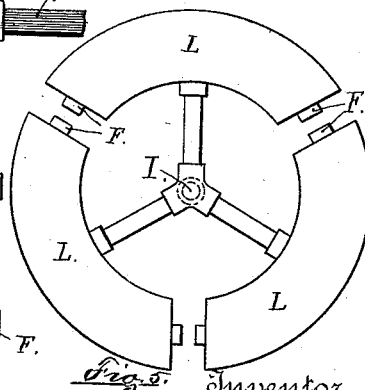
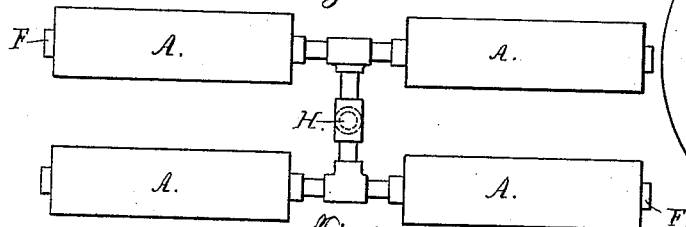
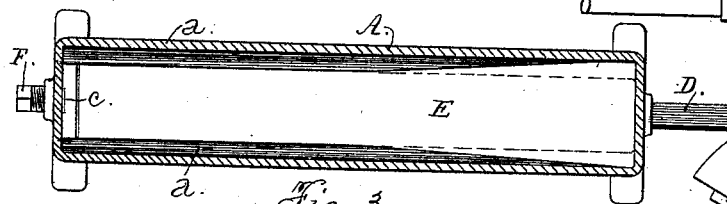
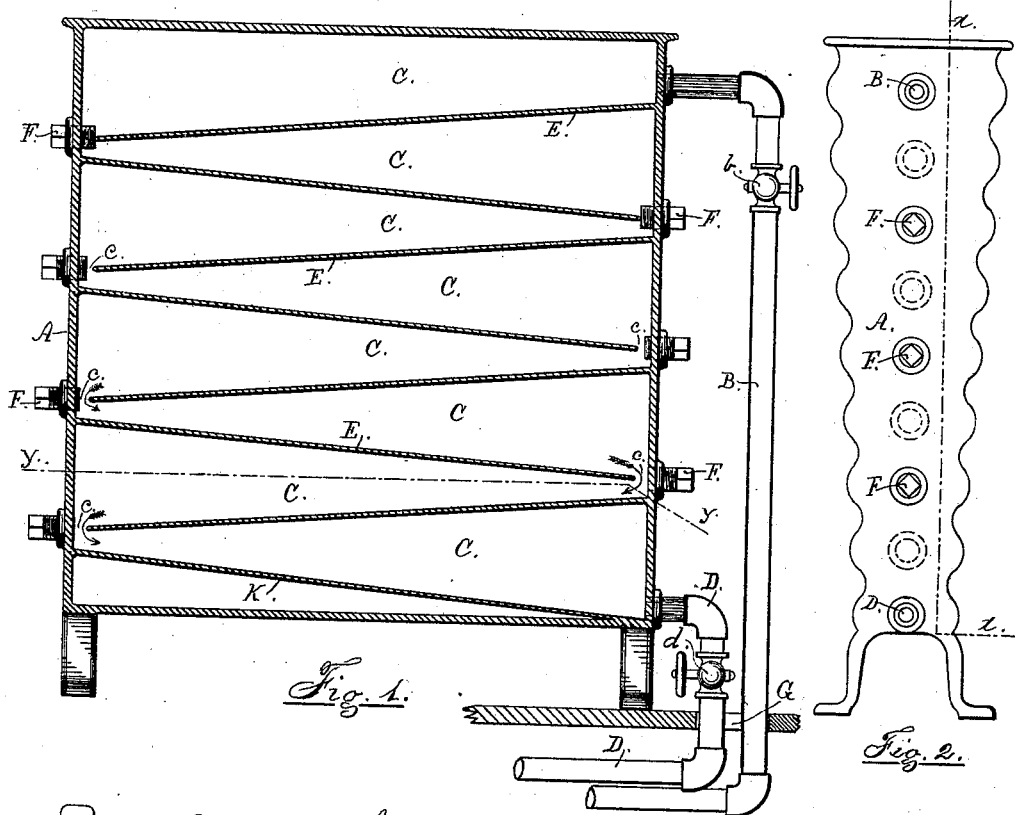


(No Model.)

G. H. ROATH.  
STEAM RADIATOR.

No. 422,541.

Patented Mar. 4, 1890.



Witnesses  
David K. Kerr,  
Geo. A. Lane

Inventor  
Geo. H. Roath  
By *Geo. H. Roath* Attorney  
*Geo. H. Roath*

# UNITED STATES PATENT OFFICE.

GEORGE H. ROATH, OF MARIETTA, PENNSYLVANIA.

## STEAM-RADIATOR.

SPECIFICATION forming part of Letters Patent No. 422,541, dated March 4, 1890.

Application filed March 8, 1888. Serial No. 266,585. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE H. ROATH, a citizen of the United States, residing in Marietta, in the county of Lancaster and State of Pennsylvania, have invented certain Improvements in Steam-Radiators, of which the following is a specification.

My invention relates to improvements in steam-radiators; and the object of my improvement is to construct a radiator composed of a series of chambers located one above the other, so as to form a continuous sloping passage from the top to the bottom thereof, and in which the steam is fed directly into the upper chamber and discharged from the lower and its passage from chamber to chamber regulated. I accomplish these objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a vertical longitudinal section through the line *xx* of Fig. 2. Fig. 2 is an end view of my radiator. Fig. 3 is a horizontal section through the line *yy* of Fig. 1. Fig. 4 is a top view of four rectangular radiators joined together and furnished with steam by the same supply-pipe; and Fig. 5 is a similar view of circular radiators joined together, so as to receive steam in the same manner.

The radiator is inclosed in an ornamental perforated frame or casing (not shown in the drawings) similar to those used for other radiators heretofore in use, and may be of any desirable or convenient construction.

In the drawings, A represents the shell, and B the supply-pipe, which is connected with the top chamber C, and D the outlet-pipe through which the steam is discharged from the lower chamber C. Both pipes are provided with stop-cocks *b* and *d*, respectively, and pass down through the opening G in the floor.

The partitions E, which divide the steam-chambers from each other, slope from one end to the other of the shell, the upper partition inclining downward in one direction, the second in the opposite direction, and so on alternately throughout the series, the bottom of the last steam-chamber inclining toward the outlet-opening. There is a space *c* left between the lower end of each partition and the end wall of the case which serves as a passage for the steam from each chamber to that next below, as shown by the arrows in Fig. 1.

In the ends, opposite the lower extremity of each partition, there is a short screw-bolt F, tapped into the shell, which can be screwed in toward the ends of said partitions, and thereby regulate the passage of steam from one end to the other of the chambers. These bolts are made of such size as to greatly reduce the openings between the lower ends of the partitions and the ends of the shell when screwed in against the ends of the partitions and the extent of such reduction is modified, as may be desired, in proportion to the distance the bolts are screwed in. The operation of these bolts is illustrated in Fig. 1.

Fig. 4 shows four square radiators united and supplied with steam from one central feed-pipe H. Fig. 5 shows the arrangement of a number of radiators L united to form a circle, the common feed-pipe I coming up in the center. In other respects the radiators forming these groups are constructed and operated in the same manner as the single one shown in Figs. 1, 2, and 3.

As the steam after it has entered the upper chamber G gradually condenses, it passes downward through the several chambers to the outlet. The water of condensation follows the same course as that pursued by the steam and passes directly from the radiator through the outlet-pipe to the boiler.

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

1. In a radiator, the combination of a series of partitions extending across the shell, one above the other, the opposite ends of adjoining partitions sloping downward and having openings at the lower ends, devices for regulating the passage of steam through said openings, and a supply-pipe connected with the upper chamber and an outlet-pipe leading from the lower, substantially as and for the purpose specified.

2. The combination, with the radiator and partitions dividing the same into chambers and provided with openings at alternate ends which connect said chambers, of screw-bolts tapped into the walls of the radiator at the openings through the partitions, substantially as and for the purpose specified.

GEO. H. ROATH.

Witnesses:

W. J. FORDNEY,  
WM. R. GERHART.