H. N. LIBBEY.

VALVE FOR FLUSHING TANKS.

APPLICATION FILED JAN. 6, 1921.

1,396,133.

Patented Nov. 8, 1921.

Fig. 2.

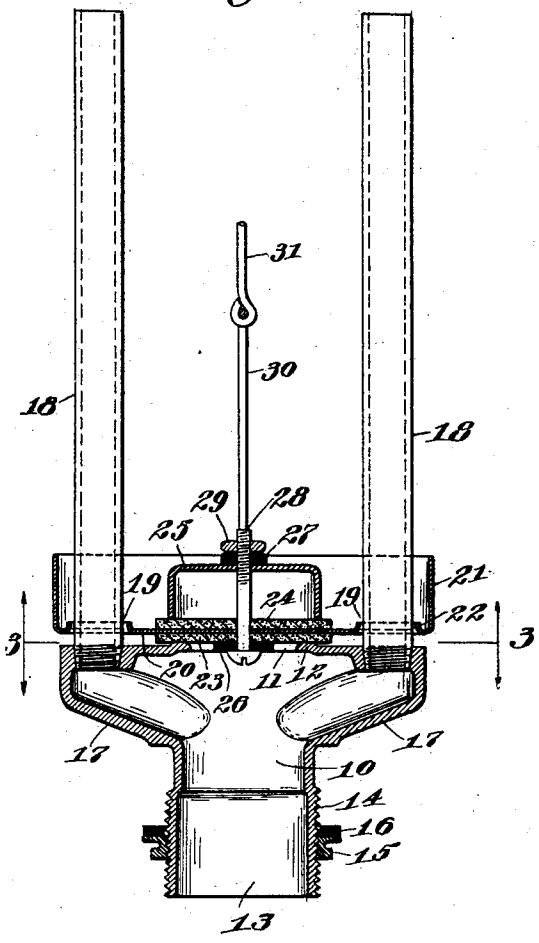


Fig. 3.

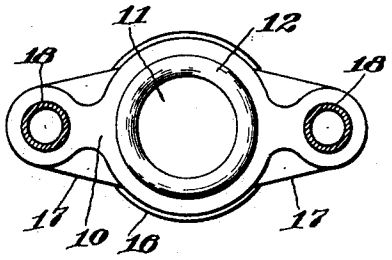


Fig. 5.

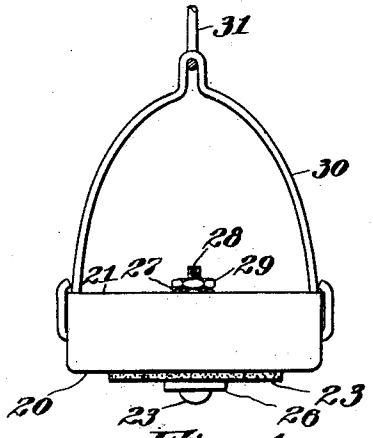


Fig. 4.

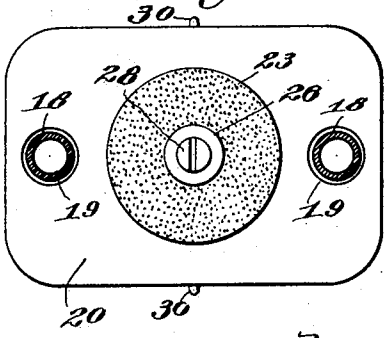
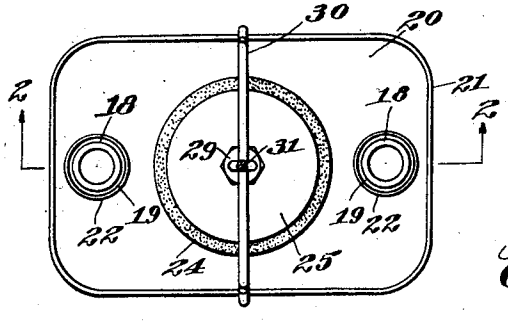


Fig. 1.



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UNITED STATES PATENT OFFICE.

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VALVE FOR FLUSHING-TANKS.

1,396,133. Specification of Letters Patent. Patented Nov. 8, 1921.

Application filed January 6, 1921. Serial No. 435,429.

To all whom it may concern:

Be it known that I, HENRY N. LIBBEY, a citizen of the United States of America, and a resident of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Valves for Flushing-Tanks, of which the following is a specification.

This invention relates to flushing valves for tanks designed to be used in connection with water closets and has for its object the provision of a device of this character which will be simple in construction, inexpensive and effective in operation.

One of the main objects of the invention is the provision of means whereby the closing member is provided with vertical guides on which said closing member is adapted to move freely toward and from the valve seat and whereby said closing member will be held to its seat by means of the water contained in the flushing tank.

Another object is the provision of a float member secured to said pan whereby the valve will be retarded in its closing movement the speed being easily regulated by the size of the float secured to said pan.

The invention consists in certain novel features of construction and arrangement of parts which will be understood readily by reference to the description of the drawings and to the claims to be hereinafter given.

For the purpose of illustrating the invention, one preferred form thereof is illustrated in the drawings, this form having been found to give satisfactory and reliable results although it is to be understood that the various instrumentalities of which the invention consists can be variously arranged and organized and the invention is not limited to the precise arrangement and organization of these instrumentalities as herein shown and described except as required by the scope of the appended claims.

Of the drawings:

Figure 1 represents a plan of a valve embodying the principles of the present invention.

Fig. 2 represents a vertical section on line 2, 2, on Fig. 1.

Fig. 3 represents a horizontal section on line 3, 3, on Fig. 2 looking down.

Fig. 4 represents a horizontal section on line 3, 3, on Fig. 2 looking up, and

Fig. 5 represents an elevation of the pan carrying the inlet closing packing member.

Similar characters indicate like parts throughout the several figures of the drawings.

In the drawings, 10 is a hollow body portion having an inlet 11 surrounded by a seat 12 and provided with an outlet 13.

The lower end of this body portion 10 is provided with the usual thread 14, nut 15 and washer 16 for securing the body portion to the usual flushing tank.

The body portion 10 is provided with oppositely disposed lateral branches 17 to which is secured the upwardly extending guide members 18. These guide members 18 are parallel and preferably tubular to form overflow pipes for the hollow body portion 10.

The guide members 18 extend through openings 19 in a plate 20 having an upwardly extending side wall 21 forming a pan.

The openings 19 are larger than the diameter of the guide members 18 so that the water in the tank may freely pass through said openings.

Each opening 19 is preferably provided with an upturned flange 22 as indicated in Fig. 2 of the drawings.

This flange 22 is so constructed as to prevent the cramping of the pan 21 on the guide members 18 as it is moved vertically lengthwise of said guide members.

Secured to the under face of the plate 20 is a packing member 23 which normally rests upon the seat 12 and closes the inlet 11.

Superimposed upon the upper face of the plate 20 is another packing member 24 on which is disposed a cup-shaped member 25.

Beneath the packing member 23 is a washer 26 and above the cup-shaped member 25 is another washer 27 preferably threaded to the central locking bolt 28 extending through the packing members 20, 24, plate 20 and the cup-shaped member 25.

The upper end of the threaded bolt 28 is provided with a lock nut 29.

This cup-shaped member may be varied in size to accommodate itself to various forms of flushing tanks.

Secured to the pan 21 is a bail 30 the upper end of which is connected to the lower end of the link 31, the upper end of which is attached to the usual actuating lever.

When it is desired to flush the water closet, the pan 21 is lifted moving vertically along the guides 18, the water above the pan

passing through the openings 19 in the bottom plate 20.

When the pan is released the weight of the water in the pan 21 and the suction caused by the flow of water through the outlet 13 will cause the pan to lower until the packing member 23 on the underside thereof contacts with the seat 12.

The weight of the water in the tank holds the packing member firmly to the seat and closes the inlet 11.

It is obvious that owing to the openings 19 being greater in diameter than the guide members 18 the pan in lowering is adapted to accommodate itself to the plane of the seat 12.

The cup-shaped member 25 is filled with air and is packed in such a manner as to prevent the water leaking into the same.

As a consequence a float is provided for the pan 21 which prevents the pan 21 lowering too rapidly.

By varying the size of the float chamber 25 the retarding of the downward movement of the pan may be varied as desired thereby providing a means whereby any desired quantity of water may pass through the outlet 13 from the flushing tank into the hopper of the water closet.

This makes a well balanced valve mechanism for flushing tanks which may be constructed economically and which is very effective in its operation.

The packing members 23, 24 are preferably made of leather and will last indefinitely.

The float chamber 25 is formed of metal and will not deteriorate as is true of many forms of floats in general use and made of rubber.

It is believed that the operation and many advantages of the invention will be understood without further description.

Having thus described my invention, I claim—

1. In a flushing valve for water closets, a hollow body portion having an inlet and outlet; two parallel overflow pipes extending upwardly from said body portion; a plate provided with openings through which said parallel overflow pipes extend; and a packing member secured to the under side of said plate and adapted to close said inlet.

2. In a flushing valve for water closets, a hollow body portion having an inlet and outlet; two parallel members extending upwardly from said body portion; a cup-shaped pan provided with openings through which said parallel members extend; and a packing member secured to the under side of said cup-shaped pan and adapted to close said inlet.

3. In a flushing valve for water closets, a hollow body portion having an inlet and outlet; two parallel overflow pipes extending upwardly from said body portion; a cup-shaped pan provided with openings through which said parallel overflow pipes extend; and a packing member secured to the under side of said cup-shaped pan and adapted to close said inlet.

4. In a flushing valve for water closets, a hollow body portion having an inlet and outlet; two parallel members extending upwardly from said body portion; a pan provided with openings through which said members extend; a packing member secured to the under face of said pan and adapted to close said inlet; and a float secured to the pan.

5. In a flushing valve for water closets, a hollow body portion having an inlet and outlet; a pan having openings in the bottom thereof; a packing member secured to said pan and adapted to close said inlet; a float secured to said pan; and means for lifting said pan from its seat.

6. In a flushing valve for water closets, a hollow body portion having an inlet and outlet; a pan having openings in the bottom thereof; a packing member secured to said pan and adapted to close said inlet; a vertical guide for said pan; a float secured to said pan; and means for lifting said pan from its seat.

7. In a flushing valve for water closets, a hollow body portion having an inlet and outlet; a pan having openings in the bottom thereof; a packing member secured to the pan and adapted to close said inlet; means for lifting said pan from its seat; a vertical guide for said member; a packing member within said pan; an inverted cup-shaped air chamber resting thereon; and means for clamping said packing members and cup-shaped air chambers to said pan.

Signed by me at 746–7 Old South Bldg., Boston, Mass., this 3rd day of January, 1921.

HENRY N. LIBBEY.

Witnesses:
WALTER E. LOMBARD,
NATHAN C. LOMBARD.