J. M. McGUIRE.

REFILL DEVICE FOR WATER CLOSET BOWLS.

APPLICATION FILED OCT. 10, 1914.

1,171,619.

Patented Feb. 15, 1916.

FIG. 1

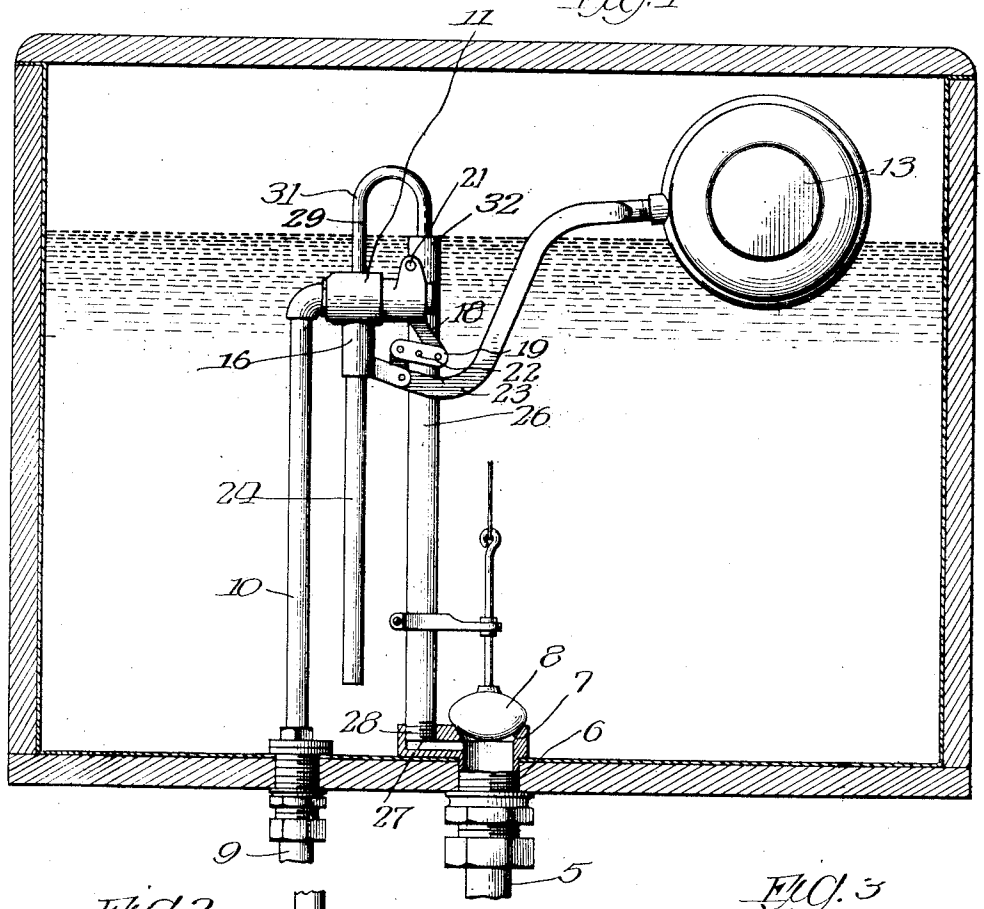


FIG. 2

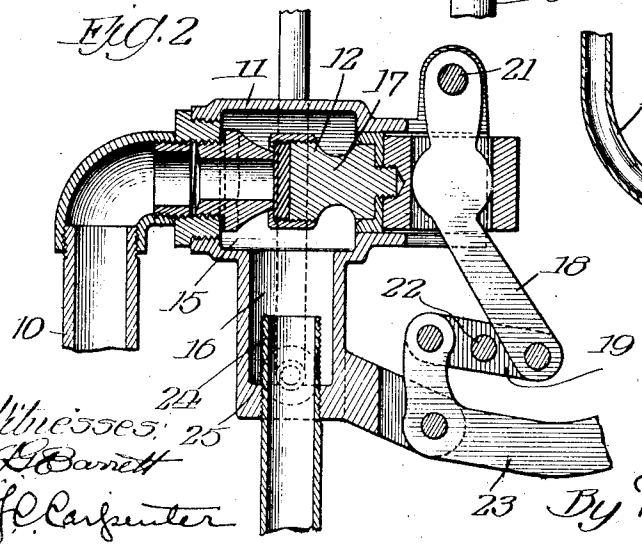
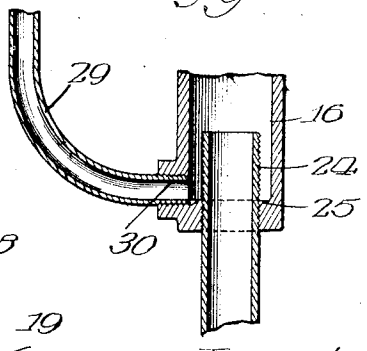


FIG. 3



Witnesses:
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UNITED STATES PATENT OFFICE.

JOHN M. McGUIRE, OF CHICAGO, ILLINOIS, ASSIGNOR TO L. WOLFF MANUFACTURING COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

REFILL DEVICE FOR WATER-CLOSET BOWLS.

1,171,619. Specification of Letters Patent. Patented Feb. 15, 1916.

Application filed October 10, 1914. Serial No. 866,016.

To all whom it may concern:

Be it known that I, JOHN M. McGUIRE, a citizen of the United States, residing in Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Refill Devices for Water-Closet Bowls, of which the following is a specification.

My invention relates in general to water closet tanks and flushing devices and has for its object broadly the provision of a tank and flushing device of silent operation.

Prior to my invention considerable annoyance has often been experienced by reason of the noise attendant upon the flushing of a closet bowl, this noise being due in large part to the introduction of water into the closet bowl after flushing to refill it for subsequent use. The flushing of a closet bowl usually draws out all of the water let in in the flushing operation and as is well known it becomes necessary to introduce a further quantity of water after the flushing proper has been completed. This has been done through various systems of pipes and appliances, all or nearly all of which have caused air to be drawn into the refill pipes, which in passing down to the bowl has produced the objectionable gurgling and hissing sounds.

It is a principal object of this invention to provide a refill device of simple and economic construction which will insure against the entrance of air with the water for refilling the bowl after the flushing operation has been completed.

It is a further object of the invention to construct such a device which may form a part of the tank and which may consequently be assembled at the factory of the manufacturer when the rest of the fixture is made up for delivery and which will therefore require no special adjustment when a tank equipped with the device is installed.

Other particular objects and advantages of the invention will be apparent as it is better understood from the following description when considered in connection with the accompanying drawing illustrating a preferred embodiment thereof.

Referring to the drawings, Figure 1 is a transverse vertical sectional view taken through a tank embodying my invention; Fig. 2 is a similar view somewhat enlarged through the valve casing and inlet pipe; and Fig. 3 is a sectional detail showing the method of connecting the refill pipe with the valve casing contemplated in the embodiment of my invention shown on the drawing.

For the purpose of illustrating my invention I have shown it embodied in a tank 4 of ordinary or preferred construction, the one shown on the drawing being of the type termed in the trade "low down." This tank is adapted to communicate in any suitable fashion with a closet bowl (not shown) through a pipe 5 suitably connected through the bottom of the tank at 6 and communicating with a valve seat member 7 adapted to communicate with and be sealed from the interior of the tank by a vertically moving valve 8. The valve 8 may be moved by any suitable mechanism to establish communication between the pipe 5 and the interior of the tank to flush the bowl. Water is admitted to the tank through a pipe 9 communicating with an inlet or feed pipe 10, which in turn communicates with a valve casing 11 containing a valve 12 which is adapted to be operated by a float 13. Water is delivered from the interior of the valve casing by a delivery pipe 24 into the tank.

The valve casing is constructed in the present instance of a valve chamber 15 and an outlet chamber 16, the valve chamber being disposed horizontally and the outlet chamber vertically in communication therewith. The valve 12 may, in accordance with my invention, have any preferred construction but is shown in the present instance to be of the piston type having a reciprocating valve head 17 operated by a lever 18 pivoted on a suitable support at 21. This lever is connected between the ends of a double leaf link 19, the two leaves of which are connected at 22. The link 19 is also connected with one arm of a bell crank 23, the other arm of which is connected to the float 13 so that lowering of the water within the tank will, through a drop of the float, cause the valve to open and a subsequent raising of the water level cause the valve to close. The delivery pipe 24 is threaded into the bottom of the delivery chamber 16 and its upper end extends a substantial distance above the bottom 25 of the delivery chamber so that the pipe 24 cannot completely drain the delivery chamber. An overflow pipe 26 is pro-

vided to determine and limit the height of the water in the tank, and this pipe communicates at its bottom with the pipe 5 through a pass 27 in the valve seat member 7 into which member the overflow pipe 26 is threaded as seen at 28.

A refill pipe 29 is threaded into the delivery chamber 16 of the valve casing near its bottom 25 and beneath the top of the delivery pipe 24, as seen best at 30 in Fig. 3. From its connection with the valve casing the refill pipe extends upwardly to a bend 31 and thence downwardly into the top 32 of the overflow pipe 26 through which it is in communication with the valve seat member 7 and consequently with the bowl of the closet when the tank is installed. The space beneath the top of the delivery pipe 24 and the bottom of the delivery chamber 16 forms a water seal covering the lower end of the pipe 29, and this seal prevents the entrance of air into the receiving end of the refill pipe at all times. When the valve 8 is open to flush the bowl the water runs rapidly from the tank and the lowering of the float opens the valve 12, admitting water from the pipe 10. This water is under pressure ordinarily and not only flows down through the pipe 24 but fills the valve casing and forces water up through the refill pipe and down into the overflow pipe 32 and thence into the closet bowl for refilling. The refilling continues until the valve 12 is closed by the float 13. It will be manifest that this arrangement prevents the entrance of air into the refill pipe and thereby eliminates one of the chief sources of objectionable noise in devices of this character.

It is thought that the invention and many of its attendant advantages will be understood from the foregoing without further description, and it will be obvious that various changes may be made in the form, construction and arrangement of the parts without departing from the spirit and scope of the invention or sacrificing any of its material advantages, the form hereinbefore described being merely a preferred embodiment thereof.

I claim:

1. In a device of the character described the combination of a valve casing, a valve in said casing, a delivery pipe extending downwardly from above the bottom of said casing, a waste pipe adapted to communicate with the closet bowl, and a refill pipe having one end disposed in said waste pipe and the other end communicating with the valve casing near its bottom and below the top of said feed pipe.

2. In a device of the character described the combination of a closet tank, a pipe adapted to communicate with a closet bowl and to deliver water thereto for flushing, a pipe for refilling said bowl after flushing, and a water seal above the outlet of said tank normally covering the end of said refill pipe through which water is received for refilling.

3. In a device of the character described the combination of a closet tank, a pipe for introducing water into a closet bowl for flushing, a refill pipe for introducing water into said closet bowl after flushing for refilling, a water seal above the outlet of said tank normally covering the receiving end of said refill pipe, and means for applying water to said receiving end under pressure for refilling.

4. In a device of the character described the combination of a tank adapted to be connected to a closet bowl, a valve for admitting water thereto after flushing, a casing for said valve, and a refill pipe communicating with said casing near its bottom and above the outlet of said tank, said casing being formed to provide a water seal cover and end of said refill pipe, said seal being in communication with the interior of said casing.

5. In a device of the character described the combination of a closet tank, an overflow pipe therefor, a pipe for introducing water into a closet bowl for flushing, a refill pipe for introducing water into said closet bowl after flushing for refilling, a water seal independent of the water in the tank after flushing and normally covering the receiving end of said refill pipe, and means for applying water to said receiving end for refilling.

6. In a device of the character described the combination of a valve, a valve casing, and a refill pipe communicating with said casing, said casing providing a permanent water seal covering the end of said refill pipe communicating with said casing.

7. In a device of the character described the combination of a tank, a valve for controlling the admission of water thereto, a valve casing, and a refill pipe communicating with the casing near its bottom, said casing forming a permanent water seal covering the end of the refill pipe communicating therewith and causing water to pass through the refill pipe under pressure whenever said tank receives water through said valve.

Witness my hand this 6th day of October 1914.

JOHN M. McGUIRE.

Witnesses:
JOHN H. GAVIN,
E. B. STADT.