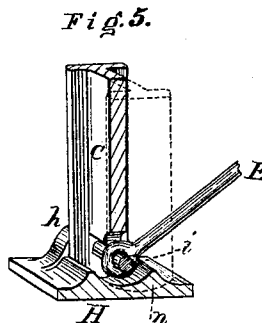
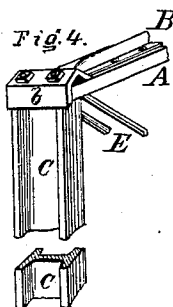
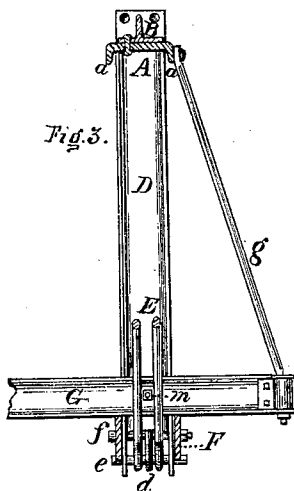
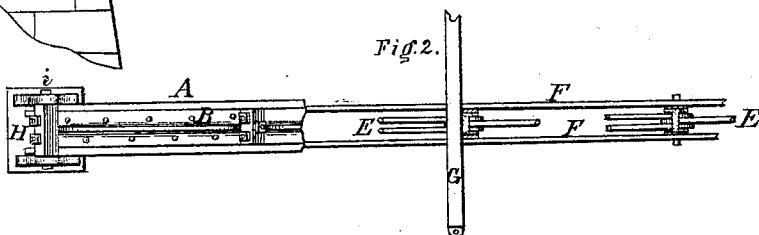
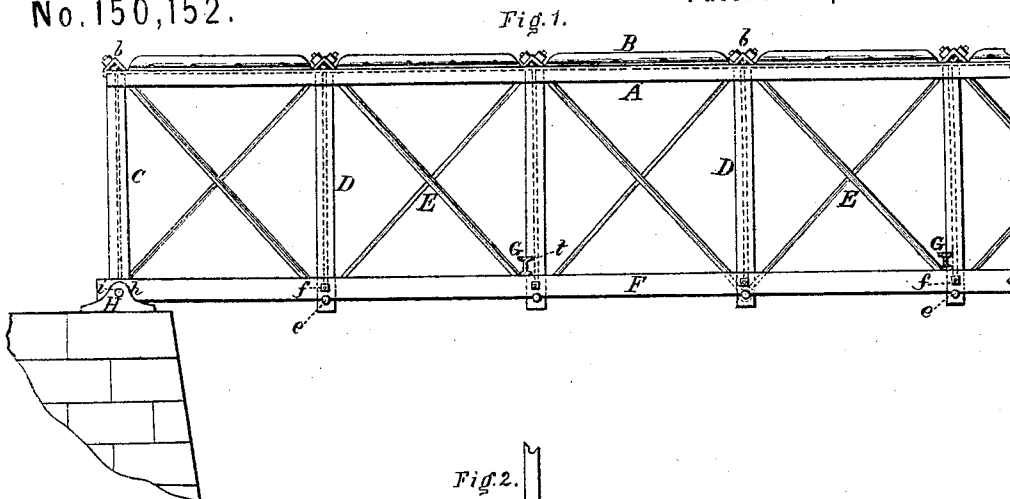


D. HAMMOND & J. ABBOTT.

Iron Truss Bridges.

No. 150,152.

Patented April 28, 1874.



Inventors.

Witnesses.

George E. Buckley  
A. McKinley

David Hammond  
Job Abbott  
by Job Abbott  
attorney-

# UNITED STATES PATENT OFFICE.

DAVID HAMMOND AND JOB ABBOTT, OF CANTON, OHIO.

## IMPROVEMENT IN IRON TRUSS-BRIDGES.

Specification forming part of Letters Patent No. **150,152**, dated April 28, 1874; application filed February 14, 1874.

### CASE A.

*To all whom it may concern:*

Be it known that we, DAVID HAMMOND and JOB ABBOTT, of Canton, in the county of Stark and State of Ohio, have invented certain new and useful Improvements in Iron Truss-Bridges; and that the following is a full, clear, and exact specification thereof, which will enable others skilled in the art to make and use the said invention.

Our invention relates to the construction of a substantial and economical wrought-iron highway truss-bridge, to be used in place of the arch-bridge for short spans of from twenty to eighty feet, or thereabout, thereby avoiding the squat appearance of the arch-bridge for such spans, and giving a good guard in the girders for each side of the track. To this end the invention claimed in this application consists in the construction of a truss top chord formed of a rolled channel-bar, having its web laid horizontal and its flanges projecting downward, and having riveted thereon a rolled T-bar, having its head riveted to the channel-web and its leg projecting upward, these parts combined forming a solid chord of great compressive capacity, which is easily manufactured, and which does not retain the rain or moisture falling on it. Said invention also consists in the construction of a truss-post of a rolled I-beam, having its web cut away to pass the chord-pin, and to receive the diagonals, if desired, the chord-pin fitting in holes in the beam-heads, and forming an end bearing for the post, thus affording a solid post of great compressive capacity, with very simple chord and diagonal attachments, as is hereinafter more fully shown. Said invention also consists in the construction of an end truss-post of a rolled I-beam, having its end rounded off and fitted in a concave seat in the girder-shoe, the shoe, post end, and chords being united by a pin passing through the walls of the shoe, chord ends, and heads of the beam-post, thus allowing the shoe to adjust itself to the abutment-top, and securing all the parts firmly to each other, as is hereinafter more fully shown. Said invention also consists of a wrought-iron truss-girder with a top chord of rolled channel-bar,

with its web horizontal and flanges projecting downward, (either with or without a rolled T-bar thereon,) posts of rolled I-beam, lower chords of plate-iron placed edgewise, and diagonals, having eyes at their lower end, connected to a pin, which transmits the post strains to the diagonals, and the diagonal strains to the lower chords, these several parts being arranged and united by bolts and angle-blocks, as is hereinafter more fully shown, so as to form a bridge-girder of very substantial and economical construction for short-span bridges.

In the accompanying drawing, Figures 1, 2, and 3 are side views, plan, and cross-section of a girder embodying our improvements. Figs. 4 and 5 are perspective detail views of the end post and its connections.

A is the top chord, arranged with its web in a horizontal position, and its flanges *aa* projecting downward. B is a rolled T-bar, having its head riveted to the web of channel-bar A, and its leg projecting upward, the object being to increase the chord-section and bending diameter without forming a trough or receptacle for rain. C is the end post of rolled I-beam iron, having its head bearing under the end of the channel-chord A by proper fitting, or through a cast-head, and having its lower end *n* rounded off, as shown by dotted lines in Fig. 5. The truss-shoe H is made with side walls *h h*, between which is a concave seat, (shown in Fig. 5,) upon which the rounded end *n* of the post C rests. The chords F F are of plate-iron, and their ends fit between the shoe-walls *h h* and the post C, and all the parts are united by the pin *h*, which passes through the shoe-walls *h h*, chords F F, heads of post C, and eye of counter-rod E, when used as shown in Figs. 1, 2, and 5, the web of the post C being cut away at the bottom to admit the counter-eye and pass the pin, as shown. D D are the intermediate truss-posts of rolled I-beam iron, which are fitted either directly or with a cast head against the channel-chord A at their ends. Their lower ends pass down between the chords F F, and have the web cut away, as shown at *d* in Fig. 3, to admit the eyes on

the diagonal and counter rods E, or simply the eye on the counter-rod, and to pass the pin *e*, which runs through the heads of the post D and the diagonal and counter eyes, as shown in Fig. 3, and fits into a notch in the chords F, as shown in Fig. 1, thus acting to support the post, and to transmit the post strain to the diagonals and counters, and the diagonal and counter strains to the lower chords. The bolt *f* passes through the chords F F and heads of post D, thus securing these posts closely together. If preferred, the diagonal rods E can be placed between the chords F and posts D, in which case thimbles should be placed on the bolts *f*, to leave the desired space between the chords and posts. The diagonals and counters E run up through the channel-bar A and through angle-blocks *b*, which are fitted between the pieces B of the top T-bar. The end angle-block *b* is usually made with a flange to fit down over the end of the channel-chord A, and makes a neat end finish, as shown in Fig. 4. The brace-beams G are made of rolled I-beam iron, and fit down on the chord F, with their heads resting in notches *t* cut in the heads of posts D, as shown in Fig. 1. These beams are clamped to the posts D by bolt *m*. (Shown in Fig. 3.) These beams are clamped to the posts D by bolt *m*, (shown in Fig. 3,) and, being thus notched and bolted to the truss-posts, aid materially in holding the girders against side motion, while they are thus brought in far enough to allow the diagonal rods E to pass up from the pin *e* without striking the beam, as shown in Fig. 1. The side brace *g* is run from the channel-bar A down to a thimble se-

cured on the end of beam G, to further aid in holding the girders from side motion.

What we claim herein as new and of our invention, and desire to secure by Letters Patent, is—

1. A top chord for trusses, consisting of a rolled channel-bar arranged with its flanges projecting downward, and having a rolled T-bar riveted to the web thereof, substantially as and for the purpose specified.

2. A truss-post of rolled I-beam form, having its web cut away at the lower end to pass the chord-pin and admit the counter-eye, substantially for the purpose specified.

3. The combination of the truss-shoe H with side walls *h h*, post C, with rounded lower end, chords F F, and pin *i*, the several parts being arranged and united substantially as and for the purpose specified.

4. A wrought-iron truss-girder constructed with a top chord of rolled channel-iron, arranged with its flanges projecting downward, posts of rolled I-beam, lower chords of plate-iron placed edgewise, and diagonal and counter rods having eyes at their lower ends secured on a pin, which transmits the post strains to the diagonals and counters, and the diagonal and counter strains to the lower chords, the several parts being arranged substantially as and for the purpose specified.

As evidence of the foregoing witness our hands this 30th day of January, A. D. 1874.

DAVID HAMMOND.

Witnesses: JOB ABBOTT.

WM. MCKINLEY, Jr.,

A. MCKINLEY.