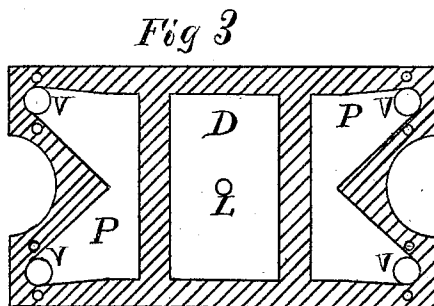
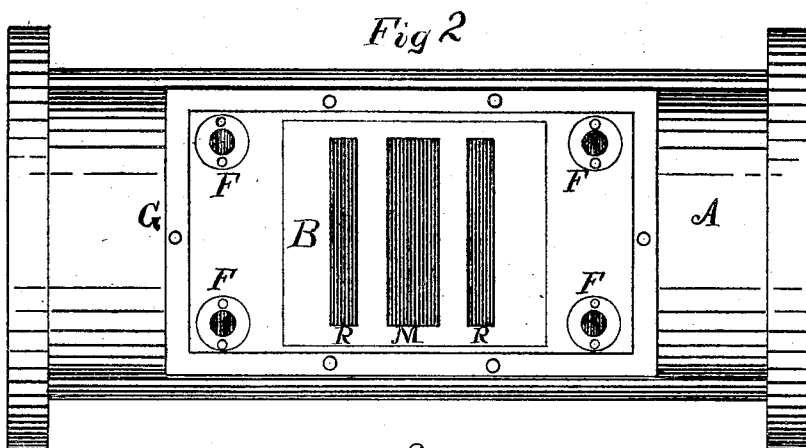
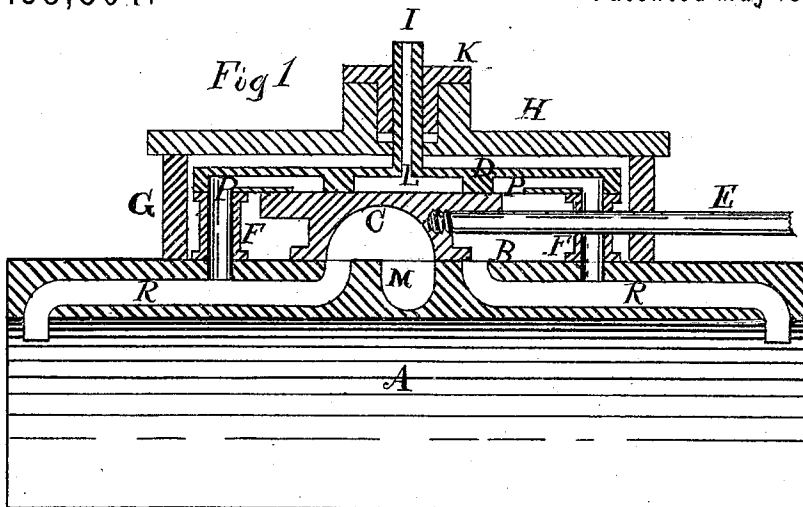


A. HENRY.
Balanced-Valves for Steam-Engines.

No. 138,804.

Patented May 13, 1873.



Witnesses
Nelson A. Hunt
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UNITED STATES PATENT OFFICE

ALEXANDER HENRY, OF RICHMOND, INDIANA.

IMPROVEMENT IN BALANCED VALVES FOR STEAM-ENGINES.

Specification forming part of Letters Patent No. **138,804**, dated May 13, 1873; application filed February 12, 1873.

To all whom it may concern:

Be it known that I, ALEXANDER HENRY, of Richmond, county of Wayne and State of Indiana, have invented certain Improvements in Balance-Valves for Steam-Engines, of which the following is a specification:

My invention relates to an improvement in balance-valves for steam-engines, wherein I use a valve with a double face, the upper face being fitted to a balance plate or seat, and operating in conjunction with double ports, the balance-plate being fitted to the upper ports in such manner as to be adjustable, as hereinafter described.

Figure 1 is a longitudinal vertical section. Fig. 2 is a top view, showing the hollow columns F, which connect with and form a part of the ports P. Fig. 3 is a sectional view of the balance-plate or seat D, and showing the openings V, which connect with the columns F and form the ports P in conjunction with the same.

A is the cylinder. B is the valve-seat, fitted in the usual way. C is the double-faced valve, fitted between the valve-seat B and the plate or upper seat D, which plate or seat fits on and connects with the hollow columns F by means of the openings V, thus extending the ports P up through the openings V into the recesses in plate D, through which the steam is received. The hollow columns are made adjustable by being screwed into the cylinder, or by any other means that will admit of the plate D being adjusted on top of the valve C to allow of nice adjustment of the balancing-plate on top of the valve. The columns may extend through and above the balancing-plate D, and the plate be adjusted by means of nuts screwed onto the upper ends of the columns, or any other suitable means that will admit of the adjustment of the plate on top of the valve and the upper ends of the columns. L represents a chamber or vacuum in plate D, and having the vent through the stem I, said stem being packed by the stuffing-box K on top of the steam-chest lid H, the balancing-plate D forming a steam-joint on top

of the valve C. The vent through the stem I serves as a convenient means of oiling the valve, as well as forming a vacuum equal to the one below, through which the exhaust passes.

Thus it will be seen that there is no pressure upon the top of the valve C, in consequence of making the ports P extend above the valve through the openings V in the balancing-plate D, and being of the same dimensions of those below and opening and closing at the same time and receiving steam through the ports P and R simultaneously, and being cut off in the same manner. The ports P and R being connected, the exhaust relieves both at the same time. The columns F are of the same height of the valve C, the plate D snugly fitting upon the upper ends of the columns and the top of valve C. The steam-chest lid may be removed and replaced at will without disturbing either the valve or the balancing-plate.

G is the steam-chest. E is the valve-stem. M is the exhaust-port; R R and P P, receiving-ports.

I am aware that double ports and balancing-plates are not new; therefore, I do not claim them, broadly; but

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

1. A slide-valve and balancing-plate, in combination with the hollow column F, when said columns are so constructed and arranged as to admit of the adjustment of the balancing-plate upon the top of the valve and upon the column, substantially as described.

2. The balancing-plate D, as shown and described, said plate having the openings V connecting with the columns F and the stem I attached to the top of said balancing-plate, in combination with the stuffing-box K, all arranged and operating substantially as described.

ALEXANDER HENRY.

Witnesses:

NELSON A. HUNT,
ORLANDO B. HUNT.