

(No Model.)

J. C. BUTTERFIELD.

ATMOSPHERIC HAMMER.

No. 285,390.

Patented Sept. 25, 1883.

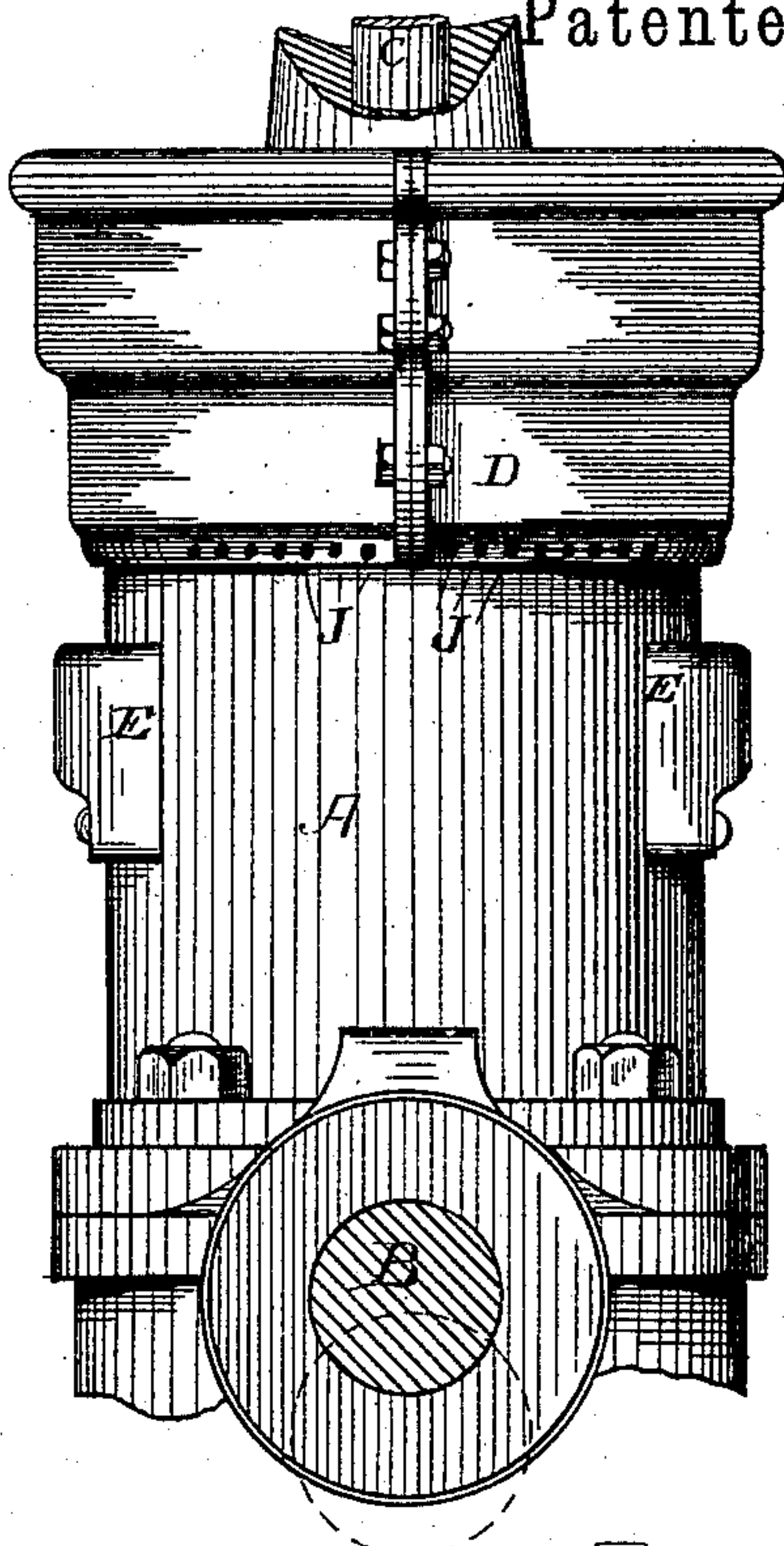


Fig 1.

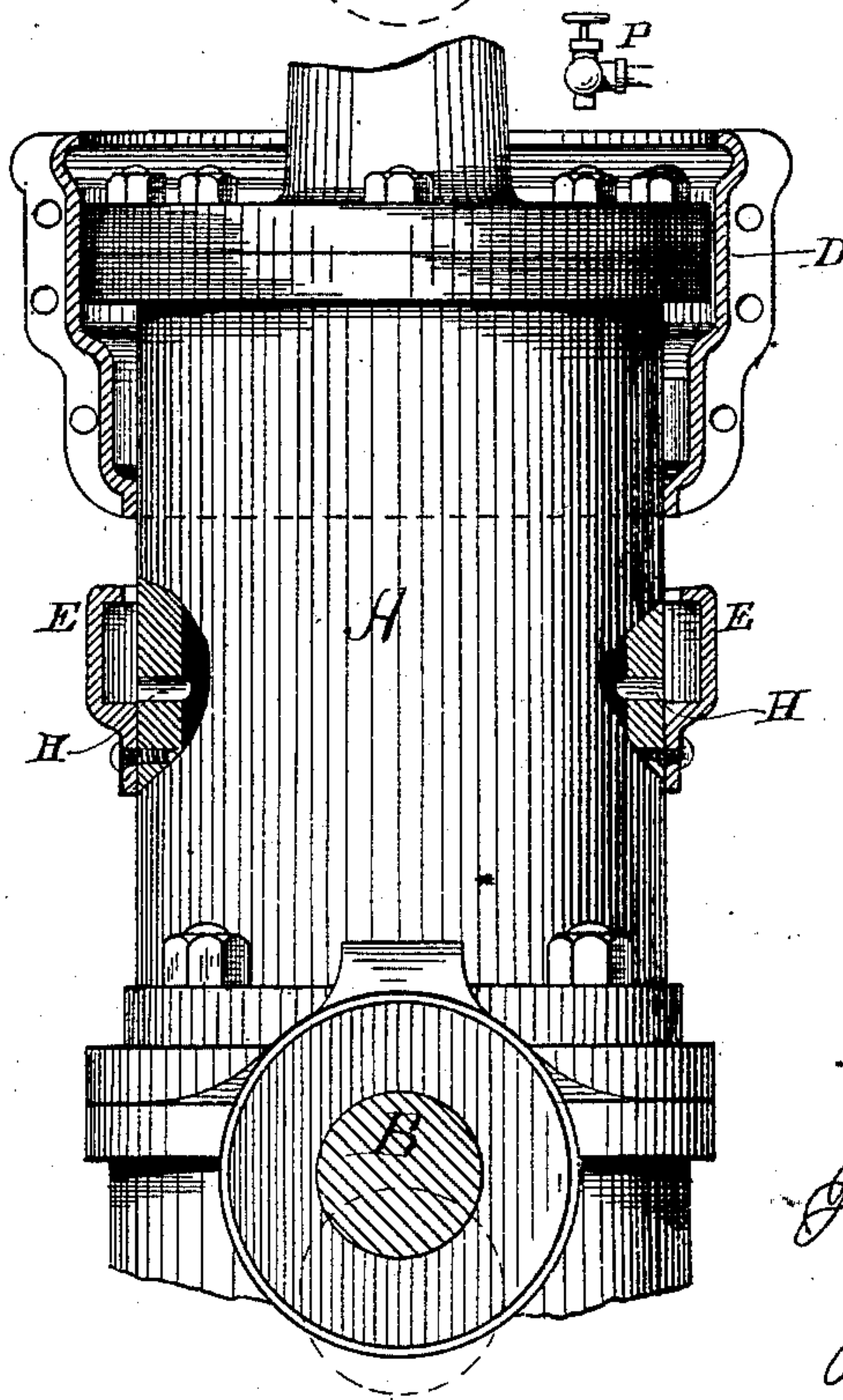


Fig 2.

Witnesses:

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# UNITED STATES PATENT OFFICE.

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## ATMOSPHERIC HAMMER.

SPECIFICATION forming part of Letters Patent No. 285,390, dated September 25, 1883.

Application filed May 8, 1883. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN C. BUTTERFIELD, of Chicago, Cook county, in the State of Illinois, have invented a new and useful Improvement in that class of Atmospheric Hammers and Stamp-Machines for which Letters Patent of the United States have been heretofore granted to me. In those machines the driving-power applied to the crank is transmitted to the walking-beam by means of a cylinder carried by the crank and compression of air on opposite sides of the piston alternately.

A development of heat is a well-known effect of air compression, and when the machines alluded to above are run at high speed or on heavy duty the development of heat becomes inconvenient and detrimental to packings, &c.

My present invention relates to said cylinders; and it consists in a water-jacket around the upper part, whereby water may be applied to take up and carry the undesirable excess of heat.

That others may fully understand my improvement, I will particularly describe it, having reference to the accompanying drawings, wherein—

Figures 1 and 2 represent in elevation and part section the air-cylinder with water-jacket applied.

A is the air-cylinder, essentially like the corresponding cylinders described in the patent above referred to. B is the driving-crank upon which said cylinder is mounted and carried.

C is the piston-rod, jointed at its upper end to the walking-beam.

The jacket D, I find it convenient to make of cast-iron in two parts, bolted together along a vertical joint, so that it can be readily applied to the cylinder. It is in contact with said cylinder along one-third the distance from its end, or thereabout, and at its upper end its edge is turned over inward, with a curved section, so as to prevent its oscillatory movements from throwing the water out. It is also provided with small leak-holes at its lower part through which the water may escape down the sides of the cylinder to cool its lower end. The lower end does not require this relief to

the same extent as the upper end, because being in intimate contact with the mass of metal in the crank the heat generated is more quickly and certainly dissipated.

Water may be delivered from a stationary pipe properly located. It should be provided with a cock, P, whereby the water-supply can be regulated at will.

The mid-section of the air-cylinder is provided with vent-holes H, for the purpose of enabling the air to escape from in front of the piston up to the mid-point of the stroke, and it enters again immediately after the piston has passed. The lubricant is thereby blown out at these holes at each passage of the piston, and to prevent it from being lost I put before said holes a screen, E, whereby the lubricant is arrested as it is blown out, and when the piston has passed said holes the lubricant is sucked in again with the inflowing air. The waste-holes J in the jacket D are so located that no part of the escaping water will find its way within the screen E.

Having now described my improvement, what I claim as new is—

1. The reciprocating air-compressing cylinder A, provided with a water-jacket, D, open at top and extended above said cylinder, so that water may be fed therein from a stationary source of supply, substantially as described.

2. The air-compressing cylinder A and water-jacket D, extending part way over the length of said cylinder, and provided with waste-holes J, whereby water may be permitted to escape down the sides of said cylinder below the jacket.

3. An air-compressing cylinder, A, having air-vents H at its mid-section, for the purposes set forth, and provided with the screens E, covering said vents, substantially as set forth.

4. An air-compressing cylinder, A, having one or more air-vents, H, at its mid-section, for the purposes set forth, and provided with the screens E, covering said vents, substantially as and for the purpose set forth.

JOHN C. BUTTERFIELD.

Witnesses:

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