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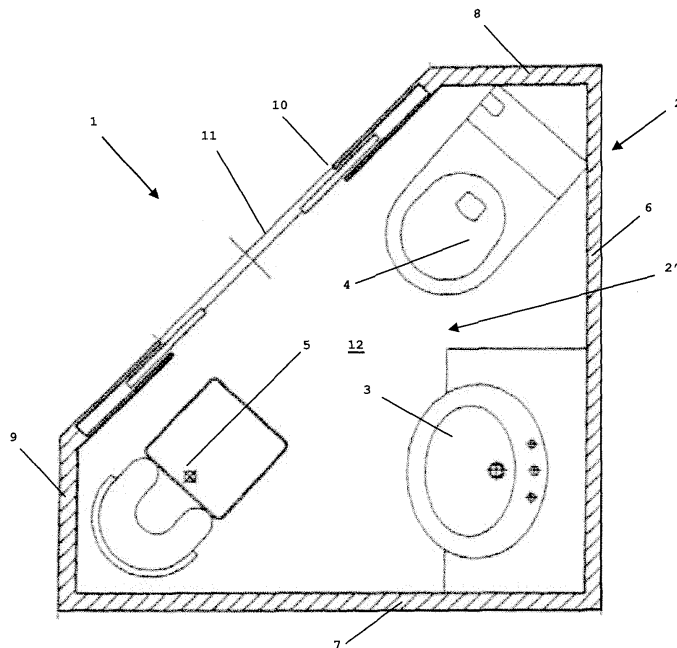
(54) **Modular toilet.**

(57) The present innovation concerns a modular toilet 1 realized through a perimeter delimitation (2, 12) of the removable type, in such a way that it can be selectively assembled/disassembled in loco, and one or more than one sanitary components (3, 4, 5) configured in such a way that they result connected in a connectable/detachable manner as well within the perimeter delimitation (2, 12).

The perimeter delimitation has a pentagonal shape in such a way as to comprise a transversal side 10 that allows important space economization, thus rendering the bathroom adaptable also to small rooms.

Given the reduced dimensions and the project modality of the modular toilet 1, a significant construction and use economy can be obtained. The energetic saving that can be obtained seems significant also.

FIG. 1



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Description

Field of the invention

[0001] The present invention concerns the technical field of toilets.

[0002] In particular, the invention refers to an innovative hygienic device of the modular type.

Background Art

[0003] It is known that in all houses there is usually one or more than one masonry toilets, the amplitude of which depends on the room itself in which they are constructed. However, many times the need for an additional toilet is felt, especially when guests are often received at home. It is clear, therefore, that an inadequate number of toilets with respect to the people present in the house can create a series of inconveniences.

[0004] It is also clear that the construction of a permanent toilet (that is a traditional toilet) implies significant construction costs and, above all, closely correlates with the space availability of the house. For example, it could be possible to build a private toilet in the guest's room, which would anyway cost a lot of money and would imply long construction times and a complex and permanent constructive masonry and installation intervention.

[0005] In other cases, the traditional toilet does not even result feasible due to the lack of construction space.

Disclosure of the invention

[0006] It is the aim of the present invention, therefore, to provide an innovative modular toilet that resolves at least in part the above-mentioned inconveniences.

[0007] In particular, it is the aim of the present invention to provide a modular toilet that results easily installed in the house without requiring permanent and invasive constructive interventions.

[0008] It is the aim of the present invention, therefore, to provide a type of modular toilet which results easily and quickly connected in a room and subsequently detachable when needed.

[0009] It is also the aim of the present invention to provide a modular toilet that results low-cost, if compared with the overall intervention costs for the construction of a traditional toilet.

[0010] It is the aim of the present invention as well to provide a modular toilet, or sectional toilet, that does not require any structural or hydraulic adaptation intervention of the room in which it is assembled.

[0011] It is the aim of the present invention too to provide a modular toilet (1) configured in such a way as to be of minimal encumbrance so that it can be easily assembled also in small rooms partially occupied by other pieces of furniture.

[0012] These and other aims are therefore reached with the modular toilet (1), as per claim 1.

[0013] In particular, a perimeter delimitation (2, 12) is comprised for delimiting the toilet (1). Such a perimeter delimitation is realized so as to be removable so that it can be selectively assembled/disassembled. In such a manner, it can be arranged in a pre-chosen space in a room quickly. Inside the perimeter one or more than one sanitary components (3, 4, 5) are arranged, which are appropriately configured in such a way that they can also be placed in a removable manner inside the said perimeter delimitation (2, 12).

[0014] The sanitary components are therefore arranged to function by simply taking advantage of the pre-existing domestic connections or through own accessories, also them of the modular type.

[0015] In this manner, the assembly is quick and does not require any kind of structural intervention.

[0016] Advantageously, the perimeter delimitation (2, 12) comprises a useable floor level (12) and a lateral pentagonal surface (2) that stands on the useable floor level.

[0017] In particular, such a pentagon-shaped perimeter delimitation (2, 12) comprises five consecutive sides (6, 7, 8, 9, 10) thus combined among them: four (6, 7, 8, 9) of the said five sides result connected among them consecutively at a right angle, while the fifth side (10) results arranged transversally with respect to the two sides (8, 9) to which it is connected.

[0018] Such a configuration is extremely advantageous since it allows to arrange the toilet in an angle against an angle of the wall, while the front wall of the toilet that is projected outward the wall into the room occupies a limited volume of space thanks to such a configuration cut through the transversal side. For example, a bed can be arranged in front of the toilet, exactly in front of the transversal side, thus leaving ample transit space between the side itself and the bed.

[0019] In greater detail, the pentagonal lateral surface (2) can advantageously comprise:

- Two surfaces (6) and (7) connected between them by one of their ends according to a right angle;
- A surface (8) that is connected by one of its ends to the opposite end of the surface (6);
- A surface (9) that is connected by one of its ends to the opposite end of the surface (7);
- A transversal surface (10) that is connected to the free ends of the surface (8) and the surface (9).

[0020] Advantageously, the surfaces (6, 7) have a length equal between them and comprised within 140 cm and 160 cm, preferably 155 centimetres, and wherein, further, the surfaces (8, 9) have a length equal between them and comprised within 40 and 55 centimetres, preferably 50 centimetres, so that the surface (10) results arranged transversally according to an angle of about forty-five angle degrees with respect to the said surface (7) or the said surface (6).

[0021] The said measures optimize space saving.

[0022] Advantageously, connection means are included to connect in a removable manner between them the useable floor level (12) and the lateral surface (2) and reciprocally the surfaces (6, 7, 8, 9, 10) forming the said lateral surface (2).

[0023] Advantageously, the following further provided:

- Drain means (40, 41, 42, 43) for realizing the drain of liquids from the sanitary components (3, 4, 5) towards the exterior of the modular toilet (1) and configured in such a way as to result modular to be connected in a removable manner to the said one or more than one sanitary components (3, 4, 5);
- Feed means for providing running water to the sanitary components and configured in such a way as to result modular to be connected in a removable manner to the said one or more than one sanitary components (3, 4, 5).

[0024] Advantageously, the drain means (40, 41, 42, 43) comprise a water trap (40) that can be placed inside the perimeter delimitation (2) and to which an input duct (41) is connected for piping the liquids from the said sanitary components into the water trap and a drainage duct (43) towards the exterior.

[0025] Advantageously, a pump (42) is further provided to be connected to the water trap (40) in such a way as to thrust the piped liquids into the water trap (40) along the duct (43) towards the exterior.

[0026] Advantageously, the useable floor level is hollow inside in such a way as to realize a receiving seat into which the water trap is arranged.

[0027] Advantageously, the feed means to provide water comprise a pipe that can be connected externally to a running water duct and a boiler for water collection.

Brief description of drawings

[0028] Further features and advantages of the present modular toilet 1, according to the invention, will result clearer with the description of one of its embodiments that follows, made to illustrate but not to limit, with reference to the annexed drawings, wherein:

- Figure 1 represents a top view of the toilet in accordance with the invention.
- Figure 2 represents a top view of the placement of the modular toilet in a room.
- Figure 3 represents a section relative to the walls of the toilet;
- Figure 4 represents a front view of the hydraulic connections and the accessory hydraulic installation of the toilet in accordance with the invention.
- Figures from 5 to 7 show some phases of use.

Description of some of the preferred embodiments

[0029] With reference to figure 1, a top view is shown

that describes some elements of the modular toilet 1, or sectional bathroom, in accordance with the invention.

[0030] In particular, the toilet is formed by a pentagonal perimeter 2 that delimits it and is provided with a chamfer 10. The perimeter 2 is therefore realized through a pre-fabricated wall 2 which is arranged so that it can be assembled in loco and subsequently disassembled.

[0031] More in detail, figure 1 shows the said wall 2 comprising two surfaces 6 and 7 arranged between them according to a right angle. Such surfaces 6 and 7 can have an overall length comprised within 140 cm and 160 cm, and preferably be of 155 centimetres. The surface 6 is further connected to a surface 8, from the opposite part to the connection with the surface 7, according to such a connection by which the surface 8 results parallel to the surface 7 itself. The overall length of the said surface 8 can be comprised within 40 and 55 centimetres, and preferably be of 50 centimetres. In the same manner, the surface 9 is arranged orthogonally to the surface 7 and parallel to the surface 6. Also in this case, the overall length of the surface 9 can be comprised within 40 centimetres and 55 centimetres, and preferably be of 50 centimetres. The surface 8 is therefore connected to the surface 9 through a surface 10 which obviously results arranged transversally according to an angle of about forty-five angle degrees with respect to the surface 7 or the surface 6. Naturally, the angle of the surface 10 is variable on the basis of the pre-chosen lengths for the realization of the surfaces (6, 7, 8, 9).

[0032] The surface 10 also comprises an entry-opening 11 to allow the access into the internal volume 2' delimited by the wall 2 and into which the various sanitary components (3, 4, 5) are placed. The opening is then closed through an ordinary door, for example a sliding one or any other door. Figure 1 shows from the top the useable floor level 12 for realizing the flooring and that is connected to the walls. The useable floor level 12 is appropriately shaped according to the form of the walls when assembled among them.

[0033] The useable floor level can have a thickness between the 12 and the 20 cm and is hollow inside in such a way as to be able to lodge inside some accessory components described below.

[0034] It is clear that, in the preferred configuration of the invention, such walls (6, 7, 8, 9, 10) are realized in such a way that they can all be disassembled/re-assembled among them so as to be able to be easily transported and then assembled in loco. In that sense, attachment means will be provided at the ends, which allow to connect them in a removable manner among them.

[0035] Nevertheless, nothing would forbid the realization of the entire perimeter delimitation 2 in an only piece that cannot be disassembled or that can be only partially disassembled.

[0036] Such a quadrangular configuration 2 with chamfer 10 has a significant technical advantage. In particular, the toilet 1 can take advantage of assembly collocations otherwise not usable. In particular, as shown

in figure 2 for exemplification purposes, it can be assembled matching an angle of the wall of the room 20 in such a way that the chamfer 10 leaves a passage free between the toilet itself and a further furnishing element that could be present in the room, such as the bed 25, for example.

[0037] The dimensions indicated above optimize space economy, even if different measures could anyway be used.

[0038] Figure 3 shows a section to highlight the technology of realization of the wall 2. The section, which can refer indifferently to any of the said surfaces (6, 7, 8, 9, 10, 12) described above, comprises a plurality of overlapped layers, that is a sandwich-like structure. In particular, the section of figure 3 shows a covering external skin 13 of variable thickness. An intermediate hardboard layer 14 is provided (for example, wood of the "Okumè" type) of variable thickness, for example from 10 to 12 millimetres and an internal layer 15, or core, of insulating material, preferably cork. The thickness of the internal layer 15 is variable from 20 to 30 millimetres.

[0039] Such a structure is particularly advantageous since it realizes a thermo-acoustic wall, that is acoustically insulating and that retains heat well. Moreover such a configuration results impermeable to humidity therefore the inconveniences due to the deformations by the action of too much humidity absorbed by the structure itself are easily avoided.

[0040] Going back to figure 1, some insertable components that can be inserted into the modular toilet are shown, that is a water closet 4, a shower 5 and a basin 3. Naturally, further sanitary components could be added to the said components (3, 4, 5) or, similarly, the said three sanitary components could be reduced to just two or to just one component (for example, only the water closet 4).

[0041] Nevertheless, the preferred configuration of the invention foresees at least the presence of a water closet 4, a shower 5 and a basin 3.

[0042] In accordance with the invention, therefore, such sanitary components (3, 4, 5) are configured in such a way as to be insertable in a modular way as well and therefore removable within the perimeter 2.

[0043] To that aim, as schematically shown in figure 4, a water trap 40 is provided, schematically represented with a rectangle 40. This in fact represents a collecting tank into which the drain liquids of the sanitary components are conveyed.

[0044] In particular, figure 4 schematically shows, through a lateral view, the said three sanitary components connected each one of them through a drainage pipe 41 to the main water trap 40. In order to reduce the encumbrance the water trap can preferably be placed into the thickness of the useable floor level 12, for example below the basin 3. Always as shown in figure 4, the water trap is provided with a pump 42 which is fed by the ordinary domestic electric network. The pump 42 serves to push the drain liquids, collected into the water trap 40, along a main drainage duct 43 realized through a simple

flexible pipe 43 of about 10 centimetres. The flexible pipe 43 can therefore be easily connected to an external drainage of the room, such as the drainage of the washing-machine, for example, or the sewer through a traditional water closet (see drain arrow applied to the pipe 43).

[0045] The water trap is therefore arranged lower with respect to the sanitary components in such a way that the drain water can flow inside, through the ducts 41, simply by gravity.

[0046] Naturally, no-one would forbid to arrange the water trap within the cabin 2 in any other position. If, in that case, the water trap resulted lifted with respect to the sanitary components, each sanitary could then be provided with a specific pump to push the drain fluid into the water trap 40 itself.

[0047] The water trap can further be provided with a waste disposal unit, thus avoiding the risk of clogging of the pipe 43. Such a disposal unit is advantageous since it renders possible the use of a drain pipe of reduced dimensions, for example of about 35 mm.

[0048] The water closet 4 can also be provided with an extraction fan, to be placed into the water closet under the toilet bowl of the water closet or in a similar position, to extract odours.

[0049] Although the preferred configuration of the invention describes only one main water trap 40, modular as well, it would also be possible to connect directly the sanitary components to the domestic sewer network or to the water trap of the traditional bathroom, in the case in which the placement of the modular toilet allows so.

[0050] Moreover, even if the preferred configuration describes a solution with only one main water trap 40, nothing would impede to provide each sanitary fitting with a water trap of its own, independent.

[0051] In order to allow the feed of the running water to the sanitary components, a simple external pipe is provided, which is connected to the ordinary feed.

[0052] Alternatively, the flexible pipe could connect a domestic tap with the dispensers of the sanitary components, that is to the shower, the basin and the caisson for the collection of drain water of the water closet. For the feed of hot water there are at least two possibilities: a connection to eventual boilers present in the house or the feed through an autonomous boiler, insertable in the same structure. The pipe and the boiler are not shown just for descriptive simplicity purposes.

[0053] To the services provided in the structure also different types of sauna or Turkish bath can be easily added.

[0054] Moreover, the modular hygienic service can be easily provided with autonomous air-conditioning. Therefore, it can also be used as dry kiln.

[0055] Having structurally described all the basic elements of the invention, we now pass onto a description of the functioning with particular reference to figures from 5 to 7.

[0056] In particular, the modular toilet that is the subject of the invention is assembled by simply arranging

the cabin 2 that forms the perimeter. The base surface 12 is therefore arranged and the different walls (6, 7, 8, 9 e 10) are connected to it. The sanitary components are arranged without the need for realizing any drilling intervention. It is in fact enough to arrange the water trap 40 with eventual pump below the basin 3 into the opening of the base or in any other position that is deemed appropriate. The sanitary components are then connected to the water trap through the said pipes 41 and from the water trap towards the exterior through the pipe 43. The connecting pipe to the running water is then arranged.

[0057] Figures from 5 to 7 show, just for exemplification purposes, some phases of use of the toilet.

Claims

1. A modular toilet (1) **characterized in that** it comprises a perimeter delimitation (2, 12) of the removable type in such a way that the perimeter can be selectively assembled/disassembled in loco and one or more than one sanitary components (3, 4, 5) configured in such a manner that they result connected in a connectable/detachable manner within the said perimeter delimitation (2, 12).
 2. A modular toilet (1), according to claim 1, wherein the said perimeter delimitation (2, 12) comprises:
 - A useable floor level (12);
 - A lateral pentagonal surface (2) that stands on the said useable floor level.
 3. A modular toilet (1), according to claim 1 or 2, wherein the said perimeter delimitation (2, 12) has a pentagonal shape comprising five consecutive sides (6, 7, 8, 9, 10) of such a length that four (6, 7, 8, 9) of the said five sides result connected consecutively according to a right angle and the fifth side (10) results arranged transversally with respect to the two sides (8, 9) to which it is connected.
 4. A modular toilet (1), according to one or more of the preceding claims from 1 to 3, wherein the said lateral pentagonal surface (2) comprises:
 - Two surfaces (6) and (7) connected between them by one of their ends according to a right angle;
 - A surface (8) that is connected by one of its ends to the opposite end of the surface (6);
 - A surface (9) that is connected by one of its ends to the opposite end of the surface (7);
 - A transversal surface (10) that is connected to the free ends of the surface (8) and of the surface (9).
 5. A modular toilet (1), according to claim 4, wherein
- the said surfaces (6, 7) have equal length comprised between 140 cm and 160 cm, preferably 155 centimetres, and wherein, further, the surfaces (8, 9) have equal length comprised between 40 and 55 centimetres, preferably 50 centimetres, in such a way that the surface (10) results arranged transversally according to an angle of about forty-five angle degrees with respect to the said surface (7) or to the said surface (6).
6. A modular toilet (1), according to one or more of the preceding claims, wherein connection means are provided to connect in a removable manner between them the useable floor level (12) to the lateral surface (2) and reciprocally the surfaces (6, 7, 8, 9, 10) forming the said lateral surface.
 7. A modular toilet (1), according to claim 1, wherein the following are further provided:
 - Drain means (40, 41, 42, 43) for realizing the drain of the liquids from the said sanitary components (3, 4, 5) towards the exterior of the modular toilet (1) and configured in such a way as to result modular to be connected in a removable manner to the said one or more than one sanitary fitting (3, 4, 5);
 - Feed means for providing running water to the said sanitary components and configured in such a way as to result modular to be connected in a removable manner to the said one or more than one sanitary components (3, 4, 5).
 8. A modular toilet (1), according to claim 7, wherein the said drain means (40, 41, 42, 43) comprise a water trap (40) that can be placed within the perimeter delimitation (2) and to which an inlet duct (41) is connected to pipe the liquids from the said sanitary components into the water trap and a drainage duct (43) towards the exterior.
 9. A modular toilet (1), according to claim 8, wherein a pump (42) is further provided, that can be connected to the water trap (40) in such a way as to push the liquids piped into the water trap (40) along the duct (43) towards the exterior.
 10. A modular toilet (1), according to one or more of the preceding claims, wherein the useable floor level is hollow inside in such a way as to realize a receiving seat into which the water trap is arranged.
 11. A modular toilet (1), according to claim 7, wherein the feed means to provide water comprise a pipe that can be externally connected to a running water duct and a boiler for the collection of the said water.

FIG. 1

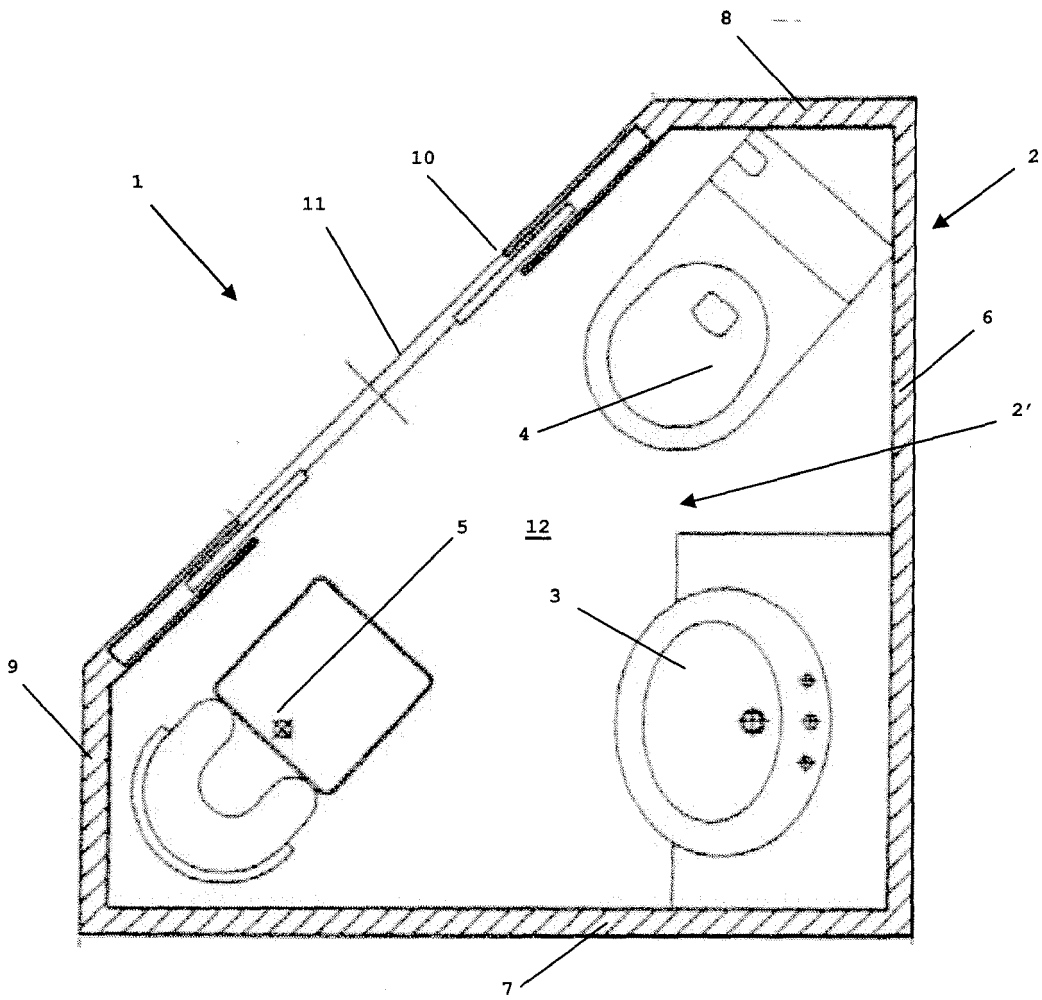


FIG. 2

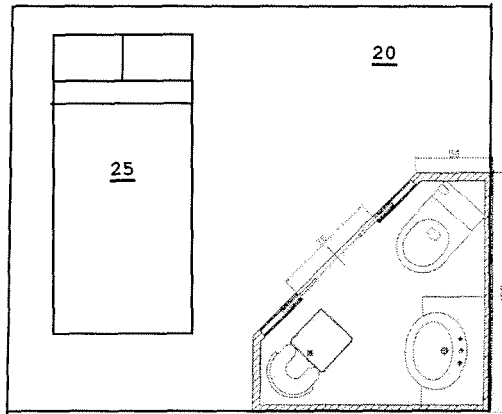


FIG. 3

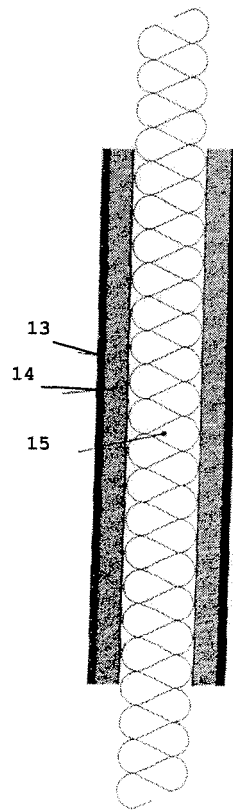


FIG. 4

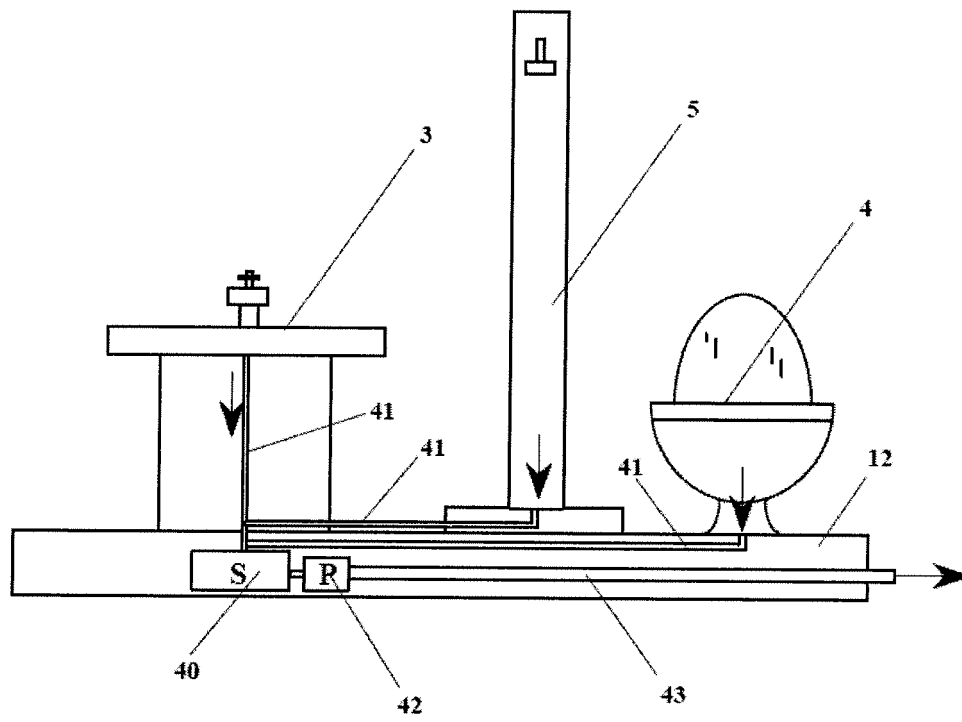


FIG. 5

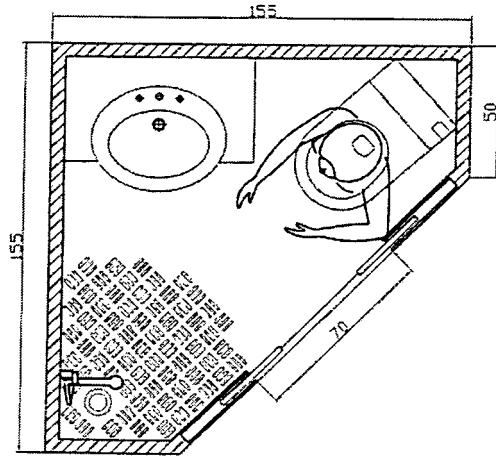


FIG. 6

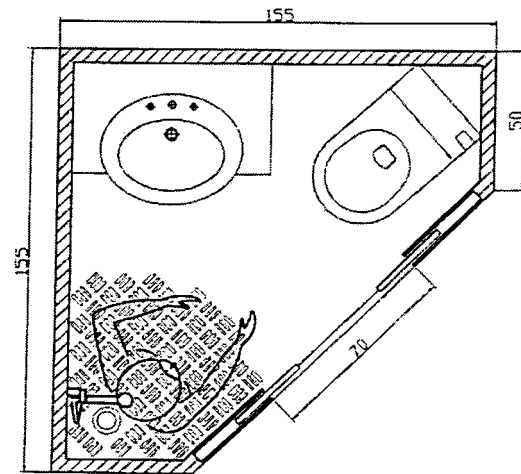


FIG. 7

