W. HADDOCK.

Oscillating-Valve for Steam-Engines.

No. 163,651 Patented May 25, 1875.

Fig. 1.

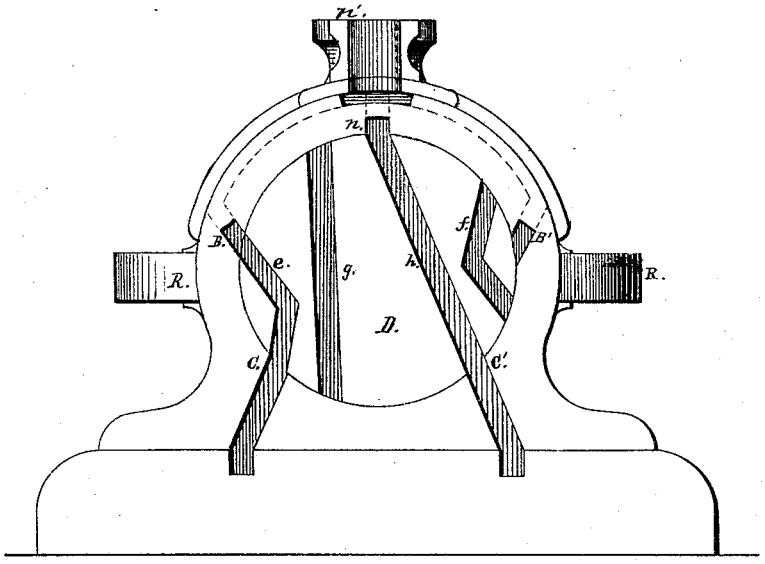
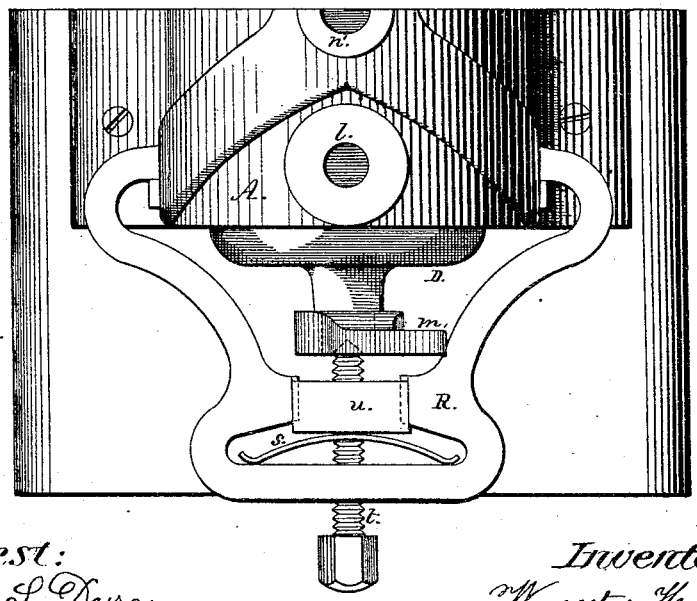


Fig. 2.



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UNITED STATES PATENT OFFICE.

WORCSTER HADDOCK, OF PITTSBURG, PENNSYLVANIA.

IMPROVEMENT IN OSCILLATING VALVES FOR STEAM-ENGINES.

Specification forming part of Letters Patent No. **163,651**, dated May 25, 1875; application filed March 24, 1874.

To all whom it may concern:

Be it known that I, WORCSTER HADDOCK, of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a certain new and useful Improvement in Valves for Steam-Enginery; and I 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.

My invention relates to an improvement in valves for enginery; and consists in a valve-case and valve furnished with a series of openings for supplying steam to, and exhausting it from, the cylinder of the engine in any desired quantity, in combination with a device for holding the valve to its seat, and for adjusting it in case of wear.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

In the accompanying drawings, which form part of my specification, Figure 1 is a vertical and transverse section of the valve-case and valve. Fig. 2 is a top view or plan of the same.

In the accompanying drawings, A represents the valve-case, which is provided with three supply-openings, *n* C C′, and two exhaust-openings, B B′. The valve D is cylindrical and slightly tapering, and is furnished with two supply-openings, *g h*, and two exhaust-openings, *e* and *f*. The valve D is held in its case through the medium of a bridle, R, furnished with a sliding nut, *u*, which is pressed toward the valve D by a spring, *s*. The nut *u* is furnished with screw-threads adapted to the screw-threads of the set-screw *t*, the point of which is conical and fits in a countersunk recess in the outer end of the valve D. By this arrangement of the bridle, nut, set-screw, and spring, the valve D is held to its seat, and can be adjusted in case of wear, and they also compensate for any undue motion tending to undue friction of the valve D by the mechanism used for rotating it. To the outer end of the valve D is secured a lever, *m*, to which is attached the cam-rod or other device for giving to the valve D a rotary reciprocating motion, which may be so arranged as to open the several ports to their full capacity, or any desired degree less than their whole capacity. The supply-openings C and C′ communicate with the cylinder of the engine. The steam-supply pipe is attached to the valve-case at *l*, and the exhaust-pipe is attached to the case at *n′*.

When the valve D is in the position represented in Fig. 1, steam is passing into one end of the cylinder through the openings *n*, *h*, and C′, and steam is being exhausted from the other end of the cylinder through the openings C, *e*, and B. By rotating the valve D so that the upper end of the opening *g* is opposite to the opening *n*, then the valve will be supplying steam through the openings *n*, *g*, and C, and exhausting it through the openings C′, *f*, and B.

Having thus described my improvement, what I claim as of my invention is—.

The case A and coniform valve D, provided with openings, as shown, in combination with the detachable bridle R, screw *t*, nut *u*, and spring *s*, when arranged and operating substantially as herein shown and described.

WORCSTER HADDOCK.

Witnesses:
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