

E. L. WATKINS.
Rotary Valve and Seat.

No. 218,348.

Patented Aug. 5, 1879.

Fig: 1.

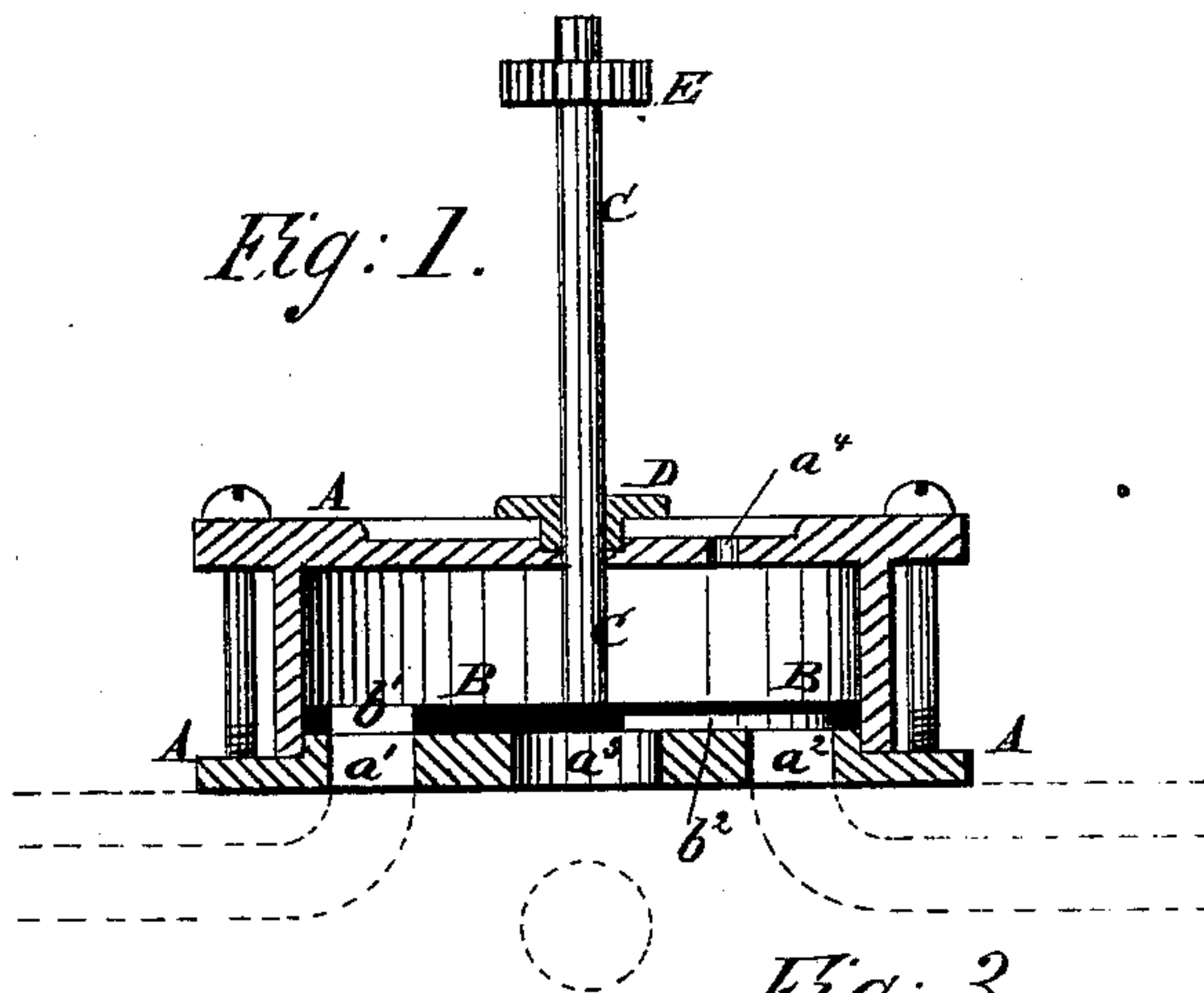


Fig: 2.

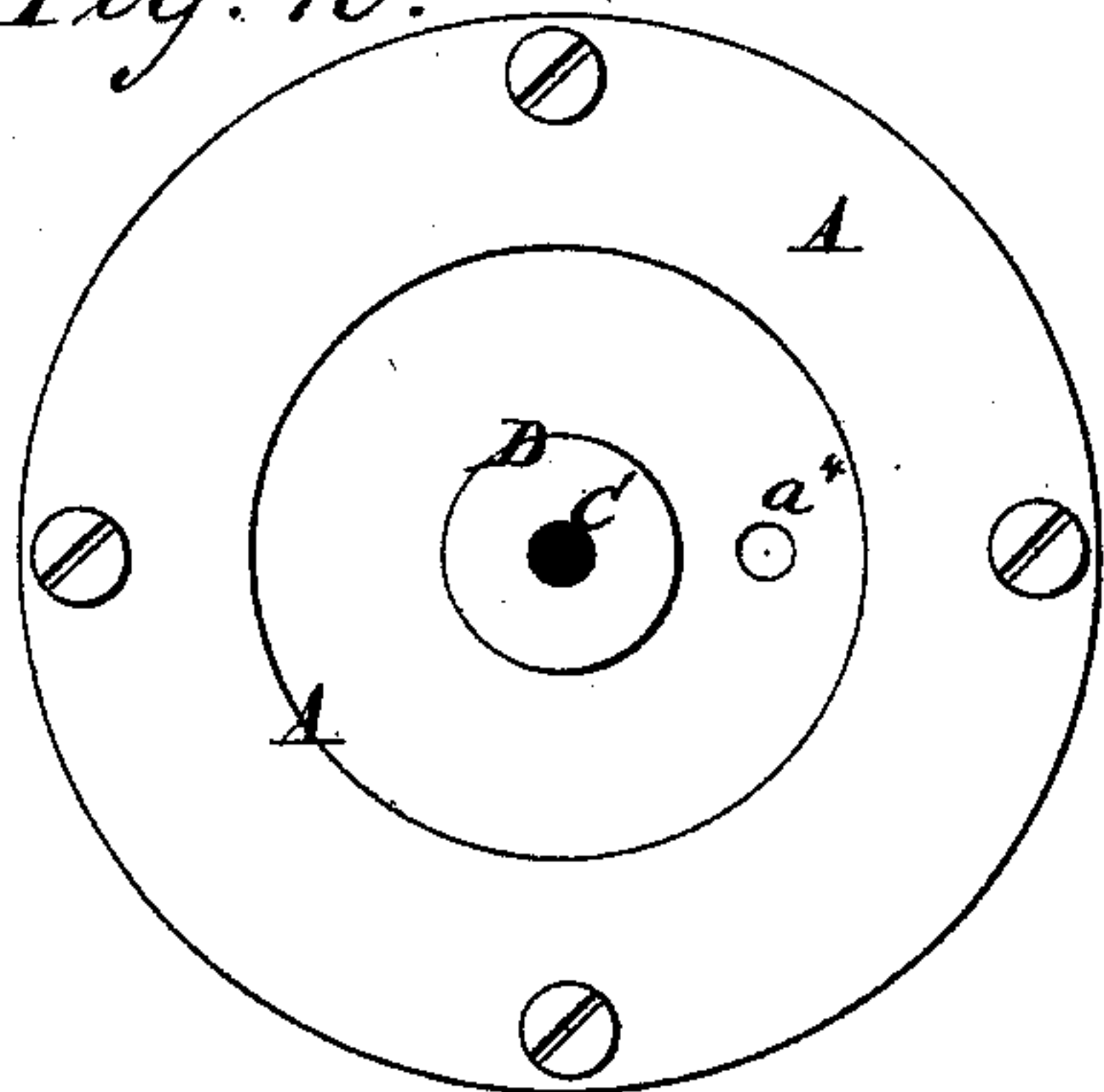


Fig: 3.

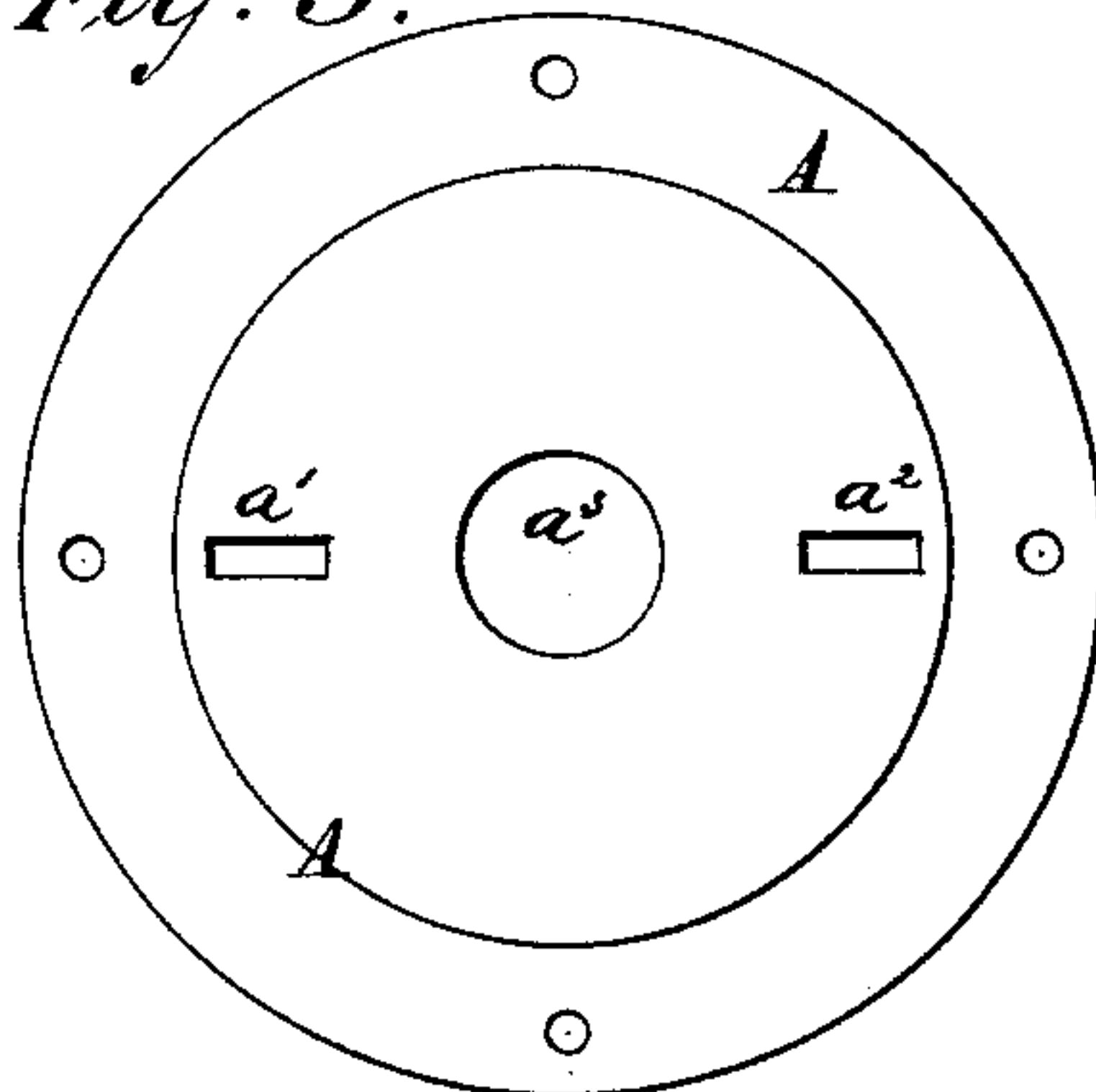


Fig: 4.

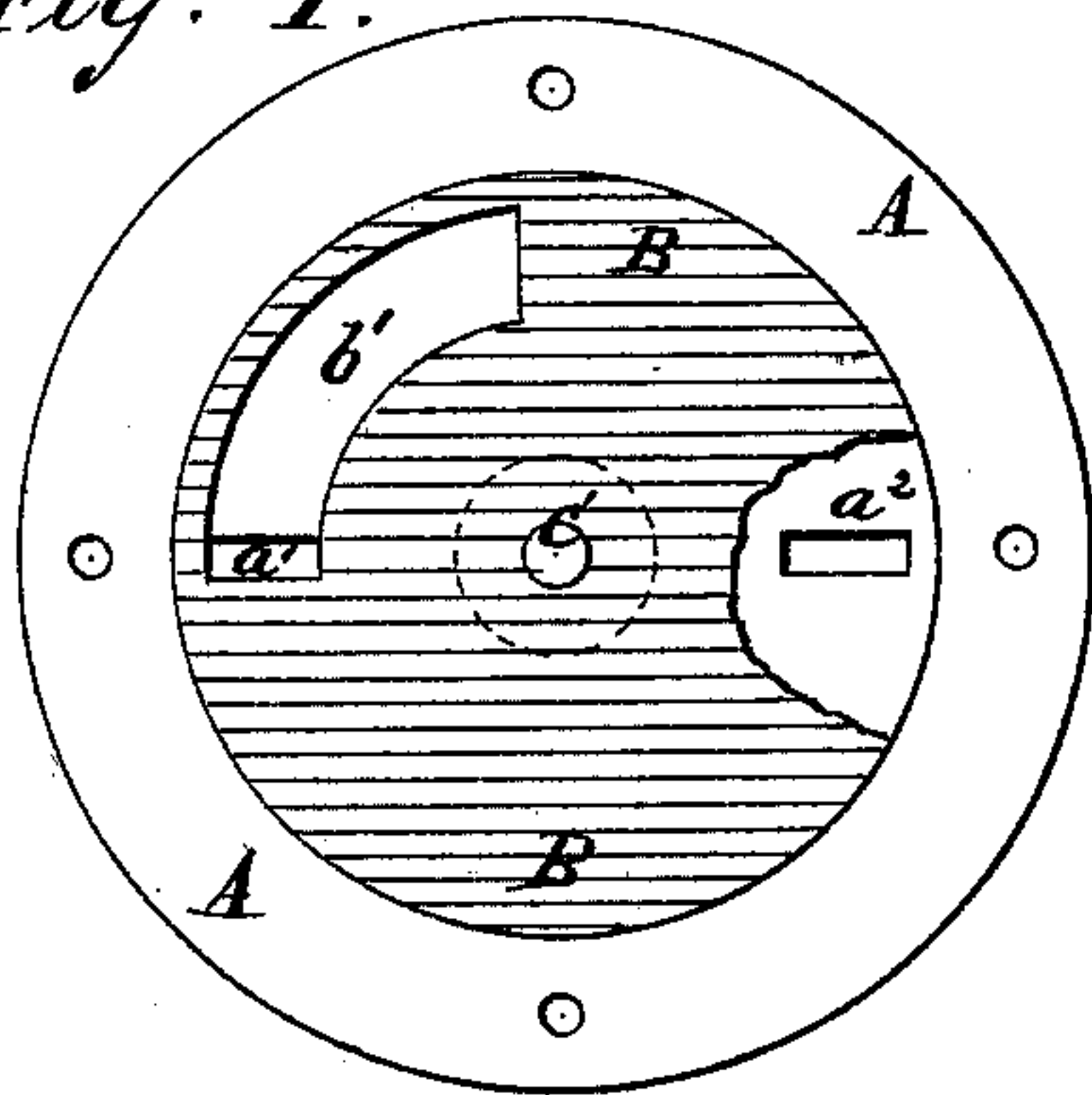
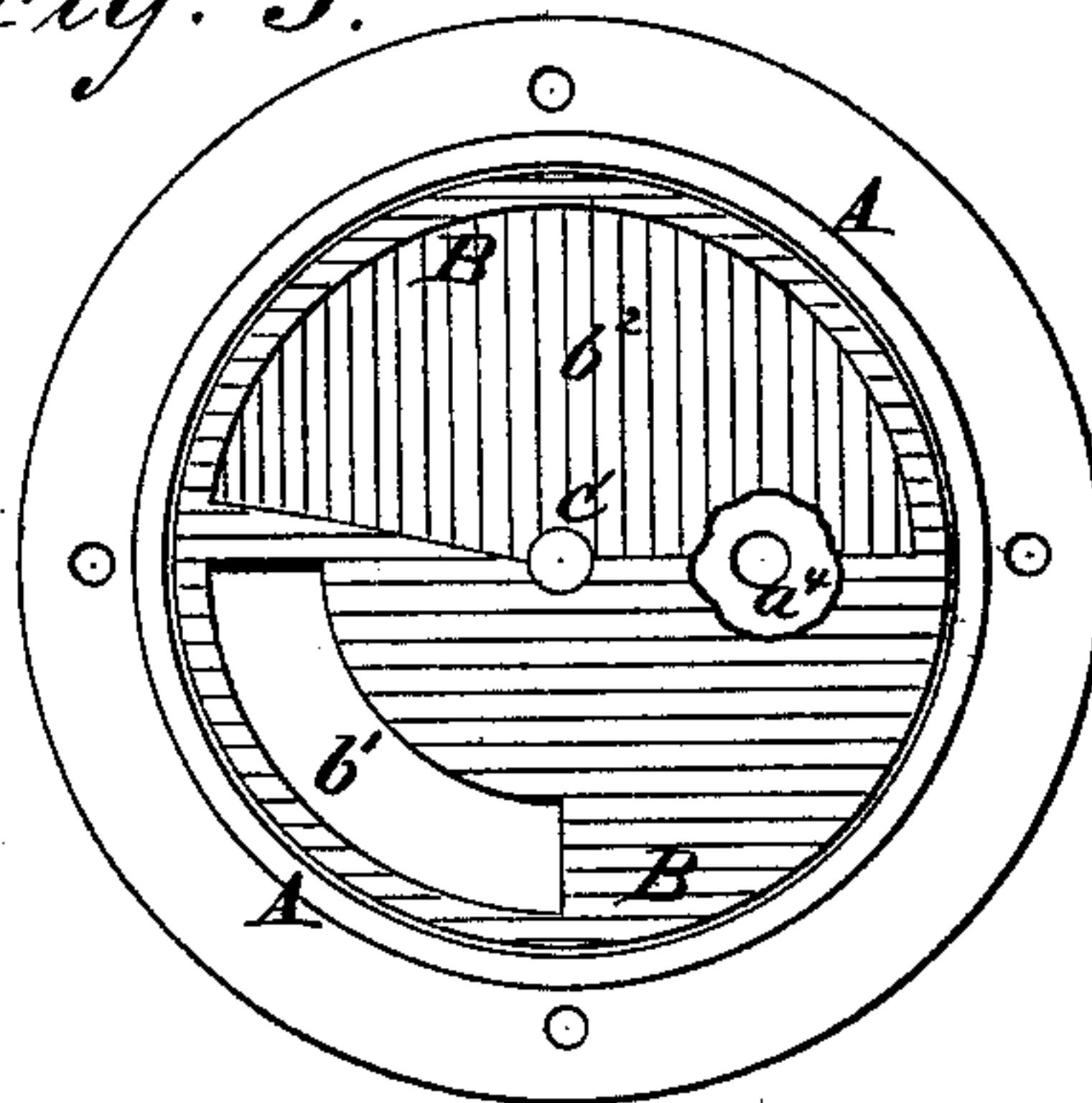


Fig: 5.



WITNESSES:

Achilles Schuhl.
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INVENTOR:

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UNITED STATES PATENT OFFICE.

EDWARD L. WATKINS, OF SAN ANTONIO, TEXAS.

IMPROVEMENT IN ROTARY VALVE AND SEAT.

Specification forming part of Letters Patent No. **218,348**, dated August 5, 1879; application filed May 12, 1879.

To all whom it may concern:

Be it known that I, EDWARD LANCASTER WATKINS, of San Antonio, in the county of Bexar and State of Texas, have invented a new and useful Improvement in an Improved Rotary Valve and Seat, of which the following is a specification.

Figure 1 is a vertical section of my improved steam chest and valve. Fig. 2 is a top view of the same, the valve-rod being shown in cross-section. Fig. 3 is a detail top view of the bottom of the steam-chest. Fig. 4 is a detail top view of the valve shown in place upon the bottom of the steam-chest, and part being broken away to show the other port. Fig. 5 is a bottom view of the valve shown in place in the steam-chest, and part being broken away to show the steam-inlet port.

Similar letters of reference indicate corresponding parts.

The object of this invention is to furnish an improved rotary valve and seat for steam-cylinders which shall be simple in construction, reliable in operation, and easily regulated and controlled.

The invention consists in combining, with a valve-seat having four ports, a rotary valve having a curved opening and recess, as hereinafter described.

A represents the steam-chest, which is made in circular or cylindrical form, and its lower head is attached to or formed upon the steam-cylinder. In the lower head of the steam-chest A are formed two ports, $a^1 a^2$, leading to and opening into the said steam-cylinder at or near its ends, and in the center of the said lower head is formed the exhaust-port a^3 . In the upper head of the steam-chest A is formed a port or hole, a^4 , through which the steam is introduced from the boiler.

B is the valve, which is made in circular form and rests upon the inner side of the lower head of the steam-chest A. Through the valve B is formed an opening, b^1 , which is made in

the form of a section of a ring, of a breadth equal to the length of the ports $a^1 a^2$, and of a length about equal to one-quarter of a circle. The opening b^1 is made in such a position as to come over the ports $a^1 a^2$ alternately as the valve B rotates upon its axis. In the lower side of the other half of the valve B is formed a recess, b^2 , of a size nearly equal to a half-circle, and of such a depth that the exhaust-steam can readily pass through it from either of the ports $a^1 a^2$ to the exhaust-port a^3 .

To the center of the valve B is attached the end of the valve-rod C, which passes out through a stuffing-box, D, secured in a hole in the center of the outer head of the steam-chest A. To the outer part of the valve-rod C is attached a small gear-wheel, E, to mesh into the gearing by which the said valve is driven.

The valve B is designed to be driven at such a speed as to make exactly one revolution during each stroke and return of the cylinder-piston.

With this construction, when the valve B is driven at a uniform speed, the steam will be cut off at about half-stroke of the cylinder-piston; but, if desired, it may be so geared as to be driven at a variable speed, and arranged to cut off steam at any desired point of the stroke.

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

The valve-seat, having ports $a^1 a^2 a^3 a^4$, in combination with rotary valve B, having the curved opening b^1 and recess b^2 , as shown and described, whereby the valve is the only movable piece to supply and cut off steam from the cylinder, constructed and arranged as shown and described.

EDWARD LANCASTER WATKINS.

Witnesses:

A. M. COHEN,
T. B. WREN.