No. 840,295. PATENTED JAN. 1, 1907.

F. A. BRYANT.

RADIATOR FOR AUTOMOBILES.

APPLICATION FILED AUG. 22, 1906.

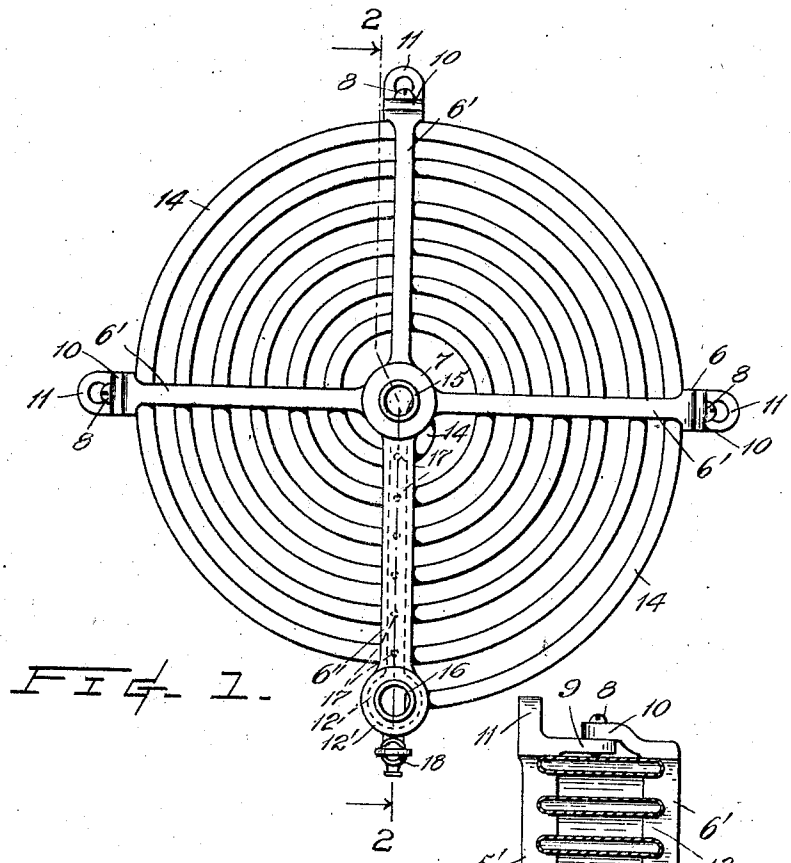


FIG. 1.

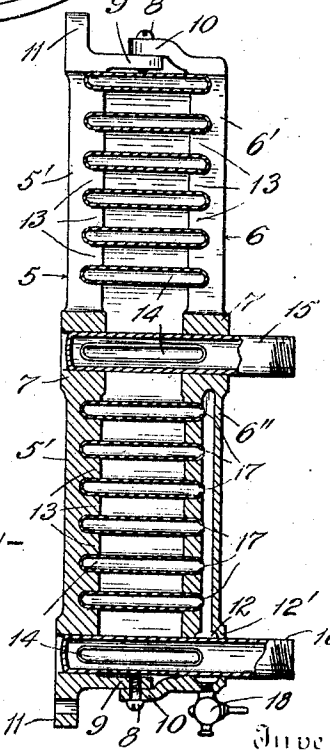


FIG. 2.

Witnesses
Paul Barnes.
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Inventor
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By his Attorney,
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UNITED STATES PATENT OFFICE.

FRANK A. BRYANT, OF SEATTLE, WASHINGTON.

RADIATOR FOR AUTOMOBILES.

No. 840,295. Specification of Letters Patent. Patented Jan. 1, 1907.

Application filed August 22, 1906. Serial No. 331,612.

To all whom it may concern:

Be it known that I, FRANK A. BRYANT, a citizen of the United States, residing at Seattle, in the county of King and State of Washington, have invented certain new and useful Improvements in Radiators for Automobiles, of which the following is a specification, reference being had therein to the accompanying drawings, in which—

Figure 1 is a rear end view of an embodiment of my invention, and Fig. 2 a sectional view taken through line 2 2 of Fig. 1.

This invention relates to liquid-coolers, and more particularly to devices of this character used for reducing the temperature of the water circulated about the cylinders of internal-combustion engines employed upon motor-vehicles or the like.

The object of my invention is to provide a compact and efficient apparatus of this nature which will be of simple, strong, and inexpensive construction and especially adapted to the service for which intended.

The invention consists in the novel construction and combination of parts, as will be hereinafter described and claimed.

Referring to the drawings, the numerals 5 and 6, respectively, designate the front and rear members of the framework of the apparatus, each provided with a central apertured boss 7 and similarly-disposed radial arms 5′, 6′, and 6″: Said two members of the frame are rigidly connected, as by bolts 8, passing through holes provided in the overlapping portions of inwardly-directed flanges 9 and 10 of the several pairs of arms, and provision is made by apertured ears 11 to receive the fastening-bolts for securing the framework in place. Of the aforesaid arms one of those which extend downwardly from either of the central bosses, as 6″, is made hollow (see Fig. 2) and communicates with a cavity 12 within the enlarged lower extremity 12′ of the arm. The other arms 5′ and 6′ have corrugations or ridges 13 upon their inner opposing faces whereby the convolutions of a coil 14 are securely held in place. This coil is formed of a light metallic tube, desirably of copper, which is flattened before being coiled, and presents a large extent of heat-radiating surface. The inner end of the coil is communicatively connected to a pipe 15, extending axially into or through said central bosses, while the other end of the coil is connected to a longitudinal pipe 16, extending into the apertured enlarged ends of the lower arms of the frame.

The pipes 15 and 16 are each closed at one end, and their opposite protruding ends are screw-threaded to provide means whereby they may be respectively coupled with the delivery and supply pipe ends, or vice versa, of the motor-cylinder water-circulating coil or passage-way for the conveyance of the cooling-water.

As indicated, the coil 14 is positioned between the members of the frame, and where the several spiral turns cross the hollow arm 6″ they communicate therewith through perforations 17 in both the coil and the arm. By brazing or soldering the contacting parts of the coil and hollow arm displacement of the registering perforations is obviated.

18 is a drain-cock whereby the water may be withdrawn from the apparatus.

The operation of the invention may be briefly described as follows: The cooling-water for the motor after becoming heated in the latter is conducted to and from the terminals of the cooling-coil of my apparatus, and in passing therethrough has its temperature reduced through contact with the cooler walls of the coil, and thence returns to the motor-cylinder to absorb more heat therefrom, and so on. The water is caused to circulate through the cooling system by the agency of a circulating-pump, as common.

Having described my invention, what I claim is—

1. In apparatus of the class described, the combination with a frame, of a tubular coil adapted to have its ends respectively connected with the inlet and discharge ends of a water-cooling conduit of an engine, said coil being provided with a series of apertures whereby connection is had with a draw-off hollow member and said member.

2. In apparatus of the class described, the combination with a frame consisting of two members each comprised of a plurality of arms radiating from centrally-apertured bosses, one of said arms being made hollow and provided with a plurality of spaced perforations, of a tubular coil intermediate said frame members seated in grooves of the arms and rigidly connected to said hollow arm, said coil being provided with a plurality of perforations corresponding with those of said hollow arm, and pipe members connected to the ends of the coil.

3. In apparatus of the class described, the combination with a frame with radial arms terminating in oppositely-directed overlapping flanges, means to secure each pair of said flanges together, one of said arms being hollow and provided with a pluralityof spaced apertures, while the other arms have inner corrugated faces, of a tubular coil interposed between said frame members and provided with a plurality of apertures spaced to register with those of the arm, and a pipe member connected to each end of the coil.

4. In apparatus of the class described, the combination with a frame formed of two members which are each comprised of an apertured boss with radial arms extending therefrom and terminating in oppositely-directed overlapping flanges, means to secure each pair of said flanges together, one of said arms being hollow and provided with a plurality of spaced apertures, while the other arms have inner corrugated faces, and a draw-off cock for said hollow arm, of a tubular coil interposed between said frame members and rigidly connected to said hollow arm, said coil being provided with a plurality of apertures spaced to register with those of the arm, and a pipe member connected to each end of the coil and protruding outwardly from the frame.

5. In apparatus of the class described, a coil connected at each end with a pipe, said pipe, and a supporting-frame consisting of two connected members, one of said members being provided with a hollow portion having apertures therein which register with apertures provided in said coil.

In testimony whereof I affix my signature in presence of two witnesses.

FRANK A. BRYANT.

Witnesses:
PIERRE BARNES,
P. D. HIBNER.