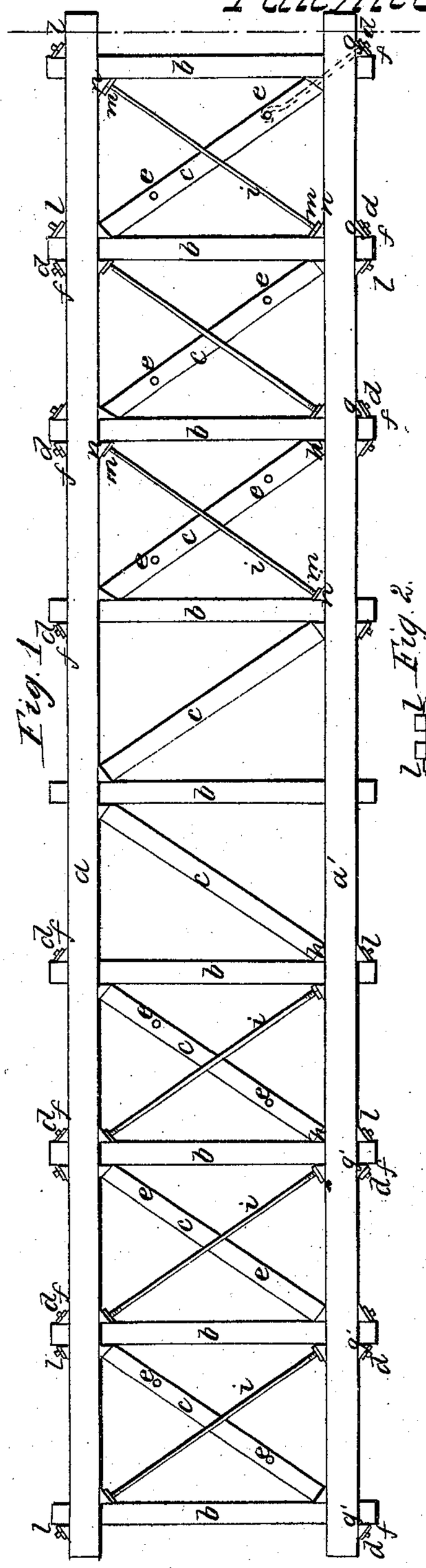
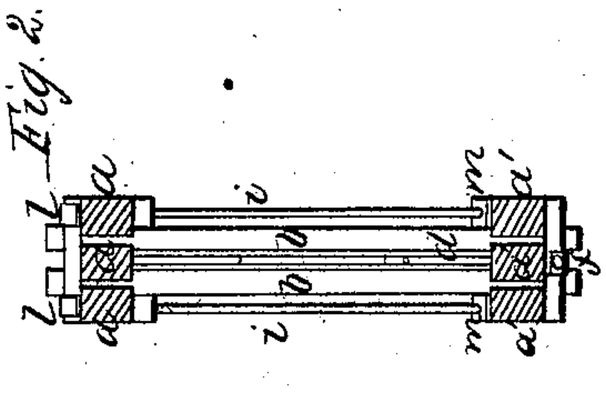
H Childs.

Truss Bridge.

No. 4,693. Patented Aug. 12, 1846.





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UNITED STATES PATENT OFFICE.

HORACE CHILDS, OF HENNIKER, NEW HAMPSHIRE.

TRUSS-BRIDGE.

Specification of Letters Patent No. 4,693, dated August 12, 1846.

To all whom it may concern:

Be it known that I, HORACE CHILDS, of Henniker, in the county of Merrimack and State of New Hampshire, have invented a new and useful Improvement in Bridges, and that the following is a full, clear, and exact description of the principle or character thereof which distinguishes it from all other things before known and of the manner of making, constructing, and using the same, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a longitudinal vertical elevation of the truss frame of a bridge on my improved plan; and Fig. 2, a vertical cross section taken at the line (X X) of Fig. 1.

The same letters indicate like parts in all the figures.

In the truss frames of bridges diagonal suspension rods have long since been used, provided with screw nuts below the lower and above the upper string pieces, by means of which the truss may be cambered, but for no other purpose, and the wooden braces extending diagonally from post to post and between the upper and lower stringers and resting against blocks, have, and can only be used as thrust braces. The defects of these modes of construction are obvious if two thrust and counter diagonal braces are used the suspension rods for cambering are required in addition, thereby greatly increasing the weight of the bridge,—and if thrust braces only are used then too much strain rests on the posts, either of which is a serious defect. Another defect is that the diagonal braces which bear against blocks above and below have nothing to bind the stringers and posts together except the keys and bolts passing horizontally through them.

The object of my improvements is to avoid these defects without adding to the weight and cost of the structure, and this end I attain by employing the suspension and cambering rods in such manner as to answer in addition to these the purpose of diagonal counter braces, by using additional nuts above the lower and below the upper string pieces, which rods passing diagonally through the stringers where they are united with the posts bind and hold them together. And combining with the diagonal thrust braces short screw bolts which pass diagonally through the stringers where they are united with the post, at top and bottom to bind them together, in the same manner but in the reverse direction of the suspension rods.

In the accompanying drawings (*a*) and (*a'*) represent the upper and lower string pieces, (*b*) the posts, and (*c*) the diagonal thrust braces which are made double; and have between them at the upper and lower end a screw bolt (*d*, *d*) secured by a metal pin (*e*, *e*) passing through the brace and an eye in the end of the bolts. These bolts extend beyond the ends of the braces sufficiently to pass diagonally through the junction of the stringers and posts and then receive nuts (*f f*) which bear against blocks (*g*, *g*) placed in the angles formed by the junction of the post and stringers, and similar to the shoe pieces (*h*, *h*) employed to receive the thrusts of the braces, in the usual manner. The suspension rods (*i*, *i*), two to each section, are inclined the reverse of the thrust braces and cross them, and pass through the junctions of the posts with the stringers in the same manner as the bolts (*d*, *d*); but in addition to the outside nuts (*l*, *l*) above the upper and below the lower stringers, there are two additional nuts (*m*, *m*) that bear against shoe pieces or blocks (*n*, *n*) below the upper and above the lower stringers, so that by binding the stringers and posts at top and bottom by means of these nuts the rods answer the double purpose of suspension rods and counter braces, at the same time that they, in connection with the bolts (*d*, *d*) at the ends of the thrust braces, bind and secure together the posts and stringers.

I generally employ in each truss two rods to each section one on each side of the thrust braces, but more or less may be used without changing the principle of my invention.

What I claim therefore as my invention and desire to secure by Letters Patent is—

1. The employment of the additional nuts upon the suspension rods under the upper and above the lower stringers, substantially as herein described, whereby the suspension

rods answer the additional purpose of counter braces, as described.

2. And I also claim the employment of the screw bolts combined with the thrust braces, and projecting beyond them sufficiently to pass through the stringers where they are united with the posts substantially as described, whereby the braces, posts, and stringers are bound together as herein described.

HORACE CHILDS.

Witnesses:
ROB. B. EATON,
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