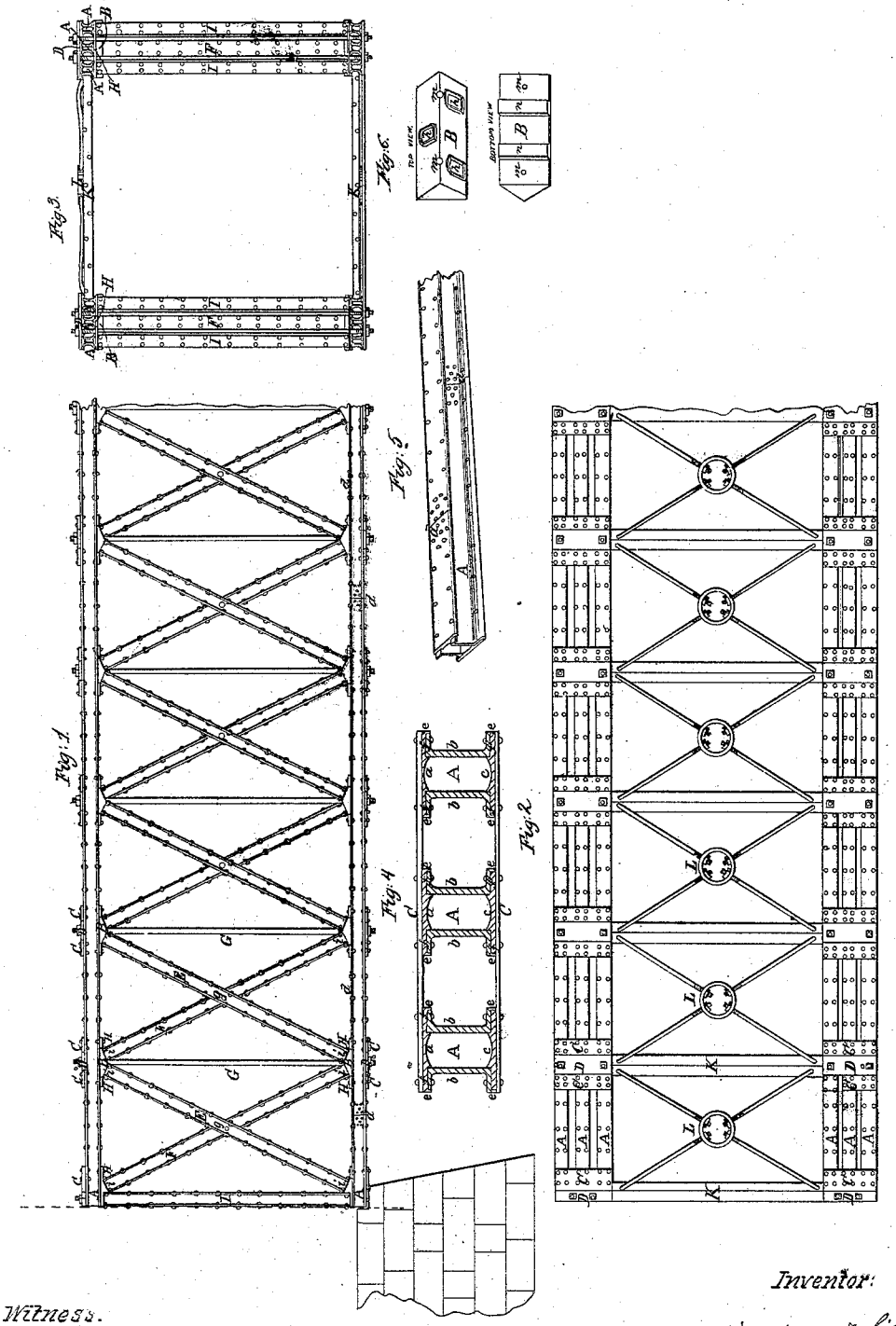
T. B. White.
Truss Bridge.

No. 66,433. Patented July 2, 1867.



Witness.
Chas. M. Morris

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TIMOTHY B. WHITE, OF NEW BRIGHTON, PENNSYLVANIA.

Letters Patent No. 66,433, *dated July* 2, 1867.

IMPROVEMENT IN IRON 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, TIMOTHY B. WHITE, of the borough of New Brighton, county of Beaver, and State of Pennsylvania, have invented new and useful Improvements in the Construction of a Wrought-Iron or Steel Bridge, of which the following is a full, clear, and exact description, reference being had to the accompanying drawing, which forms part of this specification, and in which—

Figure 1 represents an elevation of a portion of a span of one side of a bridge embracing my improvement.

Figure 2, a view of the top of the same.

Figure 3, a transverse section at the red line, fig. 1.

Figure 4, an enlarged transverse section of the tubes A A A, figs. 1, 2, 3.

Figure 5, an enlarged perspective view of one of the tubes A A A, and

Figure 6 an enlarged perspective view of the top and bottom of one of the angle-blocks B B, figs. 1 and 2.

In the construction of wrought-iron or steel bridges it is of primary importance to combine lightness with strength, which I claim to accomplish fully in the following manner: First, in constructing the tubes A A A I have the iron or steel rolled in bars of suitable lengths, in shape to correspond with that shown by the drawing at *a b b c*, fig. 4. These bars are strengthened and punched near the edge at suitable distances apart, and firmly fastened together with rivets, breaking joints by splicing, as shown at *d d*, fig. 5. These splices are made by riveting a plate of iron of suitable thickness and of a width to fit inside of the tube A, the rivets passing through the tube, iron, and plate; care being taken to have but one of the iron or steel bars, *a b b c*, fig. 4, spliced at the same point, the object being to break joints and make the tubes A A A continuous. The projections or drops *e e e e* of the bars *a b b* are for the purpose of keeping the water from entering the joints *f f f f*. Second, after the tubes are prepared as set forth, two or more of them, according to the strength of bridge required, are firmly secured, at suitable distances from each other, by plates of iron C C C, figs. 1 and 2, by rivets, as fully shown; two or more of these tubes so secured forming one cord, four of which cords I use in the construction of a bridge, two at the top and two at the bottom, as shown. Third, the braces E E and counter-braces F F and post I, fig. 1, are sections prepared in the same form and manner as one of the tubes A A A, made of suitable lengths to fit upright and diagonally across the panels, and may be made of iron or steel of a different thickness than that forming the tubes A A A, as seems to be necessary for the required strength, each end of the brace or counter-brace entering over the projection or flange *h h* of the angle-block B, fig. 6, firmly securing them to their place, and preventing the water from entering the joints at *i i i i*, fig. 1. The panels are tightened up in the usual manner by tightening the nuts on the ends of the rods G G, fig. 1. The braces and counter-braces at their crossings are all firmly secured together by bolts or otherwise at *g g*, fig. 1. Fourth, the angle-blocks B B have flanges *h h h*, fig. 6, (top view,) cast on their faces, extending say one inch or more at right angles thereto, and made in size and shape to fit the openings in the braces E E and counter-braces F F, which openings are the same as those shown at A A A, fig. 4. These angle-blocks also have projections *n n*, fig. 6, (bottom view,) cast on their bottom face, of a size to fit between the tubes A A A to prevent slipping, and are firmly held in their places by riveting the plates H H H H, fig. 1, to the tubes A A. Two or more holes *m m*, fig. 6, are cast or drilled in the angle-blocks to allow the rods G G, fig. 1, to pass through, which rods also pass through the tubes A A and iron plates D D, figs. 1 and 2, secured at their ends with nuts O O. The two sides of the bridge thus constructed may be secured at a suitable distance apart for the required width by two pieces of angle-iron riveted together, as shown at K K, figs. 2 and 3, the ends riveted to the tubes A A or in any other suitable manner, and braced laterally in the usual manner, as shown at L L, fig. 2.

Having thus fully described the construction of my improved bridge, what I claim as new, and desire to secure by Letters Patent, is—

A tubular iron beam, consisting of the upper plate *a* with the external flange *e*, the side plates *b*, provided at their lower edges with similar flanges *e*, and the lower plate *c*, all constructed and united as described.

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