

(No Model.)

A. KENDALL.
BALANCED SLIDE VALVE.

No. 250,925.

Patented Dec. 13, 1881.

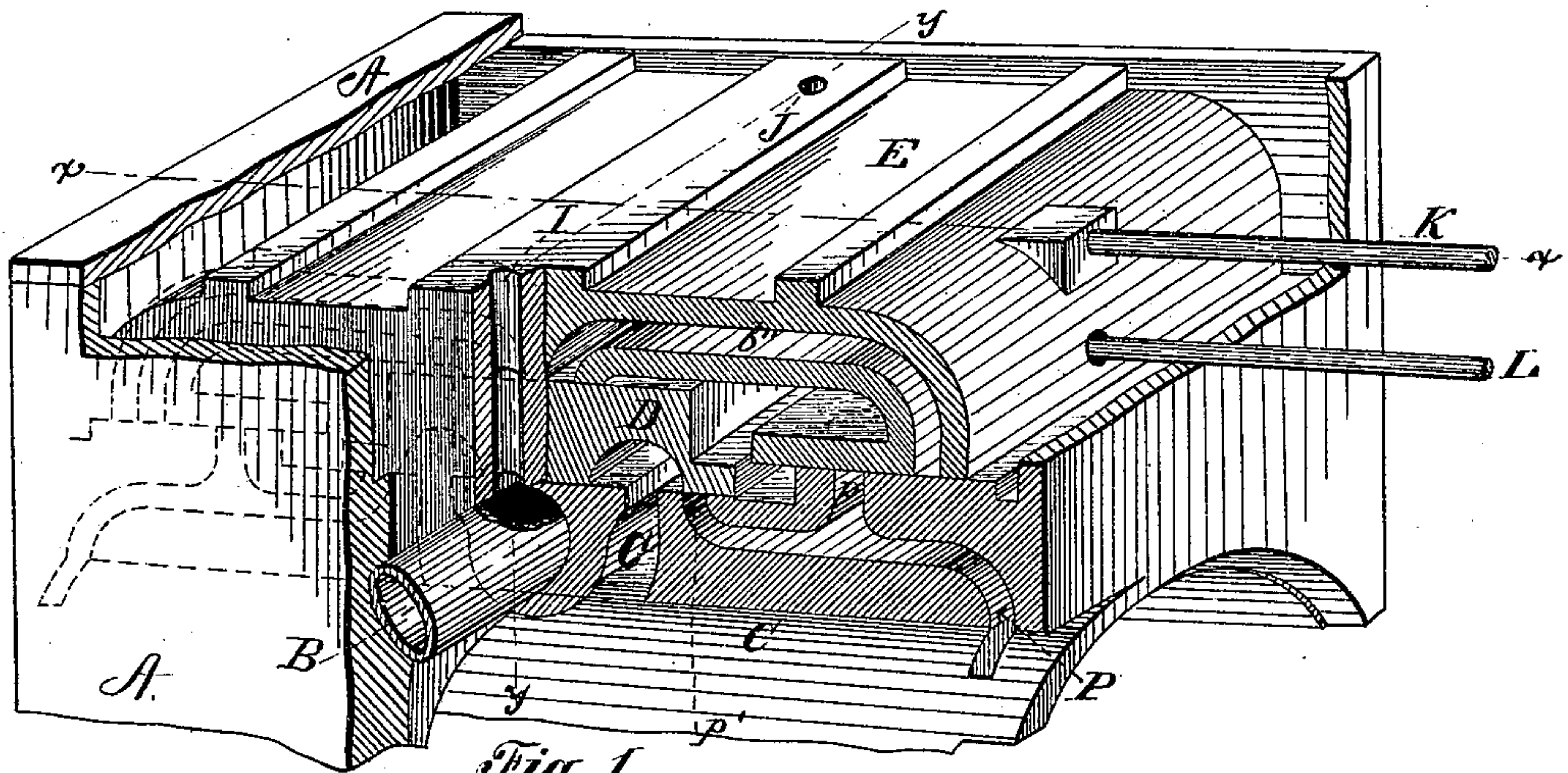


Fig. 1.

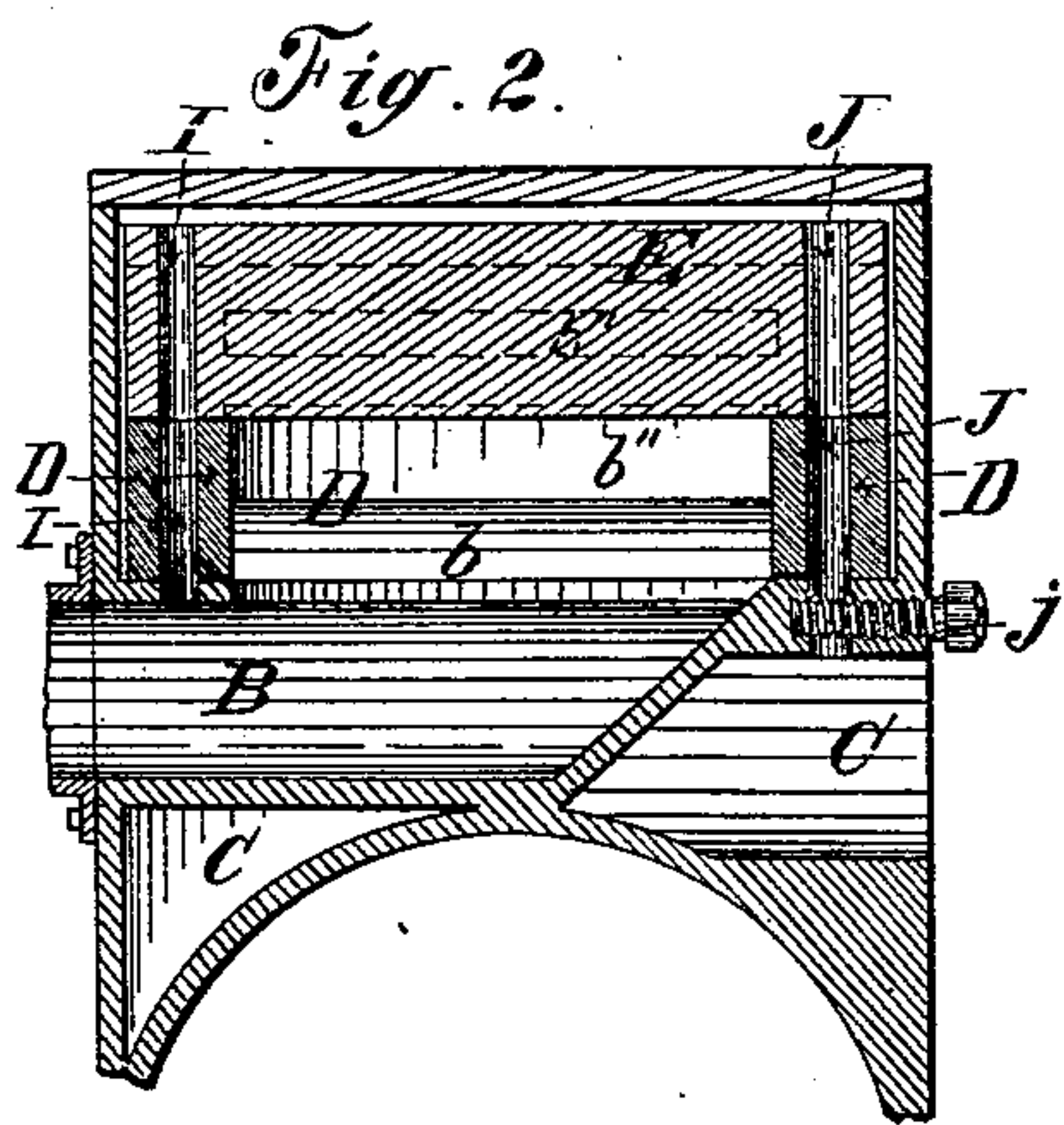


Fig. 2.

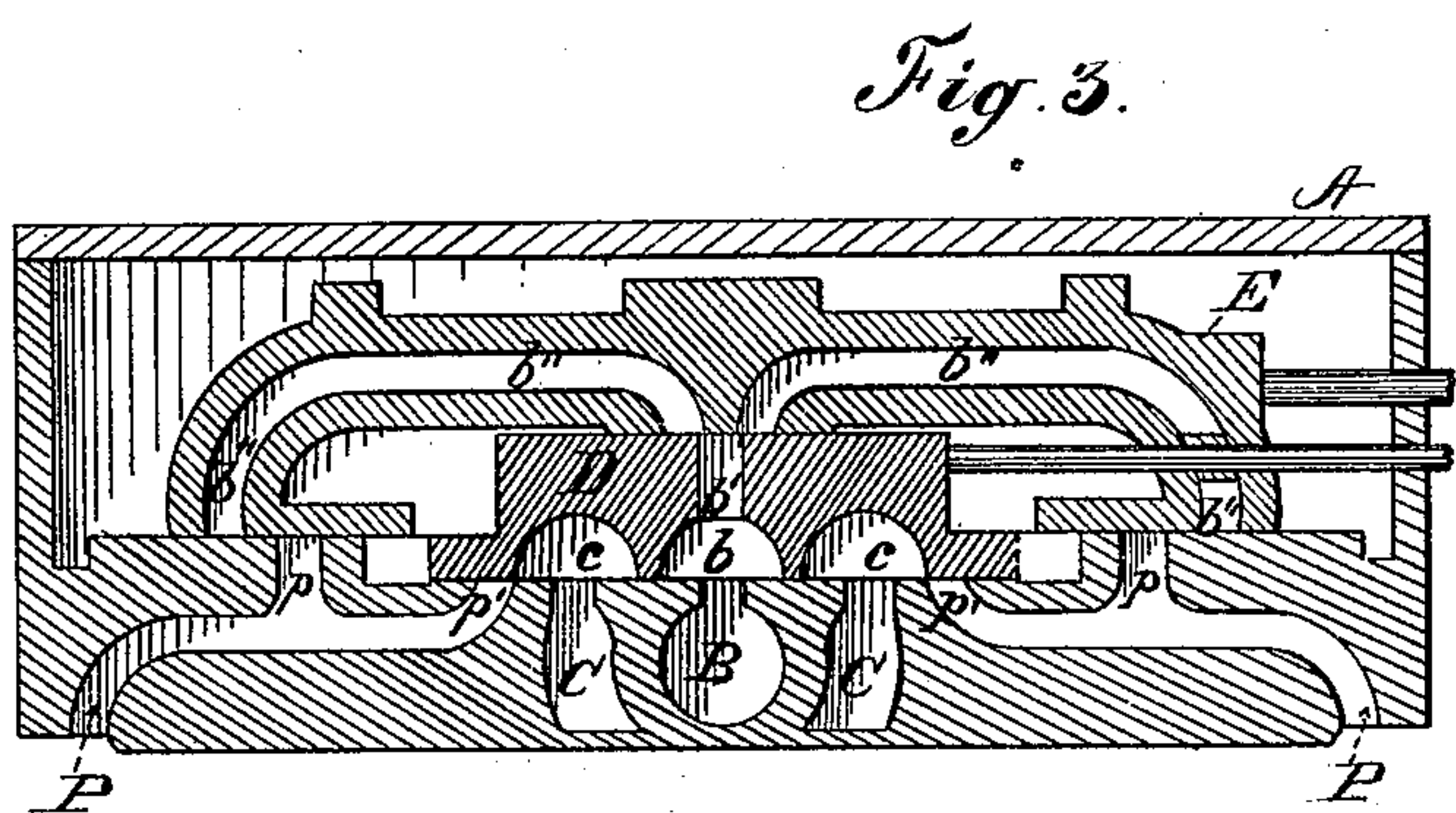


Fig. 3.

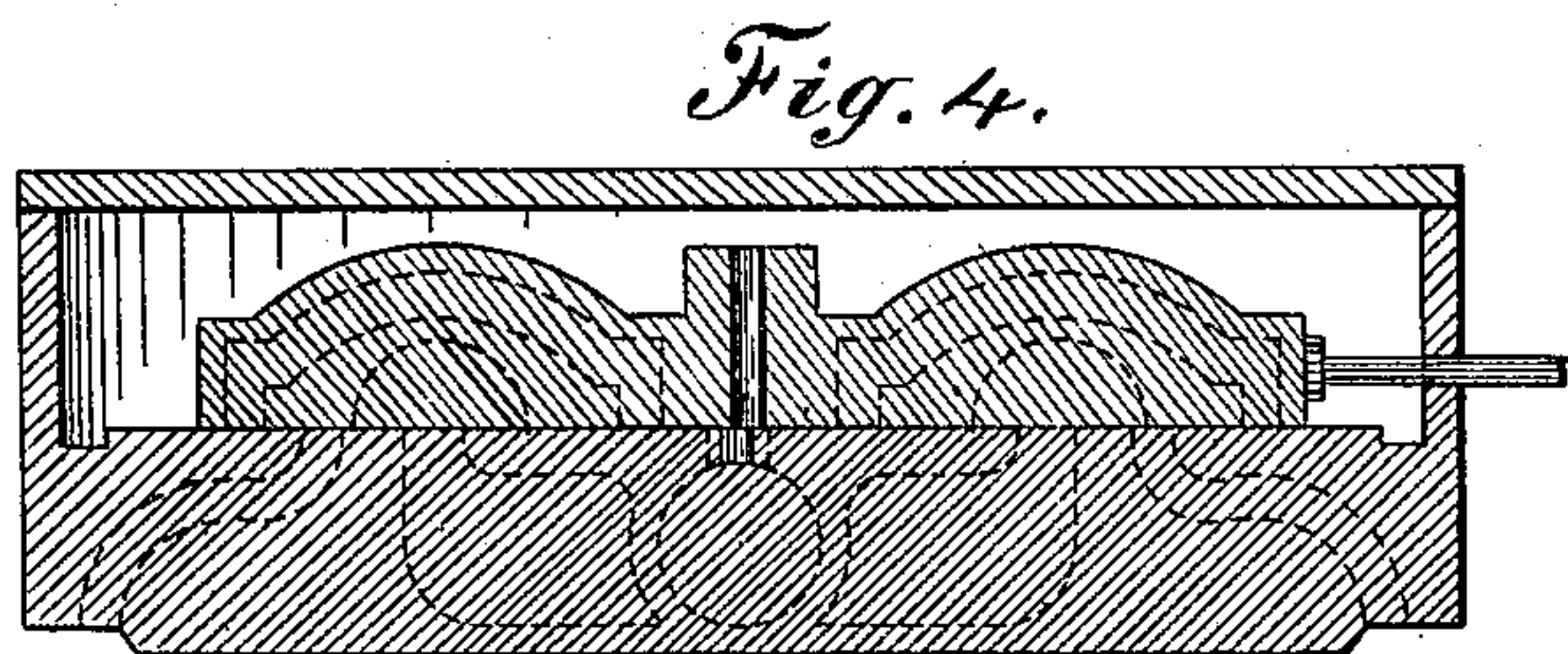


Fig. 4.

Witnesses:

W. R. Edelen.
J. H. Stonemetz

Inventor.

A. Kendall
Per Hallbrook & Hallbrook
attys

UNITED STATES PATENT OFFICE.

ADONIRAM KENDALL, OF ERIE, PENNSYLVANIA.

BALANCED SLIDE-VALVE.

SPECIFICATION forming part of Letters Patent No. 250,925, dated December 13, 1881.

Application filed May 2, 1881. (No model.)

To all whom it may concern:

Be it known that I, ADONIRAM KENDALL, a citizen of the United States, a resident of Erie, Erie county, Pennsylvania, have invented
5 new and useful Improvements in Balanced Slide-Valves for Engines; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings and the letters or
10 figures of reference marked thereon.

My invention relates to steam-valves for steam-engines. The particular class of said valves to which my invention most appertains is what are known as "balanced slide-valves."

15 My invention consists in such improvements in the construction and operation of the same as are hereinafter specifically described and pointed out.

My device is illustrated in the accompanying
20 drawings as follows:

Figure 1 is a perspective view with parts broken away, showing parts in vertical section. Fig. 2 is a vertical transverse section on the line *y y* in Fig. 1. Fig. 3 is a like view, being a longitudinal section on the line *x x* in
25 Fig. 1. Fig. 4 is a similar view to Fig. 3 of a modified form.

A A is the steam-chest; B, the supply-pipe; C, the exhaust-passage; D, the exhaust-valve;
30 E, the cut-off valve, which, together with the valve D, forms the whole valve. In Fig. 4 a single valve is shown, in place of a valve formed of two parts.

The steam-passages are as follows: From
35 the supply-passage B the steam enters the middle of the valve D, (marked *b*,) thence through an opening, *b'*, thence through a passage, *b''*, in the valve E, thence through a passage, *p*, in the cylinder, and out of the port P
40 into the cylinder. In exhausting the steam passes through the ports P and *p'* into the valve D and out through the passage C. The valve D is moved by the rod L, which connects with a fixed eccentric. The valve E is moved by a
45 movable or variable eccentric. I do not claim bisecting the valve, nor the arrangement just named for moving the segments.

In Fig. 4 a single valve is shown, with passages and ports substantially the same as those
50 above described. With valve-passages, as shown in each case, no steam would enter the

steam-chest, and hence pressure upon the back of the valve does not occur. There should, however, be enough steam back of the valve to keep it seated. This I supply as follows: 55
Openings I and J are made through the valves, (see Figs. 1 and 2,) one of which, I, connects with the supply and the other, J, with the exhaust through holes in the valve-seat. The passage into the exhaust is regulated in size 60
by a stop-screw, *j*. When the valves reach the position shown in the drawings—which they do twice each revolution of the crank—steam will pass from the supply into the chamber back of the valve, and will also exhaust into the ex- 65
haust passage; but sufficient will remain in the chamber to hold the valve upon its seat.

What I claim as new is—

1. In the balanced slide-valve of a steam-engine, the openings I and J through said 70
valve, in combination with corresponding holes through the valve-seat, one of which enters the supply-passage and the other the exhaust-passage, whereby as the valve moves steam
75 passes into and exhausts from the chamber back of the valve, as set forth.

2. In the balance slide-valve of a steam-engine, the openings I and J, with gage-stops *j* in the opening J, substantially as and for the purposes set forth. 80

3. In a steam-engine, a slide-valve consisting of two parts, D and E, with passages *c c b b' b''* therein, in combination with passages P B C *p p'* in the body of the cylinder, substantially as and for the purposes set forth. 85

4. In a steam-engine, a slide-valve having two live-steam passages therein, extending respectively from near the middle in opposite directions and opening near the ends of the valve, and serve alternately as steam-passages 90
to the cylinder-ports, in combination with openings through said valve near the middle, to convey steam to and exhaust it from the chamber back of the valve, substantially as shown. 95

In testimony that I claim the foregoing I have hereunto set my hand this 9th day of April, 1881.

ADONIRAM KENDALL.

Witnesses:

JNO. K. HALLOCK,
J. H. STONEMETZ.