J. J. McCARTHY.

CAR ROOF.

APPLICATION FILED SEPT. 7, 1911.

1,067,535.

Patented July 15, 1913.

4 SHEETS—SHEET 1.

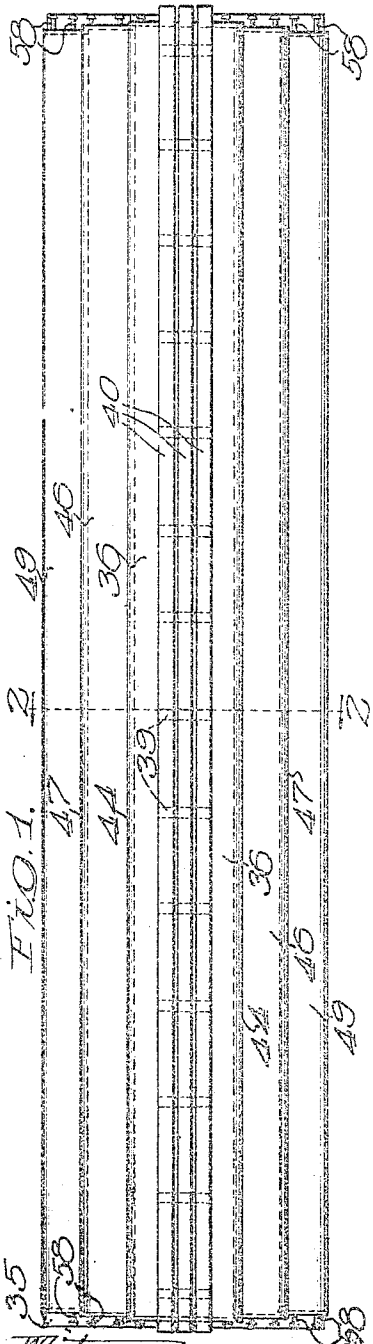


FIG. 1.

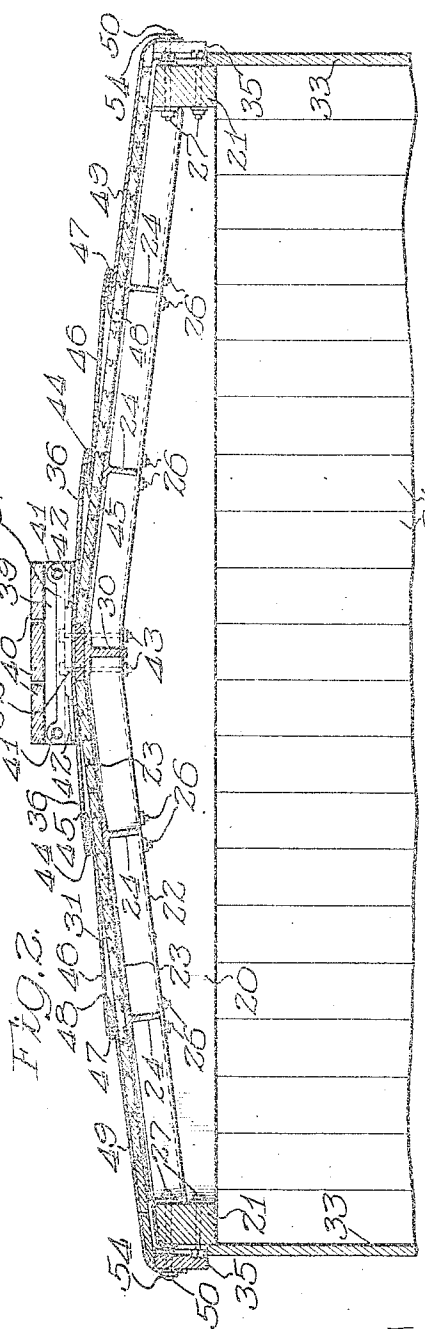


FIG. 2.

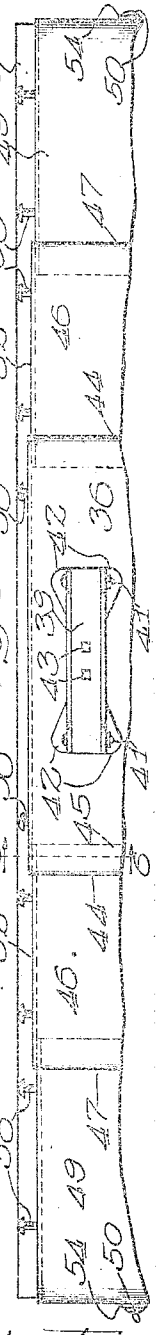


FIG. 3.

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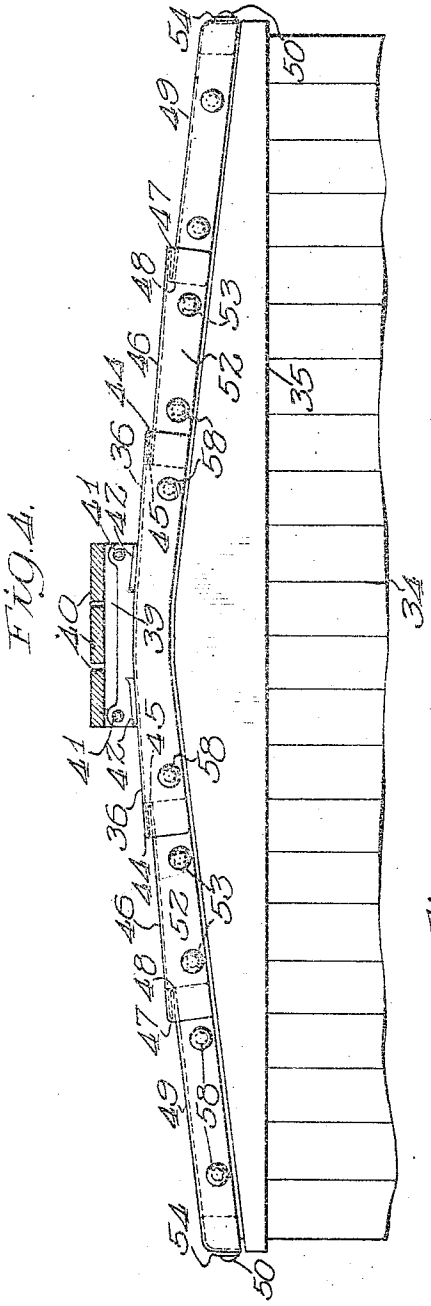


FIG. 4.

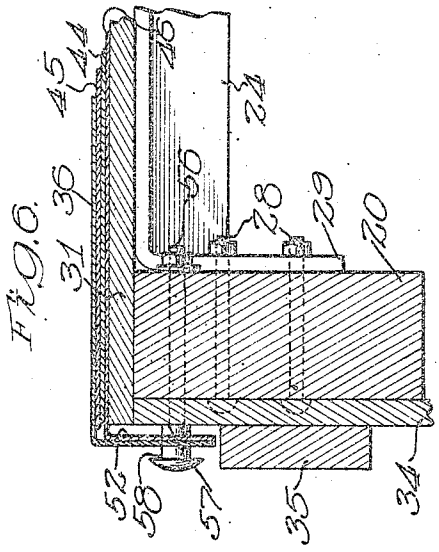


FIG. 6.

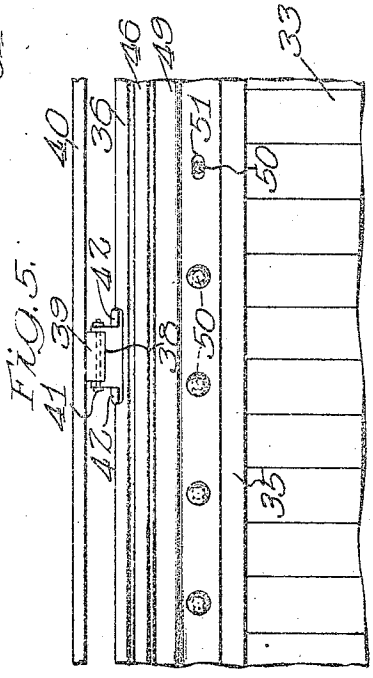


FIG. 5.

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4 SHEETS—SHEET 3.

Fig. 8.

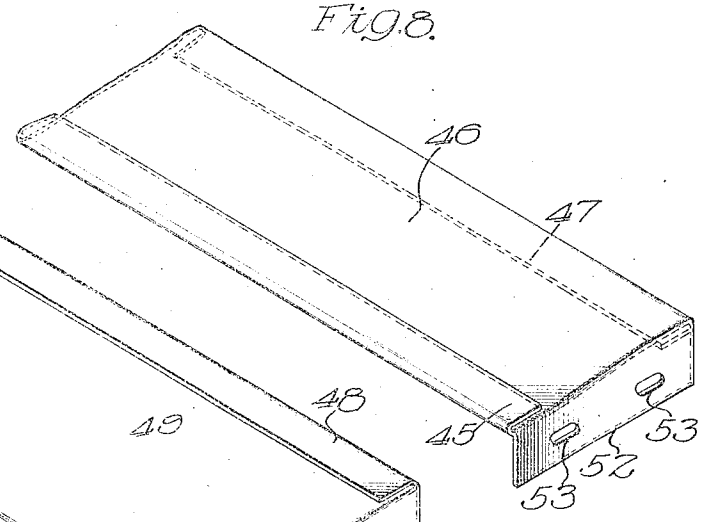


Fig. 7.

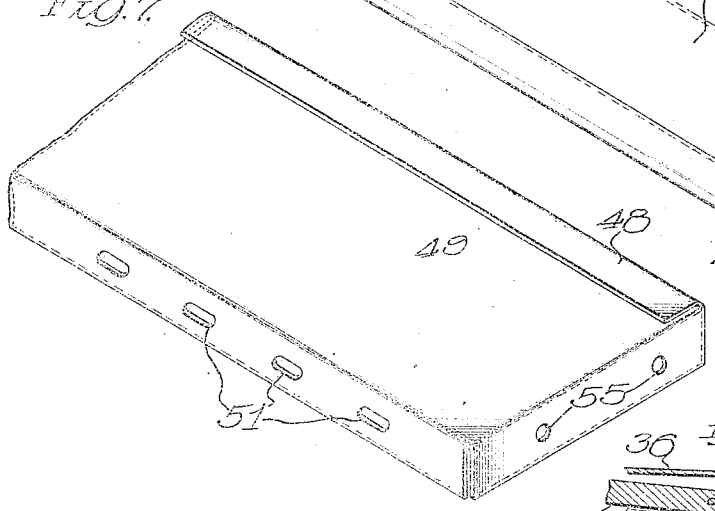


Fig. 9.

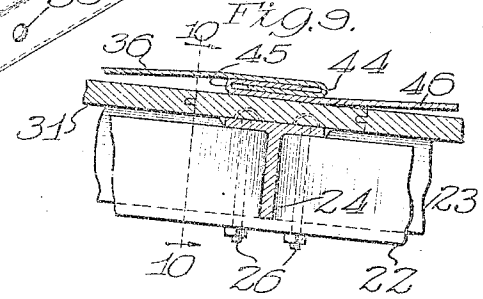


Fig. 10.

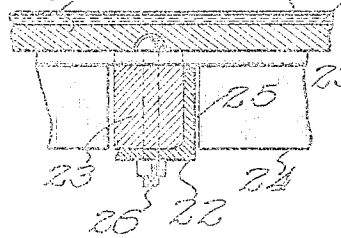
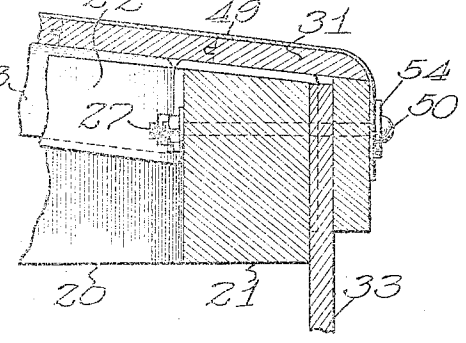


Fig. 11.



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4 SHEETS—SHEET 4.

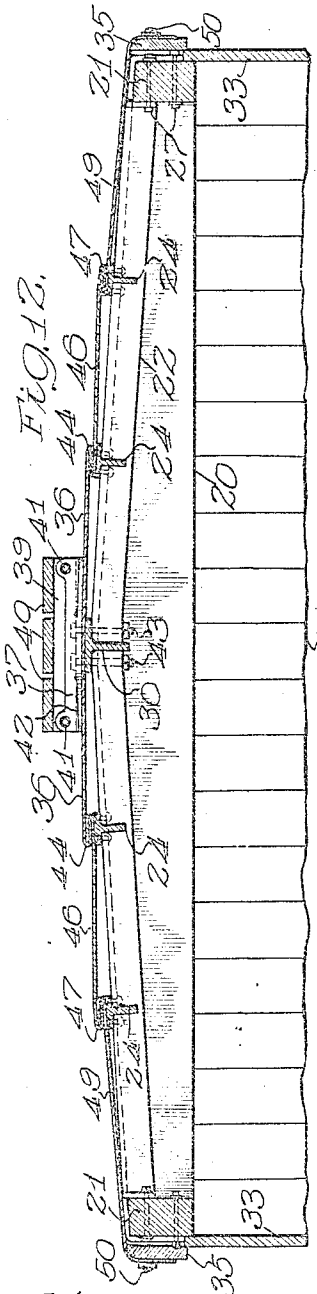


FIG. 12.

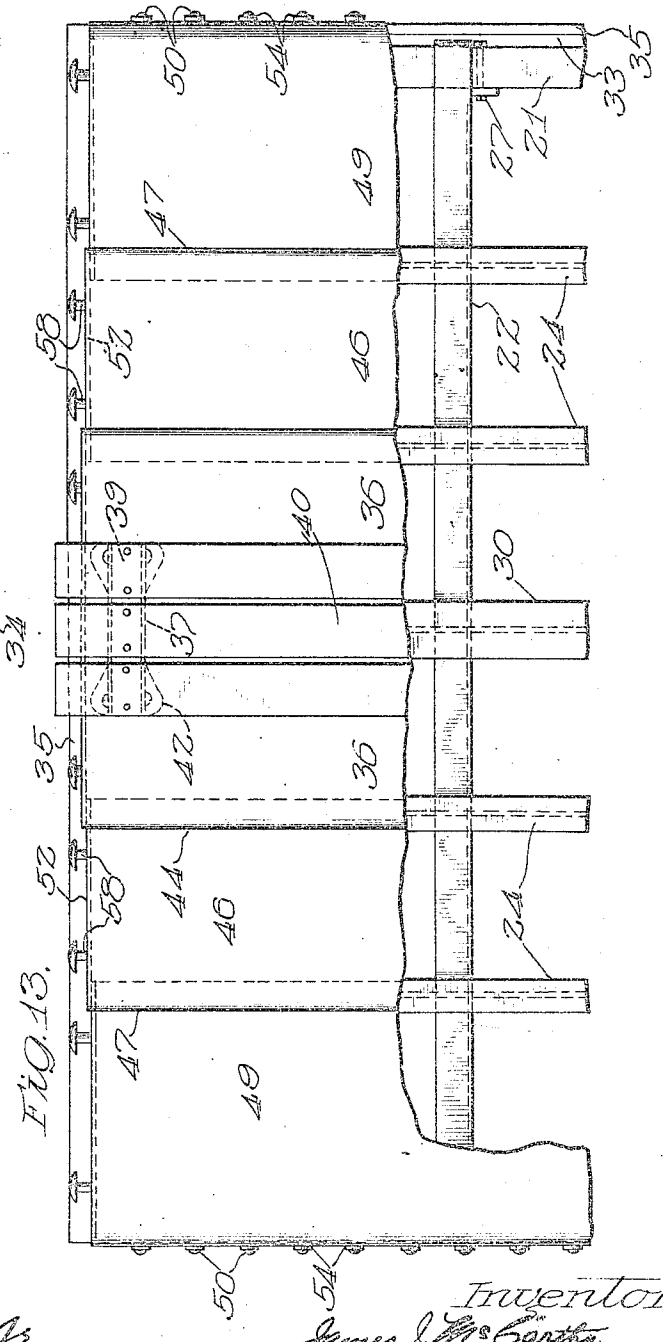


FIG. 13.

Witnesses:

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UNITED STATES PATENT OFFICE.

JAMES J. McCARTHY, OF CHICAGO, ILLINOIS.

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CAR-ROOF.

1,067,535. Specification of Letters Patent. Patented July 15, 1913.

Application filed September 7, 1911. Serial No. 648,034.

To all whom it may concern:

Be it known that I, JAMES J. McCARTHY, a citizen of the United States, residing in Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Car-Roofs, of which the following is a specification.

My invention has for an object the providing of a metallic roof construction for box cars that is weather proof and flexible and at the same time constituted of a relatively small number of separate metal sheets: and the invention has for further objects such other improvements in structure or function as may be found to obtain in the device hereinafter described and claimed.

In the accompanying drawings, forming a part of this specification and in which like reference numerals indicate like parts in all of the figures, Figure 1 is a top plan view of the entire roof. Fig. 2 is an enlarged transverse section on the line 2—2 of Fig. 1; Fig. 3 is an enlarged top plan view of one end of the roof shown in Fig. 1, except that the running boards are removed to expose one of the running board saddles; Fig. 4 is an end elevation of the roof; Fig. 5 is a side elevation, intermediate the ends of the car; Fig. 6 is an enlarged sectional detail on the line 6—6 of Fig. 3; Fig. 7 is a perspective view of the end of one of the eaves sheets; Fig. 8 is a perspective view of the end of one of the intermediate or floating sheets: Fig. 9 is an enlarged detail sectional view, showing the relation of the purlins and carlines at their intersection in the preceding views; Fig. 10 is a detail vertical sectional view on the line 10—10 of Fig. 9; Fig. 11 is an enlarged transverse detail section at the eaves adjacent the eaves end of one of the aforesaid carlines; Fig. 12 is a transverse sectional view of a modification in which heavier metal plates may be used without any underlying sheathing boards; Fig. 13 is a top plan view of one end of the same roof construction as shown in Fig. 12.

20, 20 are the end plates, and 21, 21 are the side plates, of the roof framework.

22, 22 are the metallic angle-iron carlines, each having its body of angle-iron form, extending from one to the other of the side plates, and its ends formed into hangers that extend over and embrace the side plates.

23 are wooden filler blocks seated in the upwardly facing angle of the angle-iron carlines.

24 are the T-iron purlins, whose horizontal flanges are continuous the full length of the car, and rested on the top edges of the angle-iron carlines, the filler blocks 23 being gained out to accommodate said flanges, as indicated in Fig. 9, and the vertical webs of the purlins being cut away where the purlins and carlines intersect, as indicated at 25 in Fig. 10. The bolts 26 bind together the angle-iron carlines and their filler blocks and the horizontal members of the purlins. Bolts 27 bind together the side plates and the hangers of the angle-iron carlines. The bolts 28 bind together the end plates and the downwardly turned ends 29 of the horizontal members of the purlins. The ridge pole 30 is a T-iron similar to the purlins in form and application. The sheathing boards 31, longitudinal of the car, overlie and are spiked to the top faces of the filler blocks of the carlines, and extend from the eaves to the longitudinal filler board 32 that overlies and rests upon the horizontal member of the ridge pole.

33 is the siding and 34 the end sheathing of the car, and 35, 35 are the fascia boards.

An elongated metallic ridge sheet 36, extending from end to end of the car, covers the ridge of the roof and extends part way toward the eaves on either side of the ridge line. This ridge sheet is surmounted by the saddle castings 37, each of which is provided with a transverse channel 38 to receive the wooden saddle blocks 39 upon which the running boards 40 are secured, said blocks being secured to the castings by the transverse bolts 41 at either end of the upwardly extended flanges forming the channel of each casting. These saddle castings have their flat bases laterally extended at either end, into ears 42, which increase the bearing surface of the casting upon the underlying roof sheet. The castings are secured in position by the vertical bolts 43, 43 passing through said castings, the filler board 32, the horizontal flanges of the ridge pole, and the filler blocks and horizontal members of the angle-iron carlines. The lateral edges of the ridge sheet 36 are downwardly and inwardly rebent, at 44, as is most clearly illustrated in Fig. 2 and Fig. 9, and the hooked edges thus formed engage with

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the upwardly and outwardly rebent upper edges 45 of the floating sheets 46, which extend lengthwise from end to end of the car and extend laterally part way toward the eaves of the car from the outer edges of the ridge sheet. The outer lateral edges of these floating sheets are rebent downwardly and inwardly at 47 as appears in Fig. 2 and in the perspective view of Fig. 8. And these outer lateral rebent edges of the floating sheets are in turn engaged with the upwardly and outwardly rebent edges 48 of the eaves sheets 49, which also extend longitudinally from end to end of the car and which have their outer lateral edges bent down over the eaves of the car end secured thereto by the bolts 50 passing through the horizontally longitudinal slots 51 in said down turned eaves flanges. The hooked engagement between the rebent lateral edges of the floating or intermediate sheet and the respective rebent edges of the ridge sheet and the eaves sheet, is sufficiently free to permit the intermediate or floating sheet to have a considerable movement toward or away from the eaves or ridge of the car-roof; and to further permit such movement of said floating sheet, its down-turned end-flanges 52 are provided with laterally elongated slots 53 through which are passed the retaining bolts that secure these end flanges to the ends of the car. The horizontally elongated slots 51 in the down-turned eaves flanges of the eaves sheets similarly permit the eaves sheets some play lengthwise of the car, and these slots are covered by the washers 54 under the heads of the bolts 50. But the holes 55 in the down-turned flanges at the ends of the eaves sheets, through which are passed the retaining bolts that secure said sheets to the ends of the car, are not elongated, as the eaves sheets do not require such provision for movement toward or away from the eaves line. The down-turned end-flanges of the ridge-sheet are similarly provided with bolt holes to receive the retaining bolts that secure such sheets to the end of the car. To accommodate some movement of the down-turned end-flanges of the sheets toward or away from the end sheathing or end plates of the car, as the sheets expand or contract or are otherwise somewhat distorted, the retaining bolts 56, which secure these end-flanges to the ends of the car, have their shanks shouldered, at 57, so as to provide a free outwardly projecting stud-end 58 intermediate the head of each bolt and the adjacent face of the end of the car-body, as illustrated in Fig. 3 and Fig. 6.

In the modification illustrated in Figs. 12 and 13, the metal sheets are of heavier gage and the underlying board sheathing of the roof is omitted, and the wooden filler blocks of the angle-iron carlines are also omitted, and the said angle-irons themselves are inverted in position, the horizontal member of each angle-iron projecting from the upper instead of the lower edge of the vertical member. These modifications give a substantially "all-steel" roof construction.

It will be noted that the entire roof is covered by the one ridge-sheet, two eaves-sheets and two intermediate or floating sheets, and that the long, narrow floating sheet, free of any direct attachment to either the eaves or the ridge of the car, accommodates and takes up the strains that are transmitted from the ridge toward the eaves or from the eaves toward the ridge, when the roof framework of the car is distorted; and there is also an accommodation of endwise distortion of the roof.

The form of the sheets is exceedingly simple, effecting material economies in the manufacture of the roofing material, and the application of the roof to the car is greatly simplified by the reduction in the number of parts required to be put in place.

My invention is above set forth as embodied in one particular form of construction, but I do not limit it thereto or to less than all the possible forms in which the said invention as hereinafter claimed may be embodied and distinguished from prior devices for like purposes.

I claim:—

1. In a metallic car roof, in combination; a plurality of elongated metal sheets having their length disposed longitudinally of the car, comprising a ridge sheet, eaves sheets connected at the eaves with the body of the car, and intermediate sheets connected at their ends with the ends of the car body and between their ends and along their edges being free in horizontal directions relative to the ridge and eaves sheets, and interlocking along their longitudinal edges with the said ridge and eaves sheets; substantially as specified.

2. In a metallic car-roof, in combination: a plurality of elongated metallic sheets having their length disposed longitudinally of the car, and their side-edges mutually engaged in seams paralleling and intermediate the eaves and ridge of the car, such plurality of sheets including eaves and ridge and intermediate sheets; means for retaining the sheets at the eaves and ends and ridge of the car the intermediate sheets having at their ends depending flanges which are slidably connected with the ends of the car; substantially as specified.

3. In a metallic car-roof, in combination: a plurality of elongated metallic sheets having their length disposed longitudinally of the car and extending from end to end of the same, and their side-edges mutually engaged in seams paralleling and intermediate the eaves and ridge of the car, such plurality of sheets including eaves and ridge and in-

termediate sheets, each intermediate sheet having its lateral edges loosely engaged with the adjacent lateral edges of the eaves and ridge sheets; and means for retaining the sheets at the eaves and ends and ridge of the car; substantially as specified.

4. In a metallic car-roof, in combination: a plurality of elongated metallic sheets having their length disposed longitudinally of the car and extending from end to end of the same, and their side-edges mutually engaged in seams paralleling and intermediate the eaves and ridge of the car, such plurality of sheets including eaves sheets having their outer lateral flanges overhanging and adapted to be loosely engaged along the eaves of the car; and means for retaining the sheets at the eaves and ends and ridge of the car; substantially as specified.

5. In a metallic car-roof, in combination: a plurality of elongated metallic sheets having their length disposed longitudinally of the car, and their side-edges mutually engaged in seams paralleling and intermediate the eaves and ridge of the car, such sheets having their ends overhanging and adapted to be loosely engaged along the ends of the car; and means for retaining the sheets at the eaves and ends and ridge of the car; substantially as specified.

6. In a metallic car-roof, in combination: a plurality of elongated metallic sheets having their length disposed longitudinally of the car, and their side-edges mutually engaged in seams paralleling and intermediate the eaves and ridge of the car, such sheets individually extending from end to end of the car; means for retaining the sheets at the eaves and ends and ridge of the car; substantially as specified.

7. In a metallic car-roof, in combination: a plurality of elongated metallic sheets having their length disposed longitudinally of the car, and their side-edges mutually engaged in seams paralleling and intermediate the eaves and ridge of the car, such plurality of sheets including eaves and ridge and intermediate sheets, the intermediate sheets floating free of rigid connection with the other sheets; and means for retaining the sheets at the eaves and ends and ridge of the car; substantially as specified.

8. In a metallic car roof, in combination: metallic carlines having a bottom, continuous, horizontal flange-member, and a vertical, continuous flange-member; metallic purlins arranged in substantially the same horizontal planes as the carlines, and having a top continuous flange-member resting on the vertical members of the carlines, and having a vertical flange-member recessed at intervals at the intersections of the carlines and receiving the vertical members of the carlines in such recesses, and bolts drawing and uniting together the said horizontal members of the carlines and purlins at their intersections; substantially as specified.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

JAMES J. McCARTHY.

Witnesses:

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RAYMOND C. DUDLEY.