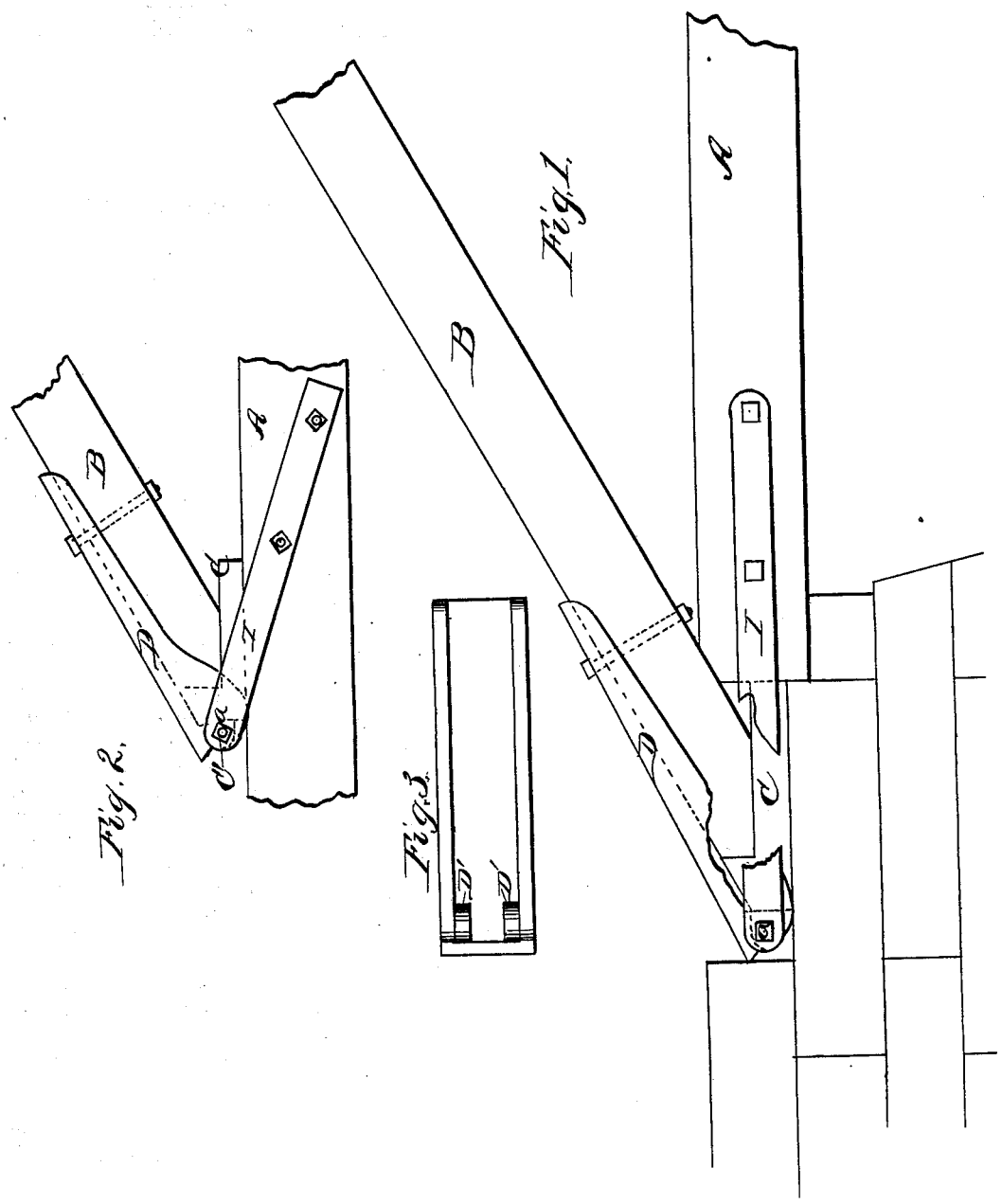
J. P. DERR.

Thorough-Brace Bridge.

No. 198,580. Patented Dec. 25, 1877.



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UNITED STATES PATENT OFFICE.

JOHN P. DERR, OF MERCER, PENNSYLVANIA.

IMPROVEMENT IN THOROUGH-BRACE BRIDGES.

Specification forming part of Letters Patent No. **198,580**, dated December 25, 1877; application filed November 20, 1877.

To all whom it may concern:

Be it known that I, JOHN P. DERR, of Mercer, in the county of Mercer and State of Pennsylvania, have invented certain new and useful Improvements in Thorough-Brace Bridges; and I 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, which form part of this specification.

My invention relates to the class of bridges known to bridge-builders as "thorough-brace" bridges; and it consists in the construction of a brace-shoe for the same, as will be hereinafter more fully set forth.

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 drawing, in which—

Figure 1 is a side elevation of the end of a bridge, showing my brace-shoe in position. Fig. 2 shows the method of attaching the shoe to the chord for inside braces, and Fig. 3 is a bottom view of part of the shoe.

A represents a portion of the chord of the bridge, and B a portion of the brace.

The brace-shoe is composed of two parts, C and D. The part C is in L shape, the vertical portion of the same being beveled on its upper edge, and formed on the back with a rounded projection, C′, having a central hole, as shown. The part D of the shoe is made somewhat in the form of a cap—that is to say, a top plate with downwardly-projecting side flanges; and at the lower end of the same, on the under side, are formed ears or projections D′ D′, between which the projection C′ is to fit, and a bolt, *a*, passing through all, unites them together.

On the ends of the bolt *a* are placed iron bars or straps I, which pass along the sides of the shoe C, and are bolted to the chord A. The lower end of the brace is beveled on both sides, the two bevels being at right angles to each other, and fitting upon and against the L-shaped shoe C, while the cap D fits over the brace and is bolted thereto.

It is well known that wooden bridges first give way at the foot or toe of the outside braces, where they were bolted to the chord, which defect causes trouble and expense. This defect is obviated by my improved brace-shoe, which possesses the following important advantages: It will prevent the toe or foot of the brace from jumping off or slipping back. It protects it from the weather. Any kind of timber can be used for braces and strain-beams, as they are not split, but left in one piece. The shoe can be used on inside braces as well as outside; hence does not shorten bridges. Its connection to the chord is such that either wood or iron may be used as chord, at pleasure. Its connection to wooden chord is such that the chord is left independent of the brace, which adds to the durability of the chord. The shoe can be adjusted to any elevation of truss or arch.

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

In thorough-brace bridges, the combination, with the chord A and brace B, of the brace-shoe constructed of the L-shaped part C, with projection C′, and the cap D, with ears D′, the two parts being hinged together, as described, and the bars or straps I, all constructed substantially as and for the purposes herein set forth.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

JNO. P. DERR.

Witnesses:
THOMAS LEECH,
R. G. MADGE.