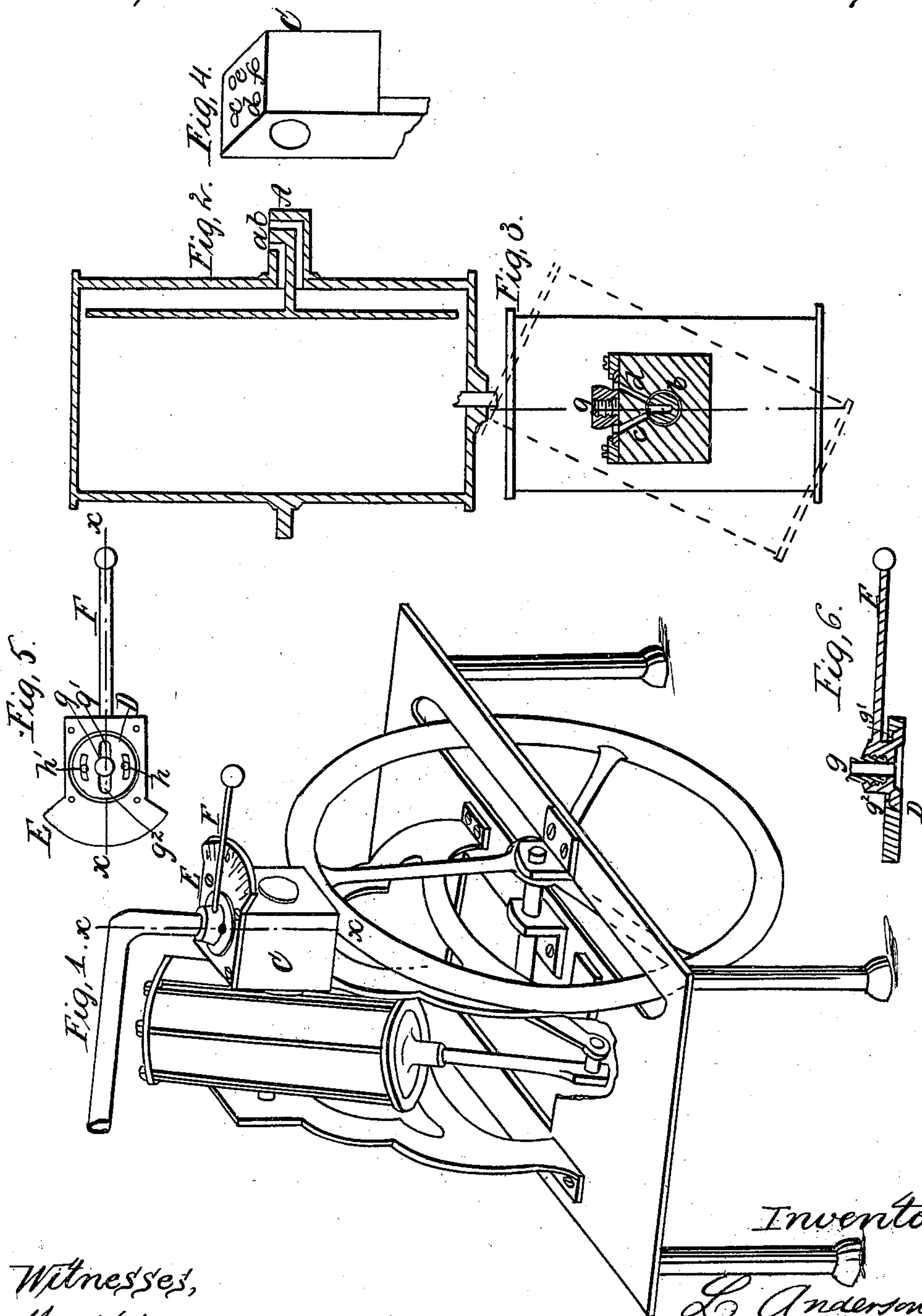


*L. Anderson.*

*Oscillating Engine.*

*N<sup>o</sup> 86,965.*

*Patented Feb. 16, 1869.*



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# United States Patent Office.

L. ANDERSEN, OF CHEBANSE, ILLINOIS.

Letters Patent No. 86,965, dated February 16, 1869.

## IMPROVEMENT IN STEAM-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, L. ANDERSEN, of Chebanse, in the county of Iroquois, and State of Illinois, have invented new and useful Improvements in Oscillating Steam-Engines; 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 improvements in oscillating steam-engines, the object of which is to simplify the construction of the same.

It consists in the arrangement of the valve and ports, as will be hereinafter described.

Figure 1 represents a perspective view of an engine provided with my improvements.

Figure 2 represents a sectional elevation of the cylinder, showing the arrangement of the ports in the trunnion.

Figure 3 represents a cross-section, taken on the line *xx* of fig. 1.

Figure 4 represents the trunnion-bearing, showing the steam-passages and the valve-seat.

Figure 5 represents a plan view of the face of the valve.

Figure 6 represents a section of the same, taken on the line *yy*.

Similar letters of reference indicate corresponding parts.

A represents the trunnion, provided with the steam-ports *a* and *b*;

C represents the trunnion-bearing, provided with the passages *c* and *d*, and *e* and *f*, through which the steam is admitted to and exhausted from the cylinder; and

D represents the valve, having the steam-receiving orifice *g*, with the lateral chambers *g*<sup>1</sup> and *g*<sup>2</sup>, and the exhaust-ports *h h'*; also, with lateral chambers

The face of the said valve works on the face of the bearing C, and is held in position thereon by the holding-plate E, in such a manner as to be oscillated freely by the lever F.

The passages for each port *a* and *b*, from the face of the bearing C to the trunnion, are intended to come as near to each other, at the junction with the trun-

nion, as the width of the ports *a* and *b*, so that they will begin to take steam as soon as the cylinder passes the perpendicular line.

When the valve stands in the position indicated in fig. 1 by the lever F, the passages will be closed, and the engine will be at rest, as the position of the chambers *g*<sup>1</sup> *g*<sup>2</sup> will be in the plane of the axis of the trunnions, and between the passages; but, when it is turned in either direction, the engine will be set in motion.

If turned to the right, communication will be opened between the chamber *g*<sup>1</sup> and *g*<sup>2</sup> and the ports *e* and *d*, and the engine will run to the right, *e* being the steam-port for the lower end of the cylinder, and *f*, the exhaust-port for the same, while *d* becomes the steam-port, and *c*, the exhaust for the upper end; and, if the valve be turned in the opposite direction, the engine will also operate in the opposite direction, the ports acting reversely.

The chambers in the face of the valve communicating with the exhaust-ports are of sufficient length to open communication with the ports, to form the exhaust-passage, before the communication of the chambers *g* and *g* with the steam-ports will be formed, and will allow the steam to exhaust from the cylinder after it has been stopped, the valve being moved to the position for that purpose.

By the change of the valve, as above described, the engine may be readily set into motion in either direction, and, at the same time, the speed may be regulated, as desired, by the amount of the openings of the ports.

Having thus described my invention,

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

The arrangement of the ports *a b* in the trunnion-bearing C, and the valve D, constructed as herein set forth.

The above specification of my invention signed by me, this 27th day of July, 1868:

L. ANDERSEN.

Witnesses:

W. J. HUNTER,  
ANDREW KOEFOED.