J. T. HILL.

Balanced Slide-Valves.

No. 152,286. Patented June 23, 1874.

Fig: 1.

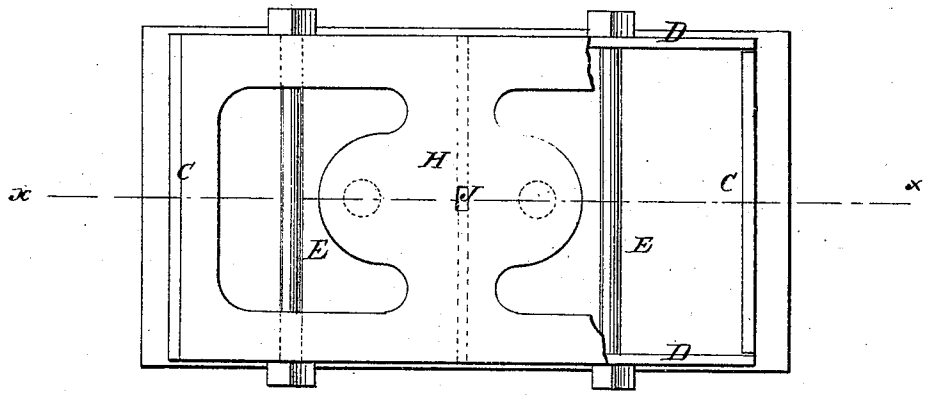


Fig: 2.

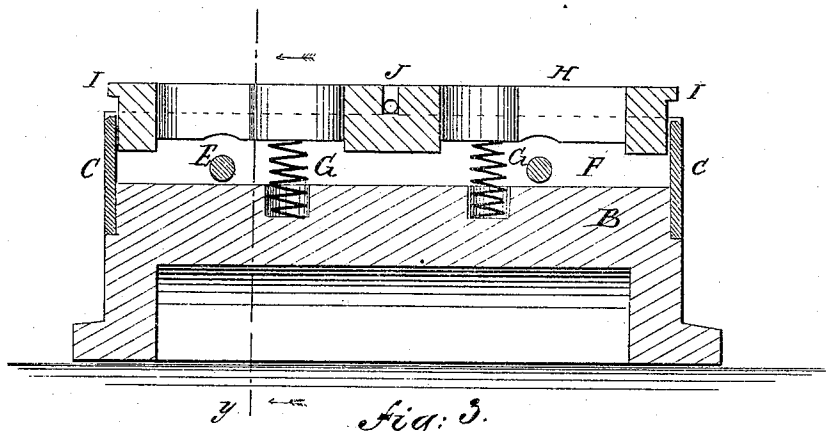
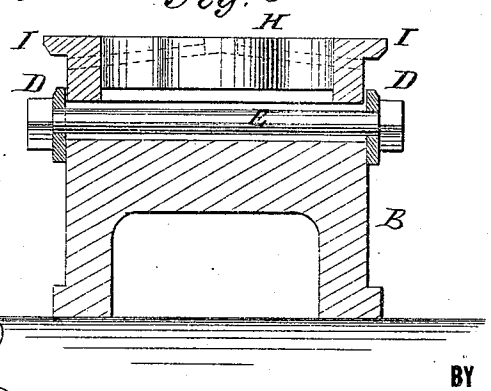


Fig: 3.



WITNESSES:

Chas. Nida.

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AM. PHOTO-LITHOGRAPHIC Co. N.Y. (OSBORNE'S PROCESS.)

UNITED STATES PATENT OFFICE.

JOHN T. HILL, OF WARREN, PENNSYLVANIA.

IMPROVEMENT IN BALANCED SLIDE-VALVES.

Specification forming part of Letters Patent No. **152,286**, dated June 23, 1874; application filed March 21, 1874.

To all whom it may concern:

Be it known that I, JOHN T. HILL, of Warren, in the county of Warren and State of Pennsylvania, have invented a new and useful Improvement in Balanced Slide-Valve, of which the following is a specification.

Slide-valves for steam engines, as they are usually constructed and operated, are subjected to the full pressure of the steam, and consequently they wear and cut on their faces or seats, and frequently become useless, as a valve that leaks steam destroys the value of the engine until it is repaired or renewed.

My object is to so construct a valve that it will not be subjected to this down pressure; and it consists in a valve, having an elastic top plate or follower confined between flange-plates on the sides and ends of the valves, the construction being hereinafter more fully described.

In the accompanying drawing, Figure 1 is a top view of the valve complete. Fig. 2 is a vertical longitudinal section of Fig. 1, taken on the line *x x*. Fig. 3 is a vertical cross-section on the line *y y* of Fig. 2.

Similar letters of reference indicate corresponding parts.

The valve B rests upon the face of the cylinder, and has flanges C C attached by screws. These flange-plates project above the top of the valve B, as represented in the drawing. D D are plates attached to the sides of the valve B by the bolts E E. The upper edges of these plates or flanges are even with the top edges of the flanges C C, forming an inclosed chamber, F, above the upper surface of the valve B. G G are spiral springs seated in the top of the valve. H is the top plate or follower of the valve. This plate rests on the springs G G. This plate is surrounded by a projecting lip, I, below which the plate fits in to the top of the chamber F, but so that it can easily play up and down. The valve having this plate H thus arranged is placed on the face of the cylinder within the steam-chest, and the steam-chest cover put on, which forces down the plate against the pressure of the springs. The re-action of the springs and the action of the steam on the lip I forces the plate upward with a constant pressure. The upper side of this plate and the lower side of the cover are placed true and smooth, so that the two run steam-tight, and prevent downward pressure, leaving the valve balanced, the steam-pressure around the valve being equal. J is an oil-hole in the center of the plate, from which blind holes extend laterally in opposite directions, as seen in dotted lines in Fig. 3, to convey oil into the steam-chest. Oil is introduced to this plate through the steam-chest cover, and serves to lubricate the face of the cylinder, as well as the plate itself.

The movement for admitting and exhausting the steam is the same as in ordinary steam-valves; but it slides over the ports perfectly easy, or without friction.

By attaching the flanges D D the improvement may be applied to the ordinary slide-valve.

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

A slide-valve, having projecting-plates C C and D D, springs G G, and follower-plate H, with lip I, substantially as shown and described.

JOHN THOMAS HILL.

Witnesses:

JOSEPH HILL,

J. H. HARRISON.