2 Sheets—Sheet 1.

S. CONKLIN.
Truss-Bridge.

No. 210,754. Patented Dec. 10, 1878.

Fig 1.

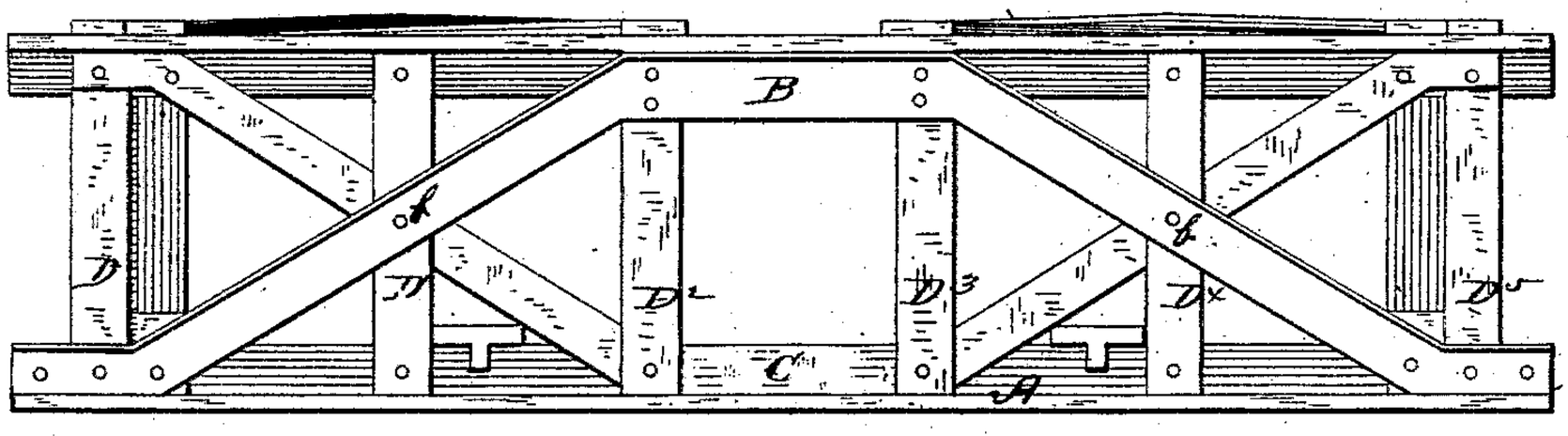
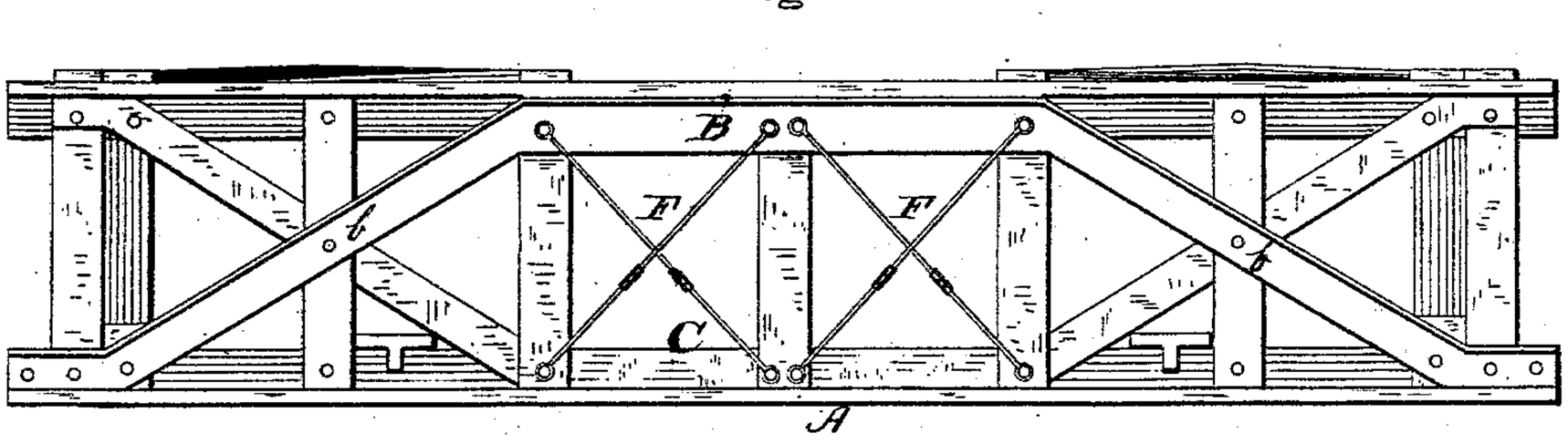


Fig 2.



WITNESSES
Harry King
William Blackstock.

By His Attorney

INVENTOR
Solon Conklin
L. Hill

2 Sheets—Sheet 2.

S. CONKLIN.
Truss-Bridge.

No. 210,754. **Patented Dec. 10, 1878.**

Fig. 3.

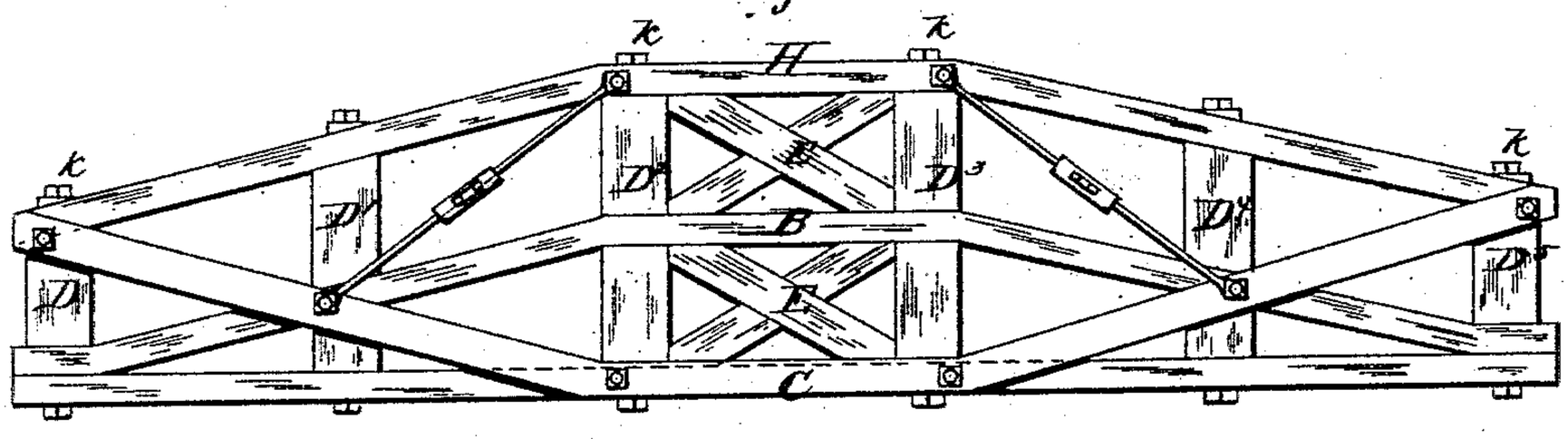
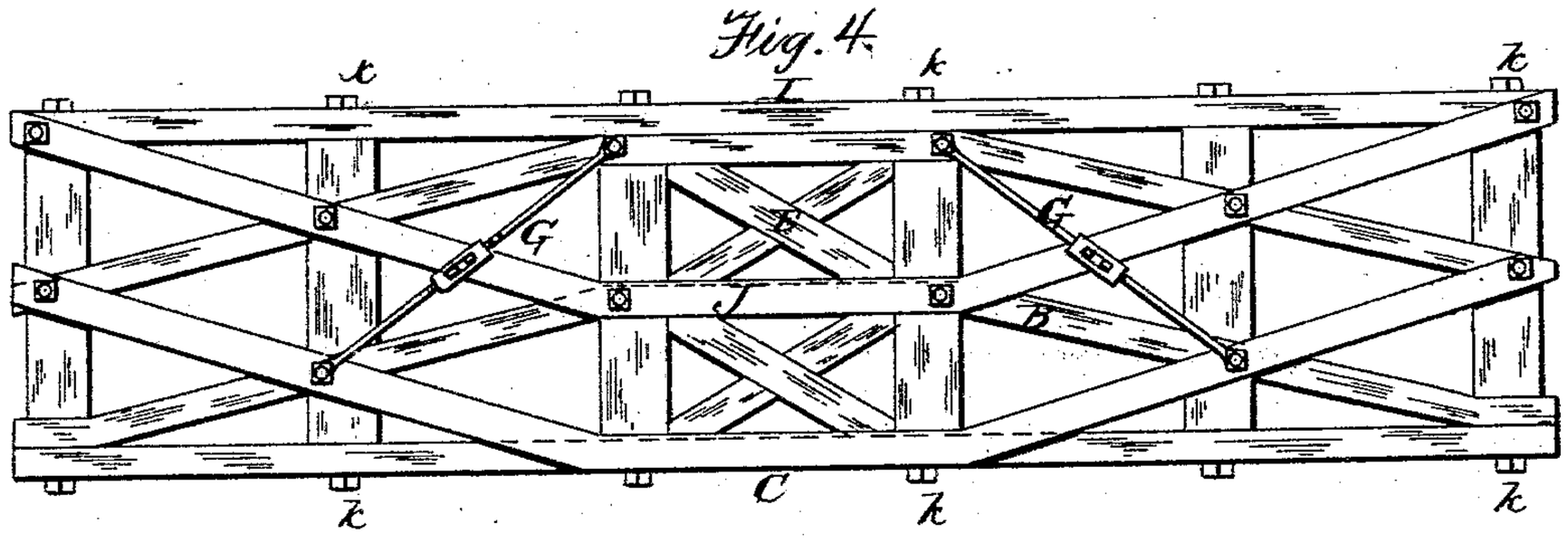


Fig. 4.



Witnesses
Harry King.
William Blackstock.

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By L. Hill
His Atty.

UNITED STATES PATENT OFFICE.

SOLON CONKLIN, OF KIRKWOOD, ASSIGNOR OF ONE-HALF HIS RIGHT TO B. S. CLARK, OF NEW YORK, N. Y.

IMPROVEMENT IN TRUSS-BRIDGES.

Specification forming part of Letters Patent No. **210,754**, dated December 10, 1878; application filed July 26, 1878.

To all whom it may concern:

Be it known that I, SOLON CONKLIN, of Kirkwood, in the county of Broome and State of New York, have invented certain new and useful Improvements in Truss-Bridges, of which the following is a specification:

The object of this invention is to increase the strength and efficiency of truss-bridges; and to this end the invention consists, first, in a new bridge element consisting of a double hip-arch truss, in which the members of the arch, at each end, cross each other, are bolted together at the points of intersection, and thence extend diagonally to the ends of the span; and, secondly, in combining therewith a straight top chord, resting directly upon the ends of the tension member and middle of the compression member, substantially as I will proceed to describe.

In the drawings, Figures 1, 2, 3, 4 are side elevations, representing different modes of embodying the bridge element above referred to as the first or main feature of my invention, Figs. 1 and 2 showing the mode of embodiment, also claimed herein as constituting the second part of my invention.

In said drawings, A represents the floor-girder or bottom chord, and B C the double hip-arch truss, of which B is the compression and C the tension member. The parts B C extend in straight lines along the top and bottom, respectively, of the middle panel or panels of the bridge, and from said panel or panels the compression-arc runs straight in a diagonal downward direction, and the tension-arc straight in a diagonal upward direction, to the end posts of the span, to which end posts they are securely bolted. In this form it is obvious that between the middle and each end of the truss the tension and compression arcs cross each other at or between the intermediate posts. They are firmly bolted together at the points of intersection, and are also bolted to all the posts D D^1 D^2 D^3 D^4 D^5.

The middle panels may be braced, as shown at E, Figs. 3, 4, or tied by diagonal rods, as shown at F, Fig. 2, or left clear, as shown in Fig. 1, as may be preferred by the constructer.

The floor-beams and cross-bracing and tying at floor and top of bridge may be of any approved plan.

The bridge element hereinabove described, and referred to hereinafter in the first clause of my claim, may be combined in many different ways in truss-bridges. I have shown three of these different modes of applying it—namely, first, in the structures represented in Figs. 1 and 2, where a straight top chord is employed with it; secondly, in the structure shown in Fig. 3, where the straight top chord of Fig. 1 is omitted and a second hip-arch, H, is substituted; and, thirdly, in the structure seen in Fig. 4, where the structure shown in Fig. 3 is supplemented with a straight top chord, I, with or without a second tension member, J. In these alternations the end and intermediate posts are extended upward far enough to meet the upper chord members or their substitutes. The bracing and diagonals may be used, and additional diagonals G, extending from the top downward and outward to the lower tension member of the hip-arch, may be employed.

In the structure shown in Fig. 3 a second tension member, extending from the tops of the posts D^1 D^4 to the horizon part of the member B at the middle panels, may be incorporated.

In the double hip-arch the lower member, C, being a tension member, may be made in sections, connected by links and eye-pins, if preferred.

I do not limit myself to any particular material in building these bridges, nor to any particular form or forms of the material. The posts may each be single or compound, as may also the beams constituting the arches, chords, and girders. The posts may be tubular, with the vertical tension-rods K extending through them, or may be straight uprights, with the vertical tension-rods beside them or between their members; and tubular or solid metal may be employed wherever the two forms will be equivalent in effect.

I am aware of the patent granted to Wm. O. Douglas, April 16, 1878, No. 202,526, which has hip-arches terminating at the ends of the span above the abutments, and shoreward di-

agonal rods, and I do not claim such invention in this specification.

Having thus described my invention in its main principle, and as applied in several of the many different forms of bridge in which it is applicable, I claim as new—

1. A bridge element consisting of a double hip-arch, the members of which extend horizontally along the middle panels, and thence in straight diagonal lines to the ends of the span, crossing each other between the middle panels and end posts, and bolted together at the points of crossing or intersection, substantially as described.

2. The combination of said double hip-arch element with straight top and bottom chords, posts, and diagonals, substantially as described.

SOLON CONKLIN.

Witnesses:
M. CHURCH,
WILLIAM BLACKSTOCK.