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(54) **POSITIONING DEVICE AND SYSTEM FOR PLUMBING INSTALLATIONS IN A WALL**

(57) A positioning system that is intended to hold and maintain a stable provisional positioning of several plumbing installations (5a, 5b) to which several taps, drains, and other fittings will later be connected; such that the system of the invention allows the testing of the plumbing installations by introducing a fluid under pressure before permanently securing them to the wall (4). The system of the invention also makes it possible to accurately mark on the wall, in an initial phase, several initial reference lines (14a, 14b) according to the locations of the taps and drains. The system of the invention also allows the marking of several reference lines (12) to make several channels (4') in the wall (4); wherein said channels (4') are configured to install the plumbing installations (5a, 5b). The system comprises at least one positioning device (26).

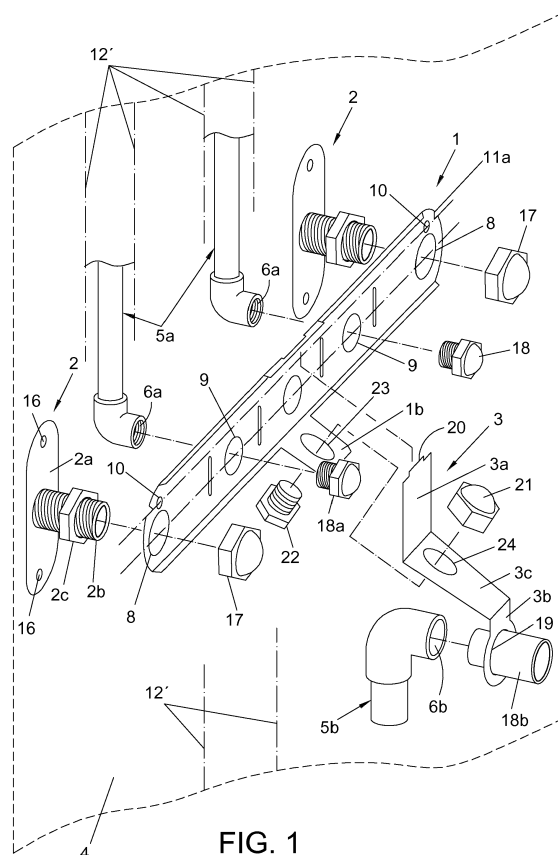


FIG. 1

Description

Object of the invention

[0001] The present invention relates to a positioning device and system for plumbing installations in a wall; wherein the positioning system is intended to hold and provisionally maintain a stable positioning of several plumbing installations to which several taps, drains, and other fittings will later be connected; such that the system of the invention allows the testing of the plumbing installations by introducing a fluid under pressure before permanently securing them to the wall.

[0002] In addition, the positioning device of the invention makes it possible to accurately mark on the wall, in an initial phase, several initial reference lines according to the locations of the taps and drains. The positioning device also allows the marking of several reference lines to make a several channels on the wall; wherein said channels are configured to install the plumbing installations.

Technical problem to be resolved and background of the invention

[0003] Currently, when a plumbing installation is carried out in a bathroom or kitchen, for example, a series of channels must first be made in the walls to fit several pipes and other elements that make up said plumbing installation, such that when no positioning system is used, as the installation is installed, the pipes must be secured by means of cement, plaster, or other means. In this situation, once the plumbing installation has been installed, several fittings, such as taps and drains, are then installed on several outlet outlets of the plumbing installation.

[0004] The installation method described generates problems of misadjustment and imprecision when installing the fittings later, so that it is easy to make mistakes in the positioning of the outlet outlets of the plumbing installation, and obviously, the later positioning of the fittings will also be incorrect.

[0005] The utility model with application number in Spain U 9300041 describes a positioning device for installations at outlet openings in plumbing installations of works that comprises a central tubular body positioned vertically and separated from the floor by means of a tubular element with adjustable height; with said central tubular body having a transversal rod at the top intended to support at least two pairs of positioning and support elements for the outlet openings.

[0006] The device described in the previous paragraph does not allow the plumbing installation to be secured to verify that it is correctly positioned, and it also does not allow the plumbing installation to be tested by introducing a fluid under pressure to verify its watertightness.

[0007] The utility model with application number in Spain U 9300042 describes a template for tracing the

channels, which also does not make it possible to secure the plumbing installation to verify whether it is positioned correctly and also does not allow testing of the plumbing installation by introducing a fluid under pressure to verify its watertightness.

[0008] In all cases, provisional and removable securing of the plumbing installation is not possible to verify correct positioning and to verify the watertightness, such that said watertightness is verified by introducing a liquid fluid under pressure, after having secured the installation with cement, plaster, or similar materials; so if there are leaks in the plumbing installation, said cement or plaster will need to be removed and the plumbing installation disassembled.

Description of the invention

[0009] In order to achieve the objectives and avoid the drawbacks mentioned in the previous sections, the invention proposes a positioning device and system for plumbing installations in a wall.

[0010] The positioning device comprises a main support that includes at least two first through openings; at least one second through opening positioned between the first two through openings, and at least two through holes adjacent to the first through openings;

[0011] Several center points of the through openings are positioned in correspondence to a reference alignment that is parallel to another additional alignment in correspondence to which at least several center points of the first through openings are positioned.

[0012] The distance between the center points of the two through holes is the same as the distance between the center points of the two first through openings.

[0013] The main support is configured to hold and position a plumbing installation through which a liquid fluid circulates.

[0014] The support comprises:

- several end notches positioned to correspond to the reference alignment on which the center points of the through holes are found.
- A central notch that is contained in a centered direction equidistant from the center points of the through holes and from the center points of the first through openings; wherein the end notches and the central notch are configured to position the main support on the wall.

[0015] The main support comprises several through slots configured to be able to draw several reference lines on the wall according to several channels in which at least one plumbing installation is contained.

[0016] The positioning device comprises an additional support that is affixed to a central part of the main support; wherein said additional support is configured to hold and position a plumbing drain installation.

[0017] The additional support includes an end through

opening that is configured to insert the anchor element that is inserted into the outlet of the plumbing drain installation; wherein said anchor element is configured to hold and position said plumbing drain installation.

[0018] The additional support comprises a tab configured to fit in a cutout of the main support; wherein said additional support is affixed unmovably to the main support by means of an anchor device.

[0019] The anchor device for affixing the additional support to the main support comprises a nut and a bolt that passes through a first opening of the main support and through a third opening of the additional support.

[0020] The additional support comprises a first end part that includes the tab; a second end part that includes the end through opening and an intermediate part that includes the third opening wherein the intermediate part is supported on an angular extension of the main support that includes the first opening.

[0021] The positioning system for plumbing installations in a wall comprises at least one positioning device that includes the main support, at least two mounting supports and at least one anchor element configured to affix said plumbing installation to the main support; wherein the main support is configured to be connected to the mounting supports when they are affixed on the wall; and wherein the anchor element is connected to an outlet of a plumbing installation;

[0022] The first through openings of the main support are configured to fit into them one part of the mounting supports; while the second through opening is configured to insert the anchor element;

[0023] The positioning system also comprises a first initial reference line drawn on the wall and on which several reference points are marked to coincide with the center points of the through holes of the main support.

[0024] The end notches of the main support are configured make them coincide with the first initial reference line drawn on the wall; while the central notch is configured to center said main support on the wall to coincide with a second initial reference line drawn on the wall.

[0025] The mounting supports include several end stops configured to provide support to the main support when it is connected to the mounting supports; and wherein said end stops are configured to keep the main support on a plane parallel to the wall; wherein the main support is connected to several threaded tubular rods of the mounting supports by means of several nuts; and wherein the end stops are positioned to correspond to the threaded tubular rods.

[0026] The end stops comprise several nuts connected to the threaded tubular rods of the mounting supports; wherein the end stops can be positioned along the length of the threaded tubular rods in order to be able to vary the distance between the main support and the wall.

[0027] The mounting supports comprise several central holes that coincide with the reference points of the first initial reference line drawn on the wall; wherein the distance between said reference points is the same dis-

tance as the distance between the center points of the central holes of the mounting supports when they are affixed to the wall.

[0028] The central holes of the mounting supports are positioned in several zones centered with respect to the threaded tubular rods of said mounting supports.

[0029] The positioning system of the invention is used to mark the channels on the wall, and is also used to determine the precise positioning of the plumbing installations and therefore the precise positioning of the general shutoff valves and other fittings and of the outlets of said plumbing installations.

[0030] To provide a better understanding of this description, and forming an integral part of it, a series of drawings are provided, which represent the object of the invention for the purposes of illustration, but not limitation.

Brief description of the figures

[0031]

Figure 1.- Shows a perspective view of the positioning device and system for plumbing installations in a wall that is the object of the invention. The system comprises at least one positioning device to provisionally secure a plumbing installation.

Figure 2.- Shows another perspective view of the positioning system of the invention.

Figure 3.- Shows a front view of a wall with channels in which the plumbing installations that are provisionally secured by means of the system of the invention are installed.

Figure 4.- Shows a plan view of a main support that forms part of the positioning device and system of the invention.

Figure 5a.- Shows a plan view of an additional support configured to be coupled to the main support.

Figure 5b.- Shows a profile view of the additional support.

Figure 6.- Shows a profile view of the main support.

Figure 7.- Shows a plan view of the anchoring support on which the main support connected.

Figure 7a.- Shows a cross-section view cut along the line A-B in figure 7.

Figure 8.- Shows a front view of the wall which shows the application of the positioning system on a first lower installation of a liquid fluid the corresponds to a tap with two water connections, a second lower drain installation; and an upper installation of a liquid fluid that corresponds to two other water connections, where two shutoff valves for hot water and cold water are installed.

Figure 9.- Shows a view of a wall on which an initial reference line and other reference elements have been marked through the main support.

Figure 10.- Shows a view of a wall on which the main support is positioned, using the initial reference line and several points that form part of said initial refer-

ence line as a reference.

Description of an exemplary embodiment of the invention

[0032] Considering the numbering adopted in the figures, the positioning system for plumbing installations 5a, 5b in a wall 4 comprises at least one positioning device 26 and two mounting supports 2; wherein in an embodiment of the invention, the positioning device 26 comprises a main support 1; and in another embodiment, the positioning device 26 comprises the main support 1 and an additional support 3.

[0033] The main support 1 is configured to be connected to two mounting supports 2 that have been previously affixed to the wall 4 that include several channels 4' in which the plumbing installations are contained: several installations 5a that comprise pipes through which water or another liquid fluid circulates, and other installations 5b that comprise the drain pipes.

[0034] The plumbing installations 5a with water include several outlets 6a configured to connect two connections of a tap or shutoff valves, for example; while each plumbing drain installation 5b includes an outlet 6b configured to connect a drain of a sanitary fixture; all after having correctly positioned and installed the plumbing installations (5a, 5b) by means of the system of the invention.

[0035] When the plumbing drain installation 5b is installed, in addition to the main support 1 and the mounting supports 2, the additional support 3 is used to hold and position said plumbing drain installation 5b; wherein in this embodiment of the invention, said additional support 3 is connected to the main support 1 as will be described later.

[0036] The main support 1 comprises several through slots 7; several first through openings 8, several second through openings 9, several through holes 10 adjacent to the first through openings 8 and several end notches 11a. The main support 1 also includes a central notch 11b to center said main support 1.

[0037] The end notches 11a and the center points of the through holes 10 are positioned on a reference alignment 10a parallel to an additional alignment 8a on which the center points of the first through openings 8 of the main support 1 are located; wherein the center points of each pair of through holes 10 and first through opening 8 are arranged in a same vertical direction when the main support 1 is affixed to the wall 4 as shown in the embodiment shown in the figures. The center points of the second through openings 9 are also positioned on the additional alignment 8a on which the first through openings 8 are also positioned.

[0038] The through holes 10 of the main support 1 are used to mark several reference points 13 arranged on a first horizontal initial reference line 14a that has previously been drawn and traced on the wall 4 according to the location of a tap, for example, that is to be installed.

[0039] A second initial reference line 14b is also pre-

viously traced on the wall 4 in order to precisely center the main support 1; wherein said second reference line 14b is perpendicular to the first reference line 14a.

[0040] The end notches 11a and the central notch 11b are used to position the main support 1 by supporting it on the wall 4 and lining up the end notches 11a with the first initial reference line 14a and lining up the central notch 11b with the second initial reference line 14b; all of this to make it possible to mark the reference points 13 also on said first initial reference line 14a.

[0041] The through slots 7 of the main support 1 are used to mark several reference lines 12 on the wall 4 that are then extended in several elongated lines 12' to make it possible to execute the channels 4' in said wall 4; wherein said reference lines 12 are marked when the main support 1 is supported on the wall 4 correctly positioned as described in the previous paragraph.

[0042] The first through openings 8 of the main support 1 are used to connect said main support 1 to the mounting supports 2; wherein said mounting supports 2 are previously affixed to the wall 4 using the reference points 13 as a reference.

[0043] Each anchoring support 2 comprises a base 2a, a tubular threaded rod 2b and an adjustable end stop 2c connected to the tubular threaded rod 2b; wherein said base 2a includes a front hole 15 that is facing the respective reference point 13 when the base 2a of the anchoring support 2 is supported against the wall 4.

[0044] Said base 2a includes several end holes 16 through which several bolts that thread into several wall anchors previously installed in several openings in the wall are passed to secure the positioning and anchoring of each one of the mounting supports 2. It is also possible to affix the mounting supports 2 to the wall 4 by means of other bolts that pass through the front openings 15 of said mounting supports 2.

[0045] The second through openings 9 of the main support 1 are used to position the outlets 6a of the hydraulic water installations 5a; wherein once the main support 1 has been installed, said outlets 6a are facing the second through openings 9 of the main support 1.

[0046] Therefore, once the mounting supports 2 have been affixed to the wall 4, the main support 1 is connected on the two supports 2 lining up the first through openings 8 of the main support 1 with the threaded tubular rods 2b of the anchoring support 2 until the main support 1 comes into contact with the end stops 2c of the mounting supports 2. Then, to immobilize the main support 1, several lateral nuts 17 are screwed onto several end sections of the threaded tubular rods 2b.

[0047] In a later phase, to immobilize the hydraulic water installations 5a, several anchor elements 18a have been included to connect to the outlets 6a of said hydraulic water installations 5a; wherein said anchor elements 18a comprise several bolts acting as plugs, whose threaded shafts pass through the second through openings 9 of the main support 1.

[0048] The additional support 3 includes an end

through opening 19 that is configured to insert an anchor element 18b (provisional pipe) that is inserted into outlet 6b of the plumbing drain installation 5b; all to immobilize said plumbing drain installation 5b when the additional support 3 is affixed to the main support 1.

[0049] The additional support 3 has a tab 20 configured to fit into a cutout 21 of the main support 1; wherein said additional support 3 is immovably affixed to the main support 1 by means of an anchor device, such as, for example, a nut 21 and a bolt 22 that passes through a first opening 23 of the main support 1 and through a third opening 24 of the additional support 3.

[0050] The central notch 11b of the main support 1 is positioned in correspondence with a centered direction 25 equidistant from the center points of the two through holes 10 and the center points of the two first through openings 8 of the main support 1.

[0051] The additional support 3 comprises a first end part 3a that includes the tab 20; a second end part 3b that includes the end through opening 19 and an intermediate part 3c that includes the third opening 24; wherein the intermediate part 3c is supported on an angular extension 1b of the main support 1 that includes the first opening 23.

[0052] The system of the invention allows the plumbing installation 5a, 5b to be positioned at the required depth inside the channels 4' in the wall 4 by means of the end stops 2b of the mounting supports 2.

[0053] It is also possible to verify the watertightness of the hydraulic water installation 5a by previously closing its outlets 6a by means of the anchor elements 18a; wherein if necessary, several watertight sealing rings would be included to create a closure being in the closure of said outlets 6a of the hydraulic water installation 5a.

[0054] The main support 1 includes at least one first through opening 8, at least one second through opening 9, and at least one through hole 10; although normally said main support 1 comprises at least two through openings 8, at least one second through opening 9, and two through holes 10; thus achieving precise positioning with better stability and more secure holding of the main support 1.

[0055] The installation of a positioning device 26 is carried out in the following manner.

[0056] Once the first horizontal reference lines 14a and second vertical reference lines 14b have been marked on the wall 4 according to the location of the taps and sanitary fixtures, the multifunction positioning device 26 is taken and the reference lines 12 are marked to outline the location of the channels 4', as well as the reference points 13 (which coincide with the center points of the through holes 10 of the main support 1) for the later precise affixing of the mounting supports 2 on the wall 4; all after previously positioning the main support 1 on the wall 4, lining up the end notches 11a and central notch 11b of the main support 1 with the first initial reference line 14a and second initial reference line 14b, respectively.

[0057] Then, on the reference points 13 on the wall 4, several holes are drilled with a bit to then insert several wall anchors to allow the two mounting supports 2 to be positioned/affixed with several bolts that will screw into said inserted wall anchors; wherein said bolts are inserted through the spaces of the threaded tubular rods 2b of said mounting supports 2. These mounting supports 2 also include end holes 16 to also hold the mounting supports 2 on the wall by means of other bolts.

[0058] Once the mounting supports 2 have been affixed to the wall 4, the adjustable end stops 2c are placed on the threaded shafts 2b according to the planned separation of the main support 1 that is required with respect to the wall 4. The main support 1 is then connected on the two supports 2 fitting the threaded rods 2b into the first through openings 8 of the main support 1 until the main support 1 comes into contact with the adjustable end stops 2c and lastly, the affixing of the main support 1 is secured by means of the lateral nuts 17 that are threaded onto several end sections of said threaded tubular rods 2b of the mounting supports 2.

[0059] In a later phase, the anchor elements 18a are connected to act as plugs that are threaded onto the threaded outlets 6a of the hydraulic water installation 5a, inserting them through the second through openings 9 of the main support 1, with the possibility of including several seals to achieve the watertight closure of said outlets 6a.

[0060] To carry out the affixing and positioning of the plumbing drain installation 5b, the additional support 3 is positioned as described above, inserting the anchor element 18b which takes the form of a tubular body, which is inserted through the end through opening 19 of said additional support 3 and lastly, one end of said anchor element 18b is embedded inside the outlet 6b of the plumbing drain installation 5b.

Claims

1. **A positioning device for plumbing installations in a wall, characterized in that** it comprises a main support (1) that includes at least two first through openings (8); at least one second through opening (9) positioned between the first two through openings (8), and at least two through holes (10) adjacent to the first through openings (8); wherein several center points of the through openings (10) are positioned in correspondence to a reference alignment (10a) that is parallel to another additional alignment (8a) in correspondence to which at least several center points of the first through openings (8) are positioned; wherein the distance between the center points of the two through holes (10) is the same as the distance between the center points of the two first through openings (8); and wherein the main support (1) is configured to hold

and position a plumbing installation (5a) of a liquid fluid.

2. **The positioning device for plumbing installations in a wall**, according to claim 1, **characterized in that** the main support (1) comprises:

- several end notches (11a) positioned to correspond to the reference alignment (10a) in which the center points of the through holes (10) are found;
- a central notch (11b) that is contained in a centered direction (25) equidistant from the center points of the through holes (10) and from the center points of the first through openings (8);

wherein the end notches (11a) and the central notch (11b) are configured to position the main support (1) on the wall (4).

3. **The positioning device for plumbing installations in a wall** according to any of the previous claims, **characterized in that** the main support (1) comprises several through slots (7) configured to be able to draw several reference lines (12) on the wall (4) according to several channels (4') in which at least one plumbing installation (5a) is contained.

4. **The positioning device for plumbing installations in a wall** according to any of the previous claims, **characterized in that** it comprises an additional support (3) that is affixed to a central part of the main support (1); wherein said additional support (3) is configured to hold and position a plumbing drain installation (5b).

5. **The positioning device for plumbing installations in a wall**, according to claim 4, **characterized in that** the additional support (3) includes an end through opening (19) that is configured to insert the anchor element (18b) that is inserted into the opening (6b) of the plumbing drain installation (5b); wherein said anchor element (18b) is configured to hold and position said plumbing drain installation (5b).

6. **The positioning device for plumbing installations in a wall**, according to claim 4, **characterized in that** the additional support (3) comprises a tab (20) configured to fit in a cutout (21) of the main support (1); wherein said additional support (3) is affixed unmovably to the main support (1) by means of an anchor device.

7. **The positioning device for plumbing installations in a wall**, according to claim 6, **characterized in that** the anchor device for affixing the additional support (3) to the main support (1) comprises a nut

(21) and a bolt (22) that passes through a first opening (23) of the main support (1) and through a third opening (24) of the additional support (3).

8. **The positioning device for plumbing installations in a wall**, according to claim 7, **characterized in that** the additional support (3) comprises a first end part (3a) that includes the tab (20); a second end part (3b) that includes the end through opening (19) and an intermediate part (3c) that includes the third opening (24); wherein the intermediate part (3c) is supported on an angular extension (1b) of the main support (1) that includes the first opening (23).

9. **The positioning system for plumbing installations in a wall**, according to the previous claims, **characterized in that**:

- it comprises at least one positioning device (26) that includes the main support (1), at least two mounting supports (2) and at least one anchor element (18a) configured to affix said plumbing installation (5a) to the main support (1);

wherein the main support (1) is configured to be connected to the mounting supports (2) when they are affixed on the wall (4); and wherein the anchor element (18a) is connected to an outlet (6a) of a plumbing installation (5a);

- the first through openings (8) of the main support (1) are configured to fit into them one part of the mounting supports (2); while the second through opening (9) is configured to insert the anchor element (18a);

10. **The positioning system for plumbing installations in a wall**, according to claim 9, **characterized in that**:

- it comprises a first initial reference line (14a) drawn on the wall (4) and on which several reference points (13) are marked to coincide with the center points of the through holes (10) of the main support (1);
- the end notches (11a) of the main support (1) are configured make them coincide with the first initial reference line (14a) drawn on the wall (4);
- the central notch (11b) is configured to center said main support (1) on the wall (4) to coincide with a second initial reference line (14b) drawn on the wall (4).

11. **The positioning system for plumbing installations in a wall**, according to any of the previous claims 9 or 10, **characterized in that** the mounting supports (2) include several end stops (2c) configured to provide support to the main support (1) when

it is connected to the mounting supports (2); and wherein said end stops (2c) are configured to keep the main support (1) on a plane parallel to the wall (4); wherein the main support (1) is connected to several threaded tubular rods (2b) of the mounting supports (2) by means of several nuts (17); and wherein the end stops (2c) are positioned to correspond to the threaded tubular rods (2b).

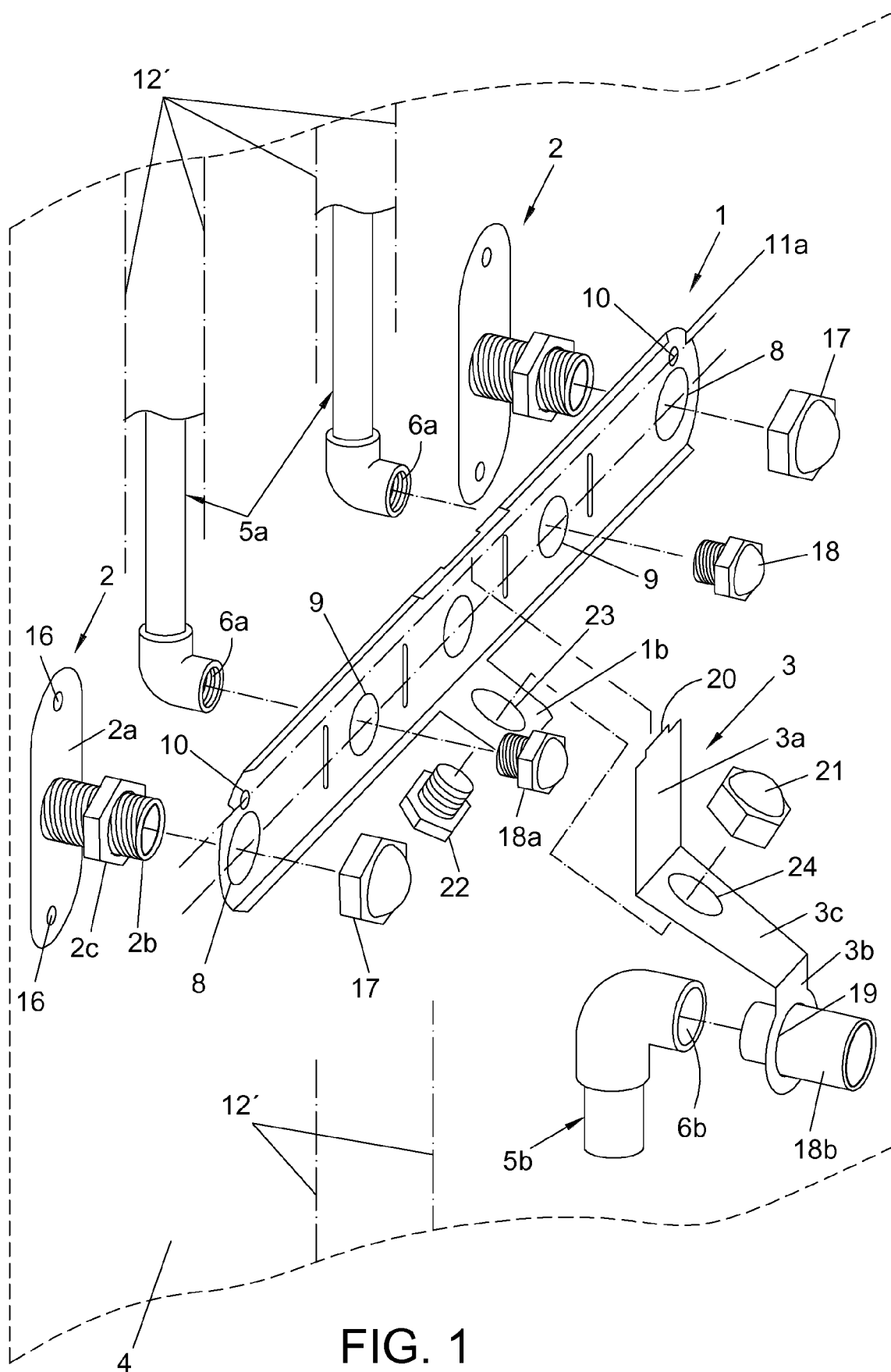
- 12. The positioning system for plumbing installations in a wall**, according to claim 11, **characterized in that** the end stops (2c) comprise several nuts connected to the threaded tubular rods (2b) of the mounting supports (2); wherein the end stops (2c) can be positioned along the length of the threaded tubular rods (2b) in order to be able to vary the distance between the main support (1) and the wall (4).
- 13. The positioning system for plumbing installations in a wall**, according to claim 9, **characterized in that** the mounting supports (2) comprise several central holes (15) that coincide with the reference points (13) of the first initial reference line (14a) drawn on the wall (4); wherein the distance between said reference points (13) is the same distance as the distance between the center points of the central holes (15) of the mounting supports (2) when they are affixed to the wall (4).
- 14. The positioning system for plumbing installations in a wall**, according to claim 13, **characterized in that** the central holes (15) of the mounting supports (2) are positioned in several zones centered with respect to the threaded tubular rods (2b) of said mounting supports (2).

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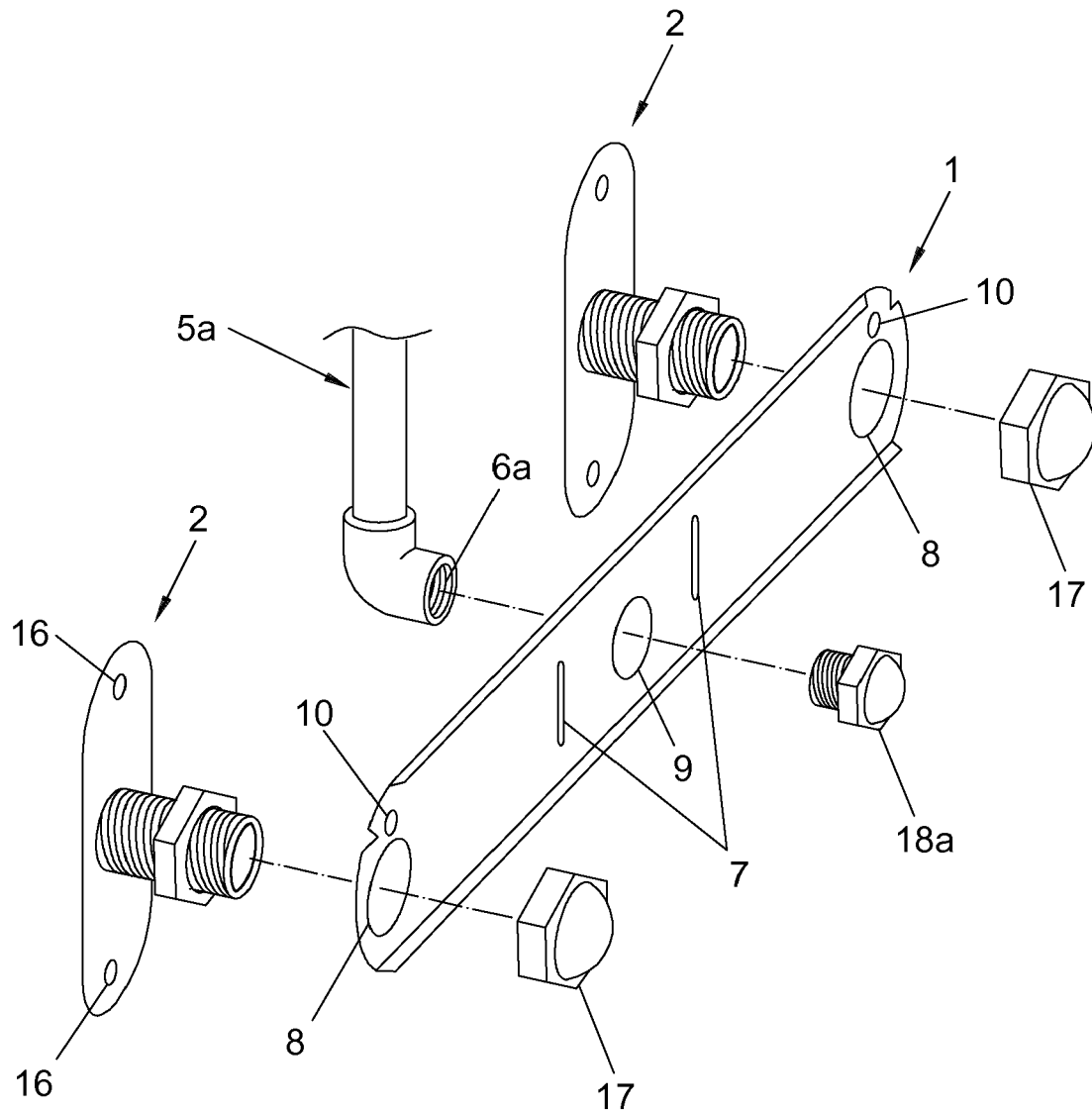


FIG. 2

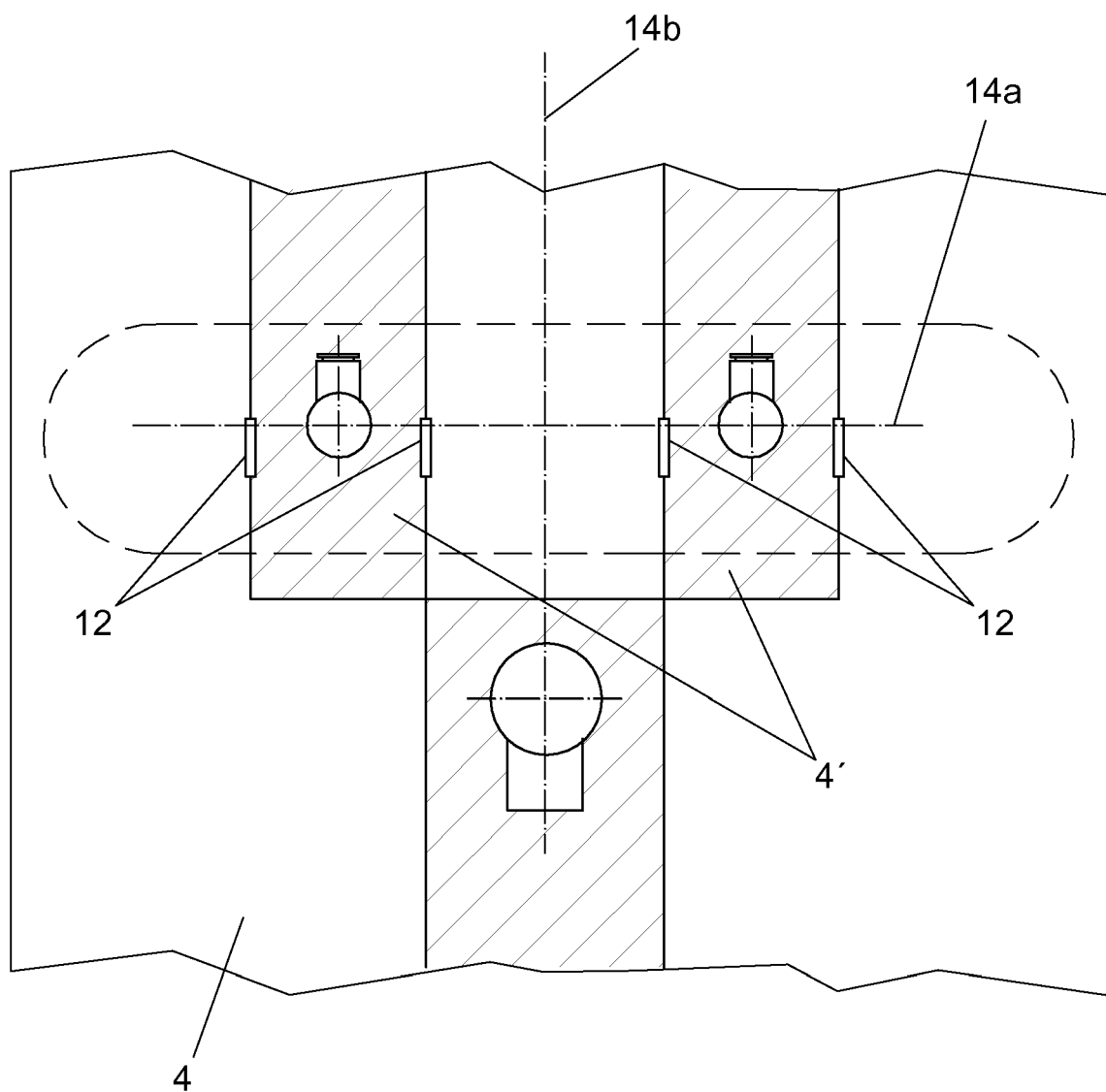


FIG. 3

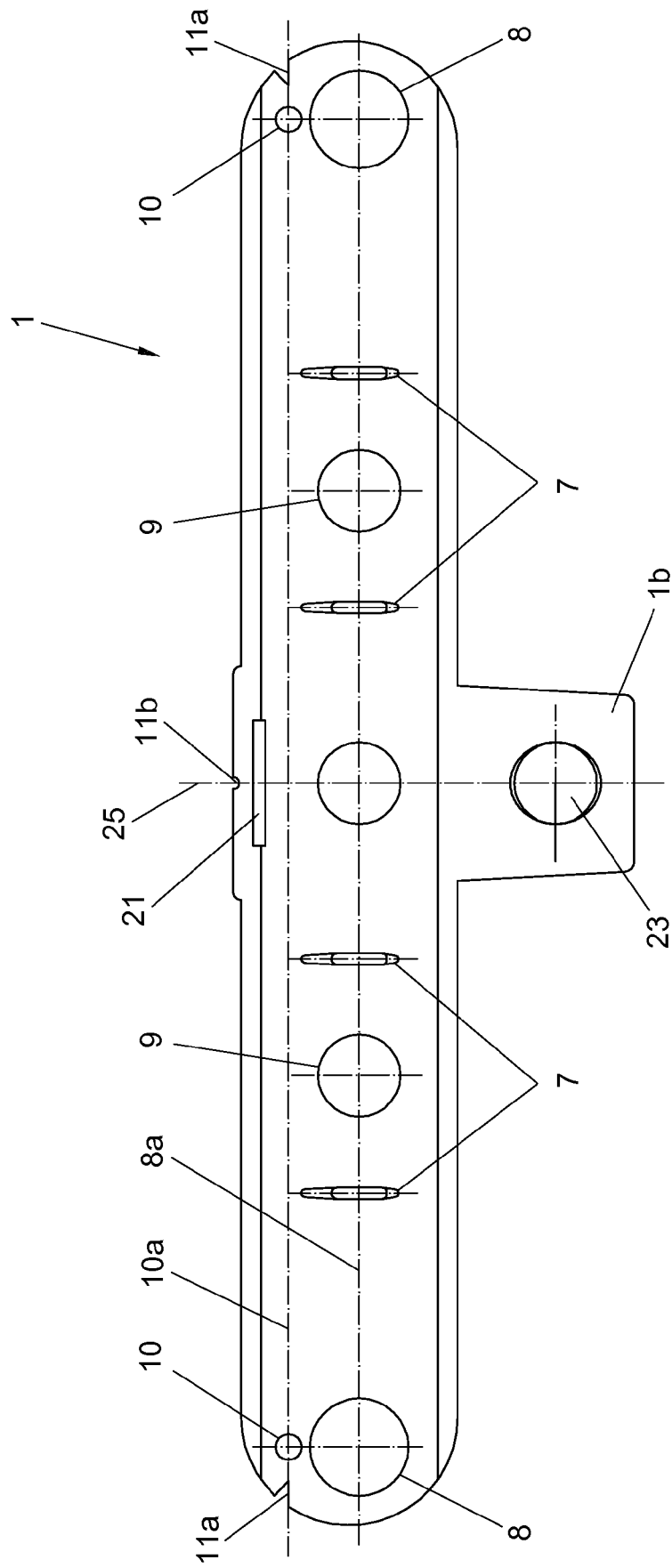


FIG. 4

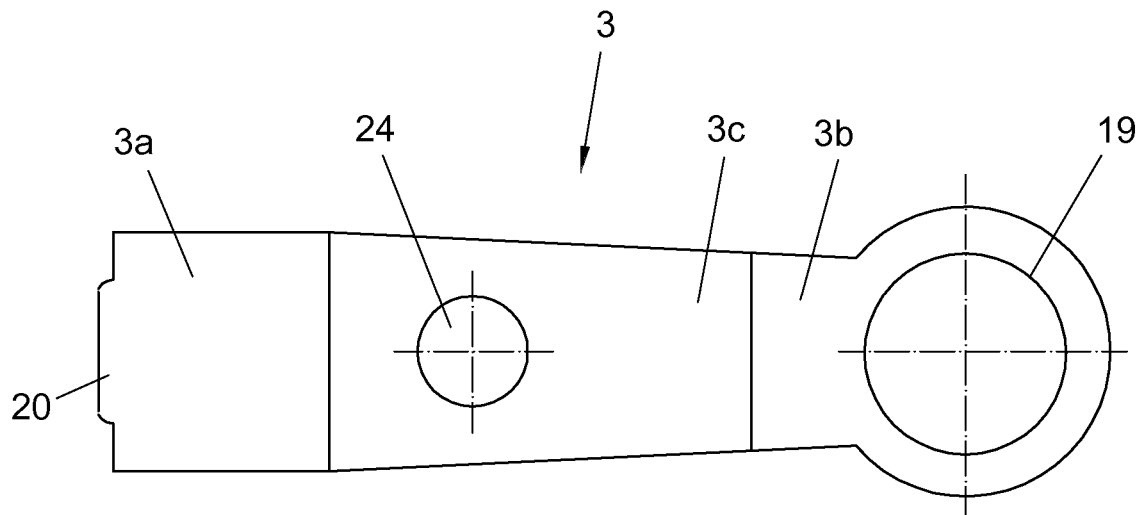


FIG. 5a

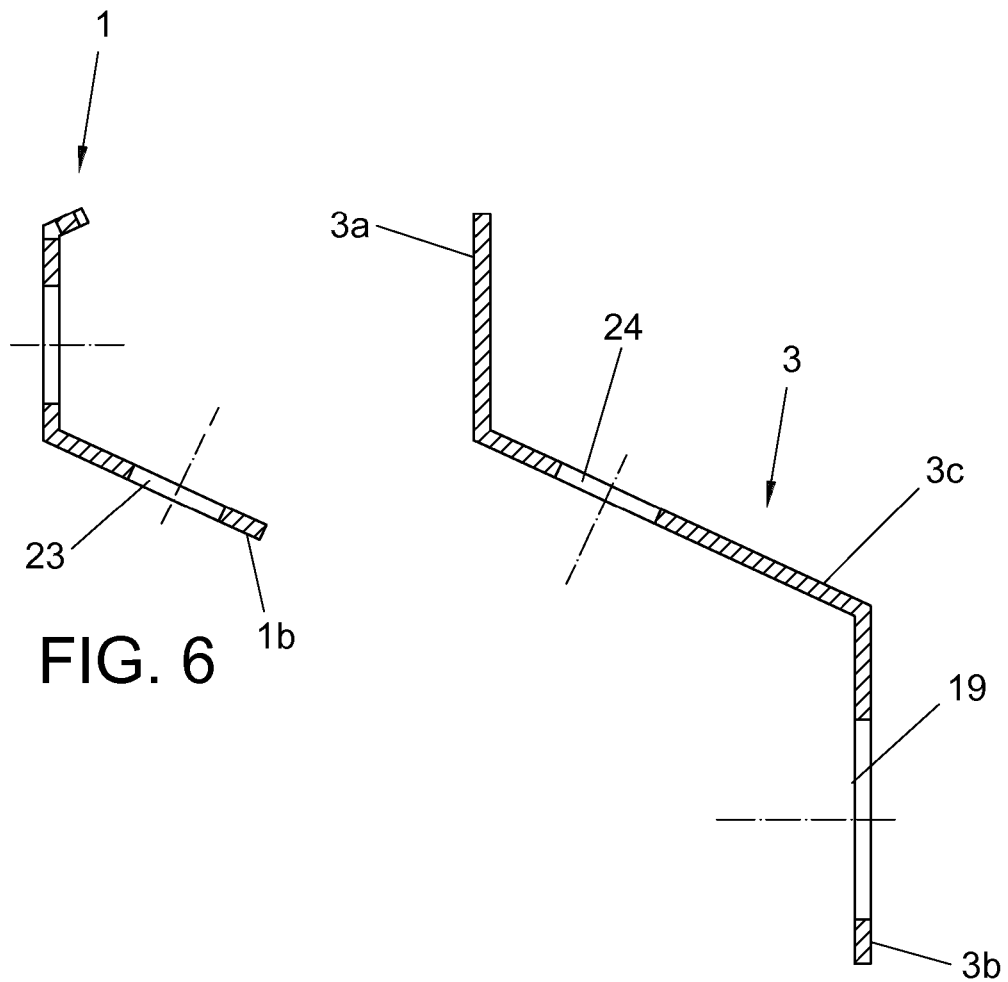


FIG. 6

FIG. 5b

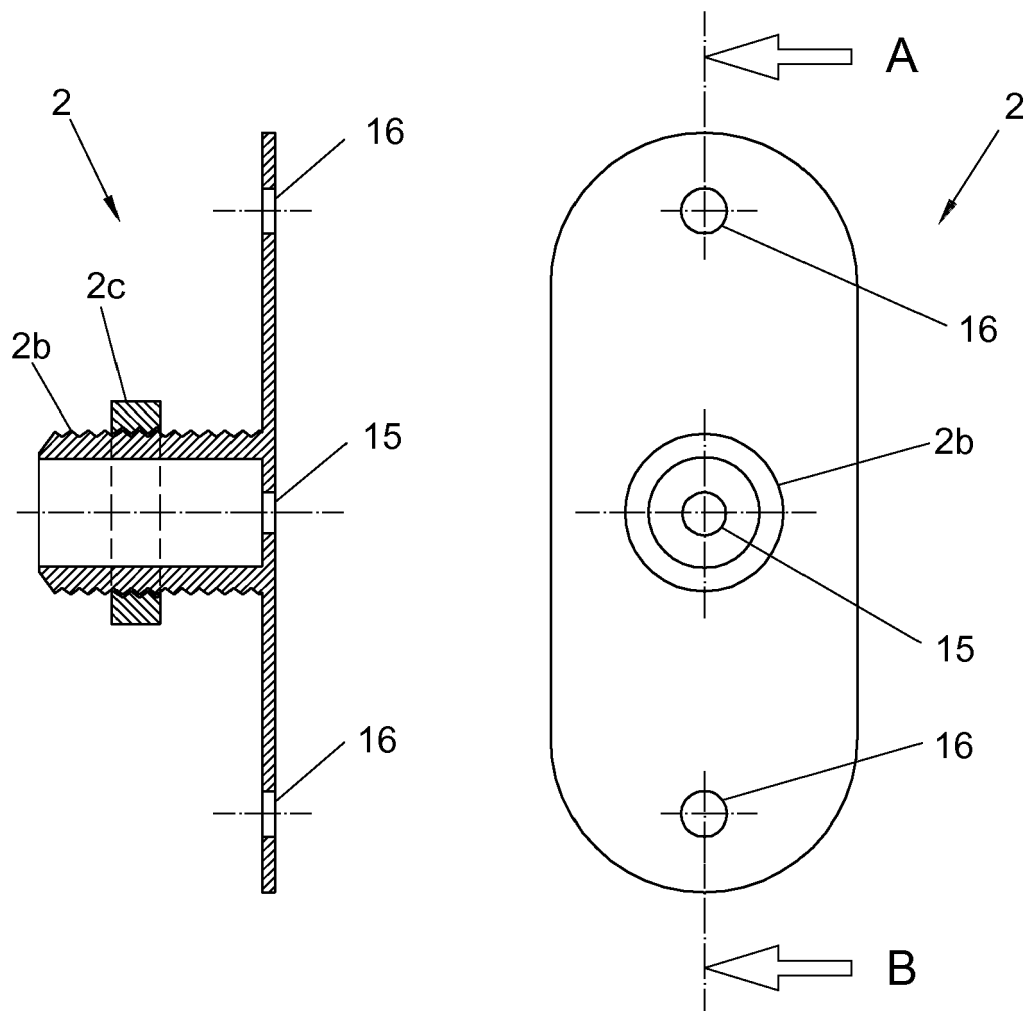


FIG. 7a
CORTE A-B

FIG. 7

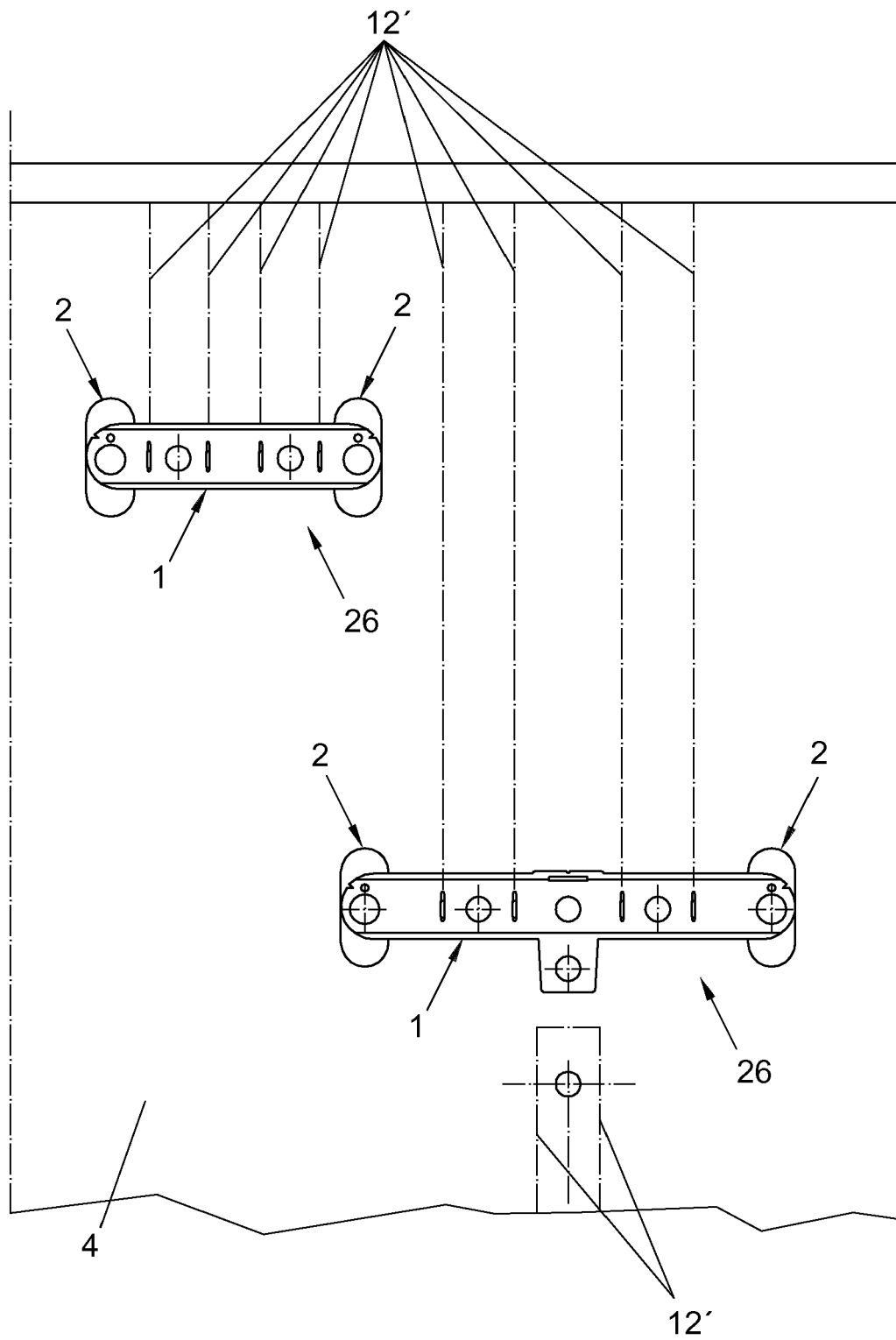


FIG. 8

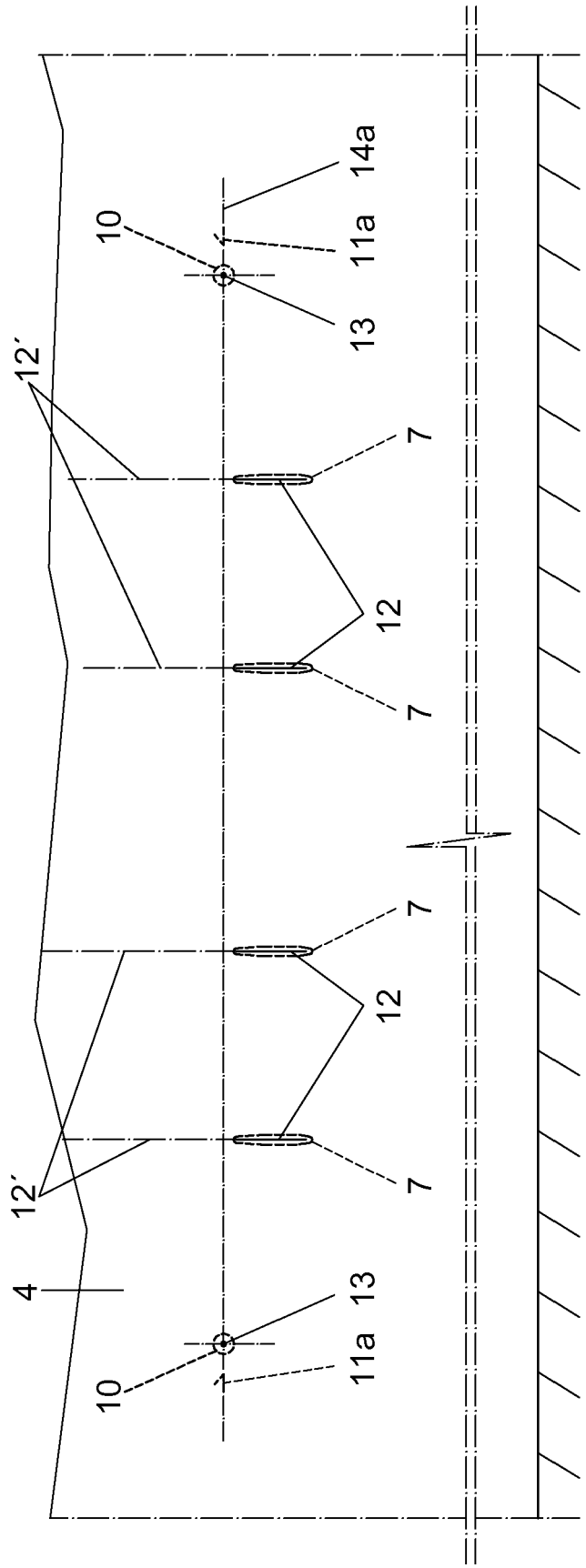


FIG. 9

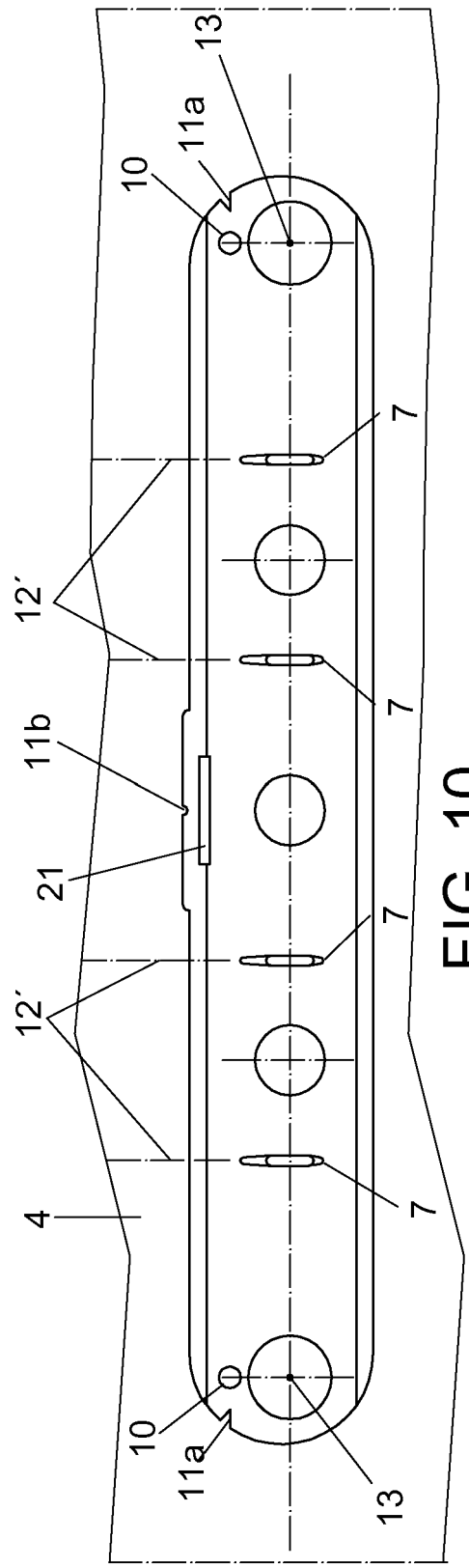


FIG. 10



EUROPEAN SEARCH REPORT

 Application Number
 EP 18 18 3049

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DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
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			TECHNICAL FIELDS SEARCHED (IPC)
			E03C
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 17 December 2018	Examiner Posavec, Daniel
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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 EPO FORM 1503 03.82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
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