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1,500,628

F. D. LESLIE

VALVE OPERATING DEVICE

Filed Dec. 21, 1920

Fig. 2.

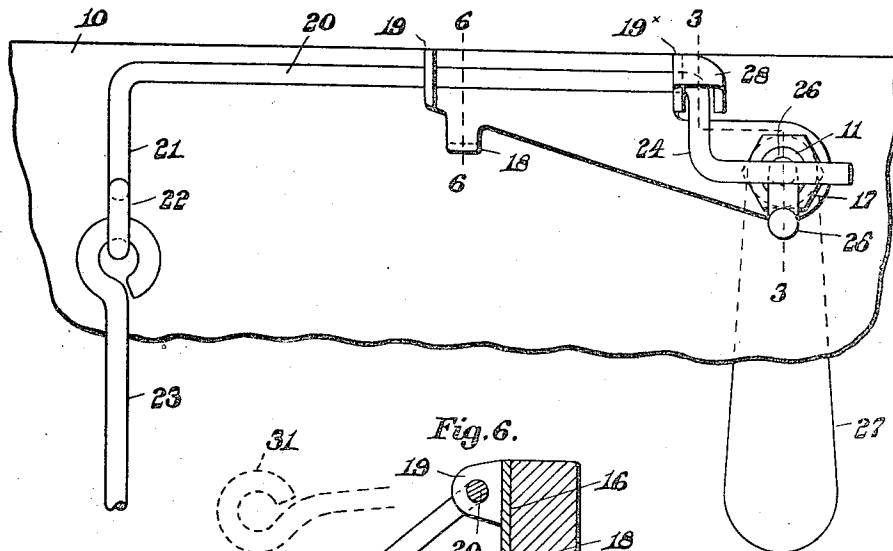


Fig. 6.

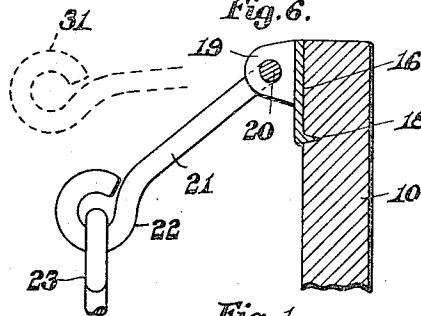


Fig. 1.

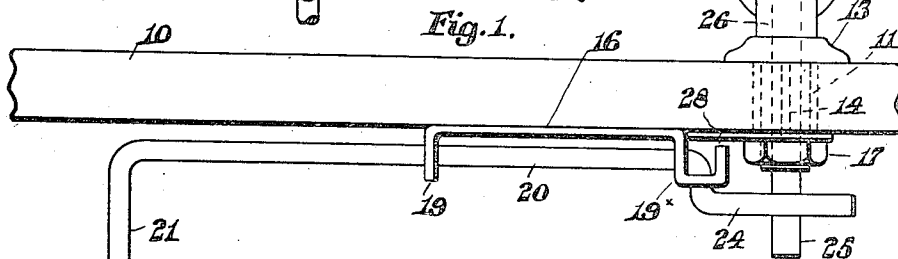


Fig. 3.

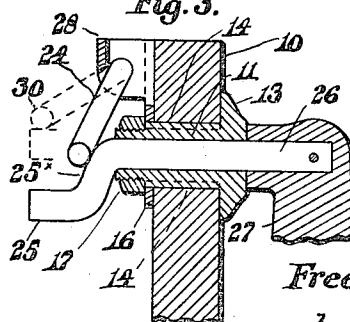


Fig. 4.

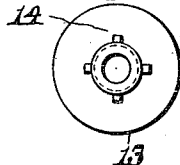
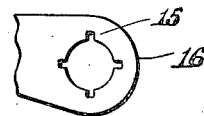


Fig. 5.



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UNITED STATES PATENT OFFICE.

FREELAND D. LESLIE, OF MILTON, MASSACHUSETTS.

VALVE-OPERATING DEVICE.

Application filed December 21, 1920. Serial No. 432,352.

To all whom it may concern:

Be it known that I, FREELAND D. LESLIE, a citizen of the United States of America, and a resident of Milton, in the county of Norfolk and Commonwealth of Massachusetts, have invented certain new and useful Improvements in Valve-Operating Devices, of which the following is a specification.

This invention relates to devices for operating the valves of flushing tanks for water closets and the like, and has for its object the provision of a simple structure of this character which is simple in design, inexpensive to construct and effective in operation.

The invention consists primarily of an oscillating rod having at one end an arm adapted to be connected to the valve lever and at the other end an L-shaped arm which is normally in contact with the L-shaped end of the handle spindle and adapted to be actuated by the oscillation of said L-shaped end in either direction whereby the valve will be lifted from its seat a limited amount.

The invention further consists of certain novel features of construction and arrangement of parts which will be understood readily by the description of the drawings and by 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-operating device embodying the principles of the present invention.

Figure 2 represents an elevation of the same.

Figure 3 represents a vertical section on line 3, 3, on Fig. 2.

Figure 4 represents an end elevation of the non-revoluble bushing.

Figure 5 represents an elevation of one end of the supporting plate for said valve-operating mechanism, and

Figure 6 represents a vertical section on line 6, 6, on Fig. 2.

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

In the drawings, 10 is the wall of a flushing tank used in connection with water closets or the like and 11 is a metal bushing having a head 13 at its outer end bearing against the outer face of the wall 10.

The bushing 11 is provided with radial fins or ribs 14 extending into notches in the wall 10 to prevent the rotation of said bushing 11 about its axis.

These fins or ribs 14 also extend into notches 15 in one end of a plate 16 which is held against the inner face of the wall 10 by means of the clamping nut 17 threaded to the inner end of the bushing 11.

Inasmuch as the bushing 11 is non-revoluble, it is obvious that the fins or ribs 14 will prevent the rotation of the plate 16 about the axis of the bushing 11.

The opposite end of the plate 16 is provided with a lateral pointed projection 18 which may be forced into the wall 10 to assist in retaining said plate 16 in position on the wall 10.

The plate 16 is also provided with two ears 19, 19* extending away from the inner face of the wall 10 and in bearings in these ears 19, 19* is mounted a rod 20 one end of which is provided with a lateral arm 21 having an eye 22 at its outer end.

One end of a link 23 is connected to the eye 22, this link 23 being adapted to connect at its opposite end with the usual lever for actuating the valve of the flushing tank which valve and tank may be of any well-known construction.

As the valve mechanism forms no part of the present invention it is not illustrated in the drawings.

The opposite end of the rod 20 is provided with an L-shaped arm 24 which normally rests upon the L-shaped end 25 of the spindle 26 mounted to oscillate in the bushing 11, the outer end of said spindle 26 having secured thereto a handle 27 by which said spindle 26 may be oscillated.

The L-shaped end 25 of the spindle 26 is so shaped that when the L-shaped arm 24 rests normally thereon, said arm 24 is at an acute angle to a vertical plane as indicated in Fig. 3 of the drawings.

The ear 19* is provided with a notched extension 28 which coacts with the L-shaped

arm 24 to limit the upward movement of said arm 24 and also to prevent end movement of the rod 20.

It is obvious therefore, that the oscillation of the rod 20 is limited in one direction by the extension 28 and in the opposite direction by the L-shaped end 25.

By actuating the handle, the L-shaped end 25 may be moved in either direction about the axis of the spindle 26 and in this movement the L-shaped arm 24 will be moved into the position indicated in dotted lines at 30 in Fig. 3.

The oscillation of the rod 20 thus effected will move the arm 21 into the position indicated in dotted lines at 31 in Fig. 6 and the valve will be lifted from its seat the required distance to effect the proper operation of the flushing tank.

When in normal position the L-shaped arm rests against the inclined portion 25^x of the end 25 of spindle 26 and near the axis of said spindle so that when the spindle 26 is oscillated the arm 24 will be moved slowly at first and its movement will be gradually increased as the arm 24 moves along the inclined portion 25^x to the horizontal portion of said L-shaped end 25 where the leverage will be the greatest.

The advantage of thus gradually actuating the valve and preventing a sudden inrush of a large amount of water into the hopper is self-evident.

This makes a very simple construction of valve-operating mechanism which may be installed easily and which when once installed is effective in operation and cannot get out of order.

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

Having thus described my invention, I claim—

1. In a device of the class described, a plate having lateral ears and an opening at one side of said ears; a rod mounted to oscillate in said ears and having at one end a valve operating arm and at the opposite end, adjacent one of said ears, an L-shaped arm the outer end portion of which is straight and parallel with said rod; a tubular member mounted in said opening and adapted to extend through the wall of a tank, said member having an outer head integral therewith; a spindle mounted in said tubular member having formed integral therewith an offset straight inner end normally below the axis of said spindle and midway of the straight portion of said L-shaped

arm; and means for oscillating said spindle in either direction to cause the offset portion of said spindle to engage the straight portion of said L-shaped arm and move said rod about the axis.

2. In a device of the class described, a plate having lateral ears and an opening at one side of said ears provided with radial notches; a rod mounted to oscillate in said ears and having at one end a valve operating arm and at the opposite end, adjacent one of said ears, an L-shaped arm the outer end portion of which is straight and parallel with said rod; a tubular member mounted in said opening and adapted to extend through the wall of a tank, said tubular member being provided with an integral outer head and having fins positioned in said notches; a spindle mounted in said tubular member having formed integral therewith an offset inner end normally below the axis of said spindle and midway of the straight portion of said L-shaped arm; and means for oscillating said spindle in either direction to cause the offset portion of said spindle to engage the straight portion of said L-shaped arm and move said rod about the axis.

3. In a device of the class described, a plate having lateral ears; a rod mounted to oscillate in said ears and having a valve-operating arm at one end; an L-shaped arm at the opposite end of said rod; a notched extension to one of said ears coacting with said L-shaped arm to limit the oscillation of said rod and the end movement thereof; a spindle having an L-shaped end on which said L-shaped arm normally rests; and means for oscillating said spindle.

4. In a device of the class described, a plate having lateral ears; a rod mounted to oscillate in said ears and having a valve operating arm at one end and at its opposite end an L-shaped arm the outer end portion of which is parallel with said rod; a spindle having its inner end bent to form an offset cylindrical portion parallel to said spindle and having an inclined portion on which the straight portion of said L-shaped arm normally rests at an acute angle to a vertical plane and at a point adjacent the axis on which said spindle oscillates; and means for oscillating said spindle in either direction.

Signed by me at 746-7 Old South Bldg., Boston, Mass., this 10th day of December, 1920.

FREELAND D. LESLIE.

Witnesses:

WALTER E. LOMBARD,
NATHAN C. LOMBARD.