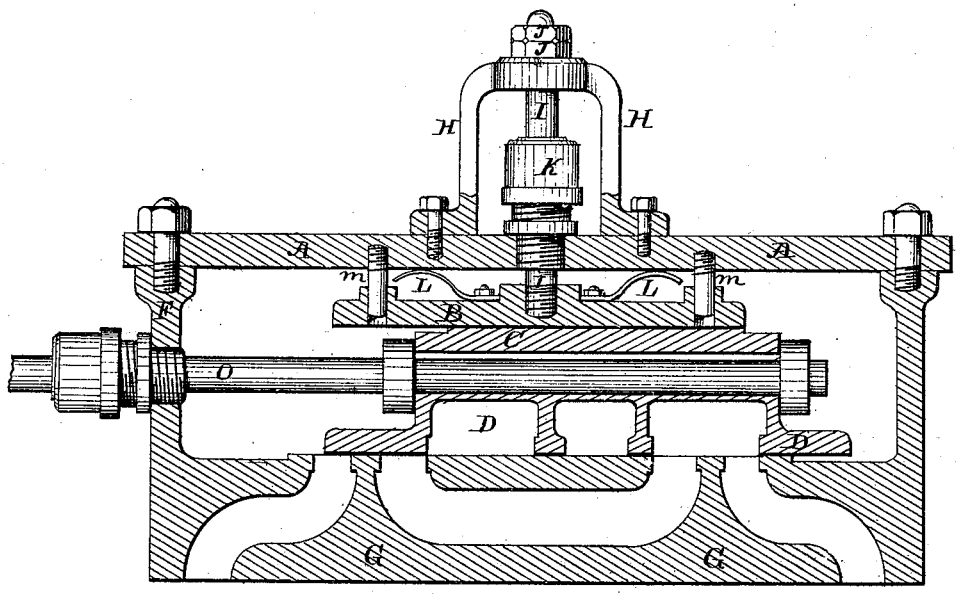
L. H. HALL.

BALANCED VALVES.

No. 181,334. Patented Aug. 22, 1876



Witnesses:

J. J. Read

R. N. Porter

Inventor:

Leonard H. Hall

by Sturgess & Hallock

attys.

UNITED STATES PATENT OFFICE.

LEONARD H. HALL, OF ERIE, PENNSYLVANIA.

IMPROVEMENT IN BALANCED VALVES.

Specification forming part of Letters Patent No. **181,334**, dated August 22, 1876; application filed February 28, 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 certain new and useful Improvements in Balancing Slide-Valves for Steam-Engines; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawing, and to letters of reference marked thereon, which form a part of this specification.

My invention consists in providing a new and improved mode of balancing the slide-valve of a steam-engine.

The object of my invention is to so balance the slide or cut-off valve of a steam-engine as to prevent undue friction, and to accomplish this result in the most perfect manner.

The following general description will enable those skilled in the art to which my invention relates to construct the same, and place it in operation upon an engine.

My device is shown in the accompanying drawing, as follows—that is to say, by one figure, which is a vertical longitudinal sectional view of the steam-chest, the sliding cut-off valve, and of my device.

The various parts are represented and designated by letters of reference as follows: A F G are the walls of the steam-chest. D is the valve, and O is the valve-piston. E E are the ports. All these parts are old and of ordinary construction. C is a balance-plate built on the back of the valve, and is of sufficient size to properly balance the valve. The upper face of this plate is made smooth, and works in contact with the lower face of the suspended balance-plate B. The faces of these plates, when in contact, form a close joint; hence, the whole pressure of the steam comes upon the suspended plate B. The manner in which I suspend this plate is as follows: A steel rod, I, screws into the upper surface of the plate, and from thence passes through a stuffing box, K, in the upper plate A of the steam-chest, thence through a sustaining-yoke, H, and is there adjustably held by the adjusting-nuts J J. The plate, when thus suspended, may be pressed up by the reaction of the steam in the ports E; but any action of this kind is regulated by flexibly seating the plate B on the springs L L. The plate is steadied by pins *m m*, which are screwed into the top plate A, and work in holes or sockets in the plate B.

To one acquainted with the art to which this invention relates the operation of the parts when in position as described, and the advantages thereby gained, are obvious, and no further description is believed to be necessary.

What I claim is as follows:

1. The combination of the sustaining-yoke H, suspending-rod I, adjusting-nuts J J, with the balance-plate B, for suspending and making adjustable the said plate, and the pins *m*, for steadying the same, substantially as shown, and for the purposes mentioned.

2. The pins *m*, in combination with the flexibly-seated plate B, for steadying the same, substantially as shown and described.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

LEONARD H. HALL.

Witnesses:

JNO. K. HALLOCK,

J. J. READ.