

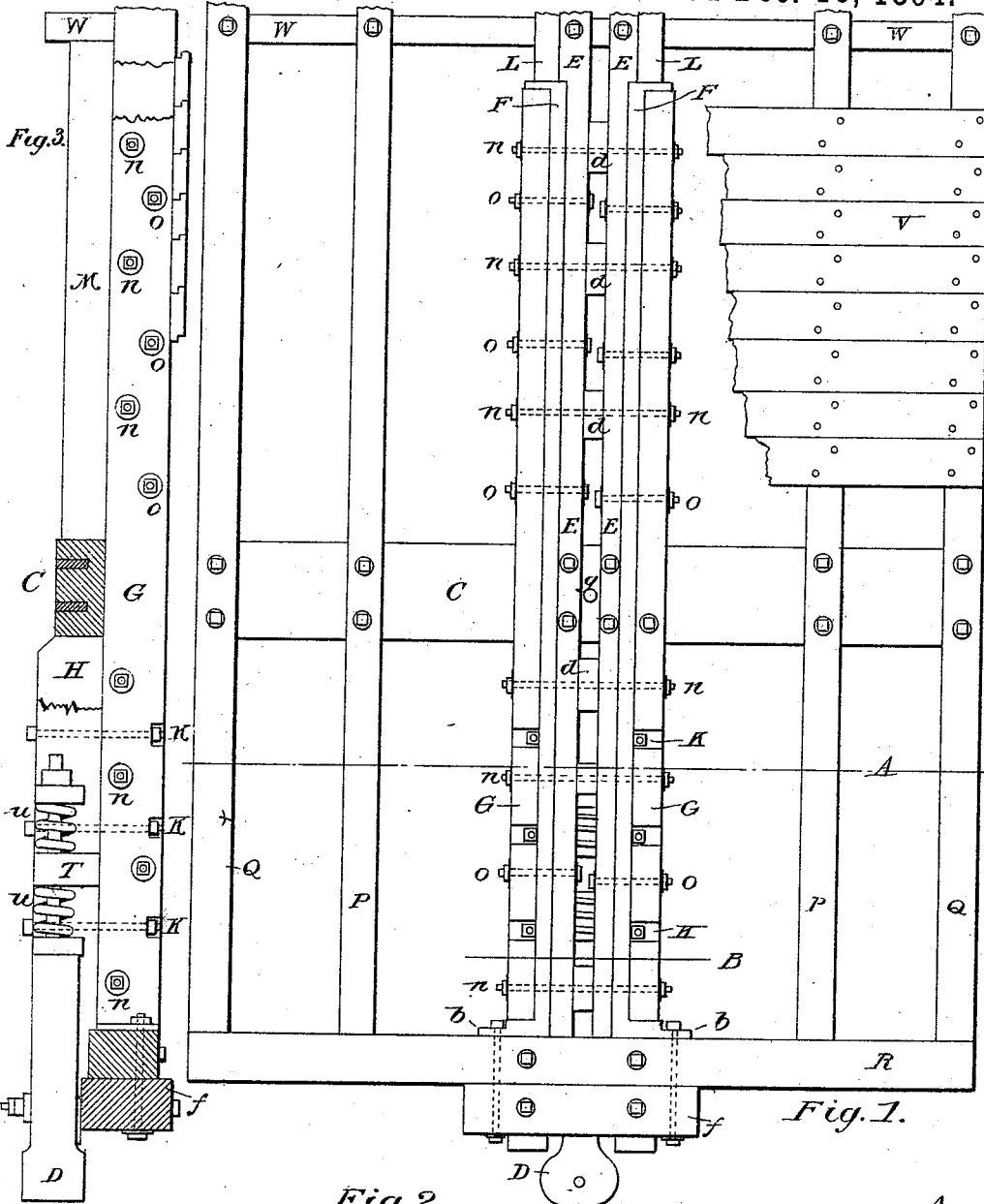
(No Model.)

3 Sheets—Sheet 1.

C. A. SMITH.
RAILWAY CAR CONSTRUCTION.

No. 530,969.

Patented Dec. 18, 1894.



Witnesses:
Alden Andrews
L. W. Carpenter

Inventor:
Chas. Austin Smith

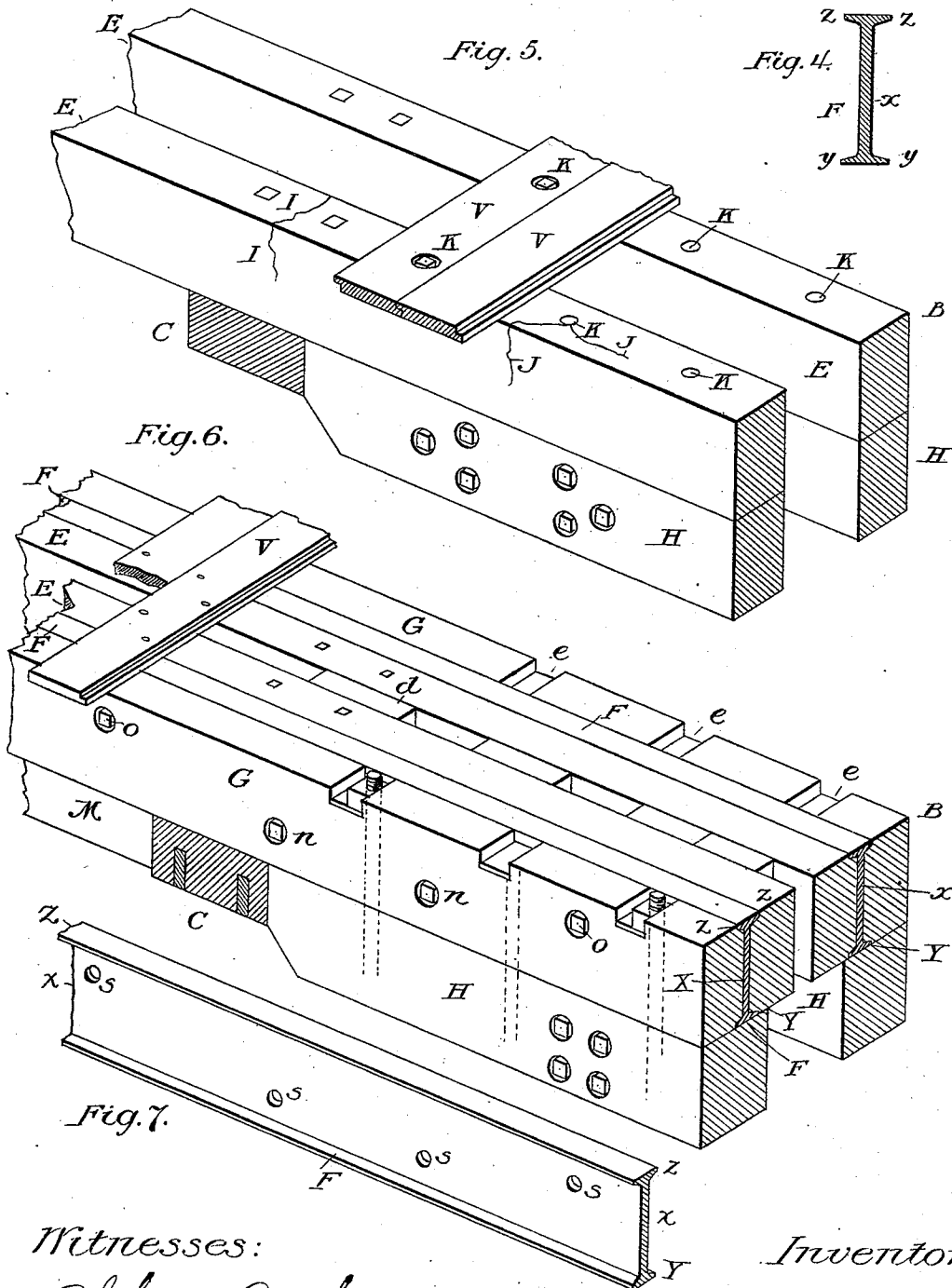
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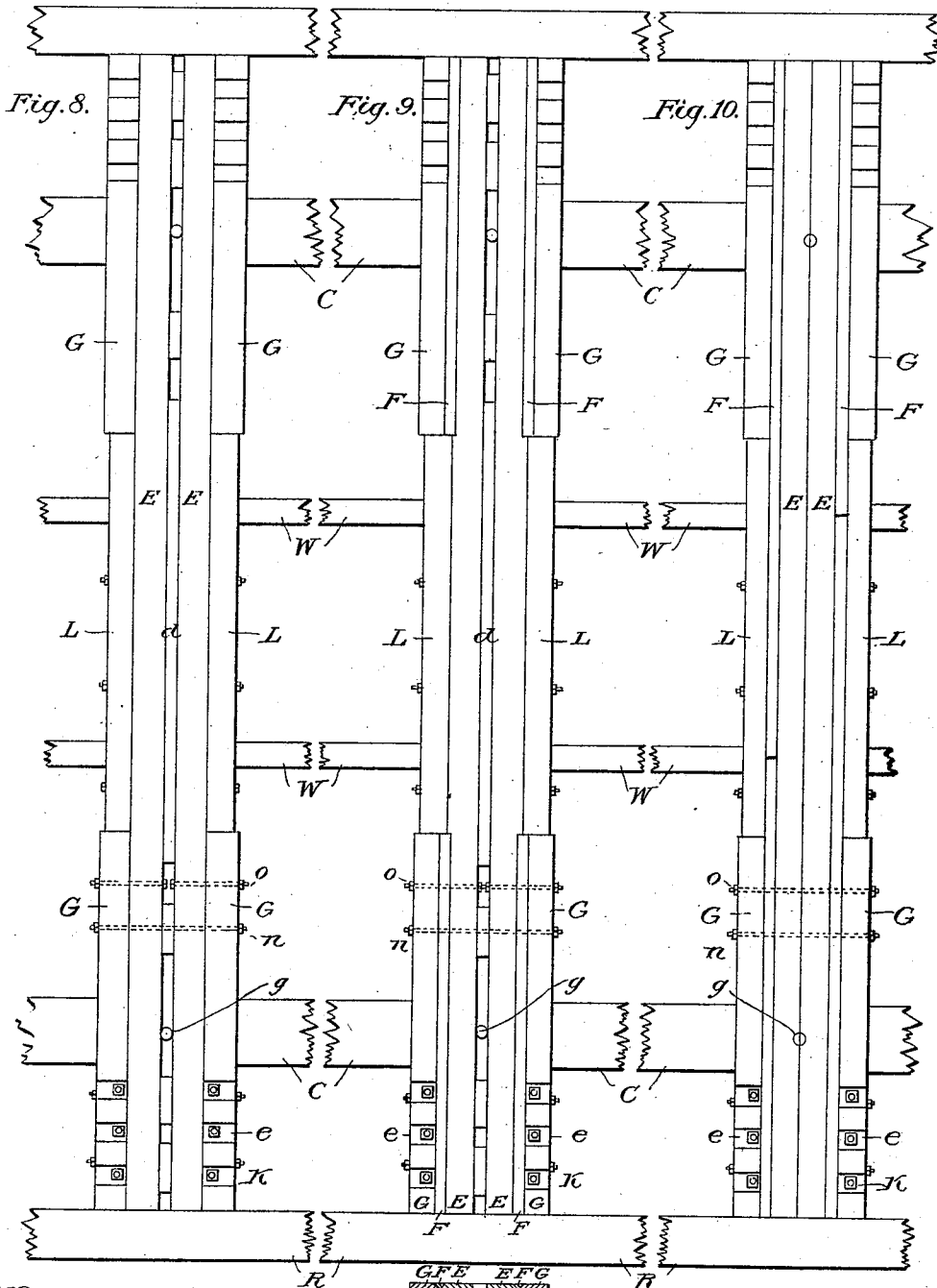
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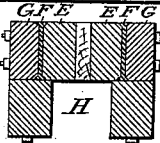
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Fig. 11.



Inventor:

Chas. Austin Smith

UNITED STATES PATENT OFFICE.

CHARLES AUSTIN SMITH, OF SOUTH CHICAGO, ILLINOIS.

RAILWAY-CAR CONSTRUCTION.

SPECIFICATION forming part of Letters Patent No. 530,969, dated December 18, 1894.

Application filed March 2, 1893. Serial No. 464,463. (No model.)

To all whom it may concern:

Be it known that I, CHARLES AUSTIN SMITH, of South Chicago, Cook county, Illinois, have invented certain new and useful Improvements in Railway-Car Construction, of which the following is a specification.

My invention relates particularly to the floor sill foundation of railway cars, and has for its object the providing of a simple, economical and efficient floor sill foundation; and the invention consists in the features and combinations hereinafter described and claimed.

In the accompanying drawings, Figure 1 is a floor plan of one end of a freight car; Fig. 2, a cross section on line A of Fig. 1; Fig. 3, a side elevation of the center floor sills; Fig. 4, a cross section of a strengthening I-beam; Fig. 5, a perspective view of an old type of floor sill foundation, illustrating the defective and weak points in the same; Fig. 6, a perspective view of one end of my car, cut off in line B of Fig. 1; Fig. 7, a perspective view of the strengthening I-beam shown in Fig. 4; Fig. 8, a modified form of my structure; Fig. 9, a plan view of the center floor sill foundation, looking at it from the top, and Fig. 10 a modified form of the improvement shown in Fig. 9.

It is well known in the art to which my invention relates, viz., the construction of proper floor sill foundations for railway cars—especially where such cars have their center sills made of wood extending the entire length of the car and to which the draft timbers are bolted to support the proper draft rigging—that they are liable to be mutilated or destroyed by the shock incident to ordinary use.

In Fig. 5 I have illustrated the general type of floor sill foundations now in use, in which E E represent the center sills which extend the entire length of the car, and to which the draft timbers, H, are secured by means of the vertical draft bolts, K. The weakest point of this structure is over the body bolster, C, which, under severe or even ordinary shocks, is liable to break. In continued use, the center sills will often split at draft bolts K, as at J, and to such an extent does this disintegration of the center sills take place that they have to be removed and replaced by a whole new one—assectioning or splicing of the same

would not in freight cars withstand shocks incident to their use, and is not permitted by the Master Car-Builders' Association. This removal and replacing of the center sill, due to its splitting or destruction, is very expensive and laborious, for the reason that if the car be loaded the load will have to be taken out and the different mechanism attached to the center sill taken down—such as the bolsters, draft rigging, cross ties, and—where air brakes are used—the mechanism necessary for such use. This involves considerable loss of time and expense, as well as delay in handling freight. To overcome these disadvantages and provide a center floor sill foundation that will withstand to a great extent the shocks incident to ordinary and even extraordinary use of the car, as well as to provide means by which the parts that receive the shock may be readily removed and replaced, without removing any of the other parts of the car, are the principal objects of my invention.

In illustrating and describing my improvement, I have shown, and will describe, only the portions which form the necessary elements of my invention, as the construction of the rest of the car and its different parts are well known to those skilled in the art; and it would be mere superfluity to either illustrate or describe them in this specification.

In constructing my improvement, I provide two wooden center sills, E, E, which extend the entire length of the car, and to which are secured in the ordinary or usual manner the end sills and flooring. These center sills are placed closer together than in ordinary use,—see Fig. 6—or interposed between such sills are planks or blocks, d, to regulate the distance by which they are separated, though these blocks may be dispensed with and the center sills placed in closer contact throughout their entire length. At each end of the car I provide auxiliary sills, G, G, which are bolted to the center sills by means of tie rods or bolts, n, n, and o, o. These bolts may extend merely through one center and auxiliary sill, or, if desired, through the entire set, for the purpose of obtaining the benefit of unity and strength. The removal of these bolts

permits the auxiliary sills to be removed from the center sills and replaced by new ones, as desired.

In order to further strengthen the center sills, and distribute the shock which comes on such sills, I prefer to interpose between the center and auxiliary sills metallic strengthening beams, F, preferably formed of I-beams which extend the length of the auxiliary sill, though in the modified form of Fig. 10, I have shown it extending the entire length of the center sill. To still further strengthen the structure and help to distribute the shock incident to the use of the car and break joints at cross ties, I interpose between each set of auxiliary sills splice planks, L, which have their end portions abutting the ends of the auxiliary sills and practically form a continuous sill throughout. These splice planks or beams, L, are secured to the center sills by means of bolts or screws, as desired, thus forming, in connection with the center sills, auxiliary sills and strengthening beam, a bolted chord for the center of the car, which effectually absorbs and distributes the shock incident to the use of the car.

I secure the draft timbers, H, directly to the auxiliary sills, by means of the vertical bolts, K. To facilitate the removal of these bolts and at the same time the draft timbers without disturbing the auxiliary sills, I notch or groove the upper surface of the auxiliary sills, at e, e, to receive the nut of the vertical draft bolt, so that the same may be inserted or removed from the notch while the car is under load, or at other times.

In describing the modified strengthening beam, F, I spoke of an I-beam, but while I may use the ordinary commercial I-beam, I prefer to use one having the main or body portion, X, provided with short plain beveled flanges, z, z, and y, y, about two and one-half inches across the top,—while in the ordinary constructions they are double that size.

While I prefer to use modified or improved I-beams, I do not desire to be limited strictly to the use of such form. By the use of these metallic strengthening beams, into which the center and auxiliary sills are inserted, having their corners beveled, I am enabled to notch, as above stated, the upper surface of the auxiliary sills, without any timber springing or sagging.

The advantages of my construction are, that the center sills are strengthened over the body bolster, the portion which is most liable to rupture or splitting, by having the combined six elements instead of the old two to withstand ordinary or extraordinary shocks incident to the use of the car; and while I prefer to use these six elements, in some cases the metallic strengthening beam may be dispensed with—as shown in Fig. 8 of the drawings—and the center and auxiliary sills bolted directly to each other, thus obtaining to a great extent all the advantages of my principal form of construction.

In using my improvement in connection with a railway car during its ordinary use, the shock will, as usual, come on the center sills; but it will then be distributed over the large mass of material, which will consequently absorb most of the shock and minimize the danger of rupture, splitting and cracking cross-grain over the bolster of the center sill.

While I have described my invention with more or less minuteness as to detail, and as being embodied in precise forms, I do not desire to be limited thereto unduly. On the contrary, I contemplate all proper changes in form, construction and arrangement, the omission of parts and the substitution of equivalents, as circumstances may suggest or render expedient.

I claim—

1. In combination with a railway car provided with center sills, auxiliary sills attached thereto at each end to the center sills and extended back over the body bolsters, and metallic strengthening beams interposed between such center sills and auxiliary sills, the whole rigidly secured together, substantially as described.

2. In combination with a railway car, center sills extending the entire length of the car, auxiliary sills attached to such center sills at each end thereof, and metallic I-beams interposed between such center and auxiliary sills, the whole being rigidly secured together, substantially as described.

3. In combination with a railway car provided with center sills, auxiliary sills attached thereto at each end to the center sills and extending back over the body bolster, and draft timbers secured to the auxiliary sills, substantially as described.

4. In combination with a railway car, center sills extending the entire length of the car, auxiliary sills rigidly attached to such center sills at each end thereof and extending back over the body bolster, and draft timbers secured to such auxiliary sills, substantially as described.

5. In combination with a railway car, center sills extending the entire length of the car, auxiliary sills rigidly attached to such center sills at each end thereof, metallic strengthening beams interposed between such center and auxiliary sills and rigidly secured to the same and extending back over the body bolster, and draft timbers secured to the auxiliary sills, substantially as described.

6. In combination with a railway car provided with center sills, auxiliary sills attached to such center sills at the ends thereof and extending back over the body bolster, metallic I-beams interposed between such center sills and auxiliary sills and rigidly attached to the same, and draft timbers removably secured to the auxiliary sills, substantially as described.

7. In combination with a railway car, center sills extending the entire length of the

car, auxiliary sills rigidly attached to such center sills at each end thereof extending back over the body bolster and provided with notches or openings to receive the nuts of the
5 draft bolts, metallic strengthening beams interposed between such center and auxiliary sills and rigidly attached to the same, draft timbers removably secured to the auxiliary sills, and vertical bolts passed through such
10 draft timbers and auxiliary sills and having their nuts resting in notches or openings in the auxiliary sills, substantially as described.

8. In combination with a railway car, a bolted chord for the center of the car compris-

ing center sills extending the entire length 15 of the car, auxiliary sills rigidly attached thereto at each end thereof and extending back over the body bolster, metallic strengthening beams interposed between such center and auxiliary sills and rigidly attached to the 20 same, and splice planks secured to such center sills and having their end portions abutting the ends of the auxiliary sills, substantially as described.

CHAS. AUSTIN SMITH.

Witnesses:

LEE W. CARPENTER,
ALDEN ANDRUS.