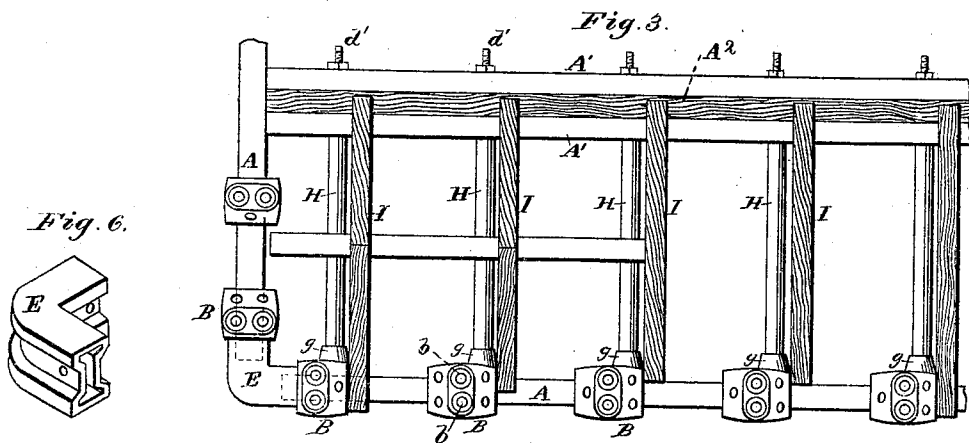
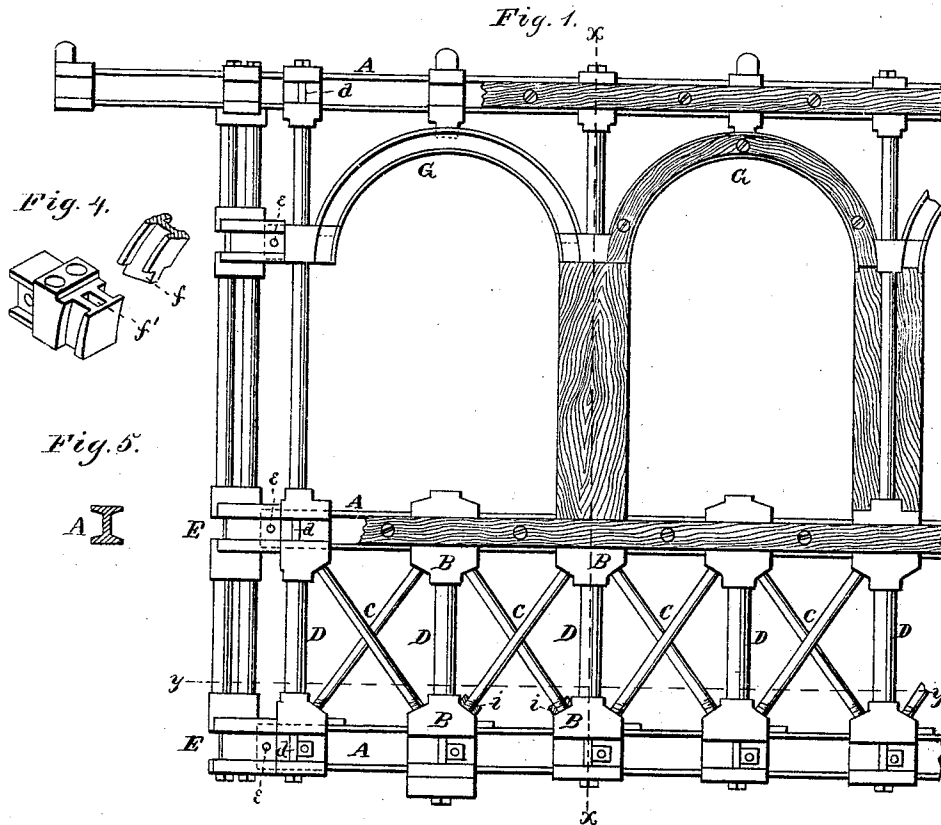


E. S. STILES.
Railway-Car Frames.

No. 149,357.

Patented April 7, 1874.



Witnesses:

Henry N. Miller
W. W. Du Hamel

Inventor.

Ezra S. Stiles.

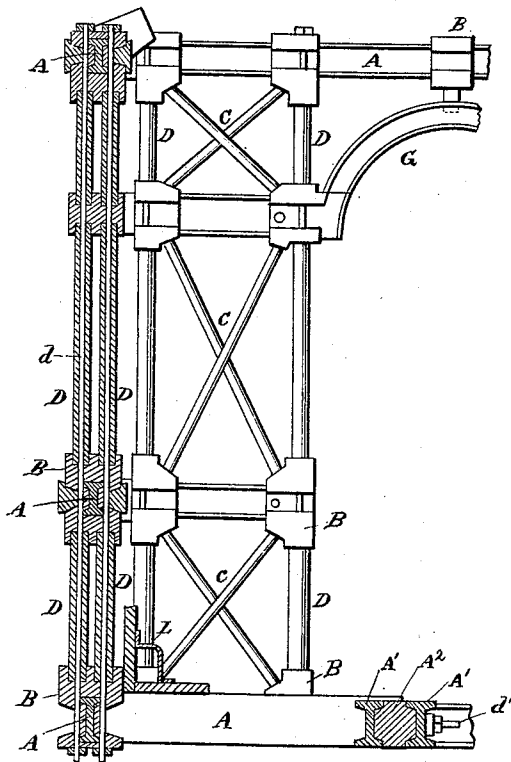
Per H. S. Abbott.
Attorney.

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Fig. 2.



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UNITED STATES PATENT OFFICE

EZRA S. STILES, OF BRIDGEPORT, CONNECTICUT, ASSIGNOR OF ONE-HALF HIS RIGHT TO STEPHEN M. CATE, OF SAME PLACE.

IMPROVEMENT IN RAILWAY-CAR FRAMES.

Specification forming part of Letters Patent No. **149,357**, dated April 7, 1874; application filed March 5, 1874.

To all whom it may concern:

Be it known that I, EZRA S. STILES, of Bridgeport, county of Fairfield and State of Connecticut, have invented certain new and useful Improvements in Cars for Railroads, of which the following is a specification:

The object of my invention is to obtain strength, lightness, and durability in the construction of cars for railroads, so as to enable them to successfully resist the effects of constant jolting and bumping, and also prevent telescoping of the cars in cases of collision. To this end, the nature of my invention consists in the construction of a frame for railroad-cars of wrought-iron beams, with malleable-iron slides and steel or iron braces; also, in the construction of the floor-stringers and other parts of the car, all as more fully hereinafter set forth.

In order to enable others skilled in the art to which my invention appertains to make and use the same, I will now proceed to describe its construction and operation, referring to the annexed drawings, which form a part of this specification, and in which—

Figure 1 is a side elevation of a part of my car-frame. Fig. 2 is an end view of the same part in vertical section. Fig. 3 is a plan view of the same. Figs. 4, 5, 6, and 7 are detached views of separate parts of my car-frame.

My car-frame is composed principally of horizontal beams and girders A A, slides B B, and braces C C. The beams A A are made of wrought-iron, substantially in the form of a T-rail, the upper and lower surfaces being flat, as shown in Fig. 5. The slides B B are made of malleable iron, with an opening or passage, *a*, through them, corresponding in shape with the beams, so that the beams can pass through them, and the slides be allowed to move on the beams. The sill-beam and first or window beam are united together in the following manner: The slides having been placed on these beams the desired distances apart, the corresponding slides are connected by means of hollow posts D D, which are inserted in sockets *b b* formed in the slides, so that the posts will rest upon shoulders, as shown in Fig. 2. A rod, *d*, is then passed through each post, which rod also goes through the slides, and is

fastened by nuts at the ends. Between the window-casings of the car, and, when forming panels, between the windows, or at the ends of the car, all the beams are connected in the same manner by hollow posts, and the rods or bolts *d* pass entirely through from top to bottom of the car. The braces C C are made of steel or iron, and connect diagonally the slides at opposite corners of each panel. Each brace has exterior screw-threads formed on one end. The braces are drilled, or in any other way entered, in at one end deep enough to be out of the way of putting the frame together, and, after the rods *d d* are all screwed down, then the braces are turned back until each is firmly fixed, and then the lock and jamb nut *i* is turned down tight to keep the brace in place. At the corners all the beams A A, except the top ones, are united by means of curved corner-pieces E E, which have openings in the ends, corresponding with the shape of the beams, for their reception, said beams being fastened by means of pins or keys *e e*. The top beam of each side may extend a suitable distance beyond each end, to form a support for the roof over the platform of the car. G G represent the arches over the windows and doors. These are also made of wrought-iron, and in cross-section are identical with the beams. At the ends of these arches are tenons *f*, to be inserted in recesses or holes *f'* made for that purpose in a projection or extension of the adjoining slides, as shown in Fig. 4.

In some cases the slides for the reception of the arches will not be upon any horizontal beam, but will be constructed to fit on and be attached to upright posts D D.

Through the center of the foundation of the car, from end to end, runs a combination-stringer, composed of two iron beams, A¹ A¹, with a wooden beam, A², interposed and fitted between them. The king-bolt and each truck-frame are to be fastened to this stringer. H H represent hollow iron girders passing across the foundation of the car. Their ends are inserted in hubs *g* formed on the bottom slides B, and they pass through the stringers A¹ A², and a bolt, *d'*, passes through each hollow girder, and through the bottom beams A and

their slides, and there fastened by nuts on the ends. I I represent the floor-joists, which are cut between the stringers, so that when they are all in place each section virtually forms a truss, thus equalizing the strain caused by any concussion the car may receive, and making it extremely difficult to telescope a car.

The center stringer $A^1 A^2$ might be termed the "back-bone" of the car.

The slides on the top beams of the car should be suitably constructed to receive the rafters, whether they be made of the same shape as the beams A or otherwise.

The car-frame thus constructed may be finished either with wood or metal, as desired; and in either case it will form a light and durable car—one that will, in a great measure, resist the effects of the jolting and bumping it is subjected to, and that will also render it impossible to telescope a car, as the malleable-iron connections or joints will not snap or break in case of any accident, but will bend, and thus resist the concussion almost like the spring behind a car-bumper takes up the force of the blow or concussion when the cars are brought in sudden contact with each other.

When the car is finished with iron panels, the side and floor may be made use of to form two sides of a heater-box, a half-box, L, being added on both sides and the whole length of the car. The box thus formed is for the purpose of heating the car by means of hot air introduced into it from a furnace built under the car.

In the various beams wood is inlaid, as shown, to fasten the finish to with screws or nails. For the inside and inside finish material may be used that will allow of being plated, painted, or photographed upon.

Frames for freight and other cars may be made substantially in the same manner, with the exception of the windows.

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

1. In a railroad-car frame, the combination of the solid beams A A and the slides B B, adjustable on said beams, substantially as set forth.

2. The combination, with the beams A and slides B, of the hollow posts D and rods d , with their nuts, substantially as and for the purposes set forth.

3. The combination, with the beams A and slides B, of the braces C, fastened by nuts i , for the purposes set forth.

4. The corner-pieces E, with apertures in the ends for the insertion of the beams A, and with keys e for fastening the beams, as set forth.

5. The arches G, with tenons f , in combination with the slides, having recesses f , as set forth.

6. The central longitudinal stringer, composed of the iron beams $A^1 A^1$ and the wooden beam A^2 fitted between them, substantially as set forth.

7. The combination of the side beams A, center stringer $A^1 A^2$, girders H, and rods d' with their nuts, all substantially as and for the purposes set forth.

In testimony that I claim the foregoing as my invention I affix my signature this 3d day of March, 1874.

EZRA S. STILES.

Witnesses:

D. F. HOLLISTER,
EDWARD F. MEEKER.