B. O. TILDEN.

FLUSH TANK OPERATING DEVICE.

APPLICATION FILED OCT. 27, 1908.

915,637. Patented Mar. 16, 1909.

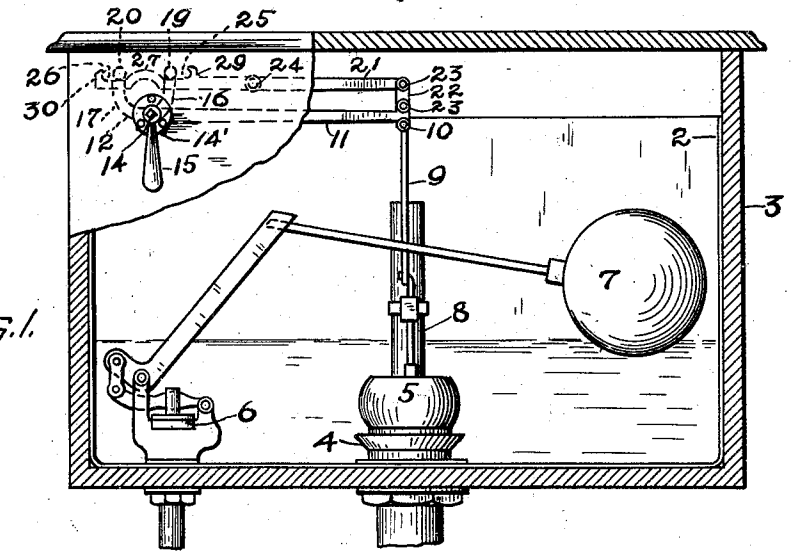


Fig. 1.

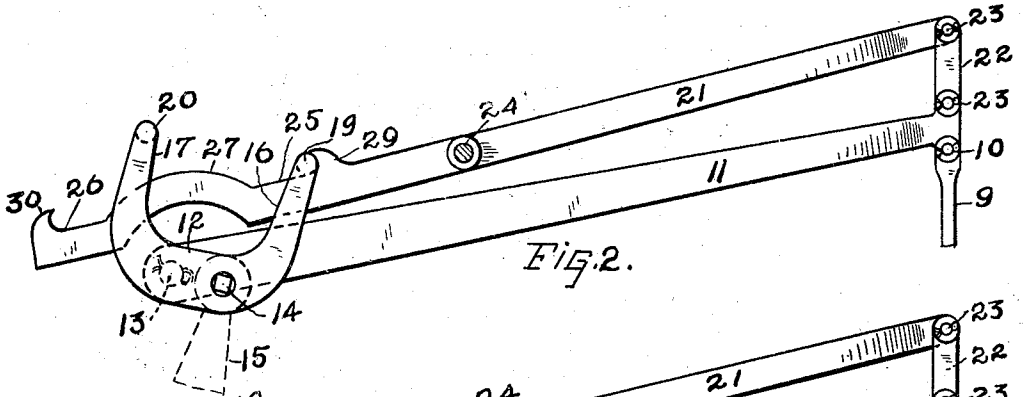


Fig. 2.

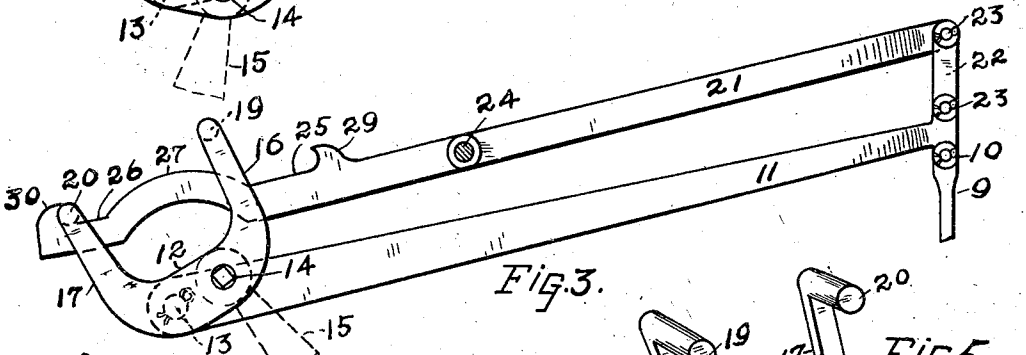


Fig. 3.

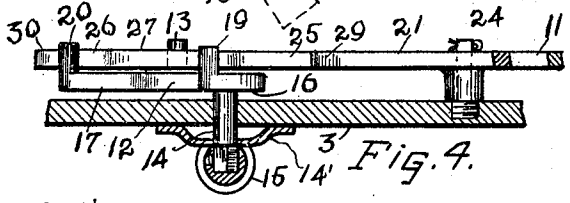


Fig. 4.

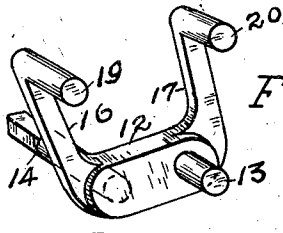


Fig. 5.

WITNESSES

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FLUSH-TANK-OPERATING DEVICE.

No. 915,637. Specification of Letters Patent. Patented March 16, 1909.

Application filed October 27, 1908. Serial No. 459,704.

To all whom it may concern:

Be it known that I, BERT O. TILDEN, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Flush-Tank-Operating Devices, of which the following is a specification.

This invention relates to improvements in flush tank operating devices, and the invention relates particularly to a mechanism for operating low-down flush-tanks, which are connected with and located in close proximity to the latrine bowls.

The object of the invention is to provide a mechanism for unseating the flush valve of water closets, which is simple, durable and effective, and wherein the construction and arrangement of the parts are such that the device is more powerful, and may be operated with greater ease, and less noise than any of the flush-tank operating mechanisms heretofore devised.

A further object is to provide means for limiting the movements of all of the working parts, including the flush valve.

The invention consists principally of the features and parts as set forth in the detail description which follows, illustrated by the accompanying drawing, and then pointed out in the appended claims.

In the accompanying drawing, Figure 1 is a front elevational view, partly in section, of a flush-tank having my improved mechanism applied, illustrating the arrangement and position of the operating parts when the valve is closed. Fig. 2 is an enlarged detail view of the operating mechanism, showing the relative arrangement of the parts, as when the operating handle is rocked to the left, for opening the flush valve. Fig. 3 is a similar detail view, showing the arrangement and position of the operating parts, as when the operating handle is rocked to the right, for opening the flush valve. Fig. 4 is a view partly in plan and partly in section, of the operating parts illustrated in Fig. 3. Fig. 5 is a detail perspective view of the forked rocking lever.

Similar numerals of reference are assigned to corresponding parts throughout the several views.

In the drawing, 2 represents a metallic water tank inclosed within a wooden case 3, comprising the well-known low-down flush-tank.

4 represents a flush valve located within the tank, and 5 the valve plunger.

6 and 7 represent respectively the water inlet valve and a globular float, all of which parts may follow any of the well-known constructions, and are not specifically included in the present invention, except for the purpose of illustrating the application and operation of the novel parts.

As shown in Fig. 1, the valve 4 is closed by the vertically operable plunger 5, to which are connected lift rods 8 and 9, the latter rod having its upper end pivotally connected at 10 to one end of a pitman or rod 11, which is disposed horizontally in the upper portion of the tank. The opposite end of the pitman 11 is journaled to a forked operating-lever 12, by means of an integral pin or stud 13. The operating-lever 12 is provided with an integral shaft or stem 14, which passes outwardly through a perforation in the face wall of the tank 3 and through an escutcheon 14′ secured to the tank. To the outer end of the stem 14 is rigidly attached a depending operating handle 15, by means of which the operating-part 12 may be rocked by the user of the closet, in either direction, to the right or left, as illustrated in Figs. 2 and 3. The operating-part 12 is formed with upwardly extending arms 16 and 17, the free extremities of which are provided with integral inwardly projecting engaging pins or parts 19 and 20, as best seen in Fig. 5. The pivot-pin 13 is preferably disposed eccentric, as shown, in relation to the stem 14, upon which the forked lever 12 is rocked by the handle 15.

21 represents a rocking-lever disposed parallel to and just above the pitman 11. The outer end of lever 21 is connected to the corresponding end of rod 11 by a link 22, and pins 23. This link connection is provided to allow some flexibility to these parts when they are operated. Lever 21 is pivoted to the front wall of the tank 3 at 24. The opposite end of lever 21 is provided with two bearing surfaces 25 and 26 which are separated by an upwardly curved portion 27. The bearing surfaces 25 and 26 are substantially of the same length, and disposed in the same plane, and their outer ends are terminated by upwardly projecting integral stops 29 and 30.

The disposition and arrangement of the parallel levers 11 and 21, and also the operating-lever 12 are such, that when the operating parts are at rest, as when the valve is closed (see Fig. 1), both of the engaging pins 19 and 20 rest upon the corresponding bearing surfaces of rocking-lever 21, in readiness to operate or depress the free end of said lever, in case the handle 15 and operating-lever 12 are rocked either to the right or to the left. Under this construction and arrangement, there is no lost motion to the parts, and the first slight movement of the handle 15, in either direction, will effect the tilting of the lever 21, as shown in Figs. 2 and 3. It will be noticed by an examination of the drawing, that rocking-lever 21 will be tilted in the same direction and to the same extent, no matter in which direction handle 15 may be rocked. On the other hand the inner end of the pitman 11, by reason of the location of the eccentric pin 13 in relation to the stem 14, will move upwardly when handle 15 is swung to the left (see Fig. 2), and at the same time the pitman will be given a slight endwise movement toward the right. When, however, handle 15 is swung to the right, the inner end of pitman 11 will move downwardly, and also toward the right slightly (as shown in Fig. 3). When the handle is swung to the left, the inner ends of the pitman 11 and lever 21 approach each other, until the engaging pin 19 is stopped by the lug 29. When the handle is swung to the right, the inner ends of pitman 11 and lever 21 both move downwardly until the engaging pin 20 encounters the stop 30, at which time the two levers are nearly parallel to each other.

In the past all, or nearly all of the flush-tank operating mechanisms, have had their working parts so constructed and arranged, that it requires considerable force on the part of the user of a closet to start the flushing, or in other words, break the seal of the valve, which is held by a strong suction at the bottom of the tank. Then when the seal of the valve is finally broken, the operating parts on account of the great force applied to start them, move with considerable ease and rapidity, with the result that when they suddenly come to a stop, a loud knocking sound is produced. In buildings having several stories, each of which are equipped with separate water closets, the noise occasioned by the operating of the flush-tanks may be heard on the floors above and below, and is therefore very annoying. In addition to the noise referred to, the old tank operating mechanisms suffer more or less impairment on account of the excessive jar and strain incidental to the violent working of the parts. It is an object of the present invention to provide a flush-tank mechanism in which all of these objectionable features are eliminated.

By the use of the pitman 11, which is connected eccentrically to the operating-lever 12, together with the coöperation of the rocking-lever 21, and all of these parts constructed, positioned and operated as shown and described, a greater leverage and power is afforded and the several parts of the mechanism may be operated without jar or sound and also with comparative ease.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent, is—

1. A flush-tank operating device, comprising an operating-lever pivoted to the wall of a tank by an integral stem, the said operating-lever having two upwardly extending arms fitted with engaging-pins, a rocking-lever disposed horizontally in the tank and pivoted to one wall of the tank, one end of said rocking-lever provided with bearing-surfaces in the same plane separated by a curved portion and each terminated by a stop-lug adapted to limit the movement of the engaging-pins of the operating-lever, and a pitman, one end of said pitman disposed between and connected to the rocking-lever and a flush-valve and adapted to coöperate with said rocking-lever for opening the flush-valve, the opposite end of said pitman journaled by means of an eccentric pin to said operating-lever, by means of which the pitman may be operated in the same time and in the same or opposite direction to that of said rocking-lever.

2. A flush-tank operating mechanism, comprising a forked operating-lever disposed in a flush-tank and supported in operative position by a stem which pierces the wall of the tank, a handle carried by the stem of said lever adapted to rock said lever in opposite directions, a pitman, the inner end of said pitman journaled by means of an eccentric pin to said operating-lever, the outer end of said pitman connecting with a flush-valve in the tank, and a rocking-lever having one end connected by a link to the outer end of the pitman adapted for lifting the pitman and opening the flush-valve, the opposite end of said rocking-lever being free, and provided with bearing-surfaces normally engaged by the arms of said forked lever, by means of which said rocking-lever is tilted by the operation of said handle.

3. The combination with a flush-tank and a flush-valve within the tank, of a pitman having one end connected to the flush-valve by a series of lift rods, a rocking-lever disposed in said tank parallel to said pitman and having one end connected to the pitman by a link, the said rocking-lever having one free end provided with two spaced bearing-surfaces, an operating-lever having a stem passing through the wall of the tank, and having two arms normally engaging the bearing-surfaces of said rocking-lever, for the purpose of depressing the free end of said

rocking-lever and raising the opposite end and also the corresponding end of said pitman, the said operating-lever having an eccentric pin to support one end of the pitman, and by means of which said pitman is moved toward or away from said rocking-lever by the rocking of said operating-lever during the opening of the valve, and a handle mounted on the stem of said operating-lever for operating all of said levers.

4. The combination with a flush-valve disposed in a closet flush-tank, of a pitman in said tank, one end of said pitman operatively connected to the flush-valve, a rocking-lever pivotally mounted in said tank above and parallel to said pitman, a link to connect said pitman and said rocking-lever, an operating-lever operatively disposed in said tank by means of an integral stem which pierces the wall of the tank, the said operating-lever having two upwardly projecting arms, each provided with an engaging pin adapted to contact with and operate said rocking-lever in the same direction, the said operating-lever having an integral pin upon which one end of said pitman is journaled and by means of which said pitman may be operated in the same or opposite direction to that of the rocking-lever, and means for rocking said operating-lever by hand for opening the flush-valve.

5. A flush-tank operating mechanism, comprising a forked lever mounted in a flush-tank by means of a stem which passes through the wall of the tank, the said lever having an engaging-pin projecting from the free end of each arm of the fork, a pitman journaled at one end upon said forked lever by means of an eccentric pin, the opposite end connected with a flush-valve in the tank, a rocking-lever pivoted inside the tank above said pitman, one end of said rocking-lever connected by a link to said pitman, the other end being free and provided with bearing surfaces adapted to connect by contact with the engaging pins of said forked lever, and a handle carried by the stem of said forked lever, adapted to rock said lever either to the right or left, to effect the movement of said pitman and said rocking-lever in the same or in different directions thereby to lift and open the flush-valve.

6. The combination with a low-down flush-tank and a flush valve within said tank, of a pitman disposed horizontally in the tank, one end of said pitman connecting with the flush valve, an operating lever operatively mounted in said tank, having a stem passing through the wall of the tank, and having an integral eccentric pin to support the opposite end of said pitman, the said operating-lever provided with two upwardly extending arms fitted with engaging-pins, a rocking-lever pivoted in said tank above and parallel to said pitman, one end of said rocking-lever connected to said pitman, the opposite end of said lever having two bearing surfaces to receive the engaging pins of the operating lever, the said bearing surfaces spaced apart and each terminated by a stop-lug for limiting the travel of the engaging-pins when the operating-lever is rocked either to the right or to the left, and a handle mounted on the stem of the operating-lever outside of the tank for operating all of said parts for effecting the opening of the flush-valve.

In testimony whereof I affix my signature in presence of two witnesses.

BERT O. TILDEN.

Witnesses:
HARRY D. WALLACE,
M. E. CATLIN.