

(No Model.)

2 Sheets—Sheet 1.

W. LITELL.  
TRUSS BRIDGE.

No. 265,331.

Patented Oct. 3, 1882.

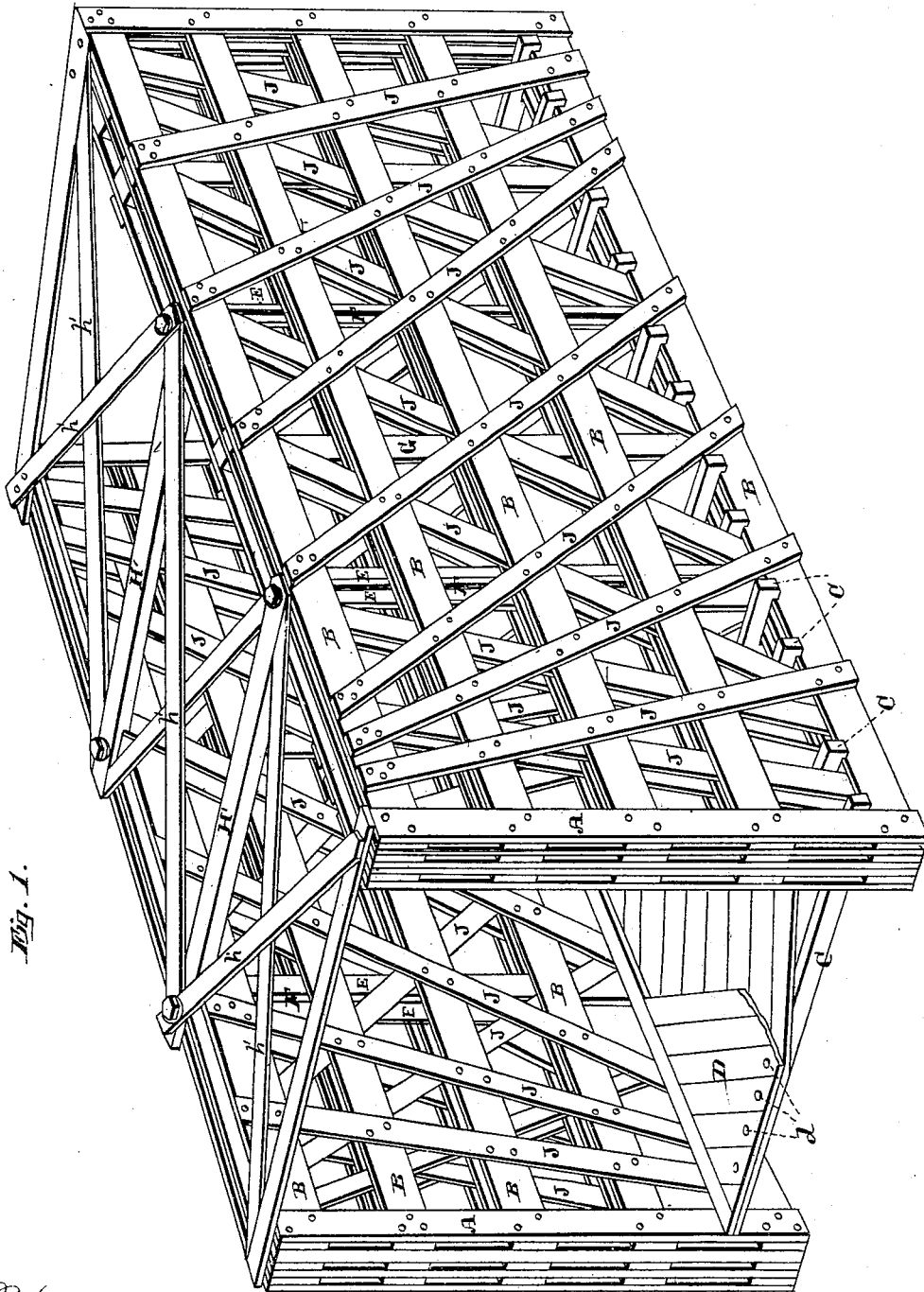


Fig. 1.

Witnesses  
Geo. H. Strong  
Amos B. Shook

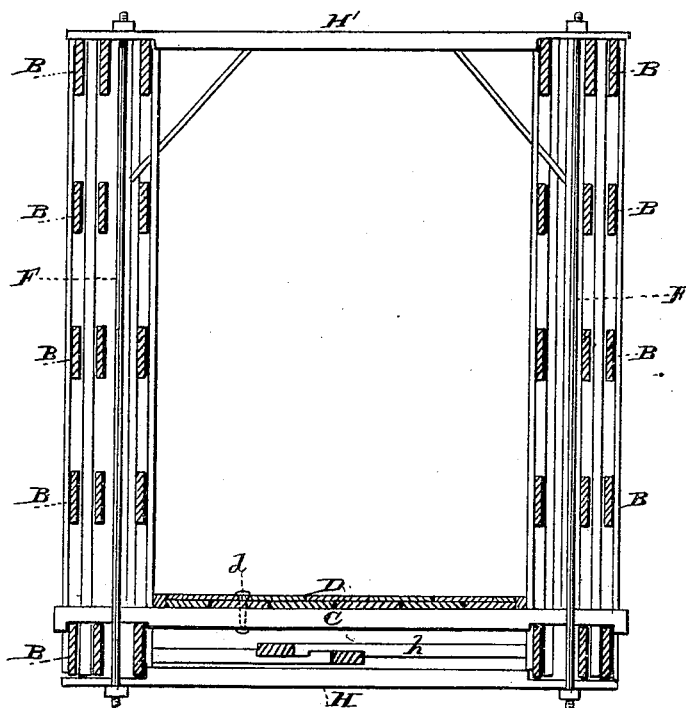
Inventor  
William Litell  
By Duvey & Co. attys

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TRUSS BRIDGE.

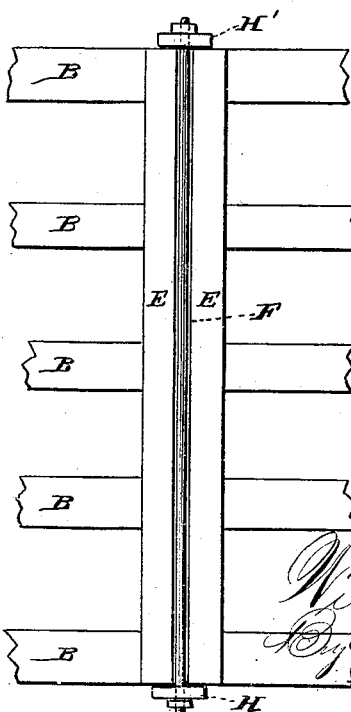
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*Fig. 2.*



*Fig. 3.*



Witnesses  
Geo. H. Strong.  
Frank L. Brooks

Inventor  
William Litell  
By Dewey & Co. Attys

# UNITED STATES PATENT OFFICE.

WILLIAM LITELL, OF BOISE CITY, IDAHO TERRITORY.

## TRUSS-BRIDGE.

SPECIFICATION forming part of Letters Patent No. 265,331, dated October 3, 1882.

Application filed February 6, 1882. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM LITELL, of Boise City, county of Ada, Idaho Territory, have invented a Truss-Bridge; and I hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to that class of bridges commonly known as "truss-bridges," and more particularly to that sub-class called "lattice truss bridges;" and it consists in certain combinations and arrangement of devices, as hereinafter fully described and specifically claimed.

Referring to the accompanying drawings, Figure 1 is a perspective view of my bridge. Fig. 2 is a transverse section. Fig. 3 is a detail of construction.

Let A represent the corner-posts, consisting each of several suitable pieces or strips, between which the ends of the horizontal chords B fit and are bolted or spiked securely therein. These chords likewise consist of several strips; and I have here shown a series of five on each side, inclusive of the top and bottom chords. Upon the bottom chords are laid transversely the joists or sleepers C. These extend beyond the chords on each side, and are notched, as shown, to fit upon and embrace said chords with their notches. By thus framing them in upon the chords they tend to resist lateral pressure and keep said chords from spreading. In connection with these sleepers, and to further assist in resisting lateral strain, I lay the floor or roadway D in two layers of plank, the first layer lying upon the sleepers diagonally and the second lying diagonally upon the first. Spikes *d* are driven through both layers into the sleepers wherever the planks cross them, so that each plank is spiked to a sleeper wherever it crosses it. The roadway laid and spiked in this manner assists the sleepers in holding the lower chords stiff and firm, and in resisting lateral strain.

E E are vertical braces. These pass down from top to bottom between the strips of all the horizontal chords B and are spiked thereto. They consist of two strips having a space between them, through which the vertical iron brace-rods F F pass. The custom heretofore has been when such rods were used to bore holes through the chords, through which to pass them; but this weakens the chords, and

is objectionable. I have therefore constructed the braces E E as shown, through which I pass the rods. They serve as guides and supports for said rods and allow them to be carried down beside the chords rather than through holes in them. Alternating with these double vertical braces I put the single vertical braces G.

Under the bottom of the bridge transversely I place girders H H. These fit their ends under the bottom chords and receive the ends of the rods F, which pass down through them and are bolted therein. Similar girders, H', I place upon the top chords, and in these are bolted the upper ends of the rods F. These rods are thus secured and serve the purpose of tie-bolts, firmly binding the bottom and top together and resisting the vertical strain. The girders H H' further assist in binding the sides together and render them firm and rigid.

Under the bridge, between the sleepers and the girders, I secure diagonal braces *h*, and on top of the bridge similar ones, *h'*, both contributing to the general strength.

J J represent braces upon the sides of the structure, the particular arrangement of which herein gives the greatest possible strength. These extend diagonally the whole extent from top to bottom, being bolted to the top and bottom chords and spiked to the intervening ones. On account of being placed diagonally and stretching the whole distance from top to bottom, they are necessarily arranged as shown, those upon one side of the central diagonal converging one way—to the top, for instance—and those upon the other side converging to the bottom. In this manner they are as evenly distributed over the sides as possible. It will be seen that there are several series of these braces—one set upon the outer surface of the horizontal chords, another upon the inner surface, and others passing between the separated strips comprising the chords. In the arrangement of these series I may place the outer ones inclining in a certain direction, and the next series inclining oppositely, and so on alternately; or I may arrange them in parallel pairs. This gives to the bridge the strength of the lattice-truss, and because of the construction here shown it is rendered very firm and strong.

In order to make the bolts or spikes firm

and solid wherever they would pass through the separated strips of the chords, I place blocks between them, and may, for the sake of greater solidity, place other blocks between these strips and extending between the vertical braces E and G.

The material of the bridge may be either wood or iron, and its dimensions suited to the necessity. The number of horizontal chords may be increased; also, the number of diagonal braces. I do not confine myself to the number here shown. The lateral strain upon the bridge is resisted by the bracing and girding upon the top and bottom, the arrangement of the sleepers upon the bottom chords, and the double diagonal roadway laid upon and spiked to the sleepers, as shown. The vertical strain is overcome by the horizontal chords, vertical braces, and tie bolts or rods, and the lattice-work or series of diagonal braces J J upon the sides.

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

1. In a truss-bridge, the posts A, composed of separated strips, and the series of horizontal chords B, composed likewise of separated strips fitting between the strips of said posts and spiked or bolted therein, in combination with the vertical braces E E, composed of two separated strips secured to the horizontal

chords B, the rods or tie-bolts F, passing between these braces and extending past the chords B, above and below, and the transverse girders H H', under the bottom and upon the top chords, and in which said tie-bolts are bolted, substantially as and for the purpose herein described.

2. In a truss-bridge, the posts A, composed of separated strips, and the series of horizontal chords B, also composed of separated strips fitting between the strips of posts A and secured therein, in combination with the series of diagonal lattice-braces J J, said braces being secured to and through the horizontal chords, as shown, and extending the whole distance from the top to the bottom chords, substantially as and for the purpose herein described.

3. A truss-bridge consisting of the posts A, series of horizontal chords B, sleepers or joists C, framed into the bottom chords, as shown, roadway D, girders H H', vertical braces E G, tie-bolts F, and the series of diagonal lattice-braces J J, arranged and secured together substantially as herein described.

In witness whereof I hereunto set my hand.

WILLIAM LITELL.

Witnesses:

THOMAS D. CAHALON,  
JEREMIAH BRUMLEICK.