

No. 650,792.

J. W. HANSEN.

Patented May 29, 1900.

UNDERFRAME FOR RAILWAY CARS.

(Application filed Jan. 12, 1900.)

(No Model.)

3 Sheets—Sheet 1.

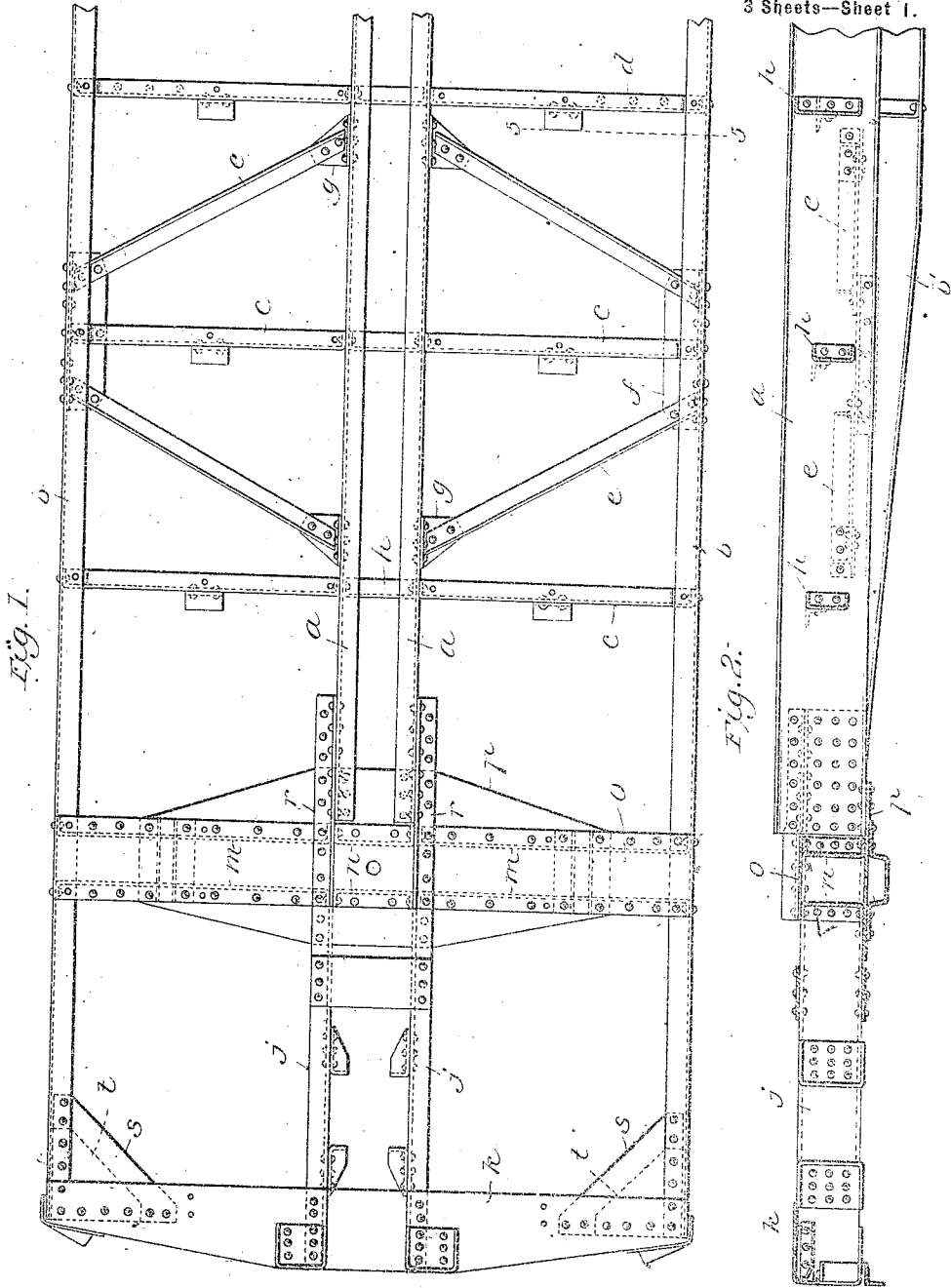


Fig. 1.

Fig. 2.

Witnesses:
Henry S. Robinson,
C. A. Finckel.

Inventor
John W. Hansen
by W. H. Finckel
Attorney

No. 650,792.

Patented May 29, 1900.

J. M. HANSEN.
UNDERFRAME FOR RAILWAY CARS.

(Application filed Jan. 12, 1900.)

(No Model.)

3 Sheets—Sheet 2.

FIG. 3.

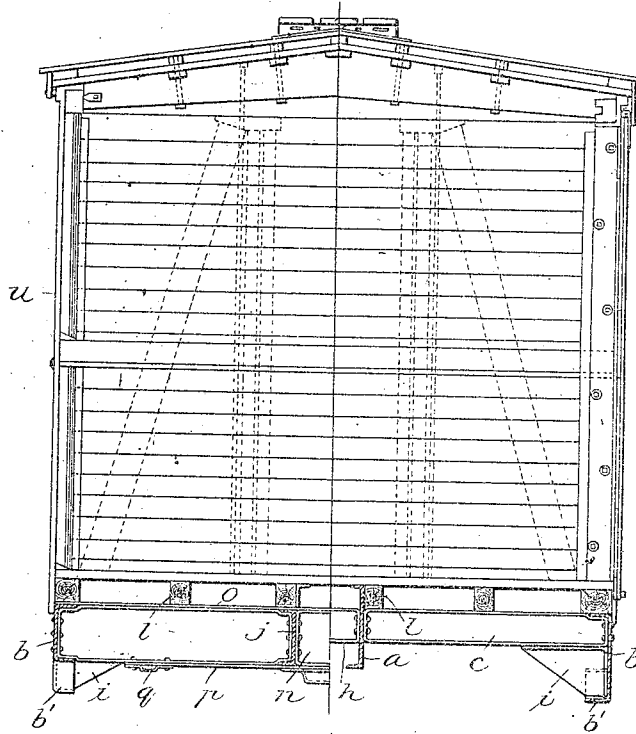


Fig. 4.

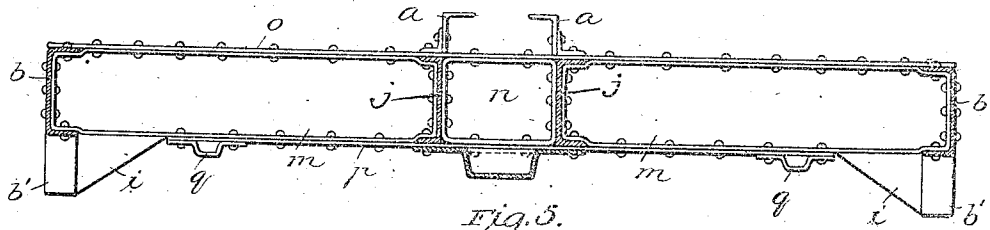
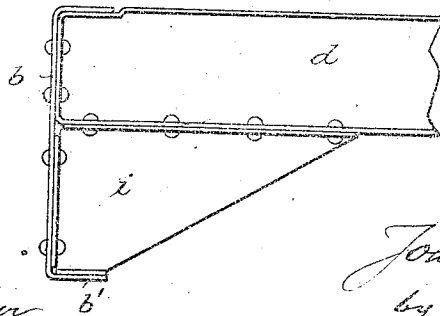


Fig. 5.



Witnesses
Harry S. Parker
Ed. Finckel

Inventor
John M. Hansen
by W. M. Finckel
Attorney

No. 650,792.

Patented May 29, 1900.

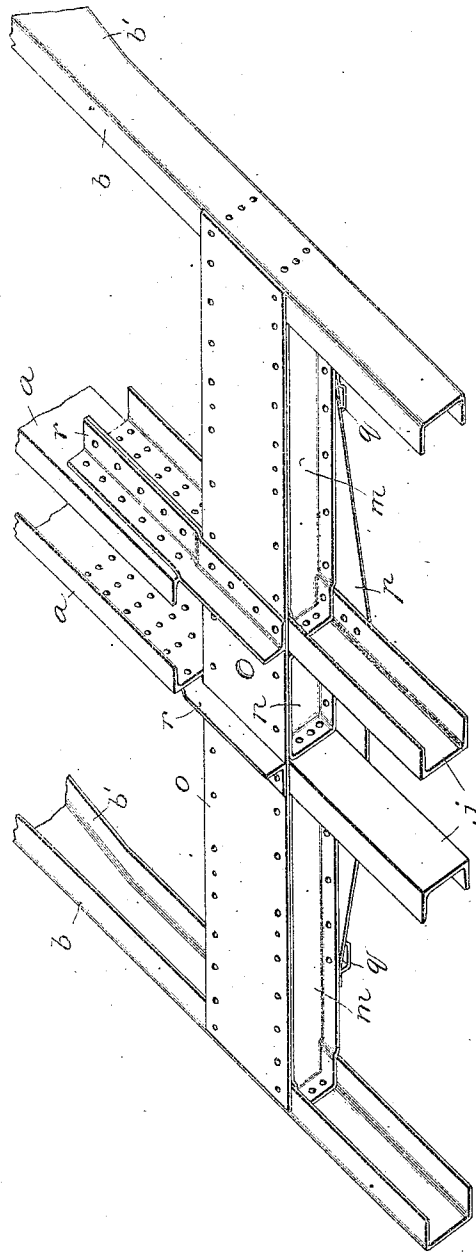
J. M. HANSEN.
UNDERFRAME FOR RAILWAY CARS.

(Application filed Jan. 12, 1900.)

(No Model.)

3 Sheets--Sheet 3.

Fig. 6.



Witnesses:
Harry S. Robson.
Ed. Finckel.

Inventor:
John M. Hansen
by W. A. Finckel
Attorney

UNITED STATES PATENT OFFICE.

JOHN M. HANSEN, OF BELLEVUE, PENNSYLVANIA, ASSIGNOR TO THE
PRESSED STEEL CAR COMPANY, OF PITTSBURG, PENNSYLVANIA.

UNDERFRAME FOR RAILWAY-CARS.

SPECIFICATION forming part of Letters Patent No. 650,792, dated May 29, 1900.

Application filed January 12, 1900. Serial No. 1,215. (No model.)

To all whom it may concern:

Be it known that I, JOHN M. HANSEN, a citizen of the United States, residing at Bellevue, in the county of Allegheny and State of Pennsylvania, have invented a certain new and useful Improvement in Underframes for Railway-Cars, of which the following is a full, clear, and exact description.

The object of this invention is to provide a very stiff, rigid, and strong metal underframe for railway-cars and upon which a body of any suitable material or construction may be erected, and which underframe may be readily repaired.

The best manner in which I have contemplated applying the principle of my invention comprehends the use of center sills of rolled steel in channel form set on edge, a bolster built up of a series of pressed-steel shapes, draft-rigging sills or beams of rolled or pressed steel channel shape, and suitable side sills and end sills, all united and braced or reinforced, as I will proceed now more particularly to set forth and finally claim.

In the accompanying drawings, illustrating my invention, in the several figures of which like parts are similarly designated, Figure 1 is a top plan view of one-half of an underframe, illustrating the features of the present invention. Fig. 2 is a longitudinal section taken about midway between the center sills. Fig. 3 is a section, the left-hand side of which is in the plane of the longitudinal center of the bolster and the right-hand side of which is in the plane of the right-hand end of Fig. 1. Fig. 4 is a transverse vertical section of the underframe, taken in the plane of the center of the bolster. Fig. 5 is a transverse section substantially in the plane of line 5 5, Fig. 1, looking toward the right. Fig. 6 is a perspective view of the bolster and its adjacent parts.

The parallel center sills *a* are made, preferably, of rolled-metal channel-beams, steel being preferred, and set on edge and with their flanges facing one another. These center sills extend from bolster to bolster.

b b are the side sills, which may be of pressed-steel channel shapes, having swelled or bellied central portions *b'* to take the place of truss-rods. The side sills extend from end

to end of the car, and preferably each is of a single piece. The center sills and the side sills are connected to one another by means of transoms *c* and *d* and obliquely-arranged braces *e*, and the braces *e* may be secured to the side sills by brackets *f*, riveted to both, and said braces may be secured to the center sills by brackets *g*, riveted to both. The transoms *c* and *d*, as shown more especially in Fig. 2, are U shape in cross-section, while the braces *e* are L shape. The side sills are riveted or otherwise united to the end sills. The center sills are further connected by interposed diaphragms *h*, which preferably are aligned with the transoms *c* and *d*. The transoms *d* are located adjacent to the bellied portions of the side sills; and there may be and preferably are interposed between the said transoms and the bellied portions of the side sills the brackets *i*, (see Figs. 3, 4, and 5,) and the effect of these brackets *i* is to truss the side sills, and by this construction I am enabled to use uniformly-narrow transoms throughout the underframe at great economy of dead-weight and material, while at the same time trussing the bellied portions of the sills.

The draft-rigging sills or beams *j j* are preferably made of rolled channel-beams and are riveted to the outside of the center sills and also riveted to the end sills *k*, and these draft-rigging sills or beams are adapted to receive any suitable draft-rigging.

The center sills in practice stand about five inches above the upper flanges of the draft-rigging beams, as shown in Figs. 2, 3, 4, and 6, in order to provide for the nailing-stringers *l*, Fig. 3, and to increase the bearing-surface for the flooring, and, moreover, such projection of these center sills affords an anchorage for the car-body which restrains or prevents its sidewise movement on the underframe and, further, adds materially to the strength of the sills without occupying space that could be advantageously used otherwise, and these objects are effected without in any wise decreasing the cubic capacity of the car-body.

The bolsters are each composed of flanged plates *m*, (see Fig. 4 especially and also

Fig. 6,) and these flanged plates are riveted to the side sills and the draft-rigging sills, and similar or shorter flanged plates *n* are arranged between the draft-sills and riveted to them. On top of the flanged plates *m* and *n* is riveted a straight flanged cover-plate *o*, which extends continuously from side sill to side sill, and below the flanged plates *m* and *n* is an elongated octagonal plate *p*, which extends from side bearing to side bearing *g*, Fig. 4, in the direction of its length and on both sides of and beyond the bolster proper lengthwise of the underframe. In order, further, to reinforce the bolster, I use the lateral splice-bars *r*, made of L-shaped metal, which are riveted to the bolster, the draft-rigging sills, and the center sills, substantially as is shown in Fig. 6.

Inasmuch as the draft-rigging and its appurtenances receive the greatest strain and shock in use and are thus more frequently damaged than other parts of the underframe, it is a great advantage to have them readily accessible for removal for repair or replacement, and by my construction I attain this desirable end. The corners of the underframe being another vulnerable point, I reinforce them by gusset-plates *s* and *t*, arranged at the top and bottom corners of the meeting ends of the end sills and side sills, and these gusset-plates are riveted to the flanges of the end sills and of the side sills. By this provision of double gussets the corners are fully protected against deformation by the use of push-poles.

I prefer to use a pressed-steel end sill of substantially the construction illustrated in the drawings and as now made by the Pressed Steel Car Company. It will be observed that the top plate *o* of the bolster serves as a cover-plate and that the plate *p*, extending lengthwise of itself to or beyond the side bearings and extending lengthwise of the underframe and united to the center sills, serves as a tie plate or gusset in tying together the center sills and draft-sills and bolster.

The body *u* of the car may be of any approved construction of wood or metal or a combination of wood and metal.

Some of the advantages resulting from this construction of steel underframe as compared with a wooden underframe are, first, that it is a self-contained structure and is sufficiently strong itself to carry the load, being in no wise dependent for strength on the car-body; second, that for this reason the necessity for the ordinary repairs to the car-body is eliminated; third, because of its stiffness and rigidity there is no liability of its sagging and thereby causing a sagging of the car-body, resulting in a leaky roof, bulging sides, improper fit of doors, and the like, and, finally, the cubic capacity of the car is practically increased five per cent. over that of a wooden car within the same over-all dimensions.

While I have designed this underframe for

box-cars especially, I do not mean to limit my invention to that one application thereof, since it is obvious that it is adaptable to other and practically all forms of cars and especially freight-cars.

What I claim is—

1. A metallic underframe for cars, comprising bolsters, center sills extending from bolster to bolster and rising above the same to receive the floor nailing-strips and restrain or prevent sidewise movement of the car-body on the underframe, and draft-rigging beams or sills alined with said center sills in length only, substantially as described.

2. In a metallic underframe, rolled channel center sills and independent rolled channel draft-rigging sills riveted to the center sills, substantially as described.

3. In a metallic underframe, center sills extending from bolster to bolster, draft-rigging sills extending from the end sills beyond the bolsters and secured to the center sills, and bolsters built up between the side sills and center sills, substantially as described.

4. In a metallic underframe, side sills and center sills, combined with flanged plates arranged between the said sills and riveted to them, and similar flanged plates arranged between the center sills and riveted to them, a cover-plate extending from side sill to side sill continuously and riveted to the flanged plates aforesaid, and a tie-plate riveted to the lower flanges of the flanged plates and the center sills, substantially as described.

5. In a metallic underframe, side sills and center sills, combined with flanged plates arranged between the said sills and riveted to them, and similar flanged plates arranged between the center sills and riveted to them, a cover-plate extending from side sill to side sill continuously and riveted to the flanged plates aforesaid, a tie-plate riveted to the lower flanges of the flanged plates and the center sills, and splice-bars arranged above the top plate and secured to it and to the center sills, substantially as described.

6. In a metallic underframe, having side sills and end sills, the double gusset-plates interposed between the top and bottom flanges of the side sills and end sills and riveted to both at the corners, to reinforce such corners against deformation by use of push-poles, substantially as described.

7. In a metallic underframe, the combination with side sills bellied midway between their ends, center sills, and transoms and truss-brackets interposed between the said transoms and the bellied portions of the side sills and secured to both, substantially as described.

8. A steel underframe for cars, comprising side sills and end sills connected together, interposed gusset-plates at their junctures, center sills rising above the side sills and extending only from bolster to bolster, transoms and braces connecting the side sills and center sills, draft-rigging sills secured to the center

650,792

5 sills below their top levels, and built-up bol-
sters connecting the various sills and includ-
ing a top cover-plate extending continuously
across the underframe from side sill to side
sill, and a bottom tie-plate, substantially as
described.

In testimony whereof I have hereunto set

my hand this 30th day of December, A. D.
1899.

JOHN M. HANSEN.

Witnesses:

E. J. REULBACH,

C. E. POSTLETHWAITE.