

S. B. GREACEN.
Valve for Compound Engines.

No. 161,779.

Patented April 6, 1875.

Fig. 1.

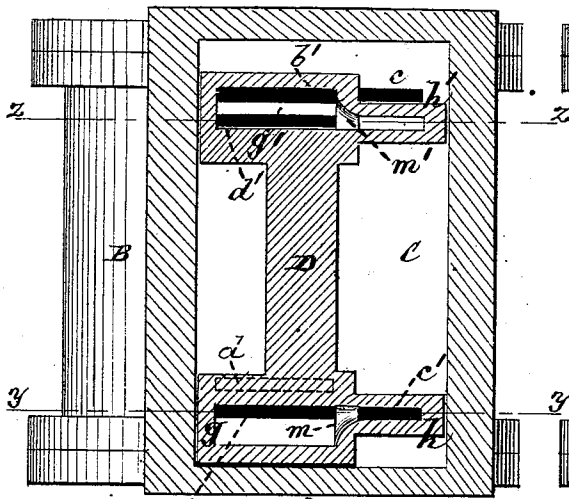


Fig. 2.

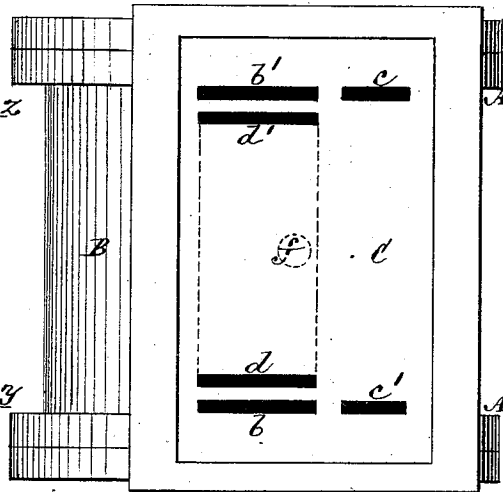


Fig. 3.

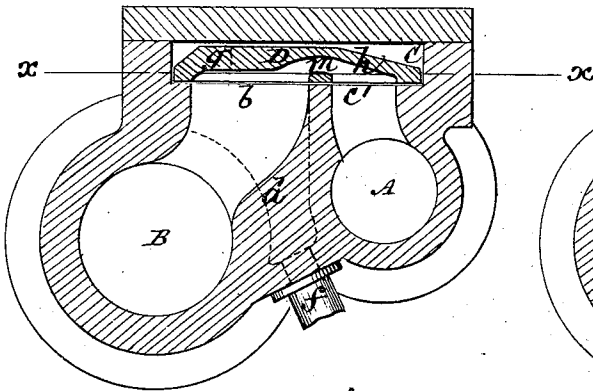


Fig. 4.

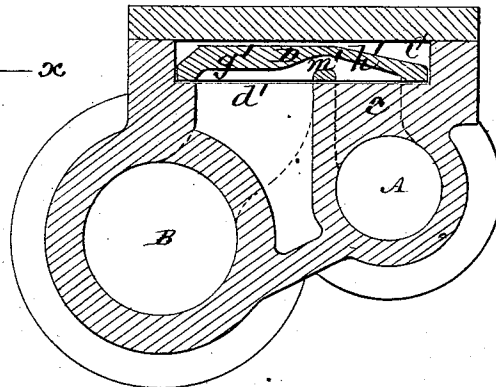
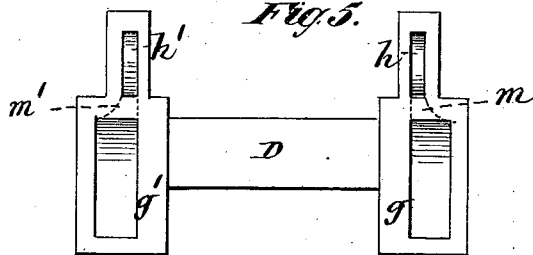


Fig. 5.



Witnesses.

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By his Attorneys
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UNITED STATES PATENT OFFICE.

STEPHEN B. GREACEN, OF NEWARK, NEW JERSEY.

IMPROVEMENT IN VALVES FOR COMPOUND ENGINES.

Specification forming part of Letters Patent No. **161,779**, dated April 6, 1875; application filed January 12, 1875.

To all whom it may concern:

Be it known that I, STEPHEN B. GREACEN, of the city of Newark, in the county of Essex and State of New Jersey, have invented a new and useful Improvement in Valves of Compound Engines; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing forming part of this specification, and in which—

Figure 1 represents a section parallel with the axes of the two cylinders of a compound engine through the valve-box and valve, on the line *x x*; Fig. 2, a further longitudinal view from the valve-box side, with the cover of said box and the valve removed. Fig. 3 is a transverse section on the line *y y*; Fig. 4, a transverse section on the line *z z*, and Fig. 5 a face or under view of the valve.

This invention consists in a single valve of novel construction, in combination with the ports of the two cylinders controlled by it, whereby a short passage only is necessary to convey the steam from the high-pressure cylinder to the low-pressure one; the ports are all straight and easily cored out, and other advantages are obtained, the whole combining great simplicity with cheapness of construction and economy in operation. A is the high-pressure cylinder of a compound steam-engine, and B its low-pressure cylinder. C is a steam-chest common to both cylinders, and having one valve-seat for a single slide-valve, D, to control both cylinders, and to pass the steam from the high-pressure cylinder to the low-pressure one, after it has performed its duty in the former and smaller cylinder.

The valve-seat has its ports *b b'* and *c c'*, which connect at opposite ends of the valve-chest with the two ends of the cylinders of ordinary construction, and straight, so that they may be readily cored out, and the same advantage applies to the exhaust-ports *d d'*, at least so far as their passage through the valve-seat is concerned. These exhaust-ports, which connect with a common outlet, *f*, are arranged alongside of the ports *b b'*, in proximity to their inner longitudinal edges, and the steam-ports *b b'* of the one cylinder are in line, or thereabout, transversely to the valve-

chest, with the steam-ports *c c'*, respectively, of the other cylinder. The valve D, which is a slide one, is arranged to reciprocate in direction of the length of the cylinders, and is constructed at its opposite ends with cavities or hollow faces *g g'*, which serve to alternately close either exhaust-port *d d'*, or to put it and its adjacent steam-port *b* or *b'* in connection with each other, the latter action taking place when it is required to exhaust the cylinder B from its opposite ends alternately, and either exhaust-port *d* or *d'* being closed by the valve and its adjacent steam-port *b* or *b'* being brought under the cavity *g* or *g'* of the valve whenever it is required to pass the steam from the small to the large cylinder from opposite ends alternately. To thus pass the steam from the high-pressure cylinder A to the low-pressure cylinder B after it has performed its duty in the first-named cylinder, and to admit fresh steam alternately to opposite ends of the cylinder A, the valve D is furthermore provided with additional cavities or hollow face portions *h h'*, arranged to alternately uncover the steam-ports *c c'*, for the admission of steam to opposite ends of the cylinder A, and connect first the one and then the other of said ports *c c'* with the inlets *b* or *b'* of the cylinder B, to pass to the latter the spent steam from the cylinder A. For this latter purpose it is merely necessary to connect the cavities *h h'* with the cavities *g g'* by short passages or apertures *m m'* in the valve, thus wasting but little or no steam.

As the passages in the valve-seat are arranged in the drawing, the pistons of the two cylinders will simultaneously work in opposite directions, and may connect with oppositely-set cranks on the driving-shaft of the engine. If desired, however, the passages *c c'* may be crossed to connect with opposite ends of the cylinder A, to work both pistons in the same direction simultaneously without changing the construction of the valve.

The valve D may be worked by an ordinary eccentric, or by other valve-gear, and an independent cut-off, if desired, may be applied to the cavities or hollow face portions *h h'* of the valve, for cutting off the supply of steam to the cylinder A at any point in the stroke of its piston, and such cut-off be operated in

the same way as similar cut-offs are operated for simple engines.

I claim—

The valve D, constructed with connecting passages or apertures *m m'* between the cavities or hollow face portions *g g'* and *h h'* of the valve, in combination with the ports *b b'*,

c c', and *d d'* in the valve-seat, the whole being arranged for operation substantially as shown and described.

S. B. GREACEN.

Witnesses:

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