

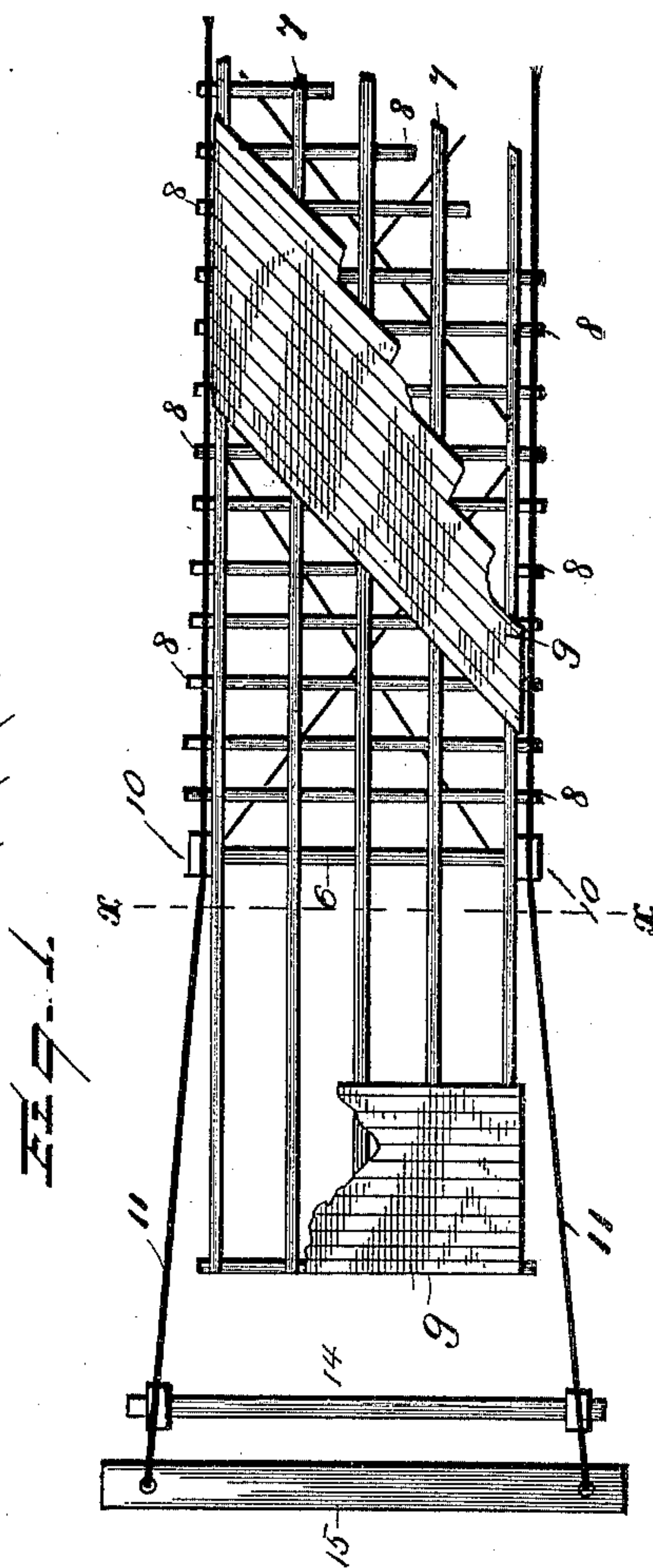
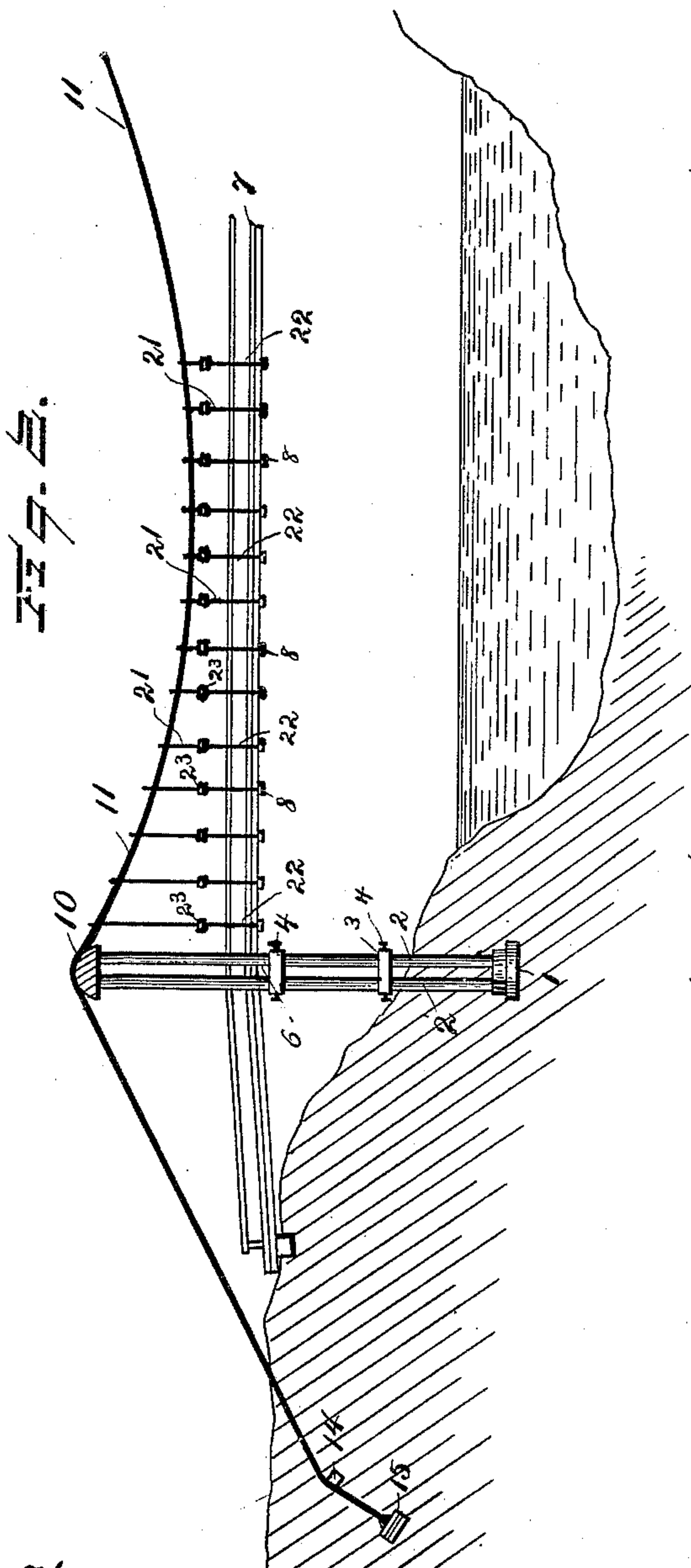
(No Model.)

2 Sheets—Sheet 1.

W. H. C. GREER.
SUSPENSION BRIDGE.

No. 411,499.

Patented Sept. 24, 1889.



Witnesses:

E. C. Mudderman

W. H. Duvall

Inventor

Wm. H. C. Greer,

By his Attorneys

C. Snowdon

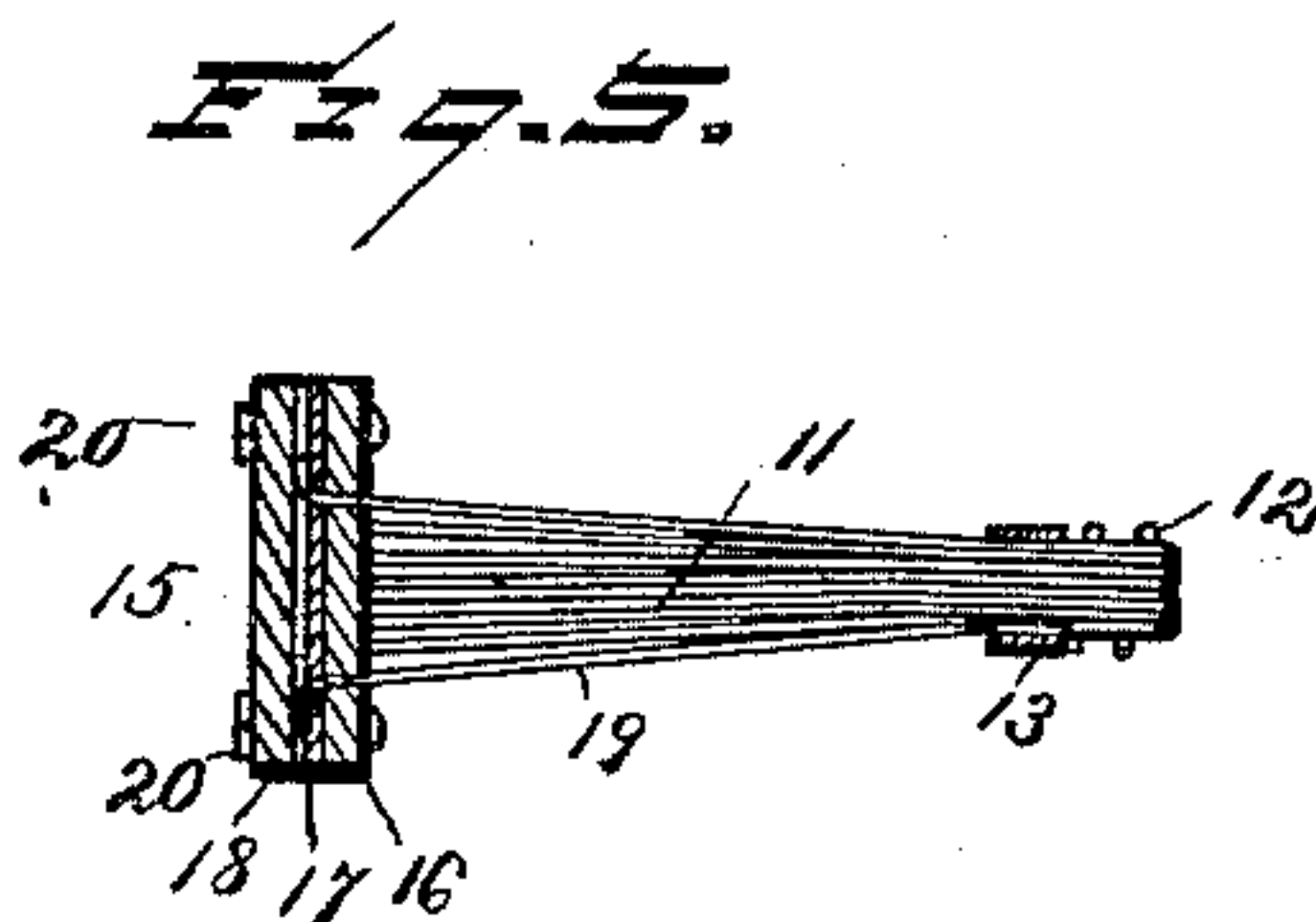
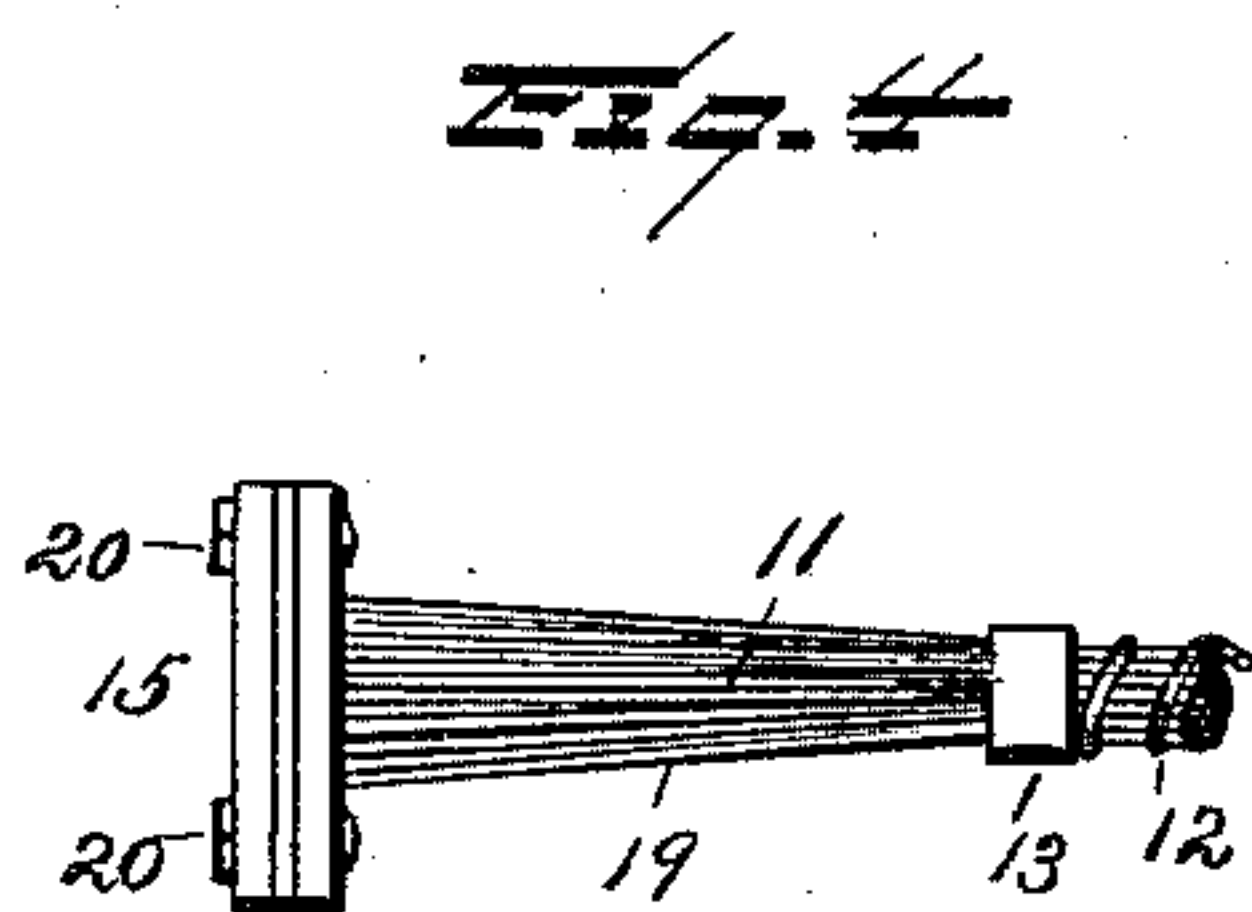
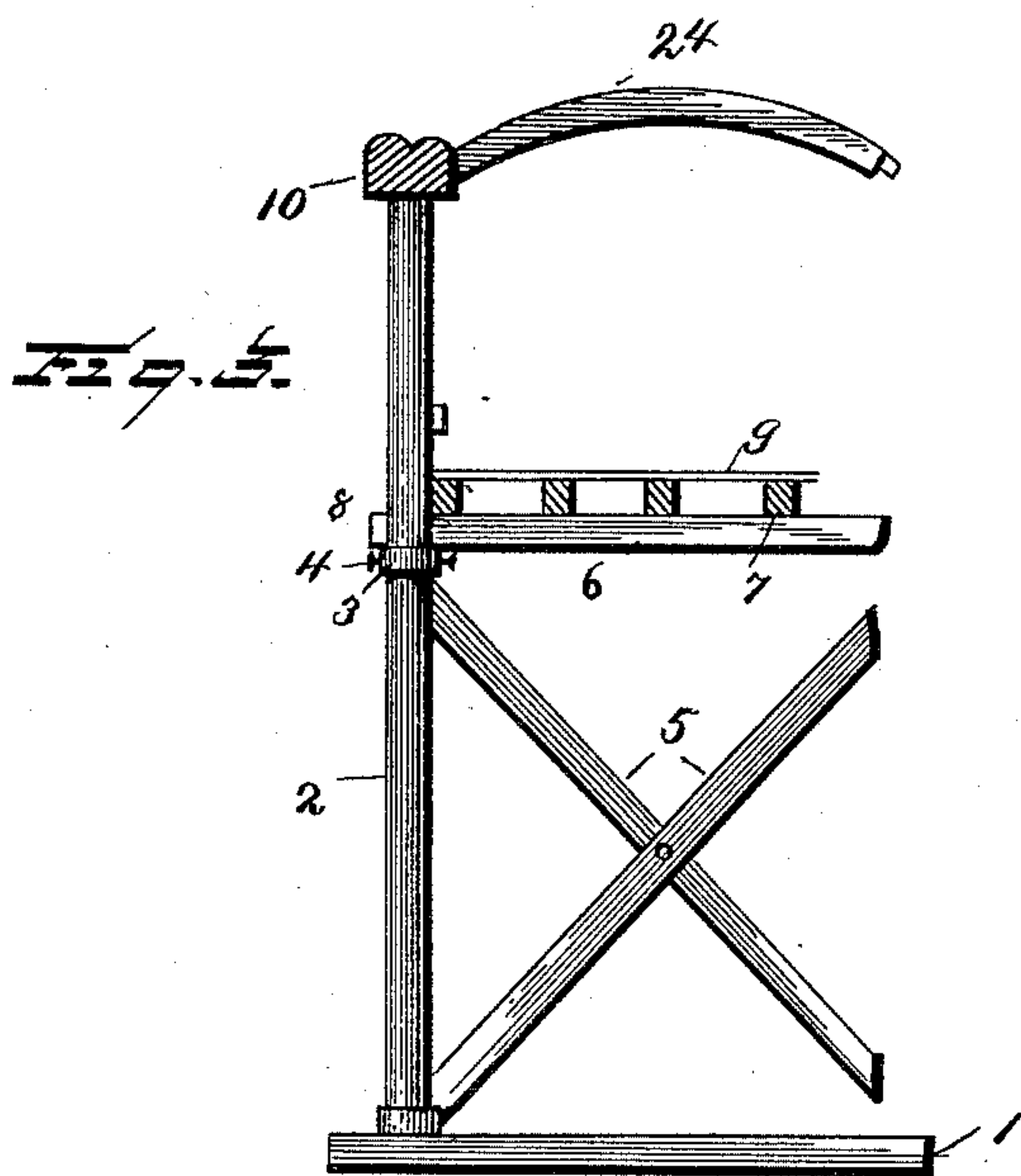
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UNITED STATES PATENT OFFICE.

WILLIAM HENRY CLAY GREER, OF SHERMAN, TEXAS.

SUSPENSION-BRIDGE.

SPECIFICATION forming part of Letters Patent No. 411,499, dated September 24, 1889.

Application filed April 23, 1889. Serial No. 308,331. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM HENRY CLAY GREER, a citizen of the United States, residing at Sherman, in the county of Grayson and State of Texas, have invented a new and useful Suspension-Bridge, of which the following is a specification.

This invention has relation to suspension-bridges.

Among the main objects of the invention are to provide a bridge the pillar or roadway of which is adjustable to different heights, and to meet certain contingencies and while adjustable as a whole is also adjustable at any point whatsoever, whereby the roadway may be maintained level regardless of the yielding of certain portions of the structure, which would otherwise require considerable tearing away and rebuilding of the parts.

A further object of the invention is to reduce the number of parts in a material degree, and so simplify the main portions of the structure as to effect a considerable saving both of the work required to assemble the parts and in the cost of the parts themselves.

Other objects and advantages of the invention will hereinafter appear, and the novel features thereof will be particularly pointed out in the claims.

Referring to the drawings, Figure 1 is a plan of one end of a bridge constructed in accordance with my invention, the flooring being broken away to expose the frame-work and the pillar-connecting brace removed. Fig. 2 is a side elevation of a portion of a bridge; Fig. 3, a transverse section on the line xx of Fig. 1; Fig. 4, a detail in plan of the terminal of the suspension-cable; and Fig. 5, a detail in section of Fig. 4, showing the anchorage.

Like numerals of reference indicate like parts in all the drawings.

Upon each of the opposite banks of a river or other way, upon sills 1, I provide opposite pairs of parallel vertical pillars 2, each of the pairs being connected by means of movable tie-plates 3, having openings near their ends for the reception of the pillars, upon which they are adjustable by means of set-screws or other binding devices 4. The two pairs of pillars are connected by means of diagonal

braces 5 and suitable tie-bars or any other form of additional bracing desired. Extending from one to the other of the opposite pairs of pillars 2 and resting upon opposite tie-bars 3, which are adjusted to a desired height, is a girder or beam 6, one being arranged upon each bank or near each end of the bridge.

7 represents longitudinal beams which extend from girder to girder, and are supported between the girders by transverse suspension-beams 8. Upon the beams 7 is laid the flooring 9.

Each of the opposite pairs of pillars 2 is provided with a superimposed connecting grooved cap 10, over which at each side of the bridge is arranged the supporting-cable 11. The cable 11 is preferably formed by the combining of a series of distinct and independent parallel cables wrapped together, the wrapping extending nearly throughout the length of the cable. By this arrangement I obviate the usual attending cost of manufacturing a special cable the strands of which are coiled. At the terminals of the spirally-wound wrapping-cable 12, I provide a sleeve 13, to which the spiral cable is secured. At this point I provide a sill or chair 14, over which the cables are stretched, the chair preferably being located under ground, and below the same and out of line therewith is arranged the anchor of the cables. The anchor 15 consists, as will be seen in Fig. 5, of three plates 16, 17, and 18, respectively. The plates 16 and 17 are perforated, preferably, on a circle for the reception of the individual cables 19, comprising cable 11, which cables diverge after leaving the sleeve 13, enter the plates 16 and 17, and are bent upwardly against the under surface of the last-mentioned plate. Against these bent ends is applied a binding-plate 18, through which binding-bolts 20 are inserted, said bolts also passing through the plates 17 and 16. At intervals along the cable and between the two banks are arranged depending rods 21, the lower ends of which are screw-threaded, and are connected adjustably to similar upwardly-projecting rods 22, corresponding in number to and supporting the tie-bars 8. The means of connecting the two rods are in this instance ordinary turn-buckles 23, though I do not limit myself to forming the rods in sections

or to the employment of turn-buckles, as any ordinary means of adjustment may be substituted therefor. By this arrangement it will be seen that the giving away of any of the parts—such as the sinking of any of the sills or the yielding of the chair or the anchor—whereby the flooring or roadway is thrown out of alignment, may be easily and quickly corrected by the means of adjustment herein described. For example, referring to Fig. 2, we will suppose that the pillars 2 at one end of the sill 1 have sunk and this side of the roadway is thrown out of alignment. The alignment may be corrected by rotating the turn-buckles, so as to draw the rods together and thus remove the weight of the bridge from the girder 6 and the tie-plates 3. Now by loosening the screws 4 the tie-plates 3 may be moved up under the girders and the binding-screws retightened, and the suspension-rods 21 and 22 then operated to accomplish any fine adjustment required.

The two opposite pairs of pillars 2 are connected by a suitable curved brace 24, which serves to maintain the same in relative position, the ends of the brace being secured to the caps 10.

Having thus described my invention, what I claim is—

1. In a suspension-bridge, opposite pillars arranged in pairs and provided with adjustable tie-plates, in combination with transverse girders mounted on the tie-plates, longitudinal beams mounted on the girders, cables suspended over cap-pieces mounted at the upper end of the pillars, adjustable suspension-bars depending from these cables and connected to transverse tie-bars arranged under the longitudinal beams, substantially as specified.

2. In a suspension-bridge, a cable composed of parallel strands suitably bound together and provided with opposite sleeves, from

which the strands diverge, in combination with an anchor comprising two perforated plates for the reception of the cables against the under surface of which they are bent, and a binding-plate provided with binding-bolts for binding the same against the bent ends of the cable, substantially as specified.

3. In a suspension-bridge, opposite pairs of vertical pillars, each pair connected at its upper end by a longitudinally-grooved cap and provided with adjustable tie-plates, in combination with transverse girders mounted on the tie-plates, longitudinal beams mounted on the girders, depending sectional adjusting-rods provided with tie-bars extending underneath the longitudinal beams and connected with the cables, the latter arranged in the grooves of the caps, and an anchor for securing the terminals of the cables, substantially as specified.

4. The sill C, having the oppositely-arranged pairs of pillars 2, braced, as at 5, and provided with the adjustable tie-plates 3, having binding-screws 4, grooved caps 10, and arched brace 24, in combination with the girders 6, arranged on the tie-plates, the beams 7, arranged on the girders, and the floor 9, arranged on the beams, and of the suspension-cables 11, arranged in the grooved caps, the anchors 15, and the chains 14, arranged at the terminals of the cable, substantially as specified.

5. The combination of the cable 11 and its support with the depending rods 21, the tie-bars 8 and their rods 22, and the connecting turn-buckles 23, substantially as specified.

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

WILLIAM HENRY CLAY GREER.

Witnesses:

E. C. FRY,

R. B. NEWCOME.