R. H. D. MORRISON.

Oscillating-Valves for Steam-Engines.

No. 198,916. Patented Jan. 1, 1878.

Fig 1

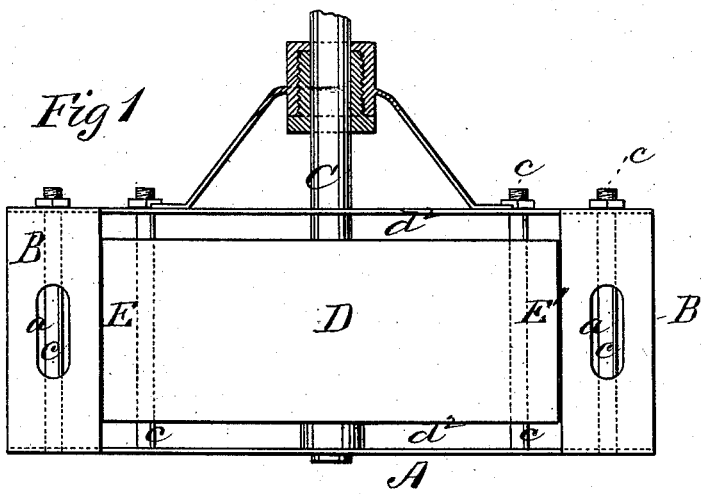
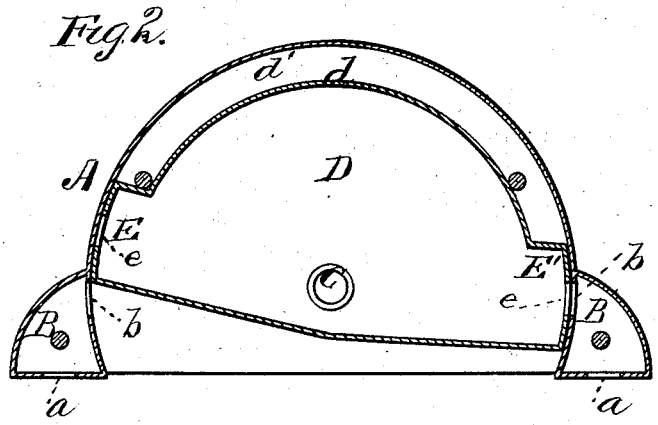


Fig 2.



WITNESSES

M. F. Utley.

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INVENTOR

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ROBERT H. D. MORRISON, OF WINONA, MINNESOTA, ASSIGNOR OF ONE-HALF HIS RIGHT TO JOHN B. KIRCH, OF SAME PLACE.

IMPROVEMENT IN OSCILLATING VALVES FOR STEAM-ENGINES.

Specification forming part of Letters Patent No. **198,916**, dated January 1, 1878; application filed June 5, 1877.

To all whom it may concern:

Be it known that I, ROBERT H. D. MORRISON, of Winona, in the county of Winona and State of Minnesota, have invented a new and valuable Improvement in Oscillating Valves for Steam-Engines; and do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawings is a representation of a bottom view of my improved valve; and Fig. 2 is a longitudinal section thereof.

This invention has for its object the improvement of oscillating valves for steam-engines.

The object of my invention is mainly to reduce the friction of the valve against its casing-walls, and to prevent the condensation of steam within the valve.

The nature of my invention consists in combining, with a balanced hollow valve and its casing, a chamber around said valve, a hollow shaft upon which the latter oscillates and through which steam is delivered to said valve, suitable ports in the side of the casing or chest, and other ports connecting the valve and the said ports, all as hereinafter shown and described.

In the annexed drawings, the letter A designates a semi-cylindrical metallic chest, that is provided upon its ends with hollow enlargements B, each provided with an upper port, *a*, leading into the cylinder, and a side port, *b*, opening from said enlargement into the interior of said box. This case or box is composed of two sections, that are clamped together by suitable bolts *c*, or any other appropriate device. Within this casing is seated and evenly balanced upon a rock-shaft, C, a hollow metallic valve, D, the edge of which is curved concentrically with the bottom of the casing, as shown at *d*, leaving an unoccupied space, d^1, that, with similar spaces d^2 at each side of the valve, forms a chamber that surrounds nearly the entire surface of said valve. E E′ represent metallic offsets that are tubular, and form, with the upper portion of the curved wall of the chest, a steam-tight joint. These offsets are diametrically opposite each other, and their curved end walls accurately conform to the curvature of the adjacent walls of the box A aforesaid. I, however, employ a suitable packing, in order to remedy any defect in the joint. The end walls of these offsets are each provided with a port, *e*, of the same general shape as the ports *b*, that register alternately with the said ports and admit or cut off steam from the cylinder.

When steam is being admitted through the hollow shaft C and the valve into one end of the cylinder, steam from the other end of the cylinder will be exhausted through the other set of ports *a b e* into the box or chest A in the spaces around the valve, and will, to a very great extent, prevent the condensation of steam in the said valve.

A rocking motion will be imparted to the shaft through suitable connecting-rods and a crank or eccentric.

The exhaust steam from the cylinder may be let off from the chest or valve-case A into a condenser or through suitable cocks.

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

1. The combination, with the chest or box A, having enlargements B, provided with ports *a b*, of the hollow valve D, provided with offsets E E′, having ports *e*, and the tubular rock-shaft C, carrying the said valve and directing the steam into its interior, substantially as specified.

2. The valve-box A, having at its ends ports *a b*, the oscillating hollow valve, journaled in said box, and having ports *e*, and a tubular shaft admitting steam into the said valve, combined, arranged, and operating substantially as specified.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

ROBERT H. D. MORRISON.

Witnesses:
J. B. KIRCH,
JACOB SCHERFFINS.