(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) **EP 2 642 034 A2**

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
25.09.2013 Bulletin 2013/39

(51) Int Cl.:
E03D 11/14 *(2006.01)*

(21) Application number: **13160253.4**

(22) Date of filing: **20.03.2013**

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA ME

(30) Priority: **22.03.2012 GB 201205026**

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(54) Adjustable frame

(57) The invention relates to an adjustable frame for mounting a toilet cistern (2) and wall hung toilet pans. The invention provides a cistern mounting frame (1) with an upper frame portion (3) having a cistern mount (30a, 30b, 32) and a lower frame portion (4) having a flush pipe mount (5), wherein the upper frame portion (3) is adjustably connected or secured to the lower frame portion (4) to allow adjustment, in use, of the height of the cistern mount (30a, 30b, 32) relative to the flush pipe mount (5). Floor attachment connectors (8) and adjustable brackets (7) may be provided with the lower frame (4) for attachment to a wall or floor.

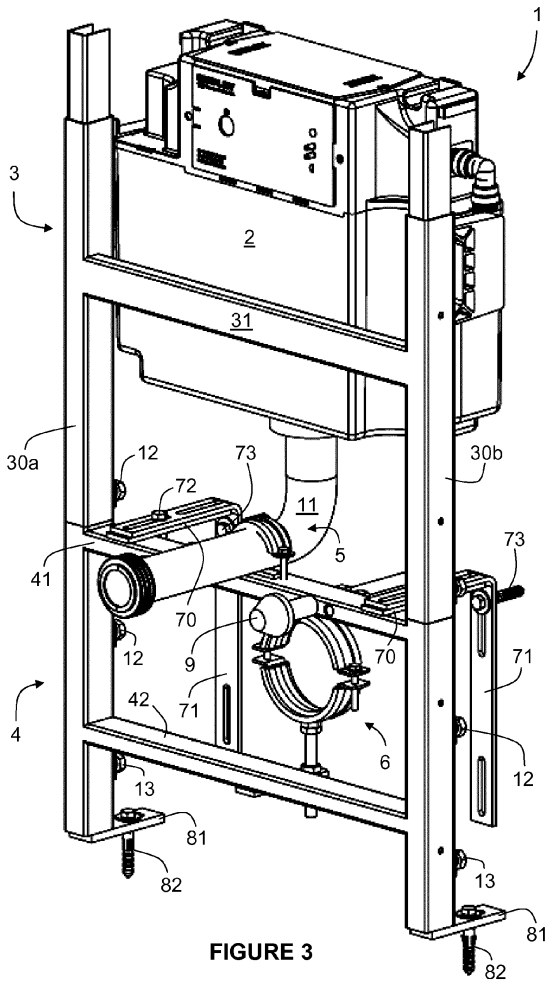

FIGURE 3

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Description

[0001] This invention relates generally to adjustable frames. More specifically, although not exclusively, this invention relates to adjustable frames for mounting wall hung toilet pans and cisterns, or cistern mounting frames.

[0002] Mounting frames are used in the installation of wall hung toilets. Such frames are generally fixed to the wall and floor, provide support for the toilet and include a concealed cistern. Cistern mounting frames may be used within vanity toilet units or inside partition walls.

[0003] A disadvantage of existing cistern mounting frames is that they are only available in fixed heights and therefore do not cater for the full range of fixing heights that might be required for different installations.

[0004] Accordingly, it would be desirable to provide an improved cistern mounting frame that is suitable for a full range of fixing heights and can be used in different installations.

[0005] It is a more specific, non-exclusive, object of the invention to provide an improved cistern mounting frame that is adjustable and therefore suitable for use in different installations.

[0006] In accordance with one aspect of the present invention there is provided a cistern mounting frame with an upper frame portion having a cistern mount and a lower frame portion having a flush pipe mount, wherein the upper frame portion is adjustably connected or secured to the lower frame portion to allow adjustment, in use, of the height of the cistern mount relative to the flush pipe mount.

[0007] The adjustable connection or securement between the upper and lower frame portions results in a single mounting frame being suitable for use in different installations where different fixing heights might be required.

[0008] The adjustable connection or securement may comprise a sliding or slidable connection or securement and/or may be provided by a telescopic or other suitable extendable and retractable connection, e.g. between the upper and lower frame portions. Preferably, the upper frame portion is releasably connectable or securable to the lower frame portion in one of two or more, e.g. a plurality, of positions, for example to provide the adjustable connection or securement. The releasable connection or securement may comprise one or more fasteners, such as clamps, latches or bolts.

[0009] One or each of the upper and lower frame portions may comprise a pair of frame members or arms or arm portions that may be vertical and/or separated and/or may be interconnected at or adjacent one or each end, e.g. upper and/or lower ends, or intermediate its ends by a cross member. The frame members or arms or arm portions may be hollow and/or may be connected or interconnected by a respective inner channel member, which may fit within or around a respective one of the frame members or arms or arm portions.

[0010] The frame members or arms or arms portions of the upper and/or lower frame portions may be adjustable or movable or slidable relative to the inner channel member. One or each of the frame members or arms or arm portions of the upper and/or lower frame portions may comprise the releasable connection or securement or a locking mechanism, for example, bolts or other attachment means, e.g. for fixing or locking the upper and/or lower frame portions, for example in one of two or more positions and/or in the required position, e.g. relative to the inner channel members.

[0011] The lower frame portion may comprise a base or floor attachment portion, e.g. for attaching the lower frame portion to a floor and/or a lower portion of a wall. The base or floor attachment portion may be adjustable, for example adjustably or slidably connected to the lower frame portion, e.g. to adjust the height of the flush pipe mount and/or a waste pipe mount for example relative to the floor. The adjustable connection between the lower frame portion and the base or floor attachment portion results in a frame that enables the height of the toilet pan relative to the floor to be adjusted.

[0012] The adjustable connection between the lower frame portion may be provided by a telescopic or other suitable extendable and retractable connection between the lower frame portion and the base or floor attachment portion. The frame members or arms or arm portions of the lower frame portion may be hollow and/or may receive part of the base or floor attachment portion or alternatively may be connected to the base or floor attachment portion by inner channel members which fit within the hollow arm portions. The frame members or arms or arm portions of the lower frame portion may be slidable relative to the base or floor attachment portion or inner channel member.

[0013] One or each of the frame members or arms or arm portions of the lower frame portion or base or floor attachment portions may comprise a further releasable connection or securement similar to the releasable connection or securement between the upper and lower frame portions. The further releasable connection or securement may comprise a locking mechanism, for example, bolts or other attachment means, and/or may be configured to fix or lock the lower frame portion with the base or floor attachment portion, for example in one of two or more positions and/or in the required position, e.g. relative to the other or relative to the inner channel members.

[0014] In a preferred embodiment, the cistern mounting frame has attachment connector or means, for example brackets, for attachment to an adjacent wall, e.g. a rear wall. The wall attachment connector or means may be connected to the upper and/or lower frame portion and/or may be adjustable, for example to accommodate different distances from the adjacent wall. The wall attachment connector or means may comprise slidable or telescopic elements or members, for example one of which elements may comprise a substantially L-shape, e.g. with a securing hole that may be for receiving a wall fastener.

[0015] In some embodiments, the flush pipe mount comprises a curved member that preferably includes an adjustable fastener at or adjacent each of its ends that may engage, e.g. threadedly engage, a portion of the lower frame member, e.g. a cross member, such as to adjust the distance between the curved member and the lower frame member or cross member, e.g. a flush pipe rest mounted to the lower frame member or cross member, for example to clamp a flush pipe therebetween.

[0016] The waste pipe mount may comprise a pair of curved of C-shaped members, for example upper and lower curved or C-shaped members that preferably include an adjustable fastener at or adjacent each of their ends and/or that may engage, e.g. threadedly engage, the two members, such as to adjust the distance therebetween, for example to clamp a waste pipe therebetween.

[0017] Further aspects of the invention provide a toilet comprising the frame described above and/or a kit of parts for assembly into a frame described above and/or a method of installing a cistern mounting frame as described above.

[0018] Embodiments of the invention will now be described by way of example only with reference to the accompanying drawings in which:

Figure 1 is a front view of an adjustable cistern mounting frame according to the invention present in its maximum adjustment state with a cistern mounted in position;

Figure 2 is a rear view of an adjustable cistern mounting frame in its minimum adjustment state;

Figure 3 is a front perspective view of an adjustable cistern mounting frame in its minimum adjustment state with a cistern mounted in position; and

Figure 4 is a similar view to that of Figure 3 with the frame in its maximum adjustment state.

[0019] Referring to the Figures, there is shown a cistern mounting frame 1 with a cistern 2 mounted in position. The cistern mounting frame 1 has an upper frame portion 3 and a lower frame portion 4 adjustably interconnected by a pair of inner channel members 10a, 10b such that the upper frame portion 3 is adjustable in position relative to the lower frame portion 4.

[0020] The upper frame portion 3 includes a pair of spaced apart hollow vertical arm portions 30a, 30b interconnected at an upper central portion by a cross member 31. Each arm portion 30a, 30b of the frame portion 3 includes four mounting holes 32 adjacent their upper end, each of which receives a fastener (not shown) to provide a cistern mount by which the cistern 2 is attached to the upper frame portion 3.

[0021] The lower frame portion 4 also includes a pair of spaced apart hollow vertical arm portions 40a, 40b that are interconnected at their upper end by a first lower cross member 41 and adjacent their lower end by a second lower cross member 42.

[0022] The first lower cross member 41 includes a flush pipe mount 5 mounted at its centre for receiving and securing and securing in place a flush pipe 11. The flush pipe mount 5 is in the form of a C-shaped bracket 50 with a pair of bolts 51 at its ends for adjusting the spacing between the bracket 50 and a resilient seat 52 on which the flush pipe 11 rests to clamp the flush pipe 11 between the bracket 50 and the seat 52.

[0023] The second lower cross member 42 includes a waste pipe mount 6 adjustably mounted at its centre for receiving and securing in place a waste pipe (not shown). The waste pipe mount 6 includes two opposed C-shaped brackets 60 with a pair of bolts 61 interengaging their ends for adjusting the spacing therebetween to clamp, in use, a waste pipe (not shown) between them. The vertical position of the waste pipe mount 6 is adjustable relative to the second lower cross member 42 by a mounting bolt 62 that engages a nut 63 secured to the second lower cross member 42.

[0024] The lower frame portion 4 also includes a pair of adjustable wall fixing brackets 7 mounted to the first lower cross member 41, floor attachment connectors 8 one of which is adjustably mounted to each of the arm portions 40a, 40b and a pair of pan fixing bolts 9 that engage one of two pairs of pan mounting holes 43a, 43b in the first lower cross member 41.

[0025] The adjustable brackets 7 each include an elongate horizontal plate 70 secured to the top of, and extending rearwardly of, the first lower cross member 41 with a central slot and an elongate L-shaped plate 71 with a pair of slots in each of its horizontal and vertical portions. The horizontal plate 70 and the horizontal portion of the L-shaped plate 71 are adjustably connected by a fastener 72 and the vertical portion of the L-shaped plate 71 is secured, in use, to a wall (not shown) by a fixing screw 73.

[0026] Each floor attachment connector 8 is in the form of a foot member with a vertical portion (not shown) that is telescopically received within the lower end of a respective one of the arm portions 40a, 40b and a horizontal plate 81 extending perpendicularly of the vertical portion (not shown) and including a fixing bolt 82 for securement, in use, to a floor (not show).

[0027] The arm portions 30a, 30b of the upper frame portion 3 are connected to the arm portions 40a, 40b of the lower frame portion 4 by a respective one of the inner channel members 10a, 10b that fit within the arm portions 30a, 30b, 40a, 40b. The height of the upper frame portion 3 relative to the lower frame portion 4 may be adjusted by telescopically sliding the upper frame portion 3 relative to inner channel members 10a, 10b. As shown more clearly in Figures 2 to 4, the arm portions 30a, 30b, 40a, 40b are releasably secured at any one of an infinite number of positions to their respective inner channel member 10a, 10b by a locking mechanism in the form of

bolts 12.

[0028] Similarly, the height of the lower frame portion 4 may be adjusted by telescopically sliding the lower frame portion 4 relative to the floor attachment connectors 8 and releasably secured together at any one of an infinite number of positions by a further locking mechanism in the form of bolts 13.

[0029] In use, the cistern mounting frame 1 is first placed in the desired position and fixed to a wall (not shown) and floor (not shown) using the adjustable brackets 7 and the floor attachment connectors 8. The position of the lower frame portion 3 is then adjusted to determine the distance between the flush pipe 11 (and toilet pan) and the floor (not shown) and secured to the desired height using the aforementioned adjustment between the lower frame portion 4 and the attachment connectors 8. If required, the position of the waste pipe mount 6 may also be adjusted using the mounting bolt 62.

[0030] It will be understood by those skilled in the art that flush performance is improved by increasing the height of the cistern 2 relative to the toilet pan (not shown), or more specifically relative to the flush pipe mount 5. The present invention is particularly advantageous in that it enables adjustment of the upper frame portion 3, and therefore the cistern mount 32 and cistern 2, to the optimum position while remaining within the constraints of the installation. More specifically, the upper frame portion 3 is adjusted along the inner channel members 10a, 10b away from the lower frame portion 4 and the bolts 12 are used to fix the upper frame portion 3 and lower frame portion 4 in the required positions on the inner channel members 10a, 10b. When the cistern mounting frame 1 is adjusted to the required height and fixed in position, the flush pipe 11 is cut to the appropriate length and fitted, a partition (not shown) can be constructed and the toilet pan (not shown) can be fitted and connected to the flush pipe 11 and waste pipe (not shown).

[0031] It will be appreciated by those skilled in the art that several variations to the aforementioned embodiments are envisaged without departing from the scope of the invention. For example, the upper frame portion 3 and the lower frame portion 4 need not include any of the arm portions 30a, 30b, 40a, 40b or cross members 31, 41, 42. The locking mechanism need not be provided by bolts 12, 13 and the adjustable connections need not be telescopic and/or slidable.

[0032] It will also be appreciated by those skilled in the art that any number of combinations of the aforementioned features and/or those shown in the appended drawings provide clear advantages over the prior art and are therefore within the scope of the invention described herein.

Claims

1. A cistern mounting frame with an upper frame portion having a cistern mount and a lower frame portion having a flush pipe mount, wherein the upper frame portion is adjustably connected or secured to the lower frame portion to allow adjustment, in use, of the height of the cistern mount relative to the flush pipe mount.

2. Frame according to claim 1, wherein the upper frame portion is telescopically slidable relative to the lower frame portion.

3. Frame according to claim 1 or claim 2, wherein the upper frame portion is releasably securable to the lower frame portion in one of two or more positions.

4. Frame according to claim 3, wherein the upper frame portion is releasably secured to the lower frame portion in the one position by one or more fasteners, clamps, latches or bolts.

5. Frame according to any preceding claim further comprising a floor attachment connector adjustably connected to the lower frame portion to allow adjustment, in use, of the height of the lower frame portion relative to the floor.

6. Frame according to any preceding claim further comprising a wall attachment connector adjustably connected to the upper and/or lower frame portion to allow adjustment, in use, of the distance between the lower and/or upper frame portion relative to a wall.

7. Frame according to any preceding claim, wherein each of the upper and lower frame portions comprises a pair of vertical frame members interconnected by one or more cross members, each frame member of the upper frame portion being adjustably connected to a respective frame member of the lower frame portion.

8. Frame according to claim 7 further comprising a pair of inner channel members, wherein the frame members are hollow, each frame member of the upper frame portion receives a portion of a respective inner channel member and each frame member of the lower frame portion receives a further portion of a respective inner channel member to provide the adjustable connection between the upper and lower frame portions.

9. Frame according to any preceding claim further comprising a waste pipe mount adjustably secured to the lower frame portion, wherein the height of the waste pipe mount relative to the lower frame portion is adjustable.

10. Frame according to any preceding claim further comprising a cistern mounted to the cistern mount.

11. Frame according to any preceding claim further comprising a toilet pan mounted to the frame.

12. A toilet comprising a frame according to any preceding claim.

13. A kit of parts for assembly into a frame according to any one of claims 1 to 11 or a toilet according to claim 12, the kit comprising the upper frame portion and the lower frame portion.

14. A method of installing a cistern mounting frame comprising the steps of providing a frame according to any one of claims 1 to 11, adjusting the height of the upper frame portion relative to the lower frame portion to a desired position and securing the upper frame portion to the lower frame portion.

15. A method according to claim 14 further comprising securing the frame to a floor and/or a wall, securing a cistern to the cistern mount and securing a toilet pan to the frame.

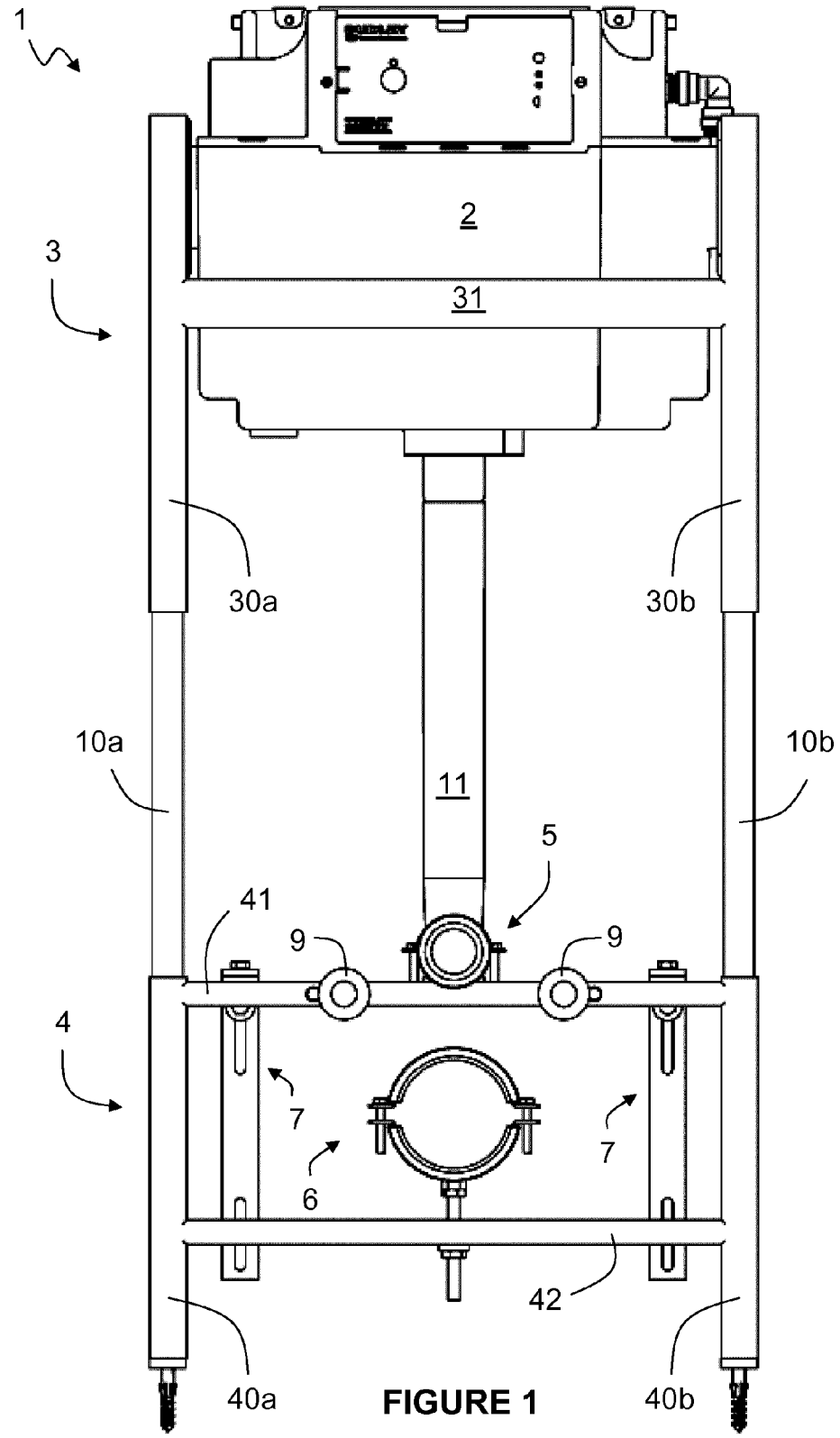

FIGURE 1

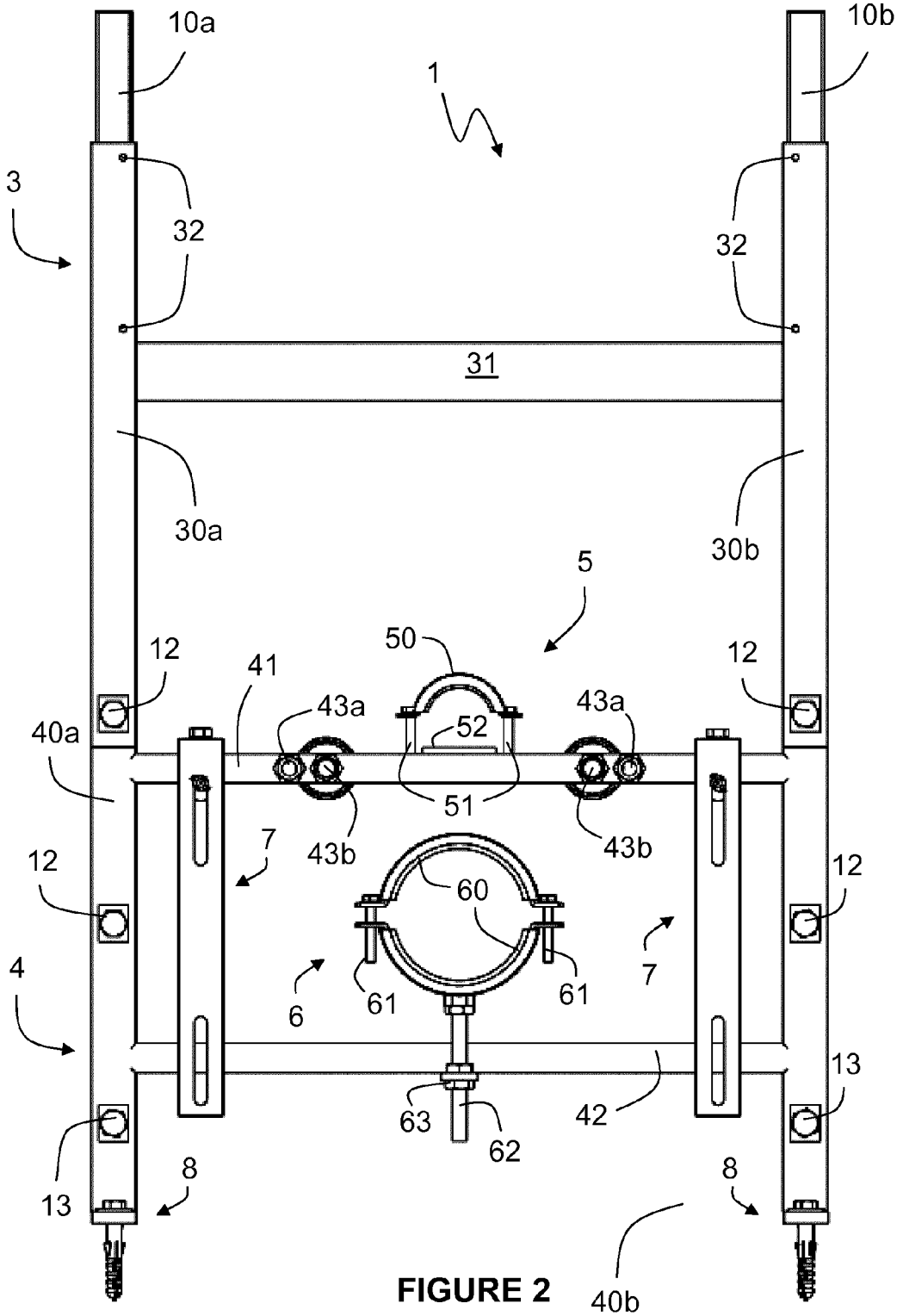
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FIGURE 2

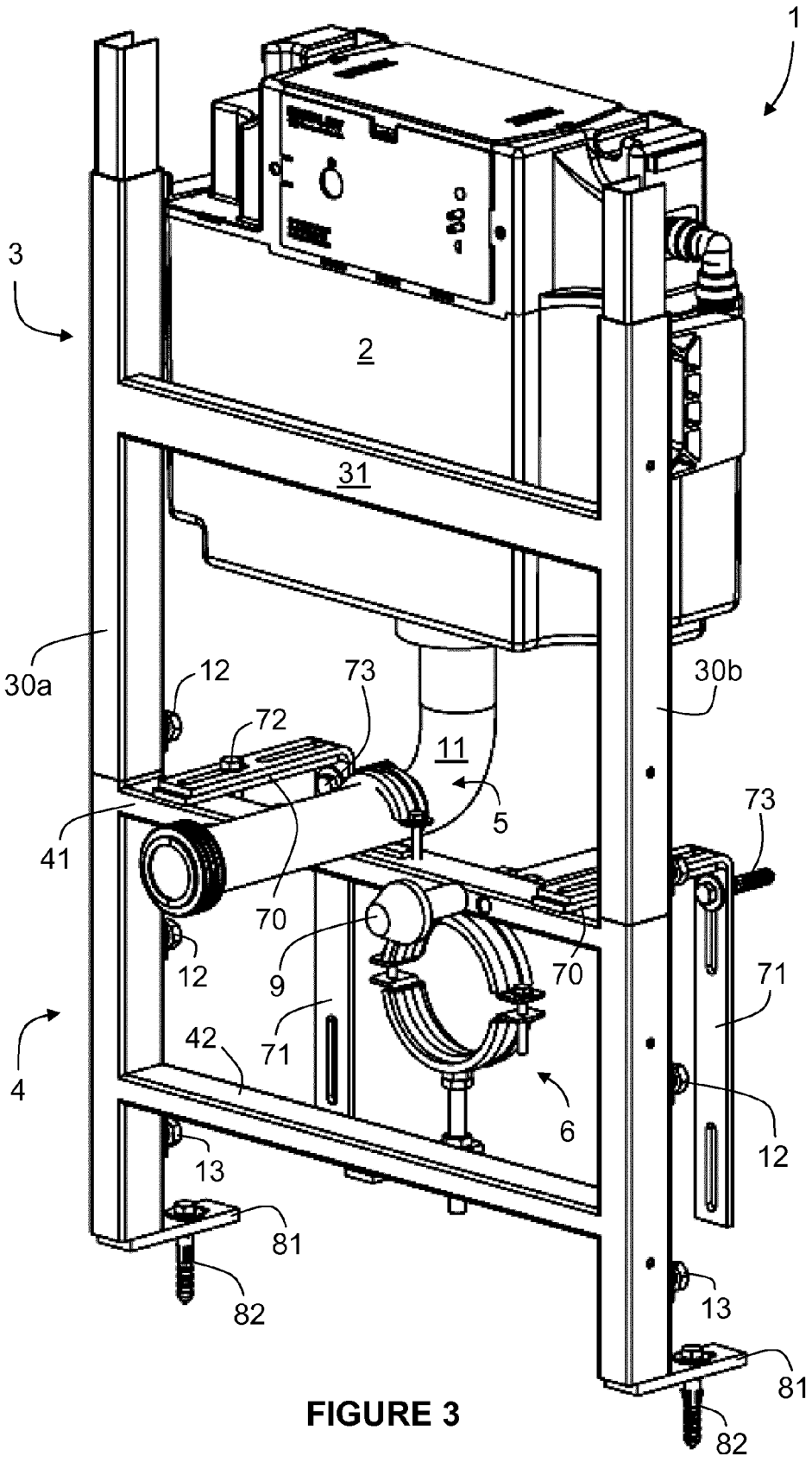
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FIGURE 3

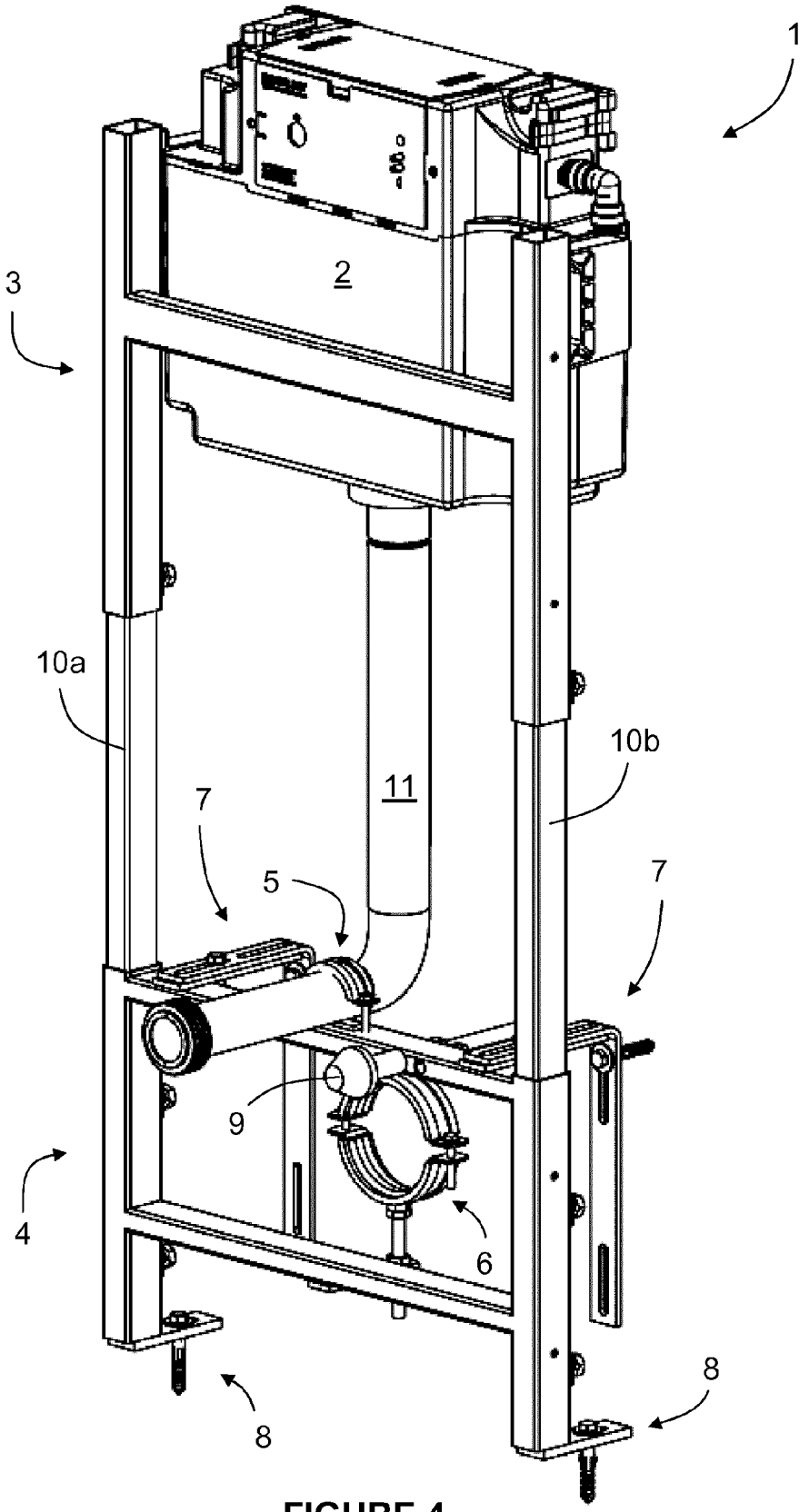

FIGURE 4