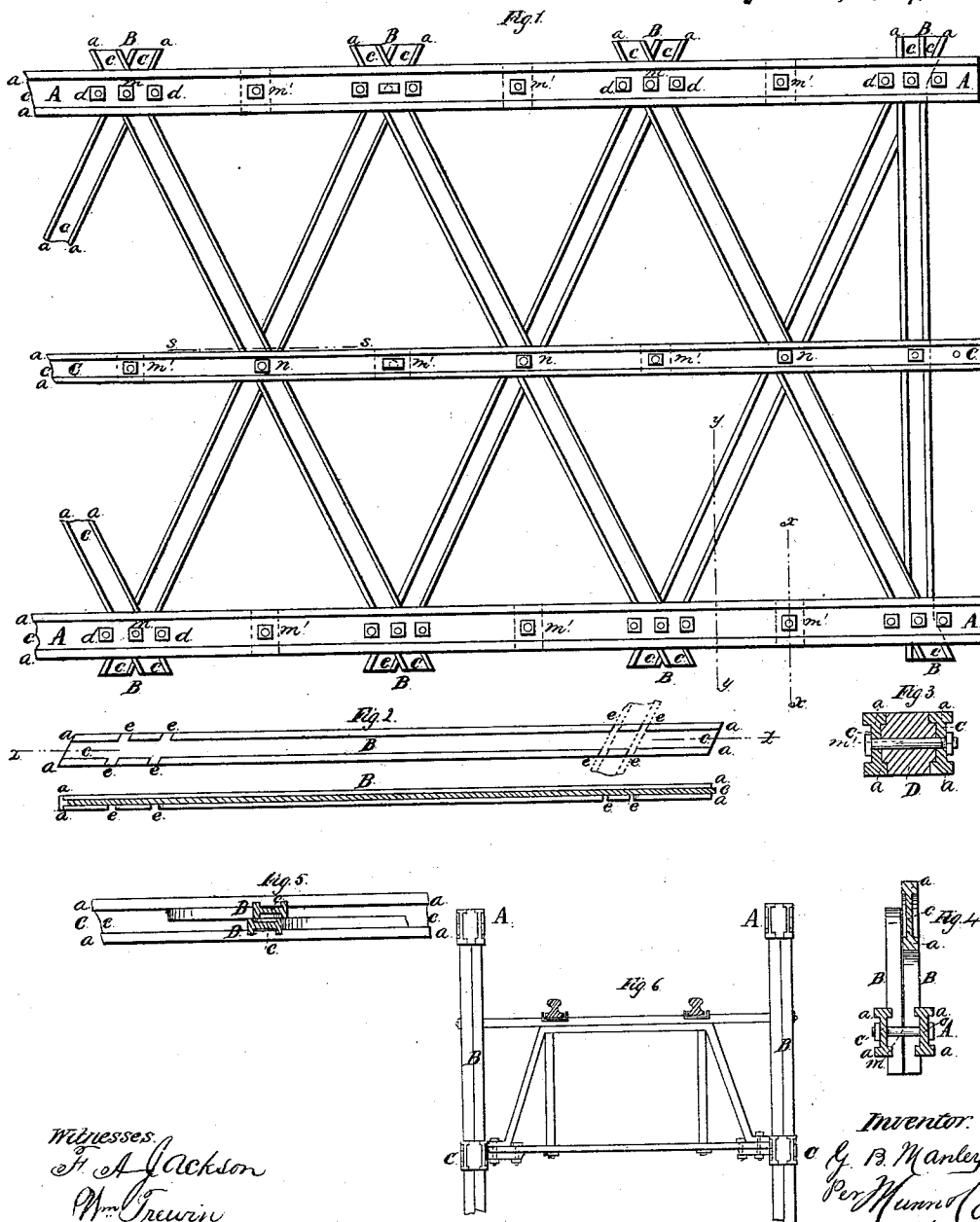


G. B. Manley. Truss Bridge.

N^o 64,340.

Patented Apr. 30, 1867.



Witnesses:
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GERVAIS B. MANLEY, OF COGAN'S STATION, ASSIGNOR TO HIMSELF AND
TIMOTHY O. VAN ALLEN, OF DANVILLE, PENNSYLVANIA.

Letters Patent No. 64,340, dated April 30, 1867.

IMPROVED LATTICE AND TRUSS BRIDGE.

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, GERVAIS B. MANLEY, of Cogan's Station, in the county of Lycoming, and State of Pennsylvania, have invented a new and improved Wrought-Iron Lock-Lattice Bridge-Truss; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a side elevation of my improved truss for bridges.

Figure 2 is a detached side view of a single bar and a longitudinal section thereof in the line *z z*.

Figure 3 is a vertical cross-section of one of the chords or main strings of the truss through a brace-block taken in the line *x x*, fig. 1.

Figure 4 is a vertical cross-section of the same and one of the brace-bars taken in the line *y y*, fig. 1.

Figure 5 is a horizontal cross-section of two of the brace-bars just above their intersection with the middle chord of the truss, and showing the arrangement of their interlocking with each other, taken in the line *s s*, fig. 1.

Figure 6 is an end view of a bridge-truss, showing a mode of connection of a railroad bed with the two sides.

Similar letters of reference indicate like parts.

This improvement relates to the construction of trusses for railroad and other bridges of wrought iron; and consists in the manner of connecting and interlocking the strings and braces or suspension-bars, whereby are combined great strength and security, simplicity, economy, and durability. The truss is formed of rolled iron bars, upon the lattice principle, with upper and lower main strings or chords on each side, each main string being formed of two parallel beams; and between the main strings is one lighter middle string, formed of two parallel beams of the same size as the diagonal braces or vertical suspension-bars, which intersect in the line of the middle string and are locked in it. The beams of the upper and lower main strings are made of the same size and pattern, and the braces or diagonal suspension-bars are all made alike, of the same pattern as the string beams, but smaller in size. The uniformity of their construction gives great facility in putting them together to form the truss; and upon being fitted and tested at the shop, a bridge-truss may be taken apart and erected with great dispatch wherever it is required.

The string-beams *A* and braces *B* are rolled iron bars or beams differing only in size, and are formed of the ribs *a a*, connected by a web, *c*, the width and thickness of the beams varying with their application and the strength required for the truss. The beams are all planed and gauged, so that the ribs *a a* are of exactly the same size on the beams and braces respectively. To lock and fasten the diagonal braces together, so that they shall support and sustain each other firmly and securely, notches are cut into one side of the ribs *a a* of the braces to receive the ribs of the string-beams at their points of intersection. These notches *e e* in the ribs *a a* are made diagonally across the braces on one side only at the proper angle, and are cut down square to the web *c*, as shown in fig. 2. The braces or suspension-bars *B* are fitted to the upper and lower strings *A* in pairs, intersecting near their ends at regular intervals along these strings, and also in the middle with the intermediate string *C*, fig. 1, and they are connected with all the strings in the same manner, being placed between the beams thereof and locking the notches in their ribs upon the ribs of the beams, as shown in figs. 4 and 5. Screw-bolts and nuts *d d* bind the main strings and braces together, placed on both sides of the braces, the bolts passing through the beams of the strings only; and between these bolts a bolt, *m*, passes through both beams and braces, and connects the opposite sides of the truss laterally if desired. The braces *B* are secured to the middle string *C* by a single bolt, *n*, passing through all in the centre of their intersection. The strings are all strengthened and solidified by placing cast-iron brace-blocks *D* between their beams, which fit in the grooves formed by the ribs *a a* and the web *c*, and fill the space when the truss is put together, as shown in section, fig. 3. The blocks are placed midway between the points of intersection of the strings and braces, and are secured by a single bolt and nut, *m'*. The ends of the truss are finished by a vertical bar, as shown in fig. 1; but no suspension-rods or counterbraces of any kind are employed in the construction of my improved locked bridge-truss, as the tension on all the parts is equal, and the proportional strength sufficient for the strain at any point

I am aware that iron beams have been made with ribs and webs for various purposes, and I disclaim any originality in the mere form of construction, and I also disclaim the lattice-work principle of constructing trusses for bridges; but I do claim as new, and desire to secure by Letters Patent—

1. The method and arrangement of interlocking the wrought-iron strings and braces of a lattice-work truss for bridges, in the manner herein described.

2. The brace-block D, in combination with the grooved and ribbed beams of strings A and C, fitted and secured between them, as and for the purposes herein described.

The above specification of my invention signed by me this 18th day of October, 1866.

G. B. MANLEY.

Witnesses:

WM. F. McNAMARA,

ALEX. F. ROBERTS.