L. H. HALL.

BALANCE SLIDE-VALVE.

No. 186,129. Patented Jan. 9, 1877.

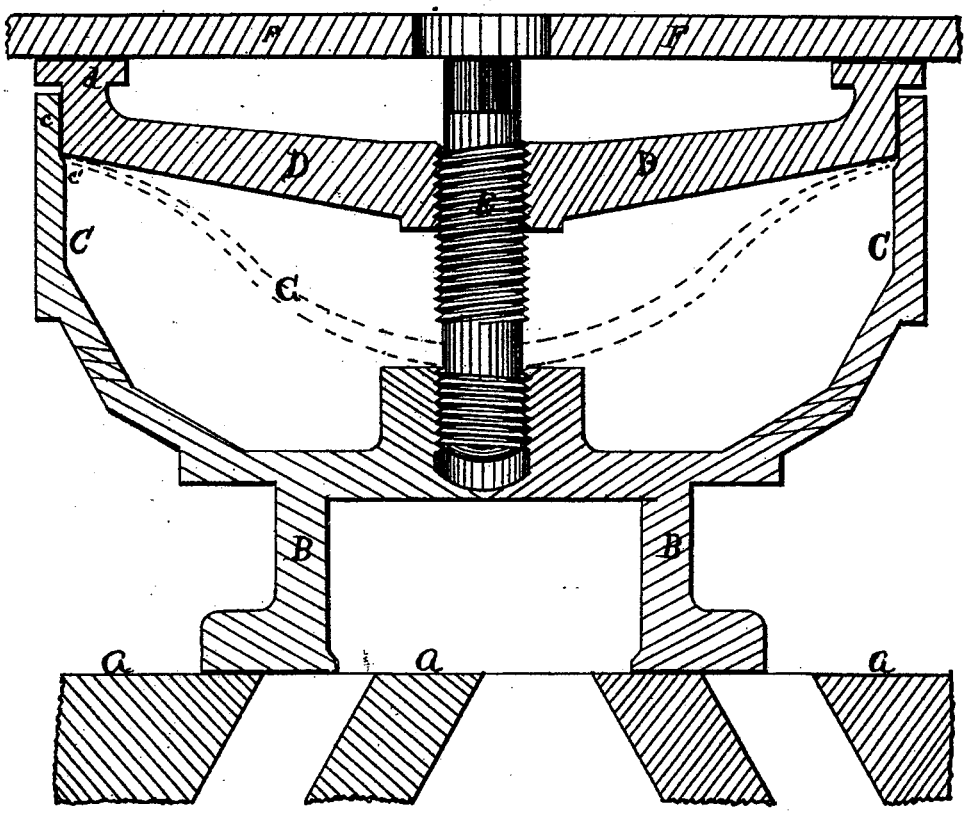

Fig. 1.

Witnesses

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UNITED STATES PATENT OFFICE.

LEONARD H. HALL, OF ERIE, PENNSYLVANIA.

IMPROVEMENT IN BALANCE SLIDE-VALVES.

Specification forming part of Letters Patent No. 186,129, dated January 9, 1877; application filed October 21, 1876.

To all whom it may concern:

Be it known that I, LEONARD H. HALL, of Erie, in the county of Erie and State of Pennsylvania, have invented a new and useful Balance Slide-Valve; and I do hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to the construction of balanced slide-valves for steam-engines, and consists in a new and improved device for balancing said valves.

My device is shown in the accompanying drawing, as follows: The figure is a vertical section of my valve on the line of motion—*i. e.*, lengthwise of the steam-chest.

A is the valve-seat. F is the top of the steam-chest, which is made smooth on its under side, and faces against the top of the balancing device. B is the valve, on the top or back of which is built my balancing device, which consists of a plate, D, which is circular, and has on its periphery a wing or face, *d*, which fits against the under face of the top F with a steam-tight joint. Connecting this upper plate with the valve is a circular rim, C, which fits against the plate D with a steam-tight joint, *c*, and is provided with a shoulder, *c'*, which prevents the plate D passing too far into the cup formed by the circular walls C. E is a standard or stud with a right and-left screw on it, by which the plate D is adjusted against the face F. The top of the stud E is squared, and an opening is left in the top of the steam-chest F, the face *d* preventing the escape of steam from the same, through which a key can be inserted at any time and the parts adjusted by turning the stud E. The cup- or circle formed by the walls C is just large enough to balance the valve. No steam can pass over the face *d*, and hence there is no pressure upon the top plate D. The plate D is made of brass, so as to avoid rusting of the joints *d* and *c*; and to avoid the use of too much metal, and thus to economize in the use of that expensive metal, the plate D can be made with openings—that is, it may be simply a wheel with spokes, for, as no steam passes through the joint *d*, no bad results can follow making the plate D as just named; but when the plate D is made solid the walls C can be made open—that is, the walls forming the shell C may be a mere skeleton below the shoulder *c'* when the plate D is solid. I simply name these as alternate forms of construction, either of which may be followed; or the plate D and the shell C can all be made solid, if desired.

The great end gained by the use of the right-and-left screw is to hold the head D so it cannot move either up or down. When the head is thus held firmly, so there is no motion, I am enabled to do away with the use of packing-rings to form a joint between the shell and the head at *c*, and make simply a ground steam-tight joint at that point, and when the shell C is made of open-work or in skeleton it need not have a strictly steam-tight joint at *c*.

What I claim is as follows:

1. A balance slide-valve, B, having a shell, C, built on its back, and a faced balance-plate, D, set in said shell, in combination with a right-and-left screw, E, for sustaining and adjusting said plate D, substantially as shown and described.

2. A cylindrical shell, C, cast upon the back of the valve and bored out, in the bore of which fits the plate D, turned up so as to fit said bore, and form the joint *c*, without the use of packing-rings, in combination with an adjusting-stud, E, the whole being arranged and operating substantially as and for the purpose set forth.

In testimony whereof I, the said LEONARD H. HALL, have hereunto set my hand.

LEONARD H. HALL.

Witnesses:
JNO. K. HALLOCK,
CHAS. BURNHAM.