

(No Model.)

C. F. WALTHER.
RADIATOR.

No. 537,371.

Patented Apr. 9, 1895.

Fig. 1.

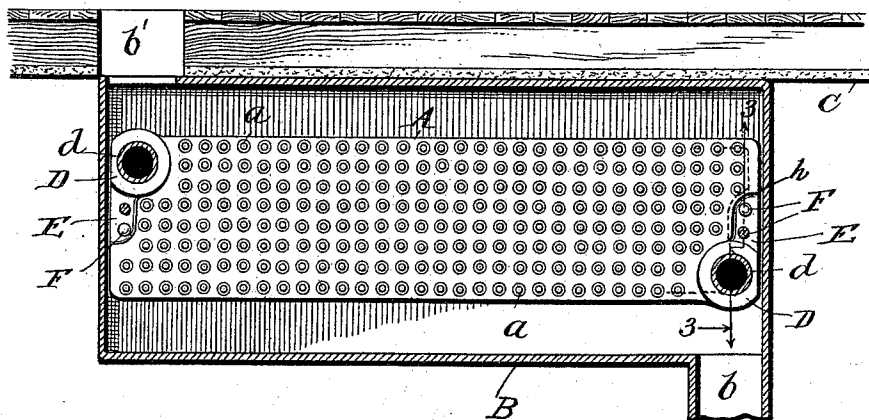


Fig. 2.

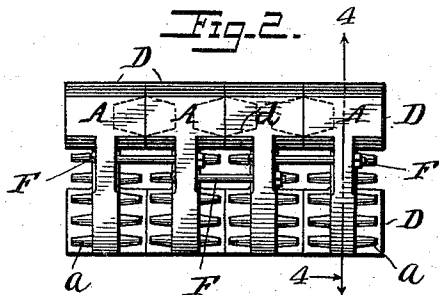


Fig. 3.

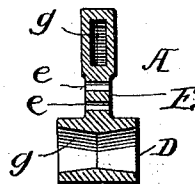
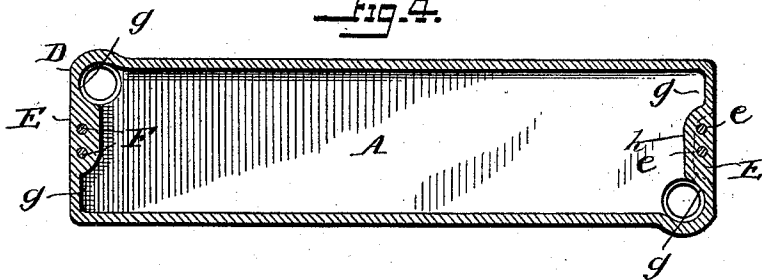


Fig. 4.



Witnesses
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UNITED STATES PATENT OFFICE.

CHARLES F. WALTHER, OF BUFFALO, NEW YORK.

RADIATOR.

SPECIFICATION forming part of Letters Patent No. 537,371, dated April 9, 1895.

Application filed February 16, 1894. Serial No. 500,362. (No model.)

To all whom it may concern:

Be it known that I, CHARLES F. WALTHER, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented certain new and useful Improvements in 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.

In the manufacture of indirect radiators for steam or hot water,—that is, radiators in contact with which a confined current of air is caused to pass and be heated, before being delivered into the apartment,—there are certain desiderata which it is the object of my invention to secure. These may be enumerated as follows: The sections of the radiator should be constructed so as to facilitate their being readily put together and taken apart, especially when the stack of sections is located, as it usually is, close to the ceiling, under the floor, or in other confined space; and to this end I provide each section with perforated flanges for the connecting bolts, arranged at the ends of the sections, as distinguished from being arranged at the tops and bottoms thereof, as is now ordinarily the practice; for the reason that the connecting bolts and nuts are more easily accessible if located at the ends, instead of at the top and bottom of the stack. In radiators of this class it is desirable, and essential for the best results, that the boxing or casing by which they are surrounded should be brought close up to the ends of the sections, in order that all of the air which enters the casing shall be forced to circulate between the sections, and practically none of it shall be allowed to pass between the ends of the sections and the walls of the boxing or case, as a better heating of the air is thus secured; and to this end I make the perforated flanges through which the connecting bolts pass, flush with the ends of the sections, as distinguished from extending beyond the ends of the sections. It is desirable that the size of the stack be easily enlarged by adding sections thereto, or diminished by removing sections therefrom, and to this end the sections are made all alike, having the perforated end flanges such as hereinbefore described, and these sections are

connected together by short bolts which pass through the flanges of two adjacent sections.

A radiator section made according to my invention, and as above set forth, besides possessing the advantages, as a finished product, which I have described, can be more cheaply manufactured than can the indirect radiator sections now in common use, in which the flanges or lugs for the connecting bolts are outside of or beyond the periphery or edges of the body of the radiator section, for the reason that there is a material reduction in size of the flask in which the section is molded, with a corresponding lessening of cost for the molding; and further there is a very much reduced proportion of breakage in the shipping of such radiator sections, because the perforated flanges for the connecting bolts do not project beyond the outlines of the body of the radiator sections and are hence protected from being knocked or broken off.

In order that my invention may be better understood, I have illustrated an embodiment thereof in the accompanying drawings, in which—

Figure 1 is a vertical sectional view taken between two sections of an indirect radiator made according to my invention. Fig. 2 is an end view of the radiator. Fig. 3 is a vertical section through the end of one of the sections, taken on the line 3—3 of Fig. 1. Fig. 4 is a vertical section taken on the line 4—4 of Fig. 2.

The radiator is made up of a series of sections A, which are duplicates, one of the other, and are placed side by side, and are connected in a manner presently to be set forth. The stack so formed is shown as being placed in a box or casing B which may be of wood, tin-lined, and is situated directly below the ceiling C. The air to be heated enters the box through an opening *b*, and after circulating between the radiator sections, passes out in a heated condition through the outlet *b'*. The inner walls of the box or casing come close to the ends of the radiator so that there is practically no circulation of air between these two. Each section is preferably rectangular in shape, is hollow, thereby forming a chamber for the circulation of steam or hot water, and is provided upon its opposite sides with the projecting studs or

ribs *a* as is usual in radiators of this kind. The sections are provided upon their opposite faces and preferably near their opposite ends with perforated bosses *D*, in the perforations through which are seated the double-tapered nipples *d* which form the steam connections between the sections.

E, E are perforated ribs or flanges, one at each end of the radiator section, and having their outer edges flush with the outer edge of the section *A*. I prefer that these perforated ribs should be adjacent to the bosses *D*, as shown. Each of these ribs or flanges *E* has two bolt holes *e, e* formed through it, and through these holes are passed the short connecting bolts *F*. These bolts are arranged as shown in Fig. 2, each connecting the two adjacent sections,—so that each section is connected with the sections on either side of it by two short bolts *F*. The central portions of the end walls of the section are set inward so that they extend into the central steam space, as represented at *h*, Figs. 1 and 4, and it is to these set-in portions of the end of the radiator section that the flanges or ribs *E*, for the connecting bolts are applied. The body of the radiator thus projects outward beyond the set-in parts, *h*, as represented at *g, g*, and the outer edges of the flanges *E*, are brought substantially flush with the ends of the body of the sections, instead of projecting beyond them, with the advantages inci-

dent to such construction which have been heretofore referred to.

By reference to the drawings, particularly to Fig. 1, it will be seen that the connecting bolts *F*, are much more easily accessible than they would be did they pass through flanges situated at the top and bottom of the sections as is now customary. It will be also observed that the connecting means nowhere extend beyond the periphery or edge of the body of the section, so that it is possible to build the surrounding casing close up to the radiator wherever it be placed.

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

A hollow section for a steam or hot water radiator, of substantially rectangular form and having suitable openings for steam or water connections, and having the central parts, *h*, of each end wall set into the steam space of the section, and having perforated flanges or ribs formed upon the said set in portions, whereby the outer edges of the flanges are substantially flush with the ends of the sections, substantially as set forth.

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

CHARLES F. WALTHER.

Witnesses:

EDWIN A. BELL,
GEORGE R. HOWARD.