M. Kremser.

Truss Bridge.

No. 52,860. Patented Feb. 27, 1866.

Fig. 1.

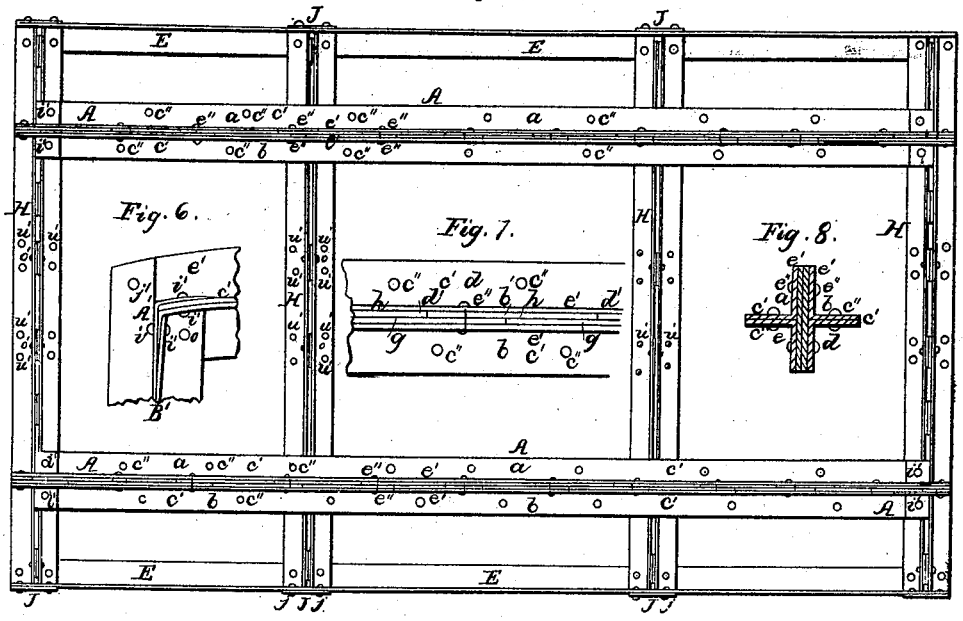


Fig. 2.

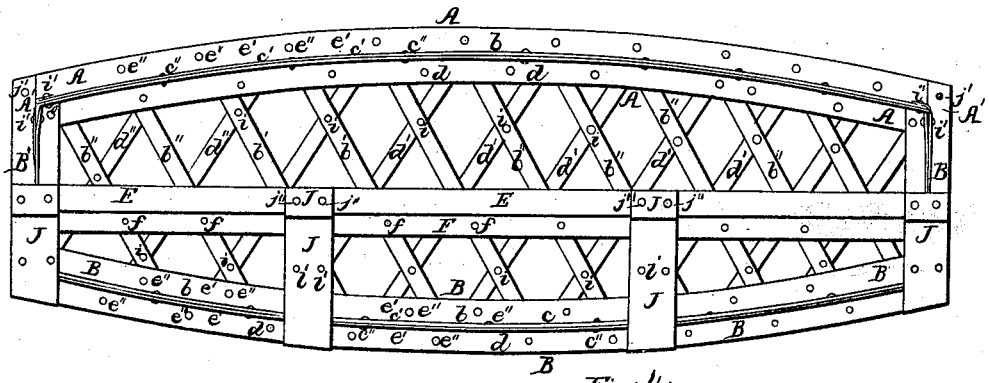


Fig. 4.

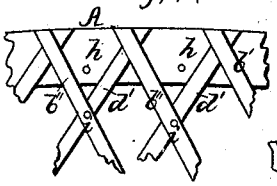


Fig. 3.

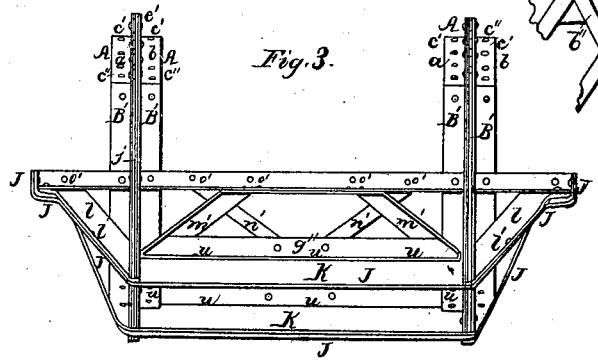
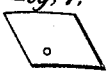
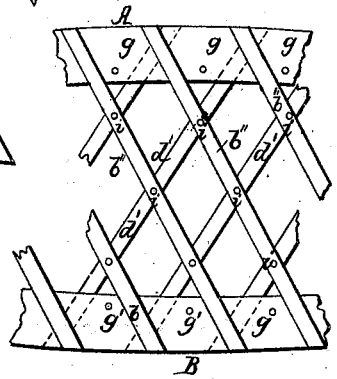


Fig. 9.





Witnesses;
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UNITED STATES PATENT OFFICE.

MARTEN KREMSER, OF CLEVELAND, OHIO.

IMPROVEMENT IN BRIDGES.

Specification forming part of Letters Patent No. **52,860**, dated February 27, 1866.

To all whom it may concern:

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

Figure 1 is a plan view of the bridge. Fig. 2 is a side elevation. Fig. 3 is an end view. Figs. 4, 5, 6, 7, 8, and 9 are sectional views, that will be referred to in the description.

Like letters of reference refer to like parts in the different views.

My improvement relates to the construction and mode of connecting the main and counter braces of a bridge to the upper and lower chords, forming a lattice-truss that will be a cheap and durable structure with the least weight of material, the entire bridge being made of rolled iron put together without the usual labor of forging.

A and B represent the upper and lower curved chords of the bridge, secured at the ends to posts B′, which, together with the main and counter braces, form a truss on each side of the bridge. The upper and lower chords are constructed alike, and each chord is composed of four angle-irons, *a b c d*, two on each side, or two above and two below, as shown in Fig. 8, which is an enlarged transverse view of one of the chords. The part *c′* of the angle-irons that project on the sides are placed closely together, as shown in Figs. 2 and 8, and secured by rivets *c″*. Between the vertical faces *e′* of the angle-irons are secured diagonal or the main and counter braces *b′ b″* and *d′ d″*, forming a system of lattice trestle-work on the sides. The main braces are those that run from each side toward the center from the upper chord, and the counter-braces are those that cross them in the opposite direction. These braces are secured in the chords in the following manner: They cross each other diagonally, as represented, and are secured where they cross by rivets *i*, the ends extending through the chords above and below, as shown in Figs. 4 and 5, in which a section of the angle-irons on the side are removed. Between the braces on each side are placed angular plates *g g′ h*, one of which is represented detached in Fig. 9. As the braces cross each other there is a space equal to the thickness of the brace on each side that is filled up with the plates, as shown in Fig. 7, which is an enlarged view of a section of the top of one of the chords.

On the main braces *d′*, as shown in Fig. 4, are placed plates *g*, that fit in between the counter-braces *b″*, as in Fig. 5, being cut the same angle or inclination on the sides, and are the width and curve of the chords, and equal in thickness to the braces, that will make the face flush with the braces. On the other side, on the braces *b″*, between the main braces *d′*, are plates *h*, fitted in place in the same manner. The spaces on each side the thickness of the braces are thus filled up, making the side faces flush, on which the angle-irons are placed, and all firmly secured together by rivets *e″*. The rivets in the upper part or above the projecting sides pass through the braces and the rivets in the lower part through the plates, thus riveting them all in place securely. The lower end of the braces, connected to the chords B, are arranged and secured in the same manner, as shown in Fig. 5, there being plates *g′* between the braces *b″*, and plates between the braces *d′* on the other side, on which the angle-irons are placed and secured, as before described.

The ends of the upper and lower chords abut onto the posts B′, that are formed of angle-irons filled up with plates *j* between, (seen in Fig. 3,) rendering them firm and strong.

The connection of the end of each of the chords with the posts is shown at A′, Figs. 2 and 6, which is an enlarged view.

The outside angle-irons of the post are cut down in the corners and one part turned or lapped over onto the sides of the chords, and the other part extends up onto the vertical faces and is riveted at *j′*, and one part of the side irons of the chord turns down at the corner between the angle-irons of the post, as represented. The angle-irons thus overlapping at the corner are firmly secured together by rivets *i′*. The inside angle-irons of the post extend up onto the chords and are riveted at *o*. This necessarily forms a very strong and durable connection of the chords with the posts.

Underneath the upper chords, and secured at the ends to the posts, are stringers F, that consist of two angle-irons, one on each side of the main and counter braces, fastened together by rivets *f*. (Seen in Fig. 2.)

E E are stringers along the outside, made of a single angle-iron. Between these stringers transversely extend floor-beams H, that are placed on the stringers E and F and riveted to them, passing between the lattice-braces, and are made of two angle-irons riveted together at *o'*. From the ends of the floor-beams, and riveted to the stringers at *j''*, are braces J, turned under the stringers and inclined down round the lower chords, extending along underneath the bridge, as shown in Figs. 2 and 3, which, together with the floor-beams and braces *n' m' g''*, form floor-trusses, of which there can be any number, according to the length of the bridge. Each truss underneath the floor-beams is formed of angle-irons *l*, riveted to the brace J at *l'*, and inside of the lower chords and lattice-braces are angle-irons *g''*, turned and inclined upward from the corners, as at *m'*, and extend along at the top under the floor-beam, to which they are secured by rivets *u'*. Between the angle-irons of the braces *m' g''* and floor-beams are riveted braces *n'*.

k is an angle-iron between the braces *g''* and J, riveted at *u*.

A truss constructed in this manner renders the floor of the bridge very firm and durable.

There is a peculiar solidity and firmness given to the bridge by means of the main and counter braces by the manner of securing them with plates to the chords, as before described, that prevents the bridge from sagging or swerving down from the ends toward the middle by the braces springing out of place, for the plates on both sides of the braces, fitting close onto the edges and being so firmly secured by rivets between the angle-irons of the chords, will at all times retain the braces in line and at the proper tension in relation to the load upon the bridge. The weight of the load or vertical pressure upon the bridge is sustained and transmitted from the main to the counterbraces in the usual way.

The main braces may be of double plates, or there may be placed a main brace on each side of the counter-braces.

The bridge in all its parts is made entirely of metal or rolled iron from the mill, and can be put together in building the bridge without the usual forging.

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

Connecting the chords or arches of bridges to the posts B', when constructed and arranged substantially as described, and shown in Fig. 6, for the purpose specified.

MARTEN KREMSER.

Witnesses:

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A. W. MCCLELLAND.