Dec. 30, 1924. 1,520,837

J. F. MORGAN

AUTOMOBILE RADIATOR

Filed Aug. 30, 1923 3 Sheets-Sheet 1

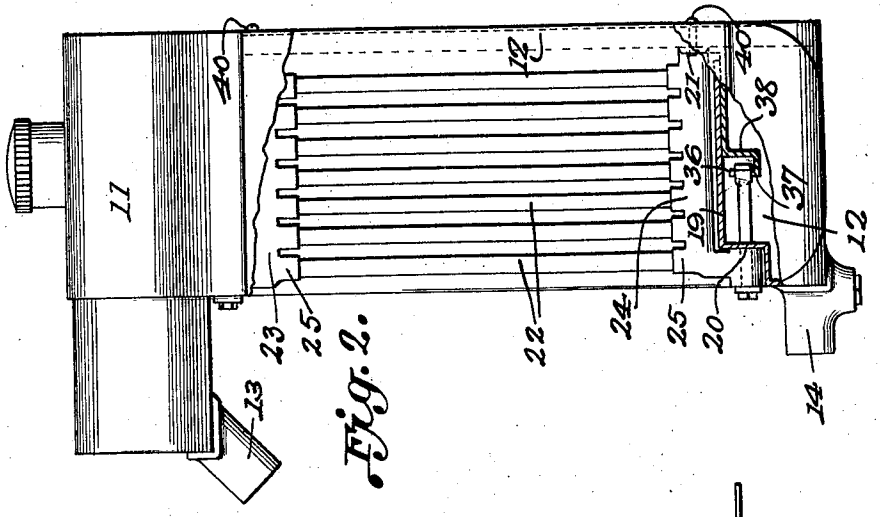


Fig. 2.

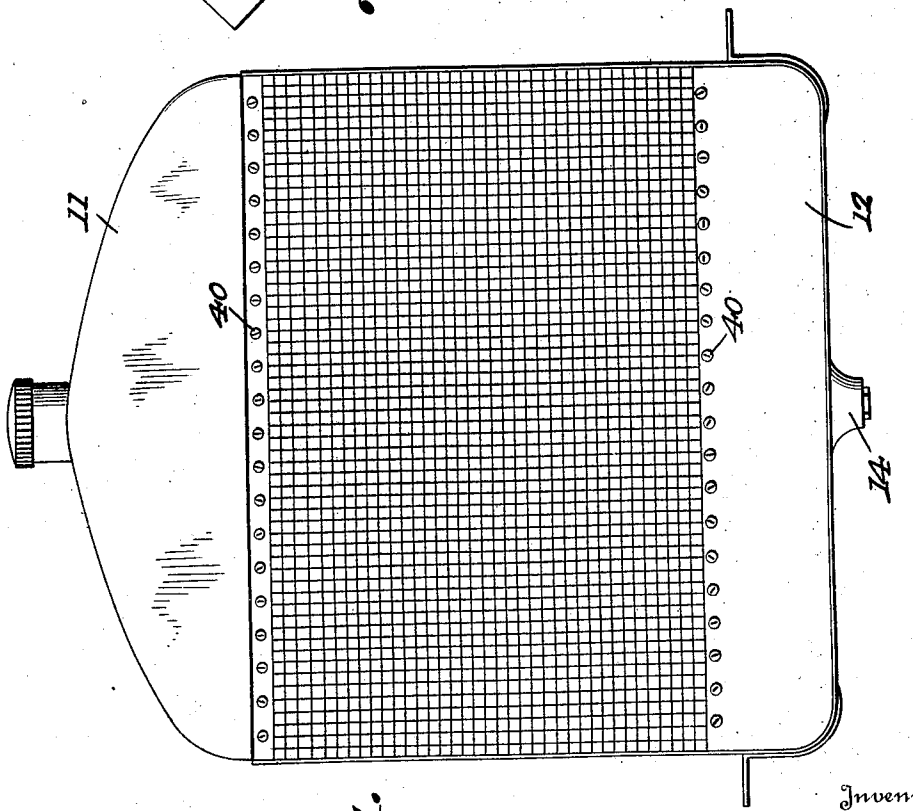


Fig. 1.

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Fig. 4.

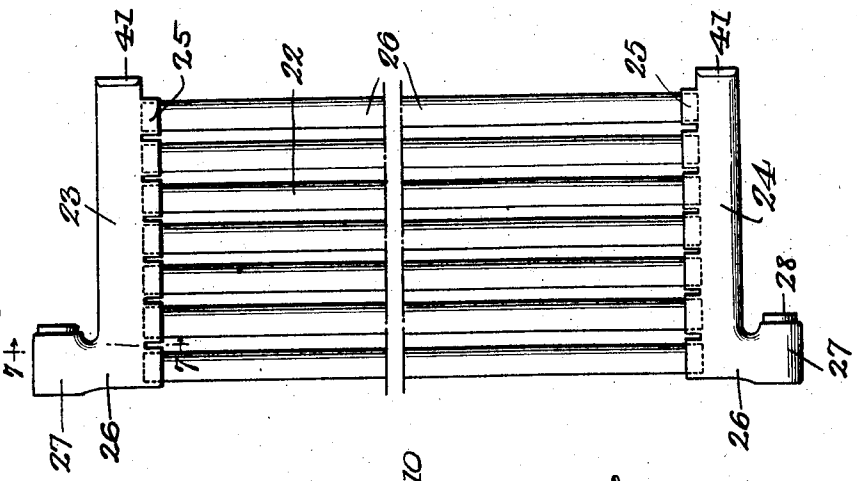
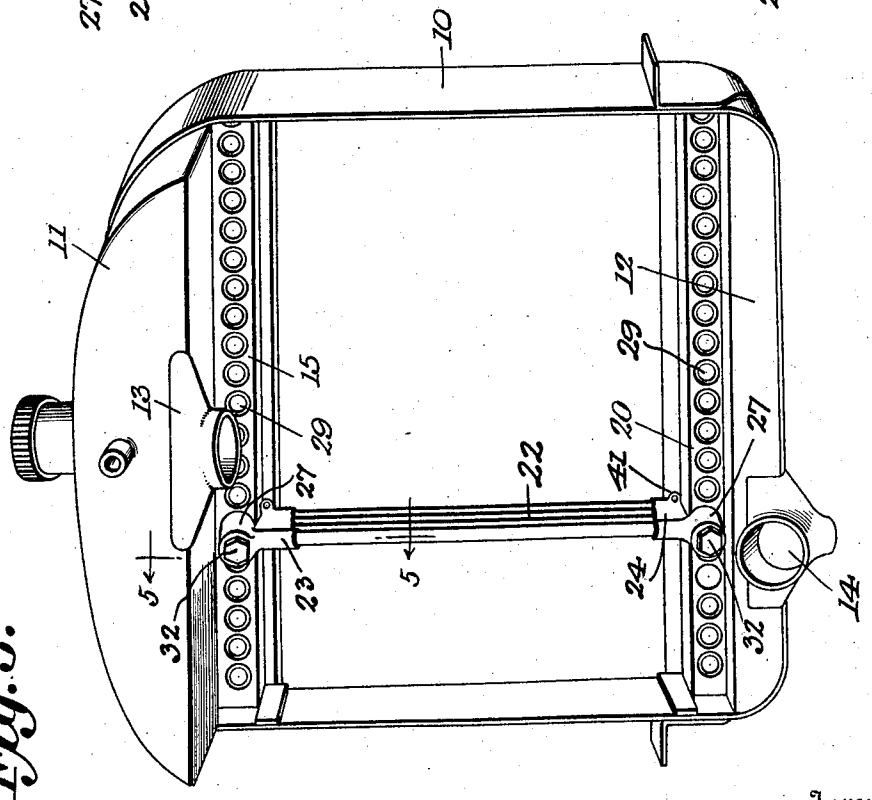


Fig. 3.



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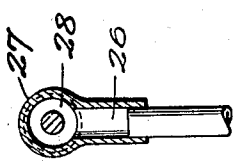


Fig. 7.

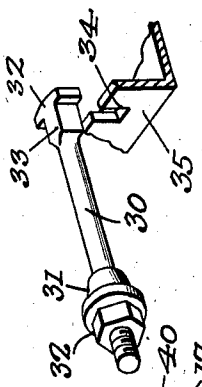


Fig. 6.

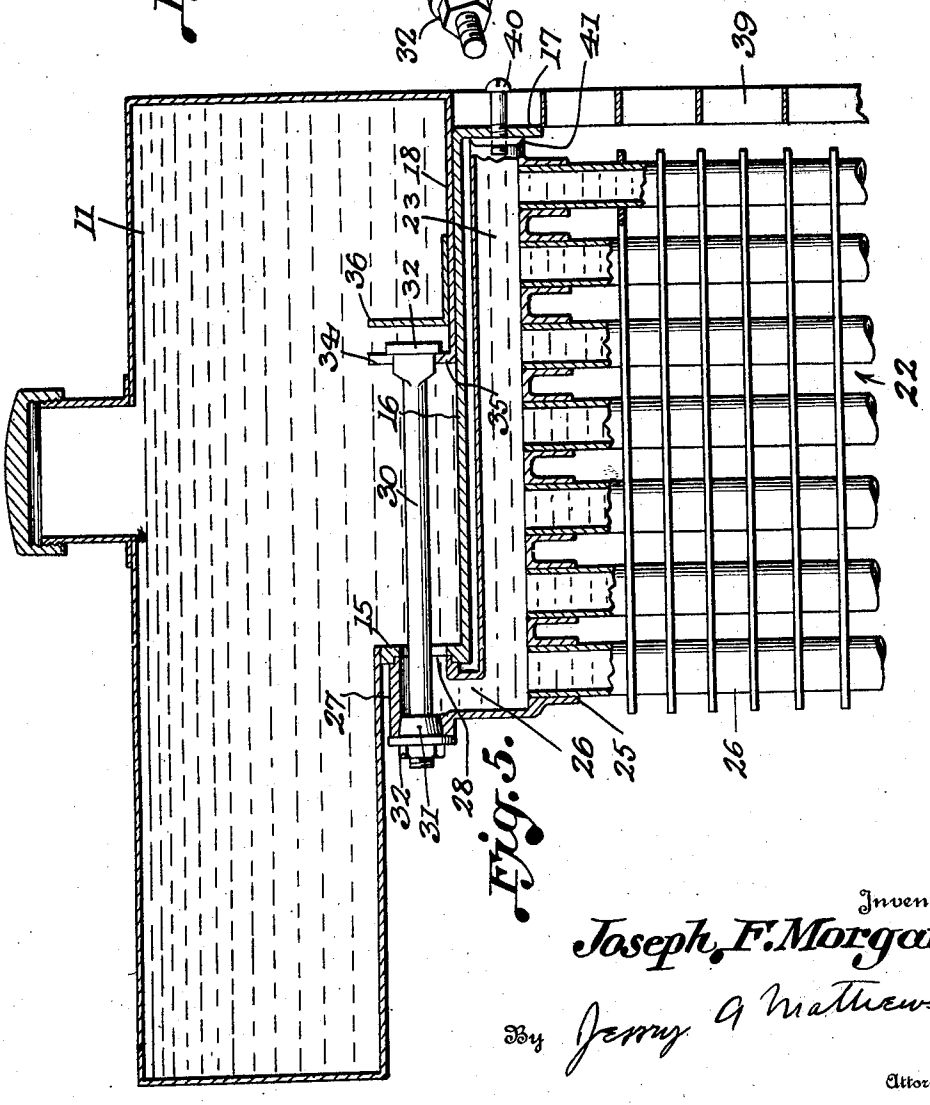


Fig. 5.

Inventor

Joseph F. Morgan

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Patented Dec. 30, 1924. 1,520,837

UNITED STATES PATENT OFFICE.

JOSEPH F. MORGAN, OF THORP, WISCONSIN.

AUTOMOBILE RADIATOR.

Application filed August 30, 1923. Serial No. 660,210.

To all whom it may concern:

Be it known that I, JOSEPH F. MORGAN, a citizen of the United States, residing at Thorp, in the county of Clark and State of Wisconsin, have invented certain new and useful Improvements in Automobile Radiators, of which the following is a specification.

My invention relates to improvements in automobile radiators.

An important object of the invention is to provide an automobile radiator, the tubes of which are arranged in units, which may be readily separated and removed from the radiator, for the purpose of repair.

A further object of the invention is to provide a radiator of the above mentioned character, having means for detachably holding the units in place within the radiator shell, such means being so constructed that it will be readily releasable, durable, and will not unduly retard the free circulation of the water through the units.

A further object of the invention is to provide a radiator of the above mentioned character, which is of simple construction, strong, durable, and will have the general appearance of the ordinary standard radiator.

Other objects and advantages of the invention will be apparent during the course of the following description.

In the accompanying drawings forming a part of this specification, and in which like numerals are employed to designate like parts throughout the same,

Figure 1 is a front elevation of a radiator embodying my invention,

Figure 2 is a side elevation of the same,

Figure 3 is a perspective view of a radiator, viewed from the rear, showing one tube unit in place,

Figure 4 is a side elevation of one tube unit,

Figure 5 is a vertical transverse section taken on line 5—5 of Figure 3,

Figure 6 is a perspective view of the lock bolt, and,

Figure 7 is a detail section taken on line 7—7 of Figure 4.

In the drawings, wherein for the purpose of illustration is shown a preferred embodiment of my invention, the numeral 10 designates a radiator shell as a whole, comprising an upper reservoir 11, and a lower reservoir 12. The upper reservoir is equipped with the usual intake 13 and the lower reservoir has an outlet 14. The upper reservoir, see more particularly Figures 3 and 5, is provided with a shoulder forming a vertical wall 15. This vertical wall is preferably formed upon the inner or bottom wall 16, provided with a depending flange 17, at its forward end. The bottom 16 is arranged beneath a bottom portion 18, and these parts may be soldered or otherwise suitably connected. The flange 17 terminates inwardly of the front end of the tank 11, for a purpose to be described. The lower tank 12 has its top wall 19 bent downwardly forming a vertical shoulder or wall 20. The top wall 19 is equipped with a vertical flange 21, spaced inwardly from the forward end of the radiator shell, as shown.

The numeral 22 designates a tube unit, as a whole, embodying upper and lower headers 23 and 24. These headers have nipples or tubular extensions 25, for receiving the ends of the tubes 26. These tubes may be held within these nipples by any suitable means, such as being screw threaded therein, soldered, or both. It is preferred that the connection between the headers and the tubes be detachable, so that a new tube may be placed in position, in the event that one of the old tubes should become broken, or leak. Each header is provided with an outwardly projecting lateral tubular portion 26, carrying a tubular coupling head 27. This coupling head is provided with a reduced extension 28, at its free end for insertion within a selected opening 29, formed in either vertical wall 15 or 20.

The outer ends of the tubular coupling heads 27 are formed open, for the passage of lock bolts 30, having caps 31, screw threaded thereon. These caps have heads 32, which are polygonal, so that they may be turned with a wrench. The caps 31 serve to close the outer ends of the tubular coupling heads. The lock bolts 30 are provided at their inner ends with transverse heads 32 and square portions 33, inwardly of and adjacent the heads 32.

The square portions 33 of the lock bolts 30 project within the upper reservoir 11, and are seated within square notches 34, formed in a vertical flange 35, carried by the bottom portion 18. 36′ designates a vertical guard arranged near the flange 35

to limit the longitudinal movement of the lock bolts 30, in assembling. The square portions 33 of the lock bolts 30 projecting into the lower reservoir 12 are seated within notches 36, formed in a vertical flange 37, which is L-shaped in across section, and carried by a vertical bracket 38.

A particular advantage in the construction of the bolts with their square portions or heads, is that such bolts will be held against rotation in screwing up the caps or nuts 31, and further, these square heads cannot rust sufficiently whereby they would be destroyed upon removal of the bolts, as is frequently the case with radiators of this general type, wherein the inner end of the bolt is screw threaded, with the screw threaded end arranged interiorly of the tank, in contact with the water. There is a further advantage in the laterally arranged coupling head 27. This permits the bolts to extend entirely exteriorly of the tubular headers 23, whereby the bores of these tubular headers are entirely unobstructed. The coupling heads 27 are formed of larger diameters than these headers, and hence the water may pass through these coupling heads, without being unduly retarded. As the coupling heads are relatively short, the increase in cost of the units, by increasing the diameter of the coupling heads, is very slight.

The numeral 39 designates a honey comb front, which is held in place by screws 40 or the like, engaging with the flanges 17 and 21. These screws project inwardly beyond the flanges and engage within screw threaded openings, formed in laterally projecting ears 41, formed integral with the forward ends of the upper and lower headers.

In operation, with the tube units in place it is obvious that the water within the upper reservoir will circulate through the coupling head 27, which is of sufficient diameter to prevent the improper retarding of the circulation by the bolt 30. The water will enter the upper header and pass through the tubes into the lower header and then through the coupling head 27 into the lower reservoir.

It is to be understood that the form of my invention herewith shown and described is to be taken as a preferred example of the same, and that various changes in the shape, size, and arrangement of parts may be resorted to without departing from the spirit of my invention, or the scope of the subjoined claims.

Having thus described my invention, I claim:

1. An automobile radiator, comprising upper and lower reservoirs having side walls provided with openings, upper and lower tubular headers arranged between the upper and lower reservoirs, tubes connecting said headers, tubular coupling heads extending laterally and outwardly from the headers and having their bores of larger diameter than the bores of the tubular headers, said tubular coupling heads having their forward and rear ends open, such forward ends engaging at the openings in the side walls, lock bolts arranged within the reservoirs exteriorly of the headers and extending through the tubular coupling heads, caps having screw threaded engagement with the rear ends of the lock bolts and closing the rear ends of the coupling heads, and slotted elements anchored within the upper and lower reservoirs for detachable locking engagement with the forward ends of the bolts.

2. An automobile radiator, comprising upper and lower reservoirs having side walls provided with openings, upper and lower tubular headers arranged between and exteriorly of the reservoirs, tubes connecting the headers, tubular coupling heads extending laterally and outwardly from the headers and having their bores of greater diameter than the diameter of the bores of the headers, said tubular coupling heads having their forward and rear ends open with their forward ends engaging at the openings in the side walls, slotted flanges mounted within the upper and lower reservoirs, locking bolts having heads and polygonal portions to engage within the slots of the flanges, and caps having screw threaded engagement with the rear ends of the locking bolts and closing the rear ends of the tubular coupling heads.

3. An automobile radiator, comprising upper and lower reservoirs having side walls provided with openings, upper and lower tubular headers extending transversely between the reservoirs exteriorly thereof in close relation thereto, tubular coupling heads arranged at the rear ends of the headers and extending laterally and outwardly therefrom and having their forward and rear ends open, the forward open ends engaging at said openings in the side walls, slotted flanges mounted within the reservoirs, bolts provided with heads and polygonal portions held within the slots of the flanges, said bolts extending through the tubular coupling heads, and caps screw threaded upon the rear ends of the bolts and closing the rear ends of the coupling heads.

In testimony whereof I affix my signature.

JOSEPH F. MORGAN.