Feb. 10, 1931. W. H. RADFORD 1,791,841

RADIATOR SCREEN

Filed May 20, 1929

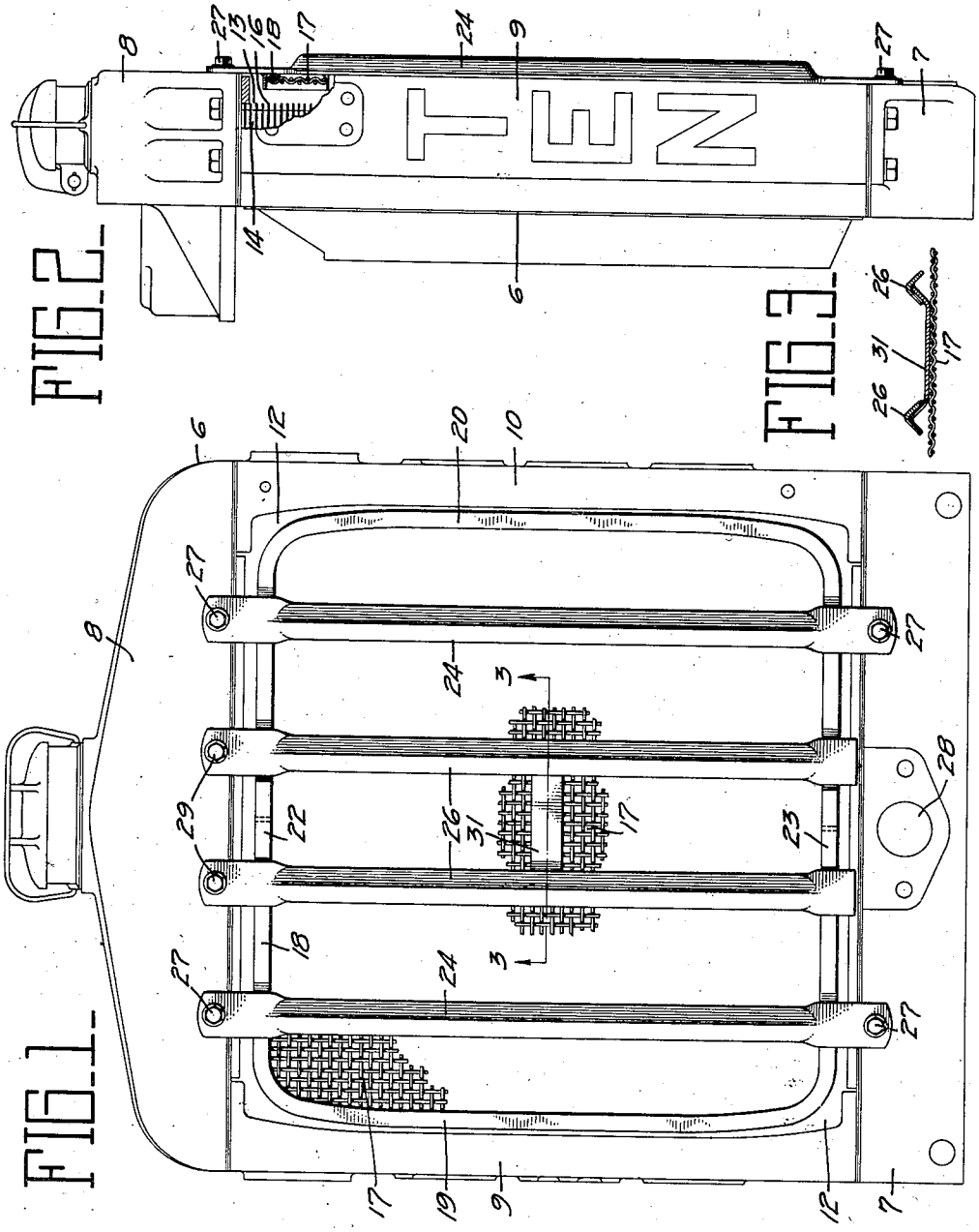


FIG. 1.

FIG. 2.

FIG. 3.

INVENTOR
William H. Radford
BY White, Frost & Fryer
ATTORNEYS

Patented Feb. 10, 1931 1,791,841

UNITED STATES PATENT OFFICE

WILLIAM H. RADFORD, OF SAN LEANDRO, CALIFORNIA, ASSIGNOR TO CATERPILLAR TRACTOR CO., OF SAN LEANDRO, CALIFORNIA, A CORPORATION OF CALIFORNIA

RADIATOR SCREEN

Application filed May 20, 1929. Serial No. 364,657.

My invention relates particularly to guards for protecting the relatively delicate cooling units of radiators applied to vehicles and especially to radiators utilized on tractors.

Due to the severe service in which tractors are customarily used, it is expedient to mount the cooling radiator for the internal combustion engine with which such tractors are equipped, at the extreme forward portion of the tractor, to obtain the greatest possible circulation of cooling air. This construction, however, subjects the radiator to the possibility of considerable mechanical abuse. The core of the radiator is customarily composed of a number of relatively delicate metal parts which are easily damaged by mechanical impact and are further subject to clogging by collections of foreign matter. Tractor service in logging and in orchard work renders the radiator core especially subject to mechanical damage and operation in some localities subjects the interstices of the radiator core not only to clogging by twigs together with small stones and pebbles but also to clogging by numerous insects which are often present. However, care must be taken in providing any protection for the radiator that the efficiency of its operation is not impaired.

Therefore, an object of my invention is to provide a screen for protecting the relatively delicate radiator core.

Another object of my invention is to provide a screen for a radiator with heat conducting connections, whereby the screen assists the radiator in dissipating heat.

Another object of my invention is to provide a means for intercepting the foreign matter which otherwise might clog the radiator core so that cooling efficiency of the radiator is maintained.

Another object of my invention is to provide an intercepting means for a radiator which can easily be cleared of any collected matter.

An additional object of my invention is to provide a radiator screen which can withstand the vibration and rough treatment to which such a device is subjected.

The foregoing and other objects are attained in the embodiment of the invention shown in the drawings, in which,

Figure 1 is a front elevation of a radiator with the radiator screen of my invention attached thereto.

Fig. 2 is a side elevation of the device as shown in Fig. 1, a portion being broken away to disclose the interior construction.

Fig. 3 is a cross-section on line 3—3 of Fig. 1.

In its preferred form the radiator screen of my invention is applied to a radiator including a shell having an opening therein through which the radiator core is exposed and to which is attached a guard including a mesh screen secured to a binding frame in turn fastened to cross bars removably secured to the radiator shell.

In the form of my invention disclosed in the drawings, there is provided a radiator shell 6 usually including a bottom header 7, a top header 8 and side spacers 9 and 10, properly fastened together and encompassing a central opening 12 through which the radiator core 13 is exposed. The radiator core can be of any of the usual constructions and in the present instance includes a number of water tubes 15 surrounded with cooling fins 16.

In accordance with my invention, I preferably superpose a relatively fine mesh screen 17 over the major portion of the opening 12. The mesh of the screen is preferably about the same as the mesh of the radiator core 13 so that any material which might pass the screen 17 can also pass through the radiator core. To afford mechanical rigidity to the screen, to support it, and for other reasons I preferably surround the screen with a frame 18 to which it is welded. This frame is conveniently formed of two metal angles 19 and 20 which are of similar contour and are abutted adjacent the upper central portion and the lower central portion of the radiator.

For securing the two members together I preferably span them with reinforcing bands 22 and 23 to which the opposed ends of the members are spot welded. The screen and frame are welded to a plurality of cross bars 24 entirely spanning the opening 12 and addi-

tional cross bars 26 partially spanning the opening 12.

The cross bars 24 at their opposite extremities overlie the radiator shell 6 and are preferably perforated to receive studs 27. The bars 26, however, at their lower end are terminated to clear a power shaft opening 28 in the lower header 7 while at their upper end are perforated to receive studs 29 securing them to the upper header 8. As an additional support and reinforcement, a strap 31 spans the two central cross members 26 and is spot welded thereto as well as to the central portion of the screen 17.

These cross bars not only serve to support the screen in the radiator opening, to reinforce the screen and frame, and to protect the screen and radiator, but also conduct heat from the headers to the frame and the screen, from the surfaces of which it is dissipated. To this end, the construction of the device, particularly the manner of joining the frame, bars, and the screen together, is of importance; the best result is obtained by making all of the connections molecular unions, as by welding, thus creating joints which will be efficient heat conductors.

With the radiator screen of my invention, the cross-bars 24 and 26 provide means for strongly resisting severe mechanical impact with limbs, large stones and the like, while the screen 17 affords an intercepting means for small rocks, insects and similar foreign materials. While the screen when clear passes ample air for the radiator, when seriously clogged it cuts off the amount of air available thereto. But since the entire radiator screen of my invention can easily be removed by withdrawing the several studs 27 and 29, it can easily and quickly be cleaned and returned to position on the radiator shell.

I claim:

1. A radiator screen comprising a quadrilateral frame, a mesh screen welded to one side of said frame, and a plurality of cross bars welded to the other side of said frame.

2. A radiator screen comprising a quadrilateral frame composed of two similar sections spot welded to securing straps, a mesh screen spot welded to one side of said frame, and a plurality of cross bars spot welded to the other side of each of said sections.

3. A radiator screen comprising a frame, a mesh screen fastened to one side of said frame, and a plurality of supporting and reinforcing cross bars fastened to the other side of said frame.

4. A radiator screen comprising a radiator shell having an opening therein, a mesh screen overlying said opening and disposed in said shell, a frame secured to and bounding said screen, and a plurality of cross bars spanning said opening and secured to said frame and to said shell.

5. A radiator screen comprising a radiator shell having an opening therein, a frame, a mesh screen overlying said opening and disposed in said shell, said screen being secured to one side of said frame, and a plurality of cross bars spanning said opening and secured to the other side of said frame and to said shell.

6. A radiator screen comprising a frame, a mesh screen molecularly united with one side of said frame, and a plurality of cross bars molecularly united with the other side of said frame.

7. A radiator screen comprising a frame, a mesh screen molecularly united with one side of said frame, a plurality of vertical bars molecularly united with the other side of said frame, and a transverse bar molecularly united with said screen and one of said bars.

In testimony whereof, I have hereunto set my hand.

WILLIAM H. RADFORD.