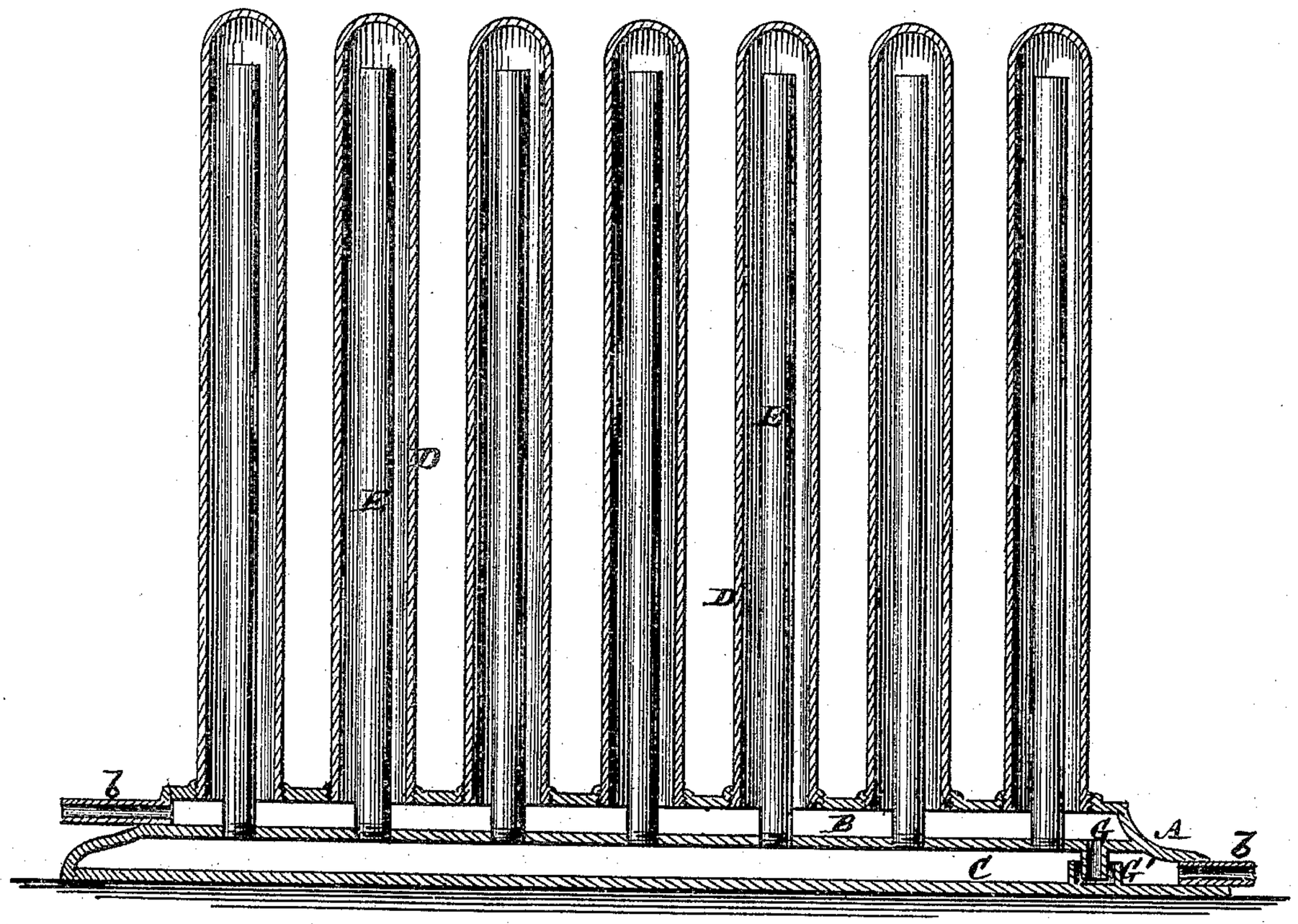
G. W. BLAKE.

STEAM-HEATER.

No. 172,378. Patented Jan. 18, 1876.



Witnesses
John Becker.
Jno. Haynes

George W. Blake
by his Attorneys
Brown & Allen.

UNITED STATES PATENT OFFICE.

GEORGE W. BLAKE, OF NEW YORK, N. Y.

IMPROVEMENT IN STEAM-HEATERS.

Specification forming part of Letters Patent No. **172,378**, dated January 18, 1876; application filed November 10, 1875.

To all whom it may concern:

Be it known that I, GEORGE W. BLAKE, of the city, county, and State of New York, have invented a new and useful Improvement in Steam Heaters or Radiators; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing, which forms part of this specification.

This invention relates to that description of radiators in which steam is made to circulate through a superstructure of outer and inner tubes or ducts, connected, respectively, with an upper and a lower chamber in the base of the radiator, the one chamber forming an inlet-compartment for the steam, and the other an outlet-compartment for the water of condensation, and said chambers being connected by one or more openings for passing off the water of condensation from the one chamber to the other.

The invention consists in one or more siphons or water-traps applied to the communication between said chambers, whereby the steam is prevented from blowing through the chambers and passing off through the outlet-chamber without duly circulating through the radiating structure of the heater.

This application of a water-trap or siphon to the two chambered or horizontally-divided base essentially differs from those arrangements in which each connected radiating-tube has a separate siphon or water-trap, and in which the steam instead of being admitted to the base is admitted to the radiating-tubes direct.

By my combination of parts a single siphon or water-trap will suffice for any number of tubes in the same row or series of rows on the same base, and said tubes have a free and uninterrupted communication with the base, the one chamber of which serves as a distributing-space for the steam of the several tubes.

Figure 1 represents a vertical section of a steam-radiator having my invention applied.

A is the base of the radiator, divided into upper and lower chambers B C. Erected on this base are a series of upright tubes, D, closed at their upper ends, but open at their lower ends, where they communicate with the upper chamber B of the base. E are small upright tubes, open at both ends, and arranged within the tubes D, but not extending fully up to the top ends of the latter, and connecting at their lower ends with the bottom chamber C of the base. Either of these chambers B C may be the inlet-compartment for the steam, and the other the outlet-compartment for the water of condensation, said chambers being provided, respectively, with an inlet and outlet orifice or pipe, *b*, at opposite ends of the radiator, but it is preferred to make the upper chamber B the inlet-compartment and the lower chamber C the outlet-compartment.

The circulation of the steam through the tubes D and E is the same as in other radiators, and one or more openings or ducts, G, are made to connect the upper chamber B with the lower chamber C of the base for passing of water of condensation from the upper chamber to the lower one, or from the one chamber to the other. Such openings or ducts, however, as heretofore provided, are liable to interfere with the free circulation of the steam through the tubular portion of structure mounted on the base, inasmuch as they form, in connection with the pipes *b b*, a vent for the steam to blow through the two chambers B C of the base without circulating through the tubes D and E. This I remedy by making each of such ducts, if more than one, to act as a siphon or water-trap, by extending the duct downward into the lower chamber C, and either bending it slightly upward where thus extended, or, which is the same thing, inserting its lower end in a cup, G, within the lower chamber C. By thus connecting the upper and lower chambers B C by one or more siphons or water-traps, while every facility is afforded for water of condensation to pass off from the one chamber to the other in the base, the water of condensation collecting in the trap or siphon will sufficiently seal the direct communication between the two chambers B C, as to prevent the steam from blowing through them without circulating through the tubes D E, or heating and radiating portion of the structure.

I claim—

The combination, with the divided base A, the inlets or outlets *b*, and the heating or radiating tubes D E, communicating, respectively, with the upper and lower base-chambers B C, of a siphon or water-trap, G G′, applied to said chambers of the base independently of the heating or radiating tubes, substantially as shown and described.

GEO. W. BLAKE.

Witnesses:

HENRY T. BROWN,

MICHAEL RYAN.