

B. S. WARREN & S. HERBERT.
CAR ROOF.

APPLICATION FILED JUNE 9, 1906.

Patented Sept. 7, 1909.

2 SHEETS—SHEET 1.

933,143.

FIG. 2.

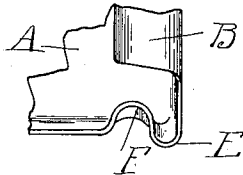
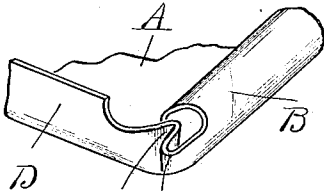


FIG. 4.

FIG. 3

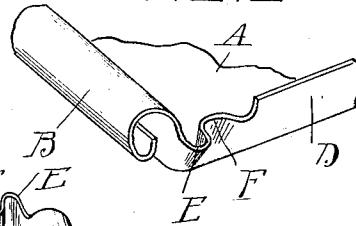


FIG. 1.

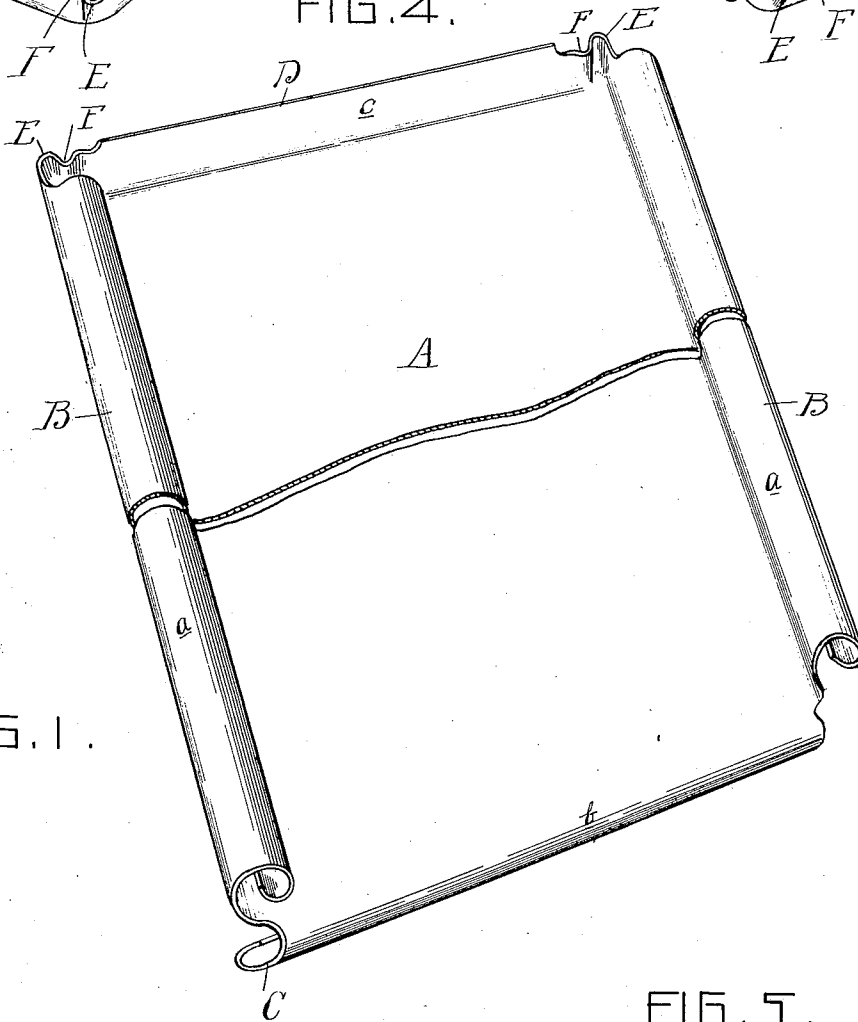
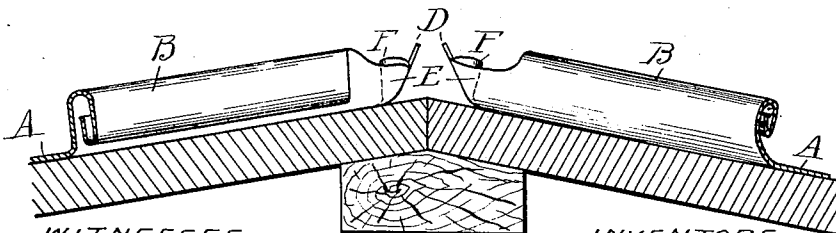


FIG. 5.



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2 SHEETS—SHEET 2.

FIG. 6.

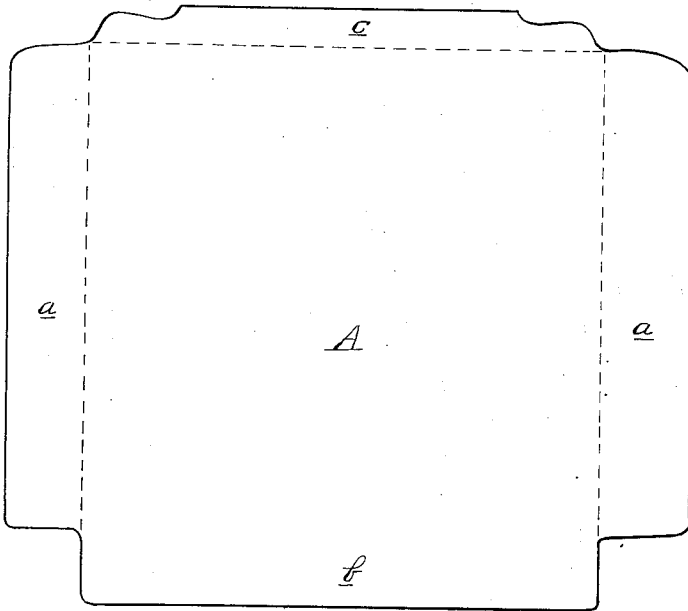


FIG. 7.

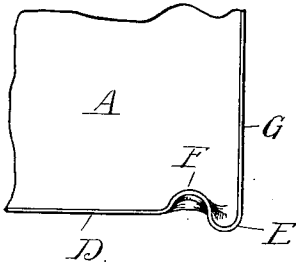


FIG. 8.

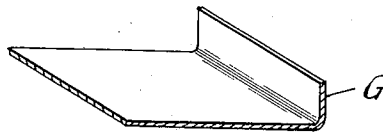


FIG. 9.

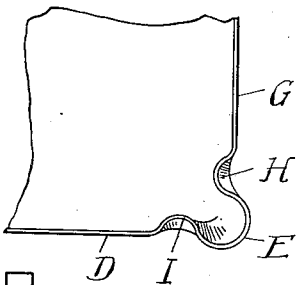
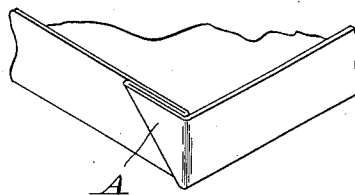


FIG. 10.



WITNESSES

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UNITED STATES PATENT OFFICE.

BENJAMIN S. WARREN AND SAMUEL HERBERT, OF DETROIT, MICHIGAN, ASSIGNORS TO HUTCHINS CAR ROOFING COMPANY, OF DETROIT, MICHIGAN, A CORPORATION OF MICHIGAN.

CAR-ROOF.

933,143.

Specification of Letters Patent.

Patented Sept. 7, 1909.

Application filed June 9, 1906. Serial No. 320,974.

To all whom it may concern:

Be it known that we, BENJAMIN S. WARREN and SAMUEL HERBERT, citizens of the United States of America, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Car-Roofs, of which the following is a specification, reference being had therein to the accompanying drawings.

The invention relates to new and useful improvements in car roofs, and consists particularly in the construction of the sheets having upturned flanges at the side and peak so as to make a substantially "pan-shaped" corner with corrugations or bends in one or both of the flanges of such a nature as not to break the metal, or bend it at such a sharp angle as to break through the galvanizing or tinning usually applied thereto; and further in the construction of such a roof sheet and such a corner construction, combined with involute flanges at the sides; and further in the construction, arrangement and combination of the various parts as more fully hereinafter described and particularly pointed out in the claim.

In the drawings, Figure 1 is a perspective view of a sheet for a metal roof as used on cars, and embodying our improvement as applied to a sheet having the involute side flanges; Figs. 2 and 3 are perspective views of the corner of the sheet; Fig. 4 is a plan view of the corner; Fig. 5 is a section through a car roof showing portions of two sheets on opposite sides, as in position on the car; Fig. 6 is a plan view of the blank from which the specific structure shown in Fig. 1 is preferably shaped; Fig. 7 is a plan view of such a corner construction applied to a sheet with vertical upstanding flanges on the side and peak; Fig. 8 is a section through such sheet; Fig. 9 is a plan similar to Fig. 7, showing the corrugations or bends applied in both the side and the peak flange; and Fig. 10 is a perspective view of the old and well known type of corner construction employed in making pans or pan-shaped sheets for metal roofs.

In the present state of the art sheet metal roofs are made of sheets which extend from the peak to the eaves of the car, and are connected together at their sides by various kinds of joints or by various means. It is

desirable at the peak to have an upstanding flange, so that in a storm the rain driven by the wind will not drive laterally across the ends of the sheet, and on the roof between the edges of the sheet at the peak. It has been more or less customary to make such an upstanding flange at the peak, and in doing so a very common form of corner construction has been employed (such as shown in Fig. 10), in which the lap or fold of metal projecting after the flanges have been bent up and, as shown at A' (Fig. 10), is bent around parallel to and pressed against one of the flanges on the sheet. This construction is objectionable, or any other construction is objectionable, in which sharp or acute bends are required in the metal, because such bends will crack or break the galvanizing or tinning usually applied to such sheets, and they will thus quickly rust at this point and cause a leak at the peak, which is the worst place to have the leak, as the water will run down beneath the plates and thus rot out the whole width of the roof. Our invention is intended to make such pan-shaped corner in the sheet and yet do it with any desired form of side flange without the necessity of sharp bends in the metal, which will break the galvanizing or tinning.

A represents a sheet of metal which is desired to be shaped into a roof sheet. In Fig. 6 we have shown the blank from which is preferably formed the sheet shown in Fig. 1, the flanges *a* at the sides being bent up into the involute upstanding portions B, the flap *b* being bent downward to form the portion C, which is at the eaves of the car and forms the securing flange at the eaves. The portion *c* is bent up to form the peak flange D. In bending this up we do it with dies or tools in such a way as to form the curved corner E, and also bend the flange D, as for instance at F, with a gradual bend, *i. e.* forming a curve or corrugation which takes up the excess of metal without the necessity of forming any sharp angles or bends therein, and thus without any breaking of the galvanizing or tinning covering the sheet.

In Fig. 8 we have shown a section through a sheet in which the side flange, instead of being an involute flange as shown at B, is simply an upstanding vertical flange, G, and in Fig. 7 we have shown the same curved

corner E and the same corrugation or bend F, as shown in Figs. 1, 2 and 3, only applied to a sheet made with the side flange, as in Fig. 8.

5 In Fig. 9 we have shown a curved corner E, but we have shown corrugations H I in both the side flange G and the peak flange D. In this case neither the corrugation H or I need be as deep as the single corrugation F, the corrugation being simply sufficient to
10 take up the excess of metal which in the ordinary construction goes into the flap A'.

With this construction we are enabled to make a sheet pan-shaped at the peak and
15 without any sharp bends, which will break the galvanizing and yet obtain all the ad-

vantages of preventing a leak by the driving rains at this point.

What we claim as our invention is,—

In a car roof, a metal sheet having a continuous flange extending around the top and sides thereof, said flange being provided with open crimps therein adjacent the corners of the sheet. 20

In testimony whereof we affix our signatures in presence of two witnesses. 25

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Witnesses:

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