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W. SHERWOOD

BALL COCK

Filed Jan. 9, 1922

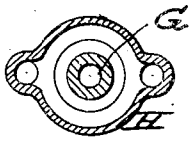
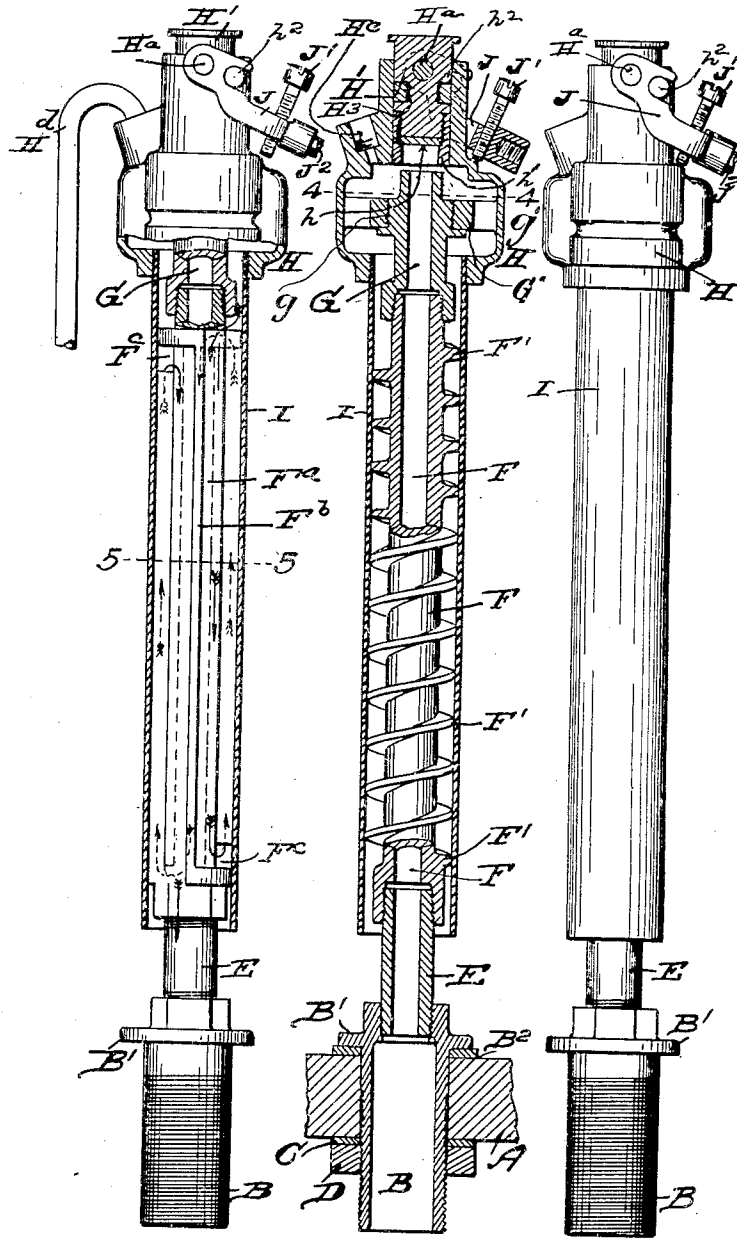


Fig 4

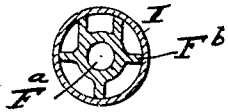


Fig 5

Fig 3 Fig 2 Fig 1

Inventor

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# UNITED STATES PATENT OFFICE.

WILLIAM SHERWOOD, OF DETROIT, MICHIGAN.

BALL COCK.

Application filed January 9, 1922. Serial No. 527,926.

*To all whom it may concern:*

Be it known that I, WILLIAM SHERWOOD, a citizen of the United States, residing at Detroit, county of Wayne, State of Michigan, have invented a certain new and useful Improvement in Ball Cocks, and declare the following to be a full, clear, and exact description of the same, such as will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to water inlet valves for flushing tanks controlled by a ball-float or other suitable means.

One object of my invention is to reduce the velocity of the water before leaving the supply pipe to overcome so far as possible the disagreeable hissing sound caused by water under pressure when discharged into the flushing tank.

With the foregoing and other objects in view which will appear as the description proceeds the invention further resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood that changes may be made in the precise embodiment of the invention herein disclosed without departing from the spirit of the same.

In the drawings accompanying this specification:

Figure 1 is a side elevation of the device with the ball-float and supporting rod broken away.

Figure 2 is a vertical cross-sectional view of the device showing parts in elevation.

Figure 3 is a vertical cross-sectional view of a modification of the device with parts in elevation.

Figure 4 is a horizontal cross-sectional view taken on or about line 4—4 of Figure 2.

Figure 5 is a horizontal cross-sectional view taken on or about line 5—5 of Figure 3.

Referring now to the letters of reference placed upon the drawings:

A, denotes the bottom of a flushing tank of usual construction provided with an opening to receive a water supply pipe B having a flange B', overlapping a washer B<sup>2</sup> adjacent the inner wall of the tank. C, is a washer fitted to the pipe B on the underside of the tank and D is a nut screwed upon the pipe to secure the latter to the wall of the tank. E, denotes a nipple screwed into

the pipe B, upon which is screwed a relatively long stand-pipe F having a spiral flange F' integral with its outer wall.

A valve casing H is secured to the upper end of the stand-pipe F and a hollow valve seat member G is confined within the casing. A spider G' secured to the casing H supports the valve seat member in alignment with the stand-pipe with which it communicates, the spider G' having a central screw-threaded aperture *g* and other openings *g'* between the central aperture and the casing wall. The valve seat member G is exteriorly screw-threaded intermediate its ends for working fit in the screw threaded aperture *g* of the spider. The casing H is contracted at its upper end and a plunger H' is slidably mounted in this contracted upper end of the casing and is provided at its lower end with a valve disk *h* carried thereon by a collar *h'* screwed onto the lower end of the plunger. The collar *h'* projects from the lower end of the plunger to embrace the upper end of the valve seat member and to position said disk *h* on the upper end of the valve seat member, as shown in Fig. 2.

A "hush" pipe I depends from the casing H and closely encircles the perimeter of the flange F' forming with the latter a spiral passage to secure the noiseless delivery of water into the tank. J, is a yoke journaled upon trunnions *h*<sup>2</sup> extending laterally from the valve casing, and sleeved upon lugs H<sup>a</sup>, integral with the closure plug. J' is an adjusting screw extending through the wall of the yoke and adapted to bear upon the casing to limit the travel of the closure plug in an opening direction. J<sup>2</sup> is a rod screwed into the end of the yoke upon the end of which is mounted the usual ball-float (not shown) controlling the operation of the valve. H<sup>3</sup> is a packing ring carried by the closure plug H' to prevent the escape of water at the upper end of the plug. H<sup>c</sup> denotes an opening into the valve casing from which leads the usual "refill" pipe H<sup>d</sup>.

In the modification shown in Figure 3 the "hush" pipe is fitted to a stand-pipe F<sup>a</sup> provided with longitudinally disposed outer ribs F<sup>b</sup> having "staggered" connecting passages F<sup>c</sup> between the ribs to cause the water delivered through the ball-cock to pass back and forth throughout the length of the "hush" pipe that it may spend its velocity before leaving the pipe.

Having indicated the several parts by reference letters the construction and operation of the device will be readily understood:

5 Upon the water being discharged from the flush tank in the usual manner the ball-float (not shown) controlling the operation of the closure plug H' will be depressed thereby raising the closure plug and thus  
10 admitting water through the ball-cock which upon leaving the valve body is forced to take the spiral passage provided in the "hush" pipe thereby checking its velocity before entering the tank thus eliminating  
15 the disagreeable hissing noise common to many flush tank installations.

In the modification shown in Figure 3 the water instead of taking a spiral course around the stand-pipe is caused to follow a  
20 passage up and down the pipe whereby its force is spent before leaving the stand-pipe.

It will be noted that in the present construction that a "hush" pipe of relatively high altitude is provided having a long  
25 spiral or other devious passage thereby securing the gradual expenditure of the velocity of the water before it passes into the flushing tank thus insuring a practically noiseless delivery of water into the latter.  
30 Having thus described my invention what I claim is:

1. In a supply means for flushing tanks, a coupling adapted to extend through the bottom of the tank and be rigidly secured  
35 thereto, a stand-pipe connected to and rising from the coupling, a hush-pipe opening at its lower end into the tank and sleeved upon the stand pipe, the latter having means for cooperation with the hush-pipe to provide a relatively long channel between said  
40 pipes through which the water passes prior to its discharge into the tank, a valve casing secured to the upper end of the hush-pipe, a spider secured to the interior of the casing  
45 intermediate the ends of the latter and in-

cluding a central screw-threaded aperture and other openings between said aperture and the casing wall, a hollow valve seat member disposed in vertical alignment with the stand pipe and provided intermediate  
50 its ends with an exterior screw-threaded portion having working fit with said screw-threaded aperture a float controlled plunger mounted in the upper end of the casing in  
55 alignment with the valve seat member and slidable toward and away from cooperative relation with the latter to govern the passage of water from the stand pipe into the hush-pipe and thence to the flushing tank, and a float lever connected to the plunger.  
60

2. In a supply means for flushing tanks, a stand pipe adapted to be operatively connected to the tank, a hush-pipe opening at its lower end into the tank and sleeved upon the stand pipe, means between the stand-  
65 pipe and hush-pipe to provide a relatively long channel between said pipes through which the water passes prior to its discharge into the tank, a valve casing secured to the upper end of the hush-pipe, a spider in the  
70 casing having a screw-threaded aperture, a hollow valve seat member disposed in vertical alignment with the stand-pipe and provided intermediate its ends with a screw-threaded portion having working fit in the  
75 screw-threaded aperture of the spider, and a float controlled plunger mounted in the casing in alignment with the valve seat member and slidable toward and away from cooperative relation with the outer end of  
80 the valve seat member to govern the passage of water from the stand-pipe into the hush-pipe and thence to the flushing tank.

In testimony whereof, I sign this specification in the presence of two witnesses.

WILLIAM SHERWOOD.

Witnesses:

S. E. THOMAS,  
JOHN CONSIDINE.