

W. C SELDEN.  
VALVE FOR ENGINES.

No. 110,294.

Patented Dec. 20, 1870.

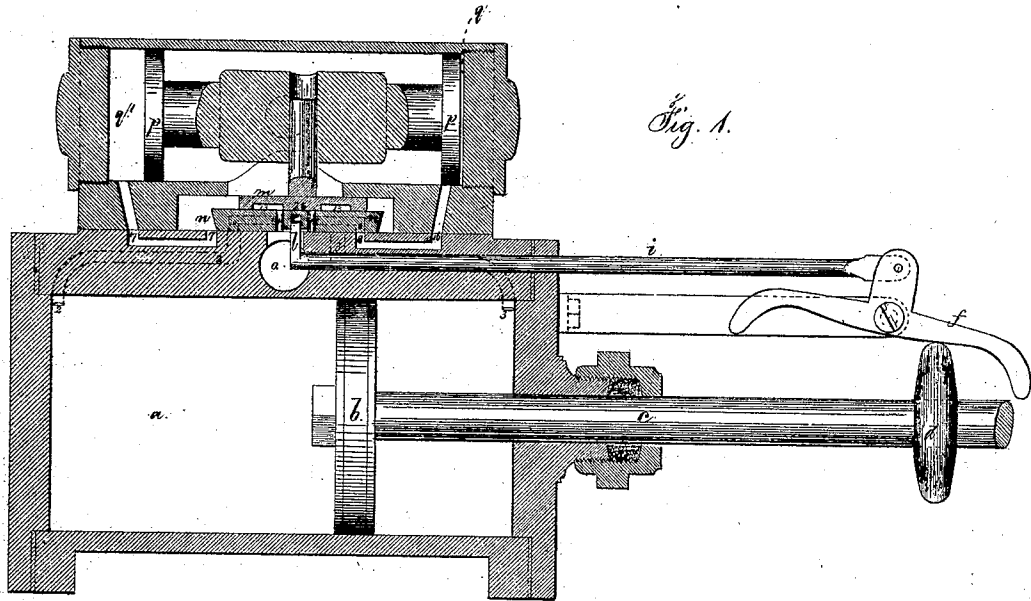


Fig. 1.

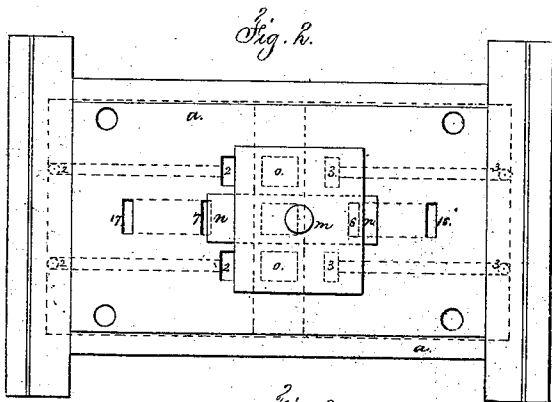


Fig. 2.

Fig. 3.

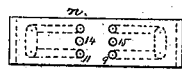
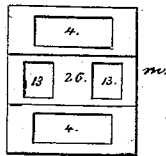


Fig. 4.

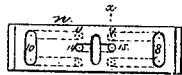


Fig. 5.



Fig. 6.

*W. C. Selden*

Witnesses,

*Chas. H. Smith*

*Geo. D. Walker*

# United States Patent Office.

WILLIAM C. SELDEN, OF BROOKLYN, NEW YORK, ASSIGNOR TO ADAM CARR, OF PATERSON, NEW JERSEY.

Letters Patent No. 110,294, dated December 20, 1870.

## IMPROVEMENT IN VALVES FOR ENGINES.

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, WILLIAM C. SELDEN, of Brooklyn, in the county of Kings and State of New York, have invented and made an Improvement in Valves for Engines, and the following is declared to be a correct description of the said invention.

This invention is an improvement upon and modification of the valve for engines, for which Letters Patent were allowed to me, January 19, 1870.

In my present improvement the parts are made so as to be more easily constructed and kept in repair than in my aforesaid valve.

In the drawing—

Figure 1 is a vertical section, longitudinally, of the cylinder;

Figure 2 is a plan of the valves and valve-seats;

Figure 3 is an inverted plan of the main valve;

Figure 4 is a detached view of the top; and

Figure 5 is a similar view of the bottom of the secondary valve; and

Figure 6 is a cross section of the same, at the line  $x x$ .

The steam-cylinder  $a$ , piston  $b$ , piston-rod  $c$ , boss or cam  $d$ , to act upon the lever  $f$  and the rod  $i$ , are substantially similar to those in the aforesaid invention and patent.

The secondary valve  $n$ , is operated by a toe,  $l$ , upon the rod  $i$ ; the main valve  $m$  is actuated by the pistons  $p p$ , in the cylinders  $q q'$ , in the valve-chest of the engine.

The secondary valve  $n$  admits steam to act upon the pistons  $p$  and move them and the valve  $m$ , and, as the valve  $m$  moves, it cuts off the steam that acts in the cylinders  $q q'$ , in such a manner as to cushion the steam, and prevent concussion or thumping, so that the valve is nearly noiseless.

The ports 2 2, at one end of the steam-cylinder, and 3 3, at the other end of the cylinder, are of usual character, except that at the valve-seat there are two separate openings at each end, so as to be in line with the faces of the main valve  $m$ .

The exhaust port  $o$  is adapted to convey away the steam passing from either of the ports 2 or 3, through the ports 4 of the valve  $m$ .

The secondary valve  $n$  is beneath or within the

valve  $m$ , and operates with the ports 6 and 7, to admit steam to either cylinder  $q q'$ , the ports 6 and 7 leading along beneath the valve-seat and passing by the openings 16 and 17, into the respective cylinders  $q q'$ .

The valve  $n$  has passage ways through it, see dotted lines, figs. 4 and 5; these connect the openings 8 and 10, on the lower face, with the respective openings 9 and 11, on the upper face of this valve  $n$ , and the under side of the valve  $m$ , has ports 13, acting with the openings 9 or 11, to allow steam to escape, by the ports 14 or 15, into the exhaust.

With the parts in the position of figs. 1 and 2, the piston is moving to the right, the ports 2 being open and steam acting through 7 and 17 in the cylinder  $q'$  to hold the pistons  $p$  and valve  $m$ , in the position shown.

As the stroke is finished, the boss  $d$ , lever  $f$ , and rod  $i$ , change the position of the valve  $n$ , so that steam is admitted by the ports 6 and 16 into the cylinder  $q$ , to move the pistons  $p$  and valve  $m$ . As the valve  $n$  is moved, the port 7 is closed, and then opened to the exhaust through 10, 11, 13, and 14 but so soon as the valve  $m$  moves, the portion 16 slides over and covers the holes 11 and 14, cutting off the further exhaust, and confining in  $q'$  sufficient steam to cushion the piston  $p$  and prevent concussion, thus causing the valve to be noiseless, or nearly so.

The reverse movements take place at the extreme inward movement of the piston and rod, the admitting and cutting off of the steam being as before described.

I claim as my invention—

The secondary valve  $n$ , and passage-ways through it, substantially as described, in combination with the steam-valve  $m$ , pistons  $p$ , cylinders  $q q'$ , and steam and exhaust ports, arranged substantially as and for the purposes set forth.

Signed this 1st day of August, A. D. 1870.

WM. C. SELDEN.

Witnesses:

HAROLD SERRELL,  
CHAS. H. SMITH.