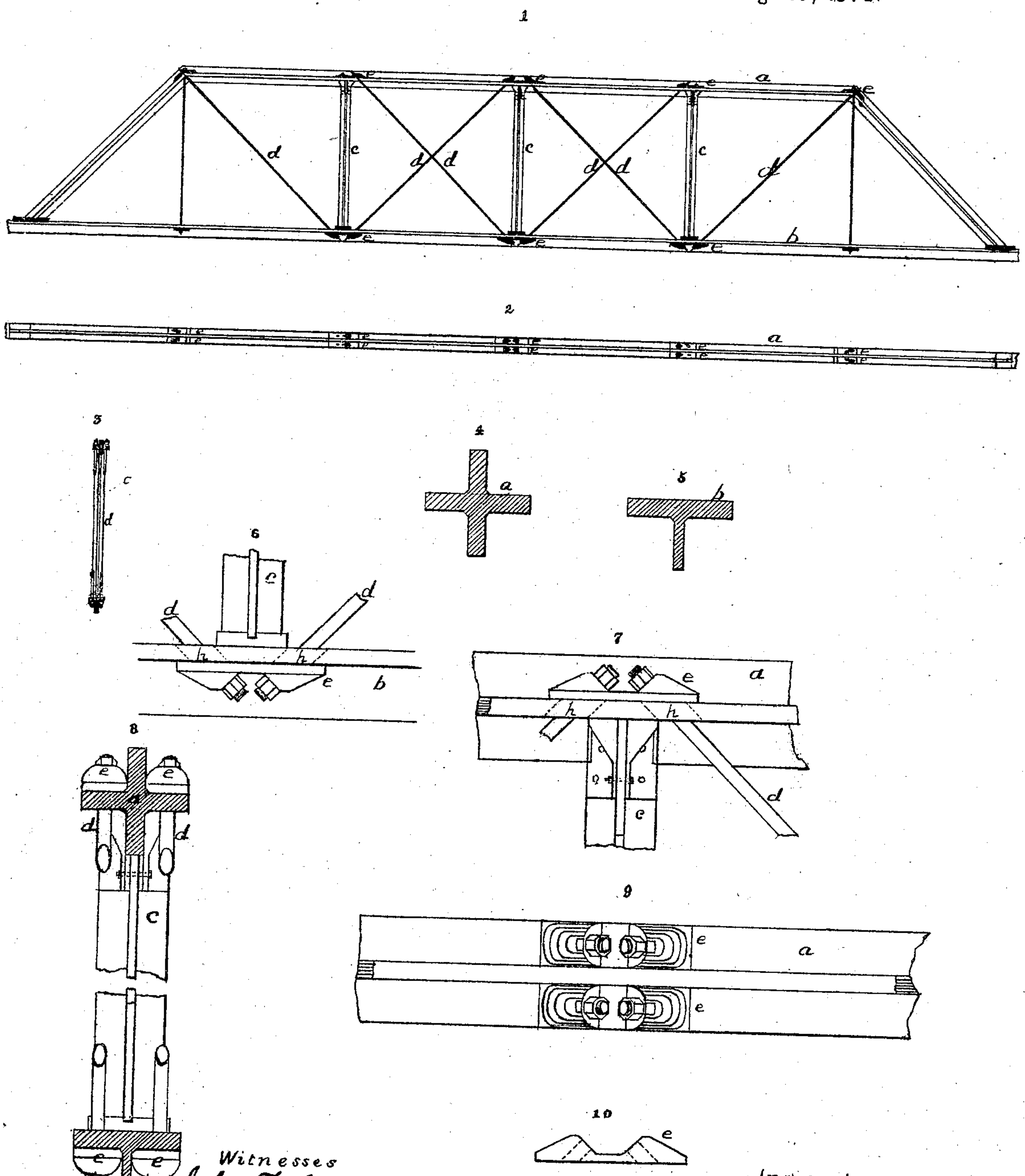


W. F. BONNELL.

Improvement in Truss-Bridges.

No. 130,561.

Patented Aug. 20, 1872.



Witnesses  
*John F. Anderson*  
*George E. Bird*

Inventor  
*William Franklin Bonnell*  
Per *Wm Henry Clifford* Atty.



# UNITED STATES PATENT OFFICE.

WILLIAM FRANKLIN BONNELL, OF PORTLAND, MAINE.

## IMPROVEMENT IN TRUSS-BRIDGES.

Specification forming part of Letters Patent No. 130,561, dated August 20, 1872.

*To all whom it may concern:*

Be it known that I, WILLIAM FRANKLIN BONNELL, of Portland, in the county of Cumberland and State of Maine, have invented a new and useful Improvement in Truss-Bridges; and I hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawing forming part of this specification, in which—

Figure 1 is a side elevation of a space. Fig. 2 is a top plan of an upper chord and struts. Fig. 3 is an end view of one of the supports and the rods. Fig. 4 shows the cross form of the supports; Fig. 5, T-form of lower chord. Fig. 6 shows part of the lower chord-support and rods; also, a link and the slot through which the rods pass. Fig. 7 shows a part of an upper chord with support-rods, link, and slots. Fig. 8, the same as in Fig. 3; scale enlarged and the support broken out at the center; Fig. 9, same as in Fig. 2—scale enlarged, and showing only one point of union of the rods and links; Fig. 10, side elevation of link. Same letters show like parts.

The object of my invention is to produce a truss wherein and by means of which the pressure of the load or weight imposed upon the bed or road-way of the truss is distributed throughout the entire truss.

The braces, in general form, are like the Pratt truss, but differ from it in being connected by sliding links, which, in combination with the rods or braces, form a continuous support or chain of rods throughout the entire truss.

To effect this transmission of the force of the load I construct the truss in the following manner: Between the upper and lower chords *a* and *b* are placed, at proper intervals, the uprights *c*. Extending diagonally between each two or pair of these supports are the rods *d*, reaching from the top of one to the bottom of the next support. The rods pass through elongated holes or slots in the chords, and are then secured by nuts in the links *e*. There being four rods—*i. e.*, two on each side of every support—there are, also, two links over the top or under the bottom of the same, the nuts resting upon and the slots being made in the horizontal part of the cruciform or T-

shaped chords. This passing of the rods through the slots in the chords has the effect to admit of a slight sliding movement of the links, so as to equalize and distribute an excessive strain.

To facilitate an inspection of the bearings throughout a line may be distinctly marked upon the edge of the chord, equidistant from the center of each slot, which, when the bridge is in adjustment, exactly corresponds with similar marks upon the center of the links. The nuts upon the ends of the rods afford the means of correcting any displacement, and of bringing the rods to the proper tension when the marks coincide. As set forth, the upper chord is made cruciform, as the best combination of lightness and strength, and to afford a bearing for the sliding links. With the links this system of trussing can be applied to any form of chords now in use. The T-form of the lower chord affords a good bearing for the flooring, and seats for the links there applied. The supports are made in cross-form to afford the largest amount of support with a given amount of material.

To illustrate the operation, suppose a weight at the lower end of the center-post or support. It will be seen that it is, by the rods and links, immediately transferred to the tops of the two posts, at either side, and from the bottom ends of these two, by other rods, again transferred to the top of the center-post, as well as further carried to other posts—if there be any—so that, as to said center-post, there is counteraction, the same weight on the flooring at its base operating to push upward and draw downward at the same time. In the accompanying drawing the slots are indicated at *h*, the same being spaces between dotted lines, shown in Figs. 6 and 7. It is obvious that, instead of the two rods on each side of the supports, one or more may be employed in connection with the links and slots.

I do not claim the peculiar form given to the chords or the supports. The purpose of this application is to embrace such a combination of the supports, chords, slots, rods, and links as to attain the transmission of the strain throughout the whole structure, and the counteraction herein set forth, and to prevent the imposed weight from pressing or bearing

alone at the point on the span where it rests or touches the bridge. It is obvious that rollers, rockers, pulleys, or any equivalent devices, can be used instead of the links to transmit and distribute the strain.

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

The combination of the links *e*, or their

equivalents, with rods *d*, chords *a* and *b* having slots *h*, and the supports, substantially as herein set forth.

WILLIAM FRANKLIN BONNELL.

Witnesses:

JOHN F. ANDERSON,

GEORGE E. BIRD.

Portland, April 7, 1871.