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W. U. GRIFFITHS.

FLUSHING APPARATUS FOR WATER CLOSETS.

APPLICATION FILED NOV. 25, 1904.

FIG. I.

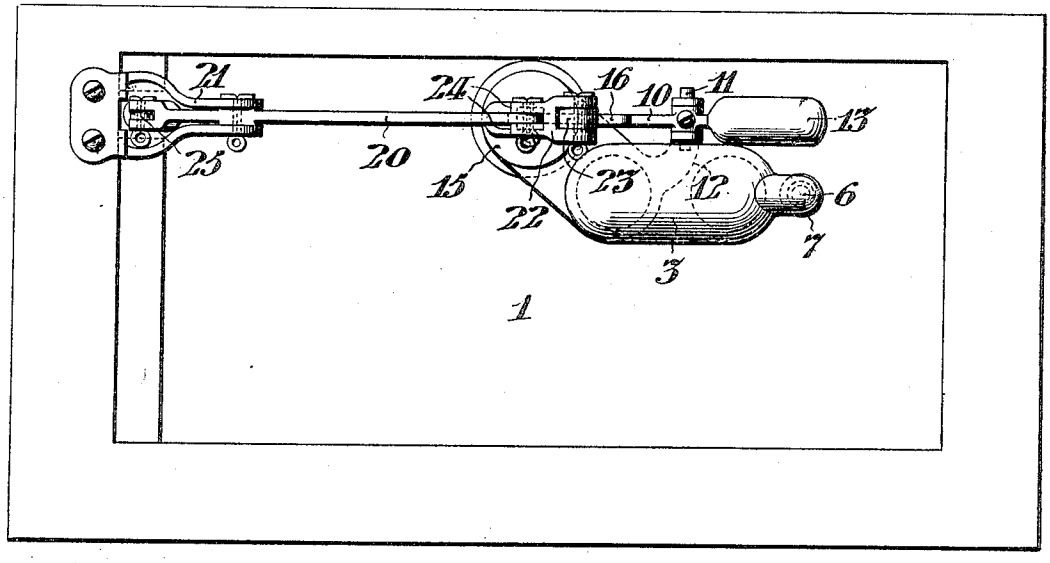
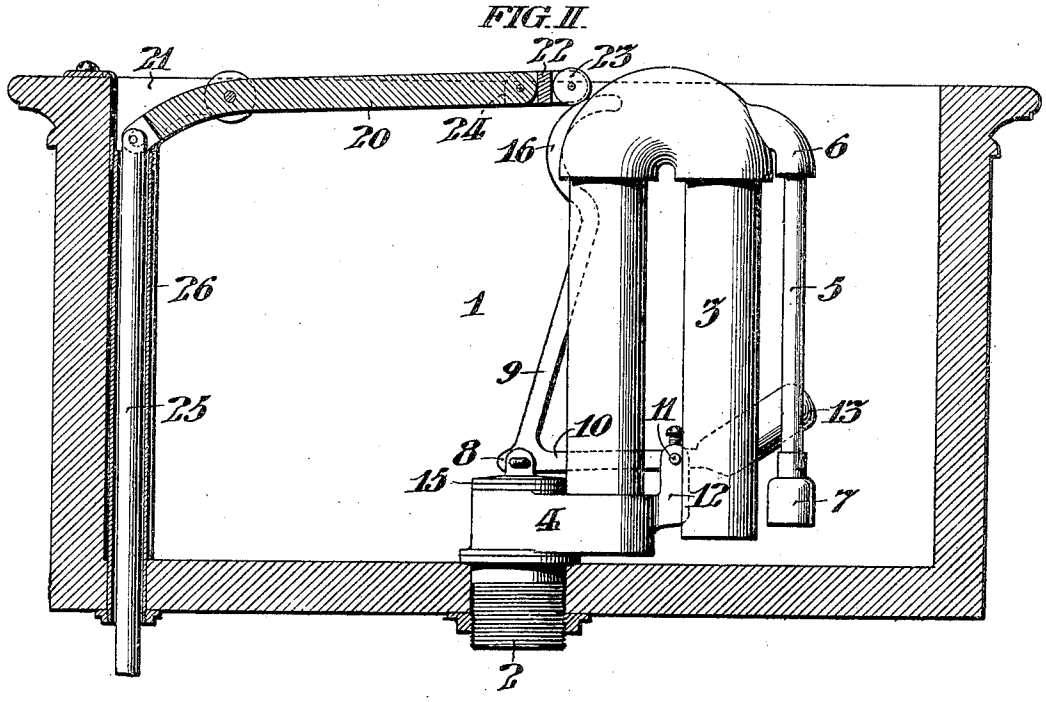


FIG. II.



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FLUSHING APPARATUS FOR WATER-CLOSETS.

No. 812,992. Specification of Letters Patent. Patented Feb. 20, 1906.

Application filed November 25, 1904. Serial No. 234,145.

To all whom it may concern:

Be it known that I, WILLIAM U. GRIFFITHS, a citizen of the United States, residing in the city of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Flushing Apparatus for Water-Closets, of which the following is a specification.

My invention relates to the particular type of flushing apparatus in which a stationary siphon is located in the flush tank and which siphon is in communication with a flush pipe extending from the tank to the hopper of the water closet.

The object of my invention is to provide an improvement in the means whereby the valve which closes the port or opening leading from the tank into the flush pipe may be readily controlled and opened.

In the accompanying drawings I have illustrated a good form of an embodiment of my invention. Many variations in construction and arrangement may, however, be employed without departing from the spirit of my invention.

In the accompanying drawings forming a part of this specification,

Figure I is a top plan view of a flush tank and flushing apparatus contained therein;

Figure II is a transverse section of the flush tank, and shows the siphon structure in elevation.

In the drawings,

1 designates a flush tank which is provided with a flush pipe leading therefrom to the hopper of the water closet. The upper end only of the flush pipe is shown at 2. 3 designates a siphon which is secured in the tank, the said siphon being stationary, and being in communication with the upper end of the flush pipe, as indicated at 4.

In order to prevent the disagreeable noise incident to the breaking of the siphon, I have provided a siphon breaking device which consists of the tube 5 arranged at the side of the open leg of the siphon and connected to the same at its upper end, as indicated at 6, and to the lower end of the said pipe 5 a cup 7 is secured, the upper portion of the said cup being reduced, so that its internal diameter is but slightly greater than the external diameter of the tube or pipe 5 which extends into and is secured to the bottom of the cup 7. The lower end of the pipe 5, within the cup 7, is provided with perforations, not shown.

8 designates a lever having two arms 9 and 10, which are angularly arranged with respect to each other. The arm 9 extends upwardly to a point about the top of the tank, though the said arm may be made of greater or less length, as desired. The arm 10 of this lever lies in a nearly horizontal position, though not necessarily so, and is pivoted at 11 to a supporting arm 12, which extends out from the lower end portion of the siphon structure and is formed integral therewith.

It is to be understood, however, that, if desired, this arm may be made separately from the siphon structure and supported in any desirable manner; for instance, it may be supported directly upon the side walls or the bottom of the flush tank.

The arm 10 is extended beyond its pivot, as is clearly indicated in the drawings, and is provided or formed with a weight 13 at its end, as is clearly indicated in each of the figures of the drawings.

15 designates a valve which is pivotally secured to the lever at the point of juncture between the two arms 9 and 10 of the lever. The valve 15 is for the purpose of opening and closing the port of the flush tank, the port being provided for the usual purpose of permitting the water to escape from the flush tank to the water closet hopper. The upper end of the arm 9 of the valve carrying lever is provided with a cam projection 16 for a purpose which will be hereinafter set forth.

As illustrated, the cam projection 16 is formed by bending the arm 9, but, if desired, the arm 9 may extend straight to its end and the cam projection formed by securing to the said arm a separate piece of material, preferably metal.

20 designates a lever which is pivoted at a point intermediate its ends upon the inner end of a bracket 21 secured upon a wall of the flush tank, as clearly shown in the drawings. The inner end of the lever 20 is provided with a pivoted extension 22, and the said extension 22 is provided with a roller 23.

It will be noted that by reason of the square abutting shoulders indicated at 24, the extension 22 cannot move downward from the position indicated in Figure II about its pivot. But by reason of the fact that the upper portion of the extension at its point of connection with the lever 20 is rounded, the said extension can move upward about its pivot with respect to the said lever 20.

25 designates a rod connected to the outer

end of the lever 20, the lower end of said rod, though not shown, extends downward to some point where it is adapted to be engaged by some portion of the seat of the hopper, or an extension thereof to be operated as in the manner shown, for instance, in my Patent No. 745,724, dated December 1, 1903.

The upper end of the rod 25 is supported and guided in a tube 26 secured in the bottom of the flush tank.

In operation it will be understood that when the outer end of the lever 20 is moved upwardly by means of the rod 25, the inner end thereof moves downwardly and the roller 23 of the extension 22 passes over the cam projection 16 of the arm 9 of the angular lever, without occasioning movement of the same. This is due to the fact that the extension 22 moves upwardly with respect to the lever 20 about the pivotal connection between the said extension and the said lever.

As soon as the inner end portion of the lever 20 has moved downwardly sufficiently the extension 22 again assumes a position in a line with the lever 20 underneath the projection 16.

As the outer end portion of the lever 20 moves downwardly and the inner portion thereof moves upwardly under the influence of the weight of the rod 25, it is obvious that the roller 23 upon the extreme outer end of the extension 22 would ride upward over the face of the cam projection or portion 16 until it reached the normal position shown in Figure II, and that in moving to this position it would occasion a tilting movement of the angular lever consisting of the arms 9 and 10 about its pivot or hinge, and would occasion movement of the valve to open the port leading from the flush tank into the flush pipe.

As soon as the roller has passed over the cam projection or portion 16, the lever assumes its normal position indicated in Figure II and the valve 15 immediately closes the port in the flush tank. The closing of this port does not take place, however, until sufficient water has begun to flow outward from the tank through the flush pipe to occasion or effect siphonic action of the siphon.

By reason of the presence of the weight 13 upon the extreme outer end of the arm 10 of the lever which serves as a counterweight, it requires but very small effort to move the angular lever to lift the valve 15 from its seat.

Although I have shown the lever 20 as being provided with an extension 22, the latter being adapted to engage with the cam projection 16 and to occasion the movement of the angular lever carrying the valve only when it moves upwardly, it is to be understood that a lever may be employed without a hinged extension, in which case the inner end thereof contacting with the said cam projection or portion would occasion movement of the valve carrying lever by both its upward and its downward movements, thereby occasioning two flushing actions of the apparatus by a movement of the lever from its highest position (illustrated in the drawings) to its lowest position and then back to its highest position.

Having thus described my invention, I claim—

1. A flush tank provided with a port, a siphon located in the said tank, and means for opening and closing the said port, the said means comprising a pivoted lever which is provided with a cam projection, a valve secured to the said lever and being movable with the said lever to open and close the said port, and a lever adapted to contact with and travel over the said cam projection.

2. A flush tank provided with a port, an angular lever located in the said tank, one portion of which lever is pivotally secured to a suitable support and the other portion of which is provided with a cam projection, a valve secured to the said lever and adapted to close the said port, and a pivoted lever having one of its ends adapted to contact with and to travel over the said cam projection.

3. A flush tank provided with a port, a lever comprising two arms arranged at an angle to each other, one of the said arms being pivotally secured upon a suitable support within the said tank and the other of said arms extending upwardly toward the top of said tank and being provided at its upper end with a cam projection, a valve secured to the said lever, and a pivoted lever having one of its ends adapted to contact with and travel over the said cam projection.

4. A flush tank provided with a port, a lever consisting of two parts arranged at an angle to each other, one of which is pivotally secured upon a suitable support within the said tank and which part has a weight at its extreme end to counterbalance the weight of the said lever, and the other of which parts is provided with a cam projection, a valve secured to the said lever, and a movable lever having one of its ends adapted to contact with and travel over the said cam projection.

5. A flush tank provided with a port, a lever consisting of two arms arranged at an angle to each other, one of the said arms occupying a substantially horizontal position within the said tank and being pivotally secured upon a suitable support, and the said arm being extended beyond its point of support and provided with a weight, the other of the said arms extending upwardly toward the top of the tank and being provided with a cam projection, a valve supported upon the said lever and adapted to close the said port, and a movable lever having one end adapted to contact with and travel over the said cam projection.

6. In an apparatus of the character described, a flush tank having a port, a siphon having communication with the flush pipe leading from the tank, a supporting arm secured to the said siphon, a lever comprising two arms arranged at an angle to each other, one of the said arms being pivotally secured upon the supporting arm and extended beyond its pivoted point, the extended portion thereof being provided with a weight, and the other arm of the said lever extending upwardly toward the top of the flush tank and being provided with a cam, a valve pivotally secured upon the said lever and adapted to close the said port, and a pivoted lever having one end adapted to contact with and travel over the said cam.

7. An apparatus of the character described, a flush tank provided with a port, and a siphon secured within the said tank and being in communication with a flush pipe, a siphon breaking device connected to the said siphon, a lever comprising two arms arranged at an angle to each other, one of the said arms being pivotally secured upon a suitable support within the said tank, and the other of said arms extending upwardly toward the top of the said tank and being provided with a cam, a valve secured to the said lever and being adapted to close the said port, and a pivoted lever having one end adapted to contact with and to travel over the said cam projection.

In testimony that I claim the foregoing as my invention I have hereunto signed my name this 19th day of November, A. D. 1904.

WILLIAM U. GRIFFITHS.

In presence of—
THOS. K. LANCASTER,
LAURA KLEINFELDER.