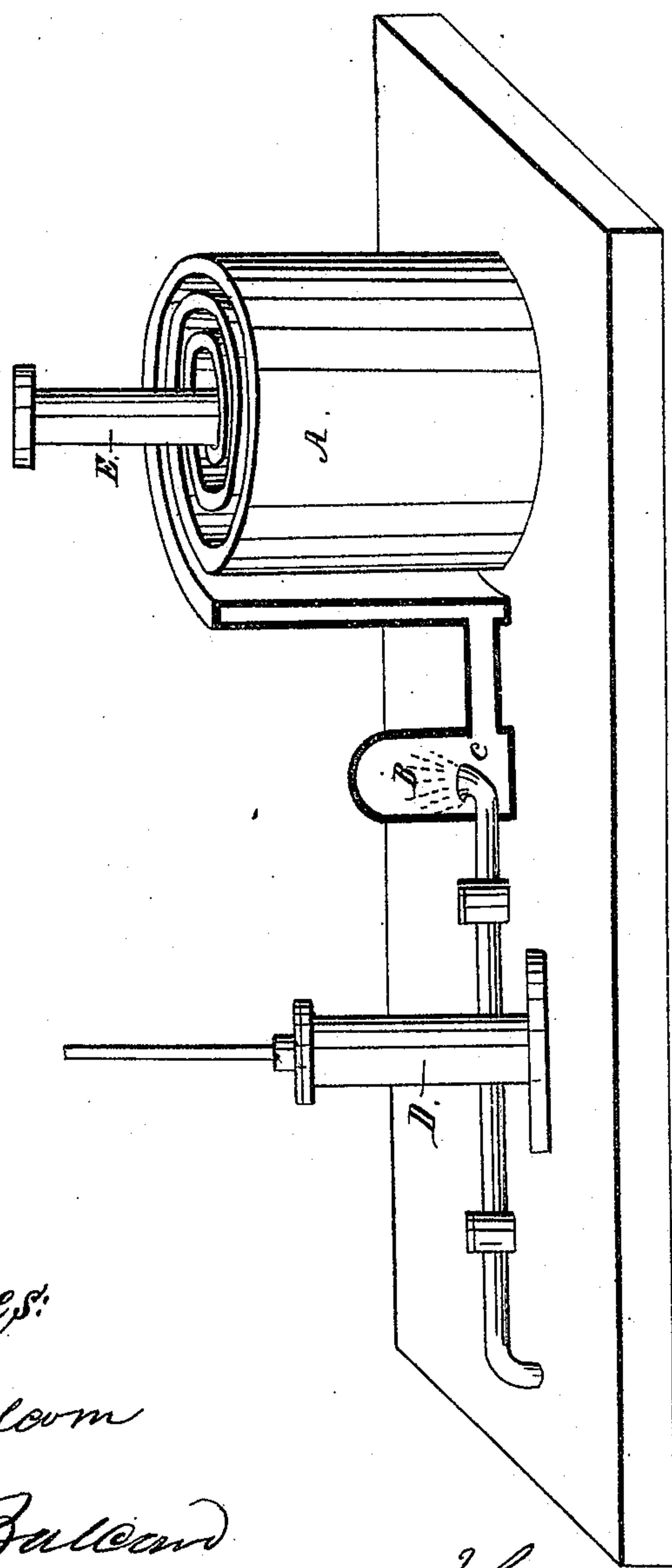


H. M. Paine,
Steam-Boiler Superheater.
N^o 36,440. Patented Sep. 9, 1862.



Witnesses:

E. J. Balcom

Wm. W. Balcom

Inventor:

H. M. Paine

UNITED STATES PATENT OFFICE.

HENRY M. PAINE, OF WORCESTER, MASSACHUSETTS, ASSIGNOR TO EDWARD M. ARCHIBALD, (IN TRUST,) OF NEW YORK, N. Y.

IMPROVEMENT IN STEAM-GENERATORS.

Specification forming part of Letters Patent No. 36,440, dated September 9, 1862.

To all whom it may concern:

Be it known that I, HENRY M. PAINE, of the city and county of Worcester, and State of Massachusetts, have invented a new and useful Method of Generating Steam for Purposes of Motive Power; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the annexed drawing, making part of this specification.

The object of my invention is to generate steam for purposes of motive power under such conditions that a boiler is dispensed with and a great economy of fuel and space realized.

The nature of my invention consists in the injection of finely-comminuted water into a volume of steam under such conditions that the aqueous particles are vaporized by contact with the steam, and the steam thus saturated superheated by circulation through heated chambers.

In practice I attach to a flat helical coil, A, a chamber, B. A nozzle, C, having an orifice sufficiently small to reduce water to a fine mist when pressed through it, is connected with a water-pump, D. If the coil A be partially filled with water and steam generated therein, the chamber B will be charged with the same. When the whole volume has attained to the condition of dry steam, a stroke of the pump D injects the required volume of water in a comminuted condition into the volume of dry steam in chamber B, converting it into wet steam. If, now, the coil is momentarily relieved of the pressure by the opening of the valves of

the engine, to which the coil may be attached by means of pipe E, which communicates with the coil, the wet steam will be circulated through the hot coils, and in its turn become dry or superheated steam, and thus at each successive stroke of the engine the chamber B is charged and the coil superheats.

I do not confine myself to the use of a coil or the form of chamber. Any heater whose construction is such that a circulation is established throughout its entire structure at each stroke of the engine may be used, as the constructor may design. The injection may also be made in a continuous current of steam; but I find in practice that the best results are obtained where the circulation is pulsative. It is also essential to the best working of the invention that the capacity of the heater and its connections with the cylinder should be limited to the space only necessary for prepassage of the steam, as all tendency to accumulate a "head" is detrimental to circulation.

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

The process of generating and superheating steam by injecting water in a comminuted state into superheated steam, by contact with which its particles are converted into steam, and afterward permitting the circulation of the steam so obtained through a heated chamber to be superheated, substantially as herein specified.

HENRY M. PAINE.

Witnesses:

ELIAS T. BALCOM,
WM. H. BALCOM.