

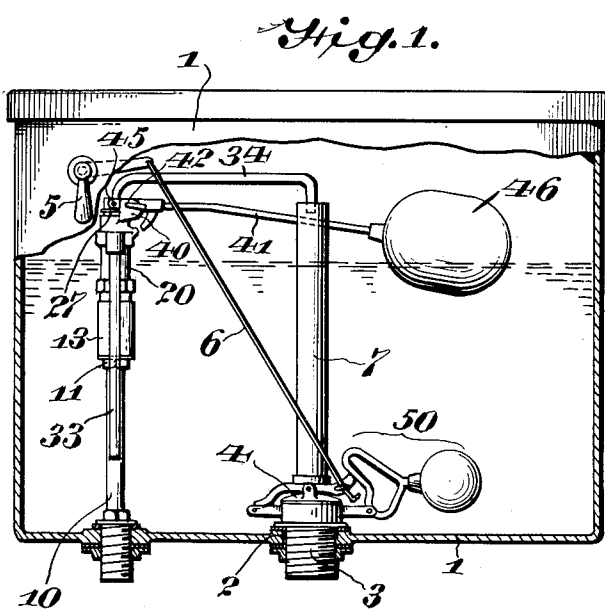
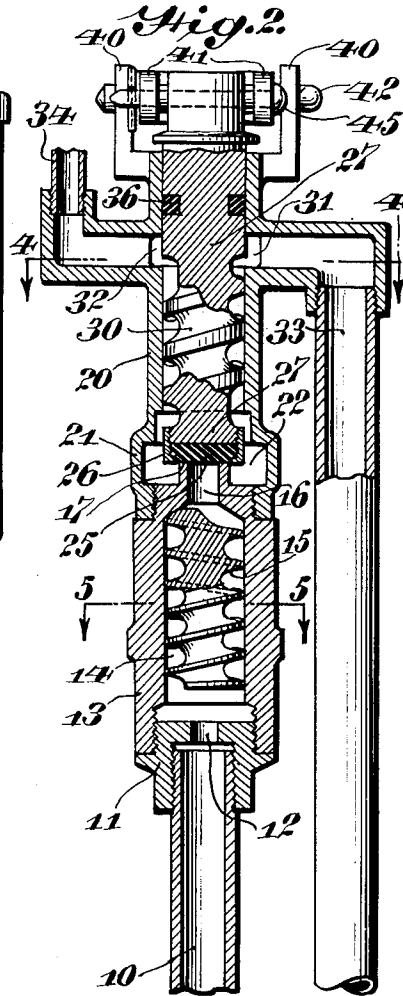
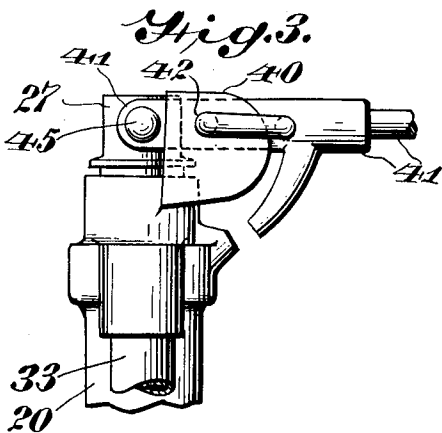
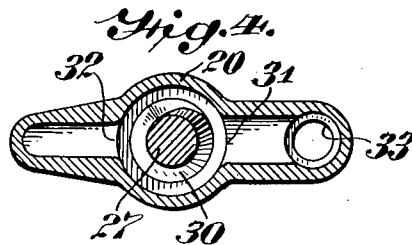
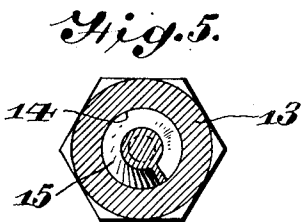
Nov. 26, 1929.

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1,737,233

MEANS FOR CONTROLLING THE DISCHARGE OF WATER INTO FLUSH TANKS

Filed May 17, 1927



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MEANS FOR CONTROLLING THE DISCHARGE OF WATER INTO FLUSH TANKS

Application filed May 17, 1927. Serial No. 191,947.

The supply of water to flush tanks or other sanitary apparatus is usually accompanied by whistling and other like sounds, which are objectionable.

Heretofore no practical means has been found which could be used for properly admitting the water to such tanks without such accompanying objectionable and disagreeable noises or sounds.

The general object of the present invention is to provide a novel construction for controlling the admission of water to flush tanks and the like of a character such that water may be delivered into flush tanks without the accompaniment of such objectionable noises or sounds.

It also is an object of the invention not only to provide a novel construction of valve for controlling the admission of water to such tanks, but also to provide within the water supply pipe in advance of the valve means for retarding the flow of water therethrough, which means cooperates with the said valve to accomplish the purpose for which this invention is designed.

To these and other ends the invention comprehends the construction and arrangement of parts as herein described in detail, particularly pointed out in the claims, and as illustrated in the drawing in which I have shown one form of a convenient embodiment of the invention. However, it is to be understood that the invention is susceptible of embodiment in various forms and that changes in the details of construction may be made within the scope of the claims without departing from the invention.

In the drawing:

Fig. 1 is a view showing a flush tank partly in elevation and partly in vertical section, and also showing the water supply pipe provided with the invention.

Fig. 2 is a view in longitudinal section of the discharge end of a water supply pipe provided with the invention;

Fig. 3 is a view in elevation of the upper portion of the said pipe and also showing the upper portion of the means for actuating the valve within the pipe;

Fig. 4 is a transverse section taken on the line 4—4 of Fig. 2; and

Fig. 5 is a transverse section taken on the line 5—5 of Fig. 2.

In the drawing I have shown a flush tank 1 provided at the center of its bottom with an opening 2 within which the upper end portion 3 of a pipe is mounted. The upper end of the said pipe terminates a short distance above the bottom of the tank and is adapted to be opened and closed by means of a valve 4. To open the valve the handle 5 is turned which operates through the link 6 to lift the valve from its seat. An overflow pipe 7 is provided as a means for preventing overflow of the tank in case of accident.

The water for supplying the flush tank 1 is delivered through a pipe 10 which is connected with the water supply system. The upper end of the said pipe projects into and terminates within the tank 1 and is provided with a nipple 11 having a hole 12 through the top thereof which is of reduced diameter. Mounted upon the nipple 11 is an extension 13 provided with a chamber 14 within which is mounted a relatively stationary member 15 which is spirally grooved. The upper end of the extension 13 is provided with a closure having an opening 16 therethrough of reduced diameter. A tubular projection extends upwardly and outwardly from the top of the section 13 and its outer end constitutes a seat 17 for the valve. The chambered section 13 with the spirally grooved member 15 therein operates to retard the flow of water through the pipe when the control valve is opened and cooperates with the valve which is of peculiar construction as a silencing means.

Mounted upon the upper or outer end of section 13 is a tubular section 20 which constitutes a further extension of the pipe 10. The lower or inner end of the section 20 has an enlargement 21 within which is provided an enlarged chamber 22 which surrounds the projection previously referred to, the end of which constitutes the valve seat 17. The opening 16 is adapted to be opened and closed by a valve 25 of rubber or other suitable material mounted within a ferrule 26 which is internally screw threaded and secured to the

lower end of a member 27 which constitutes, in effect, a valve stem which extends upwardly through the tubular section 20 and projects beyond the outer end thereof. The member 27 is provided with a spirally grooved section or portion 30, the upper portion of which terminates, when the valve is closed, at a point approximately coincident with the lower edges of lateral openings or ports 31 and 32. The first named port 31 is in communication with the pipe 33 through which water is discharged into the flush tank 1. The other lateral opening 32 is in communication with the pipe 34 which is adapted to discharge water into the upper end of the overflow pipe 7 to which reference has been made previously. The upper portion of the member 27 fits closely but movably within the upper portion of the extension section 20 and is rendered water tight by a packing 36.

The upper end of the extension section 20 is provided with upwardly extending spaced brackets 40 upon which the inner portion of the lever 41 is pivoted by means of a pivot pin 42. The said pin is located laterally of the longitudinal axis of the member 27. The end of the lever 41 beyond the pivot pin 42 is connected by means of a pivot pin 45 to the upper end of the member 27. The outer end of the lever 41 is provided with a float 46 which is adapted to rest upon the water, as shown in Fig. 1 in the tank 1.

When the water in the tank occupies the level shown in Fig. 1 of the drawing the float 46 is held in its uppermost or elevated position and through the lever 41, as heretofore described, operates to hold the member 27 in its downward or inward position with the portion 25 upon the lower end thereof in contact with the valve seat 17 to close the opening 16 leading from the silencing chamber 14 in the member 13.

Normally the tank 1 is filled with water to a predetermined level, for instance, the level shown in Fig. 1. When it is desired to open the valve 4 to permit the discharge of water from the tank for the flushing of the water closet hopper or other sanitary device the handle 5 is operated to open the valve 4. The said valve is retained in open position until the water escapes from the tank 1 by means of a device 50 of known construction. When the water has been discharged from the tank 1 the device 50 resumes a position to permit the valve 4 to return to closed position. As the water flows from tank 1 and the top level thereof descends the float 46 falls to elevate the valve member 27 to lift the valve 25 from its seat 17. When the valve is open water is permitted to flow from the pipe 10 through the chamber 14, through the valve chamber within which the lower part of the member 27 is located and thence through the port 31 and pipe 33 into the

tank 1. Said flow continues during the period that water is being discharged from the tank through the pipe, the upper portion of which is shown at 3, and after the valve 4 is closed it continues to flow until the float is elevated to effect the inward movement of the valve member 27 to close the valve 25.

The structure of means as described herein for controlling the discharge of water through the pipe 10 into the tank is particularly adapted for use where the water is supplied under relatively great pressure; that is, where the water is obtained from high pressure water systems.

In constructions as heretofore employed when the control valve is opened the water issues with force and rapidity and in consequence considerable sound or noise is produced. This noise frequently is accompanied by a whistling sound which is very objectionable. Such whistling sound likewise frequently is heard when the valve is being closed by the operation of the float. In constructions embodying my invention in which retarding means as at 15 and 30 are provided the flow of the water is so retarded that the noise which heretofore has been due to the rapid flow thereof is eliminated and also the whistling sound likewise due to the relatively great pressure of the water against the valve in its opening and closing movement is also eliminated.

In case the pressure of the water supply does not exceed around fifty pounds the retarding means 30 alone is sufficient for the purpose stated but for greater pressures the presence of the spirally grooved member 15 is necessary.

Having thus described my invention what I claim and desire to secure by Letters Patent is:—

1. Means for controlling the discharge of water through and from a pipe, which means comprises a chamber near the discharge end thereof having a retarding device therein, and a casing having a valve positioned therein for closing an opening leading from the said chamber, the said valve being provided with a stem having means for effecting further retardation of the flow of water after it passes through the opening controlled by the said valve.

2. Means for controlling the discharge of water through a pipe into a flush tank which means comprises a chamber within which is mounted a retarding device, said chamber having a discharge opening leading therefrom, a longitudinally movable member, the inner end of which is adapted to open and close the opening from said chamber to thereby control the flow of water therefrom and means for effecting further retardation of the water after it has passed beyond the said valve.

3. Means for controlling the discharge of

water through and from a pipe into a flush tank which means comprises a chamber near the discharge end of said pipe within which is located a member having a spiral groove therein through which water is adapted to flow, a valve casing located beyond the said chamber, a longitudinally movable member located within the said valve casing and terminating at its inner end in a valve for closing an opening from said chamber and the inner portion of the said longitudinally movable member being provided with a spiral groove.

4. Means for controlling the discharge of water from a pipe which means comprises an enlarged tubular section secured to the outer end of said pipe within which a spirally grooved member is located, said tubular section being provided at its outer end with a discharge opening, a valve casing mounted upon the outer end of said tubular section, a longitudinally movable valve mounted in the said valve casing, and means for causing longitudinal movement of the said valve for opening and closing the opening from the said tubular section.

5. Means for controlling the discharge of water from a pipe which means comprises an enlarged tubular section at the outer end of said pipe, a spirally grooved member located in the said enlarged tubular section, the outer end of said enlarged tubular section being provided with an opening of reduced diameter, a valve casing mounted upon the outer end portion of said tubular section, said valve casing being provided with a port for discharging water therefrom, a valve member longitudinally movable in the said valve casing, the inner end of which is adapted to open and close the opening of reduced diameter leading from the said tubular section, and the inner portion of the said valve member being provided with a spiral groove, the outer end of which terminates at a point in juxtaposition to the discharge port in the said valve casing, and means connected with the outer end of the said valve member for effecting opening and closing movements thereof.

6. Means for controlling the discharge of water through and from a pipe, which means comprises a chamber near the discharge end of said pipe having a retarding device therein, means for retarding the flow of water into said chamber, and a casing having a valve positioned therein for closing an opening leading from the said chamber, the said valve being provided with a stem having means thereon for effecting further retardation of the flow of water after it passes through the opening controlled by the said valve.

In testimony that I claim the foregoing as my invention I have hereunto signed my name this 16th day of May, 1927.

WILLIAM U. GRIFFITHS.