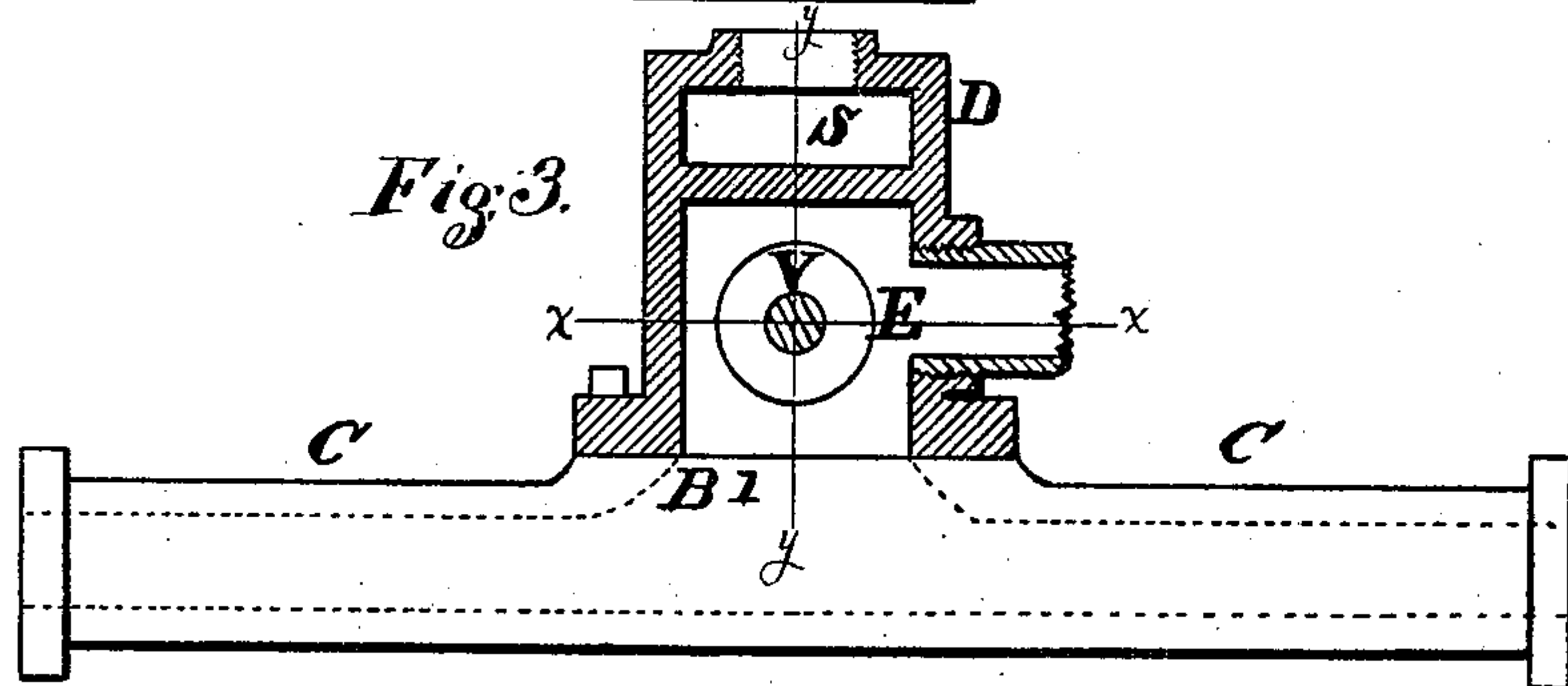
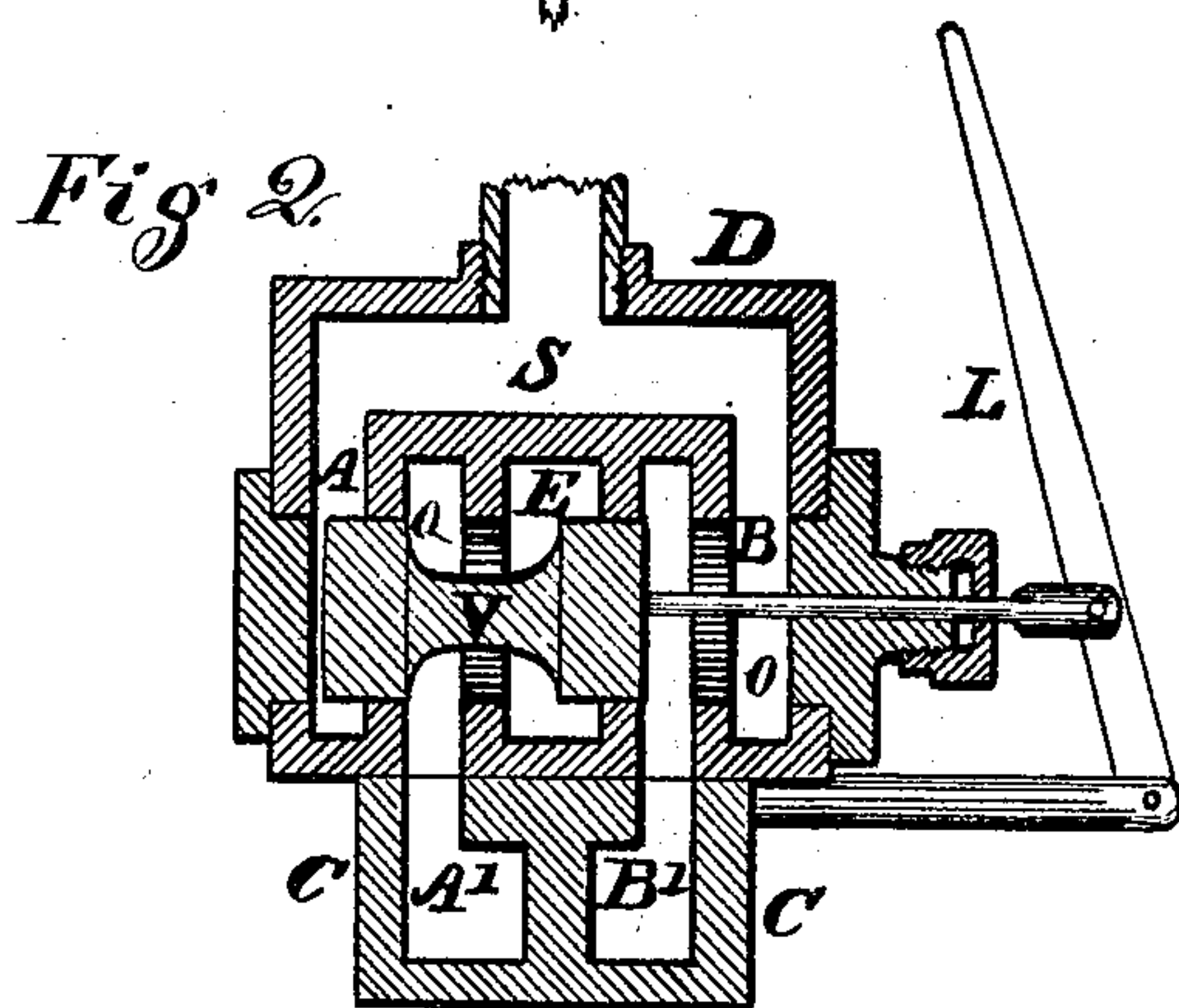
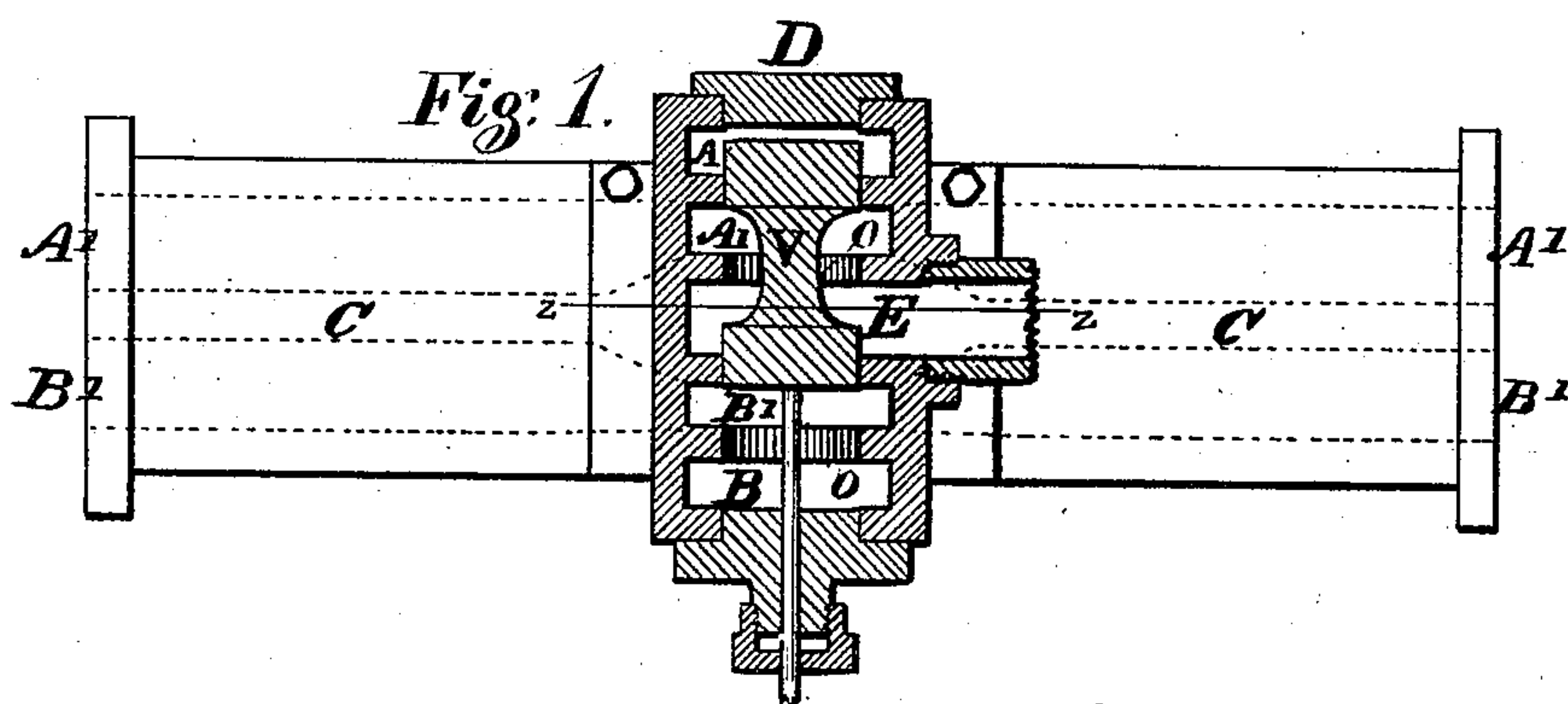


F. MURGATROYD.

REVERSIBLE VALVES FOR STEAM-ENGINES.

No. 178,870.

Patented June 20, 1876.



Witnesses

Geo. Mahon  
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By

Frank Murgatroyd Inventor

Geo. W. Tibbitts.

Attorneys

# UNITED STATES PATENT OFFICE.

FRANK MURGATROYD, OF CLEVELAND, OHIO.

## IMPROVEMENT IN REVERSIBLE VALVES FOR STEAM-ENGINES.

Specification forming part of Letters Patent No. **178,870**, dated June 20, 1876; application filed March 24, 1876.

*To all whom it may concern:*

Be it known that I, FRANK MURGATROYD, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented a new Reversing Steam-Valve, of which the following is a specification:

This invention relates to reversing-valves for steam-engines; and consists of a piston-valve arranged within a valve-case, having peculiar chambers and ports, and connected by a double pipe or pipes with the ordinary inlet and exhaust ports of valve-chests of two ordinary steam-engines, combined and operating as hereinafter described and claimed.

To enable others to fully understand my invention, I will proceed to describe the same in detail, with the aid of the accompanying drawing, in which—

Figure 1 is a top or plan view, having the valve-case cut on line *xx* of Fig. 3. Fig. 2 is a vertical section of the valve and case on line *yy* of Fig. 3. Fig. 3 is a side elevation, having the valve-case cut on the vertical section-line *zz* of Fig. 1.

C C represent a double pipe or pipes, designed, as shown in the drawing, as a connection between the steam-chests of two engines. Midway between the ends of said pipes is attached a valve-case, D, in which are chambers A B S E, formed by partitions, through which are made openings O O, in which the

valve V is operated by means of the lever L. S is a chamber in the top of the case D, where the steam is admitted, and open to the chambers A B. A' B' are passages leading to the pipes C C. The passage A' leads to the inlet-ports of the valve-chests of the engines, and the passage B' to the exhaust-ports of the same. E is the exhaust-chamber and passage in the case D.

The operation of this device is as follows: With the valve V in the position seen in the drawing, steam would pass into passage B' through the chamber B, thus leading to one side of the engine-valves. By changing the valve V to the other end of the case, the steam is directed into passage A', leading to opposite side of engine-valves, thus reversing said engines.

Having described my invention, I claim—

The valve-casing D, having partitions therein, forming the inlet-chamber S, chambers A B, and exhaust-chamber E, intercommunicating by means of openings O, and combined with the valve V, working in said openings, the passages A' B', double pipe C, and steam-chests of two engines, substantially as and for the purpose described.

F. MURGATROYD.

Witnesses:

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