

No. 763,589.

PATENTED JUNE 28, 1904.

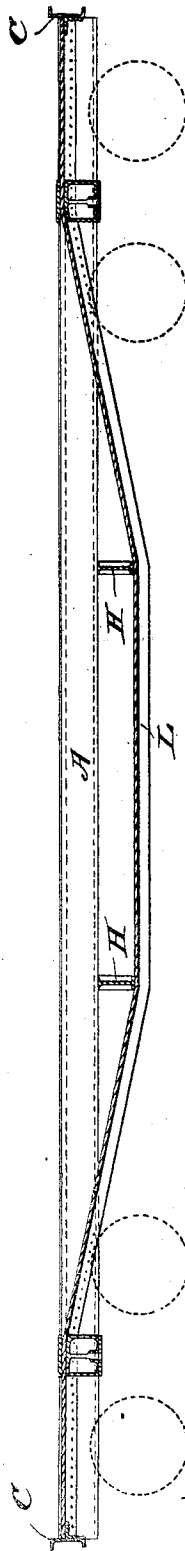
C. E. BAUER.
UNDERFRAME FOR RAILWAY CARS.

APPLICATION FILED SEPT. 28, 1902.

NO MODEL.

4 SHEETS--SHEET 1.

Fig. 1.



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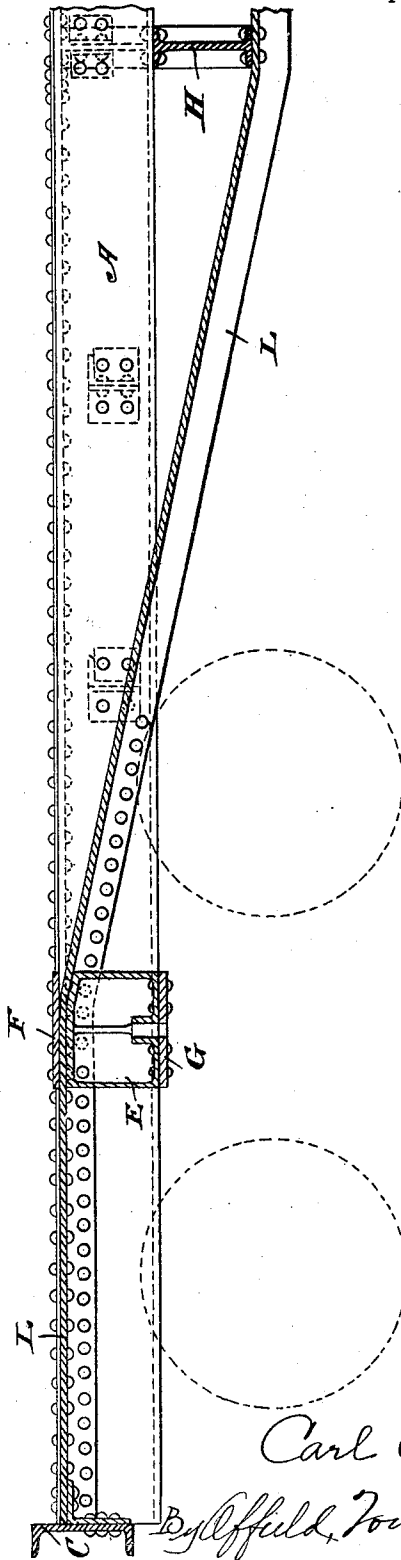
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4 SHEETS—SHEET 2.

Fig. 2.



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4 SHEETS—SHEET 3.

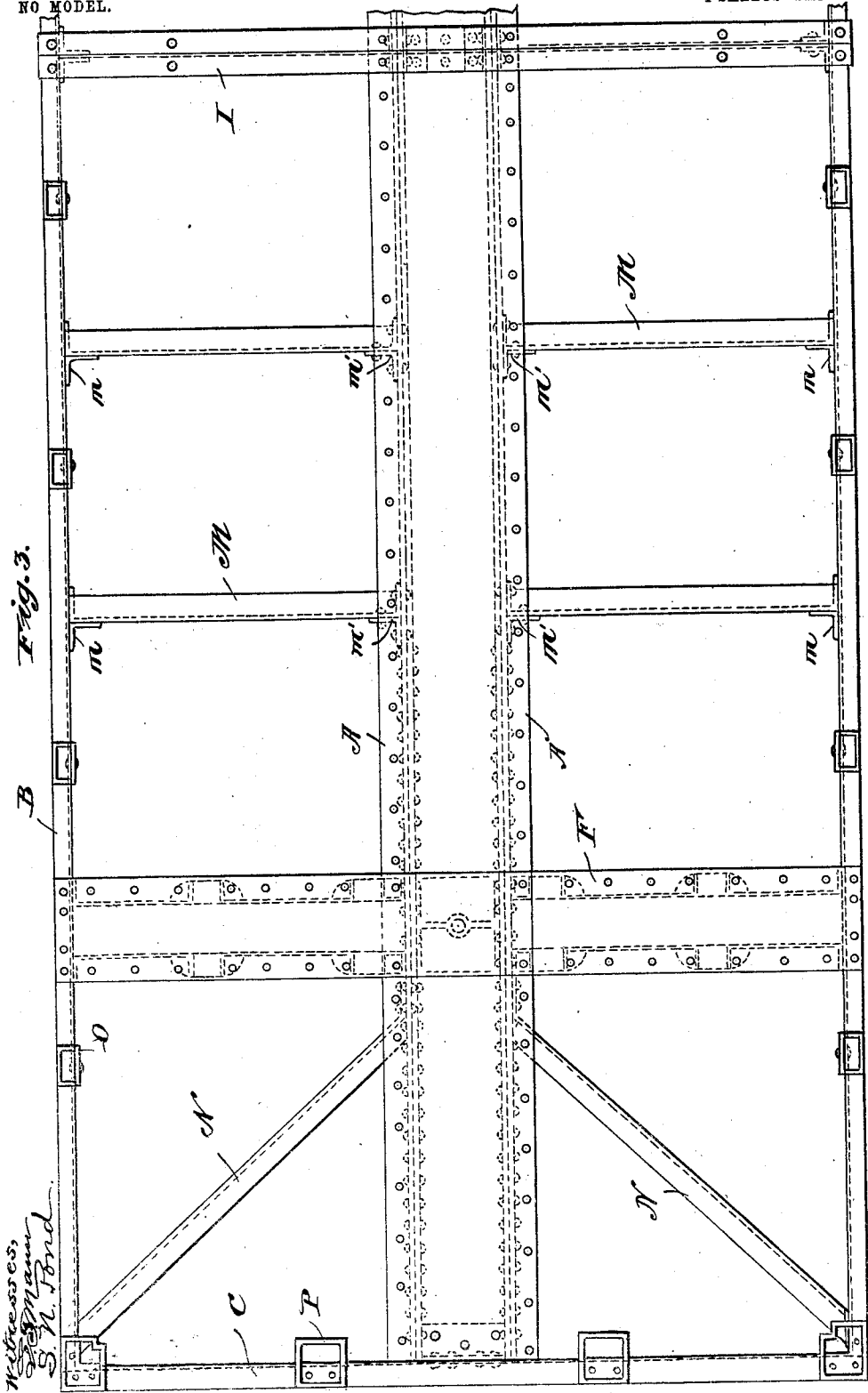


Fig. 3.

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No. 763,589.

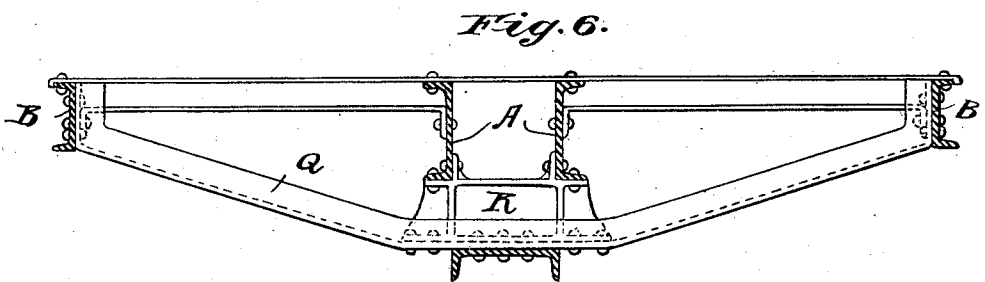
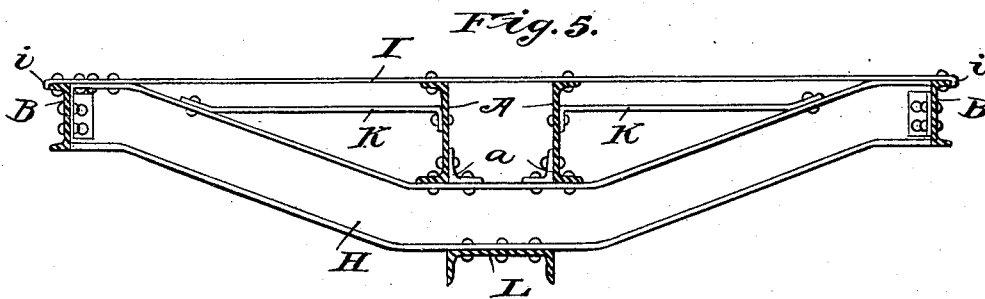
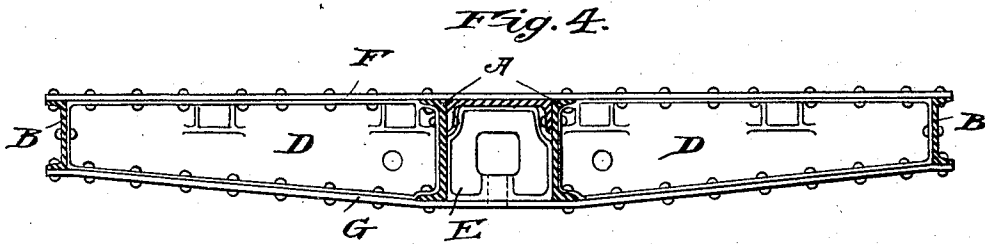
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NO MODEL.

4 SHEETS—SHEET 4.



Witnesses,
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UNITED STATES PATENT OFFICE.

CARL E. BAUER, OF HAMMOND, INDIANA, ASSIGNOR TO SIMPLEX RAILWAY APPLIANCE COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

UNDERFRAME FOR RAILWAY-CARS.

SPECIFICATION forming part of Letters Patent No. 763,589, dated June 28, 1904.

Application filed September 26, 1902. Serial No. 124,920. (No model.)

To all whom it may concern:

Be it known that I, CARL E. BAUER, a citizen of the United States, residing at Hammond, in the county of Lake and State of Indiana, have invented certain new and useful Improvements in Underframes for Railway-Cars, of which the following is a specification.

My invention relates to steel underframes for railway-cars, and has for its principal object to obtain a maximum strength and weight sustaining capacity with a minimum weight of material.

A minor object of the invention is to effect an increased economy in the cost of construction. The latter object I secure by the employment of commercial forms of structural steel throughout the framework of the car, and the principal object I secure principally through the employment of a pair of parallel channel-beams or other structural shapes, as center sills, which act at the same time as draft-sills and form the compression members of a truss, the tension member of which is preferably formed by a suitably-bent channel-bar or I-beam disposed beneath and between the center sills and united to the latter at its ends throughout the distance between the body-bolster and the end of the frame at each end of the car-body.

My invention will be readily understood in connection with the accompanying drawings, which illustrate a preferred embodiment of the same, and in which—

Figure 1 is a central vertical longitudinal section through an underframe embodying my invention in its preferred form. Fig. 2 is a similar view, enlarged, of one end thereof, comprising that portion between the end of the frame and the adjacent cross-tie. Fig. 3 is a top plan view of that portion of the underframe shown in Fig. 2. Fig. 4 is a transverse sectional view slightly to one side of the body-bolster and showing the latter in side elevation. Fig. 5 is a similar transverse view slightly to one side of one of the cross-ties and illustrating the latter in side elevation, and Fig. 6 is a view similar to Fig. 5 of a slightly-modified form of transverse truss.

In the drawings, A designates a pair of longitudinal center sills extending from end to end of the underframe and disposed parallel and at sufficient distance apart to serve as draft-sills. These sills, preferably, and as herein shown, are composed of a pair of channel-beams disposed with the webs thereof in vertical planes and with their top and bottom flanges extending outwardly toward the sides of the frame.

B indicates the side sills, which are likewise formed of channel-beams having the same relative disposition as the center sills, but preferably of somewhat less height than the latter.

C designates the end sills, likewise formed of channel-beams having their flanges turned outwardly, and in practice I prefer to employ for the end sills channel-beams of a greater height than the side sills, so that a portion thereof may extend upwardly above the plane of the floor of the car for a purpose hereinafter disclosed. The ends of the side sills are suitably united at their meeting corners by the usual angle-plates, (not shown,) and the ends of the center sills may be joined to the meeting faces of the end sills by similar means.

The body-bolster is constructed as a constituent part or element of the underframe itself, and, as shown more particularly in Fig. 4, comprises a pair of companion castings or steel plates D, lying between the outer faces of the center sills and the inner faces of the side sills, respectively, a center casting or plate E, housed between the inner faces of the center sills and suitably apertured to receive the king-bolt, and top and bottom plates or straps F and G, tying together the side sills in the vertical plane of the bolster and containing between them and rigidly riveted thereto the castings or plates D and E, as well as embracing between them the longitudinal center sills A.

Referring to Fig. 5, H designates the cross-tie, of which there are preferably two, so disposed as to divide the space between the body-bolsters into approximately three equal parts. These cross-ties H are preferably formed of

I-beams, so bent as to be capable of a rigid connection at their ends with the inner faces of the side sills and at their intermediate portion to underlie and engage the lower edges of the center sills A, being secured to the latter in any suitable way, as by angle-brackets *a*. A plate I is laid over and upon the top margins of the side sills and center sills transversely thereof and in substantially the same vertical plane as the cross-tie and when secured to said side sills and center sills constitutes the tension member of the cross-truss, of which the cross-tie H forms the compression member. Preferably the plate I has a gib *i* on each end which engages the side sills on their outer faces, and as an additional bracing for the truss transverse tie-rods K K may be interposed between the top sides of the cross-tie H and the adjacent outer walls of the center sills A.

L designates the tension member of a main longitudinal truss extending virtually from end to end of the car and cooperating with the center sills A as compression members. This tension member L is preferably formed of a channel-beam disposed with its flanges downward and having its end portions lying between, parallel with, and rigidly secured to the center sills throughout the end portions of the latter lying between the end sills C and the body-bolsters. This tension member L overlies the central casting E of the body-bolster at each end of the car, and between said bolsters it is bent or bowed downwardly to pass under the cross-ties H, being bolted or riveted to and constituting a seat for the latter, whereby also the cross-ties H become struts of the longitudinal truss.

At suitable intervals between the cross-ties and body-bolsters and parallel therewith are located a series of transverse floor-beams M, tied by brackets *m* and *m'* to the opposed faces of the side and center sills, respectively.

N designates a pair of obliquely-disposed brace-bars connecting the center sills near their forward ends with the adjacent corners of the floor-frame.

Mounted on the side sills B at suitably-spaced intervals are the usual side-post pockets O, and similarly mounted on the end sills C are end-post pockets P, which latter pockets may have an inwardly and downwardly extending portion resting upon the car-floor in addition to that portion of the pocket which is located in the vertical plane of the end sill in order to accommodate the increased thickness of the end posts. By virtue of the elevated position of the end sills somewhat above the horizontal bounding planes of the center sills the application of the end pockets P is facilitated, and, moreover, space is provided for the play of the draw-bar between the center sills without the necessity of perforating the end sill, at least to such an extent as to seriously impair the strength of the latter.

From the foregoing it will be seen that by my invention I provide a main truss running the whole length of the car, which is preferably supported at the center plates of the bolsters with cross-trusses at the cross-ties, which latter, since they themselves support at their ends the side sills, transfer the weight and load to the main longitudinal truss and through the latter to the center plates on the bolsters, which are exactly the points where the load should be carried in all center-bearing cars.

In Fig. 6 I have shown a slightly-modified construction of cross-truss, wherein the cross-tie is formed by a channel-beam Q, having its flanges disposed upwardly and with its ends bent upwardly for attachment to the side sills. In order to secure the necessary height of truss when employing this form of cross-tie, I interpose between the lower margins of the center sills and the seat of the cross-tie a casting R, suitably shaped to seat in and be secured to the channel and on its upper side to receive and connect with the center sills. This form of cross-tie, as compared with the I-beam shown in the remaining figures of the drawings, has greater width or breadth, and consequently offers greater resistance to lateral flexure under the compressional strains to which it is subjected.

It is obvious that within the limits permitted by the height of the car-floor above the track on which the car travels the height of the main longitudinal truss at the cross-ties can be increased or diminished to meet the varying loads and other conditions, while the construction as a whole, being both transversely and longitudinally trussed, affords a maximum strength and load-bearing capacity for a minimum weight of underframe.

Believing myself to be the first to embody in any form the underlying principle of my invention, which may be stated to be the transfer of the load by means of transverse trusses to a central longitudinal truss and thence to the center plates of the bolsters, I not limit my invention to the described structural forms of elements herein shown nor to the precise relative locations and arrangements thereof set forth, except to the extent specified in the claims hereunto appended.

I claim—

1. In an underframe for railway-cars, the combination with a longitudinal truss, of a transverse truss supported upon and transmitting its load to said longitudinal truss, substantially as described.

2. In an underframe for railway-cars, the combination with the end and side sills and the body-bolsters, of a transverse truss uniting said side sills, and a longitudinal truss supporting said transverse truss and itself bearing upon said body-bolsters, substantially as described.

3. In an underframe for railway-cars, the combination with the side and end sills and

the body-bolsters, of transverse trusses uniting said side sills, and a longitudinal truss constituting a support for said transverse trusses and itself supported upon said body-bolsters, substantially as described.

4. In an underframe for railway-cars, the combination with the side and end sills and a pair of parallel center sills, of transverse trusses uniting said side sills and supporting said center sills, and a tension member extending over and between said body-bolsters and between the latter supporting said transverse trusses and the parts carried thereby, substantially as described.

5. In an underframe for railway-cars, the combination with the side and end sills, the body-bolsters, and a pair of longitudinal center sills, of cross-ties uniting said side sills and carrying said center sills and constituting compression members of transverse trusses, and a longitudinal tension member coextensive with the length of the frame and united at its ends to and between the ends of the center sills and constituting therewith a longitudinal truss, said longitudinal tension member being carried upon the body-bolsters and itself supporting the transverse trusses intermediate said body-bolsters, substantially as described.

6. In a steel underframe for railway-cars, the combination with side and end sills and a pair of longitudinal parallel center sills all formed of channel-beams disposed vertically with their flanges directed outwardly, of body-

bolsters comprising constituent transverse elements of the frame, transverse cross-ties of structural steel uniting the side sills and supporting the center sills and constituting compression members of transverse trusses, and a channel-beam disposed longitudinally of the frame beneath and between said center sills and overlying said bolsters, said longitudinal channel-beam supporting said transverse trusses between said bolsters and constituting the tension member of a central longitudinal truss whereof said center sills are compression members, substantially as described.

7. A sill structure for car-platforms comprising a pair of channel-beams arranged with their flanges extending in opposite directions, a filling truss-beam between said channel-beams, said truss-beam being a channel-beam arranged with its web horizontal and its flanges in vertical planes, and means for bracing the central depressed portion of the truss-beam from the channel-beams of the sill.

8. A platform structure for cars comprising a center sill and side sills formed of channel-beams, a truss-beam filling the space between the channel-irons of the center sill and depressed at its lower portion below the side sill, and a spacing block or beam forming a strut between the said truss-beam and the sill.

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