

W. P. MURPHY.

CAR ROOF.

APPLICATION FILED SEPT. 28, 1911.

1,030,602.

Patented June 25, 1912.

4 SHEETS—SHEET 1.

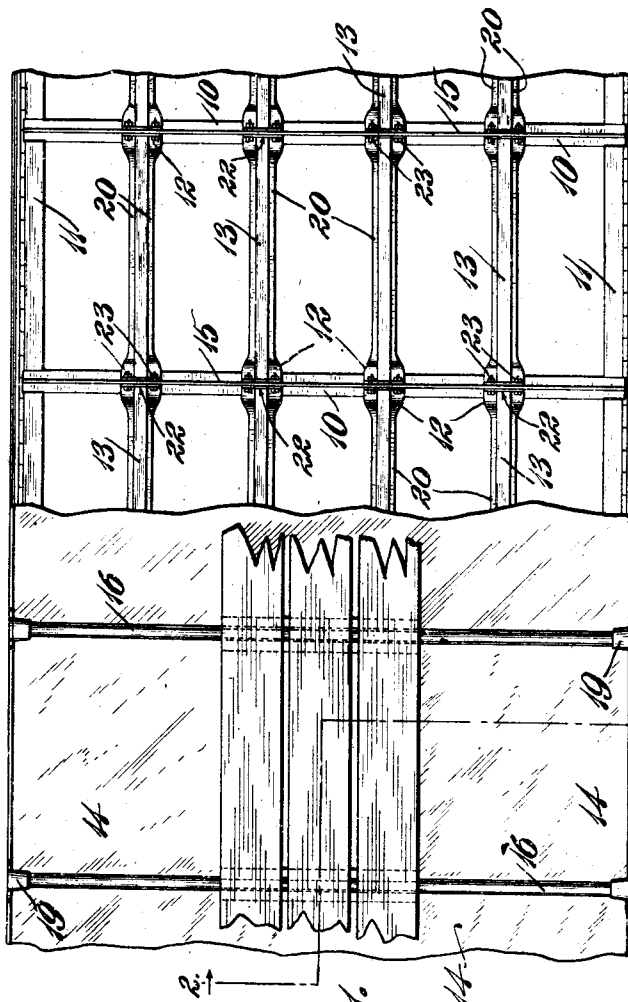


Fig. 1.

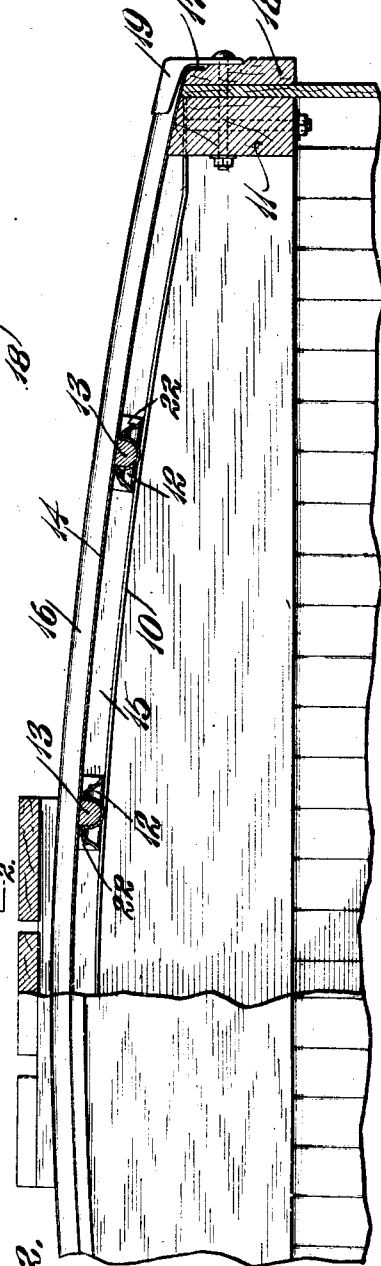


Fig. 2.

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Attest: [Signature]

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By [Signature] his attys.

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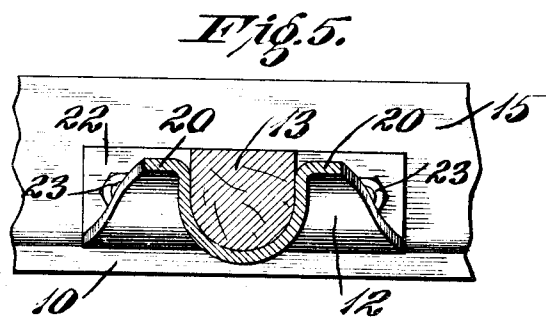
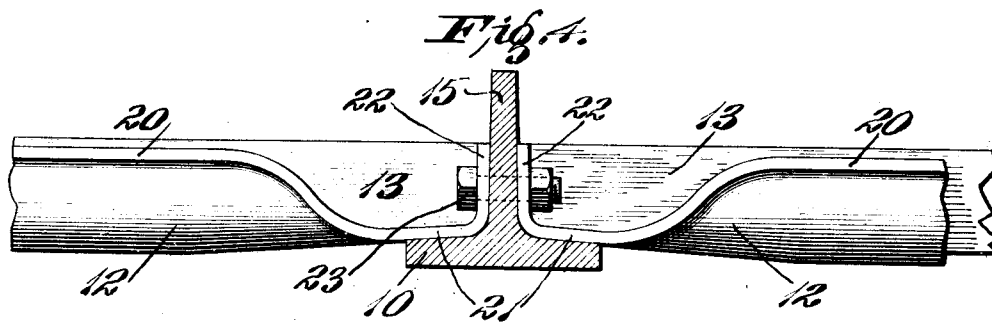
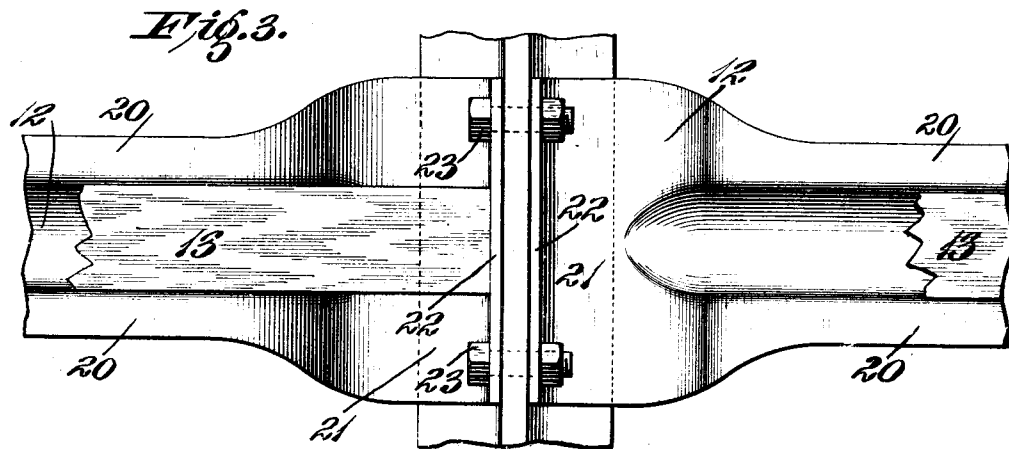
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4 SHEETS-SHEET 2.

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Witnesses:

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4 SHEETS-SHEET 3.

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Fig. 7.

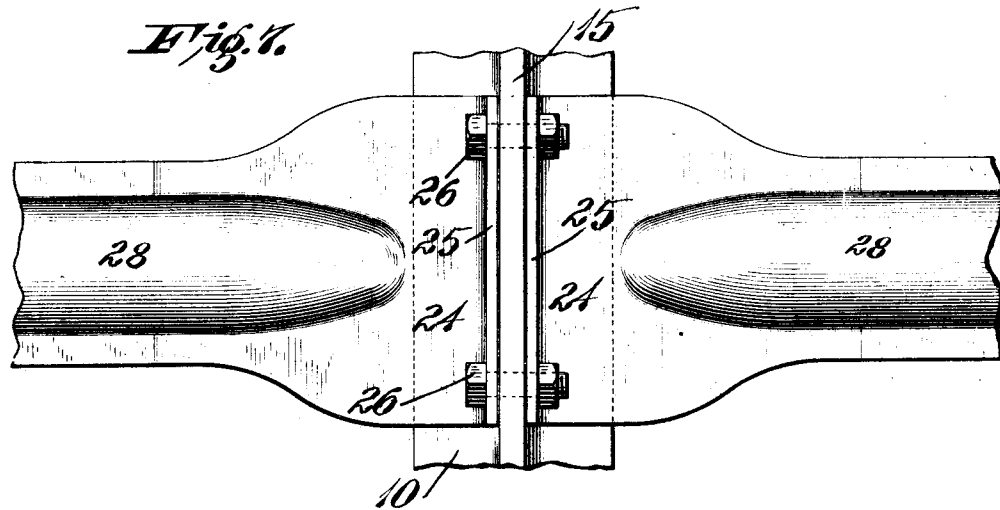


Fig. 8.

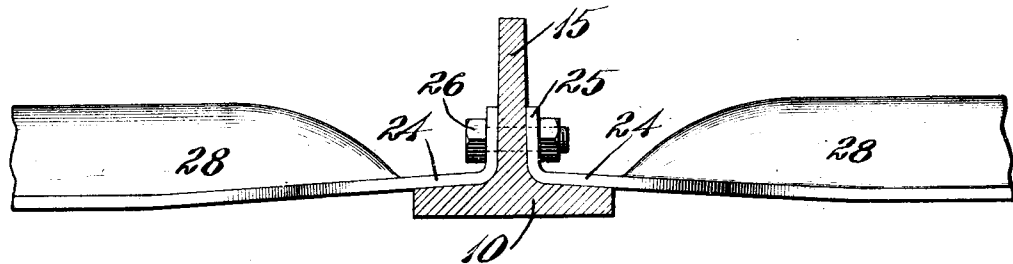


Fig. 9.

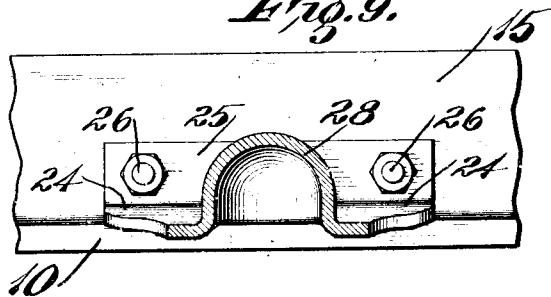
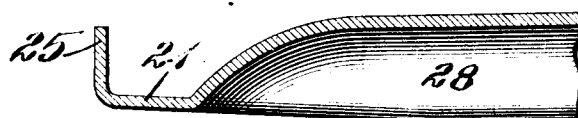


Fig. 10.



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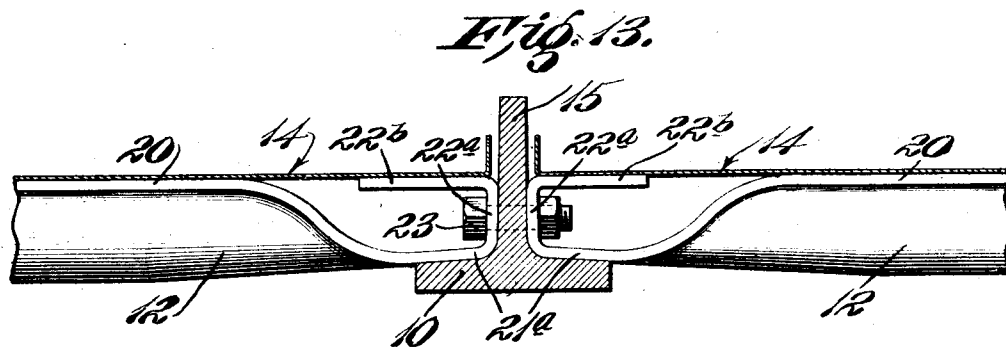
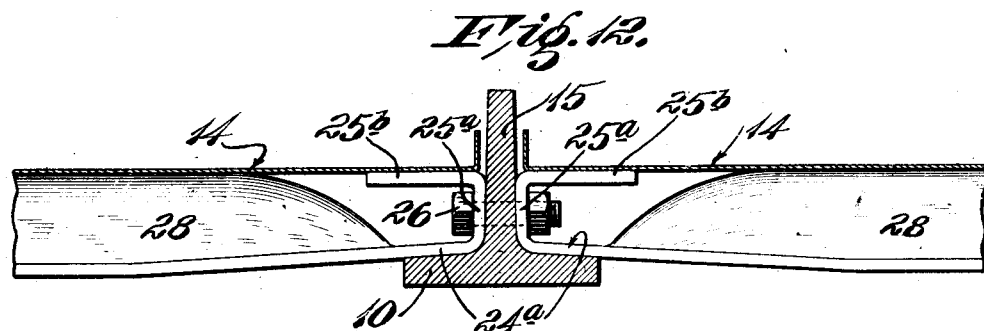
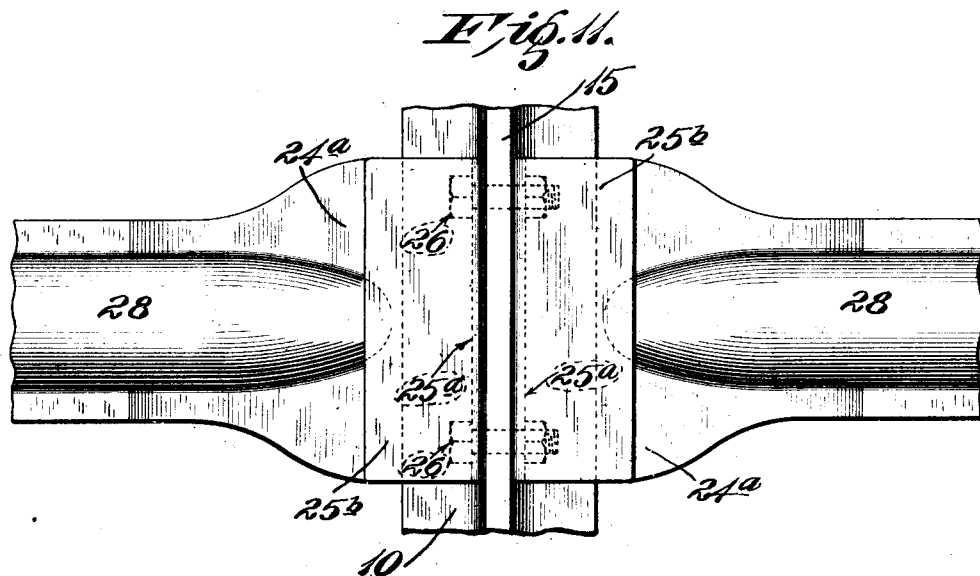
CAR ROOF.

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4 SHEETS-SHEET 4.

1,030,602.



Witnesses:

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UNITED STATES PATENT OFFICE.

WALTER P. MURPHY, OF CHICAGO, ILLINOIS.

CAR-ROOF.

1,030,602.

Specification of Letters Patent.

Patented June 25, 1912.

Application filed September 28, 1911. Serial No. 651,717.

To all whom it may concern:

Be it known that I, WALTER P. MURPHY, a citizen of the United States, and a resident of the city of 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 relates to the construction of roofs for freight cars, and its object is to provide a rigid substructure upon which the roof covering may be secured, the particular objects of the invention being to reduce the vertical thickness of the roof, resulting either in increased head room within the car or in a less total height of the top of the car above the rail, to strengthen the roof substructure against deformation due to racking and weaving of the car, and to produce a cheap construction readily assembled and easily repaired.

Referring to the accompanying drawings forming a part of this specification, in which like characters represent like parts throughout the several views: Figure 1 is a top plan view of a part of a car roof with the roof sheets partly broken away to show the roof substructure; Fig. 2 is an end elevation of a portion of the upper corner of a car showing my improved roof partly in section on the line 2-2 of Fig. 1; Fig. 3 is a top plan view of one of the forms of connection between the carlines and purlins in my improved roof; Fig. 4 is a side elevation of the same showing the carline in section; Fig. 5 is a transverse section through the purlins and filler block of the form illustrated in Figs. 3 and 4; Fig. 6 is a longitudinal section through the end of the purlin; Fig. 7 is a top plan view of the joint between the carlines and another form of purlin. Fig. 8 is a side elevation of the same showing the carline in section; Fig. 9 is a transverse section through the purlins shown in Figs. 7 and 8; and Fig. 10 is a longitudinal section through the end of the same; Fig. 11 is a top plan view of the end portion of a modified form of purlin, showing the joint between two purlins and a carline; Fig. 12 is a side elevation of the joint shown in Fig. 11, showing the carline in section; and Fig. 13 is a side elevation of the joint between the ends of a modified form of purlin and a carline, showing the carline in section.

Referring to Figs. 1 and 2 of the drawings, my improved roof comprises carlines

10 spaced longitudinally from end to end of the car and spanning the car from eaves to eaves, the ends being securely attached to the side plates 11. Purlins 12, parallel with the slide plates, are arranged lengthwise of the car bridging the spaces between the carlines, to which they are securely fastened, and are uniformly spaced across the car from eaves to eaves. Roof sheets 14 extending from eaves to eaves of the car are supported on the purlins and side plates between the upstanding webs 15 of the carlines, and are turned down at the ends into grooves 17 in the fasciae 18 along the sides of the car. Seam caps 16 are arranged over the vertical webs 15 of the carlines to cover the joints between adjacent roof sheets. These seam caps are secured at the ends by hood clips 19 fastened to the eaves of the car.

In the form of my invention illustrated in Figs. 1 to 6, inclusive, the purlins are channel shaped, and arranged with the open side uppermost, and filler blocks or strips 13 are placed in the channels to serve as intermediate supports for the roof sheets. These filler blocks serve as nailing strips in case wooden sheathing is used beneath the roof plates, and where no wooden sheathing is used they serve to space the roof plates above the metal purlins to lessen friction, to allow ventilation, and to decrease the height of the joints between the roof sheets at the carlines.

As shown in Figs. 3 to 6 the purlins are of steel or iron plate pressed up into the form of a channel with marginal flanges to receive the wooden filler blocks 13 for the greater portion of their length, and are flat at the ends, the extremities of the flat portions being bent up nearly at right angles with the plane of the purlins to abut against the vertical webs of the carlines. The bent up portions 22 of adjacent purlins are arranged to abut in line with each other at opposite sides of the webs 15 of the carlines, and holes are drilled or punched through all three members to receive bolts 23 for securing them rigidly together. These bolts 23 are spaced as far apart as is practicable in order to brace the joint as much as possible against stresses tending to distort the roof substructure diagonally. The flattening out of the end portions of the purlins produces a purlin having a considerably wider end than body portion, and results in a much stiffer joint against lateral stresses than one in which the ends are not so widened out.

Moreover, the bolting of the purlins directly to each other through their turned up ends and the vertical web of the carline provides a stronger joint than it is possible to make by bolting the horizontal ends of the purlins, when unprovided with the bent-up end portions, individually to the horizontal flanges of the carlines as has been done heretofore.

In the improved form of joint shown in Figs. 7 to 10 of the drawings, the open side of the flanged channel-section purlin 28 is placed underneath and the channel is merged into the flange 24 at the ends, the extremities 25 of which are bent up to abut against the vertical webs 15 of the carlines, adjacent purlins being secured together and to the carlines by the bolts 26. This arrangement leaves a space between the ends of the struck up portions of the purlins and the vertical flanges of the carlines below the top line of the purlins, which space is desirable with certain types of roof sheets in order to accommodate corrugations adjacent the side margins, as shown and described in an application filed by me on January 23, 1911. In Figs. 11 and 12 the extremities 24^a of the purlins are struck up as at 25^a and then rebent as at 25^b to form supporting flanges for roof sheets 14, the top faces of said rebent portions being in the same plane as the crowns of the channeled body portions of the purlins. The purlin 12, shown in Figs. 3 to 6, inclusive, may be provided with a rebent flange 22^b at each end in the plane of the flanges 20, the rebent flanges 22^b forming with the flanges 20 supports for the roof sheets 14. My improved purlin is also very well adapted to wood or metal lined roofs, in which wood sheathing or sheet metal plates or pans are arranged below the roof sheets in the spaces between the purlins and carlines, and supported on the side flanges thereof. The securing bolts 23, 26, for the purlins do not interfere with the corners of the lining panels, as would be the case were they arranged in the horizontal flanges of the carlines instead of in the vertical webs thereof. The purlin 28 has the additional advantage of providing side flanges for supporting the lining which are substantially even with the horizontal flanges of the carlines.

While I have illustrated and described my invention in detail, I do not wish to be understood as restricting myself to the precise forms and arrangements which I have shown, but

What I consider to be my invention and desire to secure by Letters Patent is as follows:

1. In a car roof, the combination with carlines having vertical webs, of metal purlins of flanged channel section extending between said carlines, the channel and

flanges being merged into the same plane at the ends of the respective purlins and bent up against the vertical webs of the carlines, and fastening means passed through said bent up ends of the purlins and webs of the carlines to secure them together.

2. In a car roof, the combination with carlines having vertical webs, of metal purlins of flanged channel section extending between said carlines, the channel and flanges being spread out into a plane section at either end of the respective purlins and bent up against the vertical webs of the carlines, and bolts passed through said laterally spaced bent up ends of the purlins and the webs of the carlines to secure said purlins and carlines together, said bolts being spaced apart, thereby securing a bracing effect.

3. In a car roof, the combination with carlines having vertical webs, of metal purlins of flanged channel section adapted to receive a wooden filler extending between said carlines, the channel and flanges being merged into the same plane at the ends of the respective purlins and bent up against the vertical webs of the carlines, and fastening means passed through said bent up ends of the purlins and webs of the carlines to secure them together.

4. In a car roof, the combination with carlines having vertical webs, of metal purlins of flanged channel section adapted to receive a wooden filler extending between said carlines, the channel and flanges being merged into the same plane at the ends of the respective purlins and bent up against the vertical webs of the carlines, filler strips positioned in the channel section of said purlins, the upper surface of said filler strips lying above the flanges of the purlins and below the top of the webs of the carlines, and fastening means passed through said bent up ends of the purlins and webs of the carlines to secure them together.

5. A car roof comprising carlines provided with vertical webs and lateral flanges along the bottom edges thereof, metal purlins of flanged channel section extending between the carlines and resting at the ends on the said lateral flanges, the flanged channel section of the purlins merging into wide spreading plane sections at the ends extending laterally beyond the body lines of the purlin and terminating in transverse flanges, and means for securing said transverse flanges to the vertical webs of the carlines.

6. A car roof comprising spaced carlines provided with vertical webs, metal purlins having roof sheet supporting portions extending between the carlines, transverse flanges terminating in rebent supporting portions at the ends of said purlins, and means for securing said transverse flanges to the vertical webs of the carlines.

7. A car roof comprising spaced carlines provided with vertical webs and lateral flanges along the bottom edges thereof, metal purlins having lateral flanges extending between the carlines and dividing the spaces between the carlines into panels adapted to receive a lining to be supported by said lateral flanges, transverse flanges at the ends of said purlins, and means for securing said transverse flanges to the vertical webs of the carlines.

8. A sheet metal purlin pressed into a channel section, the end portions of said purlin being merged into a plane section, said plane section being struck up and rebent to form terminal flanges in the plane of the top of the channel section.

9. A sheet metal purlin pressed into a channel section and provided with marginal flanges, said marginal flanges and channel section merging into a plane section at the end of the purlin, and terminating in struck up flanges having rebent extremities.

10. A car roof comprising carlines provided with vertical webs and lateral flanges along the bottom edges thereof, metal purlins of flanged channel section extending be-

tween the carlines and resting at the ends on said lateral flanges, the flanged channel section of the purlins merging into plane sections at the ends and terminating in struck up and rebent flanges, and means for securing said struck up flanges to the vertical webs of the carlines.

11. A car roof comprising carlines provided with vertical webs and lateral flanges along the bottom edges thereof, metal purlins of flanged channel section extending between the carlines and resting at the ends on said lateral flanges, the flanged channel section of the purlins merging into plane sections at the ends and terminating in struck up and rebent flanges, and means for securing said struck up flanges to the vertical webs of the carlines, said rebent end flanges being in the plane of the tops of the purlins.

Signed at St. Louis, Missouri this 23rd day of September, 1911.

WALTER P. MURPHY.

Witnesses:

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PAULINE AMBERG.