

I. GREENFIELD.
 AUTOMOBILE RADIATOR.
 APPLICATION FILED NOV. 13, 1916.

1,289,737.

Patented Dec. 31, 1918.

Fig. 1.

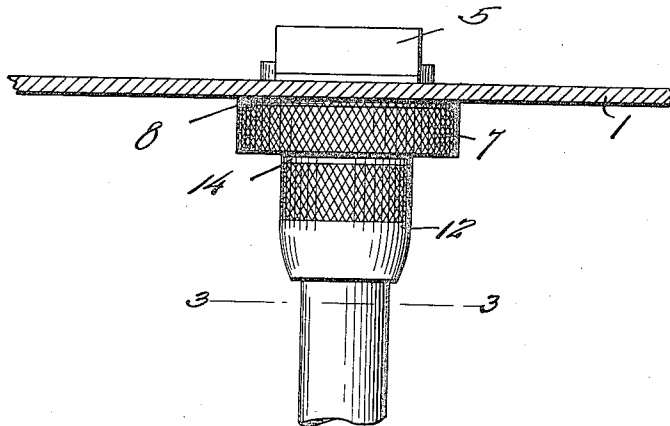


Fig. 2.

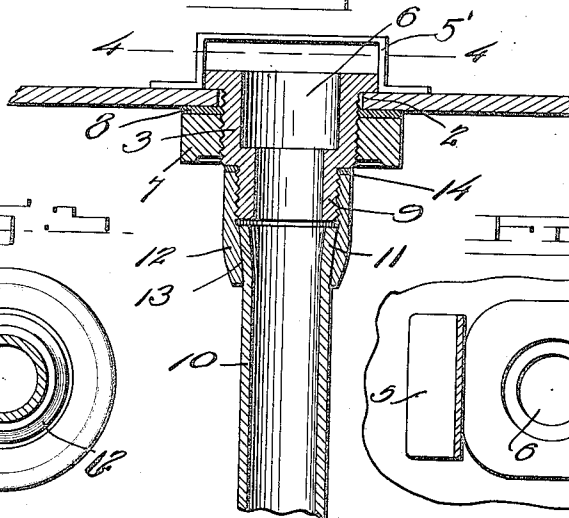


Fig. 3.

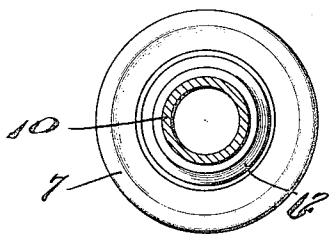
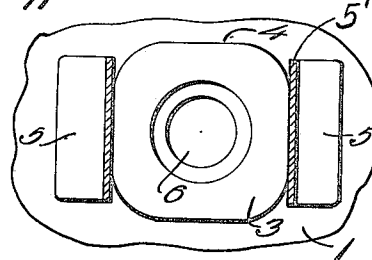


Fig. 4.



WITNESSES

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AUTOMOBILE-RADIATOR.

1,289,737.

Specification of Letters Patent.

Patented Dec. 31, 1918.

Application filed November 13, 1916. Serial No. 131,127.

To all whom it may concern:

Be it known that I, ISADOR GREENFIELD, a citizen of the United States, residing at Providence, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Automobile-Radiators, of which the following is a specification.

This invention relates to an improvement in automobile radiators, and more particularly to means by which the radiator tubes are secured and held in place in their connection with the headers.

An object of my invention is to provide means that will hold the nipple in turning while at the same time retaining the same against displacement and presenting baffle plates over the open ends of the water tubes for deflecting the water downwardly.

A further object is to so arrange the parts that any individual tube of the radiator structure may be removed at any time without disturbing the remaining tubes and to provide means which performs the dual function of holding portions of the securing means against displacement and also of directing the course taken by the water as the same is circulated in the header in its passage to and from the radiator tube.

With the above and other objects in view, my invention consists in certain novel features of construction and combinations of parts which will be hereinafter set forth in connection with the drawings and then more particularly pointed out in the claims.

In the drawings:—

Figure 1 is a sectional view of a fragment of a radiator with the tube connection shown in its securing mounting.

Fig. 2 is a vertical sectional view through the structure as disclosed in Fig. 1.

Fig. 3 is a transverse sectional view taken on the line 3—3 of Fig. 1.

Fig. 4 is a sectional view on the line 4—4 of Fig. 2.

In the present illustration in the drawings I have shown only fragmentary portions of a radiator and the connection as applied to only a single tube, although it will of course

be understood that the radiator as completed will be constructed to have the usual headers and the usual number of water circulation tubes, and here attention might be called to the fact that the tubes might be connected at one end with one of the headers in the usual manner, and the connection as shown might be applied to the remaining end of the water circulating tube to secure the same in the mounting with the header, although it might here be stated that it is preferable that both ends of each of the radiator tubes be connected with the headers by the use of the device of my invention, as when the tubes are so mounted, they may be tightened should any leakage develop, and also if one of the tubes should become injured or should burst, the same could be readily removed and a new and perfect tube inserted in place thereof.

The wall 1 of the header is provided with the opening 2, or it might be said that this wall is provided with a plurality of openings as the various tubes are to be connected therethrough. However, as all of the connections are identical on the several tubes, it is deemed necessary here to illustrate and describe only one tube in its fitted mounting with respect to the header. The headed nipple 3, which has the head thereof provided with the flat sides 4 is made of a diameter that it may be fitted through the opening 2 and the head will hold the nipple against being carried entirely through the opening and will at the same time form a flange extending over onto the metal of the wall 1 of the header so that a broad bearing surface is obtained. The strap metal guards 5 are formed from a strip of metal which has its end bent downwardly to provide vertical walls 5' and are then bent at right angles to provide means whereby the guards may be soldered or otherwise secured to the wall 1. It will of course be understood that the nipples 3 are inserted through the openings 2 from the inside of the header and the strap metal guards 5 are secured over the heads of the nipples so that the vertical walls 5' engage with the flat sides 4 thereof

and hold the nipples against turning while at the same time retaining the same against displacement and presenting baffle plates over the open inner ends of the bore 6 formed therethrough.

The outer end of the nipple 3 is reduced in size from the diameter of the main body of the same and both the main body and this reduced portion are provided with the external screw threads. A clamp nut 7 is provided with internal screw threads to mesh with the threads of the body portion of the nipple 3, and a washer 8 of a suitable material is placed over the nipple against the outer side of the wall 1 of the header after which this nut 7 is fastened in place and thus the nipple is rigidly mounted with the wall of the header and at the same time a liquid tight joint is established by the packing washer. A reduced end 9 of the nipple 3 has the bore 6 somewhat reduced, as it passes therethrough, and it is preferable that the bore of this reduced portion be substantially the inside diameter of the radiator tubes 10. As is better shown in Fig. 2, the end of the radiator tube 10 is flared as indicated at 11, it however being understood that the flare is not widened out sufficiently that the tube in any of its parts has a greater diameter than the diameter of the reduced portion 9 of the nipple. A connecting sleeve 12 has the bore thereof as indicated at 13 constricted at one end, and at the enlarged end the bore is provided with screw threads which will fit the threads of the reduced portion 9 of the nipple. As the connecting sleeve 12 is fitted over the tube 10 and is then screwed onto the reduced portion 9 of the nipple, the tapered portion of the bore 13 thereof will engage with the flared portion 11 of the radiator tube and consequently the radiator tube will be drawn up to fit substantially against the end of the nipple and at the same time a tight joint will be established between the connecting sleeve and the radiator 1. It is perhaps preferable that a washer 14 of a packing material be introduced between the shoulder formed on the nipple 3 and the inner end of the connecting sleeve 12, as this will establish a liquid tight joint at this point and will also act to exert resilient pressure against the connecting sleeve to lock the same against accidental displacement from the tightened position.

The manner of forming the connections and of assembling the parts has been set forth as the description has progressed, and it is not therefore deemed necessary to here indulge in recapitulation; however, it might be pointed out that by providing a connection such as I have set forth, for each of the water circulation tubes of the radiator structure, disposing the retaining members 5 to hold the nipples 3 against displacement, and

then providing tubes which can be flared after the connecting sleeves have been placed thereon, a structure is provided with which it is not necessary to use special apparatus in either assembling or disassembling the parts, and also that with the use of this structure it is possible to tighten the radiator tubes from time to time as they may become loosened through the vibration of the automobile or through any other cause, and here attention might be called to the fact that it is desirable that both the lock nut 7 and the connecting sleeve 12 be knurled on their peripheries so that these parts may be turned and adjusted in place by the use of the fingers where a suitable wrench or pair of pliers is not available.

While I have herein shown and described only one specific form of the structure, it will be understood that a number of variations and modifications might be resorted to in the form and arrangement of the several parts without departing from the spirit and scope of my invention, and hence I do not wish to be limited to the exact disclosure but only to such points as may be set forth in the claims, and while I have illustrated only fragments of the headers and only one of the connecting means, it will be apparent that my invention pertains to the construction of an entire radiator as much as to form an arrangement of one particular connection and joint therefor.

I claim:

1. A radiator water tube connector comprising in combination with a header, a nipple having a head provided with flat sides and adapted to be inserted through an opening in the said header, and a baffle plate secured to said header adapted to prevent movement of the said nipple.

2. A radiator water tube connector comprising in combination with a header having an opening therethrough at the point at which the water tube is to be connected, a nipple provided with a head and having a passage therethrough arranged to be inserted through the opening with the head engaged against the header structure, said nipple provided with external screw threads, means mounted on the nipple to hold the same against displacement from the opening of the header and to establish a water tight joint, a water tube having the end thereof flared, a sleeve having one end thereof constricted mounted over said water tube to be screwed onto the nipple and to thus hold the water tube connected therewith and at the same time establish a water tight connection, and a deflecting member mounted within the header over the head of the nipple to hold said nipple in place and to deflect the water as the same is circulated.

3. A radiator water tube connector com-

prising in combination with a header having an opening therethrough, a nipple having a bore therethrough, being provided with a head and adapted to be inserted in said
5 opening, said nipple having its head provided with flat sides, a baffle plate having its side walls engaging with the flat sides of the nipple head to prevent movement thereof, a

water tube, and means whereby the said tube is connected to the said nipple.

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

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ISADOR GREENFIELD.

Witnesses:

ISAAC S. WOILER,
ABRAHAM BRYNES.