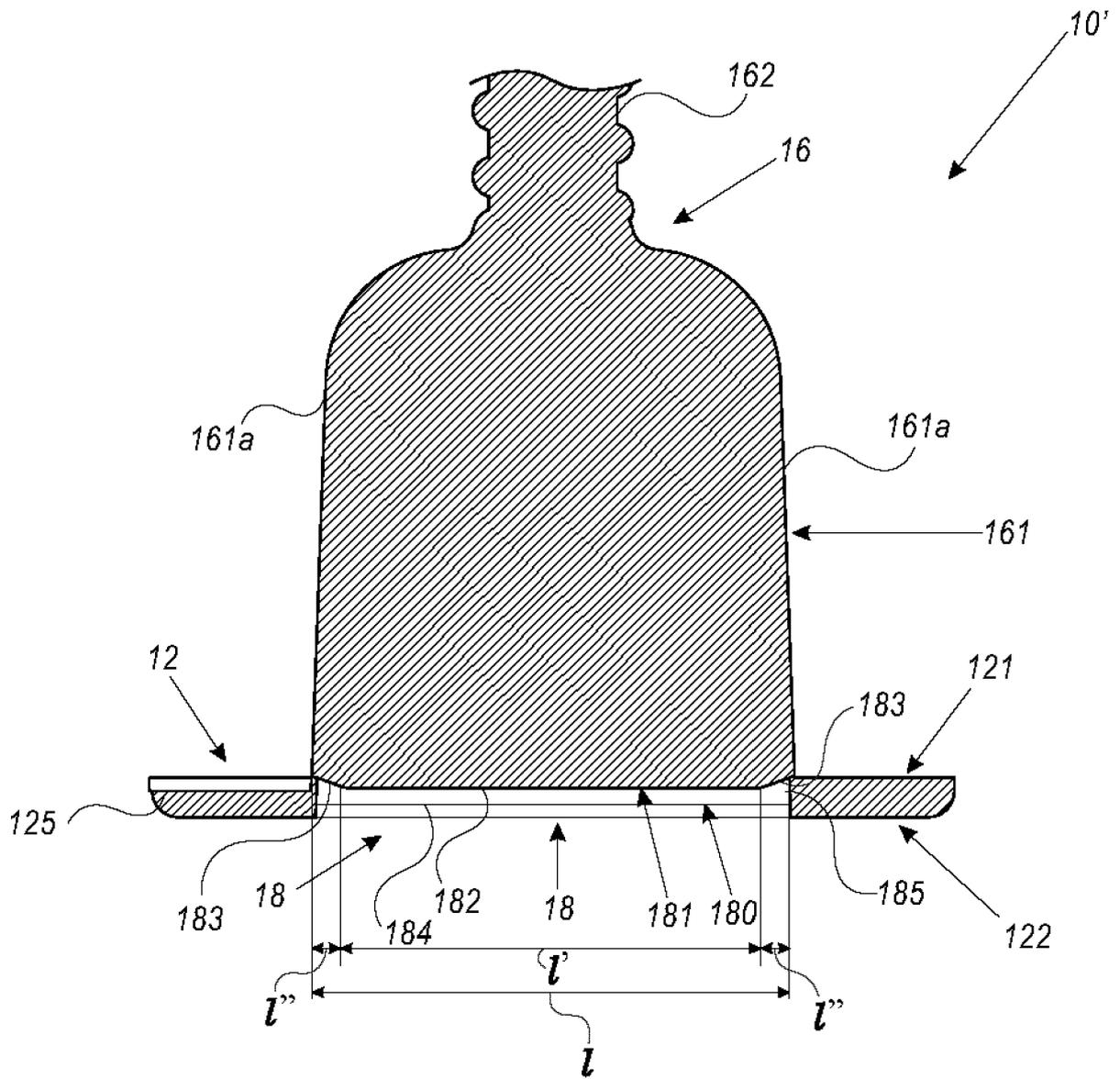


FIG. 1G

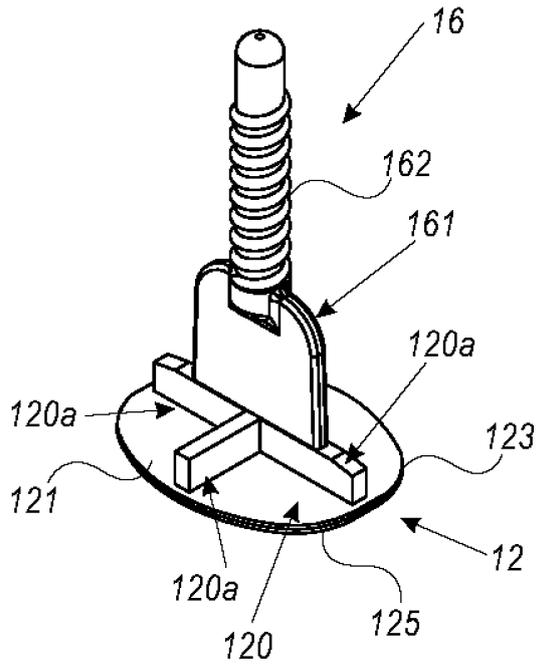


FIG. 2A

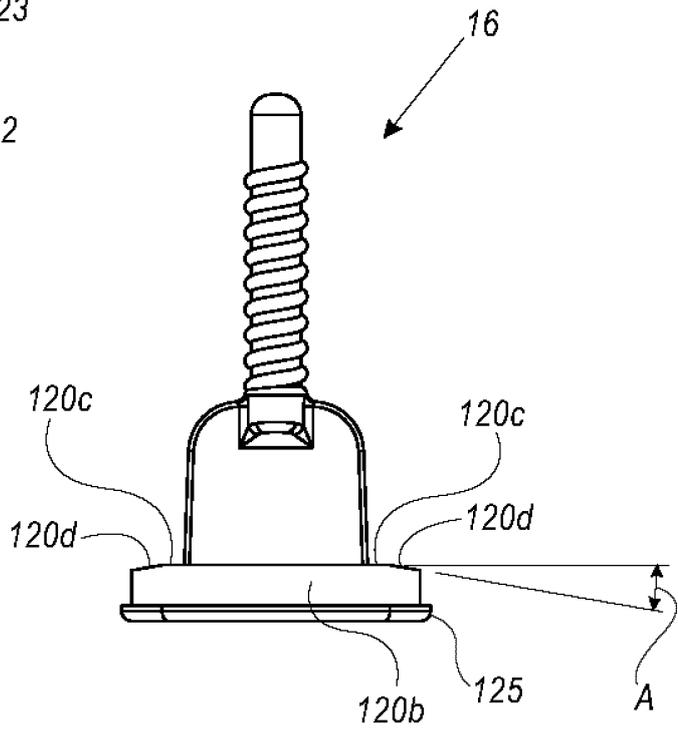


FIG. 2B

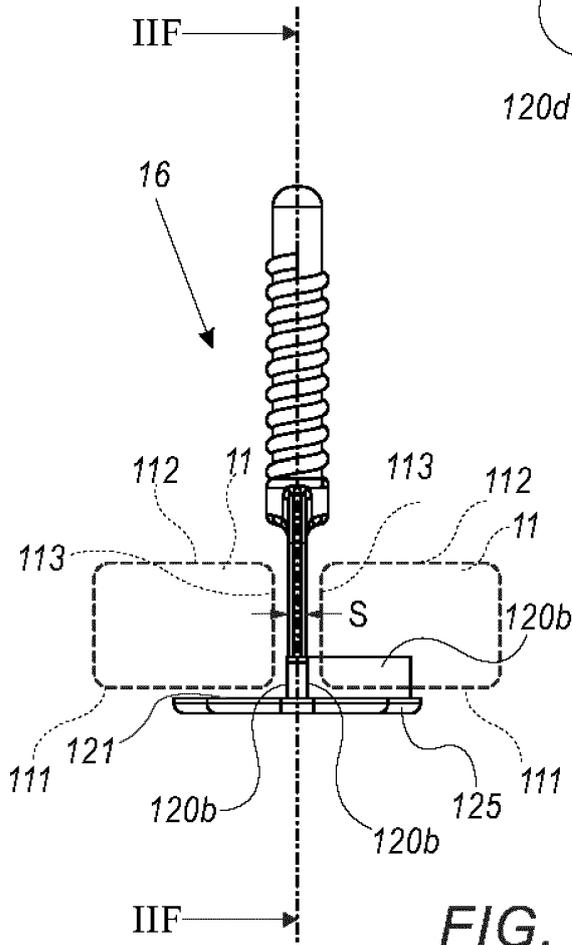


FIG. 2C

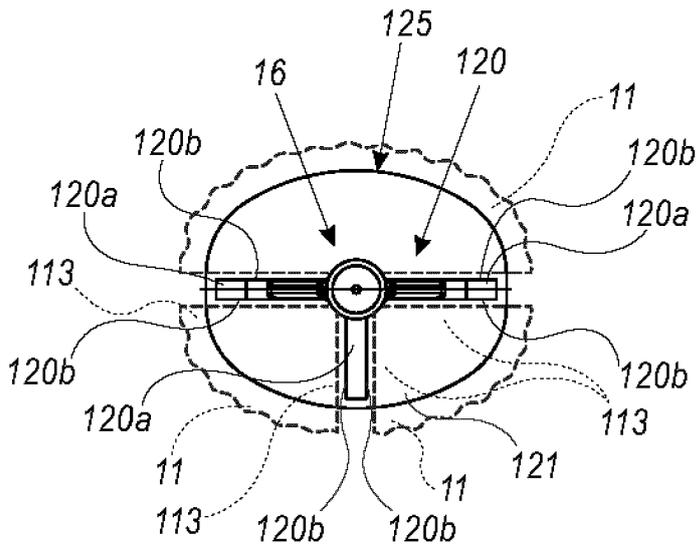


FIG. 2D

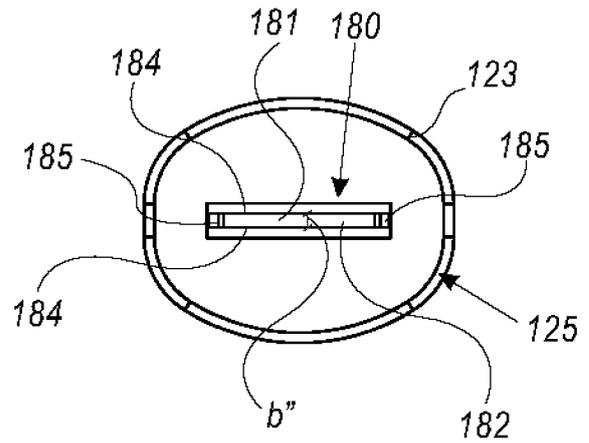


FIG. 2E

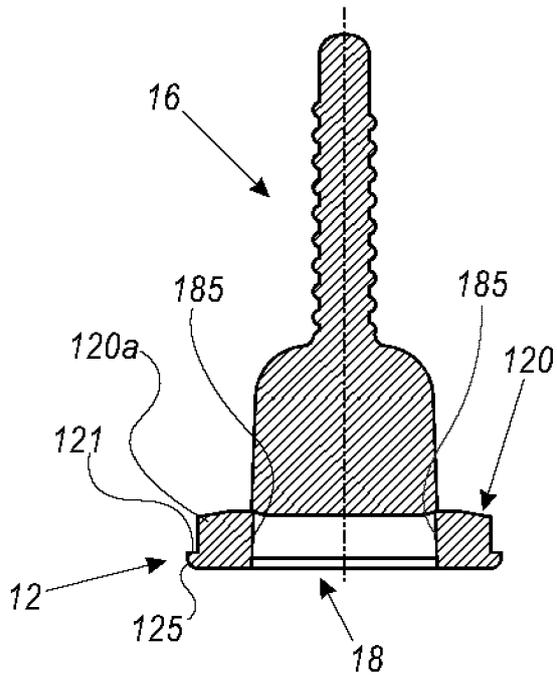


FIG. 2F

FIG. 4A

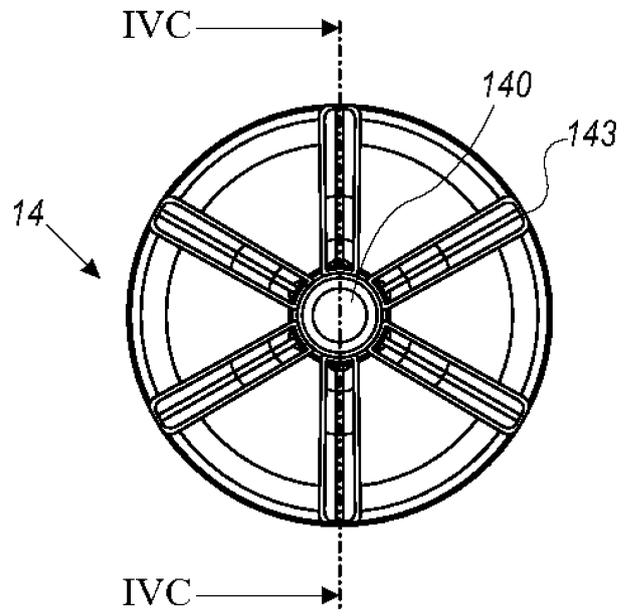
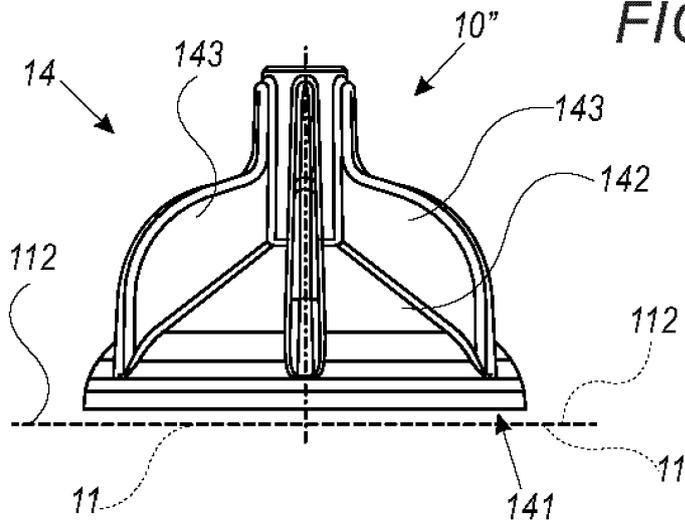


FIG. 4B

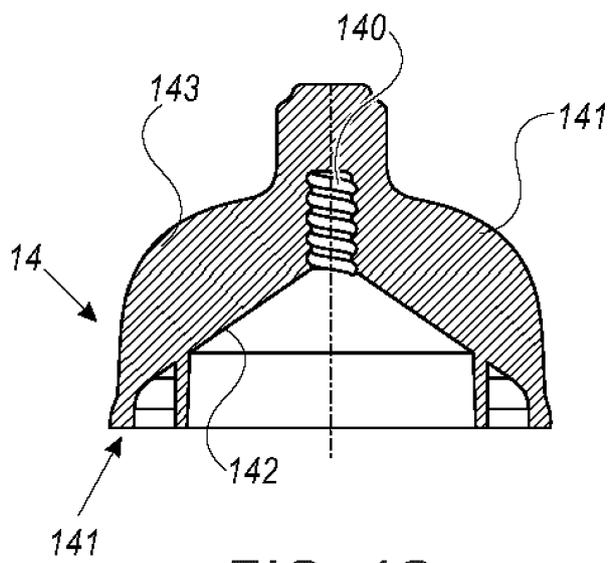


FIG. 4C

REFERENCES CITED IN THE DESCRIPTION

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