

M.C. Stebbins,

Pump Piston,

No 83,739,

Patented Nov. 3, 1868.

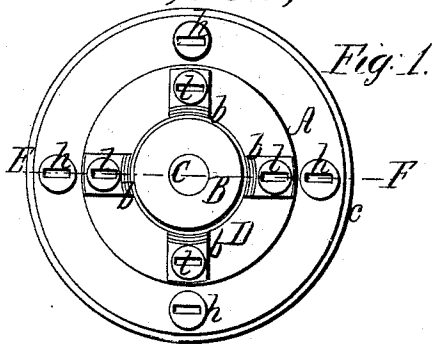


Fig. 1.

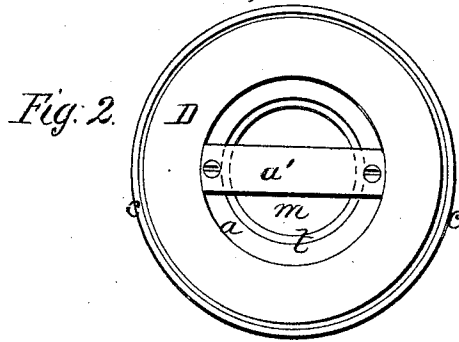


Fig. 2.

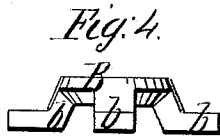


Fig. 4.

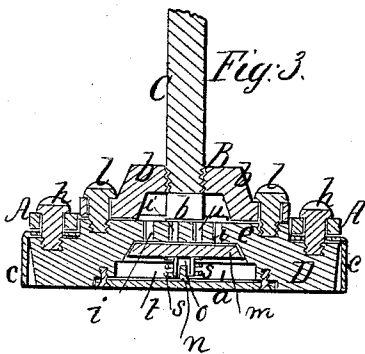


Fig. 3.

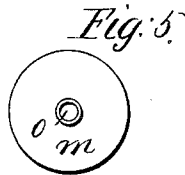


Fig. 5.

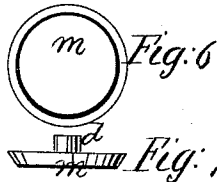


Fig. 6.

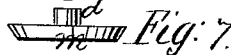


Fig. 7.

Fig. 8.

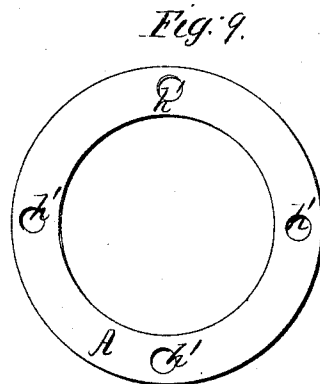
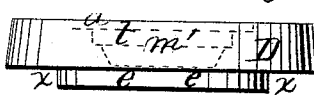


Fig. 9.

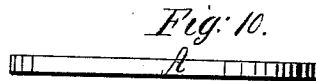


Fig. 10.

Fig. 12.

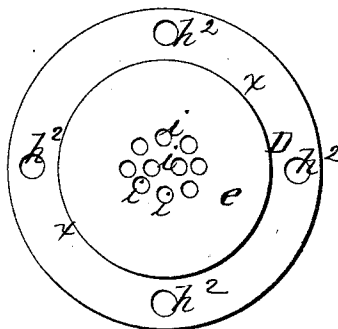
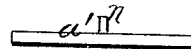


Fig. 11.



Witnesses;

T. A. Leventis
E. E. Rice

Inventor;

M. C. Stebbins

United States Patent Office.

M. C. STEBBINS, OF SPRINGFIELD, MASSACHUSETTS.

Letters Patent No. 83,739, dated November 3, 1868.

IMPROVEMENT IN PISTON-VALVES.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, M. C. STEBBINS, of Springfield, in the county of Hampden, and State of Massachusetts, have invented a new and useful Improved Piston-Valve; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, and to the letters of reference marked thereon, in which—

Figure 1 is a plan view of the valve;
Figure 2 is a reverse plan view of the same;
Figure 3 is a vertical section through line E F of fig 1;
Figure 4 is a side elevation of the spider;
Figure 5 is a plan view of the valve-disk;
Figure 6 is a reverse plan view of the same;
Figure 7 is a side elevation of the same;
Figure 8 is a side elevation of the follower, having the valve-seat therein;
Figure 9 is a plan view of the packing-ring;
Figure 10 is a side elevation of the same;
Figure 11 is a side elevation of the disk-guard plate; and
Figure 12 is a plan view of the follower.

My invention consists in the arrangement and construction of a valve with a guide and spring, whereby said valve may be kept more properly in its place, and perform its functions more regularly and perfectly than is the case with those now in use.

That others skilled in the art may be able to make and use my invention, I will proceed to describe its construction and mode of operation.

In the drawings, D represents the follower, or solid portion of the piston, both sides of which are made plane or flat, one side, however, having thereon the circular central projection *e*; and the other, or opposite side, having a circular portion cut away, for the insertion of the valve with its attachments. Into the first circular space, *a*, made by cutting away such circular portion of the piece D, is placed the bar *a'*, being secured in place by means of screws, or in any other suitable manner.

The chamber *m'* is also made in the follower D, the circumference of which chamber is bevelled, or is made at an angle of less than ninety degrees to its base, the outer diameter of said chamber being greater than its inner diameter, and a space, *t*, is left in the follower, that the valve-disk *m* may have sufficient room to move when in practical operation.

Perforations, *i i*, are made from the chamber *m'* through the part *e*, and to the outside of the said part *e* is secured, by means of screws, or in any other proper manner, the spider B, having any desired number of projections or legs, *b b*, having holes therein through which to pass the screws or bolts *l l*, to secure it in place upon the follower D.

Around the central projection *e* is an annular space, *x*, into which is placed suitable packing, as leather, a hole being first cut therein, through which protrudes

the projection *e*, said packing being also cut sufficiently large to be bent down all around the follower D, at *c*. The packing-ring A, which may be of sufficient thickness and strength to secure the packing in place, is then placed on the follower D, in the annular space *x*, and over the leather packing, and is secured in place by means of the screws *h h*.

The valve-disk *m* is a circular piece of metal, made in the form of a truncated cone, its tapered or bevelled periphery fitting closely the periphery of the chambers *m'*, and upon the base of the disk *m* is the projection *d*, which may be cylindrical in form.

This projection *d* has a chamber, *o*, therein, into which is inserted the small projection or pin *n*, upon the bar *a'*, a small spiral spring, *s*, being first placed upon the projection *d*, upon the disk *m*. A threaded hole is made in the circular portion of the spider B, into which is turned the rod C, having a screw-thread cut thereon, by which to move the valve to and fro in the cylinder.

Having thus described its construction, I will now proceed to describe its mode of operation.

The spider B being properly attached to the follower D, the disk *m* is inserted in its chamber, *m'*, the spiral spring *s* placed over the projection *d*, upon the disk *m*, and the bar *a'*, with the projection *n* thereon, inserted in the chamber *o*, in the said projection *d*, is then secured to the follower D, outside the disk *m*, by screws or otherwise. The packing *c* being secured around the follower D by means of the ring A, the valve, if it is to be used in an air-condenser, is inserted in the cylinder, fitting snugly therein, a similar valve, but without any rod C, being first inserted in the cylinder, near the bottom, and firmly secured, both valves, if used in an air-condenser, being placed in the cylinder with the disk *m* downwards.

If, now, the piston, or valve, as I prefer to denominate the whole as arranged, be down, and it be drawn upward, the lower valve, remaining stationary with reference to its position in the cylinder, a vacuum is formed between the two valves, by drawing up the upper one, and the disk *m* of the lower valve is closed, or is forced upward against its bevelled seat in the chamber *m'*. The air is thus prevented from passing up through the lower valve into the cylinder, and enters the cylinder through apertures in the upper part of said cylinder, made for that purpose, passes down through the apertures *i i*, in the valve, and, pressing upon the disk *m*, forces it away from its seat, *m'*, and enters the cylinder between the valves, through the space around the disk *m*, between it and its seat. This continues as long as the valve is drawn upward. When the upper valve is forced downward, the pressure of the air between the valves forces the disk *m* of the upper valve upward against its tapered seat, thus closing that valve, and preventing the exit of the air in that direction. The disk *m*, of the lower valve, is consequently forced downward, away from its seat, which opens the passage

through said lower valve, and the air is then free to pass out. The small protuberance or projection *n*, upon the bar *a'*, which is inserted into the chamber *o*, of the projection *d*, serves to keep the disk *m* always in a position to be forced directly to its seat, without tilting, and the small spiral spring *s* assists in keeping the disk always against its seat.

I am aware that various devices have been used, in which a puppet-valve or disk is shown, and I do not claim said devices, or any part of them, when considered irrespective of my particular arrangement and construction, the object and design of my invention being solely to insure a more certain and perfect working of the disk, by means of the chambered guide and spring, as herein described.

Having therefore described my invention,

What I do claim as new, and desire to secure by Letters Patent, is—

The combination and arrangement of the piston *D*, having the bevelled seat or chamber *m'* therein, the disk *m* having the chambered projection *d* thereon, with its spring, *s*, and the bar *a'*, with the projection *n* thereon, operating within said chambered projection *d*, the whole constituting an improved piston-valve, and constructed and operating substantially as herein described and set forth.

M. C. STEBBINS.

Witnesses:

T. A. CURTIS,
F. E. RICE.