

March 12, 1929.

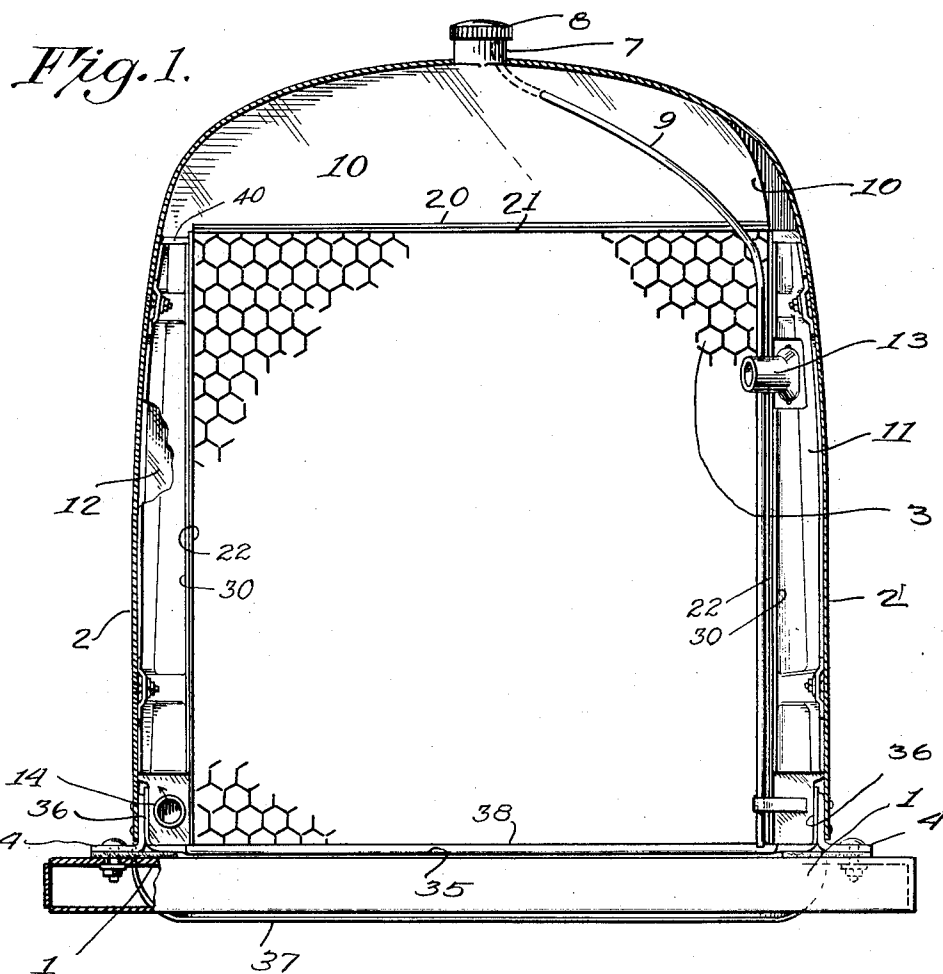
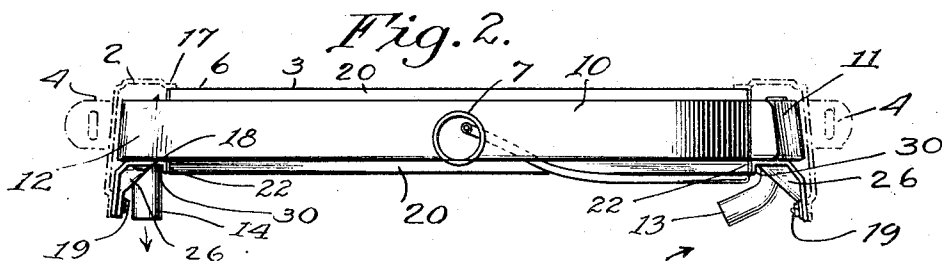
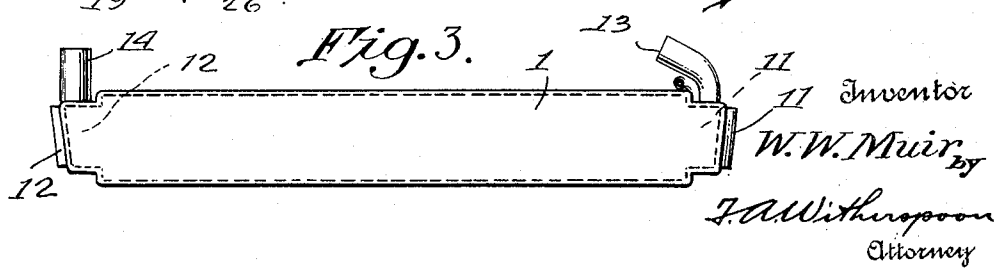
W. W. MUIR

1,705,026

AUTOMOBILE RADIATOR

Filed May 10, 1924

3 Sheets-Sheet 1



March 12, 1929.

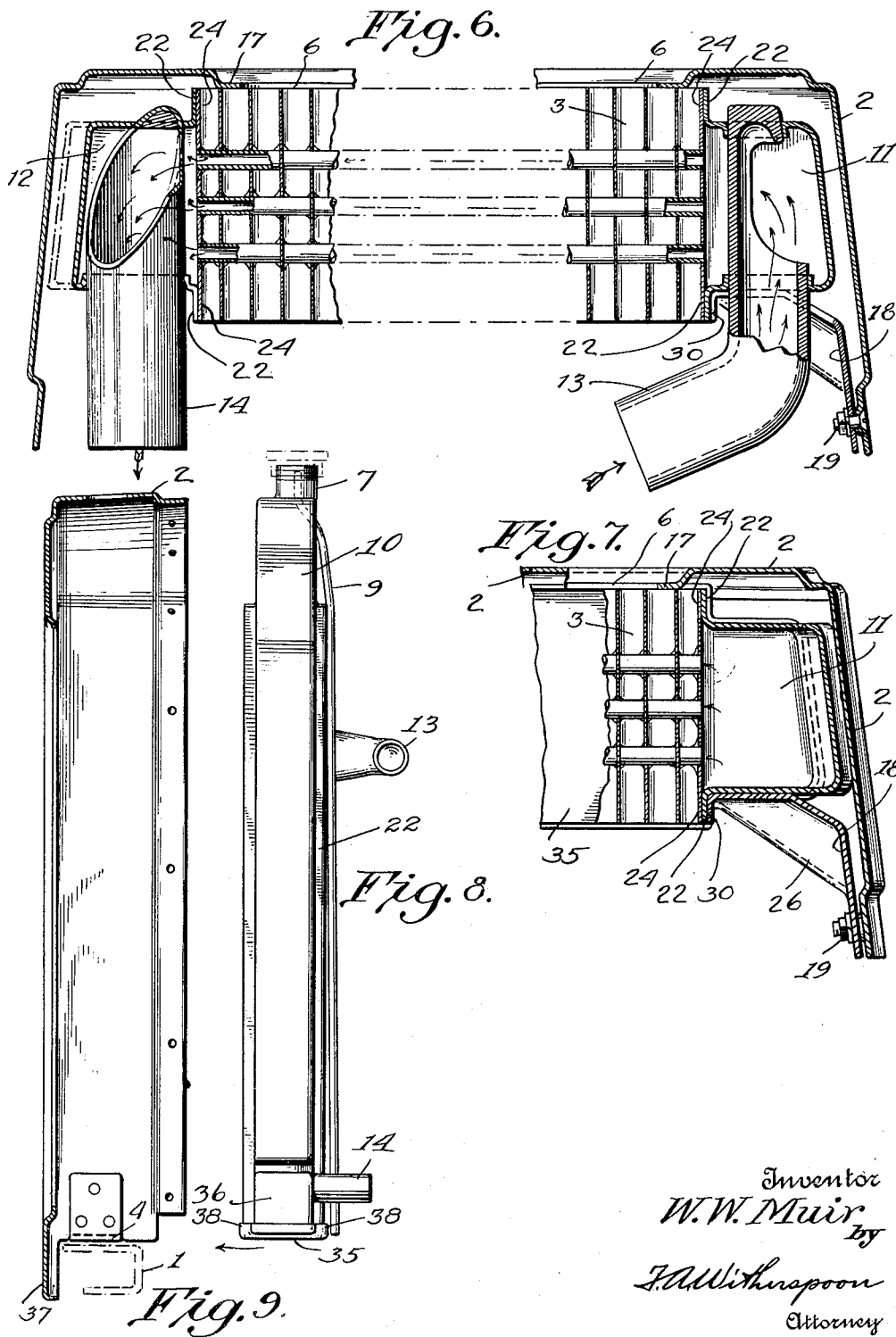
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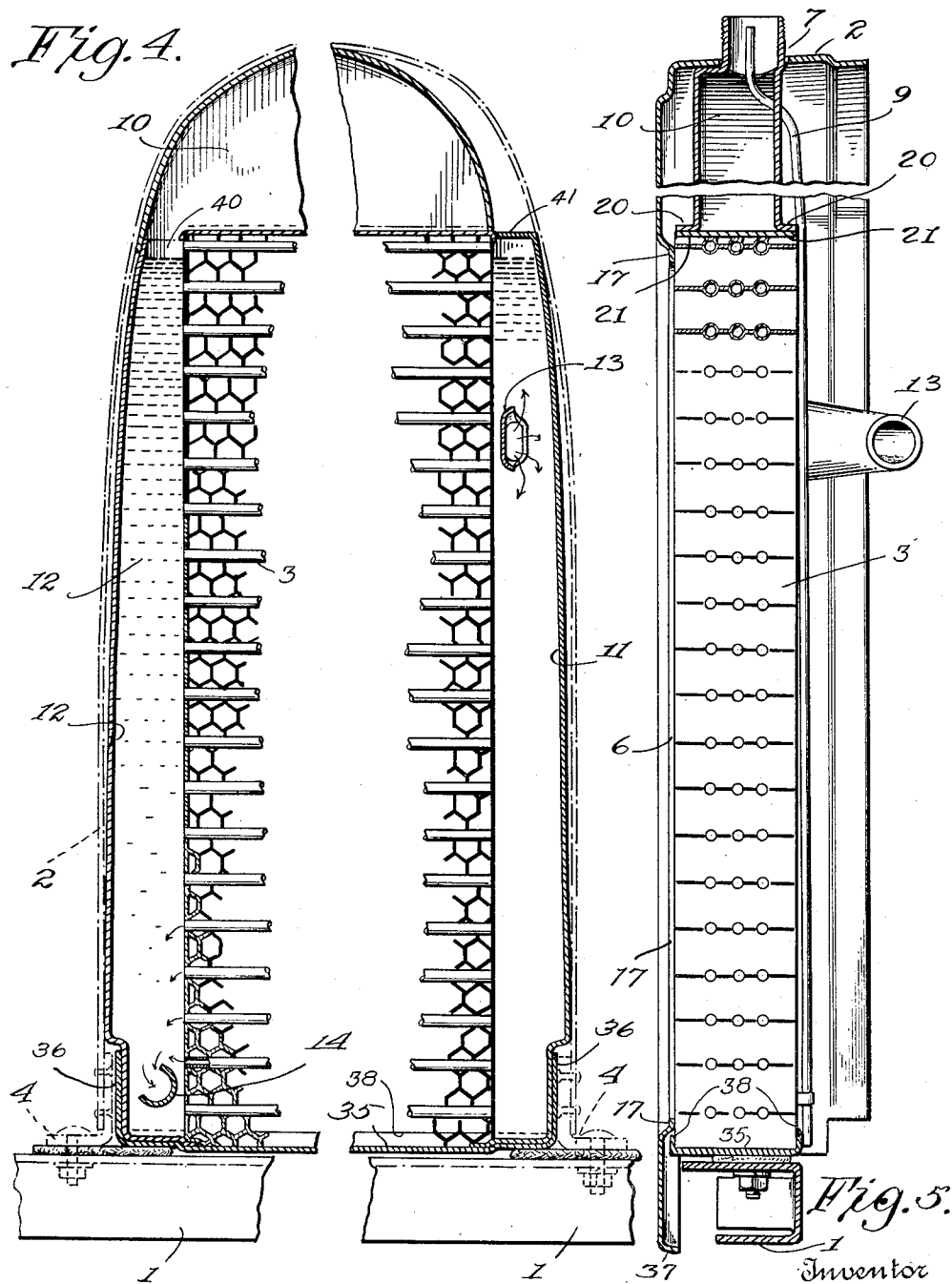
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March 12, 1929.

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AUTOMOBILE RADIATOR
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UNITED STATES PATENT OFFICE.

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AUTOMOBILE RADIATOR.

Application filed May 10, 1924. Serial No. 712,297.

This invention relates to radiators for internal combustion engines and especially to those radiators which are carried upon automobiles, and has for its object to so improve the protection of said radiators over the constructions which have been heretofore proposed to the end that the leaks now caused by rough roads will be substantially eliminated.

With these and other objects in view, the invention consists in the novel details of construction and combinations of parts more fully hereinafter disclosed and particularly pointed out in the claims.

Referring to the accompanying drawings, forming a part of this specification, in which like numerals designate like parts in all the views:—

Figure 1 is a rear elevational view, partly in section, of a radiator suspension made in accordance with this invention, and adapted to be associated with a well known radiator now on the market.

Figure 2 is a top plan view of the parts shown in Fig. 1;

Figure 3 is a bottom plan view of the parts shown in Fig. 1;

Figure 4 is a vertical sectional view broken away through the middle showing how this suspension can be associated with a tubular form of core;

Figure 5 is a sectional view taken at right angles to the plane of the view shown in Fig. 4;

Figure 6 is a transverse sectional view showing the side tanks and the inlet and outlet members for the cooling fluid, which are associated with the cores of this suspension;

Figure 7 is a detail transverse sectional view illustrating one of the side tanks and its associated parts;

Figure 8 is a side elevational view of the core and its rigidly attached top and side tanks removed from the shell; and

Figure 9 is a sectional view of the outer shell removed from the core.

1 represents the front portion of the framework of an automobile, and 2 the outer shell of any suitable radiator core 3. In Figure 1, the core 3 is preferably of the form shown in U. S. Patent #1,314,263, August 26, 1919, entitled Radiator construction, and issued to Herbert C. Harrison, but I have illustrated

in Figs. 4, 5, 6 and 7, other forms of core that are also suitable to be supported by this invention.

The outer shell 2, is provided with the usual bottom flanges 4 on each side thereof, which are firmly bolted to the framework 1 of the automobile; and said shell 2 is provided with the usual cut away portion in the front thereof to form the opening 6, and flanges 17, as illustrated in Figs. 2, 6 and 7. Said shell 2 is also provided with the top tubular extension 7, provided with the closing cap 8 into which the vent pipe 9 leads, as will be readily understood. 10 represents a top air tank, which is rigidly attached to said core 3, as by soldering flange 20 to the top portion 21 of said core, on Figs. 1, 2 and 5, and there are side water tanks 11 and 12 to accommodate the cooling fluid for the radiator core that are also rigidly attached to said core 3, as by soldering their flanges 22 to the flanges or surfaces 24 with which the core 3 is provided, see Figs. 1, 6 and 7. The bent pipe member 13 represents an inlet for steam or hot water from the engine jacket, not shown, and the pipe 14 represents an outlet for said fluid. These said pipes 13 and 14 are preferably suitably joined to the engine jacket by flexible connections, also not shown.

Stated in other language, as best shown in Figs. 1, 2, 3, 6, 7 and 8, the radiator core 3 has rigidly soldered thereto the top air tank 10, the side tank 11, and the side tank 12; and rigidly connected to said tanks 11 and 12 are liquid inlet and outlet members 13 and 14, as shown. The result is that the said radiator core, together with the tanks 10, 11 and 12, and inlet and outlet members 13 and 14, illustrated in Fig. 8, may be bodily lifted out of the outer shell, Fig. 9, and replaced therein very much as an egg may be lifted out of its supporting cell or case and replaced therein. Thus it is evident that in case any shocks are encountered by said framework, although they will be transmitted to the outer shell 2, yet said shocks must first be transmitted across frictional joints before they can reach said tanks, and the latter constituting strong, rigid bracing structures for the core, it follows that the strains on the core will be very much lessened, all as will be more clearly understood from what follows.

As will be clear from Figs. 2 and 5, the

core 3 extends beyond the front and back sides of the top air tank 10, and beyond the front and back sides of the side tanks 11 and 12, and thus supplies on the rear sides of said tanks 11 and 12 the rearwardly extending flanges or surfaces 22. The front edge of said core 3 is jammed up against the front circular flange 17 of the outer shell 2, so that wedging members 18 bolted to the outer shell 2, as at 19, may wedge their flanges 30 firmly against the tank flanges or surfaces 22, which lie in a plane not parallel to the plane of the outer shell 2, and thus hold the core 3 firmly in place inside the outer shell 2 and on each side thereof, all as clearly shown in Figs. 6 and 7. The said bracing or wedging members 18 are stiffened, as illustrated at 26, Figs. 2 and 7. That is, the radiator core 3, with its attached tanks 10, 11 and 12, surrounding its three sides and soldered to said core by the flanges 20 on the top tank and 22 on the side tanks, may be readily slipped as a unit into the outer shell 2, from the rear, and a portion of its front cellular surface jammed up against the front flange 17 of said shell 2, as best shown in Figs. 5, 6 and 7. When in this position and entirely free from any rigid connections to said shell 2, said core and tanks are readily detachable and frictionally secured in place by fitting along the rear edges of said tanks 11 and 12 the wedging or holding plates or members 18, as best shown in Figs. 1, 2, 6 and 7. These members 18 are preferably of the form shown. It follows that should it be desired to remove the core 3 and its rigidly attached tanks 10, 11 and 12, from the shell 2, it is only necessary to remove the bolts 19 and holding plates 18, whereupon the said core and tanks may be readily slipped out of said shell.

In order to strengthen the bottom portion of the core 3, and to enable it to still better avoid strains it would otherwise receive when passing over rough roads, there is provided the bottom strap, or member 35, having the turned up ends 36, and longitudinally disposed side flanges 38, as best shown in Figs. 1, 4, 5 and 9, and which is rigidly secured to the bottom ends of said tanks 11 and 12. 37 represents a lower extension of the shell 2, which hides the frame 1.

The side tank 12 opens into the top tank 10, as best shown at 40, in Figs. 1 and 4, and thus may air and other gases present in tank 12 be led into tank 10 and out of the vent tube 9 to the atmosphere. Tank 11 is closed at its top 41, Fig. 4, so that the hot vapor or liquid entering through inlet 13 must first pass through the core 3 and be subjected to a cooling action before communicating with the vent 9. In this way any valuable alcoholic vapors are condensed and not lost to the system, while any air present is readily eliminated.

It will now be clear that owing to the con-

struction involving the rigid securing of the tanks 10, 11 and 12 to the core 3, and the frictional securing of said core and tanks to the outer shell 2, and the rigid securing of the outer shell 2 to the framework of the automobile, one is enabled to provide a relatively close fit between the shell and the core portions of the device so that the latter may be standardized as to size, dimensions, etc., and the shell may likewise be standardized for all radiator cores. That is to say, the unit consisting of the tanks and core may be made of uniform size to fit uniform sized outer shells no matter what may be the style of core. This is an important feature of this invention. Further it will be seen that the tanks 10, 11, and 12, and the strap 35 all constitute a protective frame encompassing the relatively frail core 3. Another important feature of the invention resides in the fact that owing to the bracing structure formed by the three tanks occupying the three sides of the radiator core and rigidly secured thereto, the amount of metal placed in the core may be greatly reduced. In other words, it has been demonstrated by actual tests that as much as 30% of metal may be saved over the prior constructions by following the principles of this invention.

A still further feature of this construction resides in the fact that it is found that the metal going into the make-up of the outer shell and tanks may be more economically used than in the prior constructions.

What is claimed is:

1. A radiator mounting comprising a removable radiator unit, a frame to support said unit, a shell secured to said frame and encasing said unit, a flange on said shell engaging the front side of said unit, and wedging means carried by said shell engaging the back side of said unit.

2. A radiator mounting comprising a removable radiator unit, a frame to support said unit, a shell secured to said frame and encasing said unit, a flange on said shell engaging the front side of said unit, and a wedge carried by said shell engaging a shoulder on the back side of said unit.

3. A radiator mounting comprising a removable radiator unit, a frame to support said unit, a shell secured to said frame and frictionally engaging said unit preventing vertical displacement of the latter, a flange on said shell engaging the front side of said unit preventing lateral movement thereof in one direction, and a plurality of wedges secured to said shell engaging the back side of said unit preventing lateral movement thereof in the opposite direction.

4. A radiator mounting comprising a removable radiator unit, a frame to support said unit, a shell secured to said frame and frictionally engaging said unit, a flange on said shell frictionally engaging the front side

of said unit, and wedging means carried by said shell frictionally engaging the back side of said unit.

5 A radiator mounting comprising a removable radiator unit, a frame to support said unit, a shell secured to said frame and encasing said unit, a flange on said shell engaging the front side of said unit, and a chuck member carried by said shell engaging the
10 back side of said unit and coacting with said flange through said shell.

6. A mounting for a radiator unit including a core having rigidly secured about the

top and sides thereof a protective tank structure, said mounting comprising a frame extending along the bottom of said core and supporting the same through said tank structure; a shell encasing said core and tank structure adapted to be rigidly secured to said frame, said shell provided with a flange engaging the front side of said core and tank structure; and means carried by said shell and yieldable therewith for wedgingly engaging the back side of said structure.

In testimony whereof I affix my signature.

WELLINGTON W. MUIR.