No. 723,800. PATENTED MAR. 24, 1903.

W. H. WOODCOCK & R. H. HORNBROOK.

GONDOLA CAR.

APPLICATION FILED JUNE 16, 1902.

NO MODEL. 3 SHEETS—SHEET 1.

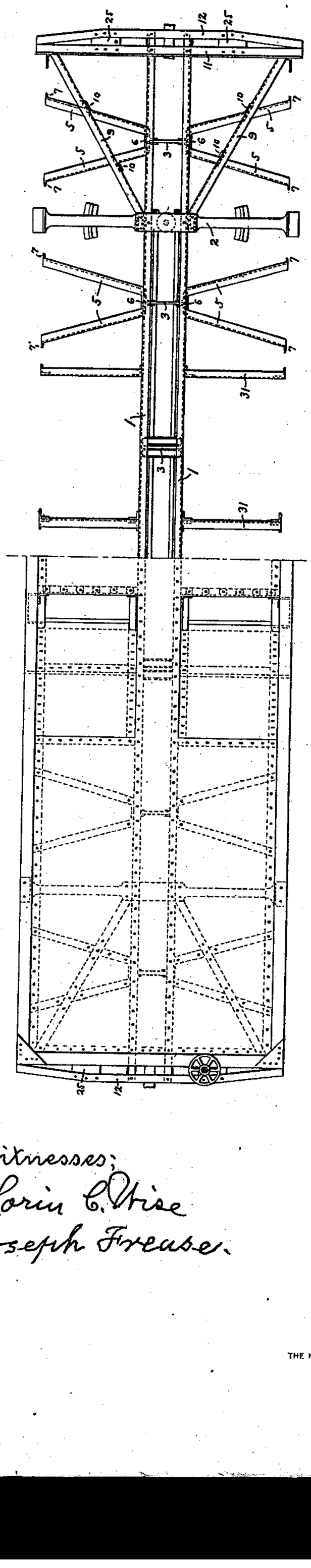

Fig. 2.

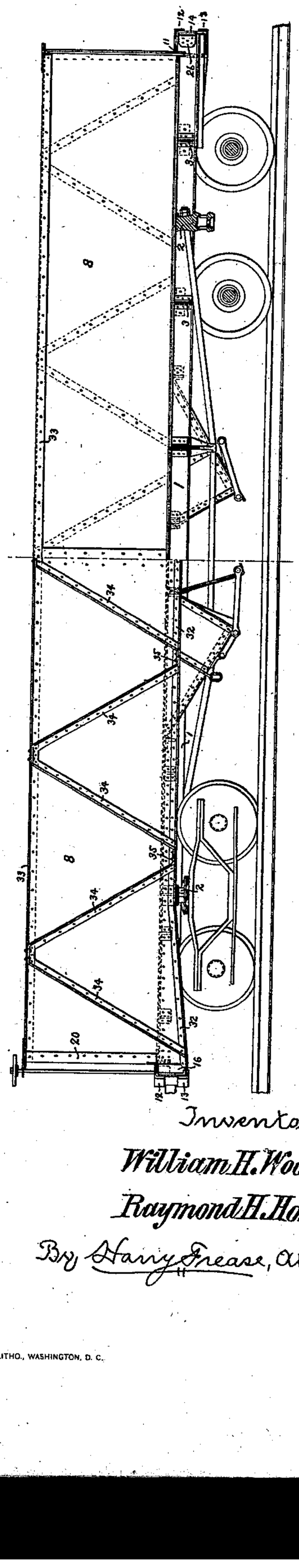

Fig. 1.

Witnesses;
Lorin C. Wise
Joseph Frease.

Inventors;
William H. Woodcock,
Raymond H. Hornbrook,
By Harry Frease, Attorney.

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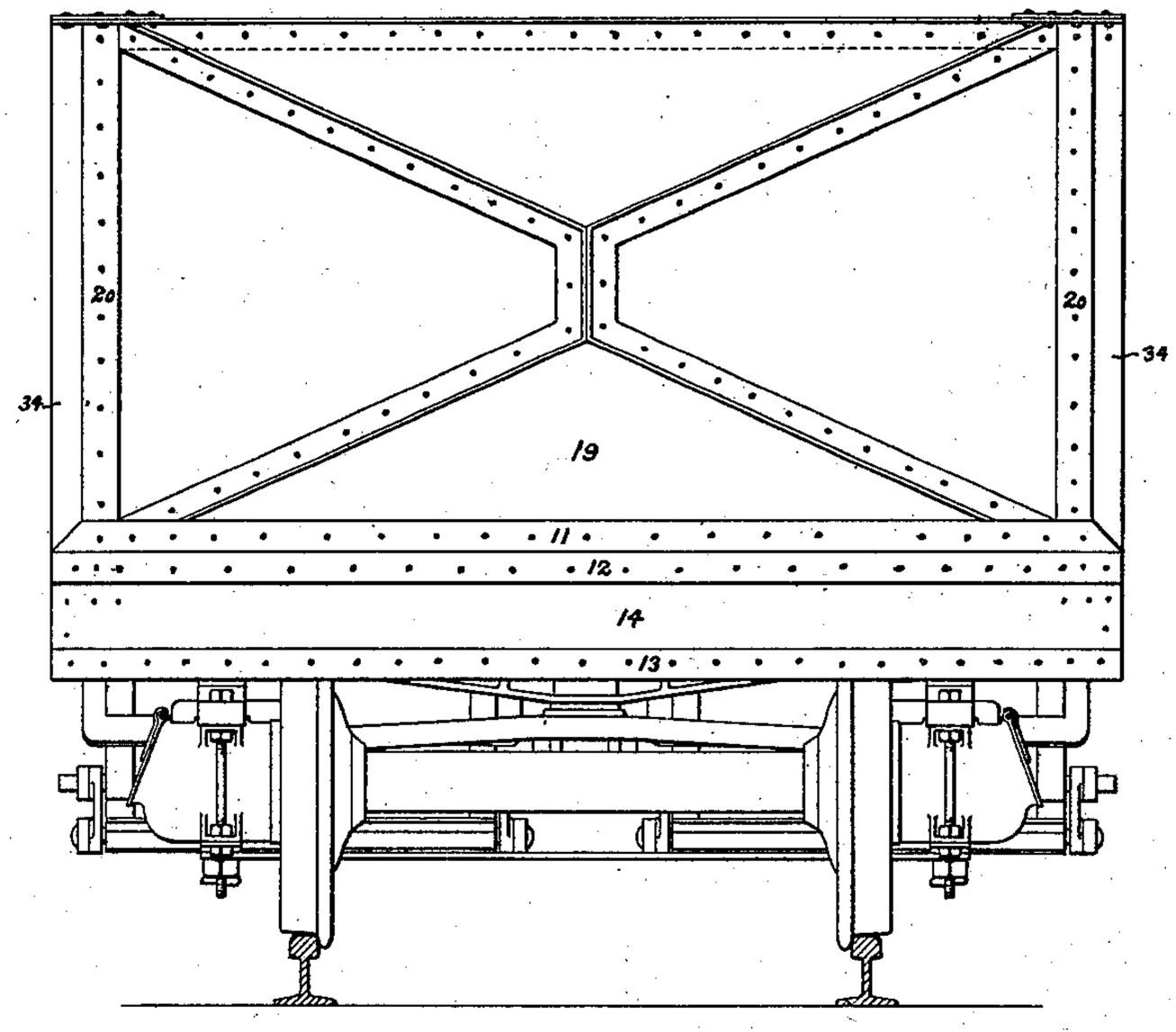
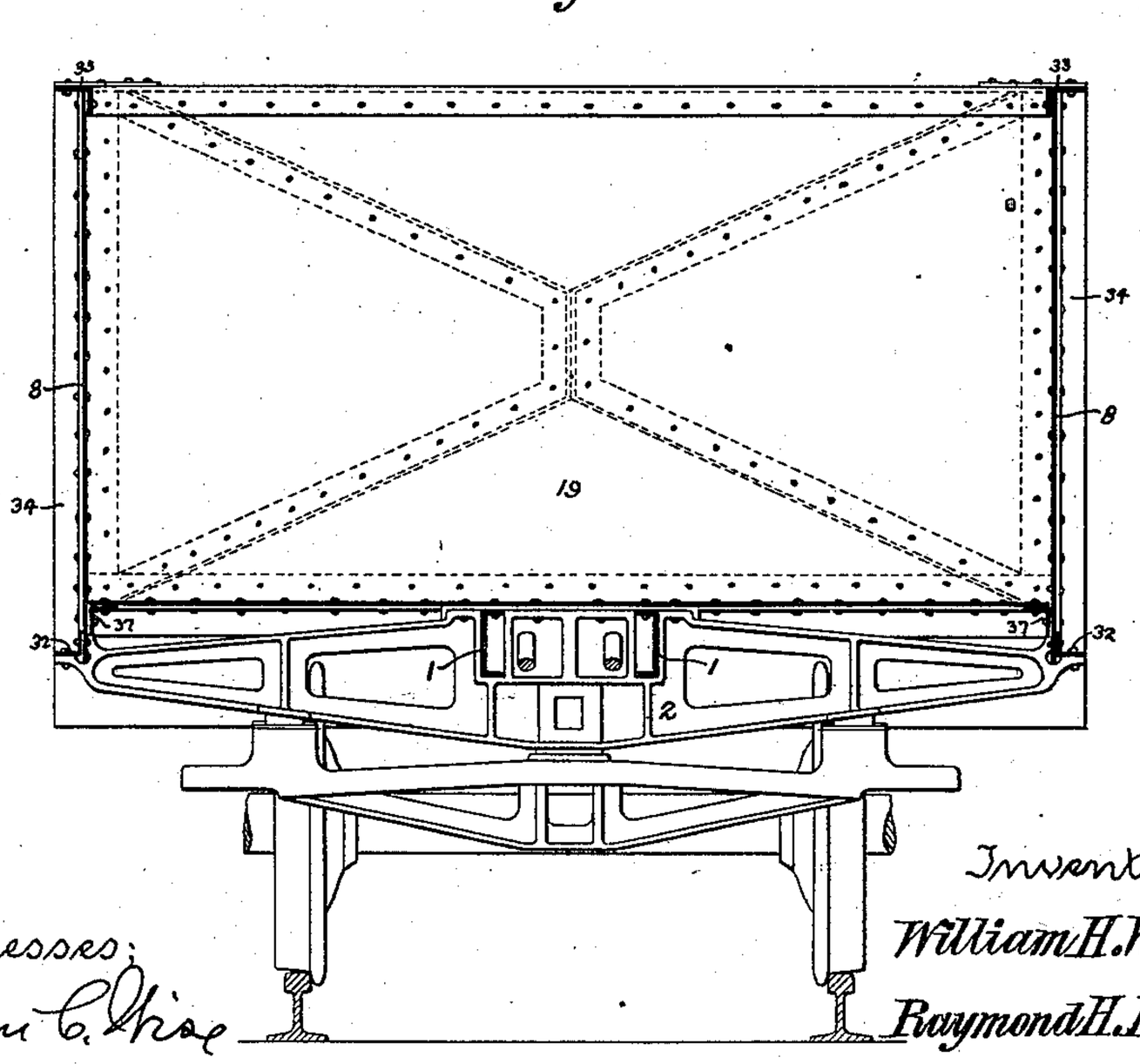


Fig. 3.



Witnesses:
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Fig. 4.

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NO MODEL. 3 SHEETS—SHEET 3.

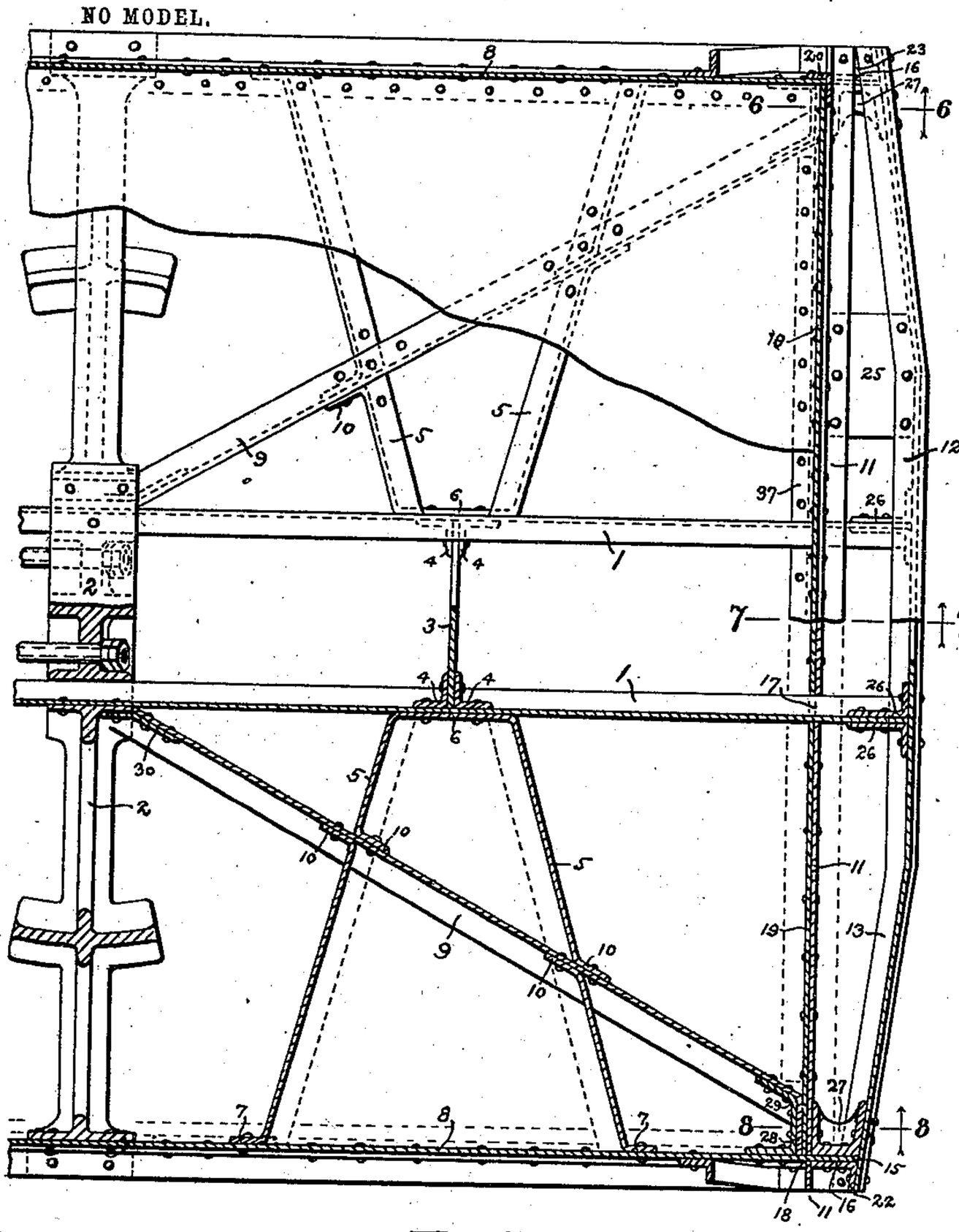

Fig. 5.

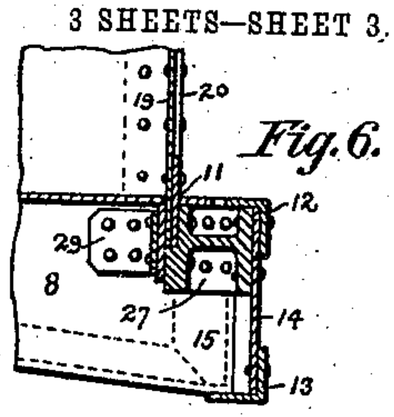

Fig. 6.

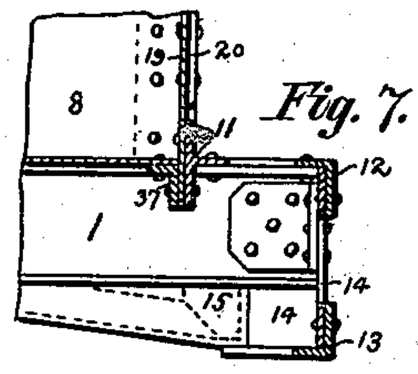

Fig. 7.

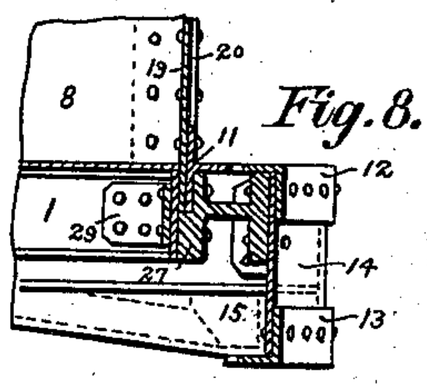

Fig. 8.

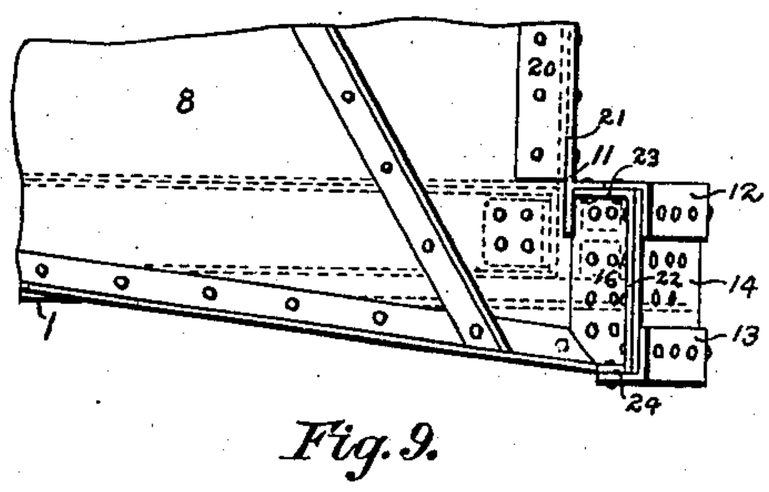

Fig. 9.

Witnesses;
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UNITED STATES PATENT OFFICE.

WILLIAM H. WOODCOCK AND RAYMOND H. HORNBROOK, OF CANTON, OHIO.

GONDOLA CAR.

SPECIFICATION forming part of Letters Patent No. 723,800, dated March 24, 1903.

Application filed June 16, 1902. Serial No. 111,917. (No model.)

To all whom it may concern:

Be it known that we, WILLIAM H. WOODCOCK and RAYMOND H. HORNBROOK, subjects of the King of Great Britain, residing at Canton, in the county of Stark and State of Ohio, have invented a new and useful Gondola Car, of which the following is a specification.

Our invention relates to improvements in gondola cars in which the car-body is made of structural steel and shapes and without any side sills; and the objects of our improvements are, first, to provide suitable transverse bracing in the floor-frame of the car; second, to make the end sills out of simple shapes, so they will properly withstand the shocks and strains imposed upon them, and also furnish convenient means for attaching the end and floor plates and side-plate extensions; third, to provide a rigid connection between the side plates and the end sills, so as to tie all parts of the car-body securely together, and, fourth, to properly stiffen the side plates of the car, so they will act as girders in lieu of side sills. We attain these objects by the arrangement and construction illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of one end half of the car, showing the other end half in vertical longitudinal section; Fig. 2, a plan view of one end half, showing the floor-framing of the other end half; Fig. 3, an end elevation; Fig. 4, a vertical cross-section; Fig. 5, a plan view of one end, having various parts broken away to show the details; Fig. 6, a section on line 6 6, Fig. 5; Fig. 7, a section on line 7 7, Fig. 5; Fig. 8, a section on line 8 8, Fig. 5; and Fig. 9, a side view showing the side-plate and end-sill connection.

Similar numerals refer to similar parts throughout the drawings.

The center sills 1 of the car are preferably made of channel-bars, which bear in the respective bolsters 2 and extend the full length of the car. The center sills are spaced apart by the separator-plates 3, which are riveted to the webs of the channel-bars by the angle-plates 4 on either side.

The transverse braces 5 are made of angle-bars, and a pair of diverging braces are located on either side opposite the separator-plates. To make each pair of transverse braces, the horizontal flange is cut away at the middle of an angle-bar, and the bar is bent diagonally outward, diverging in either direction from the ends of the free section 6 of the vertical flange, which free section is riveted to the web of the side-sill channel-bar, the same rivets passing through the angle-plate 4 of the separator-plate. The horizontal flange is also cut away at each end of the angle-bar, and the free outer ends 7 of the vertical flange are bent to join the inner face of the side plate 8, to which they are riveted. In the respective end sections of the car the transverse-brace angle-bars on either side are cut across by the corner-braces 9, which are preferably made of channel-bars. At the points of juncture the horizontal flanges of the angle-bars are cut away, and the free ends 10 of the vertical flanges are bent to join the web of the channel-bar, to which they are respectively riveted on either side.

Each end sill of the car is made of a T-bar 11, upper and lower angle-bars 12 and 13, respectively, and a sill-plate 14, which are respectively connected with the end extensions 15 of the car side plates by the respective flanges of the sill end plates 16. The T-bars 11 extend across the entire width of the car and have their flanges vertical and their legs directed outward. The lower flange of each T-bar is notched to fit over the center sills and the side-plate end extensions, as at 17 and 18, respectively. The end plate 19 of the car is riveted to the inner side of the T-bar, and the lower edge of the end plate is flush with the lower edge of the T-bar and is notched to fit over the center sills, as at 17. The end plates extend across the car to the end of the side plates, and the corner of the car above the end sill is finished by the angle-bar 20, which is riveted to the side and end plates, respectively. The transverse flange of the corner angle-bar is cut away at the lower end for the upper flange of the T-bar, as at 21. The end extension 15 of the side plate projects immediately below the leg of the T-bar 11 to the inner face of the sill-plate 14, and the end edge of the extension corresponds in length with the width of the sill-plate. If this extension cannot be made within the normal width of the side plate, the lower edge of the plate is inclined downward, pref-

erably from near the respective bolsters, to increase the width at each end. The sill end plate 16 is riveted on the outer face of the side-plate extension and is also riveted by its vertical flange 22 to the end of the sill-plate, by its upper horizontal flange 23 to the ends of the leg of the T-bar and the horizontal flange of the upper sill angle-bar, and by its lower horizontal flange 24 to the end of the horizontal flange of the lower sill angle-bar. The upper and lower rivets through the sill-plate extend also through the vertical flanges of the upper and lower sill angle-bars, respectively. By this arrangement and construction all the parts of the sill are rigidly fastened together and with the end extension of the side plate. The sill angle-bars 12 and 13 are riveted by their respective vertical flanges on the face of the sill-plate, and their horizontal flanges extend inward past the upper and lower edges, respectively, of the plate. The angle-bars and plate are spaced apart from the T-bar in the middle part of the sill; but on either side they converge toward the T-bar and join near it at their respective ends. At the angle of convergence the tie-plates 25 are riveted, respectively, to the leg of the T-bar and the horizontal flange of the upper angle-bar to stiffen the parts, and in the middle of the car the sill-plate is riveted on the ends of the center sills by the respective angle-plates 26. The castings 27 are also provided to strengthen the end sills at the respective corners, where the cars are bumped by pushing them with a pole. Each casting has three faces, fitting, respectively, against the sill-plate, the side-plate extension, and the lower flange of the T-bar, to which parts the casting is riveted. The casting also projects below the T-bar flange and the lower edge of the end plate and presents a face flush with the inside face of the end plate for receiving the end 28 of the corner-brace 9. The corner-brace channel-bar has its flanges cut away at the outer end, and the free end 28 of the web is bent to join the inner face of the end plate and the adjoining part of the corner-casting. This joint is reinforced by the brace-plate 29, which is bent to fit the web of the corner-brace, the bent free end of said web, and the inner face of the car side plate, to which parts it is riveted. The rivets in the middle section of this plate connect with the corner-casting, and the upper ones pass through the lower part of the end plate and the depending flange of the T-bar, thereby securely connecting all these parts together. The inner end of each corner-brace is riveted directly by its flanges and by the angle-plate 30 on its web to the bolster at the side of the center sill.

The side plates 8 of the car are riveted to the respective ends of the bolsters, the transverse bars 31, the transverse braces, and in the end sills. Along the outer side at the lower edge of each side plate is riveted the angle-bar 32, having its horizontal flange projected outward from the lower edge of the plate, and along the inner side at the upper edge of the plate is riveted the angle-bar 33, having its horizontal flange projected outward over the upper edge of the plate. A series of diagonal braces 34, made of angle-bars, is riveted on the outer face of each side plate. At the lower end of the diagonal brace the vertical flange of the angle-bar is cut away, and the free part 35 of the transverse flange is bent to join the horizontal flange of the lower-edge angle-bar, to which it is riveted. Thence the brace is extended diagonally upward along the side plate, to which it is riveted, to the horizontal flange of the upper-edge angle-bar, where the brace is bent and joined to said flange for a short distance, the respective flanges being riveted together. Thence the brace is bent again and extended diagonally downward along the side plate to the lower-edge angle-bar, to which it is attached, as before described. Each pair of diagonal braces may be formed separate in an inverted-V shape, as described, or two or more pairs can be formed out of a continuous angle-bar.

The floor 36 of the car is laid on the center sills, the corner-braces, and the angle-bars 37, which angle-bars are riveted along the inner faces of the side and end plates of the car, respectively.

What we claim as our invention, and desire to secure by Letters Patent, is—

1. In a car floor-frame, channel-bar center sills, a separator-plate riveted to said sills by angle-plates, angle-bar transverse braces riveted to said sills on either side opposite said plates, said braces diverging outward, and side plates to which the ends of said braces are riveted.

2. In a car floor-frame, a center sill, a side plate, a bolster and an end sill; a channel-bar corner-brace having its ends riveted respectively in the corner of the end sill and side plate, and in the corner of the bolster and center sill; and diverging angle-bar braces between the center sill, the corner-brace and the side plate, respectively, the horizontal flanges of the angle-bars being cut away at the junction-points, and the free vertical flanges being bent to join the center sill, the web of the corner-brace and the side plate, to which said bent flanges are respectively riveted.

3. A car end sill composed of a transverse T-bar having its leg directed outward and having notches in its lower flange near the middle, an angle-bar having one flange directed inward opposite said leg and its other flange directed downward, a plate riveted on said depending flange, an angle-bar riveted along the lower edge of said plate and having its free flange directed inward; end plates having flanges riveted respectively to the T-bar leg, the angle-bar flanges, and the sill-plate, near the respective ends thereof; center sills located in said notches, and angle-

plates riveted on either side of the respective center sills and to said sill-plate and the depending angle-bar flange.

4. A car end sill composed of a transverse T-bar having its leg directed outward and having notches in its lower flange near the ends, an angle-bar having one flange directed inward opposite said leg and its other flange directed downward, a plate riveted on said depending flange, an angle-bar riveted along the lower edge of said plate and having its free flange directed inward, side-plate end extensions located in said notches; and end plates riveted to said extensions and having flanges riveted respectively to the T-bar leg, the angle-bar flanges, and the sill-plate, near the respective ends thereof.

5. A car end sill composed of a transverse T-bar having its leg directed outward, an angle-bar having one flange directed inward opposite said leg and its other flange directed downward, a plate riveted on said depending flange, an angle-bar riveted along the lower edge of said plate and having its free flange directed inward; and end plates having flanges riveted respectively to the T-bar leg, the angle-bar flanges, and the sill-plate, near the respective ends thereof.

6. A car end sill composed of a transverse T-bar having its leg directed outward, an angle-bar having one flange directed inward opposite said leg and its other flange directed downward, a plate riveted on said depending flange, an angle-bar riveted along the lower edge of said plate and having its free end directed inward; end plates having flanges riveted respectively to the T-bar leg, the angle-bar flanges, and the sill-plate, near the respective ends thereof; and a casting riveted inside to said end plate, the T-bar leg, the sill-plate, and the depending angle-bar flange.

7. A car side plate having an end extension projected from its lower part, said end extension being adapted to be riveted to the car end sill.

8. In a car, a side plate, an angle-bar riveted along the lower edge thereof, and diagonal braces riveted on the face of the plate comprising an angle-bar bent as an inverted V, and having the vertical flange cut away at the ends, and the free ends of the transverse flange bent to join the flange of the edge bar to which they are riveted.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

WILLIAM H. WOODCOCK.
RAYMOND H. HORNBROOK.

Witnesses:
JOSEPH FREASE,
HARRY FREASE.