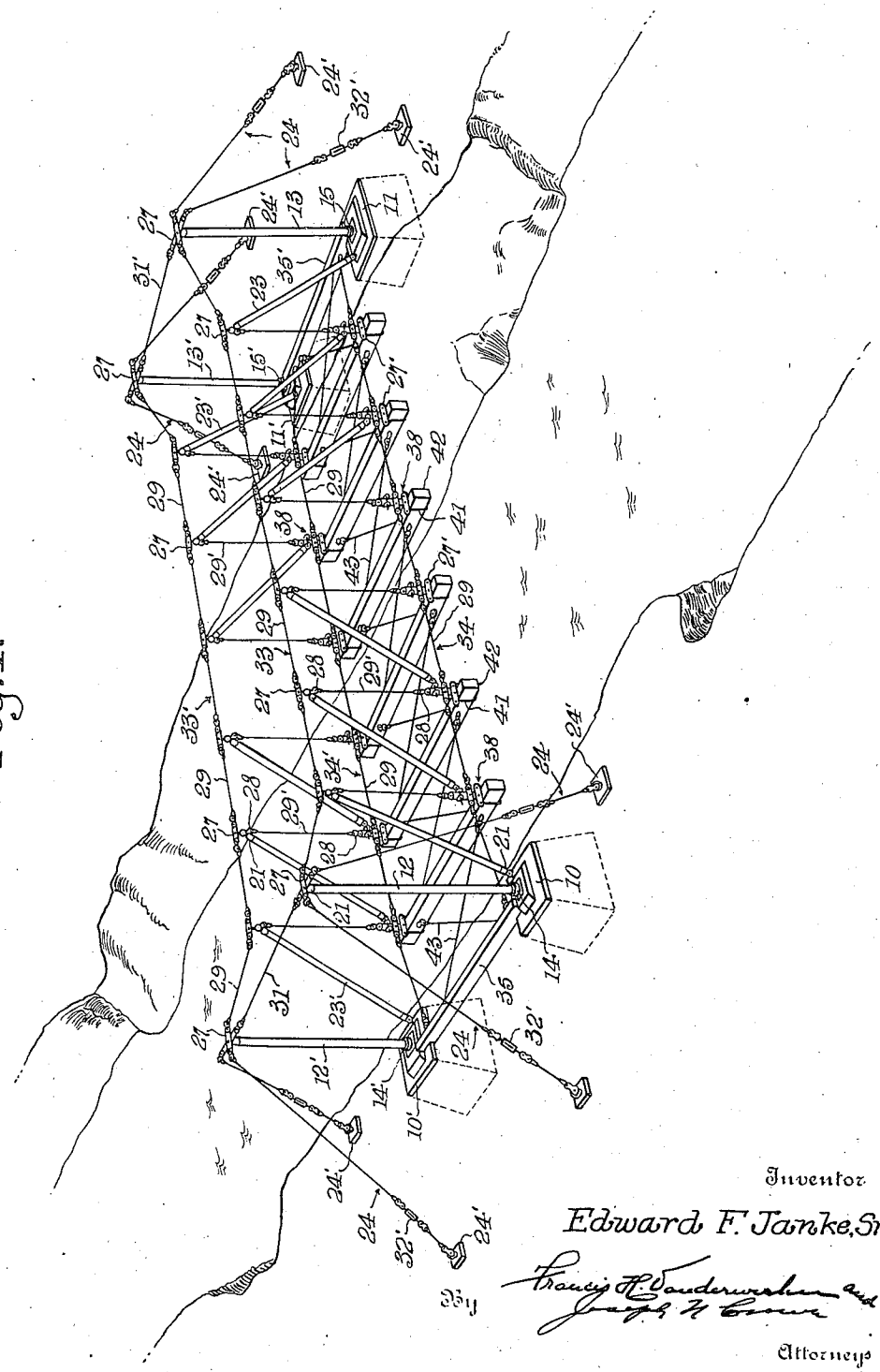
March 25, 1947. E. F. JANKE, SR 2,417,825

BRIDGE STRUCTURE

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Fig. 1.



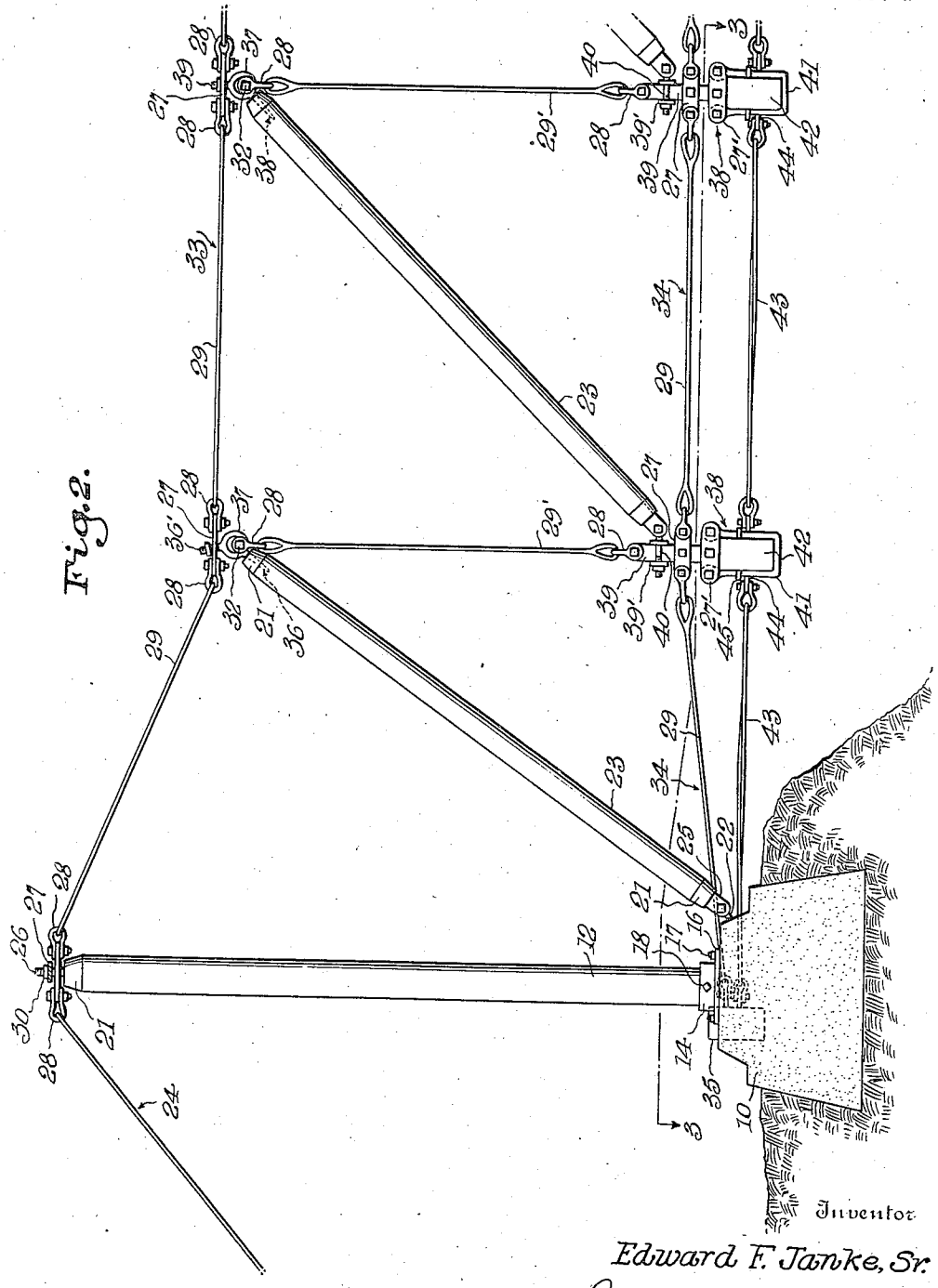
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BRIDGE STRUCTURE

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Fig. 2.



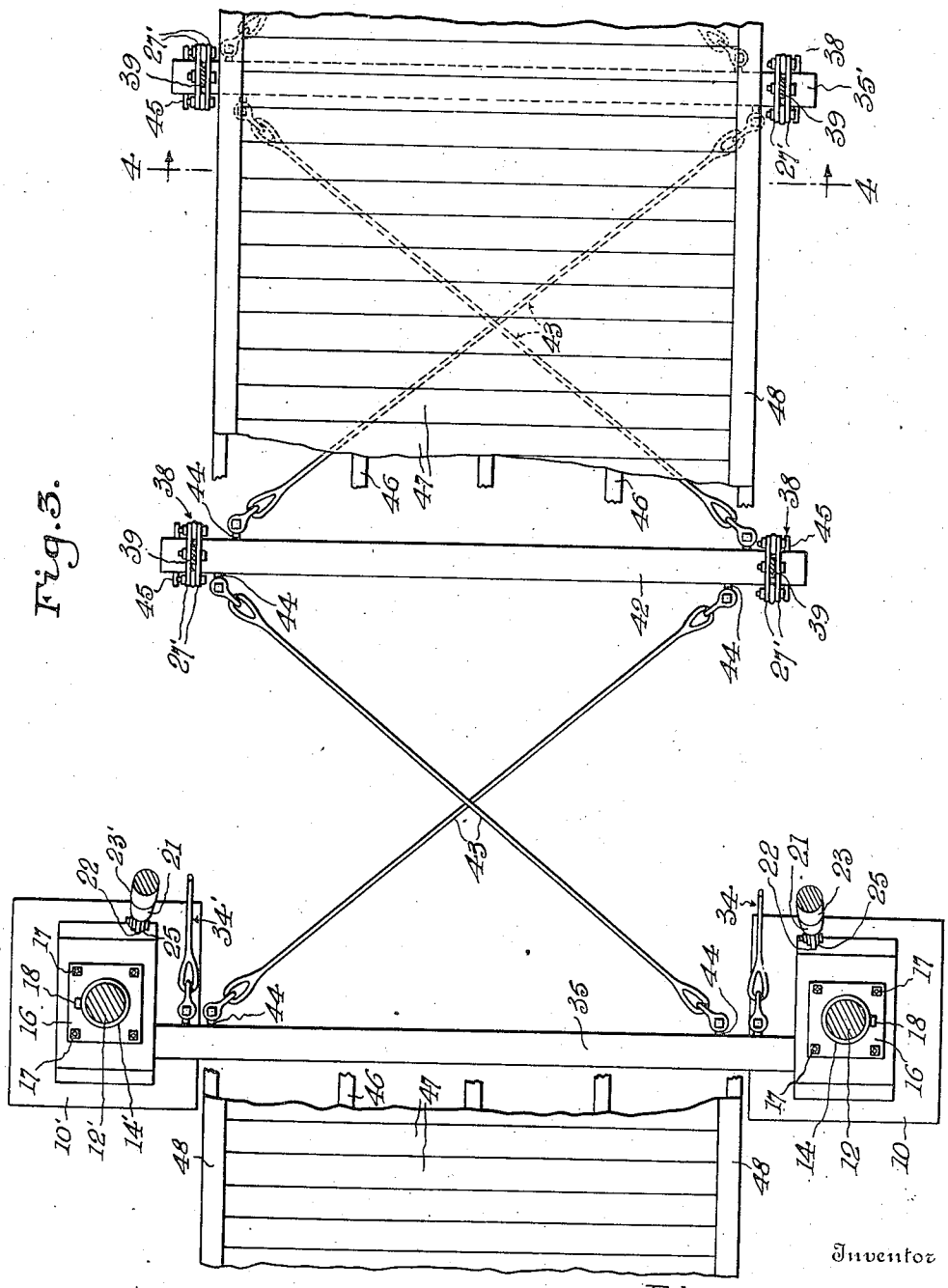
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BRIDGE STRUCTURE

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Fig. 3.



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BRIDGE STRUCTURE

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Fig. 6.

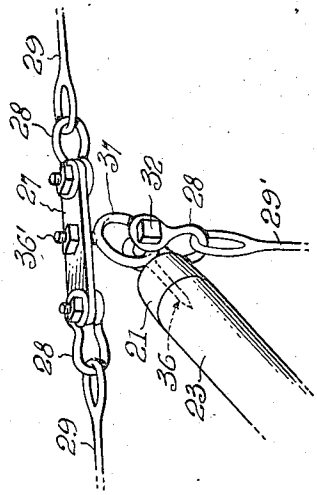


Fig. 8.

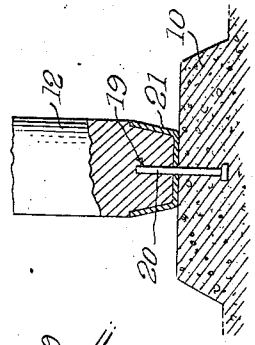


Fig. 7.

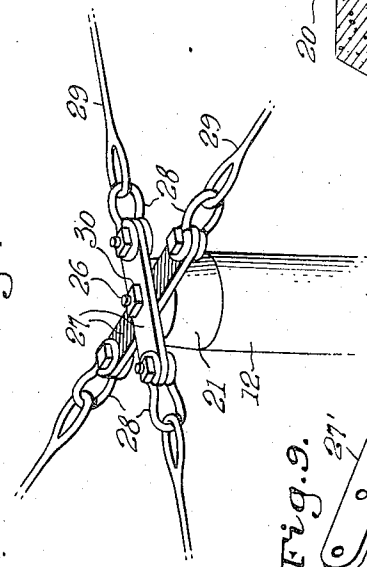


Fig. 9.

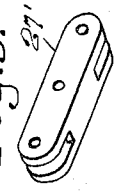


Fig. 4.

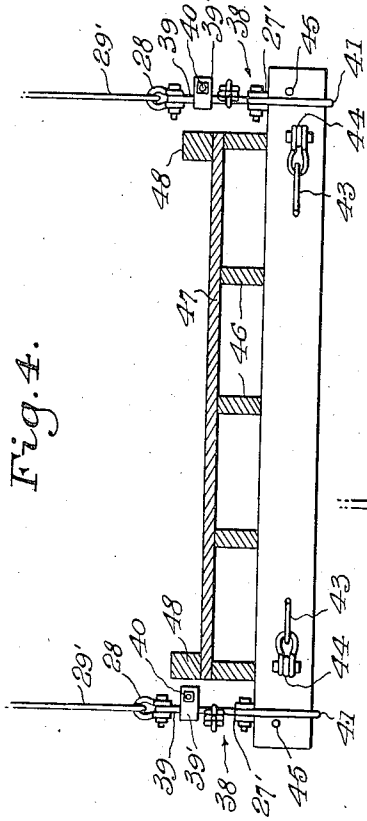
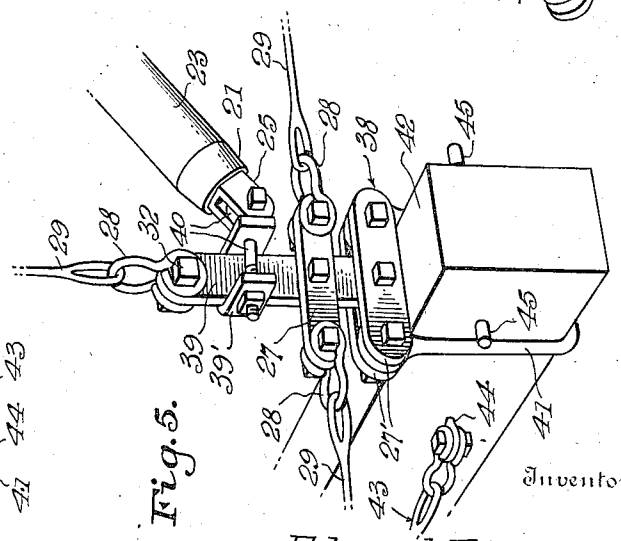


Fig. 5.



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Patented Mar. 25, 1947

2,417,825

UNITED STATES PATENT OFFICE

2,417,825

BRIDGE STRUCTURE

Edward F. Janke, Sr., Washington, D. C.

Application November 10, 1944, Serial No. 562,773

1 Claim. (Cl. 14—3)

(Granted under the act of March 3, 1883, as amended April 30, 1928; 370 O. G. 757)

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The invention described herein may be manufactured and used by or for the Government for governmental purposes, without the payment to me of any royalty thereon.

This invention relates generally to bridges but more particularly to a bridge which may be rapidly erected with easily transportable parts.

One object of the invention is to provide a bridge of the type set forth having a light, strong and efficient structure which may be easily erected by unskilled workmen.

Another object of the invention is to provide a bridge having a structure composed of many like and similar parts which may be easily manufactured, transported and replaced when necessary.

Another object of the invention is to provide a bridge of the class described which is of sufficient rigid construction to prevent lateral swaying or longitudinal to and fro motion caused by live loads or wind pressure.

Another object of the invention is to provide a bridge which is composed of easily connected parts which may be readily assembled to form any suitable span, and assembled with sufficient rapidity to make the structure adaptable for bridging streams or rivers in battle areas.

With these and other objects in view the invention consists in certain features of construction and combinations and parts hereinafter described and particularly pointed out in the claim.

Referring to the drawings in which like parts are represented by similar reference characters:

Figure 1 is a perspective view of the assembled bridge with flooring removed;

Figure 2 is a side elevation showing the foundation, mast and two sections at one end of the bridge;

Figure 3 is a sectionized view taken on the line 3—3 of Figure 2;

Figure 4 is a sectionized view taken on the line 4—4 of Figure 3;

Figure 5 is a perspective view of one end of a beam showing the boom and rod connections;

Figure 6 is a perspective view of an upper end of a boom and its rod connections;

Figure 7 is a perspective view showing the upper end of a mast and the arrangement of the rod connections;

Figure 8 is a partially sectionized elevation showing a modified form of mast support; and

Figure 9 is a perspective view of a loop fastener.

Briefly stated, the bridge comprises end masts which are supported on suitable foundations and which are retained in an upright position by guy

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rods, portal bracing and chords which extend throughout the length of the bridge. The chords also function as supports for a plurality of diagonal compression members or booms and vertical tension rods, to which are attached lower end loops for the support of floor beams. The structure is formed as a series of boom sections supported by the masts, the longitudinal boom supports forming links in the chords which extend between the masts and the end beams of the bridge.

Referring to Figs. 1 and 2 the numerals 10, 10′ and 11, 11′ designate the foundation blocks or abutments on which the masts 12, 12′ and 13, 13′ are supported. On these foundation blocks are mounted mast support members 14, 14′ and 15, 15′ which consist of flanged collars, the flange portion 16 of which is attached to the blocks by stud bolts 17 and the collar portion is attached to the lower end of the masts by means of screws 18. A modified form of means for the attachment of the masts to the blocks is shown in Fig. 8, wherein the mast is provided with a drilled hole 19 at its lower end which is adapted to receive the pin 20 which is retained by the block. All masts and booms used in the bridge construction, if made of wood, are provided with caps 21 at their extremities to prevent splitting.

In the foundation are also fastened eye pins 22 to which the booms 23 and 23′ are connected by means of U-shaped attaching members 25 which are affixed to their lower ends as will be further described.

At the upper extremity of the masts are provided anchoring pins 26 which are screwed into the masts or otherwise suitably attached thereto. These pins 26 which are threaded at their upper ends for the reception of a nut are adapted to retain thereon link fastening strips 27.

The fastening strips 27 which are shown in detail in Fig. 7 comprise strips of metal provided with a center hole adapted to fit over the upwardly projecting threaded pins 26, and end holes which are adapted to retain the shackles 28 for the attachment of the rods 29 which form guy members. After the fasteners are placed over the threaded pins they may be fastened in place by means of the nuts 30.

The masts are supported by guy members or braces 24 which extend to the concrete blocks 24′, and by the portal braces 31 and 31′ which are also composed of rods 29. The guy members are tightened by means of turnbuckles 32′. Both the guy members and portal braces are attached to fasteners 27 by means of shackles 28. The

masts are connected longitudinally by the upper chords 33 and 33' which are also composed of rods 29 interconnected by fasteners 27 and shackles 28 as shown in Figs. 1 and 2. The lower chords 34 and 34' extend longitudinally between the end beams 35 and 35' which are partially embedded in the foundation blocks 10, 10' and 11, 11'. The eye pins 22, as described above, are fastened within the foundation blocks for the attachment of the lower ends of the booms. To the upper ends of the booms are attached ring members 37 which have two projecting threaded pins 36 and 36', one of which screws into the top of the boom, and the other pin is adapted to project through the center hole in a fastening strip 27 to which rods 29 of the upper chord are attached.

From the ring of the ring member 37 are suspended rods 29' which are attached to said ring members by means of a shackle 28 and a bolt 32, as shown in Fig. 6. The lower ends of the rods 29' are also attached, by means of a shackle 28 and bolt, to a beam support fastener 38 which comprises a metal strip 39 provided with three holes throughout its length, one hole adjacent to either end thereof, and a hole about one third the distance from the bottom of the strip. To the main strip is welded a U-shaped boom support member 39' which is drilled for the reception of an eye bolt 40 to which the U-shaped attaching member 25, affixed to the lower end of a boom 23, is bolted. The strip 39 of the beam support fastener 38 is attached to a fastening strip 27 by a bolt which passes through the central hole therein. The end holes of the strips 27 of the beam support fasteners 38 are provided for the attachment of shackles which are connected to rods 29 of the lower chords 34 and 34'. At the lower end of the beam support fastener 38 is attached a loop fastener 27' which is held on either side of the strip 39 by means of a bolt extending through the lower hole therein.

The end holes of the loop fasteners 27' which are attached to the beam fastener are for the attachment of bolts which suspend a U-shaped loop 41 adapted to support a cross beam 42 as shown in larger views in Figs. 2 and 5.

The beams which extend through the loops 41 are braced by cross rods 43 which are attached to eyes 44 fastened to said beams 42 and 35 and 35' adjacent to the ends thereof. The beams are held within the loops by means of pins 45 which are driven into holes drilled through the beams between the loops and the ends thereof.

Upon the beams may be placed steel treadways or parallelly spaced longitudinal stringers 46 which support the transverse floor boards 47, as illustrated in Figs. 3 and 4. Curb rails 48 extend along each side of the flooring throughout the length of the bridge.

In constructing the bridge the abutments 10, 10' and 11, 11', and anchor blocks 24' are first located in the desired positions, as shown in Fig. 1. The masts are then erected and braced by the guy rods 24 and portal braces 31 and 31'. The upper chords 33 and 33', comprising the rods 29 and fastening strips 27, are then attached to the upper ends of the masts and the booms 23, 23' are attached to the eyes in the foundation blocks 10, 10' and 11, 11' and to the nearest fastener strips 27 in the upper chords. Lower chords 34 and 34' which are also composed of rods 29 linked together by fastening strips 27 are then attached to the end beams 35 and 35'. The vertical suspension rods 29' are suspended from the ring members 37, and to the bottom of these rods 29' are fastened the beam fasteners 38 which have a U-shaped beam loop 41 attached thereto. After the first section of the bridge has been erected the booms of the following sections are attached by engaging the pins 36' of the ring members 37 to the fastening strips 27 of the upper chords and connecting the U-shaped attaching members 25 at the lower ends of the booms to the strip 39 of the beam support fastener 38 by means of the eye bolts 40. The rods 29' are attached to the rings 37 at the upper ends of the booms and to the beam fastener 39, in all of the sections.

By stringing the upper chords only before filling in the booms and vertical tension rods, the boom sections may be built outward from the masts, one after another, until the other side is reached, or they may be erected from either end masts and the construction continued toward the center.

The rods 29 and 29' from which the upper and lower chords, mast supports, and suspension members are formed may be of equal length. The booms may also be of equal length, and the fastener strips 27 may be of similar construction and equal size. Loop fasteners as shown in Fig. 9 may be used to support the U-shaped loops 41 or two separate links 27 may be attached to the sides of the strip 39 for this purpose.

The uniformity in construction and size of the parts used, the ease with which they are connected, and the manner of their arrangement to form a plurality of interconnected boom sections are features which facilitate the erection of a rigid and durable bridge in the shortest possible time.

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

A bridge structure comprising end masts and a plurality of interconnected boom sections each section including a boom and a suspension rod, upper and lower chords formed of rods connected by link fasteners extending between said masts, means for connecting said booms to said link fasteners in the upper chord, means for connecting said suspension rods to said booms at their upper ends and beam support fasteners for uniting the lower ends of adjacent booms and suspension rods, said beam support fasteners each including an elongated strip to which is connected a link fastener of a lower chord, loop fasteners connected to said elongated strips, and supporting loops connected to said loop fasteners, beams supported by said loops, stringers mounted on said beams, and flooring mounted on said stringers.

EDWARD F. JANKE, SR.

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