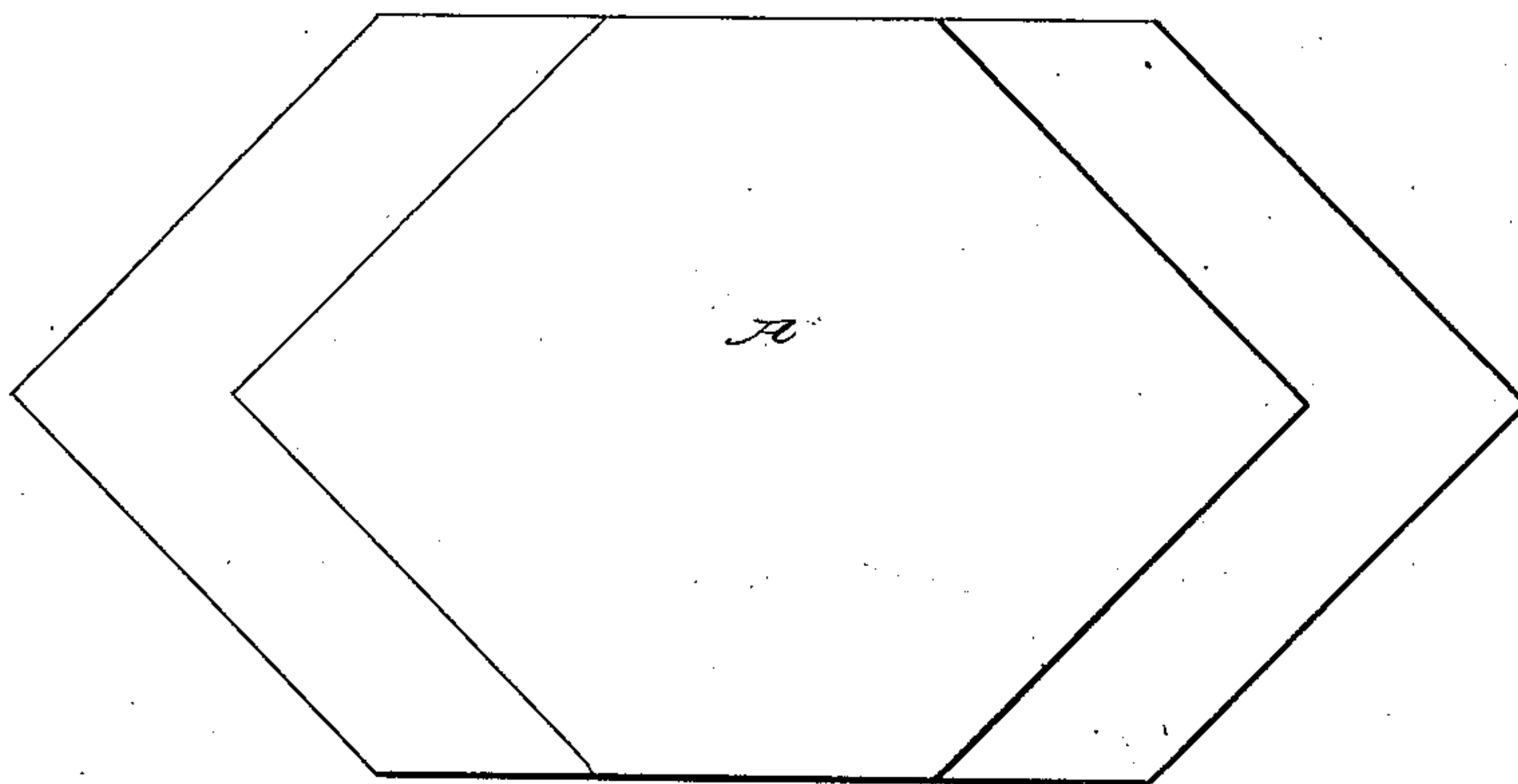


*S. D. Wilson,  
Steam Slide Valve.*

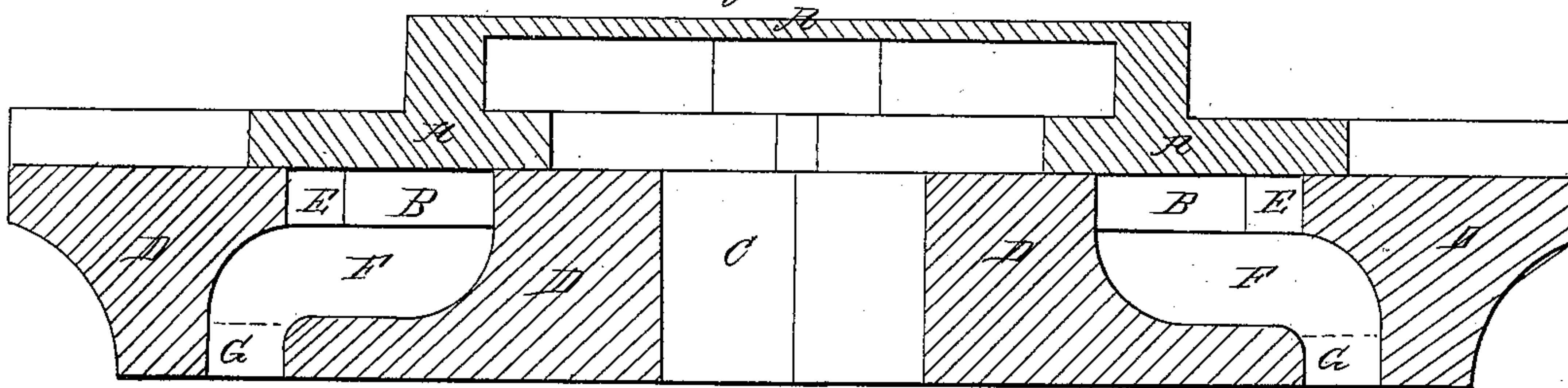
*N<sup>o</sup> 10,417.*

*Patented Jan. 10, 1854.*

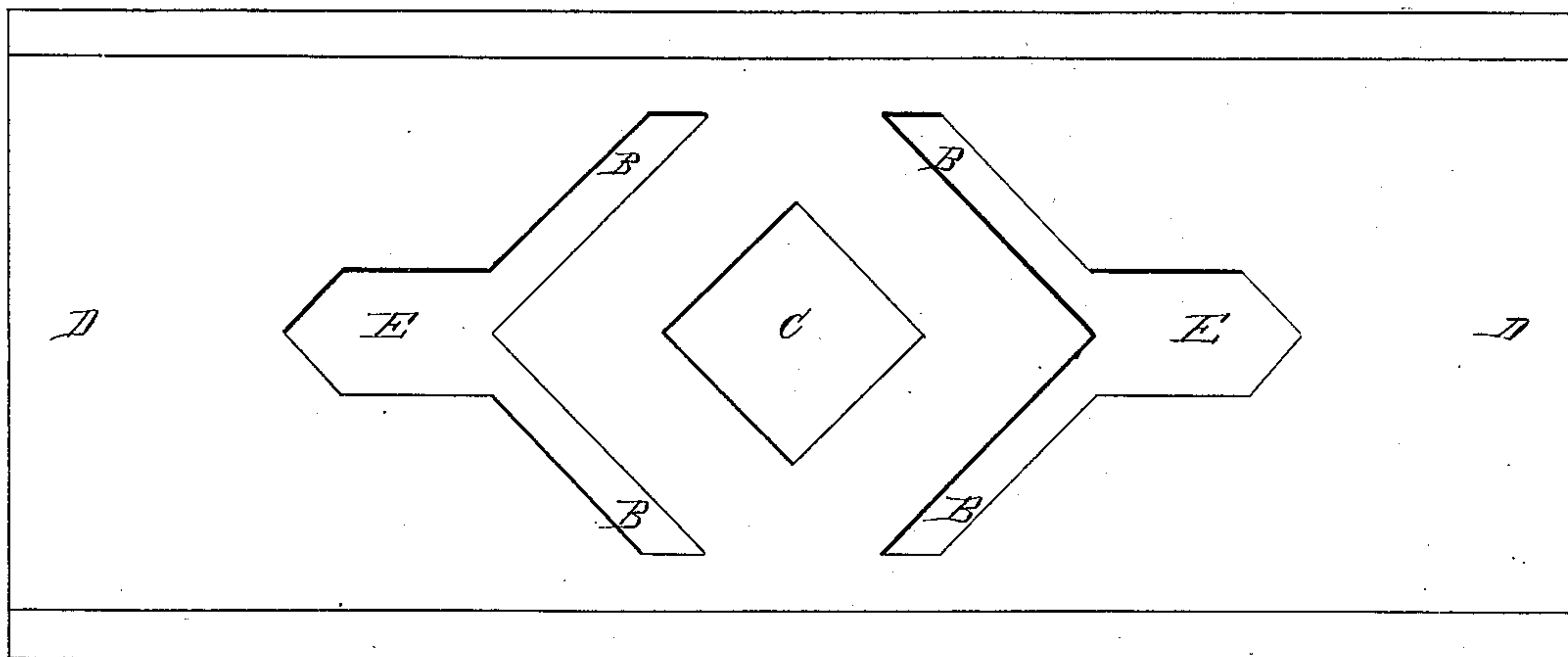
*Fig. 1*



*Fig. 2.*



*Fig. 3.*





# UNITED STATES PATENT OFFICE.

STEPHEN D. WILSON, OF READING, PENNSYLVANIA.

## VALVE AND VALVE-SEAT OF STEAM-ENGINES.

Specification of Letters Patent No. 10,417, dated January 10, 1854.

*To all whom it may concern:*

Be it known that I, STEPHEN D. WILSON, of the city of Reading, county of Berks, and State of Pennsylvania, have invented a new and useful Improvement on Steam-Ports in Valve-Seats and Slide-Valves for Steam-Engines of Every Description; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1, is a top or surface view of the valve. Fig. 2 is a transverse section of valve and valve seat, and Fig. 3, is a surface view of the valve seat.

The nature of my invention consists in the enlargement and peculiar construction of the steam ports in the valve seat of steam engines, and in adapting the valve, to these ports, so as to exhaust steam from one end of the cylinder with much greater rapidity than it is admitted into it at the other, all of which is to be accomplished by the same motion, with a single slide valve and by this means diminish the resistance of the exhaust steam, and increase the power and speed of the engine with a saving of fuel.

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

I construct my steam chest in any of the known forms; represented here in Figs. 2 and 3, letter D; and on it place a slide valve A, Fig. 1. I make no change in the form or size of the steam port G, in common use, leading from the cylinder to the seat of the steam chest until it reaches the seat; I then enlarge the port F, in the seat until it is equal in capacity to twice the steam port, G, and continue it at this size to the surface of the seat of the steam chest, B, and E, in Figs. 2 and 3. I make my valve, A, Fig. 1, in any of the known forms, and moved, too, by the common eccentric motion, except that I alter the shape of the valve so as to adapt it to the form of the openings in the seat. I then arrange my valve motion, so that it will open only one-half the port, F, for induction E, and the other half for eduction B, as my object is to exhaust steam in the shortest possible time, so as to relieve the working of the engine from all resistance from this source; I shape on the face of the seat, D, Fig. 3, that portion of the opening of the steam port, E, used for induction, as long in the

direction of the stroke of the engine as the steam chest will admit of and as narrow as possible to admit sufficient steam to work the engine at its full power, and making the aperture, E, either straight, angular, or semicircular as I may prefer. The other half, B, on the face of the seat, D, Fig. 3, I shape as long as the steam chest will admit of at right angles with the length of the cylinder, or I may vary it by giving it a semicircular or angular figure such as B, Fig. 3, and as narrow as possible, just widening it enough to make the eduction opening, B, equal in capacity to the induction opening, E.

By this construction of the ports I am able to exhaust the steam from the cylinder with an increased speed just in the ratio the opening, B, bears to the opening, E, in a line parallel with the length of the cylinder, thereby dispensing with the necessity of giving lead to the exhaust, saving the fuel force of the steam to the finishing of the stroke; working the engine more by expansion, securing increase of speed and power and saving fuel.

The exhaust port, C, Figs. 2 and 3, I make in the common form sufficiently large to conduct off the steam as fast as it escapes through the eduction port, B, and of a figure or shape to suit the other portions of my seat, the valve, and its action. If deemed expedient, in the working of an engine, any amount of lead and lap may be given to this valve without impairing in the least any of its advantages.

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

The enlargement and peculiar construction of the steam ports in the valve seats of steam engines, B, E, and F, Figs. 2 and 3, and in adapting the valve, A, Fig. 1, to these ports, so as to exhaust the steam, as herein described, using for that purpose the aforesaid shape and figure, or any other substantially the same and which will produce the intended effect; and I hereby disclaim title to any original invention of the slide valve, valve seat, steam ports, eccentric motion, and any else heretofore known on which my improvement may be founded, confining my claim strictly to the improvements made on them as herein described.

STEPHEN D. WILSON.

Witnesses:

J. GLANCY JONES,  
J. PRINGLE LOVE.