

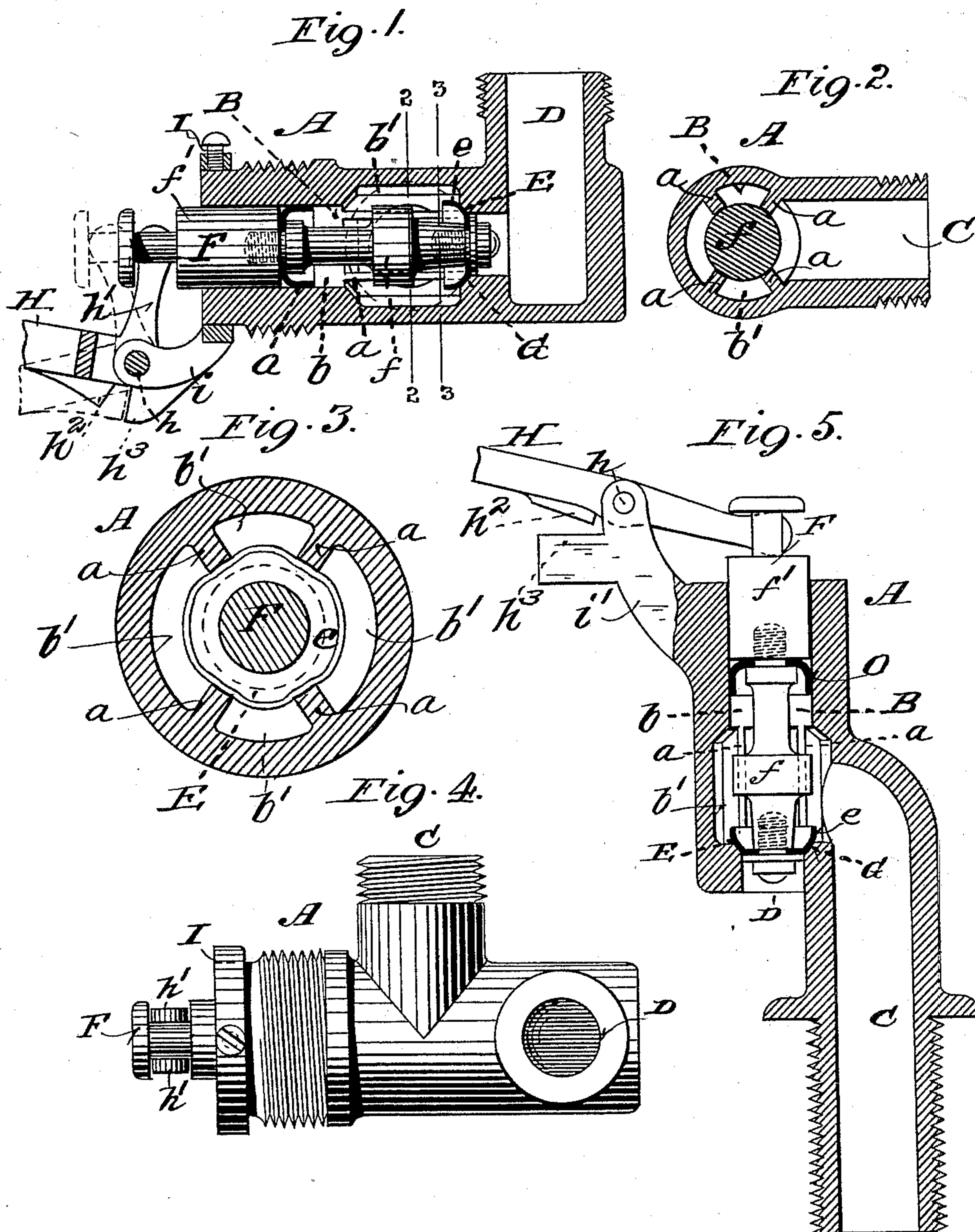
(No Model.)

J. VOSBURGH.

VALVE FOR WATER CLOSETS OR OTHER CONSTRUCTIONS.

No. 453,069.

Patented May 26, 1891.



WITNESSES:  
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# UNITED STATES PATENT OFFICE.

JACOB VOSBURGH, OF ST. LOUIS, MISSOURI, ASSIGNOR TO THE N. O. NELSON MANUFACTURING COMPANY, OF SAME PLACE.

## VALVE FOR WATER-CLOSETS OR OTHER CONSTRUCTIONS.

SPECIFICATION forming part of Letters Patent No. 453,069, dated May 26, 1891.

Application filed January 23, 1891. Serial No. 378,765. (No model.)

*To all whom it may concern:*

Be it known that I, JACOB VOSBURGH, of St. Louis, Missouri, have made a new and useful Improvement in Valves for Water-Closets or other Constructions, of which the following is a full, clear, and exact description.

The present valve can be used as a horizontally-arranged valve, as indicated in Figures 1, 2, 3, and 4, or as a vertically-arranged one, as indicated in Fig. 5.

The improvement relates more especially to the main valve and the parts more directly therewith associated, substantially as is hereinafter set forth and claimed, aided by the annexed drawings, making part of this specification, in which—

Fig. 1 is a view showing the casing in longitudinal section, the main valve, and the packing-valve in section, and the valve-stem in side elevation, and the parts as when the main valve is seated; Fig. 2, a cross-section on the line 2 2 of Fig. 1; Fig. 3, a cross-section on the line 3 3 of Fig. 1. The view is on a larger scale than that of Fig. 2 and is in the opposite direction therefrom—that is, toward the main valve. Fig. 4 is a side elevation of the improved construction, and Fig. 5 a vertical sectional view of a vertically-arranged construction having the improvement.

The same letters of reference denote the same parts.

A represents the casing which incloses the valve-chamber B and the parts therein working. The water is admitted to the valve-chamber through the inlet C and is discharged therefrom through the outlet D. The main valve E is in the form of a cup-leather, is attached to the valve-stem F, and seats at G. Instead, however, as in previous constructions, of adapting the seat for the valve to work through it, the seat is made conical, and the valve E coacts therewith in manner similar to that of a conical valve, saving that the valve-flange *e*, when the valve is seated, is adapted to expand somewhat by reason of the water-pressure, (which is in the direction of the seating of the valve,) and thereby cause the valve to be sufficiently out of balance to incline it to seat, and when seated to hold it to its seat. Said expanded portion or portions of the main valve are in

practice slightly larger in diameter than that of the main portion *b* of the valve-chamber. This comes about in the following manner: The valve-chamber on the inlet side of the valve-seat is enlarged, substantially as shown at *b'*. The enlargement, however, does not extend continuously around the valve-chamber, but is interrupted by ribs *a a a a*, which in practice are integral with the casing, and which extend longitudinally in the valve-chamber and project radially inward therein to meet the plane of the main portion *b* of the valve-chamber. This enlargement enables the water entering through the inlet C to pass entirely around the valve-stem, so as to bear evenly upon the main valve, and the ribs perform a double function. They serve to guide the inner portion of the valve-stem in its movement, to which end the valve-stem is provided with a suitable flange *f*, whose diameter is fitted to that of the main portion of the valve-chamber, and they also serve to prevent the valve-flange from being too much expanded and flattened—that is, the valve-flange can expand slightly at points between the ribs, as indicated in Fig. 3, but opposite the ribs it is kept from expanding. The flange *f* is intended for a guide only, and it is sufficiently removed from the main valve to enable the water-pressure to act freely, as described, upon the valve-flange. The valve-stem toward its outer end is enlarged, substantially as shown at *f'*, to fit the diameter of the main portion of the valve-chamber, and thereby provide for guiding the valve-stem at its outer end. The valve-stem is provided with a suitable cup-leather valve O to prevent leakage past the outer portion of the valve-stem.

H represents the usual float-lever. It is pivoted at *h* to the extension *i* of the ring I upon the casing, and by means of its arms *h'* *h'* it engages with the valve-stem to operate it, as indicated by the broken lines in Fig. 1.

Any suitable means may be employed for enabling the float-lever to operate the valve-stem in the ordinary manner.

In Fig. 5 the pivot *h* is in an extension *i'*, which is part of the casing. In this last-referred-to construction the inlet and outlet to and from the valve are modified, as shown.

An additional feature of the construction



is the provision for arresting the fall of the float-lever, and with it the outward movement of the valve-stem, so that the valve shall not be displaced from the valve-chamber by reason of the water-pressure. This is accomplished preferably in the following manner: The float-lever is provided with a shoulder  $h^2$ , which, when the float-lever has turned downward upon its pivot to bring the valve-stem to its proper outward limit, encounters a fixed shoulder  $h^3$ , which in turn may be supported from any part of the construction.

Several advantages accrue from the present improvement. The valve is nearly balanced. The valve-stem, with all the parts thereto attached, by detaching the float-lever, can be withdrawn from the casing. The valve is guided perfectly in its movement, and when seated is thoroughly tight, and the construction generally is of a simple nature and capable of being readily and economically produced.

I claim—

1. The combination of the casing having the inlet and outlet, the valve-seat, and the valve-chamber enlarged and provided with the ribs

extending longitudinally and radially, as described, with the valve-stem provided with the main cup-leather valve, the flange  $f$ , the enlargement  $f'$ , and the cup-leather for preventing leakage past the outer portion of the valve-stem, said flange being fitted to said ribs and being spaced apart from said main valve, substantially as described.

2. The combination of the casing having the inlet and outlet, as described, the valve-seat, the valve-chamber enlarged and provided with the ribs extending longitudinally and radially, as described, the valve-stem provided with the main cup-leather valve, flange  $f$ , the enlargement  $f'$ , and the cup-leather for preventing leakage past the outer portion of the valve-stem, and the pivoted float-lever, the downward movement of said float-lever being arrested, as and for the purpose described.

Witness my hand this 17th day of January, 1891.

JACOB VOSBURGH.

Witnesses:

C. D. MOODY,  
B. F. KEY.