L. O. JONES.

WATER CLOSET FLUSHING MECHANISM.

APPLICATION FILED JAN. 3, 1918.

1,281,583. Patented Oct. 15, 1918.

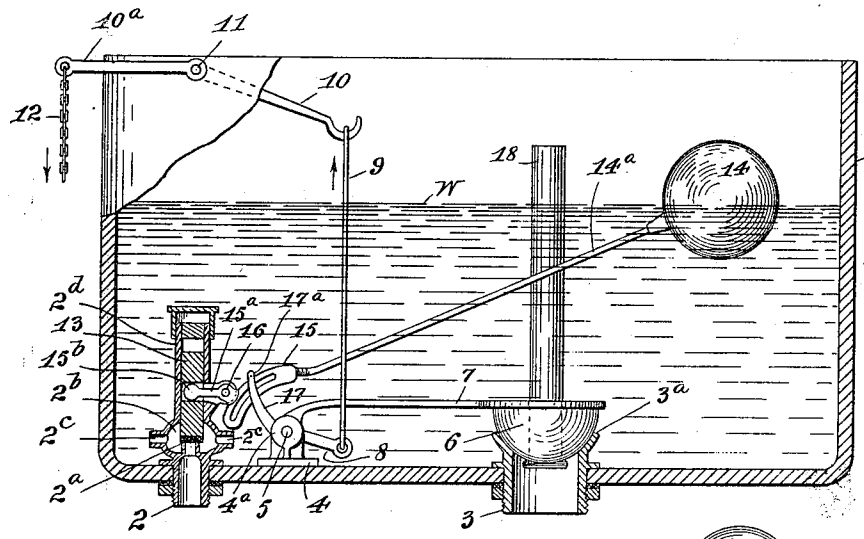


Fig. 1

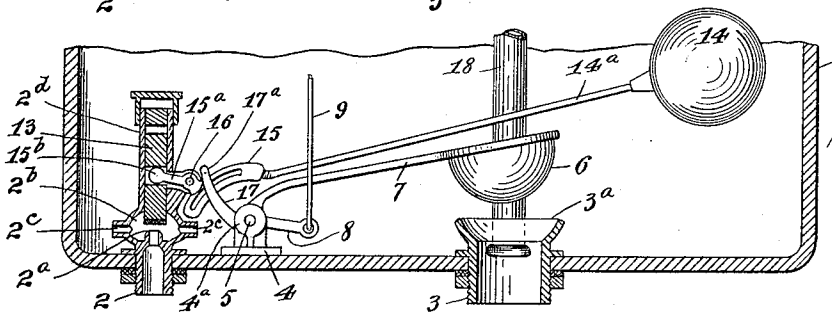


Fig. 2

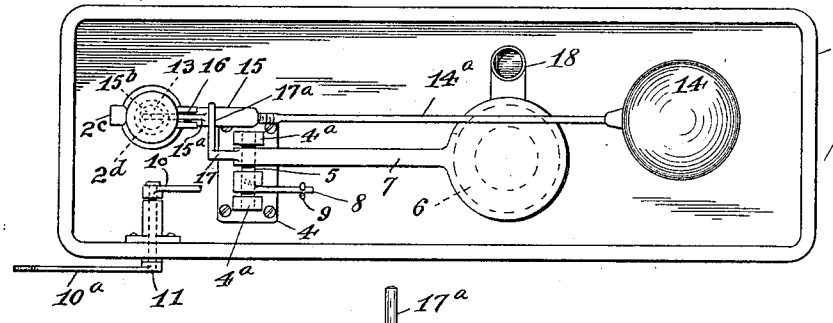


Fig. 3

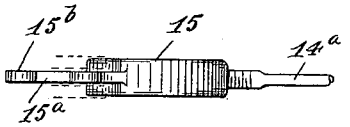


Fig. 4

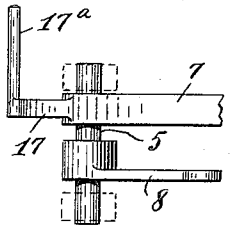


Fig. 5

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WATER-CLOSET-FLUSHING MECHANISM.

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Application filed January 3, 1918. Serial No. 210,107.

To all whom it may concern:

Be it known that I, LEVIS O. JONES, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Water-Closet-Flushing Mechanisms, of which the following is a specification.

This invention relates to means for controlling the inflow and outflow of liquid to and from tanks provided for the purpose of flushing water-closets.

The principal object of the present invention is the provision of improved means for automatically and positively arresting the outflow of liquid from the tank after the closet has been flushed. A further object of the invention is to provide simple and effective means for automatically opening and closing the intake, and another object is to provide novel mechanism for the said purposes, which can be easily and conveniently actuated; that is made up of comparatively few parts, making it simple and economical to construct; that is durable and not liable to become inoperative.

With these and other apparent objects in view, the invention consists in the construction, combination and arrangement of the parts hereinafter described and pointed out definitely in the claims. Throughout the description reference will be had to the accompanying drawings which are made a part of the specification, and in which similar characters of reference are employed to designate corresponding parts.

In the said drawings Figure 1 represents a sectional view of a water-closet tank embodying the invention, certain portions of the apparatus being shown in elevation, and showing the normal position of the parts with the inlet and outlet valves both closed.

Fig. 2 is a similar section with a portion of the tank broken away, and showing the valves both open.

Fig. 3 is a top plan view with a portion of the operating lever broken away.

Figs. 4 and 5 are fragmentary views on an enlarged scale of details which will be fully identified in the description which follows.

Referring to the drawings, 1 designates a tank provided with an intake member 2, and an outflow member 3. The intake has a valve seat 2^a, and the outflow member has a valve seat 3^a. A bracket 4 is attached to the floor of the tank, and a shaft 5 is journaled in two bearings 4^a provided on said bracket. An outflow valve 6, preferably semi-spherical in form, is provided with a stem 7. The stem 7 is rigidly attached to the shaft 5, and the valve 6 is adapted to register in the seat 3^a. An operating lever arm 8 is also firmly fixed on the shaft 5, the said arm being connected by means of a link rod 9 with an actuating lever 10. The lever 10 is fulcrumed at 11 and operated in the ordinary manner. In the present embodiment a chain 12 is the actuating member provided. It is obvious that the manipulation of the chain 12 in direction of arrow, and the co-action of the lever 10, link 9 and arm 8 will oscillate the shaft 5 and raise the valve 6 off the seat 3^a, due to the stem 7 being firmly fixed on the shaft 5. The valve 6 being lifted allows the liquid to flow through the member 3 and flush the closet bowl.

The inlet member 2 is provided with a chamber 2^b, and one or more openings 2^c within the tank 1. A valve casing 2^d houses a slide valve 13, which is operated by the float 14 in the manner and through the means described as follows: The float stem 14^a is connected with a segmental support 15 which is provided with a lever arm 15^a fulcrumed on the casing 2^d at 16. The head 15^b of the arm 15^a engages a slot in the valve 13. The member 15 is adapted to oscillate on the fulcrum 16 and through the medium of the arm 15^a seat and unseat the valve 13. The oscillation of the member 15 is brought about through the action of the liquid in the tank, on the float 14.

When the apparatus is assembled in operative condition, the normal position of the elements is substantially as shown in Fig. 1, W designating the high-water level in the tank. In operation the valve 6 is raised clear of its seat 3^a in the manner hereinbefore described, the arm 10^a of the lever 10 being held depressed for a short interval of time, sufficient to allow a substantial amount of liquid to flow through the outlet 3 into the closet bowl. As the liquid in the tank is thus spent, the float 14 travels downward and through the medium of the stem 14^a oscillates the member 15 on its fulcrum 16, and the arm 15^a raises the valve 13 off the seat 2^a allowing liquid, under pressure from the supply source (not shown) to flow into the tank through the intake 2, chamber 2^b and openings 2^c.

When the lever 10 is released, the valve

6 drops by force of gravity into its seat 3ª. There may however be disturbing influences, such as for example, the inrush of the liquid, that hinder the perfect sealing of the outlet by the member 6. This is an objectionable feature of many of the apparatuses of this character heretofore in common use, and the provision of means to overcome this objection forms one of the salient objects of the present invention. To this end I provide an arm 17 which is firmly fixed on the shaft 5. In the embodiment as shown, the arm 17 is integral with the stem 7, it may however be a separate member keyed or otherwise rigidly attached to the shaft, in either case it oscillates with said shaft. The arm 17 extends upward, as shown, and is provided with a bar 17ª that extends over the lever member 15. When the member 15 is depressed through the lowering of the float, it recedes from the bar 17ª, and therefore has no influence on said bar. The bar however is so located relative to the member 15, that when said member approaches its upward limit it comes in contact with the bar 17ª, as shown in Fig. 1. The pressure of the member 15 on the bar 17ª caused by the liquid raising the float 14, acting through the oscillating member 5 and the stem 7 forces the valve member 6 firmly into the seat 3ª, retaining said valve in the seat, thereby providing an absolute seal.

A pipe 18 is connected with the outflow member 3 within the tank. The said pipe extends upward beyond the predetermined high-water line W, and provides exhaust means for the emergency of overflow.

It is obvious that the construction and combined arrangement of the elements as shown and described, provides a simple, economical and effective apparatus for the purpose set forth, but it will be evident that various changes may be made in details of construction without departure from the spirit of the invention.

What I claim and desire to secure by Letters Patent is.

1. In a device of the character named, a tank having an inlet, and a flushing outlet, a valve for the inlet, a lever for operating said valve, a float connected with said lever for actuating same, a flush-valve mounted to oscillate in a vertical arc in fixed bearings provided therefor, and register with the outlet, means for oscillating said flush-valve whereby the outlet is opened and closed, and means co-acting with the inlet-valve lever for exerting closing pressure on the flush-valve.

2. In a device of the character named, the combination of a tank; an inlet valve; a float actuated lever for operating said valve; an outlet; a valve for said outlet; a lever attached to said outlet valve and adapted to oscillate in a vertical arc in fixed bearings provided therefor, thereby opening and closing said outlet; a system of levers for actuating the oscillating member; and means connected with the oscillating member and co-acting with the float actuated lever for exerting closing pressure on the outlet valve.

3. In water-closet flushing mechanism the combination with the tank, of an inlet member; a valve casing connected with said inlet member; a slide valve operative in said casing; a lever for operating said slide valve to open and close the inlet; a float connected with said lever for actuating same; a flushing outlet member; a stationary bracket within the tank; a valve registering with the outlet and adapted to oscillate in a vertical arc in fixed bearings provided on the bracket; means for oscillating said outlet valve; and means connected with said outlet valve and coacting with the inlet valve lever for exerting closing pressure on the outlet valve on the closing movement of said inlet valve lever.

4. In water-closet flushing mechanism the combination with a tank, of an inlet member; a valve casing connected with said inlet member; a slide valve operative in said casing; a lever for operating said slide valve to open and close the inlet; a float connected with said lever for actuating same; a flushing outlet member; a stationary bracket within the tank; a valve registering with the outlet and adapted to oscillate in a vertical arc in fixed bearings provided on the bracket; means for oscillating said outlet valve; means connected with said outlet valve and co-acting with the inlet valve lever for exerting closing pressure on the outlet valve on the closing movement of said inlet valve lever; and an overflow member connected with the outlet member.

In testimony whereof I affix my signature.

LEVIS O. JONES.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."