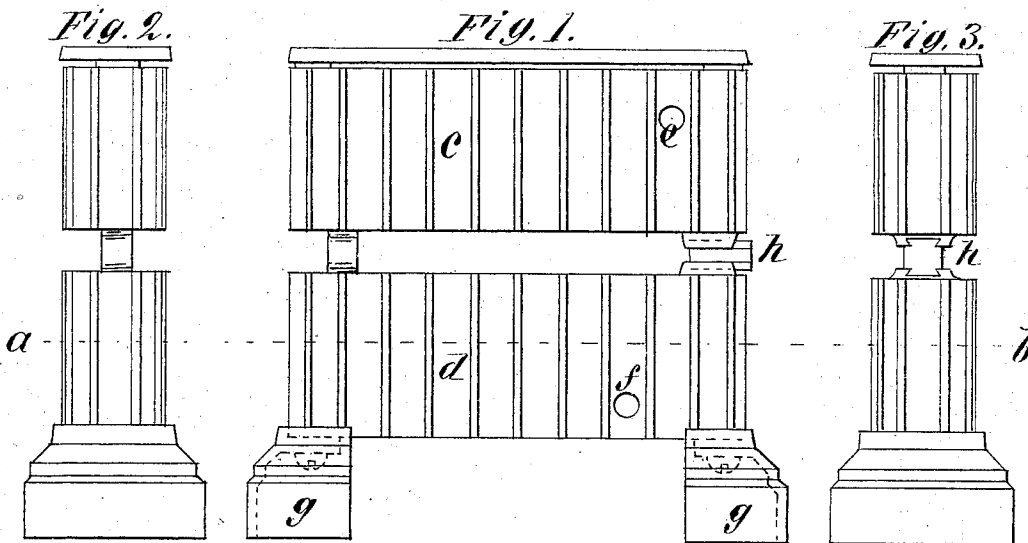
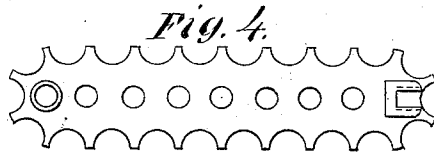
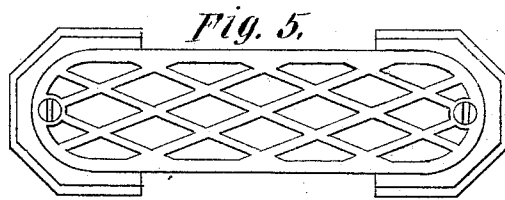
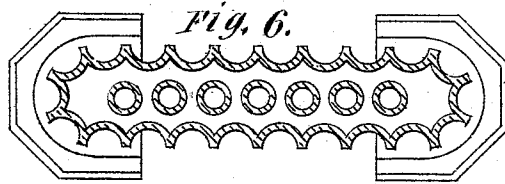


D. RUSSELL, Jr.
Steam-Heaters.

No. 147,794.

Patented Feb. 24, 1874.



Witnesses.

L. R. Batchelder

B. David Washburn

Inventor.

Daniel Russell

UNITED STATES PATENT OFFICE.

DANIEL RUSSELL, JR., OF EVERETT, ASSIGNOR TO HIMSELF AND THOMAS F. BURKE, OF EAST SOMERVILLE, MASSACHUSETTS.

IMPROVEMENT IN STEAM-HEATERS.

Specification forming part of Letters Patent No. **147,794**, dated February 24, 1874; application filed July 14, 1873.

To all whom it may concern:

Be it known that I, DANIEL RUSSELL, JR., resident of the town of Everett, county of Middlesex and State of Massachusetts, have invented a Radiator and Air-Heater for Steam-Heating Purposes, of which the following is a specification:

The object of my invention is to produce a simple device combining an inexpensive construction with the requisite efficient and ornamental radiating-surface, suitable circulating-tubes, convenient provision for the arrangement of steam and waste pipes, &c., as hereinafter more fully set forth.

My invention is illustrated in the accompanying drawings, of which Figure 1 is a side elevation. Fig. 2 is an end elevation; Fig. 3, a view of the opposite end; Fig. 4, a plan of the lower section; Fig. 5, a plan; Fig. 6, a sectional plan, the cutting plane of which is taken at line *a b*.

The radiator is composed of two or more sections, *c d*, of cast metal, cast hollow, as see Fig. 6, and provided with a series of tubes, (see Figs. 4 and 6,) through which the air circulates freely. The space within the casting and around the tubes is occupied by the steam. The steam-induction pipe is connected at the opening shown in the upper section at *e*, and the waste or eduction pipe for conducting away the condense-water is connected at the opening shown in the lower section at *f*. The exterior of the radiator is formed of concave or semicircular grooves or flutings, which, besides making an effective radiating-surface, is ornamental withal, and furnishes frequent convenient passage-ways up the side of the radiator, for the induction and eduction pipes to pass upward from beneath to the points of connection, which may be located in either of these grooves, the groove almost or quite inclosing the pipe within the outline of space occupied

by the radiator-sections, so that these pipes need not project to become unsightly, or occupy unnecessary room. The lower section is furnished with the base or feet *g*, and on its top at one end is provided a dovetailed groove, which groove is also repeated on both top and bottom of as many sections as are used intermediate between the top one and bottom one, and also on the under side of the top section, as see Figs. 1 and 3. At the end opposite these dovetail grooves is screwed in a short piece of pipe into the top of the lower section; then the next upper section is screwed onto the pipe, and the key *h* is slipped into the dovetail grooves, as see Figs. 1 and 3, and so on with as many sections as are required, one over the other. A neat ornamental cap-piece of metal in open-work is screwed to the top of the upper section, resting upon embossments or washers, so as to leave an open space between.

This radiator is easily taken apart and packed for transportation; is simple in construction, ornamental in appearance, not liable to become accidentally broken; is compact, easily managed, enlarged or reduced in quantity of heating-surface by adding or removing sections, produces an efficient heating and circulation of the air; is inexpensive in construction, and durable.

I claim—

The radiator, as constructed in two or more horizontal sections, each of which is made with corresponding external vertical and concave flutings, and a series of corresponding central air-pipes, the sections being united, as described, to form radiators of any required height.

DANIEL RUSSELL, JR.

Witnesses:

Z. R. BATCHELDER,
B. DAVIS WASHBURN.