Sheet 1, 2 Sheets.

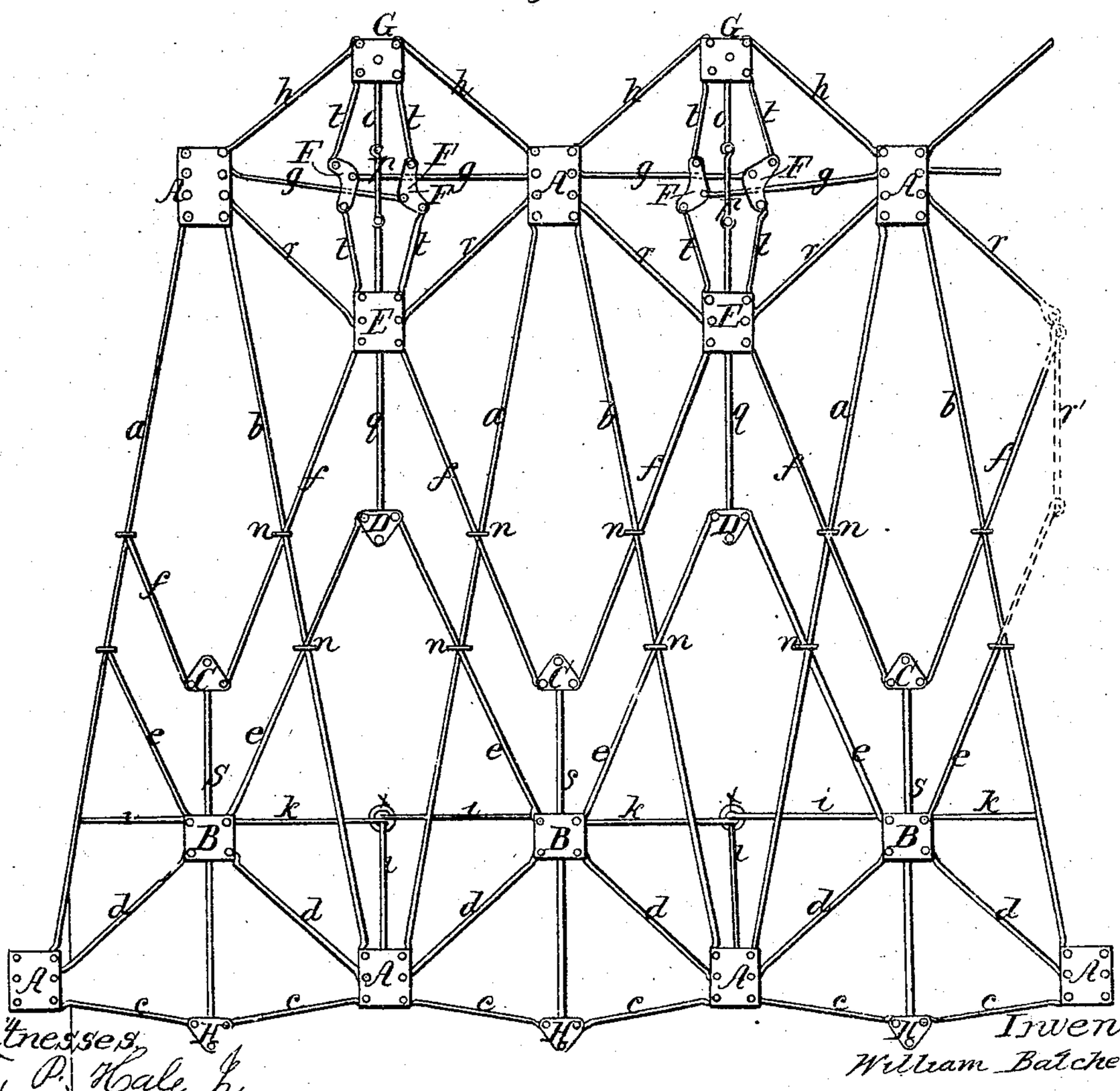
# W. Batchelder.

## Truss Bridge.

No. 48,643. Patented Jul. 11, 1865.

Fig. 4.

Fig. 1.




Witnesses,
F. P. Hale Jr
H. E. Fisher.

Inventor;
William Batchelder.
by his Attorney.
R. H. Eddy.

Sheet 2, 2 Sheets.

# W. Batchelder.

## Truss Bridge.

No. 48,643. Patented Jul. 11, 1865.

Fig. 2.

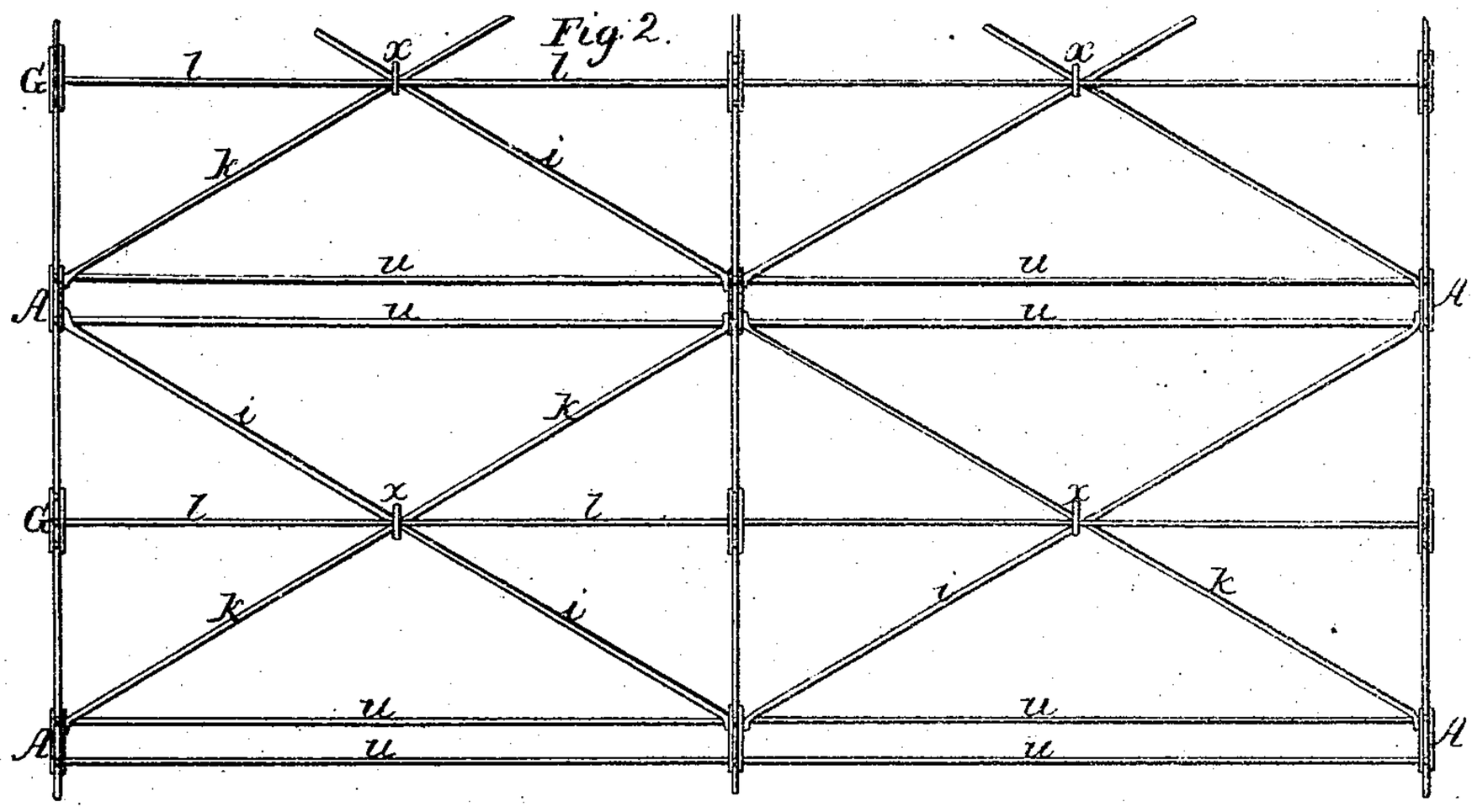
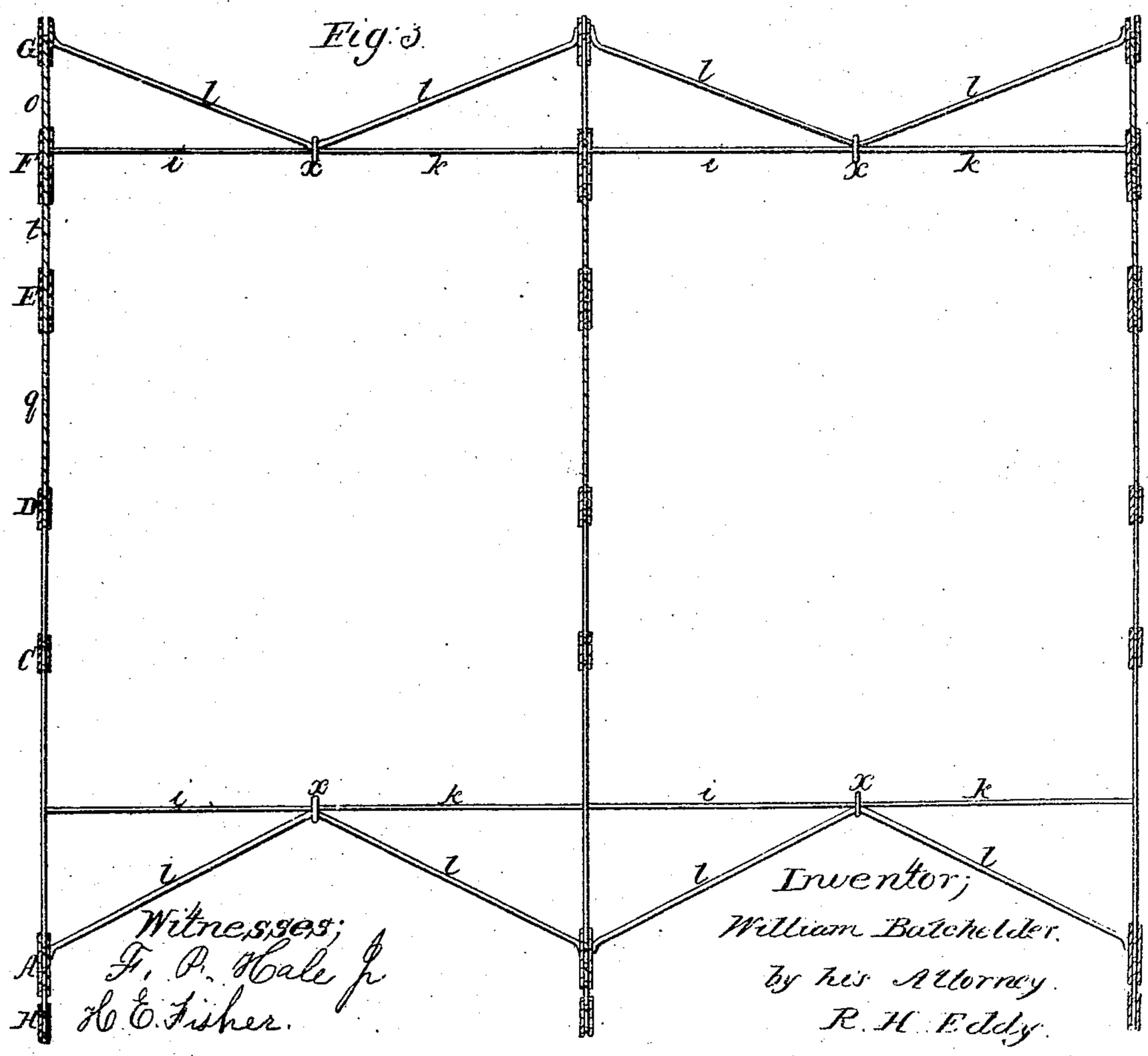



Fig. 3.

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by his Attorney.
R. H. Eddy.

# UNITED STATES PATENT OFFICE.

WILLIAM BATCHELDER, OF NEWBURYPORT, MASSACHUSETTS.

## IMPROVEMENT IN TRUSSES FOR BRIDGES.

Specification forming part of Letters Patent No. **48,643**, dated July 11, 1865.

*To all whom it may concern:*

Be it known that I, WILLIAM BATCHELDER, of Newburyport, in the county of Essex and State of Massachusetts, have invented a new and useful Improvement in Trusses for Bridges or Roofs; and I do hereby declare the same to be fully described in the following specification and represented in the accompanying drawings, of which—

Figure 1 is a side elevation, Fig. 2 a top view, and Fig. 3 a transverse section, of a bridge-frame made in accordance with my invention.

Each of the truss-frames of the bridge is mainly composed of rods, each of them having an eye at each of its ends. With these rods certain connections are employed, each of which consists of two metallic plates arranged side by side and at a short distance apart, and connected by a series of rivets or screw-bolts going laterally through them. These connections are represented at A, B, C, D, E, F, G, and H. The distance between the two plates of each connection is equal to or a little greater than the diameter of either of the rods which are to go between the said plates.

In composing the truss I make use of a series of inclined rods, *a a*, and counter inclined rods *b b*, which I arrange with respect to each other and with a series of the connections A A A A A in manner as exhibited in Fig. 1. Each of the said rods (formed with an eye at each end of it, as shown in Fig. 4) has its eyes inserted between the plates of two of the connections A A, and the rod is secured to such connections by a bolt or rivet going through each of the eyes and the two plates between which it may be situated. Next I arrange another series of the connections B B with reference to the lower connections, A A A, in manner as shown in Fig. 1, and I extend from each of the connections B four rods, *d d e e*, and in such manner that the two lower rods, *d d*, proceeding from each connection B, shall be joined with the two next adjacent connections A A. Except at the ends of the truss, each of the rods *e*, proceeding upward from either connection B, is united with one of a series of triangular-shaped connections D, disposed with respect to the series of connections B B in manner as shown in Fig. 1. Each connection D is suspended by a hanger composed of rods *o p q* from a connection, G, disposed at the upper part of the truss, there being one of the connections G immediately over each of the connections D. The two outer rods, *e e*, may be fastened at their upper ends to the two extreme rods *a b*. The connection G has two rods, *h h*, extending from it to the next adjacent two connections, A A, in manner as shown in the drawings.

There is arranged directly over the connections D a connection, E, down through which the suspension-rod *q*, forming part of the hanger, passes. Furthermore, the connection E is suspended from the two upper connections A A by two inclined rods, *r r*. Two rods, *f f*, extend from the lower part of the connection E, and proceed to and are connected with two triangular connections, C C, there being a connection, C, directly over each of the connections B. A rod, *s*, suspended from the connection C, supports at its lower end a triangular connection, H, which is arranged between and connected to two of the lowermost connections A A by rods *c c*.

Between each two of the connections G E, throughout the bridge, two connections, F F, are arranged as shown in Fig. 1. The said connections F F have rods extending from them to the two next adjacent connections A A in manner as represented in Fig. 1, each rod *g* in its course from one connection F to its connection A being carried through the other connection F. The two rods *g g* also pass between the pair of rods *p p*, which are jointed to the rods *p q* by bolts or rivets going through the adjacent eyes of the said rods. Each connection F is joined with the next contiguous connections G E by two rods, *t t*, arranged as shown in Fig. 1.

I would remark that the two extreme rods *f f* may be joined at their upper ends to the rods *a b;* or, if preferable, each of them may be extended upward and be connected with a rod, *r*, as exhibited by dotted lines, in which case each rod *e* may be also extended beyond its rod *a* or *b*, and be connected with the rod *r* by a rod or chain, *r'*.

At the intersection of each two crossing rods I employ a ring, *n*, to go around the two, in order to give stiffness to the structure.

A truss of any desirable length may be thus made by increasing the bars and connections

and arranging them substantially as described and represented. The side elevation exhibits how the parts of two sections of the truss are arranged and connected.

The arrangement of the various parts of this truss is such that a weight bearing on either of the parts B, and tending to depress it, will produce a counter action or tendency of the truss to camber.

In placing two or more of the trusses together or parallel to one another their opposite parts A A are to be connected by horizontal parallel rods *u u*, (see Fig. 2,) and by diagonal rods *i k*. The opposite parts B B are also to be so connected, and there is to be a bent rod, *l*, extended between each of the two opposite parts G G or A A of the two trusses, the bend of the rod being at the crossing of the two diagonal rods *i k*, and the three rods *k l* being encircled by a ring, *x*, where they come together, the whole being as shown in the drawings.

The flooring-timbers of the bridge may rest directly on the series of lower parallel bars, *u u*.

I would remark that the eyes of the rods may be formed by simply bending the ends of the rods around in the proper form, or by so bending them and afterward welding or otherwise fastening the ends to the bars.

I claim as my invention—

1. The truss made substantially as described—that is to say, of the rods *a a*, *b b*, *c c c c*, *d d d d*, *e e e e*, *f f f f*, *g g*, *h h*, *r r*, *t t t t*, the hangers *o p p g*, and the connections A A A A A A, C C, D, E, F F, and G, arranged and applied together in manner as specified and represented.

2. In combination therewith, the series of rings *e* or their equivalents applied at the intersections or crossings of the rods.

3. The combination of two of the said trusses and two series of parallel rods *u u*, diagonal rods *i k*, and bent rods *l*, arranged with the said trusses, as specified.

WILLIAM BATCHELDER.

Witnesses:
J. G. GENISH,
G. W. JOHNSON.