Sept. 27, 1927. 1,643,558

C. H. GUNN

BALL COCK

Original Filed Feb. 1, 1926

Fig. 1

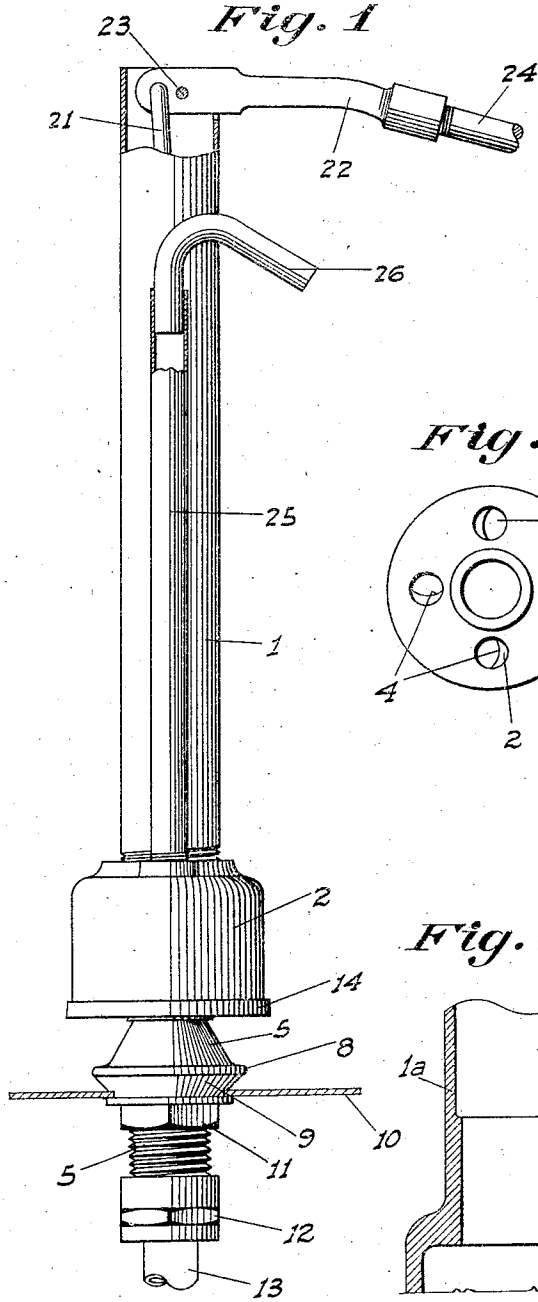


Fig. 2

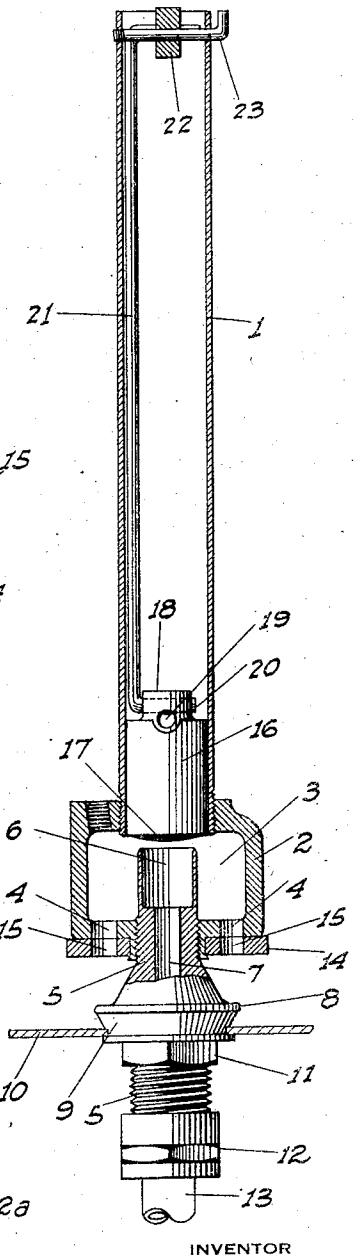


Fig. 3

Fig. 4

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UNITED STATES PATENT OFFICE.

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BALL COCK.

Application filed February 1, 1926, Serial No. 85,205. Renewed March 4, 1927.

This invention relates to improvements in ball cocks such as are used to control the flow of water into toilet flush tanks and the like.

The principal objects of my invention are to provide a ball cock so constructed as to be almost entirely noiseless; one in which the valve member is adjustable so as to enable the valve to be closed when the water is at different levels in the tank without having to disturb the float stem, and thus enabling a solid float stem to be used; and a device having a refill tube arrangement which eliminates the need of the delicate and easily damaged threaded connection usually employed, while enabling the tube to be easily adjusted or removed.

A further object of the invention is to produce a simple and inexpensive device and yet one which will be exceedingly effective for the purpose for which it is designed.

These objects I accomplish by means of such structure and relative arrangement of parts as will fully appear by a perusal of the following specification and claims.

In the drawings similar characters of reference indicate corresponding parts in the several views:

Fig. 1 is a side elevation of my improved ball cock partly in section.

Fig. 2 is a vertical section of the device.

Fig. 3 is a bottom plan view of the discharge chamber showing the adjustable discharge openings.

Fig. 4 is a fragmentary section showing a modified form of barrel construction.

Referring now more particularly to the characters of reference on the drawings, the numeral 1 denotes a barrel removably secured into the top of the casing 2 which forms a completely enclosed chamber 3 except for a plurality of discharge openings 4 in its bottom.

Screwed into the bottom of the casing in vertical alinement with the barrel is a tubular fitting 5. This fitting projects upwardly into the casing to a point near the lower end of the barrel and said upper portion has a bore 6 considerably larger than the main bore 7 therebelow.

Below the casing fitting 5 is provided with a flange 8 against which a rubber gasket 9 seats. This gasket is adapted to form a seal with the bottom of a tank 10 in which the ball cock is mounted. The fitting 5 projects through and below the tank in the customary manner and is threaded to receive a nut 11 for engaging the under side of the tank, and an independent coupling nut 12 for connection with the usual intake pipe 13.

Turnably mounted outside the bottom of the casing and engaging the same is a plate 14 having openings 15 to register with the openings 4.

Slidably mounted in the barrel is a plunger 16 having a pad 17 of rubber or the like on its lower end to engage the top of the fitting 5 and seal the same. This plunger has a head 18 of reduced size which is provided with two or more transverse openings 19, on different levels to receive the horizontal lower end portion 20 of a vertical operating rod 21. The upper end of this rod is pivotally connected to an arm 22 which in turn is removably pivoted to the barrel adjacent its upper end by a threaded pin 23 passing through the sides of the barrel. The outer end of the arm 22 is tapped to receive the adjacent end of the usual float stem 24.

A rigid tube 25 is screwed into the top of the casing 2 alongside the barrel, in the upper end of which tube is removably and turnably fitted an angled tube 26, these two members functioning for the usual refill purposes.

In operation when the float at the outer end of the stem is raised, the opposite end of the arm 22 will be lowered, causing the plunger to be lowered and pressing the pad 17 against the top of the fitting 5, thus preventing water from entering the chamber 3. As the water is drawn out of the tank and the float lowered, the plunger of course is raised. The water then enters the chamber 3 and passing out through the openings 14 and 15 will enter and fill the tank. Since the size of the passage 6 is larger than that of the passage 7, through which the entering water flows first, the pressure of the water when it leaves the restricted passage will be suddenly lessened, and it will flow out into the chamber 3 without the sudden rushing and noisy movement usually had. The chamber also allows the pressure of the water to be silently lessened before such water flows into the tank through the openings at the bottom of the casing.

By adjusting the plate 14 the size of the openings may be altered according to the

pressure had in the piping system, so that the water will flow into the tank with properly regulated smoothness.

The fitting 5 below the casing is flared outwardly as shown, so as to deflect the water from the chamber openings obliquely into the tank instead of allowing it to drop straight down. This feature also eliminates any noise which might otherwise be caused by the falling water.

The member 20 of the operating rod 21 being connectible with the plunger head at different levels, the operating length of the plunger unit from the arm 22 may be altered to suit. Since the member 20 cannot come out of the hole in the plunger head when the plunger is once in the barrel, it is not necessary to provide any screw or similar fixed connection between said rod and the plunger. The pin 23 being readily removable from the barrel, the plunger unit may be easily withdrawn from the barrel at any time.

The plunger has a clearance fit with the barrel so as to enable some water to get past the same and thus equalize the pressure resisting the lowering of the plunger to its seat. By reason of the refill tube arrangement the upper member 26 may be adjusted or removed at any time without danger of said member being rendered useless when it is desired to remount it.

If desired, the barrel 1^a may be cast integral with the member 2^a, as shown in Fig. 4. In this case, the bore of the barrel only adjacent its lower end is machined to receive the plunger; the bore above said plunger being left larger so that the plunger may be easily drawn out of the barrel.

From the foregoing description it will be readily seen that I have produced such a device as substantially fulfills the objects of the invention as set forth herein.

While this specification sets forth in detail the present and preferred construction of the device, still in practice such deviations from such detail may be resorted to as do not form a departure from the spirit of the invention, as defined by the appended claims.

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

1. A ball cock including a vertical barrel, an enlarged casing in the top of which the lower end of the barrel is fixed, a water intake member projecting upwardly into the casing in alinement with the barrel, said member being open at its upper end, and a float controlled plunger in the barrel to engage and close the upper end of said member; the casing having outlets in its bottom.

2. A ball cock including a vertical barrel, an enlarged casing in the top of which the lower end of the barrel is fixed, a water intake member projecting upwardly into the casing in alinement with the barrel, said member being open at the upper end, and having a bore larger in the upper portion than in the lower portion thereof, and a float controlled plunger in the barrel to engage said member and close the bore in the upper portion of said member; the casing having outlets below the top of the intake member.

3. A ball cock including a vertical barrel, an enlarged casing in the top of which the lower end of the barrel is fixed, a water intake member projecting upwardly into the casing in alinement with the barrel, said member being open at its upper end, a float controlled plunger in the barrel to engage and close the upper end of said member; the casing having outlets in its bottom, and means for altering the area of such outlets at will.

In testimony whereof I affix my signature.

CHARLES H. GUNN.