

E. King.
Draw Bridge.

No 45,051.

Patented Nov 15, 1864.

Fig. 1.

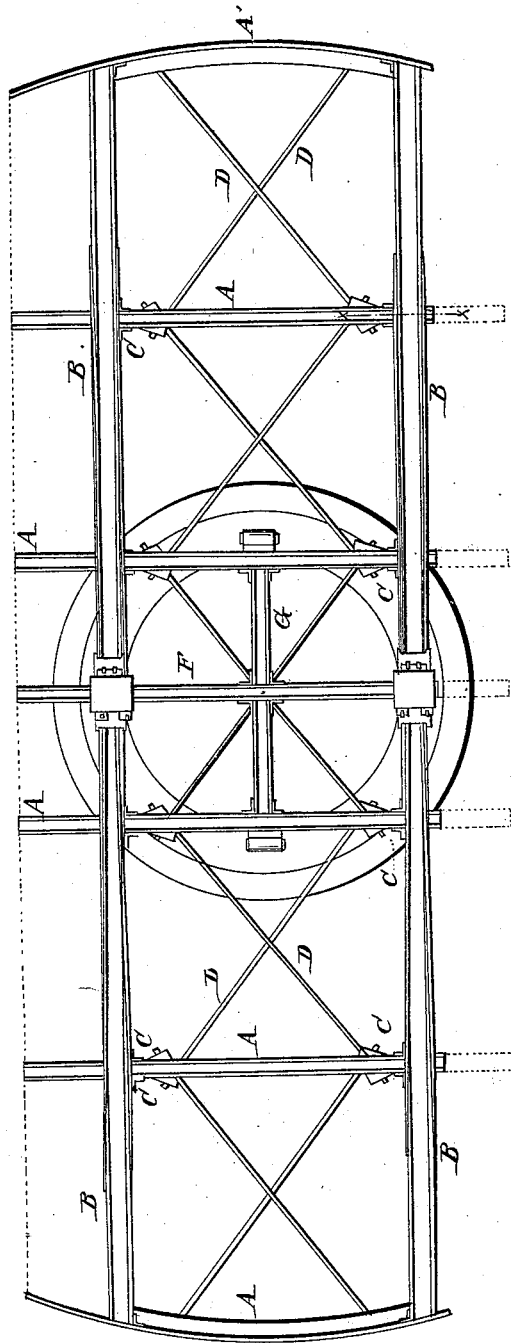
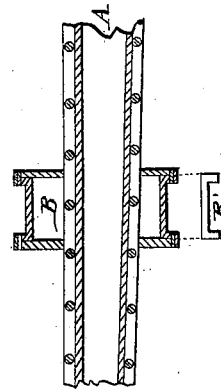


Fig. 2.



WITNESSES:

W. A. Burdette
J. Holmes

INVENTOR:

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Fig. 3.

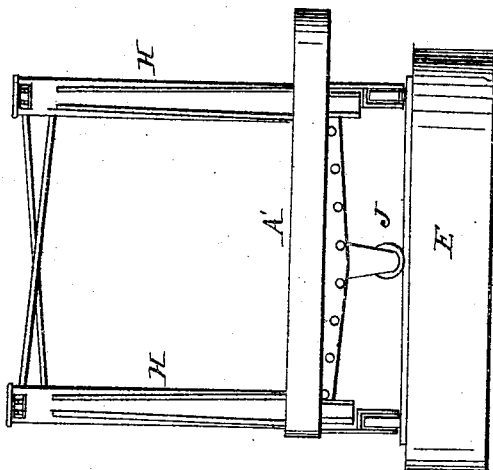


Fig. 4.

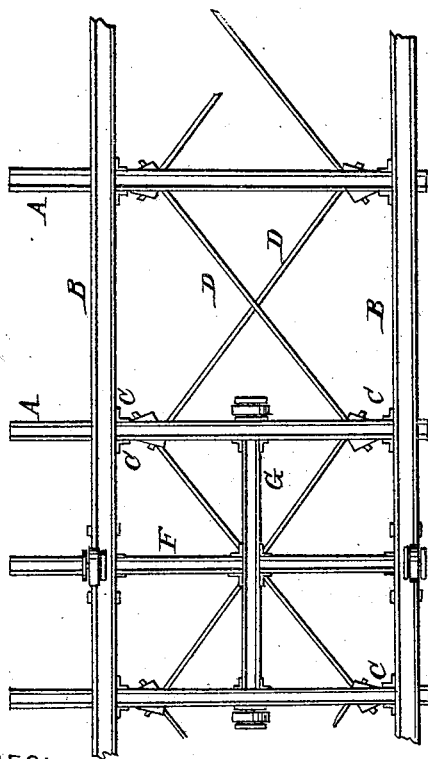
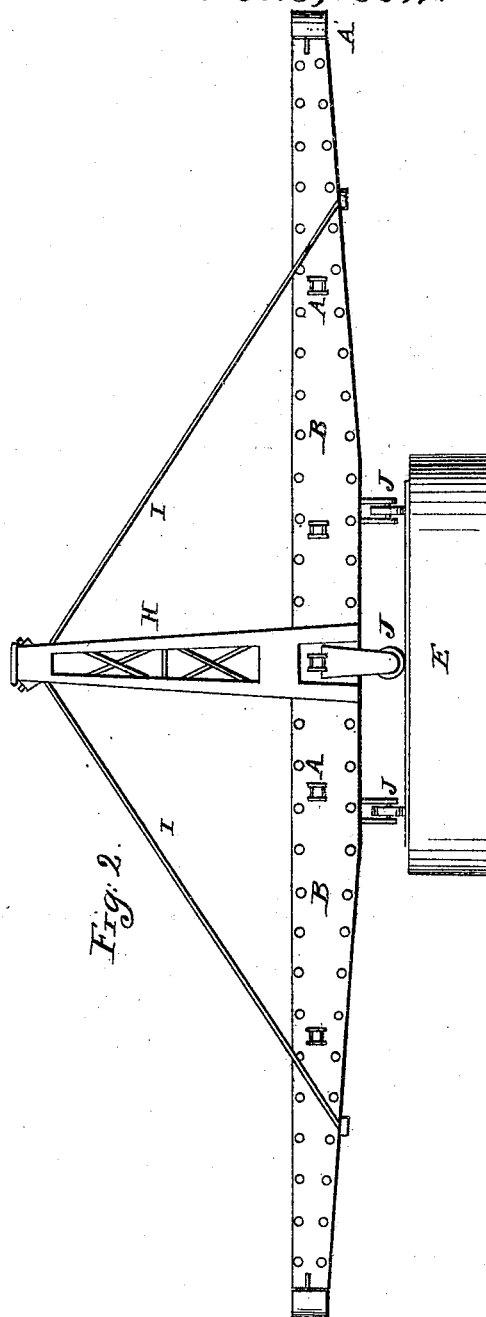


Fig. 2.



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UNITED STATES PATENT OFFICE.

Z. KING, OF CLEVELAND, OHIO.

IMPROVEMENT IN THE CONSTRUCTION OF BRIDGES.

Specification forming part of Letters Patent No. **45,051**, dated November 15, 1864.

To all whom it may concern:

Be it known that I, Z. KING, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented new and useful Improvements in Bridges; and I do hereby declare that the following is a full and complete description of the construction and operation of the same, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a plan view. Fig. 2 is a side elevation. Fig. 3 is an end view. Fig. 4 shows the under side, and Fig. 5 is a section in the direction of the line *x x* in Fig. 1.

In the drawings, A represents the needle-beams and B the chords. These are both made of plate-iron, riveted together in the same manner as is a steam-boiler. Both the beams and chords are tubular. The ends of the beams are nearly square, but they are deeper or rectangular in the middle. The chords B are rectangular in form, (in section,) as in Fig. 5. For a bridge of one hundred and eighty feet span they should be about a foot in width, about six feet high in the middle, and tapering toward the ends to about one foot or more.

The needle-beams are placed about ten feet apart, and pass through the chords B, as shown in Figs. 1, 2, and 5, and to which they are firmly secured by the angle-irons C, which are firmly riveted both to the chord B and beam A upon the inner side, as shown in Figs. 1 and 4.

D represents lateral braces. They are made of heavy iron-rods, and are passed diagonally in both ways between the needle-beams A, as seen in Figs. 1 and 4, and are drawn tight by nuts on each end. The needle-beams A extend through upon one or both sides of the chord B a sufficient distance for a sidewalk, or this may be omitted. The stringers or joists upon which the plank for the track are placed may be laid upon or attached to the beams A in any convenient manner.

The bridge rests upon a pier in the center, which forms a turn-table, E, when used for navigable streams, but for streams that are not so the ends may rest upon piers or abutments upon each side of the stream.

When the bridge is constructed to rest upon a turn-table, the middle portion or section should be strengthened by the introduction

of additional beams, F G, and also, if desired, by double plates and diagonal vertical braces, or by a tower rising from the center of each chord, as shown in Fig. 2 at H, the ends of the chord being supported by long braces or rods I, as shown in the figure.

When great strength is required, three chords may be used instead of two, having a track upon each side of the center one.

The bearings of the truck-wheels J are attached to the beams A, F, and G, or to other parts, as may be most convenient.

The plates used in the construction of bridges of this kind are all cut to the proper pattern, and the holes for the bolts and rivets properly punched, as in the manufacture of steam-boilers.

I do not deem it important to confine myself in the construction of this bridge to the proportions here shown and described, for these may be almost indefinitely varied without in any manner changing the general principle of the invention.

In a structure of this kind it would, of course, be impracticable to make the sides or other parts of the chord or needle-beams of one piece of plate, and hence the necessity of uniting many by rivets, as in boiler-making.

The upper and lower plates of both beams and chords are formed by turning both edges at right angles, as shown at B' in Fig. 5, so that the riveting is upon the outside of the parts named. The end pieces, A', are curved so as to form the arc of a circle whose radius is from the center pin, K, in the center pin, F G.

What I claim as my improvement, and desire to secure by Letters Patent, is—

1. The beams A and chords B, in combination, when the beams A pass through chords B and are secured in the manner and for the purpose substantially as specified.

2. The beams F and G and braces D, in combination with the beams A and chords B, the several parts being constructed and secured together substantially in the manner and for the purpose set forth.

3. The towers H, in combination with the chords B and beams A, F, and G, when constructed substantially as set forth.

Z. KING.

Witnesses:

W. H. BURRIDGE,
I. HOLMES.