G. W. Bollen,

Steam Balanced Valve.

No. 38,623. Patented May 19, 1863.

Fig. 1.

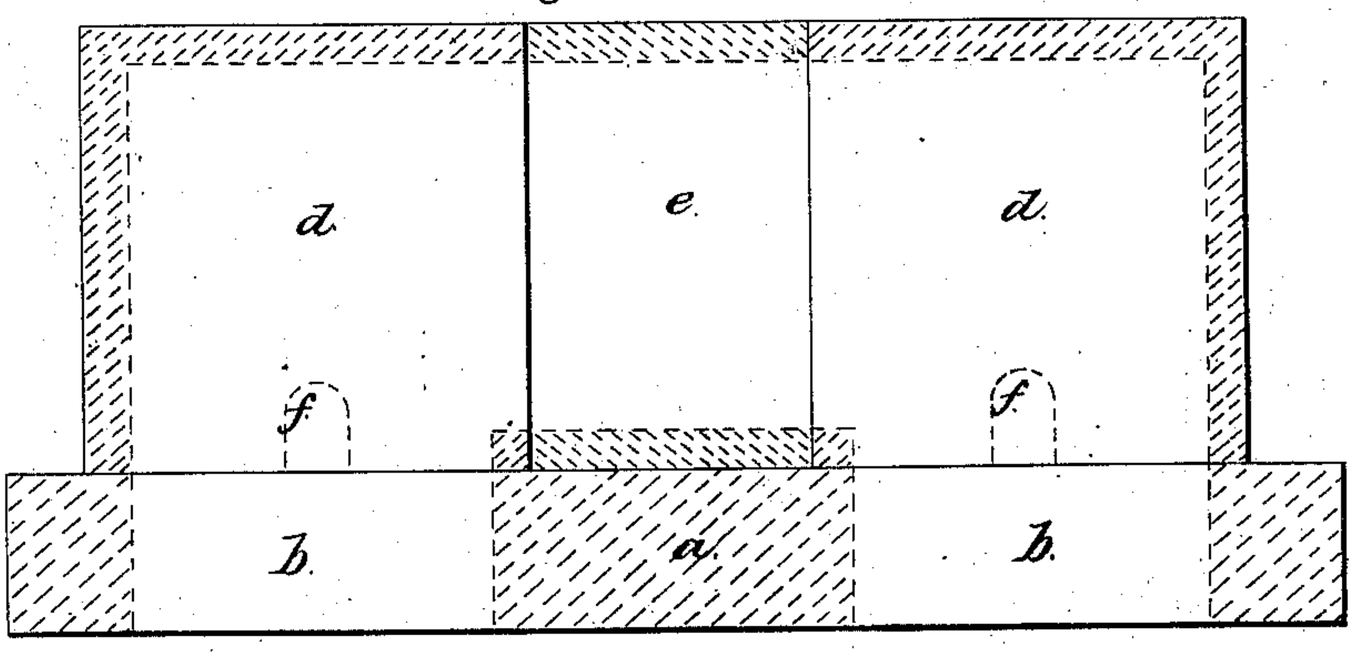
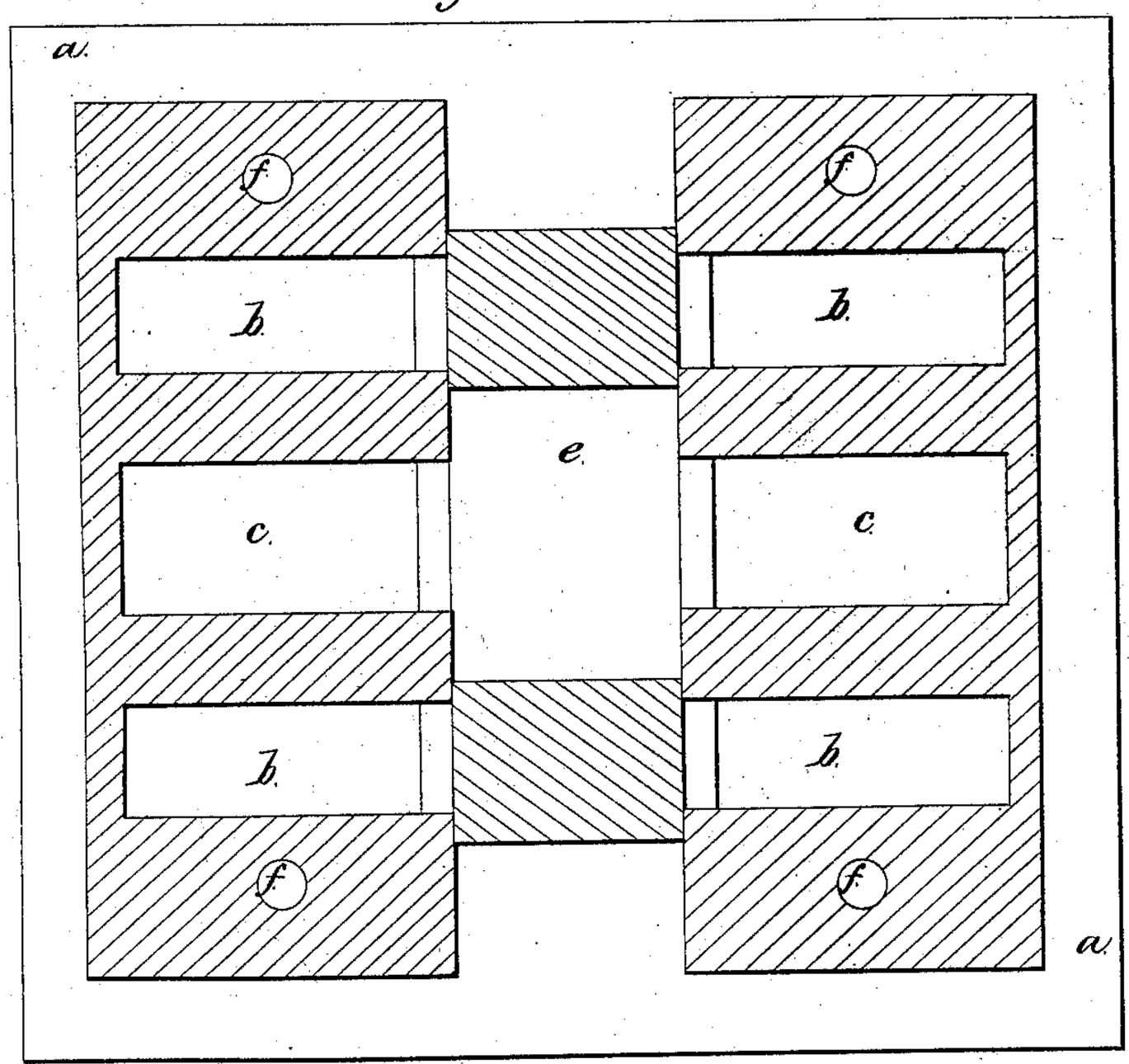


Fig. 2.



Witnesses.
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By his atty
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UNITED STATES PATENT OFFICE.

GEORGE W. BOLLEN, OF ST. LOUIS, MISSOURI, ASSIGNOR TO HIMSELF AND MICHAEL MADDEN, OF SAME PLACE.

IMPROVEMENT IN SLIDE-VALVES FOR STEAM-ENGINES.

Specification forming part of Letters Patent No. **38,623**, dated May 19, 1863; antedated January 26, 1862.

To all whom it may concern:

Be it known that I, GEORGE W. BOLLEN, of the city of St. Louis, in the county of St. Louis and State of Missouri, have invented a new and useful Improvement in Slide-Valves; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters of reference marked thereon.

This invention relates to balance slide-valves, in which the valve is operated between two cheeks, by which the pressure on one side is balanced by that on the other. Such valves are furnished with a separate valve-seat, by which the openings of the cheeks are adapted to the steam and exhaust passages of an ordinary cylinder, which enables the application of the said balanced valve to any old cylinder of the usual construction.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

Figure 1 of the drawings is an end elevation of the said improved slide-valve, and Fig. 2 is a horizontal section of the same, made on a line parallel to the center of the cylinder. The plate *a* covers the ordinary valve-seat of a cylinder and is constructed with steam-openings *b* and exhaust-openings *c*. Above these openings are placed the cheeks *d*, sufficiently far apart to admit the valve *e*, which travels steam-tight between them. The cheeks *d* are held on the face of the plate *a* by the steady-pins *f*, as is shown on the drawings, or the plate may be cast with lugs provided with set-screws, by which the cheeks may be adjusted and bolted into their proper positions. The steam and exhaust openings of the cheeks conform at the bottom with those of the plate, and open at the internal sides to correspond with the exhaust-opening that passes through the valve. The plate and the valve and cheeks are inclosed in a steam-chest of the ordinary construction.

The principle of the operation of this valve, so far as the lap, lead, travel, and expansion are concerned, is the same as that of the ordinary three-ported valve; but instead of working under the pressure and with the friction of the ordinary valve it need work with no more than may be required to keep it tight. There is no unbalanced pressure of steam upon it, for, as there is no opening under the valve, there is no pressure downward, and the pressure upon the cheeks is sustained by the steady-pins or bolts with which they are adjusted and secured.

The openings through the plate *a* need not pass directly through the plate, but they may be made to conform to the steam and exhaust openings of almost any old cylinder on the lower side, and to the openings of the cheeks on the upper side, to permit the application of the valve and cheeks to any cylinder of ordinary construction.

I claim as my invention and desire to secure by Letters Patent—

The combination of a valve and cheeks, arranged as desired, with a valve-seat, formed by the plate *a*, in the manner and for the purpose specified.

GEO. W. BOLLEN.

Witnesses:

ROLLIN B. GRAY,
MICHAEL MADDEN.