

928,985.

Patented July 27, 1909.

6 SHEETS—SHEET 1.

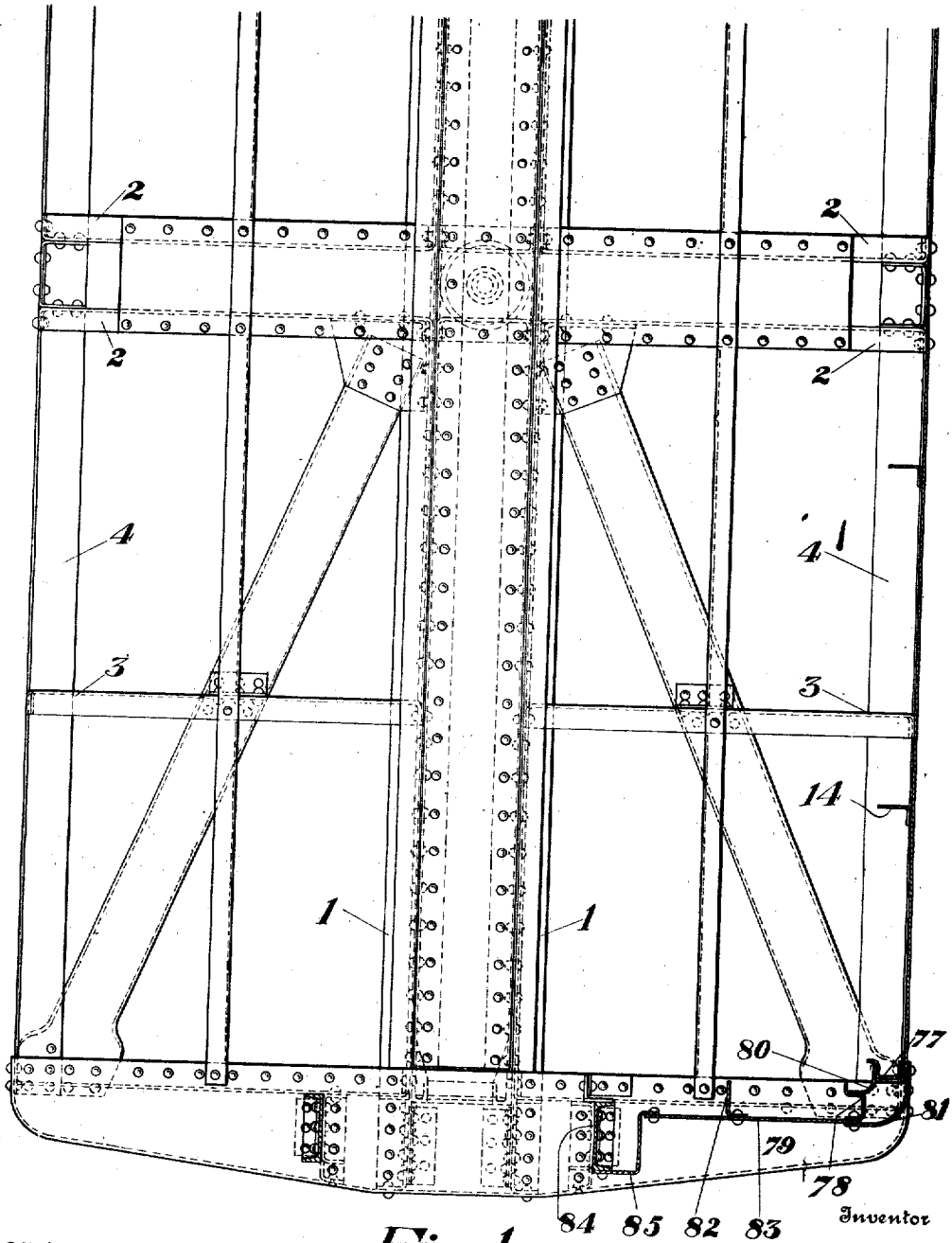


Fig. 1.

Witnesses
Frank E. Miller
Harry Cunningham.

By

Felix Koch.
Harry Q. Knight
Attorney

928,985.

F. KOCH.
PASSENGER CAR.
APPLICATION FILED DEC. 26, 1908.

Patented July 27, 1909.
5 SHEETS—SHEET 2.

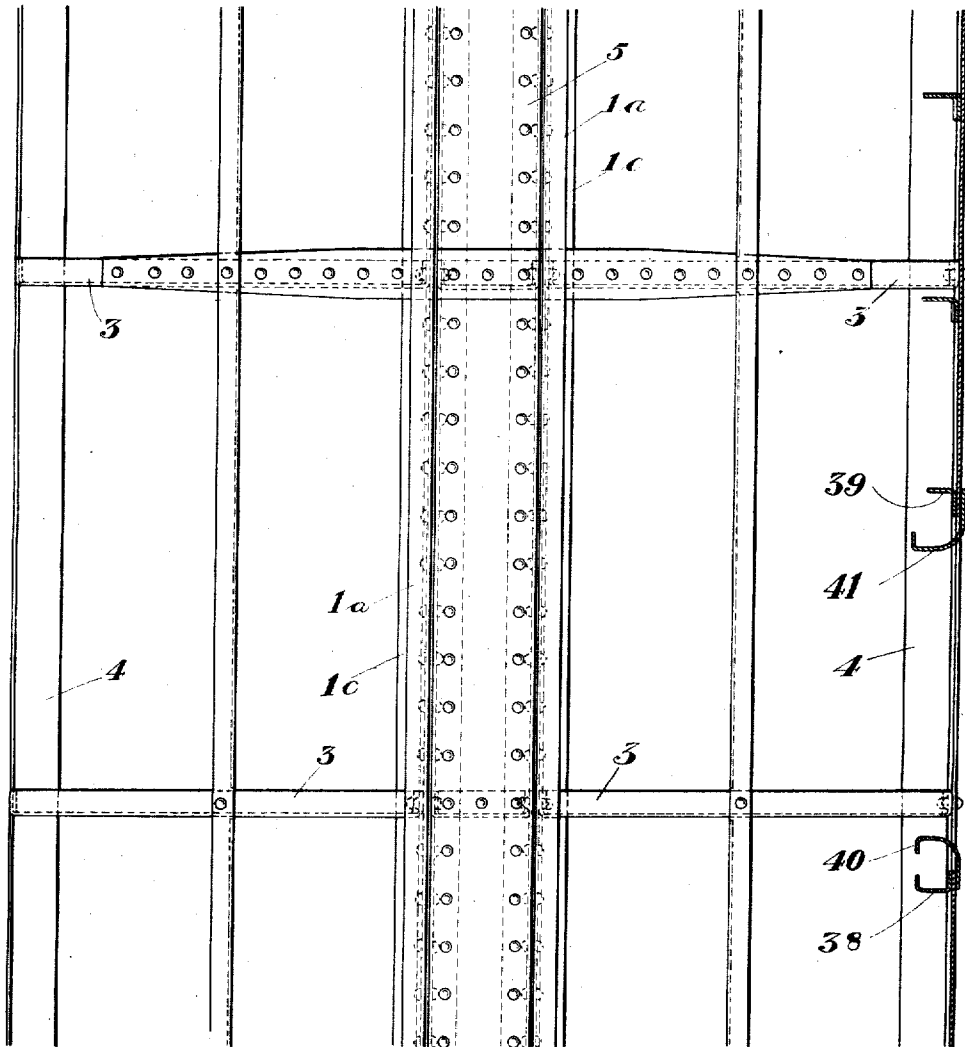


Fig. 1a.

Witnesses

Frank E. Miller
Harry Cunningham

Inventor

Felix Koch

By

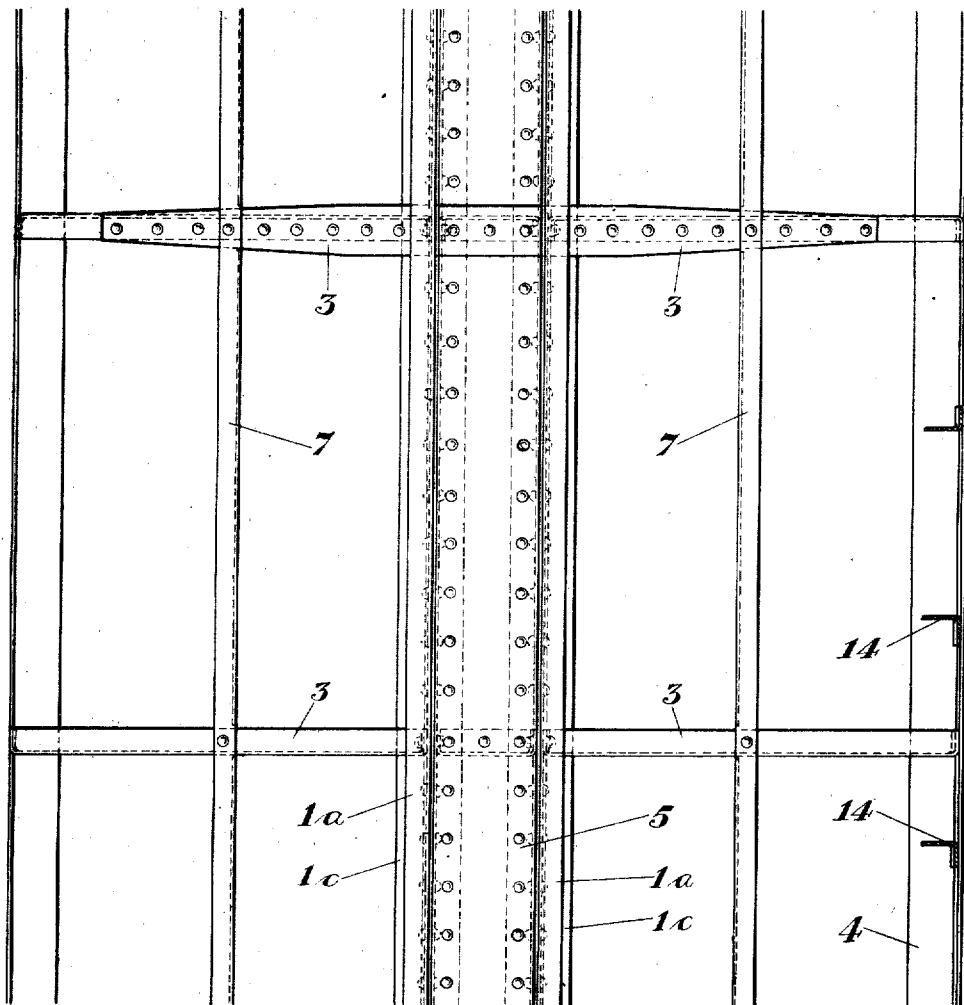
Harry A. Knight

Attorney

928,985.

F. KOCH.
PASSENGER CAR.
APPLICATION FILED DEC. 26, 1908.

Patented July 27, 1909.
6 SHEETS—SHEET 3.



Inventor

Fig. 1b.

Felix Koch.

Witnesses
Frank E. Miller
Harry Cunningham

384

Harry A. Knight

Attorney

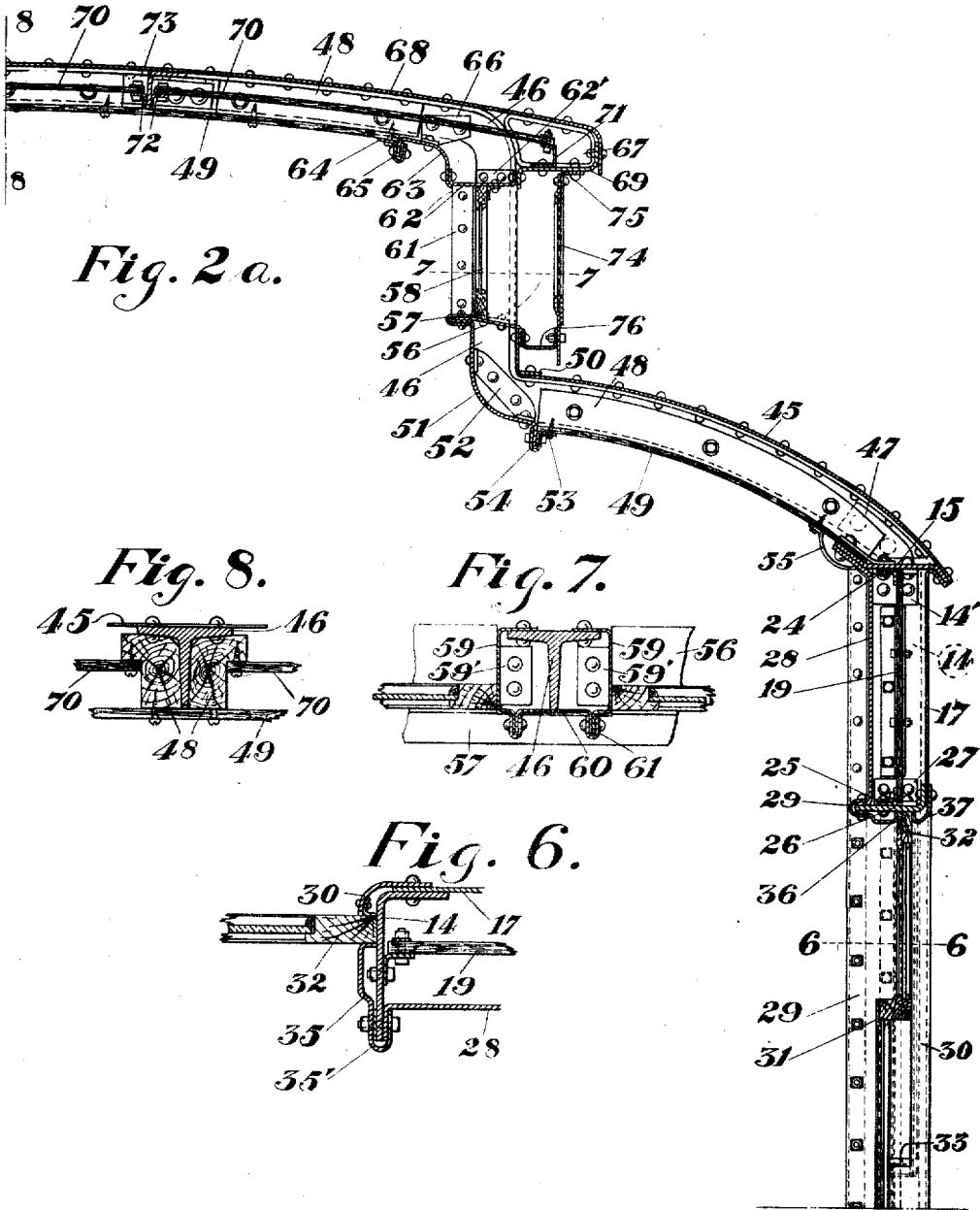
F. KOCH.
PASSENGER CAR.

APPLICATION FILED DEC. 26, 1908.

928,985.

Patented July 27, 1909.

5 SHEETS—SHEET 5.



Inventor

Felix Koch.

By

Harry A. Knight

Attorney

Witnesses

Frank C. Miller
Harry Cunningham.

UNITED STATES PATENT OFFICE.

FELIX KOCH, OF BELLEVUE, PENNSYLVANIA, ASSIGNOR TO PRESSED STEEL CAR COMPANY,
OF PITTSBURG, PENNSYLVANIA, A CORPORATION OF NEW JERSEY.

PASSENGER-CAR.

No. 928,985.

Specification of Letters Patent.

Patented July 27, 1909.

Application filed December 28, 1908. Serial No. 469,423.

To all whom it may concern:

Be it known that I, FELIX KOCH, a subject of the Emperor of Germany, residing at Bellevue, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Passenger-Cars, of which the following is a specification.

In the drawings like reference characters refer to like parts, and Figures 1, 1^a and 1^b are plan views showing one-half of the car underframe; Fig. 2 is a transverse section through one-half the car underframe and lower superstructure; Fig. 2^a is a like view through the upper portion of the superstructure; Fig. 3 is a section through the door posts; Fig. 4 is a section on line 4-4, Fig. 2; Fig. 5 is a like view on line 5-5, Fig. 2; Fig. 6 is a like view on line 6-6, Fig. 2^a; Fig. 7 is a like view on line 7-7, Fig. 2^a, and Fig. 8 is a like view on line 8-8, Fig. 2^a.

An object of the present invention is to provide improvements in the car underframe which facilitates the laying of the car flooring.

Another object of the present invention is to improve the side construction so that parts may be assembled initially with greater facility and so that same may easily be taken apart for repairs and yet give the interior as well as the exterior of the car a neat and finished appearance without multiplication of parts, involved in this side construction being also a very desirable arrangement of the window sashes and door posts and an improved side sill, belt rail and side plate and, furthermore, an improved mounting for the intermediate non-conductive lining of the car.

A further object of the present invention is to improve the upper deck structure of the car which has a neat and finished appearance and which, in structure, is simple and strong.

Referring now in detail to the drawings, 1 (Figs. 1, 1^a, 1^b and 2) represents the center sills, 2 the bolster members, 3 the transoms and 4 the side base members of a car underframe. Center sills 1 are provided with outwardly extending flanges 1^a along their upper edges which are preferably integral, and inwardly and outwardly extending flanges 1^b along their lower edges which are preferably formed by angles riveted thereto, it

being simpler to cut the sill into proper shape by shearing one edge and then applying separate angles than to form a die of suitable shape to press a flanged sill of the desired shape. Bolsters 2 and transoms 3 are riveted to the center sill, preferably at a point a suitable distance below the upper flange of said center sills (Fig. 2) and are provided with an angular upper edge, the apex of the angle being located at about the center of the upper edge of said bolster or transom, said upper edge sloping from said apex downwardly toward the center sill 1 so that a space is left between the upper flanges 1^a of the center sill 1 and the upper edge of the bolster 2 and transom 3.

5 is a tie-plate mounted on angles 6 both of which extend longitudinally of the car between the center sills 1. Angles 6 are preferably carried by the same rivets which connect bolsters 2 and transoms 3 to the center sills 1. Tie-plate 5 and angles 6 are preferably dropped below the plane of the upper flanges 1^a of the center sills 1 so that the rivets securing said tie-plate 5 and angles 6 together are below the plane of the upper flanges of said center sills 1. Side base members 4 are riveted to the lower outer corners of bolsters 2 and transoms 3, and are preferably angles with one leg longer than the other and extending horizontally.

7 are angles extending longitudinally of the car and passing through the upper edges of bolsters 2 and transoms 3 so that one leg of the angle projects downwardly between the transoms and bolsters to which an extension plate 8 between each pair of cross beams is riveted. To plates 8, bolsters 2; transoms 3 and center sills 1 are bolted angle brackets 9 to which is secured asbestos mill-board or other insulating substance.

10 is a pressed metal bracket, one between each pair of beams, extending longitudinally of the car and having one flange riveted to the side base member 4, flanges riveted to the cross beams, bolster or transom and a flange bolted to an angle bracket 9 to support the outer edge of the adjacent sheet of insulating substance. As shown in Fig. 2, there are two sheets of insulation between each of the cross beams, bolster or transom, the adjoining edges of said sheets being bolted to the extension plate 8 in each instance through medium of the brackets 9.

11 is a corrugated sheet metal floor base riveted to the upper flanges of the center sills 1, angles 7 and to angles 12 extending between posts 14, later described, and connected to said posts 14 by clip angles 12'. The object of dropping the upper edge of the bolsters 2 and transoms 3 below the plane of the upper flanges 1^a of the center sills 1 is to allow space for the riveting tools in riveting the floor base 11 to the upper flanges of the center sills 1. At the same time, the tie plate 5 and angle 6 are dropped for the purpose of carrying the rivets which hold these two members together out of the plane which the floor base 11 occupies when in position so that the floor base 11 may be laid evenly and will not be interfered with by said rivets.

13 is the floor of the car, of cement or similar composition, laid on the corrugated floor base 11.

14 are posts supported at their lower ends on side base members 4 which are riveted to bolsters 2 or transoms 3 and extending upwardly to and spaced apart by side or eave plate or plates 15 to which plates they are secured by angles 14'. Posts 14 are angular in section, said angles being formed preferably by pressing to form a deep leg projecting into the car. Posts 14 are secured to side base members 4 by angles 16 riveted to said parts.

17 is the side sheeting of the car extending from side base members 4 to plate 15 and riveted to posts 14.

18 is a belt plate consisting of a flat strip of metal riveted to posts 14.

19 is an intermediate lining of non-conductive substance, such as asbestos mill-board which consists in sheets of the material extending between the several posts above flooring 13 and bolted to angles 20, which in turn are bolted to posts 14. Lining 19 is furthermore bolted to horizontal angles 21 extending along its base or lower edge, which angle 21 rests against the floor 13 and are suitably secured thereto, the lower edge of lining 19 engaging the upper edge of angles 12. Along its upper edge the lining 19, where it is located beneath a window, is bolted to an angle 22 which in turn is secured to a sill plate 23 by suitable means or, where lining 19 extends the full height of the car side and above the doors and windows, the same is secured along its upper edge to angles 24 to which said lining is bolted and which in turn is bolted to plate 15, and along its lower edge, above the doors or windows, to angles 25 which in turn are secured to angular window or door lintels 26 which extend between posts 14, and are secured to posts 14 by angles 27.

28 is the inside lining or sheeting of the car formed in flanged panels, the flanges of said panels running vertically and hori-

zontally, the vertical flanges abutting the inner edges of posts 14. The lower horizontal flanges of the lower inner lining panels 28 are secured by suitable means to the floor of the car, the upper horizontal flanges of said lower inner lining panels 28 abutting the underside or face of the sill plate 23 or the lower horizontal flanges of adjacent inner lining panels. The intermediate inner lining panels 28 extend only between the window or door openings hereinafter described and are equal in depth to the window openings. The upper horizontal flanges of said intermediate panels being in turn riveted to the lower horizontal flanges of the upper panels which latter are equal in depth to the distance between the window lintel plate 26 and plate 15, the upper flanges of said inner lining panels being riveted or secured to plate 15, said flanges being deflected to conform to the peculiar shape of said plate 15. Wherever the vertical or horizontal flanges of the several inner lining panels abut, a cap 29 formed of bent sheet metal is riveted over the edges. Caps 29 are also riveted over inwardly projecting edges of posts 14 and the flanges of adjacent inner lining panels so that a finished appearance is given the interior of the car, at the same time reinforcing and protecting the abutting edges of the panel flanges and posts. Caps 29 also embrace the upper edges or flanges of lower panels 28, below the sill plates 23, and where this is the case caps 29 are extended over sill plate 23 and shaped to form a window weather strip.

Each of the window openings is formed between a pair of posts being bounded vertically by window lintel plates 26 secured in a manner already described to posts 14 and sill plates 23, also secured to posts 14. The outer sides of the window openings are faced with suitably shaped face plates 30 riveted to posts 14 and exterior sheeting 17 at their outer edges and bent inwardly at their inner edges to form the outer walls of grooves in which the lower sashes 31 are mounted. Face plates 30 are variable in width throughout their height, at their upper ends being narrower to form a guide for the upper sash 32 and one wall of the groove in which upper sash 32 moves. The groove in which upper sash 32 moves does not extend to the bottom of the face plate 30 but extends below the upper edge of the lower sash a distance equal to the desired depth of said upper sash. At the bottom of the groove in which upper sash 32 moves is mounted a rubber cushion 33 for cushioning upper sash 32 when it is dropped.

35 is an inner face plate which forms a sash-holding guide and also a cap for the vertical flange of intermediate inner lining panel 28 and post 14. Face plate 35 is bolted

in place with a washer 35' between it and post 14, it being desirable to bolt this member in place rather than to rivet same to permit easy detaching of the sashes from their grooves. Lower sash 31 is not designed to be moved, therefore, the upper portion of the face plate 35 extends over and in the vertical plane of the upper edge of sash 31 and forms one of the walls of the groove in which the upper sash 32 travels. Face plates 30 and 35, where they bear against the movable sash 32 or form the walls of the groove in which said sash travels, are flanged inwardly by bending their opposed edges toward the posts 14, thus forming a smooth surface against which the sash 32 slides or is held. If desired, this flange may be formed by riveting a separate angle as in the case of face plate 30, Fig. 6. The upper sash 32 may be held up in position by any suitable means such as the customary window catch (not shown). The lintel plate 26 is covered by inner and outer face plates 36, 37, respectively, similar in construction to the vertical face plates 30, 35, except that they are riveted in place.

The doorways (Fig. 3) are formed between a pair of posts, the posts at the doorway being of slightly different section, one of said posts 38 being channel in section, the other of said posts 39 being an angle like posts 14 but of less depth, and the inwardly projecting leg of which extends in only so far as the web of the inner lining panel 28. The function of posts 38, 39 is to stiffen the side frame of the superstructure and form a means for support of face plates 40, 41, and the non-conductive lining 19. Face plate 40 is located on one side of the door and is of slightly less depth than face plate 41 located on the other side of said door, face plate 40 extending in only to the door line while face plate 41 extends in sufficiently to form a door stop or jamb for the sliding door 42. Face plate 41 is secured to the flange of the adjacent inner lining panel 28; face plate 40 is left open, that is, does not extend around to and is not secured to channel 38, it being desirable to leave face plate 40 open to facilitate riveting inner lining panel 28 to channel 38. The door lintel face plate (not shown) may be of suitable construction. Door sill 42* is also of suitable construction. Owing to the location of the door 42 immediately back of post 38, when the door is in open position, it is undesirable to have flanges of the inner lining panel 28 secured to post 38, and hence post 38 is made in the form of a channel so that there is not a projecting connection between post 38 and panel 28 which would interfere with the door. Side or eave plate 15 is of a modified Z-construction, the outer flange of the plate projecting downwardly and

forming a firm support for the roof sheeting 45 at its lower edge. Sheeting 45 is bent around the lower edge of the side plate 15 and firmly riveted thereto.

46 is a carline, preferably T-shape in cross-section, with flanges facing outwardly, extending from one side of side plate 15 to the opposite side or eave plate 15 and secured to side or eave plate 15 by means of angles 47. Bolted or otherwise secured to the faces of carlines 46 over the head spaces of the car and also under the roof of the upper deck, are facing blocks, strips or stringers 48, of wood, composite or other suitable material; and to these strips or stringers 48 are attached panels 49 of composite board or other suitable substance. These panels 49 are shown as secured through the medium of wood screws. The carlines 46 are bent to form a clearstory shape of roof. The vertical portions of carlines 46 form posts for the upper deck. To the flanges of the carlines 46 is riveted the roof sheeting 45 and the upper deck side sheeting 50. At the bent inwardly projecting elbow of the carlines 46 is mounted a curved panel 51 mainly supported through the medium of double angle clips 52 riveted to carlines 46 and to said panel 51. Panel 51 is flanged outwardly at its lower and upper edges, the lower flanges projecting downwardly adjacent the downwardly projecting flanges of angles 53 secured to the panels 49 over the head spaces of the car. The lower flanges of panels 51 and angles 53 are covered by caps 54 held in place by bolts passing through caps 54, said lower flanges and said angles.

55 are longitudinally extending outwardly curved finishing strips adapted to cover the meeting edges of the upper panels 28 and side plates 15 to give the joint a finished appearance. The outer sheeting 50 of the upper deck is provided with suitable window openings. The upper flange of the curved panel 51 is bent horizontally into line with the upper deck sill plate 56 which is bent at its lower edge to embrace the edge of the outer lining 50 at the window opening. This sill plate 56 extends throughout the length of the upper deck and is suitably notched or recessed to receive the carlines 46.

57 is a horizontal sash jamb having an U-shaped inner leg forming a cap for the upper flange of the curved panel 51 and the inner edge of the upper deck sill plate 56. Jamb 57 has an upwardly extending flange against which the upper deck sash 58 rests when in closed position. Sashes 58 are pivoted so that their lower rails swing outwardly and their upper rails inwardly in the direction of the dotted lines. On either side of the window openings are upper deck window facing plates 59 flanged outwardly

and riveted to the flanges of the carlines 46 and flanged inwardly and riveted to panels 60 with flanges of upper deck in line with flanges of plates 59, the flanges of plates 59 and the panels 60 being riveted together with caps 61 covering their edges. Plates 59 are also riveted to the sill plates 56 by flanges 59' extending toward the carlines 46.

62 is a pressed steel upper deck lintel plate extending throughout the length of the upper deck over the window openings and suitably recessed to receive the carlines 46. Plate 62 is secured to carlines 46 through upwardly projecting lugs 62' formed adjacent the notches or recesses in plate 62 for the reception of the carlines 46. Plate 62 is provided with upwardly projecting flanges at its inner and outer edges, the inner flange being secured to a curved panel 63 having a flange riveted to an angle 64 through the medium of a cap 65, angle 64 being secured to the lining panel 49 under the roof of the upper deck. Panel 63 is also supported by a bracket angle 66 riveted thereto and to the carlines 46.

67 is an eave bracket of pressed metal or other suitable formation having a peripheral flange to the upper portion of which is riveted the upper deck roof 68.

69 is an upper deck eave plate of modified Z-section, preferably of pressed steel, the outer projecting flange of which is riveted to bracket 67 and the inner downwardly projecting flange of which is riveted to carlines 46. Bracket 67 and upper deck eave plate 69 form a suitable overhang for the upper deck roof 68.

70 is an intermediate insulating lining divided in a suitable number of panels extending across the upper deck beneath the roof thereof, supported at their outer edges by frames 71 and at their intermediate edges through angles 72 riveted to purlins 73. The panels of the linings 70 are also secured to strips 48 carried by the carlines 46 beneath the roof of the upper deck, shoulders being formed in these strips 48 to which the lining panels 70 are secured by wood screws or other means.

74 are the ventilating screens supported in front of the sashes 58 by brackets 75 riveted to the upper deck eave plates 69, supported below by brackets 76, riveted to upper deck side sheeting 50 and to said screens.

The corner posts of the car are of box-shape in cross-section and comprise a pair of modified channels 77, 78 secured at their lower ends to side base member 4 and end sill 79, respectively, and to each other through the medium of a conterminous plate 80 riveted to the rear flanges of channels 77, 78, the remainder of the post columns being made up by a conterminous curved

outer plate 81 riveted to the far flanges of 65 channels 77, 78.

82 are the car end posts similar in construction to side posts 14, save that they rise from the end sills 79.

83 is the car end sheeting supported by the 70 car corner posts and end posts 82.

84 are the central end posts of the car of greater depth than the posts 82 and connected to end sheeting 83 by angular plates 85, these plates being angular to compensate 75 for the difference in the line of the outer flanges of posts 84 and the end sheeting 83 and to produce an ornamental appearance.

In the car thus described, it will be noted that the lining is so arranged that the same 80 may be quickly and easily applied, all securing bolts or rivets being accessible to a tool owing to the fact that projecting connecting flanges are formed. It will further be noted that these projecting flanges are 85 covered by finishing caps to give the car a neat appearance. It will also be noticed that many of the parts have, incidental to their shape, both ornamental and mechanical functions.

Having thus described my invention the following is what I claim as new therein and desire to secure by Letters Patent:—

1. In a railway car, a center sill and side construction and cross-bearers extending 95 therebetween in combination with bracket members mounted on said center sill, cross-bearers and side construction and insulating material supported by said bracket members.

2. In a railway car, a center sill and side 100 construction and cross-bearers extending therebetween in combination with bracket members mounted on said center sill, cross-bearers and side construction, insulating material supported by said bracket members, 105 a beam extending between said cross-bearers for centrally supporting said insulating material.

3. In a railway car, the combination with a flanged center sill, a cross-bearer having 110 an upper edge angular relative to its length, the inner portion of which is spaced below the upper flange of said center sill, a flanged section riveted to said cross-bearer, posts supported by said flanged section, upper 115 flanged sections supported by and between said posts in the horizontal plane of the upper flange of said center sill and a level flooring supported by the upper flange of said center sill and said upper flanged 120 sections.

4. In a railway car, the combination in a side construction of a flanged section having a vertically disposed flange, a flanged post supported by said section, outer sheeting riv- 125 eted to the vertical flange of said section and to the flange of said post, an inner lining flanged and secured to the inwardly pro-

jecting portion of said post and an intermediate lining secured between said outer sheeting and inner lining.

5 In a railway car, the combination in a side construction of a base member consisting of a flanged section with a vertically disposed flange, flanged posts rising from said section, floor-supporting members extending between said posts, a floor supported by said members and outer sheeting riveted to the vertical flange of said base member and to the flanges of said posts and inner lining extending above said flooring and secured to the inwardly projecting portions of said posts.

6. In a railway car, the combination in a side construction of a base member consisting of a flanged section with a vertically disposed flange, flanged posts rising from said section, floor-supporting members extending between said posts, a floor supported by said members and outer sheeting riveted to the vertical flange of said base member and to the flanges of said posts and inner lining extending above said flooring and secured to the inwardly projecting portions of said posts and an intermediate lining secured between said outer sheeting and inner lining.

7. In a railway car, a pair of posts, a window lintel having a vertical flange extending between said posts, outer sheeting secured to the vertical flange of said lintel and a facing strip embracing said outer sheeting and shaped to form a window guide and weather strip.

8. In a railway car, in combination with a pair of posts a lintel extending between said posts, a lining panel above said lintel and a cap embracing said lintel and lining and shaped to form a sash guide and weather strip.

9. In a car construction, in combination with posts and a side plate of modified Z-section, of a lining panel having its upper edge bent into line with the upper flange of said side plate.

10. In a car construction, in combination with posts and a side plate of modified Z-section, of a lining panel having its upper edge bent into line with the upper flange of said side plate and a bead covering the adjacent edges of said side plate and lining panel.

11. In a railway car, the combination with carlines, T-shape in section having flanges toward the exterior of the car and formed with transversely and vertically extending portions, of stringers mounted on the transversely extended portions of said carlines,

lining panels secured to said stringers and intermediate lining panels riveted directly to said carlines between said stringers.

12. In a railway car, the combination with a carline bent to shape the upper deck of the car, of stringers mounted on said carlines, composite lining secured to said stringers and adjacent metallic lining secured directly to said carlines.

13. In a railway car, the combination with carlines shaped to form the car upper deck, stringers mounted on the carlines, composite lining secured to the stringers and having along its edge an angle secured thereto, metallic lining secured directly to the carlines adjacent said composite lining and having a flange adjacent said angle and a cap embracing said flange and angle.

14. In a car, a T-section post and flanged vertical facing plates riveted to said post at its flanges and an interposed vertical plate riveted to said plates at their opposite portions.

15. In a railway car, a T-section post with its flanges disposed toward the exterior of the car, vertical facing plates having outer flanges riveted to the flanges of said post and an interposed vertical plate or panel spacing said facing plates at their inner sides or edges.

16. In a railway car, the combination with a suitably shaped carline, a bracket projecting outwardly therefrom, a ventilator screen supported by said bracket along its upper edge and means for spacing said screen from said carline supporting the former along its lower edge.

17. In a car roof structure, the combination with a suitably shaped carline, stringers secured to said carline, an inner and an intermediate lining supported by said stringers.

18. In a car roof structure, the combination with a suitably shaped carline, of recessed stringers secured thereto, an interior lining secured to said stringers and an intermediate lining secured in the recesses in said stringers.

19. In a car, a post consisting of a pair of channels and inner and outer curved continuous spacing and finishing plates connecting, respectively, the inner flanges of said channels with each other and the outer flanges of said channels with each other.

In testimony whereof I affix my signature, in presence of two witnesses.

FELIX KOCH.

Witnesses:

FRANK E. MILLER,
H. B. FISHER.