F. M. CAPELL.

AUTOMOBILE RADIATOR.

APPLICATION FILED MAY 23, 1916.

1,242,652.

Patented Oct. 9, 1917.

Fig. 1.

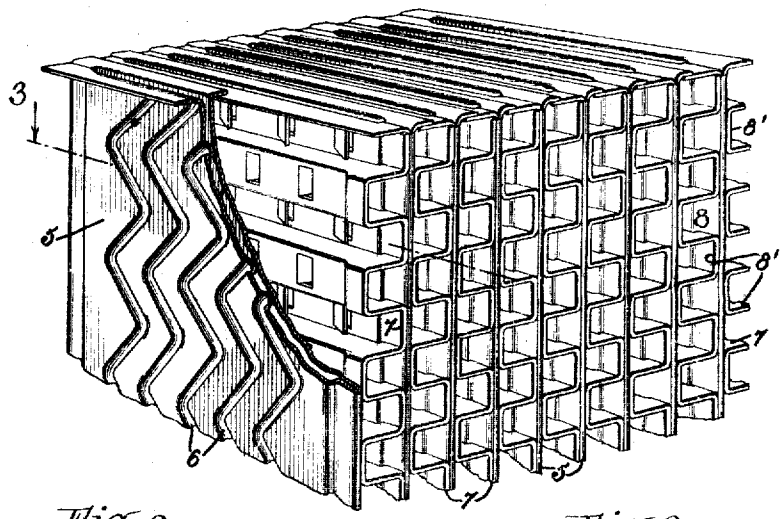


Fig. 2.

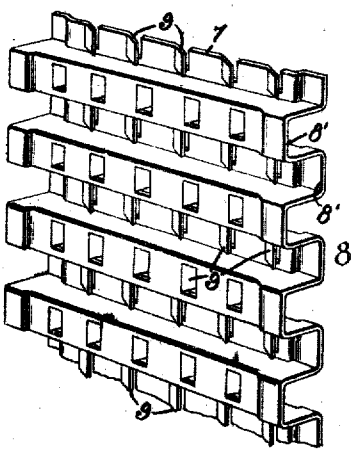


Fig. 3.

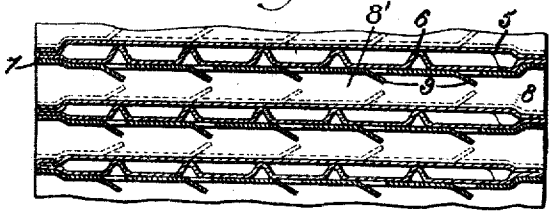


Fig. 4.



WITNESSES

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AUTOMOBILE-RADIATOR.

1,242,652. Specification of Letters Patent. Patented Oct. 9, 1917.

Application filed May 23, 1916. Serial No. 99,262.

To all whom it may concern:

Be it known that I, FRANK MILTON CAPELL, a citizen of the United States, and a resident of Lockport, in the county of Niagara and State of New York, have invented a new and Improved Automobile-Radiator, of which the following is a full, clear, and exact description.

My invention relates to automobile radiators known as the straight tube radiator. The ordinary straight tube radiator has the defect that the cooling liquid passes too rapidly therethrough and therefore the radiation is not perfect. The object of the invention is to obviate the above defect and to produce a simple and efficient radiator.

With the above and other objects in view, the nature of which will more fully appear as the description proceeds, the invention consists in the novel construction, combination and arrangement of parts as herein fully described, illustrated and claimed. In the accompanying drawings, forming part of the application, similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a perspective fragmentary view of a radiator section embodying my invention;

Fig. 2 is a perspective view of a spacer;

Fig. 3 is a fragmentary horizontal section through the radiator on line 3, Fig. 1; and

Fig. 4 is a section through a tube for a cooling liquid.

Referring to the drawings, the tube 5 is formed of a single blank adapted to be folded longitudinally substantially in the middle thereof. The blank is stamped so that the major part thereof in each half is depressed through the entire length from the edges to form a tube when it is folded. One-half of the blank, in addition, is stamped to form inward longitudinal sinuous ridges 6 which engage the other half of the blank when the blank is folded over, as shown in Fig. 4. The sinuous ridges are preferably zigzag shape and the adjacent ridge sections are substantially at right angles to each other. The ridges 6 divide the tube into a plurality of sinuous passages which increase the path of travel of the cooling liquid. It will be noted that the tube formed has only a single straight seam at one edge. This so-formed tube has not only a longer path of travel for the cooling liquid, but it also presents a larger cooling area.

The cooling tubes 5 are separated by spacers 7 which are folded transversely of their length to form a series of channels 8, the successive channels 8' being open on the opposite sides of the spacer. The bottom of each channel has a series of baffles 9 depressed therefrom into the channel, these baffles forming deflectors for the air which passes through the channel and directs the air against the surface of the tube. Where the baffles 9 are in register with the ridges 6 of the tubes they help to direct the air through the ridges which are in the form of narrow grooves, thus the air circulating through the channels formed by the spacers and the sides of the tubes is also caused to circulate through the ridges which are disposed transversely of the channels. The baffles 9 increase the radiating surface of the radiator.

The sinuous path presented by the tubes to the cooling medium, the baffles in the air channels formed by the spacers with the tubes, and the partial circulation of the air through the ridges which form the sinuous path for the cooling liquid all help to increase the efficiency of the radiator. The ridges, further, materially increase the strength of the structure, in consequence of which the resulting radiator is not subjected to disarrangement due to the continuous vibration to which it is subjected.

I claim:

A radiator of the class described, comprising tubes for a cooling medium, each having longitudinal sinuous ridges directed inwardly to divide the tube into a plurality of sinuous passages, spacers between the adjacent cooling tubes, said spacers being folded transversely to present U-shaped channels disposed transversely of the sinuous passages in the tubes, the adjacent U channels in the spacers having their bottoms on opposite sides, and baffles in said channels stamped out from the bottom thereof whereby openings are formed in the bottom of the channels, substantially as and for the purpose set forth.

FRANK MILTON CAPELL.