(No Model.)

2 Sheets—Sheet 1.

T. H. KOSURE.

BRIDGE.

No. 478,438.

Patented July 5, 1892.

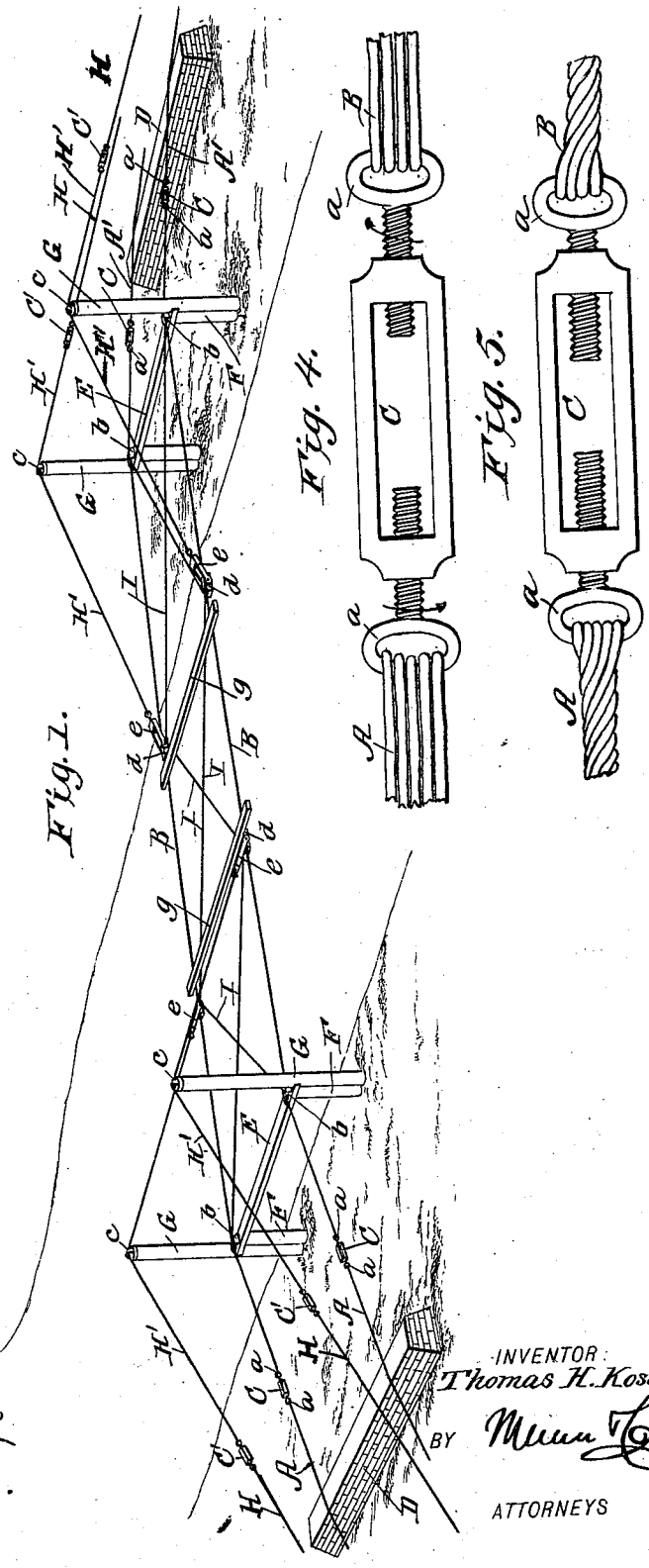

Fig. 1.

Fig. 4.

Fig. 5.

WITNESSES:

Fred G. Dieterich

Edw. W. Byrn.

INVENTOR:

Thomas H. Kosure.

BY Munn & Co

ATTORNEYS

(No Model.) 2 Sheets—Sheet 2.

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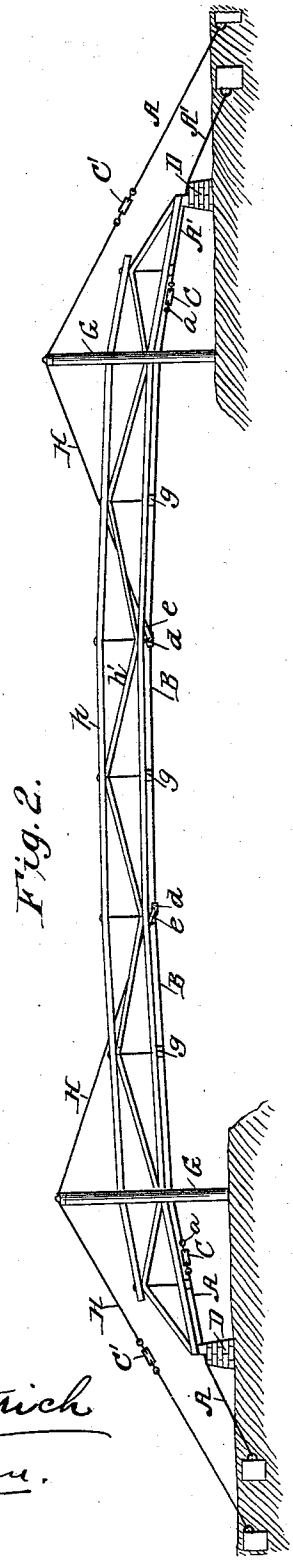

Fig. 2.

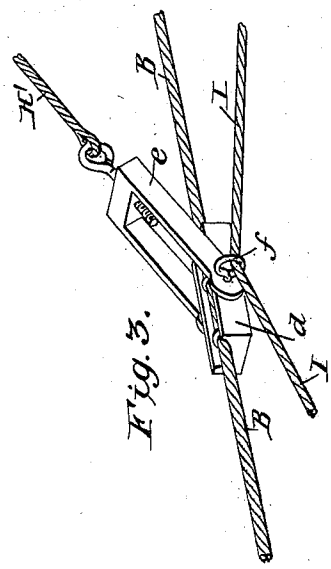

Fig. 3.

WITNESSES:
Fred J. Dieterich
Edw. W. Byrn.

INVENTOR:
Thomas H. Kosure.
BY Munn & Co
ATTORNEYS

UNITED STATES PATENT OFFICE.

THOMAS H. KOSURE, OF FARMERSVILLE, TEXAS.

BRIDGE.

SPECIFICATION forming part of Letters Patent No. 478,438, dated July 5, 1892.

Application filed May 26, 1891. Serial No. 394,202. (No model.)

To all whom it may concern:

Be it known that I, THOMAS H. KOSURE, of Farmersville, in the county of Collin and State of Texas, have invented a new and useful Improvement in Bridges, of which the following is a specification.

My invention relates to small bridges for public roads; and it is designed to provide a simple and strong construction in metal of very low cost and light weight, using only such materials as are easily available, being also of easy construction and well adapted to resist washouts.

It consists in the peculiar construction and arrangement of parts, which I will now proceed to fully describe, and afterward point out in the claims.

Figure 1 is a perspective view of the bridge with the flooring and side rails removed. Fig. 2 is a side elevation of the bridge complete, and Fig. 3 is a detail view, in perspective, of one of the connections of the cables, while Figs. 4 and 5 are side views of the cable connections on a larger scale, showing the method of twisting and tightening the cables.

My bridge is in the nature of a suspension-bridge, in which the principal members of the bridge are constructed of wire cables under tension. These cables, however, instead of being first made and then applied, are made of straight strands of wire, which are twisted at the same time that the bridge is constructed, thus performing at one operation the construction of the cables and the putting of the same under proper tension between the anchorage-points.

I will first describe the bridge itself and afterward explain how it is made.

In the drawings two main cables support the floor of the bridge and run along its edges Each of these cables is composed of three sections A B A′, connected by turnbuckles C, having screw-eyes *a a*. These cables have a firm anchorage in the earth at opposite ends of the bridge and are bent over abutments D, of masonry, and then pass to metal bearing-plates *b b*, which rest upon a transverse sill E, sustained upon short columns F F at each embankment. Beside these short columns F are tall columns G G, which at their upper ends carry caps *c*, forming bearing-plates for the suspension-cables H H′. These latter are each made in two sections connected by turnbuckles C′. These suspension-cables have at one end a firm anchorage in the earth and after passing over the bearing-plates at the tops of the long columns are fastened to the main cables at points about one-third the distance of the span between the columns. To brace the bridge against lateral deflection from the wind or other cause, stay-cables I are arranged to cross each other from side to side, passing from one main cable to the other and back again. These stay-cables are made fast to the main cables at the same points where the suspension-cables connect, and at these points a special metal coupling (see Fig. 3) is used, consisting of a grooved shoe *d*, in which lies the main cable, which is fastened thereto by staples or bolts. To the shoe is fastened a half-section *e* of a turnbuckle and an eyebolt *f*, the eyebolt forming the pivotal connection of the half-section of the turnbuckle to the shoe. The shoe being secured to the main cable, the suspension-cable is fastened to the half-section *e* of the turnbuckle and the stay-cables are secured to the eyebolt *f*, and thus a coactive union between these members is effected and a proper distribution of strength and strain is obtained. Along the main cables A B A′ the floor-sills *g* are laid transversely, and upon the same a trussed hand-rail *h h′* is erected, as shown in Fig. 2.

In constructing my bridge I use in making and running the cables plain strands of wire, which are run back and forth from one anchorage-point to a turnbuckle until enough strands are laid for a cable for one section, and from that turnbuckle the strands are then laid to the next for the next section, and so on. The screw-eyes of the turnbuckles at opposite ends of a section are then turned in opposite directions, and the double result is accomplished of twisting the strands into a cable and also of tightening the cable between its anchorage-points. The cables so formed retain their twisted forms and show no tendency to untwist, the wire being slightly stretched by reason of its ductility in the operation of twisting, which causes it to remain in this form.

In Fig. 4 is shown one of the cable connections after the wire is strung in straight parallel lengths, and Fig. 5 shows the same after

the cable is twisted, the pitch of the strands of the cable being of the same inclination as the pitch of the screw-threads of the eyebolt that twists the cable.

The twisting of the strands of the cables after the anchorage is obtained in contradistinction to using a cable already twisted is that the act of twisting not only secures the tightening of the cable, but it also puts a uniform tension on all the strands—*i. e.*, the tightest strands go to the center in twisting and the slack ones lie upon the outside of the cable so formed. When the strands are so twisted, their convolutions lie against each other with a frictional contact, which unifies and increases the tensile strength.

Having thus described my invention, what I claim as new is—

1. A bridge consisting, essentially, of wire cables connected by turnbuckles, the twist of the cables being of the same direction of inclination as to pitch as that of the screw-threads of their respective eyebolts and the said wire cables being composed of wires first strung plainly or in parallel position and then twisted together between the turnbuckles to simultaneously form the cable and tighten the same, substantially as shown and described.

2. The combination of the main cables A B A′, made in sections and connected by turnbuckles C, the abutments D, transverse sills E, having bearing-plates *b*, the short columns F, long columns G, having caps *c* at their upper ends, the suspension-cables H H′, anchored at one end in the earth and passing over the bearing-plates of the tall columns and connected at the other end to the main cables, and the crossed stay-cables I, substantially as shown and described.

3. The combination, with the main-cable section B, the stay-cable I, and the suspension-cable H, of a single coupling for these three members composed of a shoe for the main cable, an eyebolt for the stay-cable, and a turnbuckle-section for the suspension-cable, substantially as shown and described.

THOS. H. KOSURE.

Witnesses:
JAY HORN,
L. C. CLIFTON.