W. JACKSON.

BALANCED VALVES FOR STEAM-ENGINES.

No. 187,014. Patented Feb. 6, 1877.

Fig. 1.

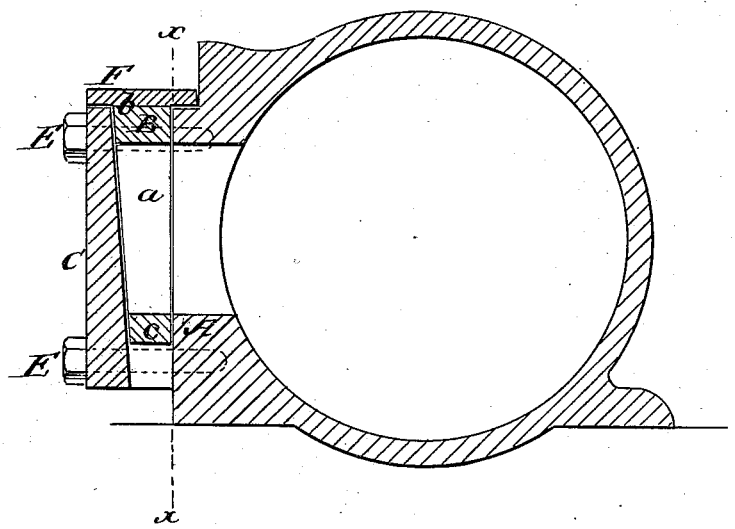


Fig. 2.

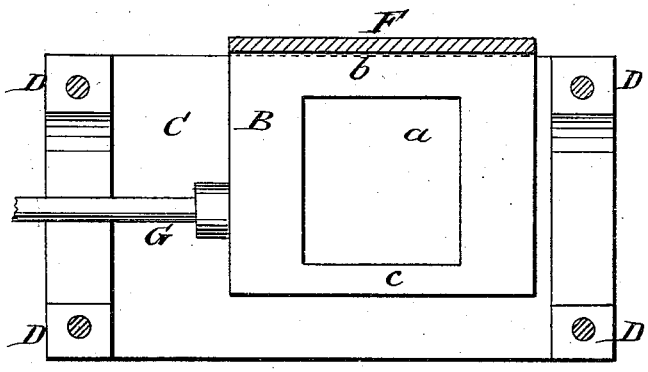
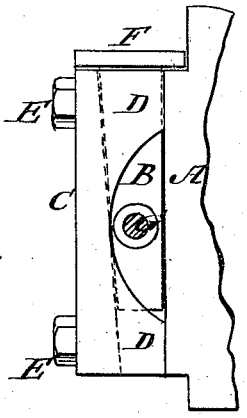


Fig. 3.



WITNESSES:

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UNITED STATES PATENT OFFICE.

WILLIAM JACKSON, OF MILLERSTOWN, PENNSYLVANIA.

IMPROVEMENT IN BALANCED VALVES FOR STEAM-ENGINES.

Specification forming part of Letters Patent No. **187,014**, dated February 6, 1877; application filed December 11, 1876.

To all whom it may concern:

Be it known that I, WILLIAM JACKSON, of Millerstown, in the county of Butler and State of Pennsylvania, have invented a new and Improved Balanced Slide-Valve, of which the following is a specification:

Figure 1 is a transverse section of my improved valve attached to an engine-cylinder. Fig. 2 is a transverse section on line *x x* in Fig. 1, looking toward the face of the valve. Fig. 3 is an end view of the valve, valve-seat, and covering.

Similar letters of reference indicate corresponding parts.

My invention consists of a valve the back of which is beveled, and whose central or exhaust space extends to the back, and in a beveled cover placed at the back of the valve, between which and the valve-seat the valve moves. The whole is inclosed in the steam-chest, and all of the exposed sides of the valve are subjected to the same pressure, so that the valve is balanced, and little power is required to move it.

In the drawing, A is an ordinary valve-seat, and B is a valve, the center or exhaust space of which is cut entirely through, forming the opening *a*. The back of the valve is inclined or beveled, so that the valve is thicker at *b* than it is at *c*. C is a cover, the inner side of which is beveled to correspond with the bevel of the back of the valve, and it is provided with projections D, which rest upon the valve-seat, and with bolts E, that hold it firmly in place.

The valve is fitted to the seat in the usual manner, and is also accurately fitted to the cover, so that steam cannot pass it on either side.

The upper edge of the valve is provided with a plate, F, that projects over the sides of the valve, and slides upon the side of the cover and valve-seat supporting the valve, and preventing it from wedging between the beveled face of the cover and the valve-seat. The valve-rod G is attached to the valve in the usual way. The valve and cover are inclosed by the steam-chest.

The back of the valve is protected by the cover C, so that it is not subjected to steam-pressure, and as the pressure is exerted equally on all of the exposed sides of the valve, it will be seen that the valve is nearly or quite balanced, and that little power is required to move it. Steam is admitted to the cylinder, and exhausts in the usual way.

Wear may be compensated for by removing the plate F a small distance from the edge of the valve, and interposing a thin lagging, which throws the valve into the narrower portion of the space inclosed between the cover C and the valve-seat; or the projections D may be dressed slightly, and the cover set nearer the valve-seat.

The advantages claimed for the invention are, that the valve, being balanced, requires but little power to run it, and for the same reason it is more durable and less likely to get out of order than the ordinary valves.

The improvement may be readily applied to engines of ordinary construction.

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

In combination with the valve-seat A, the valve B, beveled on back, and having exhaust-space extended thereto, correspondingly-beveled cover C, having the projections D resting on seat, and the plate F, projecting over the sides of valve, as shown and described.

WILLIAM JACKSON.

Witnesses:
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FRED. A. BELKNAP.