

B. Eaton,
Steam Slide Valve.
N^o 17,142. Patented Apr. 28, 1857.

Fig: 1.

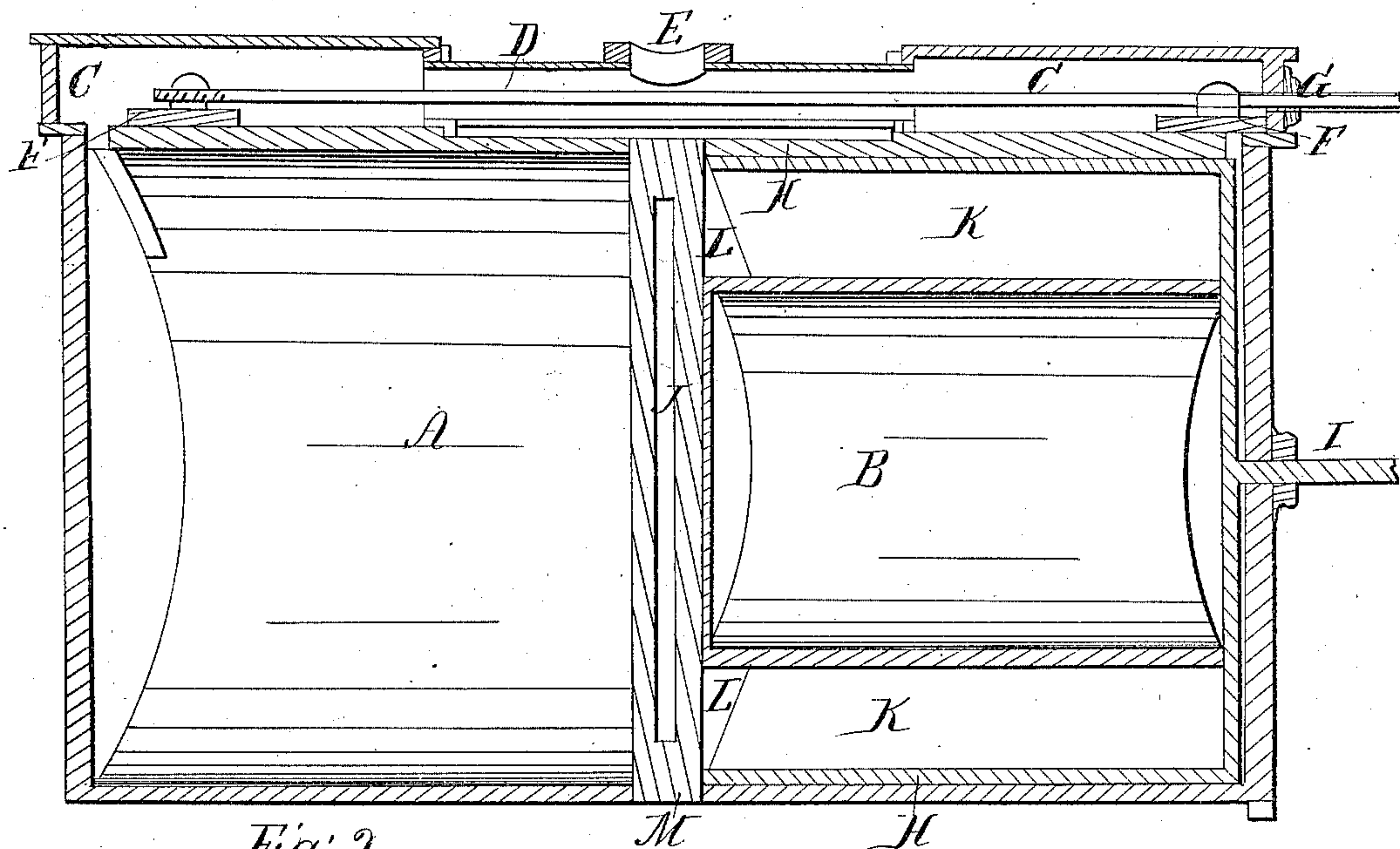
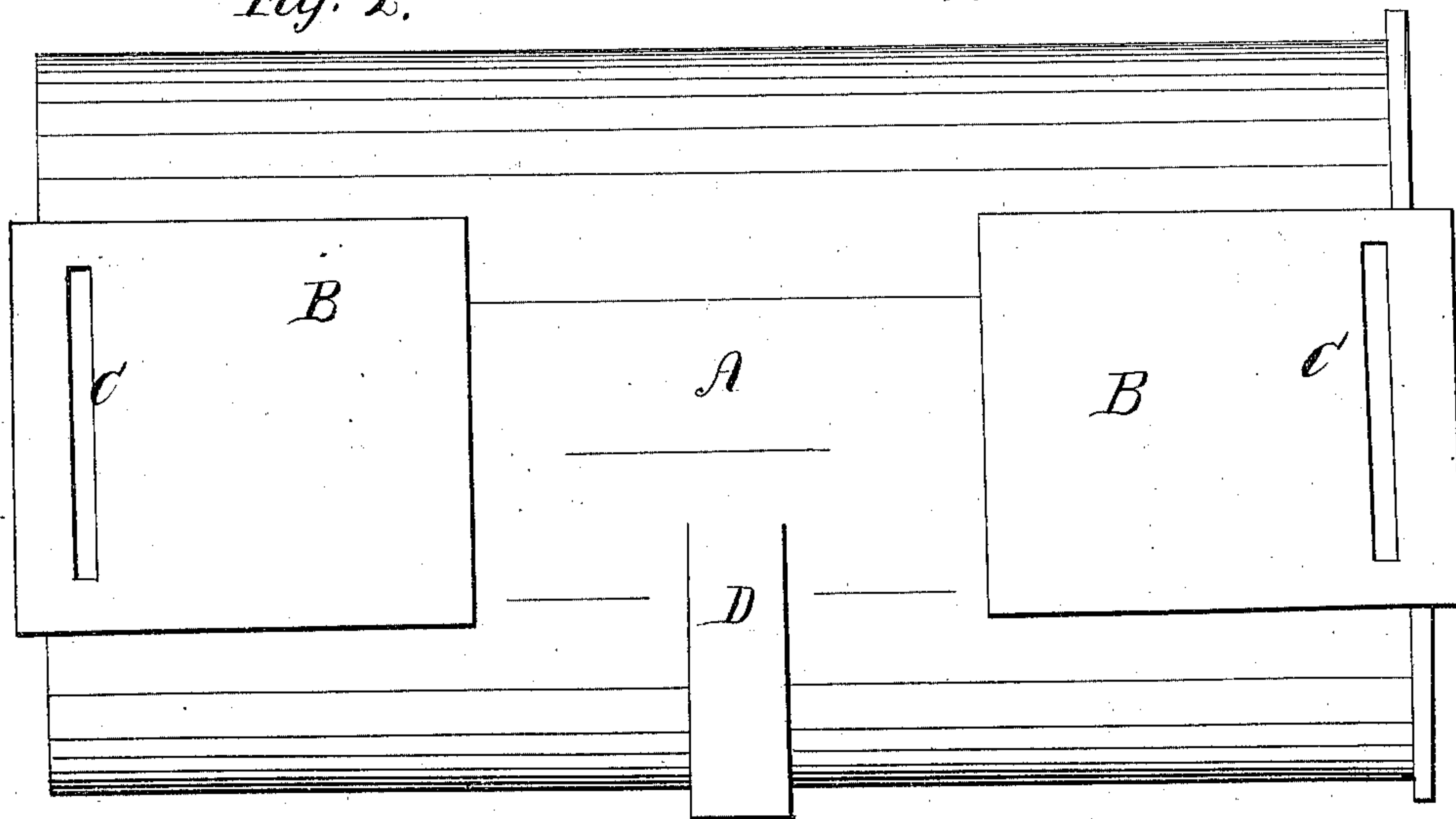


Fig: 2.



UNITED STATES PATENT OFFICE.

BOWEN EATON, OF ROANOKE, INDIANA.

ARRANGEMENT OF PORTS IN STEAM-CYLINDERS.

Specification of Letters Patent No. 17,142, dated April 28, 1857.

To all whom it may concern:

Be it known that I, BOWEN EATON, of Roanoke, in the county of Huntington and State of Indiana, have invented a new and
5 useful arrangement of ports in steam-cylinders, discharging steam therefrom by means of the piston-head and so placing the valve-seat of the steam-chest as to dispense with the side pipe and making but one opening in
10 the said valve-seat and using a simple flat valve for the same; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings.

15 The nature of my improvement consists in the making of an escape orifice in the cylinder, and discharging the steam therefrom by means of the piston head, by which I am enabled to place the valve-seat of the
20 steam chest immediately on the cylinder, thus dispensing with the side-pipe and diminishing the space traversed by the steam from five or six inches, to three-fourths of an inch.

25 It further consists in the greater distance through which the piston head traverses, than in ordinary engines, before it becomes necessary to let off the steam, consequently, allowing a much longer use of it, and a
30 freer discharge thereof.

It also consists in making but one opening in the valve seat of the steam chest, and the using of a simple flat valve for the same, together with using this valve only for the
35 purpose of letting steam into the cylinder, and as a cut-off, by means of which, the pressure and friction on this valve, and the power necessary for working the same are very greatly diminished.

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

The cylinder A is constructed in any of the known forms, with an oblong, flattened
45 disk M of sufficient dimensions, in the center (measuring lengthwise) for the purpose of attaching the escape-pipe; through which disk an escape orifice J, is made exactly in the center of the cylinder, and transversely
50 to the same, for the escape of the steam, which escape is accomplished in an easy, direct and speedy manner, and rendering it unnecessary to return the steam through the

steam chest, as in the ordinary way. The size of this opening, or orifice, is one inch, 55 by such length as will be equal to four-tenths of the inside circumference of the cylinder, and made beveling from within outward, to allow the free and easy escape of the steam. This opening is best made on 60 one side of the cylinder. I make two openings in the cylinder, one in each end, for supplying the same with steam, which are opened and closed alternately by means of the valves F, F, of the steam chests C, C. 65 These valves are connected together by the valve-rod G.

The piston head B is made one half of the length of the cylinder, inside; (less a half inch, to an inch and a half, and acts 70 as a valve to the escape orifice in the same, retaining the steam in the cylinder until the piston head passes said orifice, and securing a much longer use of the power,) and then discharges the steam from the 75 same, by passing the escape orifice in the cylinder at each vibration of the piston, and thus obviates the necessity of providing for the discharge of the steam by the valve of the steam chest, and of course lessening the 80 pressure and friction on that valve, at least five-sevenths of the ordinary amount, and very materially diminishing the liability of accidents.

It will be seen that as the steam enters at 85 one end of the cylinder, behind the piston head, it is forced along the cylinder until it passes the escape orifice in the center, when the steam escapes; the steam thus enters at the other end of the cylinder and forces the 90 piston back again until it re-passes the same orifice, when the steam escapes as before. The valve seat of the steam chest is placed immediately on the cylinder, dispensing with the side pipe, and making the passage 95 of the steam to the cylinder immediate and direct. The valves F, F, of the steam chests C, C, are simple flat valves, made much smaller than usual and connected together by the valve-rod G, and are used only for 100 letting steam into the cylinder, and as cut offs.

I make use of two steam chests, C C placing one on each end of the cylinder A which are connected by steam pipe D, with but 105 one opening in each for the egress of steam.

This opening *c, c* should be one half inch, by nearly the inside diameter of the cylinder.

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

The arrangement of the central exhaust and end steam ports, as herein set forth for the admission of steam at each end of the

cylinder only, and its eduction from the central port only; the latter being controlled 10 entirely by the piston of the engine's cylinder.

BOWEN EATON.

Witnesses:

A. M. LEWIS,

WM. M. KÖCHER.