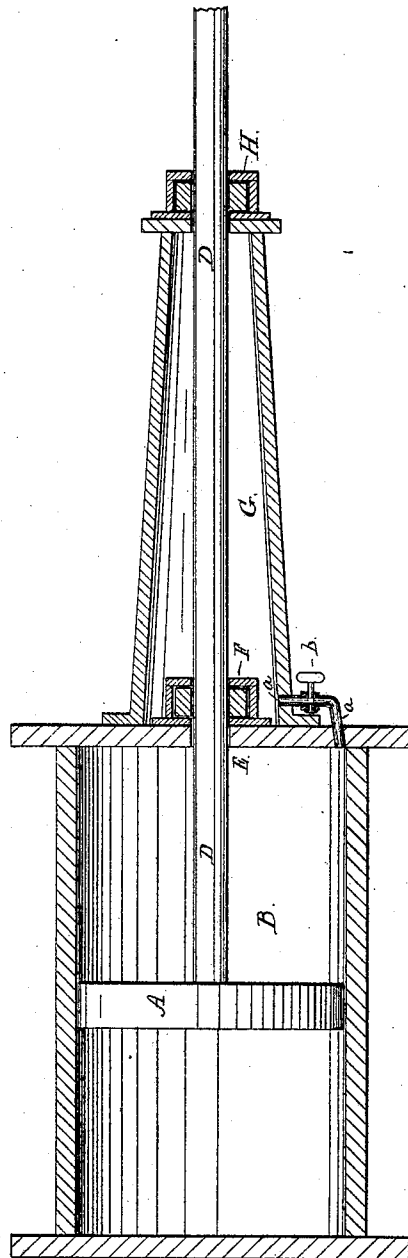


W. WELLS.
Vapor-Engines.

No. 145,466.

Patented Dec. 9, 1873.



WITNESSES.

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UNITED STATES PATENT OFFICE

WILLIAM WELLS, OF SALEM, MASSACHUSETTS.

IMPROVEMENT IN VAPOR-ENGINES.

Specification forming part of Letters Patent No. **145,466**, dated December 9, 1873; application filed October 29, 1873.

To all whom it may concern:

Be it known that I, WILLIAM WELLS, of Salem, in the county of Essex and State of Massachusetts, have invented an Improvement in Vapor-Engines, of which the following is a specification:

The object of this invention is to prevent the escape of the vapor about the piston-rod of vapor-engines, more particularly vapor-engines using the vapor of bisulphide of carbon. For this purpose the invention consists of constructing the piston-cylinder with an outside chamber, which incases, or substantially so, the length of the piston-rod entering the piston-cylinder, and thus prevents its exposure to the external air, obviating radiation. This chamber receives the escaping gases, and from it a pipe is provided to conduct them back to the cylinder when desired.

In the accompanying plate of drawings, the present invention is illustrated by a central longitudinal section of a piston-cylinder.

A in the drawings represents the piston, and B its cylinder, of a vapor-engine; D, the piston-rod attached to piston-head, and passing out of the cylinder at E, through a stuffing-box, F, as usual; G, a chamber surrounding the piston-rod outside of the cylinder. This

chamber G is sufficient in length to embrace substantially the length of the piston-rod entering the piston-cylinder, and it surrounds the stuffing-box F of piston-cylinder, and at H is provided with a stuffing-box, to pack the piston-rod. This chamber receives the escaping vapors from the piston cylinder, and also vapors escaping by radiation, and holds them from escape to the external air. *a*, a pipe, leading from the chamber G to the piston-cylinder, for conducting the vapors back into the cylinder; *b*, a stop-cock in pipe *a*, to open and close the same to the passage of the vapors from the chamber G to the piston-cylinder.

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

The chamber G, arranged about the piston-rod and connected with the piston-cylinder of a vapor-engine, substantially as and for the purpose described.

The above specification of my invention signed by me this 21st day of October, A. D. 1873.

WILLIAM WELLS.

Witnesses:

ALBERT W. BROWN,
EDWIN W. BROWN.