March 24, 1959 W. G. McINNES 2,879,040

COOLING FAN ASSEMBLY FOR AUTO ENGINES AND THE LIKE

Filed March 5, 1956

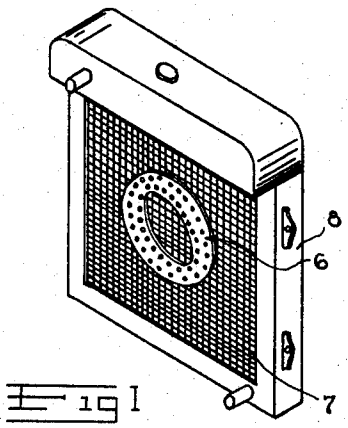


Fig 1

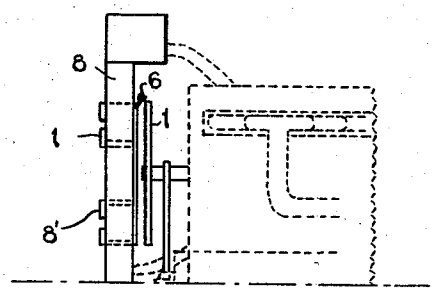


Fig 5

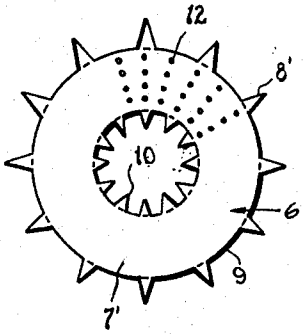


Fig 2

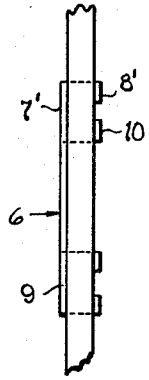


Fig 3

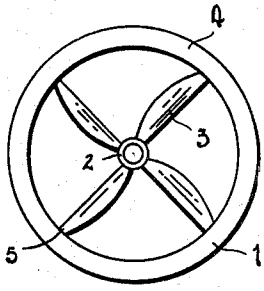


Fig 4

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COOLING FAN ASSEMBLY FOR AUTO ENGINES AND THE LIKE

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2 Claims. (Cl. 257—126)

My invention relates to new and useful improvements in cooling fan assemblies for auto engines, the principal object and essence of my invention being to provide a device of the character herewithin described whereby the tips of the fan blades are prevented from coming into engagement with the radiator core in the event of accidents or the like, thereby preventing said core from damage.

Another object of my invention is to provide a device of the character herewithin described which can readily be attached to existing radiator cores.

Yet another object of my invention is to provide a device of the character herewithin described which may include a novel fan blade construction, inasmuch as the fan blade assembly is provided with a perimetrical ring which, in the event of accidents, may come into interfacial contact with the stationary ring on the radiator core, thereby preventing damage occurring to said radiator core.

A still further object of my invention is to provide a device of the character herewithin described which is simple in construction, economical in manufacture, and otherwise well suited to the purpose for which it is designed.

With the foregoing objects in view, and such other objects and advantages as will become apparent to those skilled in the art to which this invention relates as this specification proceeds, my invention consists essentially in the arrangement and construction of parts all as hereinafter more particularly described, reference being had to the accompanying drawings in which:

Figure 1 is a perspective view of a radiator core showing part of my invention in situ.

Figure 2 is a front elevation of the ring of Figure 1 prior to fitting to the core and showing one method of attaching same.

Figure 3 is a side elevation of Figure 2 taken after attaching the ring of Figure 2 to the core.

Figure 4 is a front elevation of the modified fan blade assembly.

Figure 5 is a side elevation of an engine and radiator core showing the relationship between the fan blade assembly and the ring.

In the drawings like characters of reference indicate corresponding parts in the different figures.

It is well known that a great number of minor accidents cause sufficient deflection of the radiator core to permit the tips of the fan blades to come into contact with the core, thereby damaging same severely.

Under certain circumstances, severe stress on the chassis of the car or truck will also cause this to occur, due primarily to the fact that there is relatively small clearance between the fan blades and the inner surface of the core of the radiator.

My device is designed to overcome this disadvantage, thereby protecting the core from damage in the event of minor accidents or severe stress occurring through the chassis.

Proceeding, therefore, to describe my invention in detail, it will be seen that I have illustrated a modified

form of fan blade construction collectively designated **1**, which includes a conventional hub **2** and a set of blades **3** extending radially therefrom. However, a planar ring **4** is secured to the tip **5** of the fan blades circumferentially, this ring either being secured as by welding or the like or, alternatively, pressed from one piece at the same time as the fan blades are formed.

A further stationary ring collectively designated **6** is adapted to be secured to the inner surface **7** of the conventional radiator core **8**, as clearly illustrated in Figure 1, and on a common axis to the fan blade assembly **1**, as illustrated in Figure 3. One form of attachment of this ring to the radiator core is shown in Figure 2 and takes the form of a planar ring **7'**, having a plurality of prongs **8'** extending radially from the outer edge **9** thereof and a plurality of prongs **10** extending inwardly from the inner edge **11** of the ring. These prongs are bent at right angles to the plane of the disc or ring and are then passed through the interstices of the radiator core **8**, whereupon the ends are bent at right angles, as shown in Figure 3, thus securing the ring firmly to the inner surface of the core.

In order to prevent this ring from cutting down the efficiency of the cooling area, it may be perforated as at **12** to permit air to pass therethrough.

In operation, the modified fan blade assembly **1** is secured to the fan bearing in the conventional manner, whereupon the stationary ring **7'** is secured to the inner surface of the core of the radiator, as hereinbefore described, said ring and said fan blade assembly being on a common axis.

In the event that the core is deflected due to impact or severe strain, the perimetrical ring **4** of the fan blade assembly merely comes into interfacial contact with the stationary ring **7'**, which is preferably made of a relatively soft metal, such as copper. This prevents any damage occurring to the core of the radiator, thereby effecting a considerable saving in repairs, particularly of minor accidents.

Since various modifications can be made in my invention as hereinabove described, and many apparently widely different embodiments of same made within the spirit and scope of the claims without departing from such spirit and scope, it is intended that all matter contained in the accompanying specification shall be interpreted as illustrative only and not in a limiting sense.

What I claim as my invention is:

1. A cooling fan assembly for auto engines and the like comprising in combination with a conventional radiator core having an inner surface adjacent to the associated engine, a set of fan blades, a hub upon which said blades are mounted, a perimetrical ring spanning the tips of said blades circumferentially, and a corresponding stationary ring secured to said inner surface of said radiator core in spaced and parallel relationship from said perimetrical ring and on the same axis, said stationary ring being provided with means for securing same to said radiator core, said means taking the form of a plurality of radially extending prongs around the outer perimetrical edge of said ring and further radially extending prongs around the inner perimetrical edge of said ring, said prongs being adapted to pass through interstices within said radiator core and to be angulated at the distal ends thereof, thereby securing said ring to said core.

2. The device according to claim 1 in which said stationary ring is perforated.

References Cited in the file of this patent

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