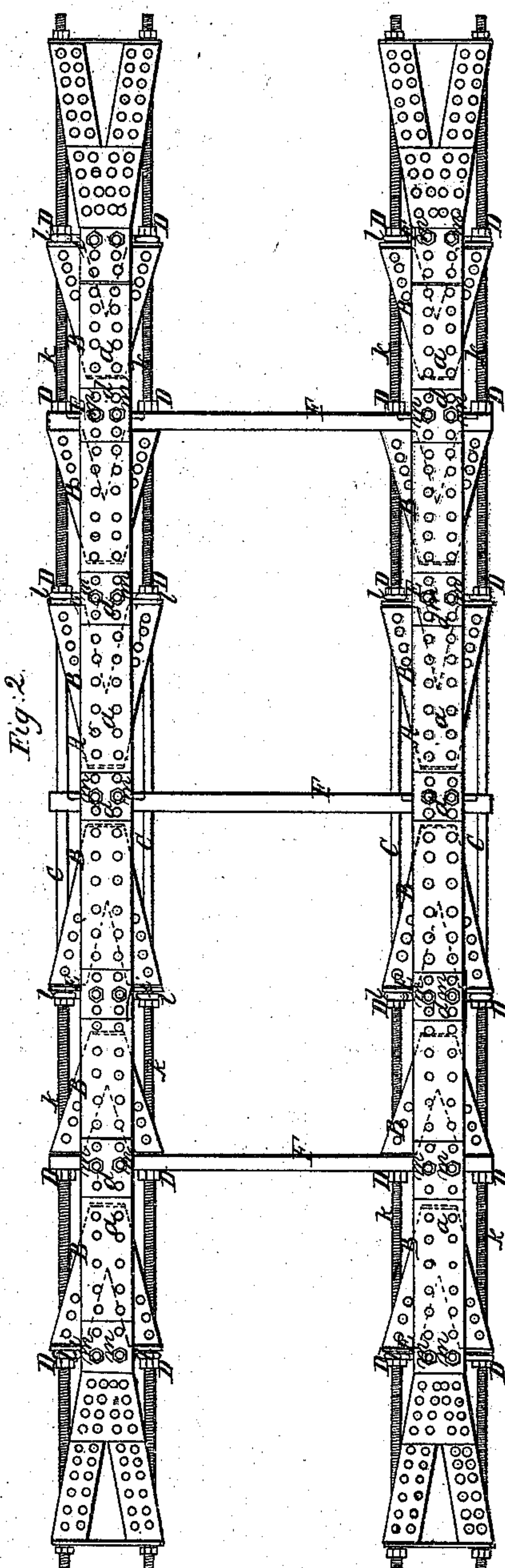
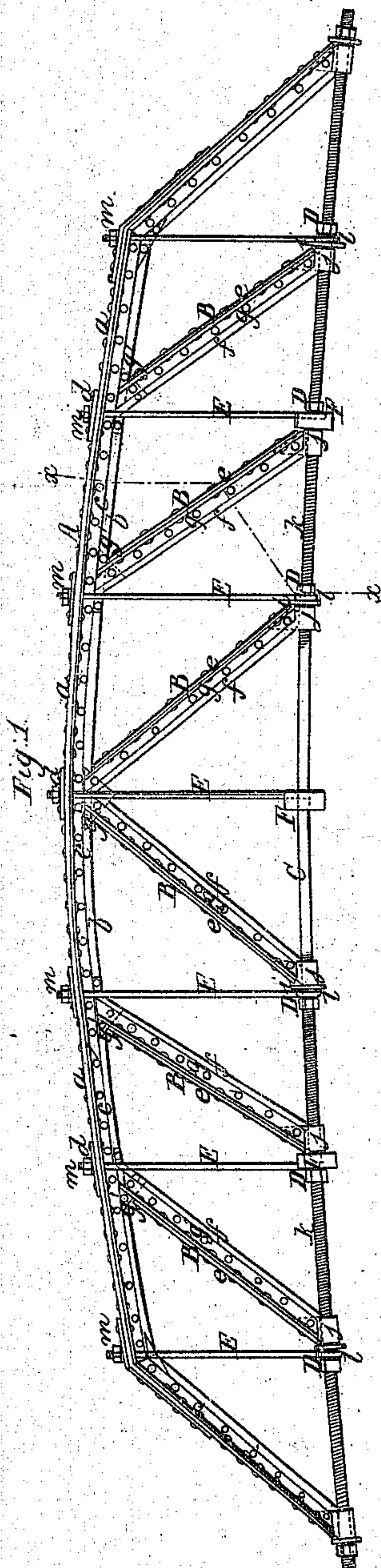
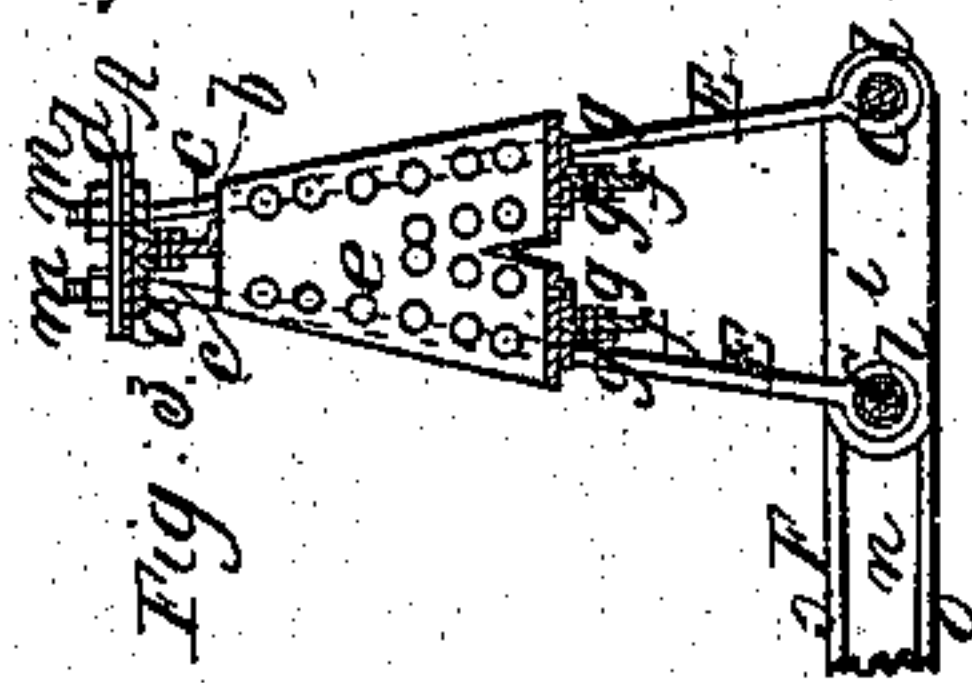


G. Heath.
Truss Bridge.

Patented May 27, 1862

No 35,374.



Witnesses;
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UNITED STATES PATENT OFFICE.

GEORGE HEATH, OF LITTLE FALLS, NEW YORK.

IMPROVEMENT IN WROUGHT-IRON BRIDGES.

Specification forming part of Letters Patent No. 35,374, dated May 27, 1862.]

To all whom it may concern:

Be it known that I, GEORGE HEATH, of Little Falls, in the county of Herkimer and State of New York, have invented a new and useful Improvement in the Construction of Wrought-Iron Bridges; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a side view of my invention. Fig. 2 is a plan or top view of the same. Fig. 3 is a transverse section of the same, taken in the line *x x*, Fig. 1.

Similar letters of reference indicate corresponding parts in the several figures.

This invention consists in a novel construction and arrangement of cords, braces, straining-beams, and vertical rods, as hereinafter fully shown and described, whereby a light and durable bridge is obtained, well calculated to resist vertical and longitudinal or horizontal strain, as well as lateral swaying.

The invention is designed for wrought-iron bridges, and I term it a "wrought-iron truss-bridge."

To enable those skilled in the art to fully understand and construct my invention, I will proceed to describe it.

A represent the straining-beams of the bridge, which are composed of wrought-iron plates *a*, which have vertical plates or webs *b*, secured centrally to their under sides by angle-irons *c*, which are firmly riveted to both. (See Figs. 1 and 3.) The plates *a* have supplemental plates *d* riveted to them on their upper surfaces, which serve to strengthen them. It is designed that these plates *d* shall form a lap—say of six inches—each side of vertical rods hereinafter described. The several plates are firmly secured by two rows of rivets.

B represents the braces, which are double or of V form, and constructed similarly to the straining-beams A—to wit, of plates *e* and webs *f* connected thereto by angle-irons *g*, firmly connected by rivets. The upper parts of the braces unite and correspond in width to the straining-beams A, and they are perfectly connected therewith by plates *g'*, which are riveted to the straining-beams, as shown clearly in Fig. 1. The lower parts of each brace B are connected by a horizontal plate *i*,

and said parts each terminate in a thimble *j*, through which and the plates *i* the cords C of the bridge pass.

The braces B are secured at their lower ends on the cords C by means of lock-nuts D, which are fitted on screw-threads *k*, cut on the cords. (See Fig. 1.)

E are vertical rods, the lower ends of which terminate in eyes *l*, through which the cords C pass. These rods E are between the plates *i* at the lower ends of the braces and the nuts D, which firmly hold the rods E in proper position and resist the thrust of the braces B, as will be seen by referring to Fig. 1.

As the braces B are forked or of double form, it will be seen that two cords are required for each straining-beam and two vertical rods for each brace. (See Fig. 3.) The upper ends of the rods E pass through the plates *a* of the straining-beam and through the supplemental plates *d*, and are secured at their upper ends by nuts *m*, the rods E, although termed "vertical" ones, still converging toward their upper ends in order that they may pass through the straining-beam, as clearly shown in Fig. 3.

The braces B have an inclination of forty-five degrees, and each pair of rods E is in a vertical plane. The braces B, however, of each straining-beam have not all the same position, those at one side of the center of the beam having a reverse position to those at the opposite side, as shown clearly in Fig. 1.

F represents the needle-beams which support the flooring-timbers of the bridge. These needle-beams are each composed of a vertical metal plate *n*, having an angle-iron *o* at its upper and lower edges, which form recesses or chambers at each side to receive the flooring-timbers. The cords C pass through these needle-beams near their ends, and additional metal plates may be secured to them at points through which the cords pass in order to insure requisite strength. The ends of the needle-beams are rounded, as shown clearly in Fig. 3, and they are secured to the cords C between the lock-nuts D and the lower braces B, as shown in Fig. 1.

All the parts herein described are to be of wrought metal and of a thickness commensurate with the dimensions of the bridge and the weight it is designed to bear.

In consequence of having the braces B con-

structed and arranged as shown, they resist lateral or horizontal strain, and in connection with the vertical rods E resist vertical strain, the braces, in combination with the rods aforesaid, rendering the bridge extremely efficient in this respect. The forked or V-shape form of the braces B prevent any lateral swagging of the bridge. By reversing the position of the braces B, as shown and described, the longitudinal or horizontal strain is resisted in both directions with the employment of comparatively little material, the double diagonal braces hitherto employed in many bridges being dispensed with.

In bridges where sidewalks are required an additional truss similar to those described is used at the outer side of each sidewalk. In long bridges the cords C may be composed of several pieces connected by swivels.

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

1. The combination of the diagonal double or forked braces B, straining-beams A, vertical rods E, and cords C, substantially as and for the purpose set forth.

2. Constructing the straining-beams A and braces B of wrought-metal plates and angle-irons connected together by rivets, substantially as and for the purpose specified.

3. Securing the lower ends of the braces B and vertical rods E to the cords C by means of the thimbles j and lock-nuts D, but this I only claim when used with the peculiar arrangement of the rods E, braces B, and straining-beams A, as herein described.

4. The needle-beams F, constructed as shown, when used in combination with the cords C and applied thereto, as herein set forth.

GEO. HEATH.

Witnesses:

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