J. F. ALLEN

Balanced-Valves.

No. 167,865. Patented Sept. 21, 1875.

Fig. 1

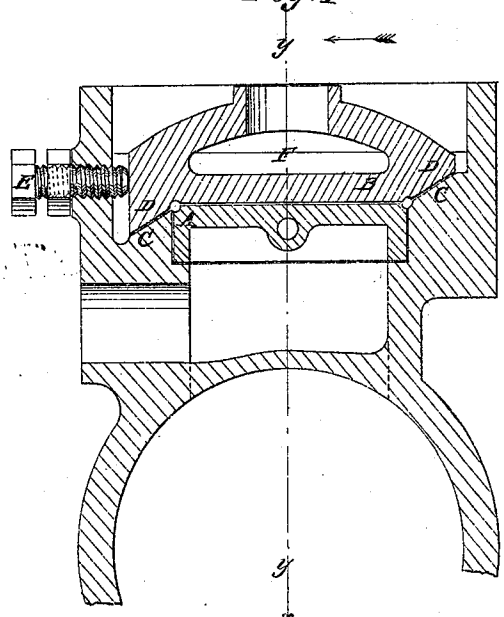
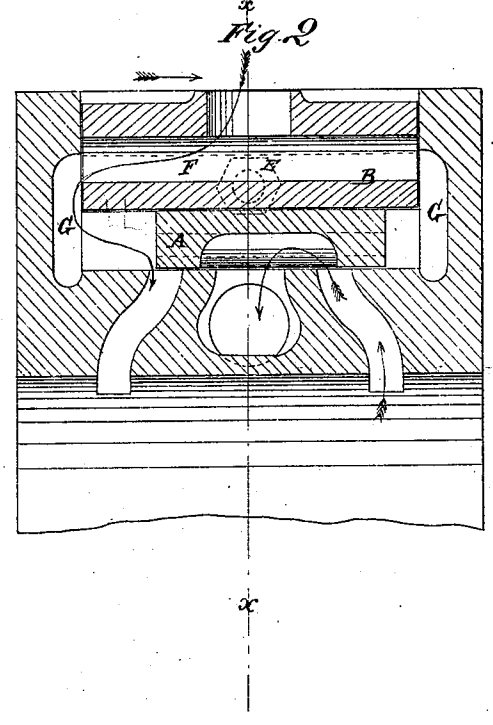


Fig. 2



WITNESSES:

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IMPROVEMENT IN BALANCED VALVES.

Specification forming part of Letters Patent No. **167,865**, dated September 21, 1875; application filed August 1, 1874.

To all whom it may concern:

Be it known that I, JOHN F. ALLEN, of the city, county, and State of New York, have invented a new and Improved Balanced Slide-Valve, of which the following is a specification:

The invention will first be fully described, and then pointed out in the claim.

Figure 1 is a cross-section of a steam-chest with a balanced valve, according to my invention, the section being taken on the line *x x* of Fig. 2, and Fig. 2 is a longitudinal section taken on the line *y y* of Fig. 1.

Similar letters of reference indicate corresponding parts.

A is an ordinary slide-valve; B, the pressure-plate; C, the inclined supports for the plate; D, corresponding inclines on the plate to rest on supports C, and E is the adjusting-screw.

The valve is faced on the back or top, and the plate is faced on the under side to fit steam tight, and the supports C and inclines D are so arranged relatively to the valve that when the plate is free from the influence of the screw it shifts laterally so as to rest wholly or mainly on it, and thus allows the full pressure of the steam to act upon it, and by forcing it up the inclines by the screw it relieves the valve of the pressure just in the measure that it is raised. Thus the valve is balanced in the most simple manner, and is so that it can be adjusted to any pressure at any time without opening the steam-chest, and, moreover, the arrangement affords a balanced valve which will lift when a locomotive-engine is running after the steam has been shut off, and prevent the piston from pumping air into the boiler by allowing the air to escape from the front to the rear of the piston under the valve.

The invention is applicable to slide-valves generally. The passage F in the pressure-plate is merely to afford a simple way for the steam to enter the chambers G at the ends of the valve to save making the chest enough longer for the steam to pass over the ends of the pressure-plate; but any other approved arrangement may be employed. It also acts as a relief-valve to the engine in case the cylinder is filled with water.

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

The combination, with valve A, of steam-chest having inclines C C and the correspondingly-inclined movable plate B, the former having an open and the latter a closed top, as shown and described, whereby air may enter the cylinder when the valve is raised by back pressure.

JOHN F. ALLEN.

Witnesses:

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