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EUROPEAN PATENT APPLICATION

(43) Date of publication:
22.01.2003 Bulletin 2003/04

(51) Int Cl.⁷: **E03D 1/012**

(21) Application number: **02016105.5**

(22) Date of filing: 19.07.2002

(84) Designated Contracting States:
**AT BE BG CH CY CZ DE DK EE ES FI FR GB GR
 IE IT LI LU MC NL PT SE SK TR**
 Designated Extension States:
AL LT LV MK RO SI

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(30) Priority: 20.07.2001 IT MI20011564

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(54) **Lavatory flush tank**

(57) A recess-type lavatory flush tank (1) which may be equipped alternatively to operate with a front or top control: a box-shaped body (2) defining a water tank has two through openings (10, 11) for housing control mem-

bers of a discharge device; the two openings (10, 11) are formed adjacent to each other in a front wall (3) and a top wall (7) respectively of the body (2); and a cover plate (20) is fitted in rotary manner to the body (2) to selectively close either one of the openings (10, 11).

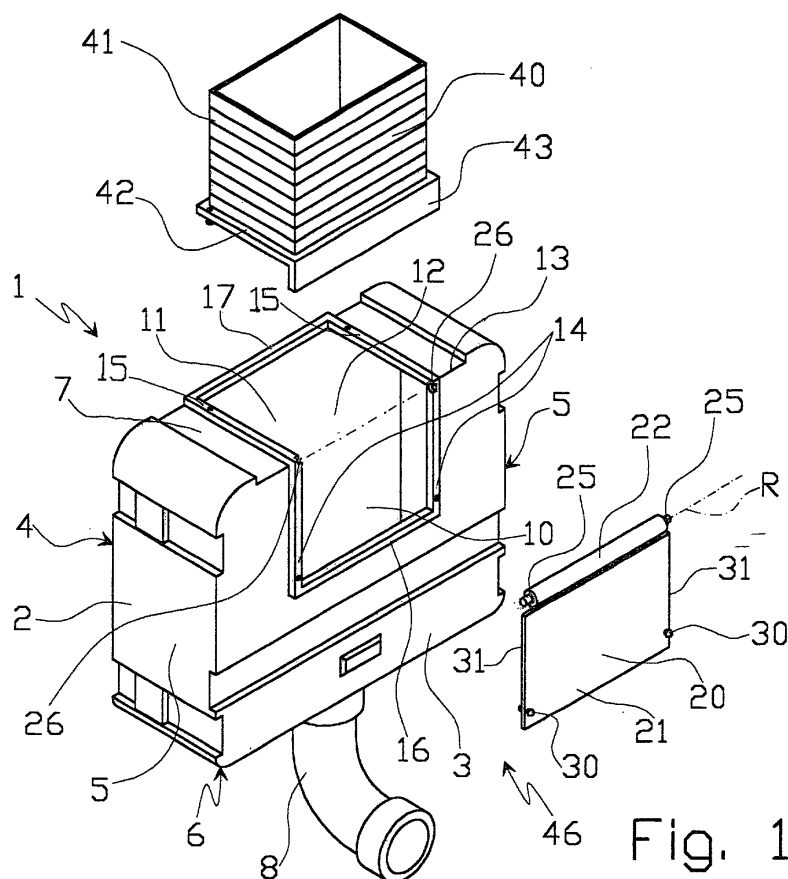


Fig. 1

Description

[0001] The present invention relates to a lavatory flush tank particularly suitable for recessed installation, and which can be equipped to operate with a front or top control.

[0002] As is known, flush tanks comprise a water tank 'housing a discharge device connected to an external user control by actuating members, which are normally fitted through an opening formed in a front or top wall of the flush tank, depending on where the control is located.

[0003] Some known flush tanks have two openings, one in the front wall and one in the top wall, so that the actuating members of the discharge device can be fitted through either, and the flush tank can be equipped to operate with a front or top control. One example of this type of flush tank is described in European Patent Application n. EP-A-867570.

[0004] Flush tanks of this sort, however, have the drawback of requiring a cover for the unused opening to prevent foreign material from falling into the water tank when walling in or otherwise installing the flush tank. Assembling and fastening the cover therefore involve additional, and not always straightforward, work when installing the flush tank.

[0005] It is an object of the present invention to provide a lavatory flush tank designed to eliminate the aforementioned drawbacks. More specifically, it is an object of the invention to provide a recessed flush tank which can be equipped to operate with a front or top control, and which simplifies assembly and installation, while at the same time being cheap and easy to produce.

[0006] According to the present invention, there is provided a lavatory flush tank comprising a box-shaped body defining a water tank and having two through openings for housing control members of a discharge device; said openings being formed adjacent to each other in a front wall and a top wall respectively of said body; and the flush tank being characterized by comprising flip-over cover means fitted in rotary manner to said body to selectively close either one of said openings.

[0007] The flush tank according to the invention can therefore be equipped to operate with a front or top control, and is quick and easy to assemble and install, while at the same time being cheap and easy to produce.

[0008] 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 schematic exploded view in perspective of a lavatory flush tank in accordance with the invention;

Figures 2, 3 and 4 show schematic larger-scale views of respective parts of the Figure 1 flush tank.

[0009] With reference to the accompanying drawings, a lavatory flush tank 1 comprises a box-shaped body 2 defining a water tank; body 2 is substantially prismatic in shape, and comprises a front wall 3, a rear wall 4, two lateral walls 5, a bottom wall 6, and a top wall 7; and bottom wall 6 has an outlet hole (not shown) connected to a bend 8.

[0010] Front wall 3 and top wall 7 have respective through openings 10, 11 for housing control members of a discharge device (all known and not shown for the sake of simplicity). Openings 10, 11 are substantially the same shape and size; are both rectangular; are defined by respective portions of the same opening 12 formed through front wall 3 and top wall 7; are located adjacent to each other along an edge 13 joining front wall 3 and top wall 7; are connected to each other along edge 13; and are defined by respective pairs of opposite lateral edges 14, 15, and by respective end edges 16, 17 connecting respective lateral edges 14, 15.

[0011] In the purely example embodiment shown, lateral edges 14 and end edge 16 of opening 10 project slightly from front wall 3; and, similarly, lateral edges 15 and end edge 17 of opening 11 project slightly from top wall 7.

[0012] In a variation not shown, lateral edges 14 and end edge 16 of opening 10 are recessed slightly with respect to front wall 3, so that opening 10 is set back with respect to the plane of front wall 3; and, similarly, lateral edges 15 and end edge 17 of opening 11 are recessed slightly with respect to top wall 7, so that opening 11 is set back with respect to the plane of top wall 7.

[0013] In a further variation not shown, lateral edges 14 and end edge 16 of opening 10 are flush with front wall 3, so that opening 10 is substantially coplanar with front wall 3; and, similarly, lateral edges 15 and end edge 17 of opening 11 are flush with top wall 7, so that opening 11 is substantially coplanar with top wall 7.

[0014] Whichever the case, lateral edges 14 have respective holes 18a formed through front wall 3; lateral edges 15 have respective holes 18b formed through top wall 7; and holes 18a, 18b are all located a predetermined distance from edge 13.

[0015] Flush tank 1 also comprises a flip-over cover plate 20 fitted in rotary manner to body 2 to selectively close either of openings 10, 11, and which is therefore so shaped as to fit over either of openings 10, 11 and to cooperate with respective lateral edges 14, 15 and end edges 16, 17. In the non-limiting example shown, cover plate 20 comprises a flat rectangular plate 21, and a cylindrical rod 22 extending along one side 23 of plate 21; plate 21 is connected to rod 22 by a root portion 24, and may either be substantially coplanar with a diametrical plane of rod 22, or (in a variation not shown) extend tangentially from a lateral surface of rod 22; and rod 22 is shorter than side 23.

[0016] Two pins 25 project longitudinally from respective opposite axial ends of rod 22, engage in rotary manner respective rotation seats 26 formed in body 2, are

aligned with each other, and define a predetermined axis of rotation R about which cover plate 20 can be rotated or flipped over into either of two work positions 20a, 20b shown schematically in Figure 3 and in which cover plate 20 covers opening 10 or opening 11 respectively.

[0017] Rotation seats 26 are formed at edge 13, on opposite sides of opening 12; the axis of rotation R extends substantially along edge 13; and pins 25 click inside respective rotation seats 26.

[0018] Cover plate 20 also comprises click-on fastening means for fastening cover plate 20 to body 2 in either of work positions 20a, 20b. More specifically, cover plate 20 comprises a pair of pins 30 fitted symmetrically to plate 21, close to respective opposite lateral ends 31 of plate 21; and each pin 30 comprises two longitudinally opposite end heads 32a, 32b which click inside holes 18a, 18b, so that holes 18a, 18b define respective fastening seats for pins 30.

[0019] Flush tank 1 also comprises a guard frame 40 which selectively fits integrally to either one of openings 10, 11 not closed by cover plate 20. Guard frame 40 is substantially defined by a box 41; and by a radially outer rim 42 which fits over either of openings 10, 11 and cooperates with respective lateral edges 14, 15 and end edges 16, 17. Rim 42 supports a strip 43 projecting perpendicularly from rim 42, on the opposite side to box 41; and two teeth 44 which project perpendicularly from rim 42, substantially parallel to each other and to strip 43, and are located symmetrically at opposite lateral edges of rim 42 and at the same distance from strip 43.

[0020] Teeth 44 are substantially the same shape as end heads 32a, 32b of pins 30, and also click inside holes 18a, 18b, which therefore define respective fastening seats for both teeth 44 and pins 30.

[0021] Box 41 is provided inside with locating pins 45 (only one shown in Figure 4) fitted, for example, to a radially inner peripheral edge of rim 42 and substantially parallel to teeth 44.

[0022] In actual use, cover plate 20 is fitted in rotary manner to body 2 by inserting pins 25 inside respective rotation seats 26. If flush tank 1 is to be set up to operate with a top control (i.e. with the control members of the discharge device housed through opening 11), cover plate 20 is set to work position 20a closing opening 10 and leaving opening 11 open, and is fixed to body 2 by clicking heads 32a of pins 30 inside holes 18a.

[0023] Guard frame 40, on the other hand, is fitted over opening 11: locating pins 45 are inserted inside opening 11 to guide the guard frame into the correct position; and guard frame 40 is then fixed to body 2 by clicking teeth 44 inside holes 18b.

[0024] Guard frame 40 is prevented from being fitted by mistake over opening 10 (already closed by cover plate 20) by holes 18a already being engaged by pins 30 of cover plate 20 (and therefore unable to receive teeth 44 of guard frame 40), and by cover plate 20 preventing insertion of locating pins 45 inside opening 10. Flush tank 1 is therefore provided with means 46 for pre-

venting guard frame 40 from being fitted over the opening already closed by cover plate 20.

[0025] Conversely, if flush tank 1 is to be set up to operate with a front control (i.e. with the control members of the discharge device housed through opening 10), cover plate 20 is flipped over or rotated about axis of rotation R into work position 20b closing opening 11 and leaving opening 10 open, and is fixed to body 2 by clicking heads 32b of pins 30 inside holes 18b.

[0026] Guard frame 40 is then fitted over opening 10 and fixed to body 2 by clicking teeth 44 inside holes 18a.

[0027] In one possible variation, as opposed to being formed respectively through front wall 3 and top wall 7, holes 18a, 18b are closed by respective covers or thin portions of the walls in which they are formed; and the covers are pierced, when installing flush tank 1, by inserting pins 30 or teeth 44.

[0028] Clearly, changes may be made to the flush tank as described and illustrated herein without, however, departing from the scope of the present invention.

Claims

1. A lavatory flush tank (1) comprising a box-shaped body (2) defining a water tank and having two through openings (10, 11) for housing control members of a discharge device; said openings being formed adjacent to each other in a front wall (3) and a top wall (7) respectively of said body; and the flush tank being **characterized by** comprising flip-over cover means (20) fitted in rotary manner to said body (2) to selectively close either one of said openings (10, 11).
2. A flush tank as claimed in Claim 1, **characterized in that** said flip-over cover means comprise a cover plate (20) having pins (25) engaging in rotary manner respective rotation seats (26) formed in said body (2); said cover plate (20) being rotatable about a predetermined axis of rotation (R) to selectively assume either one of two work positions (20a, 20b) in which said cover plate (20) closes a respective opening (10, 11).
3. A flush tank as claimed in Claim 2, **characterized in that** said pins (25) click inside the respective rotation seats (26).
4. A flush tank as claimed in Claim 2 or 3, **characterized in that** said openings (10, 11) are located adjacent to each other along an edge (13) joining said front wall (3) to said top wall (7); said axis of rotation (R) extending substantially along said edge (13).
5. A flush tank as claimed in Claim 4, **characterized in that** said openings (10, 11) are substantially the same shape and size, are defined by respective

portions of a same opening (12), and are connected to each other along said edge (13).

6. A flush tank as claimed in one of Claims 2 to 5, **characterized by** also comprising first click-on fastening means (30, 18a, 18b) for fastening said cover plate (20) to said body (2) in either one of said work positions (20a, 20b). 5
7. A flush tank as claimed in Claim 6, **characterized in that** said first click-on fastening means comprise at least one pin (30) carried by said cover plate (20) and having two longitudinally opposite end heads (32a, 32b) which click alternatively inside respective first fastening seats (18a, 18b) formed in respective lateral edges (14, 15) of said openings (10, 11). 10 15
8. A flush tank as claimed in one of Claims 2 to 7, **characterized by** comprising a guard frame (40) which selectively fits integrally to either one of said openings (10, 11) not closed by said cover plate (20). 20
9. A flush tank as claimed in Claim 8, **characterized by** comprising means (46) for preventing said guard frame (40) from being fitted to the opening closed by said cover plate (20). 25
10. A flush tank as claimed in Claim 9, **characterized by** comprising second click-on fastening means (44, 18a, 18b) for fastening said guard frame (40) to said body (2). 30

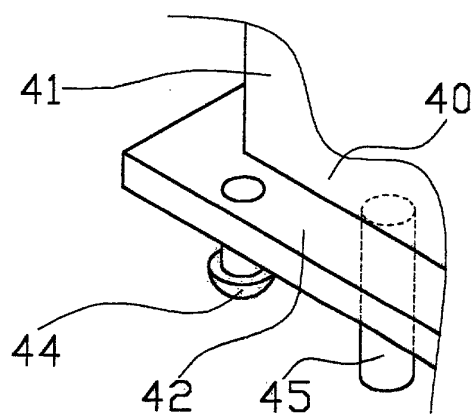
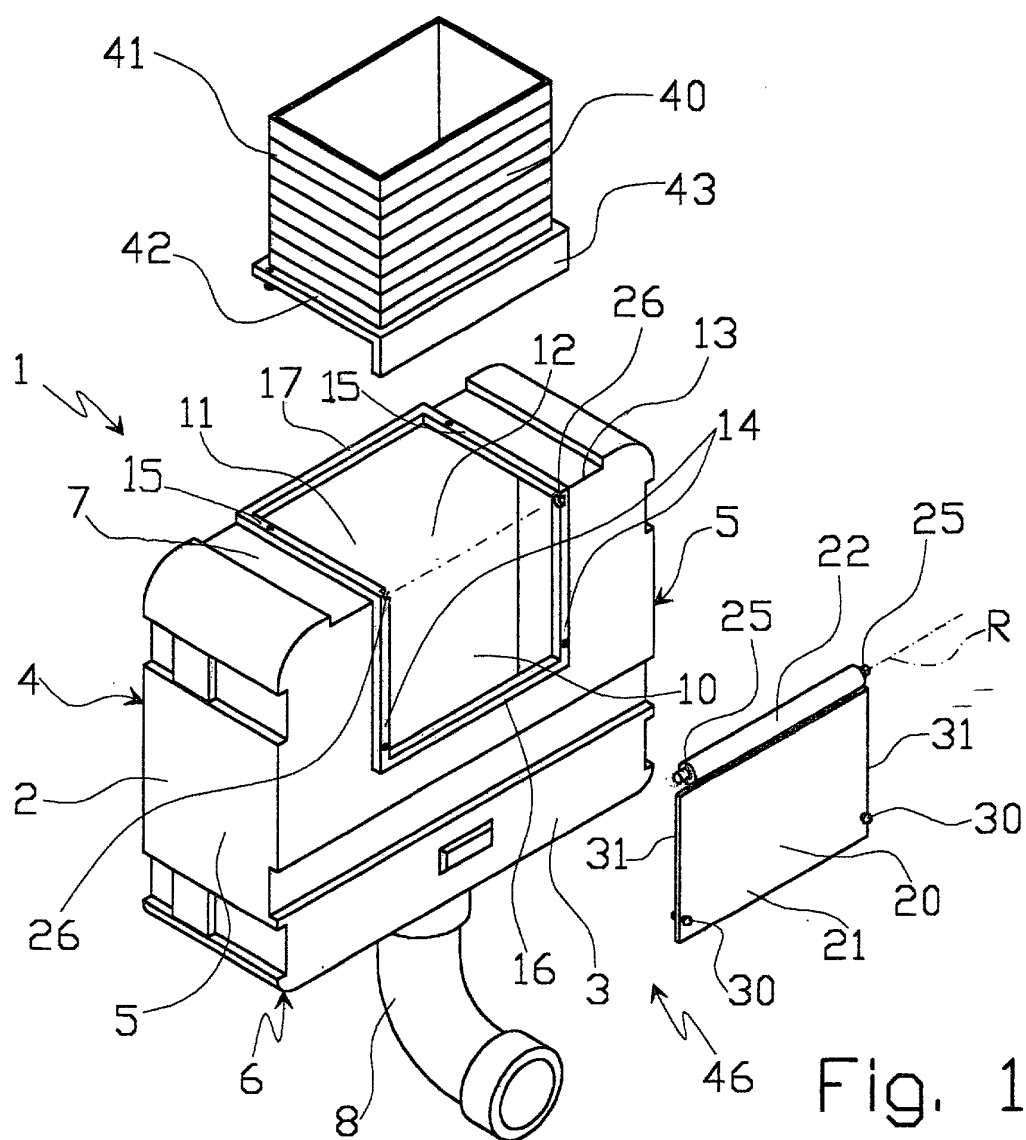
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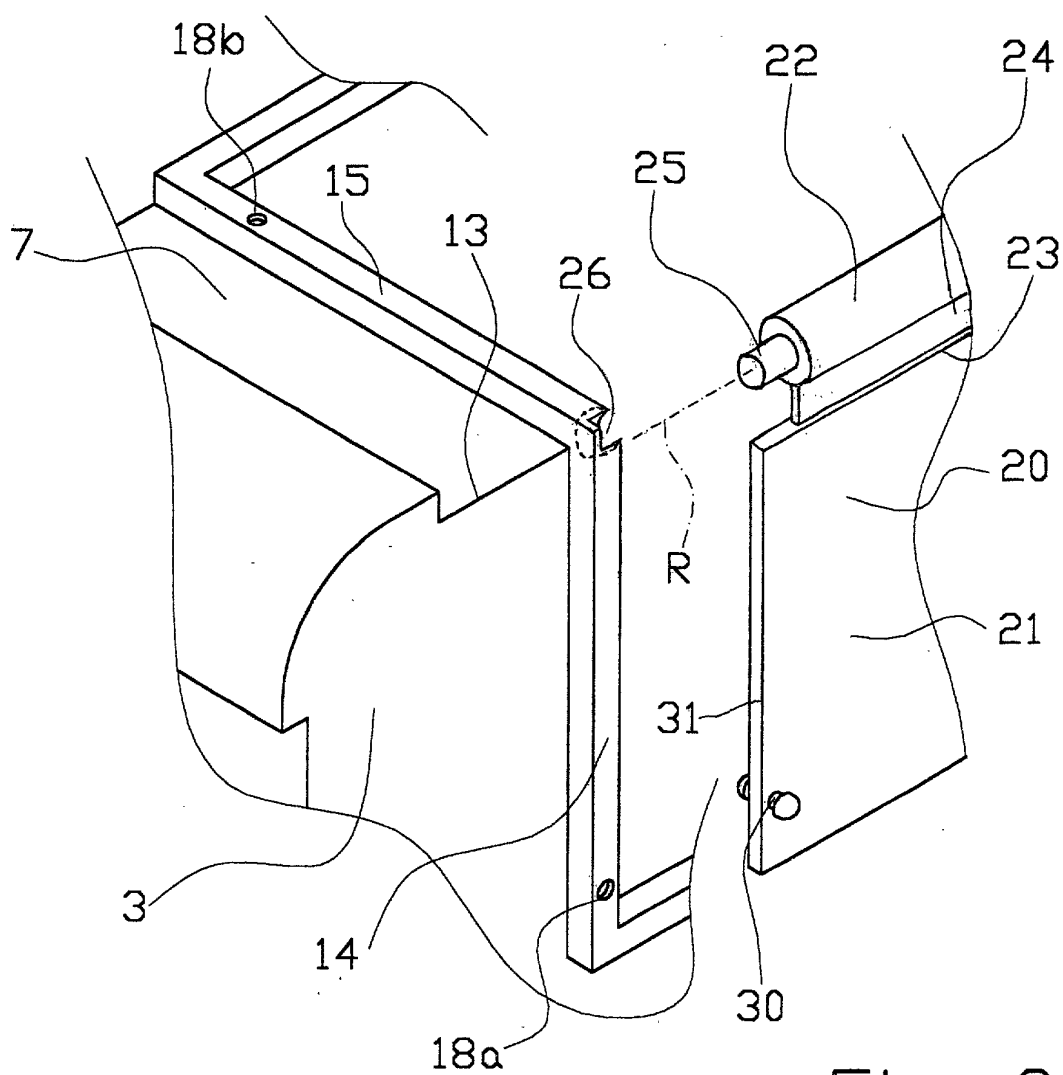


Fig. 2

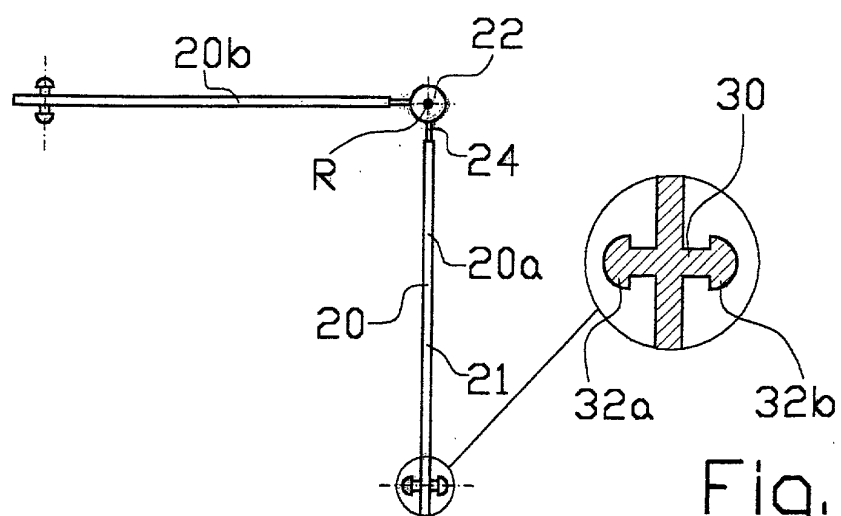


Fig. 3