

A. J. SIMMONS.

Valves for Steam and Vacuum Pumps.

No. 141,599.

Patented August 5, 1873.

Fig 1

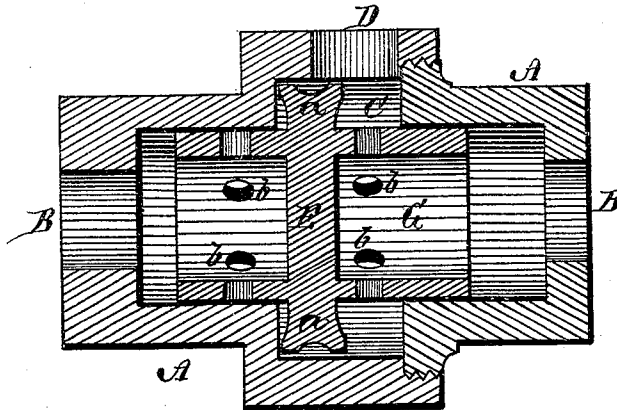


Fig 2

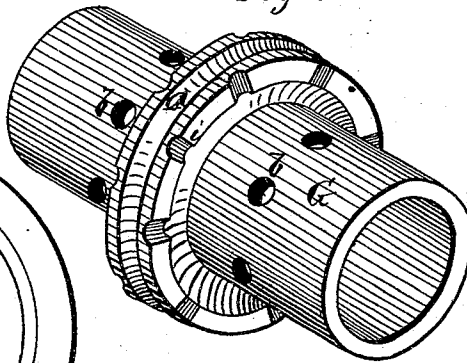
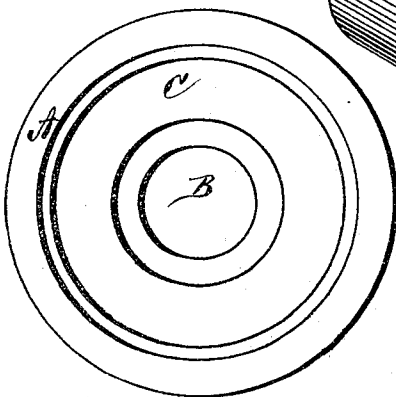


Fig 3



Witnesses:

Frank L. Curand
C. L. Everett

Inventor.

Alonzo D. Simmons
Per Alexander Mason

Attorneys.

A. J. SIMMONS.

Valves for Steam and Vacuum Pumps.

No. 141,599.

Patented August 5, 1873.

Fig 4

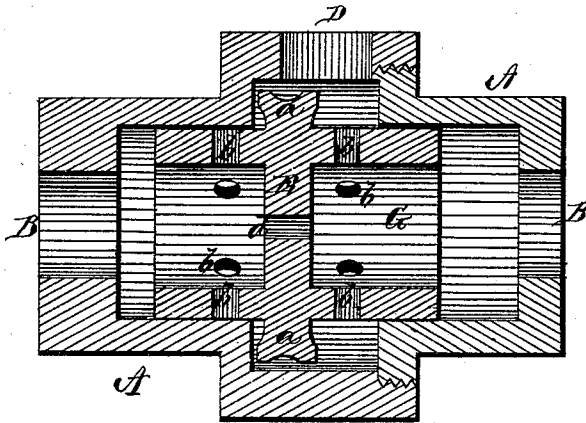
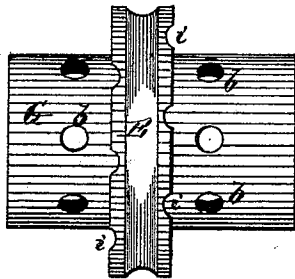


Fig 5



Witnesses:

Frank L. Curand

C. L. Ewert

Inventor.

Alonzo J. Simmons

per Alexander Watson

Attorneys.

UNITED STATES PATENT OFFICE.

ALONZO J. SIMMONS, OF INDIANAPOLIS, INDIANA.

IMPROVEMENT IN VALVES FOR STEAM AND VACUUM PUMPS.

Specification forming part of Letters Patent No. **141,599**, dated August 5, 1873; application filed May 10, 1873.

To all whom it may concern:

Be it known that I, ALONZO J. SIMMONS, of Indianapolis, in the county of Marion and in the State of Indiana, have invented certain new and useful Improvements in Steam-Pumps; and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings and to the letters of reference marked thereon making a part of this specification.

The nature of my invention consists in the construction and arrangement of an automatic balanced slide-valve for steam-pumps, to be used either as a receiving or as a discharge valve, as will be hereinafter more fully set forth.

In order to enable others skilled in the art to which my invention appertains to make and use the same, I will now proceed to describe its construction and operation, referring to the annexed drawings, in which—

Figure 1 is a longitudinal section of my valve and casing when used as a receiving-valve. Fig. 2 is a perspective view of the valve, and Fig. 3 is an inside view of the casing. Fig. 4 is a longitudinal section of the valve and casing, showing its construction when used as a discharge-valve; and Fig. 5 is a side view of the valve.

A represents the valve-casing, made in tubular or cylindrical form, with an opening, B, at each end. At the center of the casing A is an enlargement or chamber, C, with an opening, D, on one side, as shown. G represents the valve, made in cylindrical form, open at both ends, and with a central head or partition, E, as seen in Figs. 1 and 4. Around the center of the valve G is a projecting flange, *a*, which passes into the enlarged chamber C of the valve-casing, the valve fitting steam and water tight in the casing, as shown. The casing is made in two parts, as shown, and screwed or otherwise firmly united together after the valve has been inserted. At equal distances from the center head E of the valve G, on both sides, are made a number of holes or apertures, *b b*, of any suitable form and shape.

My valve is intended to be employed with any of the well-known double-cylinder vacuum-pumps.

When this valve is used as a steam or receiving valve in steam-pumps the head E is to be solid, as shown in Fig. 1; but when used as the hydraulic or discharge valve an aperture, *d*, is made in the center of said head, as shown in Fig. 4.

When used as a steam or receiving-valve the steam enters through the port D and through the apertures *b* on one side of the central head E, through the valve, and through the port B at that end of the casing, to one cylinder; and as soon as the water in this cylinder has been forced out by the pressure of the steam the pressure from the other cylinder will throw the valve over endwise, so as to close those apertures *b* through which the steam was entering and open the corresponding ones on the other side of the central head E, and cause the steam to pass through the same and through the aperture at the other end of the casing to the other cylinder, and force the water in the same out, when the valve is in like manner thrown back again; and so on, it is thrown alternately back and forth automatically as soon as each cylinder is emptied.

When used as a hydraulic or discharging valve the water enters from the cylinders through the ports B B, passes through the ports *b b*, and out at D, the valve moving automatically in the same manner and at the same time as the steam or receiving valve, the aperture *d* in the central head E allowing sufficient water to pass through from one cylinder to the other at the proper time to cause the steam or receiving valve to be moved, as above described. When the water in one cylinder has been forced out by the steam a sufficient quantity of water is admitted from the other cylinder through the opening *d* to condense the steam, and the pressure in the full cylinder overbalancing that in the just emptied cylinder the steam or receiving valve is instantaneously thrown over to the other side, and so on alternately from one side to the other as soon as either cylinder becomes emptied.

It will readily be seen that this valve is always perfectly balanced, so that there is no friction of any consequence to overcome.

The flange *a* on the valve, working in the enlarged chamber C, acts as a stop to the

movement of the valve; but I may dispense with said flange, and let the ends of the valve form the stops against the ends of the casing.

The flange *a* is grooved circumferentially, as shown, and on each side are small apertures or notches *i i*, to allow the steam to pass into said groove and equalize the pressure.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

The cylindrical casing *A* having end ports *B B* and side port *D*, and the cylindrical valve

G having ports *b b*, and enlarged central head *E* in chamber *C*, with or without the aperture, constructed substantially as and for the purposes herein set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 9th day of May, 1873.

ALONZO J. SIMMONS.

Witnesses:

C. L. EVERT,
A. N. MARR.