Sept. 9, 1924. 1,507,964

T. G. HUDSON

AUTOMOBILE RADIATOR

Filed July 26, 1921 2 Sheets-Sheet 1

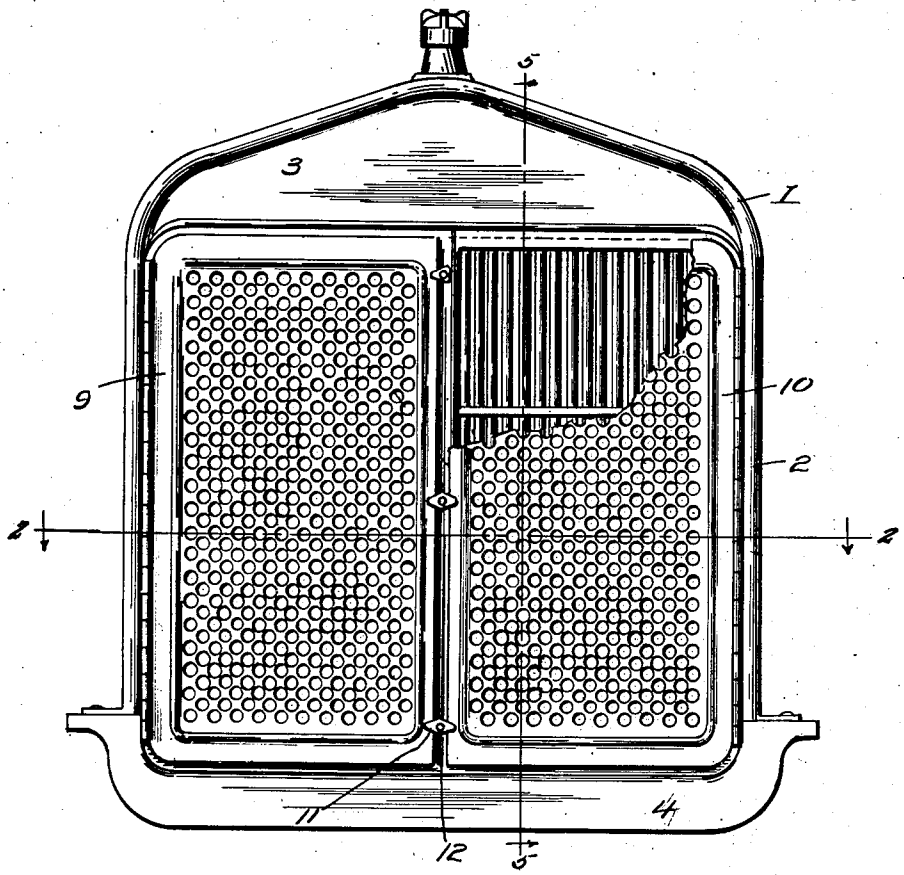


Fig. 1.

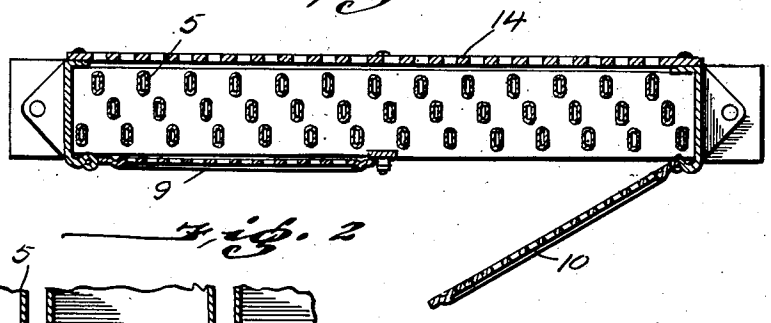


Fig. 2

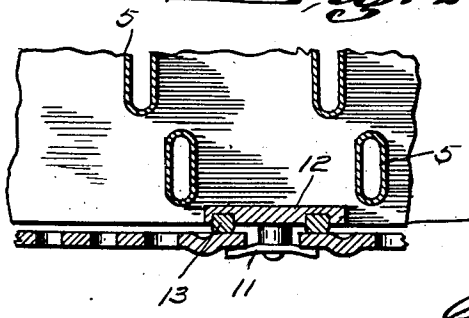


Fig. 3

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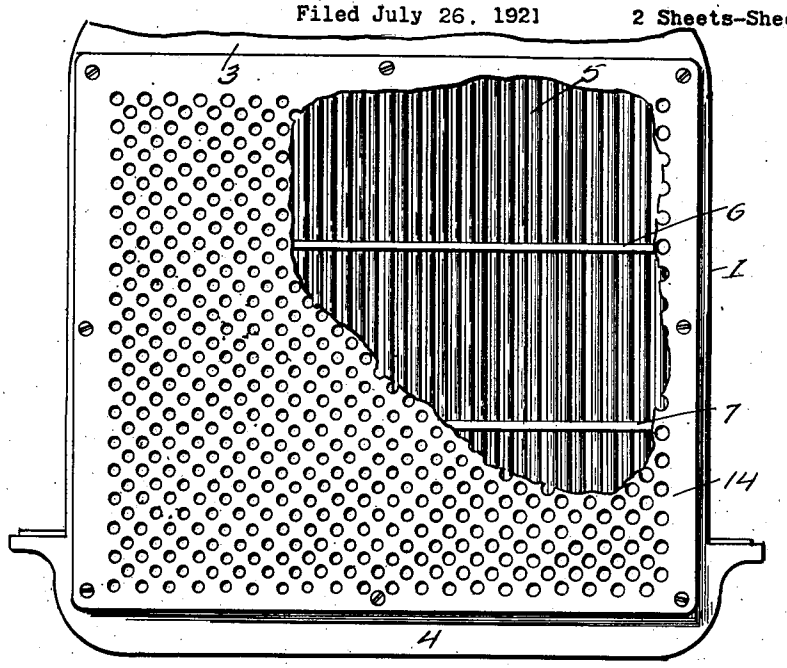


Fig. 4.

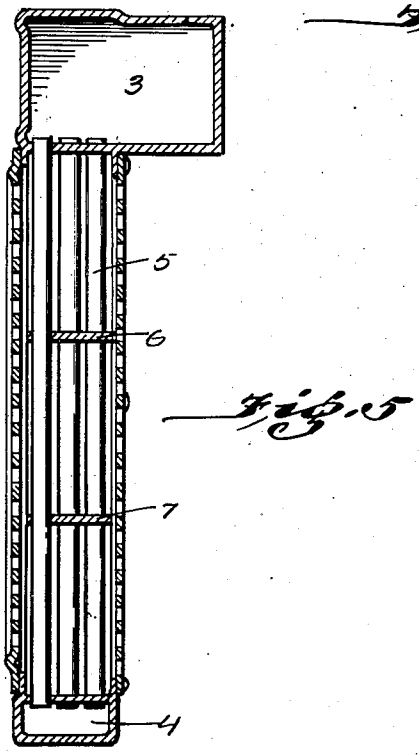


Fig. 5.



Fig. 6.

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UNITED STATES PATENT OFFICE.

THOMAS G. HUDSON, OF MARION, INDIANA.

AUTOMOBILE RADIATOR.

Application filed July 26, 1921. Serial No. 487,611.

To all whom it may concern:

Be it known that I, THOMAS G. HUDSON, a citizen of the United States, residing at Marion, in the county of Grant and State of Indiana, have invented certain new and useful Improvements in an Automobile Radiator, of which the following is a specification.

This invention relates to automobile radiators and the object thereof is to provide a radiator of this character in which simplicity in construction, economy and efficiency in repairing are combined, and in which each tube may be reached separately for repairs.

Another object is to provide a radiator of this character in which heat radiating fins are dispensed with and perforated plates substituted therefor.

Another object is to provide an improved form of circulating tube so mounted and arranged that a maximum cooling effect will be produced and which are so supported that a lower section is provided to be packed with mineral wool or other suitable material in cold weather to prevent freezing of the tubes and the lower tank and to insure free circulation, and to stabilize the tubes.

With these and other objects in view, the invention consists in certain novel features of construction as hereinafter shown, described and claimed.

In the accompanying drawings:

Figure 1 represents a front elevation of a radiator constructed in accordance with this invention with parts broken out.

Fig. 2 is a horizontal section taken on the line 2—2 of Fig. 1.

Fig. 3 is an enlarged detail horizontal section.

Fig. 4 is a rear elevation of the radiator with parts broken out.

Fig. 5 is a vertical section taken on the line 5—5 of Fig. 1; and

Fig. 6 is an enlarged detail vertical section.

In the embodiment illustrated the radiator 1 constituting this invention, comprises opposed vertical substantially channel shaped side members 2, each having its front side formed to provide the hinge knuckles 2′ and having a water tank 3 at their upper ends and a similar tank 4 at their lower ends, the tanks 3 and 4 being connected by water circulating tubes 5. These tubes 5 are, in cross section, of flat oval form, as clearly shown in Figure 2 and are set three in a row from the front to the rear of the device and staggered, in order that the rear tubes will not absorb the heat radiated and driven directly back from those tubes forwardly of them. This construction also enables one to repair any tube easily and without interfering with the other tubes. These tubes 5 are supported by horizontally disposed cross plates 6 and 7 which are spaced vertically apart to provide equal divisions or sections, the lower section formed beneath the plate 7, being designed to be packed with mineral wool or similar material in cold weather for preventing the tubes and the lower tank 4 from freezing, and thereby insuring the free circulation as well as stabilizing the tubes.

The front of the radiator is provided with perforated cover plates 9 and 10 formed to provide hinge knuckles at their outer edges for connection with the hinge knuckles of the shell and closing toward the center of the shell, being secured by suitable fasteners 11, which are preferably constructed of spring metal plates carried by an upright or vertical bar 12, having suitable anti-rattling strips 13 positioned between the front edges of the closures 9 and 10 and said bar 12. These plates 9 and 10 are perforated, as shown clearly in Fig. 1, and they are adapted to be swung open to afford access to the front tubes 5.

The rear of the radiator is covered by a removable perforated plate 14 secured by screws to the rear sides of the members 2 so that it may be readily removed to expose each and every circulating tube 5, which is very necessary in case of repairs and owing to this arrangement of the plate tubes may be reached and repaired without removing the radiator from the machine.

From the above description, it will be obvious, that this substitution of the perforated plates 9, 10 and 14 for the front and rear fins usually employed in radiators of this character insures simplicity in construction, and economy and efficiency in repairing.

The formation of the tubes 5 in flat, oval form in cross section provides an extended area for contact with the air passing around them, thereby insuring the proper cooling of the water which circulates through them.

The arrangement of the cross plates or supporting sections adapt them to hold the tubes in a permanent position, preventing warping or bending and eliminating possible leaks owing to such causes.

The substitution of the perforated front plates and the removable perforated rear plate for the fins ordinarily employed in radiators of this character, greatly simplifies the radiator construction, and while permitting free access of air to the circulating tubes 5, also affords ready access thereto, one or both of the hinged plates at the front of the radiator being adapted to be opened, according to whether it is desired to obtain access to one half or the entire radiating surface, while the removability of the rear plate 14 permits free access to the rear tubes, any one of which may be repaired without removing the radiator from the machine.

Plates 9, 10 and 14 are arranged so as to be in heat exchanging relation with the atmosphere at both the front and rear of the radiator to more effectively cause the cooling of the contents of the radiator and at the same time stiffen the cooling system of the automobile where the structure is subjected to injury. However the stiffening occurs without producing undue rigidity and weight.

The preferred embodiment of the invention is disclosed in the drawings and set forth in the specifications, but it will be understood that any modifications within the scope of the claimed invention may be made in the construction without departing from the principle of the invention or sacrificing any of its advantages.

What I claim is:

1. In an automobile radiator, vertically opposed substantially channel-shaped members, a water tank at the upper and lower ends of said members, circulating tubes between said tanks, hinge knuckles integral with the front side of each of said members, a pair of vertically positioned perforated cover plates having hinged knuckles formed in their outer side edges and aligning with the knuckles of said members, means in connection with said knuckles for hinging said plates to said members, means for securing said plates in closed position, and a perforated cover plate at the rear of said members.

2. In an automobile radiator, vertically opposed substantially channel-shaped members, a water tank at the upper and lower ends of said members, a vertical centrally positioned bar between said upper and lower tanks at the front thereof, circulating tubes between said tanks, hinge knuckles integral with the front side of each of said members, a pair of vertically positioned perforated cover plates having hinged knuckles formed in their outer edges for aligning with the knuckles of said members, and having their inner edges normally positioned against said bar, means in connection with said knuckles for hinging said plates to said members, means carried upon said bar for securing said plates in closed position, and a perforated cover plate at the rear of said members.

3. In an automobile radiator, vertically opposed substantially channel-shaped members, a water tank at the upper and lower ends of said members, a vertical centrally positioned bar between said upper and lower tanks at the front thereof, flat oval circulating tubes between said tanks, said tubes being in staggered relation in series of three and so arranged that the rear tubes will not be in direct line with the tubes forward of them, hinge knuckles integral with the front side of each of said members, a pair of vertically positioned cover plates having knuckles formed in their outer edges for aligning with the knuckles of said members and having their inner edges normally positioned against said bar, means in connection with said knuckles for hinging said plates to said members, means carried upon said bar for securing said plates in closed position, and a perforated cover plate at the rear of said members.

In testimony whereof, I affix my signature.

THOMAS G. HUDSON.