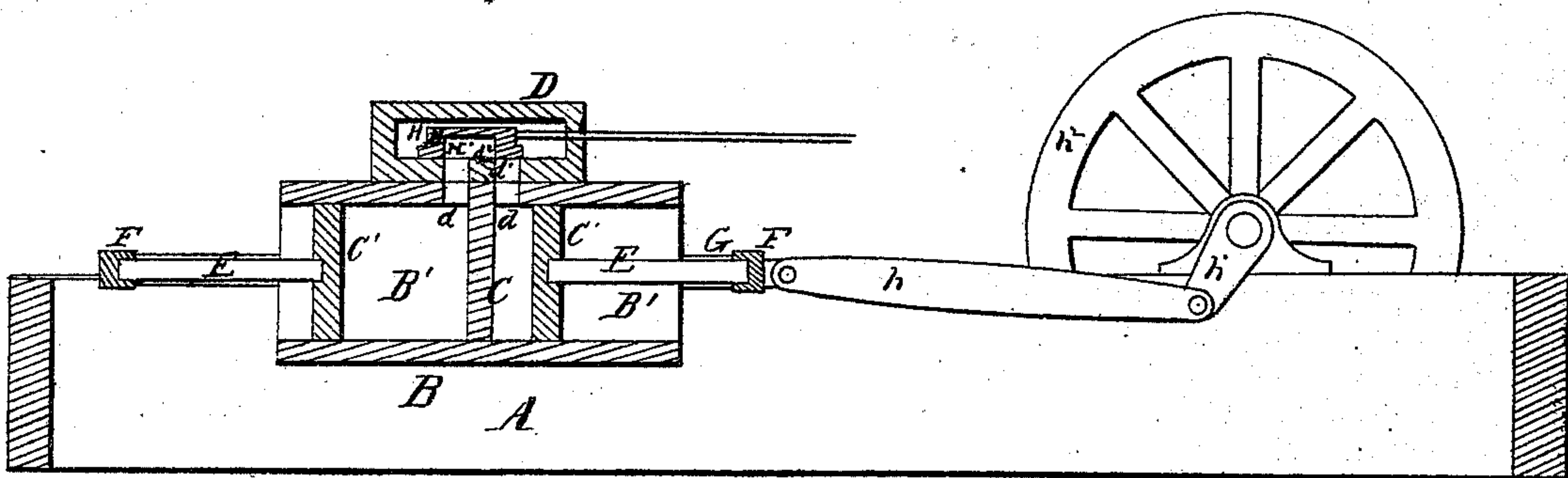


L. CARMAN.

Improvement in Steam Engines.

No. 122,224.

Patented Dec. 26, 1871.



Witnesses
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UNITED STATES PATENT OFFICE.

LEANDER CARMAN, OF McCOY'S STATION, OHIO.

IMPROVEMENT IN STEAM-ENGINES.

Specification forming part of Letters Patent No. 122,224, dated December 26, 1871.

To all whom it may concern:

Be it known that I, LEANDER CARMAN, of McCoy's Station, in the county of Jefferson and State of Ohio, have invented a new and valuable Improvement in Steam-Engines; 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 drawing making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawing is a representation of a vertical longitudinal section of my invention.

This invention has relation to an improved steam-engine, having a double cylinder within which works two connected pistons; and the novelty consists in the construction and arrangement of said cylinder, its pistons, steam-valve, steam and exhaust ports, as hereinafter described.

In the accompanying drawing illustrating this invention, A represents a strong engine-bed or foundation, supporting the steam-cylinder B, which is open at both ends and divided into two similar apartments, B', by means of a center partition, C, on either side of which are the steam-passages *d* opening into the valve-box D. Between the passages *d* is a wall, *d*¹, in which is made an exhaust-opening or passage, *d*². C' indicates the pistons working within the chambers or apartments B'. E are the piston-rods, secured to the cross-heads F of a reciprocating frame, G, which is arranged to slide along the top of the bed A, and is connected, by means of a pitman, *h*, to the crank *h*¹ on the shaft of the fly-wheel *h*². The pistons are so arranged that one approaches the partition C while the other recedes from it,

one of the apartments B exhausting while the other is filling. The valve is marked H, and is given a reciprocating motion by the ordinary mechanism for operating steam-valves. It is constructed with a chamber, H', which allows the exhaust steam to pass through from the cylinder to the exhaust-passage *d*². Steam passing through the valve-box is let into the apartments B alternately, according as the changing position of the valve opens the communication and closes the exhaust.

The drawing shows the piston on the left as at the outer end of the cylinder and the valve in position to exhaust the chamber through which said piston plays, and to move to the left and admit steam to the other chamber, so as to move the other piston to the right.

The cylinder constructed as herein described prevents steam "cushioning" to a great extent, and enables the engineer to keep the packing in order more easily than in an ordinary engine.

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

In a steam-engine having the open-end cylinder B separated into two compartments, B' B', by the partition C, the arrangement of the steam-passages *d*, the intervening wall *d*¹, perforated for the exhaust *d*², and the D-valve H, all constructed and arranged to operate as specified.

In testimony that I claim the above, I have hereunto subscribed my name in the presence of two witnesses.

LEANDER CARMAN.

Witnesses:

B. L. MYERS,
J. F. BALL.

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