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ANCHORING MEANS FOR RADIATOR CORES

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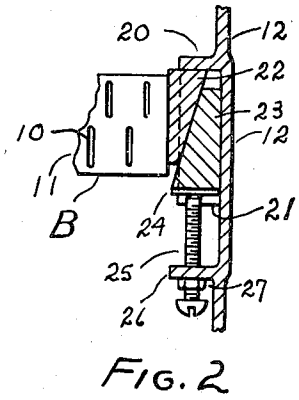


FIG. 2

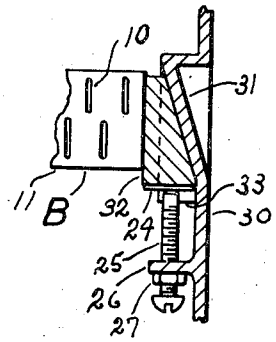


FIG. 3

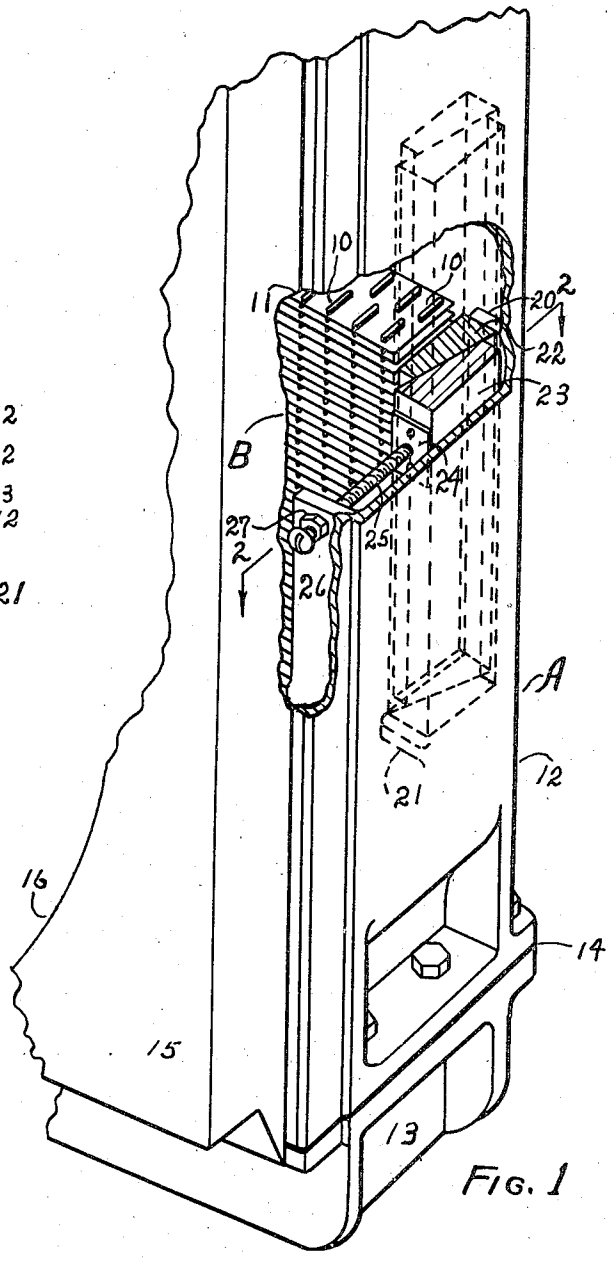


FIG. 1

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ANCHORING MEANS FOR RADIATOR CORES

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1 Claim. (Cl. 257—125)

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The present invention relates to means for anchoring a cooling core intermediate its ends to its surrounding frame, the type usually being called automotive type radiators, particularly the larger sizes wherein harmful transverse vibrations may cause fracturing of the tubes at the point where they enter the tube plates.

In liquid cooling radiators of the class a fractured tube is a serious matter and difficult or impossible to repair. I therefore provide very simple means for anchoring the core intermediate its ends to the side members of the radiator frame, so as to prevent harmful vibration and also provide a means which is easily adjusted after the core has been assembled into the frame.

An important object of the present invention is to provide anchoring means of the character described which does not need a connection to the core except contact with the ends of a large number of fins so that the fins, which are very thin and delicate, cannot be injured by their contact with the anchoring means.

Another important object of my invention is to provide preferably two wedge shaped wood blocks of a suitable length and means whereby the blocks may be adjusted for suitable pressure against a large number of fin edges without danger of injury and without metallic contact with the fins.

One of the objects of the present invention is to provide a large area contact with the fins by the use preferably of wood blocks which will yieldingly contact the individual ends of the fins so that all of the fins may find lodgment in the wood.

Generally stated objects of my invention are to provide a device of the character which is simple, easily manufactured at low cost, efficient and easily assembled into position and disassembled.

To these and other useful ends my invention consists of parts, combinations of parts or their equivalents as hereinafter described and claimed and shown in the accompanying drawings in which:

Fig. 1 is a fractional perspective view of my invention as applied to a conventional radiator.

Fig. 2 is a section taken on line 2—2 of Figure 1 through the core anchoring means and one side of the frame.

Fig. 3 is a fractional sectional view similar to Figure 2, but of a modification.

In the drawings I designate the frame by reference character A and the core by reference character B. Member B comprises the usual bottom and top headers which are operatively

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connected together by a large number of tubes 10, these tubes being spaced about as shown and are flattened to a shape about as shown. Tubes 10 extend through a multiplicity of closely spaced fins 11. Core B is adapted to be surrounded by a frame, the side members of which are designated by reference numeral 12. The bottom of the frame 13 generally acts as a header cap for the core in which case the tube plate 14 lies on the upper face of member 13 and under the under face of member 12 and having a gasket (not shown) between members 13 and 14. The upper header may be formed similar to the lower header wherein there are two members 12 for the sides of the frame and a member 13 for the bottom of the frame and another member (not shown) somewhat similar to member 13 but inverted and being secured to the side members 12 similar to member 13.

In radiators of the class it is customary to provide a shroud for the fan. In Figure 1 a shroud is designated by numeral 15. A fraction of the circular opening for the fan is designated by numeral 16. The fan and shroud are usually positioned in rear of the radiator, automobile and truck style.

Tubes 10 have very thin walls which are made of a composition of copper. The fins are very thin and therefore the core is frail but heavy especially when filled with a cooling compound. Cores of the type may be from 28 to 48 inches high. It will therefore be seen that the core between headers may oscillate sideways, largely because of weight and length. This oscillation will not be greatly resisted by the tubes because of their shape and position.

Clearly transverse vibrations set up by engine vibrations or vibrations caused by the travel of the vehicle over rough roadways will soon cause tubes to fracture at the point where they enter tube plate 14. Side members A are, because of their shape, very rigid. I therefore interpose about midway the core my improved anchoring means as follows:

Vertically disposed inwardly extending flanges 20 are provided on members 12 and positioned relative to core B as shown in Figure 2. A horizontally disposed inwardly extending flange 21 is provided. I provide a wedge shaped wood block 22 and another wedge shaped wood block 23 and position them as illustrated in Figure 2, the rear of block 22 resting against flange 20. The bottom of these blocks rest on flange 21.

I provide metal contact blocks 24 for contact with the ends of adjusting screws 25, which are screw threaded into a flange 26 and held into

adjusted position by nuts 27. Thus after core B is assembled into the frame, blocks 22 and 23 are positioned as shown on opposite sides of the core and wedge 23 is moved forward by means of screw 25 to thereby firmly anchor the core between side members 12 of the frame.

It will be understood that any suitable material may be used in place of wood and that the blocks may not be made of the same material. It is desirable, however to make block 22 of wood or a material of similar characteristics. Block 23 is preferably made of wood or a material which has similar characteristics.

Referring now to Figure 3; core B will be in the same relative position to the side frame members as in the other figures. In this instant, however, the side frame members are designated by reference numeral 30, having formed thereon angled portions 31. Wood blocks 32 are provided and fit between members B and 31 as illustrated, the blocks having plates 24 adapted to be contacted by screws 25 which is threaded into flange 26, the bolts having nuts 27. Thus blocks 32 may be moved forward by screws 25 so as to snugly anchor core B between the side members of the frame. In this design flanges 33 which are similar to flange 21, shown in Figure 2, are provided to support and position the V blocks 32. One of these flanges may be positioned at the top of the V blocks if necessary.

It will be seen that my improved anchoring means is easily manufactured at low cost and can be easily applied to the radiator and adjusted so at to effectively prevent transverse vibration of the center of the core relative to the headers or frame; that the device is simple and can be easily adjusted by any one of ordinary intelligence.

Clearly many minor detail changes may be made in the design shown without departing from the spirit and scope of the invention as recited in the appended claim.

Having thus shown and described my invention I claim:

A radiator of the character described comprising in combination, a vertically arranged vertically elongated frame having side bars and a heat exchange core therein, said core comprising a number of vertically positioned tubes and a multiplicity of closely spaced fins through which the tubes extend with the ends of the fins in substantial vertical alignment and spaced a short distance from the adjacent side bars of the frame, vertically elongated pairs of wood wedges with their adjacent sides in contact and the outer sides in parallel relation and positioned between the ends of a large number of fins and the adjacent side bars of the frame, a stop on said side bars against which the wide side of the inner wedges rest, screw threaded means anchored to said side bars having contact with the wide sides of the outer wedges, whereby the pair of wedges may be used for snugly anchoring the core between said side bars and whereby the fins in contact with the inner wedges of the pairs of wedges will when under pressure indent the wedges forming a definite anchor against vertical movement of the ends of the fins.

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