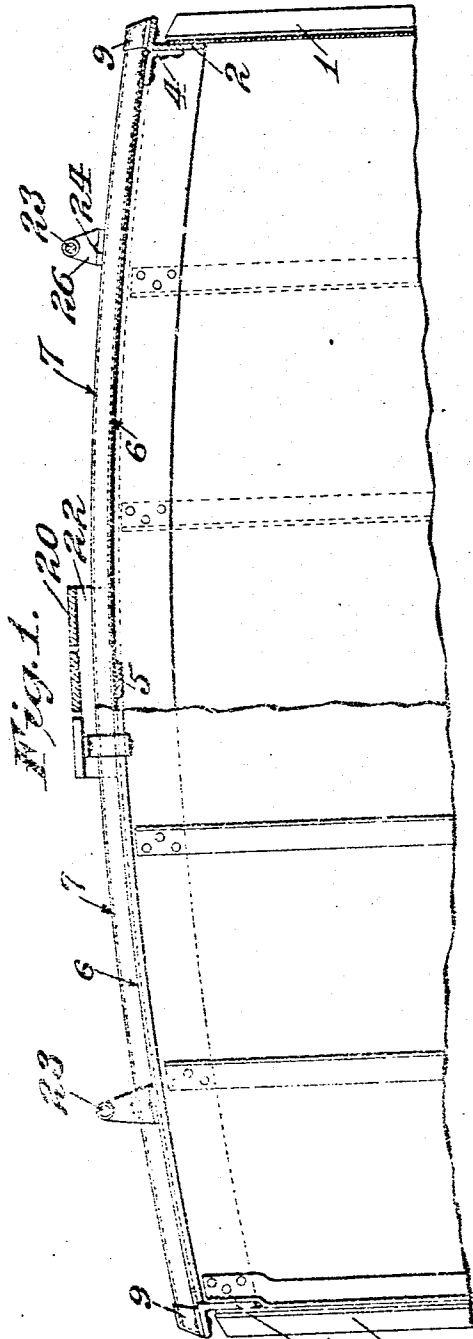


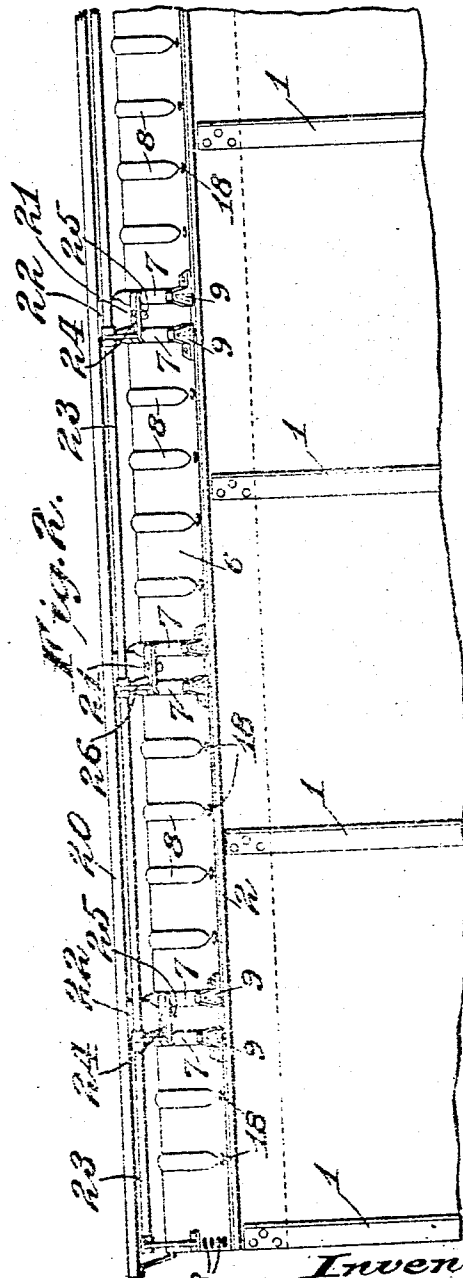
W. P. MURPHY.
CAR ROOF.
APPLICATION FILED MAY 20, 1907.

Patented Jan. 13, 1910.
3 SHEETS—SHEET 1.

946,823.



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 3 SHEETS—SHEET 2..

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Fig. 3.

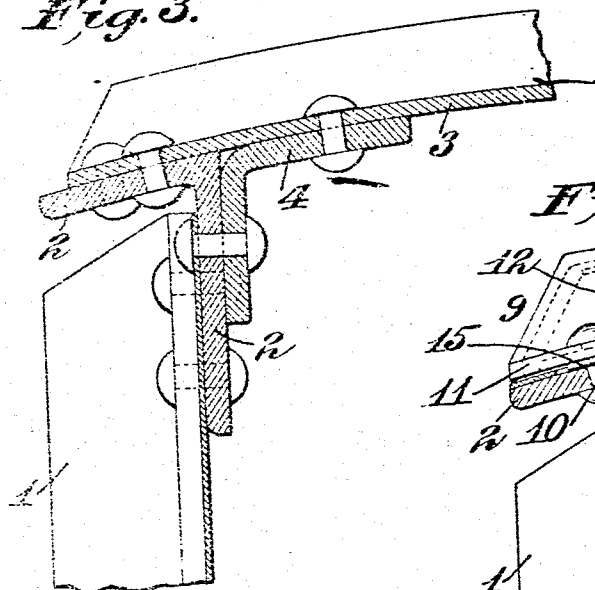


Fig. 4.

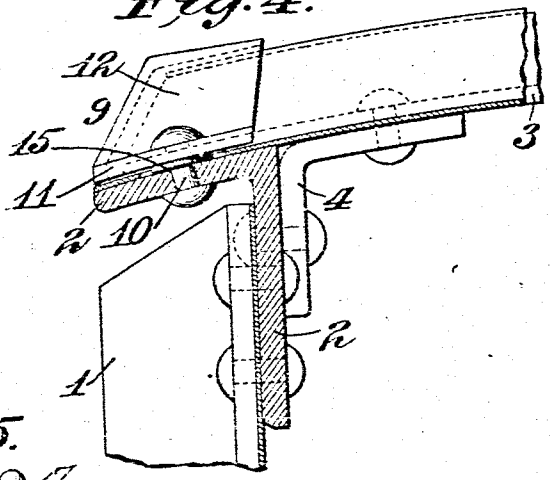
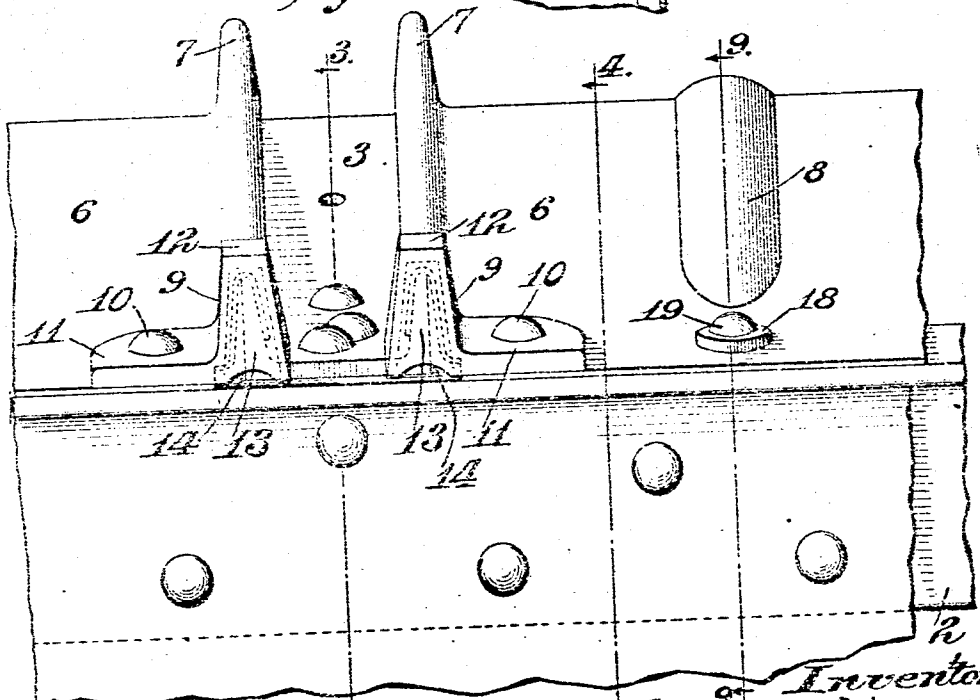


Fig. 5.



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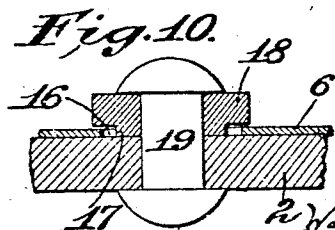
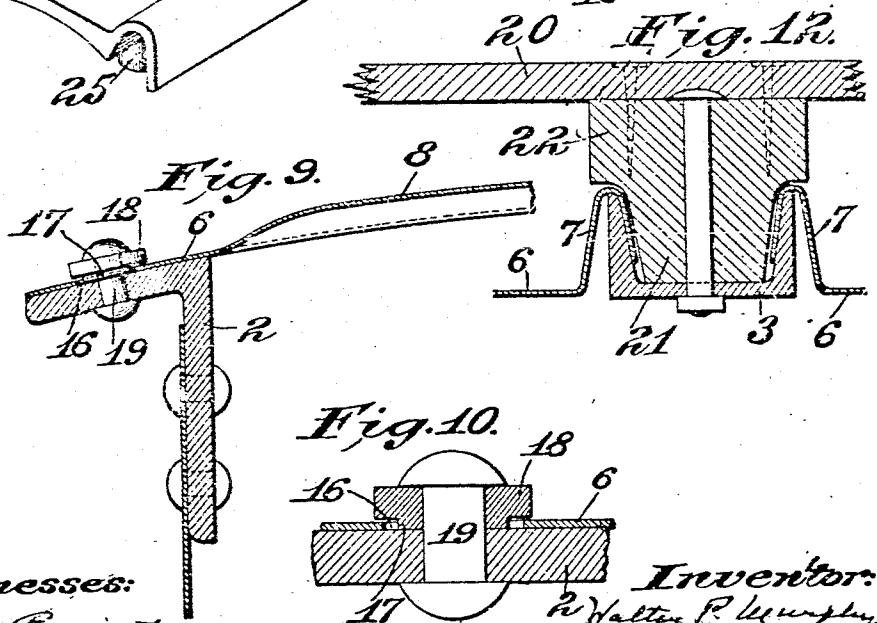
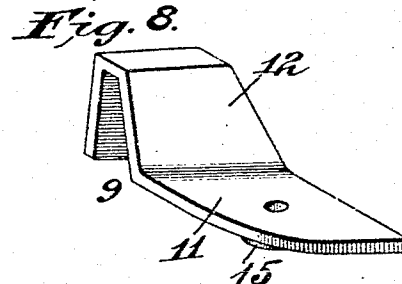
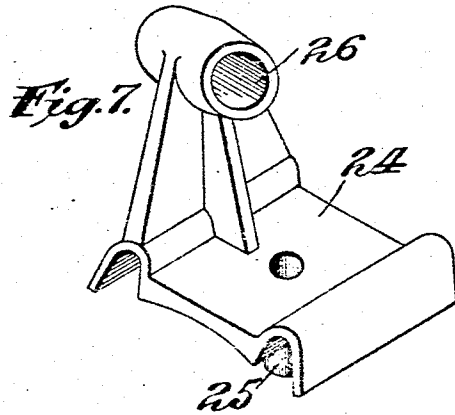
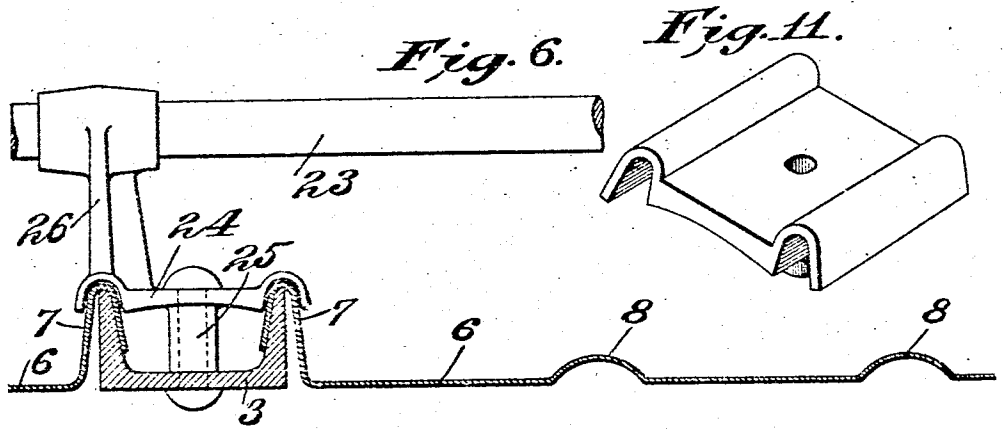
CAR ROOF.

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Patented Jan. 18, 1910.

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UNITED STATES PATENT OFFICE.

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CAR-ROOF.

946,823.

Specification of Letters Patent. Patented Jan. 18, 1910.

Application filed May 20, 1907. Serial No. 374,589.

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 St. Louis and State of Missouri, have invented a new and useful Improvement in Car-Roofs, of which the following is a specification.

My invention relates to car roofs and has for its principal object to provide a roof for a steel frame car.

It consists in the construction and arrangements of parts hereinafter described and claimed.

In the accompanying drawing, which forms part of this specification, and wherein like symbols refer to like parts wherever they occur, Figure 1 is a view partly in elevation and partly in transverse section of a car roof embodying my invention together with the upper portion of a steel frame car; Fig. 2 is a side elevation of the roof and upper portion of the car embodying my invention; Fig. 3 is a transverse sectional detail view through the carline and eaves portion of the car, as indicated by the dotted line 3—2 of Fig. 5; Fig. 4 is a transverse sectional detail view through the eaves portion of the car on the section indicated by the line 4—4 of Fig. 5; Fig. 5 is a detail elevation of a portion of the roof at and adjacent to the carline and of the eaves portion of the side of the car adjacent thereto; Fig. 6 is a longitudinal sectional view through a carline and a portion of the roof sheets adjacent thereto; Fig. 7 is a perspective view of the fastening for the safety rod; Fig. 8 is a perspective view of a clip for holding the roof sheets; Fig. 9 is a transverse sectional detail view on the section indicated by the line 9—9 of Fig. 5; Fig. 10 is a detail sectional view of one of the roof sheet holding nuts; Fig. 11 is a perspective view of a modified form of clip; and, Fig. 12 is a detail view of a running-board saddle.

The present roof is especially designed for steel frame cars. Extending longitudinally of the car and rigidly secured to the side columns 1 so as to constitute a portion of the side frame of the car are angle plates 2 or plates of other suitable section. One member of the angle plate is vertically disposed, while the other member projects outwardly and inclines downwardly at a slight angle. At intervals throughout the length of the

car, arched carlines 3 extend from side to side of the car and are riveted or otherwise rigidly secured to the horizontal member of the angle plates 2 at the eaves or upper portion of the side frames. Said carlines are also riveted or otherwise rigidly secured to angle irons 4 fixed to the vertical member of said angle plates 2. Preferably, these carlines are made in the form of channels with their flanges upstanding; and they serve as tie members to increase the strength and rigidity of the frame of the car as well as to support the roof sheets and the running board. Extending longitudinally of the car at the ridge and riveted or otherwise rigidly secured to the carlines is a ridge pole 5. Purlins also may be used if desired to more firmly secure said carlines.

The roof sheets 6 preferably extend from eaves to eaves and have rebent flanges 7 at their longitudinal edges arranged to overlap the upstanding flanges of the carlines. For this purpose, the height of the marginal flange of the sheet is slightly greater than the height of the flange of the carline, and the rebent or downturned portion of the marginal flange is narrow enough to keep the edge thereof from bearing against the web of the channel. Preferably, the intermediate portion of the roof sheets is strengthened with corrugations or ribs 8 extending lengthwise of the sheet, but terminating short of the ends thereof so that the end portions will lie flat against the substructure and thereby exclude moisture and cinders. The rebent flange of the roof sheet is held in engagement with the flange of the carline by means of suitable clips 9 which are firmly secured to the framing by bolts 10 which pass down through holes in the roof sheet. The clip shown in Fig. 8 comprises a shank portion 11 adapted to be fastened to the framing of the car and a housing or hood portion 12 adapted to overlap the rebent marginal flange of the roof sheet. The housing portion preferably has the greater portion of one side 13 closed so as to protect the end of the roof sheet from the weather and cinders. This closed side lies at the end of the flange of the carline and has a gap or opening 14 in its lower portion to let out any cinders that may accidentally get inside thereof.

In order to prevent the clip from bind-

ing the roof sheet, a circular boss 15 of greater thickness than the roof sheet and of less diameter than the hole in the sheet is formed on the under side of the shank around the bolt hole. The intermediate portion of the roof sheet has circular holes 16 therein near its ends, and in each hole rests a washer whose lower portion 17 is of smaller diameter than said hole so as to allow a clearance between the roof sheet and said washer. The lower portion of the washer, that is, the portion of less diameter is of slightly greater thickness than the thickness of the roof sheet. The upper portion 18 of the washer is of greater diameter than the diameter of the holes in the roof sheet. By this arrangement, the roof sheet is held against vertical movement but is free to move horizontally in any direction. The washer is rigidly secured to the horizontal portion of the eaves plate 2 by means of a rivet or bolt 19.

The running board 20 of the car is mounted upon suitable saddles which are secured by rivets or bolts extending through the channeled carlines without perforating or binding the roof sheets. For this purpose, the lower portion 21 of the saddle is narrow enough to enter between the upstanding ribs of the carline without tightly binding the flanges of the roof sheets and the bottom of the saddle is arched to rest flatwise on the web of the channel. The upper portion 22 of the saddle projects over the flanges of the roof sheets and thus serves as clips to prevent them being lifted away from the carlines. The lower portion serves as a distance piece to prevent the upper overlapping portion from binding the flanges of the roof sheets.

Preferably, my roof is provided with a safety rod 23 which extends parallel with the eaves at some distance therefrom. This safety rod is fastened to the carline without perforating the roof sheets. For this purpose, a casting 24 of proper shape to lap over the upstanding flanges of the channel or carline is provided. The middle portion of this casting is provided with a distance piece 25 arranged to bear against the web of the channel and the casting is held in place by means of a bolt or rivet extending downwardly through a hole provided therefor in said casting and the distance piece thereof and through said carline. By this arrangement, the roof sheets are prevented from binding against the carline. This casting is provided with an upwardly extending socket member 26 adapted to receive the safety rod.

It is noted that by reason of the clearance between the roof sheets and their fastening devices, said sheets are free to move slightly with relation to the substructure, and consequently, they are relieved from stresses

tending to tear them during the working of the car. At the same time, the rebent marginal flanges of the sheets constitute stiffening ribs which cooperate with the carlines in sustaining the vertical load, such, for instance, as the weight of the brakeman on the running board. So, too, the roof sheets, the running board and the safety rod all assist in transferring a portion of the load from one carline to another.

Obviously, the construction hereinbefore described admits of considerable modification without departing from my invention. Thus, while a channel has divers advantages, it is obvious that certain of the advantages of my invention can be attained when a T-bar or double angle iron is substituted therefor. In such case, the rebent marginal flange of one roof sheet would overlap the single upstanding rib of the carline and the rebent marginal flange of the adjacent sheet would overlap the flange of the first mentioned sheet. So, too, it is obvious that the form of clip may be varied and that said clip may be secured to the carline without perforating the roof sheet. The casting which supports the hand rail acts in this manner as a clip for each of the adjacent flanges of the roof sheets, and when the casting is used merely as a clip, the upwardly extending arm thereof may be eliminated, as shown in Fig. 11. So, also, the roof sheets may be corrugated sheets and instead of extending from eaves to eaves, it is obvious that they may extend from eaves to ridge and be there joined together by any suitable seam.

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

1. A car having a steel frame comprising angle plates at the tops of the sides thereof, and a roof consisting solely of arched metal carlines having upturned flanges and secured to said angle plates, and metal roof sheets having rebent marginal flanges overlapping said upstanding flanges of the carlines, and means within the contour of the car securing said sheets to said plates permitting limited endwise movement of said sheets.

2. A car having arched metal carlines with upstanding flanges, metal roof sheets having rebent marginal flanges overlapping the upstanding flanges of the carlines, and clips secured to a portion of the frame of the car and overlapping the rebent flanges of the roof sheet said clips being inside of the lateral contour of the car.

3. A car having arched metal carlines with upstanding flanges, metal roof sheets having rebent marginal flanges overlapping the upstanding flanges of the carlines, and clips secured to a portion of the frame and overlapping the rebent flange of the roof sheet, said clips comprising a shank portion and a hooded portion adapted to overlap the

rebut flange of the roof sheet said clips being inside of the lateral contour of the car.

4. A car having arched metal carlines with upstanding flanges, metal roof sheets having rebent marginal flanges overlapping the upstanding flanges of the carlines, and clips secured to a portion of the frame and overlapping the rebent flange of the roof sheet, said clip comprising a horizontal shank portion and an upstanding hooded portion, and said hooded portion having a closed outer end with an opening near the bottom thereof.

5. A car having a steel frame, and a roof consisting solely of carlines and metal roof sheets supported entirely by said frame and means within the horizontal plane of the car roof for securing said roof sheets to the frame and to said carlines, said sheets being adapted to sustain any load to which the roof is ordinarily subjected and said means being adapted to limit movement of the sheets in their own plane and to hold them against vertical movement without binding them.

6. A car having a steel frame, comprising angle plates at the tops of the sides thereof, and a roof consisting solely of metal carlines secured to said angle plates and metal roof sheets secured to said angle plates so as to be movable relatively thereto, said sheets being of sufficient strength to sustain any load to which the roof is ordinarily subjected, the horizontal members of said angle plates being turned outwardly, and means for securing said roof sheets to the top of said angle plates outside of the sides of the car and being adapted to limit the movement of the sheets in their own plane and hold them against vertical movement.

7. A car having a steel frame comprising angle plates at the tops of the sides thereof with their horizontal members extending outwardly, and a roof consisting solely of arched metal carlines secured to said angle plates and metal sheets secured to said angle plates so as to be movable relatively thereto, said sheets being adapted to sustain any load to which the roof is ordinarily subjected, the means for securing said sheets to said angle plates being on top of the car and being adapted to permit limited movement of the sheets in their own planes and hold them against vertical movement.

8. A car having a steel frame and a roof consisting solely of metal roof sheets and carlines, and means for securing said sheets to the frame, said means comprising offset washers whose smaller portion is thicker than the roof sheets and of narrower diameter than the holes therein, and means for securing said washers.

9. A car having a steel frame comprising angle plates at the tops of the sides thereof and arched metal carlines secured to said

angle plates, said angle plates having their horizontal members turned outwardly, metal roof sheets having holes near the ends thereof beyond the side of the car, washers for holding said roof sheets and means for fastening said washers to said angle plate, said washers comprising a portion of small diameter loose in a hole in the roof sheet and a portion of larger diameter overlapping the edges of said hole without binding said edges.

10. A car having a steel frame comprising angle plates at the tops of the sides thereof and arched metal carlines secured to said angle plates and having upstanding flanges, metal roof sheets having holes near the ends thereof and rebent marginal flanges overlapping the upstanding flanges of the carlines, clips secured to a portion of the frame and overlapping the rebent flanges of the roof sheets, and washers extending through the holes in the roof sheets and secured to the angle plates, the lower portion of said washers being thicker than the roof sheets but of narrower diameter than the holes therein and the upper portion of said washers overlapping the edges of said holes.

11. A car having arched channel carlines with upstanding flanges and metal roof sheets constituting an outside roof, each sheet having a rebent flange along each of two opposite sides arranged to overlap the adjacent upstanding flanges of the adjacent carlines, and saddles for the running board secured to said carlines without perforating the roof sheets and projecting beyond the sides of the carlines and spaced from the roof sheets to prevent binding on the same.

12. A car having arched channel carlines with upstanding flanges and metal roof sheets, each sheet having a rebent flange along each of two opposite sides arranged to overlap the adjacent upstanding flanges of the adjacent carlines, a safety rod and supports therefor, said supports being secured to the carlines without perforating the roof sheets.

13. A car having arched channel carlines with upstanding flanges and metal roof sheets, each sheet having a rebent flange along each of two opposite sides arranged to overlap the adjacent upstanding flanges of the adjacent carlines, saddles for the running board secured to said carlines without perforating the roof sheets, a safety rod and supports therefor, said supports being secured to the carlines without perforating the roof sheets.

14. A car having metal carlines provided with upstanding flanges, metal roof sheets constituting an outside roof and a running board saddle constituting means for securing said roof sheets to the carlines, said means being adapted to afford a clearance between them and said sheets.

15. A car having arched metal carlines with up-standing flanges, metal roof sheets having marginal flanges overlapping the up-standing flanges of the carlines, and constituting an outside roof and clips secured to a portion of the frame of the car and overlapping the rebent flanges of the roof sheet with a clearance between them said clips being inside the lateral contour of the car.
- St. Louis, Missouri, May 15th, 1907.
- WALTER P. MURPHY.
- Witnesses:
- JAMES A. CARR,
G. A. PENNINGTON.