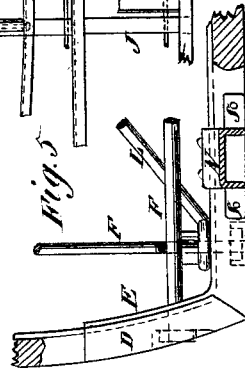
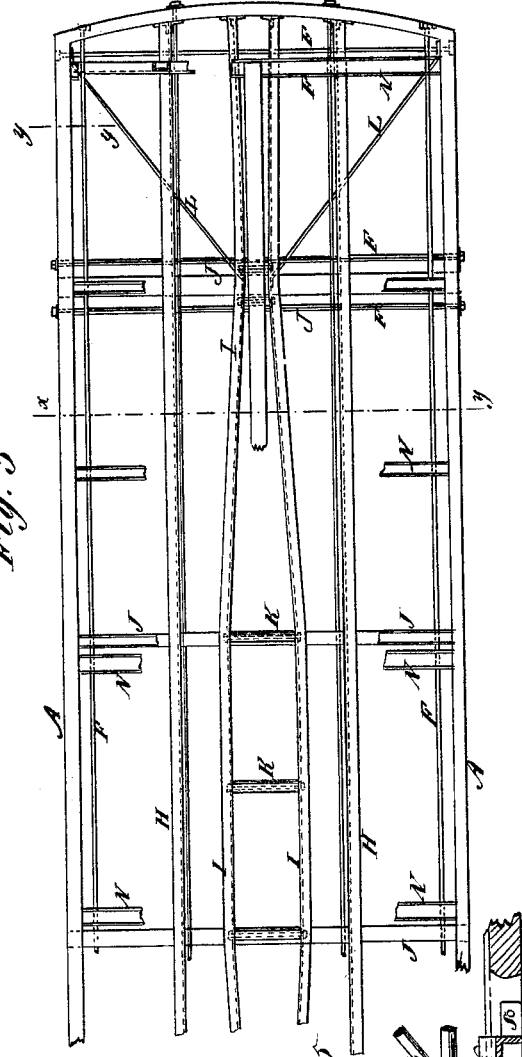
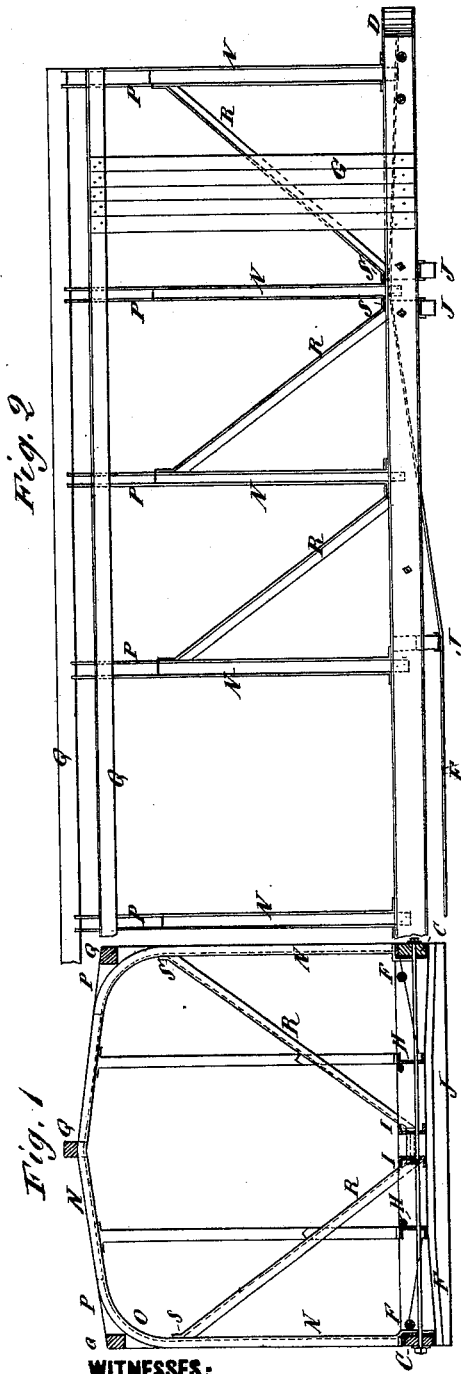


F. J. KIMBALL.  
METAL CAR-FRAME.

No. 183,856.

Patented Oct. 31, 1876.



WITNESSES:  
*C. Veroux*  
*A. F. Terry*

INVENTOR:  
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BY *Munnell*  
ATTORNEYS.

# UNITED STATES PATENT OFFICE.

FREDERICK J. KIMBALL, OF PHILADELPHIA, PENNSYLVANIA.

## IMPROVEMENT IN METAL CAR-FRAMES.

Specification forming part of Letters Patent No. **183,856**, dated October 31, 1876; application filed September 4, 1875.

*To all whom it may concern:*

Be it known that I, FREDERICK J. KIMBALL, of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented a new and Improved Car-Frame, of which the following is a specification:

My invention consists of a novel and simple construction of a car-frame of channel-bars, angle-bars, iron and wood corner-pieces, and wood beams, whereby great strength is secured without excessive weight, and with economy in the cost, all as hereinafter described.

Figure 1 is a transverse section of my improved car-frame, taken on line *xx* of Fig. 3. Fig. 2 is a side elevation. Fig. 3 is partly a plan view and partly a horizontal section. Fig. 4 is a detail section on line *yy*, and Fig. 5 is a detail horizontal section.

Similar letters of reference indicate corresponding parts.

The side pieces A and end pieces B of the bed-frame are of channel-iron, with the channel arranged outside and filled with wood, C, except at the corners, where metal knee filling-pieces D are used to make string-joints by riveting or bolting the bars to them. The back E of one of the bars is also extended along the back of the other, and secured to it. Through these metal corner-pieces longitudinal and transverse tension rods or bolts F are arranged, for straining the frame up tight. The wood filling serves for nailing the siding G to, as well as for stiffening the channel-bars.

H represents two straight longitudinal channel-bars, and I two others, which are slightly curved outward, extending through the middle portion of the bed-frame from end to end, and attached thereto by flanges, and riveted to the end pieces, and supported at suitable intervals on the transverse channel-bars J, which are attached at their ends to the side bars, and arched a little along the middle portion for strength.

L represents diagonal braces extending from

the corners of the frame to the junction of the first transverse bar J and the middle longitudinal bars I, for stiffening up the bed-frame. The roof and side supports consist of the bow-shaped channel-bars N, with arched or rounded corners O, to which corner-pieces of wood, P, are attached for making the necessary angular shape, and on which the wood plates Q are supported. A ridge-plate is also supported by these bars along the middle, and they are braced by angle-bars R, which are split along the angles at the ends, as at S, for riveting to the top and side of the bars A and N. The tension-rods F, running longitudinally, are arranged over the end transverse bars, and under the middle ones, to brace up the middle of the car. The supports N are fastened by end pieces S, same as the braces R.

The bars I are curved in a horizontal plane, because the shock which occurs when the cars come together comes mainly upon the middle stringers, and when the strain is too great for the rods that pass through the thimbles the said bars will readily spread, and can be afterward easily drawn back into place. If not curved, they might bend upward or downward, so that they could not be straightened without removal from the car-frame.

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

1. The combination of the channel-bars A B, knee-pieces D, and longitudinal and transverse channel-bars H I J, substantially as specified.
2. The arched channel-standard N and wood corner-pieces P, substantially as specified.
3. The middle longitudinal bars I, having the outward bow or set, and provided with suitable stays K, as and for the purpose specified.

FREDERICK J. KIMBALL.

Witnesses:

J. ABBOTT DIVER,  
WM. D. CHAPIN.