

J. J. BARES.
RADIATOR FOR AUTOMOBILES.
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1,361,807.

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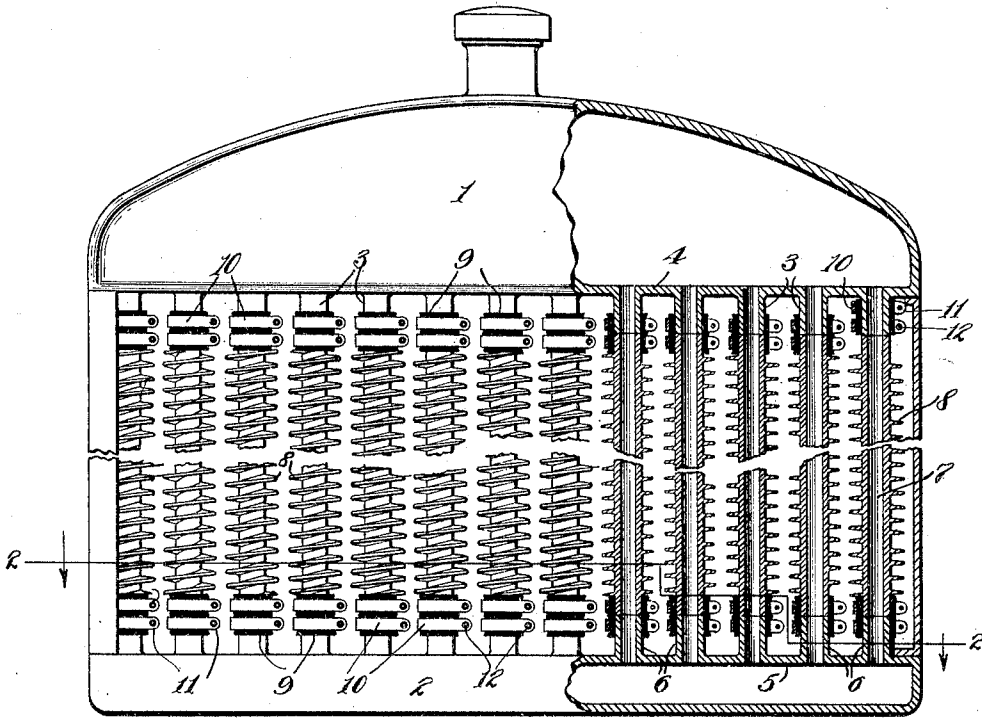


Fig. 1.

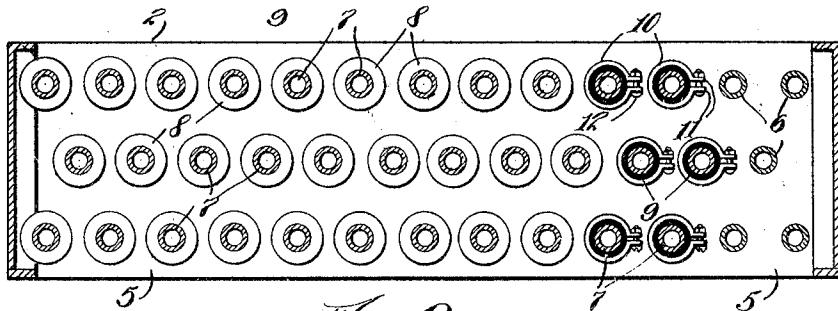


Fig. 2.

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UNITED STATES PATENT OFFICE.

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To all whom it may concern:

Be it known that I, JOHN J. BARES, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented a certain new and useful Improvement in Radiators for Automobiles, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings.

10 This invention relates to radiators such as are used for automobiles and has for its object to provide a construction which will permit the radiator tubes to be conveniently assembled and disassembled, with a minimum amount of labor. A further object of the invention is so to connect the radiator tubes with their tanks or headers as will reduce to a minimum the vibrations or jars imparted to the tubes, and particularly to the joints between the said tubes and the said tanks or headers, thereby prolonging the lives of the tubes. A further object of the invention is to provide a radiator of this type which will permit the employment of integral or one-piece tanks with such tubes. I accomplish the foregoing objects in and through the construction and arrangement of parts shown in the drawings forming part hereof, wherein Figure 1 represents a view, partly in front elevation and partly in section, of an automobile radiator embodying my invention; and Fig. 2 a sectional view corresponding substantially to the line 2—2 of Fig. 1.

35 Describing by reference characters the various parts illustrated herein, 1 denotes the upper tank or header and 2 the lower tank or header of a radiator such as is employed with automobiles. The upper tank is provided with a suitable number of nipples 3 projecting downwardly from the bottom plate 4 thereof. These nipples may be formed with the tank, as the said tank may be cast in one piece with the nipples.

45 The upper wall 5 of the lower tank is provided with nipples 6, corresponding in position and preferably in dimensions with the nipples 3. The nipples 6 may also be formed with the tank in the same manner as specified for the upper tank, thus enabling each tank to be made of one piece of metal. The bodies of the radiator tubes 7 may be of any approved construction and be provided with heat equalizing projections 8 of any approved type, the projections being shown as spiral flanges. Each tube will be secured

in place by means of a sleeve 9 of yielding material, such as rubber. Each of these sleeves is provided with a pair of clips 10, preferably of spring metal, each clip being shown as a split ring having a pair of lugs 11, which may be drawn together by means of a bolt 12.

The nipples will be of such length as to enable the sleeves and their attached clips to be slid upon the same, the lower ends of the upper sleeves and the upper ends of the lower sleeves in this position clearing the corresponding ends of the radiator tubes. When a tube is inserted between the ends of a pair of opposed nipples 3 and 6, the sleeves will be slid over the ends of the tube and the bolts 12 tightened. The position of one of the sleeves before the insertion of the radiator tube is shown at the right hand of Fig. 1. When the sleeves are positioned upon the nipples and the adjacent ends of the tubes, the portions of the sleeves upon the tubes are preferably in substantial contact with the heat diffusing projections, thus enabling me to provide each tube with such projection or projections extending substantially the full length thereof, whereby the employment of my invention will not materially detract from the radiating areas afforded by such projections.

The employment of sleeves of yielding material as a means for connecting the radiator tubes to the nipples provides a shock-absorbing connection between each tank and the radiator tubes, whereby the bodies of the tubes are protected against vibrations and jars and the tendency to breakage and leakage of the tubes is reduced to a minimum. Furthermore, the manner of constructing the tanks and connecting the tubes thereto enables me to make the tanks of one continuous piece of metal, thus dispensing with joints and the consequent liability of leakage in the tanks.

When it is desired to renew or replace a tube, it is necessary only to slacken up the bolts 12, slip the sleeves 9, together with the clips, along their respective nipples 3 and 6, and withdraw the tube. The old tube may be repaired and replaced or a new tube substituted therefor by merely slipping the sleeves over the ends of said tube and setting up on the bolts 12.

Having thus described my invention, what I claim is:—

1. A radiator comprising a pair of op-

posed tanks or headers each having nipples projecting therefrom toward the other, radiator tubes interposed between said nipples, and flexible means detachably connecting
5 said tubes to said nipples.

2. In a radiator, the combination of a pair of opposed tanks or headers each having nipples projecting toward the other, radiator tubes interposed between said nipples,
10 sleeves of yielding material applied to said nipples and the ends of the tubes adjacent thereto, and means for clamping said sleeves to said nipples and tubes.

3. In a radiator, the combination of a pair
15 of opposed tanks or headers each having nipples projecting toward the other, radiator tubes interposed between said nipples, sleeves of yielding material applied to said nipples and the ends of the tubes adjacent
20 thereto, and a pair of clips coöperating with each sleeve for compressing the same

against a nipple and against the portion of a tube adjacent thereto.

4. In a radiator, the combination of a pair of opposed tanks or headers each having
25 nipples projecting toward the other, tubes interposed between said nipples, a sleeve of yielding material adapted to surround each nipple and the portion of a tube adjacent thereto, and a pair of clips on each sleeve
30 adapted respectively to clamp the sleeve to a nipple and the end of a tube adjacent thereto, each nipple being at least as long as the sleeve coöperating therewith whereby
35 the sleeves may be assembled upon the nipples, the tubes inserted between the nipples, and the sleeves thereafter slipped over the ends of the tubes and secured in place by said clips.

In testimony whereof, I hereunto affix my
40 signature.

JOHN J. BARES.