R. C. STEWART.

RADIATOR PROTECTOR.

APPLICATION FILED OCT. 1, 1921.

1,435,345.

Patented Nov. 14, 1922.

2 SHEETS—SHEET 1.

Fig. 1.

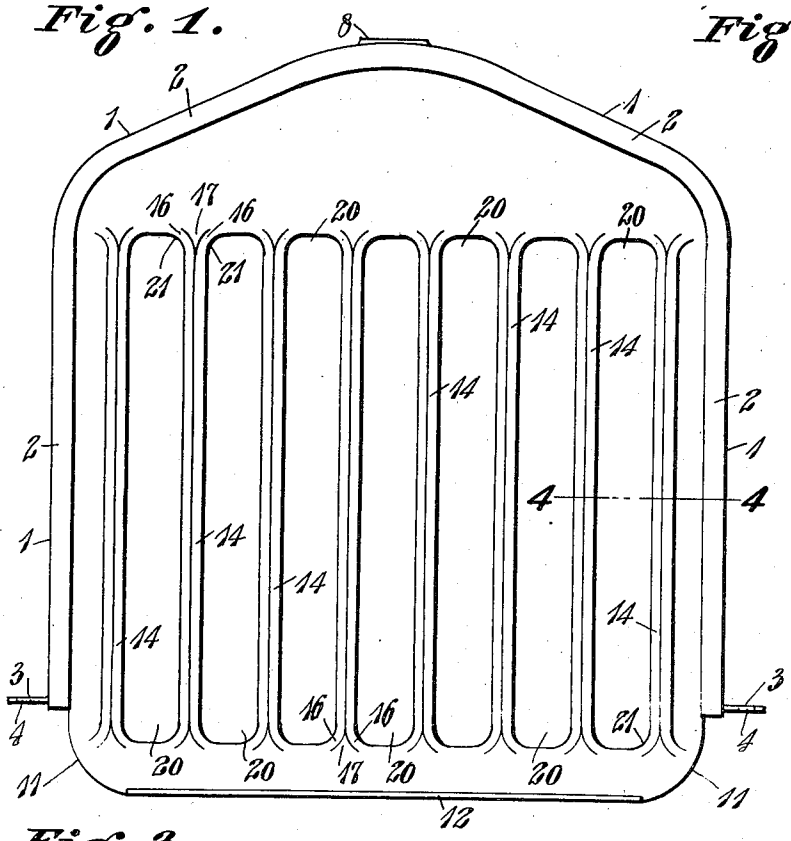


Fig. 2.

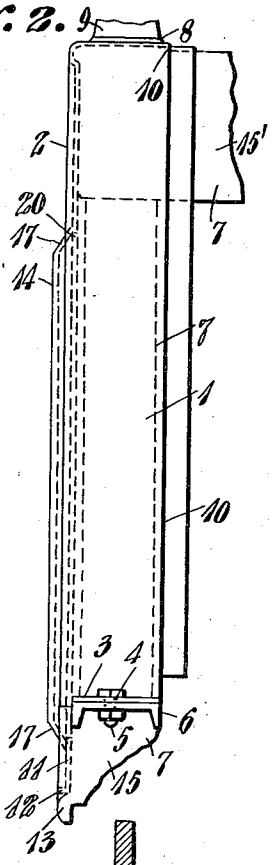


Fig. 3.

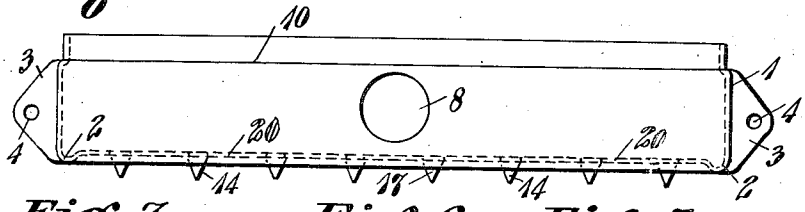


Fig. 7.

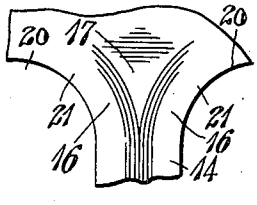


Fig. 6.

Fig. 5.

Fig. 4.

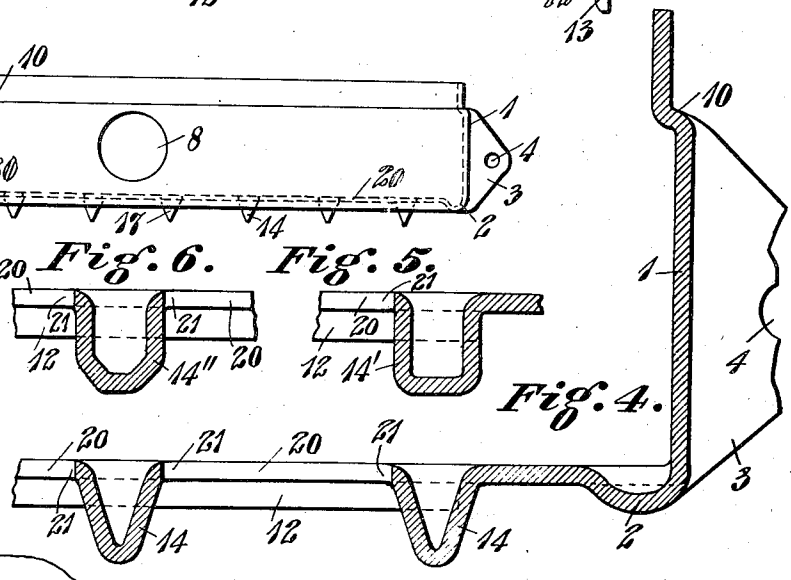
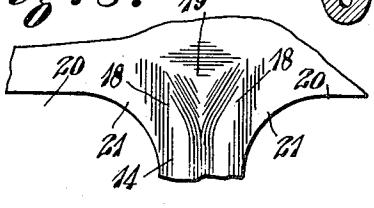


Fig. 8.



INVENTOR

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2 SHEETS—SHEET 2.

Fig. 9.

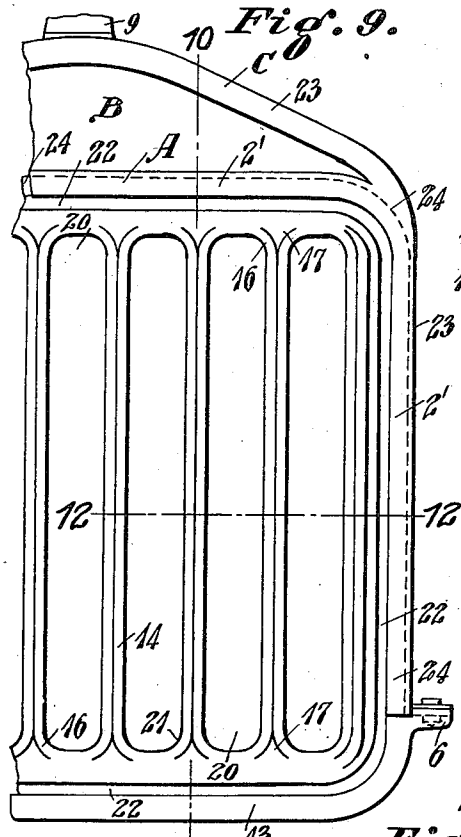


Fig. 10.

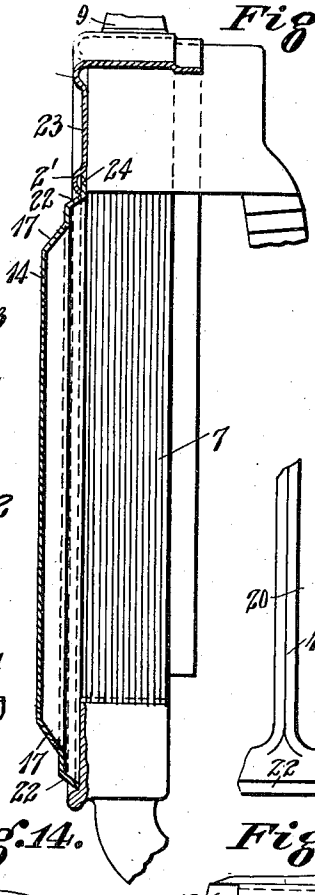


Fig. 11.

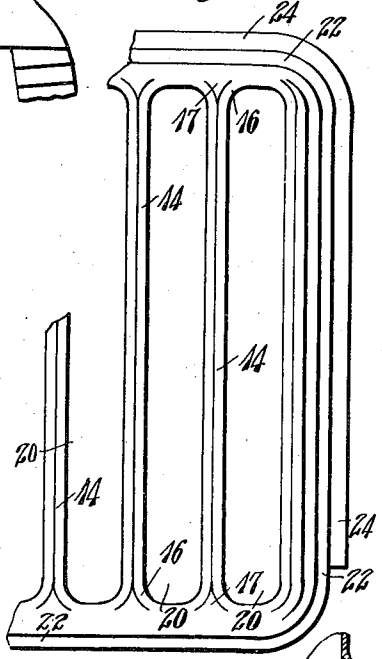


Fig. 12.

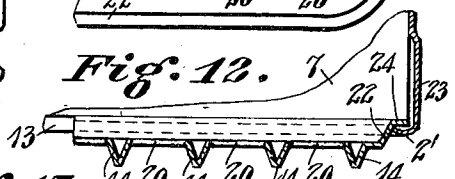


Fig. 13.

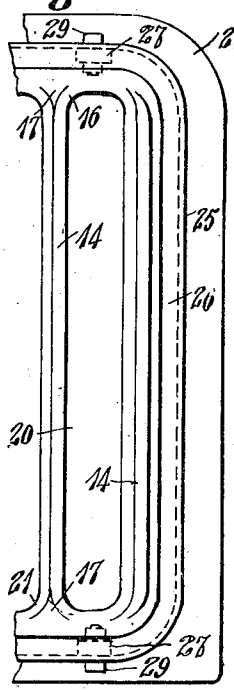


Fig. 14.

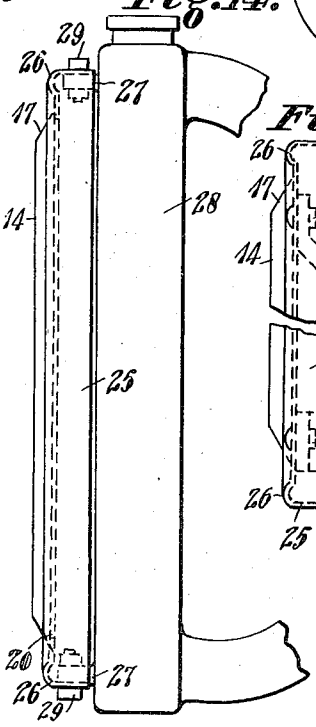


Fig. 15.

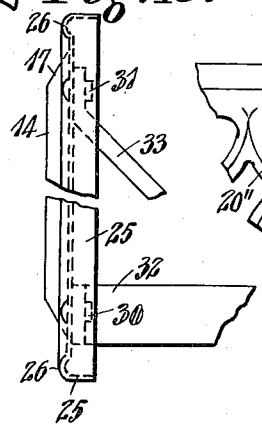
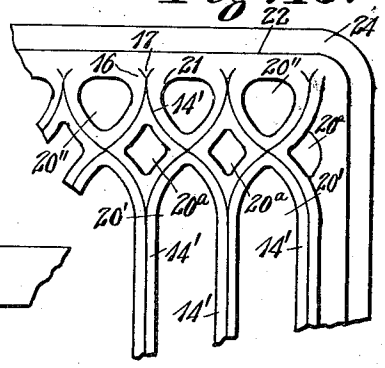


Fig. 16.



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Patented Nov. 14, 1922. 1,435,345

UNITED STATES PATENT OFFICE.

RICHARD C. STEWART, OF COVINGTON, KENTUCKY.

RADIATOR PROTECTOR.

Application filed October 1, 1921. Serial No. 504,634.

To all whom it may concern:

Be it known that I, RICHARD C. STEWART, a citizen of the United States, residing at Covington, in the county of Kenton and State of Kentucky, have invented certain new and useful Improvements in Radiator Protectors, of which the following is a specification.

My invention relates to guards, and more especially to guards or protectors to prevent impacts against the radiators of motor-vehicles. Its object is to simplify the construction of such devices, economizing in their manufacture and making them more durable and neater in appearance. A further object is to add to the ease of attachment of the guard or protector to the structure of the motor-vehicle or other structure including the radiator to be protected, and to make the attachment more secure and stable, not only against impacts which it fends from the radiator but against loosening under vibration incident to the vehicle travel or engine operation. Other objects will appear in the course of the ensuing description.

I attain these objects by the device illustrated, for example, in the accompanying drawings, in which—

Figure 1 is a front elevation of a protector more particularly designed for passenger motor-vehicles of well known construction and displacing part of the radiator enclosure as found in such construction;

Fig. 2 is a side elevation of this protector, part of the radiator-including structure being shown with the guard installed thereon;

Fig. 3 is a top plan view of this protector;

Fig. 4 is an enlarged partial horizontal cross-section on the plane of the line 4—4 of Fig. 1;

Fig. 5 is another similar partial cross-section showing a modified rib;

Fig. 6 is a section similar to Figs. 4 and 5 showing another modified rib;

Fig. 7 is an enlarged partial front elevation showing more clearly the details of the rib junction of Fig. 1;

Fig. 8 is a similar view showing a modified rib junction;

Fig. 9 is a partial front elevation of a protector modified for assemblage with the part mentioned as displaced by the example of Figs. 1 to 4, inclusive, also showing this part of the radiator enclosure in assemblage with the protector;

Fig. 10 is a front-to-rear vertical section on the plane of the line 10—10 of Fig. 9, part of the radiator-including structure being shown with the protector and enclosing part installed thereon;

Fig. 11 is a partial front elevation of this protector detached from the radiator and its enclosure;

Fig. 12 is a partial horizontal cross-section on the plane of the line 12—12 of Fig. 9;

Fig. 13 is a partial front elevation of another modified protector for attachment to radiator-including structures of the kind more usually found on motor-trucks, part of such structure being shown with the protector attached thereto;

Fig. 14 is a side elevation of the example of Fig. 13;

Fig. 15 is a partial side elevation showing a modified attachment of the protector of Figs. 13 and 14, intermediate parts being omitted for lack of space; and

Fig. 16 is a partial front elevation of a protector similar to that of Figs. 9 to 12, inclusive, showing a modified design of the apertures and ribs.

As shown in Figs. 1 to 4, inclusive, a single sheet of material, such as sheet steel, is formed with a continuous flange 1 pressed back from its opposite upright edges and top edges, in the shape of the radiator shell of the vehicle; a forwardly distended bead 2 being formed throughout the length of the junction of this flange 1 with the main part of the sheet, similar to the bead found on the front edge of such a shell. Also, the lower ends of this pressed-back flange 1, at opposite sides, are bent out horizontally, forming feet or lugs 3, and these have openings 4 through which bolts 5 are passed to bolt the protector to the brackets 6 (Fig. 2) found on the radiator-including structure 7, in the way that the shell was bolted thereto. At the middle of the top of this flange 1 is an opening 8 fitting around the radiator neck 9 snugly, as did a similar opening in the radiator shell thus displaced by the protector. The upright and top extreme edge parts of the sheet, here the rear edge parts of the flange 1, are formed to receive snugly the front edge parts of the radiator and engine hood of the vehicle; these edge parts being inset, leaving a continuous shoulder 10 throughout the flange 1 (Figs. 2, 3 and 4) similar to that found along the rear edge of the usual radiator shell thus displaced. The lower part of this protector has rounded corners 11 and a

straight lower edge, preferably provided with a slight forwardly bent flange 12 to strengthen it; this lower part thus being adapted to fit snugly within the bead 13 extending around the lower part of the radiator front as found on the mentioned vehicles, as for instance, the Ford automobile.

The main part of the sheet has a series of upright ribs 14 distended forward, extending about from the lower to the upper tank of the radiator, as from the tank 15 to the tank 15′ in Fig. 2. These ribs 14, at their upper and lower ends, merge into the flat body of the sheet, being gradually less distended from a point some distance from the end, to the end. In this example, these ribs are of V-shaped cross-section, preferably somewhat deeper than wide; and the sides of the V diverge in curve 16 with the intervening flat end part 17, forming the gradually less distended rib end part, as clearly seen in Fig. 7. These sides of the V may continue parallel as at 18 in Fig. 8, with the intervening flat end part 19 accordingly shaped, to form the gradually less distended rib end part. The sheet is cut away between each two adjacent ribs 14, forming apertures 20; the spacing of the ribs 14 being considerably greater than the rib width, and the apertures being the full width of the spacing. However, I prefer that the apertures be round-cornered or otherwise provided with ample extra metal in the corners, as by the fillets 21, strengthening the junctions of the ribs 14 with the main parts of the sheet. The cross-section of the ribs may vary in different or the same guards, as for instance the rectangular-channeled cross-section of the rib 14′ of Fig. 5, or one with diagonal corner parts, making a five-sided cross-section, as the rim 14″ of Fig. 6.

In Figs. 9 to 12, the single sheet is dished forward to a less extent than in the previous example, having only the comparatively slight rearwardly projected flange 22, which preferably is continued entirely around all of the edges. This sheet is of a size and shape that will result in this flange 22 fitting snugly within the before mentioned lower bead 13 of the radiator and within the bead 2′ of the radiator shell 23 found on the radiator. Coextensive with this shell 23, a further flange 24 extends laterally and upwardly from the flange 22, to fit snugly under the radiator-shell bead 2′. In some radiators, the lower bead A and panel B thereabove are absent; in which case my protector would have additional height to fit under the upper bead C (Fig. 9). The ribs and apertures in this example are the same as those of the previous example. To install this protector, the radiator shell 23 is unbolted from its brackets 6 and slid up off of the radiator structure; then the protector is placed against the front of the radiator, and the shell 23 is slid down onto the radiator and again bolted. The shell 23 thus holds the protector rigidly in place by its bead 2′ in front of the protector flange 24, and with the protector engaging downwardly, at its lower edge along the flange 22, with the bottom bead 13 of the radiator, where the flange 24 is absent. The rearwardly projected flange 22 stiffens the edge parts of the protector, thus adding to this rigidity.

The protector of Figs. 13 and 14 is similar to that just described, but as shown, is provided with a rearwardly extended flange 25 joining the main part in a bead 26, entirely around the protector. This flange 25 and bead 26 strengthen the edges of the protector so that it can function properly when supported merely at widely separated locations, as by the lugs 27 formed on the radiator frame 28, over which lugs the upper and lower parts of the flange 25 fit, with bolts 29 through the flange and the respective lugs. Such a radiator structure is more common on motor-trucks and other large heavy motor vehicles; the frame of the radiator usually being a casting without any enclosure such as the shell of the passenger vehicle radiator. The flanges or lugs 27 are not found on such castings as usually made; so that this mounting requires that the radiators be made with these lugs with the attachment of such a protector contemplated. For vehicles of this character already provided with radiators of this kind, the protector of Figs. 13 and 14 can be attached as seen in Fig. 15, where bolts 30 and 31 at the bottom and top, respectively, pass through the margin of the main part next to the side parts of the flange 25; at the bottom into the frame 32 of the vehicle, and at the top into a brace 33 which will be understood to extend back and down and be attached to the frame 32 as is known in the art. In this case, as in the other example, the flange 25 affords the necessary stiffness to the edges of the protector, and the bead 26 adds to this stiffness.

Any of the protectors may have the design of its ribs and apertures varied as may be desired, for appearance. An example of such variation is seen in Fig. 16, where the ribs 14′ curve across each other, with alternate ribs meeting at a single junction with the sheet main part, leaving various apertures 20′, 20″ and 20ª. The rib junctions are similar to those before described, preferably with the ample fillets 21′, widening and strengthening these junctions with the marginal parts of the sheet.

Other variations in ornamental and structural design of the protector may occur, depending upon conditions and upon the design of radiator structures to be equipped. Details of various examples may be interchanged; for instance the protector of Figs.

1 to 4 may have a rearwardly inclined flange intermediate of its main part and its bead 2, similar to the flange 22 of Figs. 9 to 12, inclusive; or this flange 22 may be omitted in the latter example, so that the apertured and ribbed main part of the protector stands back nearer to the radiator. Therefore, while certain details are deemed preferable in connection with my invention, and I have shown and described these rather specifically in elucidating the construction and use of my invention, as is required, I do not wish to be understood as being limited to such precise showing and description, but having thus fully described my invention,

What I claim as new and desire to secure by Letters Patent is:

1. A radiator protector comprising a sheet with a number of apertures therein, material of said sheet between apertures thereof being distended to form hollow ribs between said apertures.

2. A radiator protector composed of a single sheet with a number of apertures therein, material of said sheet between apertures thereof being distended to form ribs between the apertures, and said sheet having opposite edge parts flanged and having an edge part between said opposite edge parts flanged, said flanged edge parts being shaped to fit closely along corresponding edge parts of a radiator-including structure and to be confined to said structure.

3. A radiator protector composed of a single sheet with a number of apertures therein, material of said sheet between apertures thereof being distended to form ribs between the apertures, and said sheet having opposite upright edge parts flanged and having its upper edge part flanged, said flanged edge parts being shaped to fit closely along corresponding edge parts of a radiator-including structure and to be confined to said structure.

4. A radiator protector composed of a single sheet with a number of apertures therein, material of said sheet between apertures thereof being distended to form ribs between the apertures, and said sheet having a flange continuous along the upright and upper edges thereof, substantially at right angles to the main part of the sheet and of depth sufficient to extend across and form a shell around a radiator-including structure.

5. A radiator protector composed of a single sheet with a number of apertures therein, material of said sheet between apertures thereof being distended to form ribs between the apertures, said sheet having a flange continuous along the upright and upper edges thereof, substantially at right angles to the main part of the sheet and of depth sufficient to extend across and form a shell around a radiator-including structure, and said flange having its edge part inset to receive the edge of a hood structure.

6. A radiator protector composed of a single sheet with a number of apertures therein, material of said sheet between apertures thereof being distended to form ribs between the apertures, said sheet having a flange continuous along the upright and upper edges thereof, substantially at right angles to the main part of the sheet and of depth sufficient to extend across and form a shell around a radiator-including structure, and said flange having a radiator-neck-receiving opening in its upper part and having its lower end parts bent outward at opposite sides of the protector for attachment to respective brackets on said radiator-including structure.

7. A radiator protector composed of a single sheet with a number of apertures therein, material of said sheet between apertures thereof being distended to form ribs between the apertures, said sheet having a flange formed on an edge thereof, and having a bead distended along the junction of said flange with the main part of the sheet.

8. A radiator protector composed of a single sheet with a number of apertures therein, material of said sheet between apertures thereof being distended to form ribs between said apertures, and the upright and top extreme edge parts of said sheet being formed to receive snugly the edges of an overlying part of a radiator-including structure.

9. A radiator protector composed of a single sheet with a number of apertures therein, material of said sheet between apertures thereof being distended to form ribs between the apertures, the upright and top extreme edge parts of said sheet being formed to receive snugly the edges of an overlying part of a radiator-including structure, and bottom edge parts of said sheet being formed to fit down upon extended parts of said structure.

10. A radiator protector comprising a sheet with a number of apertures therein, material of said sheet between apertures thereof being distended to form ribs between the apertures.

RICHARD C. STEWART.