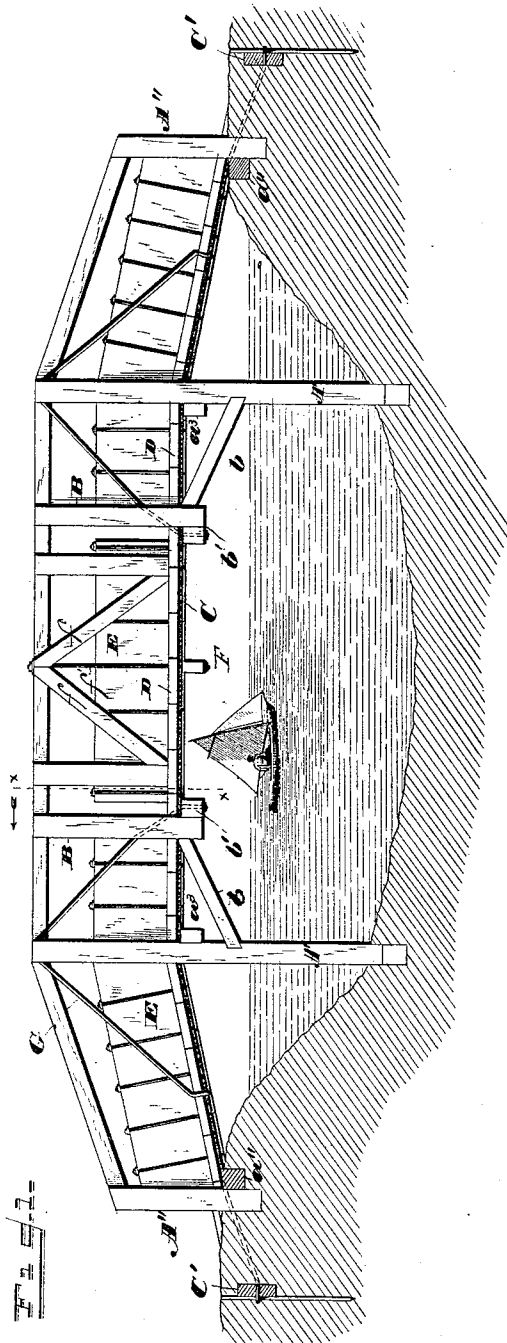


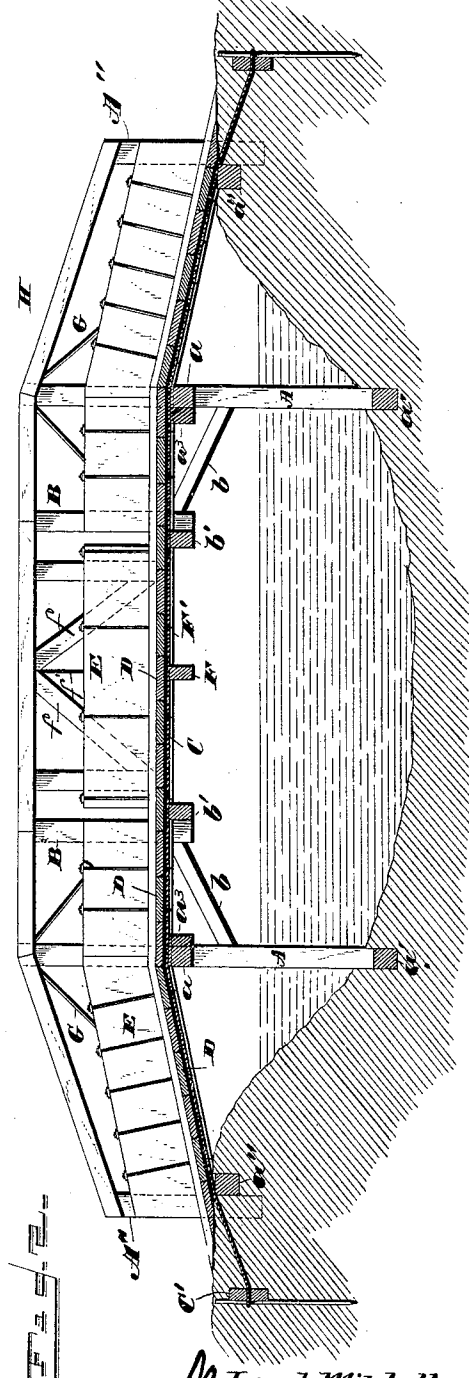
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BRIDGE.

Patented Aug. 16, 1887.



G. S. Elliott.
E. M. Johnson



Joseph Mitchell
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(No Model.)

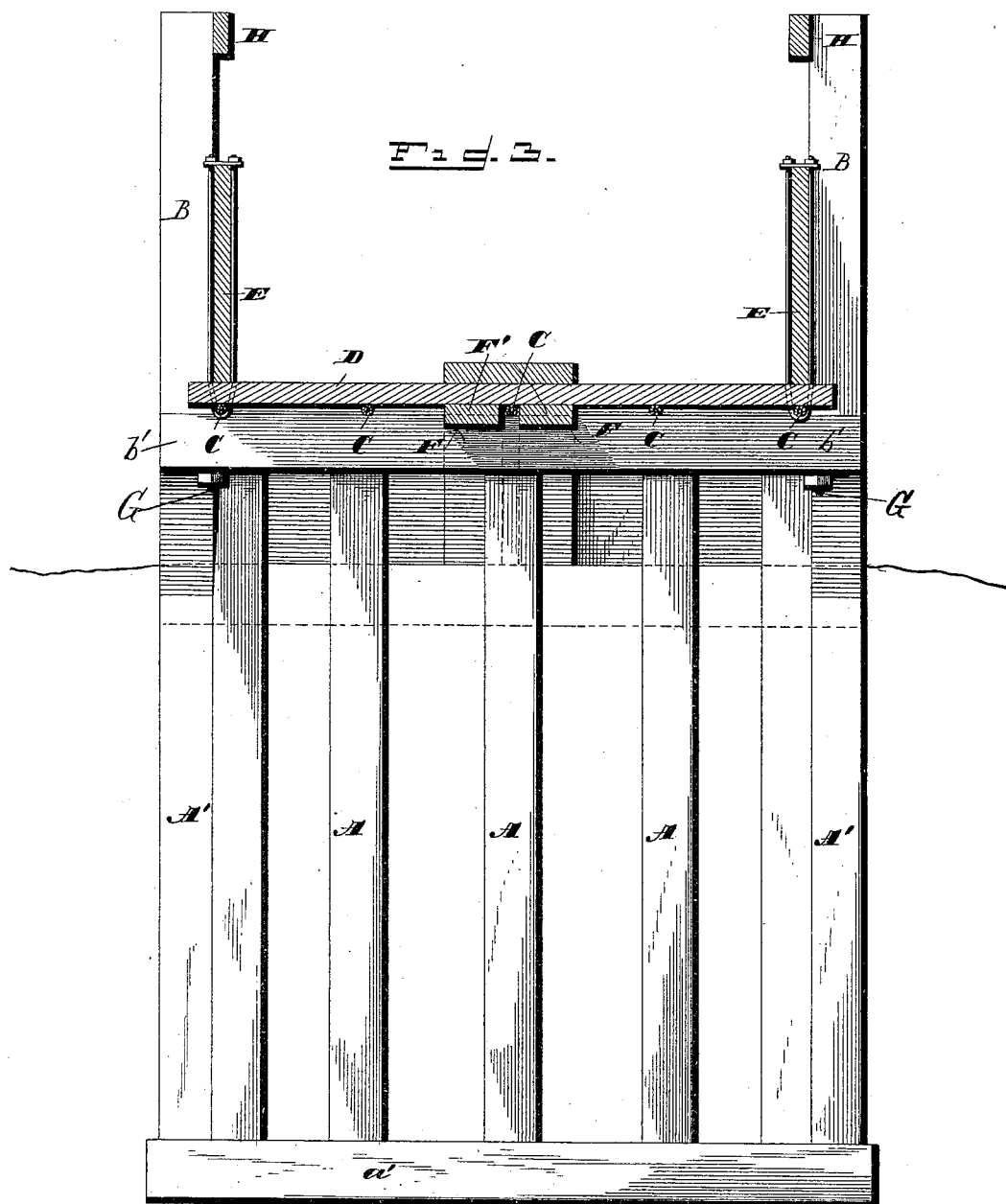
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J. MITCHELL.

BRIDGE.

No. 368,483.

Patented Aug. 16, 1887.



WITNESSES

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(No Model.)

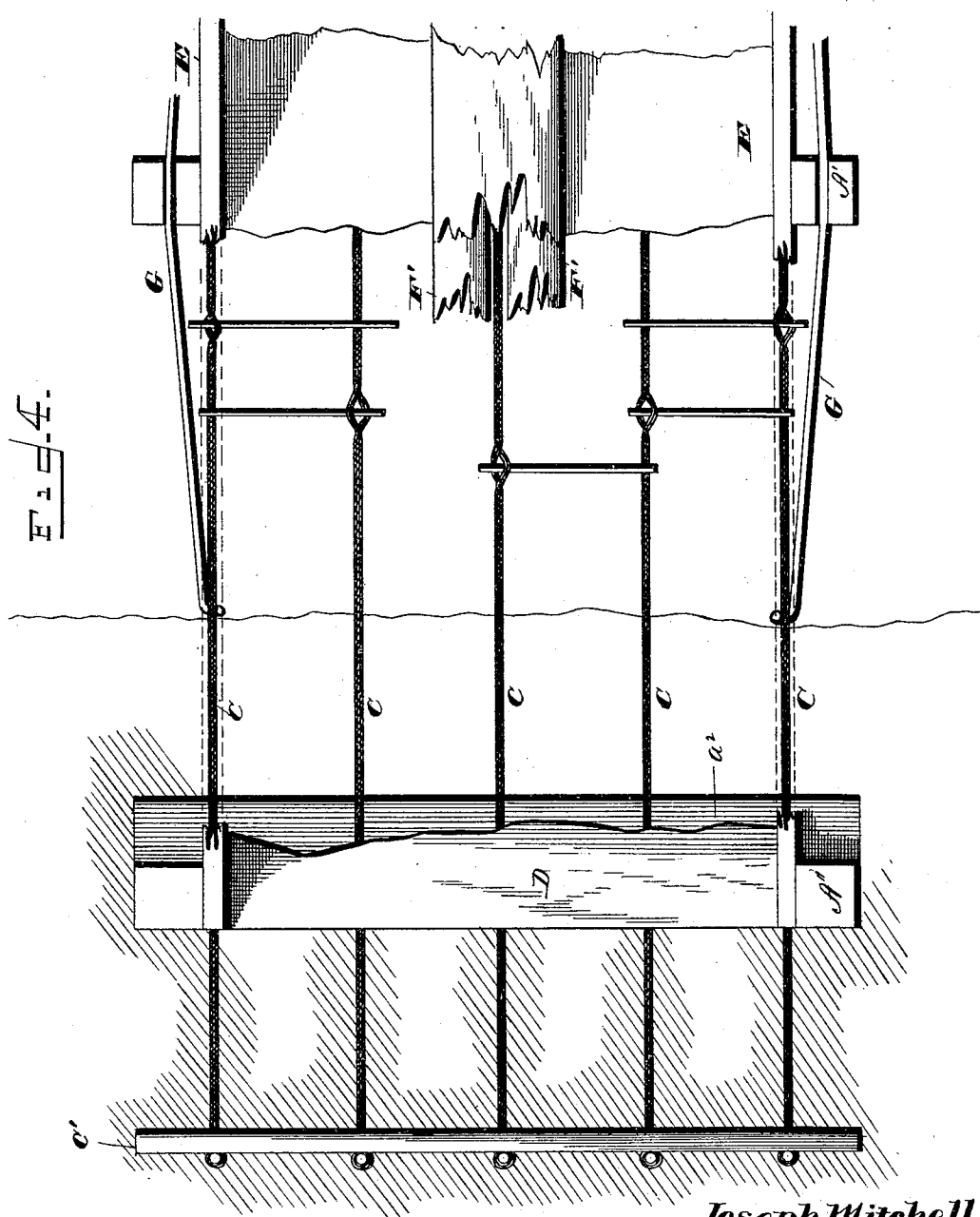
3 Sheets—Sheet 3.

J. MITCHELL.

BRIDGE.

No. 368,483.

Patented Aug. 16, 1887.



Joseph Mitchell.

INVENTOR

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WITNESSES

G. S. Elliott.
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UNITED STATES PATENT OFFICE.

JOSEPH MITCHELL, OF MONTAGUE, TEXAS.

BRIDGE.

SPECIFICATION forming part of Letters Patent No. 368,483, dated August 16, 1887.

Application filed March 19, 1887. Serial No. 231,597. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH MITCHELL, a citizen of the United States of America, residing at Montague, in the county of Montague and State of Texas, have invented certain new and useful Improvements in Bridges; and I do hereby 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 letters or figures of reference marked thereon, which form a part of this specification.

My invention relates to certain new and useful improvements in bridges of that class which are used for crossing streams or county roads, and for such other purposes as a bridge may be desired, the object of my invention being to provide a bridge which is cheap in construction and which can be securely anchored to banks bordering the stream, so that it cannot be washed away, thus obviating the necessity of building long approaches, and also to do away with the floor-beams and substitute therefor cables which are so constructed that they may be tightened without the necessity of removing the floor-boards, which floor-boards can be readily removed, when desired, to make repairs without disorganizing the other portion of the bridge; and with the above end in view my invention consists in a bridge the construction of which will be hereinafter fully set forth and claimed.

In the accompanying drawings, which illustrate my invention, Figure 1 is a side view of a bridge constructed in accordance with my invention. Fig. 2 is a longitudinal sectional view. Fig. 3 is a vertical sectional view taken through the line xx of Fig 1; and Fig. 4 is a top plan view of the bridge, the flooring-boards being removed.

A A refer to a series of vertical posts or uprights, which are preferably located near the side of the stream or depression to be crossed, these posts extending from the transverse beams $a a$ to the beams a' .

A' refers to the side beams, which extend above the beams A and form side posts for the bridge. At the banks of the bridge are planted posts A'', which serve as supports for the side rails, the lower ends of these posts resting

against transverse beams a'' , which are planted in the ground. The posts A and A' are connected to each other by transverse bars a^3 , which are located at the upper ends of the posts A, and are practically on a line with the under side of the floor-boards.

B refers to upright posts, which are braced to the post A' by inclined beams b , and the lower ends of these posts are connected to each other under the floor-boards by transverse beams b' .

C C refer to a parallel series of cables, which are preferably constructed of galvanized wire, the ends of the cables being securely attached to the ground by having their ends looped, through which pass metallic bars or holding-pins, and the ends of these cables also pass through perforations in beams C', which are planted at a suitable depth in the ground. By means of these pins and beams the cables are held securely in position, and the necessity of stone abutments or other artificial structures is avoided. These cables when placed in position are passed over the transverse beams of the different sections of the bridge and are pulled as tight as possible, and these cables serve as a means for supporting the bridge, the main portion of the bridge being supported above the cables, and not suspended therefrom.

Before the cables are stretched the beams hereinbefore described are placed in position, and after the cables are stretched I proceed with the building of the bridge, the transverse floor-boards D being placed upon the cables. After these boards are loosely placed in position the side boards, E, are secured to the posts A' and A'', and then stirrups consisting of U-shaped rods are passed over the cable through perforations in the floor-boards and alongside of the side boards until they reach the top of said boards, when plates are placed over the ends and nuts attached to their screw-threaded ends, so as to firmly unite the floor-boards, side pieces, and said cables. The center section of the bridge, which extends from the posts B B, is provided on each side with diagonal braces f , meeting at the center of the section, and from the meeting point of these braces depends a tie-rod, f' , to the lower end of which is secured the transverse beam F,

extending across the bridge beneath the cables; and, if preferred, longitudinal beams F' may be arranged beside the center cable, between beam F and the floor-boards, to give this section of the bridge additional rigidity.

G refers to brace-rods, which extend from near the center of the end sections of the bridge, where they are secured to the cable, over the side posts, A', and from thence downward diagonally through the lower end of the beam B, where they are suitably secured to the ends of the transverse beams b'.

The center portion of the bridge may consist of as many sections as may be desired, and the bridge is provided at the upper ends of the vertical posts with a rail, H.

It will be observed in a bridge constructed as hereinbefore described that there is but very little or no oscillation of the same, and that by simply removing the stirrups the floor-boards may be taken out when it is desired to replace them. When, after long use, or owing to the changes of the temperature, the cables become slack, they can be tightened by passing a lever through loops formed by separating the strands thereof and twisting the cables, so as to tighten the same, and the levers can remain in the cables, the long end bearing upon the adjacent cables, so as to prevent said levers turning. I prefer to tighten the cables by twisting them as near the ends thereof as possible, as said end portions are usually easily accessible.

I am aware that prior to my invention it was not broadly new to support bridges by bars which could be tightened by turning nuts, and I do not claim, broadly, such construction; but

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

1. In combination with vertical and transverse supporting-beams, a series of parallel cables extending over said transverse beams and secured at their ends in the ground, floor-boards laid transversely upon the cables, side pieces resting upon the floor-boards and stirrups for securing the outer cables, floor-boards, and side pieces together, substantially as described.

2. The combination of the parallel series of cables having loops, the floor-boards laid upon the cables, the side pieces resting upon the floor-boards, the stirrups connecting the outer cables, floor-boards, and side pieces together, and tightening-levers secured in the loop of the cables with the long end resting on the cable next adjacent, substantially as described.

3. The combination, in a bridge, of a series of parallel wire cables, the ends of which are secured in the ground, supporting-posts A and A', brace-rods G, attached at one end to the side cables, passing over posts A' and connected at their other ends to transverse beams b', brace-beams b, a central section provided with one or more transverse beams, F, supported by braces, all of said transverse beams being located beneath the cables, transverse floor-boards D, laid upon the cables, and side boards, E, resting upon the floor-boards and secured to the side cables by stirrups, substantially as described.

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

JOSEPH MITCHELL.

Witnesses:

F. L. HAWKINS,
R. W. BEALE.