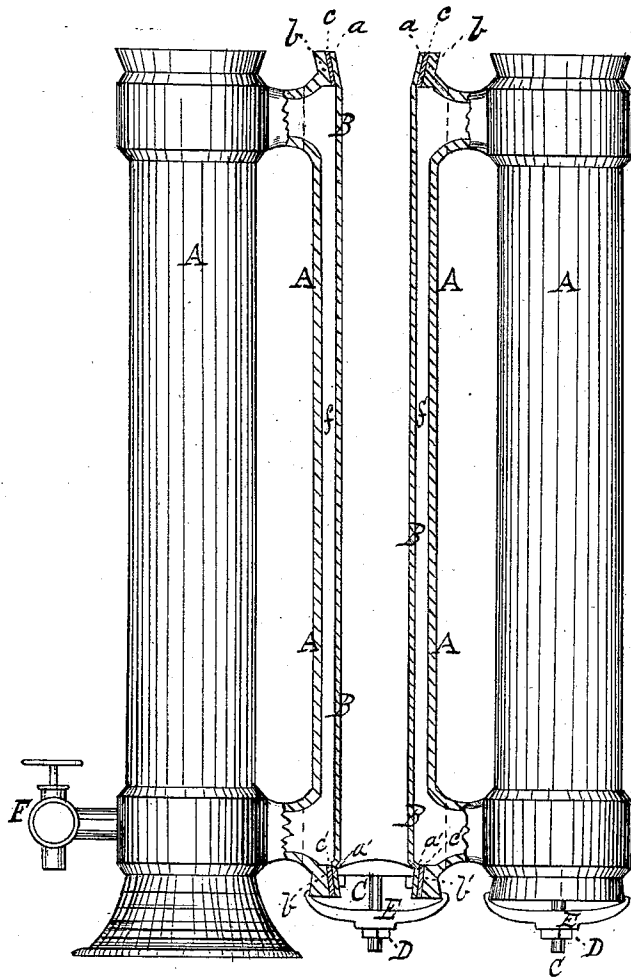


J. L. WINSLOW.

Steam Radiator.

No. 111,598.

Patented Feb. 7, 1871.



WITNESSES

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UNITED STATES PATENT OFFICE.

JOSEPH L. WINSLOW, OF PORTLAND, MAINE.

IMPROVEMENT IN STEAM-HEATERS.

Specification forming part of Letters Patent No. 111,598, dated February 7, 1871.

To all whom it may concern:

Be it known that I, JOSEPH L. WINSLOW, of Portland, in the county of Cumberland and State of Maine, have invented a new and useful Improvement in Radiators; and I do hereby declare the following to be a full, clear, and exact description thereof, which will enable others to make and use my invention, reference being had to the accompanying drawing, forming part of this specification, in which is shown a front elevation of my invention, partly in section.

My invention has reference to steam-radiators for use in the heating of dwelling-houses and the like. To render the application of steam suitable to the heating and ventilation of houses many improvements and modifications in the apparatus for generating and distributing the heat have been found to be necessary to make it perfectly safe as well as economical; and as the ordinary pipes and fittings, such as are generally used in mills and public buildings for radiating purposes, have been found to be too cumbersome and unseemly in appearance, and in many cases wholly inapplicable to the purpose, a special arrangement of radiating-surfaces to occupy a minimum space and be ornamental is essential to make up a radiator for the purpose of house-warming.

Many improvements in this direction have been made from time to time; but I am not aware of any radiators in use at the present time having extended radiating-surfaces that do not require a corresponding increase in the volume of steam necessary to fill them.

Heretofore all radiators of an ornamental design have failed to combine the minimum amount of steam-room with the maximum amount of radiating-surface. A radiator possessing the above-specified qualification, in combination with the necessary strength to resist a large pressure—a pressure, say, of one hundred pounds to the square inch—it is believed has never before been invented, nor one possessing flues which cause a direct circulation of air through them, thus drawing or setting in motion more rapid currents of air to and from the radiator than would be created by radiation from surfaces alone.

It is a very important feature in the construction of radiators that they should have

as few joints compared to the amount of surface as possible, and that those should be of such shapes and in such positions as will render them less liable to leak. All of those joints required in the ordinary column radiator to connect column to column, side by side, are wholly avoided in my improved radiator, to be hereinafter described. I construct it by casting the columns composing it in one continuous piece of metal. As will be observed, a radiator so constructed, although possessing a large increase of surface, will contain no more joints than the ordinary radiator, and those joints are of such a character and form, and in such position, as to be subject to but very little strain, as little surface is presented to a pressure from within, and that wholly free from all strains other than that due to pressure applied to the radiator.

The foregoing statements are demonstrated by the fact that a small bolt is sufficient to make both joints between the inside and outside pipes perfectly tight against a severe pressure. The form of joint spoken of between the inner and outer pipes, and the manner of securing either end of the inner pipes to either end of the outer pipes, is applicable when the inner pipes only are of cast-iron. Should wrought-iron tubes be substituted, they would be secured at either end as such tubes are usually when used in boilers, viz., by expansion. Then, of course, the bearings for said tube to make a joint against would be of the usual form.

In the drawing, A A show columns, of any number and design, in one continuous piece of metal, in the interior of which are inserted the smaller pipes B B. These pipes are of peculiar construction, to enable them to make a tight joint at their ends with the ends of the outer pipes or casings. The upper ends of B B are made flaring, or wider to some degree than the other portions of the tube, and are fitted with an annular packing of rubber or other suitable material.

The outer tubes, A A, are constructed with an inclined shoulder at the top, corresponding in shape with the shape of the flaring ends of B, so that when the inner tubes are placed inside the outer ones and drawn down to place the incline on B fits that on A. This can be plainly understood by reference to the draw-

ing, in which *a* shows the flaring or inclined ends of the inner tubes; *b*, the incline or shoulder of the outer tubes; *c*, the annular packing. The bottoms of the tubes are somewhat similarly constructed, the form of the inclines being varied somewhat. *a'* shows the incline on the tubes B; *b'*, that on A; and *c'*, the annular packing.

The inner tube is secured in its position and held firmly to its seat on *b b'* at either end of the column, by the bolt C, the nut of which, D, is screwed against the crab E, which rests against the end of the column.

F is the valve to regulate the supply of steam to the radiator. G is an air-valve for the expulsion of air.

The operation of the radiator will be readily seen. The steam being admitted through the valve F, the annular steam-space *f* in each column is filled, each column in its turn. The steam very rapidly condenses, owing to the large amount of surface it covers compared to its volume. In consequence of this large amount of surface a very rapid condensation takes place and as rapid a supply follows, so that a much larger proportion of steam is condensed than in any other form of radiator.

The advantages of this radiator over a single-pipe radiator are, first, a gain of heating-surface with a corresponding diminution of the volume of steam; and, second, in consequence of this, a more rapid condensation of steam, and consequently proportionately more effect as a radiator.

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

1. A radiator composed of two or more pipes, joined at either end of said pipes, of one continuous piece of metal.

2. The annular steam-spaces *f*, as formed by the internal surface of the outer pipe, in connection with the outer surface of the internal pipe.

3. The method of securing the internal pipe by a single bolt, said pipe being enlarged at one end and diminished at its opposite end at an angle to the sides other than a right angle.

JOSEPH L. WINSLOW.

Witnesses:

WM. HENRY CLIFFORD,
GEORGE E. BIRD.