Dec. 24, 1940. W. J. O'NEAIL 2,226,320

ENGINE RADIATOR

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Fig. 1.

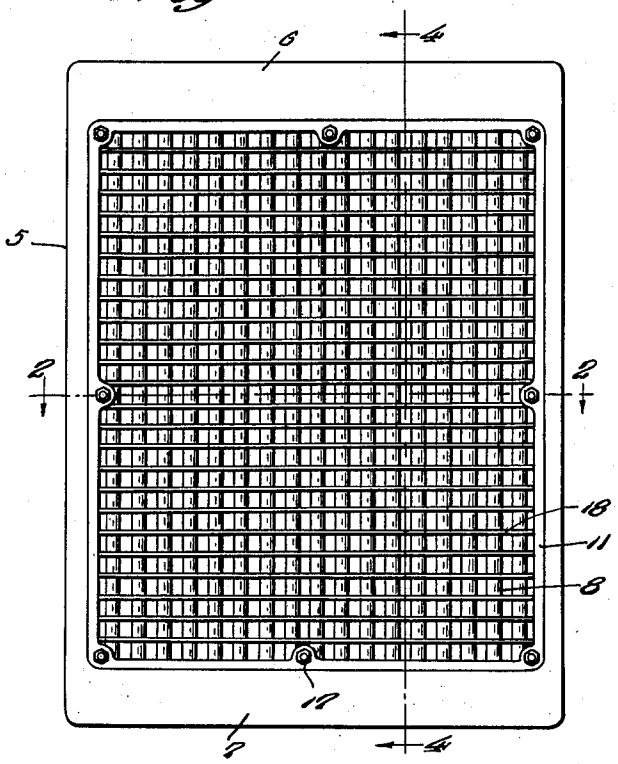
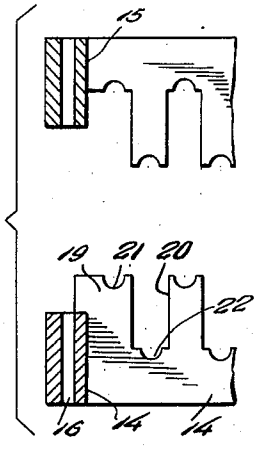


Fig. 3.



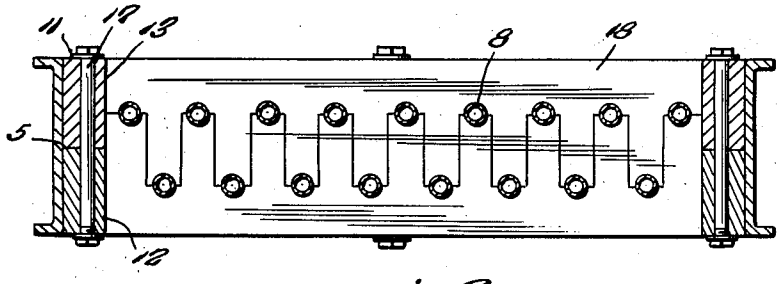


Fig. 2.

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Fig. 4.

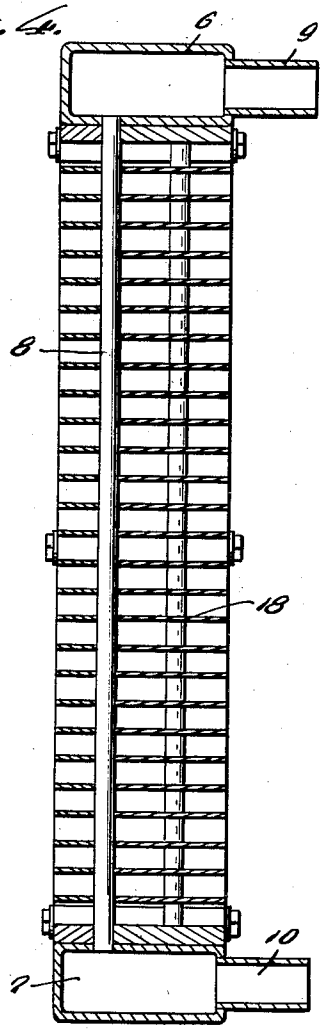
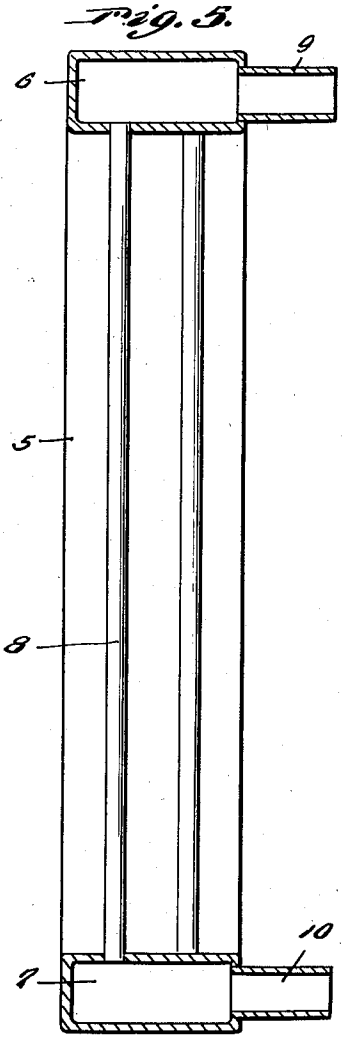


Fig. 5.



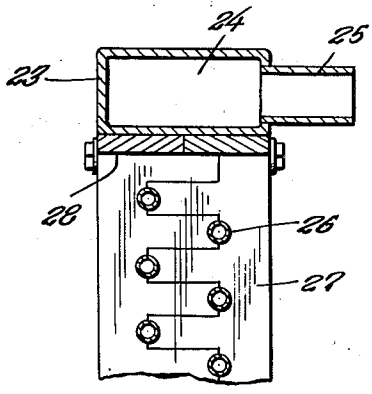


Fig. 6.

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UNITED STATES PATENT OFFICE

2,226,320

ENGINE RADIATOR

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Application May 17, 1940, Serial No. 335,838

6 Claims. (Cl. 257—129)

The present invention relates to new and useful improvements in radiators for the internal combustion engines of automobiles, trucks, tractors and other motor-driven vehicles, and has for its primary object to provide a radiator construction in which the fins are carried by a removable sectional frame to provide for the easy and quick removal of fins from the radiator tubes in order that the tubes may be easily and conveniently removed and replaced for repair purposes, when desired.

An object of the present invention is to provide a radiator construction of this character which is simple and practical in its arrangement, relatively inexpensive to manufacture and otherwise well adapted for the purposes for which the same is intended.

Other objects and advantages reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming part hereof, wherein like numerals refer to like parts throughout, and in which—

Figure 1 is a front elevational view,

Figure 2 is a transverse sectional view taken substantially on a line 2—2 of Figure 1,

Figure 3 is a fragmentary group sectional view of one end of the sectional inner frame having the fins secured thereto,

Figure 4 is a vertical sectional view taken substantially on a line 4—4 of Figure 1,

Figure 5 is a vertical sectional view of the outer frame having the upper and lower tanks connected by the radiator tubes, and

Figure 6 is a modification showing a fragmentary sectional view of a radiator provided with horizontal tubes.

Referring now to the drawings in detail and with particular reference to Figures 1 to 5 inclusive of the drawings, the numeral 5 designates the outer metallic frame of the radiator which includes the upper tank 6 and lower tank 7 connected by the tubes 8. The ends of the tubes are preferably soldered or otherwise fitted in the respective tanks to provide a liquid tight connection therewith. The upper tank 6 is provided with the usual hose attaching nipple 9, while the lower tank 7 is also provided with the hose attaching nipple 10.

In the present embodiment of the invention the tubes 8 are arranged in rows in staggered relation as shown to advantage in Figure 2 of the drawings, and it will be understood that any desired number of rows of tubes may be provided.

Snugly fitted within the inner periphery of the frame 5 is the inner frame 11 which includes a pair of circumferentially split frame sections 12 and 13, each of the frame sections having bosses 14 and 15, respectively, on the inner periphery thereof and formed with aligned openings 16 through which bolts 17 are inserted for securing the sections of the inner frame to each other, as shown in Figure 2 of the drawings.

Extending between a pair of the parallel sides of the inner frame member are the cooling fins 18 which are arranged in spaced parallel relation and having their end portions connected to the sections 12 and 13 of the inner frame, in any suitable manner, as by soldering, welding or the like. The opposed edges of the fins carried by the respective sections are formed with alternate tongues 19 and slots 20 adapted for interfitting engagement with the tongues and slots of the opposed fins. The outer edge of the tongues 19 are formed with an arcuate notch 21 and the inner end portion of the slots 20 are likewise formed with an arcuate notch 22, the notches of the opposed fins cooperating to embrace the opposite sides of the tubes 8 in snug fitting engagement therewith, as shown in Figures 2 and 4 of the drawings.

In Figure 6 of the drawings I have illustrated a modified form of the invention wherein the outer frame is designated at 23 having the tank 24 formed therein and which extends entirely around the frame, the tank having the usual hose attaching nipple 25 connected thereto. In this form of the invention the tubes 26 extend horizontally and the fins 27 extend vertically and are carried by the sectional inner frame member 28. Otherwise the construction is identical to that heretofore explained.

From the foregoing it will be apparent that the sections of the inner frame member 11 may be easily and quickly removed from the tubes 8 in order that any of the defective tubes may be quickly and conveniently removed and replaced without necessitating a complete dismantling of the radiator.

It is believed the details of construction, advantages and manner of use of the device will be readily understood from the foregoing without further detailed explanation.

Having thus described the invention, what I claim is—

1. An engine radiator comprising an outer shell having water compartments therein, tubes connecting opposite walls of the shell and providing communication between the compartments, a cir-

cumferentially split frame conformably fitted in the shell, alined fins carried by the sections of the frame, said fins having alternately arranged tongues and slots at their meeting edges adapted for interfitting engagement at opposite sides of each of the tubes and surrounding the tubes to secure the same against lateral movement in all directions, and means for detachably connecting the sections of the frame.

2. An engine radiator comprising an outer shell having water compartments therein, tubes connecting opposite walls of the shell and providing communication between the compartments, a circumferentially split frame conformably fitted in the shell, alined fins carried by the sections of the frame, said fins having alternately arranged tongues and slots at their meeting edges adapted for interfitting engagement at opposite sides of each of the tubes, the ends of the tongues and the inner edges of the slots having notches cooperating to embrace each tube individually and bolts extending through the split sections of the frame for detachably connecting the same.

3. An engine radiator comprising an outer shell having water compartments therein, tubes connecting opposite walls of the shell and providing communication between the compartments, a circumferentially split frame conformably fitted in the shell, aligned fins carried by the sections of the frame and means for detachably connecting the sections of the frame with the fins arranged in edgewise relation and with the opposed edges of each fin positioned against opposite sides of each tube, said opposed edges of the fin having a contour conforming with the curvature of the tube and cooperating to engage the tubes on all sides for securing the tubes against lateral movement in all directions.

4. An engine radiator comprising an outer shell having water compartments therein, tubes connecting opposite walls of the shell and providing communication between the compartments, a circumferentially split frame conformably fitted in the shell, aligned fins carried by the sections of the frame, said fins having interfitting adjacent edges arranged with the opposed edges of each fin positioned against opposite sides of the tube, said opposed edges of the fins having a contour conforming with the curvature of the tubes at all sides for securing the tubes against lateral movement in all directions.

5. An engine radiator comprising an outer shell having water compartments therein, tubes connecting opposite walls of the shell and providing communication between the compartments, a circumferentially split frame conformably fitted in the shell, fins carried by each section of the frame and having opposed edges positioned against opposite sides of the tubes, said opposed edges of the fins having a contour conforming with the curvature of the tubes and cooperating to engage the tubes at all sides for securing the tubes against lateral movement in all directions.

6. An engine radiator comprising an outer shell having water compartments therein, a plurality of staggered rows of tubes connecting opposite walls of the shell and providing communication between the compartments, a circumferentially split frame conformably fitted in the shell, fins carried by each section of the frame and having opposed edges positioned against opposite sides of the tube, said opposed edges of the fins having a contour conforming with the curvature of the tubes and cooperating to engage the tubes at all sides for securing the tubes against lateral movement in all directions.

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