

No. 771,567.

PATENTED OCT. 4, 1904.

A. O'BRIEN.
COCK.

APPLICATION FILED NOV. 23, 1900.

NO MODEL.

Fig. 1

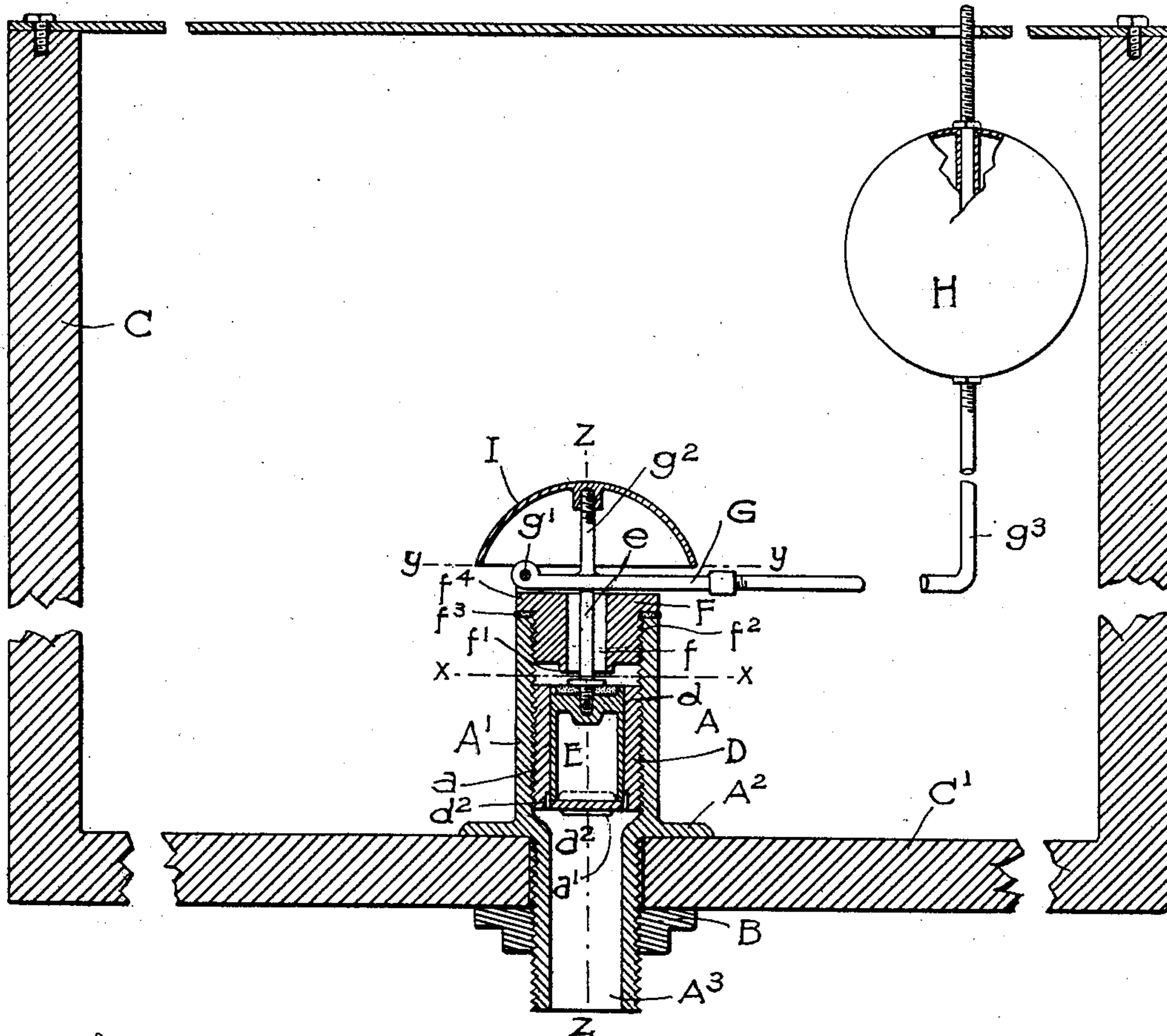
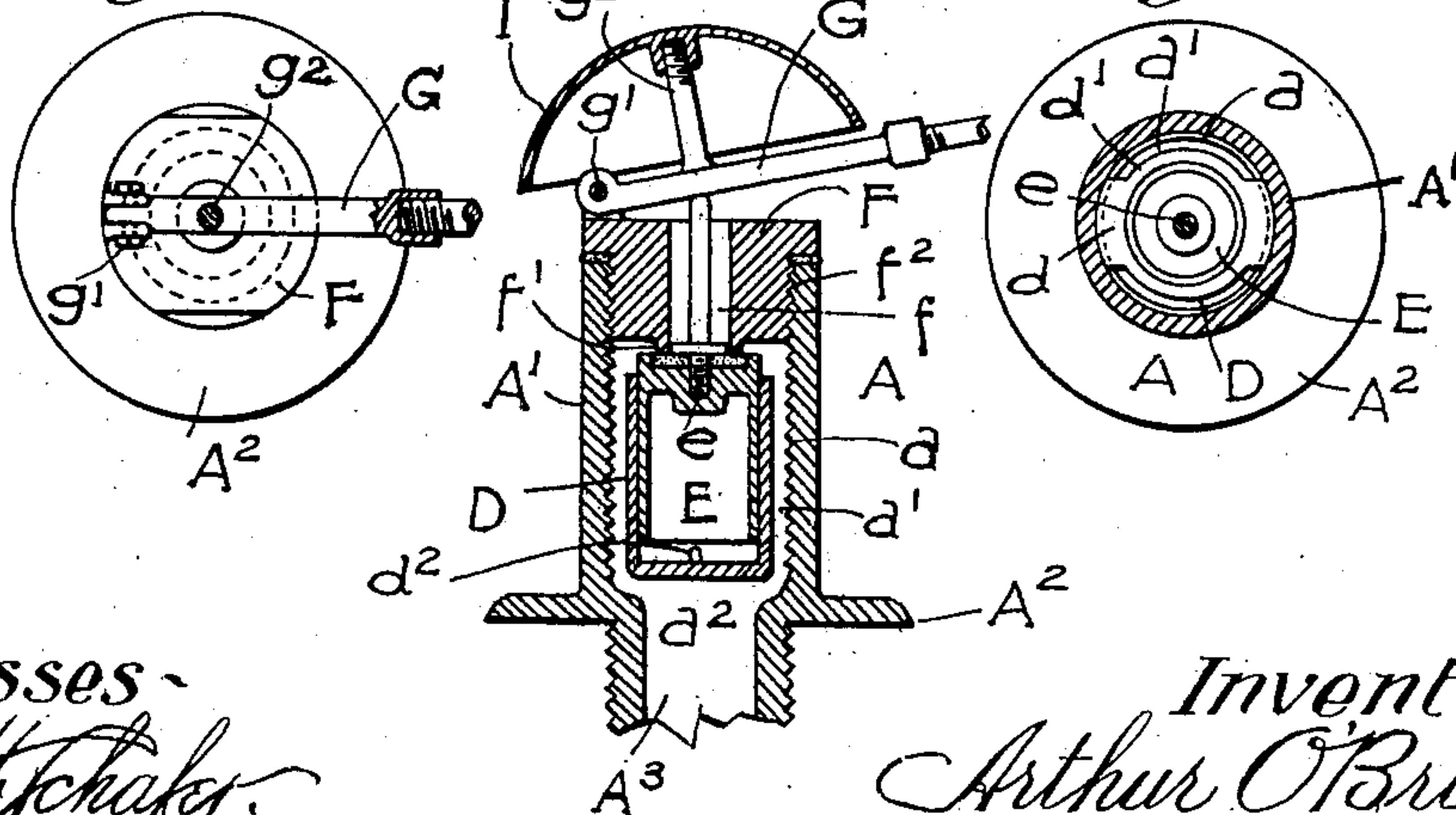


Fig. 2

Fig. 4

Fig. 3



Witnesses -

Arthur H. Schafer.
Edward H. Hunt.

Inventor.

Arthur O'Brien -

By his Atty. Wm. H. Rowe,

UNITED STATES PATENT OFFICE.

ARTHUR O'BRIEN, OF CHICAGO, ILLINOIS.

COCK.

SPECIFICATION forming part of Letters Patent No. 771,567, dated October 4, 1904.

Application filed November 23, 1900. Serial No. 37,488. (No model.)

To all whom it may concern:

Be it known that I, ARTHUR O'BRIEN, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Cocks, of which the following is a specification.

My invention relates especially to a novel form of valve-seat and valve-casing which is adapted to various forms of cocks and faucets and which is herein shown and described as adapted for use as a flush-tank valve for water-closets.

The object of my invention is to provide a valve which will act quickly under any head or pressure of water, which will seat itself truly at all times upon the valve-seat, which will not water-hammer, which will automatically open to admit air into the pipe of the faucet when it is desired to withdraw the water from the pipes to prevent freezing, and which will possess various advantages over other valves in its simplicity, durability, and economy of construction.

My invention consists, essentially, in a float-valve consisting of an inverted cylindrical cup or bell supported in an outer cylindrical shell, the latter serving both to hold the air within the bell and to guide the valve and adapt it to seat itself truly at all times by the buoyancy of the air within the valve and the pressure of the water beneath and around the same; and the invention also consists in certain features of construction and combination of parts hereinafter particularly described and claimed with reference to the accompanying drawings, wherein—

Figure 1 is a vertical section through a tank and tank-valve, the latter illustrating the essential features of my invention and showing the valve in a closed position; Fig. 2, a horizontal section in line *y y* of Fig. 1; Fig. 3, a horizontal section in line *x x* of Fig. 1; and Fig. 4, a vertical section of the valve, shown at right angles to and on line *z z* of Fig. 1.

The valve-casing A consists of a valve-cylinder A', having an internal thread *a* and flange A² at its base and a supply-pipe section A³ in the axis of said cylinder below the valve-cylinder A' and threaded externally to make connection with a supply-pipe and to provide

a threaded section to receive a nut B, which screws onto it and securely holds it upon the tank C, the section A³ being passed through the bottom C' of the tank and the flange A² of the valve-casing bearing upon the upper surface of the bottom of the tank.

The internal thread *a* of the valve-cylinder is fitted with a cylindrical valve-shell D, truly bored to receive the cup-valve E and provided with oppositely-disposed externally-threaded segment projections *d*, which fit the internal thread *a* of the valve-casing to bring the axis of the valve-shell D coincident with the axis of the valve-casing A and also provided with segment-shaped oppositely-disposed outer walls *d'*, which are of a diameter sufficiently less than that of the interior diameter of the casing A to provide segmental water-channels *a'* upon each side of the valve-shell and leading from the supply-chamber *a*² beneath the valve-shell to the discharge-aperture *f* of a valve-seat *f'* and cap F, the latter having an outer thread *f*², which fits the internal thread *a* of the valve-casing. The discharge-aperture *f* is a bored or cored hole through the axis of the cap F, and the valve-seat *f'* is a peripheral rim projection upon the under side of the cap F, against which the bearing surface or face of the valve E rests to close the discharge-aperture *f*, and the said bearing-surface preferably consists of a disk of rubber or suitable material held in a recess in the top of the valve by a valve-stem *e* screwing into the top of the valve to hold it firmly thereon, the said valve-stem projecting upwardly therefrom through the axis of the discharge-aperture and above the same a sufficient distance to be operated upon by a lever G, which is pivoted at *g'* upon one side of the cap F and extends diametrically across the same, as shown in Fig. 2, and is connected with an L-shaped rod *g*³, the vertical arm of which carries a float-ball H of any well-known or preferred construction.

The lever G has a vertical post *g*² extending upwardly therefrom in the axis of the valve, as shown in Fig. 1, and is threaded and fitted at its upper end with a bell deflector I, the latter serving to shed the water around the valve and downwardly therefrom and pre-

vent it from spurting up into the tank in a stream, as would be the case when the valve opens if the discharge-aperture were not so guarded.

5 The valve-shell D has a drain-aperture d^2 , preferably a number of them, which allow any water which may get below the valve to escape therefrom when the supply-pipes are emptied in very cold weather to prevent freez-
 10 ing and also to allow the water to follow up below the air within the valve a limited distance, as shown by dot lines in Fig. 1, and thus hold the air-pressure under sufficient tension to quickly lift the valve when the pressure is
 15 released therefrom.

A packing f^3 is placed between the flange f^4 of the cap F and the upper end of the valve-casing A, and a valve of simple construction may thus be manufactured at small
 20 cost. The buoyancy of the valve is sufficient at all times to be lifted wherever the head of water is on or above the level of the valve-seat, and with a much greater head of water the valve will be held tight against its seat at
 25 all times. The valve may be readily adapted for use as a stop-cock, gate-valve, faucet, or wherever a vertically-reciprocating valve is employed and has obvious advantages over a
 30 valve which is lifted by direct pressure of the water only or closed by its own weight, as with the usual check-valve.

I claim as my invention and desire to secure by Letters Patent—

1. A cock comprising an internally-thread-
 35 ed, upwardly-opening valve-casing, an exter-

nally-threaded valve-shell removably secured therein, a plurality of ports in the lower end of said shell, a plurality of waterways intermediate the casing and the shell, an automatic reciprocating cup-valve in said shell, a valve-
 40 closure thereon, an externally-threaded, centrally-apertured cap engaged in the upper end of said casing, a valve-seat thereon, a valve-stem axially engaged on said cup and extending upwardly through the aperture in said
 45 cap, a float, an arm pivotally connecting the float with said cap and operatively engaging on said stem and a deflector rigidly engaged on the arm above said aperture.

2. In a device of the class described the com-
 50 bination with an internally-threaded, upwardly-opening valve-casing, of a centrally-bored valve-shell therein, a reciprocating cup-valve in said bore, a screw-threaded cap engaged in the upper end of said casing and con-
 55 taining an upwardly-opening discharge-aperture concentric with the bore of said casing, a valve-seat, a valve-closure, a valve-stem axially engaged on the upper end of the cup extending through the aperture in the cap, a
 60 float-arm pivoted on the cap adapted to engage the upper end of said valve-stem, a float thereon, an upright shaft rigidly secured on the arm opposite the contact-point with said stem and a deflector on said shaft.

ARTHUR O'BRIEN.

Witnesses:

WM. H. ROWE,
 CARLE H. SCHAFER.