O. FROBERG.

AUTOMOBILE RADIATOR.

APPLICATION FILED NOV. 17, 1919.

1,389,749.

Patented Sept. 6, 1921.

2 SHEETS—SHEET 1.

FIG. 1

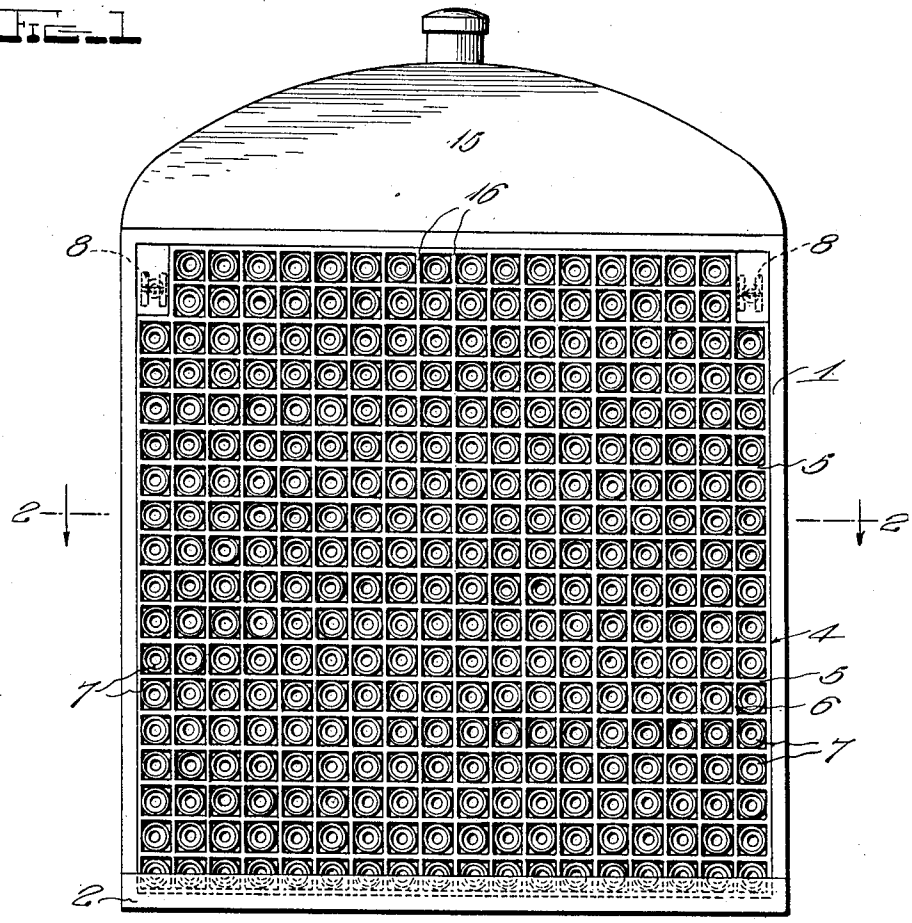
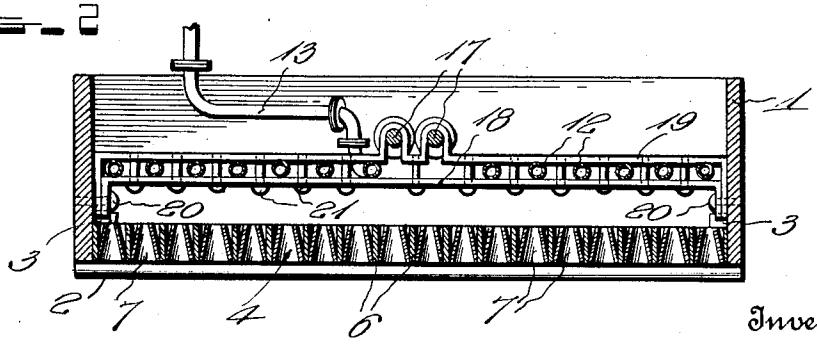


FIG. 2



Inventor

Olof Froberg

By H. B. Williamson

Attorneys

O. FROBERG.

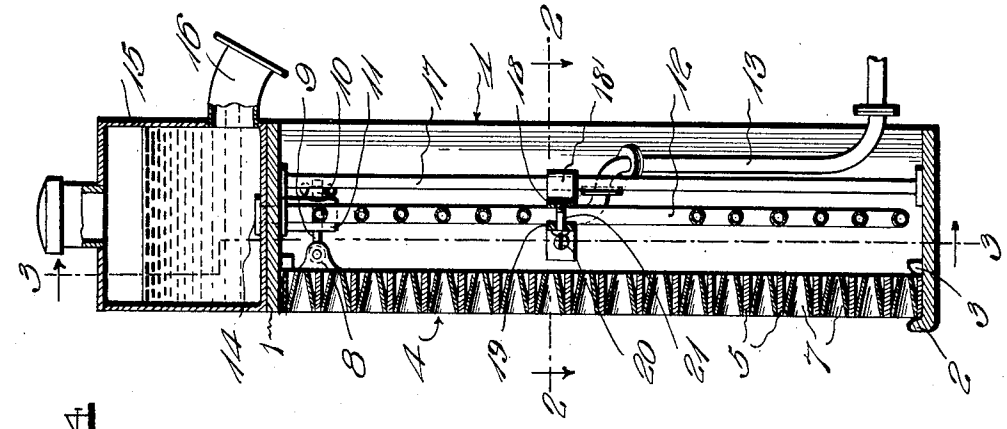
AUTOMOBILE RADIATOR.

APPLICATION FILED NOV. 17, 1919.

1,389,749.

Patented Sept. 6, 1921.

2 SHEETS—SHEET 2.



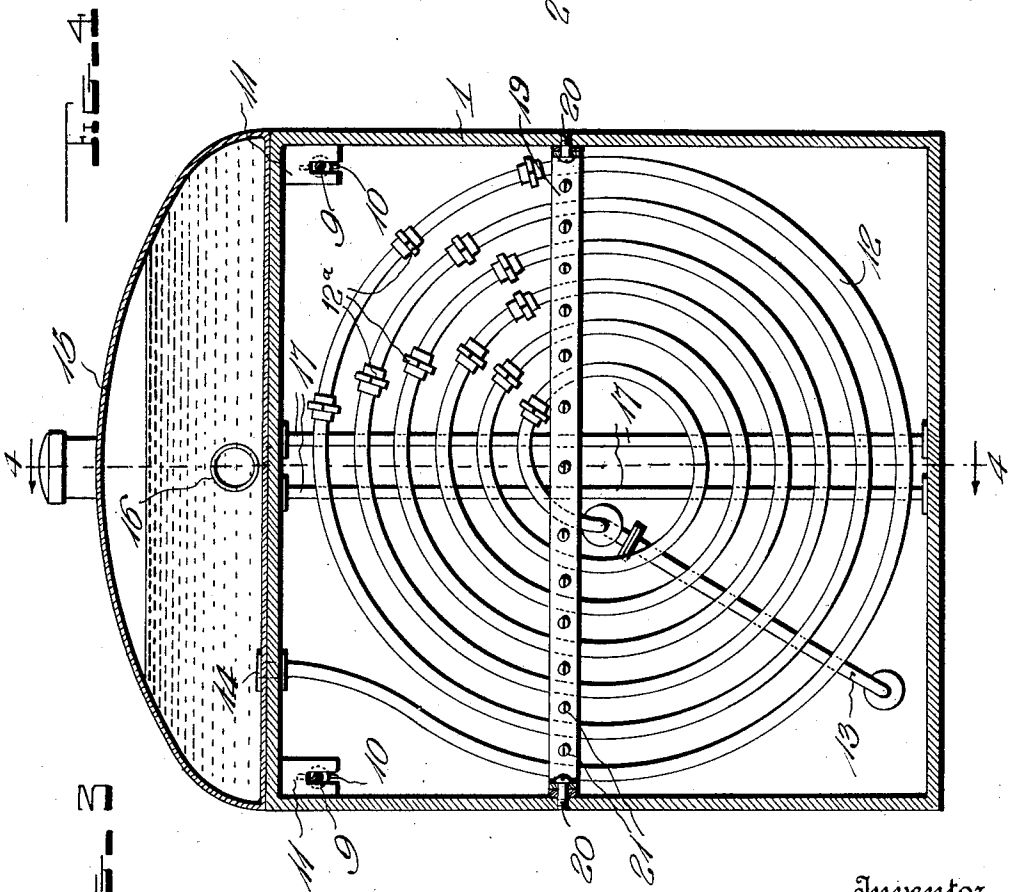


Fig. 4

Fig. 3

Inventor

Olof Froberg

By A. B. Wilson & Co

Attorneys

UNITED STATES PATENT OFFICE.

OLOF FROBERG, OF BENTON HARBOR, MICHIGAN.

AUTOMOBILE-RADIATOR.

1,389,749. Specification of Letters Patent. Patented Sept. 6, 1921.

Application filed November 17, 1919. Serial No. 338,415.

To all whom it may concern:

Be it known that I, OLOF FROBERG, a citizen of the United States, residing at Benton Harbor, in the county of Berrien and State of Michigan, have invented certain new and useful Improvements in Automobile-Radiators; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to automobile-radiators.

The main object of this invention is to provide an improved construction which is exceedingly simple and comparatively inexpensive, and which is less easily damaged by extremely cold weather than the radiators of ordinary construction.

A further object is to provide an improved automobile radiator which includes a screen which can be very quickly and easily removed for the purpose of gaining access to the cooling coil for applying a weather shield or for effecting repairs.

Other objects and advantages may become apparent to persons who read the following details of description in connection with the accompanying drawings in which,—

Figure 1 is a front elevation of my improved radiator.

Fig. 2 is a horizontal sectional view along the line 2—2 of Figs. 1 and 4.

Fig. 3 is a vertical sectional view along the line 3—3 of Fig. 4.

Fig. 4 is a vertical sectional view along the line 4—4 of Fig. 3.

Referring to these drawings in detail, in which similar reference characters correspond with similar parts throughout the several views:

The invention includes a hollow frame 1 which is open at its front and rear sides and adapted to be supported on the front part of an automobile chassis in the usual way, this frame being formed with spaced shoulders 2 and 3 between which is seated a perforated screen 4 of the novel construction illustrated more clearly in Figs. 2 and 3. The screen 4 is preferably formed of a series of horizontal strips or bars 5 and a series of vertical strips 6, which intersect each other at right-angles, while numerous nozzles 7 are formed or secured between the strips 5 and 6, and constitute the perforations of which the screen 4 largely consists. A pivot bearing 8 is formed on or secured to the top portion of the screen 4, and a laterally turned end of a bolt 9 extends through the bearing 8 so as to be pivotally connected with the latter. The bolt 9 has one end screw-threaded and has a wing-nut seated on this threaded end. A pair of slotted securing lugs 11 are formed on or secured to the upper inner surface of the frame 1, and each bolt 9 extends through one of the slots of the lugs 11 so that the nuts 10 may engage with the lugs 11 for co-acting therewith and with the shoulders 2 and 3 for removably securing the screen 4 in the frame 1 at a position in front of a cooling coil or pipe 12, this coil being preferably involute as illustrated in Fig. 3, and has one end communicating with a pipe section 13 by means of which it may be connected to a water-jacket of an engine in the usual manner. The outer end of the coil 12 is in open communication, at 14, with a tank seated on top of the frame 1 and provided with a pipe connection 16, the latter being adapted for connection with said water-jacket. It will be seen, therefore, that a circulating system may be completed through a water-jacket, thus connected with the coil 12 and tank 15.

For the purpose of supporting the middle portion of the tank 15 and aiding in other connections (as will presently appear), a pair of posts 17 extend vertically from the lower portion to the upper portion of the frame 1 while crossing the center of this frame. A bar 18 extends horizontally across the center of the frame and has its ends secured to the vertical or upright walls of the frame. The bar 18 is spaced from the posts 17, and the series of turns of the coil 12 is arranged between the posts 17 and bar 18. A bar 19 extends across the center of the frame 1, and has laterally turned ends which are seated upon the similarly turned ends of the bar 18, and screws 20 or other appropriate means may be employed for securing the bars 18 and 19 together and to the frame 1. It will be seen that the bars 18 and 19 have their intermediate portions spaced from one another and that the coil or pipe 12 is embraced between these two bars. It will also be seen that the upright rods or posts 17 are embraced by the bar 18, the latter being formed with suitable loops 18′ for this purpose at its middle portion. Bolts or screws 21 extend through these bars and have screw-threaded engagement with one of them, so that by tightening these

screws, the turns of the coils 12 are separately clamped by the sections of the bars 18 and 19 between the screws 21. It will be seen, therefore, that the coil 12 is not only supported by the clamp which constitutes the bars 18 and 19 and screws 21, but holds the turns of the coil in the correct spaced relation to one another, and in spaced relation to the top, bottom and sides of the box or frame 1. Moreover, by referring to Figs. 2 and 4, it will be seen that the engagement of the bar 19 with the posts 17 tends to prevent vibration of the clamping bars and the coil supported thereby.

A considerable space is provided between the removable screen and the cooling coil, and this space may be utilized for inserting a screen of paper, cloth, or other suitable material for protecting the coil 12 against extreme cold, and such screen may be very quickly and easily inserted and removed in consequence of the screen 5 being very quickly and easily removed, as described in the foregoing.

In addition to the important features pointed out in the foregoing, it will be seen that the form of screen 5, as more clearly shown in Fig. 1, is extremely ornamental and attractive.

Although I have described this amendment of my invention very specifically it is not intended to limit the invention to these exact details of construction and arrangement, but changes may be made within the scope of the inventive ideas as implied and claimed.

An important feature of this invention resides in the provision of unions 12^a in the coil 12, so that in case of leakage in any part of the coil, the leaky turn of the coil can be quickly and easily removed and replaced without removing or changing the position of the other turns of the coil.

What I claim as my invention is:

1. In an automobile radiator, a frame, water conducting means in said frame, a screen in said frame in front of said water conducting means and having vertical and transverse strips providing passages of substantially an even diameter for the depth of the screen, and tubes mounted in the air passages and tapering inwardly toward the water conducting means.

2. In an automobile-radiator, a hollow radiator-frame, water conducting means in the radiator frame, a perforated screen normally in front of said water conducting means, a securing lug in the top part of said radiator-frame and having a slot that opens through one side thereof, a screw normally extending through said slot and having a laterally turned end and a threaded end, the laterally turned end being pivoted to the top part of said screen, and a nut on the threaded end of said bolt, said bolt being swingable about its pivotal end to move out of said slot when said nut is loose so that said screw can easily be removed from the radiator frame.

In testimony whereof I have hereunto set my hand.

OLOF FROBERG.