

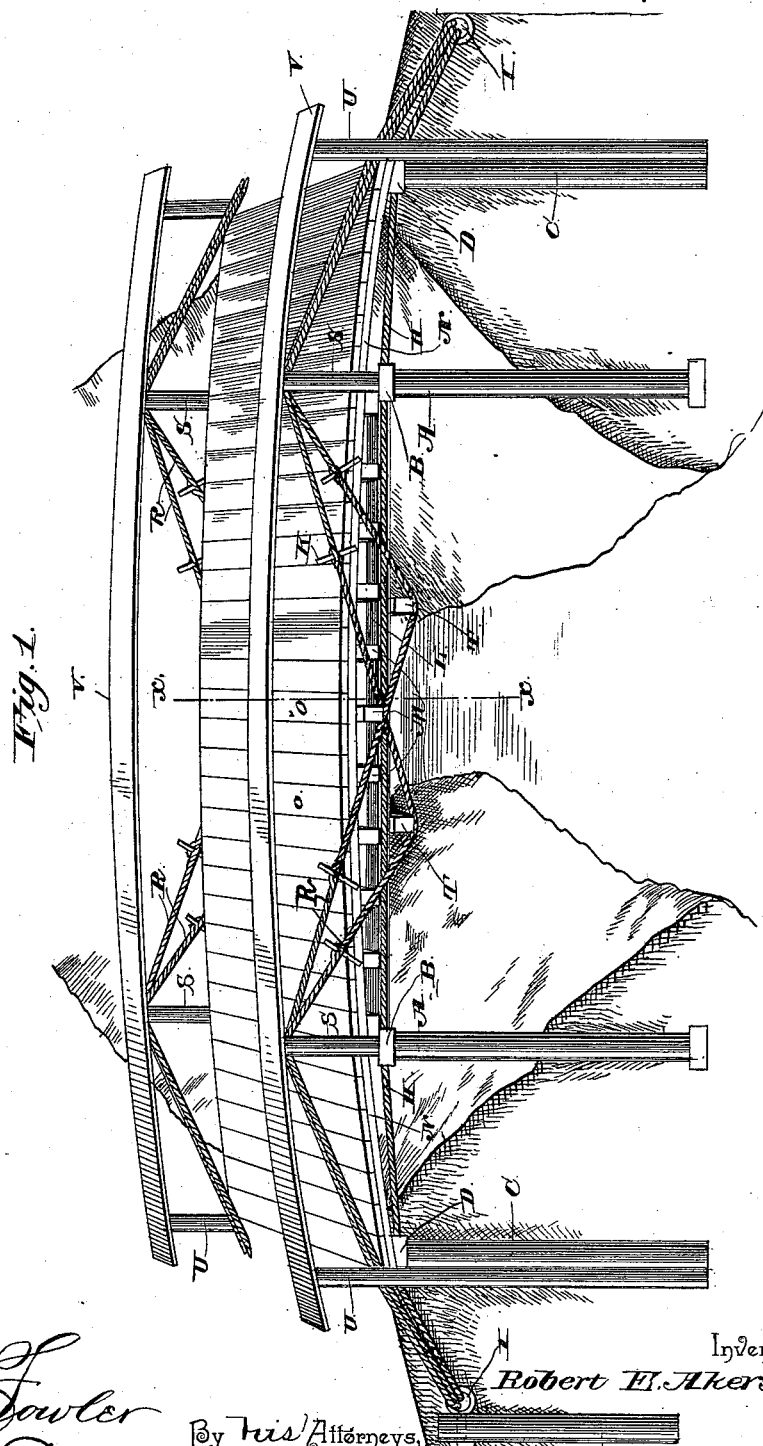
(No Model.)

3 Sheets—Sheet 1.

R. E. AKERS.
SUSPENSION BRIDGE.

No. 418,777.

Patented Jan. 7, 1890.



Witnesses

M. Fowler
E. Siggers

By His Attorneys,

C. A. Snow & Co.

Inventor

Robert E. Akers

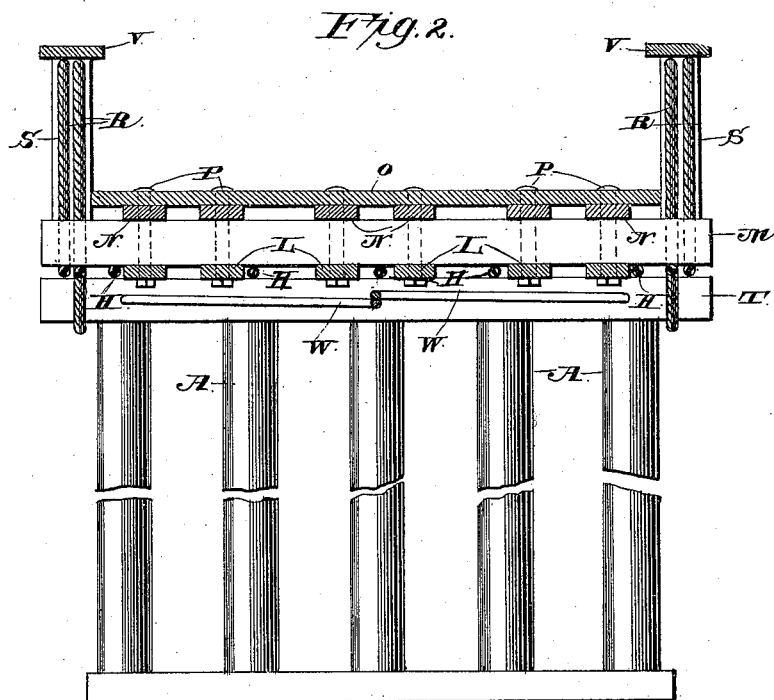
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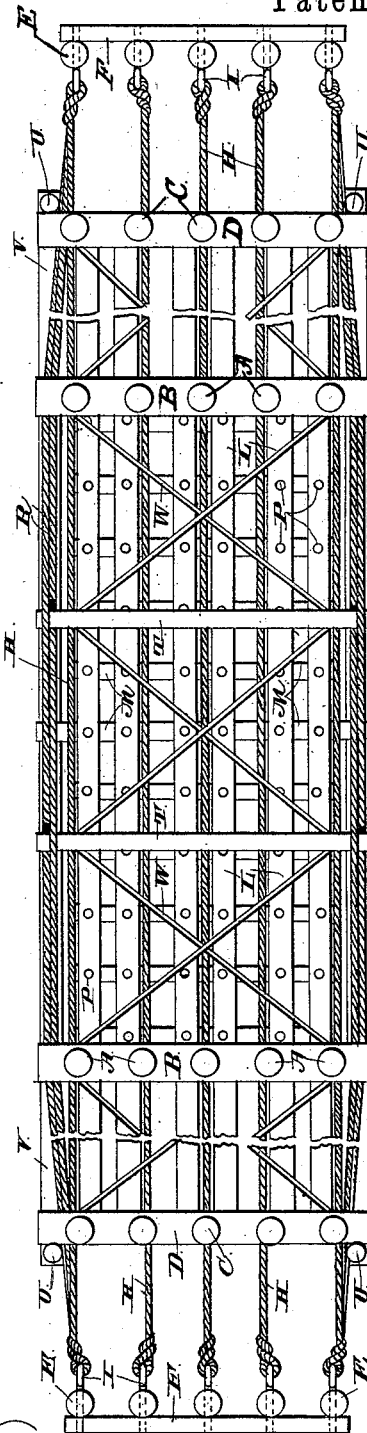
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Fig. 3.



Witnesses

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UNITED STATES PATENT OFFICE.

ROBERT EDWIN AKERS, OF LEHIGH, INDIAN TERRITORY.

SUSPENSION-BRIDGE.

SPECIFICATION forming part of Letters Patent No. 418,777, dated January 7, 1890.

Application filed June 15, 1889. Serial No. 314,330. (No model.)

To all whom it may concern:

Be it known that I, ROBERT EDWIN AKERS, a citizen of the United States, residing at Lehigh, Choctaw Nation, Indian Territory, have invented new and useful Improvements in Suspension-Bridges, of which the following is a specification.

My invention relates to an improvement in suspension-bridges; and it consists in the peculiar construction and combination of devices that will be more fully set forth hereinafter, and particularly pointed out in the claims.

In the drawings, Figure 1 is a side elevation of a bridge embodying my improvements. Fig. 2 is a vertical transverse sectional view of the same, taken on the line $x x$ of Fig. 1. Fig. 3 is a bottom plan view.

On opposite sides of the stream or chasm are erected rows of supporting-posts A, and on the upper ends of said posts are secured cross-plates B. Arranged in line with and at a suitable distance beyond the posts A are rows of posts C, the upper ends of which are in a somewhat lower plane than the upper ends of posts A, and are connected together by cross-plates D.

E represents posts, which are arranged at a suitable distance beyond the posts C and constitute the anchor-posts. Cross-beams F are secured on the outer sides of the anchor-posts.

H represents cables, which are preferably made of wires twisted together, are stretched over the plates B D and across a stream or chasm, and have their ends attached to eyebolts I, which are passed transversely through the anchor-posts and through the beams F.

L represents a series of stringers, which are arranged longitudinally and have their ends supported on the plates B. A series of cross-beams M are arranged transversely on the stringers, and the thickness of the said cross-beams is increased as they near the center of the bridge, and decreased as they near the ends thereof, as shown. On the upper sides of the said beams M are supported flooring-beams N, which are likewise arranged longitudinally and have their ends secured on the end beams D. Owing to the varying thicknesses of the cross-beams M, the flooring-beams N are curved sufficiently to give the requisite crown or arch to the bridge. The

floor-boards O are secured on the beams N. It will be observed by reference to Figs. 1 and 2 that the stringers L are on the same plane with the cables, and that the floor-beams N and said stringers L are secured together by bolts P, which pass through them and also through the beams M.

R represents cables, which are similar in construction to the cables H and have their ends attached to eyebolts at the end posts of the series E. The said cables are arranged in pairs at the sides of the bridge, and are passed over standards S, which rise from the ends of the plates B. Arranged transversely under the stringers L, and at suitable regular distances from the center of the bridge, are cross-beams T, under which the cables R are passed, the said cables being thereby crossed between the said beams, as shown in Fig. 1, and the intersecting portions of the cables are caused to bear under the central beam M. Each of the cables R comprises in this instance two strands or smaller cables, and between them at suitable points are inserted twisting-bars K. A proper tension of the cables may now be secured by revolving the bars in either direction, and thus twisting the cables upon themselves, all as clearly shown in Fig. 1.

U represents posts, which are erected on the banks of the stream at a distance beyond and in line with the standards, and on the said posts U and standards S are secured hand-rails V, which form the sides of the bridge.

W represents cables or rods, which are secured to the posts A C or to the ends of the plates B D, and are extended under the bridge and crossed between the posts C and A, between the latter and the beams T, and between the said beams, the function of the said rods or cables being to brace the bridge against lateral strain.

Before driving the posts A, C, and E suitable ditches will be excavated in the banks of the stream, in which the said posts will be erected, and after the posts have been placed therein the ditches will be filled up. I prefer to use posts of bois d'arc, cedar, locust, or other durable wood.

Having thus described my invention, I claim—

1. The combination, in a bridge, of the sus-

1. The combination, in a bridge, of the posts A, the plates B, supported thereon, the stringers having their ends supported on the said plates, the cables H, anchored at opposite sides of the stream, passing over the plates B, and arranged parallel and in the same plane with the stringers, the cross-beams M, arranged on the stringers, the floor-beams N, arranged longitudinally on the beams M, the cross-beams T, arranged under the stringers, and the cables R, spanning the stream and supporting the ends of the beams T, substantially as described.

2. The combination, in a suspension-bridge, of the posts A, the plates B, supported thereon, the stringers having their ends supported on the said plates, the cables H, anchored at opposite sides of the stream, passing over the plates B, and arranged parallel and in the same plane with the stringers, the cross-beams M, arranged on the stringers, the floor-beams N, arranged longitudinally on the beams M, the cross-beams T, arranged under the stringers, and the cables R, spanning the stream and supporting the ends of the beams T, substantially as described.

3. The combination, in a bridge, of the posts A, the plates B, the posts C, arranged beyond the posts A, the plates D, connecting the posts C, the anchor-posts E beyond the posts C, the cables stretched over the plates B and having their ends attached to the anchor-posts, the cross-beams M, arranged on the cables, the stringers L under said cross-beams and having their ends supported on the plates B, the floor-beams N, arranged on the beams M, the standards S, rising from the ends of plates B, the beams T, arranged transversely under the stringers under the centers of the bridge, and the cables R, attached to the anchor-posts, stretched over the standards

S, and bent downward under the ends of the beams T, substantially as described.

4. In a bridge, the suspended cables R, the cross-beams T, supported by the cables, the latter being crossed midway between the beams, the stringers L, resting on the cross-beams, the beams M, resting on the stringers, the flooring supported on the beams M, and the cables H, anchored on opposite sides of the stream and arranged parallel with the stringers under the beams M, as set forth.

5. In a bridge, the suspended cables R, the cross-beams T, supported by the cables, the latter being crossed midway between the beams, the stringers L, resting on the cross-beams, the beams M, resting on the stringers, the flooring supported on the beams M, and the cables H, anchored on opposite sides of the stream and arranged parallel with the stringers under the beams M, and the cables W, arranged horizontally under the bridge and extending diagonally and crossed between the cross-beams T, substantially as and for the purpose set forth.

6. In a bridge, the supporting-cables each consisting of a plurality of strands, a twisting-rod dividing the series and adapted to twist the cables for giving them proper tension, substantially as specified.

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

ROBERT EDWIN AKERS.

Witnesses:

W. HARDING,
J. E. ADAMS.