T. H. HARRIS.

RADIATOR.

APPLICATION FILED JULY 25, 1913.

1,095,570.

Patented May 5, 1914.

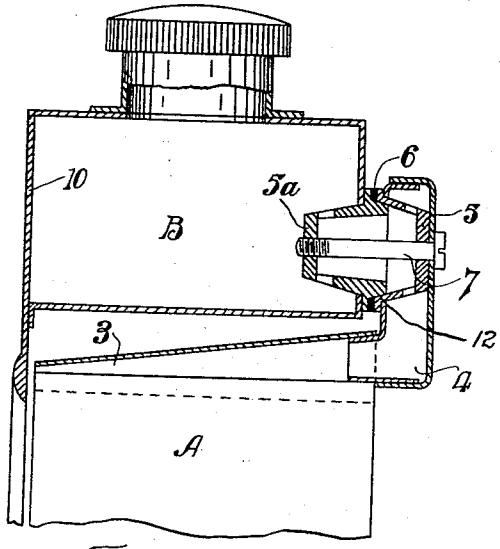


Fig. 1.

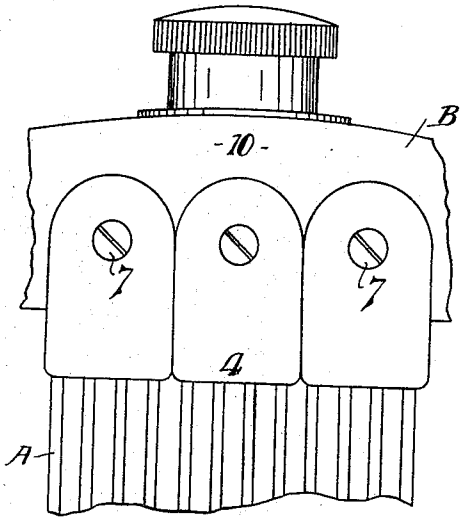


Fig. 2.

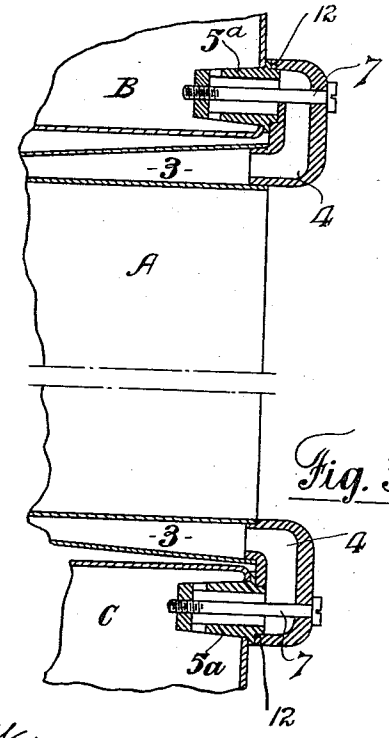


Fig. 3.

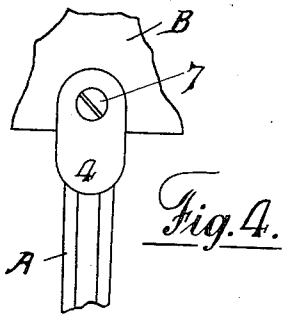
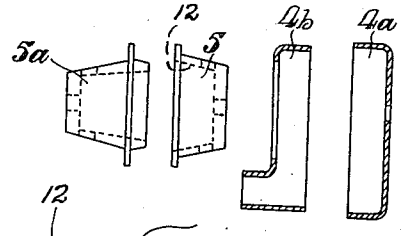


Fig. 4.



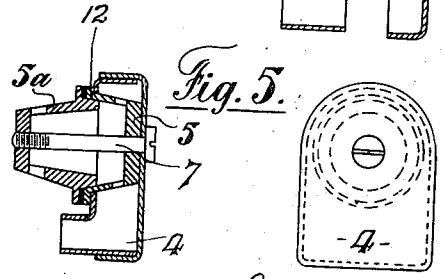


Fig. 5.

Witnesses:

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UNITED STATES PATENT OFFICE.

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RADIATOR.

1,095,570. Specification of Letters Patent. Patented May 5, 1914.

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To all whom it may concern:

Be it known that I, THOMAS HENRY HARRIS, residing at Birmingham, England, have invented certain new and useful Improvements in Radiators; 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.

This invention relates to improvements in connection with radiators, condensers, coolers and the like apparatus, and has more specific reference to the attachments of the radiator elements to tanks or vessels at top and bottom. These radiator elements, hereinafter referred to as "elements," are cooling elements when the radiator is used to decrease the temperature, and are heating elements when the radiator is used to increase the temperature.

It has been found necessary to have elements constituting the cooling part of radiators or condensers arranged so as to be capable of detachment and replacement and to have elements individually independent of each other, so as to facilitate the building up of radiators according to the varying types of models used.

In constructing a radiator according to this invention I have been endeavoring to meet the requirements of motor car manufacturers, who prefer to have patterns differing from their competitors, and it is with the object of providing means for joining elements of various patterns to the radiator tanks in a manner that allows said elements to be detachable from the upper and lower tanks, that I have made the following improvements. In forming or grouping the elements the upper and lower ends are provided with a hood or cross pipe, which may be formed out of the element itself, or from separate pieces of metal soldered or brazed to the side thereof.

I will now proceed to describe this invention more particularly by reference to the accompanying drawings in which:—

Figure 1 is a part sectional elevation of the upper part of an element, showing its connection with the tank. Fig. 2 is a back view of Fig. 1. Fig. 3 shows in section a modified form of connector employed for securing communication between the elements and top and bottom tanks. Fig. 4 is a back elevation of Fig. 3. Fig. 5 shows details of the construction illustrated in Fig. 1.

In the drawings, the element A is the medium for the circulation of water between the upper tank B and lower tank C. The element A is constructed in the usual manner from sheet metal. In forming the elements, the upper and lower ends of same may be slightly bell-mouthed, and joined singly or in groups to a header, hood or cross pipe 3. Into this header or hood, whose function is that of a distributing pipe, an elbow 4 is soldered or otherwise secured at both top and bottom. Said elbow is preferably formed by stamping and in two parts 4^a and 4^b as shown in Fig. 5. Thus each elbow may carry one or two elements as shown in Fig. 4, or three or more elements as shown in Fig. 2. Within such elbows are secured perforated thimbles 5, engaging suitably spaced corresponding thimbles or cones 5^a, secured within the tanks B and C, as shown in Figs. 1 and 3, The cones or junction-pieces 5^a fit tightly in holes in the tanks and are soldered to them or otherwise permanently secured to them. The thimbles 5 are removable and fit over the outer end portions of the cones, and packing-washers 6 are interposed between the thimbles and the cones. Screw-bolts 7 are passed through the elbow-pipes and thimbles, and are screwed into the bottoms of the cones or junction-pieces. The heads of the bolts 7 bear against the elbow-pipes so that the thimbles 5 are drawn tightly against the cones and the packing-washers. The radiator elements A are tubular and of any approved construction. When the radiator is used on a motor car they are cooling elements, and when the radiator is used to heat a dwelling they are heating elements. In Fig. 3, modifications of these connectors are shown. In Fig. 3, no thimble *per se* is employed within the elbow 4, the latter, being in one piece, is coned to engage a corresponding part of the thimble 5^a. The conical portions which engage with the junction pieces 5^a are marked 12 in all places where shown in the drawings.

In Fig. 5, details of construction are shown, the elbow 4, being stamped out of sheet metal in two parts 4^a and 4^b, these parts being soldered together by dipping. By these means the elements are secured to the tanks for water circulation.

The operation is as follows: The elements A attached to elbows 4 are secured to the top and bottom tanks B and C, by means of

screws 7 and are thus easily detachable for renewal or other purposes. By these means an effective joint is obtained for fitting any type of radiator body 10 with a plurality of detachable and replaceable elements.

I claim:—

1. In a radiator, the combination, with a tank, and a hollow junction-piece secured thereto and communicating therewith; of a removable radiator element provided with a hood, an elbow-pipe secured to the said hood and provided with a conical portion which communicates with the radiator element and engages with the outer end portion of the junction-piece, and a fastening bolt passing through the elbow-pipe and its thimble portion and screwed into the end of the junction-piece.

2. In a radiator, the combination, with a tank, and a hollow junction-piece secured thereto and communicating therewith; of a removable radiator element provided with a hood, an elbow-pipe formed of two sections which are secured together and connected to the said hood, a hollow thimble engaging with and communicating with the elbow-pipe and provided with a conical portion which engages with the outer end portion of the junction-piece, and a fastening bolt passing through the elbow-pipe and the thimble and screwed into the end of the junction-piece.

In testimony whereof I have affixed my signature, in presence of two witnesses.

THOMAS HENRY HARRIS.

Witnesses:

MAURICE WATTS HUMMING,

ERNEST PARKER.