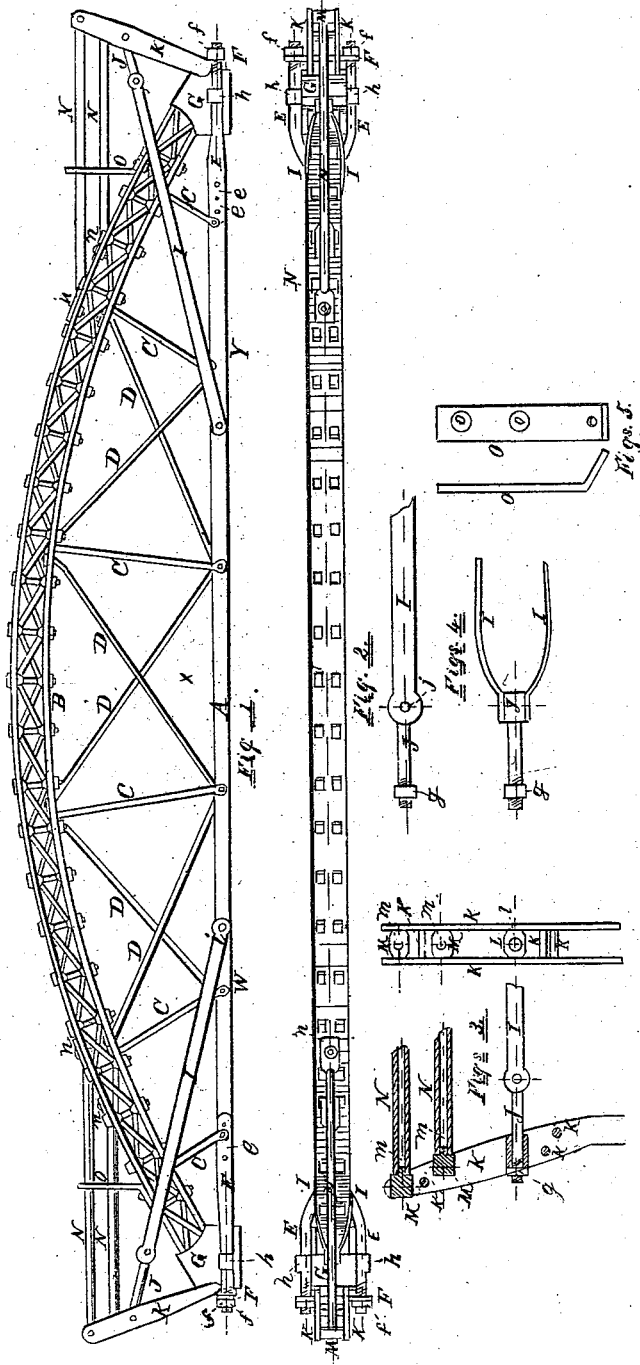


J. Davenport,
Truss Bridge.

No. 82,388.

Patented, Sept. 22, 1868.



Joseph Davenport INVENTOR
 BY *John Abbott* ATTORNEY
David Hammond
Ed. A. Butcher WITNESSES

United States Patent Office.

JOSEPH DAVENPORT, OF MASSILLON, OHIO

Letters Patent No. 82,388, dated September 22, 1868.

IMPROVEMENT IN ARCHED 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, JOSEPH DAVENPORT, of Massillon, in the county of Stark, and State of Ohio, have invented new and useful Improvements in Arch-Bridges; and I do hereby declare that the following is a full, clear, and exact description of my invention, reference being had to the accompanying drawings, forming a part of this specification, and to the letters of reference marked thereon, of which drawings—

Figure 1 is an elevation of a bridge-girder with my improvements.

Figure 2 is a plan of the same.

Figure 3 are sectional and side views of the lever-posts and their connections.

Figure 4 are side view and plan of the tension-straps and bolt.

Figure 5 are side and front views of the lever-post-rod supports.

The nature of my invention consists in the peculiar arrangement of the bridge-girder, chords, and girder-shoes, with lever-posts, rods, and tension-straps, in such a manner as that the arch of the bridge-girder shall be greatly strengthened against any vertical bending of said arch, at or near what may be termed the "points of rupture" of said arch, whereby a much stronger arch may be constructed from the same amount of material than has heretofore been made.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

The arch B, shown in drawings, is the same as the arch for which I was granted a patent on the 24th day of December, 1867, and which, as it is fully described in the specification for that patent, need not be further specified here, but I wish it understood that I do not limit the application of my improvements to this particular form of arch.

The ends of the arch B rest in shoes G G, which have the eyes *h h* formed at their sides.

The chords A are one in number to each girder, and are formed of continuous strips of plate-iron, set up edgewise, and parallel to each other.

The bolts E E are of the form shown, being flattened out at one end, and are secured to the ends of the chords A by rivets or bolts *e e*, as shown.

The bolts E E pass through the eyes *h h* in the shoes G G, and by the sides of the lever-posts K K, through the washer-irons F F, where they are secured by nuts *ff*, as shown.

The posts or suspension-rods C C and diagonal braces D D are arranged and secured to the arch B and chords A, as shown.

The lever-posts K, shown in detail in fig. 3, are composed of the side-pieces K K, of plate-iron, of the form shown, which are connected by the bolts or rivets *k k*, and have secured, between said side-pieces K K, the blocks M M, having the pins *m* cast thereon, and the cross-piece L with hole *l* therein. These lever-posts K set against the rear part of the shoes G G, and have the washer-irons F F arranged so as to bind them in said position.

The tension-straps I I are formed of plate-iron, and are secured at one end to the chords A, by the bolts *i*, as shown. They pass up from the chords, one on each side of the arch, and are secured by a bolt or rivet, *j*, to the tension-bolt J. This bolt J passes through the hole *l* in the cross-piece L in the lever-post K, and is secured by a nut, *y*, arranged as shown in fig. 3.

The lever-post rods N N are formed of hollow tubes, having one end flattened down, and secured to the arch B by one or more bolts *n*, while the other end abuts against the blocks M in the lever-posts K, the pins *m* on said blocks entering into the hollow of the tubes N, and hold them in position, as shown in fig. 3.

The supports O are bolted to the arch B, and have holes *o*, through which pass the rods N N, thus giving a support to said rods.

The floor of the bridge is laid on cross-beams, which are arranged on the chords A, in an ordinary manner.

A load being placed on the girder or bridge at a point, *w*, on the end of the same, has a tendency to draw down the arch above it, and to cause the arch to rise at the other end, above the point Y near the other end,

which rising is prevented by the rods N N, which press against the block M in lever-post K, which is prevented from turning by the tension-rods I.

A load being placed at W, near the centre of the girder, has a tendency to draw down the centre of the arch, and cause a bending of the same, at or near the points of rupture, above the points W and Y, which bending is prevented by the rods N N, as before shown, while the tension-straps I I form, with the chords A, a suspension-chain, which helps to carry the load at the centre, the posts K K being sustained against this strain by their lever-action over the shoes G G, and against the washer-irons F F at the ends of the chord-bolts E E, and also by the rods N N bearing on the arch B.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The rods N N, when used in combination with the arch B and posts K K, substantially as and for the purpose specified.
2. The supports O, when used in combination with the arch B and rods N N, substantially as and for the purpose specified.
3. The lever-posts K, when constructed of the side-plates K K, bolts or rivets *k k*, blocks M M, and cross-piece L, and used in combination with the chord-bolt washer-iron F, the shoe G, the tension-bolt J, with straps I I attached thereto and to the chords A, the rods N N, and the arch B, substantially as and for the purpose herein specified.

As evidence that I claim the foregoing, I have hereunto set my hand, in the presence of two witnesses, this 4th day of May, A. D. 1868.

J. DAVENPORT.

Witnesses:

ED. L. BEEBOUT,

JOB ABBOTT.