

A. VAN HORN.
Steam-Heaters.

No. 158,546.

Patented Jan. 5, 1875.

Fig. 1.

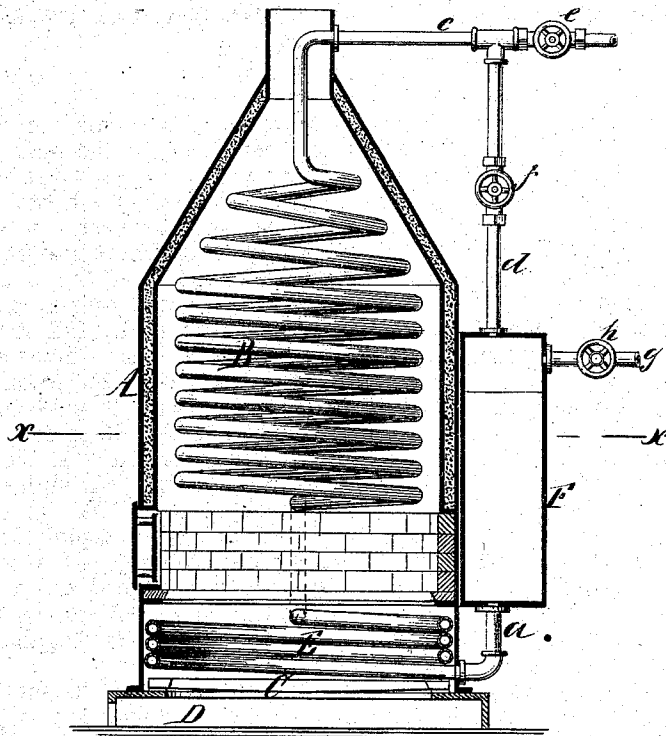
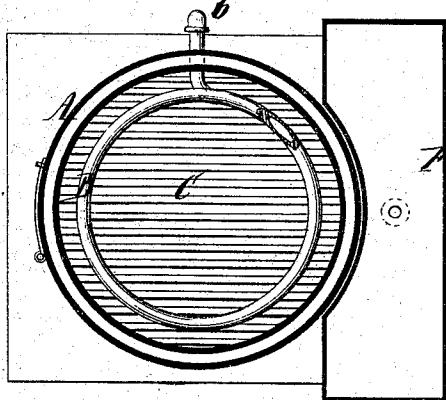


Fig. 2.



Witnesses:
Ernst Bilhuber.
Henry Gintner.

Inventor:
Andrew Van Horn
Van Santvoord & Haaff
attors

UNITED STATES PATENT OFFICE.

ANDREW VAN HORN, OF BROOKLYN, E. D., NEW YORK.

IMPROVEMENT IN STEAM-HEATERS.

Specification forming part of Letters Patent No. **158,546**, dated January 5, 1875; application filed December 9, 1874.

To all whom it may concern:

Be it known that I, ANDREW VAN HORN, of Brooklyn, E. D., in the county of Kings and State of New York, have invented a certain new and Improved Steam-Heater, of which the following is a specification:

This invention is illustrated in the accompanying drawing, in which—

Figure 1 represents a vertical central section. Fig. 2 is a horizontal section in the plane *x x*, Fig. 1.

Similar letters indicate corresponding parts.

This invention relates to that class of steam-heaters in which one or more generating-coils are used, which are supplied with water from a supply-tank situated outside the furnace that incloses the generating-coils, and is connected with the tail end of the heating-pipes; and my invention consists in combining, with the main steam-generating coil and water-supply tank, a branch pipe extending from the water-tank, and having a stop-cock, and communicating with a steam-pipe connected with the steam-generating coil, which steam-pipe is also provided with a stop-cock, all of which will be fully hereinafter described.

In the drawing, the letter A designates a furnace, which contains a generating-coil, B, one or more. This generating-coil is situated above the fire-grate C, and close to this grate, over the ash-box D of the furnace, is situated a secondary generating-coil, E. This secondary coil connects at its lower or outer end, by means of a pipe, *a*, with a supply-tank, F, situated outside of the furnace; and the upper or inner end of said secondary coil connects, by a pipe, *b*, with the lower end of the main generating-coil B, said pipe *b* being situated outside the furnace A. The steam which is generated in the main coil passes through a pipe, *c*, to the heating-pipes, and from the pipe *c* extends a branch pipe, *d*, to the supply-tank. The pipes *c* and *d* are provided with stop-cocks *e* and *f*, respectively. The tail end *g* of the heating-pipes connects with the upper part of the supply-tank, and this tank is filled with water to such a height that the secondary coil and the lower part of the main coil will be filled with water. The tail-pipe *g* is provided with a stop-cock, *h*.

When a fire is kindled in the furnace the water contained in the main coil is rapidly formed into steam, and the water contained in the secondary coil is heated to the boiling-point. If the stop-cock *e* is opened and the stop-cock *f* in the branch pipe *d* is closed, the steam generated in the main coil passes through the heating-pipes, and finally back into the supply-tank; and as the pressure in the supply-tank is thus made equal to that in the generating-coils the water from the supply-tank continues to pass through the secondary coil to the main coil, and a constant circulation is effected. At the same time the water, on passing through the secondary coil, is heated, so that the same, on reaching the main coil, is rapidly transformed into steam, and thereby an even and uniform circulation is produced and a regular supply of steam is obtained, and at the same time the main coil is protected against being burned or overheated.

When it is desired to shut off the steam from the heating-pipes the stop-cocks *e* and *h* are closed and the stop-cock *f* is opened. The steam generated in the main coil is then conducted back in the supply-tank through the branch pipe *d*, and the circulation of water through the generating-coils continues without interruption, so that said coils are not liable to become overheated.

My heater is applicable for railroad-cars, and also for buildings.

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

In a steam-heater, the combination, with the steam-generating coil B and water-supply tank F, of the branch pipe *d*, having stop-cock *f*, and steam-pipe *c*, having stop-cock *e*, substantially as and for the purpose described.

In testimony that I claim the foregoing I have hereunto set my hand this 5th day of December, 1874.

ANDREW VAN HORN.

Witnesses:

W. HAUFF,
E. F. KASTENHUBER.