

(No Model.)

J. D. STARK.
SLIDE VALVE FOR ENGINES.

No. 484,903.

Patented Oct. 25, 1892.

Fig: 1.

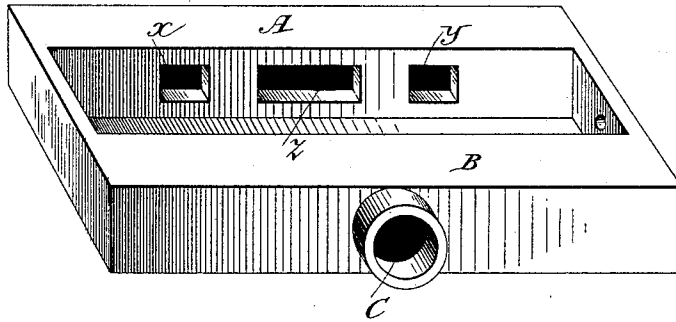


Fig: 2.

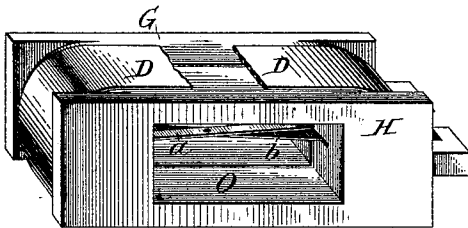


Fig: 3.

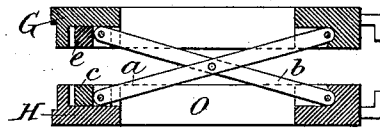
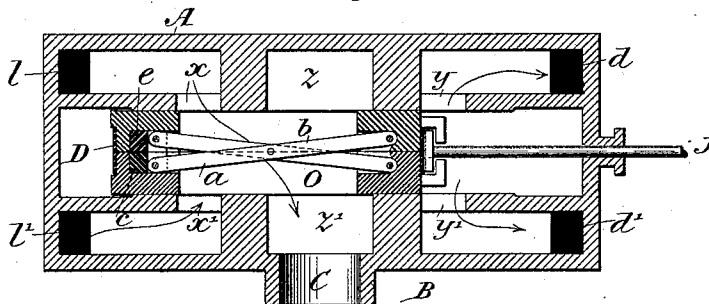


Fig: 4.



Witnesses:
John A. Rennie.
Joseph W. Oakman

Inventor,
J. Dunn Stark

UNITED STATES PATENT OFFICE.

JOHN DUNN STARK, OF NEW YORK, N. Y.

SLIDE-VALVE FOR ENGINES.

SPECIFICATION forming part of Letters Patent No. 484,903, dated October 25, 1892.

Application filed August 3, 1891. Serial No. 401,615. (No model.)

To all whom it may concern:

Be it known that I, JOHN DUNN STARK, a citizen of the United States, and a resident of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Slide-Valves for Steam-Engines, of which the following is a specification.

My invention relates to improvements in balanced slide-valves and their seats; and the objects of my invention are, first, to get rid of the excessive friction which is caused by steam-pressure on the valve, and, second, to make a steam-engine more easily governed and controlled. I attain these objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a perspective view of the valve-seat; Fig. 2, a like view of the valve; Fig. 3, a sectional view of the valve, and Fig. 4 a like view of the same in position on its seat.

Similar letters refer to similar parts throughout the several views.

If over the surface A B, Fig. 1, we put a plate or cover, we will have a new form of steam-chest, which may be cast as a part of the cylinder instead of being separate. In the drawings the cover is left off to expose the ports $xz y$. The opposite ports in the side B are seen only in Fig. 4.

The valve, Fig. 2, is moved over and between the opposite ports and seats by means of the connecting-rod J, Fig. 4, which is connected with the eccentric and with the valve, as shown in the drawings. In its motion the valve runs on a small guide at each corner, by which it is retained in the proper position to allow steam to pass and press on all sides of its free surface.

The valve, Fig. 2, is made in two parts G and H, with their backs adjoining in the seam E. Over this seam is placed the ribbon D D, of metal or other suitable material, which, being flexible, renders the seam steam-tight by virtue of the pressure of steam all round the valve. If the back of each part of this valve be of the same size as its face, it must be held against its seat by means of springs between its two parts; but if the face of each part is made a little larger than its back, as shown in Fig. 2, the valve will adjust itself by slight steam-pressure without

the springs. Recourse may be had to both springs and steam-pressure, if desired.

The two parts H G of the valve are connected together, so as to move parallel to each other, by means of the cross-pieces $a b$, which are pivoted at one end to the two parts of the valve, Fig. 3, and at the other end to the slides $c e$, which move freely parallel with the two parts of the valve as they act automatically in taking up any wear caused by the friction between the valve and its seat. By this means of connecting the two parts of the valve one end cannot be raised from its seat without raising the whole length of the valve. If the part A, Fig. 1, be placed directly over the ordinary steam-ports and the ports $xz y$ be made to pass through it from side to side and to open into the old ports, we may dispense with the part B and connect two ordinarily-shaped valves together, so as to run on the two opposite seats thus formed. Then if we construct one or both valves in two parts and connect said parts in a manner described in reference to the two parts of the valve, Figs. 2 and 3, these twin valves will also adjust and balance themselves. It will be seen that while the ports $y y'$, Fig. 4, are open steam rushes into the cylinder through these and the apertures $d d'$, and at the same time the exhaust-steam goes through $b b' x x'$ and the opening O, passing through the valve and through the exhaust-port $z z$, as shown by the arrows.

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

1. A balanced slide-valve made in two similar parts or halves, which are connected together by means of cross bars or links pivoted to each, so as to secure accurate parallel motion, substantially as set forth.

2. A steam slide-valve composed of two similar parts, which are connected together by cross-pieces that produce parallel action of said parts over the seam, between which is a flexible ribbon, substantially as set forth.

3. The double slide-valve, in combination with the double set of steam-ports and valve-seats, the ribbon over the joint between the two parts, and the parallel connection of the same, as and for the purpose set forth.

4. The double steam slide-valve, in combination with the double valve-seat, the cross-bars which produce parallel action of the two

parts of the valve, the ribbon over the seam between the same, and the springs and packing, substantially as specified.

5 5. The twin valves with spring between the two parts of the valve, in combination with the ribbon over the joint between the same and their parallel connection, and also the double valve-seat with ports extending through it from face to face, as and for the
10 purpose specified.

6. The combination of the double slide-valve with its opening or chamber passing through it from one face to its opposite face,

the parallel connection of the two parts of the valve by means of cross-bars, the ribbon over 15 the seam between the said parts, the double valve-seats, and the double set of ports, all substantially as set forth.

Signed at New York, in the county of New York and State of New York, this 1st day of 20 August, A. D. 1891.

JOHN DUNN STARK.

Witnesses:

ELLA F. BRAMAN,
JOS. C. BRAMAN.