Aug. 25, 1931. J. A. WHITE 1,820,413

RADIATOR STRUCTURE

Filed Aug. 24, 1929

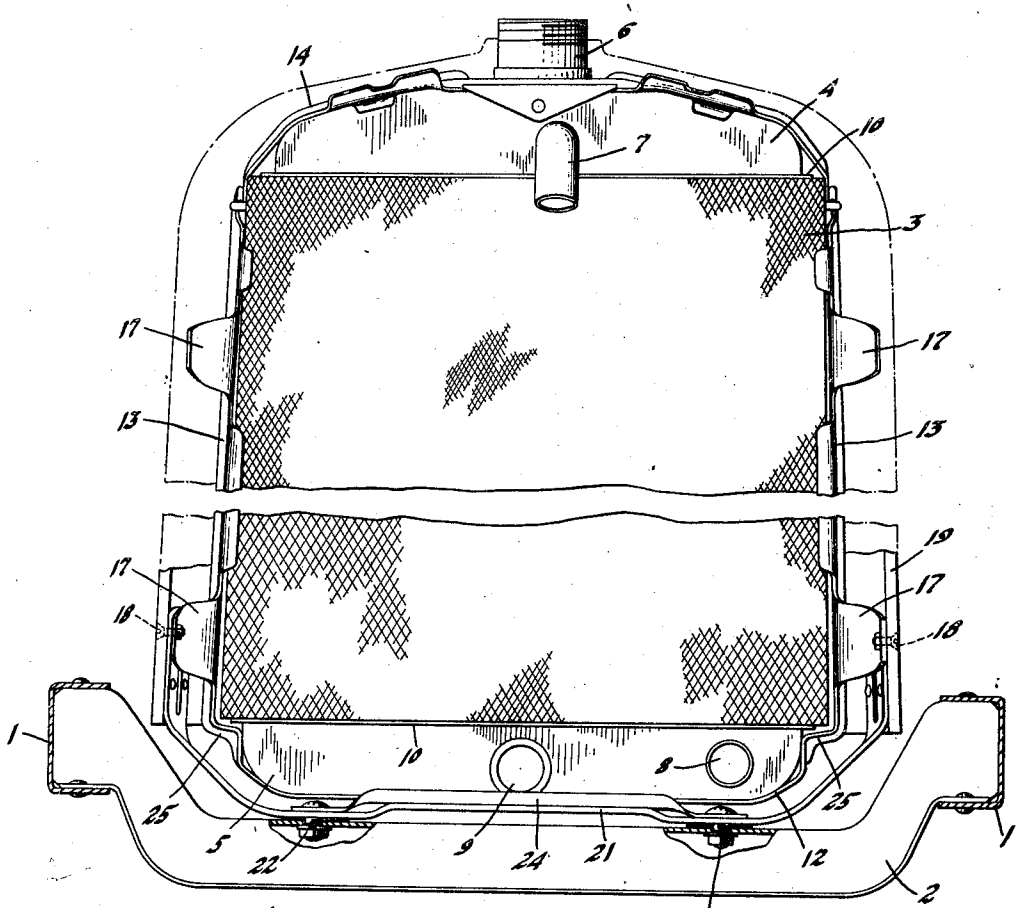


Fig. 1

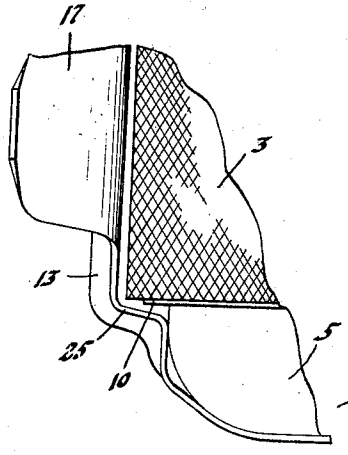


Fig. 2

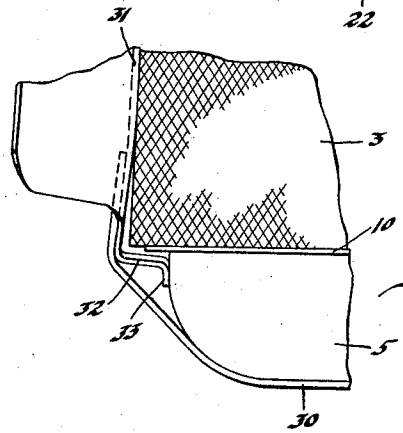


Fig. 3

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UNITED STATES PATENT OFFICE

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RADIATOR STRUCTURE

Application filed August 24, 1929. Serial No. 388,085.

This invention relates to improvements in radiator structures and particularly to the construction of the general type of radiator which forms a part of the cooling system of an internal combustion engine such as is employed on motor vehicles.

The radiator in which the present invention has been embodied includes a core unit made up of a number of preformed plates suitably secured together to afford a series of spaced water passages for the flow of air therebetween, with inlet and outlet headers or tanks at opposite ends of the water passages, and a hoop or band encircling the core and tanks to hold them in assembled relation and anchor or support the assembly in an ornamental shell or casing which is mounted on the chassis frame of the vehicle.

It is one of the primary objects of the present invention to provide an improved anchorage strap or band for supporting the tank and core assembly in the shell which will firmly hold the associated parts in proper relation with each other, and which will be so arranged with respect to the core that the core will be freed from the imposition of thrusts or stresses incident to frame weaving, road shocks or the like.

Other objects and features of advantage will become apparent during the course of the following specification when taken in connection with the accompanying drawings illustrating a preferred embodiment of the invention.

In the drawings:

Fig. 1 is a rear elevation of a radiator mounted upon a vehicle chassis frame and illustrating the application of the invention.

Fig. 2 is a fragmentary enlarged view of a portion of the structure shown in Fig. 1.

Fig. 3 is a detail view illustrating a slight modification.

Referring specifically to the drawings, the reference numerals 1—1 indicate a pair of longitudinally extending chassis frame members, and 2 is a transverse member on which is mounted the radiator. In the present instance, the cooling portion or core 3 of the radiator is shown as of the well known cellular type, preferably consisting of a number of preformed plates arranged in spaced pairs to provide a series of vertically disposed water passages and horizontal air spaces between the water passages. Inlet and outlet headers or tanks 4 and 5 respectively are secured at opposite ends of the water passages, the upper header 4 having a filler spout 6 and an inlet pipe connection 7, and the lower header 5 being provided with an outlet pipe connection 8, and an opening 9 for the insertion of an engine starting crank. Each tank 4 and 5 is of slightly smaller width than the core 3, and is provided with a lateral base flange 10 which contacts with and is soldered or otherwise secured to the adjacent overhanging portion of the core. Surrounding the core and spaced tanks is an anchorage hoop or band which may be formed in a number of separate parts properly joined together. In the drawings the hoop is shown as comprising a saddle or U-shaped member having a bottom portion 12 and a pair of upwardly extending side straps 13, the upper ends of the straps 13 being joined or interlocked in a suitable fashion with a top strap 14. In the instant case the interlock consists of reversely bent portions on the adjacent ends of the straps 13 and 14 that internest with each other, the internesting parts being slightly inclined so that a wedging action is obtained when the parts are slid one on the other which contracts the band or hoop tightly about the assembly. Disconnection of the joint is prevented by bending an end tab or ear on one of the parts laterally over the other part. This particular joint is described more fully in my pending application for Patent Serial No. 388,086.

Each of the straps 13 and 14 is provided at suitable intervals with rearwardly and outwardly extending ears 17 for attachment as by means of studs 18 to the rearward edge of the customary ornamental shell or casing 19. A U-shaped supporting strap 21 secured as by means of bolts 22 to the chassis frame member 2 has its upwardly extending end portions riveted or otherwise fastened to the side walls of the shell 19 whereby the shell is supported on the frame and in turn

supports, through the ears 17, of the anchorage hoop or bands, the tank and core assembly. To steady and hold the assembly firmly in the shell or casing, a channel plate 24 may be secured to the bottom strap 12, and provided at opposite ends with slotted feet for engagement beneath the fastening studs 22.

In order that strains and side thrusts received by the anchorage straps 13 will not be imposed upon the sides of the core 3, it is proposed to provide a lateral offset portion 25 between the strap portions 12 and 13 of slightly greater dimension than that portion of the core overhanging the side wall of the bottom tank 5, so that the lateral offset portion 25 will contact with and abut the side wall of the tank and the adjacent portions of the side of the core and strap 13 will be spaced slightly from each other particularly at the connection or joint between the tank and core. Thus the likelihood of damage to the thin and delicate metal of the core will be materially reduced and any stresses will be transmitted thru the lateral offset or foot directly to the stronger metal of the header or tank.

In the event the bottom and side portions of the hoop are formed in separate pieces as may sometimes be desirable, the invention may take the form illustrated by Fig. 3. Here the end of the bottom strap 30 is secured as by soldering, welding or otherwise to the side strap 31 and the lower end of the side strap is inclined outwardly away from the side of the core and provided with a lateral or inturned foot 32 having a dependent flange 33 for abutment with the side wall of the bottom tank. As in the arrangement previously described, the core and particularly the lower portion thereof secured to the tank will be freed of the damaging strains.

Various other forms of the invention will be apparent to those skilled in the art and there is no intention to limit the invention to the exact details referred to herein.

I claim:

1. In a radiator, a shell adapted to be mounted on a support, a radiating unit encased within and directly supported through said shell, said unit including a bottom tank having an outturned marginal flange, a core secured along its underside to said outturned flange with portions thereof overhanging the side walls of the tank, and an anchorage strap for mounting the unit on the shell, having a portion thereof extending adjacent the side of the core with a lateral attachment projection and another portion inset adjacent the joint between the core and outturned flange of the tank for contact with the side wall of the tank, said inset portion being of slightly greater dimension than the overhang of the core whereby to hold the side portion clear of the core so that thrusts and strains are imposed directly on the tank through said inset portion rather than on the core and the joint between the core and tank.

2. In a radiator, a heat transfer unit, including a tank having an outturned marginal flange, a core having one end joined to said flange and overhanging the side walls of the tank, and an anchorage band contractible about the core and tank to hold these parts assembled, portions of the band adjacent the joint between the core and outturned flange being inset for a distance slightly exceeding the core overhang for direct thrust engagement with the wall of the tank.

3. A contractible assembly and anchorage hoop for encircling a heat transfer unit of the type wherein the core is offset outwardly beyond the side walls of an end tank, including a strap adapted to extend closely adjacent the side of the core, and provided with an inset portion corresponding to but of a dimension slightly greater than the core offset for direct thrust engagement with the tank wall.

In testimony whereof I affix my signature.

JAMES A. WHITE.