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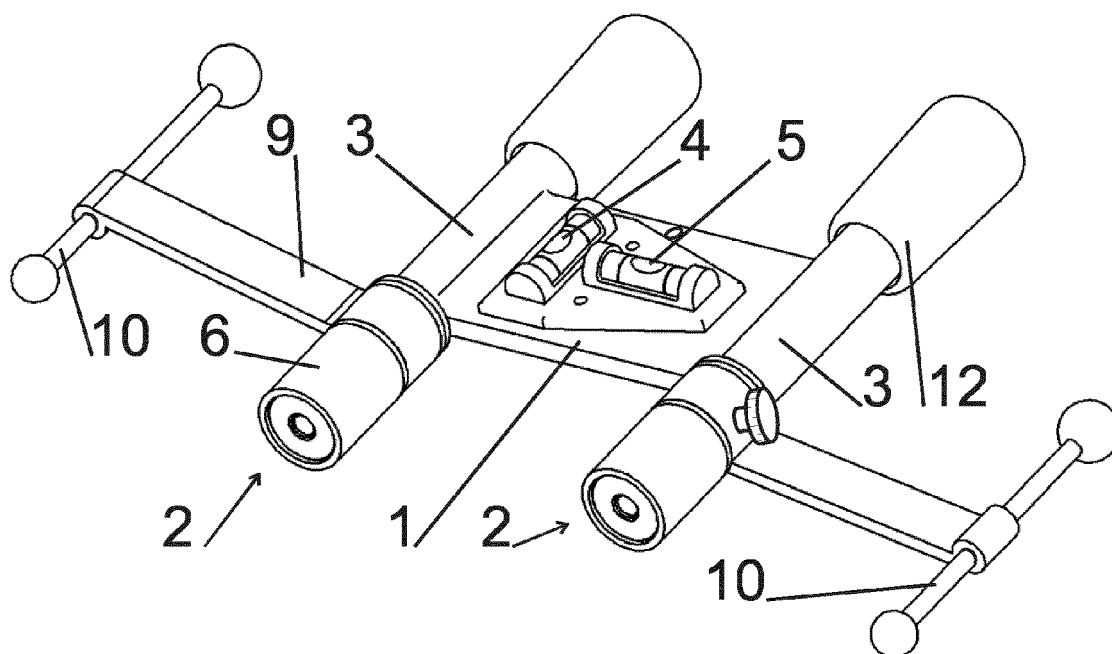
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(54) **Position adjustment device for the installation of plumbing components**

(57) Device for adjusting the position of pipe endings at mounting has a flat body (1) with two oblong hubs (3) with a fixed pitch. The hub axis (3) are parallel and in the hub axis (3) connecting elements (2) with a thread (14) are placed. Flat body (1) has at least two one-dimensional vials (4,5) or at least one two-dimensional vial to determine the horizontal position of the device. Flat body (1) has a predetermined spacing of the connecting elements

(2), preferably 100 or 150 mm and in a preferred arrangement will have a rotary arms (9) with adjustable stops (10). The device can contain a plate adapter (7) for connecting concealed mixing boxes. Plate adapter (7), as part of the device and also as a standalone product designated later for connection to a device includes a group of holes (16) and two holes (15) with threads for connection to the connecting element (2).



**Fig. 3**

## Description

### Technology

**[0001]** The technical solution refers to equipment, tools for setting the correct position of plumbing, sewage items for their mounting on a wall or into a wall or into the floor. The device allows setting the pin of installation objects into a horizontal position as well as into a perpendicular position against a wall or floor.

### Present technology

**[0002]** When mounting the installation objects, particularly boards and leads of the mixing faucets and concealed faucets in masonry walls it is necessary to keep their horizontal position, since even a small angular imprecision is reflected in the final impression of the user. Horizontal lines are shown by lining, for example tiles and therefore the perceived inaccuracy of the angle is perceived in a very sensitive way. By improper placing the repair is possible only by breaking the connecting mortar or plaster, or breaking already finished tiling. When installing, plumbers or construction workers commonly use a spirit level which they put on plumbing outlets. The connection between the level and the installed object is only temporary, the joint has an allowance and the level sets a position only in one diameter. This solution is completely unsatisfactory. Partial improvement of the solution according to the utility model DE 8206728, a device that uses a tool with one vial (Bubble Level, Spirit Level) placed on a partition which connects pipe extensions inserted into the pin sockets of installed object. This solution determines the position of only one diameter and in principle has an incorrect lead of the partition on sliding tubular extensions. Known is also a patent publication WO 01/65913, which uses a tube sockets with telescopic partition, on which the vial is located. This solution has three zones of creating allowance, which are a source of measurement imprecision and it is also able to fix the position in only one diameter. Similarly also other devices, such as according to US 2008/0168672, DE 8632306 have more connecting zones, which are a source of imprecision. The same disadvantage is shown also in solution according to the utility model DE 8815841, which uses a movable partition adjusted in two directions. This solution is characterized by low stiffness and complicated operation which worsens the final result of installation. Known is also a solution according to WO 94/16174 which uses extensions slidably held in the partition. This solution is complicated, has many allowance resources and low stiffness and does not allow to set the exact distance from the wall in a case, that there is a groove, a rift or roughness in diameter of the partition. This device does not prevent incorrect space setting of the extensions of installation objects.

**[0003]** Desirable is is easy to use device which can

measure and determine the position in both diameters and is resistant to rough and unaware treatment on the site. Equipment should have in addition to measuring function also a reliable function of dragging and setting the correct position which none of the until now known solutions provide.

### Summary of the invention

**[0004]** The deficiencies mentioned above are to a large extent eliminated by a device for adjusting the position of plumbing objects at installation, especially when mounted into the wall including two connecting elements for the connection with outlets of the plumbing objects and a vial (Bubble Level, Spirit Level) according to this invention, which essence lies in the fact that it contains a flat body with two oblong hubs with a fixed spacing where the axis of the hubs are mutually parallel and in hub axes rotary placed threaded connecting elements. The connecting elements have a stop position of the connection in one diameter that is perpendicular to the axis of the hubs. Flat body provides for the device a high rigidity and stability of the hub axis parallelism. Parallelity of axes is thus not dependent on the geometry setup of the device at operating. Fixed spacing defines exactly in which axis distance it is possible to mount the pins onto device, it is not possible to change this spacing on the device. This eliminates the possibility that the worker sets the spacing for nonexistent size of a faucet and later, after solidification of the pins in the wall it will not be able to mount on any ordinary faucets. Flat body has at least two one-diameter vials or at least one two-diameter vial (spherical level). One-diameter vials usually have the shape of a transparent tube with a bubble, a bubble which moves when the inclination varies substantially linearly along the top of the tube. Two-diameter vial mainly takes the form of molded container with a transparent top cover where the bubble moves in two directions.

**[0005]** Vials are firmly attached directly to a flat body with hubs so as to eliminate the possibility of the emergence of allowances and inaccuracies between the pins and measuring vials. If one-diameter vials are used, they are placed in each transverse diameter of the surface of the body and preferably one-diameter vials are mutually placed in a rectangular position. One is parallel and on other one is perpendicular to the axis of the hub. Each vial is placed in a parallel diameter or a diameter identical to the diameter in which both axis of the hubs are placed. Flat body may or may not include a shaped bed to locate the vials.

**[0006]** The device allows us to fix the desired pin spacing, ensure mutual parallelism of axes pin and also determine the exact horizontal position of the axis pin. Connecting the pin to the device can achieve also alignment of outer face, external pin placing into one vertical diameter which was also not secured by the previously known devices. If the external pin settings, thus the thread exits of these pins, are not in one diameter we still

can have the separate axis of each pin mutually horizontal and located in a horizontal diameter but the mounted object is not possible to be fitted properly since subsequently distant thread inserts of different lengths for left and right pin must be used.

**[0007]** In a preferred arrangement of the connecting element with thread created at the first end of the shaft, which runs through the whole hub and the other end of the shaft comes out of the opposite side of the hub and is provided with a handle for shaft rotating. In principle is also possible such arrangement of the shaft which has a handle in the form of a knurled wheel on the first shaft end close to the connecting element. In terms of easy operation it is also advantageous if the flat body has two cylindrical stops to press to the end face of the pins, one cylinder stop on the axis of each hub. Doing so, a shaft with connecting element passes through the inside of a cylindrical stop. In this case, the shaft with connecting element with a thread placed in a hub not only rotary but also with the possibility of axial displacement. Then the end faces of both cylindrical stops in one diameter that is perpendicular to the axis of the hub and these end faces of cylinder stops designate the diameter of the end faces of the pins.

**[0008]** In this arrangement, the threads of connecting elements can be inserted in the layout inside the cylindrical stops and retracts into the working position at screwing the threads into the pins. Also, to facilitate handling of the equipment, there may be on the shaft from the side of the handle attached a spring which will clutch the threaded connecting element towards the cylinder stop inside. By a light pressure on the handle, the connecting element ejects from inside the cylinder stop, although in a non-functional position the connecting element does not hinder. Using the slide shaft and cylinder stop allows to connect the pins gradually, we do not need to screw left and right connecting element at the same time while flatness of the front faces of the both pins is guaranteed.

**[0009]** A worker with one hand holds the flat body, for example he holds the hub in his left hand, with his right hand pushes the right handle and at the same time rotates it so that the thread of the connecting element is screwed into the inside of the pin. When fully retracted, the end face of the cylinder stop is pressed against the pin stop. The end face of the pin is precisely worked and is perpendicular to the axis of the pin. Now is the right hub in alignment with the right pin and the end face of the right pin is in the diameter of the end face of the right stop. Subsequently, the worker places the left pin to the left connecting element, by this he may adequately adjust or even lightly bend the wiring leading to the pins. At the same time he adjusts with his left hand the position of the left pin and with his right hand pushes and rotates the left handle, while keeping the whole tool through the handle. Pulling the left connecting element ensures not only the left alignment of the left hub with the left pin but also the exact position of the left pin end face is reached.

The end face of the left pin is in a diameter with the end face of the left stop and thus is in a diameter with the end face of the right pin.

**[0010]** With two one-diameter vials or one two-diameter vial the worker sets the exact horizontal position of the pin axis. The worker keeps the device and with the joint mortar or a gauging plaster mortars the installed pins. During this mortaring and also after finishing, the worker checks the position on both vials. He keeps the device mounted on the pins until sufficient stiffness of the joint mortar or plaster. Then the device can be disconnected from the pins and used to install another object.

**[0011]** Here it is shown that the worker himself can with his both hands apply and the device, according to this invention, without the need to set a number of mutually moving elements. In the device, by a tight bond and spatial relationships are defined all the significant positions of the pins - parallelism of pin axis, pin spacing and location of the end face of pins in one diameter perpendicular to the diameter of the hub axis. Worker adjusts only the overall position and tilt of the device according to the vial.

**[0012]** Flat body will contain mainly two versions of the hub axis spacing and that is 100 mm and 150 mm. These pitches can be pre-set by dimensions of the aluminum alloy extruded profile which will be used for device production. Extruded profile has a high accuracy and parallelism of edges.

**[0013]** To improve the functionality the flat body may contain two arms with adjustable stops to set the distance between the flat body and the wall into which the pins are placed. These arms may be rotary or tilting with the axis of rotation which is parallel to the axes of the hubs. The axes of rotation or tilting may be identical to the axes of hubs. In this case it is appropriate if the arm is set between the flat body and cylinder stop. Position of arm rotation is ensured by locking element, for example in the form of locking screws. Adjustable stop may have a thread rod that can be pulled into the required position by rotating.

**[0014]** The worker swings out the arms into working position, the swinging arm angle can be chosen so that the adjustable stop leans on a flat and solid element on the wall. It excludes such a position of arms where would the adjustable stops lean on joints between the bricks or other masonry blocks or where would the adjustable stops enter the carved grooves such as into the grooves with pipes leading to the pins. Range of adjustable stops should allow to create different distances from the end face of the pins into diameter of the wall and at the same time should have a spare space for possible use of auxiliary lath. Auxiliary lath, for example in the form of ordinary aluminum spirit level or in the form of building aluminum spirit level will be placed from above on the cylindrical stops, leaning against the wall and the adjustable stops will be leant on this auxiliary lath. This will limit the impact of undulation and flexure of the wall which may

occur when using a point spacing determination through the ends of the adjustable stops.

**[0015]** The device allows to fitt the pins accurately for later connection of faucets of different spacing according to hub axis spacing. To increase the utility value of the equipment, it can be equipped by a removable plate adapter for undercoat mixing faucets which do not contain traditional pins of hot and cold water outwards from the wall. They can be for example mixing faucets of shower corners where one installation part in the form of a box is placed under the coat and above the coat sticks out the second, controlling part.

**[0016]** Plate adapter has two tapped holes for connection with the connecting elements. The holes are spaced with spacing identical to the hub axis. Plate adapter also has a set of holes for connecting the concealed box of mixing faucet. These holes in the adapter plate are placed according to projections on the front face of the particular concealed box and it is preferred if one plate adapter includes several groups of holes for more different concealed boxes. The transparency among several holes in plate adapter can be improved the way that the holes in one group of holes suitable for one type of concealed box are marked in one color. This color assignment to a particular type of concealed box can be marked in the legend placed directly on the plate adapter.

**[0017]** If installing concealed faucet without direct pins to the interior, first a plate adapter must be screwed on the concealed box so that the grooves, projections of the installed object fit into the holes in the plate adapter. Subsequently, a device with vials is placed on the plate adapter. Other equipment use is similar to the previous description.

**[0018]** Flat body may have a foothold, as for example in a form of a hole, through which the entire device can be backed up or hung up. Then to the device belongs also a supportive tool to lay or hang the flat body in the desired height of mounted pins. In a set position, the worker may hang the device on a charged hook or other sufficiently strong point above the pin level for example by using a brake drum or a butterfly buckle. The end of rope or a wire to connect to the supporting point may have an adjustable screw, which can fine-tune the exact altitude without having to release the main element of the rope or a wire length adjustment. In another version, the supportive element may have a form of a rod, a leg, preferably in a telescopic design with fast- securing elements such as for a tripod or the like.

**[0019]** The device may be equipped by a small light that illuminates both vials. The light switches on a time switch, the light shines for the set time which is typical of one working stroke with the device. For this purpose, the base carrying two vials may be made of light conductive plastic to which a light is connected, preferably in the LED form. The device can also be provided with a measuring tool to measure the distance between the connecting element axis and the floor. Display with the measured distance will be in a common viewing angle, in which the

worker sees also the vials so he is able to observe, without turning his head, all the measuring elements at the same time.

**[0020]** In order to simplify the construction of the device as much as possible, this device may have a form when the flat body has a shape of U-shaped arm where the arms create the hubs. The first vial can be placed on an arm near the connecting element, the second vial can be placed on a partition which connects the arms. The arm will be made as a solid unit. In this simplified construction, the connecting elements will have a form of a passed-through-nut with internal thread, which is adapted to be screwed securely to the pins of installed object either directly or through a threaded screws. Threaded screws are first separately and securely screwed into the pin holes and then on projecting external threads of the threaded screws are fastened the connecting elements in the form of union nut with internal thread. The flat body is by this firmly fixed with the pins.

**[0021]** The described device can adjust the horizontal position of the pins of installed object and at the same time also perpendicular position of this object against the wall. The device has a sufficient stiffness. The position can be changed directly by moving the grasped flat body or the handles.

**[0022]** Plumbing kit can be fitted with two separate devices according to this solution, where one is designed for a 100 mm pitch, second pitch is of 150 mm. The installation kit can contain several plate adapters with printed colored descriptio, aluminum lath to use the adjustable stops on uneven walls, threaded screws and reductions of different threads, for example with  $\frac{1}{2}$ " and  $\frac{3}{4}$ " thread thread, a thin polypropylene rope with a clamping clip and double-threaded tletcher with a hook and operating instructions manual. The kit can also include a measuring tool to measure the height from the floor to the pins.

**[0023]** The object of protection is the plate adapter itself to be connected to the device as described above.

**[0024]** The described device is characterized by simplicity, high stiffness and is resistant to rough handling on a bulding site. It is easy to use and reached can be very accurate results of installation and does not require special skills.

#### **Summary of drawings**

**[0025]** The technical solution of the invention is further explained by Figures 1 to 13 Shown size ratio is only illustrative, in other example can be used a different size of the devices as well as other construction details.

Figure 1 shows a front axonometric view on the device with arms folded in a transport position and the connecting elements retracted inside the cylinder stops.

Figure 2 is a top view on the device with arms folded in a transport position and the connecting elements

retracted inside the cylinder stops

Figure 3 is an axonometric front view and Figure 4 is an elevational view on the device with arms popped-up into working position and with connecting elements retracted inside the cylinder stops.

Figure 5 depicts a direct front view in the hub axis on the device with arms tilted to the selected working position.

Figure 6 is an axonometric view on the device with a partially disassembled hub where is detached a cylinder stop on the right side and then the location of the

Figure 7 depicts axonometric view on the device in a transport position where the inside of one hub is disassembled at the top and shown in an explosive view together with the arm and adjustable stop. In this view you can see the internal storage of the shaft in a plastic ducts in the hub.

In Figure 8 is separately shown a flat body made of aluminum profile, according to one of the examples. On one side of the body is formed a cavity to insert the base with a pair of vials.

In Figure 9 is captured an axonometric view from the side of the handles to the device associated with the plate adapter with several groups for concealed boxes.

Figure 10 and 11 show examples of the shapes of plate adapters with tapped holes and groups of holes to fit the pins of different concealed boxes.

In Figure 12 is an axonometric view shown the device with a simpler construction with two connecting elements in the form of cap nuts and two threaded screws.

Figure 13 is a side view with a partial wall cut where fitted is a concealed box of the faucet with marked gauge mark of MIN, MAX for given depth of the mounting the faucet in the wall. The upper part shows the situation at embedding, at the bottom part under the cut line (indicated by dot-and-dash-line) is shown an example of the state of the layers after installation - after plastering and tiling. Plotting the dotted line with arrow indicates the position of the last layer of the wall in a range between min and max. The estimated thickness of coatings, adhesives and tile (eg in form of glued tiles) to stop setting increases, which in this example has the form of excenter.

## Realization Examples

### Example 1

- [0026]** The device in this example according to images 1 to 11 has a flat body 1 of aluminum alloy. Flat body 1 as shown in Figure 8 is made of extruded profiles, where at the same time holes of the hubs 3 are formed. After material dividing, the semifinished product processed and assembled with other parts. In this example is inside the both hubs 3 a shaft 8 which is rotary and slidingly placed. At one end it has firmly attached a short cylinder with an external thread 14. In this example has the thread 14 size of  $\frac{1}{2}$ ". The shaft 8 is stored in plastic storage.
- On the other side of the hub 3 has the shaft 8 fixed a handle 12. Between the shoulder inside the hub 3 and the handle 12 is placed a pressure spring 17 which pushes the handle 12 and by that also the shaft 8 with the threaded 14.
- [0027]** On the first side of the hub 3 is in the internal thread 14 in the hub 3 screwed a cylinder stop 6. Inside is now a cylinder with an external thread 14. Cylinder stop 6 has precisely processed external front face which is designed to reach to the end face of the pin or to the surface of the plate adapter 7. Within the cylinder stop 6, is in this example formed a rotary lead for arm 9. The wiring has again plastic storage in small sliding cases which defines also the axial allowance. Arms 9 are mounted on a cylinder stops 6 before screwing them into the hub 3. The arms 9 have a fulcrum 11, in this example in the form of screws with a plastic head. At the end of the arms 9 is an adjustable stop 10, here in the form of a threaded rod with a control and touch ball.
- [0028]** On the flat body 1 is fitted a base with two one-diameter vials 4, 5. Vials 4, 5 are perpendicular to each other where the first vial 4 is parallel to the axis of the hubs and the second vial 5 is perpendicular to the axis of the hubs 3. The base of the vials 4, 5 is in the diameter parallel to the diameter in which the axis of both vials 4, 5 are located.
- [0029]** Plumbing tool set in this example contains two devices, one with a pitch of the hub 3 in the size of 100 mm and the second of 150 mm. This we will cover almost all installation sizes of faucets. A worker can choose from the set a tool with the appropriate pitch of the hubs 3, tilts and locks the arms 9. Sets on both adjustable stops 10 the same depth of the recess in the wall pins. Then he gradually connects both pins with the device so that through the handle 12 and threads 14 pulls faces of the pins to the cylindrical stops 6. Into the wall, above the point of installation of the pins he fits a nailed hook on which he hangs a small cable terminated with a small adjustable strecher with a hook which is inserted into the fulcrum 13. A worker adjusts the position of the pin so that both vials 4, 5 show equilibrium and at the same time both adjustable stops 10 lean on the wall. Then, with his second hand, the worker fastens the hanging wire and plasters the pins. He checks both vials 4, 5 and adjustable

stops 10 and leaves the device mounted on the pins until sufficient stiffness. In the meanwhile he may prepare any other installations or use other tools included in plumbing set. After fastening he releases with the handles 12 the connections of the connecting elements 2 from the pins and disconnects the device from the suspension wire.

[0030] Shaft 8 is a short cylinder on which is a thread 14 connected in a non-dismountable way, in this example by welding in the cylinder hole or gluing or pressing. At the other end of the shaft 8 is a connection to the handle 12 formed as a dismountable via nut and washer and with the help of the external thread on the end of the shaft 8. Nut is tightened by a socket as to avoid the creation of allowance since the face of the handle 12 is fastened to the flat body 1. Such dismountable arrangement to eject the shaft 8 from the hub 3 during the maintenance and cleaning of the tool. In the case of eventual fall of the tool into a mortar or water, the hub 3 can be cleaned and lubricated.

[0031] Plumbing tool set also includes plate adapters 7 as shown in Figures 10 and 11. In this example, the first has seven groups of holes 16 for projections of concealed boxes. The second has, in this example, six groups of holes 16 for projections of concealed boxes. Both plate adapters 7 has also two holes 15 with threads for connection with the connecting elements 2 of the device.

[0032] The worker first places the plate adapter 7 on the concealed box of the mixing faucet. The legend printed on the plate adapter 7 which differs in color the individual groups of holes will help. The worker the plate adapter 7 fixes, connects with the concealed box and subsequently, to the plate adapter 7 attaches a device, in this example with the pitch of hubs 3 of 150 mm. Furthermore, the work with the device is the same as for direct connection to the pins.

[0033] In this example is the device provided with a small LED light that illuminates both vials 4, 5. The light switches on a time switch, the light illuminates for the set time, which is usual for one cycle of working with the device.

[0034] Described device is characterized by simplicity, high stiffness and is resistant to rough handling on a building site. Its use is comfortable where also very precise results of installation are reached.

#### Example 2

[0035] Device for adjusting the position of plumbing objects during installation, according to this example, is shown in Figures 12 and 13. The device consists of a flat body 1 of a steel tube that is bent into the shape of the letter U. At the ends of the tube is a shoulder and coupling nuts with  $\frac{3}{4}$  " inner thread 14. This shoulder and a coupling nuts form connecting elements 2. Close to the connecting elements 2 is by a hard solder mounted a partition of also tubular section. On the arm of the flat body 1 and on the partition is milled a hole 16 into which calibrated

vials 4, 5 are inserted. The device in this example is a part of a set which includes two flat bodies 1 with the pitch of 100mm and 150 mm, several threaded nipples and also other elements.

5 [0036] The kit also includes a plate adapter 7 to connect concealed mixing faucets. The adapter 7 is made of rectangular aluminum plate. On one side of the plate are milled several holes 16 and shoulders which correspond to projections of different concealed boxes for faucets of several manufacturers. Into the plate are also  
10 drilled holes 16 through which the adapter 7 is attached with the screws to the box body of the mixing faucet. On the opposite side of the plate adapter 7 has the flat plate two positional projections with the pitch of 100 mm or 150  
15 mm. The projections in this example have  $\frac{3}{4}$  " external thread. On the top part of the plate is an adjustable stop 10, in this example it has a form of excenter. The set also includes four threaded nipples which have  $\frac{1}{2}$  " and  $\frac{3}{4}$  " external thread 14. Threaded screws have internal  
20 hexagon for screwing with 6HR keys.

[0037] Operating the device is similar to example 1, the device represents a simpler design version of the device according to example 1. After setting the height of installation according to the project, the worker sets  
25 up the horizontal position of the installed object pins and also its position perpendicular against the wall. Using plaster or mortar connecting plasters the installed object into the carved hole. In doing so continuously checks the position of both vials 4, 5. Position correction can be carried out until the beginning of solidification of connecting  
30 mortar or plaster.

[0038] When using the plate adapter 7, set is a distance between the two positions of the shoulder in the way so after the plastering and tiling only a mounting part of the  
35 concealed faucet in a defined position of max-min will project from the wall. This location according to Figure 13 is designed for final assembling of concealed faucet.

#### Industrial Usability

40 [0039] Industrial usability is obvious. According to the present invention, it is possible to repeatedly produce or use a device for adjusting the position of pins of plumbing components in the installation in to the wall, especially  
45 when installing plumbing and sewage objects in concealed manner.

#### List of Related Symbols

50 [0040]

|    |                    |
|----|--------------------|
| 1- | flat body          |
| 2- | connecting element |
| 3- | hub                |
| 4- | first vial         |

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- 5- second vial
- 6- cylinder stop
- 7- plate adapter
- 8- shaft
- 9- arm
- 10- adjustable stop
- 11- locking element
- 12- handle
- 13- fulcrum
- 14- thread
- 15- Hole with a thread
- 16- hole
- 17- spring

#### Claims

1. A device to adjust the position of plumbing components during installation, mainly during installation into the wall including two connecting elements (2) to connect the pins of the installation objects, a vial and a handle (12) **is characterized by the fact that** it contains a flat body (1) with two oblong hubs (3) with a fixed pitch where the axis of hubs (3) are mutually parallel and in the axis of the hub (3) are rotary placed connecting elements (2) with a thread (14), both connecting elements (2) have the position of connection stops in one mutual diameter which is perpendicular to both axis of the hubs (3), flat body (1) has in a parallel or an identical diameter in which both axis of the hubs (3) are placed at least two one-diameter vials (4, 5) or at least one two-diameter vial, one-diameter vials (4, 5) are mutually laterally placed, preferably are the one-diameter vials (4, 5) mutually in a rectangular position, where the connecting elements (2) are connected by handles (12).
2. A device to adjust the position of plumbing components during installation according to the claim 1 **is characterized by the fact that** in the axis of the hubs (3) are cylinder stops (6) adjacent to the location and attachment to the installed pins, a shaft (8), which has on the first end a thread (14) passes inside the cylinder stop (6), a shaft (8) passes through the whole hub (3) in which is a shaft (8)

placed rotary and at the same time slidingly with a limited length of shift where on the other end is a shaft (8) equipped with a handle (12).

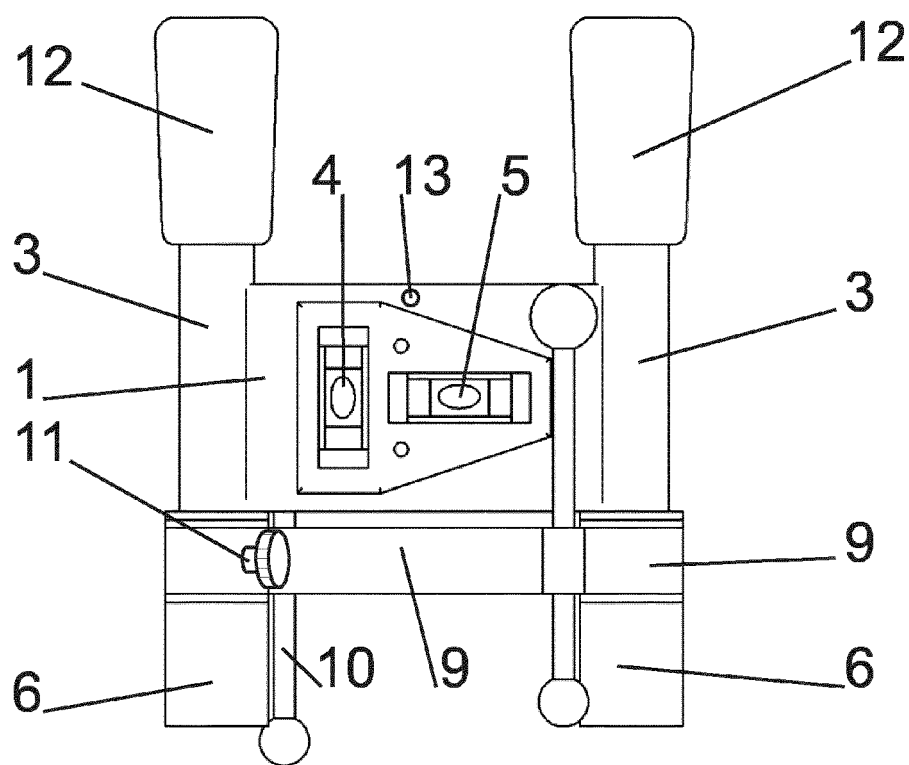
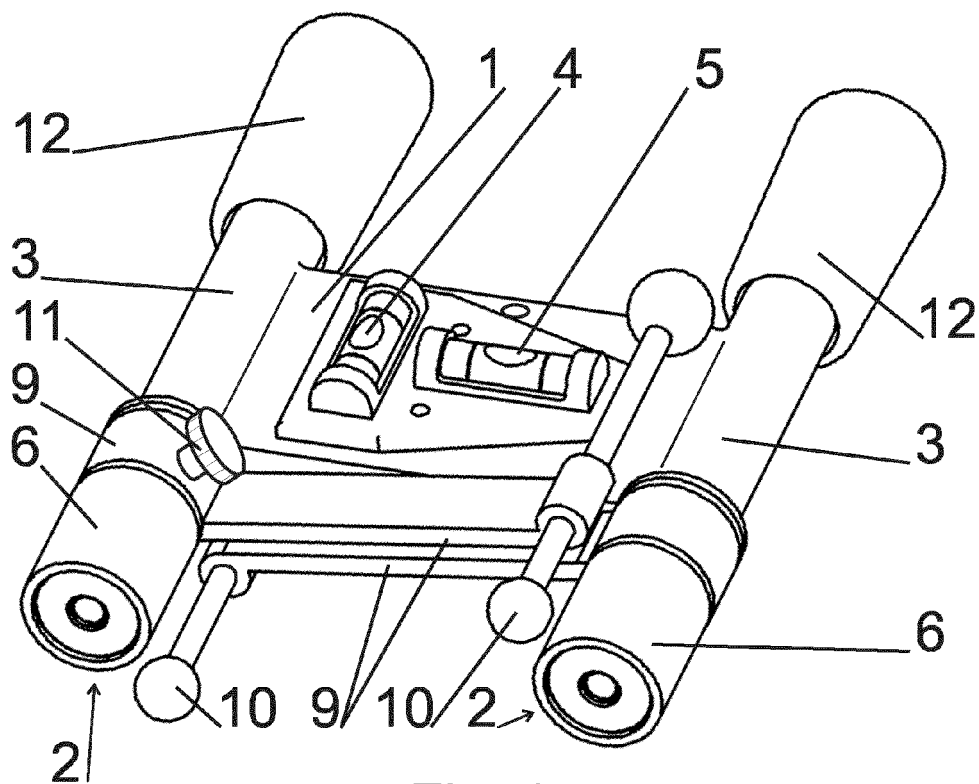
3. A device to adjust the position of plumbing components during installation according to the claim 2 **is characterized by the fact that** on the shaft (8) is between the handle (12) and the flat body (1) a pressure spring (17) and the handle (12) is to the shaft (8) fixed dismountably.
4. A device to adjust the position of plumbing components during installation according to any of the claims 1-3 **is characterized by the fact that** it has two arms (9) with adjustable stops (10) to set the distance of the flat body (1) from the wall into which the pins are mounted.
5. A device to adjust the position of plumbing components during installation according to claim 4 **is characterized by the fact that** the two arms (9) are rotary or hinged with the axis of rotation which is parallel or identical to the axis of the hubs (3) and arms (9) have fulcrum (11) to ensure the set position of the arm (9).
6. A device to adjust the position of plumbing components during installation according to any of the claims 1-5 **is characterized by the fact that** the flat body (1) has a pitch of axis of the hubs (3) in the size of 100 mm or 150 mm.
7. A device to adjust the position of plumbing components during installation according to the claim 1 **is characterized by the fact that** the flat body (1) is formed by bending a metal tubular profile, the first vial (4) is placed on a hub (3) at the axis of one connecting element (2), the second vial (5) is placed on a partition which non-dismountably connects the hubs (3), connecting elements (2) form union nuts with internal thread which fits the shoulders at the ends of the hubs (3) and the device includes at least one pair of threaded screw for mediated connection between connecting elements (2) and the pins of the installed object.
8. A device to adjust the position of plumbing components during installation according to any of the claims 1-7 **is characterized by the fact that** it contains a removable plate adapter (7) which has at least one group of holes (16) for connection with concealed mixing boxes and has two holes (15) with a thread for connection with the connecting elements (2) where the pitch of the holes (15) with a thread is the same as the pitch of the hubs (3) in the flat body (1).
9. A device to adjust the position of plumbing components during installation according to the claim 8 **is**

**characterized by the fact that** the plate adapter (7) has more groups of holes (16) corresponding to different concealed boxes where the holes (16) belonging to one group are distinguished by the description and / or color-coded, preferably directly on the plate adapter (7) located explanation of the assignment to the holes (16) according to the type and / or brand of the appropriate concealed box.

concealed mixing box.

- 5
10. A device to adjust the position of plumbing components during installation according to any of the claims 1-9 **is characterized by the fact that** it contains a support means for laying or hanging the flat body (1) in the required height and the flat body (1) has a fulcrum (13). 10 15
11. A device to adjust the position of plumbing components during installation according to any of the claims 1- 10 **is characterized by the fact that** the support means is formed by a rope or a wire which contains a feature to changelength, preferably a rope or a wire containing also tensioning screw to fine tune of the length. 20
12. A device to adjust the position of plumbing components during installation according to any of the claims 1- 11 **is characterized by the fact that** it has a light to lighten the vials (4, 5), preferably with a time switch in a form of a LED light. 25 30
13. A device to adjust the position of plumbing components during installation according to any of the claims 1- 12 **is characterized by the fact that** it contains a gauger to measure the distance of the axis of the connecting elements (2) from the floor. 35
14. A device to adjust the position of plumbing components during installation according to any of the claims 1- 13 **is characterized by the fact that** it is a part of a working set which contains two devices, one with the pitch of 100 mm, second device with the pitch of 150 mm and the set also contains at least one plate adapter (7). 40
15. A plate adapter for connection with the device na according to any of the claims 1- 14 is designed for installation in the form of a concealed mixing box **is characterized by the fact that** it has a flat shape of a plate, has at least one group of holes (16) for a slack-free connection with concealed mixing box, has two holes (15) with a thread for connection to the connecting elements (2) of the device where the pitch of the holes (15) with therads is the same as the pitch of the hubs (3) in the flat body (1) of the device; and a group of holes (16) includes at least one hole to fit at least one pin from the end face of the concealed mixing box and at least one hole for connecting element connecting the plate with the 45 50 55





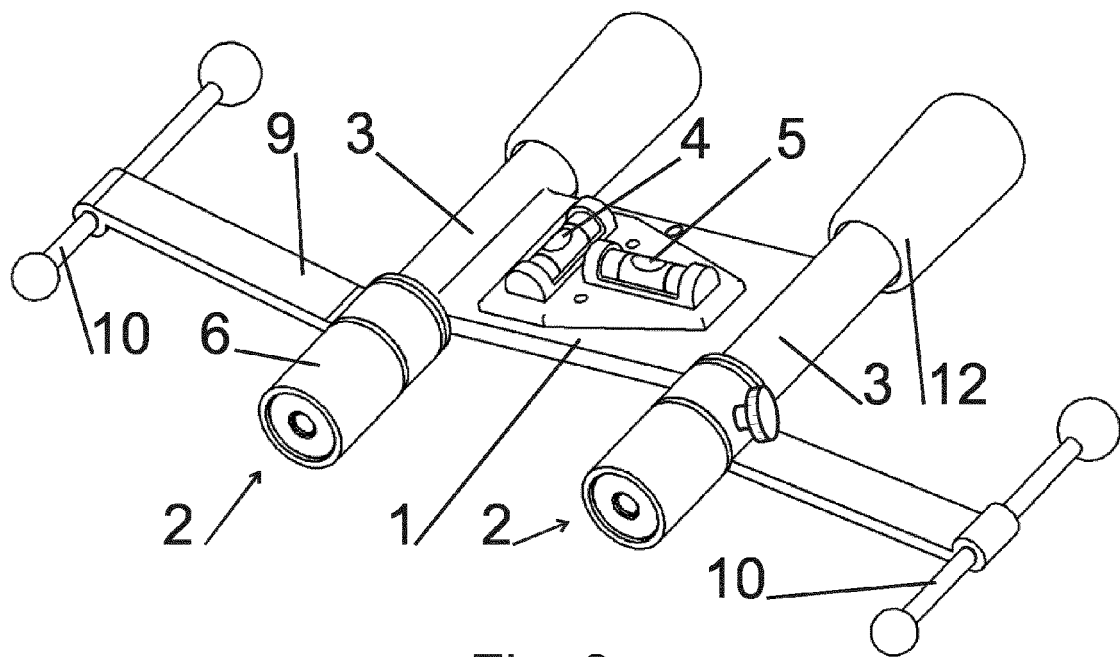


Fig. 3

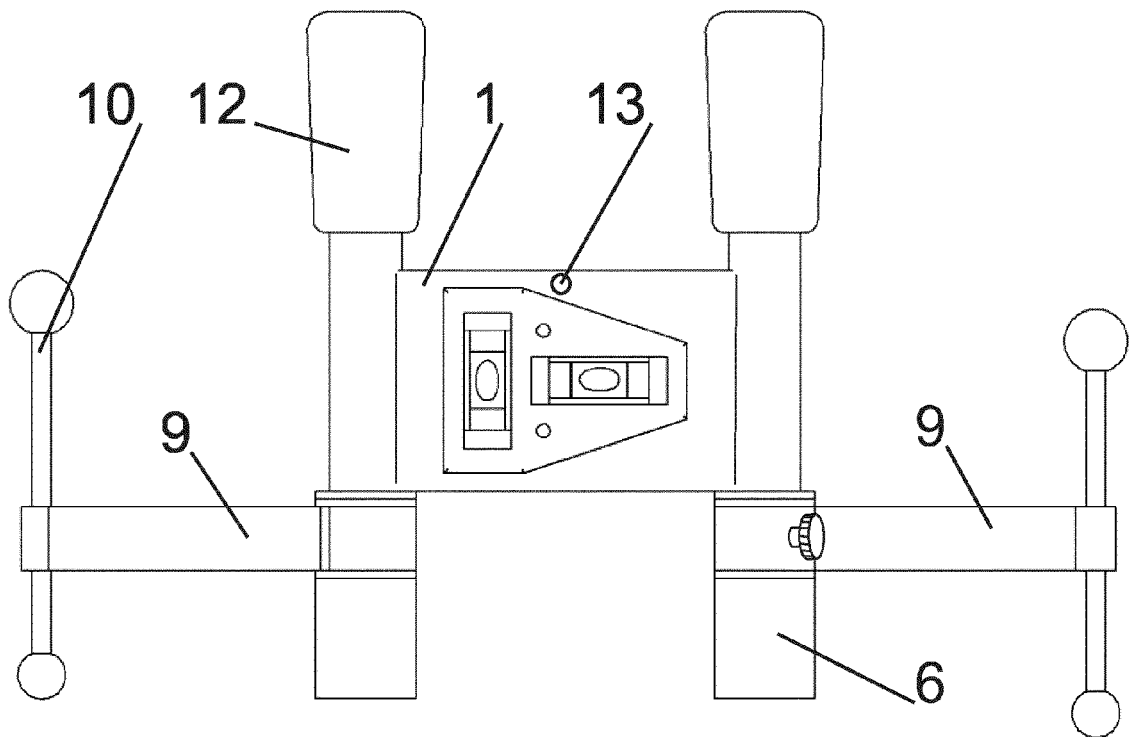


Fig. 4

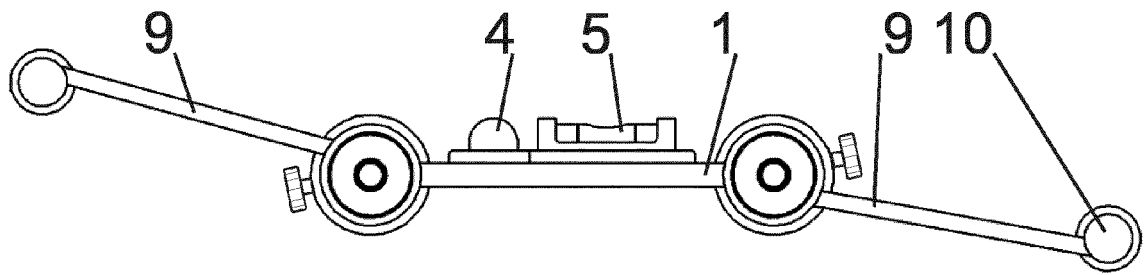


Fig. 5

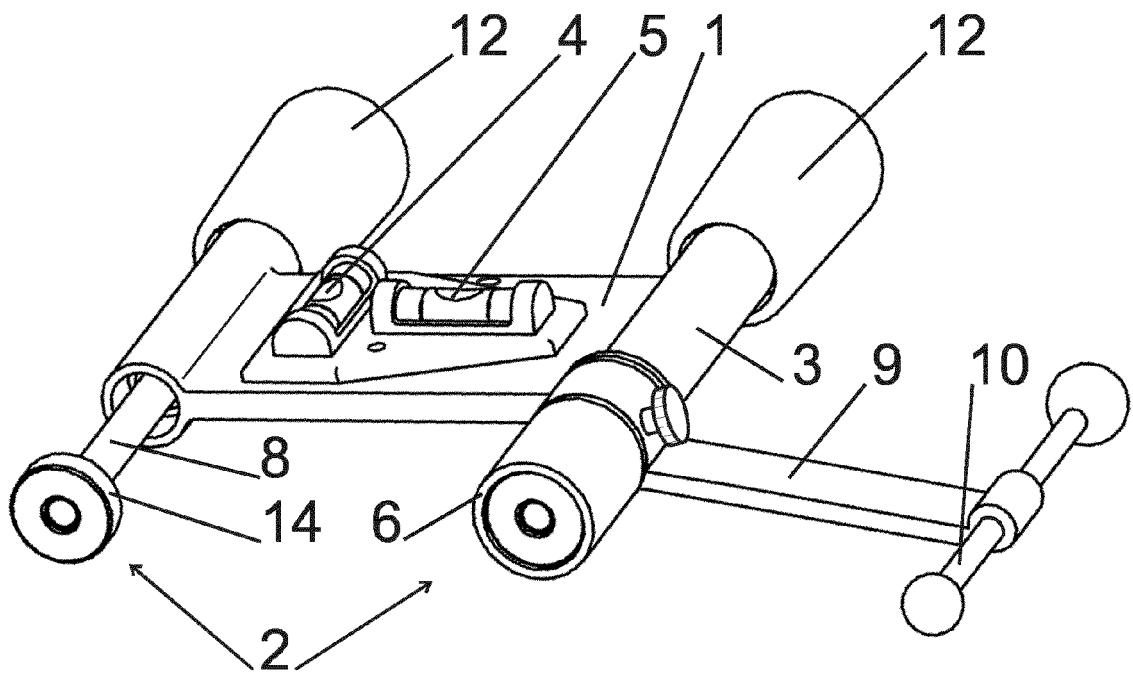


Fig. 6

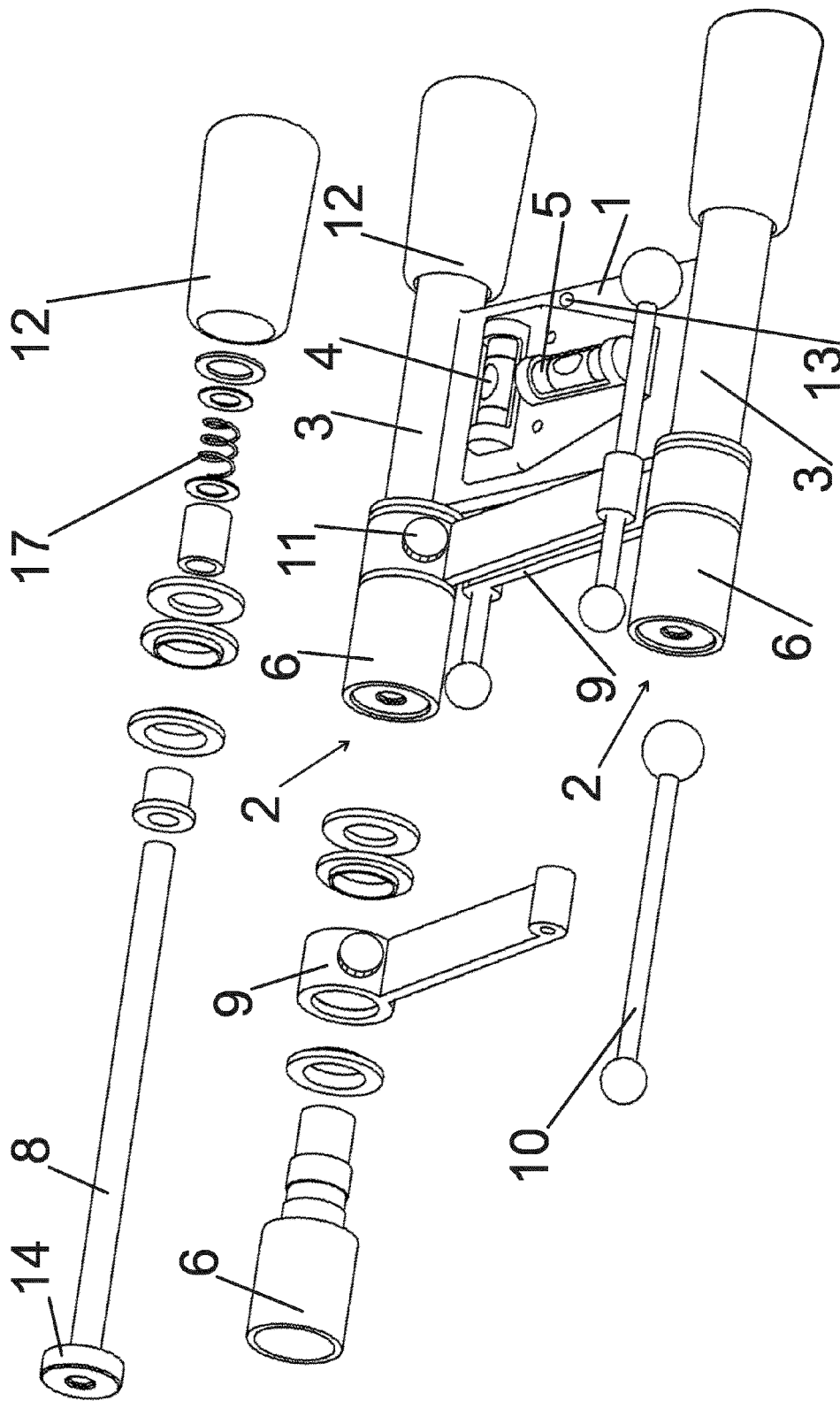


Fig. 7

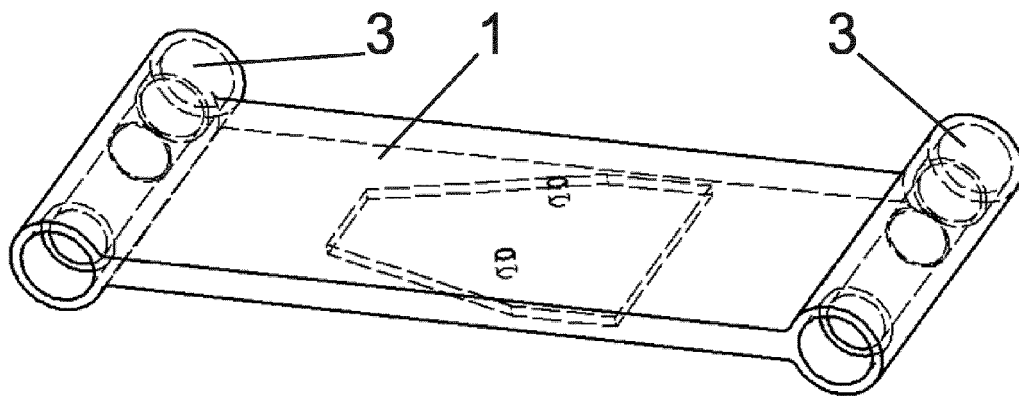


Fig. 8

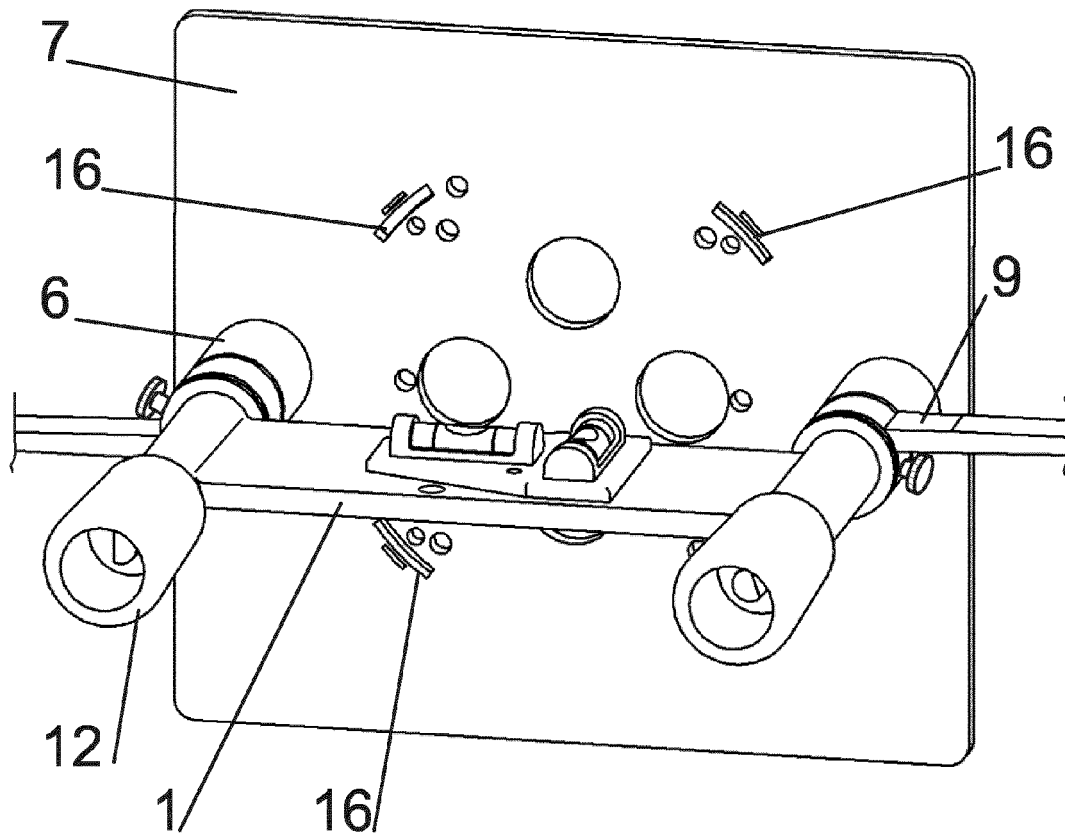


Fig. 9

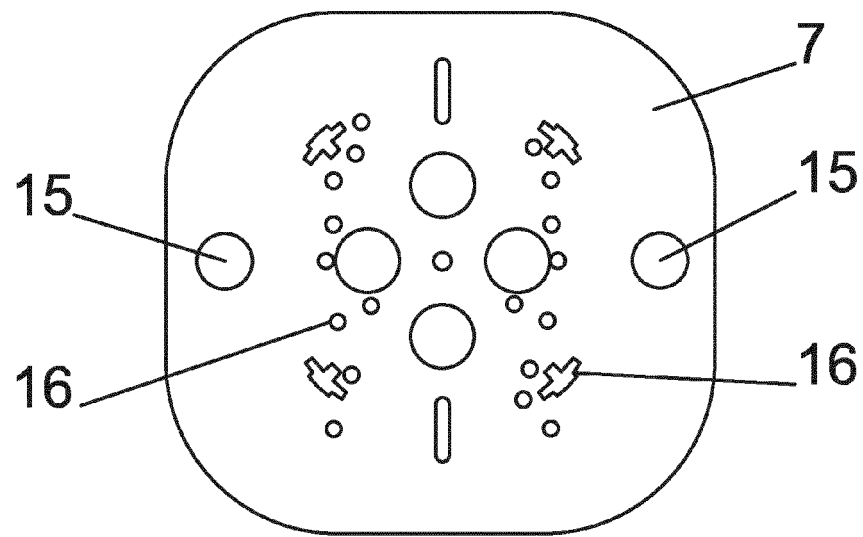


Fig. 10

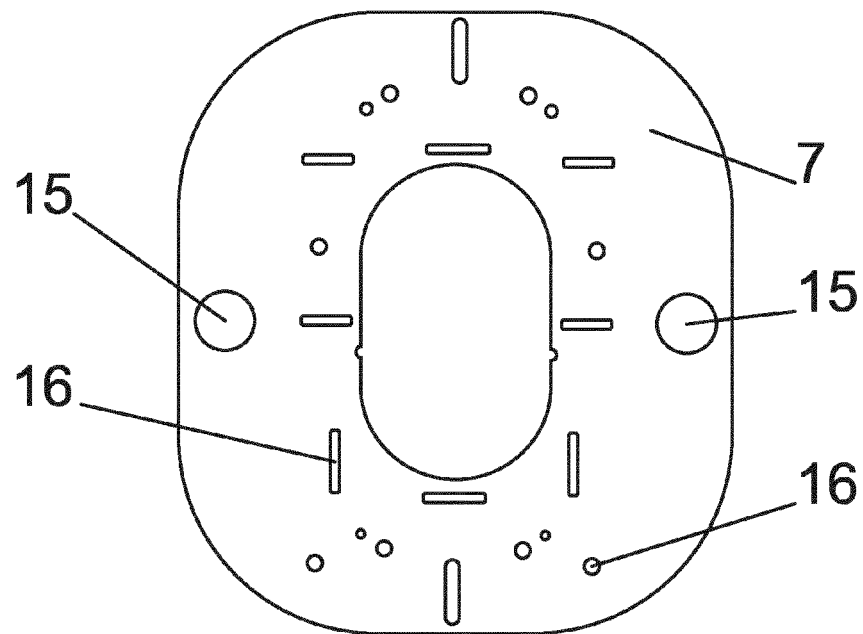


Fig. 11

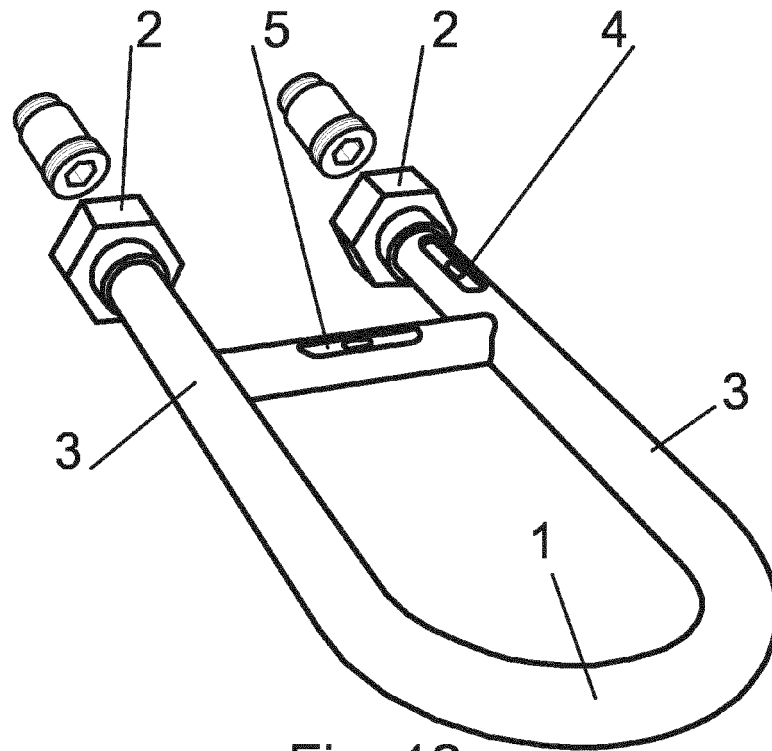


Fig. 12

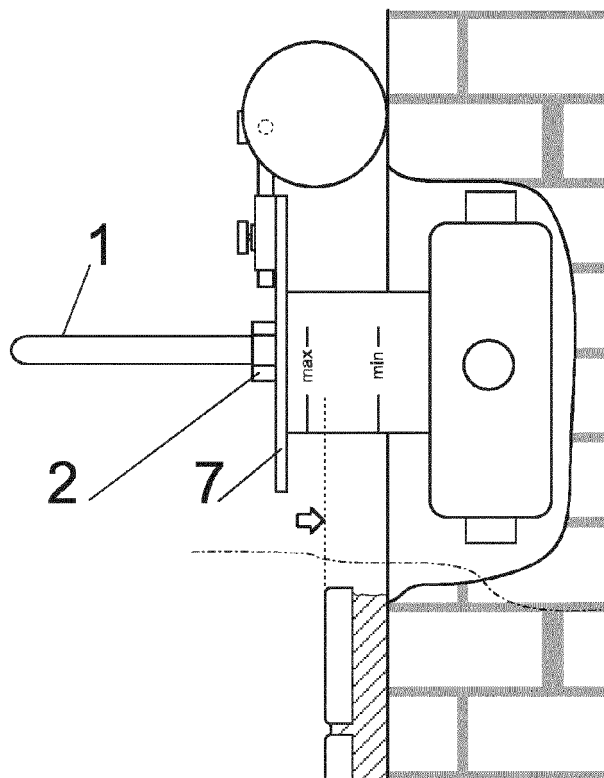


Fig. 13

**REFERENCES CITED IN THE DESCRIPTION**

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**Patent documents cited in the description**

- DE 8206728 [0002]
- WO 0165913 A [0002]
- US 20080168672 A [0002]
- DE 8632306 [0002]
- DE 8815841 [0002]
- WO 9416174 A [0002]