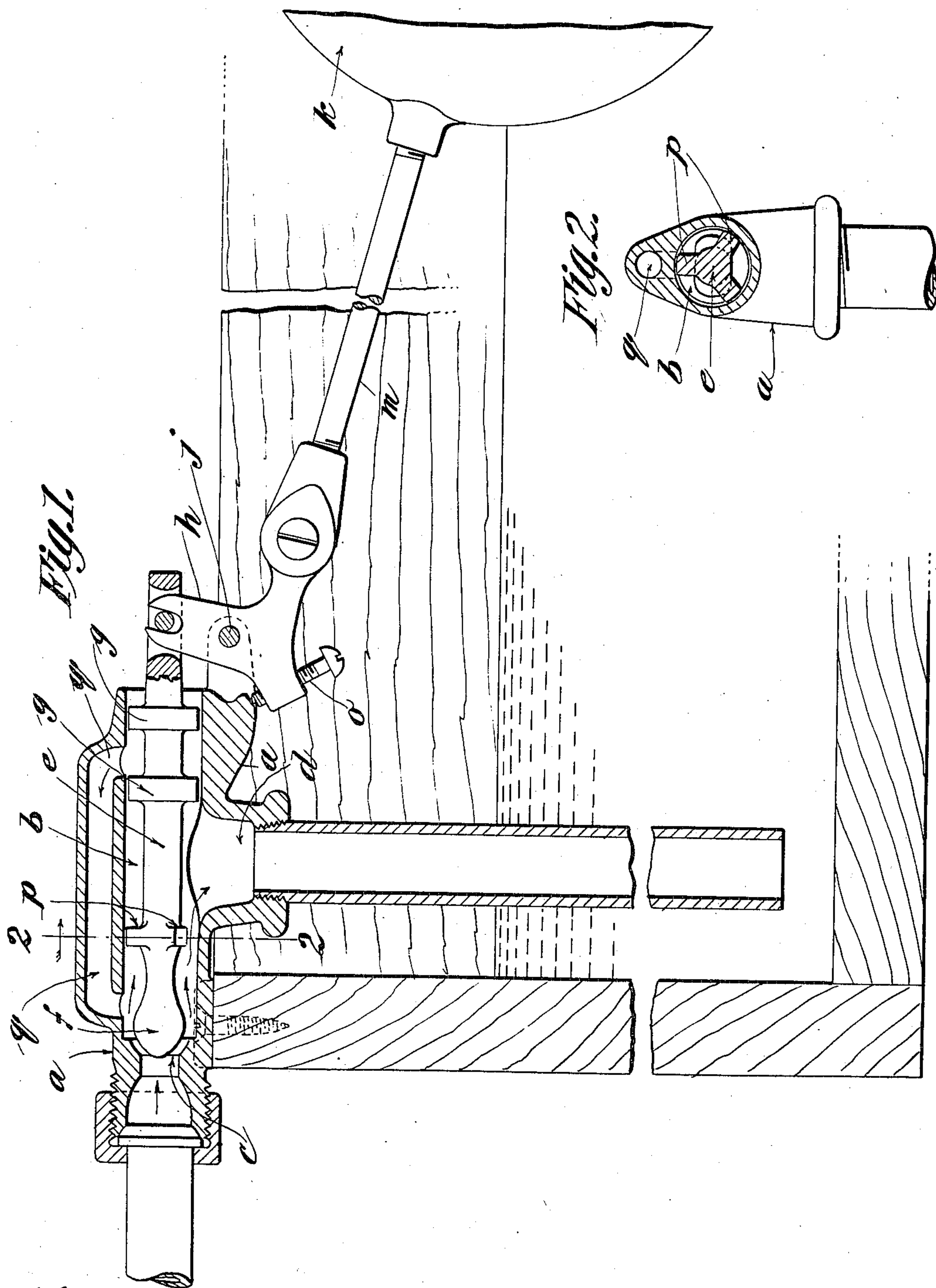


No. 812,337.

PATENTED FEB. 13, 1906.

W. GRAY.
FLOAT VALVE.
APPLICATION FILED SEPT. 29, 1904.



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UNITED STATES PATENT OFFICE.

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FLOAT-VALVE.

No. 812,337.

Specification of Letters Patent.

Patented Feb. 13, 1906.

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To all whom it may concern:

Be it known that I, WILLIAM GRAY, a citizen of the United States, residing at Springfield, in the county of Hampden and State of Massachusetts, have invented new and useful Improvements in Float-Valves, of which the following is a specification.

This invention relates to valves, and especially to float-valves, the object of the invention being to provide a valve of this description in which the use of packing is entirely eliminated and in which the valve to which the float is attached and which extends through an opening in the valve-body may be removed by simply disconnecting the stem from the float, means being also provided to induce a suction effect through said opening in the body when the valve is open, whereby any leakage therethrough is entirely obviated and permitting the plunger to be loosely fitted in the valve-body without packing.

A further object of the invention is to provide means to adjust the movement of the valve away from its seat to determine the maximum degree of opening movement of said valve.

In the drawings forming part of this application, Figure 1 is a longitudinal sectional elevation of a valve in which the invention is embodied. Fig. 2 is a cross-section of the same in a plane at right angles to the view shown in Fig. 1, the plane of the section being on line 2 2 on said Fig. 1.

Referring to these drawings, *a* is the valve-casing, through which longitudinally there extends a cylindrical bore *b*, in one end of which is formed the valve-seat *c*, the opposite end of the bore being open. About midway between the two ends of the casing is the outlet-opening *d*, the inlet-opening being at that end of the casing in which the valve *c* is located. Within the cylindrical bore of the casing a plunger *e* is located, one end *f* of which constitutes a valve to fit the valve-seat *c* to close the inlet-opening. Between the outlet-opening *d* and the open end of the valve-casing the plunger is provided with one or more circular heads *g*, which fit loosely in the cylindrical bore *b*, and beyond these heads the plunger extends outside of the casing and is connected, by means of the elbow-lever *h*, pivotally supported on the casing at *i*, with a float *k*, the arm *m* of which is screwed into or otherwise secured to the lever *h*. On

said elbow-lever is an adjusting-screw *o*, the point of which is adapted to bear on the casing *a*, whereby the movement of said elbow-lever in one direction may be limited to determine the maximum degree of opening of the valve. Between the outlet-opening *d* and the valve *c* the plunger is provided with the radial arms or projections *p*, whereby it is supported in axial alinement with the bore of the valve-casing. The plunger is not fitted with packing of any description, and it fits loosely within the bore *b*, and to make this loose-fitting construction practically operative, whereby there will be no leakage around the loose-fitting heads *g* when the valve is open, a channel *q* is formed in the wall of the casing and extending longitudinally thereof, one end of the channel communicating with the bore *b* just back of the valve-seat *c* and the other end thereof communicating with the bore *b* near the open end of the casing beyond the outlet-opening *d*. By means of this disposition of the channel *q* the water is entirely shut off therefrom when the valve is closed. As soon, however, as the float *k* falls, the valve is opened in the usual manner by the action of the float, and the flow of water through the valve and the outlet-opening *d* will induce the aspiration of air through the channel *q* in the direction of the valve, said air entering through the open end of the casing and around the loosely-fitting head *g*, and with this air-current thus maintained around the head *g* no water can possibly escape through the open end of the casing.

The hereinbefore-described construction is inexpensive, exceedingly durable, owing to the fact that there are no soft packings, and it is a construction which is readily taken apart for cleaning or examination, it being only necessary to remove the elbow-lever *h*, whereupon the plunger may be withdrawn.

I am aware that valves of various kinds have been provided with channels in the wall thereof whereby their plungers might be counterbalanced, and I am also aware that drainage-ducts have been applied to valve-bodies for the purpose of keeping certain cavities therein clear of water; but the channel *q*, herein described, does not serve for either of these purposes and is so arranged that when the valve is open the flow of water will be transversely of one end thereof, whereby (the other end of the channel being practically

open) air will be aspirated through said channel in the direction of the valve.

Having thus described my invention, what I claim, and desire to secure by Letters Patent of the United States, is—

1. A float-valve, comprising an open-ended casing having a straight cylindrical bore formed at one end with a valve-seat, said casing being further provided with an intermediate outlet, and with a separate suction-passage in communication with the bore contiguous to the valve-seat and at a point between one open end and the outlet, a packingless float-operated plunger arranged within the bore and provided at one end with a valve, and at the opposite end portion with a head loosely fitting the open end of the casing.

2. A float-valve, comprising an open-ended

casing having a straight cylindrical bore formed at one end with a valve-seat, said casing being further provided with an intermediate outlet, and with a separate longitudinal suction-passage paralleling the bore and in communication with the latter contiguous to the valve-seat and also at a point between one open end and the outlet, and a packingless float-operated plunger arranged within the bore and provided at one end with a valve, and at its opposite end portion with a pair of spaced heads both located at one side of the plane of the outlet.

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Witnesses:

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