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J. MAYHER.

STEAM-PUMP.

No. 180,434. Patented Aug. 1, 1876.

Fig 1

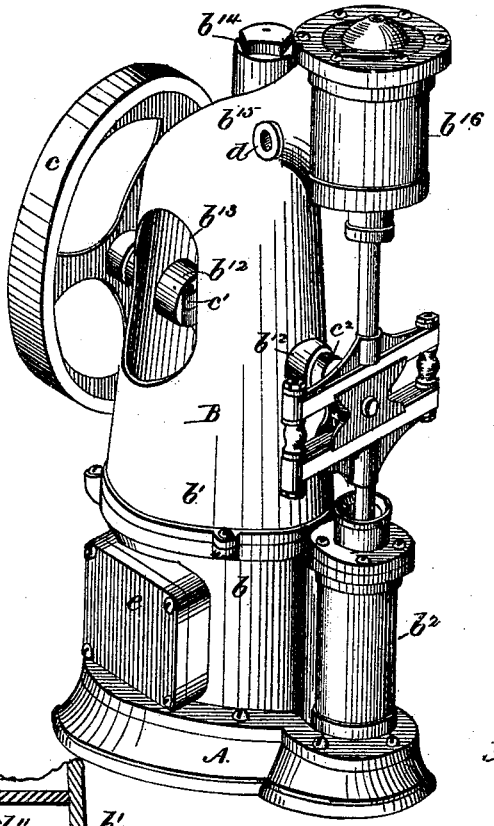


Fig 2.

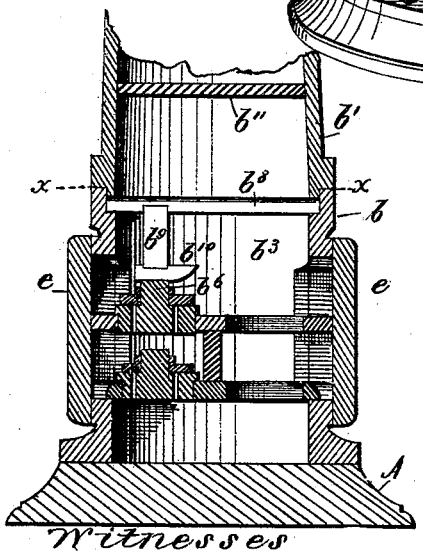
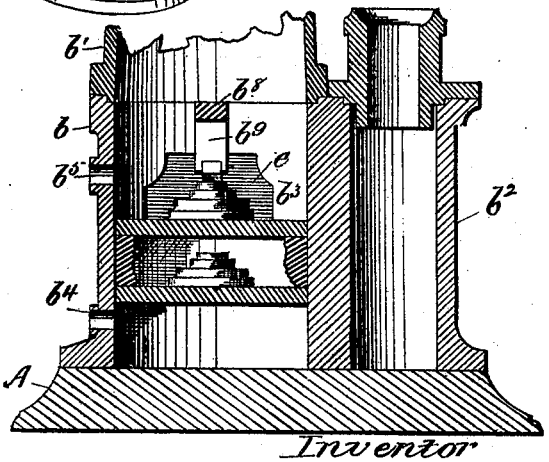


Fig 3.



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3 Sheets—Sheet 2.

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STEAM-PUMP.

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Fig 4

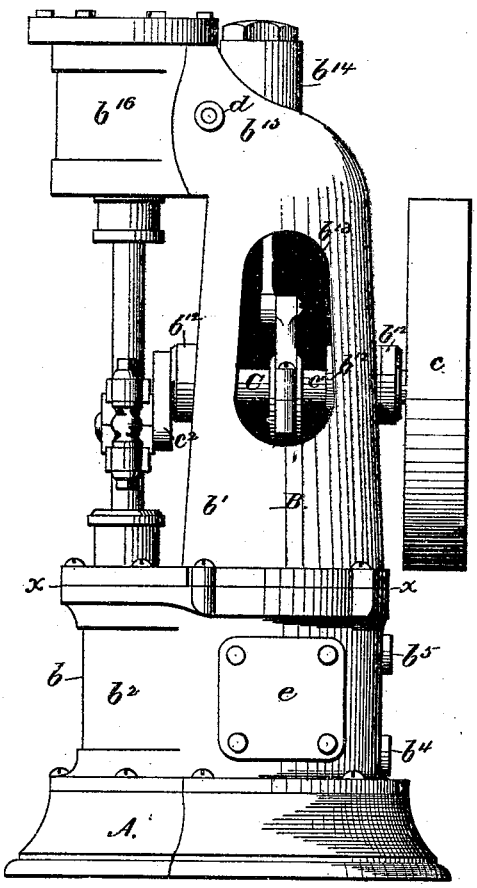

Fig 5

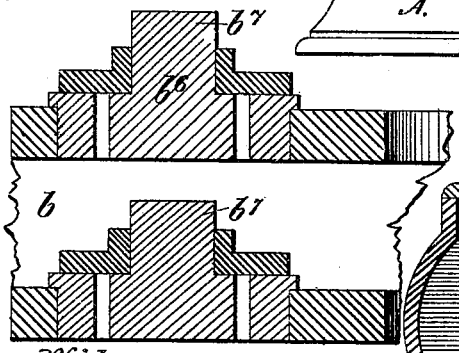

Fig 6

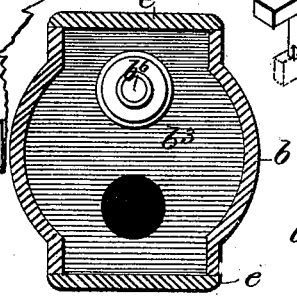

Fig 7.

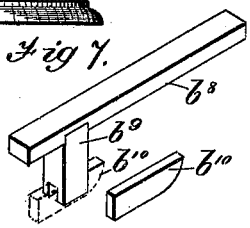

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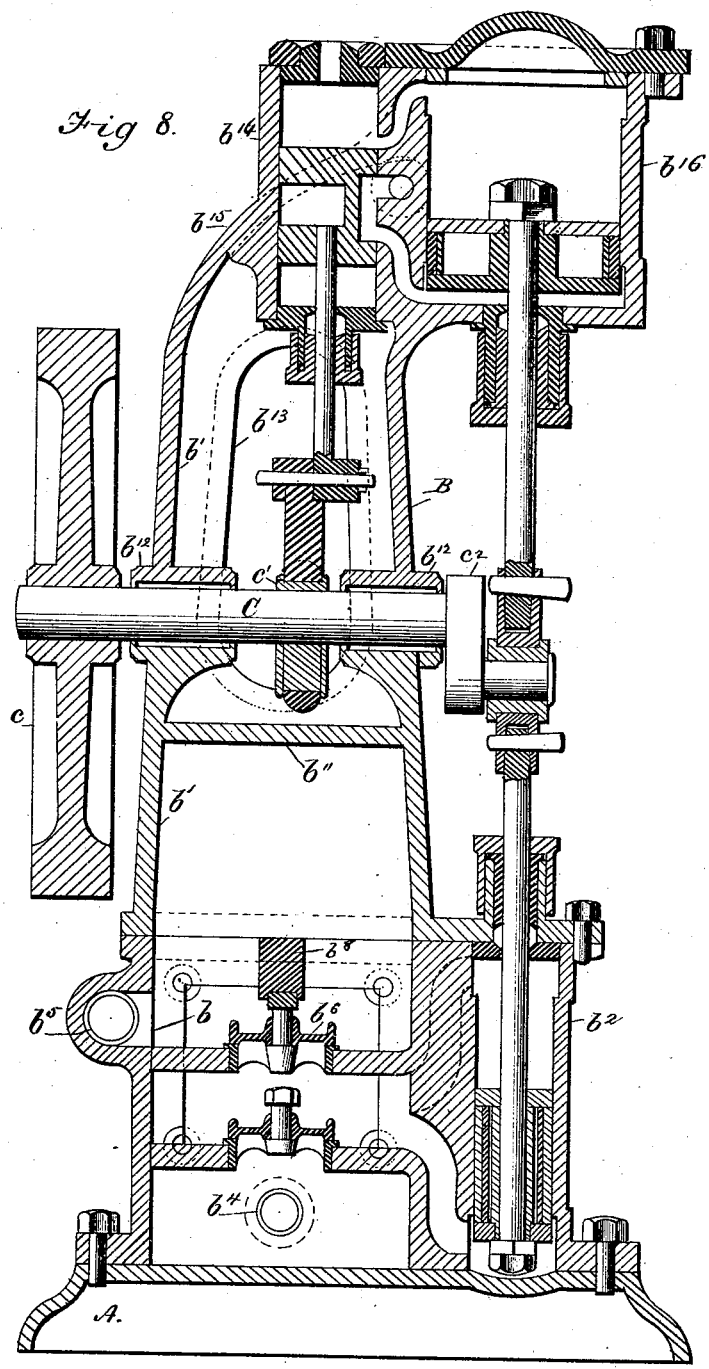
Fig 8.



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UNITED STATES PATENT OFFICE.

JOHN MAYHER, OF EAST HAMPTON, MASSACHUSETTS.

IMPROVEMENT IN STEAM-PUMPS.

Specification forming part of Letters Patent No. **180,434**, dated August 1, 1876; application filed May 25, 1876.

To all whom it may concern:

Be it known that I, JOHN MAYHER, of East Hampton, in the county of Hampshire and State of Massachusetts, have invented a new and Improved Steam-Pump; and I do hereby declare that the following is a full and exact description of the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

This invention consists mainly, first, in the combination, with a tubular column having an overhanging steam-cylinder projecting from its upper extremity, of a valve-chest cast in the turn of the column, the construction being such that strength and rigidity is given to the part most subject to strain; and, second, in providing the column with elongated side openings, so located that the strength of the column is not affected, and so, also, that the working parts within the column can be readily reached. It further consists in certain details of construction, which, in connection with the foregoing, will be fully described hereinafter.

In the drawings, Figure 1 represents a perspective view of my improved pump; Figs. 2 and 3, partial sectional elevations taken in vertical planes at right angles to each other; Fig. 4, a side elevation; Fig. 5, an enlarged sectional elevation of the valve-seats and valves; Fig. 6, a plan view of the upper division of the water-cylinder; Fig. 7, a perspective view of the device for holding the valve-seats in place, and Fig. 8 a vertical sectional elevation of the entire pump.

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

A represents the base-piece of the pump, by which the other parts are supported. B represents a round tapering column rising from the base-piece, which is divided on the line $x\ x$, Fig. 4, into two main portions, $b\ b^1$, as shown.

The construction of the portion b is as follows: b^2 represents the pump barrel or cylinder, in which the piston moves. b^3 represents the water-chamber containing the valves and water-ways, as shown. b^4, Fig. 3, represents the suction-opening, through which water is drawn into the cylinder; and b^5, the delivery-opening, through which it is discharged. b^6, Fig. 5, represents a seat of one of the discharge-valves, provided with a stud, b^7, upon which the valve proper moves. b^8, Figs. 2, 3, and 7, represents a transverse bar, having depending lugs or studs b^9, which is placed upon the chamber b near its upper edge, so as to be in line over the stud of the valve-seats, as shown. b^{10} represents an intermediate key or equivalent fastening device, interposed between the stud of the bar b^8 and the stud b^7 of the valve-seat, for the purpose of holding the latter securely in place. This key may be held against lateral displacement by a proper slot or recess in the lower end of stud b^9, or by any other suitable means. The bar being removable, the parts, of course, which are held by it may be removed also when occasion requires.

The construction of portion b^1 is as follows: b^{11} represents a division-plate or partition in the lower part of the portion, by means of which an air-chamber is formed, as shown. b^{12} b^{12} represent cylindrical enlargements or bearings upon the front and back of the column, which are provided with proper openings for receiving the shaft, as shown. b^{13} b^{13} represent openings of an elongated oval form in the sides of the column, by means of which convenient access is had to the eccentric actuating the steam-valve. b^{14}, Fig. 8, represents the valve-chest cast in the right-angled turn b^{15}, to which latter the cylinder b^{16} is attached, as shown.

The remaining parts of the pump will now be described. C represents the shaft, provided at one end with the fly-wheel c, near its center with the eccentric c^1, adapted to work the steam-valve, and at its other end with the crank c^2, actuated by the piston-rod of the steam-cylinder, as shown. $d\ d$ represent the entrance and exhaust openings for the steam, Figs. 1 and 4. $e\ e$ represent hand-hole plates in the water-chamber, by means of which the valves may be readily reached when desired.

The operation of this pump is similar to others of its class, and it will not therefore be particularly described here. Some of the advantages of the described construction are as follows: By the employment of the round tapering column the material of construction

is disposed in the most advantageous manner to secure great strength without excessive weight. By casting the circular valve-chest in the turn of the column, as shown in Fig. 8, the angle is strengthened at its weakest point, the chest, by uniting the upper side to the lower portions of the column, serving as a brace to resist the thrust of the piston in either direction. The location of the valve-chest, also, in position over the central portion of the crank-shaft, is advantageous, because the valve may be actuated by a simple eccentric upon that portion of the shaft which is well adapted to take the strain. The oval openings, being located in the side of the column, may be extended high enough to permit the valve-stem stuffing-box to be reached, as shown in Fig. 8, without cutting into the throat of the column, which, being left whole, is consequently adapted to resist the strain to which it is subjected. By locating the air-chamber within the column, the necessity of providing independent space is avoided. By dividing the column into two main parts the work of putting in the water-valves and valve-seats is easily accomplished. In case of accident by frost or otherwise, this part of the pump can be replaced at little expense. The discharge-valve seats are properly held in place by the bar and key, which are simple in construction.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In combination with a tubular column having an overhanging steam-cylinder projecting from its upper extremity, a valve-chest cast in the turn of the column, the latter serving as a brace to give strength and rigidity to the weakest portion, substantially as described.

2. A tapering tubular column having an overhanging cylinder projecting from its upper extremity , and oval openings so located in its sides that the throat, subject to strain by the movement of the piston in the cylinder, is left entire, as and for the purpose described.

3. A tapering tubular column having a steam-cylinder projecting from its upper extremity, a valve-chest cast in its turn, and elongated side openings, in combination with the valve and pump operating mechanisms, substantially as described.

4. The column B, having the division-plate b^{11}, adapted to form an air-chamber, and provided with the openings b^{13} above the partition, as shown.

5. The combination of the part b, having the water-chamber, with the part b^1, having the air-chamber and elongated openings, as described.

6. The combination of the bar b^8, stud b^9, and key b^{10} with the valve-seat b^6, as described.

This specification signed and witnessed this 5th day of May, 1876.

JOHN MAYHER.

Witnesses:
JAMES PENDERGAST,
DENNIS HICKEY.