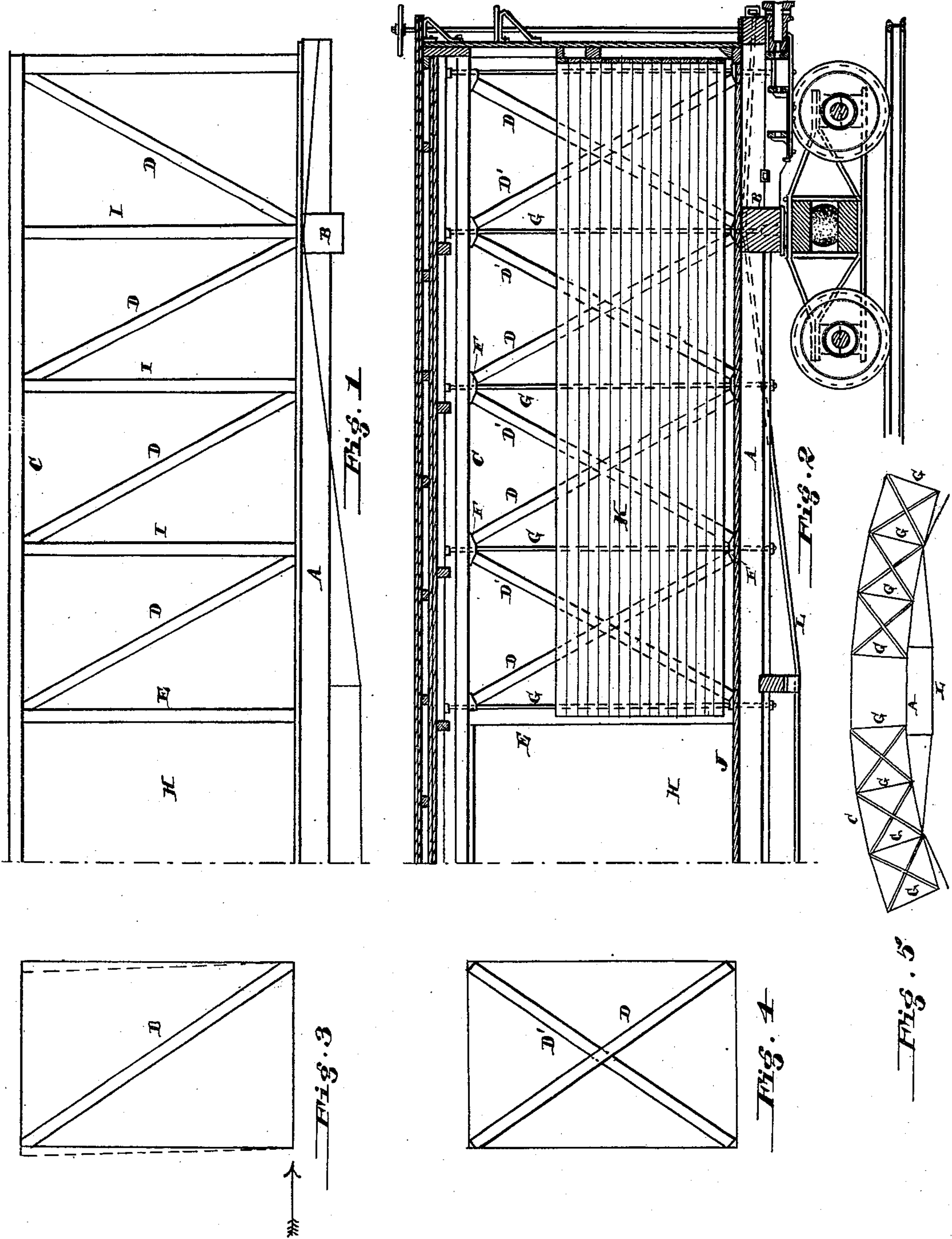


(No Model.)

J. W. CLOUD.
RAILWAY CAR.

No. 309,930.

Patented Dec. 30, 1884.



Witness
J. M. Cloud

Inventor
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UNITED STATES PATENT OFFICE.

JOHN W. CLOUD, OF ALTOONA, PENNSYLVANIA.

RAILWAY-CAR.

SPECIFICATION forming part of Letters Patent No. 309,930, dated December 30, 1884.

Application filed May 5, 1884. (No model.)

To all whom it may concern:

Be it known that I, JOHN W. CLOUD, of Altoona, Blair county, State of Pennsylvania, have made a new and useful Improvement in Railroad-Cars, which consists in certain improvements in trussing the house-walls thereof, as fully set forth in the following specification and shown in the accompanying drawings, which form part thereof.

Heretofore it has been the general practice to truss the house-walls of cars by struts set at an incline or diagonally across each panel, there being but one diagonal strut in each panel, and they are set at such angles as to transmit all of the load which comes upon them to the two bolsters immediately over the trucks. While the car is stationary, or when it is running uniformly, the load is carried without serious trouble; but when making up trains, stopping or starting or running cars onto sidings, or whenever they are thrown against one another, the trussing now in use is greatly defective, because the cars receive these shocks along the plane of the under frame, and the inertia of the house above, together with its load, in many cases produces an endwise racking of the house which the single diagonal strut has no power to counteract in some of the panels, as will be explained. It is obvious that this racking under any given shock will be most injurious when the car has a double-deck load, as of hogs or sheep, or a load of grain in bulk, or other similar loads.

The object of my invention is, therefore, to overcome the defects of the present construction by so bracing each panel that the strains a car is subjected to, as above specified, have no apparent effect upon the truss, for whenever it occurs that the compressive strain borne by a strut would otherwise be relieved by the shock and the panel be distorted, there is a strut arranged at another angle to counteract the distortion, thus forming such a rigid truss-work that the most severe usage has no appreciable effect toward weakening the superstructure.

In the drawings, Figure 1 is a skeleton elevation of one-half a car-truss as heretofore constructed. Fig. 2 is a sectional elevation of half a car embodying my improvements. Fig. 3 is a diagram illustrating the effect of a shock

on some of the panels in cars as heretofore constructed when run against another car. Fig. 4 is a similar diagram showing a panel of my improved car-truss when submitted to a similar shock; and Fig. 5 is a diagram on a smaller scale, showing on an exaggerated scale my improved construction, in which the tie-rods between the bolsters all converge slightly so as to meet if continued at a distant point, whereby a curvature or camber is given to the car-body.

A are the car-sills. B are the bolsters. C are the top plates, and form the upper chords of the trusses.

Referring to Fig. 1, we see that it was customary heretofore to support the plate C upon posts I, arranged vertically, and from each bolster B the diagonal struts D projected in the panels upon each side of said bolsters, and similar struts D were continued parallel to one of the first-mentioned struts, and for each panel until the door-frame E is reached. The struts D on the other half of the car are arranged the same way, only their angles are reversed. While the posts E are made strong to uphold the superstructure, bolts are also run parallel to them from plates C to sills A to act as ties. Now, if we analyze the effect upon one panel when the car is thrown against another car, we will find that when the blow takes place, if it comes from the direction indicated by the arrow, Fig. 3, the floor will tend to move with the arrow while the superstructure by its inertia tends to move relatively in the opposite direction, as indicated by dotted lines, allowing the house-work to be racked.

In my improved construction I dispense with the upright posts I, using the tie-rods G only, and, encircling said tie-rods at top and bottom, I place the cast-iron shoes F to receive the ends of the struts D and D'. In Fig. 2 those struts marked D are similarly located to those of the same letter in Fig. 1, and those marked D' are additional struts, the function of which is to prevent the racking from shocks, either of pulling or pushing, and by crossing the struts D D' in each panel, except that used for a doorway, greater strength of truss as an entirety is obtained, and the arrangement of the adjacent struts and door-posts E also support the roof and plates C, thus dispensing with the posts I.

K represents the usual sheathing upon the inside and lower part of the walls of the car.

If we consider a single and similarly-located panel to that shown in Fig. 3 of my improved construction, as illustrated in Figs. 2 and 4, and subject it to the same shock as was applied to the panel shown in Fig. 3, no change is effected, the panel not being susceptible to distortion.

H represents the doorway, and J the floor, of the car.

In practice I curve the sills A and plates C slightly by drawing up the hog-truss L, and by forming the lower chord in each panel between the bolsters a little shorter than the upper chord the ties G will converge to a point below the car and very distant; but this, with the curved sills and floor, adds considerably to the strength of the car.

While the above-described construction of the side-wall trussing of my car bears an apparently close resemblance to well-known bridge-trusses, it in fact differs from them materially both in structure and function, since my trussing does not, as in bridge-work, form a continuous truss between the points of support, but is entirely omitted in the middle and its place supplied by simple upright posts E, and the operation of my structure in resisting the endwise-racking strains on the car-body is radically different from that of any bridge-truss, which is never exposed to such strains.

Having now described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A car having its top plates supported from the sills by door-posts E, and by the two sets of diagonal struts D and D', the said struts crossing each other and meeting at top and bottom in pairs, and the said plates and sills being tied together by bolts passing through said points of juncture of struts at top and bottom, substantially as set forth.

2. A car having its top plates supported from the sills by the door-posts E, and by the two sets of diagonal struts D and D', the said struts crossing each other and meeting at top and bottom in pairs, and the said plates and sills being tied together by bolts passing through said points of juncture of struts at top and bottom, and slightly inclined so as to practically point toward a common center below the car, substantially as set forth.

3. A car having its top plates supported from the sills by the door-posts E, and by the two sets of diagonal struts D and D', the said struts crossing each other and meeting at top and bottom in pairs, and the said plates and sills being tied together by bolts passing through said points of juncture of struts at top and bottom, and in which the car is slightly arched, and having the lower chord in any panel between the bolsters of less length than the upper chord in the same panel, substantially as set forth.

4. In a car, the combination of the sills A and flooring J with top plates, C, the roof supported upon said plates, the door-posts E, the two sets of struts D and D', arranged diagonally to each other, and tie-rods G, substantially as set forth.

5. In a car, the combination of the sills A and flooring J with top plates, C, the roof supported upon said plates, iron shoes F, the two sets of struts D and D', arranged diagonally to each other and resting against said shoes, the door-posts E, and tie-rods G, passing through said shoes, top plates, and sills, substantially as set forth.

In witness whereof I have hereunto set my hand this 2d day of May, A. D. 1884.

JNO. W. CLOUD.

Witnesses:

WILLIS E. HALL,
BENJ. JOHNSTON.