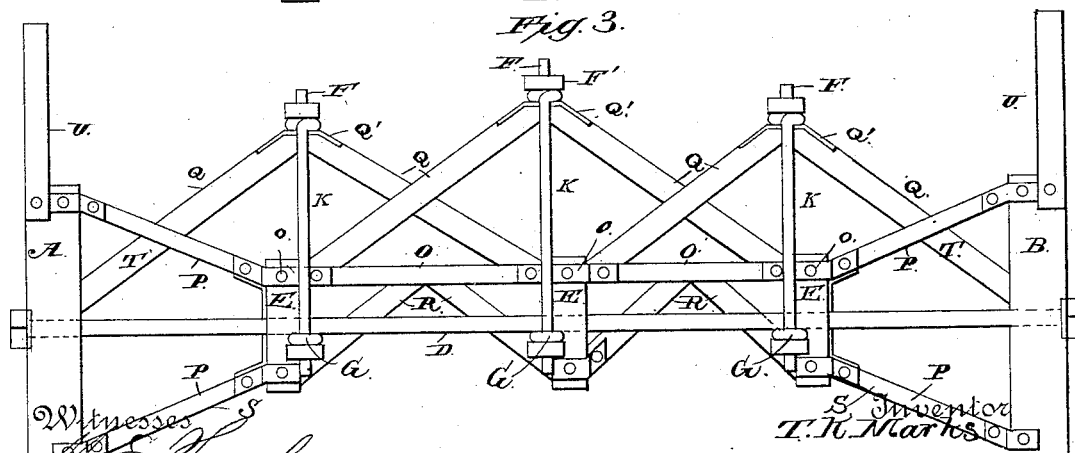
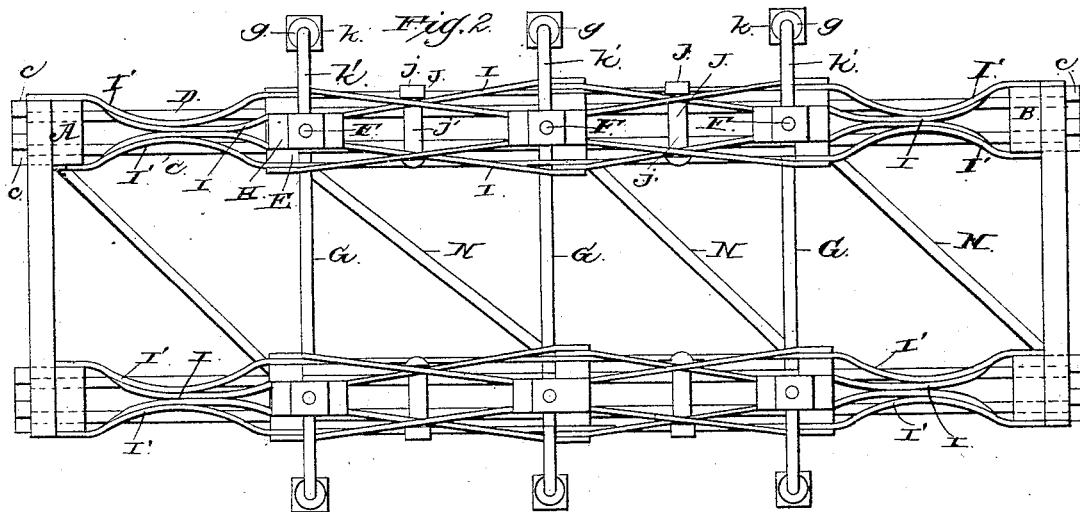



T. K. MARKS.
TRUSS BRIDGE.

Patented July 27, 1886.



Witnesses
M. E. Fowler
H. J. Berwick

By His Attorneys

T. H. Marks 

C. Snowden

UNITED STATES PATENT OFFICE.

THOMAS KENNEDY MARKS, OF CORNERSVILLE, TENNESSEE, ASSIGNOR OF
ONE-HALF TO W. M. DAVIS, OF SAME PLACE.

TRUSS-BRIDGE.

SPECIFICATION forming part of Letters Patent No. 346,118, dated July 27, 1886.

Application filed November 20, 1885. Serial No. 183,440. (No model.)

To all whom it may concern:

Be it known that I, THOMAS KENNEDY MARKS, a citizen of the United States, residing at Cornersville, in the county of Marshall and State of Tennessee, have invented a new and useful Improvement in Truss-Bridges, of which the following is a specification, reference being had to the accompanying drawings.

My invention has relation to improvements in truss bridges; and the novelty consists of the peculiar construction, combination, and arrangements of parts, substantially as hereinafter fully set forth, and specifically pointed out in the claims.

The invention has primarily for its object to provide a device of the character named, which is especially adapted for bridging small rivers and streams and between elevated doors of warehouses and the like; to provide means for taking up the slack in the tension of the rods and braces; to provide a system of braces which shall serve to strengthen the device and prevent any undue vibration of the bridge, and to combine simplicity, strength, and durability of construction with thorough effectiveness of operation.

In the accompanying drawings, Figure 1 is a side elevation of my improved truss-bridge. Fig. 2 is a top plan view; and Fig. 3 is a side elevation of another form of bridge constructed in accordance with my invention, and especially designed to be constructed from wood.

Referring to the drawings, in which like letters of reference indicate corresponding parts in all the figures, A B designate the two main supporting posts or columns arranged in pairs on opposite sides of a river, stream, or between the walls of two warehouses, to connect one with the other.

I will only describe the intermediate supporting devices and braces between one of each pair of uprights or columns, which are located on opposite banks of a stream, &c., it being understood that the fellow columns of each pair are connected in substantially the same manner.

C D designate two rods, which are preferably arranged parallel with each other, and connect the columns A B together, the ends of the rods passing through the columns and

receiving-nuts *c*, whereby the tension can be regulated as desired.

E designates a series of three or more uprights or posts, which are arranged and supported equi-distant apart on the rods or cables C D, the posts being fitted over the rods and properly secured thereto by straps and bolts.

F designates a series of vertical tension-rods, secured at their lower ends to horizontal transverse supporting-rods G, the upper ends of each of the rods F having a cap, H, and an adjusting-nut, F', bearing thereon to force the same downwardly.

I designates inclined braces, which are secured at their lower ends to the columns A B and at their upper ends to the caps H; and I' are similar inclined brace-rods, which cross the braces or rods I and are secured at their upper ends to the columns A B and at their lower ends to the upper end of the uprights or posts E. The lower ends of the brace-rods I, intermediate of two adjacent posts or uprights, E, are secured to said uprights, and the upper ends are secured to the caps H, and at the point where the diagonally-arranged diverging brace-rods of each pair cross each other they receive a short threaded shaft or tension-rod, J, the shaft or rod connecting the bars of each pair together, and receiving nuts *j* and a sleeve, *j'*, which latter is arranged between and bears on the inner faces of the rods or bars I, to limit the inward movement thereof.

The supporting-rods G are arranged transversely across from one pair to the other of the rods C D, and are secured thereto in any suitable manner, and the ends of said rods are extended beyond the rods C D and the upright posts E, and are provided with eyes *g*, said rods G serving as supports for the stringers, on which the bridge-floor is laid.

K designates a vertical brace-rod, one being provided for each of the rods G F, the lower end being passed through the eye *g*, and receiving a tightening-nut, *k*, and the upper end having a bent arm, *k'*, that is connected to the rod F, between its cap H and the nut F', as clearly shown.

L designates two longitudinal brace-rods that are disposed on opposite sides of each of the columns A B, one end of each rod being

secured to one column and the other end secured in any suitable manner to the lower portion of one of the uprights or posts E.

M designates short inclined and diagonally-arranged braces located between two adjoining posts, E, the lower ends thereof being secured to said uprights and the upper ends meeting and fitted on a common shaft or rod, M', that bears in the braces L' and receive nuts m, whereby the tension of the braces L' M can be taken up and increased, as desired.

N designates transverse diagonal brace-rods arranged beneath the floor of the bridge and secured in the uprights E on opposite sides of the floor, as will be readily understood.

In Fig. 3 of the drawings I show a wooden bridge which has the same essential and characteristic features, namely: the columns A B, the tension-rods C D, the uprights E arranged on the rods, the transverse supporting-rods G for the floor of the bridge, the vertical tension-rods F, and the brace-rods K, connected to the rods G and F in the manner before described.

O designates horizontal beams arranged between and secured to two adjoining upright posts, E, in any suitable or preferable manner, and having strengthening-straps o, bolted to the uprights E; and P designates inclined beams arranged between the columns A B and the uprights E, adjacent thereto, as shown.

Q designates diagonally-arranged brace-bars secured at their lower ends to the beams O P, and at their upper ends they are connected to the upper ends of the rods F and to strap-braces Q', the nut F' bearing on said strap-braces and the brace-bars.

R designates brace-bars arranged below the beams O, and secured thereto at their upper ends and to the lower ends of the posts E; and S are inclined brace-rods secured at the lower ends of posts E, adjacent to the columns A B, and secured to said columns.

T designates short inclined braces arranged beneath the inclined beams P and secured to said beams and the columns A B, as shown. The several braces are connected and secured together and to their supporting columns, uprights, and beams by means of straps and bolts, and by the arrangement and construction described I provide a system of braces which very firmly strengthen the bridge and prevent undue vibration of the parts thereof when a loaded team or vehicle, &c., passes over the same.

U designates top braces to connect and strengthen the columns of each pair A B.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a truss-bridge, the combination of the columns A B, the rods C D, supported therein, the upright posts E, secured to the said rods, the transversely-arranged floor-supporting rods G, secured on the rods C D, the vertical tension-rods F, and the diagonally-arranged braces connected with the rods F and the uprights E, substantially as described.

2. In a truss-bridge, the combination of the columns A B, the rods C D, supported therein, the upright posts supported on said rods, the floor-supporting rods G, the vertical tension-rods F, having the adjustable caps H, and the diagonally-arranged braces connected to the caps, the uprights E, and columns, substantially as described.

3. In a truss-bridge, the combination of the columns A B, the rods C D, the upright posts secured on the rods, the transversely-arranged floor-rods G, the tension-rods F, having the nuts and caps, the brace-rods K, connected to the extended ends of the rods G and arranged between the nuts and caps of the rods F, the crossing diagonally-arranged brace-rods secured to the caps and uprights and diverging outwardly at their lower ends, and transverse adjusting-rod J, connecting the braces at the point where they cross between the uprights, substantially as described.

4. In a truss-bridge, the combination of the columns A B, the rods C D, uprights E, supported on the rods, the longitudinal brace rods L, secured to the uprights and columns, the inclined braces M, secured to the uprights at their lower ends, and the supporting-shaft M', to which the upper ends of the braces M are connected, and which bears in the rods L, substantially as and for the purpose described.

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

THOMAS KENNEDY MARKS.

Witnesses:

S. T. TALLY,
JAS. D. COOK.