

No. 865,500.

W. F. KIESEL, JR. PATENTED SEPT. 10, 1907.
STEEL RAILWAY CAR.
APPLICATION FILED FEB. 23, 1907.

3 SHEETS—SHEET 1.

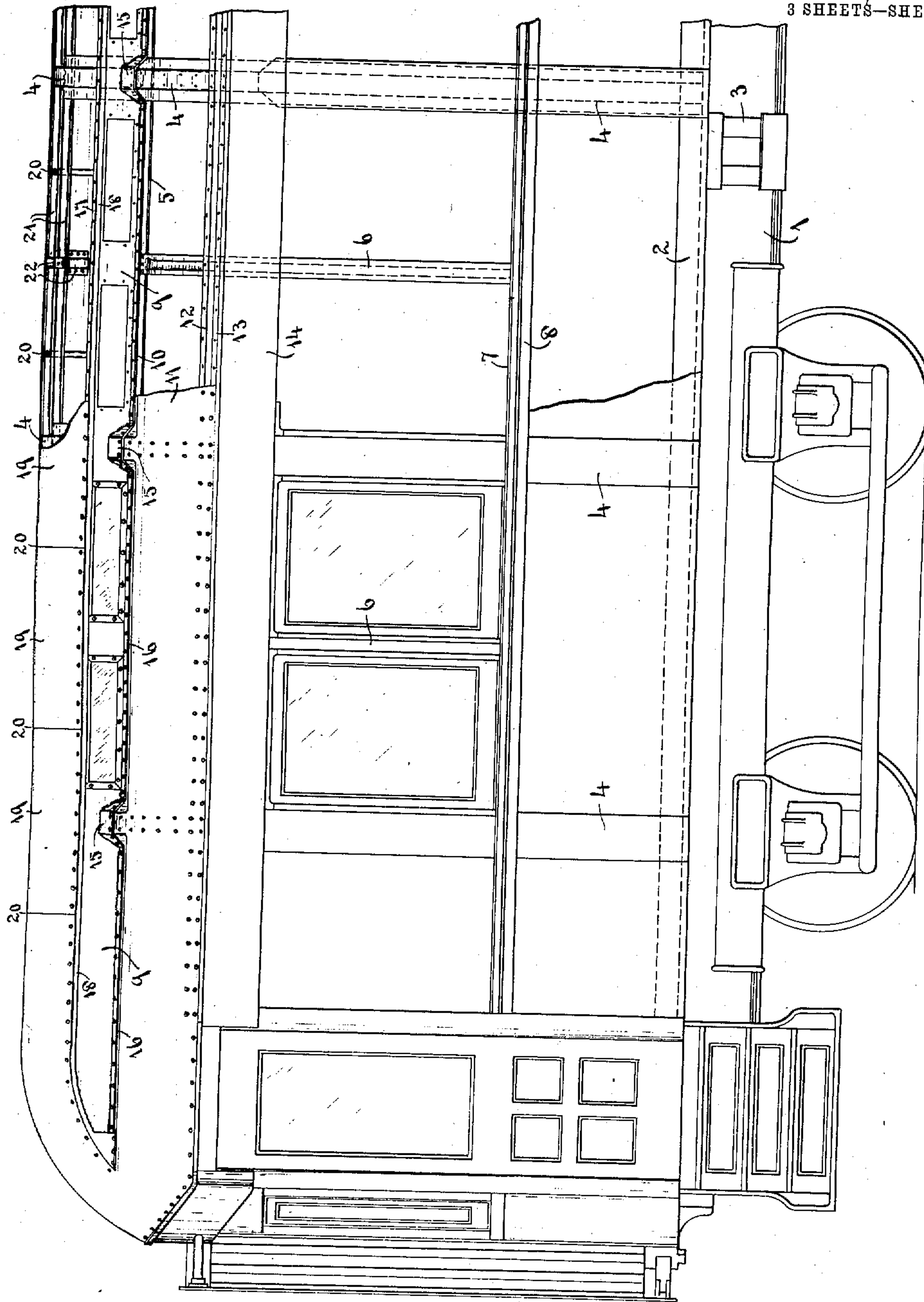


Fig. 1.

WITNESSES:

M. E. Verbeck.
L. V. Hoeltzgen

INVENTOR

William F. Kiesel, Jr.

BY

Eugene Dixon
ATTORNEY

No. 865,500.

W. F. KIESEL, JR. PATENTED SEPT. 10, 1907.
STEEL RAILWAY CAR.
APPLICATION FILED FEB. 23, 1907.

3 SHEETS—SHEET 2.

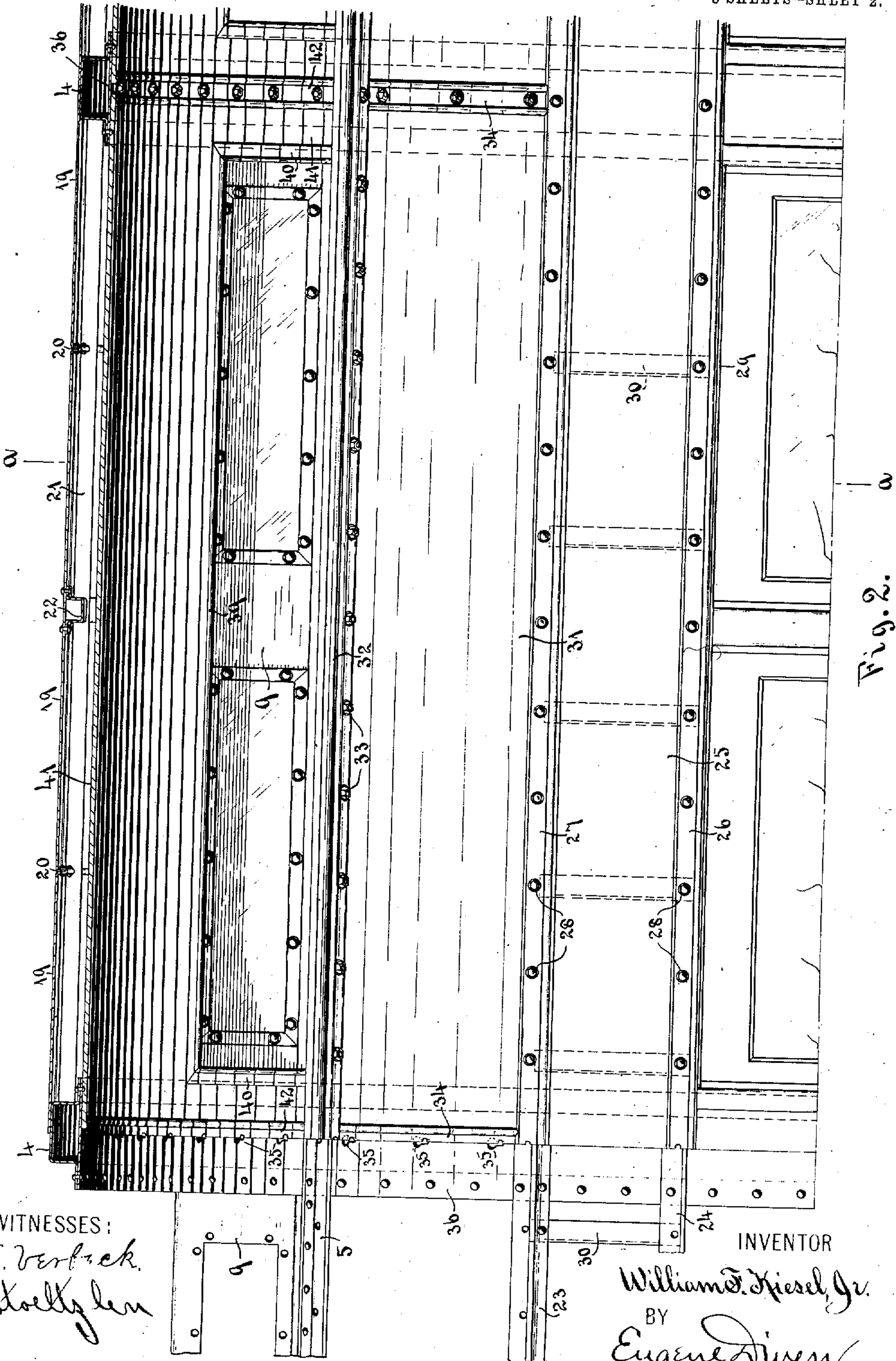


Fig. 2.

WITNESSES:

M. E. Verbeck.
R. V. Stoltz.

INVENTOR

William F. Kiesel, Jr.
BY
Eugene Diner
ATTORNEY

No. 865,500.

W. F. KIESEL, JR. PATENTED SEPT. 10, 1907.
STEEL RAILWAY CAR.
APPLICATION FILED FEB. 23, 1907.

3 SHEETS—SHEET 3.

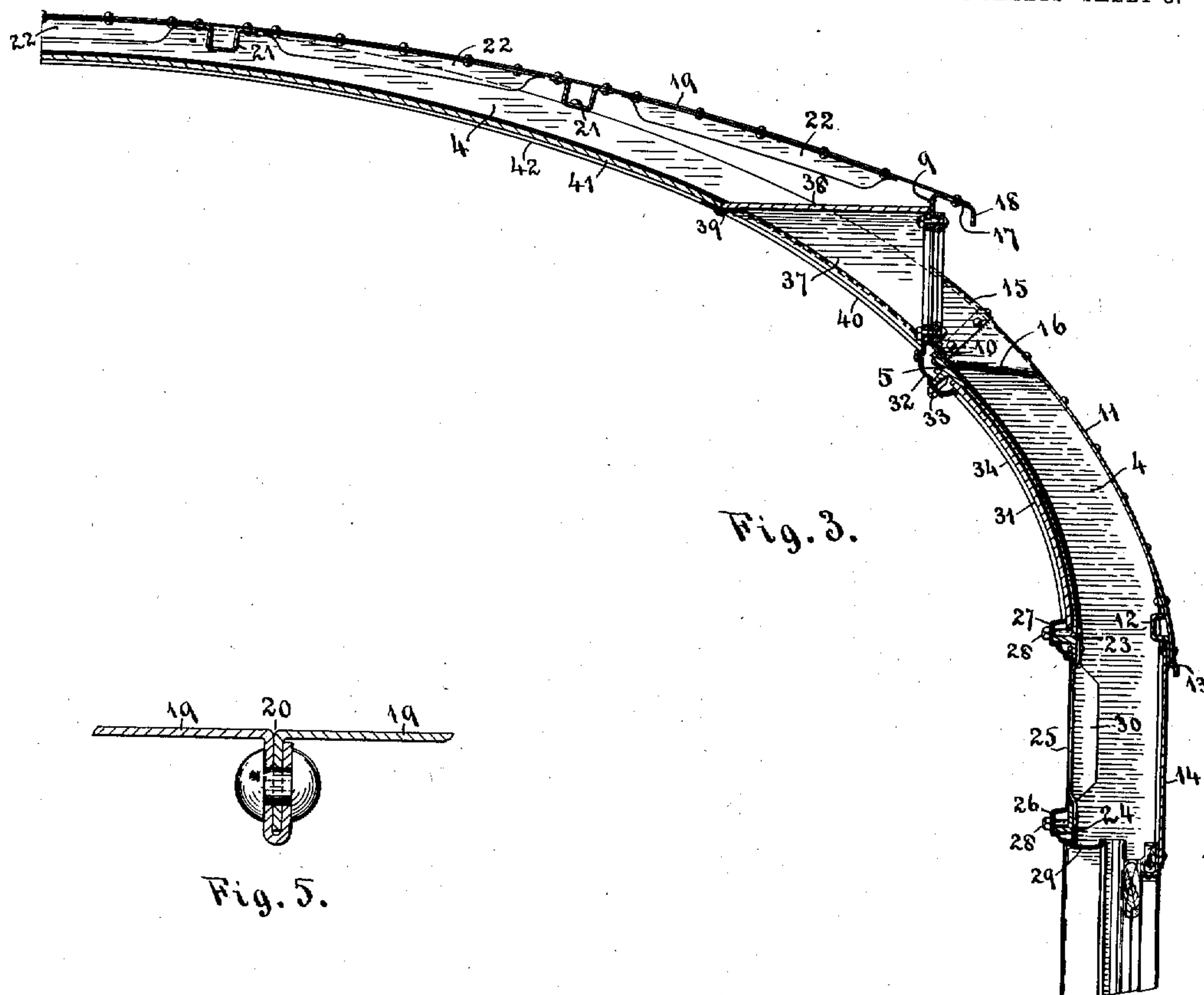


Fig. 3.

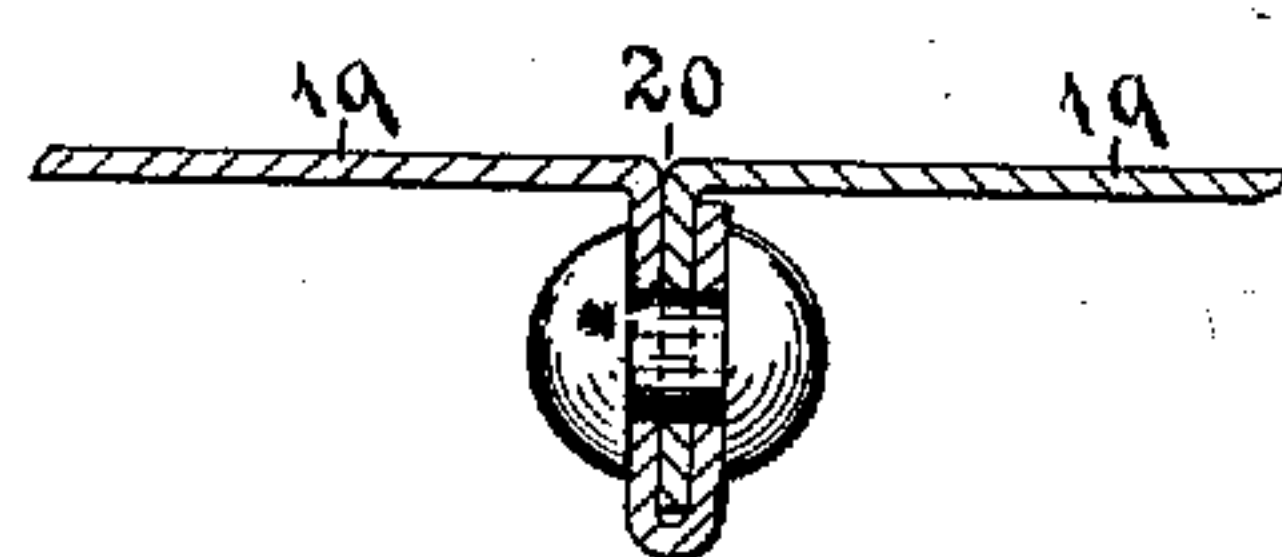


Fig. 5.

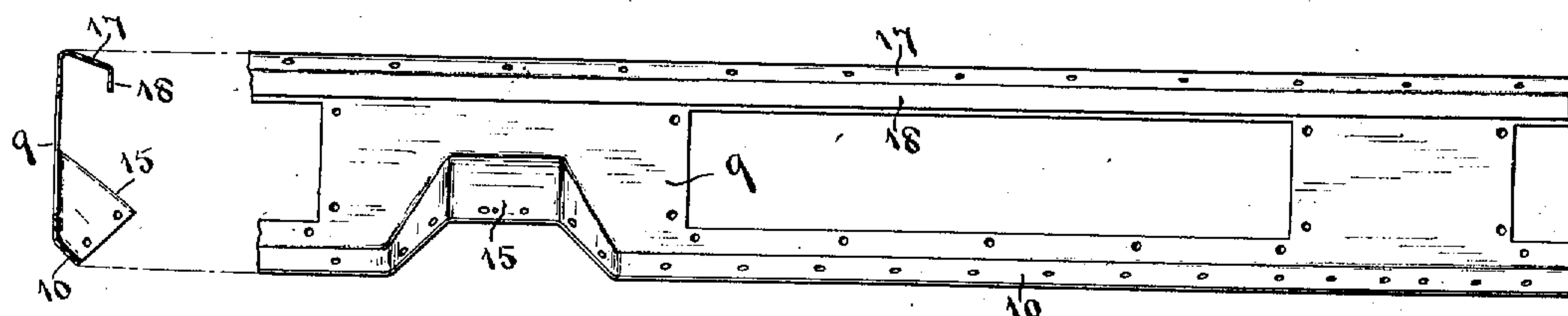


Fig. 4.

WITNESSES:

M. E. Verbeck.
L. V. Staeltgen

INVENTOR

William F. Kiesel, Jr.

BY
Eugene Diven
ATTORNEY

UNITED STATES PATENT OFFICE.

WILLIAM F. KIESEL, JR., OF ALTOONA, PENNSYLVANIA.

STEEL RAILWAY-CAR.

No. 865,500.

Specification of Letters Patent.

Patented Sept. 10, 1907.

Application filed February 23, 1907. Serial No. 358,976.

To all whom it may concern:

Be it known that I, WILLIAM F. KIESEL, Jr., a citizen of the United States, residing at Altoona, in the county of Blair and State of Pennsylvania, have invented certain new and useful Improvements in Steel Railway-Cars, of which the following is a specification.

This invention relates to improvements in the upper framework and inside and outside sheathing for steel railway cars, having what is known as a wagon-top roof; that is to say, wherein the carlines pass across the car from post to post in one continuous arch of semi-circular or semi-elliptical shape; and the object of my improvements is to break into the continuity of the roof curve with vertical deck-plates at the proper distances from the center of the car, thereby providing dormer window openings for the deck lights; and to utilize the deck-plates, by making them longitudinally continuous from end to end of the car, to thoroughly brace the carlines against end shock and strains, said deck-plates being reinforced by stiffening flanges at top and bottom, and the carlines and upper ends of the posts being further connected and braced by longitudinal frame members particularly adapted to receive the inside sheathing and finish and the outside roof sheets.

A further object is to provide improvements in other details of construction of the roof members, and in the manner of applying the outside and inside sheathings thereto.

I attain my objects by constructing and assembling the several parts of the framework and sheathing in the manner illustrated in the accompanying drawings, in which—

Figure 1 represents a side elevation of one end of a car embodying my improvements, portions of the outer sheathing being broken away to disclose the framework; Fig. 2, an inside elevation of the upper portion of the car on an enlarged scale, the roof being shown sectioned on its medial line; Fig. 3, a transverse section of one-half of the superstructure on the line *a—**a* in Fig. 2, looking to the left; Fig. 4, a detail showing a side elevation and transverse section of one of the deck plates; and Fig. 5, a detail showing one of the transverse joints between roof sheets.

Like numerals designate like parts throughout the several views.

The framework for the body of the car embodies the same general features as described in my Letters Patent for improvements in railway car frames, No. 832,486, dated October 2, 1906, and comprises the box girder center sill 1, at each side of which angle bar side-sills 2 are supported upon cross-bearers 3. From these side-sills the main frame posts 4 rise at suitable intervals, dividing the car body into panels, said main frame posts being curved over at the top and joined together

at the center of the car to provide carlines, which form a continuous arch in the framework from one side of the car to the other; these combined posts and carlines being preferably of U-shaped cross section, as described more fully in my Letters Patent for improvements in carlines, No. 809,920, granted January 9, 1906. On the lines where the deck lights are to be located, I join together these carline extensions on each side of the car by longitudinal brace members 5, which are preferably T bars, riveted inside the carlines with the central rib or flange projecting inward. Between the main frame posts, one or more intermediate posts 6 of lighter weight are provided to form the framework for the car windows; these intermediate posts being bent inward at their upward ends to conform with the curve of the lower portion of the main post carlines and riveted at their inward extremities to the T bar 5. At their lower ends the intermediate posts rest upon sill plates 7, fastened between the main posts back of the belt rail 8; this construction being the same as that described in my said Letters Patent No. 832,486.

Above the T bar 5, longitudinal deck-plates 9 rise vertically a suitable distance to provide space for the deck light window openings. These deck-plates extend continuously from end to end of the car, and have their lower portions set in between the main post carlines, with their lower edges bent outwardly at an angle at 10 to lie over the upper flange of the T bars 5. Where the deck-plates pass across the carlines, they are still further bent so as to fit over or straddle the carlines, as at 15, these bends 15 conforming to the curve of the carlines, so that the deck plates at these points have broad flanges, which rest upon the carlines and are riveted thereto. The deck-plates are cut out where the window openings are located and the sashes are bolted or otherwise fastened to the plates at these openings. The roof sheets are broken into by these deck-plates at each side of the car, and the lower roof sheets 11 rest upon the lower portion of the carlines and have their upper portions bent inwardly between the main carlines with a slight upward incline at 16. The upper edges of these roof sheets are overlapped by the outward bends 10 and 15 of the deck-plates and riveted in therewith to the braces 5.

At their lower edges, the roof sheets 11 are riveted to the longitudinal brace members 12, which are of U-shaped cross section, placed with the flanged edges outward, and having their lower flanges pressed outwardly and downwardly at 13 to form eaves moldings; this particular form of longitudinal brace being more fully described and claimed in a companion application for improvement in railway car frames, Serial No. 358,974 filed February 23, 1907. The top side plates 14 have their upper edges riveted in with the lower

flange of the braces 12 back of the lower edge of the roof sheets.

The upper portions of the deck-plates are bent outwardly at 17 to receive the outer edge of the upper roof sheets, and I preferably bend the outer edge of these flanges 17 downwardly, as at 18, to form the eaves moldings. The roof sheets 19 pass across the car between the deck-plates, and have their outer edges riveted at each side to the flanges 17. Where the roof sheets come together, the transverse joints are formed by providing one of the abutting sheets with an intumed flange, bent back upon itself, and the other sheet with a flange, which is inserted between the bends of the flange on the first sheet, these flanges being riveted together, as shown more fully in Fig. 5. By this means a thoroughly weatherproof and stiff joint is formed between these roof sheets. The lower roof sheets may be joined together in the same way; or they may be formed of continuous longitudinal sheets; this being possible, inasmuch as these lower roof sheets are sufficiently narrow to be formed from one plate of steel.

To support the upper roof sheets, I provide longitudinal brace members 21, preferably of U-shaped cross section, with their flanged edges placed upwardly to receive the roof sheets. The outer brace members 21 will rest upon the top of the carlines, and the more central braces will be set in between carlines, the roof sheets at the center of the car resting directly upon the top of the carlines. In line with the intermediate frame posts, I rivet to the under side of the roof sheets transverse braces 22 which will also be of U-shaped cross section, of much lighter weight than the carlines. These transverse bars act to stiffen and support the roof sheets between carlines. By this system of longitudinal and transverse braces I provide a strong and stiff, but comparatively light, framework for the upper roof sheets, which are thin steel plates.

At the inside of the frame posts, at points just below the spring of the carline arches, and above the window openings, I provide longitudinal brace members 23 and 24, which are riveted to the posts and assist the braces 12 in sustaining end shock and strains at this point of the car frame. For the braces 23, I preferably use T-bars placed with their ribs facing inward, and for the braces 24, I employ angle bars. These braces support the inside sheathing plates 25 which have moldings 26 and 27 formed integrally therewith at bottom and top, said moldings being fitted around the intumed ribs or flanges on braces 23 and 24, and being fastened to said braces by means of bolts placed at suitable intervals, said bolts being passed through the vertical flanges of the braces, and the threaded ends thereof where they project through the moldings 26 and 27, having cap nuts screwed thereon to clamp the plates 25 in place, said cap nuts being so formed as to present a pleasing finish. The lower moldings 26 are fitted around and between the window-casings and are united to the inside lintel plates 29 between posts. The upper moldings 27 have their upper edges bent outwardly to engage the lower edges of the head linings 31, the upper edges of said linings being engaged by a similar outward bend on the molding strips 32, which are bolted to the braces 5 by means of bolts at 33, which are hooked into holes provided therefor in the intumed rib of said braces, the ends of the bolts being concealed by the

cap nuts which fasten the molding strips in place. The head linings 31 are bent to the curve of the carlines, and are held against the carlines by means of the moldings 27 and 32, at top and bottom, and by means of the clamping strips 34 at the main frame posts, said clamping strips being adapted to overlies and conceal the transverse joints between head linings and being secured to the inside cover plates of the carlines by means of bolts inserted in holes provided therefor at 35 in Fig. 2; this clamping strip and bolt construction being more fully described in my said co-pending application.

The upper portion of the molding strips 32 engages the lower edges of the central head linings 41, where said head linings are carried down inside the carlines. Between carlines these central head linings are cut away for the deck lights, and the molding strips 32 are fitted against the deck plates 9 in these openings. The deck light openings are incased at the top by horizontal head linings 38, (see Fig. 3), the outward edges of which are joined to the deck plates and the inward edges fitted to the central head linings and fastened thereto by means of molding strips 39. At the sides of the window openings vertical lining plates 37 are fastened in place at each side of the carlines, the inward edges of said lining plates being fitted to the curve of the central head linings and fastened thereto by means of molding strips 39. The central head linings are fastened to the inside cover plates of the carlines by means of bolts and clamping strips corresponding with those employed for the lower head linings 31. All these head linings may be made from light steel plates, or from asbestos board or other fireproof material.

As the inside sheathing plates 25 over the window openings are to be of light metal I provide between the brace members 23 and 24 a series of vertical braces 30, which may be made of angle or channel bar, said braces receiving the plates 25 against their inside faces, and having bolted thereto the basket racks, the weight of which the sheathing plates 25 would not sustain. As so framed and sheathed at the inside and outside, I provide a substantial construction for the car roof which presents a pleasing and finished appearance, and which is well adapted to sustain all endwise or sidewise strains in the superstructure of the car. The continuous arched carlines, formed as integral extensions from the main frame posts, are especially adapted to strengthen the upper portion of the car frame against side racking strains.

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

1. The combination, with the carlines, of longitudinal deck-plates having their lower portions set in between and straddling the carlines where they pass across them.

2. The combination, with the carlines, of longitudinal deck-plates having their lower portions set in between and bent outwardly to straddle the carlines where they pass across them, and roof-sheets resting upon the carlines with their upper portions bent inwardly between carlines, the upper edges of the roof-sheets being overlapped by the deck-plates.

3. The combination, with the carlines extending across a car in a continuous arch, of longitudinal deck-plates having their lower portions set in between and straddling the carlines where they pass across them, roof-sheets resting upon the carlines with their upper portions bent inwardly between carlines, the upper edges of the roof sheets being overlapped by the deck-plates, and longitudinal braces fastened to the carlines at their inward sides below the deck-

plates, the deck-plates and roof sheets where they are joined together between carlines being riveted to said braces:

- 5 4. The combination, with the carlines extending across a car in a continuous arch, of longitudinal deck-plates having their lower portions set in between and straddling the carlines where they pass across them, and upper roof sheets extending across and supported by the carlines between deck-plates, the sheets at each side having their edges resting upon the top of the deck-plates and said plates being flanged along their upper edges to receive said sheets.
- 10 5. The combination, with the carlines extending across a car in a continuous arch, of longitudinal deck-plates having their lower portions set in between and straddling the carlines where they pass across them, longitudinal braces riveted to the carlines between deck-plates, and upper roof sheets resting upon said braces and fastened to the deck-plates at each side.
- 15 6. The combination, with the carlines extending across a car in a continuous arch, of longitudinal deck-plates resting upon the carlines at each side of the center, upper roof sheets passing over the carlines and fastened at the sides to the top of the deck-plates, longitudinal braces riveted to the carlines at intermediate points between deck-plates to support the roof-sheets and brace the carlines, and transverse braces riveted to the under side of the roof sheets between carlines.
- 20 7. The combination, with the carlines extending across a car in a continuous arch, of longitudinal deck-plates having their lower portions set in between and straddling the carlines where they pass across them, head-linings fastened to the carlines between the deck-plates, said head-linings being cut out between carlines to a level with the upper portion of the deck-plates, top and side linings extending between the head-linings and the deck-plates, and window sashes fastened in openings provided therefor in the deck-plates.
- 25 8. The combination, with the carlines extending across

a car in a continuous arch, of longitudinal deck-plates having their lower portions set in between and straddling the carlines where they pass across them, longitudinal braces fastened inside the carlines below the deck-plates, upper and lower head-linings fastened to the carlines, and longitudinal molding strips bolted to the longitudinal braces to fasten the respective lower and upper edges of said head-linings in place.

9. The combination, with the carlines rising from the main posts, of lower head-linings fitted to the carlines above the posts, longitudinal T braces fastened inside the posts and carlines, with their ribs facing inwardly, said braces being spaced apart to receive the upper and lower edges of the head-linings, and molding strips fastened to the braces to fasten said edges to the braces.

10. The combination, with the carlines extending across a car in a continuous arch, of longitudinal T braces riveted inside the carlines in line with the deck lights, and inside and outside sheathing plates fastened thereto.

11. The combination, with the frame posts, of parallel longitudinal braces fastened to the posts above the window openings, inside longitudinal sheathing plates having moldings formed thereon at top and bottom and fitted to said braces, bolts projecting from the braces through holes provided therefor in the moldings, and cap nuts screwed on the projecting ends of said bolts to fasten the plates in place.

12. The deck-plates having openings for deck lights cut therethrough and out-turned flanges along the top and bottom edges, the lower portion of the plates being bent upwardly and outwardly to adapt them to straddle carlines where they pass across them.

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

WILLIAM F. KIESEL, JR.

Witnesses:

J. C. STORM,
U. S. DRAYER.