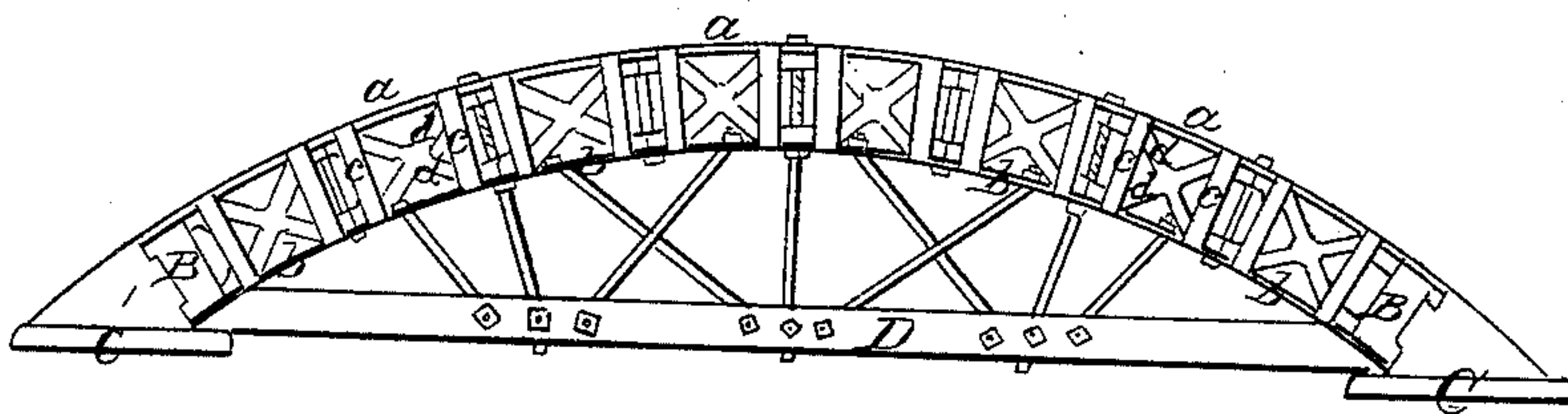


# *J. Laird, Truss Bridge.*

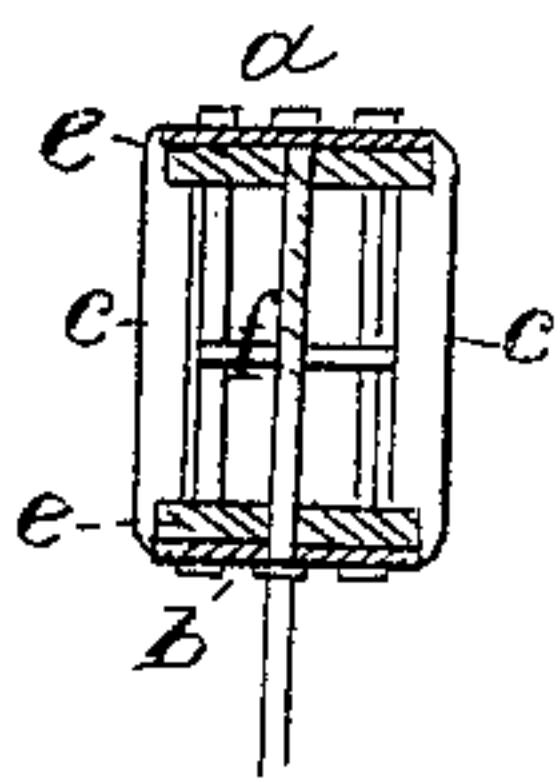
*No. 94,321.*

*Patented Aug. 31. 1869.*

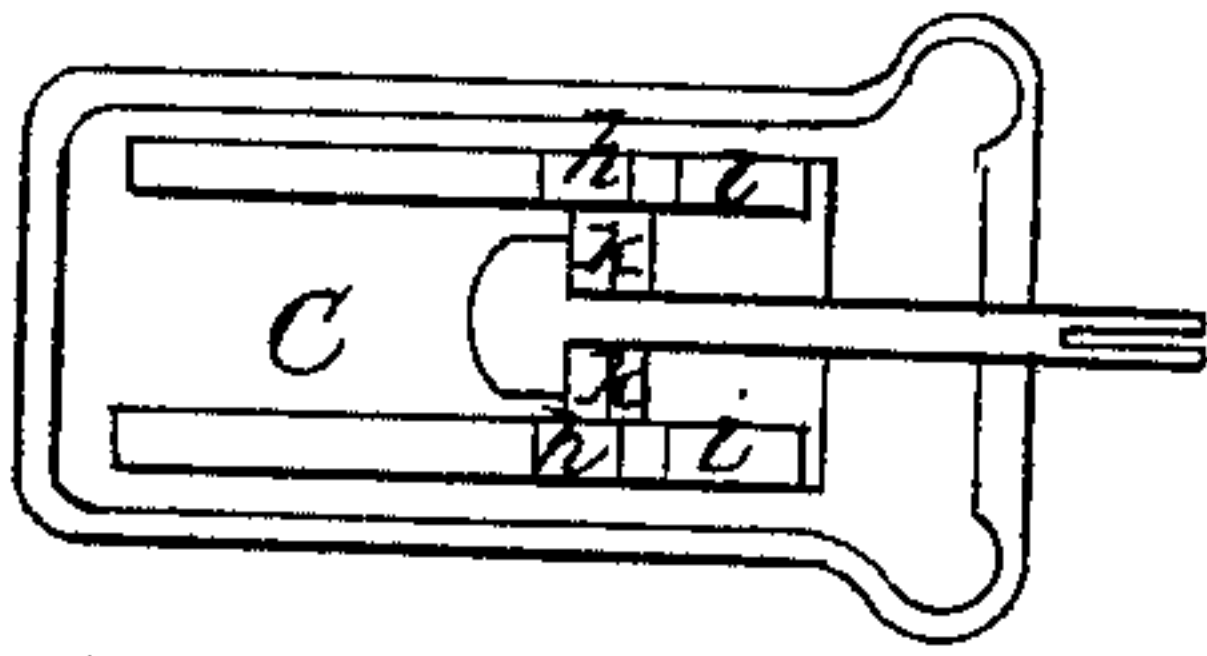
*fig. 1.*



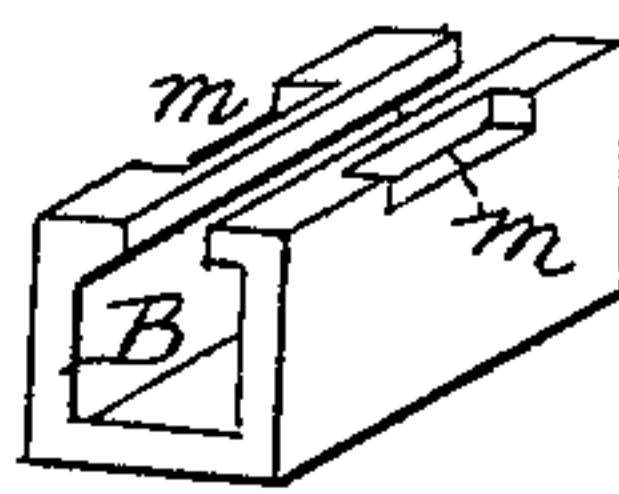
*fig. 2.*



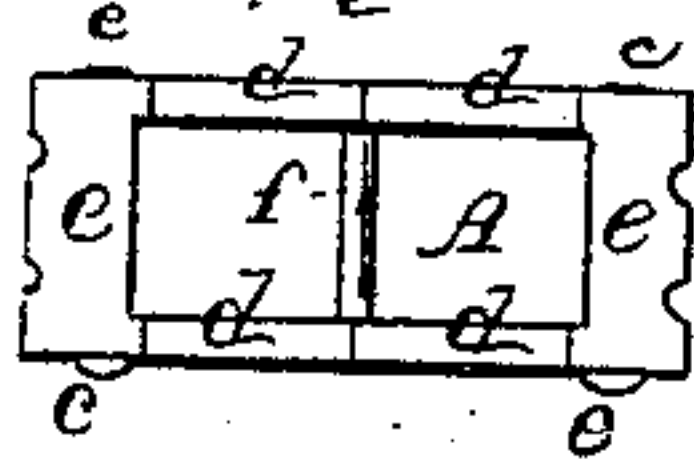
*fig. 3.*



*fig. 4.*



*Fig 5*



*Witnesses:*

*Cornelius Cox  
Leopold Buch*

*Inventor*

*John Laird  
per  
[Signature]  
Atty.*

# United States Patent Office.

JOHN LAIRD, OF CANTON, OHIO.

Letters Patent No. 94,321, dated August 31, 1869.

## IMPROVED 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, JOHN LAIRD, of Canton, in the county of Stark, and in the State of Ohio, have invented certain new and useful Improvements in Bridges; and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

The nature of my invention consists in the construction of a number of cast sections, which, when placed together, form a continuous cast arch, from shoe to shoe; also, in the manner of securing the upper and lower bars of the arch by these cross-sections, and in the manner in which the shoe is connected with the arch.

In order to enable others skilled in the art to which my invention appertains, to make and use the same, I will now proceed to describe its construction and operation, referring to the annexed drawings, which form a part of this specification, and in which—

Figure 1 is side view of the arch;

Figure 2, a cross-section of the same;

Figure 3 is an enlarged plan view of the shoe;

Figure 4 is an enlarged perspective of the block connecting the arch with the shoe; and

Figure 5 is a plan view of one of the cast sections forming the arch.

*a* represents the top or upper, and *b*, the bottom or lower bar of an arch, which are connected by means of a series of cast sections, *A A*, constructed in the following manner:

*c c* are end-pieces, connected by bars *d d*, which cross each other.

The end-pieces or bars *c c* are provided with horizontal bars *e e*, near their top and bottom, of the same length as the width of the upper and lower bars of the arch; and at the other ends of said horizontal bars are other similar end-pieces *c c* and cross-bars *d d*, all cast in one piece, with a connecting-rod or bar, *f*, at the joint of the cross-bars *d d*.

The end-pieces *c c* project above and below the horizontal bars *e e*, so that the upper and lower bars of the arch are enclosed between said projections.

A series of these cast sections being placed together, so as to form the arch, the bars *a* and *b* are secured by bolts and screw-nuts, said bolts passing through holes made for that purpose in the horizontal bars *e e*.

These holes may be made just large enough to allow the bolt to pass through, the adjoining bars having each one-half of the hole, as shown in fig. 5; or there may be a hole or slot, of any size, in the bar *e*, to allow the bolt to pass through.

Between the ends of the bars *a* and *b* is placed a block, *B*, which forms the connection with the shoe *O*.

The shoe *O* is provided with two bevelled standards *h h*, each having a projection, *i*, on its inner side; and between them are two lugs *k k*, between which the horizontal bar *D* of the arch is secured.

The block *B* is made hollow, as seen in fig. 4, and is provided with recesses *m m*, in which the projections *i i* of the shoe are inserted, the end of the cast section *A* resting against the other side of said block, and the upper and lower bars of the arch extending over the upper and lower side of the block, which thus forms the connection between the shoes and the cast sections of the arch.

Bolts are then passed through the plates *a* and *b* and the block *B*, and secured by nuts, so as to hold them firmly in place.

Having thus fully described my invention,

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

1. The use of the cast sections *A A*, constructed as described, and forming a continuous arch, from shoe to shoe, substantially as herein set forth.

2. The cast section *A*, constructed as described, the end-pieces projecting above and below, so as to secure the upper and lower bars of the arch, substantially as herein set forth.

3. Connecting the arch of a bridge with the shoes by means of the blocks *B B*, substantially as herein set forth.

4. The combination of the shoes *O O*, blocks *B B*, cast sections *A A*, and bars *a* and *b*, all constructed as described, and connected substantially in the manner and for the purposes herein set forth.

In testimony that I claim the foregoing, I have hereunto set my hand, this 15th day of March, 1869.

JOHN LAIRD.

Witnesses:

JAS. W. UNDERHILL,

A. W. WHITING.