

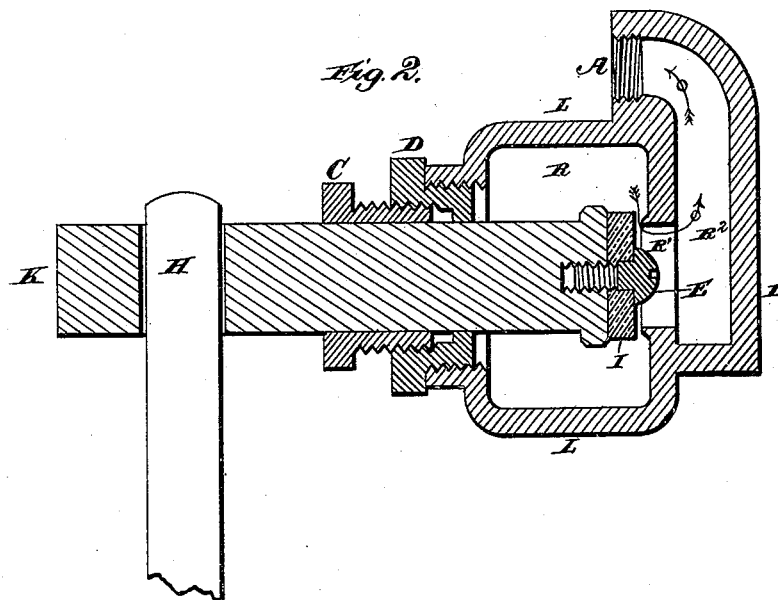
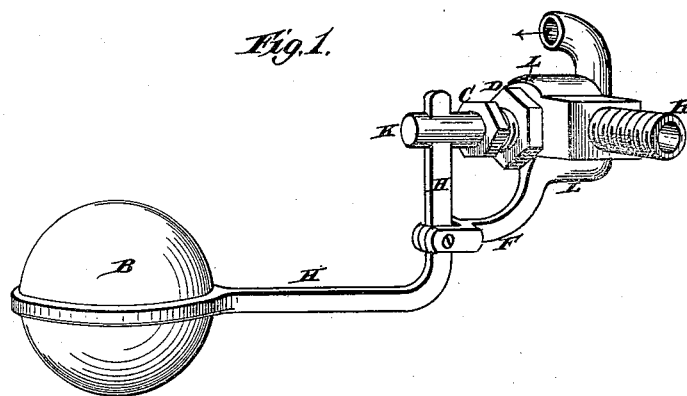
(No Model.)

A. G. ALEXANDER.

BALL VALVE.

No. 265,357.

Patented Oct. 3, 1882.



*Witnesses.*

*Robert Everett.*

*James L. Norris.*

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*A. G. Alexander*

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# UNITED STATES PATENT OFFICE.

ALEXANDER G. ALEXANDER, OF DETROIT, MICHIGAN.

## BALL-VALVE.

SPECIFICATION forming part of Letters Patent No. 265,357, dated October 3, 1882.

Application filed January 28, 1882. (No model.)

*To all whom it may concern:*

Be it known that I, ALEXANDER G. ALEXANDER, of Detroit, in the county of Wayne and State of Michigan, have invented a new and useful Improvement in Ball-Valves, of which the following is a specification.

In the drawings, Figure 1 is an elevation of a ball-valve embodying my invention, and Fig. 2 is a section through the center of the valve-stem.

The invention will be first fully described in detail, and the improvements afterward specifically set forth in the claims, a preliminary explanation being therefore deemed unnecessary.

L represents the shell or case of the valve, divided by an internal partition into two chambers, R R<sup>2</sup>.

P is an inlet-pipe communicating with chamber R, and A is an outlet-pipe opening from chamber R<sup>2</sup>.

R' is an opening between chambers R R<sup>2</sup>, having a raised rim in chamber R to form a valve-seat.

K is a valve-stem, made substantially the same in diameter as the opening R', its inner end being somewhat enlarged to support a washer, I, secured thereto by a screw, E.

C D represent an ordinary stuffing-box, through which valve-stem K works.

F is an arm fastened to the shell of the valve to afford a fulcrum for the bent lever H, the short arm of which engages with valve-stem K, the long arm thereof being fastened to ball B.

It will be understood that the ball B is placed in a vessel to which water is admitted, directly or indirectly, through the valve, and that as the water rises in said vessel ball B is raised until the valve is closed.

Valves of this kind are ordinarily constructed by making the valve-stem much smaller in diameter than the valve-seat and enlarging the inner end of the stem sufficiently to support a washer. When a valve so constructed is closed the valve is held to its seat by a force equal to the water-pressure upon a surface whose area is equal to the difference between the area of the end of the valve-stem and the area of the valve-seat, in addition to the pressure exerted by the ball or float. When the water-pressure exceeds the pressure exerted by the weight of

the ball the valve will not open, even when the water which supports the ball is withdrawn, and, if opened, closes with a jerk, causing a violent ram in the water-pipes; but when the diameters of the valve-stem and valve-seat are practically equal the power required to open the valve remains constant, without regard to the water-pressure, there being no such excess of pressure as in the ordinary construction, and the valve works surely and smoothly, whatever may be the water-pressure.

The principle of my invention may be applied with great advantage to self-closing cocks, requiring a much less powerful spring and opening much more easily than cocks constructed in the ordinary manner.

I do not wish to be understood as broadly claiming a valve automatically opened and closed through the instrumentality of a float and connecting-rods and levers, as such of itself does not constitute my invention.

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

1. The combination, substantially as herein described, of the shell or casing provided with an inlet and an outlet orifice, and divided into two chambers by a vertical partition having a lateral valve-opening, the horizontally-movable valve-stem constructed of a diameter substantially the same as that of the valve-opening, and a ball or float connected with the outer portion of the valve-stem, essentially as and for the purposes set forth.

2. The combination, substantially as herein described, of the shell or casing provided with an inlet and an outlet orifice, and divided into two chambers by a vertical partition having a lateral valve-opening, said inlet and outlet connecting with the two chambers, respectively, the horizontally-movable valve-stem carrying an attached valve, and constructed of a diameter equal or substantially equal to that of the valve-opening, a pivoted swinging lever connected with the outer portion of the valve-stem, and a ball or float sustained by the outer end of the lever, essentially as and for the purpose described.

3. The combination, substantially as herein described, of the shell or casing divided into two upright chambers by a vertical partition having a lateral valve-opening provided with

a raised rim, the inlet and outlet pipes communicating respectively with the said chambers, a stuffing-box in said casing, a horizontally-movable valve-stem arranged in the stuffing-box, and constructed of a diameter equal or substantially equal to the diameter of the lateral valve-opening, and a ball or float connected with the valve-stem by a swinging lever pivoted to the shell or casing, the whole being constructed and arranged to operate essentially as and for the purposes set forth. 10

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Witnesses:

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