

J. Foreman.
Truss Bridge.

N^o 78,797.

Patented Jun. 9, 1868.

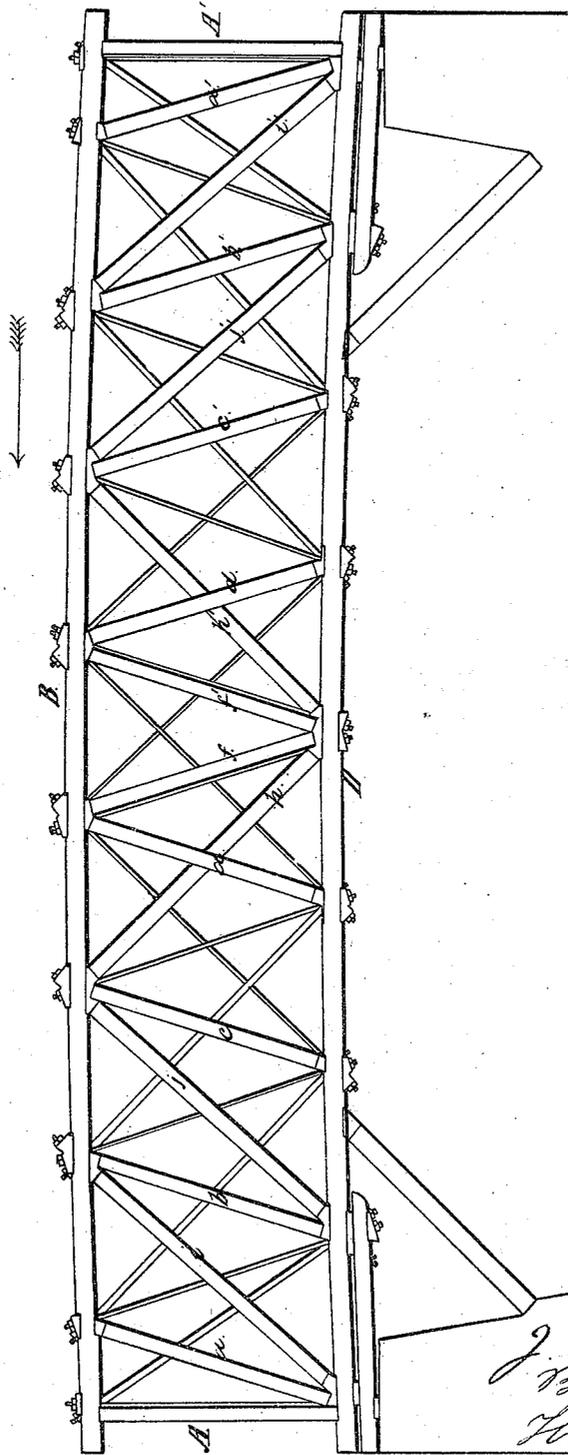


Fig. 1.

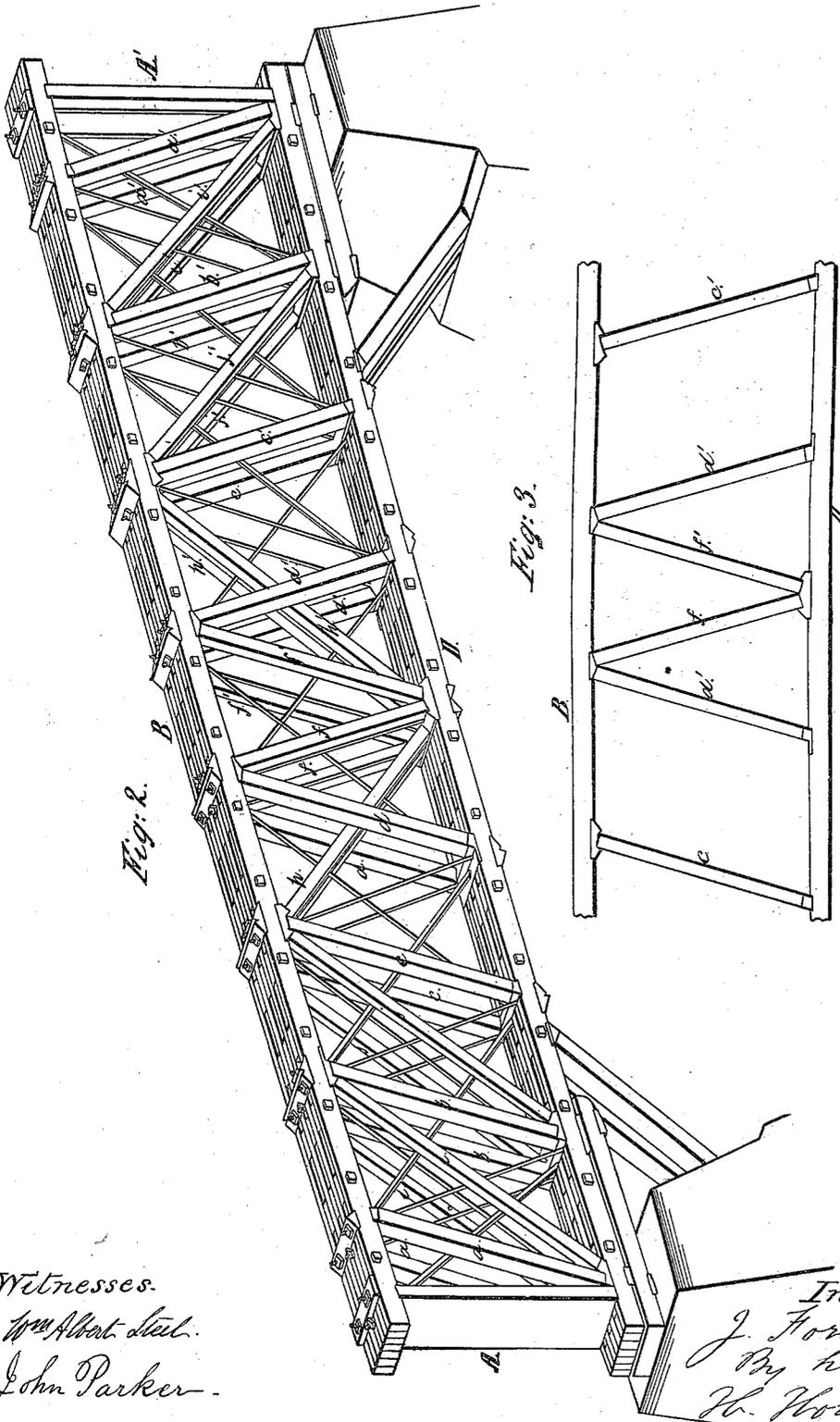
Witnesses.
Wm. Albert Steel
John Parker

Inventor.
J. Foreman
By his Atty
H. Howson

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United States Patent Office.

JOHN FOREMAN, OF POTTSTOWN, PENNSYLVANIA.

Letters Patent No. 78,797, dated June 9, 1868.

IMPROVED TRUSS-FRAMED BRIDGE.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, JOHN FOREMAN, of Pottstown, Pennsylvania, have invented an Improvement in Truss-Frame Bridges; and I do hereby declare the following to be a full, clear, and exact description of the same.

My invention consists of a truss-frame bridge, the posts of one-half of which are inclined in one direction, and those of the other half in the opposite direction, in combination with the system of suspension-rods herein described, or the equivalent to the same, the bridge being thereby increased in strength, while it can be built at a less expense than ordinary truss-bridges.

In order to enable others skilled in the art to make and apply my invention, I will now proceed to describe its construction and operation, reference being had to the accompanying drawing, which forms a part of this specification, and in which—

Figure 1 (Drawing No. 1,) is a side view of my improved truss-frame bridge.

Figure 2 (Drawing No. 2,) a perspective view of the same, and

Figure 3 a side view of part of the frame.

Similar letters refer to similar parts throughout the several views.

The main peculiarity of my improved truss-frame bridge is the absence of the usual vertical posts or vertical rods, which have heretofore been considered indispensable in bridges of this class.

The opposite end posts or frames, A and A', only are vertical, the remaining posts being inclined, those marked *a*, *b*, *c*, and *d*, in one direction, and those marked *a'*, *b'*, *c'*, and *d'*, in a contrary direction, as best observed on reference to fig. 1 (Drawing No. 1.) These posts, or, as they may be termed, on account of their inclination, main braces, are fitted to cast-iron sockets, secured to the upper chord B and lower chord D.

At the centre of the bridge, on the lower chord D, meet the two posts *f* and *f'*, (inclined in contrary directions,) and the two diagonals or counter-braces, *h* and *h'*, the post *f* meeting the post *d*, and the post *f'* meeting the post *d'* at the upper chord, while the counter-brace *h* meets the inclined post *c*, and the counter-brace *h'* the inclined post *c'* at the upper chord. A diagonal or main brace, *i*, extends from the point where the end post or frame A meets the inclined post or brace *a* at the lower chord, to the point where the post *b* is connected to the upper chord, and a similar main brace, *j*, extends from the point where the inclined post *b* is connected to the lower chord, to the point where the inclined post *c* and counter-brace *h* meet at the upper chord. Similar main braces, *i'* and *j'*, are arranged in a similar manner at the opposite end of the bridge.

On reference to the perspective view, fig. 2, it will be seen that the above-mentioned posts, braces, and counter-braces, consist each of two timbers, and that the upper and lower chords consist of a number of longitudinal beams, arranged a short distance from each other, and bolted together.

By adopting this arrangement of inclined posts or braces, and by the system of suspension-bolts, the disposal of which is indicated in the drawings too clearly to need description, I am enabled to dispense with the usual system of heavy counter-braces, common to wooden-truss bridges, there being in my improved bridge but two counter-braces, *h* and *h'*.

While the bridge is thus made much lighter than others of this class, it is increased in rigidity, especially as regards its resistance of the strains to which it must be subjected by passing trains.

This will be readily understood on supposing a heavy train to be passing on to and over the bridge, in the direction of the arrow, fig. 1. Whatever tendency the bridge may have to yield in the same direction, is met by the resistance afforded by the inclined posts or braces *a*, *b*, *c*, and *d*.

In like manner, if a train be passing in the opposite direction on to the bridge, the strain to which the latter is subjected will be resisted by the inclined posts or braces *a'*, *b'*, *c'*, and *d'*.

It will thus be seen that by inclining one half of the posts of the bridge in one direction, and the other half in the other direction, these posts perform a duty which no vertical posts can accomplish.

It will be understood that the number and arrangement of the timbers composing the several parts of the bridge, and, in a measure, the disposal of the diagonal rods, will depend upon the span and size of the bridge.

Without confining myself, therefore, to the precise construction and arrangement of parts herein described, I claim as my invention, and desire to secure by Letters Patent—

The arrangement, substantially as described, of the inclined posts, suspension-rods, and diagonals, for the purpose specified.

In testimony whereof, I have signed my name to this specification in the presence of two subscribing witnesses.

JOHN FOREMAN.

Witnesses:

JOHN WHITE,
C. B. PRICE.

J. Foreman,

Truss Bridge.

No. 104,295.

Patented June 14, 1870.

FIG. 1.

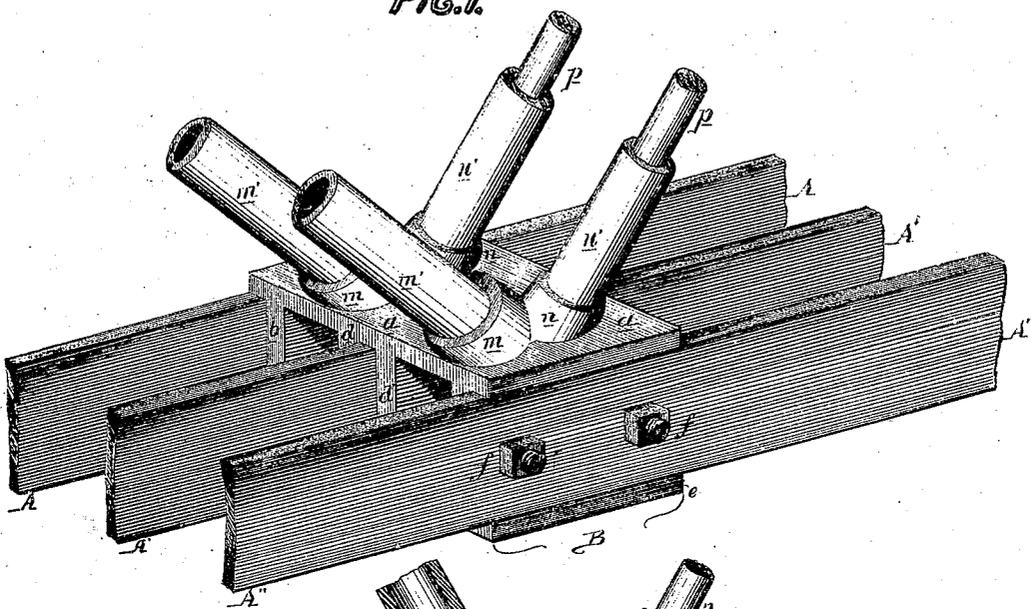


FIG. 2.

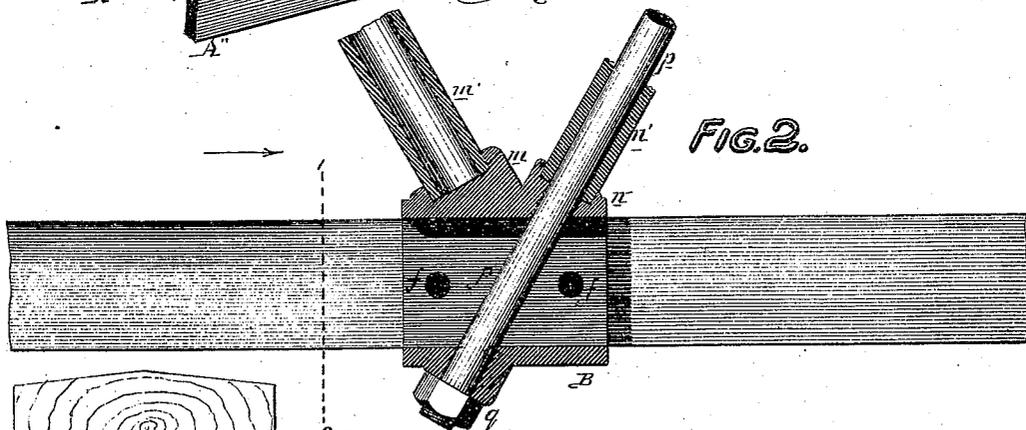


FIG. 4.

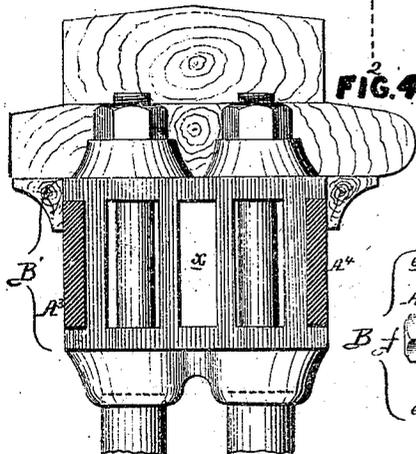
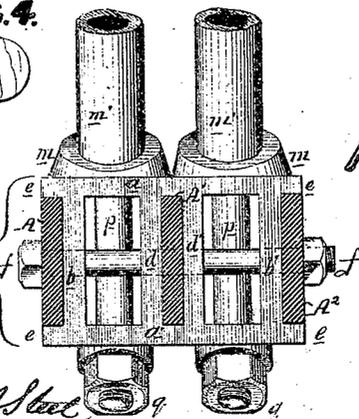


FIG. 3.



*John Foreman
by his Atty^{ys}
Howson and Son*

WITNESSES

*Wm. A. Steel
John Parker*

United States Patent Office.

JOHN FOREMAN, OF POTTSTOWN, PENNSYLVANIA.

Letters Patent No. 104,295, dated June 14, 1870.

IMPROVEMENT IN TRUSS-FRAME BRIDGES.

The Schedule referred to in these Letters Patent and making part of the same

I, JOHN FOREMAN, of Pottstown, county of Montgomery, State of Pennsylvania, have invented an Improvement in Truss-frame Bridges, of which the following is a specification.

Nature and Object of the Invention.

My invention consists of a cast-iron box, arranged for the reception and securing together of the lower or upper chord-rods and diagonals and counter-diagonals of a truss-frame bridge, in the manner described hereafter, with a view to general simplicity and economy as regards construction.

Description of the Accompanying Drawing

Figure 1 is a perspective view of sufficient of a truss-frame bridge to illustrate my invention.

Figure 2, a vertical section.

Figure 3, a transverse section on the line 1-2, fig. 2, looking in the direction of the arrow, and

Figure 4, a transverse section of a modified form of box to be applied to the upper chords of a bridge.

General Description.

A, A¹, and A² are three continuous flat bars, forming together the lower chord of a truss-frame bridge, and

B is a cast-iron box, composed of the upper and lower horizontal plates *a* and *a'*, connected together by the end vertical plates *b* and *b'*, and the intermediate vertical plates *d* and *d'*, the whole being cast in one piece.

The outer bars A and A² of the lower chord fit snugly between projecting ribs *e e*, which form parts of the upper and lower plates of the box, and against the outer vertical plates of the latter, while the intermediate bar A¹ of the lower chord passes and fits snugly between the two intermediate plates *d* and *d'* of the box.

Two bolts, *f f*, pass through the box and through

the lower chord rods, thus serving to bind the whole firmly together.

In the top of the box are two inclined projections, *m m*, having circular recesses for receiving the lower ends of the tubular diagonals *m'*, and inclined in a contrary direction on the top of the box are projections *n n*, for receiving the tubular counter-diagonals *n' n'*, through which, and through the box, pass the diagonal rods *p*, furnished at their lower ends with nuts *q*, bearing against inclined projections on the under side of the box, these diagonal tie-rods passing through the box at such points as not to interfere with its vertical plates and transverse bolts.

In fig. 4, B' represents a somewhat modified form of box adapted for application to the upper chords of a bridge; but two chords, A³ and A⁴ are shown in this case, it being intended to use a filling of wood between them at each end of the box, and the space *x* within the latter may also be filled, if desired.

It will be seen, without further description, that one casting of simple character is made the medium of receiving and securing together the chord-rods and diagonals of a truss-frame bridge.

The casting may, in bridges of a large size, be made to receive two, or even more than two, intermediate chord-rods, or three, or more than three, diagonals and counter-diagonals, without any departure from the main characteristics of my invention.

Claim.

The box B, consisting of the upper and lower plates *a a'*, vertical plates *b b' d d'*, and recessed projections *m m'*, all constructed and arranged as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOHN FOREMAN.

Witnesses:

JOSHUA BYERS,
MATTHIAS GEIST.