

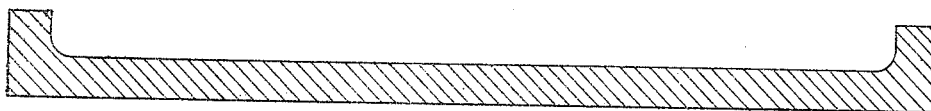
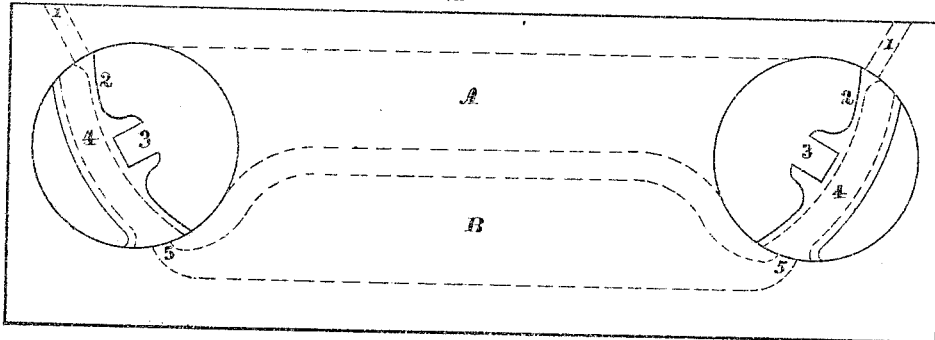
*S. H. Whitmore,*

*Oscillating Valve.*

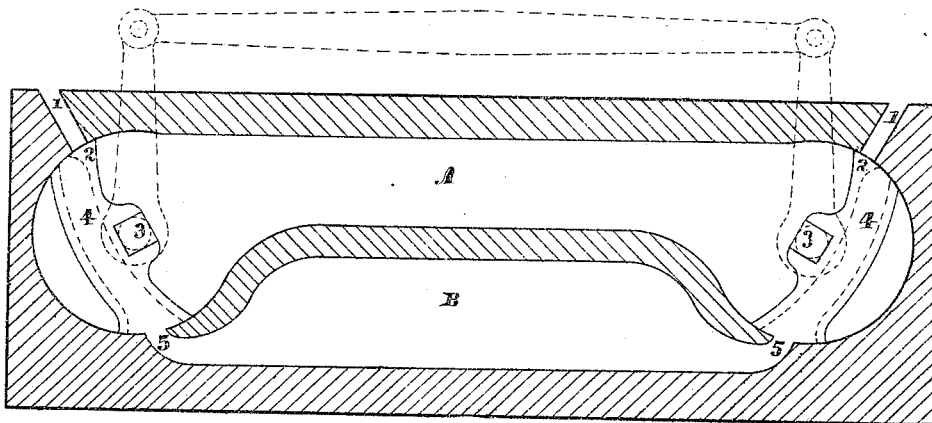
*No. 113,950.*

*Patented Apr. 18. 1871.*

*Fig. 1.*



*Fig. 2*



**Witnesses;**

*Ben. H. Richter*  
*B B Babcock*

**Inventor.**

*Seth A. Whitmore*

# United States Patent Office.

SETH H. WHITMORE, OF DECATUR, ILLINOIS.

Letters Patent No. 113,956, dated April 18, 1871.

## IMPROVEMENT IN STEAM-ENGINE VALVES.

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

Know all men that I, SETH H. WHITMORE, of the city of Decatur, Macon county, State of Illinois, have invented certain new and useful Improvements in Steam-Engine Valves and Valve-Openings, of which the following is a full, clear, and exact description, reference being had to the accompanying drawing, in which like figures represent like parts of my valve and valve-openings.

My improvements relate to the construction of valves and valve-openings of a steam-engine cylinder, and the manner of exhausting through the valves, and of placing and operating said valves at opposite ends of a steam-engine cylinder; and consists of an oscillating valve simple in construction and effective in its operation.

In the accompanying drawing—

Figures 1 and 2 are sectional views showing the several parts of my improvements in valves and valve-openings in steam-engines.

1 1 are the steam-openings from the valve and steam-chamber A into the cylinder.

2 2 are the valves and valve-seats, in which the valves oscillate by means of the valve-stems 3 3, which pass through the slot in the face of the valves, while at the outer extremity of the stems is fastened the two arms, shown in dotted lines. They, in turn, are connected together by a rod, so that when one arm is moved in one direction the other will be drawn with it.

4 4 are the exhaust-openings through the valves, through which the steam is exhausted from the cylinder into the exhaust-chamber B.

The movement of the arms from left to right will admit the steam at one end of the cylinder, over the face of the valve, into the cylinder, while the valve at the opposite end of cylinder will have the exhaust-opening through the valve brought directly under the steam-opening of the cylinder, and the opening in the valve will be brought over the opening 5 5 in the lower side of the valve-seat that opens into the exhaust-chamber B, thus making a continuous opening from the cylinder down through the valve into the exhaust-chamber B, through which the steam will flow out of the cylinder.

In making my improved valve I permit the steam to surround the valve on two sides and ends, and thus take off the most of the pressure that the valve would have if the steam was only let on to the face of the valve. To accomplish this I use only two openings,

one in the cylinder and one into the exhaust-chamber, and thus do away with a bridge between the two openings that all valves have that are known as slide or hollow-throated valves, or valves that have an oscillating motion, and which receive and exhaust of themselves, and are adjustable to their own seats by the pressure of the steam and held in place when working by the steam. To accomplish this I make an exhaust-opening through the valve to correspond to the openings in the cylinder and exhaust-chamber B. By making the valve thus I am enabled to reduce the pressure on the valve by presenting a less surface to be acted on by the steam by cutting away all of the metal on the back of the valve except so much as will form a partition between the live steam and the exhaust-opening through the valve. The larger I make the valve in diameter the nearer I come to making it a balance, as the larger the diameter the flatter the arc of the circle becomes, and consequently the nearer the two flat sides of the valve come to measuring the same number of square inches in making the valve. I do not make it so large as to become a balance, but always make it so that the face or side from which the steam is admitted over into the cylinder shall always have as many square inches, or more, as there are square inches in the steam-passage in the cylinder over the back of the valve, so that when steam is admitted onto the valve it will be forced to its seat, and thus held, when the engine is working, so that the steam in the cylinder or the steam on the back of the valve shall not force the valve from off its seat so as to let the steam blow through into the exhaust-chamber B.

Having thus fully described the nature, purpose, and operation of my invention, I do not claim, broadly, the principle of admitting and exhausting steam to a steam-engine cylinder; but

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

The above-described oscillating valve, with the exhaust-passage 4 and rock-shaft 3, in combination with the ports of the steam-chest and cylinder, all constructed and arranged substantially as described.

SETH H. WHITMORE.

Witnesses:

BEN. H. RIGHTER,  
B. B. BABCOCK.