(No Model.)

J. B. ARCI & J. CHAPMAN.

STEAM RADIATOR.

No. 310,633. Patented Jan. 13, 1885.

Fig. 1.

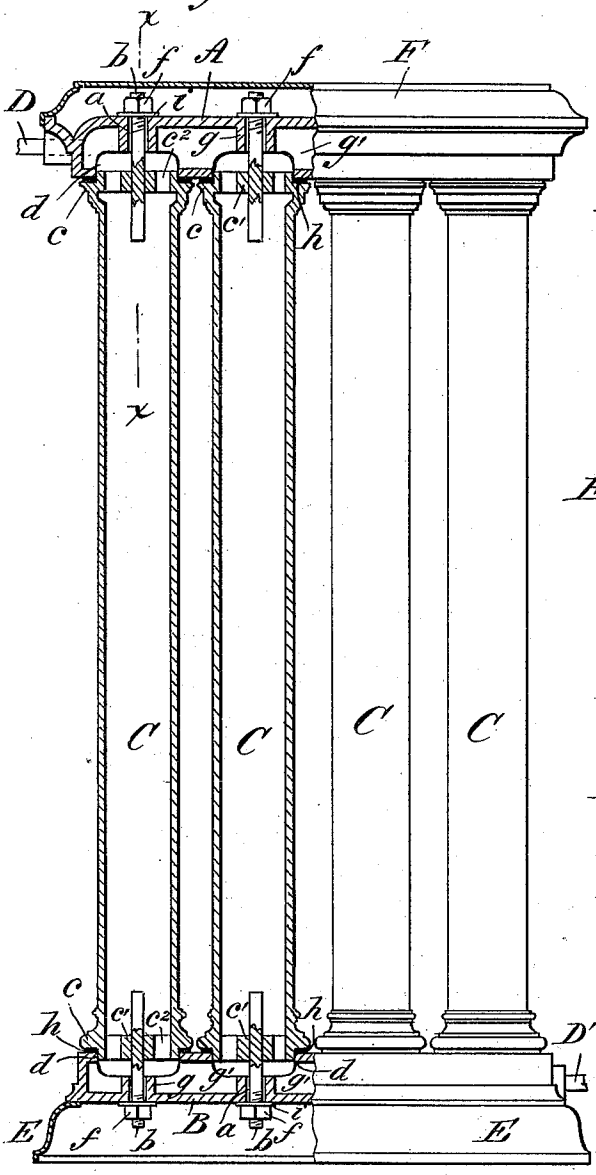


Fig. 2.

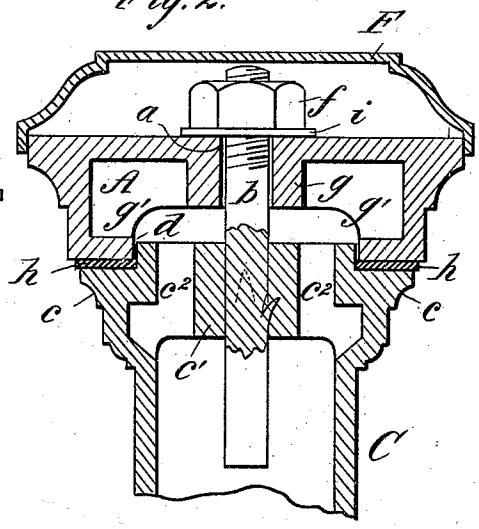


Fig. 4.

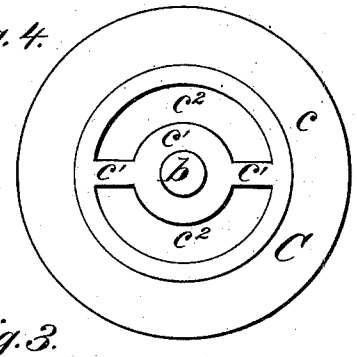
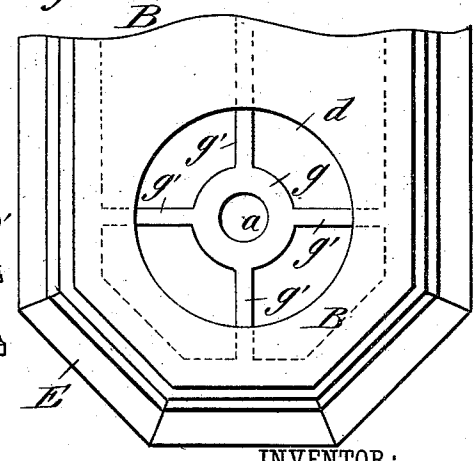


Fig. 3.



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UNITED STATES PATENT OFFICE.

JUAN B. ARCI AND JOHN CHAPMAN, OF BROOKLYN, NEW YORK.

STEAM-RADIATOR.

SPECIFICATION forming part of Letters Patent No. 310,633, dated January 13, 1885.

Application filed December 7, 1883. (No model.)

To all whom it may concern:

Be it known that we, JUAN B. ARCI and JOHN CHAPMAN, of Brooklyn, in the county of Kings and State of New York, have invented a new and Improved Steam-Radiator, of which the following is a full, clear, and exact description.

This invention relates more particularly to that class of steam-radiators wherein circulating-pipes are used which communicate at their ends with upper and lower chambers; and the invention consists of an improved and simplified method of constructing and connecting the pipes with the chambers, thereby effecting economy in and at the same time improving the construction of the radiator.

Reference is to be had to the accompanying drawings, forming part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a partly sectional elevation of our new and improved radiator. Fig. 2 is a detailed transverse sectional elevation of the same, taken on the line *x x* of Fig. 1. Fig. 3 is a detailed plan view of the lower chamber with the circulating-pipes; and Fig. 4 is an end view of one of the circulating-pipes, Figs. 2, 3, and 4 being enlarged.

A designates the upper and B the lower chamber of the radiator, and C C designate the circulating-pipes. The chambers A B are essentially duplicates of each other, each being cast with the series of small openings *a* in its outer wall to receive the bolts *b* of the pipes C, and with the series of larger openings *d* in its inner wall to receive the ends of the said circulating-pipes C. The pipes C are cast alike at both ends, with the flanges *c* and diametrical strips or portions *c'*, and the said bolts *b b* are by preference cast central to and integral with the said strips *c'*, so that no extra fitting is required, save to screw-thread the outer ends of the said bolts to receive the nuts *f*, the portions *c'* being made so as to leave the openings c^2 at either side for the free passage of the steam and water of condensation through the pipes.

If found necessary, or if it is desired to economize weight of material in making the chambers A B, we shall cast them with the inwardly-projecting enlargements *g*, surrounding the openings *a*, and with the radial bracing-fins *g' g'*, reaching from the said enlargements and from the outer wall of the chambers to the inner walls of the chambers, to prevent all danger of the outer walls being crushed in when the chambers and circulating-pipes C are drawn together by applying the nuts *f* to the bolts *b*.

In assembling the chambers and circulating-pipes constituting the radiator, the two sets of packing *h* and *i* are used—the former upon the flanges or shoulders *c* of the pipes C, the latter upon the bolts *b* between the nuts *f* and outer walls of the chamber—so that when the nuts *f* are screwed down perfectly steam-tight joints will be formed at all of the connections. The steam is admitted to the radiator through inlet-pipe D, which enters the upper chamber, A, and the products of condensation are discharged through the outlet-pipe D', fitted in the lower chamber, B. The chambers A B and pipes C having been put together and drawn to place by the nuts *f*, in order to complete the radiator, the flange E is attached to the bottom chamber, B, for supporting the radiator, and the ornamental cover F applied to the top of the chamber A, which finishes the radiator and gives it a nice appearance, and covers the bolts *b* and nut *f*.

By constructing the radiator as shown and described it will be seen that the number of parts of the radiator are reduced to the minimum, that irregular shapes are avoided, and that very little fitting of parts is required, thus making the radiator cheap to manufacture, and the radiator is at the same time made perfectly practical for its purpose.

Instead of casting the bolts *b* integral with the pipes C, the chambers and pipe might be drawn together by separate bolts and nuts; but this would involve extra labor and expenses, and hence the first-described plan is preferred.

We are aware that a steam-radiator has been heretofore constructed with loop-pipes having bolts cast therewith between the open ends thereof. A steam-chamber for said pipes was formed with two round openings for the steam to pass through to the pipes, and with sleeves through which the bolts passed when the parts were in position; also, that a similar construc-

tion has been made in which the bolts were separate from the loop-pipes, and in which bridges for the bolts were formed in the open ends of the pipes. We do not desire to claim, broadly, any such constructions as of our invention. By our construction a very strong and durable radiator is made. The tubes being single allows of each being separately replaced when broken or injured, and a great saving of metal is also afforded by our construction, as nearly the whole of one face of the steam-chamber is cut away to form the openings *d* for the several tubes, and yet the parts around the openings *a* are not weakened, owing to the fins *g'*.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

The steam-chambers A, formed with the openings *a d*, and with the enlargements *g* and radial fins *g'*, for bracing the outer wall of the chamber, in combination with the pipes C, bridge *c'*, bolts *b*, and nuts *f*, substantially as and for the purposes set forth.

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Witnesses:
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