

W. B. COOPER.

Iron Bridges.

No. 135,970.

Patented Feb. 18, 1873.

Fig.1.

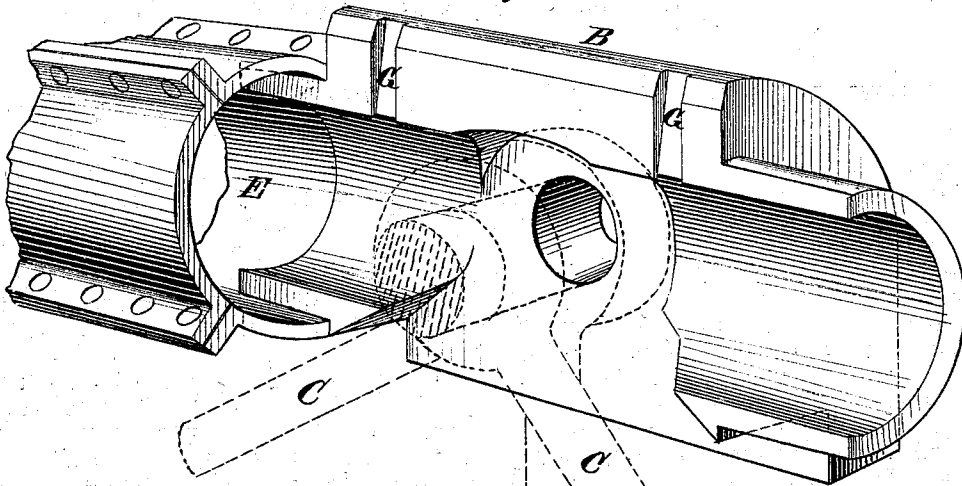


Fig.2.

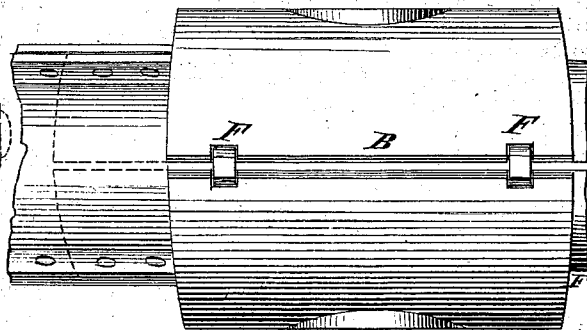


Fig.3.

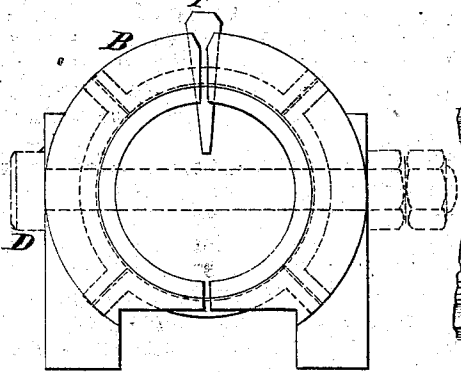
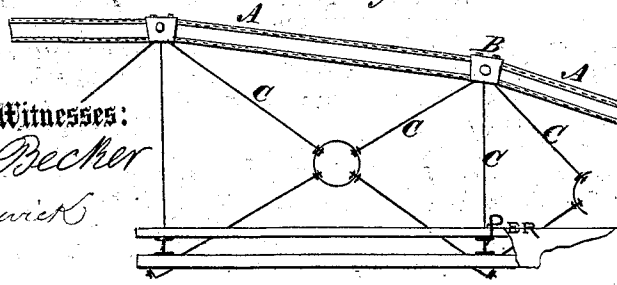


Fig.4.



Witnesses:

John Becker  
C. Sedgwick

Inventor:

W. B. Cooper

Munnell  
Attorneys.

# UNITED STATES PATENT OFFICE.

WILLIAM B. COOPER, OF ALBANY, NEW YORK.

## IMPROVEMENT IN IRON BRIDGES.

Specification forming part of Letters Patent No. 135,970, dated February 18, 1873.

*To all whom it may concern:*

Be it known that I, WILLIAM B. COOPER, of Albany, in the county of Albany and State of New York, have invented a new and useful Improvement in Iron Bridges, of which the following is a specification:

The object of the invention is to enable bridge-builders to construct the tubular arches of iron bridges in sections so that the arches can be transported and put in place without difficulty, and so that the parts can be put together and adjusted without previous boring or fitting. My invention consists in the improvement of sectional bridges, as hereinafter described and claimed.

Figure 1 is a perspective view of a longitudinal section of the connecting-block, showing the arrangement of the vertical and diagonal braces in dotted lines. Fig. 2 is a top view, partly in section; Fig. 3 is an end view; and Fig. 4 is a section of the side of the bridge, showing the parts in plan.

Similar letters of reference indicate corresponding parts.

A is the arch-tube. B is the connecting-block or section, which constitutes my invention. C represents the braces.

The arches of this description of bridge have usually been made of wrought-iron tubes riveted together so as to form a continuous tube from one abutment to the other. Such an arch it is extremely difficult to construct, transport, or put in place.

The connecting-block B enables me to make the arch in sections, by which all the difficulties named are obviated.

The block or connecting-section B is a shell, made in two parts, divided longitudinally and vertically in its center, as seen in Fig. 2. This shell is open on the under side to admit the eyes on the ends of the braces C, which eyes are secured to the shell by means of a bolt, D, through the latter. (See Fig. 3.) On each end

of the shell is a circular flange, E, a semicircular half being cast upon each half of the shell, which flanges enter the ends of the sections of the arch. The ends of those sections or tubes consequently bear against the ends of the shell or block, and the ends of both are beveled with reference to the curve of the arch.

This connecting block or section might be cast in a single piece; but, in that case, the tubes could not be properly fitted without more or less boring and turning; I therefore make the connection in two pieces, as before stated, and when the connection is made and the parts put in place I expand or separate the parts by means of one or more keys, F, a groove, G, being cast in each of the parts to receive the keys, as represented in the drawing. The flanges E are thus made to bear against the insides of the tubes and make the connection firm and rigid.

The joint being sectional I make it with a half pattern, and thus have much less trouble to cast it; being expansive I save sending my wrought-iron tubes to the shop to be planed on the inner surface; I save also planing the circular tenons of the joint; I also get an arch more nearly approaching a rigid arch, thus obtaining a much stronger bridge with the same iron.

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

1. The two-part shell B divided longitudinally and vertically, as and for the purpose described.

2. The key F combined with a shell, B, having the groove G and flanges E, as and for the purpose described.

WILLIAM B. COOPER.

Witnesses:

W. W. JEROME,  
J. L. WOODIN, Jr.