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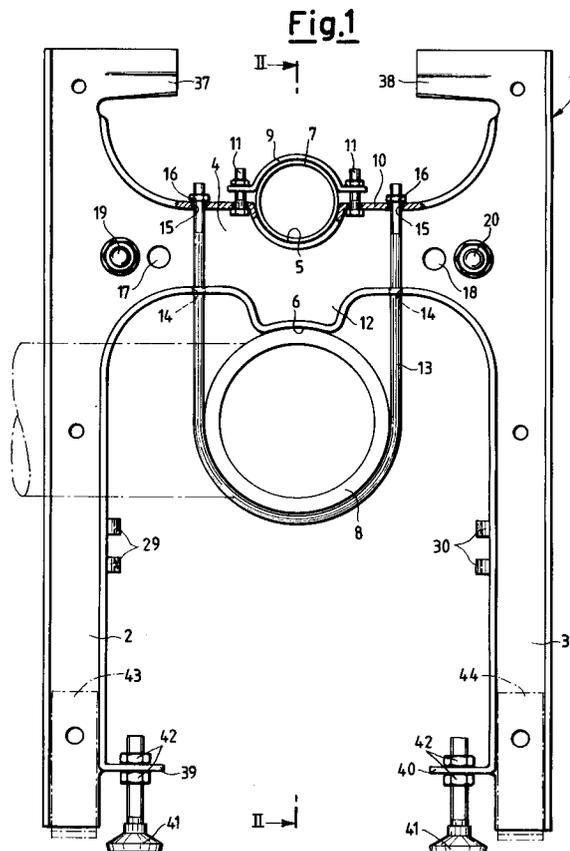
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**Support structure for wall sanitary fixtures.**

The support structure comprises a main support element (1) of metal constituted by two uprights (2, 3), linked by a cross piece (4). The cross piece (4) defines housing seats (5, 6) for sanitary fixture feed pipes (7) and discharge pipes (8), inside which seats (5, 6) the pipes (7, 8) are fastened by means of locking collars (9, 13), in such a position as to exactly correspond to the sanitary fixture connection fittings. A second cross piece can be removably fastened inside pockets (29, 30) provided in the uprights (2, 3) and defines, at its top side, two seats for housing the hot water and cold water feed pipes, and at its lower side, a housing for a discharge pipe for a bidet. By means of the present structure, the installation of the feed and discharge pipes in the wall designed to carry the sanitary fixtures is facilitated, thanks to the fixed points represented by the seats provided in the cross pieces, which allow the installer to exactly prearrange the outlet sites for the pipes from the wall, relatively to the connection fittings of the sanitary fixtures.



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The present invention relates to a support structure for wall sanitary ware, such as toilet bowls and bidets hanging on a wall.

At present, several systems are known in order to install, hanging on a wall, the above said sanitary fixtures, which generally imply the presence of a support structure which is installed inside the wall and to which the sanitary fixtures are fastened.

The structures known from the prior art are mostly composed by a large number of components, and this a first drawback, because it obliges the installer to assemble, from time to time, the several elements, with an evident time waste and a certain use inconvenience.

Secondly, with the structures known from the prior art, the installer is obliged to install the feed and discharge pipes inside the carrier wall without any precise references, and then he must assemble, around the already installed pipes, the necessary structural elements for supporting the sanitary fixture load. This causes considerable difficulties of realization of the whole system, and a further time loss, with the consequent increase in installation costs.

Another drawback which affects the structures known from the prior art is represented by the fact that they can only be used in association with determined types or mode is of sanitary ware, and therefore are unsuitable for a nearly universal use.

The structures known from the prior art are then mostly unsuitable in cause of installation of sanitary fixtures hanging on non-load-bearing walls, which are of limited thickness and in that case will not secure a reliable support for the sanitary fixtures.

The purpose of the present invention is, first of all, of supplying a support structure for wall sanitary fixtures, which makes it possible the installation to be easily and rapidly carried out by the installer, both in the case of a toilet bowl and a bidet.

Within the scope of this purpose, the invention also aims at providing a structure of the above specified type, which makes it possible the sanitary fixtures to be reliably fastened even with a limited number of components of the same structure.

Another purpose of the invention is of providing a support structure for supporting toilet bowls and bidets hanging on a wall, which is also suitable for use in non-load-bearing walls, in any case securing a stable and reliable fastening of the sanitary fixtures and an easy and quick installation.

These purposes are achieved by a support structure for supporting sanitary fixtures hanging on a wall, such as wall toilet bowls and bidets, comprising a main support element which can be installed inside a wall, and to which the sanitary fixtures are removably fastened, characterized in

that said main support element consists of two substantially parallel uprights and at least one crosspiece for said uprights linking, said crosspiece defining housing seats for water feed and discharge pipes or said sanitary fixtures.

With such a kind of structure, the installer has available fixed points, defined by said seats, which enable him to exactly prearrange the emergence points of the water feed and discharge pipes from the carrier wall, thusly avoiding any rough positioning thereof, which necessarily occurs with the structures known from the prior art, and which is the cause of very frequent mistakes in sanitary ware installation. It should be observed that with the structure according to the present invention, the installer is no longer obliged to initially install the pipes with their relevant outlets inside the wall and then assemble around said pipes the elements which constitute the support structure, but initially fastens the support structure, constituted by the main support element, and then, with the aid of the latter, he can easily install the pipes in their exact position, with which he may then rapidly connect the sanitary ware connection fittings, after fastening said sanitary ware to the support structure, because the pipes emerging from the wall are now exactly aligned with the sanitary ware connection fittings.

Advantageously, the main support element can be provided with a further crosspiece, suitable for being applied, preferably removably, to the support element, and defining housing seats for water feed and discharge pipes for a bidet. The other crosspiece, running over said second crosspiece, defines, on the contrary, the housing seats for the water feed and discharge pipes for a toilet bowl. In that way, a same support element can be alternatively used in order to install, hanging on a wall, a toilet bowl, or a bidet, by simply supplementing the support element with the above said further crosspiece, and therefore with no need for manufacturing and keeping in store distinct support elements, each one shaped and dimensioned for only one from both types of sanitary fixtures taken into consideration herein.

Advantageously, with the main support element further elements can be associated which are suitable, for example, for supporting a flush tank, or for anchoring to the floor the main element in the case when the installation is carried out in non-load-bearing walls.

Further characteristics and advantages of the present invention will be better understood from the following disclosure of preferred, non-exclusive embodiments of the invention, illustrated for merely indicative, non-limitative purposes in the accompanying purposes, in which:

Figure 1 is a partially sectional front view of a support structure according to the present invention, in its configuration for the toilet bowl installation;

Figure 2 is a sectional view taken along the line II-II of the structure of Figure 1;

Figure 3 is a partially sectional front view of a support structure according to the present invention in its configuration for a bidet installation;

Figure 4 is a sectional view of the structure of Figure 3, taken along the line IV-IV;

Figure 5 is a sectional view according to the line V-V of Figure 3; and

Figure 6 shows a different embodiment of the structure of Figures 1 and 2.

Referring to the above cited figures, a support structure according to the present invention, suitable for supporting sanitary fixtures hanging on a wall, such as hanging toilet bowls and bidets, comprises a main support element 1, which can be installed inside a wall and to which said sanitary fixtures can be removably fastened. The element 1 essentially consists of two uprights 2 and 3, substantially parallel to each other and at least one crosspiece 4 which connects the uprights 2, 3.

The crosspiece 4 is preferably made enbloc with the uprights 2, 3, and is substantially perpendicular to said uprights 2, 3. The element 1 is made of metal. Advantageously, the uprights 2, 3 and the crosspiece 4 have, a long most of their length, a cross section which is substantially "C"-shaped, as can be seen in particular in Figures 2, 4 and 5.

According to a feature of the invention, the crosspiece 4 defines housing seats 5 and 6 for water feed 7 and discharge 8 pipes for the sanitary fixtures. In particular, the crosspiece 4 is provided, at its upper side, with a substantially semicylindrical seat 5 inside which the water feed pipe 7 is housed, which is fastened to the crosspiece 4 by means of a locking collar 9, in its turn made integral with the upper wall 10 of the crosspiece 4, for example by means of screws 11.

At its lower side, the crosspiece 4 is preferably provided with an extension 12 ending with a circle-arc profile for housing the discharge pipe 8, which is kept fastened to said crosspiece 4 by a locking collar 13 running through holes 14 and 15 respectively provided through the lower and upper walls of the "C"-shaped profile of the crosspiece 4 and locked by means of nuts 16 screwed onto the screw-threaded ends of the collar 13.

The crosspiece 4 is furthermore provided with two through-bores 17, 18 for fastening screws 19, 20 by means of which the sanitary fixtures are fastened.

In the just disclosed configuration, the support structure can be used in order to install, hanging on a wall, a toilet bowl, with 7 being the toilet bowl feed pipe and 8 being the toilet bowl discharge pipe. The main support element 1, which is positioned and fixed inside the wall, supplies the installer with two fixed points, represented by the seats 5 and 6, which define two positioning and support templates for the pipes respectively above and under the midpoint of the horizontal crosspiece 4 of the element 1. In that way, thanks to the constraint imposed by the position of said templates, the toilet bowl feed and discharge pipes 7 and 8 respectively, are so exactly positioned by the installer inside the carrier wall and then are fastened, as already said, by means of the collars 9 and 13, which also allow a fastening to be accomplished which can be adjusted as a function of the size of the pipes. In that way, the installer will automatically find the match of the pipes 7 and 8 with the toilet bowl connection fittings during the step of toilet bowl installation. It derives that with the structure according to the present invention an easier and faster installation is obtained, with considerable time and costs savings.

The main support element 1 may advantageously be provided with a further crosspiece 21 (Figure 3) between the upright 2, 3, defining housing seats 22, 23 for the water feed pipes 24, 25 and discharge pipe 26 of a bidet.

According to a preferred embodiment, said crosspiece 21 can be removably fastened to the uprights 2, 3. In this case, the crosspiece 21 may be provided, for example, with end fastening extensions 27, 28, which can be entered with a mechanical key effect into pockets 29, 30 purposely provided on the uprights 2, 3. Advantageously, a plurality of fastening pocket pairs 29, 30 can be provided, placed at different levels in the uprights 2, 3, as illustrated.

In particular, the crosspiece 21 has an essentially planar configuration with a lower bent edge 31, and displays two substantially parallel and upwards protruding extensions 32 in which the seats 22 are defined, which are of semicylindrical shape with vertical axis and act as housings respectively for the pipes 24 and 25 for feeding hot and cold water to the bidet. The pipes 24 and 25 are fastened by means of locking collars 33, which can be fastened by means of screws 34 to the extensions 32 which define the pipe seats 22.

At its lower side, the crosspiece 21 is provided with a substantially semicylindrical seat 23 suitable for housing the bidet discharge pipe 26. Also this pipe is fastened by means of a locking collar 35 and screw means 36.

In the just disclosed configuration, the support element 1 equipped with the crosspiece 21 sup-

plies the installer with three further fixed points, acting again as positioning and support templates for the hot/cold water and discharge pipes. Such points are differently positioned relatively to the central body of the element 1, as a consequence of the different arrangement of the bidet connection fittings, as compared to the toilet bowl. Also in this case the pipes, installed by the installer in their exact position inside the carrier wall thanks to the constraint constituted by the same templates, are fastened to the support structure for the sanitary fixtures, with adjustment possibility by means of the adjustable collars 33 and 35. Exactly positioning said pipes facilitates the connection with the bidet feed and discharge fittings by the installer, with considerable time and costs savings.

A further advantage shown by the structure according to the present invention is given by the higher facility of installation of said structure inside the wall, as compared to the structures known from the prior art, also thanks to a smaller number of components.

For a safer fastening, the main support element 1 may advantageously be provided with brackets 37, 38, protruding from the top end of said uprights and orientated towards each other. In order to facilitate the exact positioning in height and make it possible the sanitary fixtures to be installed at different levels over the floor, the element 1 may be provided with side extensions 39, 40 at the bottom end of the uprights, inside which screw-threaded adjustment feet 41 can be inserted, which can be fixed in any desired positions by means of nuts 42. The extensions 39, 40 can be obtained by suitably bending the relevant flange of the "C"-shape cross section of the uprights 2, 3.

In the case of non-load-bearing walls, the main support element 1 is advantageously provided with anchoring brackets 43, 44 (Figures 1-4), of square bent shape and removably fastened onto the bottom ends of the uprights 2, 3. The brackets 43, 44 are fastened to or inside the floor, thus securing the reliable and strong support of the sanitary fixtures to non-load-bearing walls.

The configuration of said element 1 makes it also possible further support elements to be applied onto the upper ends of the uprights 2, 3, for example, in order to support a flush tank destined to remain buried inside the wall.

Making the element 1 with a metal material and with a "C"-shaped cross section along most of its length supplies the element and therefore the support of the hanging sanitary fixture, with particular strength.

One will understand that with the disclosed structure the installer is supplied with an easily and rapidly installed support structure, which can be used in order to install, hanging on a wall, the toilet

bowl and, alternatively, a hanging bidet as well. The structure is also suitable for installing sanitary fixtures in non-load-bearing walls, by simply applying the square brackets 43, 44, preferably with a "C"-shaped cross section.

In the case of non-load-bearing walls, the configuration of the uprights 2, 3 could be suitably modified, by providing inside them recessed housings or hollows in order to allow in particular the toilet bowl discharge pipe to run through, so as to keep the structure and the pipes inside the limits of the wall thickness.

If necessary, also an arrangement as illustrated in Figure 6 could be resorted to, as shown in Figure 6. The upright 2 or 3, at the side of which the toilet bowl discharge pipe 8 is caused to run, comprises a contoured connection bar 45 with a protruding portion 45a and fastened to the upright 2 or 3 by means of screws 46. Opposite to the portion 45a, the upright 2 or 3 is interrupted, with a portion thereof being cut away. The discharge pipe 8, having a suitable diameter, gets housed inside the room available between the separated portions of the upright 2 or 3 and the contoured bar 45, also suitably dimensioned in order to support the stresses the structure is designed to be exposed to, so that the whole structure can remain within the limits of the non-load-bearing wall. One will understand that the modifications supplied to the upright do not imply particular problems and leave fully valid all the advantages shown by the structure disclosed herein.

Of course, the structure of the present invention can be variously modified without departing from the scope of protection of the invention. So, for example, the crosspiece 4 could be replaced by an element distinct from the uprights 2, 3 and removably fastened to them. The crosspiece 21 could be fastened to the uprights 2, 3 also in a different way from as disclosed and illustrated herein, for example, by means of screws, or it can be made as one single piece with the uprights 2, 3. The feature of the definition of the fixed points by the seats for the pipes being given for granted, said seats might also have a different configuration from as disclosed and illustrated. The uprights 2, 3 might also have brackets in different positions as compared to the brackets disclosed and illustrated, or also further brackets.

## Claims

1. Support structure for supporting sanitary fixtures hanging on a wall, such as wall toilet bowls and bidets, comprising a main support element (1) which can be installed inside a wall, and to which the sanitary fixtures can be removably fastened, characterized in that said

- main support element (1) consists of two substantially parallel uprights (2, 3) and at least one crosspiece (4 and 21) for said uprights linking (2, 3), said crosspiece (4 and 21) defining housing seats (5, 6 and 22, 23) for feed (7 and 24, 25) and discharge (8 and 26) pipes or said sanitary fixtures.
2. Support structure according to claim 1, characterized in that said at least one crosspiece (4) is made as one single piece (enbloc) with said uprights (2, 3) and is provided at its upper side with a substantially semicylindrical seat (5) for housing a feed pipe (7) and at its lower side, with an extension (12) ending with a circle arc contour, for housing a discharge pipe (8), said pipes (7, 8) being fastenable to said crosspiece (4) by means of locking collars (9, 13) fastenable onto said crosspiece (4).
  3. Support structure according to claim 1 or 2, characterized in that said uprights (2, 3) and said at least one crosspiece (4) display, at least partially, a substantially "C"-shaped cross section.
  4. Support structure according to claims 2 and 3, characterized in that through the flanges of the substantially "C"-shaped cross section of said at least one crosspiece (4) bores (14, 15) are provided for said collars (9, 13) inserting and fastening.
  5. Support structure according to one or more of the preceding claims, characterized in that said at least one crosspiece (4) is provided with at least one pair of bores (17, 18) for housing and fastening sanitary fixtures fastening screws (19, 20).
  6. Support structure according to one or more of the preceding claims, characterized in that it is provided with a further crosspiece (21) between said uprights (2, 3), defining housing seats (22, 23) for the water feed pipes (24, 25) and water discharge pipe (26) of a bidet.
  7. Support structure according to claim 6, characterized in that said further crosspiece (21) can be removably fastened to said uprights (2, 3).
  8. Support structure according to claim 6 or 7, characterized in that said further crosspiece (21) is provided with end fastening extensions (27, 28), suitable for being entered into pockets (29, 30) provided on said uprights (2, 3).
  9. Support structure according to claim 8, characterized in that pairs of pockets (29, 30) are provided at different levels along said uprights (2, 3).
  10. Support structure according to one or more of claims from 6 to 9, characterized in that said further crosspiece (21) is provided with substantially parallel extensions (32) protruding from its upper side and defining substantially semicylindrical seats (22) for housing the hot/cold water feed pipes (24, 25) of a bidet, said further crosspiece (21) being furthermore provided, at its lower side, with a substantially semicircular seat (23) for housing the discharge pipe (26) of a bidet, said water feed (24, 25) and discharge (26) pipes being fastenable by means of collars (33, 35) which keep said pipes (24, 25, 26) engaged against said seats (22, 23).
  11. Support structure according to one or more of the preceding claims, characterized in that said structure is provided with fastening brackets (37, 38) extending from said uprights (2, 3) at at least one end thereof.
  12. Support structure according to claim 11, characterized in that it is provided with square-shaped brackets (43, 44) removably fastened onto the lower ends of said uprights (2, 3).
  13. Support structure according to one of claims from 1 to 11, characterized in that said uprights (2, 3) are provided, at their lower ends, with side extensions (39, 40) through which adjustable support feet (41) can be inserted and locked, in order to adjust the position of the support structure in height.
  14. Support structure according to one or more of the preceding claims, characterized in that to said main support element (1) a support structure for a flush tank is fastened.
  15. Support structure according to claim 13, characterized in that said uprights (2, 3) display a substantially "C"-shaped cross section and said extensions (39, 40) are bent from one of the flanges of the substantially "C"-shaped cross section.
  16. Support structure according to one or more of the preceding claims, characterized in that one of the uprights (2 or 3) is provided with a recessed hollow for housing the discharge pipe (8, 26).

17. Support structure according to one or more of claims from 1 to 15, characterized in that one of said uprights (2 or 3) comprises a contoured connection bar (45), which connects two portions of the uprights (2 or 3) separated from each other, and defines, together with said portions, a housing seat for housing the discharge pipe (8) of a toilet bowl.

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**Fig.1**

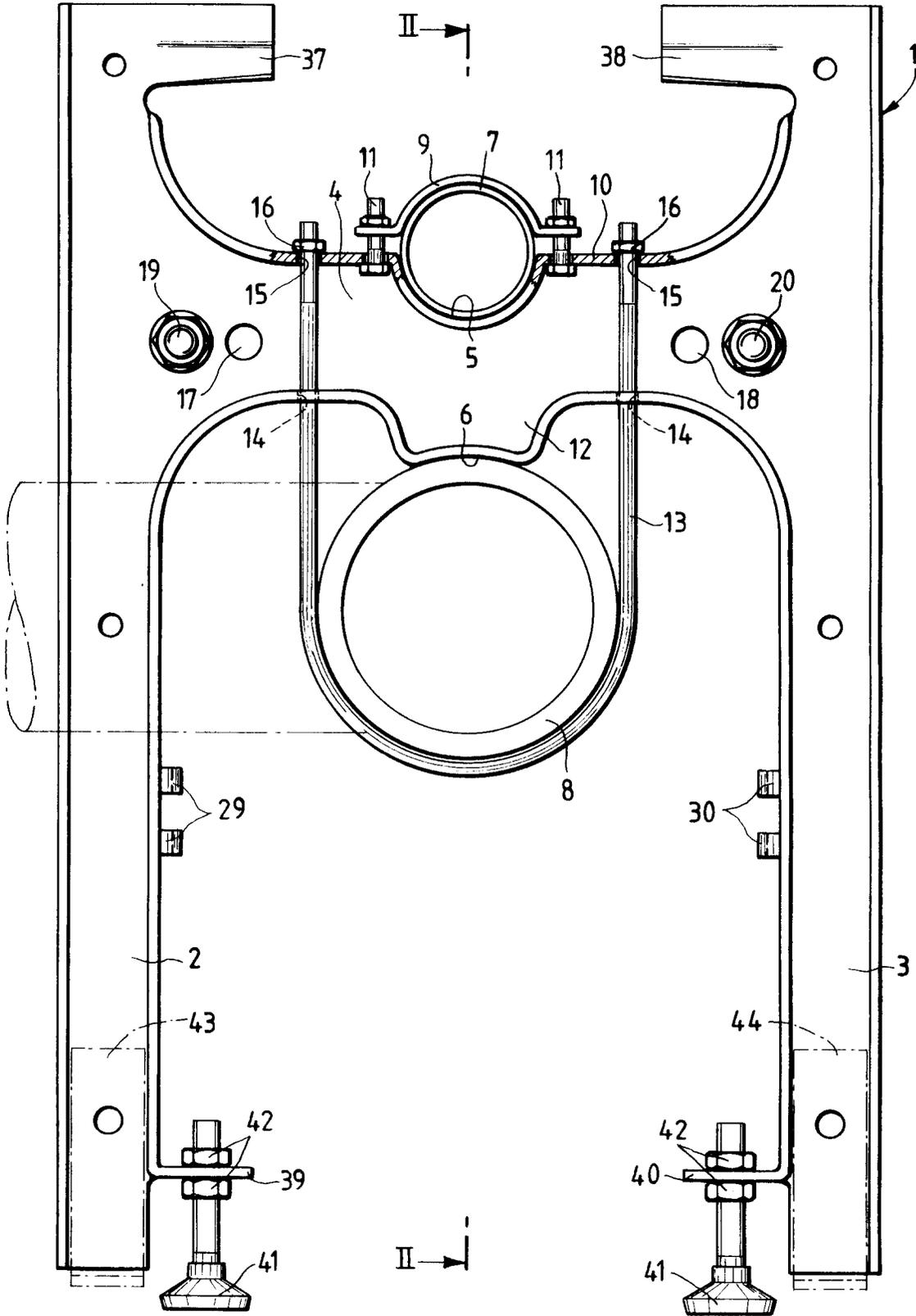


Fig.2

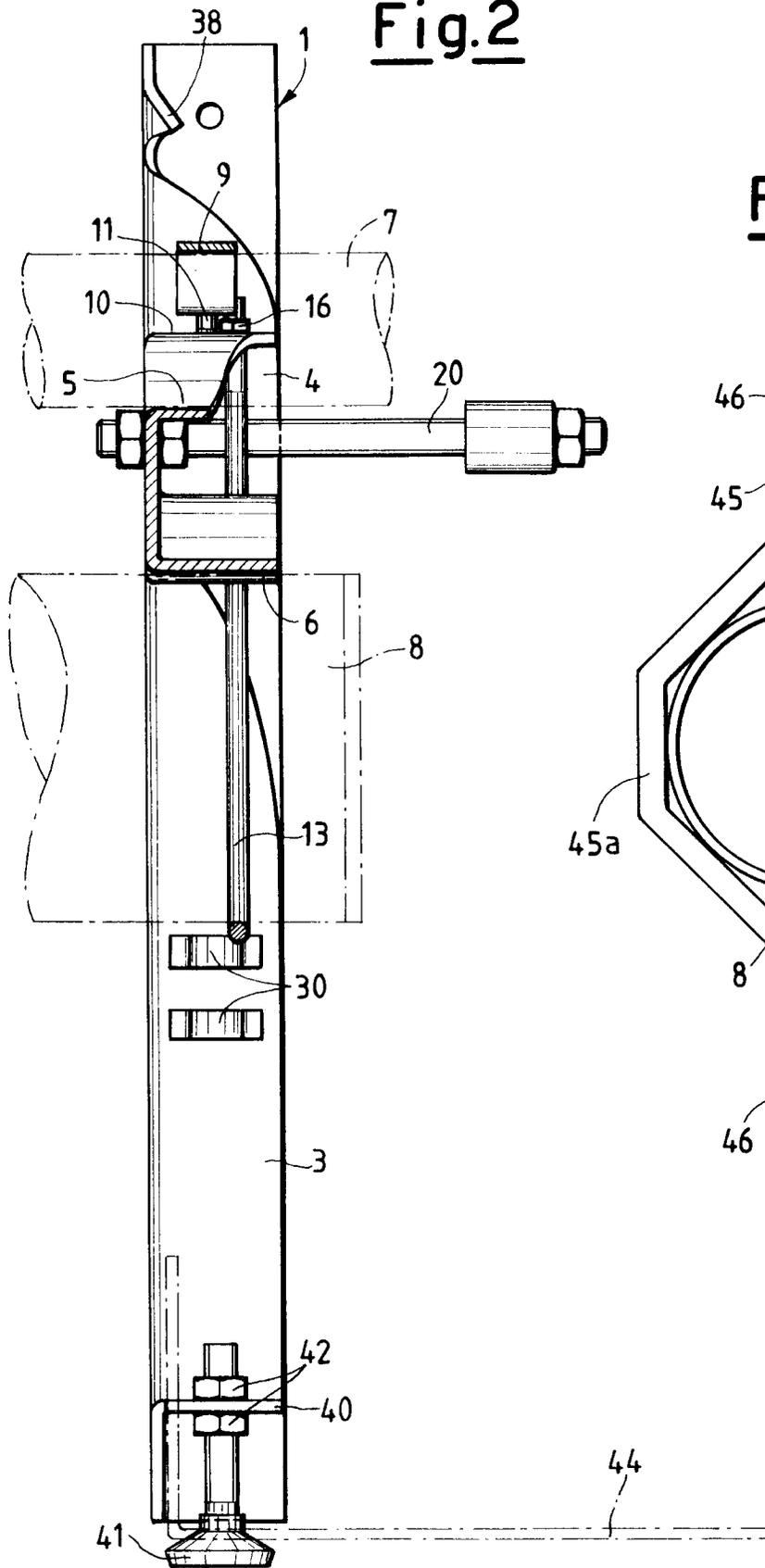
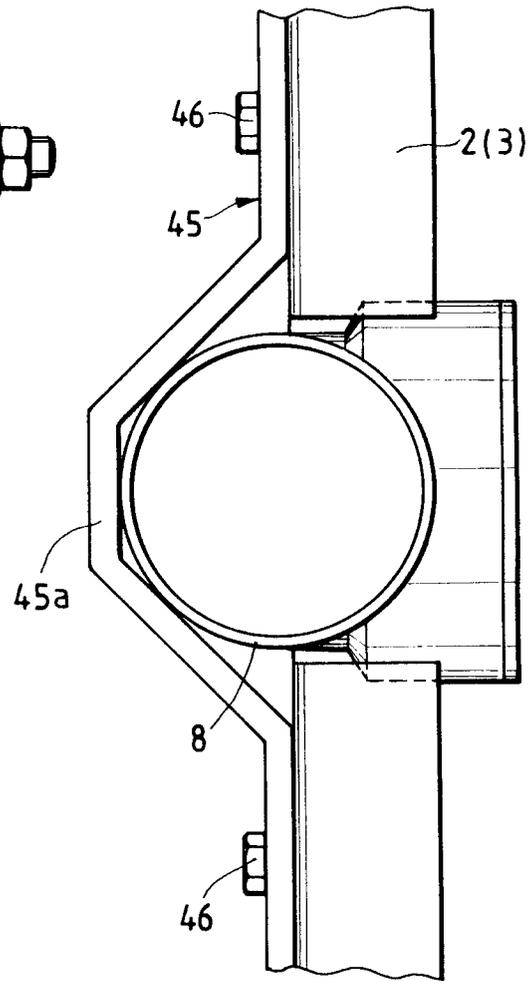
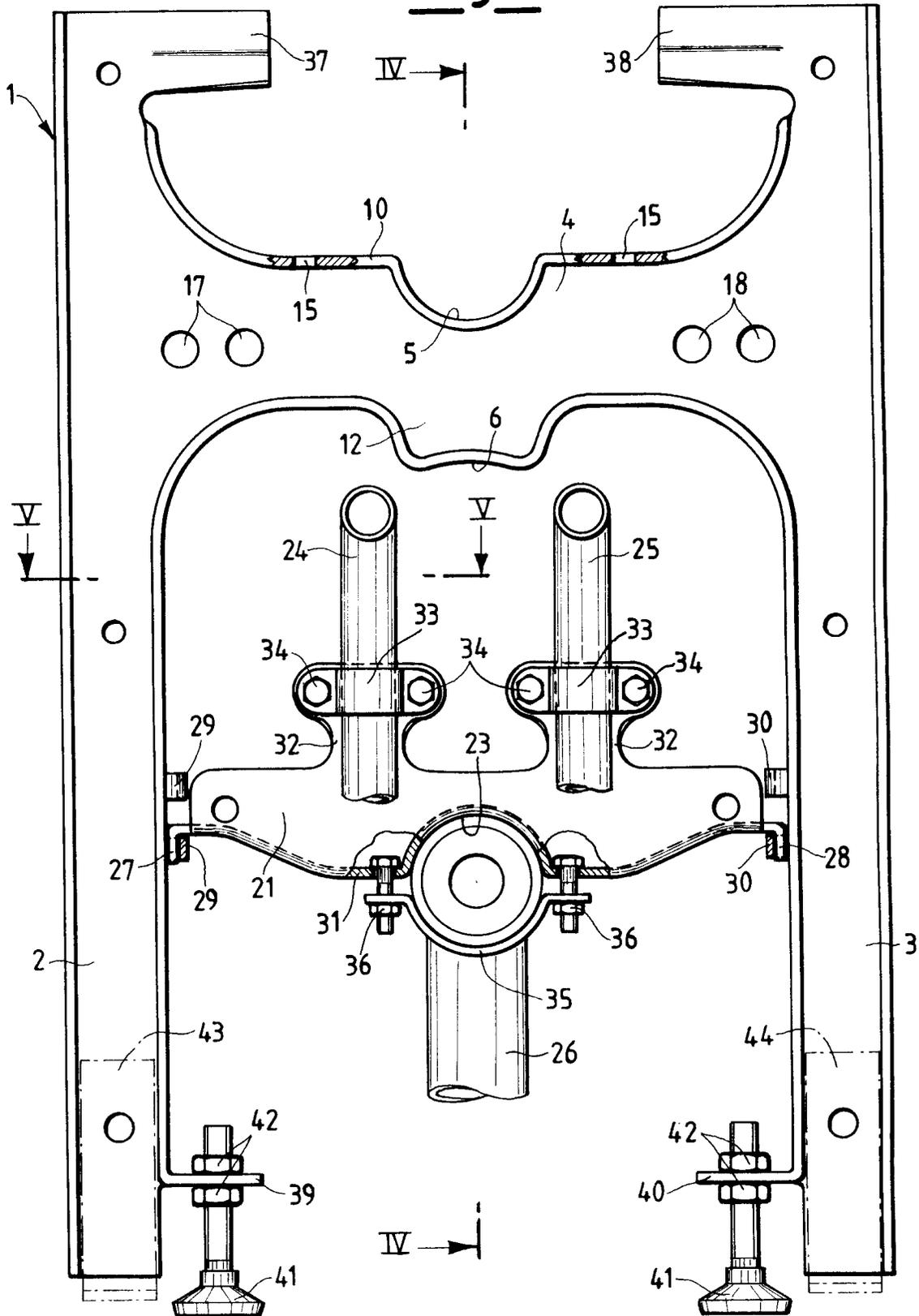
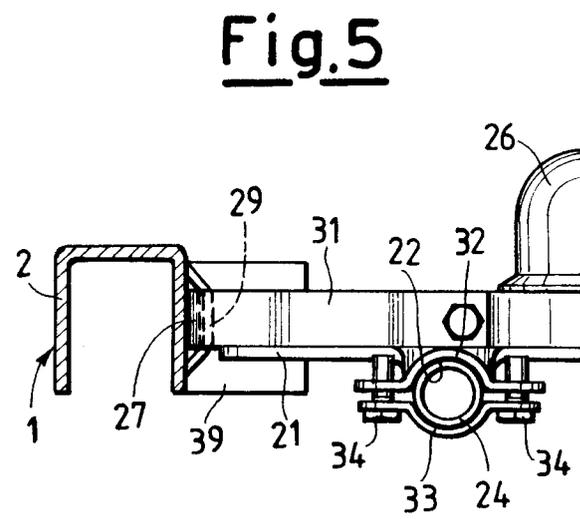
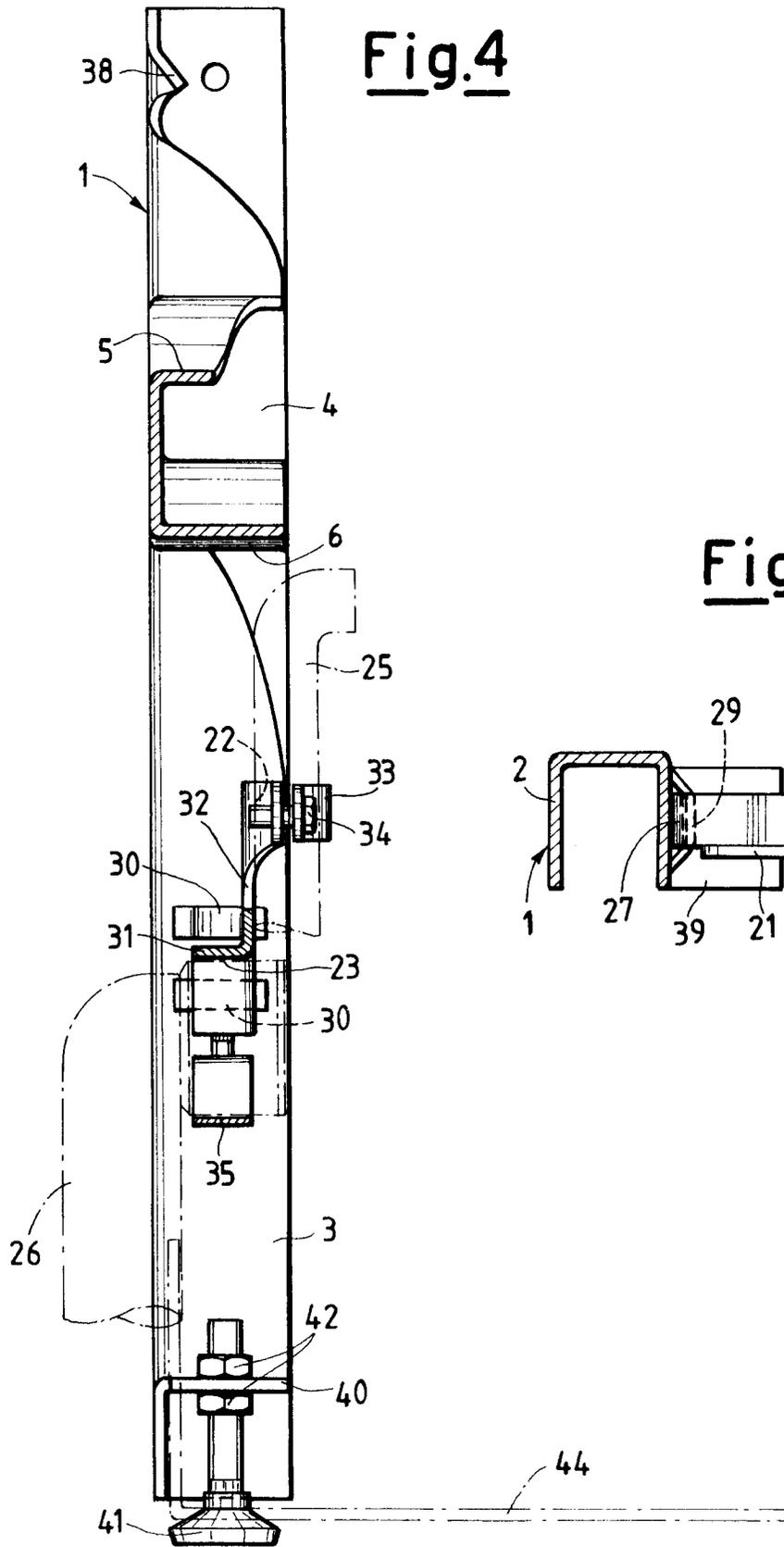


Fig.6



**Fig.3**







DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
X	EP-A-0 343 071 (PLACOPLATRE) * column 1, line 3 - line 15 * * column 1, line 39 - column 3, line 2 * * column 5, line 3 - column 8, line 24 * * column 9, line 56 - column 10, line 2 * * column 10, line 27 - line 41; figures * ---	1-10, 14	E03D11/14 E03D11/13
X	DE-A-2 637 749 (SEIFFERT) * page 8 - page 15, paragraph 1 * * page 16, paragraph 4 - page 17, paragraph 2 * * page 21, paragraph 2 - paragraph 3 * * page 22, paragraph 4 - page 24, paragraph 1; figures 3,4 * ---	1,6-14	
X	AT-A-352 025 (NIKOLAUS HUTER & CO. INSTALLATIONSGESCHAFT) * the whole document * ---	1-10	
X	DE-A-2 809 135 (FA. PAULI U MENDEN) * the whole document * ---	1-5	TECHNICAL FIELDS SEARCHED (Int. Cl.5)
X	DE-U-8 902 318 (WISAN TECHNIK AG) * the whole document * ---	1-5	E03D E03C
A	-----	11-14	
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 26 MAY 1993	Examiner DE COENE P.J.S.
<b>CATEGORY OF CITED DOCUMENTS</b> 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