W. R. Jenkins, Jr. & H. D. Landis,

Steam Balanced Valve.

No. 53,985. Patented Apr. 17, 1866.

Fig. 1.

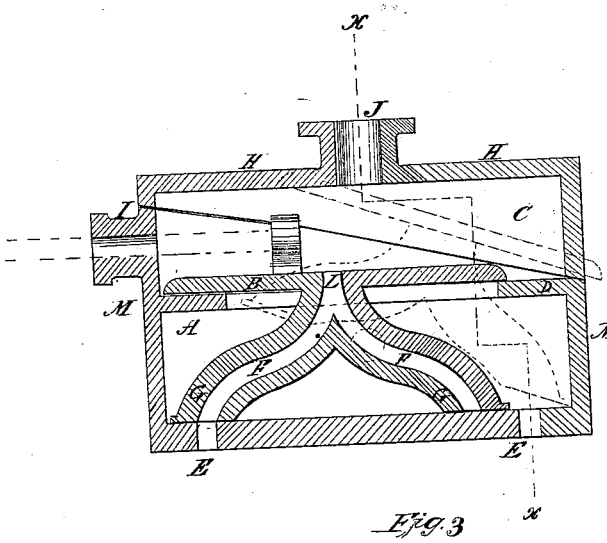


Fig. 2.

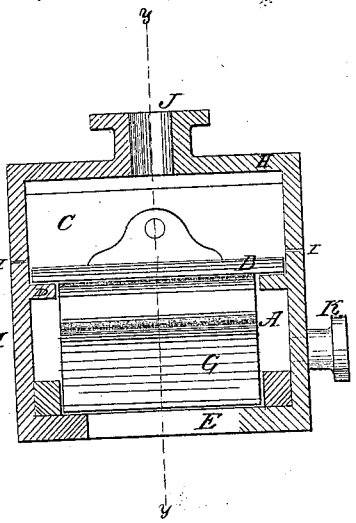
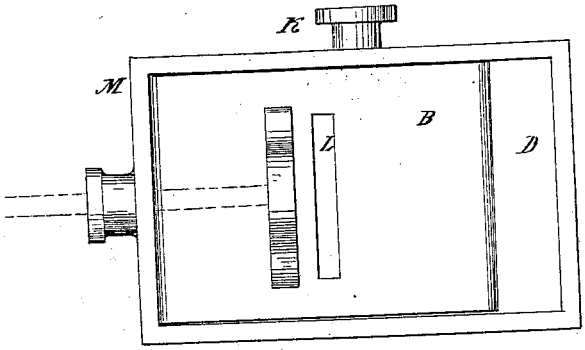


Fig. 3



Witnesses.

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UNITED STATES PATENT OFFICE.

W. R. JENKINS, JR., AND H. D. LANDIS, OF BELLEFONTE, PENNSYLVANIA.

IMPROVEMENT IN SLIDE-VALVES FOR STEAM-ENGINES.

Specification forming part of Letters Patent No. **53,985**, dated April 17, 1866.

To all whom it may concern:

Be it known that we, W. R. JENKINS, Jr., and HENRY D. LANDIS, of Bellefonte, in the county of Centre and State of Pennsylvania, have invented a new and useful Improvement in Slide-Valves; and we do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 represents a longitudinal section of a slide-valve and steam-chest made according to my invention, the plane of section being seen at *y*, Fig. 2. Fig. 2 is a cross-section on the irregular line *x*, of Fig. 1. Fig. 3 is a top view, showing the valve upon its seat.

This improvement in slide-valves consists in the arrangement of a hollow-legged valve with a plate for its cover reciprocating within a steam-chest, as will be hereinafter more fully described.

In the example of our invention here set forth, A designates the steam-chest, within which the valve G G plays. The steam-chest constitutes the lower part of a box, M, whose cover H is fitted to the box on the diagonal line I, so that the cover is of unequal height at its ends. Steam is admitted to the steam-chest A through the opening K in one of its sides, and to the cylinder of an engine through ports E in the bottom of said steam-chest. The valve consists of two hollow branches, which at their upper ends are united to each other and to a horizontal plate, B, whose ends and sides lap and move upon ledges D, which project from the ends and sides of the steam-chest, and which ledges are the boundaries of an opening through which the valve can be removed from the steam-chest, as is indicated in red outlines in Fig. 1. When the valve is to be removed the lid or cover H is first to be taken off the steam-chest, and the valve-stem is to be disconnected from the valve. The length of the plate B is such as that it always, in the movement of the valve, covers the valve-chest and keeps it separated from the exhaust-steam space C in the upper part of the box. The legs of the valve have exhaust ports or channels F through them, which open on their feet or bearing-surfaces, so as to coincide with the ports E when the valve closes either of said ports. The exhaust-ports meet at the top of the valve in an opening, L, made through the center of plate B, through which opening the exhaust-steam is admitted to chamber C, from which it escapes through an opening, J, in the lid or cover H.

The steam in the steam-chest, in consequence of this construction, is allowed to surround the valve on all sides, except on the narrow bearing-surfaces which rest on the valve-seat, the steam being between the legs or branches of the valve as well as above them, and being also in contact with the under surface of plate B, so that there will be an approximation to an equilibrium of pressure on the valve by the steam in the steam-chest.

The pressure of the steam on the under surface of plate B also serves to counterbalance the downward pressure of the exhaust steam in chamber C. Since the bearing-surfaces of the valve are at its ends, it follows that the ports of the cylinder may be directly over its ends, thereby saving much of the steam usually wasted in long ports or channels. The valve may, therefore, be extended to a length nearly equal to that of the cylinder, allowing only play enough to enable its bearing-surfaces to pass and repass the ports, and such extension is accomplished without increasing the bearing-surface of the valve, and consequently without increasing its friction. The legs of the valve may be made in one piece with the plate B, or separate therefrom. When made separate the joint I of the exhaust-chamber need not be made slanting, this inclination being given to it to allow the valve to be put in and taken out when it is made solid. The stem may be attached in the way here indicated in red outline, or it may be attached in the steam-chest; but the former mode of attaching it is preferable for the reason that then it will require very little packing, the only pressure to which its joint is subject being that of the exhaust-steam.

We claim as new and desire to secure by Letters Patent—

The combination of the plate B and hollow-legged valve G, arranged relatively with the steam-chest A, chamber C, and ledges D, in the manner and for the purpose herein specified.

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Witnesses:
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