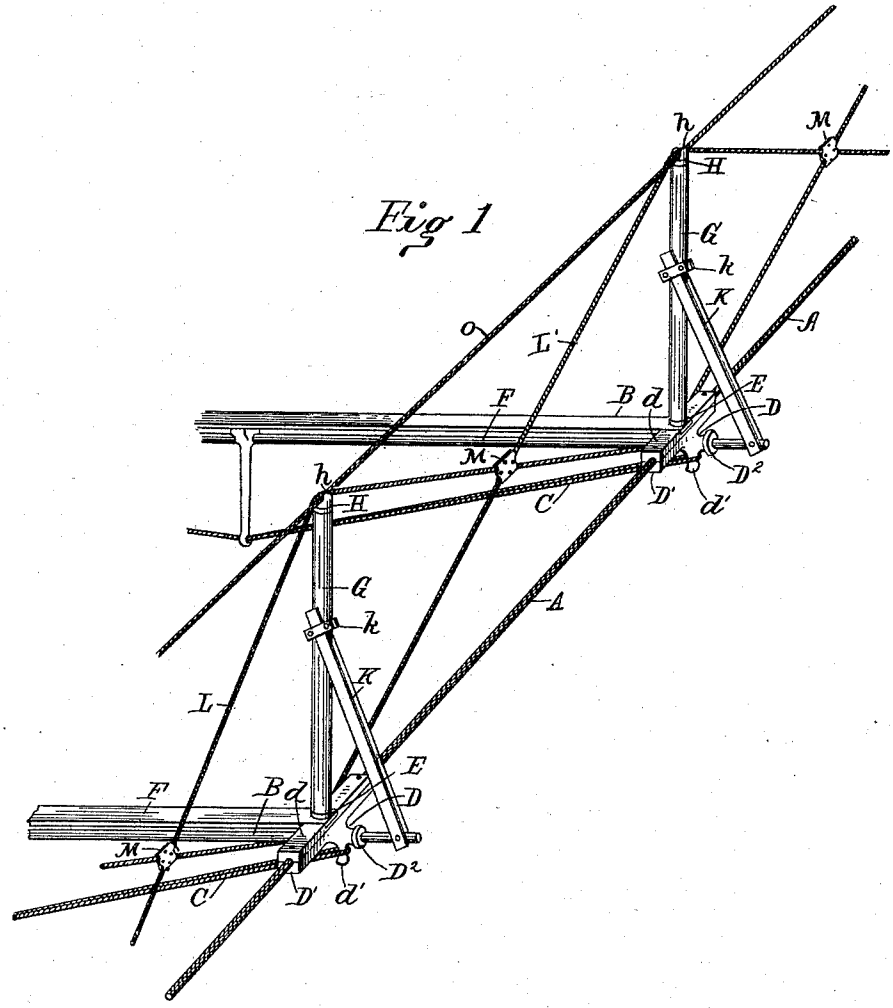
(No Model.) 2 Sheets—Sheet 1.

E. E. RUNYON.

SIDE RAIL FOR SUSPENSION BRIDGES.

No. 493,788. Patented Mar. 21, 1893.

Fig 1



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(No Model.) 2 Sheets—Sheet 2.

E. E. RUNYON.

SIDE RAIL FOR SUSPENSION BRIDGES.

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Fig 2

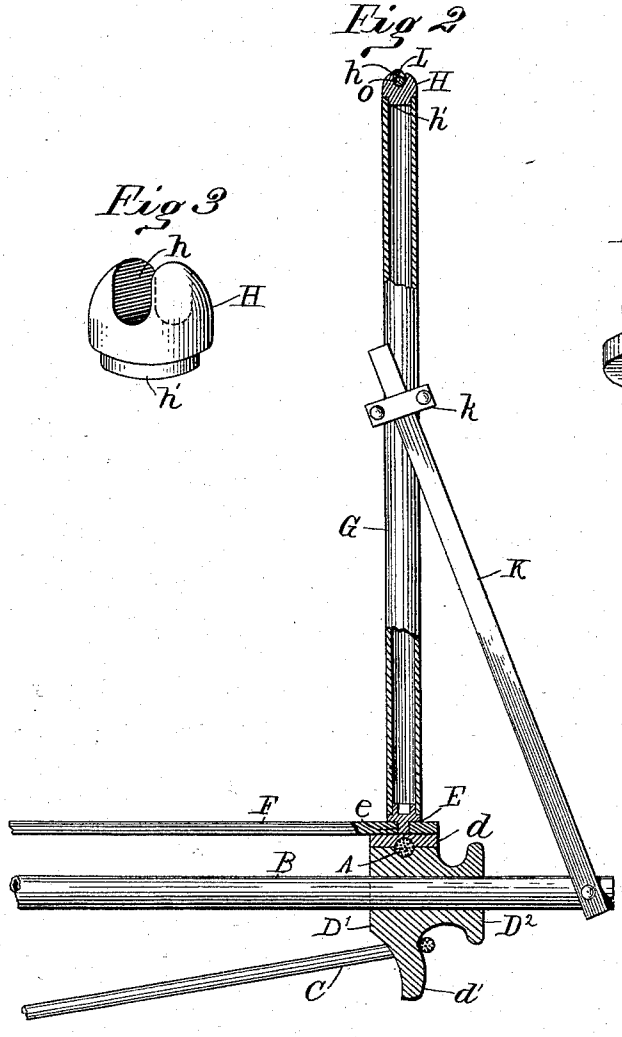
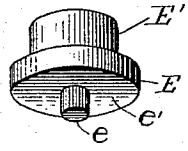


Fig 3

Fig 4



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UNITED STATES PATENT OFFICE.

EDWIN ELIJAH RUNYON, OF PILOT POINT, TEXAS.

SIDE RAIL FOR SUSPENSION-BRIDGES.

SPECIFICATION forming part of Letters Patent No. 493,788, dated March 21, 1893.

Application filed November 2, 1892. Serial No. 450,759. (No model.)

To all whom it may concern:

Be it known that I, EDWIN ELIJAH RUNYON, a citizen of the United States, residing at Pilot Point, in the county of Denton and State of Texas, have invented certain new and useful Improvements in Side Rails for Suspension-Bridges; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to an improvement in side rails for suspension bridges and consists in the construction and arrangement of parts hereinafter described and definitely pointed out in the claims.

The object of the invention is to provide an improved side railing constituting a truss, which will be light, durable, and of structural simplicity. This object is accomplished by the construction illustrated in the accompanying drawings, wherein like letters of reference indicate corresponding parts in the several views and in which—

Figure 1 is a perspective view of a section of a suspension bridge, preferably of that style of bridges shown in Letters Patent granted to me on the 18th of December, 1888, and 3d of September, 1889. Fig. 2 is a detail elevation of one of the columns and its immediate connections. Fig. 3 is a detail perspective view of the saddle, and Fig. 4 is a detail perspective view of a supporting casting for the columns.

In the drawings A represents the floor cable, B, the needle beam and C the truss for the latter. On the ends of the needle beams are castings D, formed with boxings D′, having horizontal seats therein for the floor cable, and a removable top *d*. These castings D have the tongues *d′* around which the trusses C pass and are secured in suitable seats formed thereon. On the outer ends of the castings D are outwardly extending horizontal arms D^2, for purposes hereinafter stated.

F represents flat iron bars arranged directly above the needle beams having their ends counter sunk into and secured to the caps *d* of the boxes D′. In the ends of these bars are formed apertures, in which the pins *e* of the supporting castings E, fit. The castings E, are formed with a flat circular base *e′* having the pins *e* on their underside and sleeves E′ on their upper faces. The bases rest on the upper faces of the bars F.

G are the columns formed of piping, their lower ends fitting around the sleeves E′ and resting in the bases E. In the tops of these columns are fitted the saddles H, formed of castings having the seat or groove *h* in their upper faces and sleeves *h′* on their under faces, which fit in the tops of the columns. To hold the columns in their vertical position inclined braces K, are secured thereto at points near their upper ends by clamps *k*. The lower ends of these braces are made fast to the outer ends of the arms D^2.

L, L′ are the diagonal bracing cables extending alternately up over the columns resting in the seats *h* and below the needle beams. They are joined at their crossings by the twist castings M. Below the cables L, L′ in the saddles H is the hand rail O, made of cable or gas pipe as desired, the cables extending up over and across the same firmly binding and holding it in the saddles.

By the above described construction a very simple and inexpensive trussed side rail is formed, which is much lighter than wooden structures of this nature and more lasting. It may also be very quickly constructed or placed in position.

It will be understood that the cables are secured in suitable anchorages on opposite sides of the stream.

I am aware that many minor changes in the construction and arrangement of the parts of the improvement can be made and substituted for those shown and described without in the least departing from the nature and principle of my invention.

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

1. In a suspension bridge, the combination with the needle beams and floor cables, of a casting on the ends of the beams having horizontal boxings through which the cables pass, arms on the castings, cross bars secured to the castings having apertures in their ends, seats fitted in the apertures, columns on the

seats, saddles on the columns, braces extending from the arms to the columns, a hand rail, and diagonal truss cables extending alternately over the saddles and below the needle beams, substantially as described.

2. In a suspension bridge, the combination with the needle beams and floor cables of castings at the ends of the beams, in which the cables are secured, supporting castings seated on said other castings having upwardly extending projections, columns on the supporting castings surrounding the projections, saddles having extensions on their under sides fitted into the tops of the columns, braces for the columns, a hand rail supported by the saddles, and diagonal cables extending alternately over the saddles and below the beams, substantially as described.

3. In a suspension bridge, the combination with the needle beams, floor cables, and castings uniting the same, of cross bars connected with the castings, supporting castings on the ends of the bars, having sleeves on their upper faces, columns fitted around the sleeves and resting on the supporting castings, saddles on the tops of the columns, braces for the columns, hand rails in the saddles, and truss wires extending alternately over the rail and saddles, and below the beams and united at their crossings, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

EDWIN ELIJAH RUNYON.

Witnesses:
JOHN H. KING,
I. C. KING.