

J. A. MILLER.
RADIATOR.

APPLICATION FILED JULY 13, 1909.

937,380.

Patented Oct. 19, 1909.

2 SHEETS—SHEET 1.

Fig. 1.

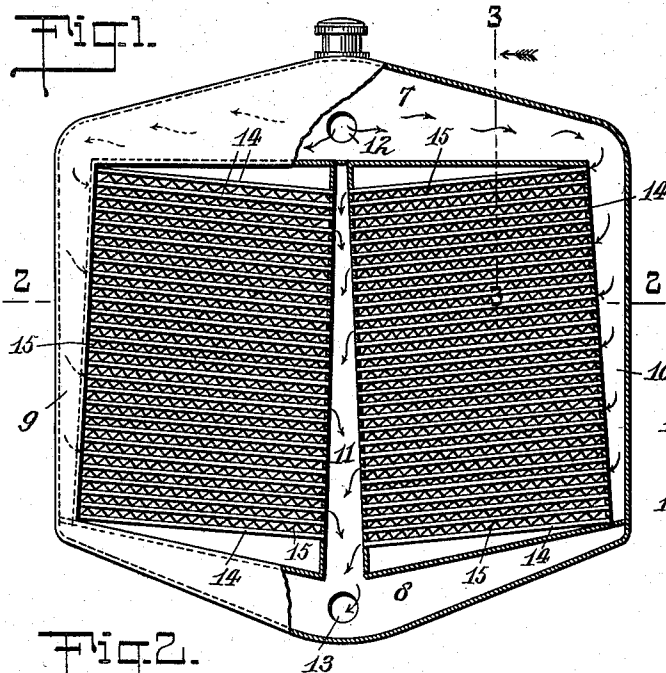


Fig. 2.

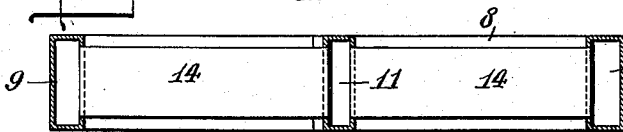


Fig. 3.

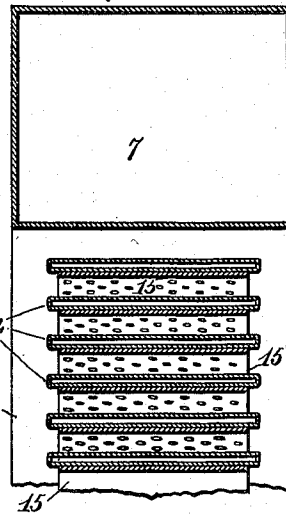


Fig. 4.

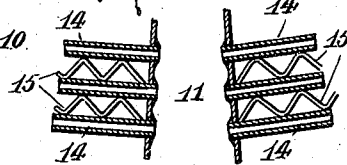


Fig. 6.

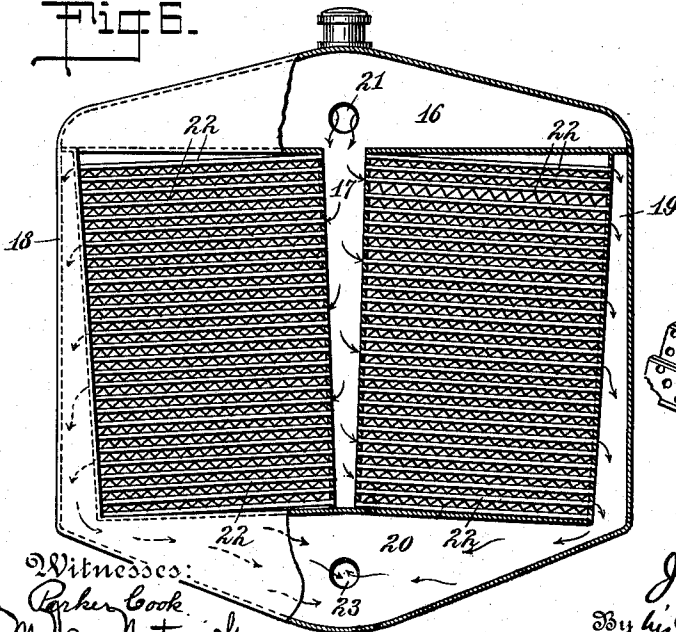
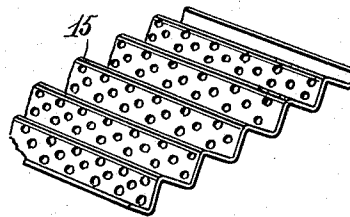


Fig. 5.



Witnesses:
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M. Van Nottwick

John A. Miller, Inventor
By his Attorney Gary Cook

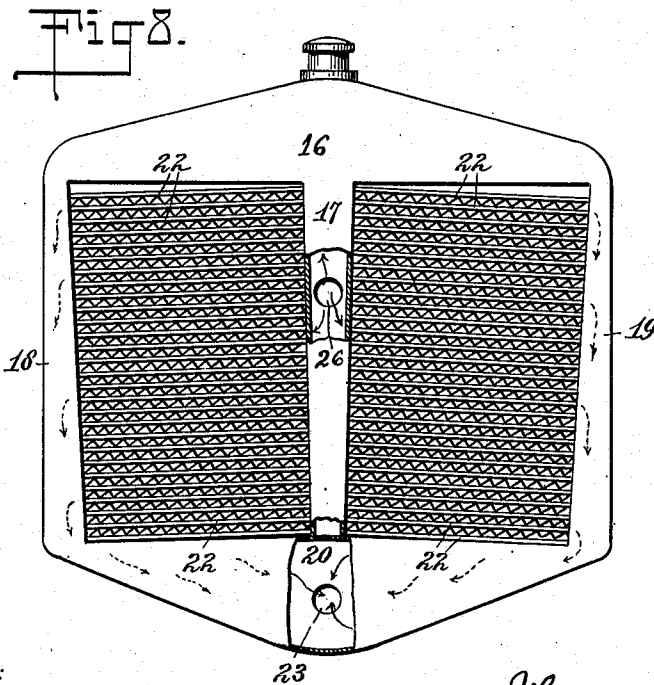
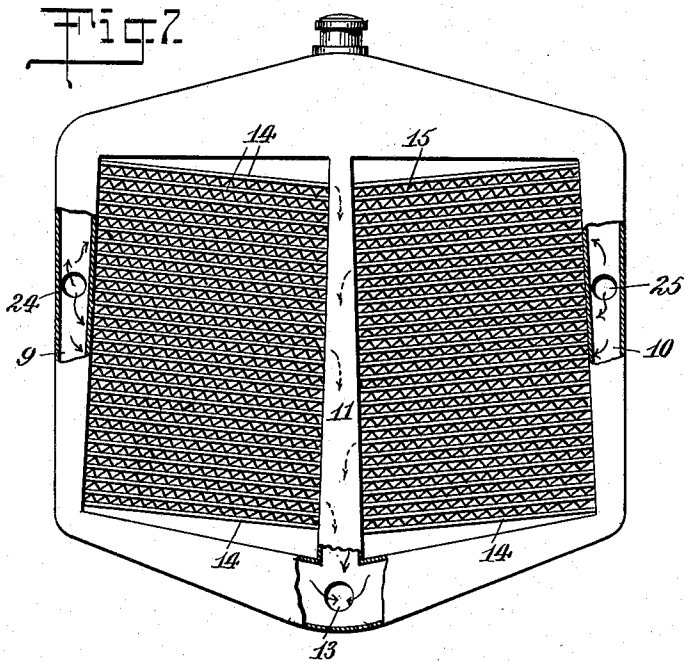
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2 SHEETS—SHEET 2.



WITNESSES:

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UNITED STATES PATENT OFFICE.

JOHN A. MILLER, OF TARRYTOWN, NEW YORK.

RADIATOR.

937,380.

Specification of Letters Patent.

Patented Oct. 19, 1909.

Application filed July 13, 1909. Serial No. 507,395.

To all whom it may concern:

Be it known that I, JOHN A. MILLER, a citizen of the United States, and a resident of Tarrytown, in the county of Westchester and State of New York, have made and invented certain new and useful Improvements in Radiators, of which the following is a specification.

My invention relates to an improvement in radiators, such as are used on automobiles, the object of the same being to provide a device of this character which shall present as much radiating surface as possible to the air, which shall be simple and economical to construct, and cheap to manufacture, and which shall be so formed and assembled that the water will be caused to travel through the radiating pipes in its passage from the top of the radiator wherein it enters, to the lower part or portion of the same out of which it flows, thereby affording ample time and means for its effective cooling.

With these and other ends in view, the invention consists in certain novel features of construction and combinations of parts, as will be hereinafter fully described and pointed out in the claims.

In the accompanying drawings, Figure 1 is a view partly in section and partly in elevation of my improved radiator. Fig. 2 is a sectional view taken on the line 2—2 of Fig. 1. Fig. 3 is a sectional view taken on the line 3—3 of Fig. 1. Fig. 4 is a sectional view of a part of the radiator showing the method of attaching the radiating tubes to the central vertical tubes. Fig. 5 is a view in perspective of a part of one of the tube supports. Fig. 6 is a view partly in section and partly in elevation of a modified form of the radiator. Fig. 7 is a view of the radiator illustrated in Fig. 1, but showing the inlets located in the side tubes. Fig. 8 is a view of the radiator illustrated in Fig. 6, but showing the inlet located in the vertical central tube.

Referring to the drawings, it will be seen that the radiator in its one form consists of the upper horizontal chamber 7, the lower chamber 8, and the three vertical tubes 9, 10, 11, the vertical side tubes 9, 10, forming the outer sides of the device, communicating at their upper ends with the chamber 7, and the central vertical tube 11 communicating at its lower end with the lower chamber 8.

The upper chamber is provided with the inlet 12, and the lower chamber with the outlet 13.

Connecting the vertical tube 9 and central vertical tube 11, and also connecting the vertical tube 10 and central vertical tube 11, are the pipes 14, the inner and outer ends thereof being open, and soldered or otherwise tightly secured to the wall of the tubes 9, 10, and also to the walls of the tube 11, as illustrated in Fig. 4, the chambers 7, 8, and also tubes 9, 10 and 11, as well as the pipes 14, being preferably formed of sheet metal.

In order to assist in holding the pipes 14 in their proper relative position, I insert between them, braces of supports 15, preferably formed as illustrated in Fig. 5, that is, of angular perforated sheet metal, the outer corners or edges being soldered to the pipes if desired, to prevent detachment therefrom.

In practice, the water enters the opening 12, filling the chamber 7, whereupon it will flow into the tubes 9 and 10 and through the pipes 14 into the central vertical tube 11, and out of the latter into the lower chamber 8, from which it issues through the outlet opening 13. If desired, however, the radiator may be constructed as illustrated in Fig. 6, that is, the upper horizontal chamber 16 may be formed to communicate with the central vertical tube 17, and the side tubes 18, 19, to communicate with the lower chamber 20. When so formed, the water entering through the inlet opening 21 and filling the chamber 16, will flow into the central tube 17, through the pipes 22 into the side tubes 18, 19, and into the lower chamber 20, from which it issues through the outlet opening 23. In each instance, however, it will be seen that the water flowing into the upper chamber will be caused to flow through the pipes in order to reach the lower chamber, thereby affording the water ample time to radiate its heat through the walls of said pipes before passing out of the lower chamber.

It will be understood of course, that it is not absolutely essential that the inlet be located in the upper chamber, as illustrated in Figs. 1 and 6 of the drawings, but may be located as illustrated in Fig. 7, that is, the water may enter the side tubes 9 and 10 at some point in their length, as illustrated at 24—25, in which event the water will circulate through these tubes and upper chamber

7 and through the pipes 14 into the vertical tube 11 and out of the latter into the lower chamber 8.

Further, when the radiator is constructed as illustrated in Fig. 8, the inlet instead of being located in the upper chamber, may be located at some point in the length of the vertical tube 17, as illustrated at 26. In such instance, the water will circulate in this central tube 17 and upper chamber 16, through the pipes 22, side tubes 18, 19, and lower chamber 20, from which it will issue through the outlet opening 23, as before described.

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

1. A radiator of the character described comprising upper and lower chambers, a central vertical tube, side tubes, and pipes connecting said vertical tube and side tubes through which pipes said water passes in traveling from the upper chamber to said lower chamber, substantially as described.

2. A radiator of the character described, comprising upper and lower chambers, a central vertical tube communicating with said

upper chamber, side tubes communicating with said lower chamber, and pipes communicating with said side tubes at one end and with said vertical tube at their opposite ends, whereby the water in said upper chamber will pass through said central vertical tube through said pipes into the side tubes, and then into the lower chamber, substantially as described.

3. A radiator of the character described, comprising upper and lower chambers, side tubes, a central tube, pipes communicating at one end to said side tubes, and at their opposite ends to said central tube, and perforated angular metal located between said pipes for assisting in retaining the latter in their proper relative positions, substantially as described.

Signed at New York, borough of Manhattan, in the county of New York, and State of New York, this 8th day of July, A. D. 1909.

JOHN A. MILLER.

Witnesses:

M. VAN NUTWICK,
PARKER COOK.