May 27, 1969 R. F. POEHLMAN 3,446,276

VEHICLE RADIATOR CORE ASSEMBLY

Filed July 7, 1967

Fig. 1.

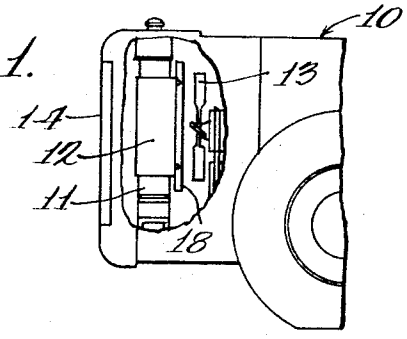


Fig. 2.

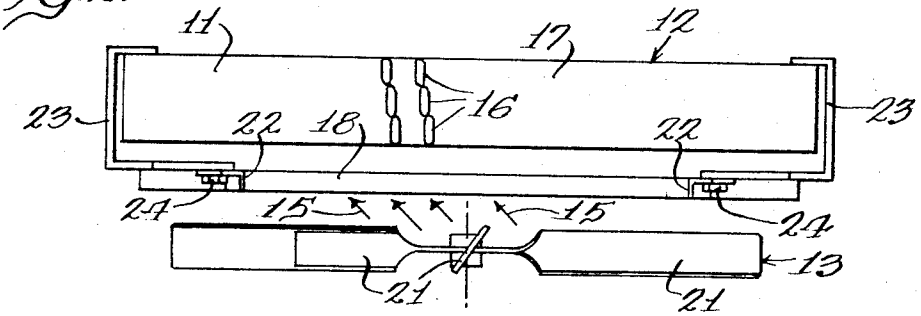
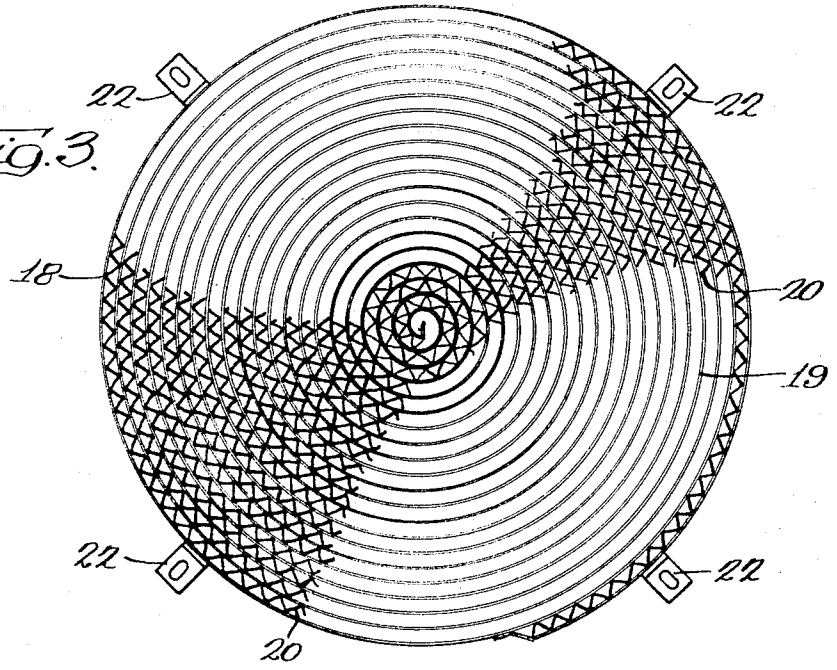


Fig. 3.



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VEHICLE RADIATOR CORE ASSEMBLY

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ABSTRACT OF THE DISCLOSURE

A vehicle radiator core assembly having a plurality of spaced coolant tubes subjected when in use to a cooling air stream that carries entrained solid particles and a core protector mounted on the upstream side of the core with relation to the air stream for intercepting the solid particles and preventing damage to the core and other parts of the radiator in which the protector is a spiral flat metal strip with spaced coils, with the strip being edgewise to the fan and radiator and an air pervious filler member located between adjacent coils in the spirals.

The radiator cores which usually include spaced liquid coolant tubes and interconnecting spaced fins for air cooling the liquid in the tubes are used in heavy duty earth moving equipment and similar equipment employing internal combustion engines and these cores are cooled by rotating fans blowing air through the core customarily from the inner side of the core. When the equipment is used in moving earth, stones and other solid particles are often dropped into the area between the cooling fan and the core and the fan projects these solid materials against the core at great force so that they abrade and wear away the core including tubes, fins and other elements. The protector of this invention provides intercepting protection for these radiator cores so that the force of the projected solids is taken up primarily by the protector before the solids reach the core.

One embodiment of the protector of this invention is illustrated in the accompanying drawings in which:

FIGURE 1 is a fragmentary side elevational view of the front of a tractor type vehicle utilizing a radiator protector embodying the invention and with portions of the figure broken away for clarity of illustration.

FIGURE 2 is a plan view showing a part of the radiator, the protector of this invention and the cooling air fan of the embodiment of FIGURE 1.

FIGURE 3 is a fragmentary front elevational view illustrating the relationship of the radiator core and the protector of this invention.

As shown in the drawings the tractor **10** employs the usual cooling radiator **11** having a core **12** and a rotatable cooling fan **13** located behind the radiator **12** to push cooling air therethrough from back to front. The front of the tractor **10** is provided with the usual air permeable front panel **14**.

Because of the inclination of the blades **21** the cooling air is projected toward the radiator core **12** at an angle as indicated by the arrows **15** in FIGURE 2. Any foreign objects such as sand, dirt and the like dropped into the space between the radiator **11** and the fan **13** are projected

toward the core **12** at the same general angle where, unless intercepted, they could readily damage the vertical tubes **16** and fins **17** of the core.

In order to prevent this damage there is provided between the fan **13** and core **12** a protector **18** comprising a spiral flat metal strip **19** spiraling outwardly from a center as shown in FIGURE 3 with the space between the spaced coils of the spiral provided with a corrugated air pervious filler member **20**.

In the illustrated embodiment the corrugated filler member **20** comprises a metal strip also arranged edgewise to the fan **13** and the core **12** with both the filler strip as well as the spiral strip **19** being thereby arranged at an angle to the direction of projection of the air stream **15** and thus of the fan projected solids. In the illustrated embodiment both the spiral strip **19** and the filler strip **20** are at right angles to the front surface of the core **12** and to the plane of rotation of the fan **13**.

As illustrated most clearly in FIGURE 2, the circular protector **18** has a diameter slightly greater than that of the plane of rotation of the fan blades **21**. Thus the generally square or rectangular core **12** will have side and particularly edge portions projecting beyond the plane of rotation of the fan blades. This provides a structure in which the only area covered by the protector **18** is that necessary to intercept fan propelled solids and does not extend over the full face of the core **12**.

In one embodiment the circular spiral protector **18** was about 23¼ inches in diameter, the width of the spiral strip **19** and thus the thickness of the protector **18** was about ½ inch and the spacing between adjacent coils in the spiral strip **19** was about ½ inch.

In order to retain the protector **18** in position between the core **12** and the fan **13** the protector is mounted on four equally spaced brackets **22** which are mounted on a side frame **23** of the radiator **11** by means of bolts **24**.

As can be seen from the above description the radiator protector of this invention is relatively light in weight because it is constructed primarily of strips of metal in its preferred construction and is only as large as required to intercept fan projected particles so that a large portion of the radiator core is not covered by the protector. Although the metal strips **19** and **20** in the preferred construction are arranged edgewise to the core and the plane of rotation of the fan they are in particle intercepting position because the air and particles projected from the fan are projected at an angle as indicated at **15** in FIGURE 2.

Having described my invention as related to the embodiment shown in the accomypanying drawings, it is my intention that the invention be not limited by any of the details of description, unless otherwise specified, but rather be construed broadly within its spirit and scope as set out in the accompanying claims.

I claim:

1. A vehicle radiator core assembly, comprising: a plurality of spaced coolant tubes subjected when in use to a cooling air stream that carries entrained solid particles, the air stream flowing through said core from an upstream side of the core to a downstream side; and a core protector mounted at said core on the upstream side thereof for intercepting said solid particles comprising a

spiral strip defining spaced coils combined with a flat filler member of sinuous form within said coil in a plane substantially at an angle to the direction of air flow, said filler member being disposed edgewise to said fan and radiator and angled to the direction of air flow to intercept solids.

2. The protector of claim 1 wherein said filler metal strip is arranged in undulations between adjacent coils extending from one said coil to the next.

3. The protector of claim 2 wherein said coil metal strip and said filler metal strip are angled to the direction of projection of said solids.

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