

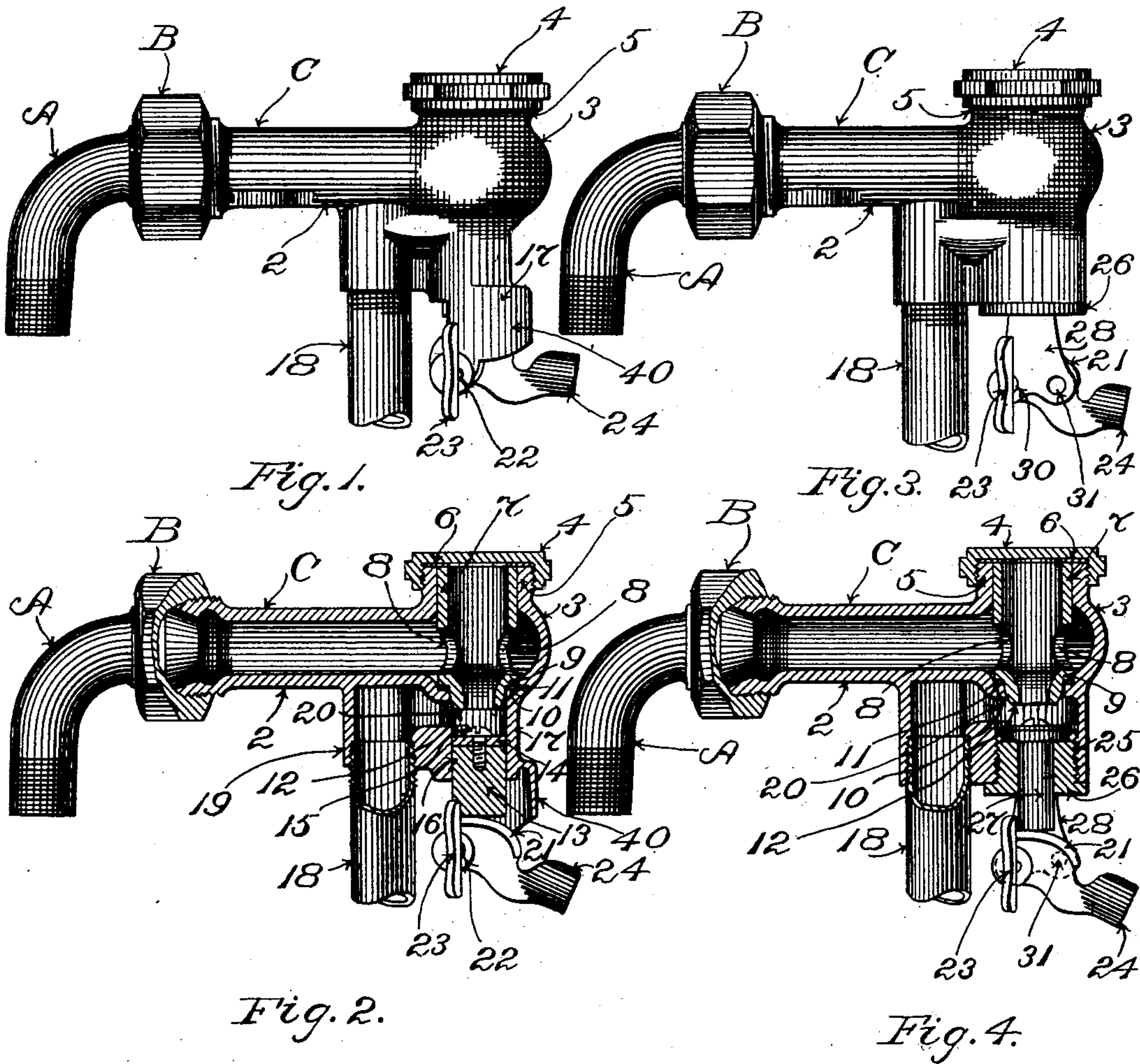
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D. W. GORMAN.  
BALL COCK.

(Application filed Mar. 29, 1900.)

(No Model.)



Witnesses:

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# UNITED STATES PATENT OFFICE.

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## BALL-COCK.

SPECIFICATION forming part of Letters Patent No. 713,426, dated November 11, 1902.

Application filed March 29, 1900. Serial No. 10,624. (No model.)

*To all whom it may concern:*

Be it known that I, DAVID W. GORMAN, a citizen of the United States, residing at Boston, in the county of Suffolk, State of Massachusetts, have invented a certain new and useful Improvement in Ball-Cocks, of which the following is a specification, reference being had therein to the accompanying drawings.

10 My invention has for its object to provide a ball-cock so arranged and constructed as to increase the efficiency and durability of the device, as also to permit of the ready and convenient removal and replacement of any of  
15 the parts which are liable to wear or which require to be renewed without removing or disturbing the fixed case or body of the valve.

The invention further consists in certain details of construction hereinafter more fully  
20 set forth.

My invention is fully set forth in the following description, in which reference is made to the accompanying drawings, and the novel features thereof are pointed out and clearly  
25 defined in the claim at the close of this specification.

In the drawings, Figure 1 is a side elevation of a ball-cock embodying my invention. Fig. 2 is a vertical lengthwise section. Figs.  
30 3 and 4 are respectively a side elevation and lengthwise section of a modified form.

The drawings show the ball-cock in its normal working position, the valve proper being arranged to move vertically when the cock is  
35 opened or closed.

A is a pipe connection; B, a union or joint by means of which the pipe connection A is connected with the body or casing C of the ball-cock. The said body C consists of a horizontal portion 2 of the form shown, which terminates in an enlarged or rounded portion 3, forming a substantially globe-shaped chamber, with an opening at top or upper portion thereof having a screw-cap 4, the removal of  
40 which permits ready access to the interior of the device. It will be seen that there is a direct passage through this globe-shaped chamber, so that the interior valve-fittings may be placed in position in and withdrawn from  
45 this said direct passage very readily in a manner which will presently appear. The cap 4

is screwed onto the upwardly-projecting circular top 5. The cap 4 is provided with a suitable washer or packing ring or disk 6 of usual construction to prevent leakage. 7 is  
55 a tube, tubular shell, or removable seat fitted in the upper end of the said direct passage through the globe-shaped chamber, provided with one or more lateral openings 8 to permit the inflow of fluid from the space within the  
60 body 2. As will be noted, the rounded part 3 of the valve-body permits the fluid within the body to pass entirely around the tube or seat 7 and to enter the openings 8 regardless of the position of said openings, both of said  
65 openings 8 being always in position to permit an inflow of fluid from the shell or casing C. The lower end of the tube 7 is preferably contracted, being provided with an annular shoulder 9, which registers with the corresponding  
70 shoulder 10, formed in the shell or casing. The joint between the shoulders 9 and 10 is suitably packed, as shown at 11, to prevent the leakage of water or other fluid there-through. The said tube 7, commonly termed  
75 the "seat," is compressed between the cap 4 and the shoulder 10, and therefore the joint at the said shoulder 10 is readily kept tight. The lower end 12 of the tube 7 forms the seat of the valve 13, which is provided with a disk  
80 14, of leather or other suitable material, to form a tight joint with the seat when the valve is closed.

15 is a screw by means of which the disk 14 is secured in place on the end of the valve 13.  
85 When the ball-cock is in its normal position, the valve 13 moves vertically in the housing or opening 16, formed to receive it in a downwardly-projecting portion of the shell 17 or casing. The valve 13 is fitted in its housing  
90 so as to move freely therein, and thus the whole force exerted by the device which operates the said valve may be exerted to press the valve tightly against its seat. When the valve is being closed, a certain amount of the  
95 fluid passing through the cock will be forced downwardly between the valve and its housing and might spray out over the edges of the tank if the tank used were a small one. To prevent this spraying, I provide a hood (shown  
100 at 40, Figs. 1 and 2) which is designed to catch any water which may strike the cam 21



and fly off therefrom and return it downwardly into the tank.

18 is a discharge-pipe through which the fluid passing through the valve discharges into the receptacle in which the ball (not shown) operates. The discharge-pipe 18 is screwed into an opening formed at 19 in a downwardly-projecting integral portion of the body C, which forms an outflow-chamber. The said discharge-pipe opening is connected with the valve-chamber by means of the opening or passage 20. When, therefore, the valve is open, fluid passes from the pipe connection A, through the horizontal body portion 2, into the rounded portion 3 of the casing, thence through the openings 8 in the tube 7, through the valve-opening, thence through the passage 20, and out through discharge-pipe 18.

For the purpose of operating the valve 13 I provide a cam 21, which is pivoted on a screw-pin 22. The pin 22 preferably is provided with a flat head 23, by means of which it may be turned readily by the thumb and finger. The screw 22 passes through lugs or projections at the opposite sides of the downwardly-projecting portion 17 of the casing. The cam 21 is provided with a socket 24, in which the end of a rod or stem (not shown) is secured, the ball or float being at the other end of said rod or stem. The plunger or valve 13 rests upon the cam-surface 21, as shown, and, as will be clear, the position of the ball or float relatively to the pivot-pin 22 will determine the position of the valve or plunger 13 relatively to its seat and the enlargement or restriction of the valve-opening. By removing the cap 4 the tube 7, the lower end of which forms the seat of the valve, may be readily removed from within the casing 3. By removing the fulcrum-pin 22 the cam 21 may be withdrawn and the plunger or valve 13 removed. Thus all the parts of the device which are likely to need repair and renewal may be very readily removed and replaced without disturbing the body or casing C. When the valve and valve-seat are removed, the interior of the shell or casing may be easily cleaned. The arrangement of the valve 13 to move vertically and of the actuating-cam 21 in a substantially horizontal position increases the efficiency of the power exerted by the float to close the valve. The space within the portion 3 of the shell around the tube or seat 7, as also within the upper portion of the said tube 7, has a cushioning effect, the pressure being distributed throughout the fluid in said spaces, with the result of lessening the wear at the valve-seat and rendering it possible to close the valve and maintain it in its closed position with less force than would otherwise require to be exerted.

The modification shown, Figs. 3 and 4, consists chiefly in making the portion 26, to which the cam 21 is pivoted, separable, which permits the said portion to be turned and the ball located in any desired position relatively to the valve. The said portion is exteriorly threaded, as shown at 25, Fig. 4, to form a plug or stuffing-nut 26. The plug has an axial hole therethrough, in which the valve-stem 27 is placed. At opposite sides of the plug are formed downwardly-projecting lugs 28, between which the cam 21 is pivoted by means of a pin 22, which is of the same shape and performs the same function as the pin 22, heretofore described. The lugs 28 are provided at their lower ends with two sets of holes or bearings 30 and 31 for the pin 22. This is for convenience in assembling the parts of the device and permits the cam 21 to be placed in operative position regardless of the point at which the plug 26 comes to a full bearing. For example, if in Figs. 3 and 4 it were desirable or necessary to give the plug 26 an extra half-turn the hole 31 would then be in position to receive the pin 22, on which the cam 21 was pivoted. This arrangement also facilitates the setting of the float in any given position relatively to the fixed parts of the valve.

While in the accompanying drawings the ball-cock is shown in its normal position for a top supply for a tank, it will be clear that it is equally applicable for a bottom supply when that is desired.

What I claim is—

In a ball-cock, the combination with a casing having an integral enlargement at one end to form a substantially globe-shaped chamber, said enlargement having a direct passage therethrough; a depending portion 19 integral with said casing and forming an outflow-chamber, said outflow-chamber communicating with said direct passage through port 20; a tubular shell mounted in the upper end of said direct passage, said shell being provided with inlet-openings intermediate its ends and having a valve-seat formed at its lower end; a screw-cap closing the upper end of said direct passage and said tubular shell and serving to hold said shell in place; a reciprocating valve mounted in the lower end of said direct passage beneath the valve-seat formed at the lower end of said tubular shell; and a ball-cock head to actuate said valve.

In testimony whereof I affix my signature in presence of two witnesses.

DAVID W. GORMAN.

Witnesses:

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