Apr. 3, 1923. 1,450,650

C. SEYMOUR

COOLING APPARATUS FOR AUTOMOBILES

Filed Nov. 13, 1919 2 sheets-sheet 1

Fig. 1.

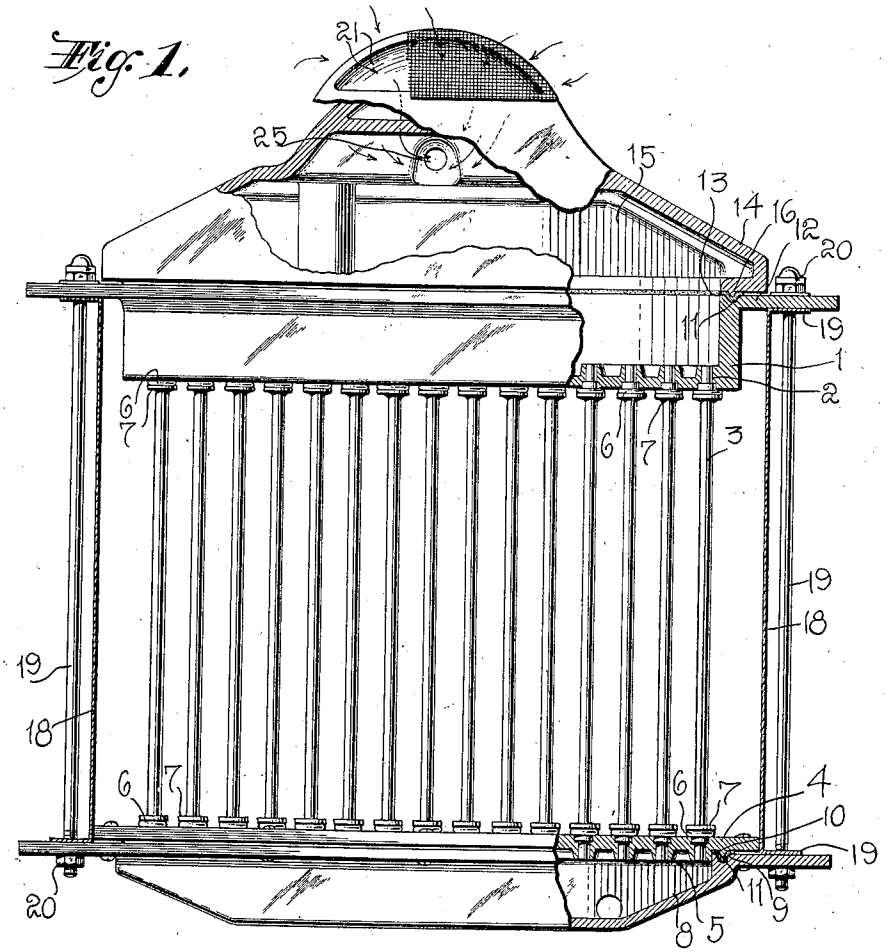
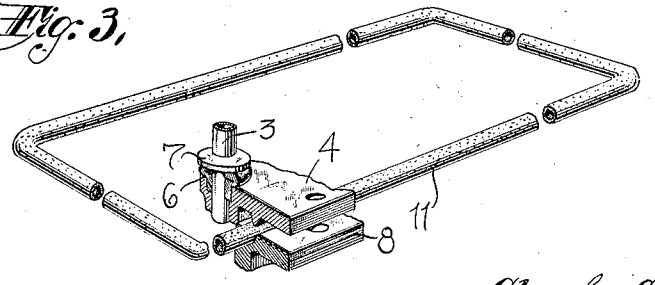


Fig. 3.



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Fig. 2.

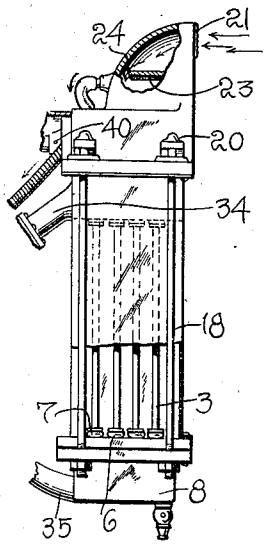


Fig. 4. Fig. 5.

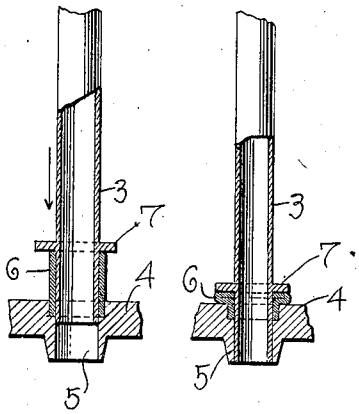
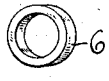


Fig. 6.



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Patented Apr. 3, 1923. 1,450,650

UNITED STATES PATENT OFFICE.

CHARLES SEYMOUR, OF BRANTFORD, ONTARIO, CANADA.

COOLING APPARATUS FOR AUTOMOBILES.

Application filed November 13, 1919. Serial No. 337,767.

To all whom it may concern:

Be it known that I, CHARLES SEYMOUR, a citizen of the United States, residing at Brantford, in the Province of Ontario, Canada, have invented certain new and useful Improvements in Cooling Apparatus for Automobiles; and I do hereby 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, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

This invention relates to new and useful improvements in cooling apparatus for automobiles, and consists essentially in the provision a new and improved radiator construction.

Another feature of the invention consists in the provision in connection with the radiator of means for forming a water and steam tight joint intermediate the pipe and the apertured top and bottom plates of the radiator without the use of soldering or other fastening means.

My invention comprises various other details of construction, combination and arrangement of parts which will be hereinafter fully described, shown in the accompanying drawings and then specifically defined in the appended claims.

My invention is illustrated in the accompanying drawings which, with the numerals of reference marked thereon, form a part of this application, and in which:

Figure 1 is an enlarged view in front elevation, parts being shown in vertical section.

Figure 2 is a side elevation of the radiator showing parts in elevation.

Figure 3 is a detail sectional perspective.

Figure 4 is a detail view showing the tube with rubber gasket or washer adjusted upon the end thereof in readiness to be inserted in position in the plate of the radiator.

Figure 5 is a similar view showing the tube inserted through the opening in the plate, with the tubular gasket doubled upon itself, forming a steam and water-tight joint.

Figure 6 is a detail perspective view of a packing collar.

Reference now being had to the details of the drawings by numerals:

1 designates the top plate or casting of the radiator having a series of bosses 2 projecting from the upper surface thereof, and apertured for the reception of the upper ends of the tubes 3. The bottom plate 4 of the radiator has integral apertured bosses 5 projecting from the under surface thereof to receive the lower end of the tubes 3, as shown clearly in Figure 6 of the drawings. Cylindrical washers 4, of rubber tubing or any other suitable flexible material, are telescoped over the upper and lower ends of the tubes 3 and their inner ends abut against the flanges or fixed collars 7 upon the tubes. The said apertures through the bosses 2 and 5 extend also through the top and bottom plates 2 and 4 of the radiator and a portion of said apertures, toward one end thereof, is of enlarged diameter, forming at one end of said portions annular shoulders. Said washers are adapted to project into said enlarged portions of the apertures and to seat, at one end thereof, against said shoulders in the manner shown in Figure 4 of the drawings.

After the washers or gaskets have been adjusted in place, as shown in Figure 4, the tubes 3 are pushed down to the position shown in Figure 5, in which position the tubular rubber gasket will be doubled upon itself and clamped intermediate the flanges 7 and the adjacent face of the bottom plate of the radiator, thus making a perfectly water and steam tight joint without the use of solder or other fastening means.

A casting 8, forming a water chamber, is provided upon its upper surface with a groove 9 which is adapted to receive a rib 10 integral with the under surface of the bottom plate 4 of the radiator. A tubular packing 11, a detail of which is shown in Figure 3 of the drawings, is placed over the groove 9, and when the bottom plate 4 and the casting 8 are clamped together the lug 10 upon the under surface of the bottom 4 will force the tubular packing into said grooves, in the manner shown clearly in Figure 1 of the drawings; forming a steam and water tight joint.

The upper surface of the flange 12 of the top plate 1 of the radiator is provided with a groove 13 which is similar to the groove 9 before described, and 14 is a cast-

ing which has a hollow water chamber 15, and upon the lower marginal edge of said casting 14 is a rib 16 adapted to engage the groove 13 formed in the flange 12. A tubular packing, similar to the one shown in Figure 5, is forced by the rib 16 into the groove 13 when the parts are assembled, as shown in Figures 1 and 2 of the drawings.

The radiator is provided with sides 18, the upper and lower ends of which are bent to form flanges 19, which have apertures registering with holes formed in the casting 8 and the flange 12 of the top 1 of the radiator. Bolts 19′ are passed through said registering apertures and holes, and nuts 20 are fitted to the threaded ends of said rods and bear against the casting 8 and the flange 12 in the manner shown clearly in Figure 1 of the drawings. When said nuts are tightened, it will be noted that the various radiator tubes will be forced into the holes in the top and bottom of the radiator plates, holding the tubular gaskets folded in the manner shown in Figure 5 of the drawings, making perfectly steam and water-tight joints, without the use of solder or other fastening means.

What I claim to be new is:

1. In a radiator the combination with upper and lower housings having alined perforations, of radiator pipes inserted and seated within the perforations and extending between the housings, and collapsible gaskets originally substantially cylindrical embracing and surrounding said pipes and compressed by said pipes against the exterior of the housing.

2. In a radiator the combination with upper and lower housings having alined perforations, or radiator pipes extending between the housings and inserted within the perforations, collars formed upon and embracing the pipes and collapsible gaskets originally substantially cylindrical embracing and surrounding the pipes and collapsed by the collars into engagement with the exterior of the housing.

3. In a radiator the combination with upper and lower housings having alined perforations, some of said perforations being enlarged by countersinks, or radiator pipes inserted in the alined perforations, extending between the housings and provided with rigid collars and collapsible gaskets originally substantially cylindrical embracing and surrounding the pipes and seated in the countersinks and compressed by the collars into engagement with the exterior of the housing.

In testimony whereof I hereunto affix my signature.

CHARLES SEYMOUR.