G. W. Thayer.

Truss Bridge.

No. 4,004. Patented Apr. 16, 1845.

Fig. 4.

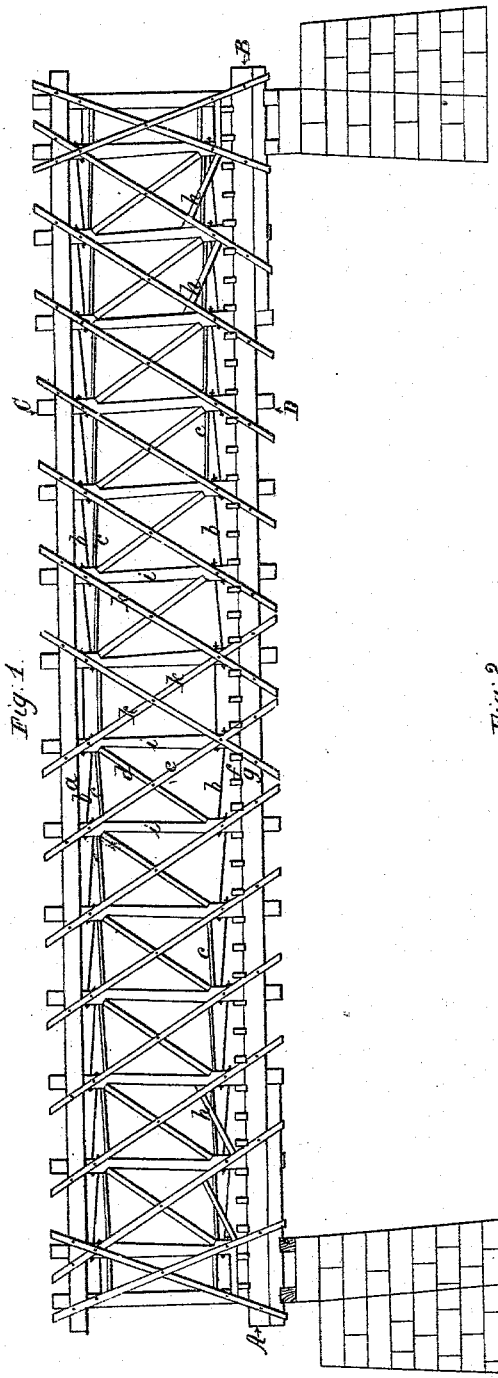

Fig. 1.

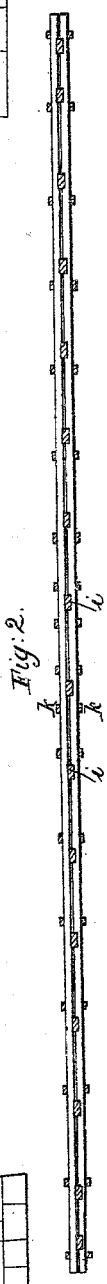

Fig. 2.

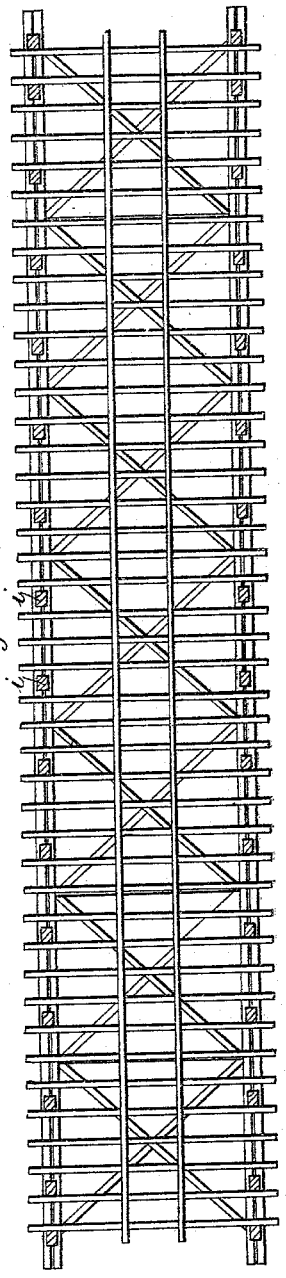

Fig. 3.

UNITED STATES PATENT OFFICE.

GEO. W. THAYER, OF SPRINGFIELD, MASSACHUSETTS.

WOODEN BRIDGE.

Specification of Letters Patent No. 4,004, dated April 22, 1845.

To all whom it may concern:

Be it known that I, GEORGE W. THAYER, of Springfield, in the county of Hampden and State of Massachusetts, have invented a new and useful improvement in bridge and roof trusses by which the timbers comprising the chords or horizontal beams thereof are prevented from drawing apart and the suspending posts and chords kept firmly in their places, thereby preventing the sagging or sinking of the truss between its supports; and I do hereby declare that the nature of my invention and the manner in which the same is to be performed are particularly described and ascertained in and by the following statement thereof, reference being had to the drawings accompanying and making part of the same and to the figures and letters marked thereon.

Figure 1, of the aforesaid drawings, represents a front elevation of a bridge truss. Fig. 2, is a horizontal section of the lower chord or string timbers, taken in a line from A, to B, Fig. 1. Fig. 3, is a plan of the flooring and the position of two of the said trusses to which the said flooring is applied, and Fig. 4, is a vertical section of the truss taken on the line C, D, Fig. 1.

In the drawings of the said truss, *a*, denotes the upper chord or string timber; *b*, *b*, &c., chord bolts to be hereinafter described; *c*, *c*, straining pieces or planks, interposed between the posts and extending from one to the other of them, as seen in Fig. 1; *d*, *d*, &c., the principal diagonal braces, each of which is stepped or bears at one end upon the lower part of one post, and at its other against the upper part of the succeeding post, as seen in the drawings; *e*, *e*, the counter braces; *f*, *f*, &c., the floor beams; *g*, the lower chord or string, and *h*, *h*, &c., auxiliary braces.

Wooden trusses for bridges, constructed, generally, like that represented in the drawings, are all more or less subjected to settlement between their pieces or supports, by reason of the action of the peculiar strains exerted upon their chords or strings, in such manner as to draw apart from each other the timbers or planks of which they are composed. In course of time, and often in a very short time after the erection of such a bridge, the settlement of it, particularly when used on a line of railway, becomes so great as to require a complete reparation and often at a great expense and hindrance to the operations of the transportation department of the road. In fact, the evil above mentioned is one of general complaint, and the object of my improvement, in part, is to prevent the same; and this I effect by means of two series of iron bolts or rods, *b*, *b*, &c., the one being arranged directly under the upper chord, and the other above the lower one as seen in Fig. 1. Each of the said bolts is passed through two consecutive posts *i*, *i*, and has a screw and nut upon one or both ends, by which, when the nut is screwed up, the posts may be drawn toward each other. A series of counter straining pieces *c*, *c*, &c., is extended along between the posts, directly beneath the upper series of iron screw rods, and another series of the same directly over the lower series of rods as seen in Fig. 1. I do not, however, deem such necessary, to my improvement, but only as something advantageous to the operation of it upon the confining bolts and other parts of the truss.

From the above it will readily be seen that when there is any settlement or sagging of the truss between its points of support or piers that such may be overcome by screwing up the nuts of the iron rods *b*, *b*. The suspension pieces of the truss will thus be kept in their places, and the chords prevented from drawing apart longitudinally. I also arrange upon one or both of the outer sides of the truss a series of inclined pieces *k*, *k*, &c., each of which extends from the upper to the lower chord or string, and beyond each as seen in the drawings, and is notched down upon and bolted or otherwise secured to the same, and to the posts and diagonal braces and counter braces in such manner as may be deemed necessary.

Having thus set forth my invention, I shall claim the combination of one or more series of iron screw rods (*b*, *b*, &c.) with the suspension posts and chords or string pieces

of a truss, in the manner and so as to operate substantially as herein above specified.

I do not claim the combining with the posts, braces and strings of a truss, a series of supplementary braces (*k*, *k*, &c.), but

What I do claim, is—

The arrangement of such a series of braces upon the outer sides of the truss, and so that they shall extend above and below the chords thereof, and be confined to the truss, substantially as above described.

In testimony whereof, I have hereto set my signature this twenty first day of February A. D. 1845.

GEORGE W. THAYER.

Witnesses:

JOSIAH HOOKER,

L. K. FULLER.