W. M. Elrod,

Rotary Steam Engine.

No. 67,966. Patented Aug. 20, 1867.

Fig. 1.

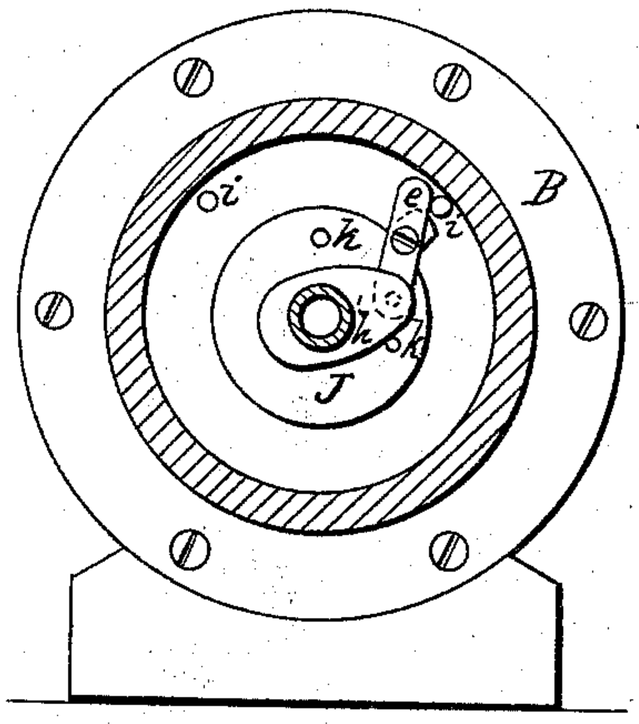


Fig. 2.

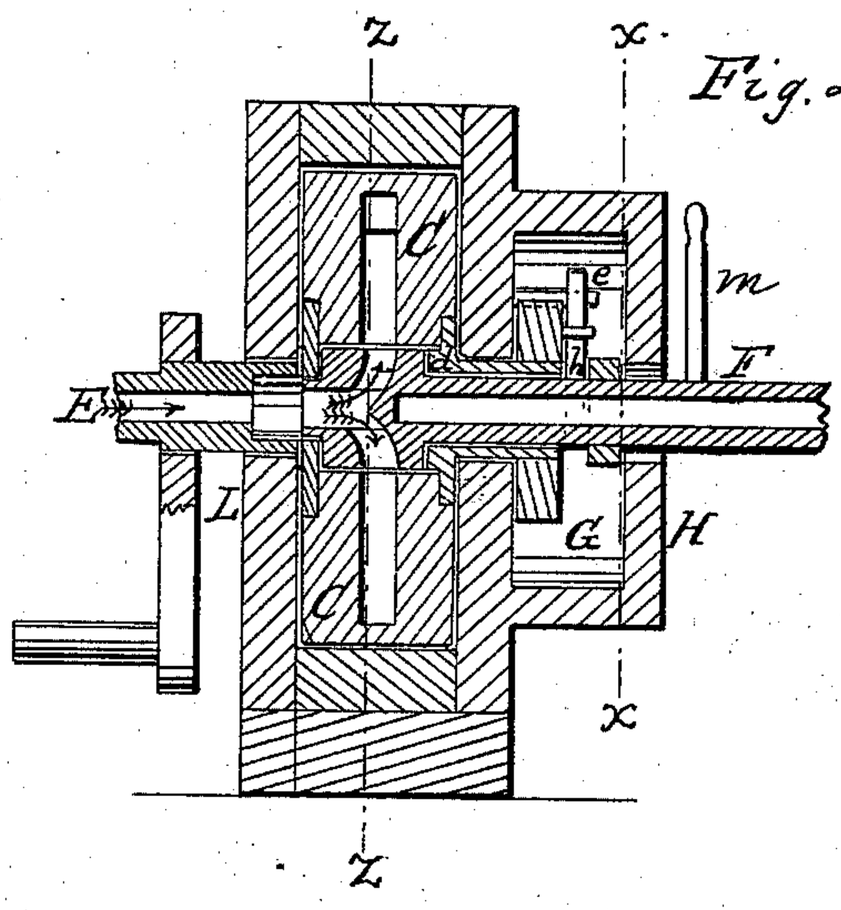


Fig. 3.

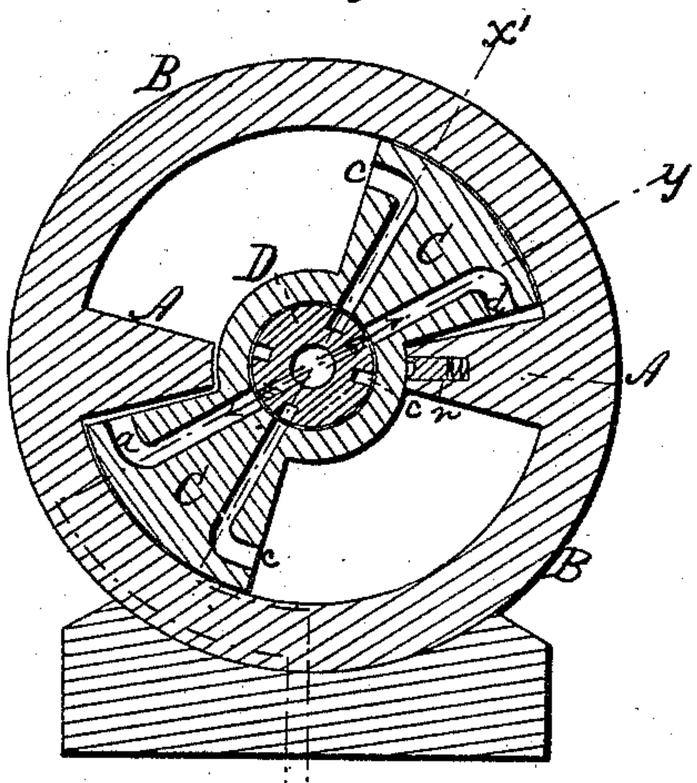
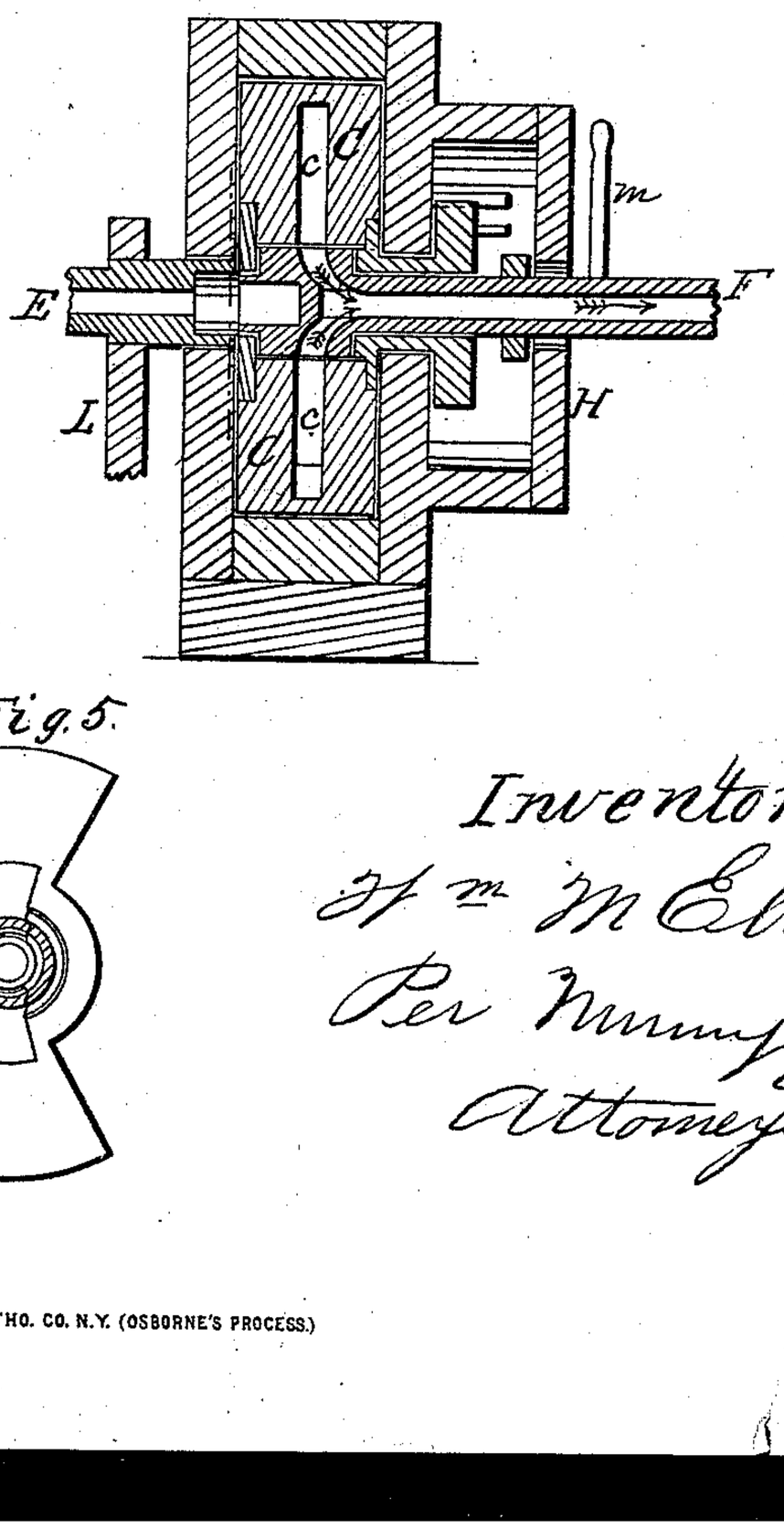


Fig. 4.



x' y

Fig. 5.

Witnesses;
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United States Patent Office.

WILLIAM M. ELROD, OF ST. LOUIS, MISSOURI, ASSIGNOR TO HIMSELF AND GEORGE L. WILLIAMS, OF THE SAME PLACE.

Letters Patent No. 67,966, *dated August* 20, 1867.

IMPROVEMENT IN OSCILLATING-PISTON ENGINES.

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, WILLIAM M. ELROD, of St. Louis, in the county of St. Louis, and State of Missouri, have invented a new and improved Oscillating-Piston Steam Engine; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification.

This invention relates to that class of steam engines known as the oscillating-piston engine, and it consists in the peculiar construction of the piston and the valve and the arrangement of the ports, together with the device for reversing the motion of the engine, as I will proceed to describe.

Figure 1 is a sectional elevation of the engine through the line *x x* of fig. 2.

Figure 2 is a cross-section of fig. 3 through the line *y y*.

Figure 3 is a vertical section of fig. 2 through the line *z z*.

Figure 4 is a section of fig. 3 through the line *x' x'*.

Figure 5 is a view of the oscillating piston.

Similar letters of reference indicate like parts.

In this engine the abutments against which the steam acts are fixed in the cylinder, and are seen in fig. 3, marked A. B is the cylinder, and C is the oscillating piston. *a a* (as the piston stands in fig. 3) are the steam-ports, which are two in number. C indicates the exhaust-ports. D is the oscillating valve. The valve is a hollow cylinder, with apertures for the steam-ports *a*, and with apertures *c* for the exhaust of the steam, as the piston is seen in fig. 3, but when the stroke is made and the position of the valve is changed for reversing the motion, *c* becomes the steam-ports and *a* the exhaust-ports. As the piston takes steam through the ports *a* it acts directly against the abutments A, and as the valve oscillates the ports *a* are made to exhaust by such oscillation. As indicated in fig. 2 the steam from the boiler enters through the hollow shaft E, and as seen in fig. 4 it is exhausted from the hollow valve-rod F. G is a chamber upon the side of the cylinder, formed by the cap H, where the reversing device is seen. *h* is an arm which is fast on the valve-rod F. J is a disk-plate, which is fast to a sleeve which passes into the cylinder, and which supports the valve-rod. This sleeve is marked *d*. *e* is an oscillating lever, which is pivoted to the disk-plate J, and which has a pin in its end which works in a slot in the arm *h*. *i i* are pins or studs, which the lever *e* strikes as the valve oscillates, thereby moving the valve and reversing the action of the engine at every oscillation. *k k* are pins in the disk J, which act as stops to govern the vibration of the arm *h*. L is the crank-lever, from which the power is taken. *m* is a vibrating lever attached to the valve-stem outside of the cylinder, by which the position of the valve can be altered or changed when desired. The centre of the piston is packed in the cylinder by a packing-plate, which is forced out of its recess by a spiral spring, as seen in figs. 3 at *n*.

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

The oscillating piston C, the hollow shaft E, the oscillating valve D, with its hollow valve-stem F, combined and arranged substantially as shown and described for the purpose of forming an oscillating-piston steam engine as set forth.

I claim the lever *m*, the disk J, the arm *h*, the lever *e*, and the pins or studs *i i* and *k k*, arranged substantially as described for the purpose of reversing the motion of the piston, as set forth.

I claim the chamber G on the side of the cylinder, substantially as shown and described.

W. M. ELROD.

Witnesses:

WM. A. SCOTT,

S. PERIT RAWLE.