(No Model.)

4 Sheets—Sheet 1.

W. PENNOCK.

METALLIC CAR.

No. 571,884. Patented Nov. 24, 1896.

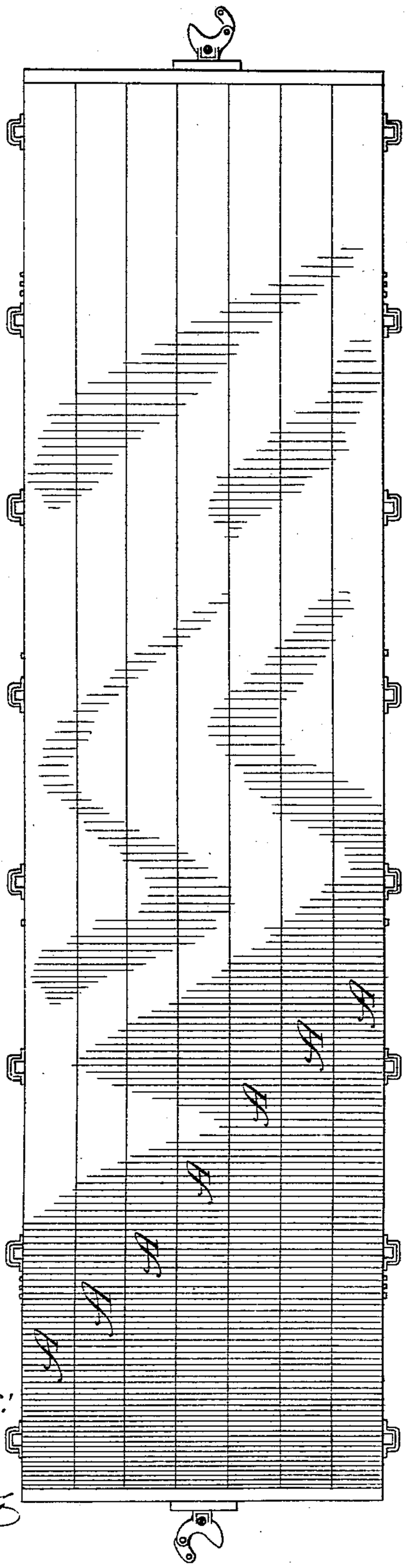

Fig. 1.

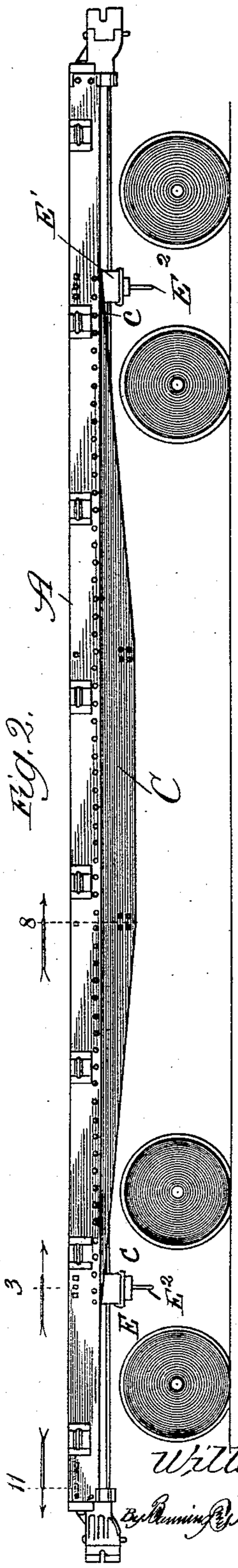

Fig. 2.

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Lutz J. Fuller.

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Attys.

(No Model.) 4 Sheets—Sheet 2.

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METALLIC CAR.

No. 571,884. Patented Nov. 24, 1896.

Fig. 3.

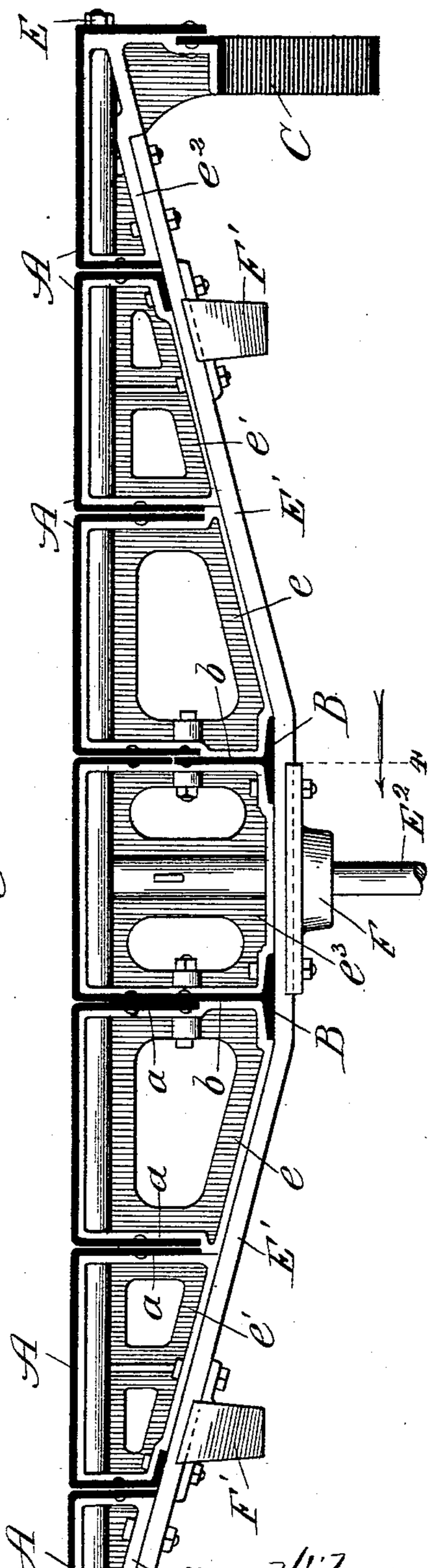


Fig. 7.

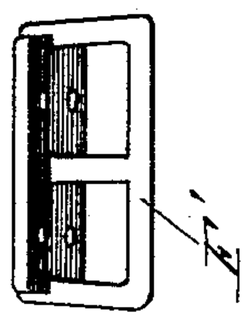


Fig. 6.

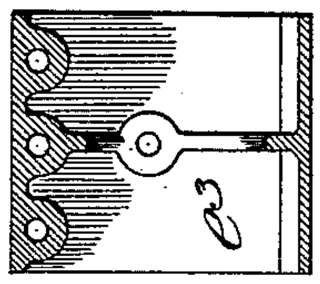


Fig. 5.

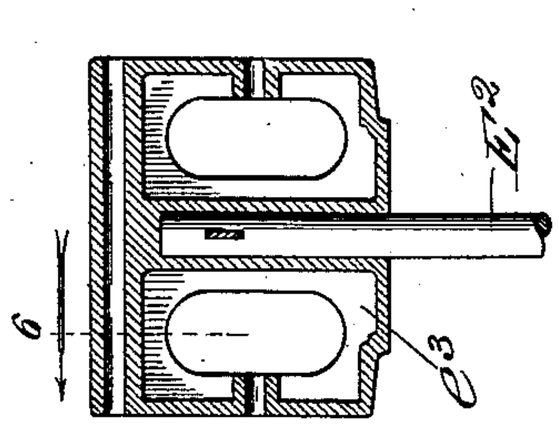
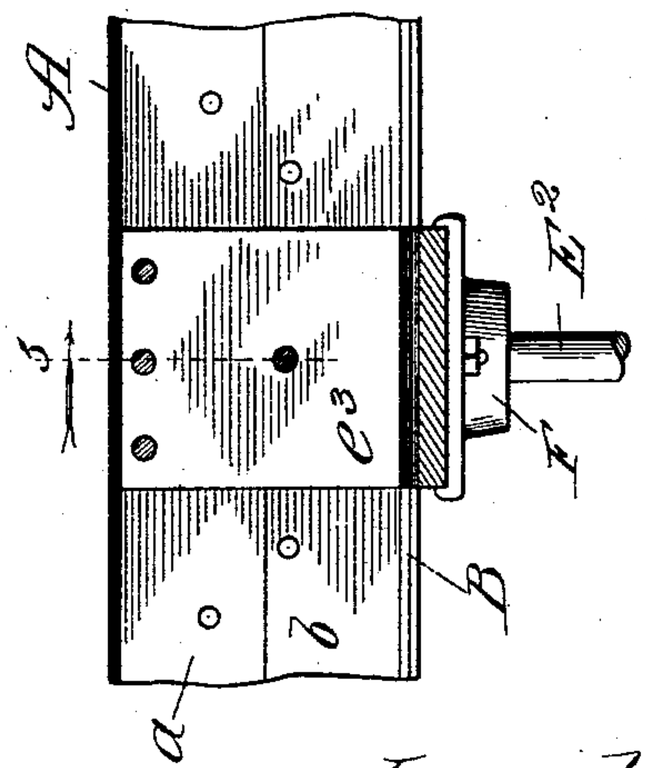


Fig. 4.



Witnesses:
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(No Model.) 4 Sheets—Sheet 3.

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METALLIC CAR.

No. 571,884. Patented Nov. 24, 1896.

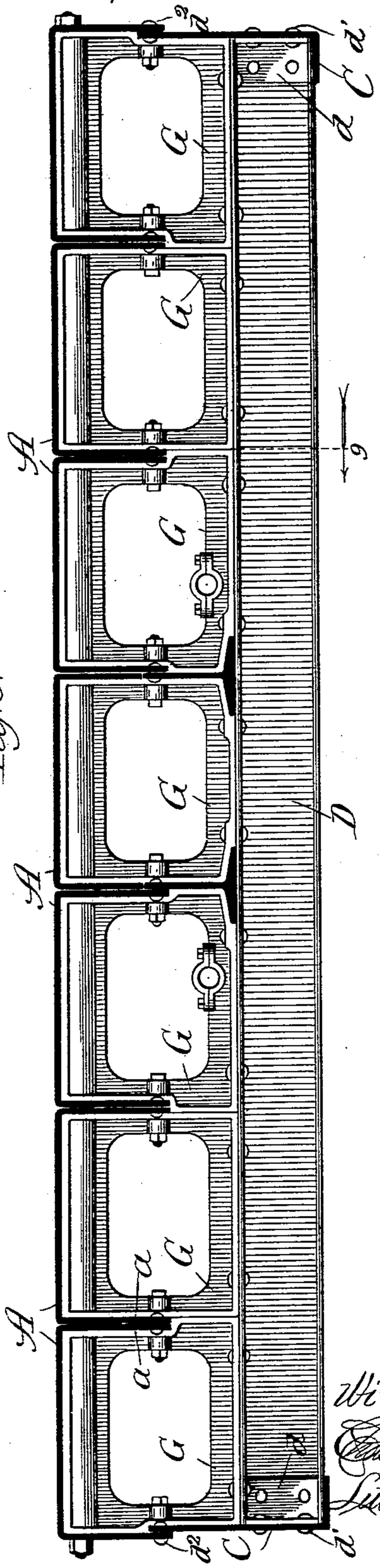

Fig. 8.

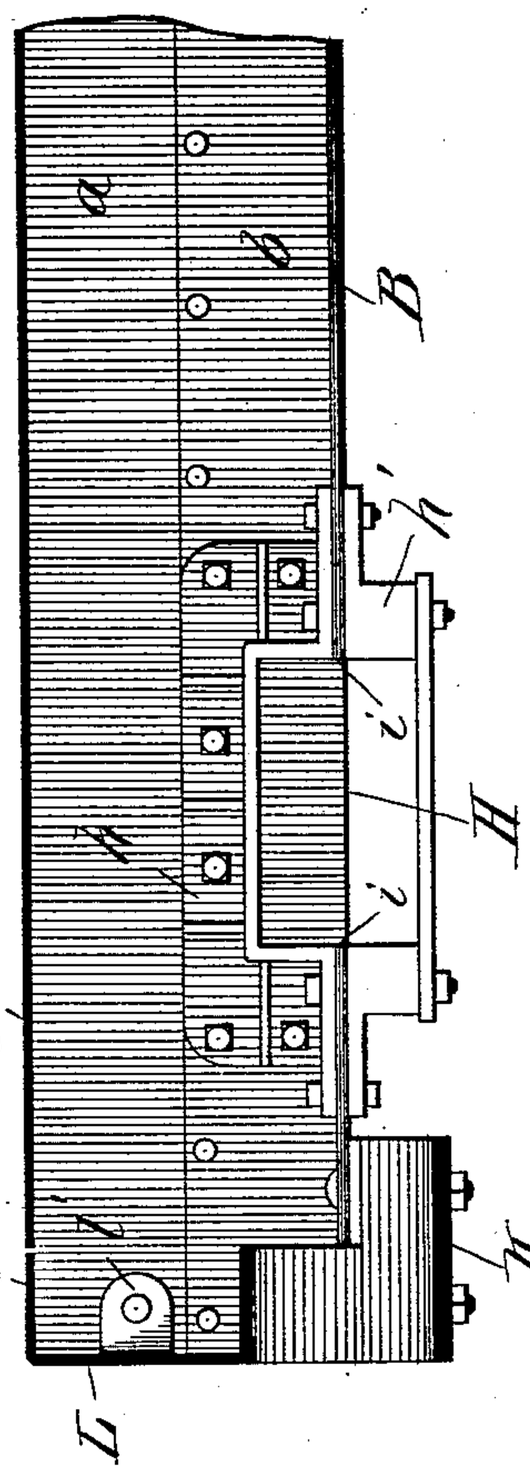

Fig. 10.

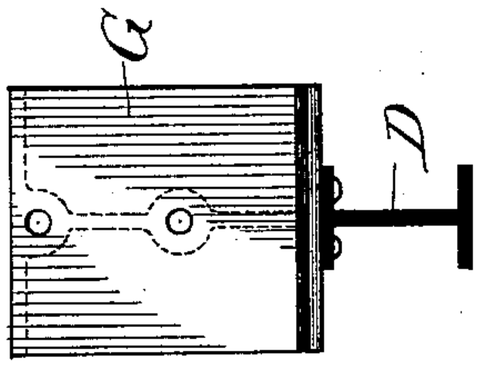

Fig. 9.

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METALLIC CAR.

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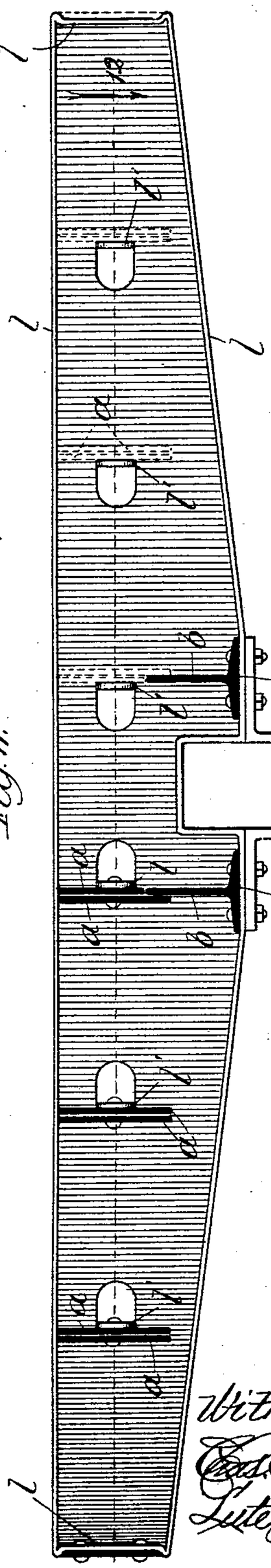

Fig. 11.

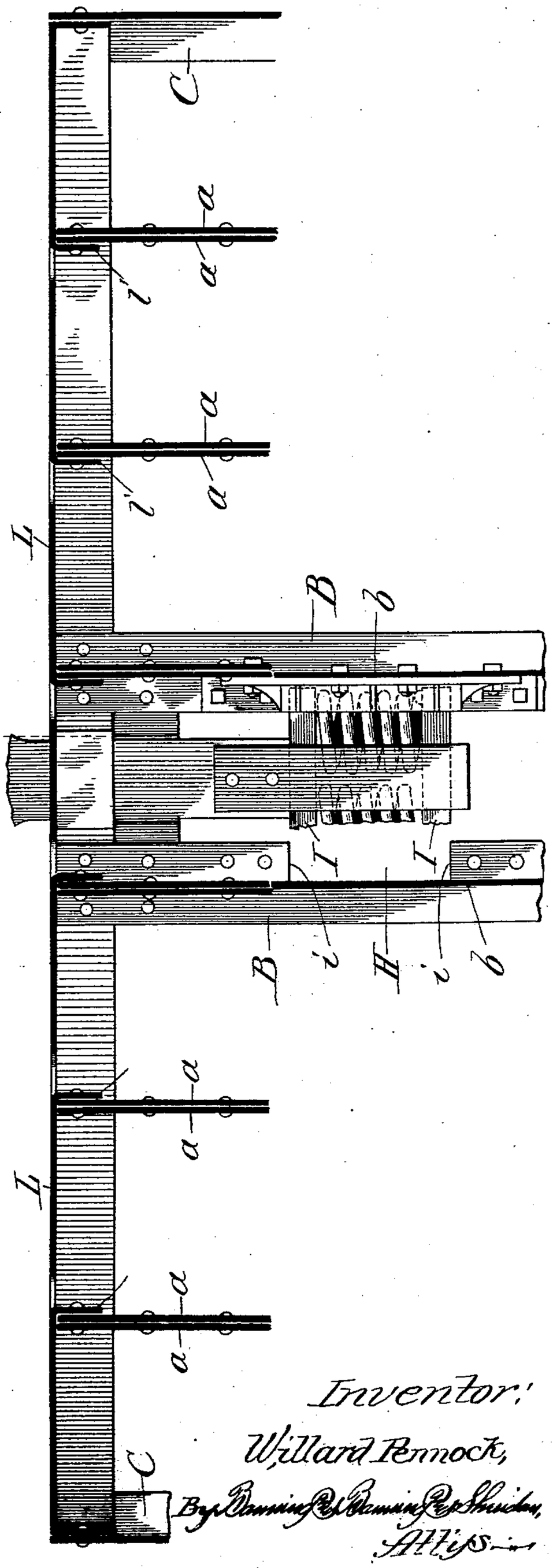

Fig. 12.

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UNITED STATES PATENT OFFICE.

WILLARD PENNOCK, OF MINERVA, OHIO.

METALLIC CAR.

SPECIFICATION forming part of Letters Patent No. 571,884, dated November 24, 1896.

Application filed April 17, 1896. Serial No. 587,939. (No model.)

To all whom it may concern:

Be it known that I, WILLARD PENNOCK, a citizen of the United States, residing at Minerva, Stark county, Ohio, have invented certain new and useful Improvements in Metallic Cars, of which the following is a specification.

My invention relates to railway-cars of both passenger and freight, and particularly to that class of cars known as "platform-cars," and has for its object the providing of a simple, economical, and efficient metallic railway-car.

The invention consists principally in the combination of a floor portion formed of several channel-beams extending lengthwise or longitudinally of the car, with their legs or flanges extending downwardly to strengthen the structure and provide a smooth upper surface, and a pair of central subsills formed of metallic angular or angle beams arranged to reinforce the legs of the central channel beam or beams and assist in supporting the same.

The invention consists, further, in the combination of a floor portion formed of several metallic channel-beams extending lengthwise of the car, with their legs or flanges extending downwardly, and a pair of longitudinal central metallic subsills formed of inverted-T beams arranged to reinforce the legs of the central channel beam or beams and extending down to form a support for the draw-bar carrier-irons.

The invention consists, further, in the combination of a floor portion formed of channel-beams extending lengthwise of the car, with their legs or flanges extending downwardly, a pair of longitudinal central subsills formed of inverted-T beams arranged to reinforce the legs of and support the central channel beam or beams, and transversely substantially centrally located metallic rectangular or I beams arranged under the inverted-T beams to assist in stiffening the structure and in the distribution of load on the car.

The invention consists, further, in the combination of a floor portion formed of several metallic channel-beams extending lengthwise of the car, with their legs or flanges extending downwardly, a pair of longitudinal substantially central subsills formed of inverted-T beams arranged to reinforce the legs of and support the central channel beam or beams, substantially centrally transversely located rectangular or I beams arranged under the inverted-T beams to assist in supporting the same, and side metallic truss-beams formed of angular iron in cross-section secured to the side channel-beams and the under portion of the transverse beam to tie the structure and assist in the distribution of load on the car.

The invention consists, further and finally, in the features, combinations, and details of construction hereinafter described and claimed.

In the accompanying drawings, Figure 1 is a plan view of a car fitted with my improvements, looking at it from the top; Fig. 2, a side elevation of the same; Fig. 3, an enlarged transverse sectional view taken on the line 3 of Fig. 2; Fig. 4, a longitudinal sectional view showing a portion of the mechanisms illustrated in Fig. 3 and taken on line 4 of Fig. 3; Fig. 5, a transverse sectional view taken through the filling of the body-bolster on the line 5 of Fig. 4; Fig. 6, a longitudinal sectional view of the filling shown in Fig. 5 and taken on the line 6 of the same figure; Fig. 7, a side elevation of one of the side bearings for the body-bolster; Fig. 8, an enlarged transverse sectional elevation taken on the line 8 of Fig. 2; Fig. 9, a sectional view of the structure shown in Fig. 8, taken on the line 9 of said figure; Fig. 10, a longitudinal sectional view of a portion of the structure, taken on the line 10 of Fig. 12. Fig. 11 is a transverse sectional view showing the inner side of the end sill and the method of securing the flooring thereto, taken on the line 11 of Fig. 2; and Fig. 12, a plan view, partly in section, taken on the line 12 of Fig. 11.

In illustrating and describing my improvements I will only illustrate and describe those parts or portions of a car which I consider to be new and in connection with so much of that which is old in the art as is necessary to disclose my invention in order to enable those skilled in the art to practice the same. I prefer for convenience and to avoid ambiguity or confusion to illustrate and describe my improvements in connection with a platform-car; but I do not desire to be limited strictly to this kind of a car, as it can be readily seen that my platform and underpin-

ning can be provided with side and end boards to make a gondola-car, sides, ends, and roof to make a box-car, and the ordinary superstructure to provide a passenger-coach.

In constructing a car in accordance with my improvements I make a floor portion of several metallic channel-beams A, arranged lengthwise or longitudinally of the car and with their legs or flange portions *a* extending downwardly, the legs of one channel-beam being securely riveted to the legs or flanges of the next adjacent channel-beam. These channel-beams are arranged with their web portions laid in the same plane, so as to provide a smooth upper floor-surface, and I prefer to use an odd number of channel-beams, so that the central beam will come over that portion of the car-frame that supports the draw-bar mechanism and in the channel of which such mechanism can be arranged.

To reinforce and assist in supporting the central channel-beam, as shown in Fig. 3, I provide two substantially centrally longitudinally located angle or angular beams B of an inverted T in cross-section, which for convenience I term "subsills." These beams are made of metal, either wrought-iron or steel, and have their web portions *b* secured to the depending legs or flanges of the channel-beams that form the floor portion next adjacent to the central channel-beam, thus acting to reinforce the same.

When the floor-section is made of an even number of channel-beams, the inverted-T beams could be secured to the two central channel-beams or the two beams next adjacent to the same, and when I speak of the "central" channel-beams I mean any set of such beams that are located near enough to the longitudinal center of the car so as to have their lower depending legs secured to these centrally-located subsills. Further, these inverted-T beams instead of having their web portions riveted to the legs of the channel-beams next adjacent to the central channel-beam could have them so arranged as to be directly in contact with the lower depending legs or flanges of the central channel-beam and securely riveted or bolted to the same, and I desire to have it understood that such change or changes would come within the scope of my invention, as it is evident they can be made by the use of mere mechanical skill.

To reinforce the platform and assist in equalizing or distributing the load carried by the car, I provide two longitudinal truss-beams C, one at each side of the car. These truss-beams are formed, preferably, of angle-iron L-shaped in cross-section with the leg or flange turned inwardly and having their end portions, as at *c*, securely riveted to the car-frame or depending leg of the channel-beam which forms the side sill. These truss-beams are bent downwardly, as is clearly shown in Fig. 2, to the desired distance, so as to have their inwardly-projecting leg or legs passed under two centrally and transversely located metallic beams D, that are passed under the center subsill. The truss-beams are securely tied to these transverse beams by means of angle-plates *d* and rivets *d'*, while the vertical extending web portion of the truss-beam is securely riveted at d^2 to the side channel beams or sills of the car. The transversely and substantially centrally located metallic beams D are shown in cross-section in Fig. 9 as being formed of I-beams. It will be understood, however, that I do not desire to be limited to the use of I-beams, as beams that are rectangular in cross-section or channel-beams may be used and would be nothing more or less than mechanical equivalents to the I-beam, which acts to tie the structure together transversely and with the truss-beams to act as a support, reinforcement for the structure, and equalize or distribute the load on the car.

In Fig. 3 I have shown the body-bolster of the car, which is made of the bolt or bolts E, which extend transversely through the structure to tie the same and act as the tension members of the bolster. Each of the channels formed by the floor-beams is preferably provided with fillings *e*, *e'*, and e^2. The lower or compression member E' of the bolster is formed, preferably, of a flat metal bar bent or pressed into the desired shape and having its lower portion passed under and secured to the legs of the central subsills and its end portions resting in stepped recesses of the fillings of the side channel-beams, being secured thereto by bolts. These end fillings therefore substantially form a part of the bolster, and the inverted-T beams practically a part of the compression member, more particularly the strut. The advantages of this kind of a bolster are that the different parts may be put together or separated without disturbing the floor structure. A central filling e^3 is provided with an aperture in which the king-bolt E^2 is fitted, while the center bearing F of the bolster is secured in line therewith and bolted to it through the compression member of the bolster.

I do not desire to be limited to the particular kind of fillings that are illustrated in the drawings or to any particular configuration or structure other than is pointed out in the claims. The bolster is provided, further, with two side bearings F'. (Particularly shown in Figs. 3 and 7.)

In Fig. 8 I have shown the floor structure as supported on the transverse metallic beam D, which also acts as a tie-beam, by means of the metal filling G, which is bolted to the channel-beams that form the floor and riveted to the tie-beam. I prefer to make these fillings of malleable castings, though I do not desire to be limited to this particular kind of metal or to the shape shown in Figs. 8 and 9.

In Figs. 10, 11, and 12 I have illustrated the mechanism and means by which the draw bar or bars are supported. The inverted-T

beams that form the central sills are cut away, as at H in Fig. 12, and their web portions provided with metal pockets *h h'*, that are bolted to the same, so that the spring follower-plates I I of the draw-bar mechanism may abut against the shoulder *i* of the central sills, which will act to take up and distribute the shocks incident to the using of the car. In Fig. 11 I have shown the draw-bar carrier-iron K as secured to the inverted-T beams that form the central subsills, so that it will be seen that these subsills are carried down far enough to act as supports to the draw-bar mechanism and thus more effectually equalize and distribute the shock incident to the usage of the car.

The end sills L, as shown particularly in Figs. 10, 11, and 12, are formed of pressed or rolled metal, either iron or steel, having the inwardly-projecting rim portion *l*, extending entirely around the same, to which the channel-beams and subsills may be secured. They further tie the ends of the car together. The end sills are provided with inwardly-projecting lugs *l'*, which are punched out of the metal and bent inwardly at right angles thereto (particularly shown in Fig. 12) and to which the leg portions of the channel-beams are secured.

While I have described my invention with more or less minuteness with regard to details and as being embodied in certain precise forms, I do not desire to be limited thereto unduly, no more than is pointed out in the claims. On the contrary, I contemplate all proper changes in form, construction, and arrangement, the omission of immaterial parts, and the substitution of equivalents, as circumstances may suggest or necessity render expedient.

I claim—

1. A car of the class described having a floor portion formed of several channel-beams extending lengthwise of the car with their legs or flanges extending downwardly, and a pair of center subsills formed of angle-beams arranged to reinforce the legs of the central channel beam or beams and assist in supporting the same, substantially as described.

2. A car of the class described having a floor portion formed of several channel-beams extending lengthwise of the car with their legs or flanges extending downwardly, a pair of center subsills formed of inverted-T beams arranged to reinforce the legs of the central channel beam or beams and extending down to and supporting the carrier-irons, substantially as described.

3. A car of the class described having a floor portion formed of several channel-beams extending lengthwise of the car with their legs or flanges extending downwardly, a pair of center subsills formed of inverted-T beams to reinforce the legs of the central channel beam or beams and cut away in their end portions to form shoulder-stops for the draw-bar spring follower-plates, substantially as described.

4. A car of the class described having a floor portion formed of channel-beams extending lengthwise of the car with their legs or flanges extending downwardly, a pair of center subsills formed of inverted-T beams to reinforce the legs of and support the central channel beam or beams, and centrally-located rectangular or I beams arranged transversely under the inverted-T beams to assist in distributing the load of the car, substantially as described.

5. A car of the class described having a floor portion formed of several channel-beams extending lengthwise of the car with their legs or flanges extending downwardly, a pair of center subsills formed of inverted-T beams to reinforce the legs of and support the central channel beam or beams and extending down to and resting on the compression member of the body-bolster, and a body-bolster arranged with its lower or compression member passed under and secured to the inverted-T beams, substantially as described.

6. A car of the class described having a floor portion formed of channel-beams extending lengthwise of the car with their legs or flanges extending downwardly, a pair of center subsills formed of inverted-T beams to reinforce the legs of and support the central channel beam or beams, centrally-located rectangular or I beams arranged transversely under the inverted-T beams, and side metallic truss-beams L-shaped in cross-section with their horizontal members arranged underneath and connected with the transverse rectangular or I beams and their vertical members secured to the outer flanges or legs of the side channel-beams, substantially as described.

7. A car of the class described having a floor portion formed of several channel-beams extending lengthwise of the car with their lateral flanges extending downwardly, a pair of center subsills formed of inverted-T beams to reinforce the legs of the central channel beam or beams, and a bolster having its tension member formed of a tie rod or rods arranged transversely through the channel-beams and its compression member made in at least three portions and having the end portions resting in and secured in the channels of the side channel-beams and its main portion passed under the inverted-T beams secured thereto with the ends secured in the shoulders or steps of the end portions, substantially as described.

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