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(54) Recess installation module for sanitary fixtures, in particular suspended sanitary fixtures

(57) There is provided a recess installation module (1) for sanitary fixtures, in particular suspended sanitary fixtures, wherein functional components (3; 4), including in particular a drain pipe support (3) and two supporting units (4) for fastening ties, are fixed removably and in respective predetermined work positions to a supporting frame (2) by inserting respective connecting teeth (30a;

30b), carried integrally by the functional components (3; 4), inside respective seats (31a; 31b) formed in the frame (2); each functional component (3; 4) also has at least one lock member (32a; 32b) which fits inside a corresponding recess (33a; 33b), formed in the frame (2), to lock the functional component (3; 4) in the work position once the teeth (30a; 30b) are inserted inside the respective seats (31a; 31b).

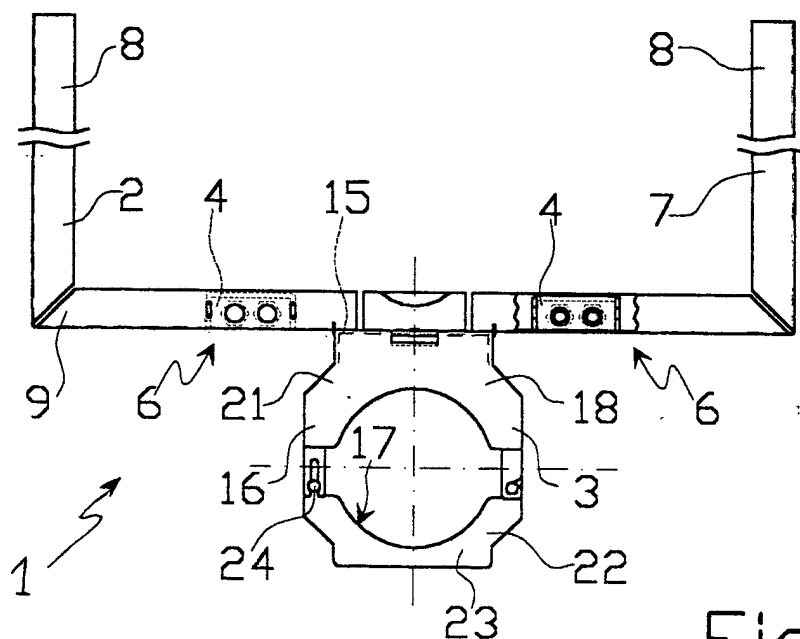


Fig. 1

Description

[0001] The present invention relates to a recess installation module for sanitary fixtures, in particular suspended sanitary fixtures.

[0002] In the installation of sanitary fixtures, recess modules are employed which can be recessed and walled in directly inside a wall, and which support a sanitary fixture (such as a lavatory, sink, or other suspended fixture). Such modules normally comprise a metal supporting frame, and a number of functional components for supporting respective auxiliary members, such as pipe lengths, fastening ties, etc.

[0003] The functional components of known modules are fixed to the frame by welds, rivets or studs, all systems which have the main drawback of taking a relatively long time to assemble, and of requiring fairly complex, high-cost assembly tools and/or machines.

[0004] It is an object of the present invention to provide a recess installation module for sanitary fixtures, in particular suspended sanitary fixtures, designed to eliminate the above drawback. More specifically, it is an object of the invention to provide a module of the type comprising a supporting frame and a number of functional components for supporting respective auxiliary members, and wherein the functional components can be fitted quickly, easily and cheaply to the frame, so that the module itself is cheap and easy to produce and assemble.

[0005] According to the present invention, there is provided a recess installation module for sanitary fixtures, in particular suspended sanitary fixtures, comprising a supporting frame and a number of functional components for supporting respective auxiliary members, the module being characterized by also comprising reversible mechanical fastening means between at least a first functional component and said frame, to fix said at least a first functional component removably, and in a predetermined work position, to said frame.

[0006] The module can therefore be assembled - and, more specifically, the functional components can be fitted to the frame - quickly, easily and cheaply, with no need for tools or machines; and both the individual functional components and the module as a whole are extremely cheap and easy to produce and assemble.

[0007] A non-limiting embodiment of the present invention will be described by way of example with reference to the accompanying drawings, in which:

Figure 1 shows a partly sectioned front view of an assembled installation module in accordance with the present invention;

Figure 2 shows a larger-scale, partly sectioned, partial side view of the Figure 1 module;

Figure 3 shows a partial schematic view in perspective of a frame forming part of the Figure 1 module;

Figures 4 and 5 show respective larger-scale details of a first functional component forming part of

the Figure 1 module;

Figures 6 and 7 show a side view and plan view respectively of a second functional component of the Figure 1 module.

[0008] With reference to Figures 1 and 2, a recess installation module 1 for sanitary fixtures, in particular suspended sanitary fixtures, comprises a supporting frame 2; and a number of functional components for supporting respective auxiliary members. More specifically, the functional components comprise a support 3 for a known drain pipe or bend (not shown); and two supporting units 4 for respective known ties (not shown) for fastening frame 2 to the wall (not shown) in which the module is recessed. Support 3 and supporting units 4 are fixed removably to frame 2, in respective predetermined work positions, by means of respective reversible mechanical fastening means 5, 6, as explained later on.

[0009] With reference also to Figure 3, frame 2 comprises a preferably one-piece, U-shaped, sheet metal body 7 having two parallel uprights 8, and a cross member 9 perpendicular to and connecting respective longitudinal ends of uprights 8. Uprights 8 and cross member 9 are defined by respective box portions of body 7 having a U-shaped cross section. More specifically, cross member 9 comprises a bottom wall 10; and opposite longitudinal, respectively front and rear, edges 11, 12 bent 90° with respect to bottom wall 10.

[0010] With reference also to Figures 4 and 5, drain pipe support 3 comprises a fastening plate 15 for connection to cross member 9; and a flange 16 substantially perpendicular to fastening plate 15 and having a through seat 17 for the pipe. Fastening plate 15 is formed in one piece, e.g. from cut and bent sheet metal, with a first half 18 of flange 16, so as to form a first half-member 21; and a second half-member 22 defines a second half 23 of flange 16, and has known connecting means 24 (not described in detail for the sake of simplicity) for connection to first half 18.

[0011] Reversible mechanical fastening means 5 comprise four parallel connecting teeth 30a carried integrally by support 3; respective seats 31a for receiving teeth 30a and formed in frame 2; and a lock member 32a which fits inside a corresponding recess 33a to lock support 3 in a work position once teeth 30a are inserted inside respective seats 31a.

[0012] Teeth 30a are carried integrally by fastening plate 15, and project perpendicularly from a face 34 of fastening plate 15 facing cross member 9 and on the opposite side to flange 16. In the example shown, teeth 30a are aligned in pairs on respective lateral edges 35 of fastening plate 15, and are bent 90° with respect to face 34 on the opposite side to flange 16. Each tooth 30a is substantially L-shaped, and comprises a root portion 36 projecting perpendicularly from face 34 on the opposite side to flange 16; and a bayonet portion 37 substantially perpendicular to root portion 36 and parallel to face 34. Bayonet portion 37 and face 34 define, in be-

tween, a connecting gap 38.

[0013] Seats 31a are defined by respective substantially rectangular slots formed through bottom wall 10 of cross member 9 with their long sides perpendicular to cross member 9; and teeth 30a are inserted perpendicu-

[0014] Lock member 32a is defined by a projection projecting from face 34 of fastening plate 15, and which clicks inside recess 33a, which is formed through bottom wall 10 of cross member 9, and is in the form of a rectangular slot with its long sides parallel to cross member 9. In the example shown, projection 32a is defined by a free end of a tongue 39 bent 90° with respect to face 34 and located substantially in the center of fastening plate 15.

[0015] With reference also to Figures 6 and 7, the two supporting units 4 are carried by cross member 9, are located symmetrically on either side of support 3, and comprise respective box bodies 40, each formed in one piece from cut and bent sheet metal, and which are inserted transversely between front edge 11 and rear edge 12 of cross member 9, and rest on bottom wall 10. More specifically, each box body 40 comprises a central plate 41, from respective opposite lateral edges of which two sides 42 extend perpendicularly; a longitudinal end of each box body 40 is closed by a front wall 43 located between sides 42 and defined by a portion of plate 41 bent 90°; and, according to a known solution, front wall 43 has two through holes 44 associated with two threaded nuts 45.

[0016] Reversible mechanical fastening means 6, for fixing supporting units 4 removably to frame 2 in respective predetermined work positions, are identical for both supporting units 4 and substantially similar to the reversible mechanical fastening means 5 described above, so that any details similar to or identical with those already described are indicated using the same reference numbers.

[0017] More specifically, for each supporting unit 4, reversible mechanical fastening means 6 comprise two connecting teeth 30b carried integrally by supporting unit 4; respective seats 31b for receiving teeth 30b and formed in frame 2; and respective lock members 32b which fit inside respective recesses 33b to lock supporting unit 4 in the work position once teeth 30b are inserted inside respective seats 31b.

[0018] Each supporting unit 4 has two parallel teeth 30b projecting longitudinally from respective first longitudinal ends 46 of sides 42 of respective box body 40 and forming an extension of sides 42; and seats 31b are defined by respective rectangular slots formed through front edge 11 of cross member 9 and with the long sides parallel to uprights 8.

[0019] Each supporting unit 4 also comprises two lock members 32b defined, in the example shown, by respective parallel projections projecting longitudinally

from respective second longitudinal ends 47, opposite first longitudinal ends 46, of sides 42, and forming an extension of sides 42; projections 32b have respective beveled edges 48 facing bottom wall 10 and preferably sloping at an angle α of roughly 60° to 70° with respect to bottom wall 10; and recesses 33b are formed through rear edge 12 of cross member 9, and are in the form of rectangular slots substantially aligned with seats 31b formed in front edge 11, and with the long sides parallel to uprights 8.

[0020] Support 3 and supporting units 4 are fitted to frame 2 as follows:

[0021] To connect support 3 to cross member 9, teeth 30a - and, more specifically, respective bayonet portions 37 - are aligned with respective seats 31a, in which position, projection or lock member 32a is not aligned with respective recess 33a; teeth 30a are inserted inside respective seats 31a in a direction perpendicular to seats 31a, and are then slid longitudinally along seats 31a to engage bottom wall 10 of cross member 9 inside respective connecting gaps 38; at which point, projection 32a clicks inside recess 33a.

[0022] Each supporting unit 4 is inserted, inclined with respect to bottom wall 10 of cross member 9, between front edge 11 and rear edge 12 of cross member 9; teeth 30b of supporting unit 4 are then inserted inside respective seats 31b, and the supporting unit 4 is pressed towards bottom wall 10; and the beveled edges 48 allow supporting unit 4 to be rotated to fit projections 32b inside respective recesses 33b; in which position, holes 44 in supporting unit 4 are aligned with respective circular holes 49 formed through front edge 11 of cross member 9 and located between the two seats 31b.

[0023] Clearly, changes may be made to the module as described and illustrated herein without, however, departing from the scope of the present invention.

Claims

1. A recess installation module (1) for sanitary fixtures, in particular suspended sanitary fixtures, comprising a supporting frame (2) and a number of functional components for supporting respective auxiliary members, the module being **characterized by** also comprising reversible mechanical fastening means (5; 6) between at least a first functional component (3; 4) and said frame (2), to fix said at least a first functional component (3; 4) removably, and in a predetermined work position, to said frame (2).
2. A module as claimed in Claim 1, **characterized in that** said reversible mechanical fastening means (5; 6) comprise connecting teeth (30a; 30b) carried integrally by said at least a first functional component (3; 4) and insertable inside respective seats (31a; 31b) formed in said frame (2); and at least one lock member (32a; 32b) which fits inside a corre-

sponding recess (33a; 33b) to lock said at least a first functional component (3; 4) in said work position once said teeth (30a; 30b) are inserted inside the respective seats (31a; 31b).

3. A module as claimed in Claim 2, **characterized in that** said at least one lock member is defined by a projection (32a; 32b) on said at least a first functional component (3; 4), and which projects from said at least a first functional component; said corresponding recess (33a; 33b) being formed in said frame (2).
4. A module as claimed in Claim 3, **characterized in that** said frame (2) comprises two uprights (8), and a cross member (9) perpendicular to and connecting the uprights; said cross member (9) being defined by a box portion of the frame (2) having a U-shaped cross section and comprising a bottom wall (10), and opposite, respectively front and rear, longitudinal edges (11, 12) bent 90° with respect to said bottom wall (10).
5. A module as claimed in Claim 4, **characterized in that** said at least a first functional component is a support (3) for a drain pipe; said support (3) comprising a fastening plate (15) for connection to said cross member (9), and a flange (16) having a through seat (17) for the pipe; said teeth (30a) projecting perpendicularly from said fastening plate (15); and said seats (31a) being defined by respective slots formed through said bottom wall (10) of said cross member (9).
6. A module as claimed in Claim 5, **characterized in that** each of said teeth (30a) is substantially L-shaped, and comprises a root portion (36) projecting from a face (34) of said fastening plate (15), and a bayonet portion (37) substantially perpendicular to the root portion (36) and parallel to said face (34); said bayonet portion (37) and said face (34) defining, in between, a connecting gap (38); and said teeth (30a) being insertable perpendicularly inside said respective seats (31a), and being slid longitudinally along said respective seats to engage said bottom wall (10) inside respective said connecting gaps (38).
7. A module as claimed in Claim 6, **characterized in that** said projection (32a) defining said lock member projects perpendicularly from said face (34) of said fastening plate (15) to click inside said recess (33a); said recess being formed through said bottom wall (10) of the cross member (9).
8. A module as claimed in Claim 7, **characterized in that** said teeth (30a) are formed on respective lateral edges (35) of said fastening plate (15), and are

bent 90° with respect to said face (34); said projection (32a) being defined by a free end of a tongue (39) bent 90° with respect to said face (34) and located substantially in the center of said fastening plate.

9. A module as claimed in one of Claims 5 to 8, **characterized in that** said support (3) comprises a first half-member (21) formed in one piece from cut and bent sheet metal, and comprising said fastening plate (15) and a first half (18) of said flange (16); and a second half-member (22) defining a second half (23) of said flange (16), and having connecting means (24) for connection to said first half (18).
10. A module as claimed in one of Claims 4 to 9, **characterized by** comprising a number of functional components, which are fixed removably, in respective predetermined work positions, to said frame (2) by respective reversible mechanical fastening means; said number of functional components comprising at least one supporting unit (4) for a tie for fastening said frame (2) to a wall.
11. A module as claimed in Claim 10, **characterized in that** said at least one supporting unit (4) comprises a box body (40) formed in one piece from cut and bent sheet metal; said box body (40) being inserted transversely between the front edge (11) and the rear edge (12) of said cross member (9), and resting on said bottom wall (10).
12. A module as claimed in Claim 11, **characterized in that** said box body (40) comprises two connecting teeth (30b) projecting longitudinally from a first longitudinal end (46) of said box body to engage the respective seats (31b); said seats being defined by respective slots formed through said front end (11) of the cross member (9); and said box body also comprising two projections (32b) defining respective lock members and extending from a second longitudinal end (47), opposite said first longitudinal end (46), of the box body to engage respective recesses (33b) formed through said rear edge (12) of the cross member (9).
13. A module as claimed in Claim 12, **characterized in that** said projections (32b) have respective beveled edges (48) facing said bottom wall (10), and preferably sloping at an angle (α) of approximately 60° to 70° with respect to said bottom wall.

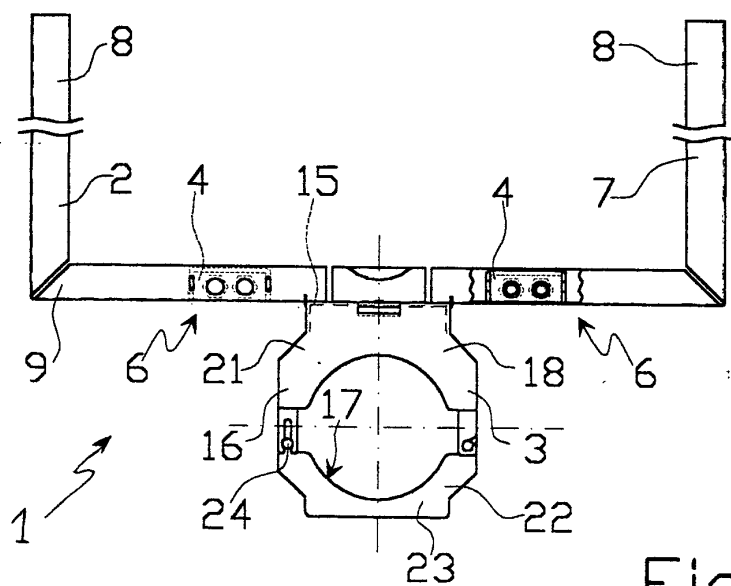


Fig. 1

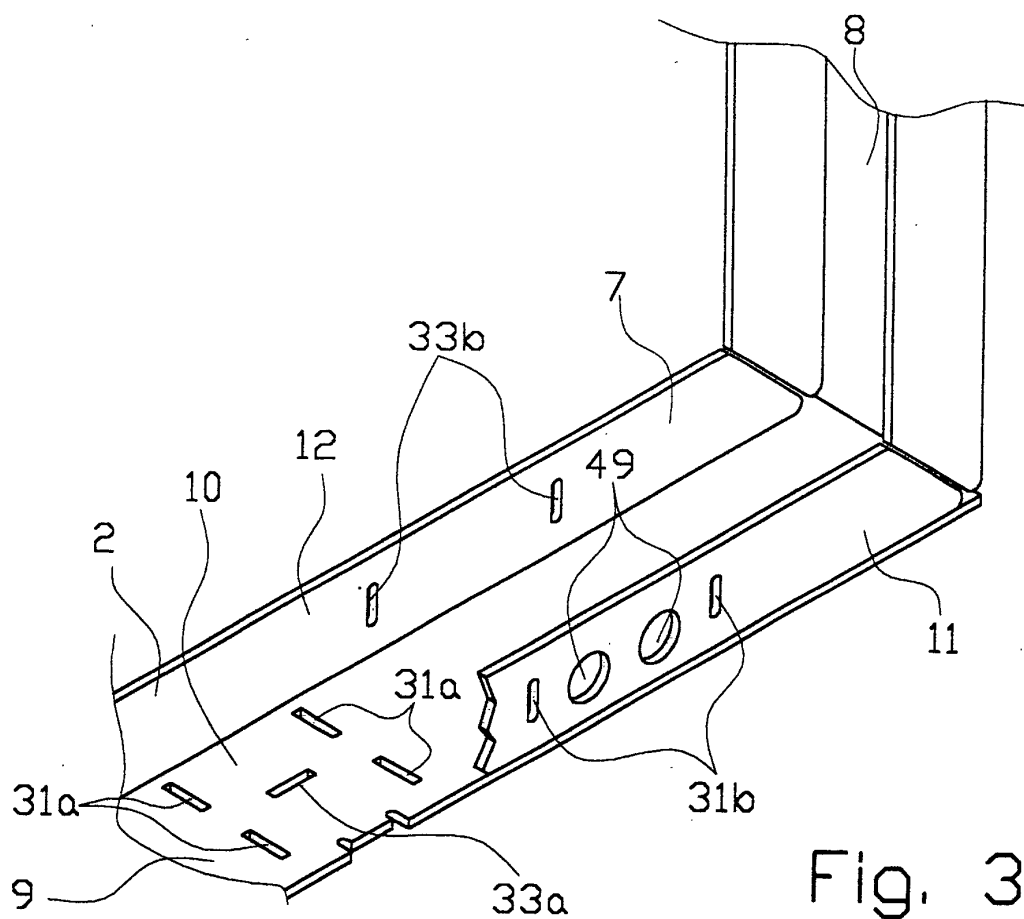


Fig. 3

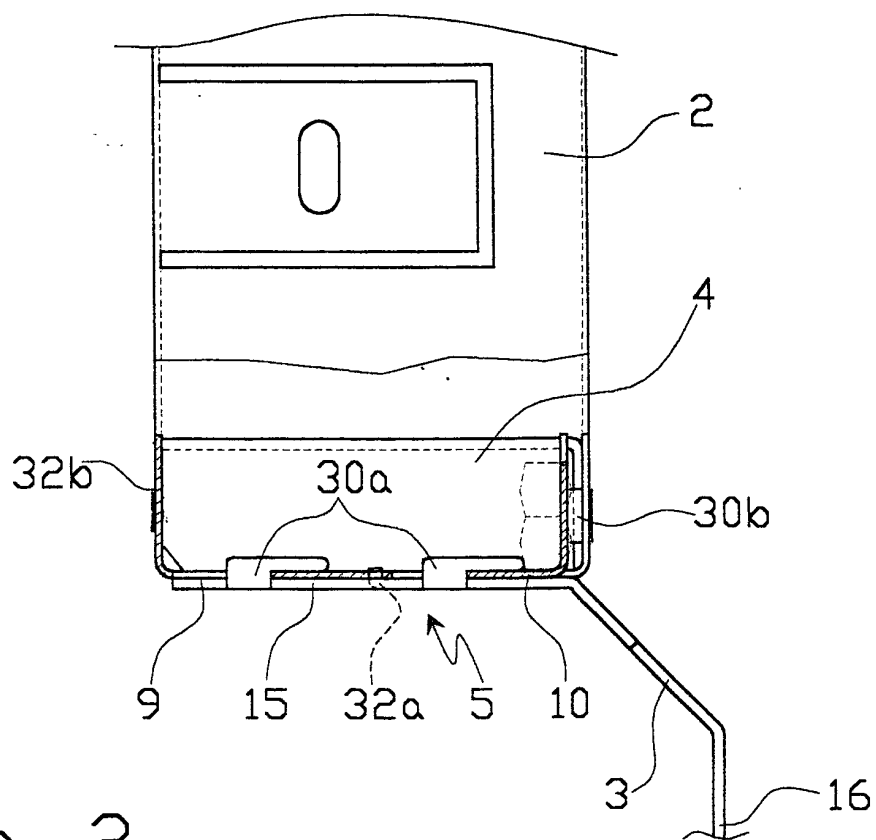


Fig. 2

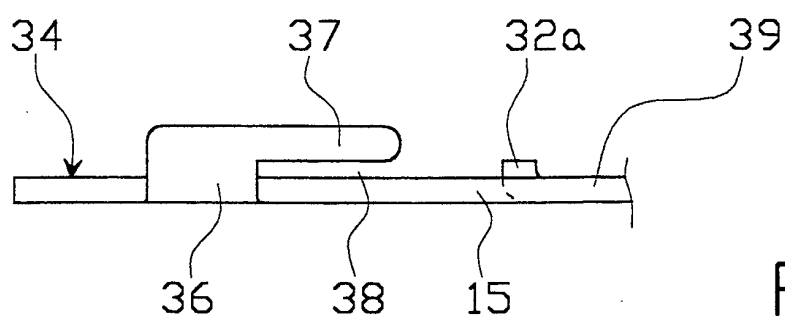


Fig. 5

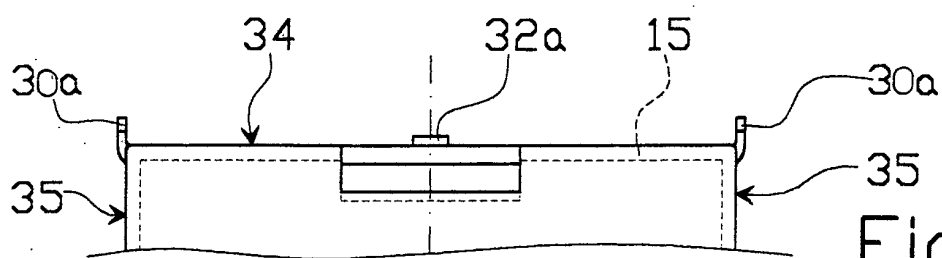


Fig. 4

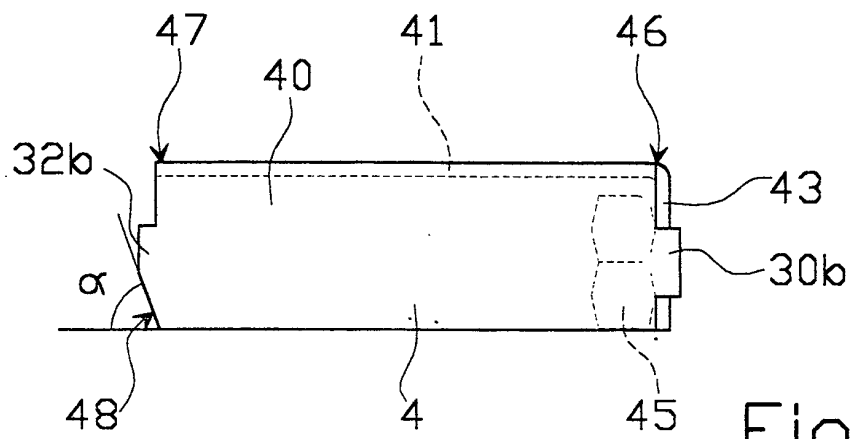


Fig. 6

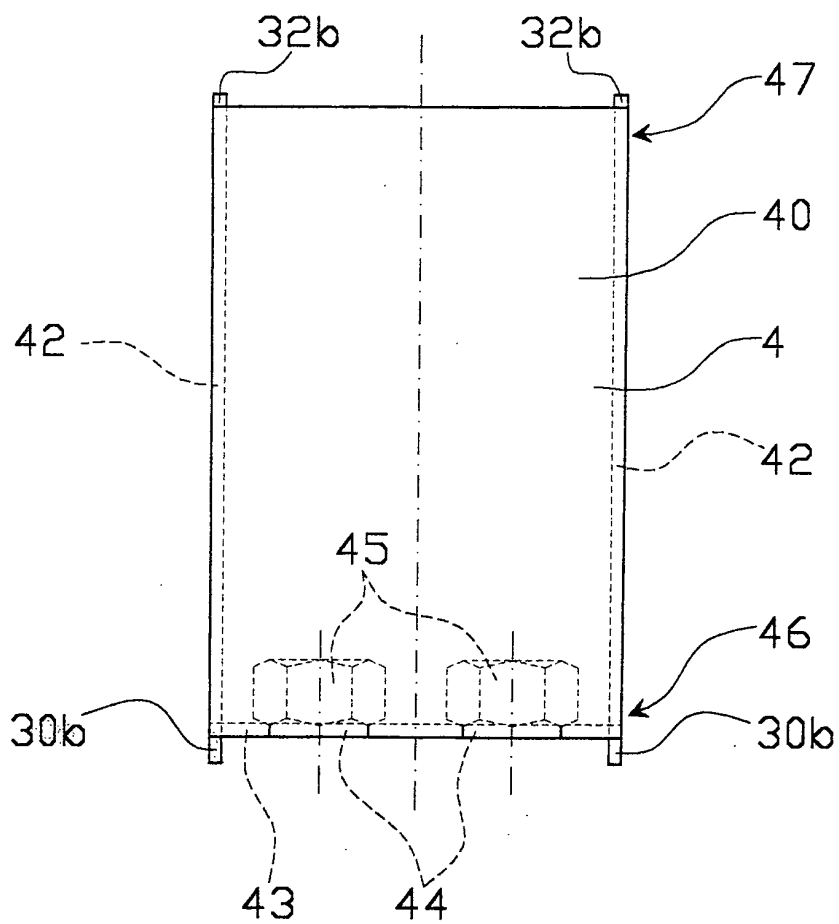


Fig. 7