

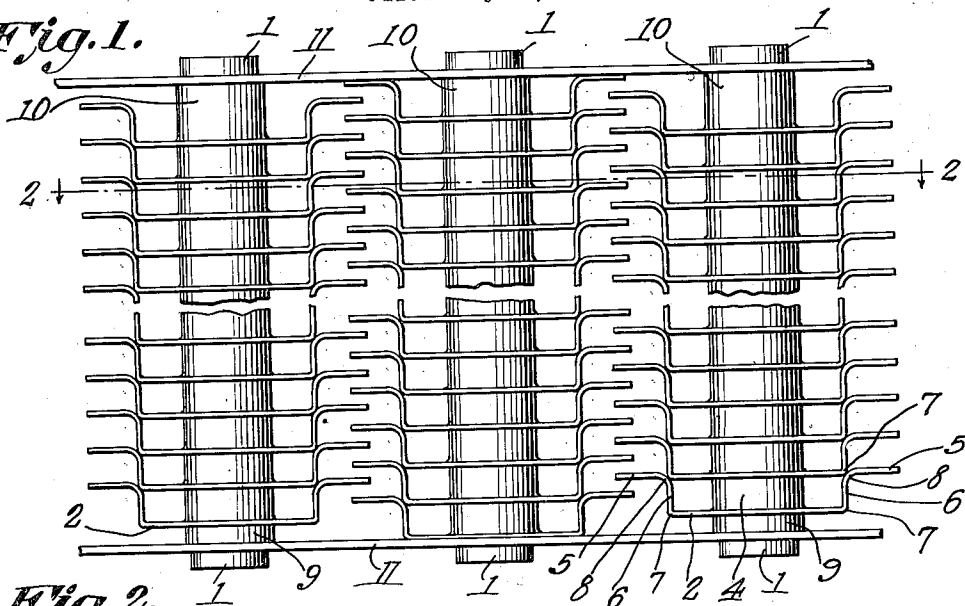
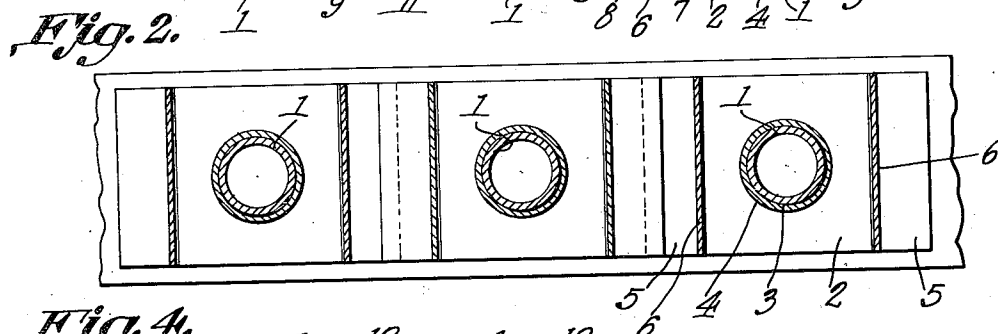
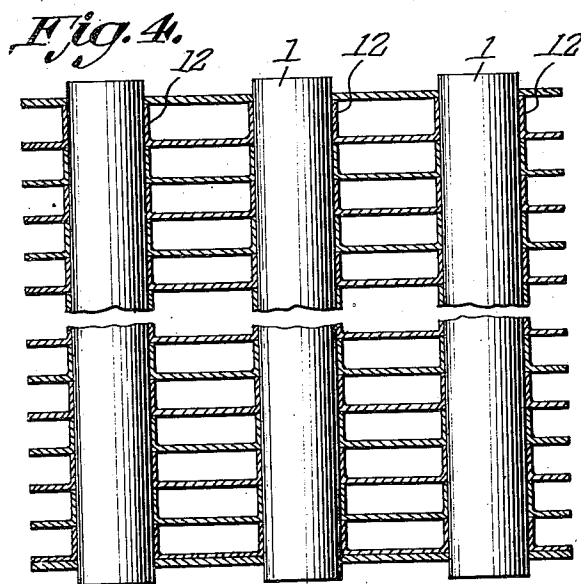
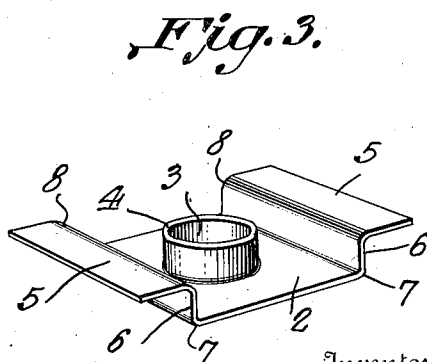
Jan. 6, 1925.

1,521,880

T. GUARINO

RADIATOR FOR MOTOR VEHICLES

Filed July 16^o, 1921



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UNITED STATES PATENT OFFICE.

TOMMASO GUARINO, OF NEW HAVEN, CONNECTICUT.

RADIATOR FOR MOTOR VEHICLES.

Application filed July 16, 1921. Serial No. 485,188.

To all whom it may concern:

Be it known that I, TOMMASO GUARINO, a citizen of Italy, and a subject of the King of Italy, residing at New Haven, in the county of New Haven and State of Connecticut, have invented certain new and useful Improvements in Radiators for Motor Vehicles, of which the following is a specification.

This invention relates to improvements in radiators for motor vehicles, and comprises a type which may be known as a sectional radiator.

The primary object of this invention is to provide a radiator for motor vehicles such that should one or more sections become injured so as to cease functioning, said injured sections may easily be removed and replaced by new sections without danger of injuring the remaining sections of the radiator.

A further object of this invention is to provide a radiator for motor vehicles which is exceptionally simple in construction, extremely durable in operation and easy and inexpensive to manufacture.

Other objects and advantages of this invention will be apparent to those skilled in the art to which it appertains when taken in connection with the following description and the accompanying drawings; it being understood however, that various changes in the form and proportions of the device may be made within the scope of the appended claims without departing from the spirit of the invention.

In the drawings forming a part of this specification in which similar characters of reference denote similar parts in the several views—

Figure 1 is a vertical view of a portion of a radiator constructed in accordance with the present invention,

Fig. 2 is a view taken on the line 2—2, Fig. 1,

Fig. 3 is a perspective view of one of the fins forming a part of the invention, and

Fig. 4 is a view, partly in section, of a modification of the device.

Referring now, more particularly to the drawings, the numeral 1 denotes water tubes forming part of the completed radiator which are secured in any suitable manner into the usual headers (not shown).

Figure 3 discloses a perspective view of the radiating plates or fins, a plurality of

which are removably secured to each water tube in a superposed manner. Each fin comprises a plate 2, centrally perforated at 3, surrounding which perforation is a wall of "bur" 4. Two opposite edges of plate 2 are formed with angular flanges composed of portions 5 and 6; the portion 6 being arranged at substantially right angles to plate 2, and the portion 5 being substantially parallel to the plane of plate 2.

The fins are superposed, one upon another on the water tubes 1 through the medium of the perforations 3 in each fin, and, as can be clearly seen in Fig. 1, mutually support each other; the edges 7 of each fin resting upon, and being supported by, the edge 8 of flange 5 of the fin immediately below. As will be seen, the fins on each water tube are really nested one within the other. The bur 4 of each fin serves to support the superposed fin, the plate 2 of said superposed fin, resting upon said bur.

In the assembling of the radiator, the fins on one tube are preferably arranged in staggered relation with respect to those of the adjacent tube. Several means of accomplishing this may be resorted to, but it has been found perfectly practical to employ a spacing ring 9 at the bottom of alternate tubes. At the top of the tubes employing this spacing ring, a fin having a bur 10, greater in height than bur 4 is preferably employed, but, if desired, another spacing ring 9 may be used.

For holding the several parts of the radiator in fixed position, retaining elements 11 are provided which are perforated to receive the ends of water tubes 1. These retaining elements 11 may be soldered to the water tubes if desired, to ensure additional rigidity of the entire radiator.

The design of radiator illustrated in Fig. 1 discloses a single series of water tubes, and consequently a single series of fins. It is perfectly practical to provide a plurality of tubes in each series, same being illustrated in Fig. 4, wherein the water tubes are arranged in sets of "threes". The fins, therefore, will be consequently larger and each provided with three perforations and three burs 12. The function of the fins and the mounting thereof, will be identical with those disclosed in Fig. 1, so no further description thereof will be necessary.

Having thus described my invention, what I claim as new and desire to secure

by Letters Patent of the United States, is—

1. A radiator comprising a plurality of water tubes, a plurality of fins secured to
5 each of said water tubes, each of said fins being provided with angular flanges and a bur for supporting a superposed fin, means on alternate water tubes for position-
10 ing the fins of one water tube in staggered relation with respect to the fins on the adjacent tube, and retaining elements secured to said water tubes.

2. A radiator comprising a plurality of water tubes, a plurality of fins on each of
15 said water tubes, means on said fins for

supporting the same in superposed relation, means on said water tubes for retaining the fins thereof in staggered relation with respect to the fins of the adjacent water tube, and retaining elements for said
20 fins secured to said water tubes.

3. A radiator comprising a plurality of water tubes and a plurality of fins removably secured to said water tubes, said fins having upwardly and outwardly extending
25 flanges whereby said fins are supported in nested superposed position.

In testimony whereof, I hereby affix my signature.

TOMMASO GUARINO.