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(54) Shower stall with heating wall.

(57) A shower stall with heating wall (1) is described, comprising at least one heating wall (1) with two vertical section bars (2, 3) holding at least one glass wall (4) and connected by at least one crosswise section bar (11, 12), said section bars (2, 3, 11, 12) having hollow sections (23, 25, 26, 27) connected to one another in which a hot fluid flows. At least one of the hollow sections (23, 25, 26, 27) is connected to at least one hollow pipe (20) in which a hot fluid, preheated by an external heating system, can enter and to at least one pipe (21) from which said fluid can exit. (Figure 1).

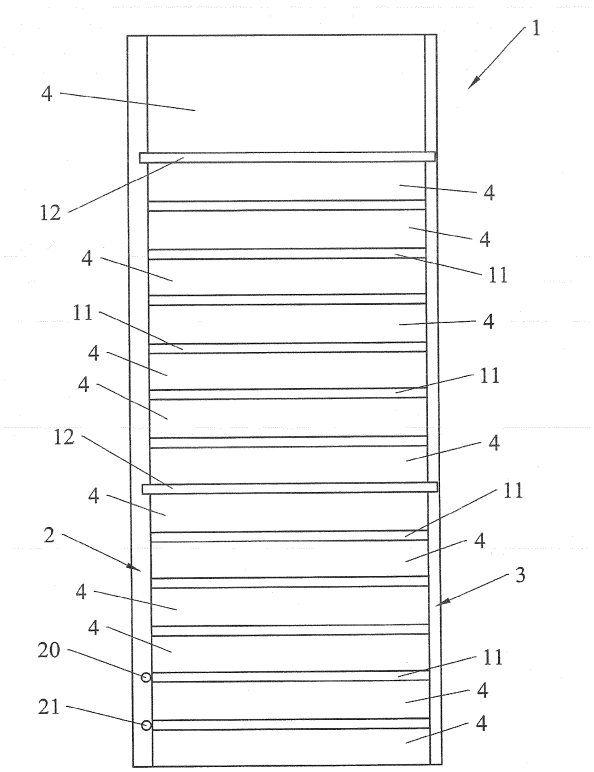

FIG.1

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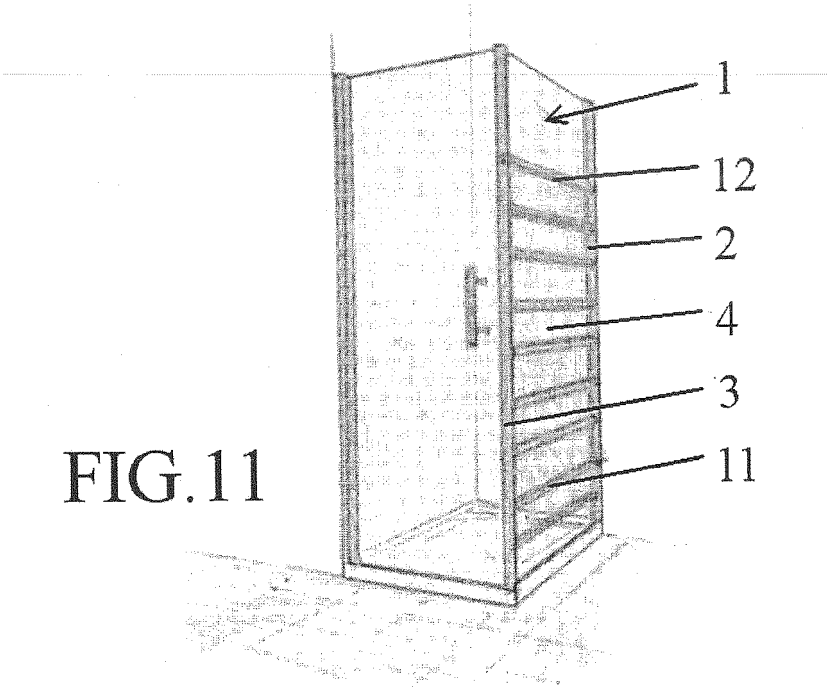

FIG.11

Description

[0001] The present invention relates to a shower stall with heating wall.

[0002] Shower stalls heated by means of electric devices fitted on at least one of the walls of the shower are known.

[0003] Such a solution is known from patent EP2431669, for example, which describes an electrically heated glass panel of a shower stall. Electric current crosses a system made of wire links, or other poorly conducting materials, enclosed between two walls made of glass, or other transparent or translucent, waterproof material. The heat generated by energy dispersion due to the electric current crossing said wire link system radiates through the glass wall itself to heat a shower stall. The glass has a low thermal conductivity, and therefore most of the heat radiated by the wire links is lost through the radiation absorption process by the glass walls, thus preventing an effective heating of the shower stall.

[0004] This heating system is poorly efficient because, on one hand, most of the energy introduced into the wire link system is dissipated to generate heat, and on the other hand most of this heat cannot radiate towards the interior of the shower because it is absorbed by the glass wall.

[0005] The need to include a waterproof wall inside the shower stall to prevent the water from contacting the electric current crossing the links contributes to the inefficiency of the system. The use of electric current close to the shower stall could make some users reluctant to purchase this apparatus.

[0006] Other methods including the use of an electric radiator or a radiator connected to the home heating system to the purpose of heating a bathroom with a shower stall are also known.

[0007] Such a solution is known, for example, from patent FR2957411, which describes a radiator of hot fluid of a home heating system, which fluid flows within a plurality of longitudinal and transversal pipes. These systems use radiators which heat a fluid or gas contained in pipes in contact with the environment. The heat exchange between pipe and surrounding environment allows the entire room to be heated by radiation of heat in the air and by convection of the air flow near the pipe itself.

[0008] This system is poorly efficient for heating the shower stall because the glass walls must remain open to let the hot air enter from the environment of the room.

[0009] It is the object of the present invention to provide a shower stall with heating wall which is energy-efficient and increases the heating efficacy.

[0010] It is a further object to heat laundry or towels resting on the interior and exterior of a shower stall.

[0011] Such an object is achieved in accordance with the invention by a shower stall with heating wall, **characterized in that** it comprises at least one heating wall with two vertical section bars holding at least one glass wall and connected by at least one crosswise section bar, said section bars having hollow sections connected to one another, in which a hot fluid flows, at least one of the hollow sections being connected to at least one hollow pipe in which a hot fluid, preheated by an external heating system, can enter and to at least one pipe from which said fluid can exit.

[0012] An advantage of the present invention is to use a hot fluid for heating both the bathroom environment and the interior of a shower stall.

[0013] Another advantage is to save energy by using a preheated hot fluid without using ineffective electric current dissipation methods to produce heat.

[0014] A further advantage is to avoid the reluctance of users to employ electric current near running water.

[0015] A yet further advantage is to have a glass wall through which only part of the heat which crosses at least one hollow section bar in which a hot fluid flows may radiate.

[0016] A further advantage is to use crosswise section bars for hanging damp laundry to be dried both inside and outside the shower stall.

[0017] These and other features of the present invention will become further apparent from the following detailed description of practical embodiments thereof, shown by way of non-limitative example in the accompanying drawings, in which:

Figure 1 shows a front view from the exterior of a heating wall of a shower stall according to the present invention;
Figure 2 shows a front view from the interior of a heating wall of a shower stall according to the present invention;
Figure 3 shows a section view taken along line III-III in Figure 2 of a heating wall with a clothes rack in resting position;
Figure 4 shows a section view taken along line III-III in Figure 2 of a heating wall with a clothes rack in working position;
Figure 5 shows a section view taken along line V-V in Figure 2 of a heating wall with a clothes rack in working position;
Figure 6 shows a first detail of figure 5;
Figure 7 shows a second detail of figure 5;
Figure 8 shows a perspective view of a detail of a clothes rack in working position;
Figure 9 shows a perspective view of a detail of a clothes rack in resting position;
Figure 10 shows a perspective view from the exterior of a shower stall with a heating wall;
Figure 11 shows a perspective view from the exterior of a shower stall with a heating wall;
Figure 12 shows a perspective view of a heating wall used as partition.

[0018] The above-listed figures show a heating wall 1 with two vertical section bars 2 and 3 holding a glass wall 4. Said section bar 2 is connected to the other section

bar 3 by means of a number of crosswise section bars 11, 12.

[0019] The crosswise section bars 11 are fitted along a longitudinal line onto the two vertical section bars 2 and 3 so as to be in contact with the glass wall 4, while the crosswise section bars 12 are fitted onto the outer side of the section bars 2 and 3 so as to be spaced apart by a gap which substantially corresponds to the thickness of the section bars 2 and 3 themselves.

[0020] Section bars 2, 3, 11 and 12 have hollow sections (23, 25, 26 and 27, respectively) in which a hot fluid flows, which may be a liquid or gas, advantageously pre-heated by means of a home heating system or by means of a similar external heating system. The section is square in the described embodiment, but any shape could be used, i.e. a pipe section.

[0021] The two pipes 20 and 21 are connected to the home heating system and the hot fluid entering and exiting from the hollow section 23 of the section bar 2 can flow therein.

[0022] Section bar 2 is wedged in an upright 22 (figure 7). It is worth noting that the upright 22 has a hollow C-shaped section, and the section bar 2 has two extensions 231, 232 of section 23 which externally envelop the free sides 221, 222 of the C-shaped section of upright 22. Such a type of coupling ensures assembly firmness.

[0023] Section bar 3 comprises a hollow section 25 with an integral insert 24 to be wedged in the glass wall 4 (figure 6).

[0024] Glass wall 4 is supported and fixed onto the inner side of section bar 2 by means of plugs 13, while it is fixed to the other end of section bar 3 by means of the wedge insert 24.

[0025] A clothes rack 30 can be fitted on the glass wall 4 inside the shower stall by means of at least two support uprights 34, fixed to the walls of section bars 2 and 3, respectively, inside the shower stall.

[0026] The support uprights 34 are installed on the inner wall of the shower stall by means of plugs 13 which are also used to fix glass wall 4 to section bar 2.

[0027] The clothes rack 30 comprises a series of horizontal pipes 31, where the first from the top and the last from the bottom are fitted on connecting rods 33 by means of pairs of pins 37.

[0028] The other horizontal pipes 31 between the latter two are positioned at regular intervals and connected to one another by means of two cords 32 through knots onto the pins 37 present at their ends.

[0029] The other ends of the pairs of connecting rods 33 can rotate within pairs of pins 36 positioned on two support uprights 34.

[0030] The connecting rods 33 can be displaced from a retracted resting position to an extended working position (as shown in Figures 8 and 9) by means of the cords 32 which can be coupled to the pins 35 positioned on the support uprights 34.

[0031] Operatively, the shower stall is heated by introducing a hot fluid, advantageously pre-heated by a home heating system, by means of pipe 20 within the hollow section 23 of section bar 2 fitted on at least one of the glass panels 4 of the shower stall 1, as shown in the example illustrated in figures 10 and 11.

[0032] The hot fluid flows in the hollow section 23 of section bar 2, may cross the hollow section 26, 27 of the crosswise section bars 11, 12, and may flow in the hollow section 25 of section bar 3.

[0033] The hot fluid may advantageously return to the home heating system via the outlet pipe 21.

[0034] The flow of fluid or gas from the home heating system into the section bars 2, 3, 11, 12 generates heat which heats glass 4 but also the air around the section bars 2, 3, 11, 12, thus heating the surrounding environment.

[0035] The crosswise section bar 12 is fitted so as to advantageously leave a gap between itself and the glass wall 4, so that damp laundry can rest thereon and be dried both by contact with the section bar 12 and by convection of hot air which rises from the bottom upwards, advantageously heated in turn by the crosswise section bars 11.

[0036] The heat generated by the section bars 2, 3, 11 and 12 is also radiated in part through the glass panel 4 so as to advantageously heat the interior of the shower stall.

[0037] The clothes rack 30 inside the shower stall advantageously increases the surface on which the laundry can be hung out. Said clothes rack 30 can be advantageously used to hang out laundry when the shower is not in use.

[0038] In order to hang out the laundry, the cords 32 are pulled and coupled to the two pins 35 fitted at the top on the vertical support rods 34. Pulling the cords 32 raises the pair of connecting rods 33, which rotate on the pairs of pins 36 fitted on the vertical support rods 34. The connecting rods 36 are in turn connected at one of their ends by means of pins 37 both to the cords 32 and to the transversal pipes 31.

[0039] Pulling the cords 32 advantageously allows to create a space in which the laundry can be hung out between the series of pipes 31 and the glass wall 4 of the shower stall.

[0040] Alternatively, the clothes rack 30 can be provided on the outer glass wall 4 of the shower stall.

[0041] A clothes rack 30 can also be fitted on the other walls of the shower stall.

[0042] The support uprights 34 may be installed on the section bars 2 and 3 by means of plugs 13 or by means of glue or adhesive.

[0043] Another alternative includes several heating walls of the shower stall.

[0044] The section bars 2, 3, 11 and 12 may be fitted either on one side of the glass wall 4 or on the other.

[0045] Alternatively, a crosswise section bar 11 arranged at the bottom between two adjacent sheets of glass can be provided, so as to directly heat the interior of the shower stall. Thereby, the interior of the shower

stall can be advantageously heated by radiation of heat though the glass wall 4 itself and by a flow of hot air which moves by convection from the bottom upwards inside the shower stall.

[0046] Figure 12 shows the above-described heating wall 1 used as a partition in a single room, e.g. in a bathroom, for separating the washbasin area from the toilet area.

[0047] Heating wall 1 generally allows to better locate the heating by exploiting the central heating system, when the user is, for example, in a shower stall near a washbasin, or even in rooms other than the bathroom. In open space-type rooms, it may be useful to create a heating wall 1 close to a sofa or desk or dining table.

Claims

1. A shower stall with heating wall (1), **characterized in that** it comprises at least one heating wall (1) with two vertical section bars (2, 3) holding at least one glass wall (4) and connected by at least one crosswise section bar (11, 12), said section bars (2, 3, 11, 12) having hollow sections (23, 25, 26, 27) connected to one another, in which a hot fluid flows, at least one of the hollow sections (23, 25, 26, 27) being connected to at least one hollow pipe (20) in which a hot fluid, preheated by an external heating system, can enter and to at least one pipe (21) from which said fluid can exit.

2. A shower stall according to claim 1, **characterized in that** it includes at least one crosswise section bar (11) in contact with the glass wall (4).

3. A shower stall according to claim 2, **characterized in that** it includes at least one crosswise section bar (12) spaced apart from the glass wall (4).

4. A shower stall according to claim 1 or 2, **characterized in that** at least one vertical section bar (2) is wedged in an upright (22).

5. A shower stall according to claim 4, **characterized in that** said upright (22) has a C-shaped hollow section, and the vertical section bar (2) has two extensions (231, 232) of the section (23) which externally envelop the open sides (221, 222) of the C-shaped section of the upright (22).

6. A shower stall according to any one of the preceding claims, **characterized in that** at least one vertical section bar (3) includes a hollow section (25) with an integral insert (24) to be wedged in the glass wall (4).

7. A shower stall according to any one of the preceding claims, **characterized in that** it comprises at least one clothes rack (30) fitted on at least one heating wall (1).

8. A shower stall according to claim 7, **characterized in that** the clothes rack (30) comprises at least one transversal pipe (31) on which laundry can be hung out, movable between a retracted position and an extended position by means of cords (32) associated with at least one pair of connecting rods (33) and with pins (35, 36, 37) fitted on at least two support uprights (34) associated with the vertical section bars (2, 3).

9. A heating wall (1), **characterized in that** it comprises two vertical section bars (2, 3) holding at least one glass wall (4) and connected by at least one crosswise section bar (11, 12), said section bars (2, 3, 11, 12) having hollow sections (23, 25, 26, 27) connected to one another, in which a hot fluid flows, at least one of the hollow sections (23, 25, 26, 27) being connected to at least one hollow pipe (20) in which a hot fluid, preheated by an external heating system, can enter and to at least one pipe (21) from which said fluid can exit.

10. A heating wall (1) according to claim 9, **characterized in that** it includes at least one crosswise section bar (11) in contact with the glass wall (4).

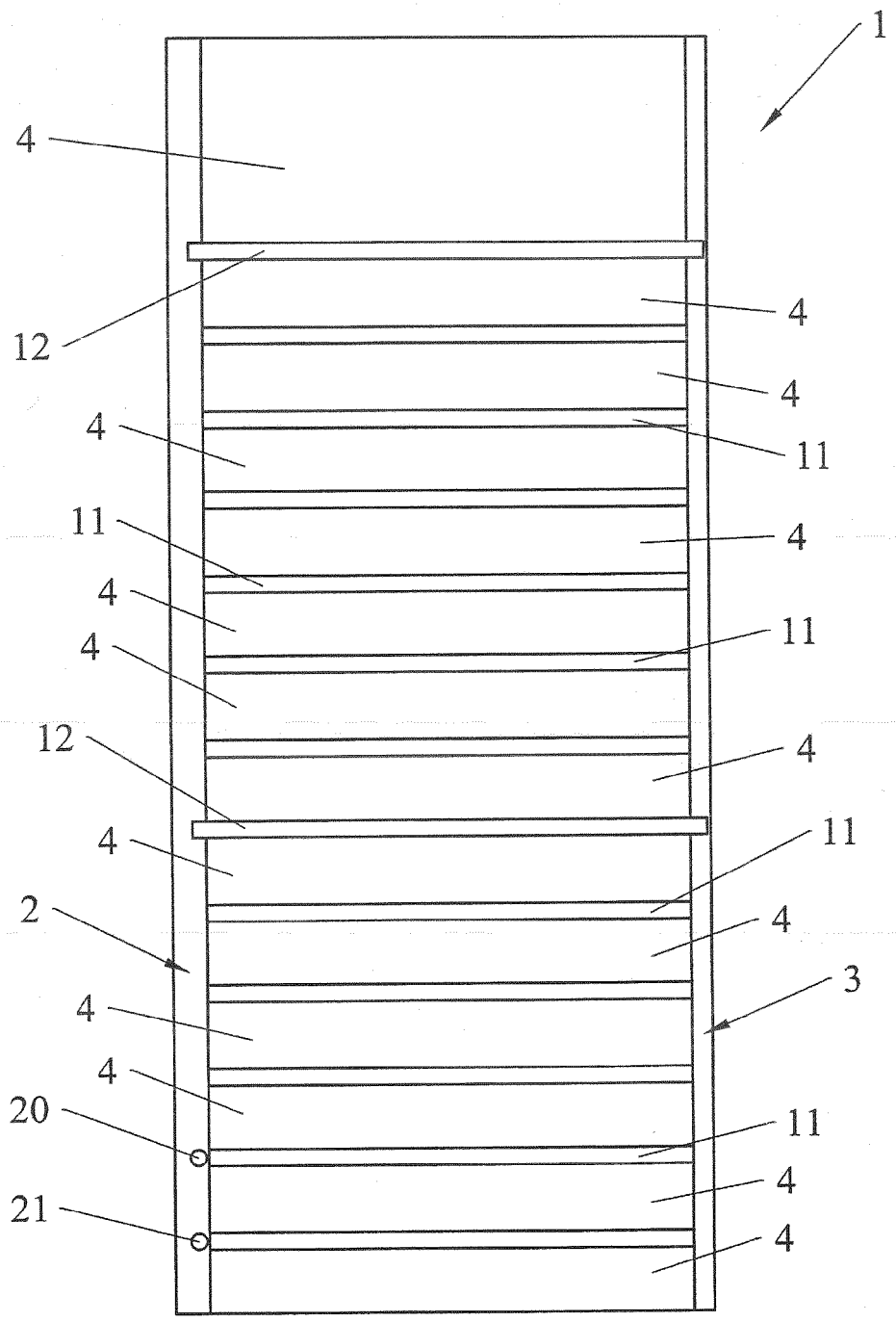

FIG.1

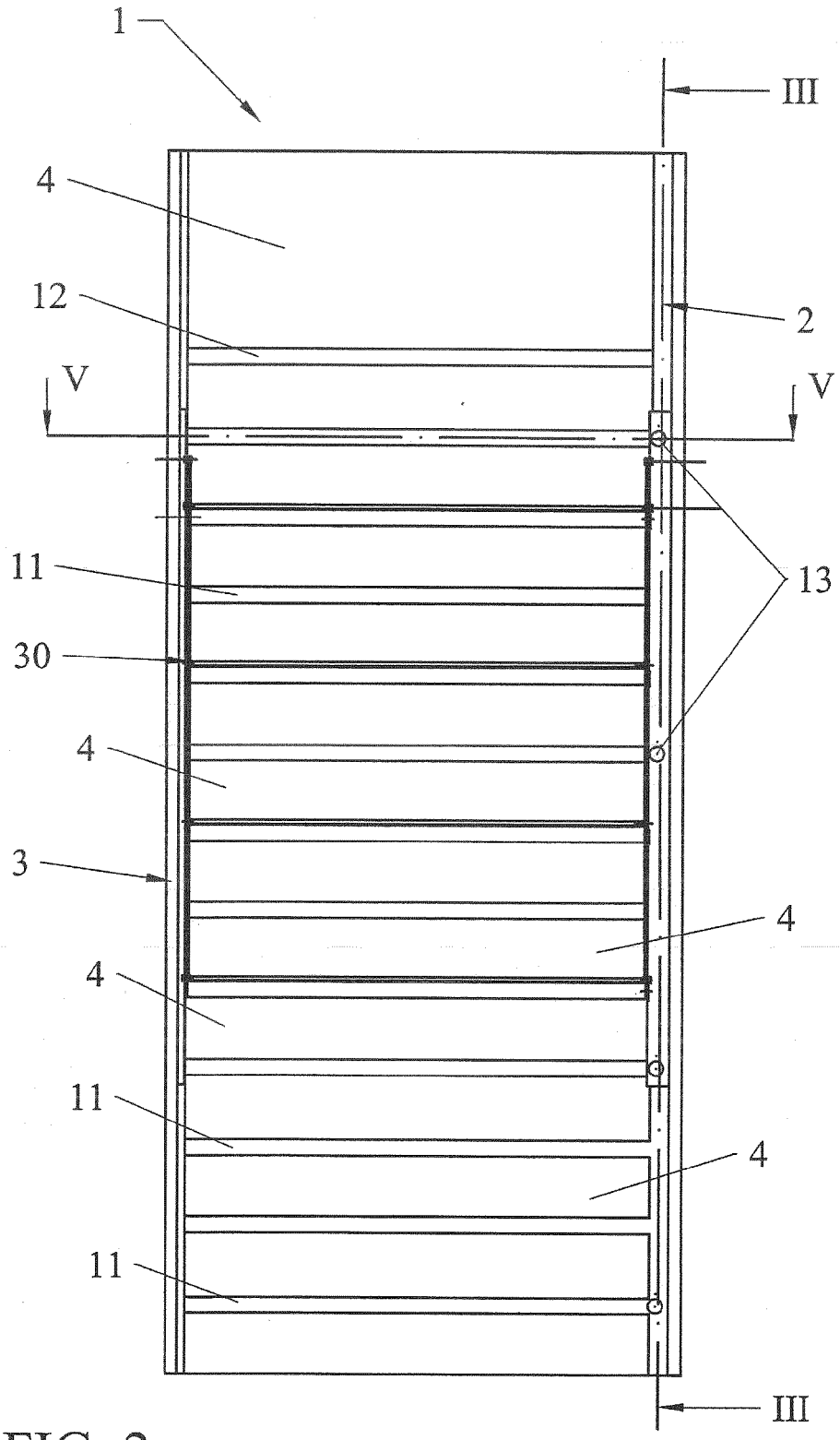

FIG. 2

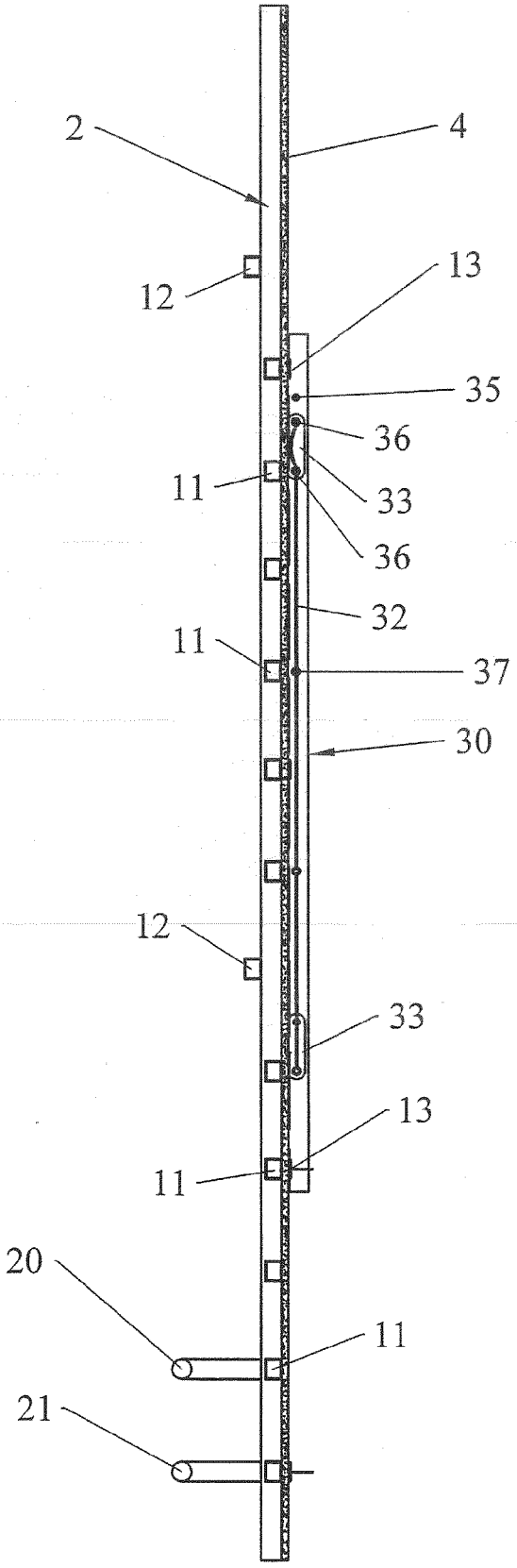

FIG.3

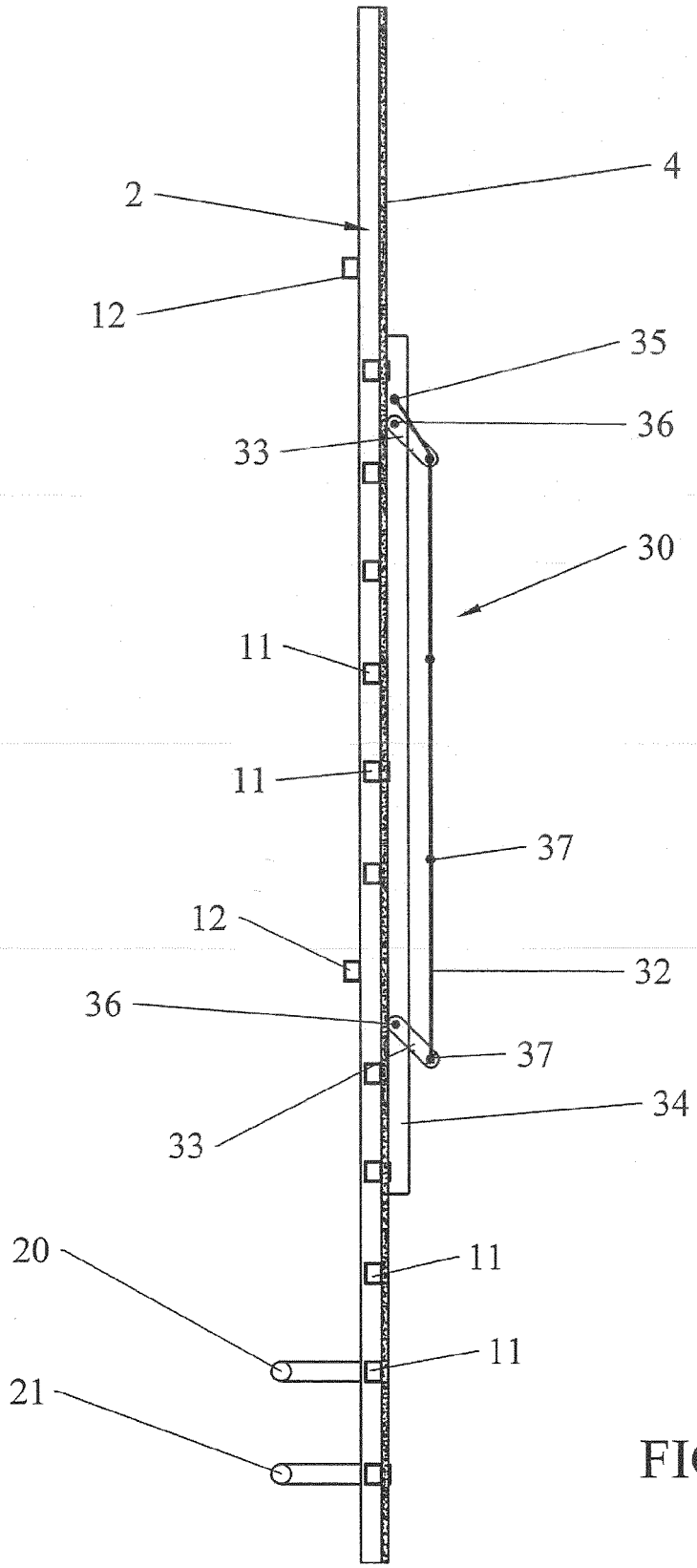

FIG.4

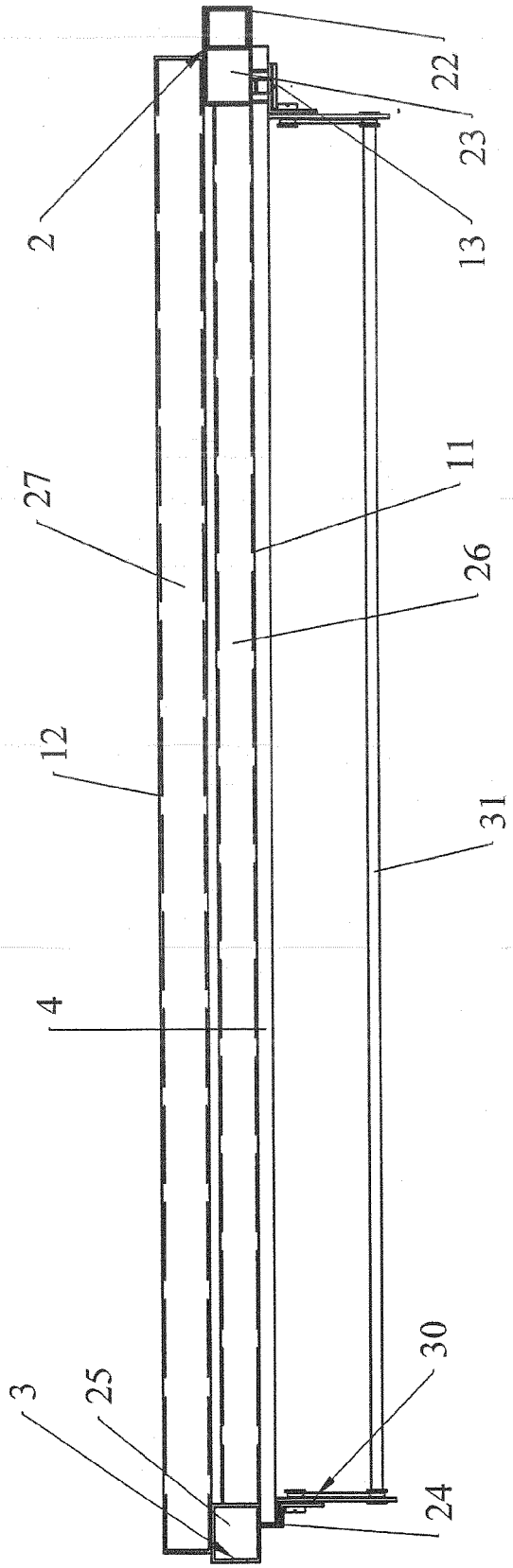

FIG.5

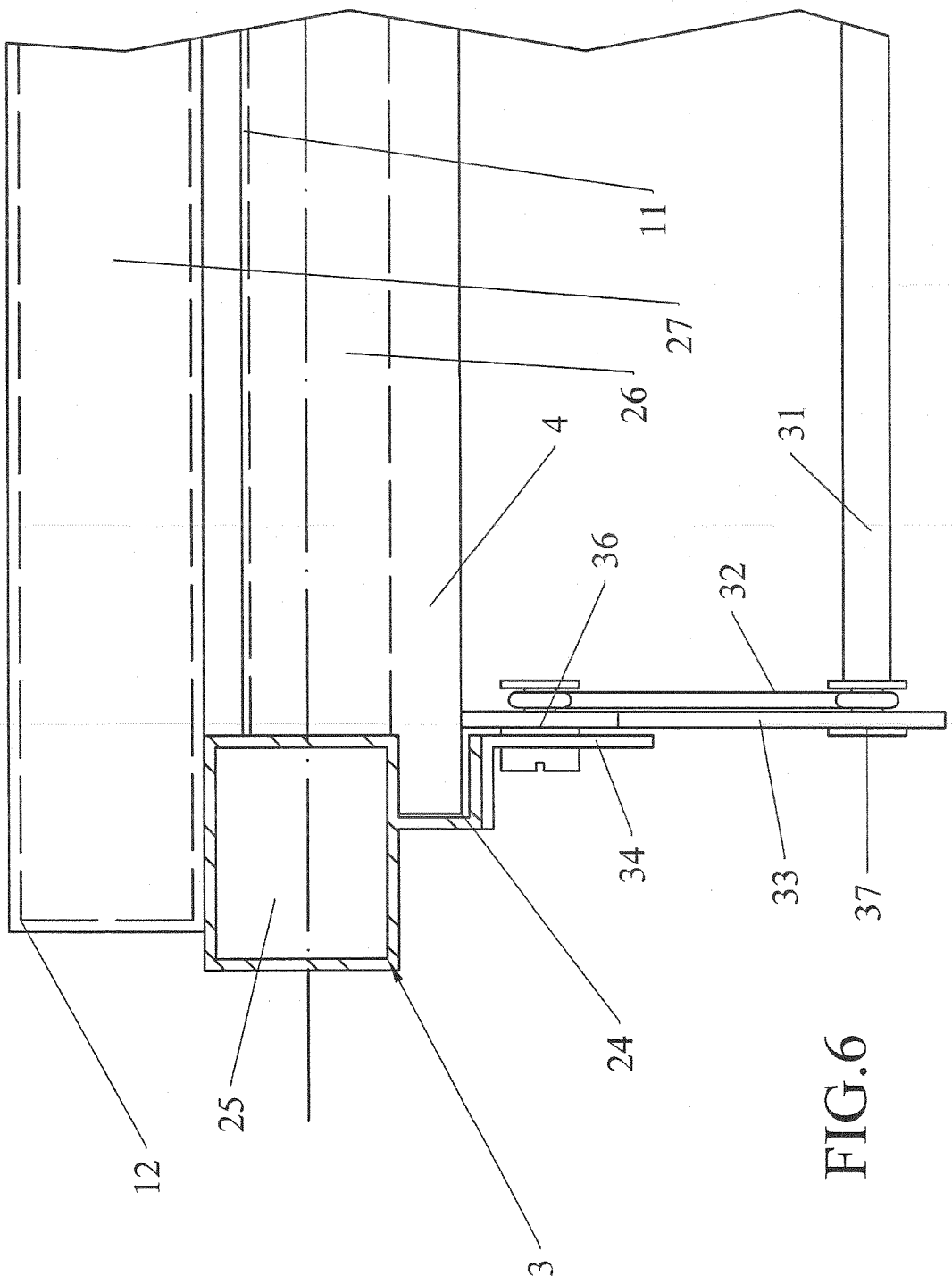

FIG.6

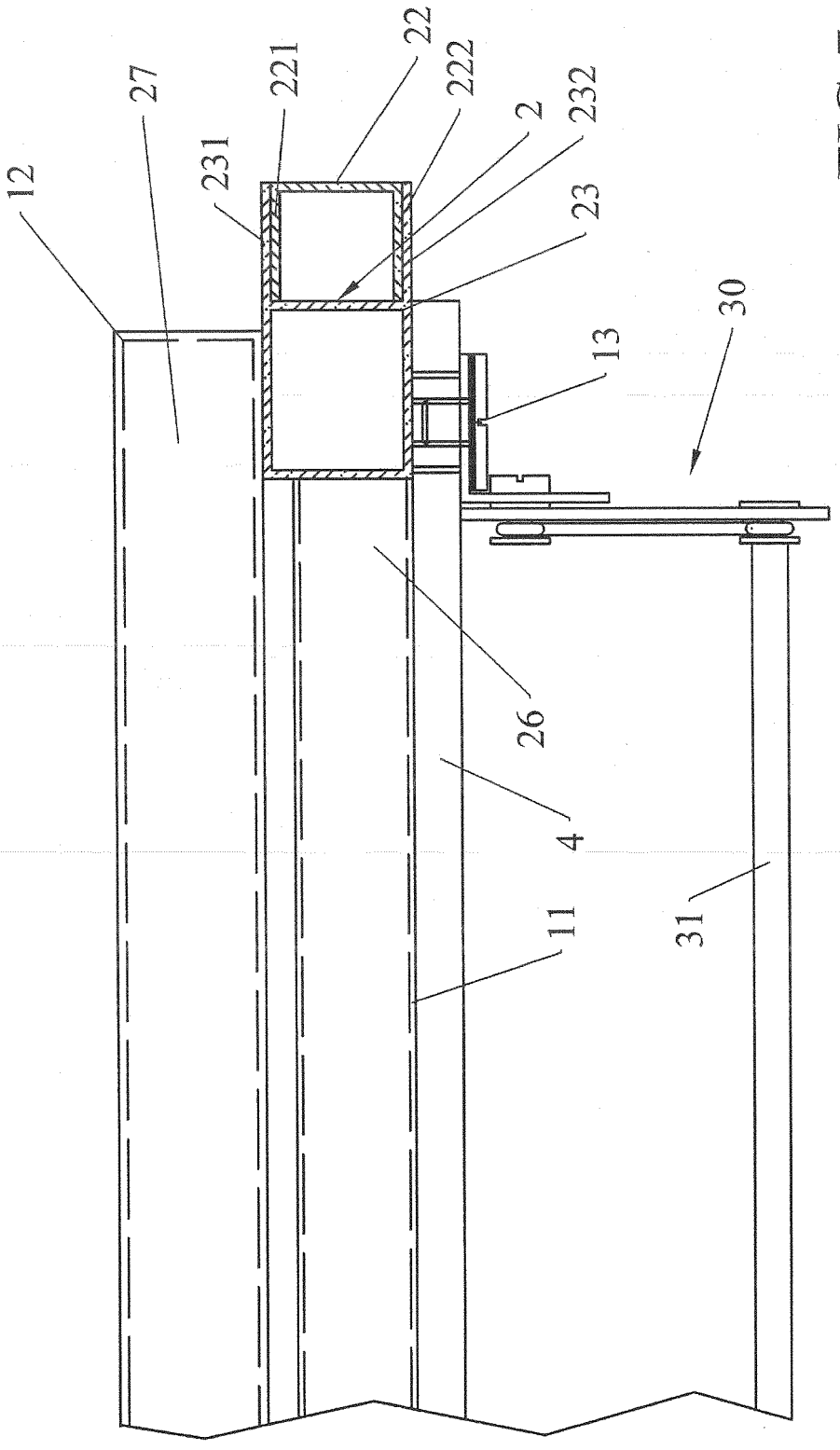

FIG.7

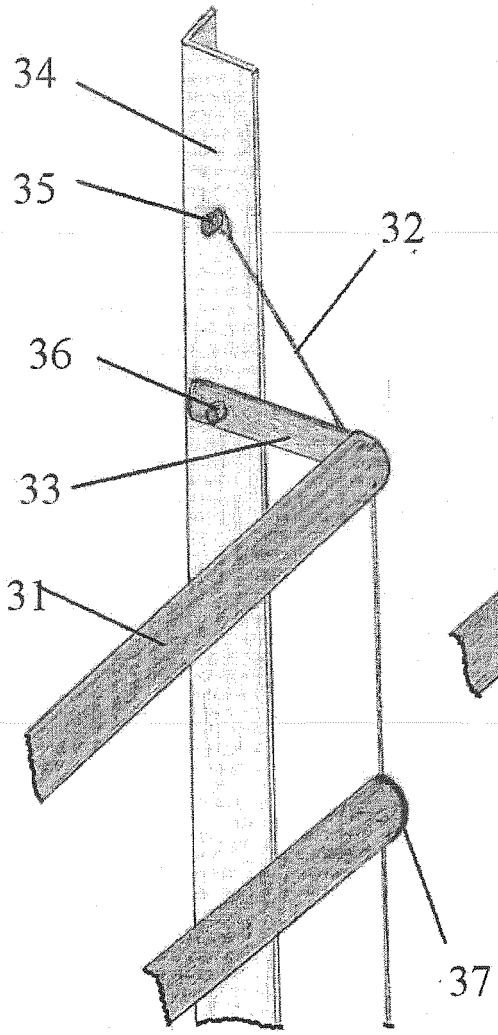

FIG.8

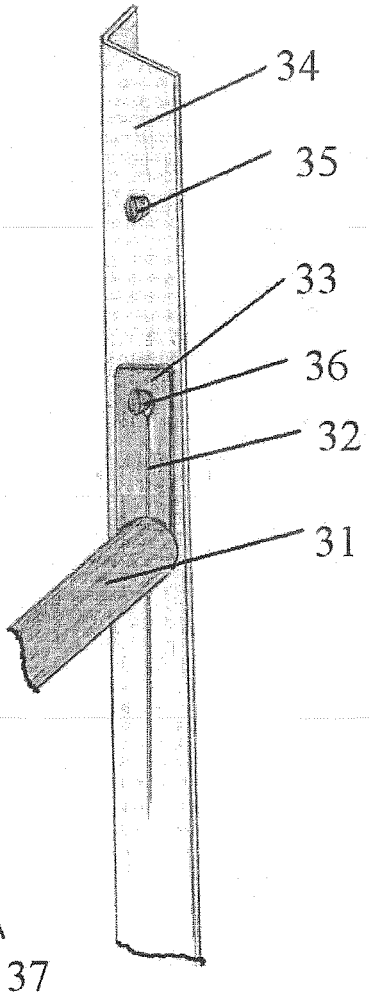

FIG.9

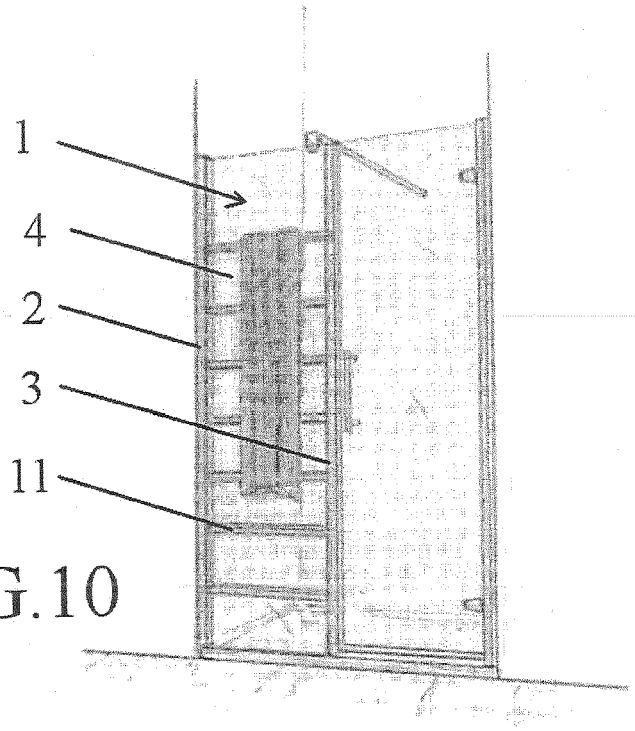

FIG.10

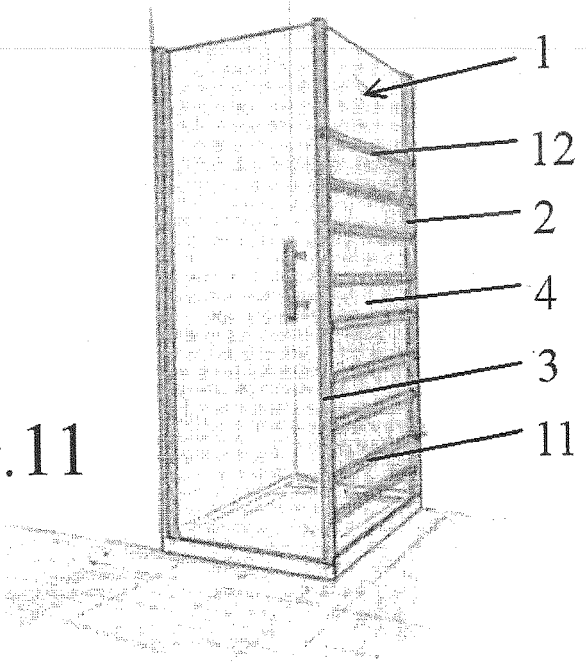

FIG.11

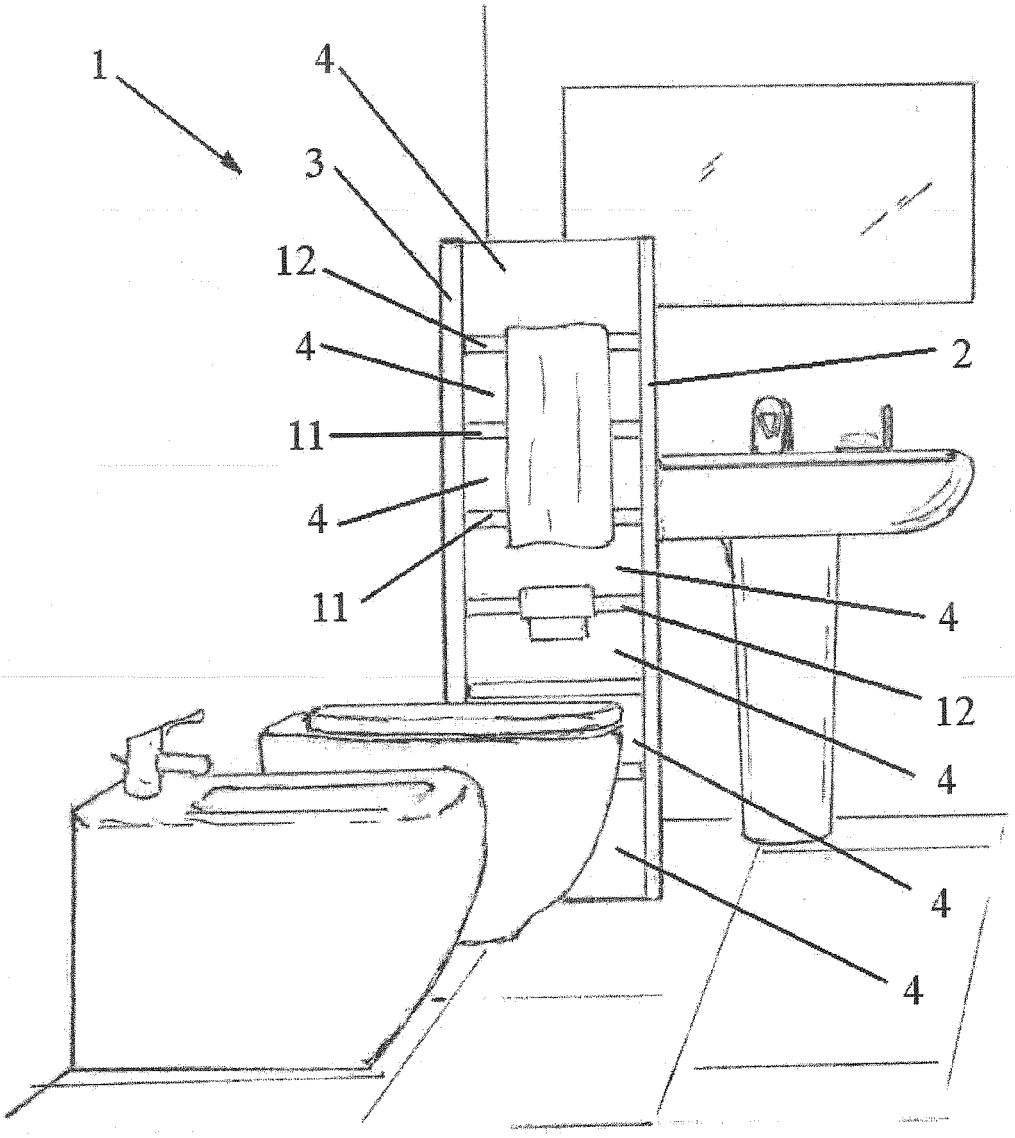

FIG.12

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EUROPEAN SEARCH REPORT

Application Number
EP 13 17 0281

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X A	DE 198 46 941 A1 (BADER SILVIA [DE]) 13 April 2000 (2000-04-13) * column 2, line 65 - column 3, line 23; figures 1,2 *	1-4,7-10 5,6	INV. A47K3/28 F28D21/00
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TECHNICAL FIELDS SEARCHED (IPC)

A47K
F28D

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	25 September 2013	Zuurveld, Gerben

CATEGORY OF CITED DOCUMENTS

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1 EPO FORM 1503 03.82 (P04C01)

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25-09-2013

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REFERENCES CITED IN THE DESCRIPTION

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- FR 2957411 **[0007]**