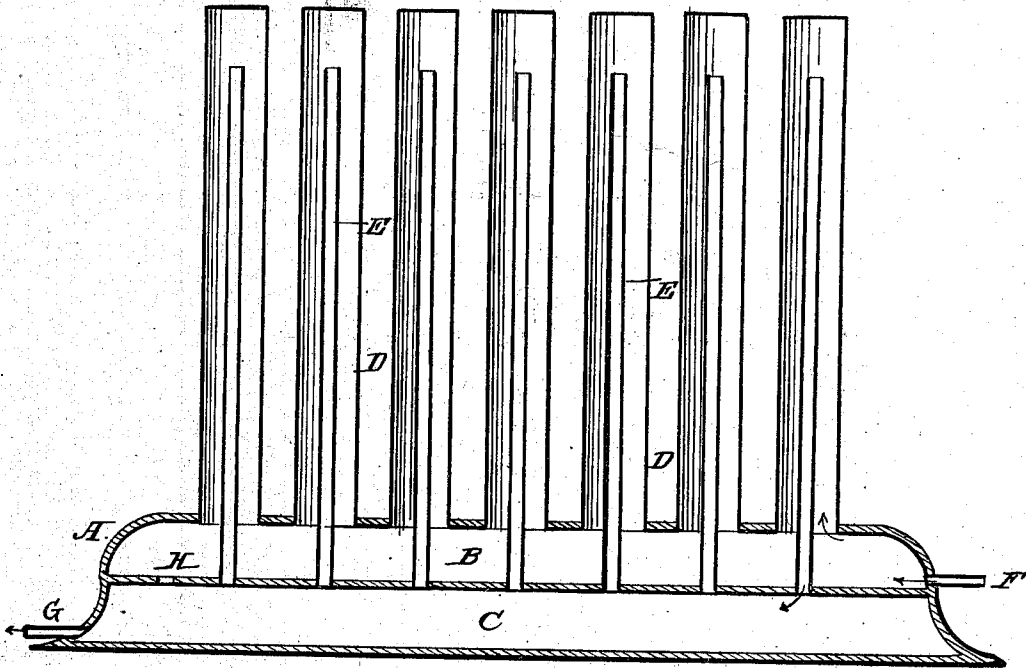


G. W. BLAKE.
Steam Heater.

No. 104,696.

Patented June 28, 1870.



Witnesses
A. Keller
E. P. Tracy

Inventor
Geo. W. Blake

UNITED STATES PATENT OFFICE.

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

IMPROVEMENT IN STEAM-HEATERS.

Specification forming part of Letters Patent No. 104,696, dated June 28, 1870.

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 Radiators, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, and which represent a central longitudinal vertical section of my improved radiator.

This improvement relates to that description of radiators in which steam is made to circulate through an inner series and surrounding outer series of upright or nearly upright tubes, the one series communicating with the upper and the other with the lower of two chambers formed within a bed-plate or base upon which the said tubes are erected; and it consists in a novel arrangement of the inlet-pipe for the admission of steam to one and of the outlet-pipe for the escape of the water of condensation from the other of said chambers, and in the provision of a communication between said chambers for the passage of the water of condensation from the upper to the lower one, whereby the objection heretofore existing to the use of such radiators is obviated.

Referring to the accompanying drawings, A is the steam-base, divided into upper and lower chambers, B C. Erected on this base is a series of vertical tubes, D, closed at their upper, but open at their lower, ends, where they communicate with the upper chamber, B, of the base.

E are small vertical tubes, open at both ends, and arranged within the tubes D, but not extending fully up to the upper ends of the latter, and connecting at their lower ends with the bottom chamber, C, of the base. F is a steam-inlet pipe to the chamber B, at or near the one end of the radiator, and G an outlet or return pipe to the chamber C, at or near the opposite end of the structure. H is a small outlet or connecting passage between the chambers B and C, consisting simply of a hole in

the horizontal partition which separates the two chambers B and C.

There may, if desired, be more than one row of tubes, D and E, arranged on a common base, A, in a single radiator.

In working the radiator, steam is admitted by the pipe F to the chamber B, from whence it passes up the tubes D, driving the air from said chamber and tubes, down through the tubes E, into the collection-chamber C, and out through any suitable valve, or along the discharge or return pipe G, which latter serves to keep up the circulation in the radiator, by the steam, after it has driven out the air from the tubes E, filling said tubes, and working toward and through the pipe G. The pipe G also serves to pass off any water that may be formed by condensation in the tubes E and chamber C, while water forming in the chamber B, by condensation of steam therein, or in the tubes D, is passed off, through the connecting passage or aperture H, into the collection-chamber C, and from thence, by the pipe G, back into the boiler.

By making the upper chamber, B, the inlet or receiving chamber, and the lower chamber, C, the outlet-chamber; and providing the communication H between the said chambers, I prevent the boiling of the water of condensation upon the upper surface of the horizontal partition between the chambers and the unpleasant gurgling and cracking noise which is thereby produced in radiators which are now made of similar construction, but in which the lower chamber first receives the steam, and the upper chamber is the outlet-chamber.

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

The arrangement of the inlet and outlet chambers B C and pipes, with a communication, H, between the said chambers, for operation substantially as herein described.

GEO. W. BLAKE.

Witnesses:

A. LECLERC,
ED. P. TRACY.