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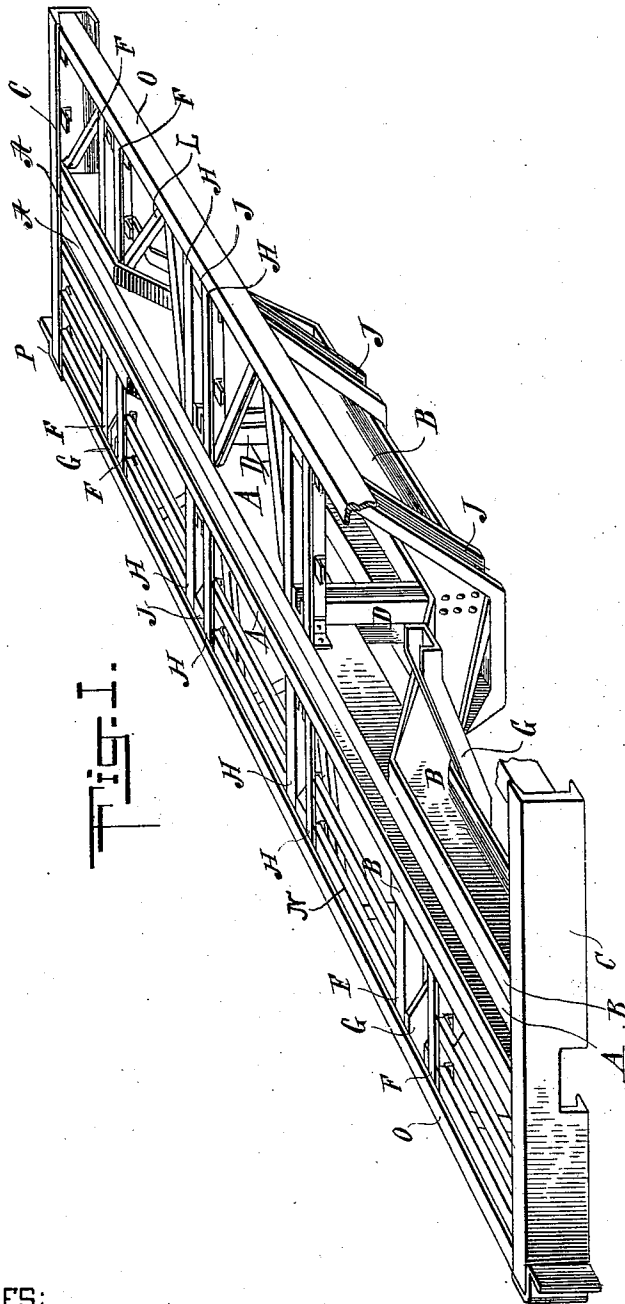
Patented Dec. 31, 1901.

C. VANDERBILT.  
RAILWAY CAR.

(Application filed July 3, 1901.)

(No Model.)

4 Sheets—Sheet 1.



WITNESSES:

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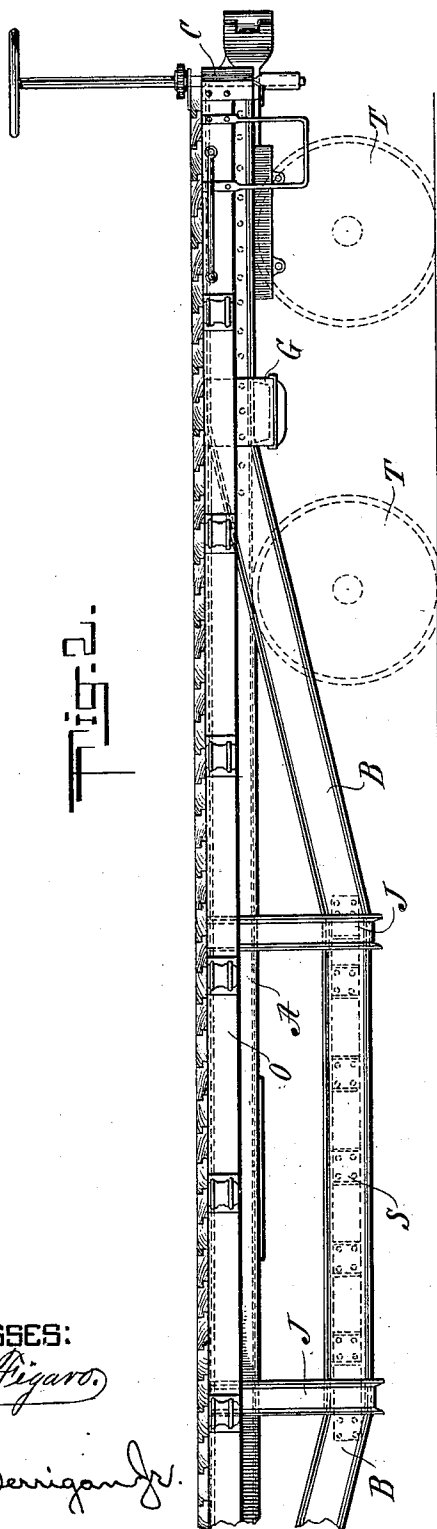
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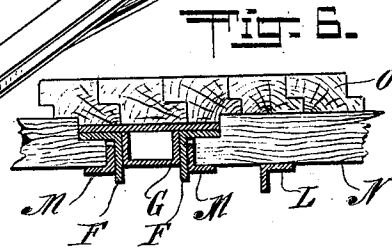
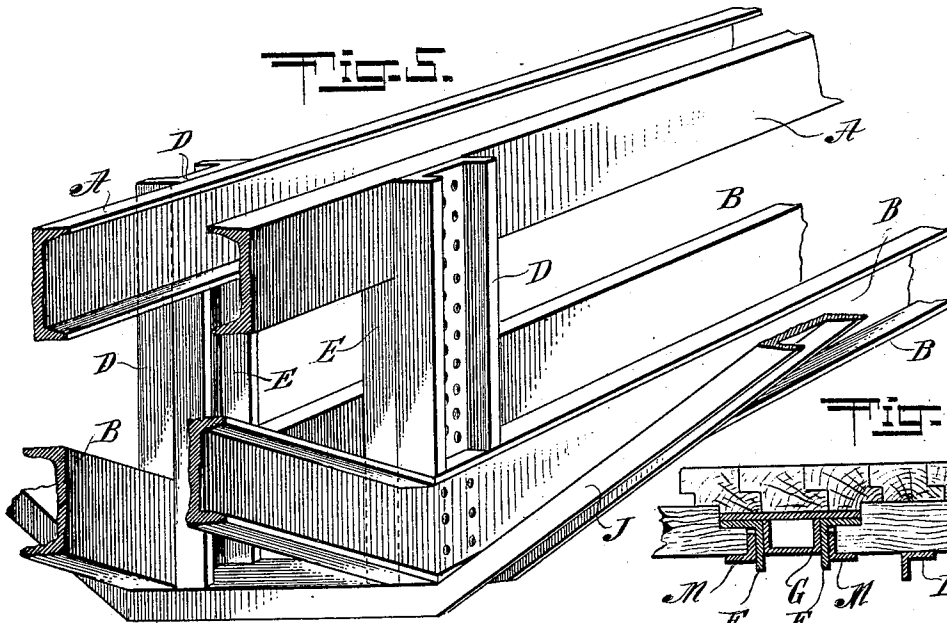
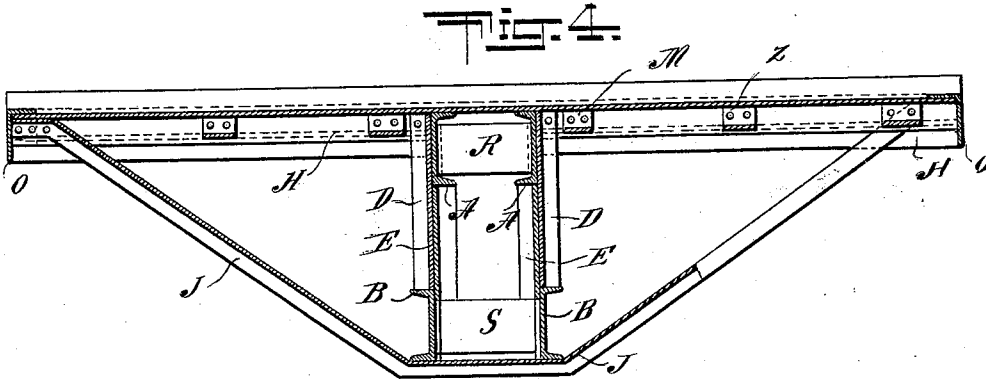
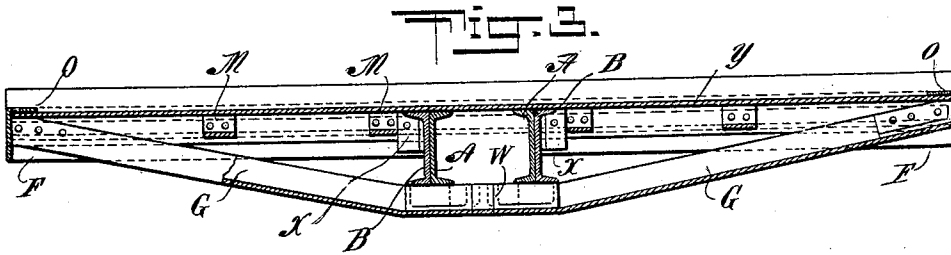
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No. 690,207.

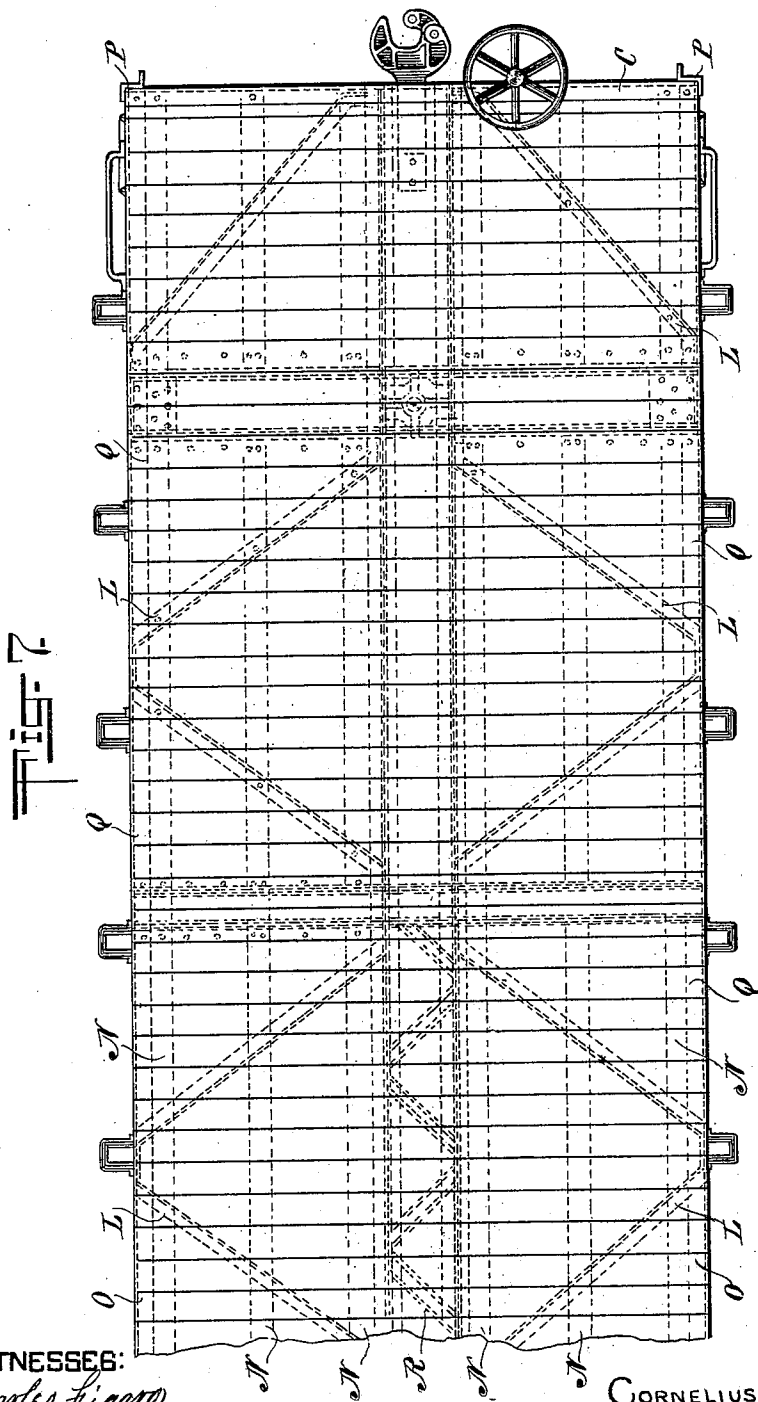
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4 Sheets—Sheet 4.



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# UNITED STATES PATENT OFFICE.

CORNELIUS VANDERBILT, OF NEW YORK, N. Y.

## RAILWAY-CAR.

SPECIFICATION forming part of Letters Patent No. 690,207, dated December 31, 1901.

Application filed July 3, 1901. Serial No. 66,962. (No model.)

*To all whom it may concern:*

Be it known that I, CORNELIUS VANDERBILT, a citizen of the United States, and a resident of the borough of Manhattan, in the city, county, and State of New York, (with a post-office address at 100 Broadway, in said borough,) have invented certain new and useful Improvements in Railway-Cars, of which the following is a full and true description, reference being had to the accompanying drawings, forming part of my specification.

The object of my invention is to economically produce an improved form of car-frame having great strength and lightness.

My improved form of car-frame, which is especially designed for freight service, is preferably constructed, wherever possible, of usual and ordinary commercial metallic parts—such as rolled channel-beams, angle-beams, angle-plates, &c.—which may be readily rolled or otherwise formed without requiring the employment of the forms shown.

Referring to the accompanying drawings, wherein similar letters indicate like parts in the several views, Figure 1 is a perspective view of the car-frame, partly broken away, showing more particularly the parts essential to my invention. Fig. 2 is a side view of part of one form of car made under my invention. Fig. 3 is a transverse sectional view on the line 3 3 of Figs. 1 and 2. Fig. 4 is a similar view on the lines 4 4 of Figs. 1 and 2. Fig. 5 is a fragmentary detail view of the longitudinal supports of the car. Fig. 6 is a detail showing the supports for the beams and the floor; and Fig. 7 is a top view of a part of the preferred car, the floor being partially laid thereon.

The new car-frame essentially comprises center sills and body-bolsters. In the preferred form the center sills are arranged in pairs, each pair having a longitudinal compression-beam A, which may be a rolled metallic channel-beam of a single piece throughout the length of the car and having the web and upper and lower flanges integral. Each beam A constitutes the compression member of a longitudinal truss, the tension member of which is preferably a rolled metallic channel-beam B, bent to shape, so as to have its ends secured, by rivets or otherwise, to the ends of the beams A and having a considerable

portion depressed below the beams A. In order to secure the greatest strength both longitudinally and transversely, the tension-beams B will usually, as illustrated, be connected to the compression-beams at a plurality of points from the ends of the beams to the body-bolsters, whereby great strength will be given throughout the car, and especially at the body-bolsters, and individually-trussed center sills are provided. End sills C C are secured to the extremities of the center sills.

In order to brace the upper and lower members of the center sills, I have provided novel and exceedingly strong connecting means, preferably of the form shown in Fig. 5 of the accompanying drawings. The said connection devices are each shown as being formed of two short channel-sections D and E, which are riveted together back to back, while the web of the upper part of D is riveted to A and the web of the lower part of E is riveted to B. Such construction, which utilizes easily-procured parts, is quickly assembled by ordinary machinery and without the services of expert workmen. It may, however, without departing from my invention be integral throughout or of any number of pieces, which may be of any available shape or size.

While body-bolsters of any ordinary or desired form may be used with my new form of car-frame, I prefer to employ the form of transversely-trussed body-bolster illustrated in the drawings, more especially Figs. 1 and 3. Each bolster in the preferred form, as illustrated, comprises four angle bars or beams F F, which are at their inner ends connected to the longitudinal beams B B by any suitable means, such as angle-plates X X, Fig. 3. The outer ends of these angle-bars may be braced by any suitable means; but I prefer to provide a continuous transverse tension member for this purpose whereby each bolster is strongly trussed. For this purpose I preferably use a channel-beam G, having the flanges disposed upwardly and connected at the ends to the outer ends of the angle-bars F F by rivets, which pass through the angle-bars and through the flanges of the channel-beam G, as shown in Figs. 1 and 3. Said channel-beams G are depressed midway of their length and pass underneath the

beams A A and B B, whereby great strength is given to the body-bolsters, with economy of material and lightness of weight. The strength of the body-bolsters is greatly increased by the addition of plates Y, Fig. 3, which extend continuously across the car and are riveted to the sides of the angle-bars F and to the flanges of the beams A and B.

I have shown the channel-beam G as having its flanges disposed upwardly. This arrangement is advantageous more especially in providing a firm seat at the point between the beams A A, Fig. 3, for an applied casting W, intended to hold a king-bolt for a truck, in which event an opening will be formed through the web of the beam G. This is the preferred arrangement; but obviously the channel-beam may be arranged with its flanges downwardly disposed.

My new car-frame may also be provided with needle-beams arranged transversely to the body and between the body-bolsters. I prefer to construct said needle-beams similarly to the body-bolsters, employing angle-bars H H, secured at their inner ends to the beams A A and braced by a bent continuous channel-beam J, the ends of which are fitted between the bars H H and riveted thereto and the centers of which pass underneath the flanges of the beams B B (see Figs. 1, 4, and 5) and preferably directly underneath the bracing devices D and E. As in the case of the bolsters, the needle-beams are also strengthened by riveted plates Z.

Preferably the car-frame is provided with side bars O O, each consisting of a continuous angle-beam which is riveted into engagement with the end sills C C and the body-bolsters and needle-beams. The frame is further braced and strengthened throughout by a number of diagonal braces L L, preferably angle-bars, the ends of which are riveted to the beams A and B and to the bars O. These braces also constitute supports for the floor-beams, as hereinafter explained.

While I have shown certain commercial forms in making up my new car, yet I do not desire to be understood as limiting my invention thereto. Obviously non-metallic parts may be substituted wherever the circumstances permit or molded or pressed metallic parts may be used.

The form of car-frame illustrated may be advantageously used for flat-cars, gondola-cars, or ordinary box-cars.

The wooden flooring may be secured in any suitable way; but I prefer the arrangement illustrated.

Referring especially to Figs. 3, 4, 6, and 7, it will be seen that the angle-bars F F and H H, comprised in the body-bolsters and needle-beams, are provided, as also are the inside faces of the end sills, with angle-plates M or other forms of pockets, and these supports are adapted to sustain the reduced ends of floor-beams N, said ends resting upon the outwardly-extending faces of the angle-plates M

and the floor-beams N resting upon one or two of the diagonal braces L, each of which contributes to the support of all beams fitting the panel. Suitable bolts are provided for securing the beams to the braces L. The floor proper consists of transversely-laid boards Q, which are nailed or bolted to the beams N. If desired, metal may be used instead of the floor-boards.

The car-frame may be provided with stake-pockets, brake-rods, couplers, draft appliances, &c., of any desired pattern. If desired, braces R between the beams A and A and braces S between the beams B and B at points between the body-bolsters may be provided.

The improved car-frame described and shown by me has many points of advantage. In the arrangement illustrated, especially when side bars O O are employed, the weight of the car and of the load is transferred from the sides to the center sills. Owing also to the novel arrangement of parts constituting the body-bolsters and needle-beams, the said parts are exceedingly light and strong, and these, combined with the light side bars O O, give to the car-frame as much strength as other frames have when employing heavy side sills.

While I have shown and described one form of car-frame which I have found to have many advantages in use, yet I do not desire to be understood as being limited to said arrangement. Obviously modifications which will still be within my claims will readily suggest themselves to persons skilled in the art of car-building.

What I claim is—

1. In a railway-car frame, longitudinally-extending beams, longitudinally-extending truss members connected to the bolsters and arranged side by side with and supporting the longitudinal beams, body-bolsters and transversely-extending truss members at each bolster, which are secured to the bolsters, substantially as and for the purpose described.

2. In a railway-car frame, one or more longitudinally-extending truss members connected to the bolsters and arranged side by side with and supporting said beam or beams, body-bolsters and transversely-extending truss members at each bolster, which are secured to the ends of the bolsters and pass underneath the longitudinal beam or beams, substantially as and for the purpose described.

3. In a railway-car frame, one or more longitudinally-extending central beams, one or more longitudinally-extending truss members arranged side by side with and supporting said beam or beams, body-bolsters and transversely-extending members at each bolster, which are secured to the ends of bolsters and pass underneath the longitudinal beam or beams, substantially as and for the purpose described.

4. In a railway-car frame, bolsters connected together by one or more longitudinally-extending beams; two or more needle-beams

connected with the longitudinally-extending beams at points between the bolsters; longitudinally-extending truss connections for the longitudinally-extending beams, and truss connections from the ends of the bolsters and from the ends of the needle-beams to the longitudinally-extending beams, substantially as and for the purpose described.

5. In a railway-car frame, bolsters connected together by one or more longitudinally-extending beams; two or more needle-beams connected by the longitudinally-extending beams; longitudinally-extending truss connections for the longitudinal beams; truss connections from the ends of the bolsters to the longitudinal beams, and truss connections for the needle-beams, substantially as and for the purpose described.

6. In a railway-car frame, two longitudinally-extending parallel metallic beams constituting center sills; body-bolsters consisting of pairs of metallic beams connected at their inner ends to the center sills; and suitably bent and transversely-disposed metallic beams connected at their ends between the outer ends of the bolster-beams and at their centers passing underneath the center sills, substantially as and for the purpose described.

7. In a railway-car frame, two longitudinally-extending parallel metallic beams constituting center sills; two longitudinally-extending bent metallic beams placed outside of the center sills and constituting truss-supports therefor; body-bolsters connected to the center sills; needle-beams connected with said sills; and truss connections from the ends of the bolsters and from the ends of the needle-beams to the center sills, substantially as and for the purpose described.

8. In a railway-car frame, rolled metallic longitudinally-extending side bars, rolled metallic end sills, and two rolled metallic longitudinally-extending center sills, connecting the end sills together; in combination with body-bolsters, each consisting of a pair of metallic beams connected at their inner ends to the center sills, and at their outer ends to the side bars, and suitably bent and transversely-disposed rolled metallic beams connected at their opposite ends between the outer ends of the bolster-beams and passing underneath the center sills, substantially as and for the purpose described.

9. In a railway-car frame, center sills, end sills, side bars, bolsters, and needle-beams connected to the center sills and side bars, in combination with diagonal braces secured to the said frame, floor-supports as M, secured to the end sills, bolsters and needle-beams, longitudinally-extending floor-beams resting upon the diagonal braces and supports, and a floor consisting of transversely-laid boards secured to the floor-beams, substantially as and for the purpose described.

10. In a railway-car frame, center sills, end sills and bolsters connected to the center sills, in combination with diagonal braces secured to the said frame, floor-supports as M, secured to the end sills and bolsters, longitudinally-extending floor-beams resting upon the diagonal braces and supports, and a floor consisting of transversely-laid boards secured to the floor-beams, substantially as and for the purpose described.

11. In a railway-car frame, the combination with center sills, and a bolster consisting of parallel metallic beams connected to said sills, of a truss connection for the bolster, said truss connection consisting of a metallic beam connected at its opposite ends to the outer ends of the bolster-beams, and at its center passing underneath the center sills, substantially as and for the purpose described.

In witness whereof I have hereunto signed my name this 1st day of July, 1901.

CORNELIUS VANDERBILT.

In presence of—

L. A. SHEPARD,  
L. F. H. BETTS.