No. 674,276. Patented May 14, 1901.

G. B. MOORE.

VALVE OR BALL COCK.

(Application filed May 26, 1900.)

(No Model.)

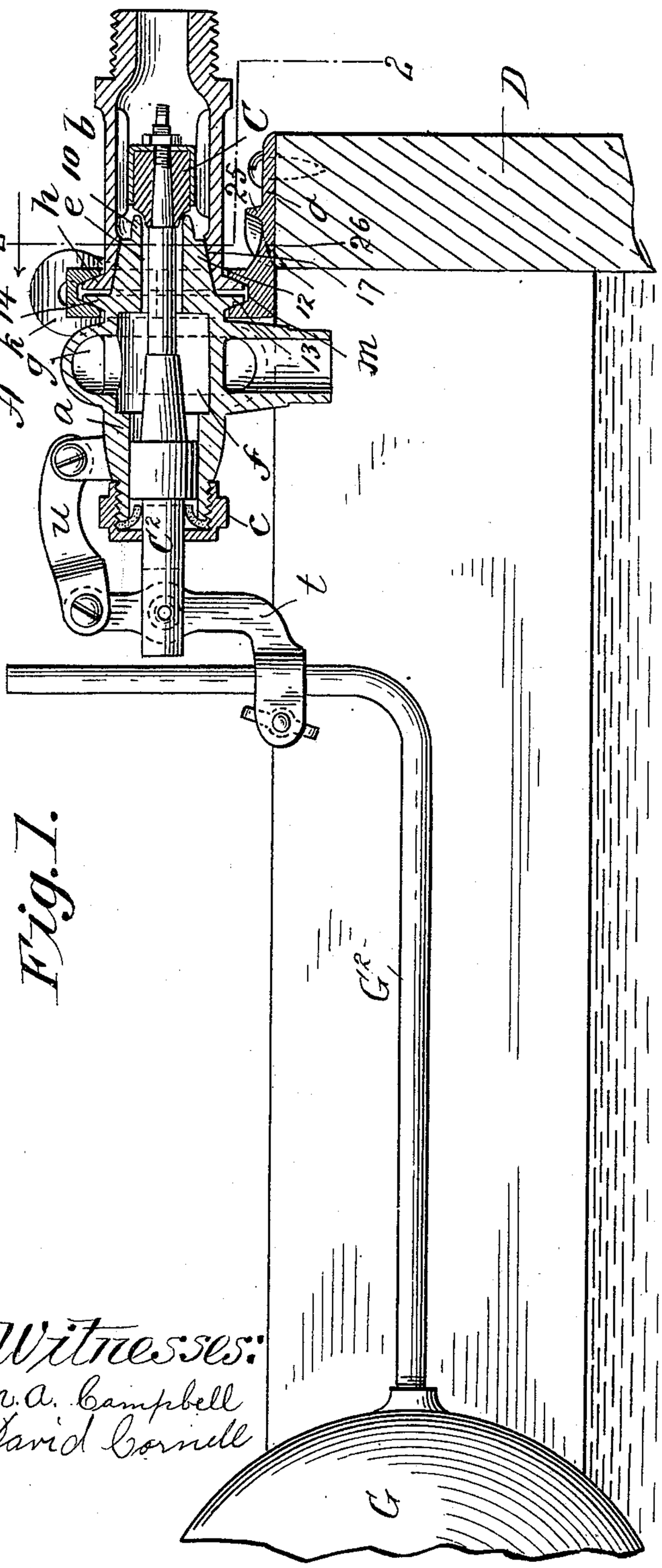

Fig. 1.

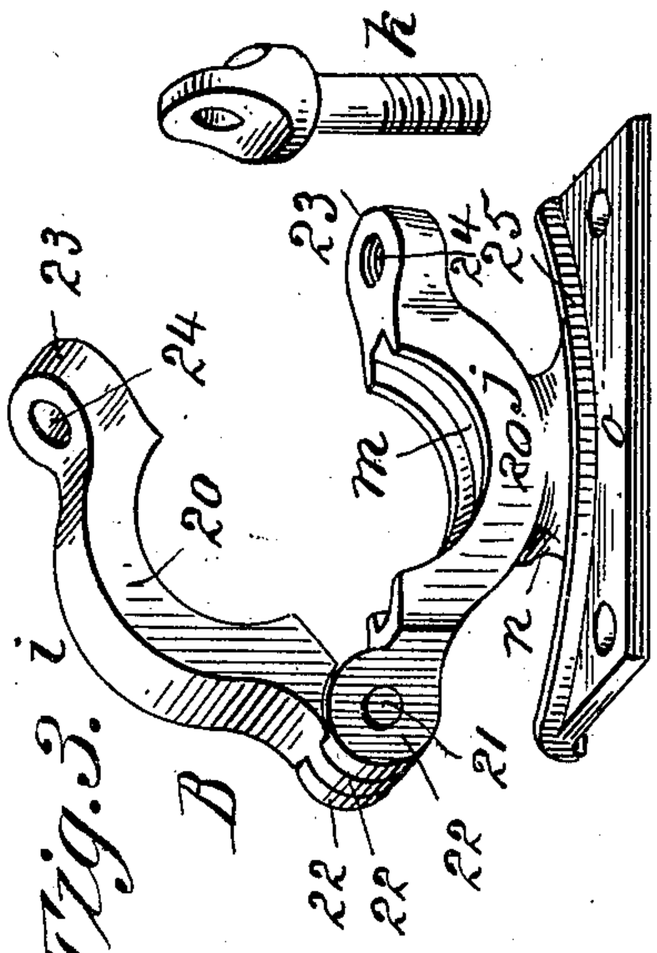

Fig. 3.

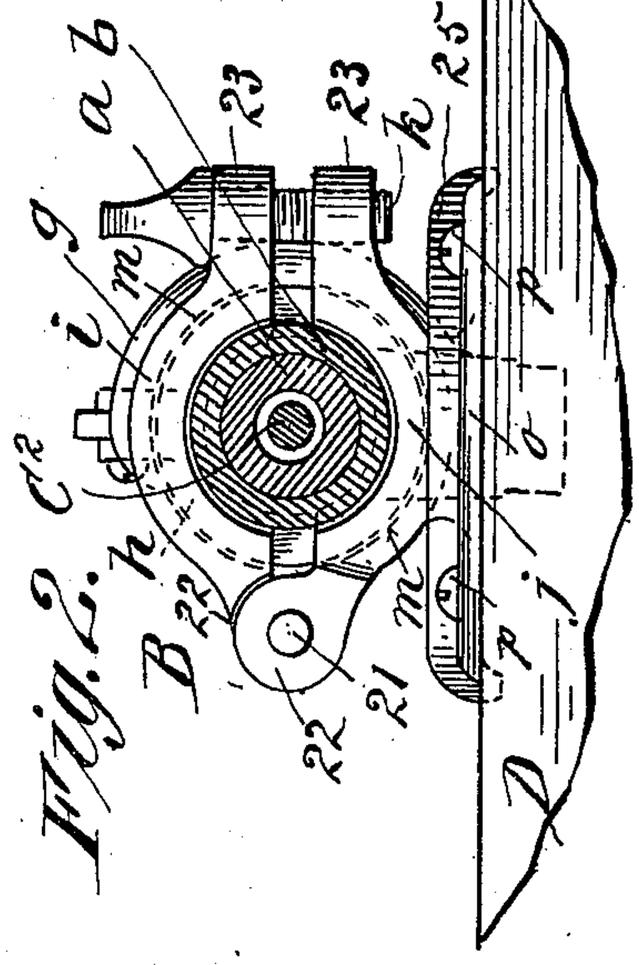

Fig. 2.

Witnesses:
M. A. Campbell
David Cornell

Inventor:
George B. Moore,
by Wm. F. Bellamy,
Attorney.

UNITED STATES PATENT OFFICE.

GEORGE B. MOORE, OF SPRINGFIELD, MASSACHUSETTS.

VALVE OR BALL-COCK.

SPECIFICATION forming part of Letters Patent No. 674,276, dated May 14, 1901.

Application filed May 26, 1900. Serial No. 18,096. (No model.)

To all whom it may concern:

Be it known that I, GEORGE B. MOORE, a citizen of the United States of America, and a resident of Springfield, in the county of Hampden and State of Massachusetts, have invented certain new and useful Improvements in Valves or Ball-Cocks, of which the following is a full, clear, and exact description.

This invention relates to improvements in valves, and more particularly to ball-cocks employed in water-closet tanks; and the invention is most especially applicable as an improvement on the construction of ball-cock illustrated in Letters Patent of the United States issued to me September 8, 1891, No. 459,044, in which description of valve the valve proper is carried by a stem which plays through one section of the valve-body and which valve has its location within the chamber of the other section of the valve-body, the valve opening against and closing with or being closed by the water-pressure, requiring no springs. As well known, ball-cocks of this class when employed in connection with a tank and the supply-pipe therefor have usually a member thereof screwed to the tank, and where the valve-casing is constructed in the two halves or sections, as shown in the aforementioned patent, and it is desired to repair the valve by the replacement of a packing-disk therein or otherwise, as commonly becomes necessary after protracted use of the valve, the entire valve must necessarily be either unscrewed or unfastened from the tank and uncoupled from the supply-pipe or the ball-cock and its carrying arm or lever must be detached from the valve and its stem, so that the casing-section with which the ball-cock arm is connected may be unscrewed and disconnected from the other. In either of these ways of gaining access to the interior of the valve-casing for the purpose of replacing the valve proper or the packing thereof or other packing or otherwise fixing or replacing a part of the valve it is very difficult to get at the parts and at best requiring more or less straining, hammering, or unscrewing, the inconvenience being as great again in the reassemblage of the parts.

The principal object of this invention is to provide in a ball-cock or valve of the character indicated, and which comprises two detachably-connected casing-sections and has combined therewith a lever-arm and ball-float, a construction and means for connection of the two parts of the valve body or casing, so that the part carrying the valve proper and the valve-stem, with which the float and its lever-arm are connected, may be most readily, quickly, and easily detached from the other part or section, which is screwed or otherwise connected to the tank, or in any case at least is connected or coupled with the supply-pipe, and without the necessity of turning part of the valve-body to be removed to unscrew it from its connection with the other section of such body.

To these ends the invention consists in the valve or ball-cock constructed as hereinafter fully described, and set forth in the claims.

Reference is to be had to the accompanying drawings, in which the present improvements are comprised in a ball-cock for a water-closet tank of substantially the character illustrated in my aforementioned Letters Patent, and in which—

Figure 1 is a central longitudinal vertical section through the ball-cock shown as mounted upon the edge of a tank. Fig. 2 is a cross-section through the two portions of the valve-case adjacent their joint as taken on the line 2 2 and showing parts beyond such line in elevation. Fig. 3 is a perspective view showing the yoke-clamp which is employed in conjunction with the valve-case sections as removed.

Similar characters of reference indicate corresponding parts in all of the views.

In the drawings, A represents the body of the valve, of a general cylindrical form, the same being necessarily for the assemblage of the parts made in the two casing-sections *a* and *b*, united by the novel means hereinafter described. The section *b* has its outer end screw-threaded or is otherwise adapted to be coupled with a supply-pipe, while the forward end of the section *a* is closed by the screw-cap or cup-shaped nut *c*. The rear end of the casing-section *a* has the contracted and somewhat-elongated opening *e*, leading forwardly into the valve-chamber *f*, from which the outlet-passage *g* leads.

The portion of the valve-casing *a* which surrounds the entrance-opening *e* thereinto

is externally constructed as follows: The extremity is formed with the annular lip or end flange 10, which constitutes the seat for the valve C, while forwardly therebeyond the surrounding wall is for a portion of its length, as indicated at 12, made in the form of the frustum of a cone, at the expanded end of which is the annular flange 14, the forward face 13 of which is beveled or widened as it approaches its junction with the exterior of the casing proper. The separable inlet-section *b* of the valve has its forward end constructed with the outwardly-flaring mouth, as indicated at 17, which, together with the frusto-conical portion of the valve-case section *a*, is ground for a close fit by such part 12 within the flaring mouth 17. The said section *b* of the valve-case has exteriorly at the end surrounding the flaring opening 17 the flange *h*, the rear side of which is beveled or inclined to correspond to the flange 14 of the other section *a*, and the sizes and tapers of the portion 12 of valve-casing *a* and the flaring mouth 17 of valve-casing *b* are relatively such that when these two tapered or inclined portions are assembled the said conical portion 12 will bottom in the mouth of the valve-casing section *b* before the flanges 14 and *h* can come into contact with each other, so that there is always afforded an opportunity for draft through the medium of these flanges of the one casing-section endwise toward the other, and the two sections of the valve constructed with the tapering fitting portions and the external flanges beveled as described are when the valve is applied in use held together by a yoke-clamp of peculiar construction, (shown in the drawings,) which will be now described in detail. This clamp B consists in the two clamp halves or sections *i j*, each half or section comprising the intermediate approximately semicircular part 20 and the end ears 22 22 and 23 23. The earpieces 22 of both clamp-sections are halved together or otherwise matched, as common in hinged joints, and connected by the hinge-pivot 21, while the opposite ears 23 23 have perforations 24 25, the latter being tapped for the reception of the thread of the screw *k*, which engages therein, the head of the screw bearing against the top of the ear of the other section having the plain or unthreaded perforation. The intermediate semicircular portion 20 of each half-section *i* and *j* of the yoke-clamp B has within its inner edge a depression or trough *m*, the opposite walls of which are convergent, as indicated in Figs. 1 and 3, and corresponding more or less closely to the tapering of the flanges 14 and *h* of the casing-sections *a b*. The clamp-yoke being placed about the adjoining flanged ends of the two sections *a b* of the valve-casing, and contracted by the screw, serves by the cam-like action of the inclined surfaces of the trough-grooves of the yoke-sections on the beveled flanges of the said casing-sections to crowd the conical portion of the one, *a*, tightly into the flaring mouth of the other, *b*.

The lower clamp-section is shown as supported by and as a part of an upright *n*, which rises above the base or foot plate *o*, adapted to be secured by screws *p* to the upper edge of the tank D, in connection with which the ball-cock is used. The said foot-plate is constructed with the upstanding guard flange or rib 25 between the outer edge of said plate and the upright *n*, and the surface of said plate inwardly beyond the said guard-flange 25 inclines downwardly and inwardly, as indicated by the dotted line 26 in Fig. 1, whereby in the event of any slight leakage of water through the valve-case at the joint of the two sections *a* and *b* in case the water should follow outwardly along the casing-section *b* past the yoke-clamp, dripping from such section, such drippings will by the said guard 25 be prevented from running to the exterior of the tank, but will be guided down into the tank.

It will be apparent that if the parts *a b* of the valve-case were screw-united it would be necessary in order to replace or pack the valve C or otherwise repair the parts carried by or within the casing-section *a* to either remove the connections that carry the ball-float, which owing to the almost inaccessible location of the parts is very difficult, or to uncouple the valve at *x* from the supply-pipe, and especially in cases where a lead supply-pipe is used and the valve-case is screwed to the top of the tank it is also necessary to remove the screws which fasten the ball-cock to the tank; but in the present contrivance it will be understood that by turning with the thumb and finger the screw *k* to unfasten the separable sections of the yoke-clamp and overturning or throwing open the upper clamp-section it is only necessary to raise the valve-body a small fraction of an inch to bring the external flanges 14 *h* clear from the trough or groove *m* in the lower yoke-clamp section, whereupon the valve-casing section *a*, with the valve C, valve-stem C^2, ball-float G, its carrying-arm G^2, lever *t*, and link *u*, may be all bodily removed from the casing-section *b*, which remains intact in its connection with the supply-pipe. The replacement of the parts or their restoration is effected also just as conveniently.

I claim—

1. In a tank valve or ball-cock, in combination, the casing-section *b* having a chamber therein for the disposition of the valve, constructed for connection with the water-supply, and having at its forward end the flaring circular mouth, the end of which is surrounded by the flange *h* the end face of which is perpendicular to the axis of the section while its back is beveled as shown, the casing-section *a* having its rear portion 12 tubular and of frusto-conical form adapted to fit into the flaring mouth of section *b* and having its rear end comprised in an annular lip 10 of less diameter than the said portion 12 and extended into the chamber of the section *b* be-

yond the inner end of its flaring mouth, and said section *a* having, where the conical portion 12 joins the body or section proper, the flange 14 which also has the perpendicular end, while its opposite side is beveled oppositely to the beveling of flange *h*, whereby when the parts are brought to juxtaposition said beveled flanges have the relations of two axially-coincident cones having their apexes opposite, the valve-stem, extended through the section *a* and into the casing *b*, having at its extremity in the chamber of the latter the valve C, and the clamp-yoke consisting of the two half-circular sections *i j* having at one end of each the radial pivotally-connected ears 22 22, and having at their other ends the radially-extended ears 23 23, having the perforations 24, one of which is screw-threaded, and both said sections having their inner edges formed with grooves *m*, matching in a common plane, the sides of which are convergent, and the constricting thumb-screw *k* passing loosely through the perforation of one of said ears 23 and with a screw engagement into the other, all substantially as shown.

2. In a tank valve or ball-cock, in combination, the base-plate *o* supporting thereabove the yoke-section *j*, the companion section *i* hinged thereto, the constricting-screw *k* operating in conjuction with the free ends of the yoke, both said yoke-sections having their inner edges formed with grooves or slots having the inclined sides, the valve-casing comprising section *a* having at its rear extremity the conical portion 12 and the flange 14 beveled as shown, and the section *b* having the flaring mouth surrounded by the bevel flange *h*, and all combined and arranged substantially as described and for the purposes set forth.

3. In a tank valve or ball-cock, in combination, the base-plate *o* adapted to be screwed upon the upper edge of a tank, supporting thereabove the yoke-section *j* and having the guard, rib, or flange 25 and the surface of the plate inside of said guard inclining toward the tank, the companion yoke-section *i* hinged to the one *j*, the constricting-screw *k* operating in conjunction with the free end of the yoke-section, both said sections having their inner edges formed with the grooves having the inclined sides, the valve-casing comprising part *a* having at its extremity the conical portion 12, and the beveled flange 14 and the section *b* having the flaring mouth surrounded by the beveled flange *h*, said flange-provided portions of the casing-sections being embraced by and held crowded the one endwise relatively to the other by said clamp-yoke, substantially as described.

Signed by me at Springfield, Massachusetts, this 13th day of July, 1899.

GEORGE B. MOORE.

Witnesses:
WM. S. BELLOWS,
M. A. CAMPBELL.