# H. P. M. Birkinbine

## Pump Valve.

No. 53,396. Patented Mar. 27, 1866.

Fig: 1.

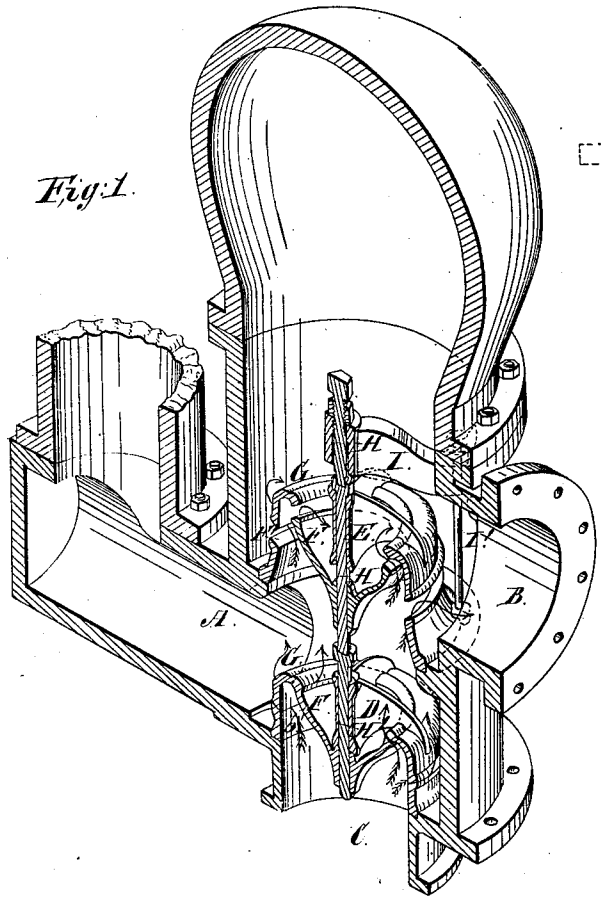



Fig: 2.

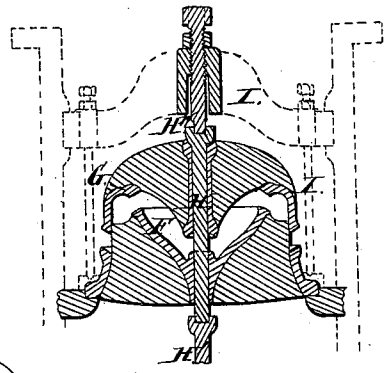
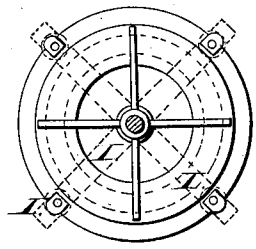



Fig: 3.




Witnesses:
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by
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# UNITED STATES PATENT OFFICE.

HENRY P. M. BIRKINBINE, OF PHILADELPHIA, PENNSYLVANIA.

## IMPROVEMENT IN VALVES FOR PUMPS.

Specification forming part of Letters Patent No. **53,396**, dated March 27, 1866.

*To all whom it may concern:*

Be it known that I, HENRY P. M. BIRKINBINE, of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful improvements in the construction particularly applicable to force-pumps of great capacity, as those used in water-works; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, made part of this specification, in which—

Figure 1 is an isometrical projection of a section of the pump. Fig. 2 is a section of a valve. Fig. 3 is a top view of the valve, showing also, in dotted lines, the yoke.

The water is drawn by the plunger working in the opening A through the induction C, and discharged through the eduction B.

D and E are the lower and upper valves. F F are the valve-seats, constructed with an exterior ring, F′, and interior cup, F, on the upper faces of both of which the valves are seated, the two being united by webs, as shown in Fig. 2, the whole constituting a double valve-seat.

G G are the valves, which in Fig. 1 are represented as closed in the lower and open in the upper valves. The sides of these valves have such a shape as that they also have two faces corresponding with those upon the valve-seats. These valves are suspended by webs in the same manner as are the parts F of the valve-seats. When the valve is open the water passes through the opening around the base of the valve, and also through the open central portion between the webs, as shown by the arrows in the drawings.

Through the centers of the valve seats and the valves pass the stems H, H′, and H″, standing one upon the other, and having on their upper extremities rounded heads, as shown, against the under side of which the valves strike in operating, the whole being confined and kept in place by the yoke I, through which H″ is passed, by a screw, and held in place by a jam-nut. The arms of the yoke are supported against the cylinder and rest upon legs I′, standing upon the upper valve-seat.

The upper and lower extremities of the central sleeve of the valves are formed into cups, resting upon rounded projections in the bottom of the parts F of the valve-seats below and fitting into the rounded heads of the stems above. These cups are intended to form water-cushions to relieve the valve-seats from the destructive effect of the concussion of the valve. In large pumps these valves weigh several thousands of pounds and would soon destroy the joints if permitted to fall directly upon the seats; but the water in these cups intervening, the motion of the valve is checked, and as the water is forced from the cup the valve rests without shock upon its seat.

Having fully explained the construction and operation of my improved pump, what I claim as my invention, and desire to secure by Letters Patent, is—

1. The valves and valve-seats of a pump so constructed as to form a water-cushion, substantially in the manner and for the purpose set forth.

2. The combination of the double-faced valve F F′ with the valve G, having cups for forming a water-cushion, the whole being constructed and arranged substantially as and for the purposes set forth.

3. The arrangement of the valve G, seats F, stems H H′ H″, and yoke I, all constructed and combined substantially as and for the purposes set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

HENRY P. M. BIRKINBINE.

Witnesses:

A. H. O'BRIEN,

EDWARD HATCH.