Impt in Steam Engines.

John Houpt.

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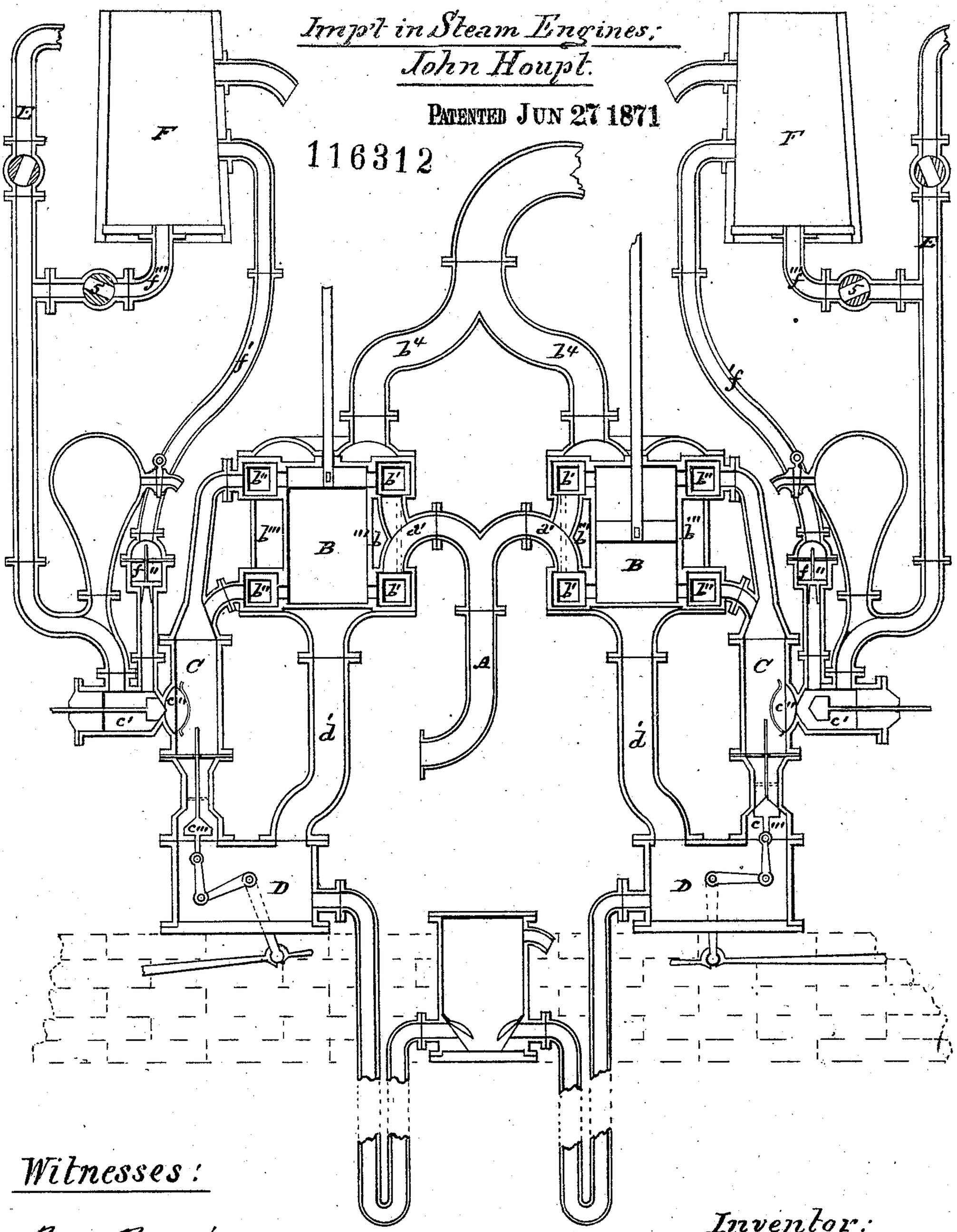

Witnesses:

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UNITED STATES PATENT OFFICE.

JOHN HOUPT, OF SPRINGTOWN, PENNSYLVANIA.

IMPROVEMENT IN STEAM-ENGINES.

Specification forming part of Letters Patent No. 116,312, dated June 27, 1871.

To all whom it may concern:

Be it known that I, JOHN HOUPT, of Springtown, in the county of Bucks and State of Pennsylvania, have invented certain Improvements in Steam-Engines, of which the following is a specification:

My improvements relate to a mode of maintaining a cool condition of the water required for the jet-condenser of a steam-engine located where water is scarce or dear; and also to the utilization of the exhaust steam, which has hitherto been generally allowed to escape directly from the steam-cylinder (or from the self-clearing jet-condenser patented to me April 19, 1870, and reissued May 31, 1870) to the furnace-chimney or to the open air, by causing the said exhaust steam to serve as a preserver of the heat of the said cylinder sufficiently to prevent any condensation of the steam therein while the engine is in operation.

The first part of my invention consists in the arrangement of an elevated water-vessel, in combination with the main water-supply pipe and the jet-valve chamber, in such a manner that, as the jet-valve closes, the momentum of the moving supply-water will cause the water in the valve-chamber to ascend upward toward the elevated vessel, from whence it may again enter the main supply-pipe by gravitation; the object of this part of my invention being to keep the water in the jet-valve chamber constantly changing, and thus to prevent its becoming warmed by the heat of the said condenser. The second part of my invention consists in the arrangement of a steam-jacket chamber around the steam-cylinder of an engine, in combination with a pipe communicating with the exhaust-steam pipe of the cylinder, or of the hot well of a condenser, and with a pipe leading either into the chimney of the furnace or into the open air; the object of this part of my invention being to preserve the heat of the cylinder by means of the usual waste steam.

The drawing represents two distinct steam-cylinders operated by steam from the same steam-pipe. The said steam-pipe A is intended to be extended into communication with the usual steam-boiler or generator, or into communication with a superheater, and is branched at a' a', so as to communicate with the respective parts b' b' of the two distinct steam-cylinders B B, the exhausts b'' b'' of which latter communicate with respective jet-condensers c c, each of which operates by dividing the exhaust steam into two portions, condensing one portion to produce the vacuum before the piston, and discharging the other portion into the hot well D below, as described in the specification of the said Letters Patent hereinbefore referred to.

In my present invention, an open steam-pipe, d', leads upward from each of the hot wells D D into a space, b''', formed by a steam-jacket which incloses the steam-cylinder, and from this space an escape-pipe, b^4, conveys the steam to the usual chimney of the furnace or to the open air. The valve-chambers c' c' of the jet-sprays c'' c'' are each supplied with cold water through a pipe, E, from an elevated reservoir, not shown; and communicating with the said valve-chamber and with a water-vessel, F, above it, is a pipe, f', which is fitted with a drop-valve, f''', that opens upward, while another pipe, f''', fitted with an adjustable valve, 5, forms a communication between the water-vessel F and the pipe E.

The pistons of the two cylinders B B are intended to move, in part, alternately in the same directions; and immediately after the first puff of the exhaust steam has passed through and thus cleared the condenser C of any air and water therein the valve c''' closes, and immediately afterward the spray of cold water enters and condenses the imprisoned portion of the steam and produces the vacuum required, as described in the Letters Patent hereinbefore referred to. The valve of the spray-pipe, closing suddenly, causes the water in the valve-chamber c' to rise, from its momentum, upward through the valve f''' in the pipe f' toward the vessel F, and thus prevents it from becoming warmed by contact with the condenser C, and consequently can be repeatedly used by flowing into the valve-chamber c' through the pipe E. The first portion of the steam which is projected into the hot well D at every stroke of the piston passes upward into the space b''' which incloses the

steam-cylinder, imparts heat to the latter, and eventually escapes into the usual furnace-chimney or into the open air.

I claim as my invention—

1. The elevated vessel F and pipe *f'*, in combination with the valve-chamber *c'* and reservoir-pipe E, the said parts being constructed and arranged to operate substantially as and for the purpose hereinbefore set forth.

2. In combination with the steam-heating chamber *b'''* around the steam-cylinder B of an engine, a pipe, *d'*, which forms a communication between the said chamber and the exhaust-steam pipe of either a steam-cylinder, a superheater, or the hot well of a condenser, substantially as described, for the purpose of keeping up the heat of said steam-cylinder by the waste steam of the engine, as described.

JOHN HOUPT.

Witnesses:
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