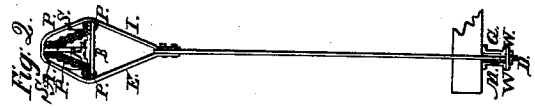
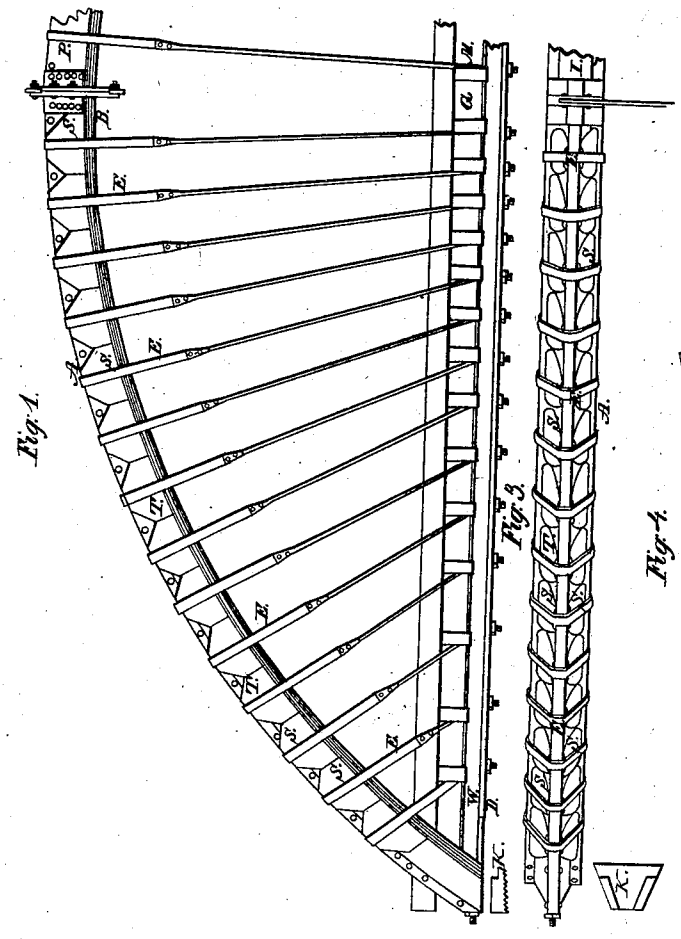
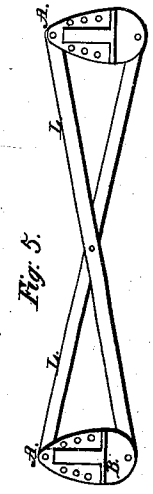
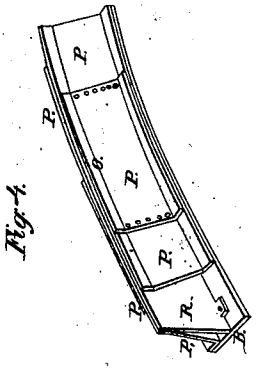
# T. W. H. Moseley
## Truss Bridge.

No. 16,572. Patented Feb. 3, 1857.



# UNITED STATES PATENT OFFICE.

THOMAS W. H. MOSELEY, OF COVINGTON, KENTUCKY.

## BRIDGE.

Specification of Letters Patent No. 16,572, dated February 3, 1857.

*To all whom it may concern:*

Be it known that I, THOS. W. H. MOSELEY, of Covington, in the county of Kenton and State of Kentucky, have invented an Improvement in Bridges, and that the following is a full, clear, and exact description of the principle or character which distinguishes it from all other things before known and of the usual manner of making, modifying, and using the same, reference being had to the accompanying drawings, of which—

Figure 1 represents a side elevation of part of one of the arches. Fig. 2 a cross section showing the form transversely of the arches. Fig. 3 is a plan or top view of one half of one of the arches. Fig. 4 a detached view showing the mode of constructing the arches and, Fig. 5 represents the diagonal cross braces which extend from arch to arch.

My invention consists in certain improvements in iron bridges hereinafter described whereby I attain lightness, strength, durability, and economy beyond any iron structure heretofore used for such purposes.

The arches A, A, of my bridge are of a compound character and are built up of wrought plate iron in such manner as to give to the whole arch transversely the form and strength of an arch, and to admit of very long spans without excessive weight, presenting at once the combined features of extraordinary strength and lightness. Hollow arches for such purposes have been essayed before but of such form, application and material as to be objectionable on the grounds of expense, great weight and derangement from expansion and contraction by changes of temperature.

A transverse section of my compound arch as shown in Fig. 2, exhibits an arch in the form of an isosceles triangle the base B of which is the chord of the arch. This form is best adapted to strength, lightness and economy of construction and is in fact the only form with the least weight that can be given to a hollow iron arch for such purpose which is not liable to buckle.

The plates P, P, P, P, Fig. 4 composing the arch are so arranged in its construction as to break joints for the purpose of strength; and for additional strength to the triangular arch, I insert a vertical plate R bolted to the base plate B and secured to plates P, P, P, P, by rivets thus uniting the plates P, R, and B in the most advantageous manner for producing a light and rigid structure, for its own support and the bridge below. Under a strain in any direction which may come upon this compound arch there is less risk of buckling of either of the plates than in other structures for such purpose. In order however to give the utmost strength to the compound arch and preventing all risk of buckling of the plates I insert loose pieces S, S, which I term saddles. These pieces rest upon the plates B, and also bear upon the plates P, P, and also support each other by their edges which come into contact as seen at T. These pieces are not secured to either plate but are inserted loosely and their upper edges receive a part of the pressure of the stirrups E, E, of the suspension rods F F. The chain of saddles on either side of the compound arch thus forms an independent arch and the effect of each individual saddle is to give tension to the plates P, P, where under great pressure in consequence of the pressure of the saddle upon the base plate B and thus prevent the buckling of the plates and with this last increment of strength and support, it is obvious that the arch can give way to extreme pressure only by the actual rupture of the metal of plates P, B, and R. The exterior face of the saddle is formed for lightness and strength, the superfluous metal being removed from those parts subjected to the least strain. The suspension rods are radial or nearly so to the curvature of the arch and therefore all of them inclined to the versed sine of the arch. The flooring of the bridge rests upon the chord M of the arch which is secured to the feet of the arch and supported by the suspension plate D. The suspension rods pass between the two plates G, G, which compose the chord M and the rods are then bolted to the suspension plate D. The suspension plate is not fastened to the chord M and the effect of this in conjunction with the radial suspension rod is, in case of great weight upon any part of the bridge to throw the strain upon the whole span at once.

It will be seen that on no part of the bridge is any weight or pressure under the point of suspension of that part and that every load draws upon the whole arch in consequence of the sliding movement of the suspension plate under the chord M. The chord M is kept in position laterally upon

plate D by flanges W, W on this plate. The feet of the arch rest upon corrugated shoes K, K, for the twofold purpose of producing friction upon the abutments and of working their way by gradual abrasion into the material of the abutments and securing a firm hold. The two arches A, A, are held together at top by diagonal braces L L.

What I claim as my improvements is—

1. The compound arch constructed substantially as herein set forth.

2. I claim the saddle pieces in combination with the stirrups and said compound arch.

3. I claim the sliding suspension plate in combination with the chord M and radial suspension rods as set forth.

4. I claim the corrugated shoes K K as set forth.

THOMAS W. H. MOSELEY.

Witnesses:

CHAS. G. PAGE,

K. T. CAMPBELL.