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(54) **Box-like body for installing components of plumbing systems within masonry**

(57) A box-like body (1a) for installing components of plumbing systems within masonry, comprising a base half-shell (2a) provided with a base wall (3a) from which protrusions (4a) extend which define at least one seat for at least one portion of at least one component (30) to be installed and a covering half-shell (6a), which can be associated with the base half-shell (2a) so as to face the base wall (3a) in order to delimit, in cooperation with the

base half-shell (2a), a compartment (7a) which is intended to contain the at least one component (30) to be installed, the box-like body (1a) further comprising a locking element (5a) which can be associated with the base half-shell (2a) and can engage the at least one component (30) to be installed, in order to lock it in the seat with respect to the base half-shell (2a).

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Description

[0001] The present invention relates to a box-like body for installing components of plumbing systems within masonry.

[0002] As is known, a substantial part of the plumbing systems in buildings is embedded within masonry so as to provide rooms in which such systems are concealed, leaving exposed only the elements that are strictly indispensable to connect the system to the so-called sanitary fixtures or to work on the plumbing system, such as for example the unions for supplying the sanitary fixtures and optionally the knobs of isolation valves to be used in case of malfunctions or maintenance interventions.

[0003] The pipes of plumbing systems are generally installed directly inside the wall, while other components, which require greater positioning precision and/or must be accessible if needed, are installed in the wall with the aid of box-like bodies in which they are accommodated.

[0004] Box-like bodies are currently available which are designed to be installed in walls and provide simply a compartment which accommodates one or more components of the system to be installed, such as for example opening-closure valves, shunt valves, manifolds or the like.

[0005] The use of such box-like bodies has highlighted the need to obtain a simple and precise positioning of the component or components with respect to the box-like body during installation.

[0006] In some cases, an attempt has been made to meet this requirement simply by using straps for fixing the component to the box-like body, with results which are not entirely satisfactory as regards the positioning precision of the components.

[0007] In other cases, in order to meet this requirement, plumbing components and box-like bodies shaped so as to mate with each other have been proposed. This solution has led to a result which is fully satisfactory in terms of positioning precision, but resorting to non-standardized components affects the production costs and is not always appreciated by installation technicians.

[0008] The aim of the present invention is to solve the problems described above by providing a box-like body for installing components of plumbing systems within masonry which allows to obtain precise positioning of the plumbing components even when using components of a standardized type.

[0009] Within this aim, an object of the invention is to provide a box-like body which is simple to install and also simplifies the installation of the components that it must accommodate.

[0010] Another object of the invention is to provide a box-like body which can be manufactured at competitive costs.

[0011] This aim and these and other objects, which will become better apparent hereinafter, are achieved by a box-like body for installing components of plumbing systems within masonry, characterized in that it comprises:

- a base half-shell provided with a base wall, from which protrusions extend which define at least one seat for at least one portion of at least one component to be installed;
- a locking element which can be associated with said base half-shell and can engage the at least one component to be installed in order to lock it in said seat with respect to said base half-shell;
- a covering half-shell, which can be associated with said base half-shell so as to face said base wall in order to delimit, in cooperation with said base half-shell, a compartment which is intended to contain the at least one component to be installed.

[0012] Further characteristics and advantages of the invention will become better apparent from the description of some preferred but not exclusive embodiments of the box-like body according to the invention, illustrated by way of non-limiting example in the accompanying drawings, wherein:

Figures 1 to 4 are views of the box-like body in a first embodiment, and more particularly:

Figure 1 is an exploded perspective view of the box-like body, with a component to be installed; Figure 2 is a perspective view of the base half-shell of the box-like body shown in Figure 1; Figure 3 is a sectional view of the assembled box-like body and component to be installed, taken along a plane which passes through the axis of the actuation shaft of the component to be installed and through the axis of an outlet port of the component to be installed; Figure 4 is a sectional view of Figure 3, taken along the line IV-IV;

Figures 5 and 6 are views of the box-like body in a second embodiment, and more particularly:

Figure 5 is an exploded perspective view of the box-like body according to the invention, with two components to be installed; Figure 6 is a sectional view of the box-like body according to the invention in the assembled condition and built into a wall, taken along a plane which passes through the axes of the actuation shafts of the two components to be installed;

Figures 7 and 8 are views of the box-like body according to the invention in a third embodiment, and more particularly:

Figure 7 is an exploded perspective view of the box-like body according to the invention, with two components to be installed; Figure 8 is a sectional view of the assembled box-like body according to the invention, taken

along a plane which passes through the axes of the actuation shafts of the two components to be installed;

Figures 9 to 11 are views of the box-like body according to the invention in a fourth embodiment, and more particularly:

Figure 9 is an exploded perspective view of the box-like body with two components to be installed;

Figure 10 is a perspective view of the base half-shell of the box-like body shown in Figure 9;

Figure 11 is a partially sectional top plan view of the box-like body according to the invention;

Figures 12 and 13 are views of the box-like body according to the invention in a fifth embodiment, and more particularly:

Figure 12 is a perspective view of the base half-shell and of the locking element of the box-like body, with two components to be installed associated with corresponding output pipes;

Figure 13 is a sectional view of the elements of the box-like body shown in Figure 12, taken along a plane which passes through the axes of the actuation shafts of the two components to be installed.

[0013] With reference to the figures, the box-like body according to the invention, generally designated in the different embodiments by the reference numerals 1a, 1b, 1c, 1d, 1e, comprises a base half-shell 2a, 2b, 2c, 2d, 2e, which has a base wall 3a, 3b, 3c, 3d, 3e from which protrusions 4a, 4b, 4c, 4d, 4e extend which define at least one seat for at least one portion of at least one component to be installed, which is designated in the different illustrated types by the reference numerals 30, 31, 32, 33, 34, 35. The box-like body further comprises a locking element 5a, 5b, 5c, 5d, 5e, which can be associated with the base half-shell 2a, 2b, 2c, 2d, 2e and can engage the component or components to be installed 30, 31, 32, 33, 34, 35 so as to lock the component or components to be installed in the seat, which is defined by the protrusions 4a, 4b, 4c, 4d, 4e, with respect to the base half-shell 2a, 2b, 2c, 2d, 2e. The box-like body according to the invention further comprises a covering half-shell 6a, 6b, 6c, 6d which can be associated with the base half-shell 2a, 2b, 2c, 2d, 2e in a position which faces the base wall 3a, 3b, 3c, 3d, 3e so as to delimit, in cooperation with the base half-shell 2a, 2b, 2c, 2d, 2e, a compartment 7a, 7b, 7c, 7d, 7e which is designed to contain the component to be installed 30, 31, 32, 33, 34, 35.

[0014] The components to be installed, which are designed to be accommodated within the box-like body according to the invention, may be constituted by opening-closure and/or shunt valves 30, 31, as shown in Figures

1 to 8, or by manifolds 32, 33, 34, 35, which are generally provided with an opening-closure valve, as shown in Figures 9 to 13, or by other similar plumbing components.

[0015] Such components or, in the case of manifolds, the valves with which they are equipped, are generally provided with a shunting element 30a, 31a or with a flow control element 32a, 33a, 34a, 35a, which is connected to an actuation shaft 30b, 31b, 32b, 33b, 34b, 35b which protrudes from the body of the plumbing component and is generally surrounded by a protection portion 30c, 31c, 32c, 33c, 34c, 35c which is substantially shaped like a hollow cylinder and is connected to the body of the component to be installed. The protection portion 30c, 31c, 32c, 33c, 34c, 35c is constituted generally by a sleeve, which has a different length according to the requirements and is screwed to the remaining part of the body of the component so as to surround coaxially the actuation shaft 30b, 31b, 32b, 33b, 34b, 35b.

[0016] The protrusions 4a, 4b, 4c, 4d, 4e are preferably arranged and shaped so as to engage regions of the body of the component which are arranged between two mutually opposite shoulders or protrusions of the body of the component so as to lock the component on a plane which is parallel to the plane of arrangement of the base wall 3a, 3b, 3c, 3d, 3e, allowing the component to be moved along a direction which is substantially perpendicular to such plane.

[0017] The locking element 5a, 5b, 5c, 5d, 5e is shaped substantially like a plate, optionally provided with a perimetric border, which is designed to be directed toward the base wall 3a, 3b, 3c, 3d, 3e, and can be associated with the base half-shell 2a, 2b, 2c, 2d, 2e in a position which faces the base wall 3a, 3b, 3c, 3d, 3e.

[0018] The function of the locking element 5a, 5b, 5c, 5d, 5e, once connected to the base half-shell 2a, 2b, 2c, 2d, 2e, is to prevent the mobility of the component, which is already engaged with the protrusions 4a, 4b, 4c, 4d, 4e, along a direction which is perpendicular to the plane of arrangement of the base wall 3a, 3b, 3c, 3d, 3e, thus completing the locking of the component with respect to the base half-shell 2a, 2b, 2c, 2d, 2e.

[0019] The covering half-shell 6a, 6b, 6c, 6d has a covering wall 8a, 8b, 8c, 8d which is designed to face the base wall 3a, 3b, 3c, 3d, 3e of the base half-shell 2a, 2b, 2c, 2d, 2e when the two half-shells are assembled. The two half-shells further have side walls which protrude from perimetric sides respectively of the base wall 3a, 3b, 3c, 3d, 3e and of the covering wall 8a, 8b, 8c, 8d, which preferably have a substantially rectangular plan shape, so as to delimit laterally the compartment 7a, 7b, 7c, 7d, 7e, which is designed to contain the component or components to be installed. Openings 9a, 9b, 9c, 9d, 9e are provided in these side walls in order to allow the passage of connection regions of the body of the component to be installed and/or of pipes to be connected to these connection regions.

[0020] The covering wall 8a, 8b, 8c, 8d of the covering half-shell 6a, 6b, 6c, 6d has an opening 10a, 10b, 10c,

10d to allow access to the component, which is accommodated in the compartment 7a, 7b, 7c, 7d, 7e delimited by the half-shells.

[0021] The opening 10a, 10b, 10c, 10d is preferably surrounded by a border 25a, 25b, 25c, 25d which protrudes from the face of the covering half-shell 6a, 6b, 6c, 6d that lies opposite its face to be directed toward the base half-shell 2a, 2b, 2c, 2d.

[0022] It is possible to arrange on this opening 10a, 10b, 10c, 10d a removable closure plate 11a, 11b, 11c, 11d which, depending on the requirements, can be blind or perforated, as will become better apparent hereinafter.

[0023] Conveniently, the locking element 5a, 5b, 5c, 5d, 5e has at least one passage 12a, 12b, 12c, 12d, 12e for the protection region 30c, 31c, 32c, 33c, 34c, 35c of the component to be installed which is designed to be arranged so that its axis is substantially perpendicular to the plane of arrangement of the base wall 3a, 3b, 3c, 3d, 3e and so that its free end is directed toward the covering half-shell 6a, 6b, 6c, 6d.

[0024] The locking element 5a, 5b, 5c, 5d, 5e can be associated, by means of a screw element 13, with a locking protrusion 14a, 14b, 14c, 14d, 14e, which extends from the base wall 3a, 3b, 3c, 3d, 3e of the base half-shell 2a, 2b, 2c, 2d, 2e toward the covering half-shell 6a, 6b, 6c, 6d.

[0025] Depending on the type and number of components to be accommodated within the box-like body, the locking element 5a, 5b, 5c, 5d, 5e can be crossed by a single passage 12a or can be crossed by two passages 12b, 12c, 12d, 12e. In particular, in the first embodiment the locking element 5a has a single passage 12a which is designed to be crossed by the protection portion 30c of the component, while in the embodiments shown in Figures 5 to 13 the locking element 5b, 5c, 5d, 5e has two passages 12b, 12c, 12d, 12e which are arranged side by side for respective substantially cylindrical protection regions 31c, 32c, 33c, 34c, 35c of the component or components to be installed.

[0026] The screw element 13 passes through a through hole 15, which in the first embodiment is provided in the locking element 5a laterally with respect to the passage 12a, whereas in the other embodiments the through hole is provided within the locking element 5b, 5c, 5d, 5e in the region located between the two passages 12b, 12c, 12d, 12e. Correspondingly, the locking protrusion 14a with which the screw element 13 engages protrudes, in the first embodiment, from the base wall 3a laterally to the seat for the component 30 defined by the protrusions 4a, whereas in the embodiments shown in Figures 5 to 13 it protrudes from the base wall 3b, 3c, 3d, 3e in a region comprised between the seats defined by the protrusions 4b, 4c, 4d, 4e.

[0027] The opening 10a, 10b, 10c, 10d provided in the covering wall 8a, 8b, 8c, 8d is arranged so that when the covering half-shell 6a, 6b, 6c, 6d is associated with the base half-shell 2a, 2b, 2c, 2d, 2e it is at the locking element 5a, 5b, 5c, 5d, 5e, which is fixed to the base half-

shell 2a, 2b, 2c, 2d, 2e.

[0028] As mentioned above, the closure plate can be perforated or blind depending on whether one wishes to allow the actuation of the valves arranged inside the box-like body without removing such closure plate or prevent this operation for safety reasons.

[0029] In the first embodiment, shown in Figures 1 to 4, the closure plate 11a is crossed by a hole 16a which is designed to be crossed by the protection portion 30c, adequately long, which protrudes from the locking element 5a and surrounds the actuation shaft 30b of the component accommodated in the box-like body.

[0030] In the second embodiment, shown in Figures 5 and 6, the closure plate 11b is crossed by two holes 16b which have parallel axes and are each designed to be crossed by the protection portion 30c, adequately long, which protrudes from the locking element 5b and surrounds the actuation shaft 30b of the corresponding component accommodated in the box-like body.

[0031] In the third embodiment, shown in Figures 7 and 8, the closure plate 11c is blind and the protection portions 31c are short, so as to not protrude, or protrude to a minimal extent, from the locking element 5c. In this case, the end of the actuation shafts 31b that lies opposite the flow control element 32a has a recessed seat which can be engaged exclusively by an appropriately provided actuation key 40 in order to actuate the valve.

[0032] In the fourth embodiment, shown in Figures 9 to 11, the closure plate 11d is provided substantially like the closure plate 11b of the second embodiment, i.e., it is crossed by two holes 16d with parallel axes which are designed to be crossed by the protection portions 32c, 33c, adequately long, which protrude from the locking element 5d and surround the actuation shafts 32b, 33b of the corresponding component accommodated in the box-like body.

[0033] In the fifth embodiment, shown in Figures 12 and 13, the covering half-shell and the closure plate have been omitted for the sake of simplicity. In this case, the covering half-shell can be provided substantially like the covering half-shell 6d shown in the fourth embodiment, apart from an adaptation of the openings provided in the side walls as a consequence of a different arrangement of the accommodated components and consequently of the pipes 50 connected thereto, as will become better apparent hereinafter. The closure plate, for this fifth embodiment, can be shaped substantially like the closure plate 11d of the fourth embodiment, but blind, i.e., without the holes 16d.

[0034] Preferably, in the surface of the holes 16a, 16b, 16d, when provided, there is a seat 17 which accommodates a gasket 18, for example of the O-ring type, which is designed to engage slidingly with slight friction the protection portion 30c, 32c, 33c that passes through such holes.

[0035] Conveniently, the closure plate 11a, 11b, 11c, 11d can slide with respect to the covering half-shell 6a, 6b, 6c, 6d along a direction which is substantially per-

pendicular to the covering wall 8a, 8b, 8c, 8d.

[0036] The sliding of the closure plate 11a, 11b, 11c, 11d with respect to the covering half-shell 6a, 6b, 6c, 6d can be guided as a consequence of the sliding coupling between the hole or holes 16a, 16b, 16d, which is or are defined in the same closure plate 11a, 11b, 11d, and the protection portion or portions of the component or components that pass or passes through it or them. As an alternative, when the closure plate 11c is blind or in combination, i.e., also when the closure plate 11a, 11b, 11d is crossed by holes 16a, 16b, 16d, the closure plate can have, on its side intended to be directed toward the compartment formed by the two half-shells, at least one bar 19, which can be coupled slidingly with a hole 20 provided within the locking element 5a, 5b, 5c, 5d, 5e.

[0037] Preferably, in this case there are two parallel bars 19 which are mutually spaced and accordingly in the locking element 5a, 5b, 5c, 5d, 5e there are two holes 20.

[0038] The locking element 5a, 5b, 5c, 5d, 5e can engage, with its side which faces the base wall 3a, 3b, 3c, 3d, an axial shoulder 30e, 31e, 32e, 33e, 34e, 35e, which is formed on the protection portion 30c, 31c, 32c, 33c, 34c, 35c of the component or components to be installed. The axial shoulder 30e, 31e, 32e, 33e, 34e, 35e can be formed by the region shaped like a hexagonal nut which is usually provided on the protection portion 30c, 31c, 32c, 33c, 34c, 35c of the component to be installed.

[0039] Optionally, the edge of the side walls of the base half-shell 2a, 2b, 2c, 2d that is directed toward the covering half-shell 6a, 6b, 6c, 6d can be provided with a border 21a, 21b, 21c, 21d, which forms a recessed seat 22a, 22b, 22c, 22d, in which an edge provided correspondingly on the side of the side walls of the covering half-shell 6a, 6b, 6c, 6d that is directed toward the base half-shell 2a, 2b, 2c, 2d is designed to be inserted.

[0040] The covering half-shell 6a, 6b, 6c, 6d can be associated with the base half-shell 2a, 2b, 2c, 2d, 2e by means of screws 23.

[0041] In the first embodiment, shown in Figures 1 to 4, the box-like body 1a according to the invention is designed to accommodate an opening-closure or shunt valve 30, which has an intake port 30f and two discharge ports 30g with a flow control element 32a which can be actuated to interrupt the connection between the intake port 30f and the discharge ports 30g or to connect selectively the intake port 30f to one of the discharge ports 30g. The flow control element 32a is connected to an actuation shaft 30b, which protrudes from the body of the valve 30 and is surrounded coaxially by a substantially cylindrical protection portion 30c. A knob, not shown, for actuating the flow-control element 32a is designed to be fitted on the end of the actuation shaft 30b that lies opposite the end connected to the flow control element 32a. In this embodiment, the locking element 5a is crossed by a single passage 12a which can be crossed by the protection portion 30c of the valve 30.

[0042] In this first embodiment, the closure plate 11a

is crossed by a hole 16a which can be aligned with the passage 12a of the locking element 5a to be crossed in turn by the protection portion 30c so that the actuation shaft 30b protrudes with its end, on which the knob is designed to be fitted, from the box-like body 1a.

[0043] In the second embodiment, shown in Figures 5 and 6, the box-like body 1b according to the invention is designed to accommodate two opening-closure and shunt valves 30, which are similar to the valve described with reference to the first embodiment. In this case, the locking element 5b is crossed by two passages 12b, which have mutually parallel axes and are designed to be crossed by the protection portions 30c of the valves 30.

[0044] In this second embodiment, the closure plate 11b is crossed by two holes 16b which can be aligned with the passages 12b of the locking element 5b in order to be crossed in turn by the protection portions 30c so that the actuation shafts 30b protrude with their end, on which the knob is designed to be fitted, from the box-like body 1b.

[0045] In the third embodiment, shown in Figures 7 and 8, the box-like body 1c according to the invention is designed to accommodate two opening-closure or shunt valves 30, 31 which are similar to the valves 30 shown in the preceding figures but are designed to be actuatable only by means of an appropriately provided key 40 on the part of personnel authorized for this operation. In this case, the protection portion 32c and the actuation shaft 32b are provided appropriately shorter so as to not protrude or protrude only to a minimal extent from the locking element 5c. In the end of the actuation shaft 32b that lies opposite the end connected to the flow control element 32a there is a seat which can be engaged only by an appropriately provided key 40.

[0046] In this third embodiment, the closure plate 11c is blind, so as to conceal the actuation shafts 32b.

[0047] In the fourth embodiment, shown in Figures 9 to 11, the box-like body 1d according to the invention is designed to accommodate two manifolds 32, 33, each of which is provided with an opening-closure valve. In Figures 9 and 11, the discharge ports of the manifolds are protected by plugs 24 which can be removed upon connection to the pipes 50.

[0048] In this fourth embodiment, the valves are provided with actuation shafts 32b, 33b, which are designed to protrude from the box-like body 1d with one of their ends, on which an actuation knob can be fitted. Corresponding protection portions 32c, 33c are arranged around the actuation shafts 32b, 33b.

[0049] The locking element 5d has two passages 12d which can be crossed by the protection portions 32c, 33c, and the closure plate 11d is provided with two holes 16d which also can be crossed by the protection portions 32c, 33c.

[0050] In the fifth embodiment, shown in Figures 12 and 13, the box-like body 1e according to the invention is designed to accommodate two manifolds 34, 35, each

of which is provided with an opening-closure valve. These figures also show the pipes 50 connected to the discharge ports of the manifolds 34, 35.

[0051] Differently from the fourth embodiment, in which the two manifolds 32, 33 are substantially coplanar, the manifolds 34, 35 are supported by the base half-shell 2e on two planes which are spaced in a different manner from the base wall 3e and the discharge ports of the manifolds are directed in a same direction, so that the pipes 50 exit from a same side wall of the box-like body and lie so that their axes are on two mutually parallel and spaced planes so as to meet particular installation requirements of the plumbing system.

[0052] The valves connected to the manifolds 34, 35 are designed to be actuatable only by means of an appropriately provided key 40 by personnel authorized to perform this operation. For this reason, the protection portion 34c, 35c and the actuation shaft 34b, 35b are appropriately provided shorter, so as to not protrude, or protrude only to a minimal extent, from the locking element 5e. In the end of the actuation shaft 34b, 35b that lies opposite the end connected to the flow control element 34a, 35a there is a seat which can be engaged only by an appropriately provided key 40.

[0053] In this fifth embodiment, the closure plate is provided in a similar manner to the closure plate 11d but is blind, i.e., it does not have the holes 16d so as to conceal the actuation shafts 34b, 35b. Moreover, the actuation shaft 34b and the protection portion 34c of the component 34 that lies closest to the base wall 3e can be provided longer or extended by means of additional extension elements. In this case, the shoulder 34e, against which the locking element 5e engages, can be provided again on the protection portion 34c or on the corresponding extension element or can be formed by a spacer 36 which is fitted around the protection portion 34c or the corresponding extension element, as shown in Figure 13.

[0054] Conveniently, in the third embodiment and in the fifth embodiment, in which the actuation of the actuation shafts 31b, 34b, 35b requires the use of an appropriately provided key 40, regions 41 for retaining the actuation key 40 are provided on the side of the closure plate that is directed toward the compartment 7c, 7e.

[0055] Preferably, in the different embodiments, the half-shells 2a, 2b, 2c, 2d, 2e, 6a, 6b, 6c, 6d, the locking element 5a, 5b, 5c, 5d, 5e and the closure plate 11a, 11b, 11c, 11d are made of molded synthetic material.

[0056] Use of the box-like body according to the invention is as follows.

[0057] The base half-shell 2a, 2b, 2c, 2d, 2e is arranged in the region of the masonry in which it is to be installed. The component or components to be accommodated within the box-like body is or are connected beforehand to the pipes and positioned in the base half-shell 2a, 2b, 2c, 2d, 2e in the seats formed by the protrusions 4a, 4b, 4c, 4d, 4e.

[0058] The locking element 5a, 5b, 5c, 5d, 5e is then fitted with its passage or passages 12a, 12b, 12c, 12d,

12e on the protection region or regions 30c, 31c, 32c, 33c, 34c, 35c of the component or components and is connected to the locking protrusion 14a, 14b, 14c, 14d, 14e of the base half-shell 2a, 2b, 2c, 2d, 2e by means of the screw element 13.

[0059] In this manner, the component or components is or are stably locked to the base half-shell 2a, 2b, 2c, 2d, 2e and the protection portions 30c, 31c, 32c, 33c, 34c, 35c are correctly positioned.

[0060] The covering half-shell 6a, 6b, 6c, 6d is then associated with the base half-shell 2a, 2b, 2c, 2d, 2e by means of the screws 23 so that the opening 10a, 10b, 10c, 10d lies at the locking element 5a, 5b, 5c, 5d, 5e.

[0061] At this point, embedding of the box-like body in the masonry is completed, and the masonry can extend so as to cover the two half-shells 2a, 2b, 2c, 2d, 2e, 6a, 6b, 6c, 6d so as to be flush with the border 25a, 25b, 25c, 25d, as shown in Figure 6.

[0062] The closure plate 11a, 11b, 11c, 11d is then fitted on the opening 10a, 10b, 10c, 10d, by fitting the holes 16a, 16b, 16d, if provided, on the protection portions 30c, 32c, 33c and/or by inserting the bars 19 in the holes 20 and making the closure plate 11a, 11b, 11c, 11d slide toward the covering half-shell 6a, 6b, 6c, 6d until it lies against the masonry around the opening 10a, 10b, 10c, 10d.

[0063] It should be noted that the engagement of the holes 16a, 16b, 16d with the protection portions 30c, 32c, 33c and/or of the bars 19 with the holes 20 is particularly easy, since the correct position of the holes 20 and of the protection portions 30c, 32c, 33c is ensured by the engagement of the locking element 5a, 5b, 5c, 5d, 5e with the component or components and with the locking protrusion 14a, 14b, 14c, 14d, 14e.

[0064] The knob for the actuation of the actuation shafts 30b, 32b, 33b, if provided, is then fitted on the shafts.

[0065] In practice it has been found that the box-like body according to the invention fully achieves the intended aim, since it allows to obtain a precise positioning of the plumbing components without necessarily requiring the use of components of a standardized type.

[0066] In the exemplary embodiments described above, individual characteristics, given in relation to specific examples, may actually be interchanged with other different characteristics that exist in other exemplary embodiments. Moreover, it is noted that anything found to be already known during the patenting process is understood not to be claimed and to be the subject of a disclaimer.

[0067] The box-like body thus conceived is susceptible of numerous modifications and variations, all of which are within the scope of the appended claims; all the details may further be replaced with other technically equivalent elements.

[0068] In practice, the materials used, although synthetic materials are preferred for the manufacture of the box-like body, as well as the dimensions, may be any

according to requirements and to the state of the art.

[0069] Where technical features mentioned in any claim are followed by reference signs, those reference signs have been included for the sole purpose of increasing the intelligibility of the claims and accordingly such reference signs do not have any limiting effect on the interpretation of each element identified by way of example by such reference signs.

Claims

1. A box-like body for installing components of plumbing systems within masonry, **characterized in that** it comprises:

- a base half-shell provided with a base wall, from which protrusions extend which define at least one seat for at least one portion of at least one component to be installed;
- a locking element which can be associated with said base half-shell and can engage the at least one component to be installed in order to lock it in said seat with respect to said base half-shell;
- a covering half-shell, which can be associated with said base half-shell so as to face said base wall in order to delimit, in cooperation with said base half-shell, a compartment which is intended to contain the at least one component to be installed.

2. The box-like body according to claim 1, **characterized in that** said locking element is substantially plate-like and can be associated with said base half-shell in a position which faces said base wall.

3. The box-like body according to claims 1 and 2, **characterized in that** said covering half-shell has a covering wall which is designed to face the base wall of said base half-shell, said half-shells having side walls which protrude from the perimetric sides respectively of said base wall and of said covering wall in order to delimit laterally said compartment, openings being provided in said side walls for the passage of regions for connecting the component to be connected to pipes or pipes to be connected to the component.

4. The box-like body according to one or more of the preceding claims, **characterized in that** said covering wall has an opening for access to the component accommodated in said compartment.

5. The box-like body according to one or more of the preceding claims, **characterized in that** said opening of the covering wall is surrounded by a border which protrudes from the face of said covering half-shell that lies opposite its face to be directed toward

said base half-shell.

6. The box-like body according to one or more of the preceding claims, **characterized in that** it comprises a removable closure plate which can be positioned at said opening provided in the covering wall.

7. The box-like body according to one or more of the preceding claims, **characterized in that** said locking element has at least one passage for a substantially cylindrical protection portion of the component to be installed, which is designed to be positioned so that its axis is substantially perpendicular to the plane of arrangement of said base wall.

8. The box-like body according to one or more of the preceding claims, **characterized in that** said opening, provided in said covering wall, is arranged at said locking element.

9. The box-like body according to one or more of the preceding claims, **characterized in that** said locking element can be associated, by means of a screw element, with a locking protrusion which protrudes from said base wall.

10. The box-like body according to one or more of the preceding claims, **characterized in that** said locking element has two passages arranged side by side for respective substantially cylindrical protection portions of the component or components to be installed, which are designed to be positioned so that their axes are substantially perpendicular to the plane of arrangement of said base wall, said screw element being arranged in the region of said locking element that is arranged between said two passages.

11. The box-like body according to one or more of the preceding claims, **characterized in that** said closure plate is crossed by at least one passage which can be aligned with the at least one passage provided in said locking element and can be crossed by a corresponding substantially cylindrical protection portion of the component to be installed.

12. The box-like body according to one or more of the preceding claims, **characterized in that** said closure plate is blind.

13. The box-like body according to one or more of the preceding claims, **characterized in that** said closure plate can slide with respect to said covering half-shell along a direction which is substantially perpendicular to said covering wall.

14. The box-like body according to one or more of the preceding claims, **characterized in that** said clo-

sure plate has, on its side designed to be directed toward said compartment, at least one bar which can be coupled slidingly with a sliding seat defined in said locking element.

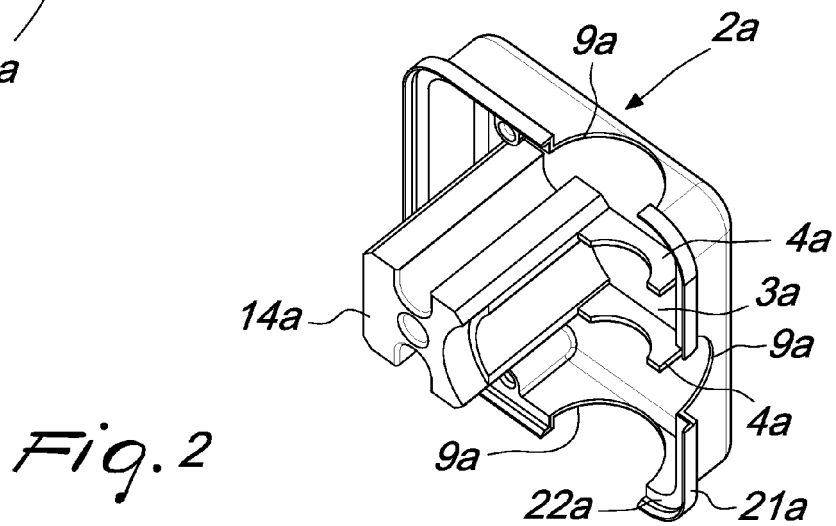
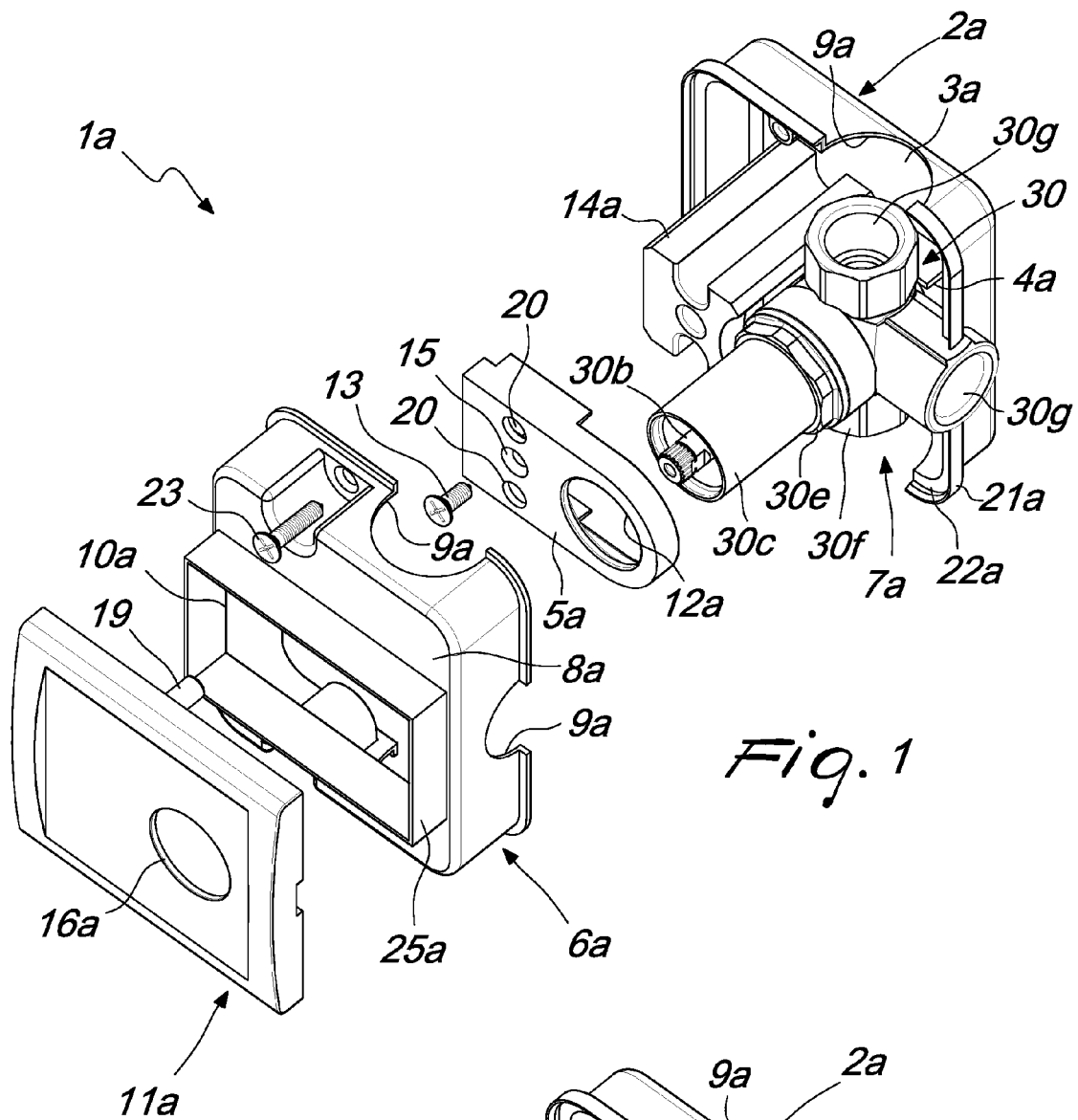
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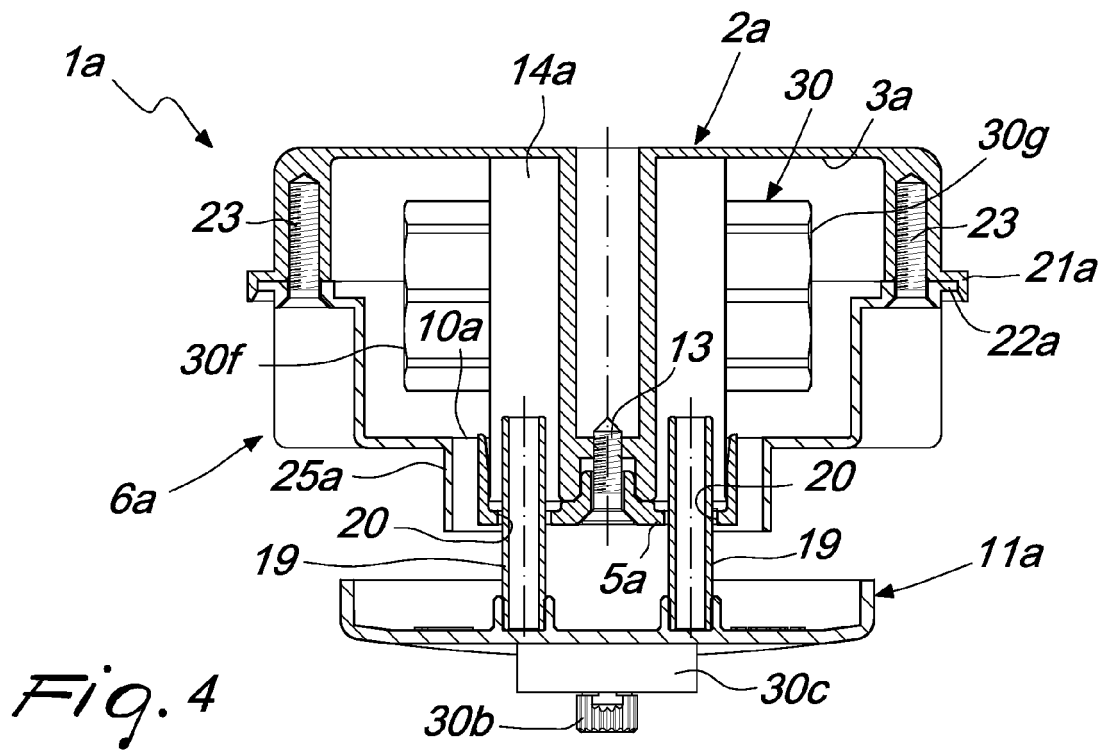
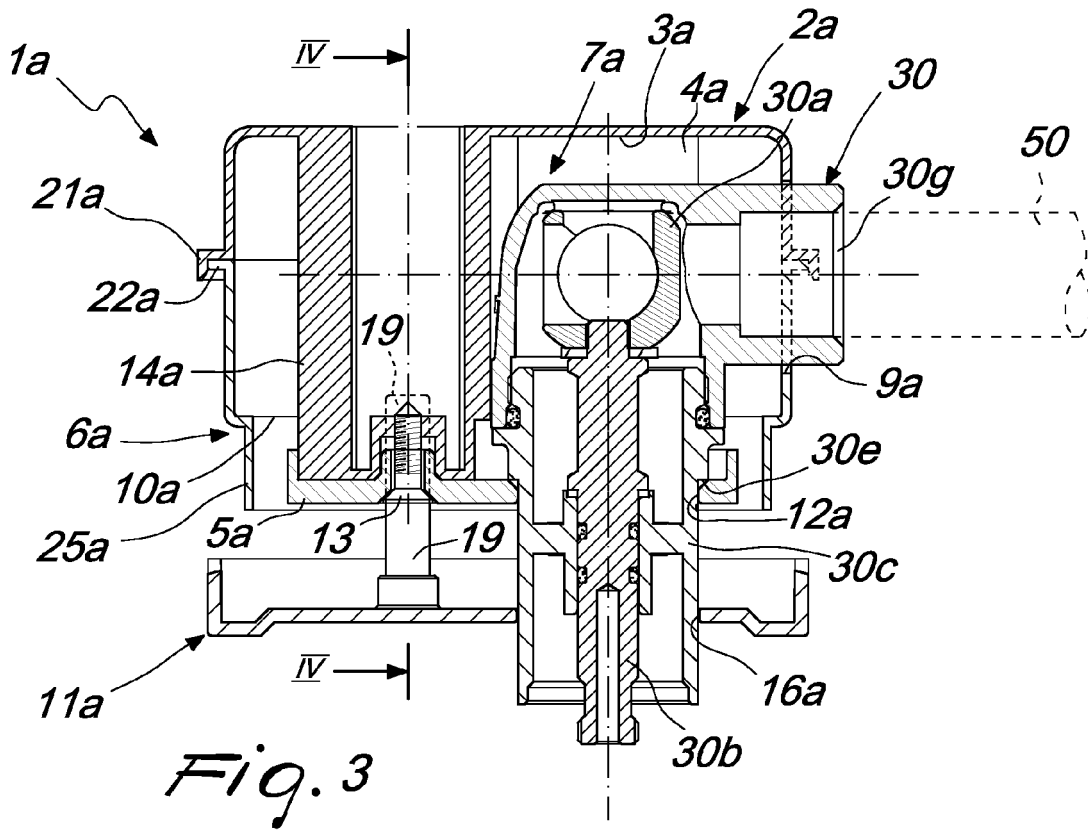
15. The box-like body according to one or more of the preceding claims, **characterized in that** said closure plate has, on its side designed to be directed toward said compartment, retention regions for a key for actuating the component or components to be installed. 10
16. The box-like body according to one or more of the preceding claims, **characterized in that** said locking element can engage, with its side which faces said base wall, a shoulder which is defined on the corresponding substantially cylindrical protection portion of the component or components to be installed. 15
17. The box-like body according to one or more of the preceding claims, **characterized in that** said protrusions which define the seats for the components to be installed are adapted to keep the components at a same distance from said base wall of the base half-shell. 20 25
18. The box-like body according to one or more of the preceding claims, **characterized in that** said protrusions which define the seats for the components to be installed are adapted to keep the components at mutually different distances from said base wall of the base half-shell for the connection of the components to pipes which are arranged on a same side of the box-like body and so that their axes lie on planes which are mutually parallel and spaced. 30 35
19. The box-like body according to one or more of the preceding claims, **characterized in that** said half-shells, said locking element and said closure plate are made of molded synthetic material. 40

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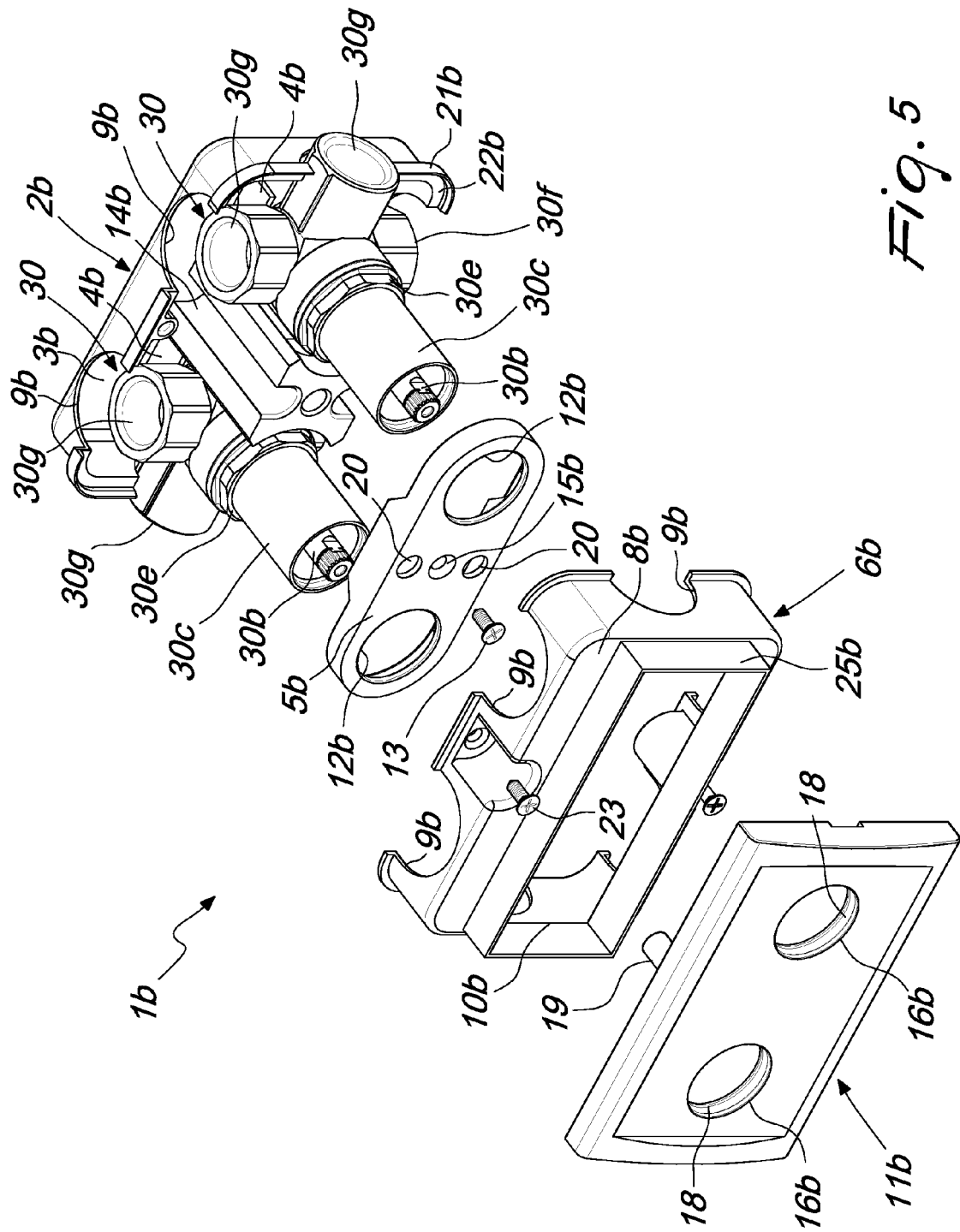


Fig. 5

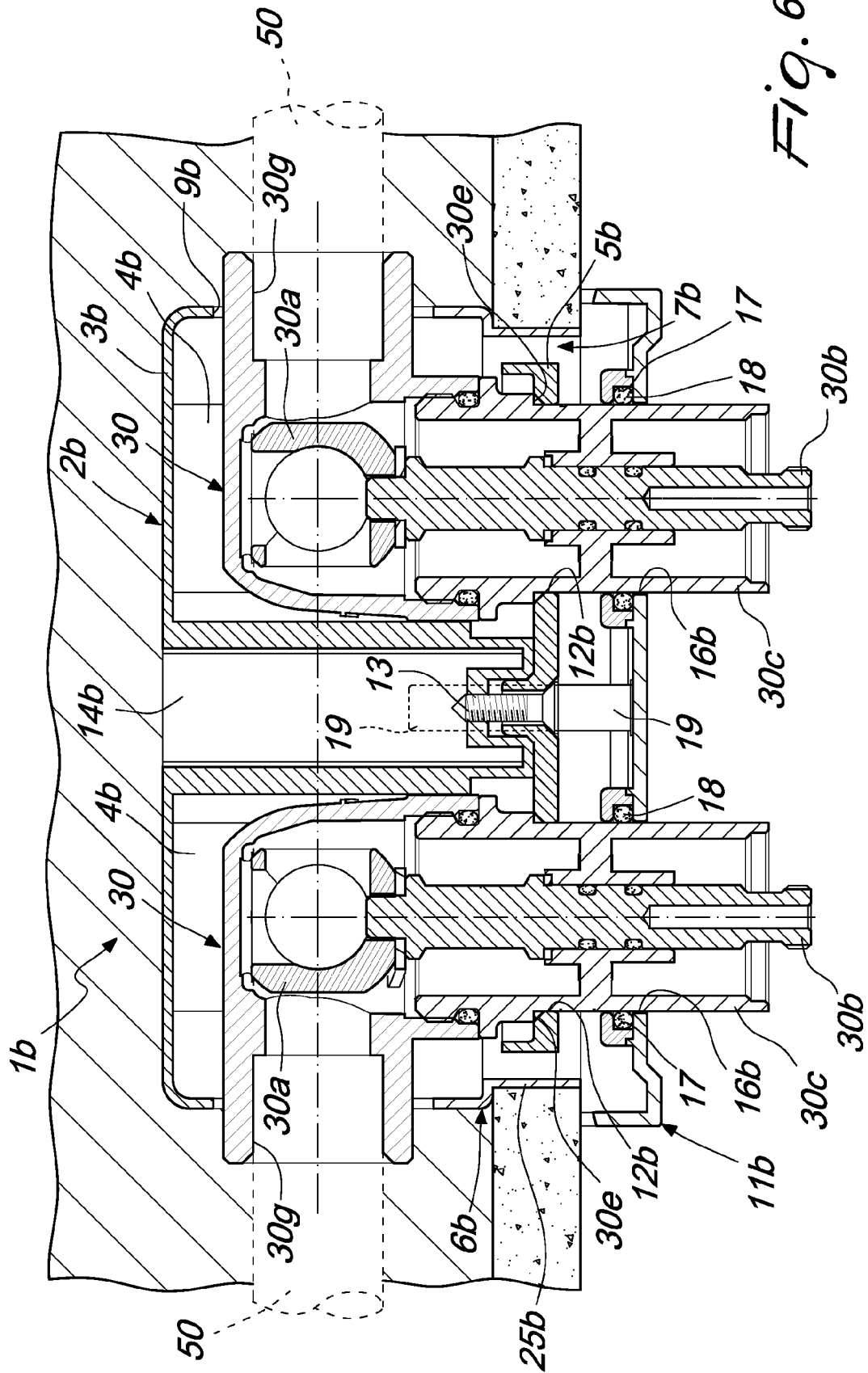


Fig. 6

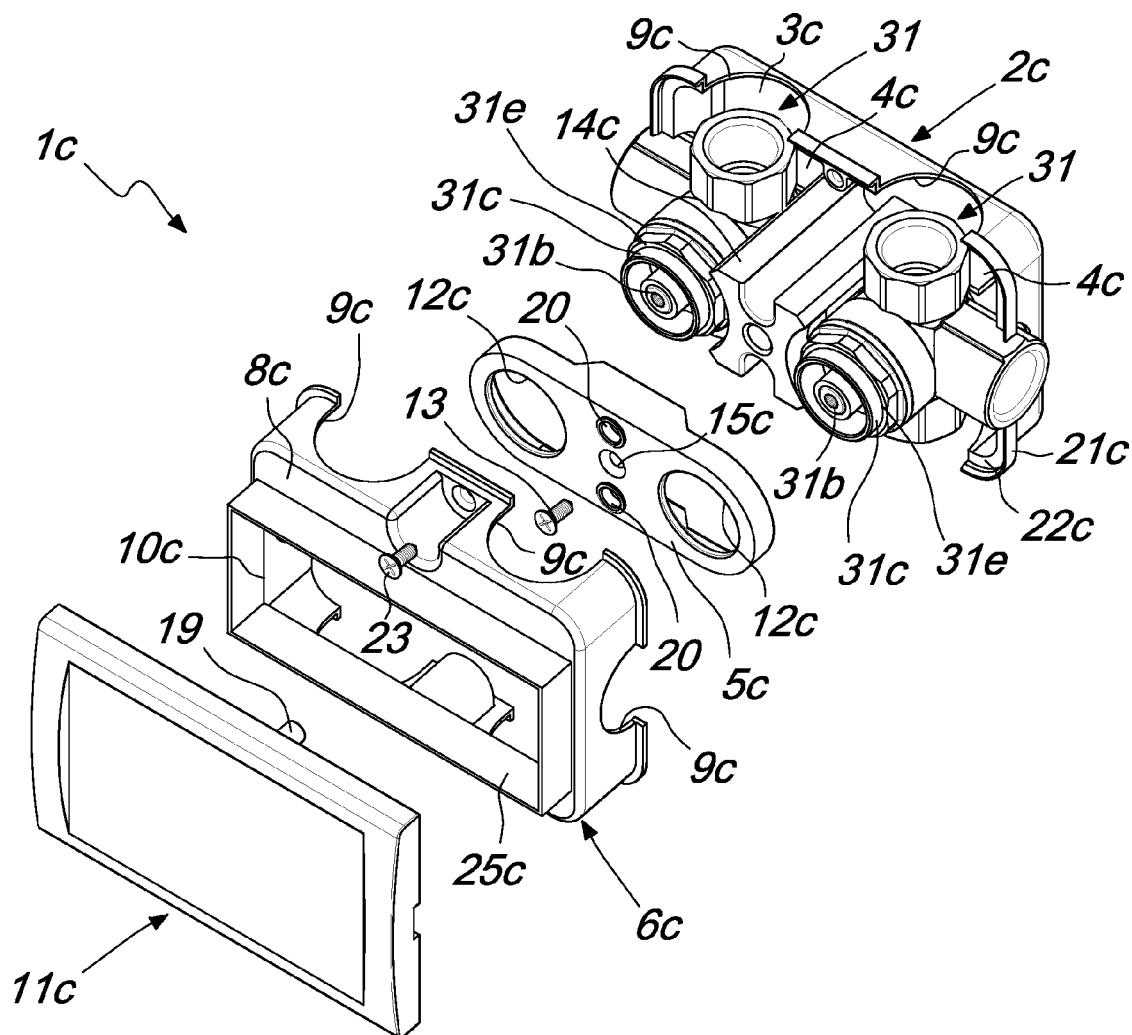


Fig. 7

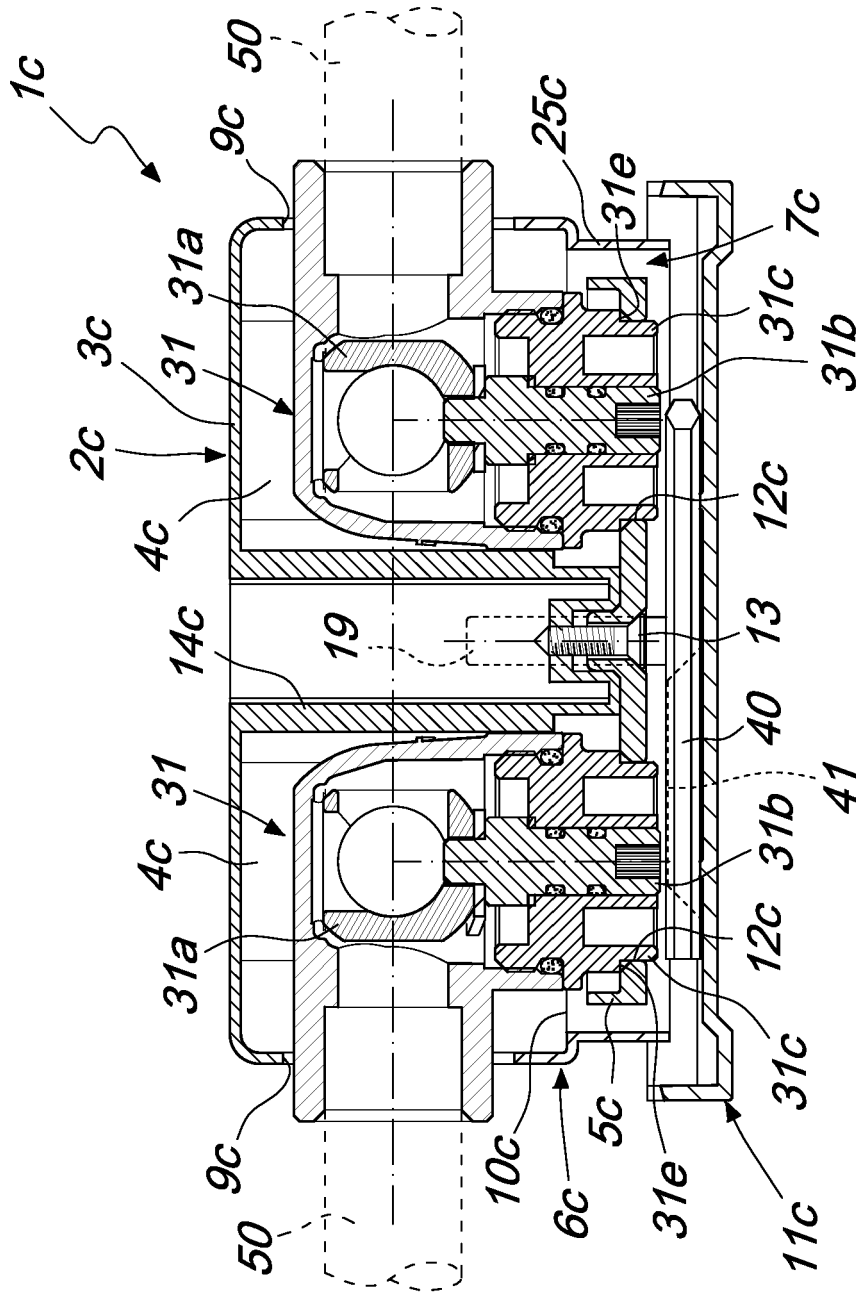


Fig. 8

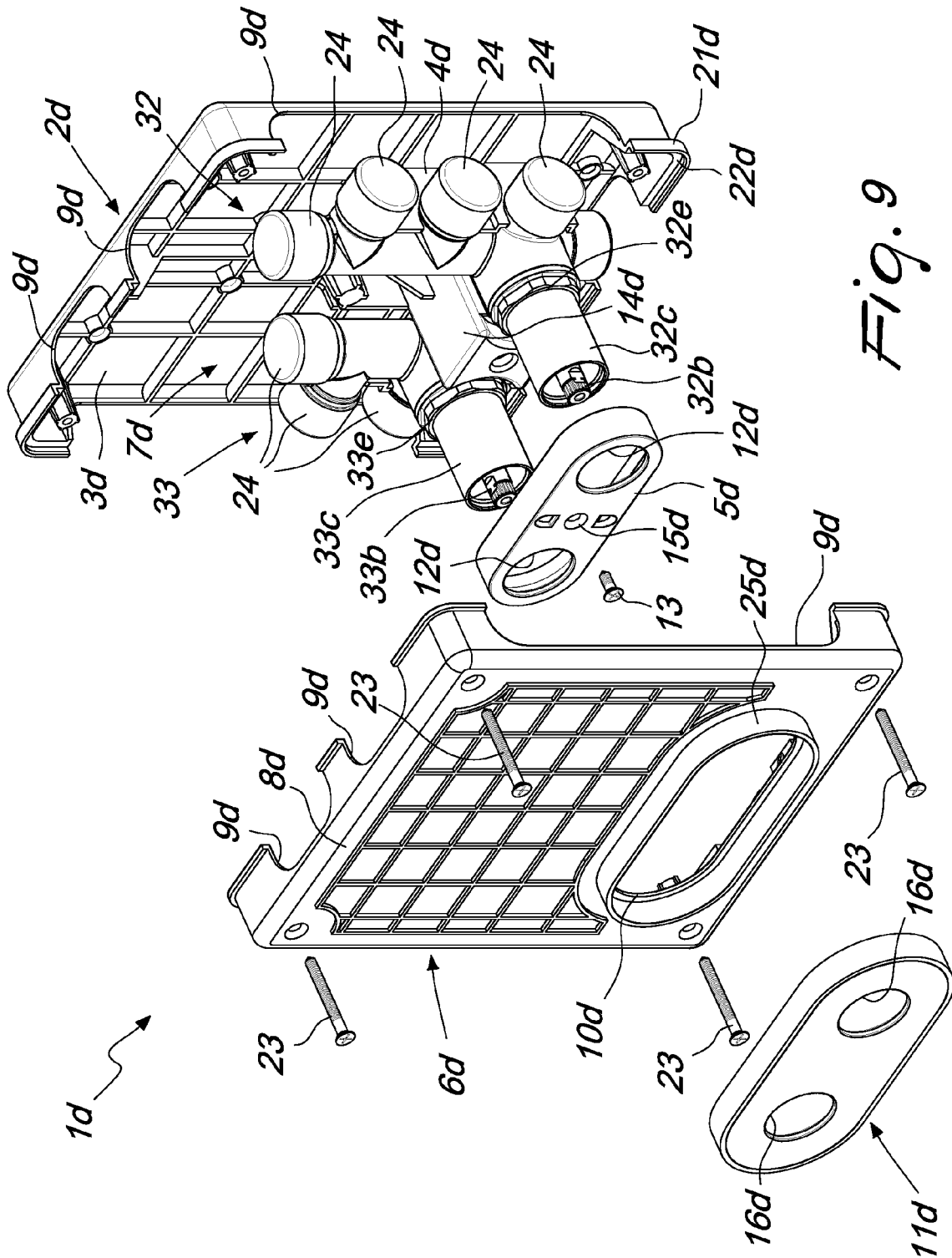


Fig. 9

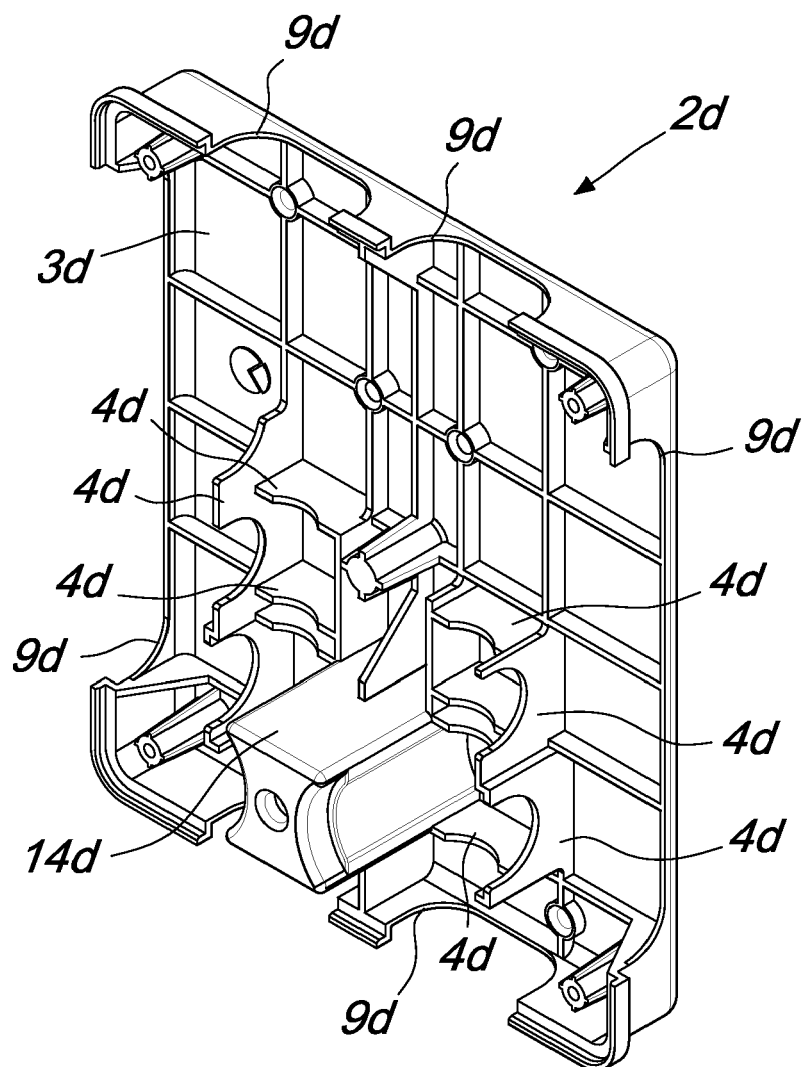
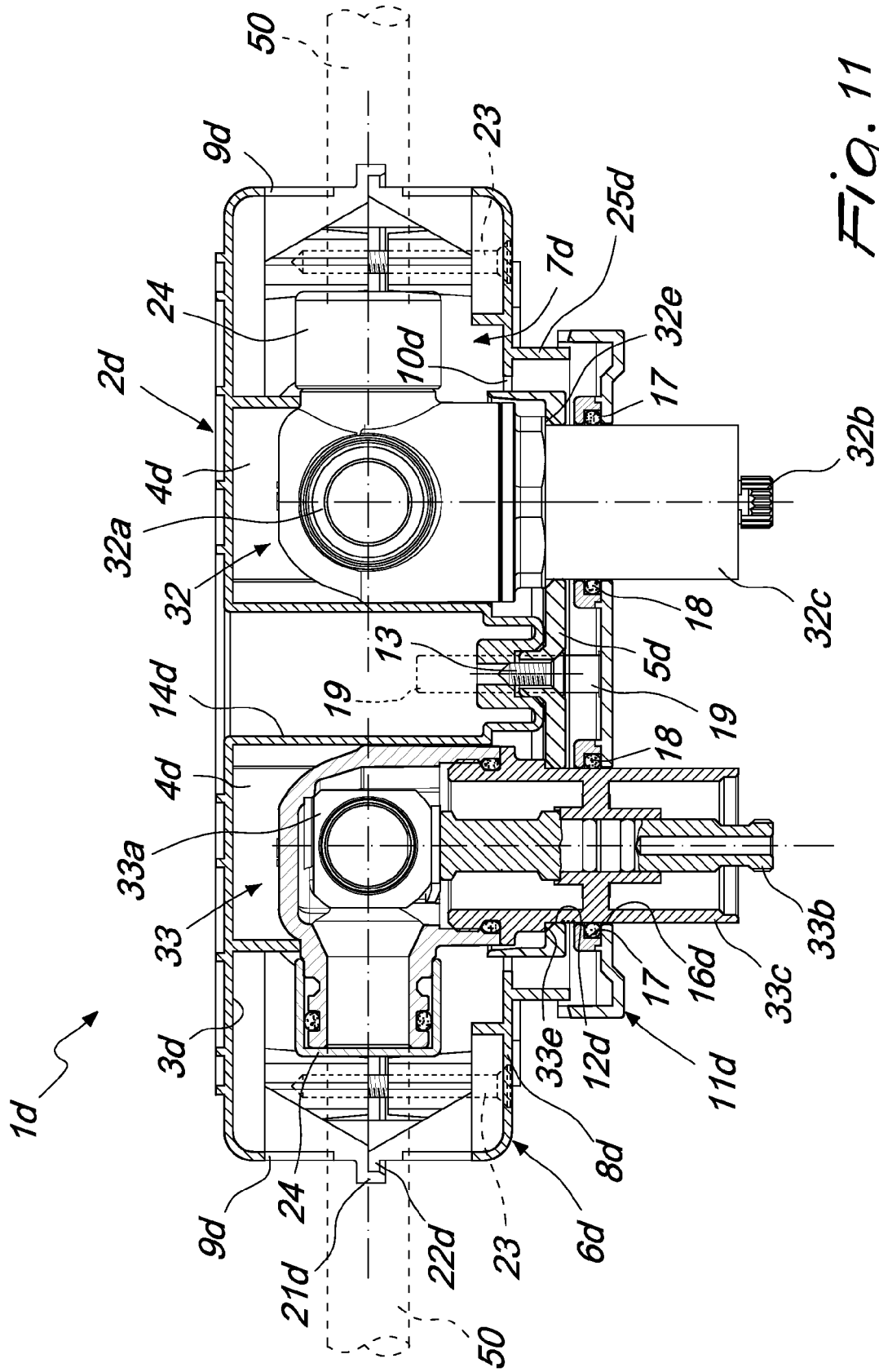


Fig. 10



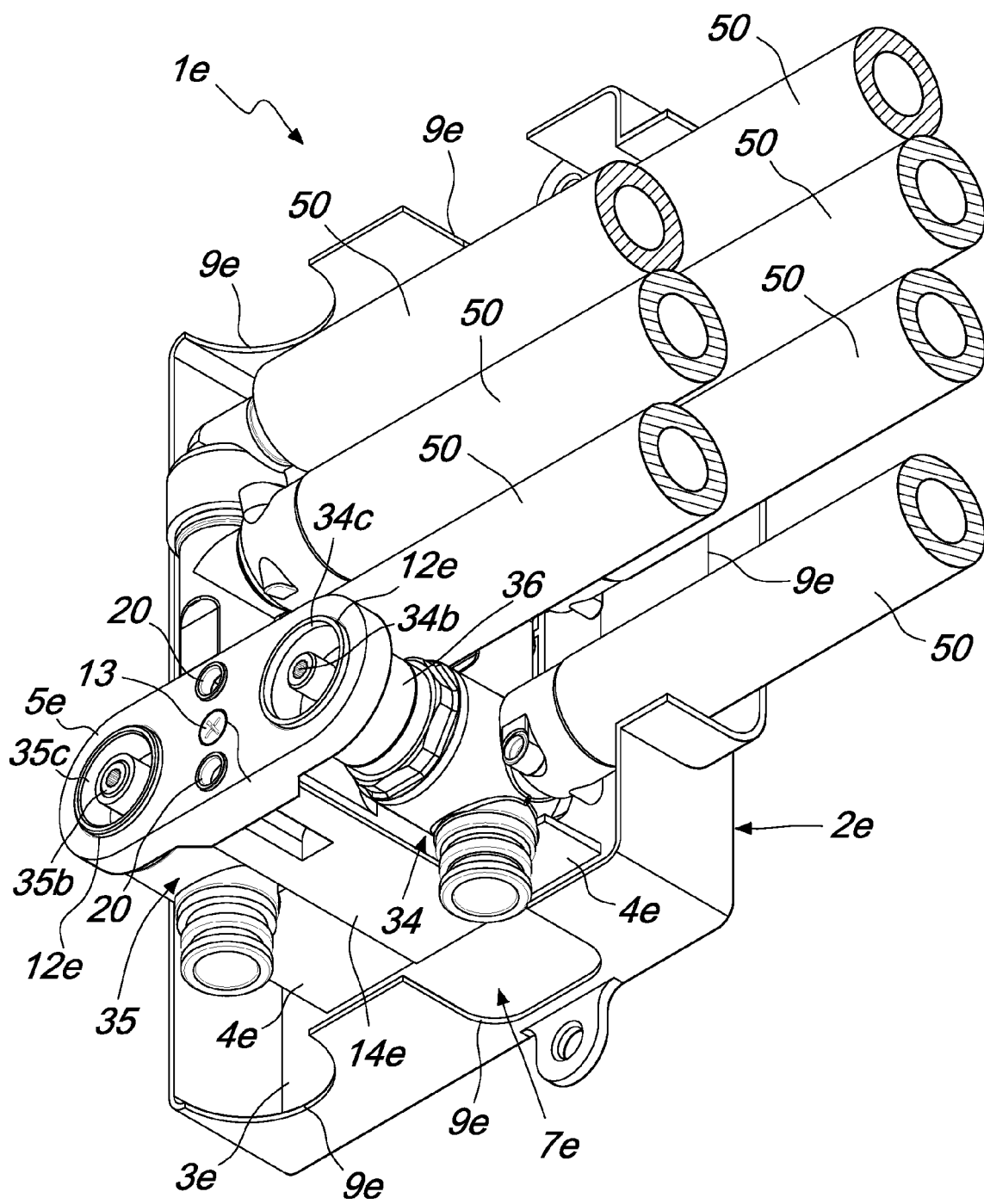


Fig. 12

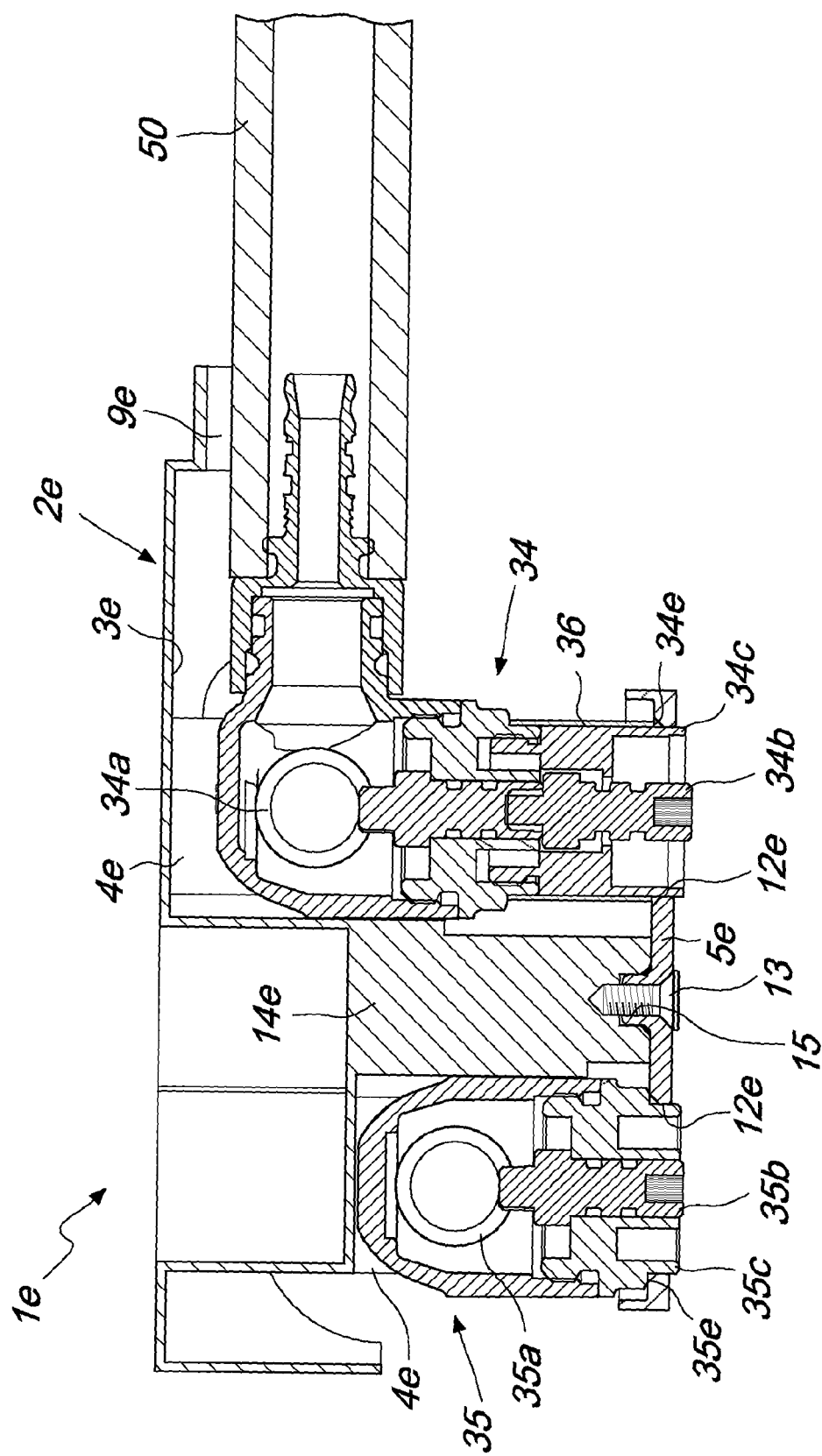


Fig. 13



EUROPEAN SEARCH REPORT

Application Number
EP 08 15 3464

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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	DE 33 27 829 A1 (HANSA METALLWERKE AG [DE]) 14 February 1985 (1985-02-14) * figures 1,2 * * page 10, line 27 - line 33 * * page 11, line 13 - line 21 * -----	1-4,7,9,10	INV. E03C1/02 H02G3/08
X	DE 40 38 418 A1 (GROHE KG HANS [DE]) 11 June 1992 (1992-06-11) * figure 2 * * column 4, line 3 - line 17 * -----	1	
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			TECHNICAL FIELDS SEARCHED (IPC)
			E03C H02G
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 28 October 2008	Examiner Flygare, Esa
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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**ANNEX TO THE EUROPEAN SEARCH REPORT
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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

28-10-2008

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