

O. H. CASTLE.

Balanced Slide-Valves for Steam-Engines.

No. 151,842.

Patented June 9, 1874.

Fig. 1.

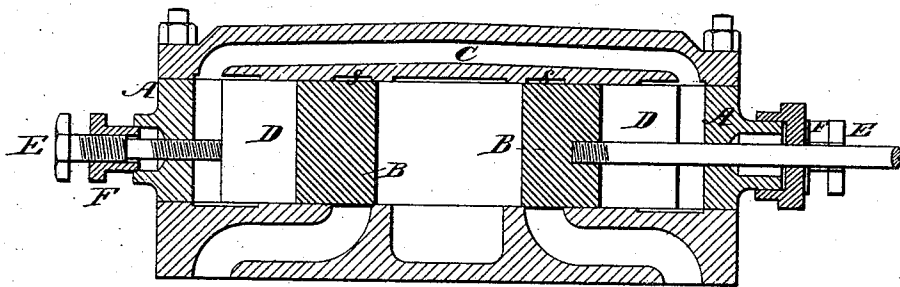


Fig. 2.

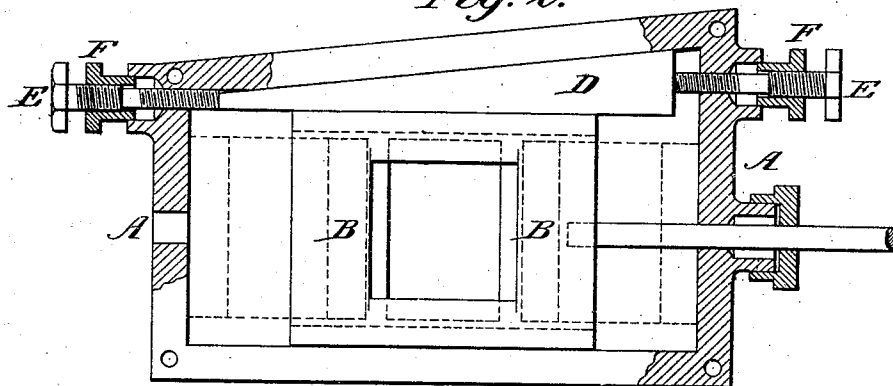
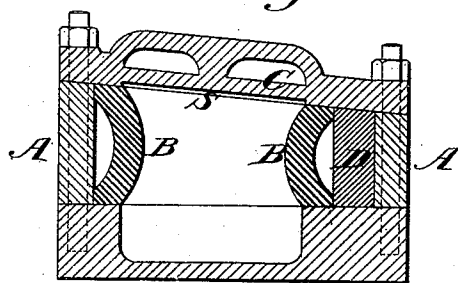


Fig. 3.



Witnesses.

H. W. Hirt.
James N. Sweetser.

Inventor.

Oliver H. Castle.

UNITED STATES PATENT OFFICE.

OLIVER H. CASTLE, OF INDIANAPOLIS, INDIANA.

IMPROVEMENT IN BALANCED SLIDE-VALVES FOR STEAM-ENGINES.

Specification forming part of Letters Patent No. **151,842**, dated June 9, 1874; application filed January 24, 1874.

To all whom it may concern:

Be it known that I, OLIVER H. CASTLE, of Indianapolis, in the county of Marion and State of Indiana, have invented certain Improvements in Balanced Slide-Valves for Steam-Engines, of which the following is a specification:

My invention relates to the combination of the principal operative parts, as more fully hereinafter set forth.

Figure 1 is a side elevation of the steam-chest and interior. Fig. 2 is a plan view of the same. Fig. 3 is an elevation, showing that end of the steam-chest which is at the right hand in Figs. 1 and 2.

The steam-chest A has sides converging toward each other and ends, at right angles to the front side, (seen in Fig. 2,) which ends converge also toward the rear. (Seen in Fig. 3.) Holes counterbored for a short distance are drilled into the steam-chest opposite the ends of wedge D, and tapped to receive set-screws E E. Upon said set-screws are screwed packing-thimbles F F, which are designed to enter the counter-bore and prevent leakage of steam. The valve B is of a rectangular form, and is converging or wedging toward the rear edge, and has channels cut into its opposite edges to facilitate the passage of steam around it, the sides or faces and edges of said valve being parallel with the line of motion. The forward edge of valve B has a greater depth than the rear edge, and this difference multiplied by the longitudinal length of ports, and by the pressure in pounds, gives the force that tends to keep the valve seated against its rear edge. Wedge D, adjusted by set-screws E E, is introduced behind the valve B, so as to pre-

vent any excess of friction, and maintain a perfect steam-joint at all times. The exhaust steam bears against the cover C through the opening in the middle of valve B, and relieves the same of any upward pressure. S S are shallow recesses cut into the under face of the cap or cover C of steam-chest A immediately over and corresponding in size with the steam-ports of the cylinder. Steam is admitted to chest A from either end or side, and enters the ports at each end of valve B in the ordinary manner. The cover C is sometimes made hollow to facilitate the passage of steam to opposite ends of said chest.

If the valve should leak, through long use, it can be adjusted by unscrewing set-screw E at right hand of wedge D, and screwing up the opposite one, which will withdraw the wedge D and let the valve B in closer to its faces, thus renewing the joint, which can be done while in motion.

The packing is preserved by holding packing-thimbles F F, which neither advances nor recedes, while set-screws E E are being turned in either direction, as the threads upon said set-screws are the same number per inch.

I make no claim to the wedge-shaped slide B, nor recesses S S, for I am aware that these are not new; but

I claim as my invention—

The combination of the valve B, wedge D, set-screws E, and packing-thimbles F with steam-chest A, to operate substantially as and for the purposes set forth.

OLIVER H. CASTLE.

Witnesses:

F. W. HIRT,
JAMES N. SWEETSER.