

F H Smith Bridge

No 75477

Patented March 10. 1868

Fig. 1.

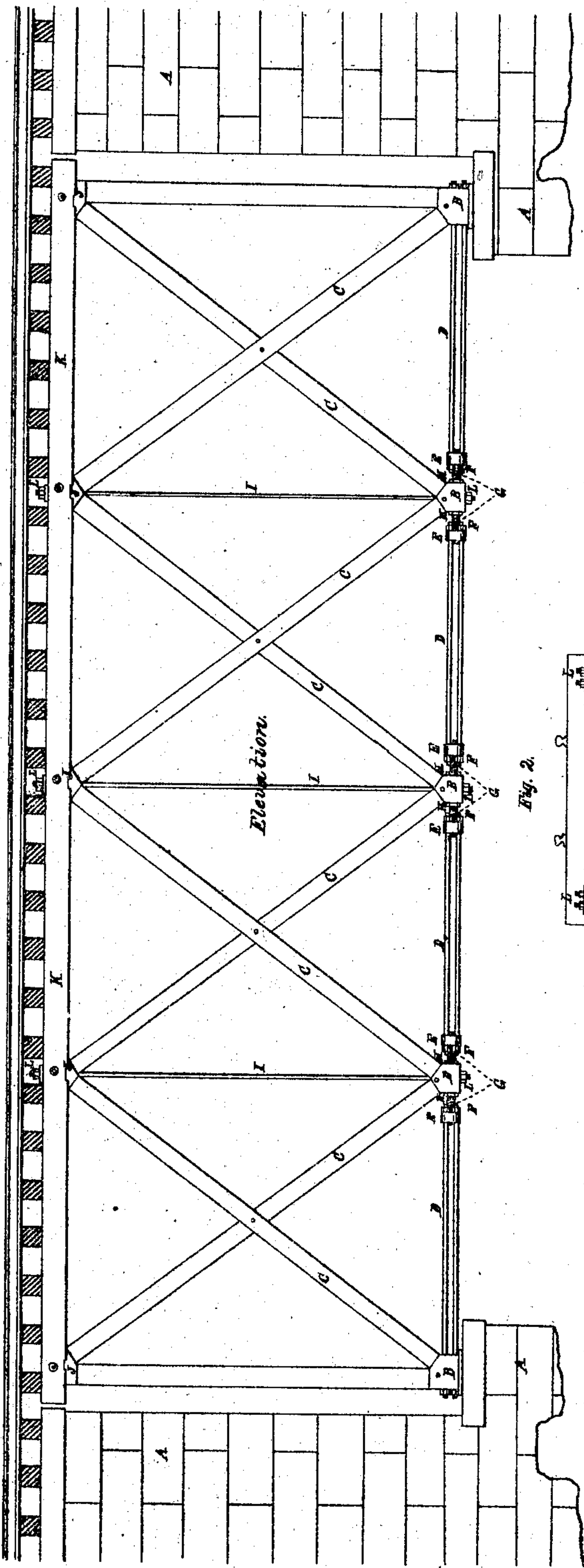


Fig. 2.

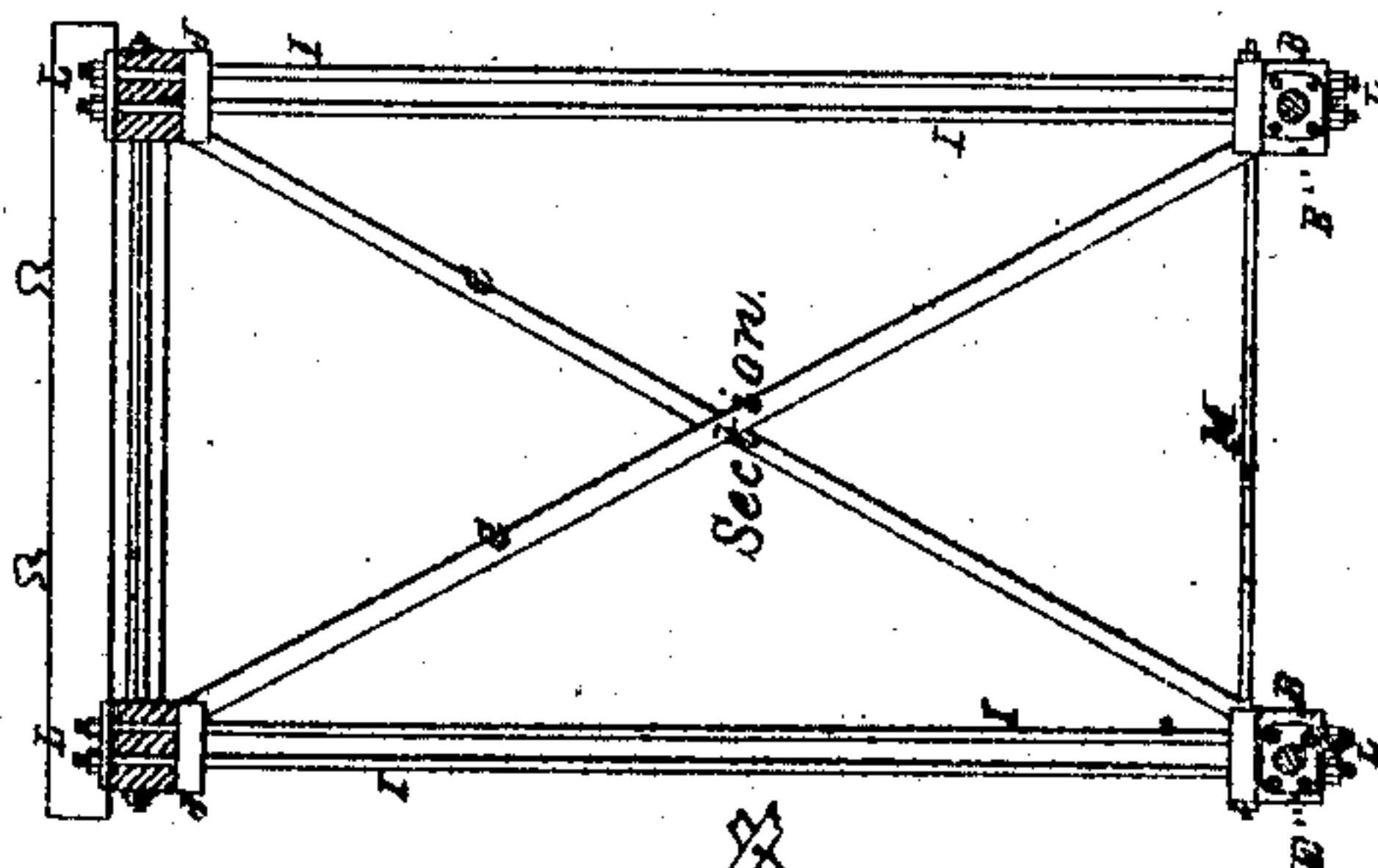


Fig. 4.

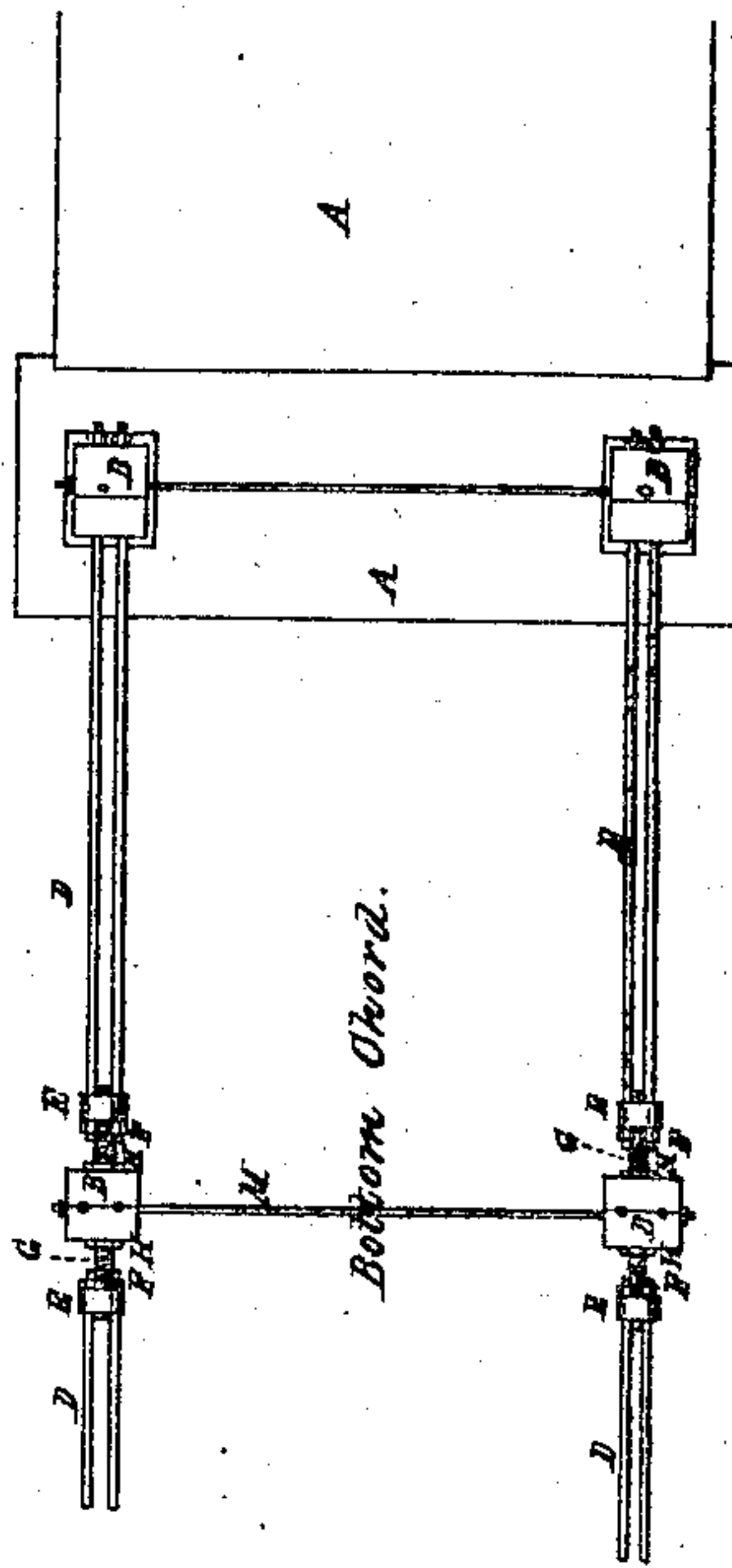
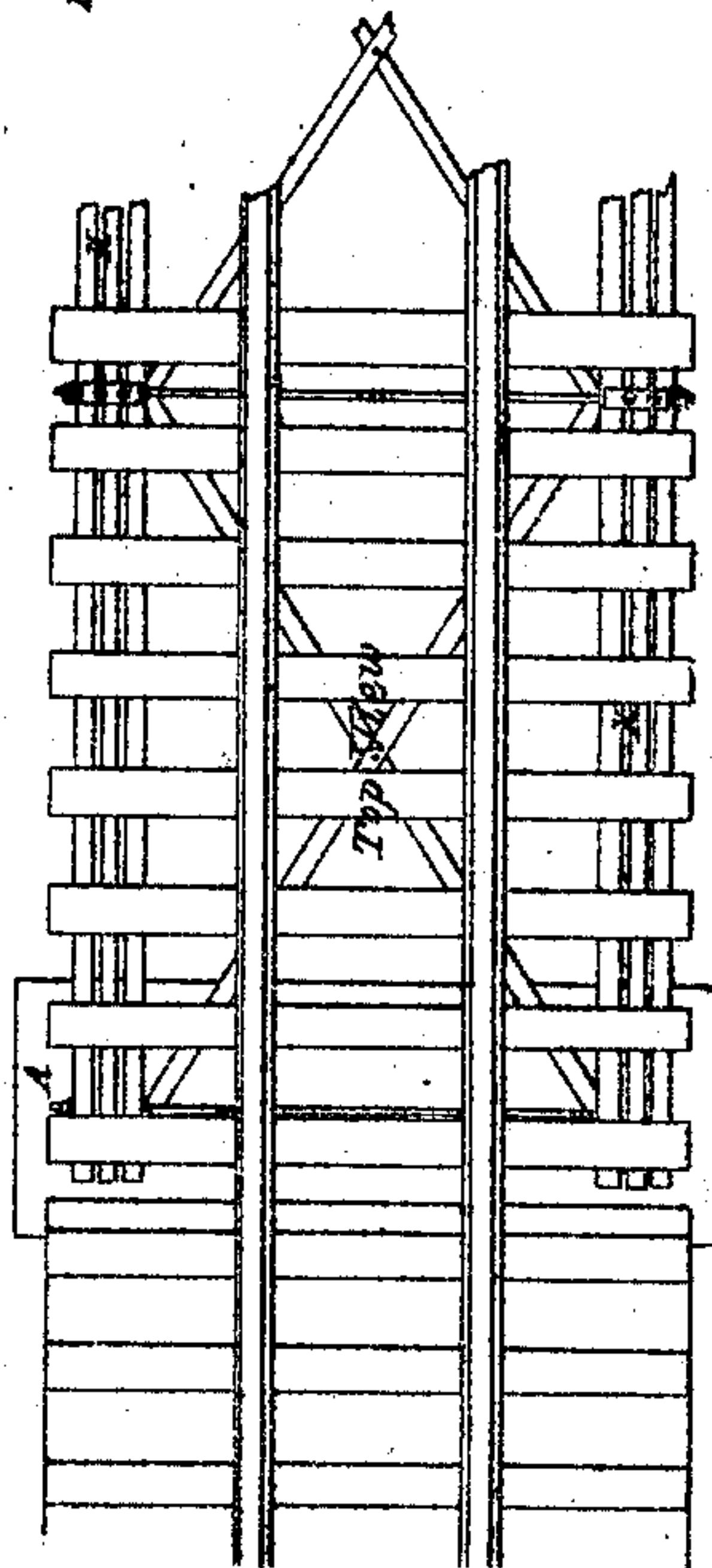


Fig. 3.



WITNESSES.

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FREDERICK H. SMITH, OF BALTIMORE, MARYLAND.

Letters Patent No. 75,477, dated March 10, 1868.

IMPROVEMENT IN BRIDGES.

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, FREDERICK H. SMITH, of Baltimore, in the county of Baltimore, and State of Maryland, have invented a new and useful Improvement in Bridges; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification.

Figure 1 is a side elevation of my improved bridge.

Figure 2 is a cross-section of the same.

Figure 3 is a top view of a portion of the same.

Figure 4 represents a portion of the bottom-chord, the superstructure being removed.

Similar letters of reference indicate corresponding parts.

My invention has for its object to improve the construction of bridges, so that any desired part of the bottom-chord can be readily adjusted, to tighten or loosen any desired part of the bridge, or to allow any desired part of the wood-work to be removed and replaced; and it consists in the construction and arrangement of the bottom-chord, as hereinafter more fully described.

In the drawings, my improved bottom-chord is represented as applied to a Howe truss, but it is equally applicable to any other form of beam-truss.

A are the abutments, upon which the ends of the bridge rest. B are the angle-blocks, the upper sides of which, except the blocks that rest upon the abutments, are made with two inclined faces to support the lower ends of the inclined braces, C, the inclination of said faces being such that they may be at right angles to the axis of said braces. Each line of angle-blocks is connected by clusters of rods, D. The ends of the rods D pass through nut-plates, E, have screw-threads cut upon them, and are adjustably secured in place by nuts F. The parts of the rods D, and all other rods in the structure which have screw-threads cut upon them, are enlarged, so that cutting the screw-threads may not diminish the strength of said rods. G are rods, which have screw-threads cut upon them, which pass through the angle-blocks B, and screw into the central parts of the nut-plates E, and which are of such a size that the area of their cross-section shall equal the united areas of the cross-section of all the rods in the cluster, so that the clusters may be taken through the angle-blocks without weakening the chord. H are nuts, placed upon the rods G, one upon each side of the angle-block, so that by screwing these nuts in one or other direction, any desired part of the bridge may be loosened to allow the timbers of said part to be removed and replaced when desired.

By screwing the nuts H backwards and forwards, the diagonal lines of braces in the panels are lengthened or shortened, and the material of the braces being incompressible, the action of the said nuts, H, results in an upward or downward motion of the top chord, thus adjusting the bridge to any desired upward curve or arch. The resistance to be overcome in this operation of adjusting the bridge as the timber seasons, is less upon the horizontal line of each panel than upon the vertical line of each panel in all cases where the length of panel is less than the height, and therefore this adjustment can be more easily made by the nuts H, acting in the horizontal line, as proposed, than by means of the vertical rods as at present performed in bridges as usually built.

The drawings represent each cluster of rods, D, as being formed of four rods, but the number of rods in each cluster is immaterial, and must depend upon the strain to which the bridge is expected to be subjected. The number of lines of clusters in the bottom-chord is also immaterial, and must depend upon the required strength of the bridge, one, two, three, or more lines being used, as may be thought necessary.

I are vertical rods, that pass through the angle-blocks B, through the angle-blocks J, against which the upper ends of the inclined braces, C, rest, through the beams K, that support the roadway, and which are secured in place by nuts, L, screwed upon their upper and lower ends. The lines of clusters of rods, D, that form the bottom-chord of the bridge are connected by horizontal cross-rods, M, which pass through the angle-blocks B, and are secured in place by nuts screwed upon their ends.

I claim as new, and desire to secure by Letters Patent—

1. A bottom-chord, formed of clusters of rods connected, as described, in the panels, and connected to each other, through the brace-blocks, by a single rod, substantially as and for the purpose specified.
2. The combination of the clusters of rods D, nut-plates E, single rods G, angle-blocks B, and nuts H with each other, with the horizontal cross-rods M, by which the various lines of clusters are connected to each other, and with the vertical rods I, by which the bottom-chord and superstructure of the bridge are connected together, substantially as herein shown and described, and for the purpose set forth.

FREDERICK H. SMITH.

Witnesses:

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H. O. HEUSTIS.