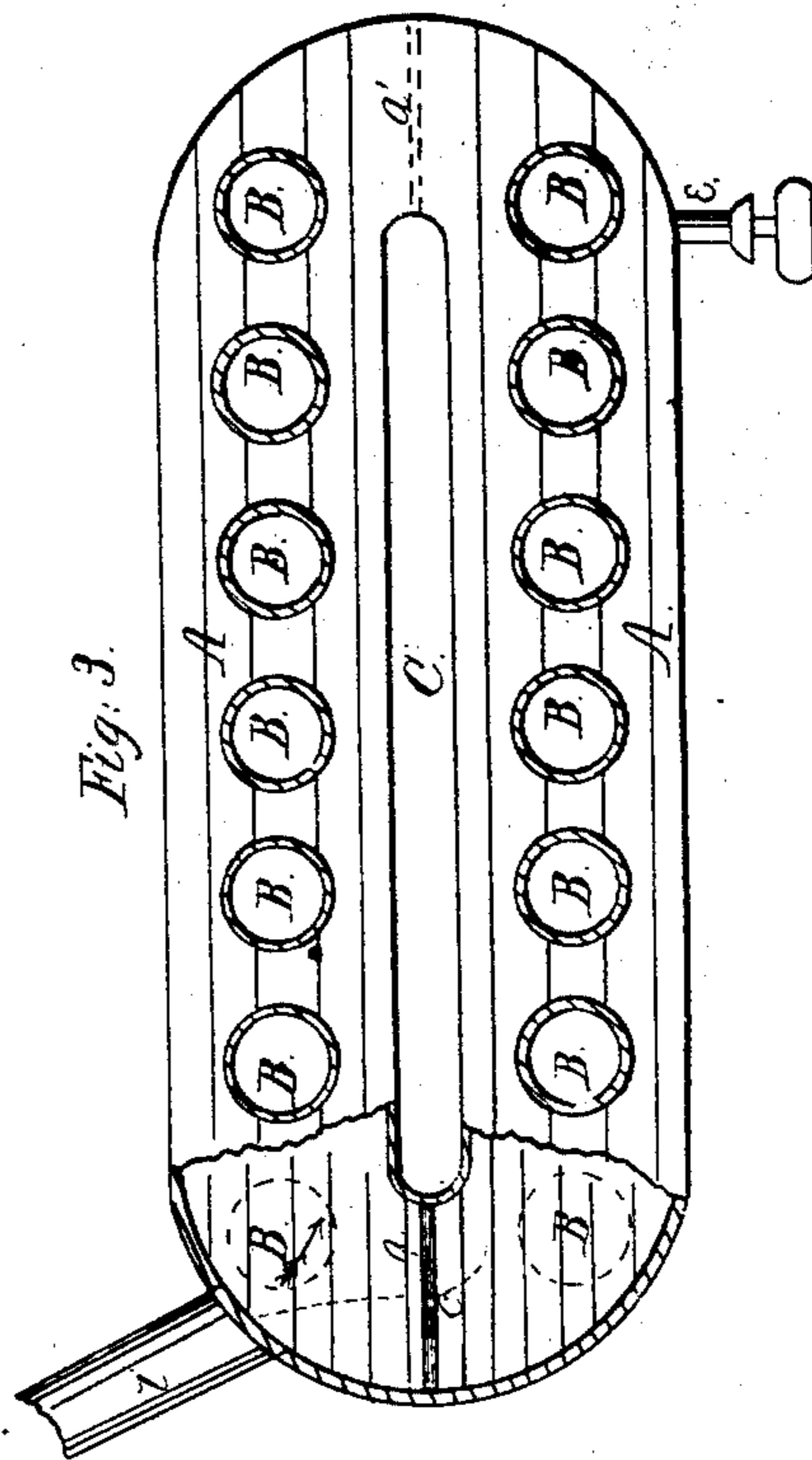
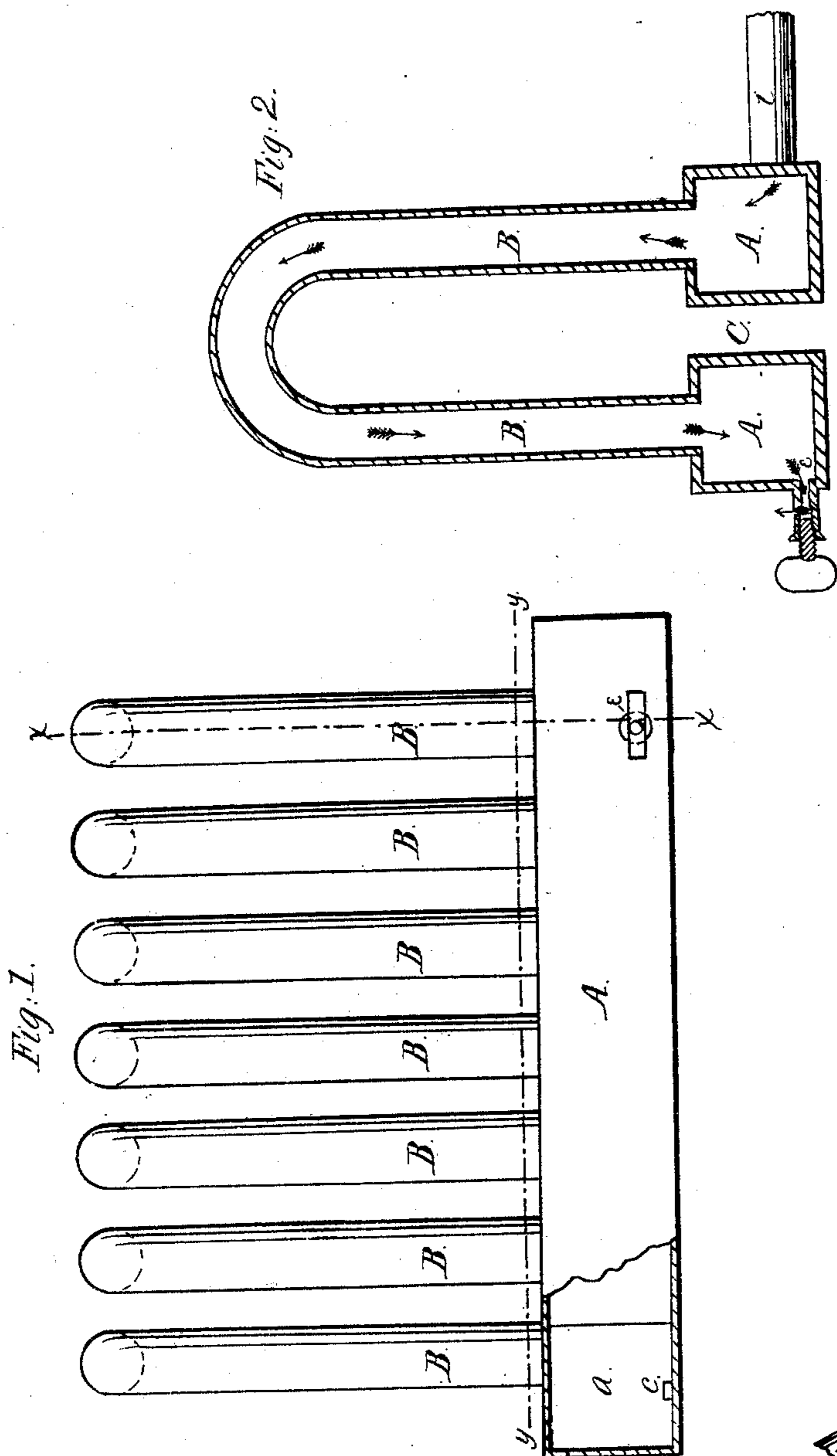


*R. T. Crane.*  
*Steam Radiator.*  
*No 38,154. Patented April 14, 1863.*



Witnesses:  
*W E Mans*  
*S B Newell*

Inventor:  
*Richard T Crane*

# UNITED STATES PATENT OFFICE.

RICHARD T. CRANE, OF CHICAGO, ILLINOIS.

## IMPROVEMENT IN STEAM-RADIATORS.

Specification forming part of Letters Patent No. 38,154, dated April 14, 1893.

*To all whom it may concern:*

Be it known that I, RICHARD T. CRANE, of Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Steam-Radiators; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings and the letters and figures marked thereon, which form part of this specification.

In the said drawings, Figure 1 represents a side elevation of my steam-radiator; Fig. 2, a transverse sectional view at the line *x* in Fig. 1, and Fig. 3 a plan view of the same in section at the line *y* in Fig. 1.

The nature of my invention consists in constructing the hollow base of a steam-radiator of two or more chambers or copartments, which said chambers are connected together by means of coiled or U-shaped pipes, so that when the steam is admitted into one of said chambers the air contained therein is driven out through the said pipes into the opposite copartment, which latter is provided with a stop-cock to prevent the air to escape from the radiator, which stop-cock, after the air has escaped, as aforesaid, is closed to prevent the escape of the steam.

It further consists in providing the partition which divides the base into two chambers, as aforesaid, with an opening or passage at the bottom thereof, and near the induction-pipe for admitting the steam, for the purpose of allowing the water and condensed steam accumulating in the second copartment of the base, to flow back into the first copartment and thence back through said induction-pipe into the steam-generator.

It further consists in constructing the said base of the radiator with a longitudinal opening between the chambers aforesaid, for the purpose of admitting the air to pass up through the same to come in contact with the radiating-pipes.

To enable those skilled in the art to understand and construct my steam-radiator, I will now proceed to describe the same with particularity.

A in the drawings represents the base of the radiator, and may be constructed of cast-iron or any other suitable material of sufficient strength to resist the pressure of the steam. The form of said base is clearly shown in the

drawings, and may be of a rectangular or tubular form, arranged in such a manner as to leave the oblong opening C between the two chambers, for the purpose of admitting the air to pass up through the same and come in contact with the pipes B. At each end of the said base A are arranged the vertical partitions *a a'*, which divide the hollow base into two chambers as effectually as though they were isolated and distinct from each other. These copartments are joined together by the U-shaped pipes, (marked B,) as is clearly shown in the drawings.

In the bottom or lower edge of the partition *a* is constructed the opening *c*, through which the water and steam which condense in the second chamber flows back into the first and out through the induction-pipe into the steam-generator. The partition *a'* is provided with no such opening, but closes the end of the base hermetically.

Instead of being constructed as shown, the two chambers may be separate, the opening C extending longitudinally their entire length, in which case the object of the passage *c* could be effected by a short pipe connecting the two copartments, as the said passage *c* does when the radiator is constructed as shown; or the passage *c* may be omitted entirely and the eduction-pipe E, serving as the outlet for both air and water, may be connected with the steam-generator directly, or the water may be allowed to run to waste.

The pipes B are of wrought-iron, and may be of any suitable size.

In Figs. 1 and 3 the exterior of the base is represented as being broken away at one end, to show the position of the partition *a* and the opening *c*, *a'* being situated in a similar manner at the other end.

My invention operates as follows: The steam being introduced through the pipe *i* fills the chamber into which it enters, forcing the air therein through the pipes B into the opposite chamber, whence it is driven out through the eduction-pipe *e*, and when the air is all driven out the passage *c* is closed by the stop-cock, to prevent the escape of the steam. As the steam condenses into water, it flows back into the first chamber through the opening *c*, and thence into the steam-generator through the pipe *i*.

By the arrangement of my improved steam-

radiator the air is all driven out of said radiator, and therefore will admit more steam and give out more heat than radiators of the ordinary construction.

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

1. Constructing the base A of a steam-radiator of two or more chambers and connecting the said chambers by the vertical U-shaped pipes B, when arranged and operating

substantially as and for the purposes delineated and set forth.

2. The opening C between the compartments of the base of a steam-radiator, for the purpose herein described and set forth.

3. The opening c or its equivalent, for the purposes shown and specified herein.

Witnesses: RICHARD T. CRANE.

W. E. MARRS,

T. B. BROWN.