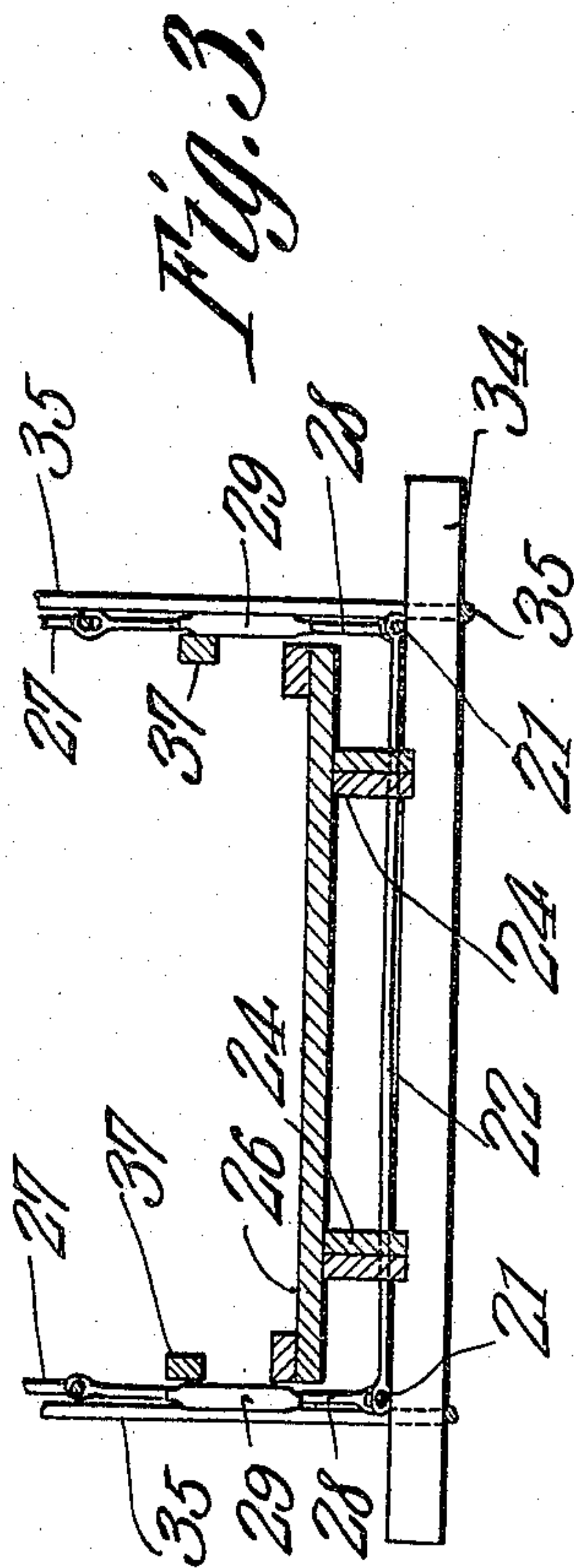
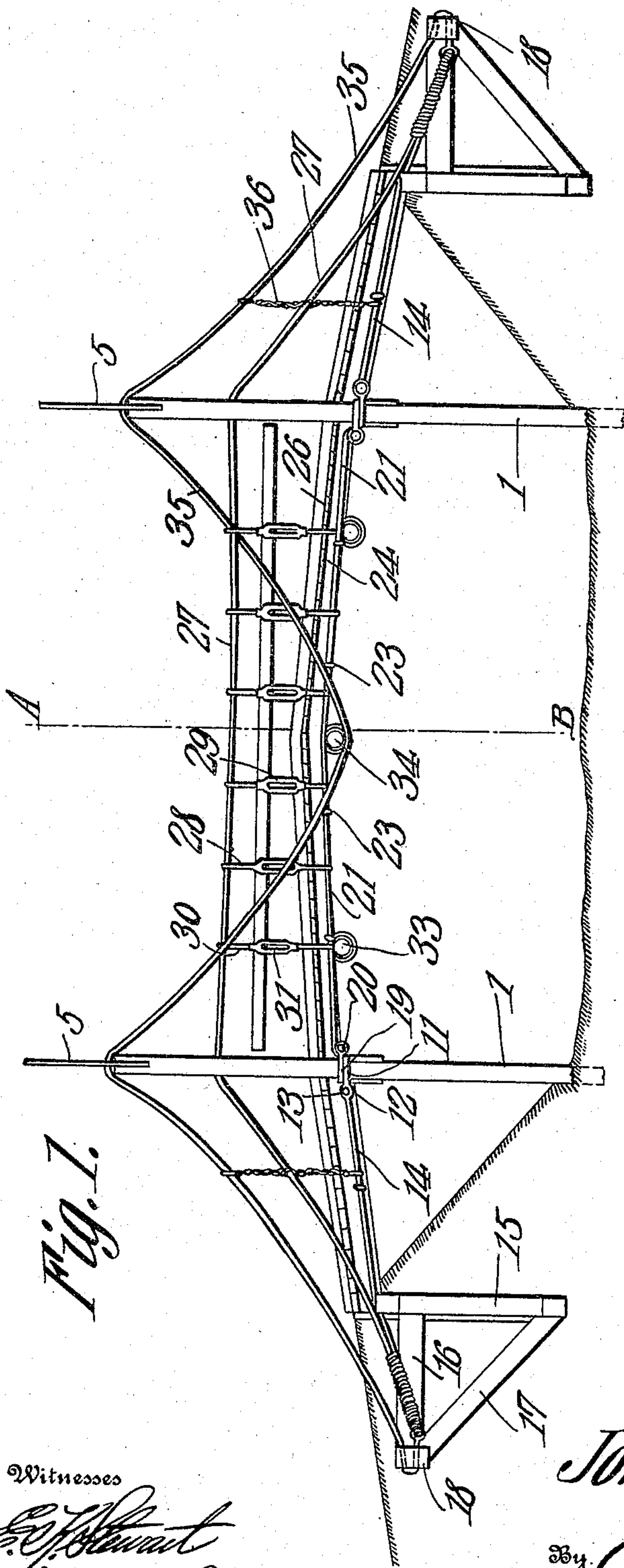


J. D. LUTTRELL.
BRIDGE CONSTRUCTION.
APPLICATION FILED SEPT. 1, 1908.

Patented Aug. 31, 1909.
3 SHEETS—SHEET 1.



Witnesses
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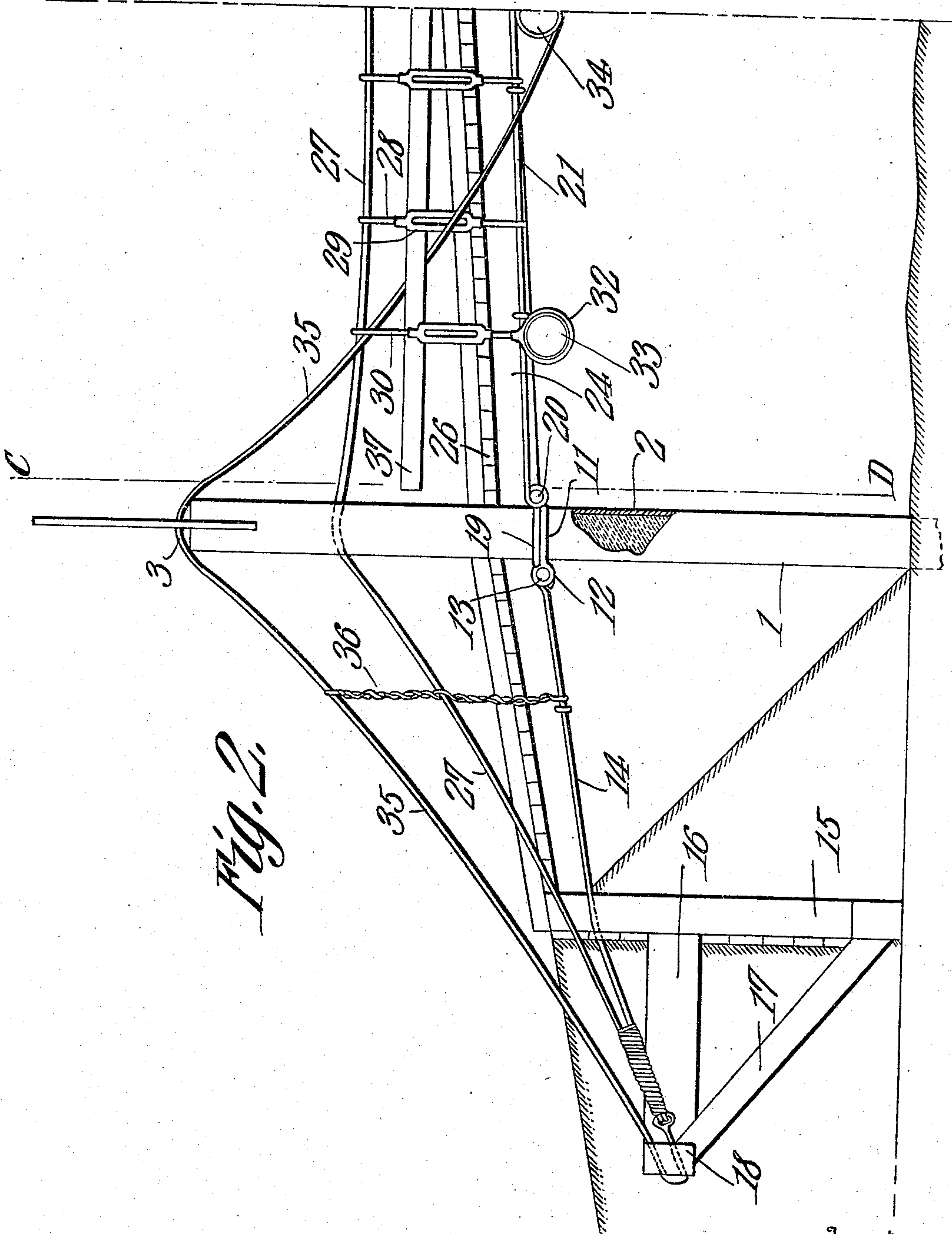


Fig. 2.

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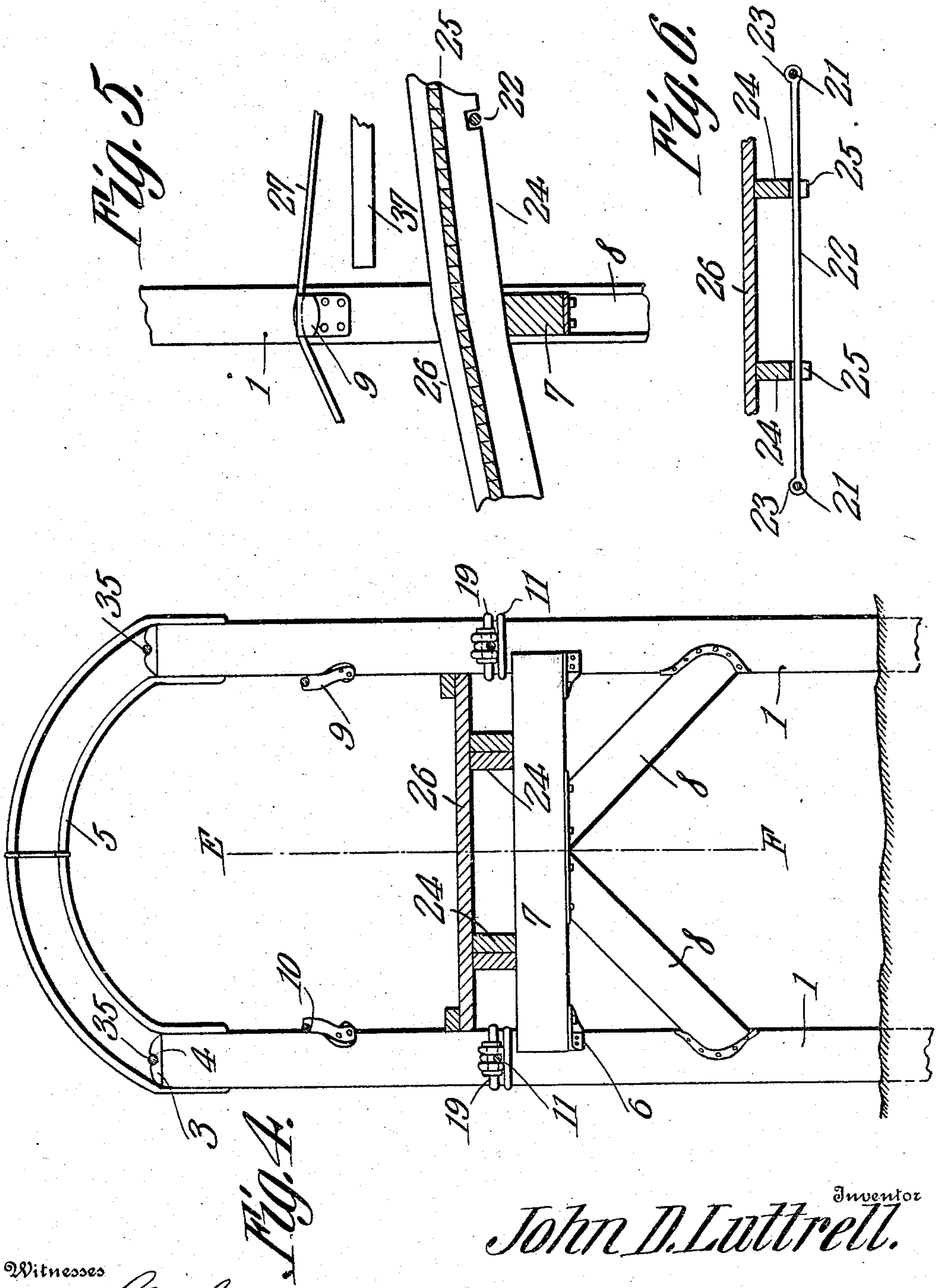
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UNITED STATES PATENT OFFICE.

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BRIDGE CONSTRUCTION.

932,483.

Specification of Letters Patent. Patented Aug. 31, 1909.

Application filed September 1, 1908. Serial No. 451,208.

To all whom it may concern:

Be it known that I, JOHN D. LUTTRELL, a citizen of the United States, residing at Kingston, in the county of Marshall and State of Oklahoma, have invented a new and useful Bridge Construction, of which the following is a specification.

This invention relates to bridge construction, and its object is to provide a suspension bridge, utilizing fixed cables, the bridge being particularly designed for use over small streams, although it can be used equally as well over large streams, it being merely necessary, in the latter event, to make certain immaterial changes in the arrangement and proportions of the parts.

The object of the invention is to provide a suspension bridge which is comparatively cheap to build, and which is attractive in appearance, as well as durable in construction.

A further object is to provide a bridge having a simple arrangement of parts whereby the cables can be readily tightened, should they become slack from any cause.

A further object is to provide novel means for connecting the stringers to the supporting cables, the connection being such as to prevent the stringers from shifting longitudinally relative to the cables.

With these and other objects in view, the invention consists of certain novel details of construction and combinations of parts, hereinafter more fully described, and pointed out in the claim.

In the accompanying drawings the preferred form of the invention has been shown.

In said drawings:—Figure 1 is a side elevation of a complete bridge constructed in accordance with the invention. Fig. 2 is an enlarged side elevation of one end portion of the bridge. Fig. 3 is a section on line "A—B", Fig. 1. Fig. 4 is a section on line "C—D", Fig. 2. Fig. 5 is a section on line "E—F", Fig. 4. Fig. 6 is a transverse section through the stringers and a portion of the floor, and showing one of the transverse tie rods.

Referring to the figures by characters of reference, 1 designates a pier, preferably formed of metal tubing, provided with a filling of concrete, as indicated at 2. A cap 3, is secured to the upper end of each of the piers and has a groove 4 in its upper or outer face for the reception of one of the cables of the bridge. The piers, such as herein de-

scribed, are arranged in pairs, each pair being disposed at one side of the stream. The upper ends of the piers of each pair are connected by concentric, arcuate braces 5, preferably formed of metal tubing, and secured in any suitable manner to the upper end portions of the piers. Brackets 6, are riveted or otherwise secured to the piers 1, and extend toward each other, so as to constitute efficient supports for the end sills 7 of the bridge. These end sills are supported by inclined tubular braces 8, suitably fastened at their upper ends to the middle portion of the sills, and at their lower ends to the piers 1. Secured upon the piers 1, at suitable distances above the brackets 6, are brackets 9, having grooves 10 in their upper faces, constituting seats for certain of the cables of the bridge.

A collar, 11, is arranged upon each pier directly above the sill 7, and each collar has eyes 12, for the reception of a clamping bolt 13, designed, when tightened, to bind the collar upon the pier. This bolt has one end of a cable 14 connected to it, said cable being extended landward from the pier and connected to an anchor of novel construction. This anchor consists of an upright frame 15, having beams 16 extending substantially perpendicularly from the upper portion thereof, the outer or free ends of these beams being connected to the lower portion of the frame 15 by means of inclined braces 17. A dead man 18 is secured to the beams 16 and braces 17, at the point where they come together, and the cable 14 is extended over the upper portion of the frame 15, and connected to the dead man 18. Another collar 19, is arranged upon each pier close to the adjoining collar 11, and the two collars are of similar construction. The clamping bolt 20, of collar 19 is engaged by one end of a supporting cable 21, which extends along one side of the bridge, the ends of said cable being connected to the corresponding piers at opposite sides of the stream. Tie-rods 22 connect the two cables 21 at regular intervals, each tie-rod being provided at its ends with eyes 23, through which the cables extend. These tie-rods support stringers 24, the lower faces of which are notched, as indicated at 25, to form seats for the tie-rods. The bridge floor 26 is secured to the stringers 24 in the usual or any preferred manner.

The brackets 9, hereinbefore referred to,

support the upper supporting cables 27 of the bridge, said cables being seated within the grooves 10, and having their ends connected to the dead men 18. The cables 27 are spaced above the cables 21 in any suitable manner and are connected thereto at regular intervals by means of tie-rods 28, each of which is provided with any suitable means, such as a turn-buckle, 29, for the purpose of drawing the cables 21 and 27 toward each other, to take up any slack which may occur therein from any cause. Additional tie-rods 30, having turn-buckles 31, are suspended from the cable 27 and are provided at their lower ends with means, such as collars 32, for engaging the end portions of tubular sills 33, extending transversely beneath the sills and constituting supports therefor. Another tubular sill 34 is arranged under the middle portion of the stringers 24, and the end of this sill rests upon truss cables 35, which rest within the grooves 4 in caps 3, and extend downwardly at their ends and are secured to the dead men 18. In Fig. 2 the end portions of these cables have been shown bent to U shape, and extending through the dead man, the terminal of the cable being provided with an eye, to which the adjoining ends of the cables 14 and 27 are connected. It is to be understood, of course, however, that this arrangement of parts need not be followed if desired, but any other suitable means may be employed for attaching the various cables to the anchor. Those portions of the truss cables 35 located between the piers 1 are inclined downwardly under the middle sill 34, and thence upwardly, so as to hold said sill centered at all times.

It is of course to be understood that various other tie devices may be used for connecting the different cables together, one of these tie devices being disclosed at 36. Railings 37 may be connected to the tie-rods 30.

Importance is attached to the novel manner of mounting the stringers upon the tie-rods 22, because they are thus held against longitudinal movement. It will also be noted that should any slack occur within the cables 21 and 27 it can be readily taken up by means of the turn-buckles 29 and 31, which can be rotated so as to draw the cables toward each other.

A bridge such as here described is especially designed for bridging small streams, and is desirable because of its simple construction and its inexpensiveness.

What is claimed is:—

A suspension bridge consisting of piers, a cap upon the upper end of each pier and having a groove therein, brackets secured upon the piers and constituting sill supports, brackets secured to the piers and above the first mentioned bracket and having grooved upper faces constituting cable seats, a collar clamped upon each pier, anchors, cable connections between the collars and anchors, truss cables mounted upon the caps and secured at their ends to the anchors, a central tubular sill mounted upon said truss cables at the centers thereof, lower side cables, collars clamped upon the piers and connected to said side cables, upper side cables mounted upon the grooved brackets and secured to the anchors, adjustable tie rods connecting the upper and lower side cables, collars disposed at the lower ends of said rods, tubular sills supported by said collars, tie-rods connecting the lower side cables, stringers mounted thereon, said stringers being notched to receive the rods, and railings carried by the adjustable tie-rods.

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

JOHN D. LUTTRELL.

Witnesses:

J. H. HIGHTOWER,
N. L. LUTTRELL.