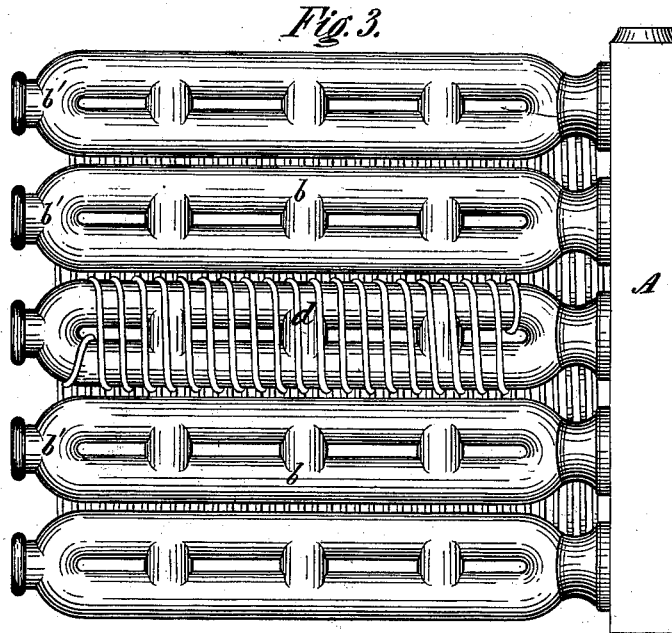
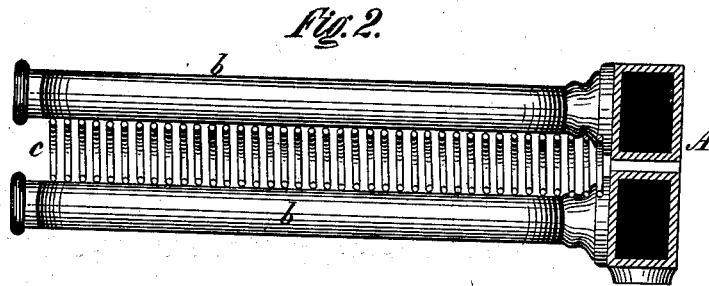
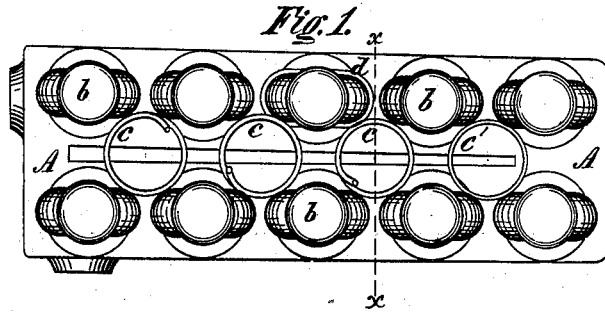


E. RUSSELL.  
Radiator.

No. 165,181.

Patented July 6, 1875.



*WITNESSES:*  
*F. M. Quincy*  
*Geo. H. Miatt*



*INVENTOR:*  
*Edmund Russell*  
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*Atty.*

# UNITED STATES PATENT OFFICE.

EDMUND RUSSELL, OF BROOKLYN, NEW YORK.

## IMPROVEMENT IN RADIATORS.

Specification forming part of Letters Patent No. **165,181**, dated July 6, 1875; application filed May 27, 1875.

*To all whom it may concern:*

Be it known that I, EDMUND RUSSELL, of Brooklyn, Kings county, New York, have invented a certain Improvement in Radiators, of which the following is a specification:

My invention relates to radiators composed of groups of **U** or loop pipes, connected to a common steam-chest; and it consists in introducing between such loop-pipes, or in winding around them, coils of metallic wire or perforated sheets of metal, which are heated by contact with the pipes, and which thus enlarge the area of heated surface, against which currents of air are brought into contact in passing through the chamber or passage in which the group of radiators is placed.

The accompanying drawings are as follows:

Figure 1 is an end view of two series of my loop-pipe radiators, affixed to the alternately-inclined passages or bends of my steam-chest. Fig. 2 is a vertical section of the same through the line *x x* on Fig. 1. Fig. 3 is a top view; and Fig. 4 represents my perforated sheet of metal bent into cylindrical form, for insertion between the upper and lower series of loop-pipe.

Referring to the drawings, **A** represents a pipe or chamber, through which a direct circulation of steam or hot water is maintained. This pipe has two or more convolutions or bends, which are respectively inclined in opposite directions, and which are arranged one

above the other. Affixed to the side of each one of these bends are the **U** or loop pipes *b b*, which are also slightly inclined, so that the mouth of each loop-pipe is slightly lower than the outer end, where the two legs are joined together by the curved passage *b'*. Coils of metallic wire *c*, or perforated sheets of metal *c'*, are introduced between the respective series of loop-pipes, or placed around the outside of such pipes, as shown at *d*. These coils of wire or perforated sheets are in contact with the pipes, and are heated by conduction therefrom. The system of radiators thus grouped together is arranged in a chamber or passage, through which air is supplied in the ordinary way.

I claim as my invention—

1. In combination with a group of loop-pipe radiators, arranged in relation to each other substantially as shown and described, coils of metallic wire introduced between the loop-pipes, as and for the purpose specified.
2. In combination with a group of loop-pipe radiators, a coiled sheet of perforated metal, substantially as shown and described.
3. In combination with a loop-pipe radiator, a coil of metallic wire wound around the loop-pipe, as and for the purpose specified.

EDMUND RUSSELL.

Witnesses:

GEO. L. FARR,  
ANDREW MERCER.