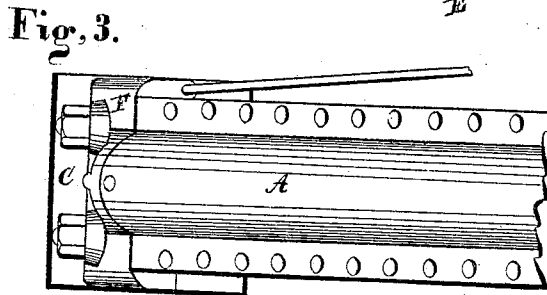
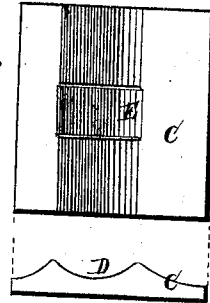
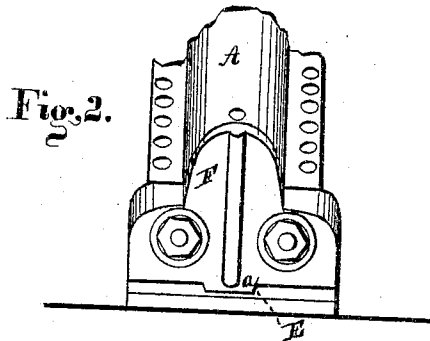
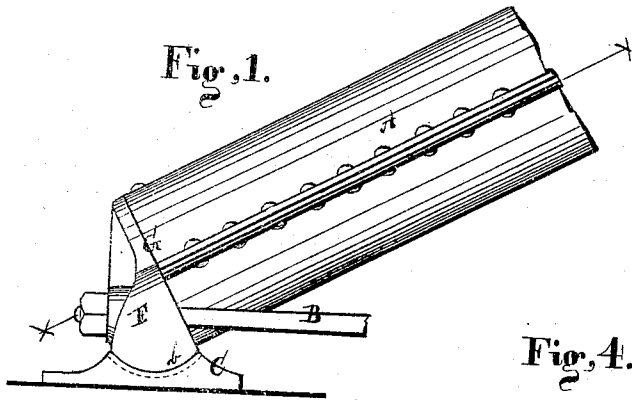


W. B. REZNER.

Improvement in Arch-Bridges.

No. 128,509.

Patented July 2, 1872.



Witnesses.
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UNITED STATES PATENT OFFICE.

WILLIAM B. REZNER, OF CLEVELAND, OHIO.

IMPROVEMENT IN ARCH-BRIDGES.

Specification forming part of Letters Patent No. 128,509, dated July 2, 1872.

SPECIFICATION.

To all whom it may concern:

Be it known that I, WILLIAM B. REZNER, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Arch-Bridges; and I do hereby declare that the following is a full, clear, and complete description thereof, reference being had to the accompanying drawing making part of the same.

Figure 1 is a side view of a section of the arch of a bridge. Fig. 2 is an end view. Fig. 3 is a plan view. Fig. 4 is a detached section.

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

The nature of this invention relates to a bridge of an arch character; and the object thereof is to provide said arch with a skew-back, against which the ends of the arch shall abut, and which skew-back, or the plane of the abutment face thereof, shall be at all times at a right angle or square to the projected line or curve of the arch resting thereon, thereby securing a ready adjustment of the two antagonizing surfaces, viz., the ends of the arch and the face of the skew-back, whereon is received the thrust of the arch against a firm opposing face at a proper angle to bring all its parts in equal compression.

Of the above said invention the following is a more full and complete description.

In Fig. 1, A represents one end of an arch of a bridge. Said arch is of a tubular character, and is constructed of iron, and of which B are the chords. The skew-back referred to consists in part of an iron plate, C, commensurate to the size of the arch. The under side of said plate is a flat surface in order that it may lie upon the abutment or stone-work of the bridge, whereas the upper side of the plate thickens toward the middle into two parallel ridges, forming a concave, D, between them, as shown in the detached view, Fig. 4. In the middle of said concave is formed a recess or groove, E, the purpose of which will presently be shown. The companion part of the skew-back consists of a triangular-shaped block or piece, F, Fig. 1, having a convex under surface of a curvature corresponding to the concave of the plate C, and in which it rests, as shown in said Fig. 1, longitudinally;

and midway the under surface of the block is formed a boss or wide rib, *a*, Fig. 2, corresponding in size and character to fit closely in the groove E of the plate C; the purpose of which rib and groove is to prevent lateral displacement of the two sections comprising the skew-back. The plane of the face G of the block F, which is the skew-back proper, slants back at any required angle with the under side or convex surface *b* of the block, but which is, however, at all times at right angle to the axial or arch line *x x* of the arch; hence, the ends of the arch have a right angle abutment against the skew-back, and which back is retained in its relation to the arch by a boss or offset formed on the face G and projected into the end of the arch.

The special advantages of a skew-back constructed substantially as above described are, that the plane of the resisting surface or face G of the skew-back is always at right angle to or square with the projection of an arch of any desired curvature, which, as aforesaid, provides for an easy and ready adjustment of the two antagonizing surfaces, viz., that of the face G of the block F resisting the thrust of the arch against it, and which resistance is always in a right line to the thrust, though the curve of the arch may vary more or less. Therefore an adjustable but firmly-opposing face at a proper angle is presented to the arch in order to bring all its parts in equal compression upon the face G of the skew-back. This skew-back also adapts itself to any inequality that may exist in the masonry, and in the event of the settling of the stone-work it prevents undue strain being exerted upon the structure by said event. It also prevents the elastic motion that often exists in iron-bridge structures from being transmitted to the masonry of the abutments, and which motion produces that vertical vibratory movement upon the stone-work so frequent in solid shoe-blocks, thereby working loose the stones and thus damaging the masonry.

By the use of a skew-back constructed as above described, one pattern or skew-back can be applied to arches of different curvatures, as the face of the block will adjust itself to the line of the arch curve in consequence of the freedom of the block to turn in the concavity

of the plate; hence, as before said, the plane of the face of the block will at all times be square to or at right angle with the arch-line or line of pressure.

Claims.

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

1. The head or block F having a convex under surface, *b*, plate C provided with a corresponding concave, D, for the reception of the convex surface *b*, arranged to operate conjoint-

ly, in combination with an arch, A, substantially in the manner as and for the purpose set forth.

2. The rib *a* of the block F as arranged in relation to and in combination with the groove E of the plate C, substantially as and for the purpose specified.

WILLIAM B. REZNER.

Witnesses:

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G. E. FRYETT.