

W. C. BAKER.
 Steam Heater.

No. 105,886.

Patented Aug. 2, 1870.

Fig. 1.

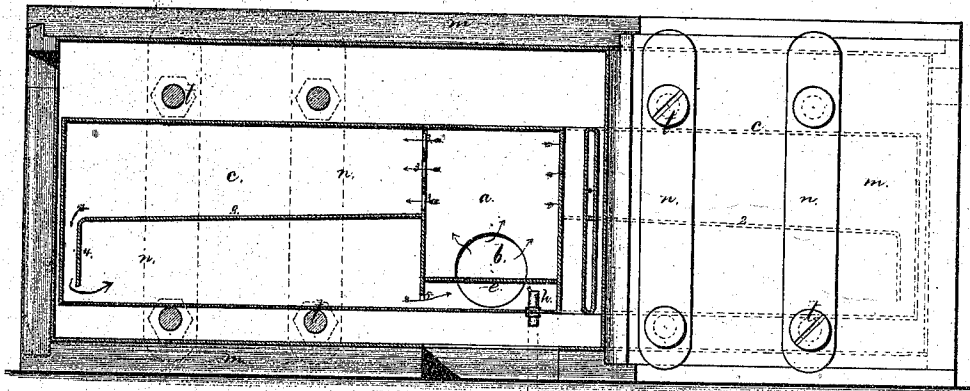


Fig. 3.

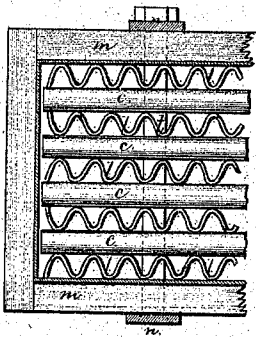
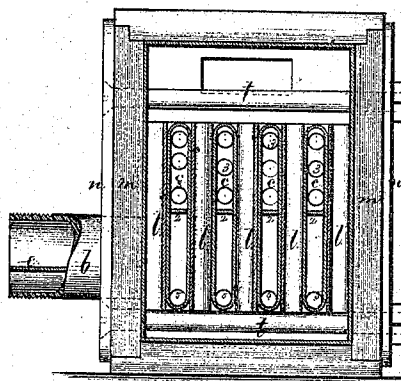


Fig. 2.



Witness,

*Chas. H. Smith
 Geo. T. Pinckney*

W. C. Baker

United States Patent Office.

WILLIAM C. BAKER, OF NEW YORK, N. Y.

Letters Patent No. 105,886, dated August 2, 1870.

STEAM HEATER.

The Schedule referred to in these Letters Patent and making part of the same

To all whom it may concern:

Be it known that I, WILLIAM C. BAKER, of the city and State of New York, have invented an Improvement in Steam Radiators; and the following is declared to be a correct description thereof.

The object of this invention is to support the thin sheet metal used for the radiators, without the use of numerous rivets or stays passing across the steam-spaces, and rendering the sheet metal liable to become rusty or leaky; furthermore, to increase the area of the radiating surface without increasing the external size of the apparatus, and to insure a circulation of the steam and the delivery of the water of condensation, and any air or gases, from the apparatus under circumstances that preclude the possibility of the parts becoming injured, especially from frost, when the apparatus is being heated up, or when it has been left exposed to the cold.

I make use of flat sheet-metal radiators, opening at one end to the steam-chamber, the other end being closed; and there is a division in each radiator that insures the circulation of steam and the driving out of atmospheric air.

The water of condensation is taken away adjacent to the steam-inlet, so that it will not be liable to freeze, as is the case frequently in cold weather on starting the apparatus, where the delivery-pipe is at a distance from the steam-supply pipe.

The flat radiators are supported by intervening corrugated stays, and these in turn ultimately are sustained by the inclosing-case of the apparatus, so that the support for the radiating-chambers is external, rendering the use of intersecting rivets and braces unnecessary, and increasing the area of radiation.

In the drawing—

Figure 1 is a vertical elevation, partially in section, of my said apparatus;

Figure 2 is a cross-section; and

Figure 3 is a sectional plan of part of the apparatus.

The steam chamber *a* is made with a pipe, *b*, connected at one side, and through which steam passes into the apparatus.

The radiators *c* are made in a flat form, of sheet metal, and extend from one or two sides of the chamber *a*. I have shown them as extending from opposite sides of said chamber.

These radiators should be placed side by side, the spaces between the radiators being about the same as that of the radiators themselves; but I do not limit myself in this particular.

Each radiator is made with one end firmly attached to the chamber *a*, and the other end closed.

There is a division, 2, in each radiator, and the opening or openings from the chamber *a* into the radiator are above this division, as at 3 3.

The division 2 descends near its outer end at 4, and there is an opening, 5, from the radiator into the space below the division *e* in the chamber *a*.

This construction insures a circulation of the steam, from the chamber *a*, through the radiators, and the water of condensation returns beneath the division *e*, and runs back into the boiler through the lower part of the steam-pipe.

The divisions 2 become stays or supports, to prevent the chambers collapsing, and it will be evident that more than one division or stay may be provided in each chamber.

It is to be understood that this radiator is placed at a higher level than the boiler, as usual, so that there may be a descent in the steam-pipe from the radiator to the boiler.

By employing only one pipe for both steam and water, the connection between the radiating apparatus and boiler is rendered more simple than heretofore, and there is no risk of the water of condensation freezing in its return to the boiler.

The steam radiating-chambers, made as aforesaid, may be used with any desired connection to the boiler.

The steam, as it fills the apparatus, rises to the top, and displaces the air; hence the air is gradually driven down, and passes off by a pipe, at *h*, that may be led to the ash-pit of the furnace or any other convenient place. This pipe may be left open, to allow air to escape or air to enter the apparatus, and prevent collapsing.

The pipe *h* is to rise above the overflow for water, to prevent water entering the same.

The spaces between the respective radiating chambers receive the corrugated stays *l*, that are made of metallic plates, bent or corrugated, so as to closely fill the space between the chambers and sustain the sheet metal of such chambers against the pressure of the steam, and at the same time form radiating surfaces to warm the air, that has a free circulation through the corrugations of said plates.

The outer casing *m* of the radiator is lined with metal, and braced by the stays *n* and bolts *t*, so as to support the same firmly against the pressure of steam acting upon the corrugated stays-*l*, through the plates of the radiators.

The usual openings are provided in the lower part of the case, for admitting atmosphere, and in the upper part for the warm air to pass into the building.

It is to be understood that this casing *m*, being made complete, supports the radiating-chambers, and that it can be transported with convenience from the manufactory to the place of use, and only requires to be suspended from the ceiling in the cellar, instead of being only an inclosure, as heretofore made on the premises, that did not aid in strengthening the radiator.

I claim as my invention—

1. The flat sheet-metal radiating chambers, with separate intermediate external stays or supports, forming also radiators, the parts being confined by tie-bolts that do not pass through the steam-spaces, substantially as specified.

2. The sheet-metal steam-radiators, made with the divisions 2, steam-inlets 3, and outlet 5, so as to produce a circulation, as specified.

3. The division *e* of the steam-chamber, separating the steam and water of condensation, in combination

with radiating-chambers and steam-supply pipe, as specified.

4. The casing *m*, within which the steam radiating-chambers are supported against the pressure of steam by such casing, as and for the purposes set forth.

Signed by me this 11th day of May, A. D. 1870.
W. C. BAKER.

Witnesses:

HAROLD SERRELL,
GEO. T. PINCKNEY.