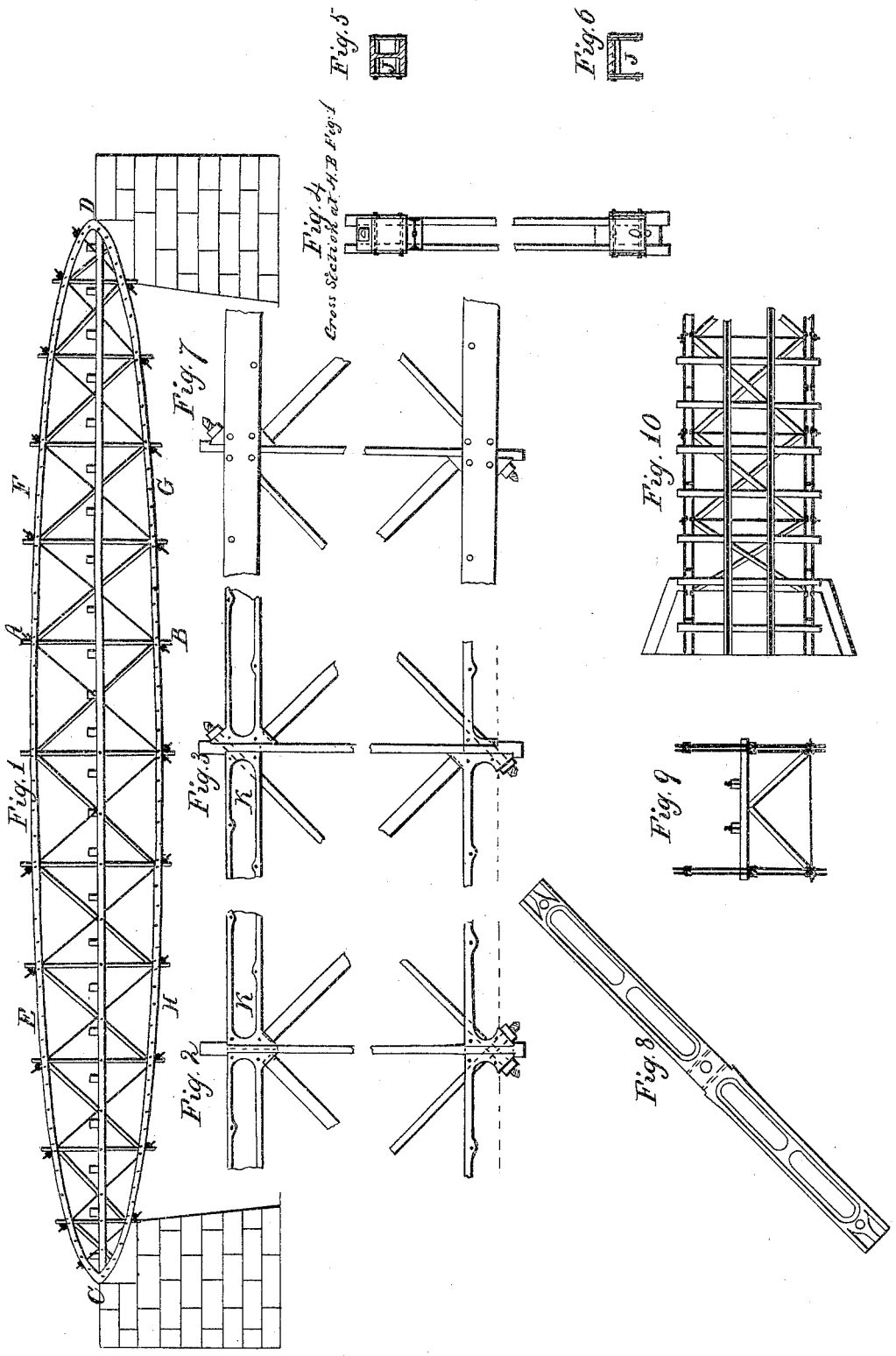
J. Barnes.

Truss Bridge.

No. 6,230. Patented Mar. 27, 1849.



UNITED STATES PATENT OFFICE.

JAMES BARNES, OF SPRINGFIELD, MASSACHUSETTS.

ELLIPTICAL OF OVAL TRUSS-FRAME FOR BRIDGES.

Specification of Letters Patent No. 6,230, dated March 27, 1849.

To all whom it may concern:

Be it known that I, JAMES BARNES, of Springfield, in the county of Hampden and State of Massachusetts, have invented a new and Improved Mode of Constructing Truss-Frames of Bridges, designed particularly for iron, but which may also be constructed of wood or partly of each; and I do hereby declare that the following is a full and exact description of the same.

The invention consists in so constructing the truss that the force of thrust and tension to which it is subjected shall be brought into such relation to each other as to produce the least tendency to fracture; by this means I shall be enabled to obtain from a given amount of material the greatest amount of strength, an object of especial importance when the material to be employed is iron. For this purpose I unite the two chords, the upper and lower, of an ordinary truss into one elliptical or oval curve in which the tension of the lower portion of the curve, being transmitted along the curve to the upper portion of the same is resisted by the opposing thrusts of the latter.

The accompanying drawings exhibit the form of the truss (see Figure 1,) C, E, F, D, G, H, as constructed of iron, the elliptical curve being formed of parallel plates of wrought iron J Figs. 5 and 6 placed at such distance from each other as may be judged necessary; straining beams K Figs. 2 and 3 of cast iron are interposed between these parallel plates, extending from post to post, and the whole is firmly bolted together. The ends of these straining beams, when they abut against the posts, are enlarged in a vertical direction in order to form shoulders for the purpose of receiving the ends of the diagonal braces of cast iron and the sustaining rods of wrought iron which form the interior frame work of the truss, as exhibited in Figs. 2 and 3. By this mode of bracing, or by any other suited to the purpose, the curved or elliptical form of the truss is preserved and the several tensions and thrusts of the structure are properly transmitted.

I am aware that bridges have been constructed on the principle of a trussed girder where the two chords have been united at the ends for the purpose of destroying the tension of the chords, but these have been formed not of a continuous curved chord, which I claim, by which the thrusts and tensions are continued throughout the chord and made reciprocal, but of chords terminating at the extremities where the thrusts are united on the principle of the ordinary truss for roofs in which the tie beam represents the lower chord and the rafters represent the upper chord, the feet of the rafters being secured at the extremities of the tie beam. I therefore disclaim a truss constructed in this way.

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

The union of the ordinary chords of a truss frame into one continuous elliptical or oval curve in which the thrusts and tensions of the truss so constructed will operate in the manner set forth herein.

Washington, Nov. 30, 1848.

JAMES BARNES.

Witnesses:
HAMMOND WHITNEY,
WM. W. BAYINGTON.