Nov. 7, 1939. L. FRANK ET AL 2,179,121

WASTE FITTING FOR OUTLET VALVES

Filed Jan. 24, 1939

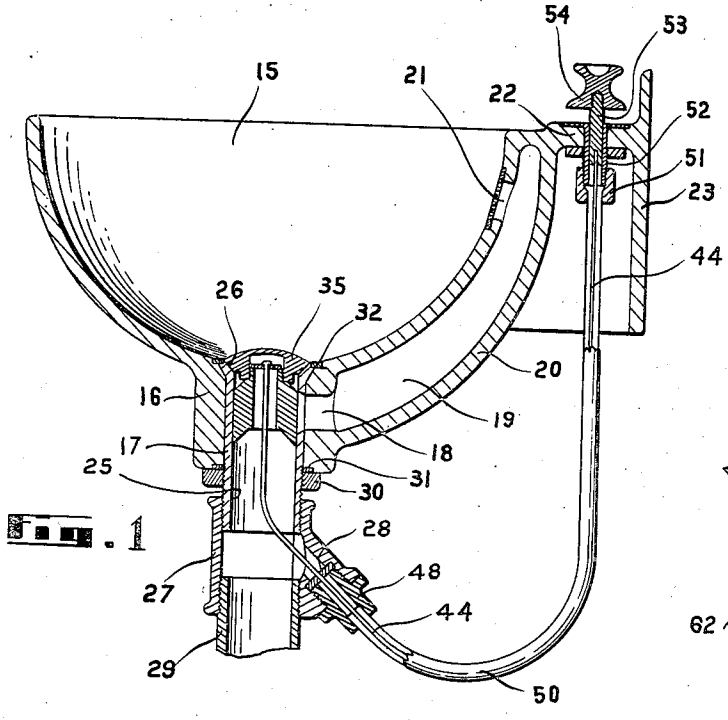


Fig. 1

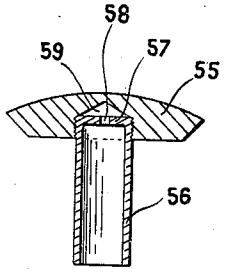


Fig. 3

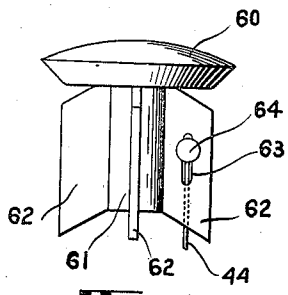


Fig. 4

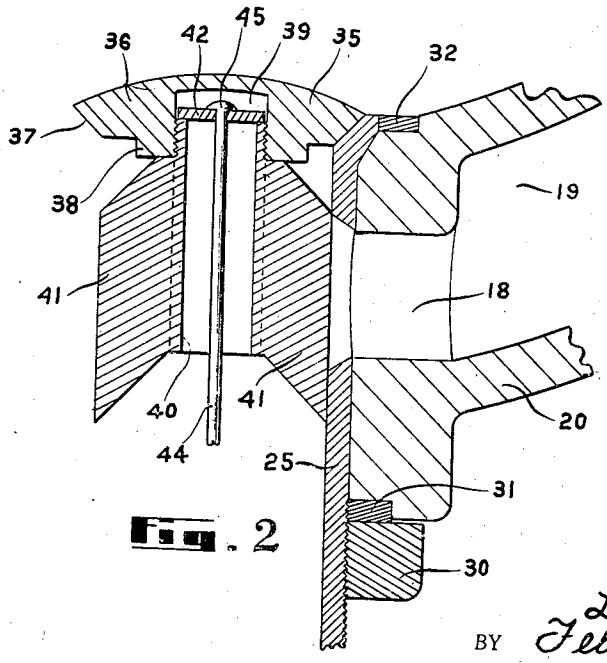


Fig. 2

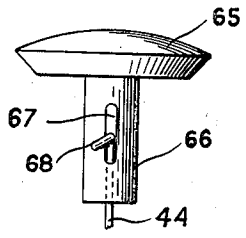


Fig. 5

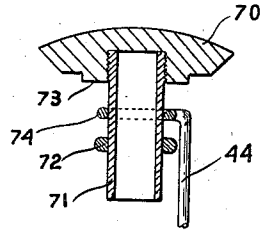


Fig. 6

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Patented Nov. 7, 1939 2,179,121

UNITED STATES PATENT OFFICE

2,179,121

WASTE FITTING FOR OUTLET VALVES

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Application January 24, 1939, Serial No. 252,566

3 Claims. (Cl. 4—203)

This invention relates to plumbing sundries and more particularly to valves for controlling waste water outlets from containers, with special reference to fixed tanks, such as bath tubs, lavatories, wash bowls, sinks and sanitary fixtures as installed in dwellings, offices and like human habitations.

Such valves ordinarily include a seat, disposed in the lowermost part of the object to be drained, being formed at the inlet end of a waste pipe leading to a sewer or other place of discharge, the seat presenting an enlarged conical mouth, suited to receive a correspondingly shaped stopper, adapted for indirect manual operation.

Such stoppers, made of brass or rubber, depend upon their weight to engage the seat, thereby to form a leak-proof joint; occasionally the stopper fails to fit squarely on the seat, in which event leakage necessarily results.

Where the stopper is controlled by a flexible rod, encased in a guide tube and actuated by a lever or push knob, difficulty is entertained in making the rod the exact length required, and the condition further complicated, if the rod actuating device is not moved precisely a predetermined distance, for if the rod be ever so slightly too long, or the actuating means be over or under operated, the stopper is prevented from making proper contact with its seat, allowing water to escape.

This condition is not apparent if the water is colored, foul or turbid, as the position of the stopper cannot readily be seen.

Therefore it is an object of this invention to provide a stopper actuating means free from the foregoing disadvantages and of obvious simplicity.

A further feature is in the provision of a stopper raising rod, which, upon its retraction, enables the stopper to rest squarely and fully upon its seat, completely closing the passage to the drain.

Another purpose is to produce a valve structure of the class described, economical and inexpensive to manufacture, easy to install, and capable of long continuous service without failure.

These important objects are accomplished by the novel construction, combination and arrangement of parts hereinafter described and illustrated in the accompanying drawing, constituting an essential component of this disclosure, and in which:

Figure 1 is a vertical sectional view of a conventional form of bowl, having an overflow and provided with a valve made in accordance with the invention.

Figure 2 is a greatly enlarged vertical sectional view of the stopper, its guide and actuating rod.

Figure 3 is a similar view of a modified form of construction, the rod being omitted.

Figure 4 is a front elevational view showing a further modification.

Figure 5 is a view like Figure 4, but indicating another structural change.

Figure 6 is a vertical sectional view showing a still further modification in the stopper.

Referring in greater detail to the drawing, a conventional type of bowl or open tank is designated generally by the numeral 15, the same having a hub-like projection 16 at the lowermost point of its bottom, this projection containing a cylindrical bore 17.

Leading into the bore, midway its length, is a lateral opening 18 in open communication with a passage 19 formed in an overflow extension 20 of the bowl, the upper end of the passage having an inlet port 21 open to the bowl.

For the sake of illustration the bowl has at one edge a flange 22 connecting with an upright support 23.

Tight fitted to the bore 19 is a tube 25 having its upper expanded end flared outwardly to produce a seat 26 and its lower end engaged in the through opening of a 45 degree T fitting 27, its lateral opening 28 being further on described.

This fitting also connects with a waste or drain conduit 29 leading to the place of disposal.

The tube 25 may be threaded exteriorly and drawn tight upon the cavity in the bowl by a nut 30, a gasket 31 being interposed between it and the end of the projection 16, while the extending annular edges of the seat may be provided with cement as at 32.

A stopper 35 is formed to present a preferably convex upper face 36 and conical edge 37 fitted to the seat 26; if preferred, its flat under surface may have a hub 38, and in any case contains an axial bore 39 in its under portion.

Screw threaded into the lower part of the bore is a tube 40, preferably provided with thin radial ribs 41, their outer edges fitted to slide freely in the tube 25 to act as guides for the stopper 35, centering the same and increasing its weight, but not materially impeding the flow of water through the valve when the stopper is raised, or preventing the overflow to drain therethrough at any time.

The upper end edges of the ribs 41 may abut the hub 38, thereby limiting the entrance of the

tube 40 into the stopper, while the entered end of the tube acts as a support for a disc 42 freely movable in the space of the bore 39 above the tube.

A flexible rod 44 passes freely through an axial perforation in the disc 42, where it is provided with an upset head 45, free to move upwardly to contact the stopper to raise it when the rod is pressed thereagainst, but when the rod is drawn downwardly, there will remain a space above the disc, enabling the stopper to close upon its seat, by gravity and possible also by a partial vacuum in the tubes 25 and 29, the end 45 of the rod not interfering with such action.

Set in the angular opening 28 of the T is a plug 48 provided with a gasket 49 at its inner end, and fixed in its outer end is a flexible guide tube 50 leading to an adapter 51 screwed on a hollow plug 52 passing through the flange 22 and securely clamped to it.

Slidably fitting the plug is a plunger 53 having fixed on its raised extending end a hand knob 54, by which the plunger may be actuated, and fixed in the inner, lower end of the plunger is the opposite end of the flexible rod 44.

Thus it will be seen that by raising or lowering the knob 54, the rod 44 will be raised or lowered at its end 45 and the thrust of raising transmitted to the stopper, while lowering is accomplished by gravity.

Obviously this is suggestive only of rod controlling means, many others of which may be substituted, the entire object being to raise the stopper when required and to permit it to seat itself upon a full reversal of motion of the actuating means, sufficient at least to lower the rod end 45 from any possible contact with the stopper.

Figure 3 shows a stopper 55 in which is secured a guide tube 56, its upper end having a closure 57 containing a perforation 58, taking the place of the loose disc 42.

In Figure 4 a stopper 60 is provided with a fixed guide tube 61 having guide ribs 62, one of which is slotted longitudinally, as at 63, to receive an angularly bent head 64 of the flexible rod 44, the slot permitting a desirable degree of lost motion to occur, if required, in the seating of the stopper.

A similar device is disclosed in Figure 5, in which a stopper 65 is provided with a guide tube 66 having a slot 67 to permit the outward passage of the bent end 68 of the rod 44, obviously the slot limiting the amount of lost motion.

Another analogous device is shown in Figure 6, in which a stopper 70 has secured in it a guide tube 71 provided with a fixed collar 72 spaced below the stopper hub 73.

Loosely surrounding the tube, between the collar and hub, is a ring 74 formed on the end of the flexible rod 44, whereby substantially the same results of lost motion are attained, so necessary to the proper functioning of the device.

It will be understood that the stopper may be made of metal, rubber or other material, the guide tube integral with the stopper or fixed therein, and other changes made within the purview of the invention in its broadest aspect.

From the foregoing it will be seen that a simple device for this purpose has been disclosed in the preferred form of its embodiment, but it is not desired to restrict the details to the exact construction shown, it being obvious that changes may be made without departing from the scope of the appended claims.

Having thus described the invention, what is claimed as new and desired to secure by Letters Patent, is:

1. In combination with a tank having a drain conduit, a conical valve seat on the bottom of said tank open to said conduit, a stopper suited to said seat, a guide tube fixed in said stopper within said conduit, a bent rod entering said conduit through a lateral opening in said T fitting, said rod having its inner end disposed in said tube, a disc in said tube to guide said rod end, and means to manually raise said rod to displace said stopper, said stopper closing the passage by gravity when said rod is moved into a position remote from said stopper.

2. In combination with a tank having a drain conduit, a T fitting in said conduit, a conical valve seat in the bottom of said tank open to said conduit, a stopper suited to said seat, a guide tube fixed in said stopper within said conduit, a bent rod entering said conduit through a lateral opening in said T fitting, said rod having its inner end disposed in said tube, a disc freely mounted in said tube, said rod guided unimpededly by said disc, said disc forming a free space above said tube and operative means on the other end of said rod to raise and lower the same, said rod when raised exerting thrust on the bottom of said stopper to open the valve and when lowered to clear the stopper, enabling it to close upon its seat by gravity.

3. In combination with a tank having a drain conduit, an overflow leading to said conduit, a T fitting in said conduit, a conical valve seat on the bottom of said tank open to said conduit, a stopper suited to said seat, a guide tube fixed in said stopper within said conduit, a bent rod entering said conduit through a lateral opening in said T fitting, said rod having its inner end disposed in said tube, a disc in said tube to guide said rod end, operative means on the other end of said rod to raise and lower the same, said rod when raised exerting thrust on the bottom of said stopper to open the valve and when lowered to clear the stopper, enabling it to close upon its seat by gravity.

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