No. 756,707. PATENTED APR. 5, 1904.

F. H. RAPLEY.

PASSENGER CAR.

APPLICATION FILED NOV. 24, 1903.

NO MODEL. 4 SHEETS—SHEET 1.

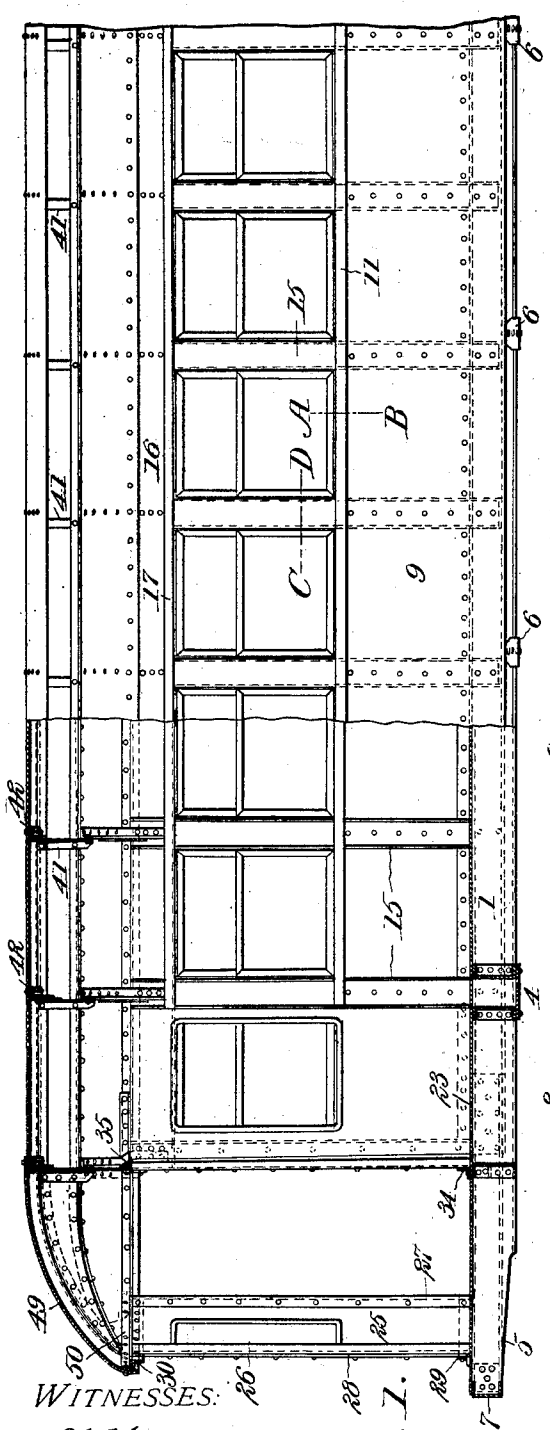


Fig. 1.

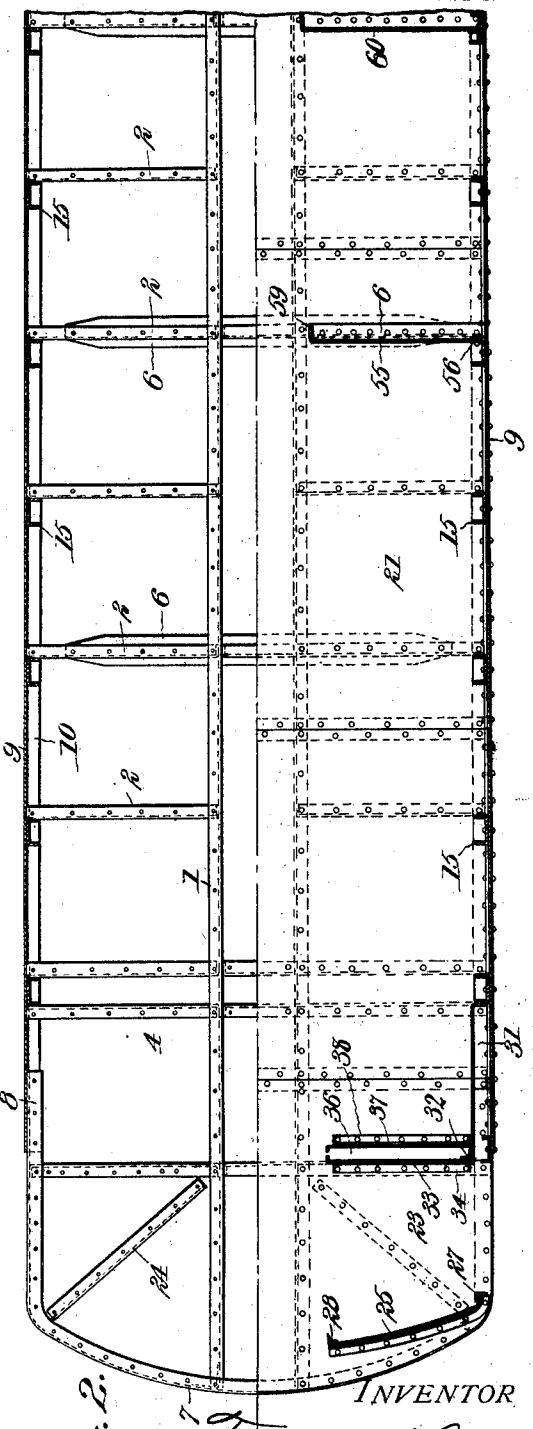


Fig. 2.

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NO MODEL. 4 SHEETS—SHEET 2.

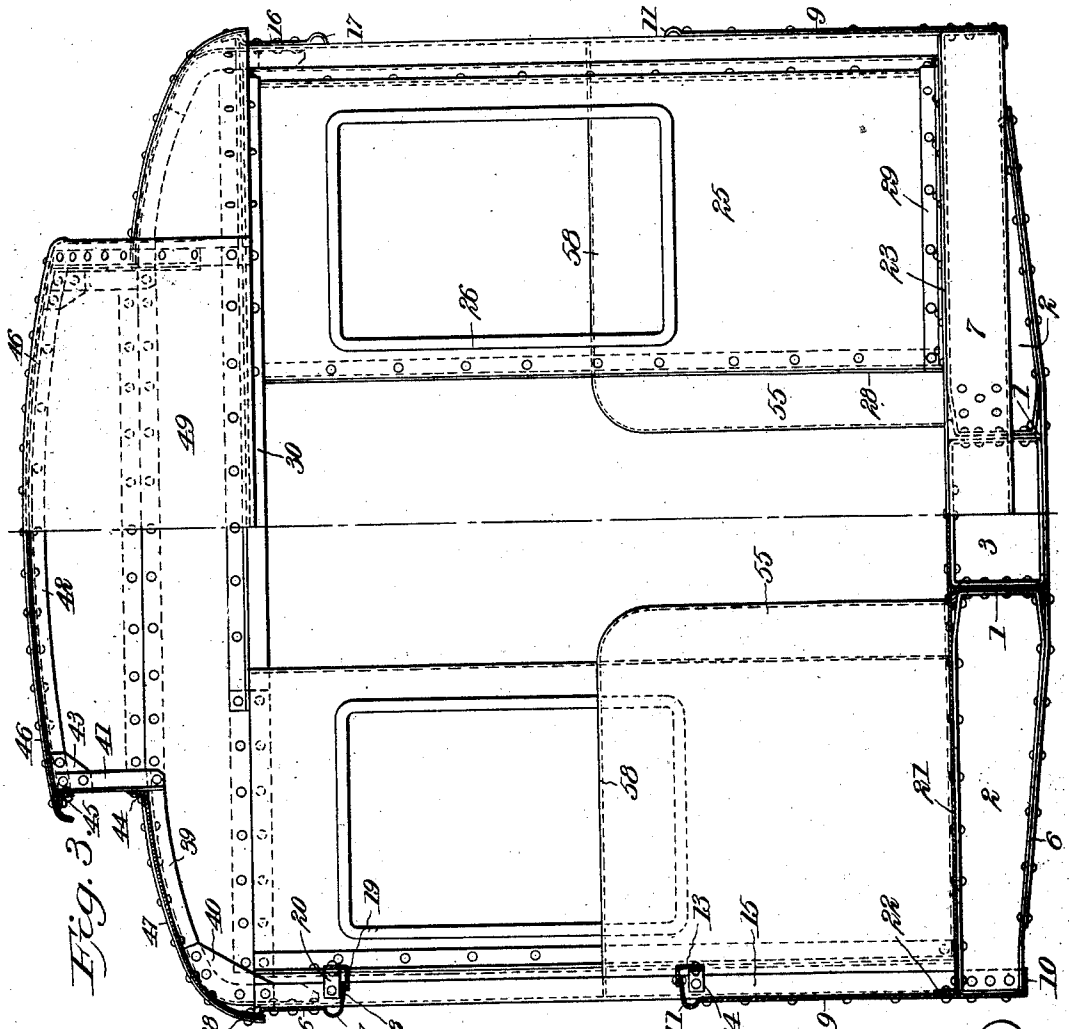


Fig. 3.

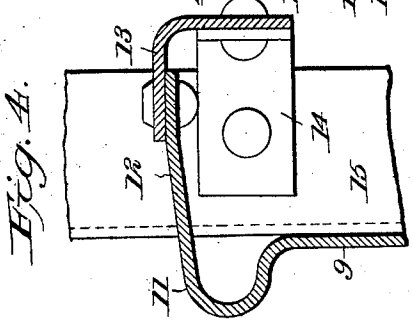


Fig. 4.

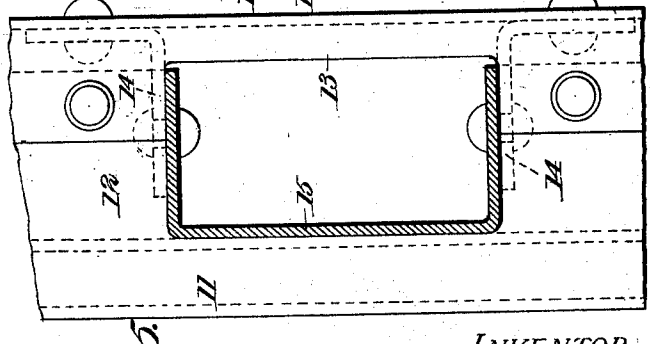


Fig. 5.

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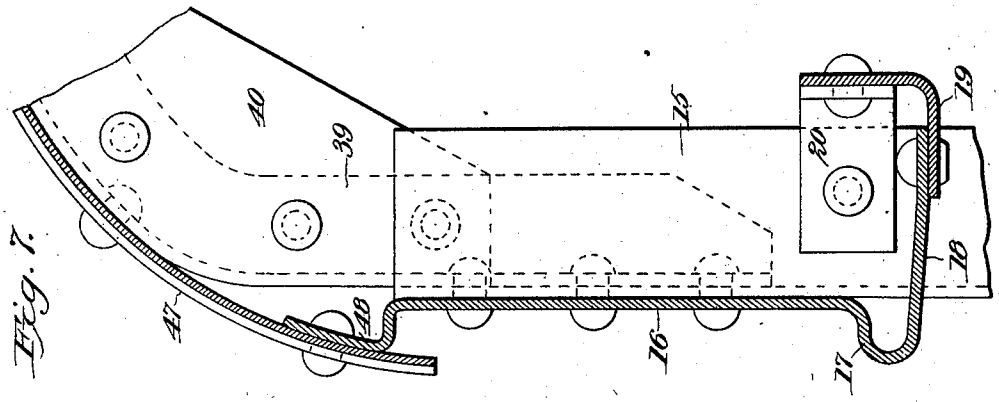
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NO MODEL. 4 SHEETS—SHEET 3.

Fig. 7.



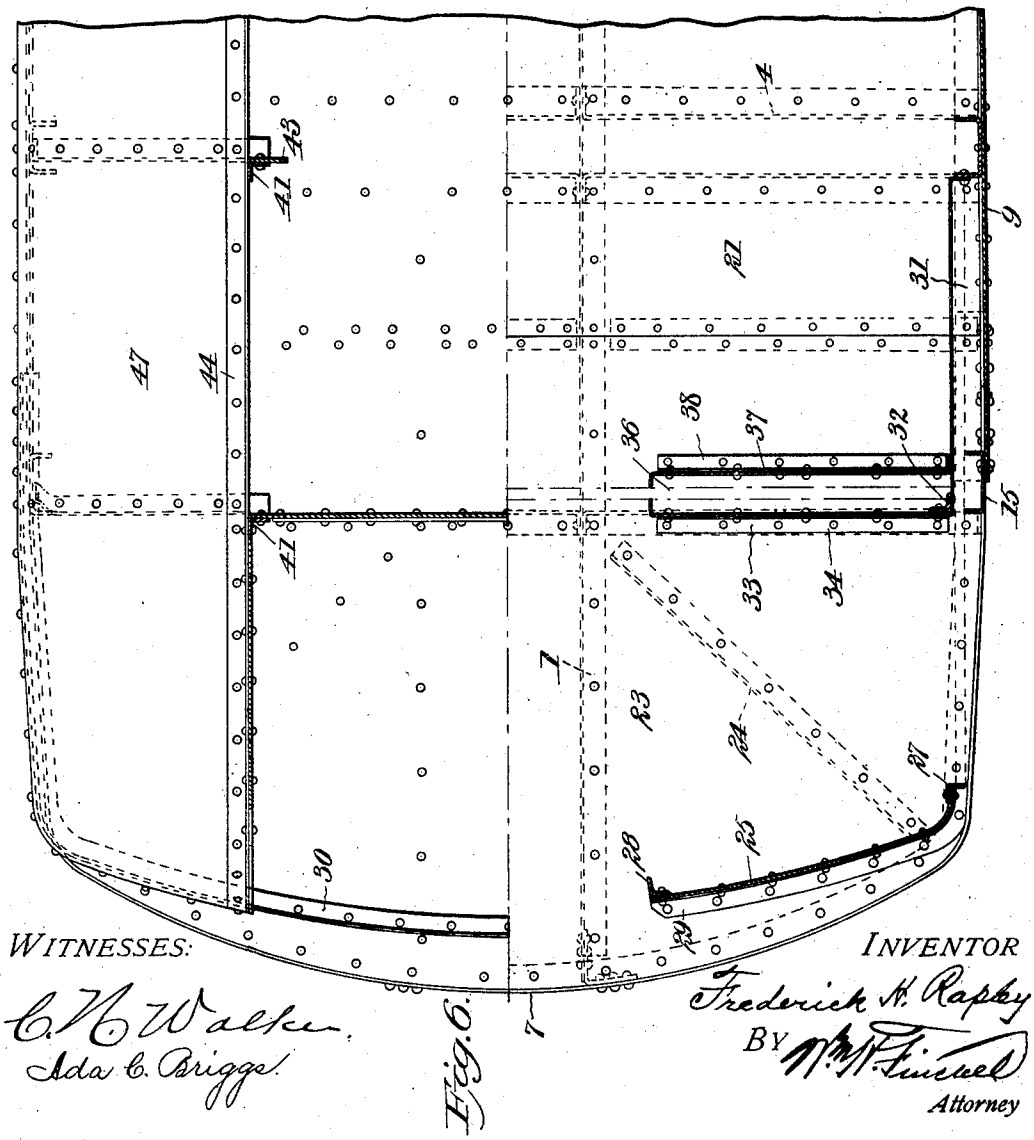


Fig. 6.

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NO MODEL. 4 SHEETS—SHEET 4.

Fig. 8.

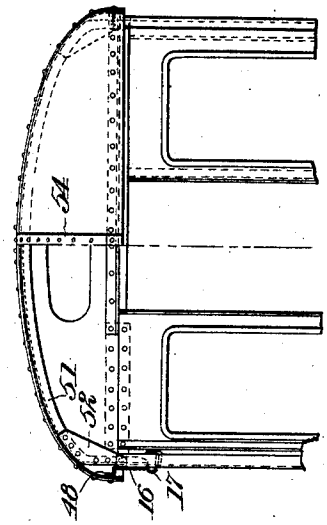


Fig. 9.

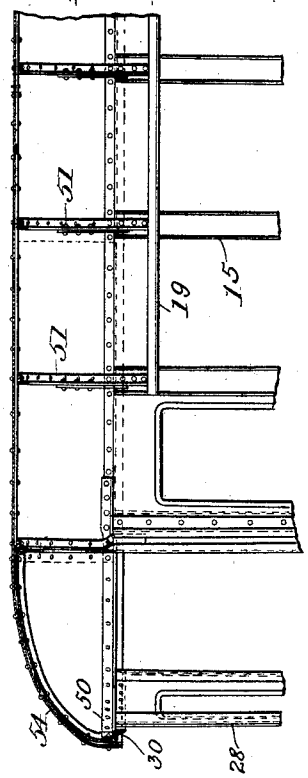
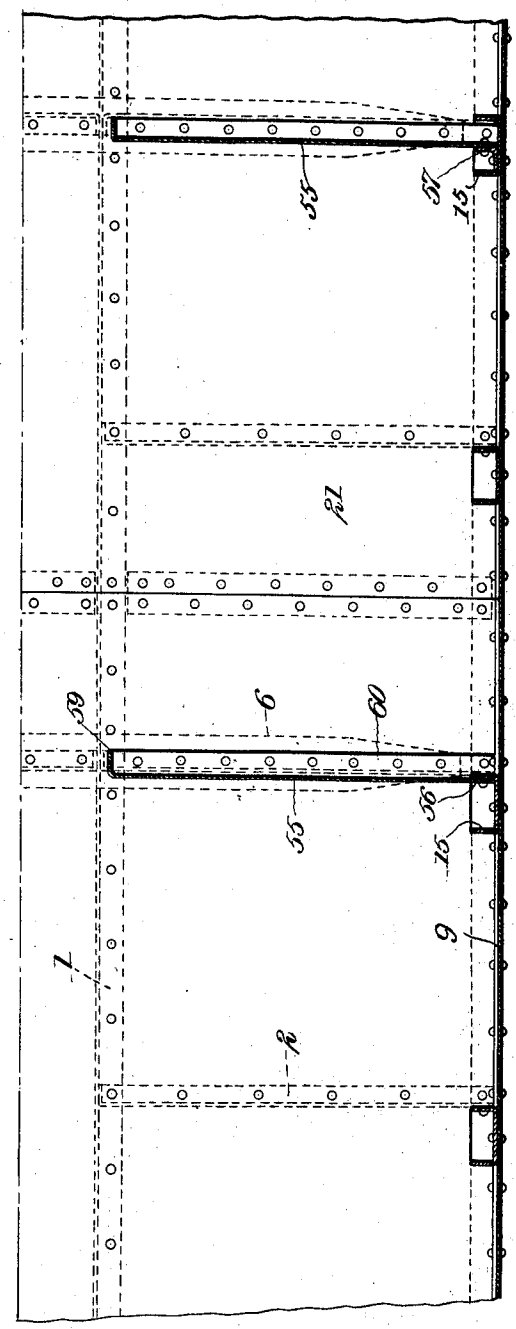


Fig. 10.



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No. 756,707. Patented April 5, 1904.

UNITED STATES PATENT OFFICE.

FREDERICK H. RAPLEY, OF NEW YORK, N. Y., ASSIGNOR TO PRESSED STEEL CAR COMPANY, OF PITTSBURG, PENNSYLVANIA, A CORPORATION OF NEW JERSEY.

PASSENGER-CAR.

SPECIFICATION forming part of Letters Patent No. 756,707, dated April 5, 1904.

Application filed November 24, 1903. Serial No. 182,524. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK H. RAPLEY, a subject of the King of Great Britain, residing at New York, in the county of New York and State of New York, have invented a certain new and useful Improvement in Passenger-Cars, of which the following is a full, clear, and exact description.

A main object of this invention is to provide an incombustible or fireproof car for use in urban or other subways or tunnels, so as to avoid the danger of burning cars in case of wrecks within the subway or tunnel. The invention, however, is not limited to the use of the cars in this sort of service, since they are equally applicable upon surface roads and upon railways generally.

The invention relates to what might with propriety be called the "frame" of the car as distinguished from the finishing, such as the upholstering or furnishing and decoration.

The invention consists of a passenger-car the body of which, including the underframe, floor, sides, ends, platforms, roof, and other fixed parts, are of metal, preferably steel, constructed and arranged as hereinafter more particularly set forth and claimed. Sheet-steel and pressed and also rolled shapes specially prepared and also as found in the market are utilized in the construction of the car.

In the accompanying drawings, illustrating the invention, in the several figures of which like parts are similarly designated, Figure 1 is a side elevation of about one-half of the car, with the left-hand half in vertical section. Fig. 2 shows in its upper half a plan view of part of the underframe and in its lower half a horizontal section taken in a plane just beneath the windows. Fig. 3 is a half end view and half vertical section on a larger scale. Fig. 4 is a cross-section, on a larger scale, of the side of the car, taken in the plane of line A B, Fig. 1. Fig. 5 is a horizontal section, on a larger scale, taken in the plane of line C D, Fig. 1. Fig. 6 shows in its upper portion a horizontal section through the monitor-top and in its lower portion a horizontal section below the windows. Fig. 7 is a vertical section, on a larger scale, of a portion of the side above the windows and extending into the roof. Fig. 8 is a half cross-section and half-elevation of a dome-roof construction. Fig. 9 is a longitudinal section illustrating the dome-roof construction. Fig. 10 is a horizontal section through a portion of one side of the middle of the car.

The underframe may be of any approved construction common in the building of steel cars, but is herein shown as composed of parallel center sills 1 in the form of channels, with diaphragms or transoms 2 projecting laterally therefrom and riveted thereto and central diaphragms or braces 3 between the said channels and bolsters 4, composed of pairs of such diaphragms and braces and bottom cover-plates, the floor-sheets constituting the top cover-plates, and the ends of the center sills are cut away, as at 5, to accommodate the draft-rigging or its draw-bars. At intervals the transoms are reinforced by bottom plates 6, riveted to their flanges and extending transversely of the car. The end sills 7 may be angles or channels or other shapes and extend the full width and depth of the platforms and rearwardly toward the sides of the car, where their ends are riveted to the sides of the car on the inside, as shown at 8.

The sides 9 of the car are utilized as plate-girders to replace the ordinary side sills, and their lower ends for this purpose may be flanged inwardly, as at 10, Fig. 3, so as to admit of their being riveted to the flanges of the diaphragms, or instead of such flanging angle-bars may be used, and these may be riveted to the sides and to the said diaphragms. As shown more particularly in Figs. 4 and 5, the upper edges of the sides are beaded at 11 just beneath the windows, so as to serve the double purpose of reinforcement and finish, and these upper edges, moreover, are turned in substantially horizontally at 12 and may be utilized as window-sills in conjunction with inner angle-plates 13, riveted to them, and also secured by brackets 14 to the side posts 15.

Each side may be made of a single sheet extending from end to end of the car or of a number of such sheets riveted or otherwise united at their meeting edges. The posts 15 may be made in the form of channels the lower ends of which are riveted to the transverse diaphragms, and the side sheets are also riveted to said posts. These posts may form the vertical members of the window-openings. The fasciæ 16 extend downwardly to the tops of the window-openings and, like the sides, are formed with a beading 17 for a similar purpose and a horizontal portion 18, turned inwardly, to which are riveted inside fascia members 19, which in turn are connected by brackets 20 with the posts. These fasciæ, like the sides, may each be of a single piece for the length of the car, or they may be made up of a number of joined pieces. Of course it will be understood that the beadings 11 and 17 of the sides and fasciæ, respectively, extend the length of the car, while their respective horizontal members 12 and 18 are cut away around the posts 15, so as to leave the posts integral from underframe to roof or eaves.

The metal floor-plates 21 may be sheets coterminous with the length and width of the car, or the floor may be composed of a number of jointed plates or sheets, and these floor plates or sheets are cut away also adjacent the side posts. As shown in the left-hand end of Fig. 3, the floor-sheets preferably have their longitudinal sides flanged, as at 22, and these flanged sides are riveted to the sides of the car.

The platforms 23 are provided with oblique angles or T's 24, riveted on below to reinforce and stiffen them. The said platforms are preferably permanently vestibuled, and these vestibules are divided, so as to permit the free passage from end to end of a train of cars. The fixed portions 25 may be provided with windows 26, and they are conveniently made of vertical angles 27 and 28 and bottom and top horizontal angles 29 and 30. The angles 27 may be portions of the side-door framing, and said side doors preferably are sliding doors, for which pockets 31 are provided at the sides of the car.

The ends of the car are built up by means of vertical angles 32 and end sheets 33, with windows therein, and these sheets are supported by horizontal angles 34 and 35. The pockets 36 may be formed by sheets 37, erected on the inside of the car parallel with the sheets 33 and in a substantially similar manner, or, as shown, these sheets 37 may have their outer edges flanged and riveted to the inner sheets of the pockets 31 for the side doors and their upper edges riveted or otherwise connected to the fasciæ, while the lower ends are secured by angles 38, riveted to them and to the floor-sheets. The inner ends of the sheets 33 and 37 are boxed in or flanged inwardly, as seen in Fig. 2, so as to leave sufficient space for the free passage of the door or doors within the pockets. It is preferred to use double doors at these entrances to the car, and a pocket is provided for each door.

Referring to Figs. 1, 3, 6, and 7, where a roof of the monitor-top type is shown, the construction is substantially as follows: Rafters 39, of angle-bars, spring from the side posts and are riveted to the fasciæ, and at the eaves these rafters are reinforced by gusset-plates 40, riveted to them. Deck-posts 41, also angles, are riveted to the rafters, and these deck-posts are connected by upper-deck carlines 42, between which and the deck-posts are interposed gusset-plates 43. Deck-sills 44, of angle-bars, are riveted to the rafters and deck-posts, and deck-plates 45 are riveted to the deck-posts and to the roof-plates 46. The roof-plates 47 are riveted to the rafters and to an offset portion 48 of each fascia. This portion of the fascia is offset, so as to give pronounced eaves to the roof, as indicated in detail in Fig. 7. The deck-sills and deck-plates are continued into the platform-roof and filled in with roof plates or sheets 49. The vertical flanges of the deck-sills and deck-plates are cut away where said sills and plates meet in the platform-roof, and their horizontal flanges are riveted together and to the angles 50, which are in the nature of platform-roof end carlines and whose ends are secured to the offsets 48 of the fasciæ. These carlines may also be riveted to the angles 30, with which the vestibule-sheets are connected.

Fig. 8 shows a dome roof, and in this construction the carlines 51 spring from the fasciæ and have the reinforcing gusset-plates 52. The roof-sheets 53 are butt-jointed, and the joints are covered by butt-straps 54.

Where the seats at opposite ends of the car next to the doors are arranged lengthwise along the sides of the car and a number of facing seats are arranged transversely of the center of the car between the longitudinal seats, the partitions between these transversely-arranged seats may be utilized as gussets or braces to stiffen the car at the center, in addition to serving as backs for the seats. With this end in view the seat-partitions 55 are of metal sheets riveted to the vertical side posts, as at 56, or to angles 57, riveted within the side posts, as shown in Fig. 10. In order to give these partitions sufficient strength, their upper edges 58 are flanged horizontally, and one or both of their vertical edges 59 are also flanged. Their bottom edges 60 may likewise be flanged, or instead angles may be used to secure these partitions to the floor-sheets.

It is to be understood that as to those parts herein shown as having flanges the said flanges

may be integral or applied, or, in other words, flanged pressed shapes may be replaced by equivalent shapes built up of plates and angles or other commercial shapes, and vice versa.

What I claim is—

1. A passenger-car, having a metallic underframe, metal side posts secured to said underframe, metal side plates or sheets also secured to the underframe and to the side posts, and having top edges forming window-sills, metal fasciæ having lower edges forming lintels of the windows, rafters secured to the fasciæ, and roof-sheets also secured to the fasciæ.

2. A passenger-car body, comprising a metallic underframe, side posts secured to the underframe, and metallic side sheets secured to the underframe and to the side posts and having their upper edges beaded longitudinally and provided with window-sills.

3. A passenger-car body, comprising a metallic underframe, side posts secured to the underframe, and metallic side sheets secured to the underframe and to the side posts and having their upper edges beaded longitudinally and provided with window-sills, combined with inner angles riveted to said sills.

4. A passenger-car body, comprising a metallic underframe, side posts secured to the underframe, and metallic side sheets secured to the underframe and to the side posts and having their upper edges beaded longitudinally and provided with window-sills, combined with inner angles riveted to said sills, and brackets connecting said angles and posts.

5. A passenger-car, having a metallic underframe, side posts secured thereto, metallic side sheets secured to the underframe and posts, and metal fascia-sheets secured to the side posts and each provided with a longitudinal bead above the windows.

6. A passenger-car, having a metallic underframe, side posts secured thereto, metallic side sheets secured to the underframe and posts, and metal fascia-sheets secured to the side posts, each provided with a longitudinal bead above the windows, and having their lower ends turned in to form lintels.

7. A passenger-car, having a metallic underframe, side posts secured thereto, metallic side sheets secured to the underframe and posts, and metal fascia-sheets secured to the side posts and each provided with a longitudinal bead above the windows, and having their lower ends turned in to form lintels, and having interior angles riveted thereto.

8. A passenger-car, having a metallic underframe, side posts secured thereto, metallic side sheets secured to the underframe and posts, metal fascia-sheets secured to the side posts and each provided with a longitudinal bead above the windows, and having their lower ends turned in to form lintels, and having interior angles riveted thereto, and brackets connecting the said angles and the posts.

9. A passenger-car, having metallic fasciæ provided with offsets at the top, combined with roof-sheets secured to said offsets.

10. A passenger-car, having end platforms, comprising metallic end sills extending about the front and opposite sides of the platforms and riveted directly to the sides of the car on the inner sides thereof.

11. A car-vestibule, comprising vertically-arranged angles, metal sheets secured thereto, and angles at top and bottom to which said vertical angles and sheets are secured.

12. A metal car, having a metallic end adapted to receive sliding double doors, and metal pockets into which said doors may be slid, said pockets comprising the ends of the car and parallel metal sheets secured to the floor and to angles above.

13. A metal car, having deck-sills and deck-plates made of angles, the vertical members of which are cut away in the platform-roof and their horizontal flanges riveted together, combined with an end carline to which they are also secured.

14. A metal car, having seat-backs composed of flanged metal plates secured to the floor and sides of the car.

15. A metal car, having transversely-arranged flanged metal plates erected vertically between adjacent seats, at or near the center of the car, and secured to the sides and the floor, and serving also as gussets or braces.

16. A passenger-car, having a metallic underframe, side posts secured thereto, metallic side sheets secured to the underframe and posts and provided with window-sills, and metallic fascia-sheets secured to the side posts and provided with lintels.

17. A passenger-car, having a metallic underframe, metallic side posts secured thereto, metallic side sheets secured to the underframe and posts, beaded longitudinally and provided with window-sills, and metallic fascia-sheets also secured to the side posts, beaded longitudinally and provided with lintels.

18. A car-frame, comprising a metallic underframe, side posts secured thereto, metal side sheets riveted to the side posts, rafters secured to the upper ends of said posts and extending upwardly and inwardly, deck-posts secured to the inner ends of said rafters upon each side of the frame, and carlines riveted directly to and extending between the oppositely-arranged deck-posts.

19. A car-frame, comprising a metallic underframe, side posts secured thereto, metal side sheets riveted to the side posts, rafters extending upwardly and inwardly from said side posts, the said rafters being reinforced by gusset-plates, deck-posts secured to the in-

ner ends of said rafters and extending vertically therefrom, carlines riveted directly to and connecting the oppositely-arranged deck-posts, and gusset-plates interposed between the said carlines and the deck-posts.

20. A passenger-car, having a metallic underframe, side posts secured thereto, metallic side sheets secured to the underframe and posts, metal fascia-sheets secured to the side posts, and rafters secured to and supported upon the said side posts and fascia-plates, combined with roof-sheets.

In testimony whereof I have hereunto set my hand this 23d day of November, A. D. 1903.

FREDERICK H. RAPLEY.

Witnesses:

HARRY DEMPSEY,

REGINALD H. LILEY.