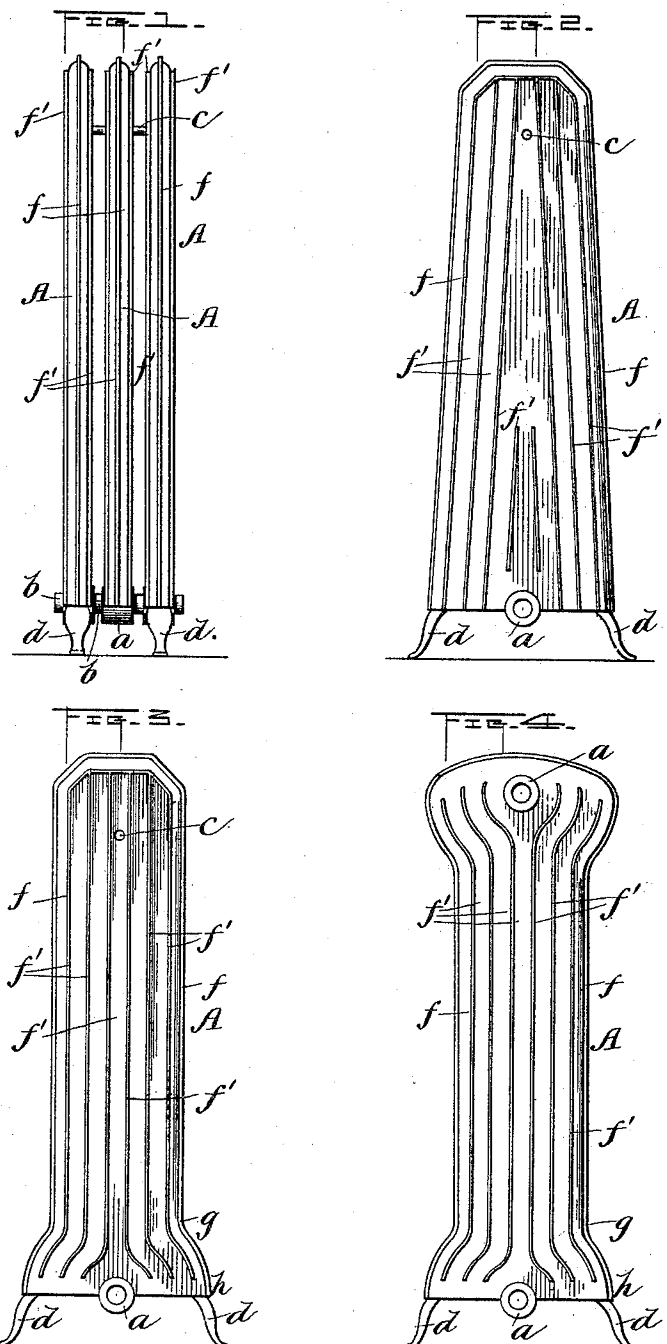
(No Model.)

T. C. JOY.

STEAM OR HOT WATER RADIATOR.

No. 456,896. Patented July 28, 1891.



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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

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STEAM OR HOT-WATER RADIATOR.

SPECIFICATION forming part of Letters Patent No. 456,896, dated July 28, 1891.

Application filed March 17, 1891. Serial No. 385,421. (No model.)

To all whom it may concern:

Be it known that I, THADDEUS C. JOY, a citizen of the United States, residing at Titusville, in the county of Crawford and State of Pennsylvania, have invented certain new and useful Improvements in Steam or Hot-Water Radiators; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to steam and hot-water radiators of that type comprising a series of hollow sections connected by collars and thimbles and through which the steam or hot water circulates, and the said sections having either hollow or solid ribs on their radiating-surfaces, which form channels for the passage of the air which is to be heated by the radiating-surfaces as it rises from the bottom to the top of the radiator. In this type of radiator, when made of the usual appropriate height and dimensions, a very considerable part of the air-circulation space is occupied and interrupted by the bosses or collars and thimbles which connect the sections, and consequently an amount of air commensurate with the area of the radiating-surfaces is not introduced between the sections, nor is it uniformly distributed over said surfaces above the bosses or collars and thimbles; and to overcome this objection is the object of my invention, which consists, first, in radiator-sections for either a steam or hot-water radiator made with a tapered form, so that they are wider at their base than at the middle of their height; second, in radiator-sections which are wider at their base and also at their top than at the middle of their height, said increased widths being produced, respectively, by a downward flare and by an upward flare given to the sections.

My improved construction of radiator-sections gives an increased area of radiating-surface at the lower part of the radiator and an additional amount of room for the air-channels, which is about equal to the loss of radiating-surface and air-channel space occasioned by the arrangement of the bosses or collars and thimbles midway between the width of the sections, and thus an adequate amount of air can be admitted and heated in a radiator of about the usual appropriate height and of a very slightly-increased width at its base, and at the same time the bosses or collars and thimbles occupy their usual location.

My invention also affords at both the top and bottom of the radiator, when heated by hot water, an adequate air-heating surface, as the increased radiating-surface obtained by flaring the sections both downward and upward about compensates for the loss of air-space occupied by the bosses or collars and thimbles at top and bottom of the ordinary radiator.

In the accompanying drawings, Figure 1 is a side elevation of a radiator adapted to be heated by steam, of the type to which my invention is especially applicable. Fig. 2 is an elevation showing the broad side of one of the sections, said section being widest at its bottom and tapered upward. Fig. 3 is a similar view of one of the sections shown in Fig. 1, the lower portion of the section being widened on a flare and the remainder of uniform width to its top; and Fig. 4 shows a section adapted for a hot-water radiator, this section being flared and widened both at its top and bottom, while the intermediate portion is of uniform width.

A in the drawings indicates a radiator-section, which is, as usual, made hollow and provided with bosses or collars *a a*. A series of these sections is shown connected together in Fig. 1 by means of ordinary thimble connections *b* and stayed by a bolt *c*, and, thus arranged and mounted on separated legs *d*, air passes up between the radiating-surfaces from the bottom to the top of the radiator, the only obstruction to the air being the bosses or collars and connecting-thimbles and the bolt.

In Fig. 2 of the drawings it will be seen that the respective sections A are made with a slight taper from their bottom to their top, and thus a gradually-increased width downward is given to the sections, respectively. These sections, as usual, have projecting ribs *f f'* on their broad radiating-surfaces. These ribs, which form the air-channel ways, are preferably run on lines parallel with the ends

of the sections. It will thus be seen that by the gradual widening of the sections downwardly, as shown in Fig. 2, the amount of radiating-surface is increased, and the obstruction offered by the bosses or collars and thimbles to the air in its upward passage between the sections is compensated for, and that a sufficient quantity of air corresponding to the amount of radiating-surface of the sections is secured, and this, too, without giving increased height to the radiator or greatly enlarging or widening the sections thereof.

In Fig. 3 the radiator-sections are shown flared downwardly from *g* to *h* for the purpose of securing the above-mentioned increase of radiating and air-circulating space and compensating for the room occupied by the bosses or collars and thimbles. The ribs *f f'* in this construction are made to follow the outline of the ends of the sections.

In Fig. 4 a hot-water-radiator section is shown, and as thimbles and collars, as *a b*, are employed at top and bottom the sections are flared at the bottom in the manner shown in Fig. 3, and also flared at the top from *g'* to *h'*, in order to give increased radiating and air-circulating surface and space.

In carrying out my invention the ribs *f f'* need not necessarily follow the outline of the ends of the section; but it is more symmetrical and desirable to have them follow said outline.

I do not confine my invention to either one of the particular forms shown, as these forms may be varied and yet compensation be made for the room occupied by the collars or bosses and thimbles, and thus have the air-space at the bottom or at the top and bottom substantially equal to the area below the upper or above the lower bosses or collars and thimbles or between the lower and upper bosses or collars and thimbles, as it is at the middle or intermediate portion of the radiator. The internal construction of the hollow sections may be of any approved character and the ribs may be either solid or hollow.

The air-circulating space between the ribs *f f'* at the ends of the sections may be one continuous unbroken chamber—that is, the intermediate ribs *f'* may be left off; but it is preferable to divide up this space by means of the ribs, and thus form a series of air-channel ways.

What I claim as my invention is—

1. In a radiator having hollow sections for the circulation of steam or hot water and connected together by bosses and collars or thimbles and provided with projecting hollow or solid ribs on their radiating-surfaces, sections having an upward taper or downward flare, thereby widening them at the lower part of the radiator sufficiently to compensate for the room occupied by the bosses or the collars and thimbles, substantially as described.

2. Radiator-sections connected by bosses or collars and thimbles and provided with projecting hollow or solid ribs on their radiating-surfaces, made with a downward flare and an upward flare, so as to widen them at their bottom and top and compensate for the room occupied by the bosses or collars and thimbles, substantially as described.

3. Radiator-sections which are connected by bosses or collars and thimbles and provided with a hollow or solid projecting rib or ribs at each of their ends and made with an upward taper or a downward flare, thereby widening them at the lower part of the radiator sufficiently to compensate for the room occupied by the bosses or collars and thimbles, substantially as described.

In testimony whereof I hereunto affix my signature in presence of two witnesses.

THADDEUS C. JOY.

Witnesses:
JOS. T. CHASE,
JOSEPH SMITH.