W. J. KELLS.

WATER COOLING RADIATOR.

APPLICATION FILED NOV. 5, 1912.

1,068,246. Patented July 22, 1913.

Fig-1-

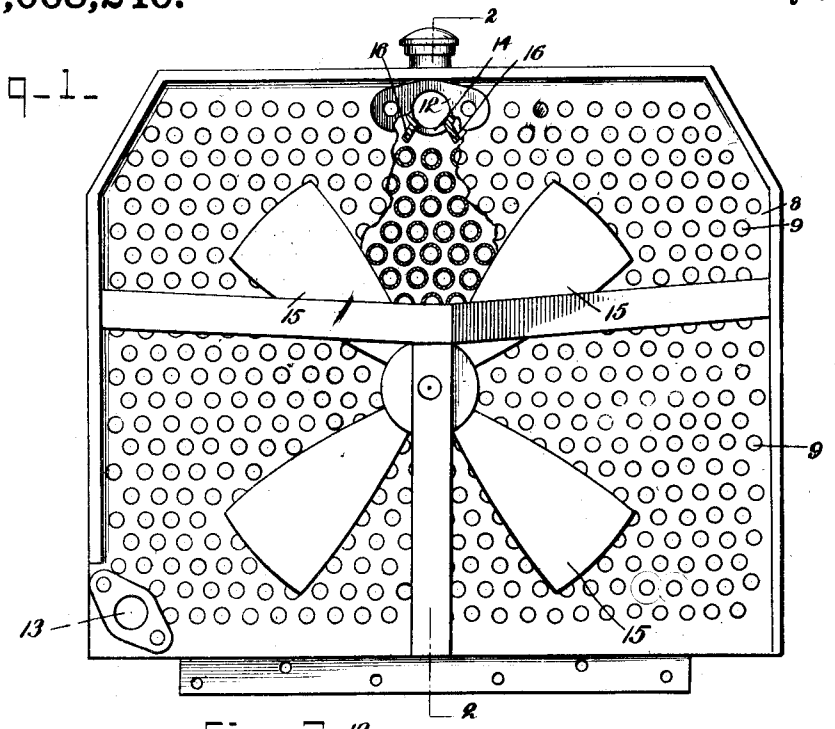


Fig-2-

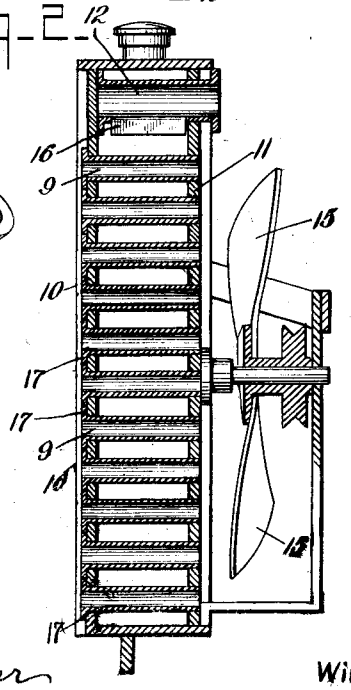


Fig-3-

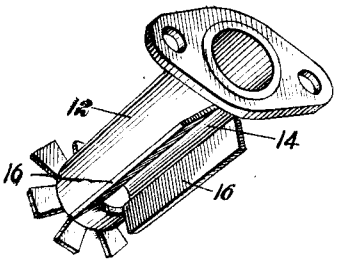
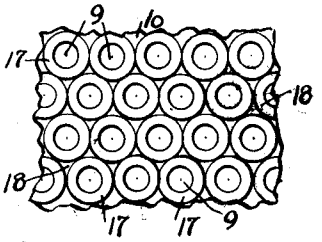


Fig-4-



WITNESSES

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WATER-COOLING RADIATOR.

1,068,246. Specification of Letters Patent. Patented July 22, 1913.

Application filed November 5, 1912. Serial No. 729,552.

To all whom it may concern:

Be it known that I, WILLIAM J. KELLS, a citizen of the United States, and a resident of Jersey City, in the county of Hudson and State of New Jersey, have invented a new and Improved Water-Cooling Radiator, of which the following is a full, clear, and exact description.

Among the principal objects which the present invention has in view are: to provide means for delivering water to an air-draft-cooled radiator in such a manner as to cause the entire water to pass within the radius of the air-draft; to provide means for delivering water to a tubular radiator in such manner as to direct the flow in contact with the tubes having the maximum refrigerating quality; and to provide means for reinforcing the construction of the radiator.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views, and in which—

Figure 1 is a rear elevation of a radiator of the character usually employed in automobiles wherein the air-draft for cooling the radiator is induced by a rotary suction fan disposed at the rear of the radiator; Fig. 2 is a vertical section taken on the line 2—2 in Fig. 1; Fig. 3 is a detail view, on an enlarged scale and in perspective, showing the connecting section of the water-delivery pipe employed in the present invention; and Fig. 4 is a detail view on an enlarged scale, showing a fragment of the radiator body and of the front plate thereof.

As seen in the accompanying drawings, the radiator 8 is provided with a multiplicity of tubes 9, which are secured in front and rear face plates 10 and 11, respectively, to form continuous passages therethrough. The front and rear plates are spaced apart to form a vertical relatively narrow chamber or tank, into which water is delivered by means of an inlet tube 12, and from whence it is delivered through an outlet 13.

Heretofore the inlet tube employed in connection with the cooler has been preferably disposed on the opposite side of, and diametrically removed from, the outlet. It is in order to retain the water in the radiator 8 the maximum period of time that the inlet and outlet have been thus disposed. An objection has existed to this form of the apparatus due to the fact that it has proved impossible to control the line of flow of the water, and as a consequence the water has been carried past the point in the radiator where the temperature is reduced the greatest, and not brought within the influence of this area of the radiator. The present invention provides against the objection stated above by delivering the water through a slot 14 formed in the inlet tube 12, which slot is so disposed with reference to the center of the fan 15, or the center of the coolest area as to deliver the water directly downward therepast. To guide the water leaving the tube 12, flanges 16 are provided, said flanges being disposed at opposite sides of the slot 14, and preferably flared, as shown in the drawings.

While I have shown in the present drawings the tube 12 as disposed vertically above the center of the fan 15, it will be understood that I am not limited to such a structure or arrangement, as said tube may be disposed at one side of the vertical center of the fan 15. When such a variation in the structure is effected, the flanges 16 deflect the water leaving the tube 12, to deliver the water above the center of said fan.

The flanges 16 are constructed of material which may be bent to expand or contract the passage between the said flanges, and in so doing widen or narrow the stream of water delivered from the tube 12, and thereby cause the incoming water to flow directly into and across the air-cooled area of the radiator directly influenced by the fan 15. It will be understood that the water then introduced into the radiator flows thereafter to all parts of the said radiator, but that when introduced as a solid stream controlled so as to pass over the area of greatest frigidity, to wit, a line co-axial with the fan 15, a more even radiation of the heat of the water is obtained.

The tubes 9 are inserted in the face plates 10 and 11, and through perforations provided therein. The tubes are primarily introduced through the plate 10, being extended therethrough until the flanges 17 provided at one end of said tubes rest against the outer surface of the plates 10. In Fig. 4 of the drawings, a small segment of the plate 10 is shown, having the tubes 9 mounted therein, said tubes each having a flange 17 the edges of which are extended to touch the edges of the flanges 17 of the adjacent

tubes 9. By this arrangement, the flanges 17 form triangular interspaces 18, which in the subsequent operation of constructing the radiator, form pockets for holding proper spelter or lead, by means of which the tubes are rigidly mounted upon said plate 10. The opposite ends of the tubes 9 extend through the plate 11 to the outer surface thereof. The ends of the tubes 9 and the outer surface of the plate 11 are flush, and these ends of said tubes are rigidly connected with the plate 11 by being soldered or welded thereto. By providing the ends of the tubes 9 with the flanges 17, a large saving is effected over the present cost of construction, where the spelter or lead is floated on the plate 10 to the depth of the extension of the tubes 9 therefrom.

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

The combination of a water-cooling radiator having parallel side walls spaced apart and connected by a plurality of open-ended tubes; a fan mounted upon said radiator to draw air through said tubes; a water inlet tube extending between said side walls and through one of said walls to be closed by the other of said walls, said inlet tube having a delivery slot extending lengthwise thereof between said side walls and disposed to deliver water across the center of the path of the column of air drawn through said radiator by said fan; and flanges formed on said inlet tube, adjacent the slot, to control the spread of water leaving said tube, and to direct the delivery of the same.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WILLIAM J. KELLS.

Witnesses:
E. F. MURDOCK,
PHILIP D. ROLLHAUS.