To all whom it may concern:

Be it known that I, GEORGE I. ROCKWOOD, a citizen of the United States, residing at Worcester, in the county of Worcester and Commonwealth of Massachusetts, have invented a new and useful Improvement in Radiators, of which the following is a specification, accompanied by drawings, forming a part of the same, in which—

Figure 1 is an end view of a radiator embodying my invention. Fig. 2 is a top view of the same. Fig. 3 is a side view. Fig. 4 is a vertical sectional view on line 4-4, Fig. 2; and Fig. 5 is a top view of a portion of the radiator with the radiating-pipes removed and shown partly in sectional view.

Similar reference-figures refer to similar parts in the different views.

An object of my present invention is to simplify the construction and reduce the cost of a radiator by reducing the number of separate pieces and the number of joints to be made up, and I attain this object, among others, by means of the construction and arrangement of parts, as hereinafter set forth, and described in the annexed claims.

My improved radiator is composed of a series of headers each consisting of a cast-metal shell 1, provided at its central section with a depending water-chamber or drip-well 2 and having its bottom wall 3 3 between the ends and the center slightly inclined to allow the water of condensation falling upon the bottom 3 of the header to flow from each end toward the center and be received in the drip-well 2. Each header is provided with a central longitudinal vertical partition 4, preferably cast integrally with the upper wall 5 of the header, the steam passing through a series of stand-pipes 18 into the drip-well, but leaving a space 6 between the ends and the center slightly inclined to allow the water of condensation falling upon the bottom 3 of the header to flow from each end toward the center and be received in the drip-well 2. Each header is provided with a central longitudinal vertical partition 4, preferably cast integrally with the upper wall 5 of the header, said vertical partition extending downwardly into the drip-well 2 to a point near the bottom of the drip-well, but leaving a space 6 between the lower end of the vertical partition 4 and the bottom of the drip-well. Each of the headers is provided at its central section and on opposite sides with openings 7 in alinement with each other and adapted when the headers are placed side by side, as shown in Fig. 4, to receive the short thimbles 8, by which the headers are connected, and securely clamped together by a bolt 9, having one end screw-threaded and engaging a nut 10, which is slightly tapering and fits an opening 7 in one of the outside headers. Communicating with an opening in the opposite outside header is an elbow-pipe 11, with the clamping-bolt 9 entering the elbow-pipe 11 and passing centrally through a boss 12 and receiving on its end a clamping-nut 13. The end of the clamping-bolt 9 is covered by a flanged shell 14 to form a steam-tight joint around the bolt. Communicating with the elbow-pipe 11 is a steam-pipe 15, through which steam passes to the radiator into the first header of the series.

As the water of condensation accumulates in the drip-well 2, the lower edges of the vertical partitions 4 become water-sealed and the course of the steam is then diverted through a series of stand-pipes 16 screwed into the upper wall 5 of the first header, the steam passing through the return-bend 17 and descending through a series of stand-pipes 18 into the same header, but on the opposite side of its vertical partition 4. The steam then enters the second header and passes through the stand-pipe 19, return-bend 20, and stand-pipe 21 from one side to the other of its vertical partition, and so on through the different headers of the series to the last header, from which the steam escapes through a pipe 22, which also serves as an overflow-pipe for the last drip-well of the series. Each of the drip-wells is provided with an opening at their lower ends closed by plugs 23, thereby enabling the water and any sediment collected to be withdrawn from each of the drip-wells. The several headers of the radiator are supported at their ends by legs or by girder-beams, such as are shown at 24 24, Fig. 3. The headers 1 are duplicates of each other, and they are all held in their assembled position by a single clamping-bolt 9, passing through the central opening 7. The tapered nut 10 accurately fitting one of the openings in the outside header forms a steam-tight joint at one end of the bolt, and the flanged shell 14, bolted upon the boss 12, forms a steam-tight joint at the opposite end of the bolt, and the elbow-pipe 11 is securely held in position communicating with the first header of the series by the same clamping-bolt that united the several headers of the series.

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

1. In a radiator, the combination of a series of headers having openings in alinement and at the central section of the headers, each of said headers having a depending water-chamber at the central section of the header, with the bottom of the header inclined from each end toward the water-chamber, a vertical partition in each header dividing the same into two chambers communicating at the bottom
of the water-chamber, pipes connecting said chambers and means for uniting said headers with their aligned openings in communication, substantially as described.

2. In a radiator, the combination of a series of contacting headers having openings in alinement and at the central section of the headers, each of said headers having a depending water-chamber, a vertical partition in each header dividing the same into two chambers communicating at the bottom of the depending water-chamber, radiating-pipes connecting said chambers and means for holding said headers in contact.

3. In a radiator, the combination of a series of contacting headers having openings in alinement, a vertical partition in each header dividing the same into two chambers communicating at the bottom, radiating-pipes connecting said chambers, and means for holding said headers in contact.

4. In a radiator, the combination of a series of shells having vertical partitions dividing each shell into two chambers communicating at the bottom of said shells, holes in the side walls of said shells and at their central section, thimbles inserted in said holes and connecting adjacent shells, pipes connecting the chambers in each shell, a bolt passing through said central openings, and through said vertical partitions, said bolt being of considerably less diameter than the holes in the side walls of the shells, but of substantially the same size as the holes in said vertical partitions, whereby said shells are united, substantially as described.

Dated this 15th day of December, 1903.

GEORGE I. ROCKWOOD.

Witnesses:
Penelope Comberbach,
Rufus B. Fowler.