No. 846,712. PATENTED MAR. 12, 1907.

C. WRIGHT.

TANK VALVE.

APPLICATION FILED AUG. 6, 1906.

Fig. 1.

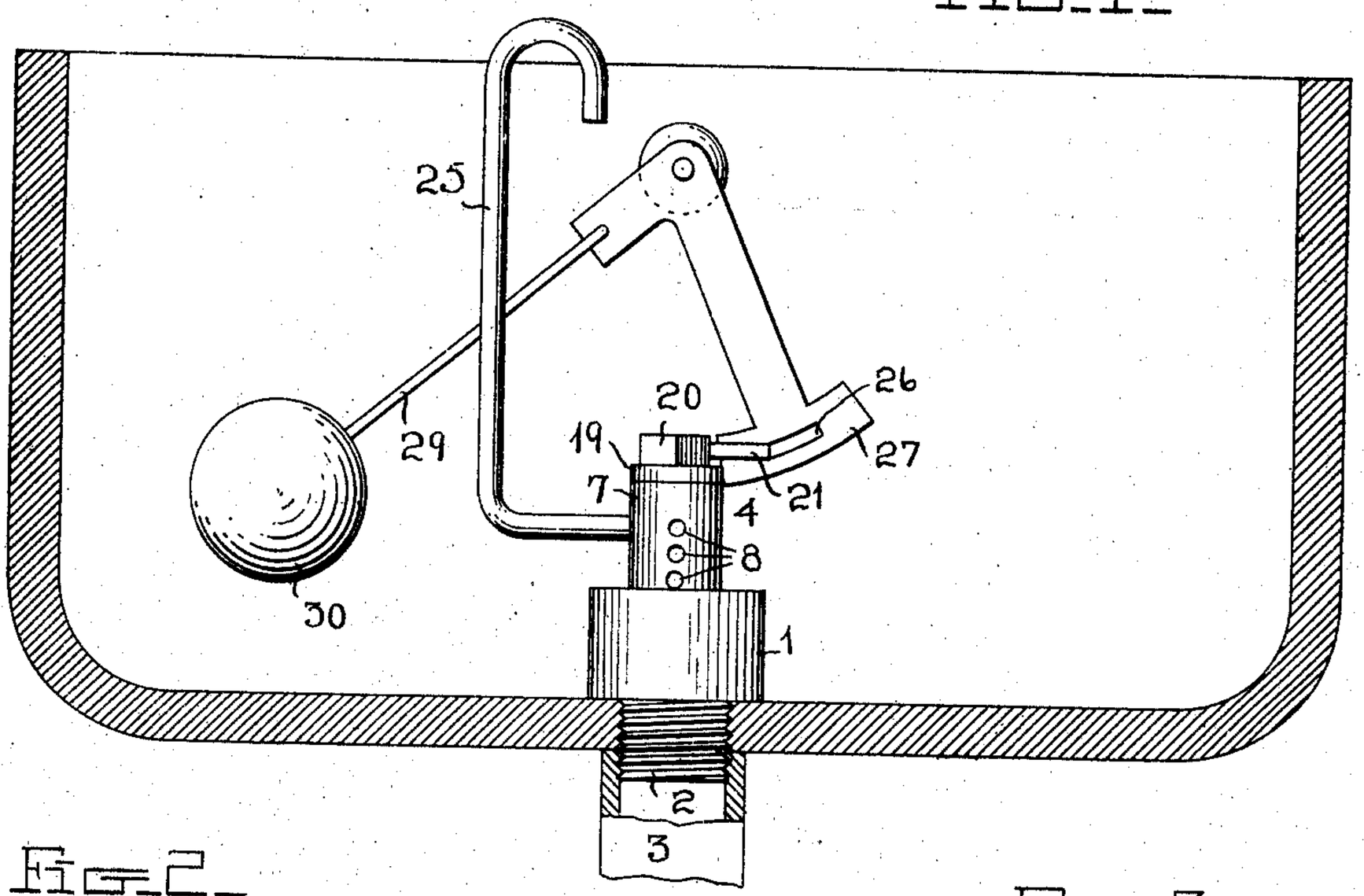


Fig. 2.

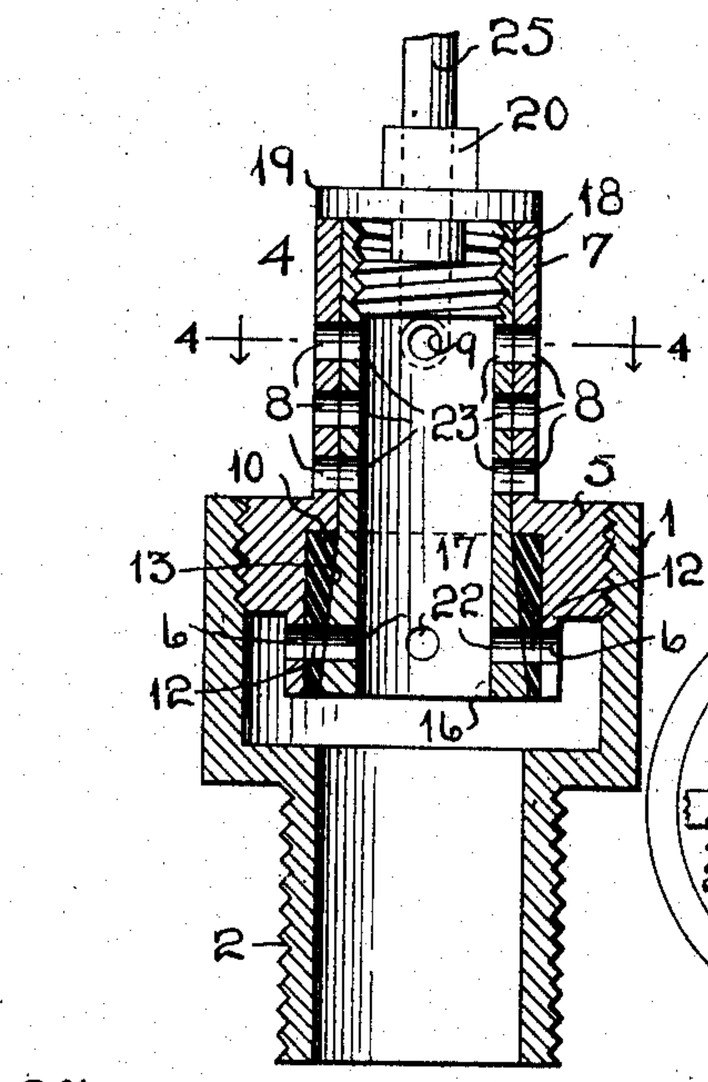


Fig. 3.

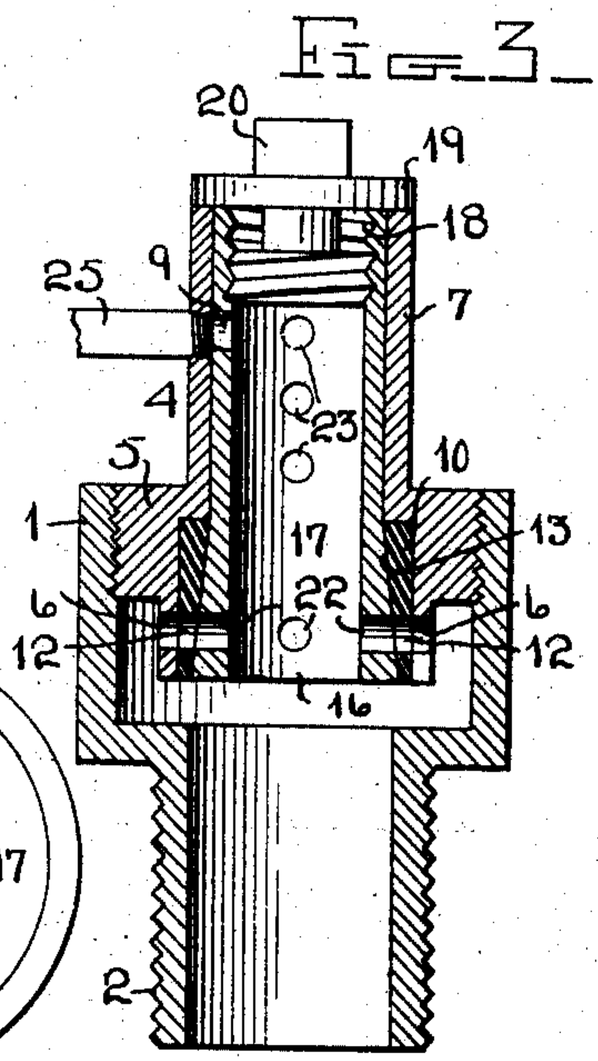
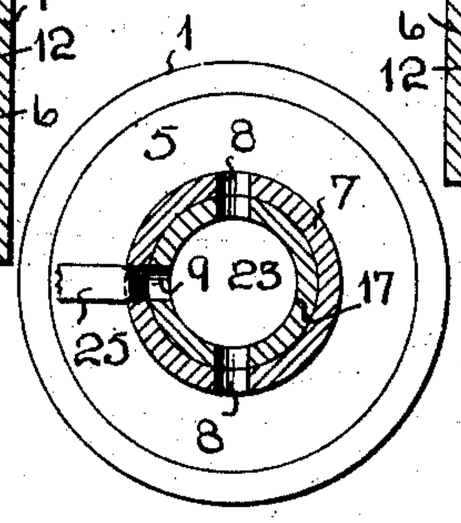


Fig. 4.



Witnesses

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TANK-VALVE.

No. 846,712. Specification of Letters Patent. Patented March 12, 1907.

Application filed August 6, 1906. Serial No. 329,495.

To all whom it may concern:

Be it known that I, CHARLES WRIGHT, a citizen of the United States, residing at South Greensburg, in the county of Westmoreland and State of Pennsylvania, have invented certain new and useful Improvements in Tank-Valves; 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 inlet-valves for tanks.

The object of the invention is to provide an inlet-valve for tanks by means of which the water therein may be automatically maintained at a predetermined level.

With this 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 drawing, Figure 1 is a vertical section through the front portion of a tank, showing the valve and its operating mechanism in elevation. Fig. 2 is a large vertical section taken through the valve. Fig. 3 is a similar view taken at right angles with Fig. 1, and Fig. 4 is a horizontal sectional view taken on a line with the discharge-ports and the air-vent.

Referring more particularly to the drawings, 1 denotes the outer casing of the valve, which is secured in the bottom of the tank and has formed thereon a threaded extension 2, which projects through the bottom of the tank and is adapted to receive the upper end of the water-supply pipe 3. The upper end of the outer casing 1 is interiorly threaded to receive an inner valve-casing 4, which is provided with an annular threaded enlargement or flange 5, adapted to be screwed into the threads in the upper end of the outer casing 1, as shown. The lower end of the inner casing 4 extends into the outer casing 1, within a short distance of the bottom of the same, said lower end of the inner casing being provided with a series of transversely-disposed inlet-passages 6, through which and around the bottom of the inner casing 4 the water is adapted to pass.

The inner casing 4 is provided with a reduced upwardly-projecting extension 7, in which at diametrically opposite points are formed series of transversely-disposed water-discharge passages 8 and at right angles thereto an air-vent 9. The lower end of the inner casing 4 is recessed to form a shoulder. Within the recess and adapted to bear against the shoulder is arranged a valve-seat 10, said seat being preferably formed of hard rubber or similar material and provided with inlet-apertures 12, which register or aline with the inlet-passages 6 in the lower end of the inner casing 4.

The valve-seat 10 is provided with a centrally-disposed tapering passage 13, with which is adapted to be engaged the conically-shaped lower end 16 of a hollow valve 17, the upper cylindrical end 18 of which is adapted to engage the inner walls of the upper extension 7 in the valve-casing 4. The upper cylindrical end 18 of the valve is provided with interior screw-threads, and into the said threaded upper end is adapted to be screwed a flanged plug 19, by means of which the valve is held in place in the inner casing, said plug being provided with a square upper end 20, with which is adapted to be engaged an operating crank or handle 21.

In the conically-shaped lower end of the valve 17 is formed a series of transversely-disposed inlet-passages 22, which when the valve is turned in the proper direction are adapted to be brought into alinement with the passages 6 and 12 in the lower end of the inner valve-casing 4 and the valve-seat 10, thereby allowing the water to enter the hollow valve. The upper cylindrical portion of the valve is provided at diametrically opposite points with vertical series of discharge-passages 23, which when the valve is turned in said direction are adapted to aline with the discharge-passages 8 in the upper end of the extension 7 of the casing 4, thus permitting the water which enters the valve through the passage 22 to pass out into the tank. In the cylindrical end 18 of the valve is also formed an air-vent, which when the discharge-passages 23 are alining with the passages 8 is adapted to register or aline with the air-vent 9 in the extension 7 of the valve-casing, thereby permitting the air in the upper end of the valve to escape, so that the water may freely enter the valve. The air-vent 9 in the extension 7 is preferably threaded, and into the same is adapted to be

screwed a right-angular upwardly-projecting air-discharge pipe 25, said pipe extending upwardly in the tank above the highest level reached by the water entering the tank. The upper end of the pipe 25 is turned or bent downwardly, so that any water which may possibly pass up through the pipe will be discharged into the tank.

The crank or handle 21 preferably has its outer end reduced and engaged iwth a segmental slot 26, formed in a segmental extension 27 on the lower end of the bell-crank lever 28, which is pivotally mounted on the inner side of the tank or other suitable support. To the other arm of the bell-crank lever is connected the stem or rod 29 of a hollow float 30, which as the water in the tank rises and falls will rock the bell-crank lever in one direction and the other, thereby causing the same to turn the valve 17 in the proper direction to close and open the same, as will be understood. By providing a slotted engagement between the crank-lever 21 and the bell-crank lever the float will be permitted to rise or fall a suitable distance before the bell-crank lever comes into engagement with the crank-handle 21, thereby permitting a certain amount of water to enter or leave the tank before the valve begins to close or open, so that before the valve has been entirely closed by the bell-crank lever the water in the tank will have reached the desired level or discharged, as the case may be.

The valve, constructed as herein shown and described, will be tightly held in place by pressure of water in the outer casing, thus preventing any possible leakage after the valve has been closed, thus providing a reliable and efficient auotmatically-operating valve for flush-tanks and the like.

From the foregoing description, taken in connection with the accompanying drawings, the construction and operation of the inven tion will be readily understood without requiring a more extended explanation.

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 as defined in the appended claims.

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

1. In a tank-valve, an outer casing provided with an inlet-passage, an inner casing therein, each end of which is perforated and the intermediate portion is adapted to engage with the outer casing, an air-pipe connected with the upper end of the inner casing, a hollow valve rotatably mounted in the inner casing provided with an air-vent adapted to register with said air-pipe, and with perforations adapted to register with the perforations in the inner casing, and means for rotating said valve by the rise and fall of the water in the tank, substantially as described.

2. In a tank-valve, an outer casing provided with an inlet-passage, an inner casing within the outer casing, each end of which is perforated, and the inner end is recessed, a perforated tapered valve-seat in the recess, a perforated, rotatable, hollow valve in the inner casing, the inner end of which is conical to fit said seat and the outer end is flanged to rest upon the outer end of the inner casing, and means for rotating said valve by the rise and fall of water in the tank, substantially as described.

3. In a tank-valve the combination with an outer casing having a water-inlet passage, of an inner casing adapted to be screwed into said outer casing, said inner casing having formed therein inlet-passages, an upwardly-projecting cylindrical extension formed at the end of said inner casing, said extension having formed therein a series of discharge-passages and an air-vent, a valve-seat arranged in the lower end of said inner valve-casing, said seat having formed therein a conically-shaped aperture and a series of water-inlet passages which aline with the passages in said casing, a conically-shaped hollow valve adapted to engage the conical aperture in said valve-seat, said valve having formed therein inlet-passages, a cylindrical extension formed in the upper end of said valve, said extension having formed therein a series of discharge-passages and an air-vent, a plug to hold said valve in place, a crank-handle connected to the upper end of said plug and means connected to said crank-handle whereby the valve may be closed or opened by the rise and fall of the water in the tank, substantially as described.

4. In a tank-valve the combination with an outer casing, of an inner casing adapted to be screwed into said outer casing, said inner casing having formed therein a series of inlet-passages, a valve-seat arranged in said inner casing, said seat having formed therein a tapering passage and a series of inlet-passages alining with the inlet-passages in said casing, a cylindrical extension formed in the upper end of said casing, said extension having formed therein a series of discharge-passages and an air-vent, an air-discharge pipe connected to said vent, a conically-shaped valve adapted to engage said tapering recess in said seat, said valve having formed therein a series of inlet-passages adapted to be turned into and out of engagement with the inlet-passages in said seat in the casing, a cylindrical extension formed on the upper end of said valve to engage the extension on said casing, said valve extension having formed therein discharge-passages and an air-vent adapted to be turned into and out of alinement with the discharge-passages, and air-vent in the extension of

said casing, a plug adapted to be screwed into engagement with the upper end of said valve to hold the same in place, a crank-handle connected to the upper end of said plug, a pivotally-mounted bell-crank lever having formed in one of its arms a segmental slot to receive the end of said crank-handle and a float connected to the other arm of said lever, whereby the same is operated by the rise and fall of the water in the tank, thereby automatically closing and opening said valve, substantially as described.

5. In a flushing apparatus, a tank, an outer casing having its lower end projecting therethrough and screw-threaded for the reception of the supply-pipe and its inner end interiorly screw-threaded, an inner casing having its intermediate portion screw-threaded and secured thereby to the outer casing, each end of the inner casing being perforated, an air-pipe secured in one of the perforations of the upper end of the inner casing, the upper end of which is curved and extends above the water-level of the tank, a perforated hollow valve rotatably mounted in the inner casing, a crank on the outer end of said valve, a pivotally-mounted bell-crank lever in the tank having one end adapted to engage with said crank, and a float on the other end of said lever, whereby the valve is controlled by the rise and fall of the water in the tank, substantially as described.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

CHARLES WRIGHT.

Witnesses:
N. A. LOOR,
J. A. BINKEY.