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(54) Means in a sanitary room installation

(57) A means in a sanitary room installation comprising sanitary units in the form of a toilet, a shower, a wash basin and possibly further units in the form of modules (3, 7, 8) for mounting on a wall of the sanitary room. Each module comprises a cassette to be mounted on a wall as well as preferably waterproof cover (3a, 7a, 8a) enclosing the cassette and all equipment associated with the unit, wherein the cover is arranged to be openable for access to equipment being part of the module, as well as means for height adjustment of said units or parts thereof. Said modules are mutually connected through tubular elements (10), wherein each module comprises attachment means for attachment of said tubular elements (10) in the respective cassette in such a way that the tubular elements (10) exits on the inside of the module. Said tubular elements (10) are designed to be self-supporting between said modules, and are suitable to act as hand rails and for placement of between the modules running conduits, such as for water, electricity, control signals and similar.

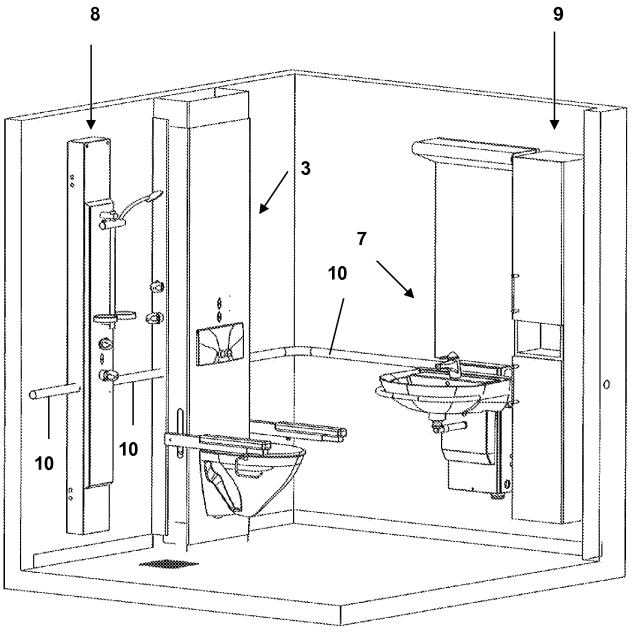

Fig. A

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Description

Field of invention

[0001] The present invention relates to a means in a sanitary room installation and more specifically a means for installation in a sanitary room, in particular for hospitals, nursing homes, and homes designed for the elderly in rebuilding or new construction, and related sanitary equipment.

Prior art

[0002] Historically water and sewage installation have been placed in gypsum shafts built on the site or in tube slots recessed in walls. The new rules of the National Board of Housing, Building and Planning BBR 2006 and "Branch rules Safe Water" do no longer permit this way of placing conduits but state instead that installation shall be accessible in their entirety for future maintenance and exchange without having to wreck the shaft in order to access the installation. Further, an installation site has to be provided with a raised bottom with a sealing layer which allows a possible leakage from the installation to be brought out in such a way that the leakage becomes visible and where a damage of the building can not occur, e.g. a flow to a floor drain in a sanitary room. Further, the installation should be placed in a ventilated space contrary to prior enclosed shafts, so that for protection against formation of Legionella bacteria the temperature of cold tap water is not raised under the influence of adjacent hot water circulation systems.

[0003] Traditionally, the sanitary equipment is not adjustable, which means that it does not have a satisfactory function for some groups of patients. There are a certain adjustability today, but this normally demands that a craftsman has to be called in order to perform height adjustments.

The invention

[0004] The object of the present invention is to provide a means in sanitary installations, which fulfils all existing demands on sanitary installations while it at the same time is easily adjustable to different users and different needs.

[0005] This is achieved with the means according to the invention having the features defined in claim 1. Embodiments and developments of the invention are disclosed in the subsequent sub claims.

[0006] With the means according to the invention is thus provided a sanitary installation which can be mounted easily and quickly, which permits access to the installation without wrecking and wherein the WC bowl, the shower means and the wash basin can be adjusted in height to be adapted to the individual needs of the patient while at the same time cold and hot water and electricity and control signal conduits are placed in the tubular elements connecting the different modules with each other. Thereby is completely avoided visible drawing on walls with accompanying cramping and puncture of the sealing liner contrary to BBR2006 and "Safe Water".

[0007] The tubular elements can run along all walls of the room and thereby they can act as hand rails and they are mounted in the WC, shower and wash basin cassettes instead of the traditional mounting in the walls with a plurality screws which puncture the sealing liner.

[0008] The means according to the invention comprises also modules in the form of cabinet modules design to be mounted on the tubular elements in that said modules on the back are provided with recesses with a width adapted to a diameter of the tubular elements and with an extension running inclined upwards so that the cabinet module can be safely and stably hung on the tubular element while at the same time the cabinet easily can be moved to other parts of the room without puncture of the sealing liner for mounting of the cabinet in new positions.

[0009] The present invention comprises a floor-to-floor high module, i.e. a means that runs all the way from floor to ceiling in the installation space, for placing the installation where water and soil pipes are installed in the means, and wherein it is provided with a removable front door with the same height as the means, making the installation accessible in its entirety. The means can, for each need, be provided with factory mounted installation or alternatively the installation can be placed in the means at the site. The means has a height adjustable WC basin and height adjustable arm rests, the length of which can be varied as required. The arm rests can also be lifted if required and also be easily removed from the cassette.

[0010] The means can also have a thermostat mixer faucet on the side for a shower for personal hygiene.

[0011] The wash basin module comprises preferably a device for continuous adjustment of the wash basin, wherein the wash basin height can be adjusted individually for the need of each patient and further the device is provided with a mounting intended to be user or a patient in a wheel chair, who wants to pull himself/herself in towards the wash basin.

[0012] The shower module is preferably so designed that the front panel with thermostat mixer faucet and the shower bar can be adjusted in height from a low position, when the patient is sitting in a shower chair and is supposed to take care of the hygiene and to a high position for someone taking a shower in a standing position or if nursing staff have the patient lying on a shower carriage, when the height of the mixer faucet can be adjusted so that the mixer faucet comes in a position above the shower carriage to be accessible for the staff.

[0013] According to the invention the WC module has a base where the surface layer of the floor is drawn up and the shower and wash basin modules and an optional cabinet module are preferably mounted on a height above the floor in order to facilitate the cleaning.

[0014] By making the modules waterproof or at least substantially waterproof and thanks to that, according to

the invention, no puncture of a sealing liner in the sanitary room occurs in the parts exposed to water, the sanitary room can be flushed on demand without any danger of water damages or damages on electric equipment.

Short Description of the Drawings

[0015] The invention will now be described more in detail below with reference to embodiments of the invention shown in the drawings, on which:

Fig. A shows a sanitary room for handicapped patients in hospitals, nursing homes and homes designed for the elderly with modules wherein WC, wash basin, and shower modules are adjustable for adaption to the individual needs of the patients and wherein cold and hot water and electricity are placed in the rails (10) mounted in the attachments in the respective means. The room also has cabinets with attachments for the rails and wherein a socket is supplied with electricity for shaver, hair dryer etc. through conduits placed in the rail from the WC module. The means in the room are designed in such a way that the number of punctures of the sealing liners is minimized in order to follow the rules of the National Board of Housing, Building and Planning BBR 2006 and "Branch rules Safe Water";

Fig. B shows an embodiment of the WC means according to the invention;

Fig. C shows an embodiment for adjustable arm rests and placement of a thermostat mixer faucet for a shower for personal hygiene according to the invention;

Fig. D shows an embodiment for an adjustable washing basin according to the invention;

Fig. E shows an embodiment for the shower means according to the invention; and

Fig. F shows a cabinet with one embodiment of rail attachment according to the invention.

Description of preferred Embodiments of the Invention

[0016] The means according to Fig. B consists of a support (1a) which is about 2 meters high with a top part (3b), which is vertically adjustable for adaption to varying floor heights.

[0017] The means has a removable front (3a), which stands on the stud bolts of the WC-bowl and also has a vertically adjustable ceiling connection plate for adaption to varying ceiling heights and a base plate (3c9 covering the drawn up sealing liner with a flooring of ceramic tiles. In the sides of the means there are permanent side strips (3f) for pipe exits.

[0018] The front (3a) has above the flush button plate recessed arrow buttons (5e) mounted on a spring metal sheet (5d) lying behind the front and which actuates micro switches (5b) arranged in the control box (5a), which switches are water protected by a rubber diaphragm (5c). Height adjustment of the WC-bowl and the arm rests is done with the arrow buttons. Height adjustment can also be made with a hand control box which is connected through cables or has the form of a radio control box.

[0019] In the WC means control units for all sanitary means in the sanitary room are arranged, such as for water basin and shower means, and from this also come the supply of cold and hot water, effluents, and electricity.

[0020] The support comprises attachments for water and effluent mains (1b) and a WC-yoke adjustable in vertical direction, where the movement is controlled by an electric control unit (1d) which through a beam (1e) and two lifting rods (1f) lifts or lowers the WC-yoke. The means is also provided with adjustable arm rests, where the height is controlled with an electrical control unit (2a), which through a beam (2b) is welded to two square pipes (2c), wherein attachment means for axle journals (4b) for arm rests (4) are welded, and where thinner square pipes (2d) run down into the square pipes of the WC-yoke, and which slide up and down in these freely movable in vertical direction. On the outside of the hole is mounted a cover plate (3e) which follows the arm rests upwards and downwards, so that the hole is always covered.

[0021] The arm rests (4) have a shaft journal entering into a pipe sleeve welded to the square pipe (2c), on the end of which is arranged a planar surface, corresponding to half the diameter of the shaft. When the arm rest is lowered the planar surface will be supported by a blocking piece made of steel (2e), which is welded to the square pipe (2c). In the part of the shaft journal having the planar surface is arranged a groove, into which a pin (2f) in the steel blocking piece (2e) enters and prevents the shaft journal and the arm rest from being dragged out from the means. In order to remove the arm rest, this is raised up to about 45°, whereupon the arm rest can be removed. In upraised position the arm rest has a negative angle which prevents it from falling down.

[0022] For adaption to different needs the arm rest (4) has an adjustable length. The armrest is comprised of a square pipe (4a) with a shaft journal (4b) welded to one end. In the pipe (4a) is arranged an inner pipe (4c), which can be pulled out about 200 mms, and where the position is fixed with an arrest button (4d). in the inner pipe there are 20 holes with 12 mms diameter punched into each other so that an elongated hole (4f) with a length of 200 mms and a free groove width of 8 mms is formed in a position where the arrest button is situated. When the arrest button is pushed in and the throat lies at the level of the groove in the elongated hole (4f), the inner pipe can be pulled in and out in the outer arm rest pipe. When the arrest button is released the end pin places itself in the punched hole lying closest, and the inner pipe is

locked.

[0023] For personal hygiene shower, the means is provided with a thermostat mixer faucet (6a) mounted in the permanent side strip of the means, and the mixer faucet is supplied from the cold and hot water mains in the means. The shower hose with the associated mouthpiece is attached to the front.

[0024] The means has a raised base (1g), wherein concrete can be cast for protection against fire and through leakage to floors lying underneath. After casting the bottom is sealed with a waterproof layer. On the outside of the raised base a sealing liner is drawn up if the means is placed in a sanitary room.

[0025] For the protection against the formation of Legionella bacteria and undesired heating of the cold water the front and the side strips (3f) are provided with ventilation openings (3g) at the top and at the bottom.

[0026] The lower ventilation opening also allows discharge of water at a possible leakage from the installation.

[0027] The means according to Fig. d is intended to make possible height adjustment of a wash basin and it also moves out the wash basin from the wall, so that a foot rest on a wheel chair is not hindered by a wall behind the wash basin, but instead the patient can come close to the wash basin in a functional way.

[0028] For adjustment of the wash basin height there is according to the invention a device (7) consisting of a fixed wall box (7a) and a movable wash basin cantilever (7b).

[0029] The wall box (7) comprises an electrical adjusting means (7c) which in the lower part is attached to the wall box and in the upper movable part is attached to a cantilever attachment (7d). The cantilever attachment is connected to two slide rails (7s) on each side of the cantilever attachment. The slide rails allow the cantilever attachment to move upwards or downwards but hold the attachment so it cannot move backwards or forwards. In the cantilever attachment there are mounted two stud bolts (7e). The wash basin cantilever (7b) has two welded-in pipe sleeves (7f), through which the stud bolts are inserted during assembling, and the cantilever is attached with two nuts on the front side of the cantilever.

[0030] The cantilever attachment has also attachments (7g) for cold and hot water pipes, which are connected with net reinforced tubing connected to the supply pipes coming from the hand rails. During assembly of the cantilever, the pipes are inserted through the holes (7h) for assembly with the faucet (7i) of the wash basin. Further, the cantilever attachment is provided with an electrical female connector (7j), which on assembly of the cantilever against the cantilever attachment gets into contact with a male connector (7k), through which control currents runs from the control buttons (7m) for adjustment of the wash basin upwards or downwards. The control buttons are mounted in the control unit (5) in the same way as with the WC means. Further, in the cantilever attachment is mounted an effluent pipe (7n) into which the effluent pipe (7o) from the wash basin in the cantilever is inserted att assembly of the cantilever on the cantilever attachment.

[0031] The effluent pipe on the cantilever attachment is through a flexible tubing connected to a water-trap (7p), the cleaning cup (7q) of which is mounted on the underside of the wall box, so that the water-trap is easy to remove for cleaning of a possible blocking of the water-trap.

[0032] As a general support for and as an aid for patients in a wheel chair there is a yoke (7r) with the aid of which the person in the wheel chair can pull himself up to the wash basin.

[0033] Normally the wash basin means is connected with water, drainage and electricity from the WC means, but can also be connected in other ways through prepared and plugged holes in the sides and at the upper and lower edges.

[0034] Further, there is a means for mounting of a mirror (7r) with accompanying light fittings (7u) and wherein the electricity supply to the light fittings comes from the wash basin means and is placed in a cable duct in the frame supporting the mirror. The intention with the means is to minimize the number of holes in the sealing layer.

[0035] Further, in the sanitary room there is a shower means according to Fig. E with a fixedly mounted wall box (8a) with a height adjustable front (8b). On the front (8b) a thermostat mixer faucet is mounted with a flow control (8c) and a temperature control (8d) and above this a shower bar (8e). the front with mixer faucet and shower bar can be adjusted in height over about 500 mms for adaption to each patient's individual needs.

[0036] When showering in sitting position the mixer faucet can be placed low and when showering in standing position high. Further, when using a shower carriage on which the patient is showered in lying position the mixer faucet needs to be placed in a so high position that it is at a level above the shower carriage.

[0037] The shower bar (8e) and the front (8b) are so designed with a reinforcement pipe (8i) welded to the inside of the front and to the mixer faucet attachment and a reinforcement pipe (8j) on the inside of the wall box screwed onto the reinforcement pipe (8i) with two bolts and having a support plate (8k) mounted on the top, which slides in slide rails (8m) placed on each side of the wall box, that these withstand a load of 80 kg in case a patient looses his balance and need support from the shower bar.

[0038] The height is adjusted with an electric adjustment device (8f) with the upper part attached to the top of the wall box (8a) and with the movable lower part (8g) attached to the mixer faucet attachment (8h). The mixer faucet attachment is attached to slide rails (8m) on each side of the attachment. The height is adjusted with control unit and arrow buttons as is done on the front of the WC means. the mixer faucet is connected to cold and hot water through flexible tubing from couplings on water coming in through the hand rails and placed in a loop

around a double tracked wheel (8n), which with a spring with constant force attached to the wheel and on the bottom of the wall box keeps the tubing stretched, when the mixer faucet moves upwards or downwards. The shower means is provided with rail attachments (8q) on each side of the wall box and wherein water and electricity are placed in the rails from the WC means.

[0039] The placement of the hand rails is shown in Figs. A and they are mounted on all walls of the room and they are provided with movable hooks for suspension, and other equipment such as e.g. waste bins, which can be hung on the rails.

[0040] There is also a cabinet (9a) that can be placed in the sanitary room, as shown in Fig. F, the lower part having a basket for dirty laundry, an open idle part with a socket for electricity (not shown on the drawing) for shaver and hair dryer, which is supplied with electricity from the rail mounted in the cabinet, and an upper part for care items. In the Fig. F is shown a round opening 9b for the hand rail. With a recess at the back of the cabinet, which has a width substantially corresponding to the diameter of the hand rail and with an extension obliquely upwards, a cabinet can easily and effectively be hung up and fixed on the hand rail.

Claims

1. A means in a sanitary room installation comprising sanitary units in the form of a toilet, a shower, a wash basin and possibly further units, **characterized in that** said units are designed as modules (3, 7, 8), each being designed to be mounted on a wall of said sanitary room,
   that each module comprises a cassette to be mounted on a wall as well as preferably waterproof cover (3a, 7a, 8a) enclosing the cassette and all equipment associated with the unit, wherein the cover is arranged to be openable for access to equipment being part of the module,
   that each module (3, 7, 8) comprises means for height adjustment of said units or parts thereof,
   that said modules are mutually connected through tubular elements (10),
   wherein each module comprises attachment means for attachment of said tubular elements (10) in the respective cassette in such a way that the tubular elements (10) exits on the inside of the module, said tubular elements (10) are designed to be self-supporting between said modules, and wherein said tubular elements are suitable to act as hand rails and for placement of between the modules running conduits, such as for water, electricity, control signals and similar.

2. The means according to claim 1, **characterized in that** the tubular elements (10) are arranged to run along all walls of the room.

3. The means according to claim 1 or 2, **characterized in that** it also comprises cabinet modules (9a) designed to be mounted on the tubular elements through on the back side of said cabinet modules arranged recesses with a width adapted to a diameter of the tubular elements and with an extension running obliquely upwards so that the cabinet module thereby in a safe and stable way after mounting hangs fixedly on the tubular element while at the same time the cabinet with ease can be moved to other parts of the room.

4. The means according to any of claims 1 - 3, **characterized in that** it comprises a module extending from floor to ceiling in the installation room intended for placement of installations, wherein water and effluent mains are mounted in the means and **in that** it has a removable front door with the same height as the means, resulting **in that** the installation is accessible in its entirety.

5. The means according to claim 4, **characterized in that** said module is a WC module (3) with a WC-bowl adjustable in height and with, independently of the adjustment of the WC-bowl, arm rests (4) adjustable in height.

6. The means according to claim 5, **characterized in that** the arm rests (4) are arranged adjustable in length, folding and removable.

7. The means according to any of claims 1 - 6, **characterized by** a wash basin module (7) comprising a device (7c) for continuous adjustment of the wash basin, wherein the height of the wash basin is continuously adjustable and also a yoke (7r) intended to be used by a patient in a wheel chair, which intends to pull himself/herself towards the wash basin.

8. The means according to any of claim s 1 - 7 , **characterized in that** the shower module (8) is designed with a front panel (8b), on which a thermostat mixer faucet and a shower bar are mounted, which front panel is arranged adjustable in height from a low position to a high position.

9. The means according to any of claims 1 - 8, **characterized in that** the WC-module (3) has a base (7g), and **in that** the shower (8) and wash basin modules (7) and possibly a cabinet module (9a) are mounted at a distance above the floor, whereby cleaning of the floor is facilitated.

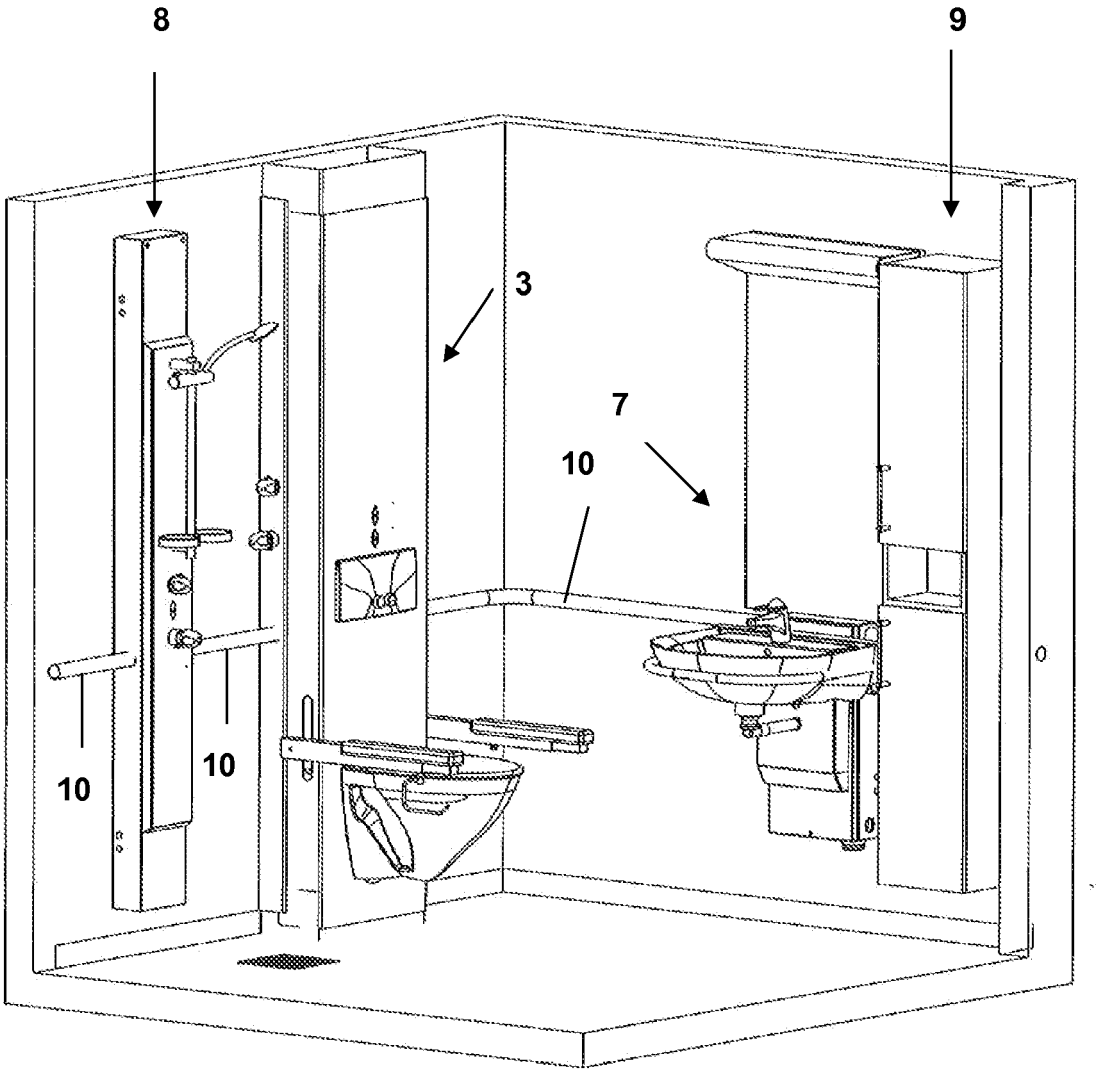

Fig. A

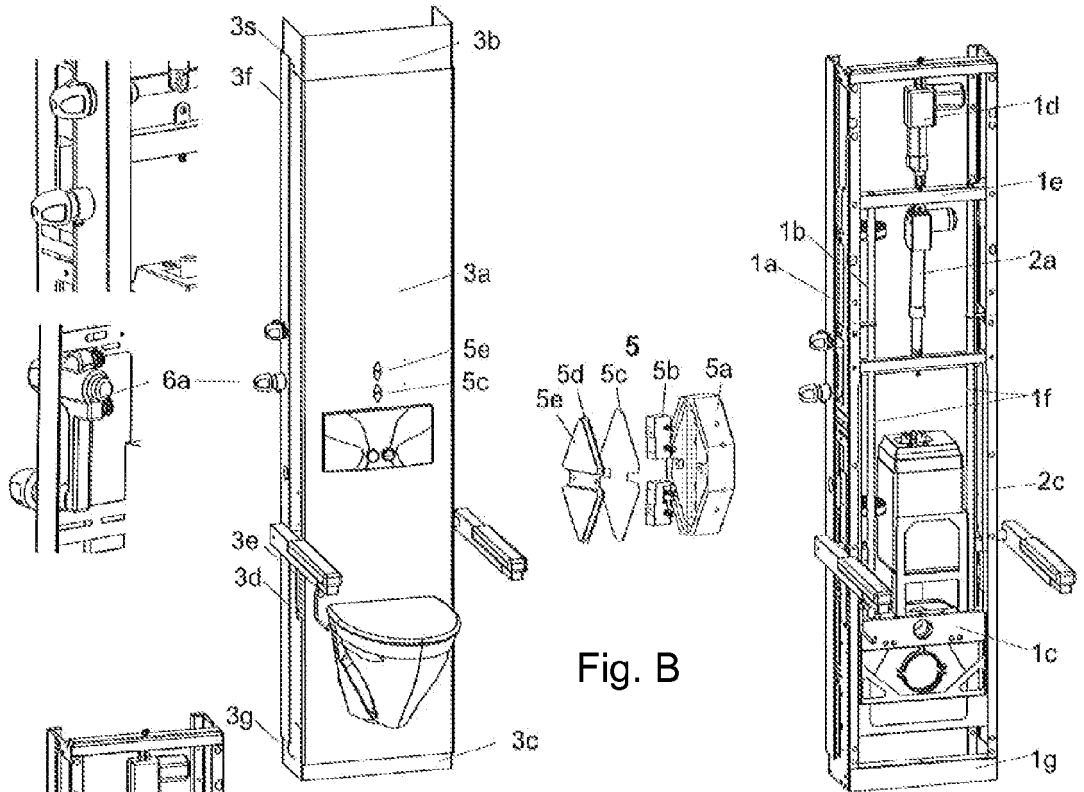
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Fig. B

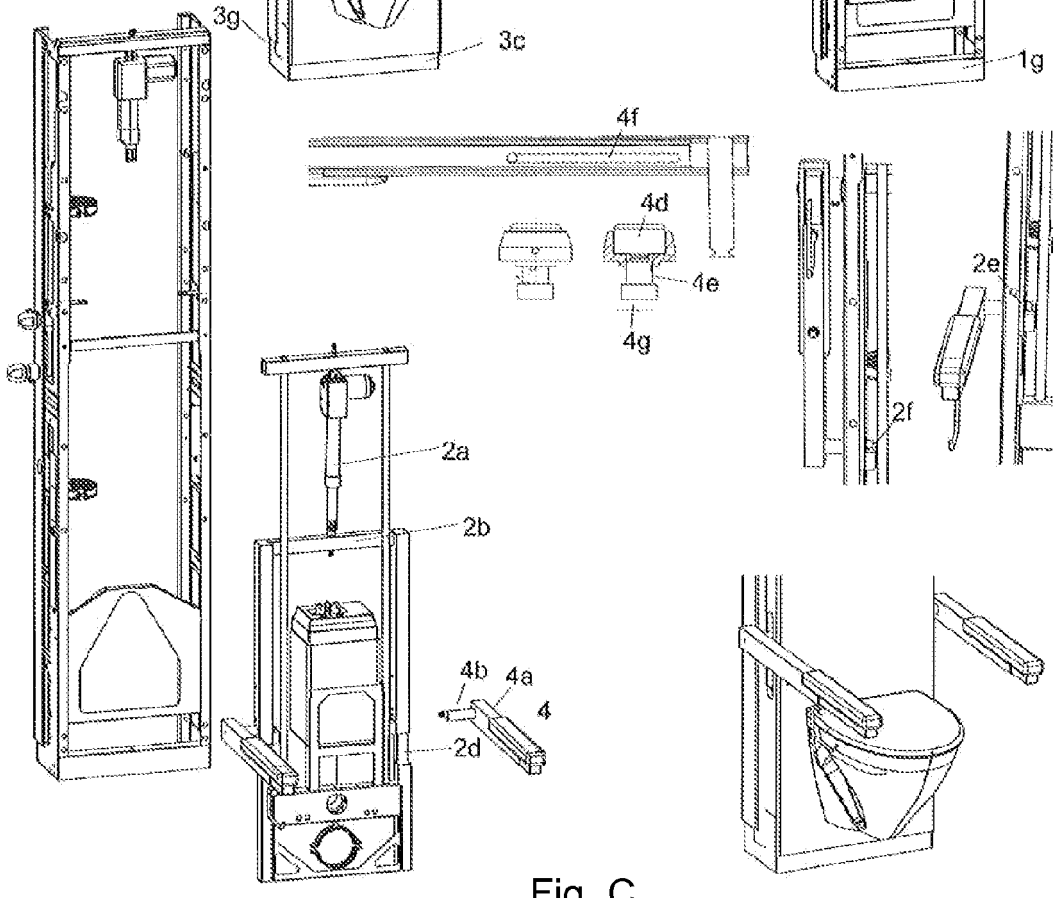
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Fig. C

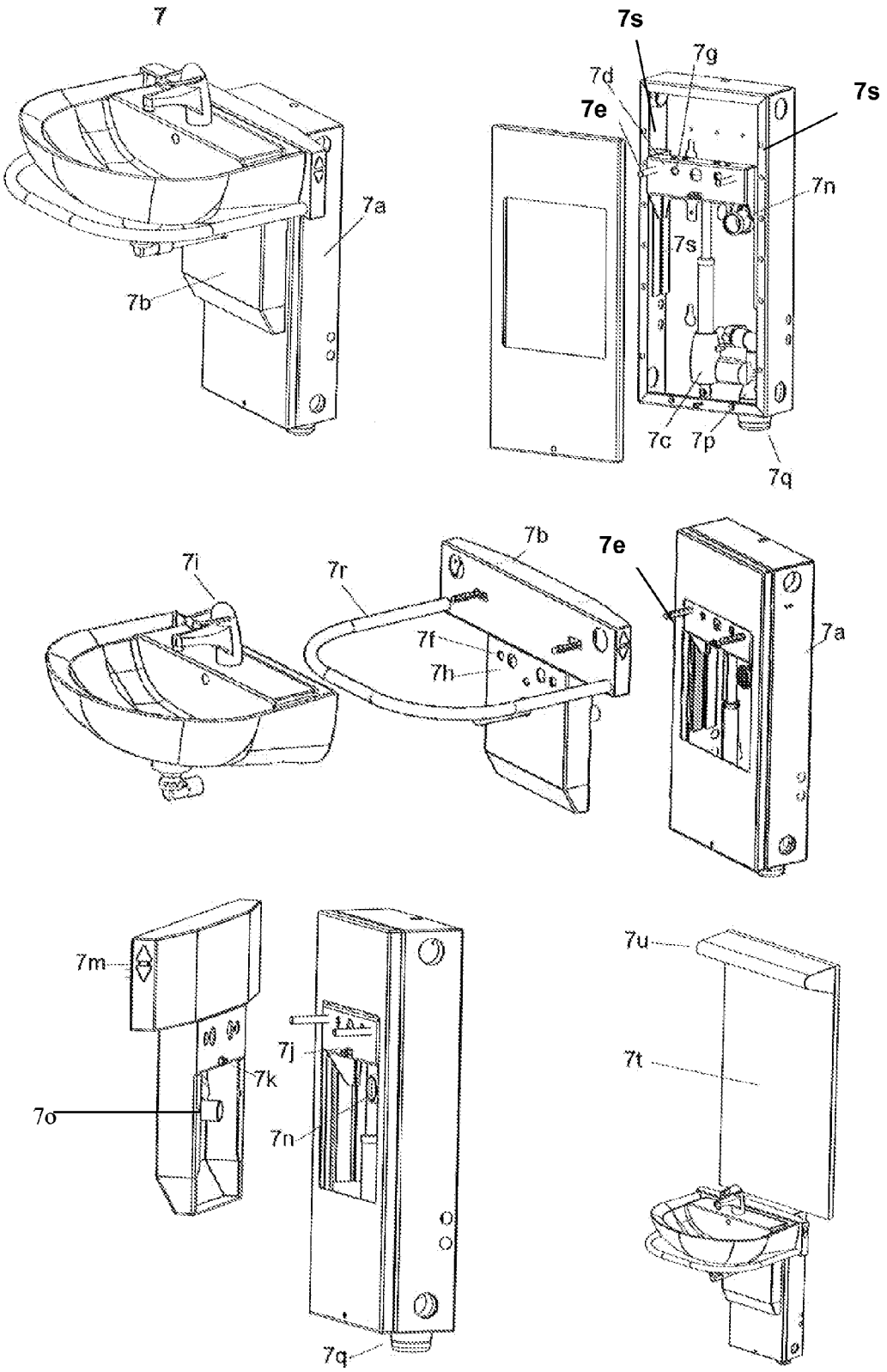
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Fig. D

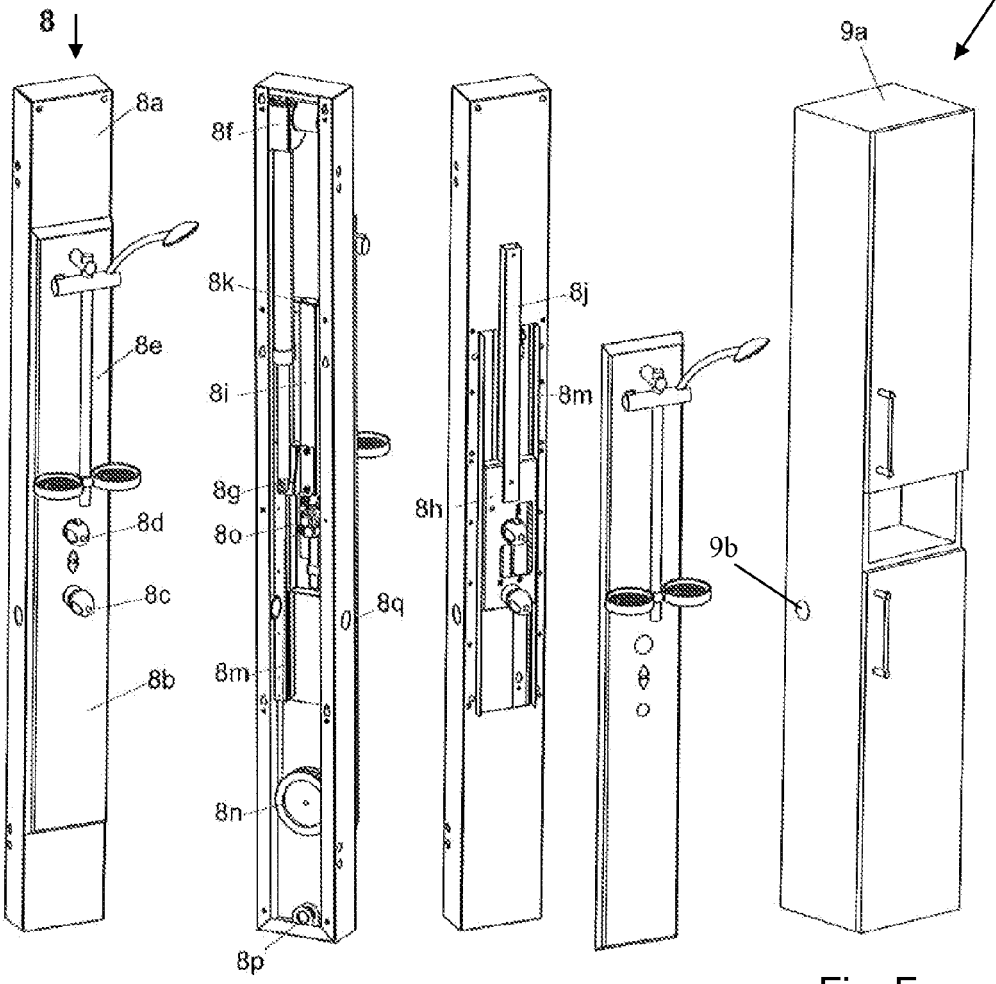

Fig. E

Fig. F

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EUROPEAN SEARCH REPORT

Application Number
EP 10 15 6511

DOCUMENTS CONSIDERED TO BE RELEVANT

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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	31 August 2010	Leher, Valentina

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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A : technological background
O : non-written disclosure
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T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
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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
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31-08-2010

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82