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RESILIENTLY MOUNTED RADIATOR ASSEMBLY

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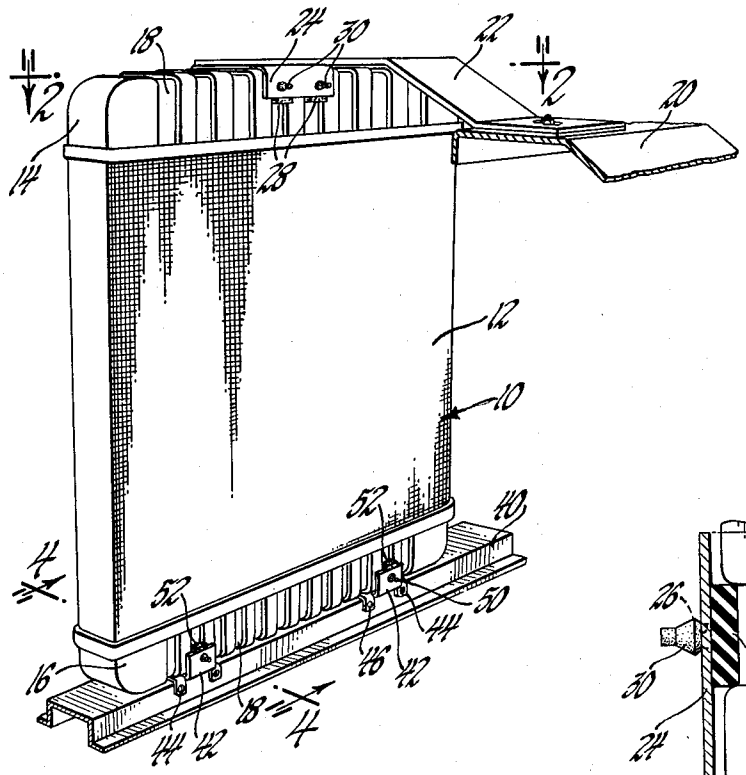


Fig. 1

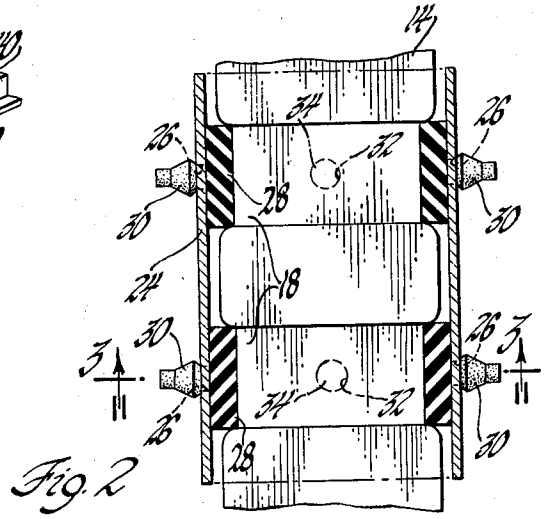


Fig. 2

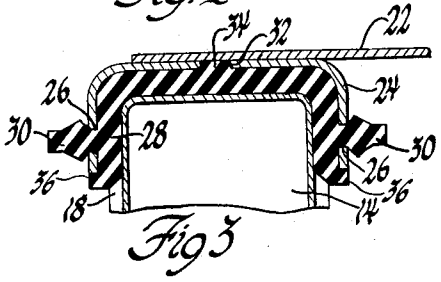


Fig 3

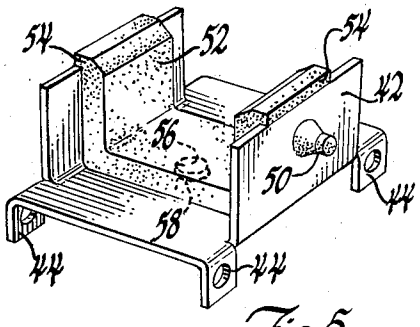


Fig 5

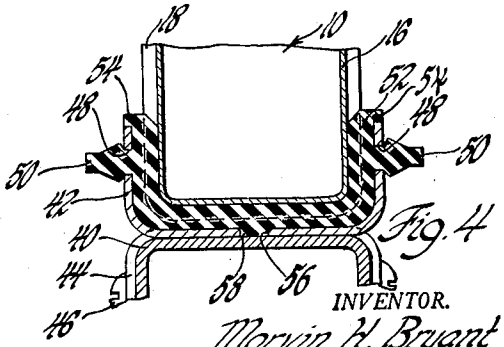


Fig. 4

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# RESILIENTLY MOUNTED RADIATOR ASSEMBLY

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6 Claims. (Cl. 180—68)

This invention relates to radiator assemblies and more particularly to radiator assemblies of the automotive type.

Obviously, in the interest of protecting radiator structures from the jars and vibrations encountered in vehicle use, it would be well to provide a "full floating" radiator; that is, a radiator which is free to move within a limited distance in any direction for the purpose of avoiding to as full an extent as possible the transfer of shocks or vibrations thereto.

Heretofore, it has been conventional either to fix a radiator rigidly in place on a vehicle by means of a suitable frame or resiliently to retain a radiator with relation to a supporting frame by springs acting in one or more directions or by rubber pads acting in cooperation with fixed pivot supports. Springs are generally too bulky and have other characteristics rendering them unsuitable to use if the radiator is to be made completely free of any rigid attachment to the vehicle. Rubber pads have been used heretofore as stated but such use has been accompanied by one or more rigid attachments to supplement the mounting so that shocks are transmitted through those attachments.

An object of the present invention is to provide an improved radiator assembly in which a radiator is resiliently supported or substantially insulated from all rigid support to avoid its subjection to shocks, vibrations and distortions.

A feature of the present invention is a radiator having oppositely disposed header tanks insulated from or retained on fixed supporting means by material which is resilient and distortionable. Another feature of the present invention is a radiator assembly in which at least one of oppositely disposed header tanks is provided with at least one recess into which resilient material extends to prevent lateral motion of the radiator with respect to supporting means to which the resilient material is fixed.

These and other important features of the invention will now be described in detail in the specification and then pointed out more particularly in the appended claims.

In the drawings:

FIGURE 1 is a perspective view of a radiator assembly illustrating one embodiment of the present invention;

FIGURE 2 is a sectional view drawn to an enlarged scale and looking in the direction of the arrows 2—2 of FIGURE 1 to show structural details;

FIGURE 3 is a sectional view looking in the direction of the arrows 3—3 in FIGURE 2;

FIGURE 4 is a sectional view showing details of construction as seen looking in the direction of the arrows 4—4 in FIGURE 1; and

FIGURE 5 is a perspective view of a support arrangement, two of which are illustrated in FIGURE 1 as supporting a radiator.

The drawings show a radiator generally indicated at 10. This radiator includes the usual liquid to air heat exchange core 12 connecting oppositely disposed header tanks 14 and 16. Recesses 18 are formed in three sides of each of the tanks 14 and 16. There are a number of these recesses 18 for each tank although only one recess for only one tank is essential in the use of the invention.

The frame of the vehicle supplies rigid supporting means for the radiator. This supporting means is shown in FIGURE 1 to include a transverse brace 20 which extends parallel with the radiator 10 and a plate 22 fixed



to the brace 20 and supporting a depending U-shaped bracket 24. The flanges of this bracket are turned downwardly so that the bracket is adjacent to the top and both sides of the upper radiator header tank 14. The flanges of the bracket 24 bear four apertures 26.

Two strips 28 of neoprene rubber are interposed between the bracket 24 and the tank 14. Each of these strips extends into a recess 18 and contacts as an insulation the metal of both the header tank and the bracket. The apertures 26 are to accommodate projections 30 which are integral with the strips 28. The bracket 24 is also apertured at 32 to receive a small upwardly directed projection 34 of rubber on each of the rubber strips 28. The ends of the strips 28 bear flanges 36 as shown in FIGURE 3. These flanges abut edges of the bracket.

The support means for the radiator 10 also includes a channel bar 40 extending parallel with the bottom header tank 16 and spaced therefrom. Two brackets 42 are interposed between the support bar 40 and the tank 16. These brackets are similar and each bears four downturned tongues 44 which are fixed to the bar 40 by means of screws 46. Each bracket 42 bears two apertures 48 for accommodating integral projections 50 of a rubber-like strip 52. The latter is similar to each of the strips 28 and also bears flanges 54 abutting the opposite edges of the corresponding upturned bracket 42. The bottom of the bracket 42 is apertured at 56 to receive a rubber projection 58 which is similar to the projection 34 of FIGURE 3.

From the above, it may be seen that the radiator 10 is a "full floating" radiator in that it is completely insulated from the rigid supporting means by the rubber strips. It is also to be appreciated that the rubber strips 28 and 32 are fixed in position with respect to the brackets 24 and 42 and, extending into the recesses of their corresponding header tanks, they prevent lateral motion or motion parallel with the bar 40 of the radiator. This resilient but adequately firm support of the radiator safeguards the latter against damage as proven by extensive tests during which not even paint on the tanks has been disturbed.

It is obvious that one or more areas of support utilizing the resilient pads or strips may be used with either openly exposed header tank of a given radiator. Two localized areas of support could be used with respect to the top tank and only one with the bottom tank or more than two could be used for each tank which is of substantial length compared with the width of each supporting pad or strip. The only other connections to the radiator would be the usual inlet and outlet hose connections which detract nothing from the resiliency of the mounting.

I claim:

1. A radiator assembly including a radiator having oppositely disposed header tanks, each of said tanks being recessed on three sides, rigid support means extending along said three sides of each tank and spaced therefrom, and resilient and distortionable material fixed to and interposed between said support means and the recessed sides of said tanks as substantially the sole retaining means for said radiator on said support means.

2. A radiator assembly including rigid support means, a radiator having oppositely disposed header tanks, recesses in the walls of said tanks, resilient and distortionable material insulating said tanks from said support means and extending into said recesses to prevent relative lateral movement between said radiator and support means, and said material being fixed to said support means.

3. A radiator assembly including rigid support means, a radiator having oppositely disposed header tanks, at least one recess in a wall of at least one of said tanks, resilient and distortionable material insulating said tanks

from said support means and fixed to the latter, and some of said material extending into said recess to prevent lateral movement of said radiator with respect to said support means.

4. A radiator assembly including rigid support means in the form of opposed U-shaped brackets, a radiator having oppositely disposed header tanks retained within said brackets, recesses in the walls of said tanks, resilient and distortionable pads interposed between said tanks and said brackets and extending into said recesses, and said pads having integral portions interlocked with said brackets.

5. A radiator assembly such as set forth in claim 4, one of said tanks being at the top of the radiator and one other at the bottom.

6. A radiator assembly including rigid support means comprising opposite U-shaped brackets, a radiator having



exposed and opposed tanks connected by a heat exchange core, each of said tanks being retained by at least one of said brackets, resilient and distortionable pads interposed between said brackets and said tanks, one of said tanks having a recess in its wall, and one of said pads extending into said recess to prevent lateral movement of said radiator with respect to said support means.

**References Cited** in the file of this patent

UNITED STATES PATENTS

| | | |
|---|---|---|
| 1,411,611 | Erickson | Apr. 4, 1922 |
| 1,593,245 | Cutler | July 20, 1926 |
| 1,834,709 | Ihde | Dec. 1, 1931 |
| 1,840,417 | Seelert | Jan. 12, 1932 |
| 1,860,783 | Muir | May 31, 1932 |
| 2,755,874 | Adloff | July 24, 1956 |