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(54) Public lavatory with a self-supporting structure.

(57) A lavatory (10) comprising at least one user compartment (14) housing at least one fixture (21, 53). The self-supporting structure comprises a base (11), a roof (13) and a series of walls (12) connected between the base (11) and the roof (13). The structure also comprises a frame (23) consisting of pillars (24) and cross members (25) connected together and consisting of hollow metal sections (26). At least one of the walls (12) consists of a panel (28), each edge (29) of which is fitted to another metal section (30, 39) by means of screws (37). The metal section (30) is in turn welded to the pillars (24) and cross members (25) of the frame (23). The upper cross members (25) of the frame (23) present hooks (27) for transferring the lavatory (10) from one site to another if necessary.

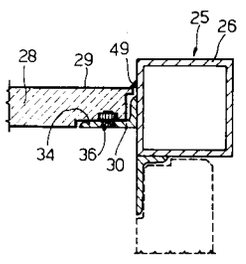

Fig. 5

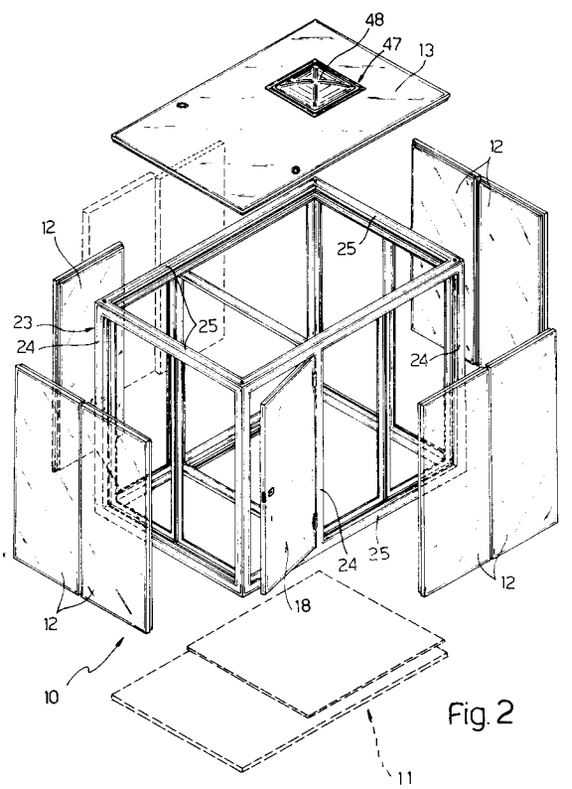

Fig. 2

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The present invention relates to a public lavatory with a self-supporting structure, comprising at least one user compartment housing at least one fixture, said structure comprising a base, a roof and a series of walls connected between said base and said roof.

Of the various designs proposed as yet for the construction of public lavatories, at least the base and often also the walls consist of prefabricated concrete structures cemented together on site. Such structures are invariably extremely heavy and difficult to transport.

Other solutions featuring integrated plastic structures, usually consisting of a one-piece shell, are generally unreliable for more than temporary installations.

Moreover, both the above known types of structure are invariably unsightly and cannot be adapted easily to conform with different urban environments.

It is an object of the present invention to provide a public lavatory having a structure designed to overcome the aforementioned drawbacks typically associated with known structures.

According to the present invention, there is provided a public lavatory with a self-supporting structure comprising at least one user compartment housing at least one fixture, said structure comprising a base, a roof and a series of walls connected between said base and said roof; characterised by the fact that said structure also comprises a frame consisting of hollow metal section pillars and cross members; at least one of said walls consisting of a panel, the edges of which are fitted in removable manner to another metal section, in turn fitted to said pillars and/or said cross members.

A preferred non-limiting embodiment of the present invention will be described by way of example with reference to the accompanying drawings, in which:

Fig.1 shows a front right view in perspective of a public lavatory in accordance with the present invention;

Fig.2 shows a partially exploded, rear right view in perspective of the lavatory structure;

Fig.3 shows a horizontal section of the lavatory;

Fig.4 shows a top plan view of the lavatory;

Fig.5 shows a larger-scale section along line V-V in Fig.4;

Fig.6 shows a partially sectioned view of one of the lavatory walls;

Fig.7 shows a section along line VII-VII in Fig.6.

Number 10 in Fig.1 indicates a public lavatory having a self-supporting structure consisting of a base 11 (Fig.2), a series of lateral walls 12 and a roof 13. In particular, lavatory 10 comprises a user compartment 14 (Fig.3) with a door 16, e.g. a sliding door; and a utility compartment 17 with a second door 18, e.g. a steel plated swing door.

Compartments 14 and 17 are separated by a partition wall 19 of stainless steel and fiberglass-reinforced plastic. Wall 19 is fitted, facing user compartment 14, with a toilet 21, and, facing utility compartment 17, with an automatic cleaning device 22 described in detail later on.

According to the present invention, the structure of lavatory 10 comprises a frame 23 (Fig.2) consisting of a series of pillars 24 and cross members 25, each consisting of a hollow metal section 26 (Fig.s 5 and 7). Sections 26 of pillars 24 and cross members 25 are connected, e.g. welded, together, and consist in particular of a square, zinc-plated steel box section.

At least two of the upper cross members 25 of frame 23 (Fig.s 1 and 2) present a strong steel or cast iron hook 27 for mechanically lifting and moving the entire structure or lavatory 10, e.g. for seasonal or temporary transfer from site to another. Hooks 27 are preferably fitted to the four top corners of frame 23.

Both roof 13 and walls 12 consist of panels 28 (Fig.s 4 to 7), each edge 29 of which is fitted in removable manner to another metal section 30 also made of zinc-plated steel and fitted, usually welded, to hollow section 26.

Each panel 28 consists of two parallel wire nets 31 and 32 embedded in a layer 33 of fireproof fiberglass-reinforced plastic foam, and is thus extremely rigid, shockproof and totally fireproof. Each edge 29 of panel 28 presents a seat for receiving a flange 34 of section 30 in such a manner that flange 34 is flush with the inner surface of panel 28. Flange 34 presents holes 36 for securing panel 28 by means of screws 37.

Section 30 is generally L-shaped, the other flange 38 of which is located adjacent to edge 29 and generally welded to one face of hollow section 26. On panels 28 of walls 12 (Fig.s 6 and 7), section 30 is flush with one face of hollow section 26, whereas, on panel 28 of roof 13 (Fig.s 4 and 5), section 30 is substantially located along the center line of one face of hollow section 26. L section 30 may be replaced with a T section 39 (Fig.3), the central flange or leg 41 of which is fitted between adjacent edges 29 of two panels 28, e.g. for forming a relatively wide wall 12, and the other two flanges 42 of which provide for securing edges 29 of panels 28 by means of screws 37, thus connecting one panel 28 directly to the other.

The outer surface 43 of panels 28 of walls 12 may be decorated, e.g. knurled or panelled; may present panels for instruction plates or advertising; and may be designed to conform with different urban environments using curtain panels of different materials and colours. Next to sliding door 16 (Fig.s 1 and 3), a painted steel panel 44 may be

provided featuring vandalproof, silk screen printed operating instructions, indicator lights, a coin slot, coin tray and cycle counter. Next to panel 44, provision is made for another panel 45 used solely for advertising and supporting, on one side, one side of front wall 12, and, on the other, a panel 40 located over the opening of door 16 and fitted to left pillar 24.

Panel 28 of roof 13 (Fig.5) is thinner than those of walls 12, and presents an opening 46 for a skylight 47 having a dome 48 made of translucent, unbreakable acrylic material. This panel 28 is connected to upper cross members 25 by means of a bead of sealing compound 47.

Base 11 comprises a floor 50 of heelproof, slotted stainless steel sheet. Underneath floor 50, provision is made for a stainless steel trash tank 51 with bronze wash nozzles.

The Fig.3 version of lavatory 10 is specially designed for disabled users confined to a wheelchair. In this case, lateral walls 12 of compartments 14 and 17 consist of two side by side panels 28 for doubling the width of compartments 14 and 17.

Partition wall 19 is also of double width, and presents a recess 52 opening on to the user compartment 14 side and extending inwards of utility compartment 17. Recess 52 houses a unit consisting of a wash basin 53 with a soap dispenser 54 and electric hand drier 55. Wall 19 or recess 52 may also be provided with a tissue dispenser (not shown).

Wall 19 is fitted with a projecting horizontal bar 56 for supporting disabled users of both toilet 21 and wash basin 53. Provision is also made for a second horizontal bar 57 along rear wall 12 and wall 12 adjacent to sliding door 16, and for a vertical bar 58 substantially along rear wall 12.

Automatic cleaning unit 22 of both the smaller and handicapped versions comprises a disinfectant tank and an automatic control unit controlled by an electronic control system 59 housed in utility compartment 17 and comprising a logic process controller, such as a microprocessor. After use, the control unit provides automatically for disinfecting, washing and drying the toilet, the inner surfaces of walls 12, floor 50 and the other accessories inside user compartment 14.

In actual use, following entry of the user, e.g. by inserting a coin to open door 16, door 16 is closed, a detector for detecting the presence of the user is enabled for turning on the lighting and the ventilator, and the outside indicator switches to "engaged". Upon the user stepping out through door 16, the detector automatically provides for closing door 16 and cleaning, disinfecting and drying compartment 14, after which the outside indicator switches to "free".

The advantages of the self-supporting lavatory according to the present invention will be clear from the foregoing description. In particular, it provides for troublefree manufacture, assembly and transportation; adapts easily to any urban environment; and is extremely reliable and hygienic.

To those skilled in the art it will be clear that changes may be made to the lavatory as described and illustrated herein without, however, departing from the scope of the present invention. For example, panels 28 may be reinforced with one instead of two wire nets.

Changes may also be made to the shape and size of compartments 14 and 17. In particular, lavatory 10 may be polygonal instead of rectangular, and some of pillars 24 of frame 23 may consist of appropriately shaped hollow sections other than the square sections described herein.

Claims

1. A public lavatory with a self-supporting structure comprising at least one user compartment housing at least one toilet, said structure comprising a base (11), a roof (13) and a series of walls (12) connected between said base (11) and said roof (13); characterised by the fact that said structure also comprises a frame (23) consisting of pillars (24) and cross members (25) of hollow metal section (26); at least one of said walls (12) consisting of a panel (28), the edges (29) of which are fitted in removable manner to another metal section (30, 39), in turn fitted to said pillars (24) and/or said cross members (25).

2. A lavatory as claimed in Claim 1, characterised by the fact that said roof (13) is also in the form of a panel (28) having its edges (29) fitted to said other metal section (30) in turn fitted to said cross members (25).

3. A lavatory as claimed in Claim 1 or 2, characterised by the fact that said hollow section (26) presents a square or rectangular cross section; and that said other section (30, 39) comprises a flange (34, 42) fitted to said panel (28) by means of screws (37).

4. A lavatory as claimed in Claim 3, characterised by the fact that said other section (30) presents an L-shaped cross section, the other flange (38) of which may be welded to said hollow section (26).

5. A lavatory as claimed in Claim 4, characterised by the fact that said hollow section (26) and said L section (30) are both made of zinc-plated steel; each of said panels (28) consist-

ing of a resin sheet (33) reinforced with a wire net (31, 32).

6. A lavatory as claimed in Claim 5, characterised by the fact that said sheet (33) comprises two parallel wire nets (31, 32) embedded in a layer of fiberglass-reinforced plastic.

7. A lavatory as claimed in one of the foregoing Claims, characterised by the fact that the upper cross members (25) of said frame (23) are fitted with at least two hooks (27) for mechanically lifting and transporting said structure.

8. A lavatory as claimed in Claim 6 or 7, characterised by the fact that the inner surface of each edge (29) of said panels (28) of said walls (12) presents a seat for receiving in flush manner a flange (34, 42) of said other section (30, 39); said other flange (38, 41) being adjacent to said edge (29) of said panel (28).

9. A lavatory as claimed in Claim 8, characterised by the fact that the outer surface (43) of at least one panel (28) of said walls (12) is knurled or designed to house advertising panels.

10. A lavatory as claimed in Claim 8 or 9, characterised by the fact that at least two panels (28) of said walls (12) are connected by a T section (39), the leg (41) of which is gripped between two adjacent edges (29) of said two panels (28).

11. A lavatory as claimed in one of the foregoing Claims from 8 to 10, characterised by the fact that the panel (28) of said roof (13) is connected to said upper cross members (25) by means of a bead of sealing compound, and comprises a substantially square opening (46) for a skylight (47) having a translucent dome (48).

12. A lavatory as claimed in one of the foregoing Claims, characterised by the fact that said base (11) comprises a floor (50) made of heel-proof, slotted sheet metal fitted over a trash tank (51) having a series of automatic wash nozzles.

13. A lavatory as claimed in one of the foregoing Claims, characterised by the fact that said structure defines a user compartment (14) and a utility compartment (17); said compartments (14, 17) being separated by a stainless sheet metal partition wall (19) fitted, on one side, with a toilet (21) and, on the other, with an automatic cleaning device (22).

14. A lavatory as claimed in Claim 12 or 13, characterised by the fact that said partition wall (19) comprises a recess (52) opening into said user compartment (14) and extending into said utility compartment (17) and housing a unit consisting of a wash basin (53) with a soap dispenser (54) and an electric hand drier (55); a grip bar (56) being fitted to said partition wall (19) between said toilet (21) and said recess (52).

15. A lavatory as claimed in Claim 14, characterised by the fact that said utility compartment (17) presents an electronic control system (59) for controlling the various automatic operating, safety and cleaning functions relative to the lavatory; said control system (59) being controlled by a microprocessor.

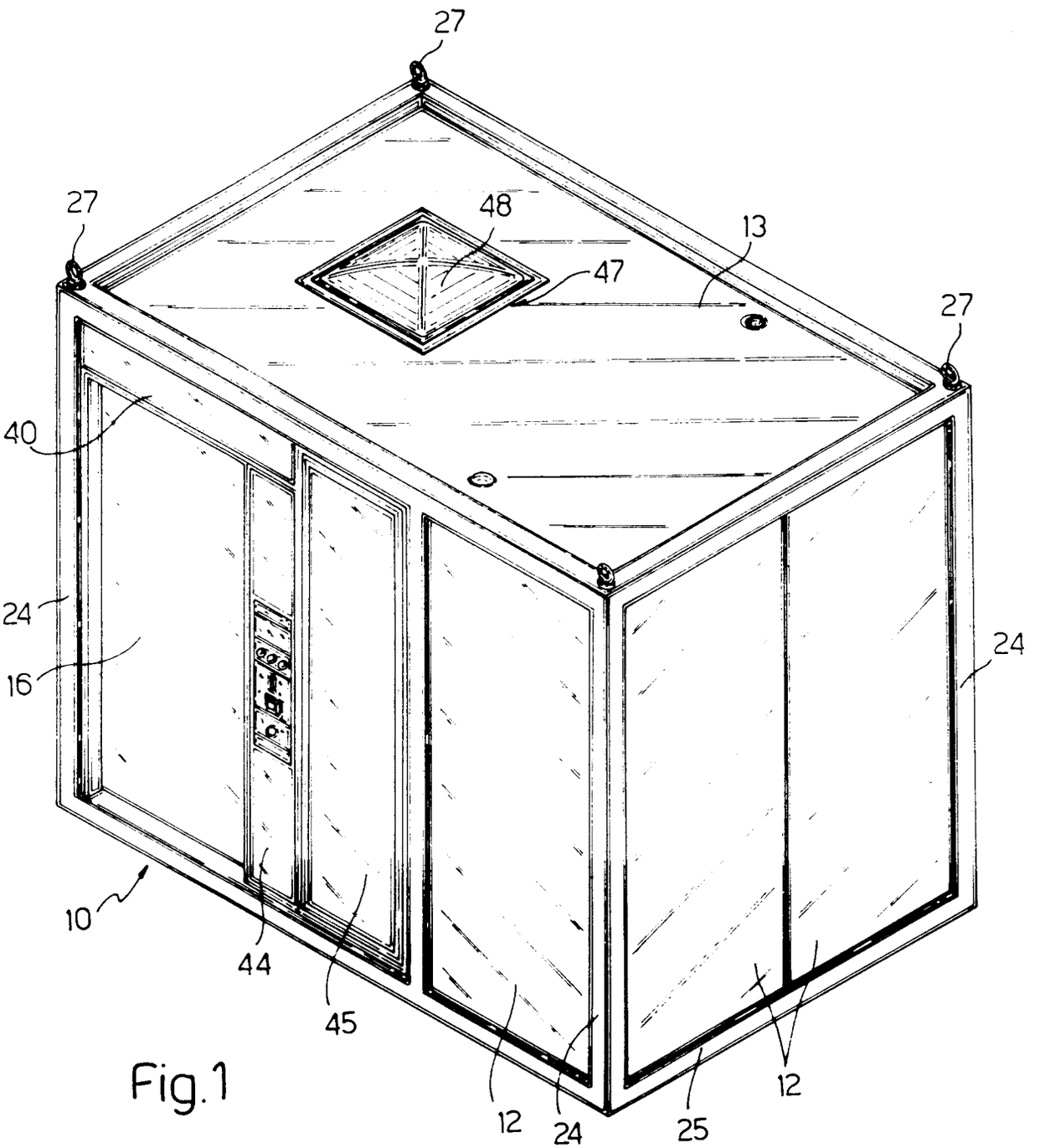

Fig.1

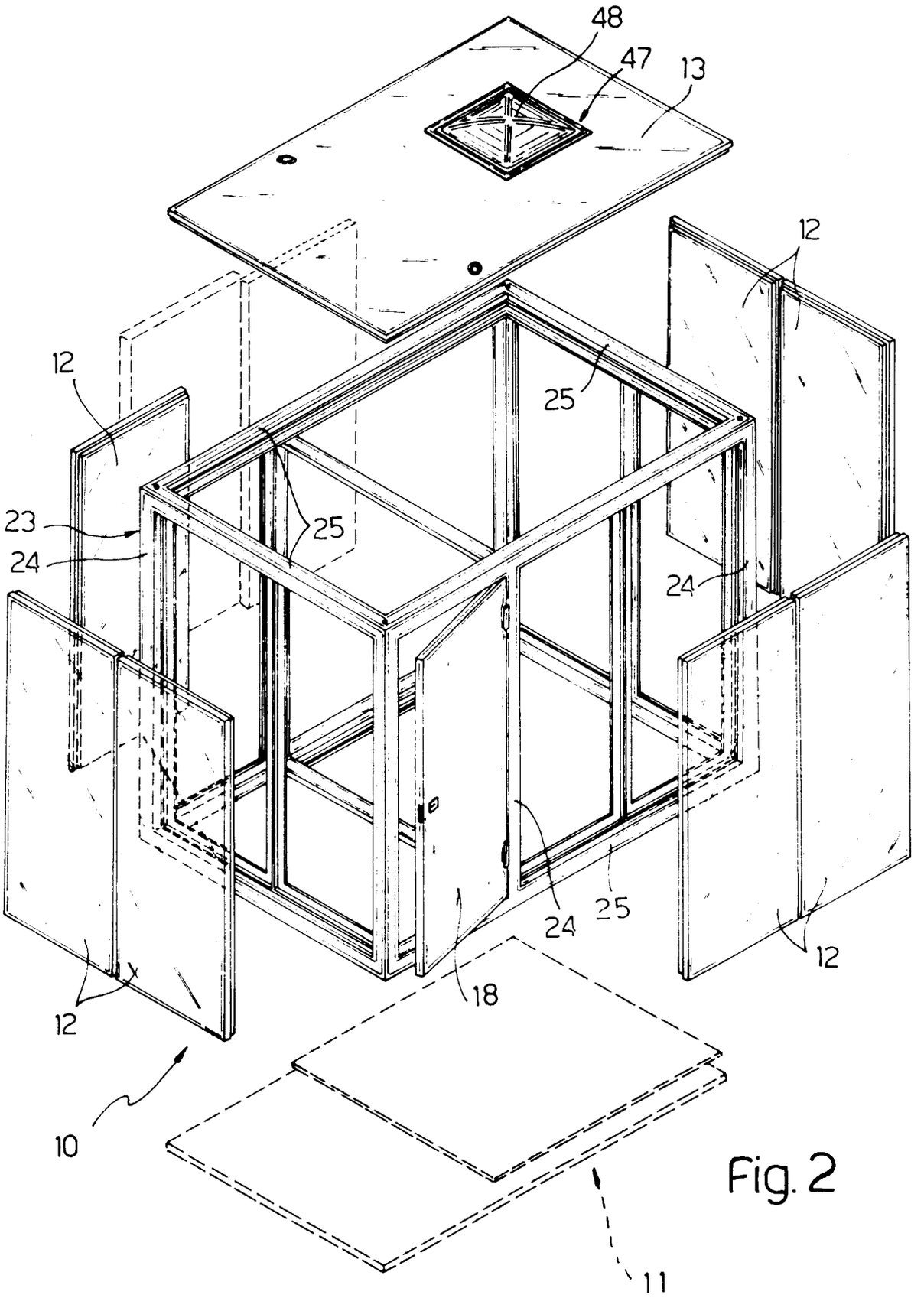

Fig. 2

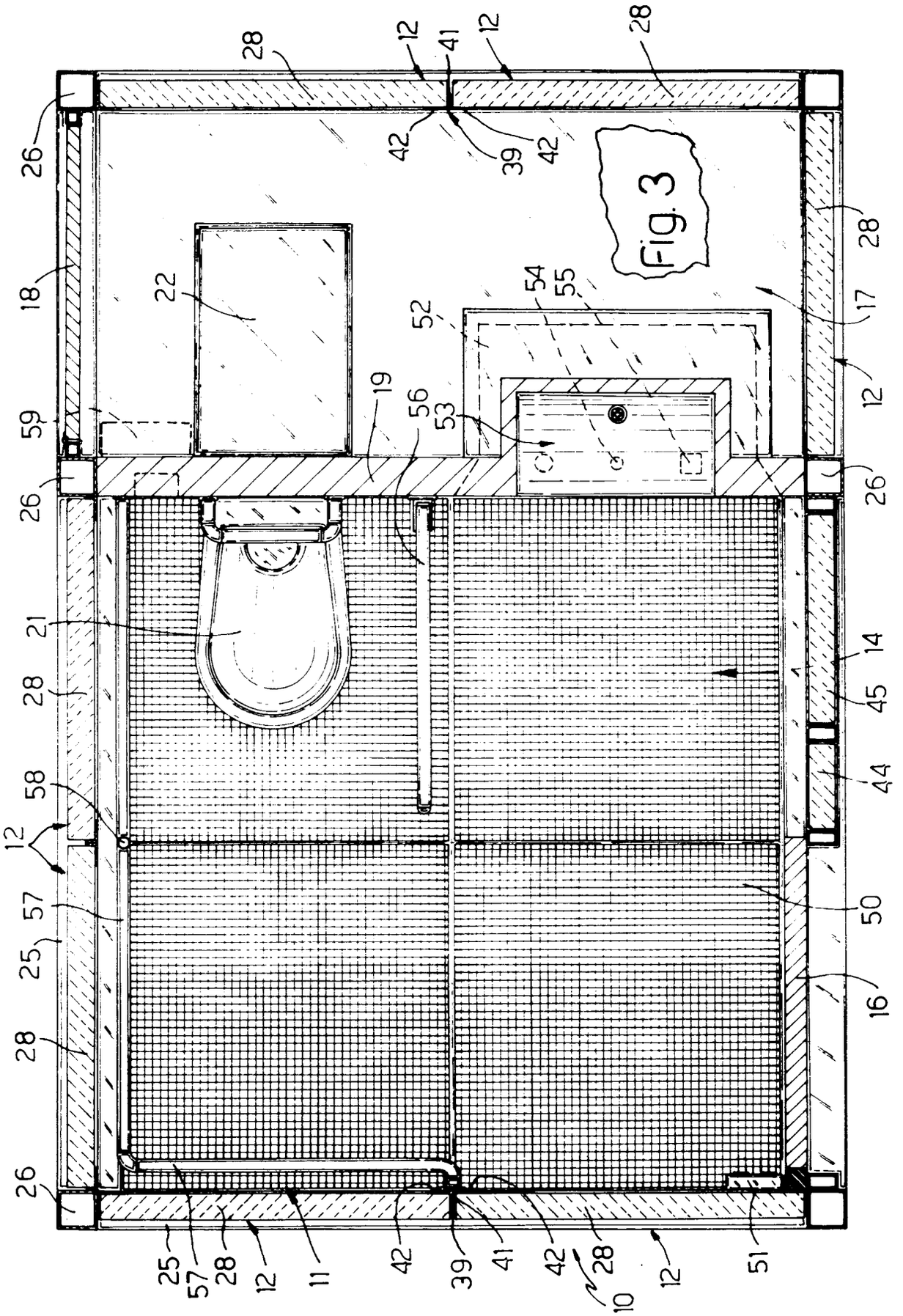
Fig. 3

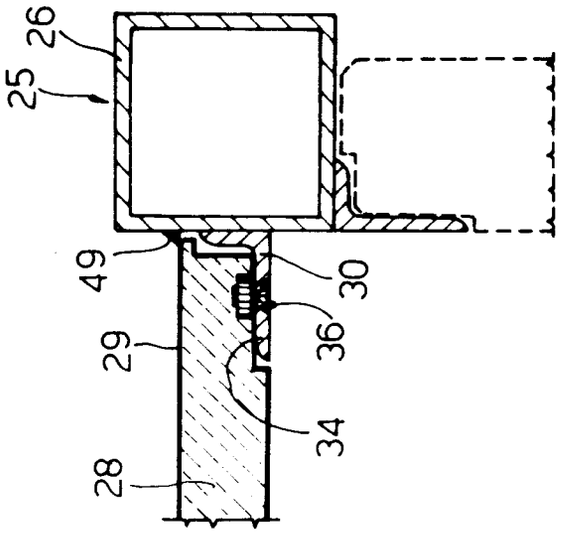

Fig.5

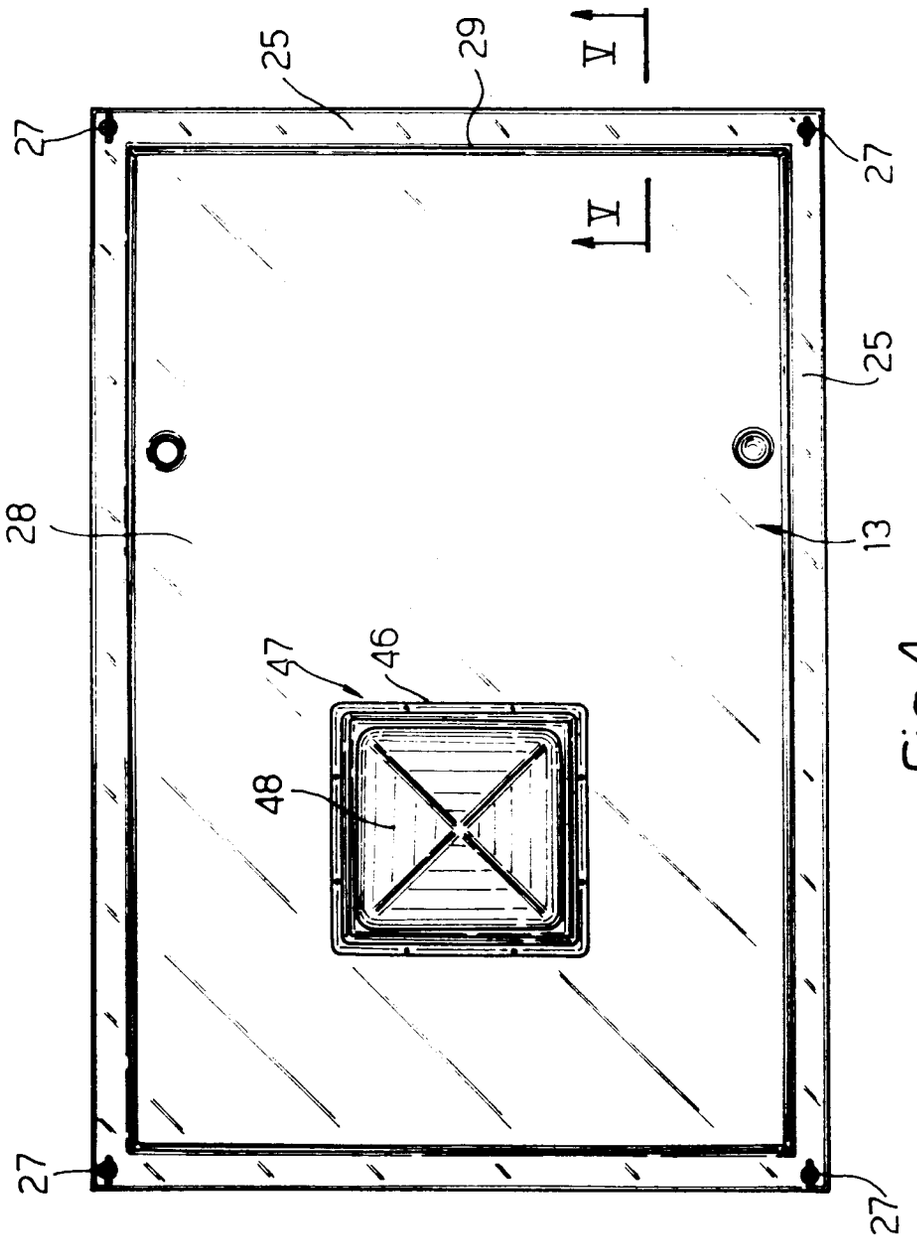

Fig.4

Fig.6

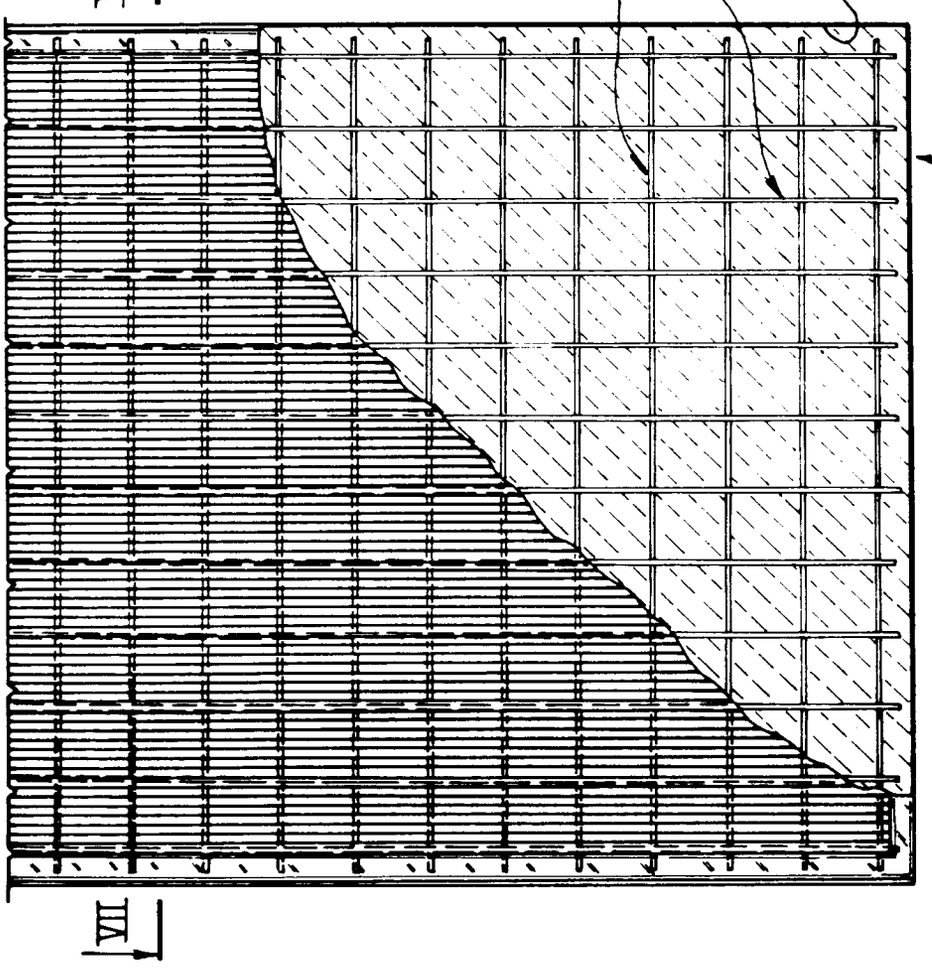

Fig.7