Coates & Lascell,

Oscillating Valve.

No. 111,908. Patented Feb. 21, 1871.

Fig. 1

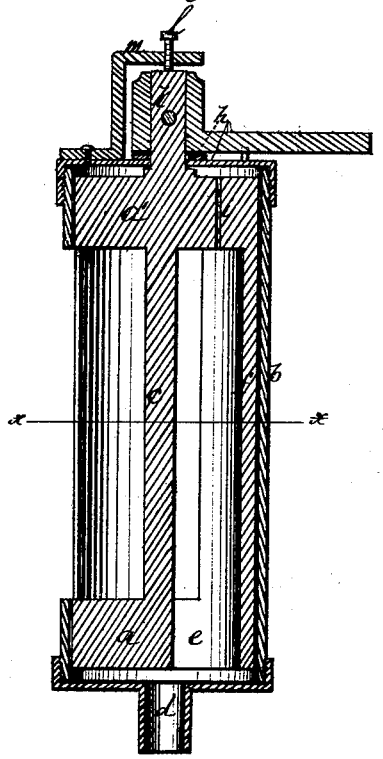
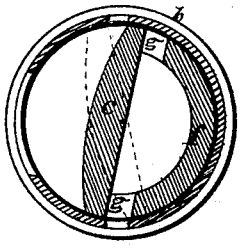


Fig. 2.



Witnesses.
H. J. Stretz
C. C. Brown

A. Coates. G. W. Lascell.
by Geo. E. Brown.
their Attorney.

United States Patent Office.

ABRAHAM COATES, OF WATERTOWN, AND GEORGE W. LASCELL, OF SYRACUSE, NEW YORK.

Letters Patent No. 111,908, dated February 21, 1871.

IMPROVEMENT IN VALVES FOR WATER-ENGINES.

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

We, ABRAHAM COATES, of Watertown, Jefferson county, and GEORGE W. LASCELL, of Syracuse, Onondaga county, New York, have invented certain Improvements in Valves for Water-Engines, of which the following is a specification.

Figure 1 is a longitudinal, and

Figure 2 a transverse vertical section.

This invention differs essentially from the valve for which Letters Patent, dated December 14, 1869, were issued to Abraham Coates, which valve is constructed with parallel transverse disks at its ends, and, connecting said disks, a flat plate and two bars running lengthwise of the valve and parallel with each other, the induction-port of the valve being the opening along its side between the two bars, and the eduction-ports being the openings along its side between the bars and the flat plate.

The object of this invention is to locate the induction-port of the valve at one end, in one of the aforesaid transverse disks, where the port may communicate with an orifice formed lengthwise of one of the trunnions of the valve-chest, this being a more convenient way of introducing water than to form an orifice in the side of the valve-chest, and, moreover, enabling the valve to be constructed so as to better resist the pressure to which it is subject from the water it receives.

Referring to the drawing—

a a' are the transverse disks at the end of the valve, which disks are large enough to fit closely the interior of the valve-chest *b*.

c is the flat plate that connects the disks *a*.

d is the hollow trunnion of the valve-chest, through which water is admitted to its interior.

e is the transverse opening in the disk *a*, that forms the induction-port of the valve.

f is a plate, curved in cross-section, convex outside and concave inside, and flush with the perimeters of the disks, which it connects, being itself parallel with the plate *c*, openings *g* being left between the plates *c* and *f*, at each side, large enough to form the eduction-ports of the valve.

The Coates valve, above referred to, has no part corresponding more nearly to the plate *f* than the two parallel bars placed at an interval from each other, the office of which is to take upon themselves a portion of the strain to which the water subjects the valve.

It is obvious that the plate *f*, diffusing the pressure over a greater area than that of the bars, and also strengthening the valve more, does, consequently, in two ways, increase its resisting capacity. This construction gives a balanced valve so far as the plates *c f* are concerned.

But the disk *a'* receives an end pressure for which there is no compensation at the other end of the valve. Accordingly, an orifice, *i*, is made through the disk *a*, by which the water gains access to the back of the disk and thus balances it.

A packing, *h*, is placed around the base of the valve-stem *k* to prevent leakage through the orifice by which the stem passes through the head of the valve-chest. If, however, leakage notwithstanding occurs, the orifice *i* may be plugged up, thus causing the disk to be pressed against the packing, the force of which pressure may be regulated by a set-screw, *l*, passing through an arm, *m*, that extends from the head of the valve-chest, said set-screw bearing on the end of the valve-stem.

We claim as our invention—

The arrangement of the disk *a* having the transverse opening *e* that forms the induction-port, the disk *a'* having the transverse orifice *i'*, the flat plate *c*, and the concavo-convex plate *f*, as described.

ABRM. COATES.
GEO. W. LASCELL.

Witnesses:
JOHN HASE,
S. FLOYD HOARD.