

J. Larsson,
Steam Balanced Valve.
N^o 85,105. *Patented Dec. 22, 1868.*

Fig 1

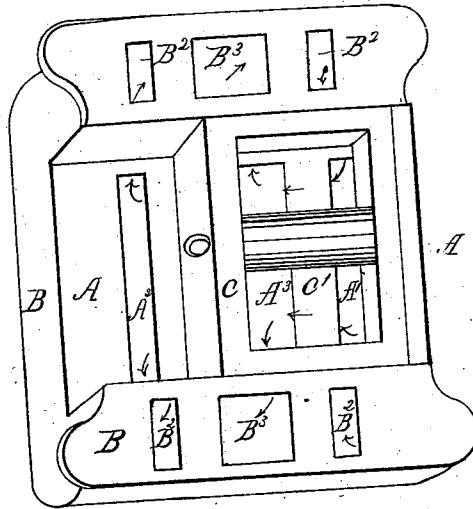


Fig 3

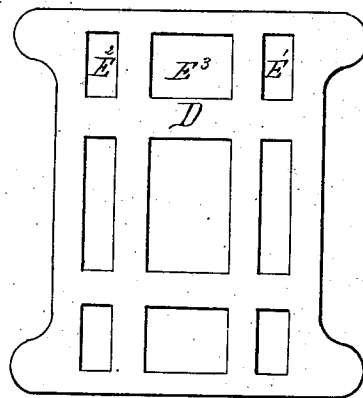
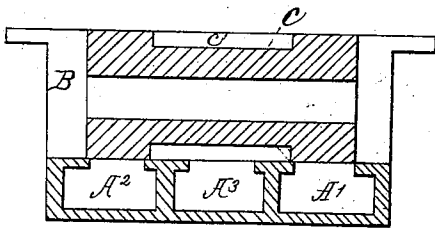


Fig 2



Witnesses
Reuben Beckett
John P. Clark

Inventor
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JOAH LAWSON, OF ALLEGHENY CITY, PENNSYLVANIA.

Letters Patent No. 85,105, dated December 22, 1868.

IMPROVEMENT IN STEAM-ENGINE SLIDE-VALVES.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, JOAH LAWSON, of Allegheny City, in the county of Allegheny, and State of Pennsylvania, have invented certain new and useful Improvements in a Balanced Steam Slide-Valve; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

The nature of my invention consists in providing a covering or false chest, which is supported, in a suitable manner, on the valve-seat of an ordinary steam-cylinder, and so arranged as to form an oblong or square box, in which the valve is reciprocated. The surfaces that touch the valve are made steam-tight, in any suitable manner.

Opposite each port on the valve-seat, the before-mentioned covering is provided with ports or recesses, of similar size as those on the valve-seat, which pass through and over the covering. By this means, constant communication is maintained between each steam-port and the corresponding ports in the covering, and a perfect equality of pressure is thus obtained on all sides. By also constructing the valve of any suitable shape, of only one-half the width or length of the steam-ports, and also making an opening or passage through it.

To enable others skilled in the art to make and to use my invention, I will describe its construction and operation.

In the accompanying drawings—

Figure 1 is a perspective view of valve and covering, showing arrangement of ports.

Figure 2, a transverse section of the same.

Figure 3, a plan of valve-seat on cylinder.

A represents the upper valve-seat.

A¹, the right-hand induction-port.

A², the left-hand induction-port.

A³, the eduction-port.

B, the covering

B¹, the right-hand false induction-port.

B², the left-hand false induction-port.

B³, the false eduction-port.

C, the valve.

C', the passage through.

D, the cylinder-valve seat.

E¹, the right-hand main induction-port.

E², the left-hand main induction-port.

E³, the main eduction-port.

The mode of operating my devices is as follows, viz: Steam being admitted into the steam-chest, in any

ordinary manner, the valve C being in the position as shown in fig. 1, the steam will pass through the port E², and also pass through the ports A² and B², and then down into port E² and into the cylinder, directly the stroke is completed. The valve C, being moved by an eccentric or other suitable device or devices, travels over until its face covers the ports A² and A³. The steam will then return through the opening, C', of the valve C, and through the ports A³ and B³ to the eduction-pipe.

The advantages I claim in my invention are the reduction of the area of the valve, consequently diminishing friction, and, as a constant communication of steam is kept up all through the several passages, thus keeping the valve, as it were, in equilibrium; and, since the slide-valve C, with its central opening, C', establishes the communication between the exhaust or eduction A³ and E³ and its corresponding port B³ in the covering, B, and in any position in which the valve C uncovers a port, wholly or partly, the corresponding port in the covering, B, is acted upon precisely in a similar manner. The pressure, therefore, upon all parts of the valve C is equally balanced.

My invention is also peculiarly adapted for steam-hammers, or to any valve-movement effected by manual power, since, the valve being perfectly balanced, it requires but little exertion to cause it to reciprocate.

My improvement can be easily adapted to existing steam-cylinders, since it requires but little change in the details.

Having thus described the construction and operation of my improvements in balance-valves,

What I claim, and desire to secure by Letters Patent, is—

1. The covering, B, over the slide-valve C, with steam or induction-ports A¹ A², and corresponding ports B¹ B², and eduction-ports A³ and B³ passing through and over the same, constructed substantially as described.

2. The construction of the slide-valve C, with its central opening or passage C', substantially as described.

3. The combination and arrangement of the covering, B, with its ports A¹ A² A³ and B¹ B² B³, with the valve C and its opening, C', when constructed and arranged as herein described and set forth.

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

JOAH LAWSON.

Witnesses:

PERCEVAL BECKETT,
JOHN P. CLARK.