May 5, 1925. 1,536,675

L. J. LA LONDE

RADIATOR

Filed July 30, 1921

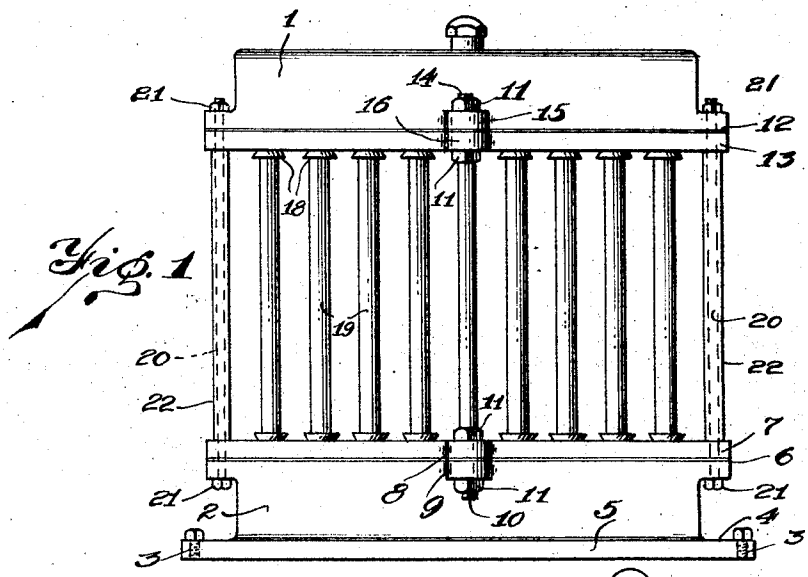


Fig. 1

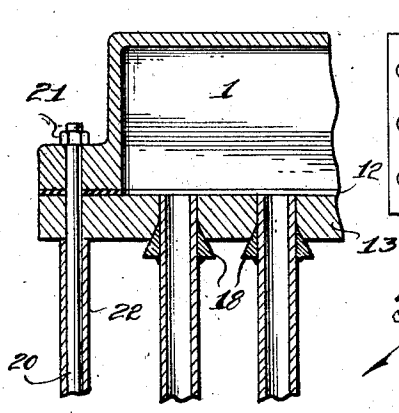


Fig. 2

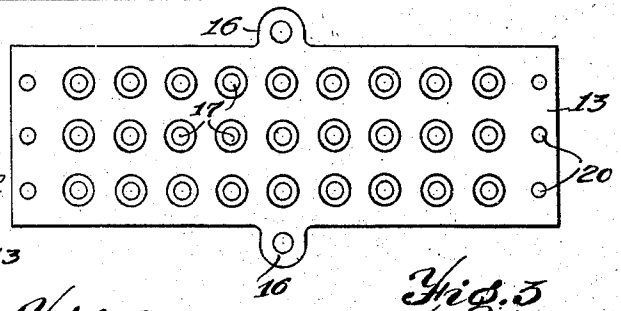
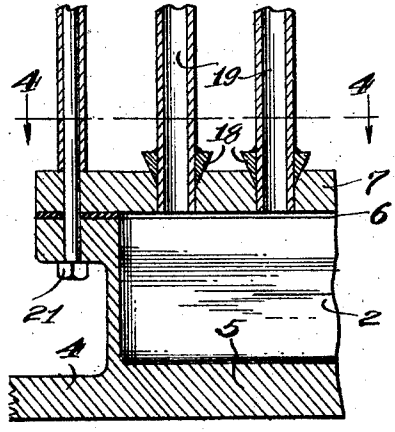


Fig. 3



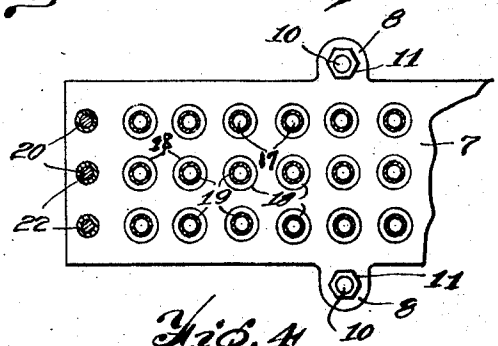


Fig. 4

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UNITED STATES PATENT OFFICE.

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RADIATOR.

Application filed July 30, 1921. Serial No. 488,572.

To all whom it may concern:

Be it known that I, LOUIS J. LA LONDE, a citizen of the United States of America, residing at Detroit, county of Wayne, and State of Michigan, have invented a new and useful Improvement in Radiators, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to a radiator or cooling system and more particularly to a radiator for use with internal combustion engines.

It is one of the objects of my invention to provide such a radiator of cheap and simple construction and which, because of the very small number of parts used therein, may be quickly and easily assembled or disassembled by a novice and which, for the same reason, is easy to manufacture.

Another object of my invention is to provide a radiator which may be easily and quickly repaired, at a very slight cost, and without requiring the services of an expert. It is also an object to so construct my radiator that repairs may be made at any place desired, thereby obviating the necessity of taking the radiator to a repair shop.

These and other objects and advantages are shown in the arrangement, combination and construction of the various parts of my improved device as described in the specification, claimed in my claims and shown in the accompanying drawings in which:

Fig. 1 is a front elevation of my improved radiator.

Fig. 2 is a central vertical sectional view of same, certain parts being broken away.

Fig. 3 is a top or plan view of a plate used in the top portion of my improved radiator, and

Fig. 4 is a view taken on line 4—4 of Fig. 2.

In the construction of my improved device I provide a head or upper tank 1 and a bottom or lower tank 2. The device is first fastened to the automobile by means of bolts 3 passing through a flange 4 extending laterally beyond the bottom 5, and as an integral part thereof, of the lower tank 2.

Resting on flanges projecting outwardly from the upper edges of the lower tank 2 is a gasket 6 which forms a tight connection or joint between the said lower tank 2 and a plate 7, which is preferably made of copper. The said plate 7 and the lower tank 2 are provided on opposite sides with ears 8 and 9, respectively, through which bolts 10 pass. The bolts 10 have nuts 11 on the ends thereof so that when these nuts are screwed down the plate 7 and lower tank 2 are held firmly together with the gasket 6 making the joint waterproof.

The upper tank 1 also has a gasket 12 bearing upon outwardly projecting flanges of its lower edges and a plate 13, preferably made of copper, fitting over the same and held rigidly to the upper tank 1 by means of bolts 14 extending through ears 15 and 16 on opposite sides of the upper tank 1 and plate 13, respectively.

Both the plate 13 and the plate 7 are provided with a plurality of countersunk openings 17 therein, into which tapered portions 18 of water tubes 19 are adapted to seat. These tapered portions may either be formed integral with each tube 19 or welded or soldered thereon, and preferably they are located a short distance inwardly from the tube's extremities in every instance, as indicated in Fig. 2.

In order to support the upper tank of the radiator at a predetermined distance from the lower tank, I provide a plurality of rods 20, having nuts 21 on the ends thereof, which extend through the ends of both plates 7, 13 and the before mentioned outwardly projecting flanges of the tanks adjacent to the same, as shown in Figs. 1 and 2. Positioned between the plates 13 and 7 and encircling the rods 20 are tubular spacers 22. These spacers are of the proper length so that the tubes 19 will seat perfectly in the holes 17 of the upper and lower plates 13 and 7, with their opposite extremities filling the straight parts of these holes, and their tapered portions wedging into the countersunk or flaring parts of the same openings 17. It will be observed, by reference to the two figures last named, that the said tapered portions constitute conical wedges that are appreciably larger at their respective bases than the entrances to the correspondingly shaped openings into which they are partially entered, and that the tubular spacers 22 coacting with the rods 20 and nuts 21 operate to maintain them undisturbed in their initial setting, until the several apertures in the copper plates 7, 13

become enlarged by abrasion resulting from the jar and vibration to which the radiator may be subjected.

It will now be seen that in case one or more of the tubes 19 become broken or damaged, it is only necessary to unscrew the nuts 11 and 21 on the upper ends of the bolts 10 and 20, lift off the top portion of the radiator, consisting of the upper tank 1, gasket 12 and plate 13, and remove the damaged tubes, replacing them with new ones, and then set back the top portion of the radiator in its former position. It should be noted that the upper tank 1, gasket 12 and plate 13, by reason of being fastened together by the bolts 14, become, for all practicable purposes, an integral structure and it is not necessary to disassemble and re-assemble them each time it is desired to change only the tubes 20 or the spacers 22.

In order to take up on the wear caused in the plates 7, 13 by the spacers 22 the latter may be furnished in varying lengths, the variations being preferably five to ten thousandths of an inch. Additional spacers may be carried in the automobile or other vehicle using the radiator so that in case it becomes necessary to take up on the worn out parts the operator may do so without having to go to a repair shop.

As illustrated in Figs. 1 and 2, the base 5 of the radiator is extended outwardly, as at 4, beyond the margins of the tanks 1, 2 and plates 7, 13 through which the bolts 10, 20 are respectively passed. These extensions enable the radiator to be advantageously connected with the chasis of an automobile when mounted thereon, inasmuch as they absorb practically all jar to which the body of the radiator proper would otherwise be submitted while traveling. The various parts of the radiator are further kept in compact assemblage within the base.

It will thus be seen that I have provided a very simple, compact device with a very few parts and one which is easily and quickly assembled or disassembled and which performs all of the functions and has all of the advantages hereinbefore recited.

Some changes may be made in the arrangement and combination of the various parts of my improved device without departing from the spirit of the invention therein and it is my intention to cover by my claims such changes as may be reasonably included within the scope thereof.

What I claim is:

1. A radiator comprising a pair of tanks arranged to discharge a liquid one into the other, detachable cover plates for said tanks provided with oppositely disposed countersunk openings, tubes fitted in the latter conveying the liquid to and from the tanks continuously, said tubes having straight portions at their extremities to snugly fit within the straight portions of said openings, conical wedges on the exterior surface of said tubes inwardly from the extremities thereof to fit within the countersunk portions of said openings, bolts serving to unite the tanks with each other at the opposite ends, including the terminals of their said plates, and tubular spacers enclosing said bolts intermediately of the plates, said spacers operating to maintain the wedges on and around the tubes in a set position relatively to the countersunk openings.

2. A radiator structure as in claim 1 wherein the cover plates are joined intermediately of their lengths by binding elements enabling the bolts and spacers to be disconnected from the tanks without disturbing the wedged tubes in their setting within the countersunk openings of said plates.

LOUIS J. LA LONDE.