Dec. 14, 1937. W. P. MURPHY 2,102,276

CAR ROOF

Filed Oct. 3, 1936 2 Sheets-Sheet 1

Fig. 1.

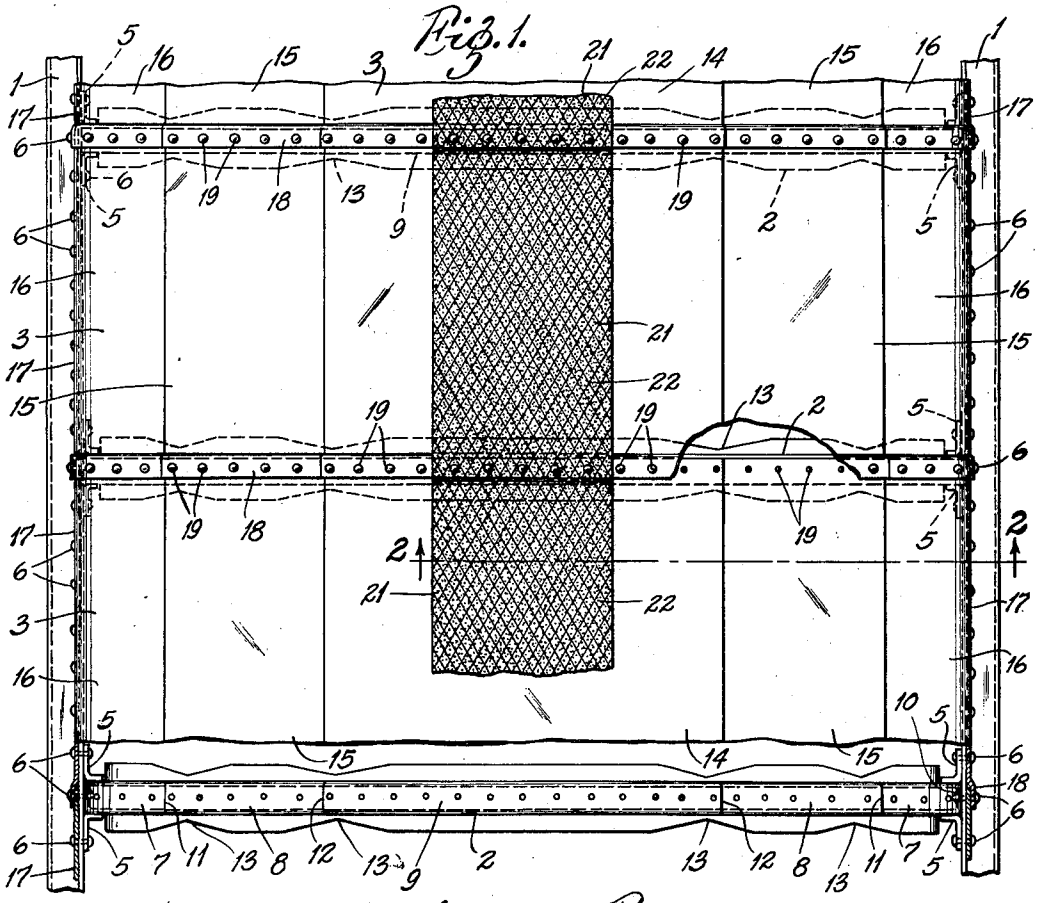


Fig. 2.

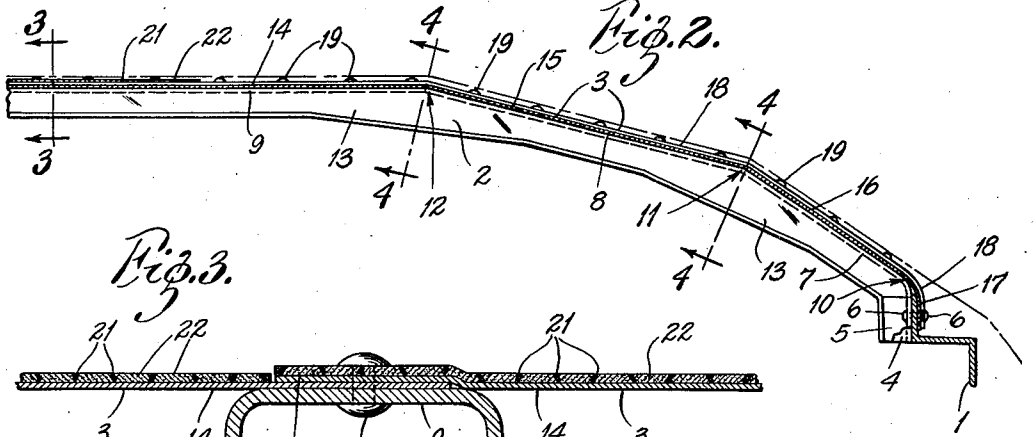
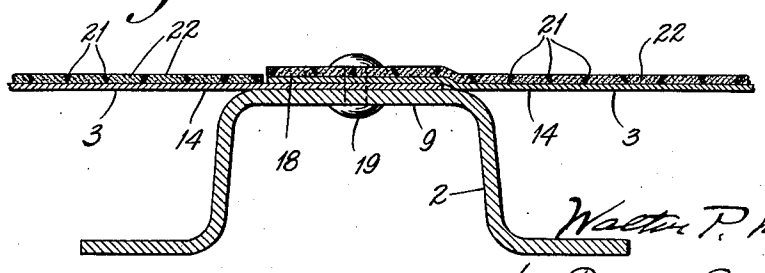


Fig. 3.



INVENTOR

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HIS ATTORNEYS

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Fig. 4.

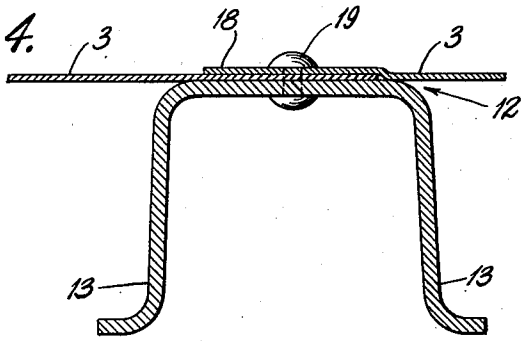


Fig. 5.

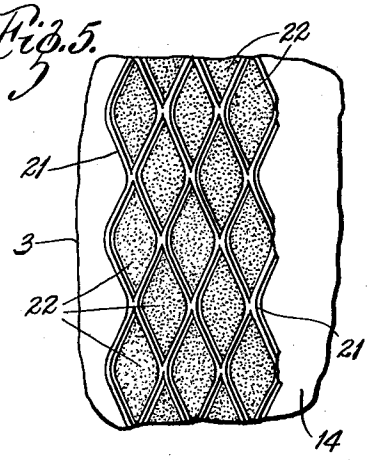


Fig. 6.

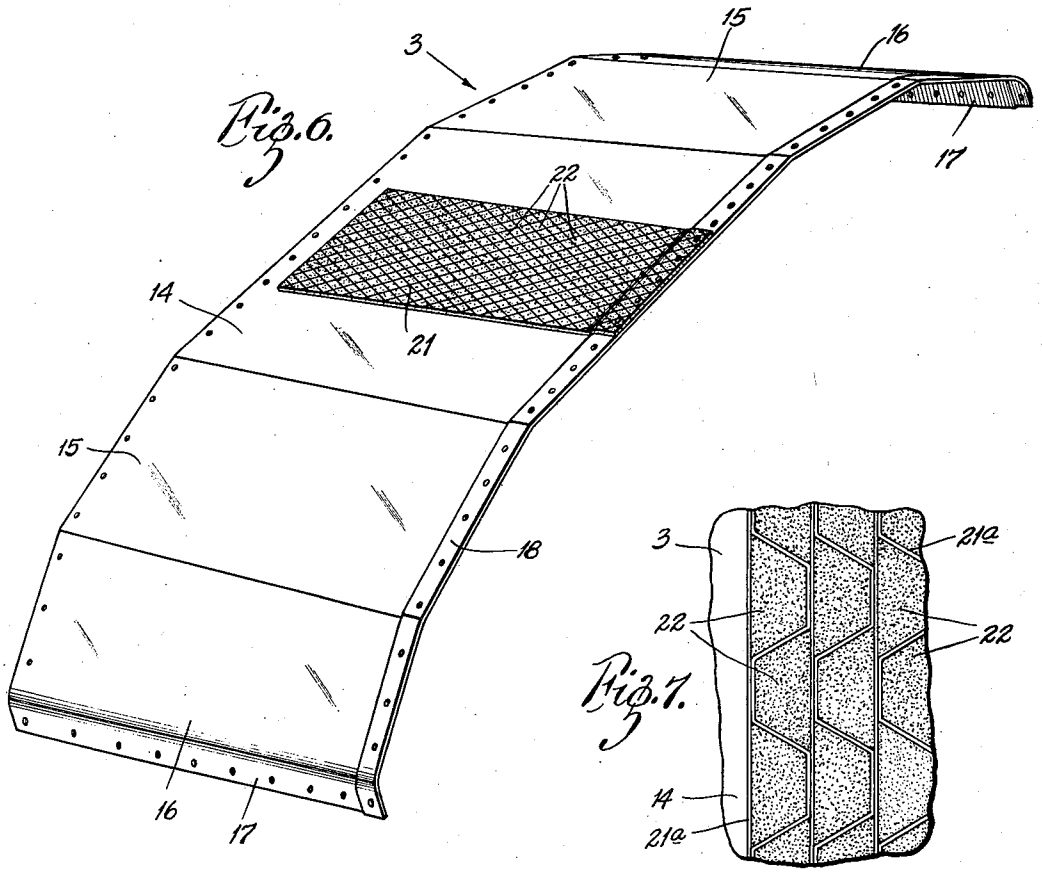


Fig. 7.

Walter P. Murphy INVENTOR:

by Cameron Cameron Brawley

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Patented Dec. 14, 1937

2,102,276

UNITED STATES PATENT OFFICE

2,102,276

CAR ROOF

Walter P. Murphy, Chicago, Ill., assignor to P. H. Murphy Company, New Kensington, Pa., a corporation of Pennsylvania

Application October 3, 1936, Serial No. 103,832

12 Claims. (Cl. 108—5.4)

My invention relates to car roofs, especially to that type of car roof wherein the margins of adjacent sheets lap flatwise and are secured together and to the supporting carlines by flat riveted or welded seams. The principal objects of the present invention are to position the roof sheets as high as practicable above the rails so as to provide a maximum loading capacity for the car. Another object is to provide a runway that will occupy very little space above the roof. The invention consists in the roof hereinafter described and claimed. It also consists in the parts and combinations of parts hereinafter described and claimed.

In the accompanying drawings which form part of this specification and wherein like reference numerals refer to like parts wherever they occur,

Fig. 1 is a plan view of a portion of a car roof embodying my invention;

Fig. 2 is a vertical transverse section through one-half of the roof on the line 2—2 in Fig. 1;

Fig. 3 is a fragmentary vertical section on the line 3—3 in Fig. 2;

Fig. 4 is a similar section on the lines 4—4 in Fig. 2;

Fig. 5 is a fragmentary plan view of the runway portion of the car roof;

Fig. 6 is a perspective view of one of the roof sheets; and

Fig. 7 is a view similar to Fig. 5 showing a modified form of grill work for the runway.

The construction illustrated in the drawings comprises the metal side plates 1 of the car, carlines 2, whose ends are secured to the respective side plates, and roof sheets 3, which extend from side plate to side plate. The carlines shown in the drawings are of inverted channel-shaped section with vertical end portions 4 that have laterally extending angle pieces 5 welded or otherwise secured to its opposite sides, which angle pieces are secured flatwise to the upstanding leg of the metal side plate, as by rivets 6 or welds.

The top surface of each carline conforms substantially to the established tunnel clearance outline of the American Association of Railroads. That is, the stretch 7 of the outer or top surface of the carline near the eaves slopes inwardly and upwardly substantially parallel with the clearance outline to a point opposite the first angle or break in said outline; thence, the next stretch 8 of the upper surface of the carline inclines inwardly and upwardly at a somewhat lower angle and parallel with the adjacent portion of the clearance outline to a level far enough below the top of the clearance outline to just accommodate the roof sheets and the runway hereinafter described; and the next stretch 9 of the top of the carline extends horizontally from this point to the corresponding point at the other end thereof. Thus, the width of the middle horizontal or ridge stretch 9 of the top of the carline is between one-third and one-half of the distance between the side plates; and there are three breaks in the upper surface of each half of the carline, namely, one break 10 at the eaves separating the vertical stretch from the outer inclined stretch, one break 12 at the edge of the middle horizontal stretch which separates said horizontal stretch from the inner inclined stretch, and one break 11 between the two inclined stretches. The inner or lower surface of the carline is parallel with the upper or outer surface thereof at the downturned ends 4 and opposite the middle portions of the horizontal or ridge stretch 9 and opposite the middle portions of the inner inclined stretches 8, and opposite the outer ends of the outer inclined stretches 7. The stretches of the lower surface of the carline, which are parallel with stretches of the upper surface are connected by stretches 13 which are not parallel with the upper surface and which have the effect of increasing the depth of the carline opposite the breaks in its upper surface. Said carline is described and claimed in my application filed concurrently herewith, Serial No. 103,833.

The roof sheets extend from side plate to side plate and have six breaks therein conforming to the breaks in the upper surface of the carline above described; that is, each roof sheet comprises a horizontal panel 14 at the ridge or middle of its length, bordered on each side by an inner sloping panel 15 of relatively small inclination, next to each of which is an outer sloping panel 16 of steeper inclination, each of which outer sloping panels is contiguous with a downturned end panel 17. The sheets are of proper length transversely of the car for their end panels to fit flatwise against the outer surfaces of the upstanding legs of the side plates. Preferably a narrow strip 18 along one side margin of each sheet is raised to the thickness of the adjacent sheet which is overlapped thereby.

The sheets are laid with the margin of one sheet overlapping and resting flatwise on the margin of the adjacent sheet, the lap being above the carline and the sheets and carline being secured together as by welding or by rivets 19 extending vertically through the lapping margins of the sheets and the top of the carline.

Thus, the seam is low and adds very little to the thickness of the roof. The downturned ends of the sheets are secured flatwise against the outer surfaces of the side plates, as by rivets 6.

In order to provide a runway, a piece of expanded metal 21 is welded directly to the horizontal ridge portion of each sheet and the interstices in the expanded metal are filled with material 22 suitable for the purpose, such, for instance, as asphalt, mastic or other plastic composition which will afford a good footing. The surface of the runway may be roughened, as by embedding grit in the upper portion thereof, to prevent slipping. The plastic filling may entirely cover the expanded metal, but I prefer to leave the top edges of the expanded metal exposed to prevent slipping; in fact, the filling material may be dispensed with entirely.

I prefer to secure a separate section of expanded metal to each roof sheet and to weld such section to the sheet either by spot welding or by lines of welds that are continuous along the roof sheet and unite with the sheet all strands of the expanded metal that are intersected by the weld line. It is noted that when the runway section is united with the individual sheet, it terminates short of that margin which is to be overlapped by the next adjacent sheet.

Expanded metal is well adapted for the runway because it adds very little to the height of the car, because the strands incline upwardly and have raw edges that furnish a non-slip footing, and because its angular interstices are well adapted to hold plastic material. However, I do not wish to limit myself to expanded metal, as grill work, such as shown in Fig. 7 may be substituted therefor. In the grill work 21*a* illustrated in said figure, there are flat bars or rods set edgewise on the roof sheet and welded thereto; and the space between said rods is occupied by flat rods set edgewise and bent in more or less zigzag fashion and fastened together to form interstices. Even wire mesh work may be used, especially when the plastic covers the metal anchoring and reinforcing portion of the runway.

When the individual sheets are laid in position, the runway sections are in alinement longitudinally of the car and constitute a substantially continuous runway. It is a merit of the invention that the shaping of the sheets and the application of the runway sections thereto may be done at the factory where the conditions are most favorable for accuracy and economy of work. The thinness of the runway, the conformity of the roof sheets to the established tunnel clearance outline, and the design of the carlines all contribute to the placing of the roof as high as practicable above the rails and to the obtaining of a maximum loading capacity for the car.

What I claim is:

1. A car roof comprising side plates, carlines extending from side plate to side plate, roof sheets extending from side plate to side plate and a runway, the upper surfaces of the carlines and sheets conforming substantially to the established tunnel clearance outline throughout the width of the car and of the sheets with their ridge portions horizontal and spaced low enough for the runway to clear said outline, and said runway comprising expanded metal laid directly on the roof sheets throughout its length.

2. A car roof comprising side plates, carlines extending from side plate to side plate, roof sheets extending from side plate to side plate and a runway, the upper surfaces of the carlines and sheets conforming substantially to the established tunnel clearance outline throughout their width and length with their ridge portions horizontal and spaced low enough for the runway to clear said outline, and said runway comprising expanded metal laid directly on the roof sheets and a plastic material filling the interstices thereof.

3. A car roof comprising side plates, carlines with vertical end portions mounted on the inner vertical faces of said side plates, and roof sheets mounted on said carlines and side plates and lying substantially parallel with and close to the established clearance outline throughout their width and length, the upper surface of the carlines conforming substantially to the established tunnel clearance outline with its ridge portion horizontal and spaced low enough for the runway to clear said outline, the margins of adjacent sheets overlapping each other flatwise above the carlines and rigidly secured together and to the carlines, and said sheets having downturned end flanges secured flatwise to said side plates.

4. A car roof comprising side plates, carlines mounted on said side plates, and roof sheets mounted on said carlines and side plates and lying substantially parallel with and close to the established clearance outline throughout their width and length and having a runway extending longitudinally of the car, the upper surfaces of the carlines conforming substantially to the established tunnel clearance outline with its ridge portion horizontal and spaced low enough for the runway to clear said outline, said runway comprising expanded metal welded directly to the roof sheets, and the margins of adjacent sheets overlapping each other flatwise above the carlines and rigidly secured together and to the carlines.

5. A car roof comprising side plates, carlines mounted on said side plates, and roof sheets mounted on said carlines and side plates, and having a runway extending longitudinally of the car, the upper surfaces of the carlines conforming substantially to the established tunnel clearance outline with its ridge portion horizontal and spaced low enough for the runway to clear said outline the lower surfaces of said carlines having certain portions which are substantially parallel with but of shorter length than the adjacent portions of the upper surface, and other portions which connect the ends of said short portions and substantially increase the depth of the carline in the regions of the breaks in its upper surface, said runway comprising expanded metal resting on and secured to the roof sheets, and the margins of adjacent sheets overlapping each other flatwise above the carlines and rigidly secured together and to the carlines.

6. A car roof comprising side plates, carlines mounted on said side plates, roof sheets extending from side plate to side plate, and a thin runway secured flatwise directly to said sheets so as to add very little to the height of the car, the upper surfaces of the sheets and carlines being close to and conforming substantially to the established tunnel clearance outline substantially throughout their length and width and with their ridge portions horizontal and spaced low enough for the runway to clear said outline, the margins of adjacent sheets overlapping each other flatwise above the carlines and rigidly se-

cured together and to the carlines and the sheets being otherwise unbroken in a longitudinal direction.

7. A car roof comprising side plates, carlines, roof sheets and a sectional runway, each sheet conforming substantially to the established tunnel clearance outline with its ridge portion horizontal and having a separate section of the runway mounted directly thereon, the sheets being spaced low enough for the runway to clear said outline, the margins of adjacent sheets overlapping each other flatwise above the carlines and rigidly secured together and to the carlines, and the runway section of each sheet terminating short of the overlapped margin thereof.

8. A car roof sheet having transverse breaks therein dividing it into a flat horizontal middle panel about equal in width to the top of the established tunnel clearance outline, downturned end panels and two inclined flat panels between the middle panel and each end panel, said inclined panels being substantially parallel with the adjacent portions of said outline, said sheet having expanded metal secured flatwise to its middle panel to constitute a runway section.

9. A car roof sheet having transverse breaks therein dividing it into a flat horizontal middle panel about equal in width to the top of the established tunnel clearance outline, downturned end panels and two inclined flat panels between the middle panel and each end panel, said inclined panels being substantially parallel with the adjacent portions of said outline, said sheet having expanded metal welded flatwise to its middle panel to constitute a runway section.

10. A car roof sheet having transverse breaks therein dividing it into a flat horizontal middle panel about equal in width to the top of the established tunnel clearance outline, downturned end panels and two inclined flat panels between the middle panel and each end panel, said inclined panels being substantially parallel with the adjacent portions of said outline, said sheet having expanded metal secured flatwise to its middle panel and plastic material filling the interstices of the expanded metal to constitute a runway section.

11. A car roof comprising side plates, carlines extending from side plate to side plate, roof sheets extending from side plate to side plate and a runway, the upper surfaces of the carlines and sheets conforming substantially to the established tunnel clearance outline throughout the width of the car with their ridge portions horizontal and spaced low enough for the runway to clear said outline, and said runway comprising metal laid directly on the roof sheets throughout its length and welded thereto.

12. A car roof comprising side plates, carlines mounted on said side plates, roof sheets mounted on said carlines and side plates and lying substantially parallel with and close to the established clearance outline throughout their width and length, and a thin runway secured flatwise directly to said sheets so as to add very little to the height of the car, the upper surface of each carline having breaks to conform it substantially to the established tunnel clearance outline throughout the length of the carline with its horizontal ridge portion spaced low enough for the runway to clear said outline, the lower surfaces of said carlines having certain portions which are substantially parallel with but of shorter length than the adjacent portions of the upper surface, and other portions which connect the ends of said short portions and substantially increase the depth of the carline in the regions of the breaks in its upper surface, the margins of adjacent sheets overlapping each other flatwise above the carlines and rigidly secured together and to the carlines, said sheets being flat between such overlaps.

WALTER P. MURPHY.