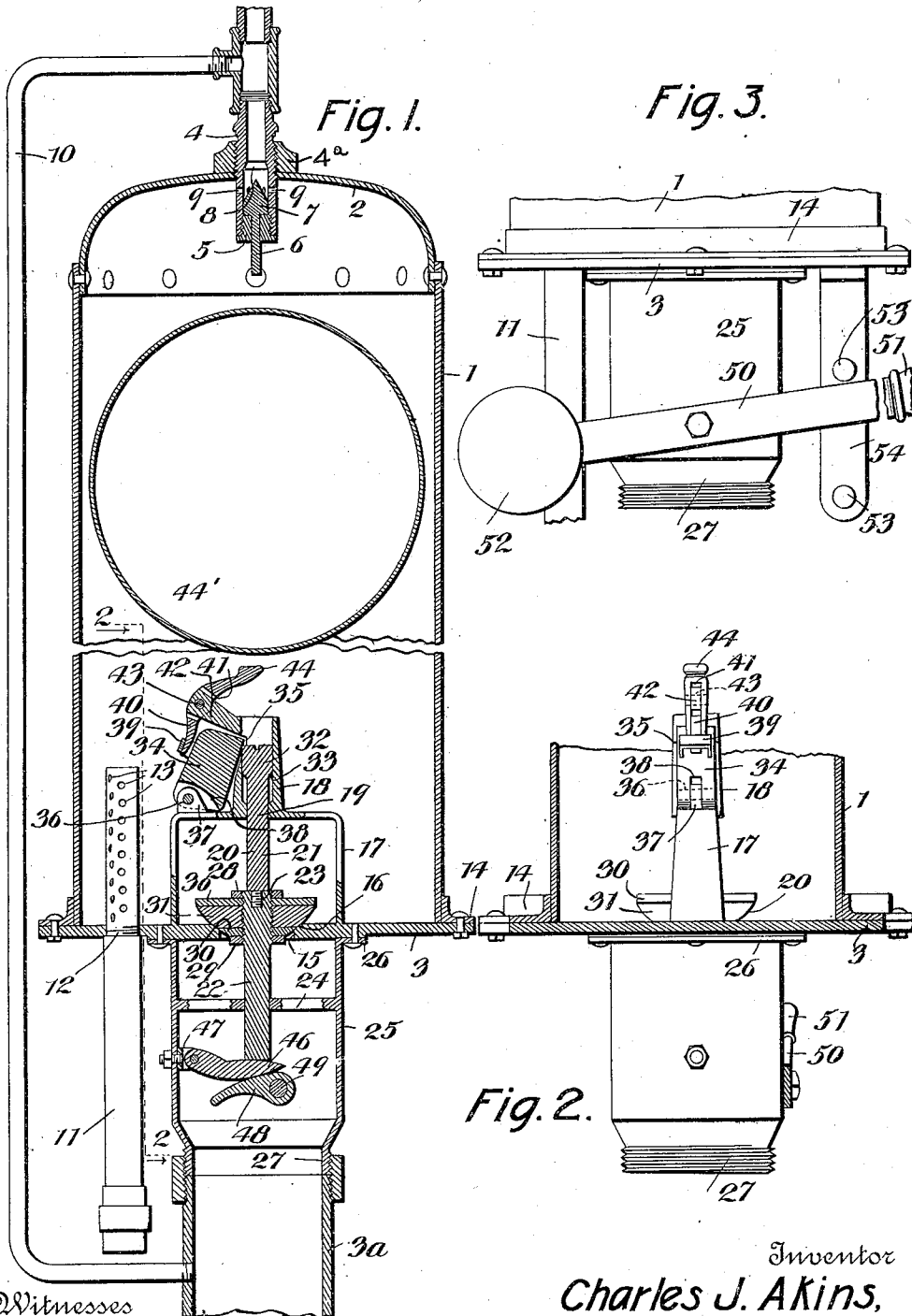


No. 841,214.

PATENTED JAN. 15, 1907.

C. J. AKINS.
FLUSHING TANK.

APPLICATION FILED SEPT. 29, 1905.



Witnesses
Geo. H. Hillyer
C. H. Grieshaber.

Inventor
Charles J. AKINS,
by *A. B. Wilson*
Attorney

UNITED STATES PATENT OFFICE.

CHARLES J. AKINS, OF HUNTINGTON, OREGON, ASSIGNOR OF ONE-FOURTH TO B. W. GRAHAM AND ONE-FOURTH TO G. W. SHERK, OF PORTLAND, OREGON.

FLUSHING-TANK.

No. 841,214.

Specification of Letters Patent.

Patented Jan. 15, 1907.

Application filed September 29, 1905. Serial No. 280,623.

To all whom it may concern:

Be it known that I, CHARLES J. AKINS, a citizen of the United States, residing at Huntington, in the county of Baker and State of Oregon, have invented certain new and useful Improvements in Flushing-Tanks; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to improvements in flushing-tanks, and more particularly to the one set forth in my pending application for patent, bearing Serial No. 258,948, and filed May 5, 1905.

The object of the invention is to improve and simplify the construction and operation of flushing-tanks, and thereby render the same more efficient and durable in use and less expensive to manufacture.

With the above and other objects in view the invention consists of certain novel features of construction, combination, and arrangement of parts, as will be more fully described, and particularly pointed out in the appended claims.

In the accompanying drawings, Figure 1 is a vertical sectional view through a flushing-tank constructed in accordance with my invention. Fig. 2 is a detail vertical sectional view taken on a plane indicated by the line 2 2 in Fig. 1; and Fig. 3 is a detail side elevation of the lower end of the flushing-tank, showing the operation of the lever.

Referring to the drawings by numerals, 1 denotes a tank or receptacle, preferably in the form of a cylinder, having its upper and lower ends closed by plates or heads 2 3. The upper head 2, as shown, is convex and riveted in the open top of the cylinder, as shown. Screwed into a centrally-disposed enlargement 4^a on the head 2 is an air-valve casing 4, which has its inner end projecting into the tank and interiorly screw-threaded to receive a threaded plug 5. Sliding through a central opening in the latter is the stem 6 of an air-valve 7, the tapered upper end of which is adapted to coact with a valve-seat 8, formed in the bore of the casing 4 above an annular series of vent-openings 9, provided in the casing 4 and affording communication between the interior of the tank and

the bore of the valve-casing 4 to permit of the escape of air from the tank. The outer end of the casing 4 may be left open to the atmosphere, or it may be connected to a vent-pipe, which may lead to any desired point, and, if desired, an overflow pipe or connection 10 may be provided, as shown, to permit any water which may escape from the tank through the air-valve to pass back to the water-discharge pipe 3^a. Water is admitted into the bottom of the tank through a supply-pipe 11, which is screwed into a threaded opening 12, formed in the lower plate or head 3. The end of the water-supply pipe 11 which is disposed within said tank is formed with perforations 13, which permit the water to discharge noiselessly into the tank.

The lower head or plate 3 is, as shown, in the form of a cast-metal disk, which is bolted to an annular flange 14, formed or provided upon the lower end of the cylinder 1. In the center of the plate or disk 3 is an outlet-opening 15, formed with a valve-seat 16, and upon the inner face of said plate or disk above said opening is formed a guide-frame 17. The latter is of substantially inverted-U form and has projecting upwardly from the center of its top a tubular guide 18 for the stem 19 of an outlet or discharge valve 20, which coacts with the seat 16. The valve-stem 19 consists of two sections 21 and 22, which have a screw-threaded connection with each other, as shown at 23. The upper section 21 is guided in the tubular portion 18 of the frame 17, and the lower section 22 is guided in an opening formed in a cross-bar or spider 24, which is formed in the cylindrical casing or coupling 25. The latter has its open-flanged top 26 screwed or otherwise secured upon the under side of the plate or disk 3, concentric with its valve-opening 15, and its reduced lower end 27 is exteriorly screw-threaded to receive the outlet or discharge pipe 3^a. The upper end of the lower section 22 of the valve-stem is exteriorly screw-threaded to receive jam-nuts 28 and 29, between which are clamped washers 30 and a convex ring 31, of leather, rubber, soft metal, or other suitable material, which is adapted to engage the valve-seat 16.

At the upper end of the upper section 21 of the valve-stem 19 is formed an annular

enlargement or head 32, which provides an annular shoulder 33. The head or enlargement 32 slides in the tubular guide 18, and the shoulder 33 is adapted to be engaged by the end of a dog 34, which is pivoted upon the top of the frame 17 and is adapted to have its end projecting through an opening 35, formed in the guide 18. Said dog 34 is pivoted by a pin 36 to a lug 37, formed upon the top of the bracket 17 and projecting into a recess 38, formed in said dog. The latter has upon its outer face a loop or bracket 39, which is adapted to receive the lower end of a trip-lever 40. The latter is slotted intermediate its ends, as at 41, to receive an arm or lug 42, which projects from one side of the tubular guide 18 and to which said trip-lever is pivoted by means of a pin 43. The upper end 44 of said trip-lever is disposed centrally in the tank 1 and is adapted to be actuated by a float 44', which is free to move vertically in the tank, according to the level of the water. Said float, as shown, is in the form of a hollow sphere of slightly less diameter than that of the tank 1, so that there will be little or no liability of the float sticking at any point in the tank. The said float is adapted to actuate the trip-lever 44 and the stem 6 of the air-valve, as hereinafter explained.

The lower end of the lower section 22 of the valve-stem 19 is adapted to bear upon a lifting-arm 46, which is pivoted to a bracket 47, secured within the casing or coupling 25, as clearly shown in Fig. 1. Said lifting-arm 46 is adapted to be actuated by a cam-lever 48, secured upon a shaft 49, which is mounted in suitable bearings in the casing 25, and has one of its ends projecting through a stuffing-box provided in the latter. Upon said projecting end is secured an operating-lever 50, which has a handle 51 at one of its ends and a counterbalancing-weight 52 at its other end. The swinging movement of the lever 50 is limited by stops 53, provided upon a depending bracket 54, which is secured upon the bottom plate or disk 3, as shown in Fig. 3 of the drawings.

The operation of the flushing-tank is as follows: As the water enters the inlet-pipe 11 and fills the tank 1 the float 44 will rise and lift the stem 6 of the air-valve 7 and force the latter upon its seat 8 to close the air-outlet. When the handle 51 of the lever 50 is depressed, its shaft 49 will cause the cam 48 to elevate the arm 46, and the latter will force the valve-stem 19 upwardly, thereby lifting the valve 20 from its seat 16 and permitting the water in the tank 1 to discharge through the opening 15 and the casing 25. As soon as the handle 51 is released the weight 52 will return the lever 50 to its normal position. As the valve-stem 19 is elevated the shoulder 33 will pass above the dog 34 and permit the latter to fall by gravity beneath the

same and prevent the stem from again dropping. The valve 20 is thus held in its elevated position, so that the contents of the tank may be quickly discharged. As the float 44 lowers with the level of the water it will strike the end 44 of the trip 40, and its weight will actuate the latter to swing the dog 34 outwardly from beneath the shoulder 33 and permit the valve 20 and its stem 19 to drop to their normal positions, and thereby close the outlet-opening 15 of the tank.

Various changes in the form, proportion, and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of this invention.

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

1. In a device of the character described, the combination of a tank, a water-outlet therefor, a valve-seat in the bottom of said tank, a guide adjacent to said seat, a valve-stem slidable in said guide, a valve upon said stem to coact with said valve-seat, means for manually elevating the lower end of said valve-stem, a slotted, tubular guide for the upper end of said valve-stem, a shoulder formed upon the upper end of said valve-stem, an overbalanced dog pivoted upon said guide and adapted to project through the slot in said slotted guide, a loop upon said dog, a lug projecting from said slotted guide, a trip pivoted upon said lug and having one end engaged with said loop and its other end projecting above said valve-stem, a centrally-disposed air-valve in the top of said tank, and a float in said tank adapted to actuate said air-valve and said trip, substantially as described.

2. In a device of the character described, the combination of a tank, an air-valve casing disposed centrally in the top of said tank, an air-valve slidable in said casing and having its stem depending therefrom, a perforated water-supply pipe projecting into the bottom of said tank, a valve-seat formed centrally in the bottom of said tank, a casing surrounding said seat, guides in said casing, a valve-stem slidable in said guides, a valve carried by said stem and coacting with said valve-seat, a lifting-arm in said casing engaged with the lower end of said valve-stem, a shaft in said casing, a cam-lever upon said shaft and engaged with said lifting-arm, a counterbalanced operating-lever upon the outer end of said shaft, a bracket, stops upon said brackets to engage said operating-lever to limit the movement thereof, a slotted, tubular guide for the upper end of said valve-stem, a shoulder formed on the upper end of said valve-stem, a pivoted dog adapted to project through the slot in said tubular guide and to engage said shoulder, a trip pivotally mounted upon said guide and hav-

ing one end loosely engaged with said dog
and its other end disposed centrally in said
tank above said valve-stem, and a float in
said tank adapted to actuate said trip and the
5 stem of said air-valve, substantially as de-
scribed.

3. The combination of a tank having a
vent, a valve to close and open said vent, a
10 water-outlet, a valve to control said water-
outlet, means to open the last-mentioned
valve, means to lock said valve in opened
position, and a float to trip said valve-lock-

ing means when said float descends to cause
said valve to close, said float acting on its
ascent to close the vent-valve, substantially 15
as described.

In testimony whereof I have hereunto set
my hand in presence of the subscribing wit-
nesses.

CHARLES J. AKINS.

Witnesses:

S. H. GREENE,
J. H. SHIELDS,
L. C. GREENE.