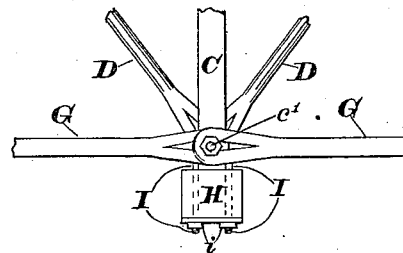
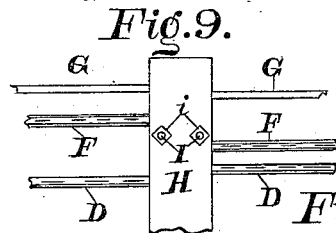
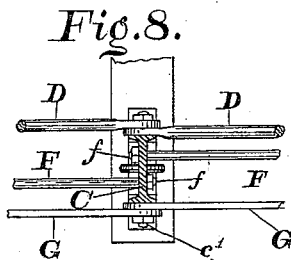
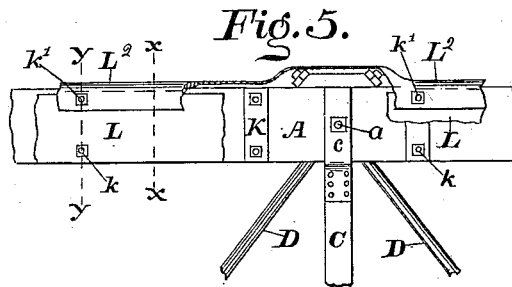
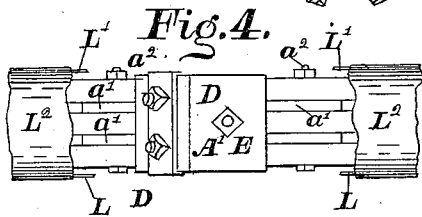
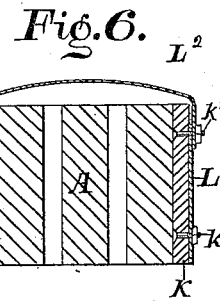
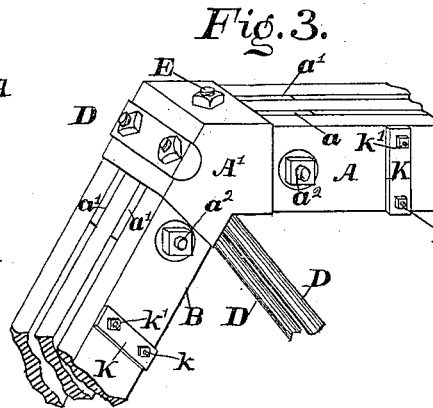
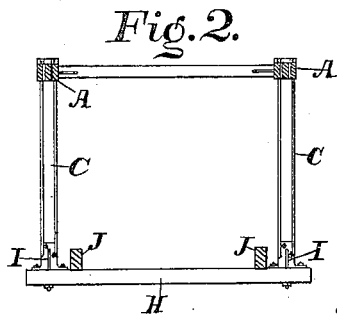
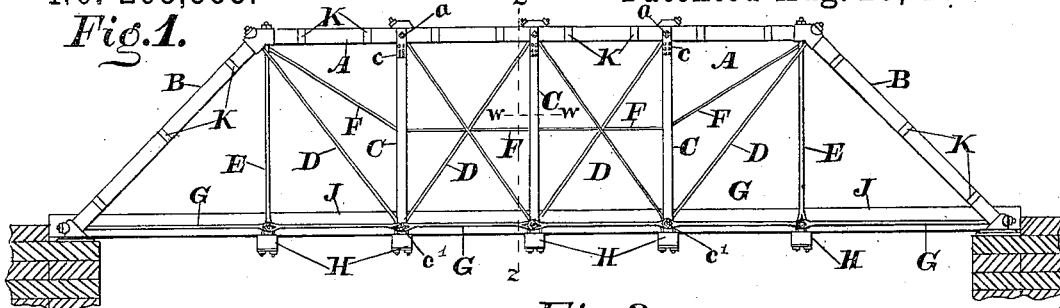


(No Model.)

S. H. GODMAN.
BRIDGE.

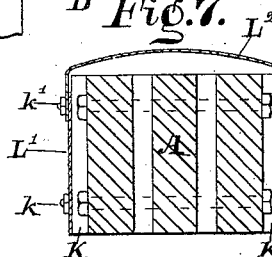
No. 263,333.

Patented Aug. 29, 1882.



WITNESSES.

Chas. N. Leonard.
Chas. L. Thurber.



INVENTOR.

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UNITED STATES PATENT OFFICE.

SOLOMON H. GODMAN, OF INDIANAPOLIS, INDIANA.

BRIDGE.

SPECIFICATION forming part of Letters Patent No. 263,333, dated August 29, 1882.

Application filed April 14, 1881. (No model.)

To all whom it may concern:

Be it known that I, SOLOMON H. GODMAN, of the city of Indianapolis, county of Marion, and State of Indiana, have invented certain new and useful Improvements in Bridges, of which the following is a specification.

The objects of my said invention are to improve the construction of combined wood and iron bridges, and to protect the wooden portions of the same from the action of the weather. These objects are accomplished in the manner hereinafter particularly described and claimed.

Referring to the accompanying drawings, which are made a part hereof, and on which similar letters of reference indicate similar parts, Figure 1 is a side elevation of a bridge embodying my improvements; Fig. 2, a transverse section of said bridge on the dotted line *z z*; Fig. 3, a perspective view of one corner of the frame-work; Fig. 4, a top or plan view of the same partly covered; Fig. 5, a side elevation of a section of frame-work; Fig. 6, a transverse vertical section of the top chord of the bridge and its covering on the dotted line *y y*; Fig. 7, a similar section on the dotted line *x x*; Fig. 8, a horizontal section, looking downwardly from the dotted line *w w*; and Fig. 9, an under side plan of a section of one of the floor-beams and lower chords and adjacent parts.

In said drawings, the portions marked A represent the top chords of the bridge; B, the end posts thereof; C, the upright posts or struts; D, the diagonal truss-rods; E, the vertical truss-rods; F, a line of tie or stiffening rods; G, the lower chords, which are preferably in the form of tie-rods; H, the floor-beams; I, clevis-like devices whereby said floor-beams are supported; J, the stringers to the bridge; K, cleats on the chords A and end posts, B; and L L' L², sheet-metal coverings for said chords and posts.

The chords A, posts B, rods D, E, and G, floor-beams H, and stringers J are all of substantially the common construction. The chords A and posts B are, however, united by a peculiarly-formed corner-block, A'. This block is faced to the proper angle to receive the ends of said chords and posts, and is provided with projections *a'* on its faces, which fit between the members of the chord and post,

and thus provide a ready means of fastening the parts together, which is done by passing bolts *a*² through them.

The upright posts or struts C are of wrought-iron, and are of the form usually known as "I-beams." They are connected to the top chords, A, by the plates *c* and bolts *a*, to the bottom chords by bolts *c'*, and to the floor-beams by clevises I. By this means a continuous wrought-iron connection is established from the top to the bottom of the bridge.

The stiffening-rods F start from the corner blocks, A', and pass through the centers of the posts C nearest them, where they are secured by nuts *f*. A section of this rod also connects each of the posts C, and is secured by like nuts. This gives a continuous line of stays through the centers of these posts from end to end of the bridge, and prevents them from bending or "buckling" under any heavy strain.

The clevises I pass through the bottom end of the posts C and down through the floor-timbers H, where they are secured by nuts *i*, and thus hold said timbers securely.

The cleats K are nailed onto the chords A and posts B at suitable intervals along their length, and serve to support the covering L L' L². Said cleats are thick enough to leave the heads and nuts of the bolts used in the construction of said chords and posts inside of a line parallel with their faces, and extend across the faces of said chords and posts, as shown. Each cleat is provided with two small bolts, *k* and *k'*, the nuts of which are upon the outside.

The sheet-metal covering is applied in the following manner: The nuts being removed from the bolts *k* and *k'*, the sheets L and L', which are provided with holes corresponding to said bolts, are placed thereon, and the nuts placed upon said bolts *k*. The sheet L² is then placed over the tops of the other two, covering the top of the chord or post, and brought down over the bolts *k'*. The nuts are then placed on the latter, and the covering is complete. By the use of these cleats the sheet-metal covering is enabled to be put on smoothly and with much less trouble than formerly, and at the same time cover all the main bolts and nuts of the bridge. There being no holes through the sheet metal which lead to the wood

of the bridge structure, (the holes therein leading to the cleats only,) no water can get upon said wood, and therefore cannot cause the same to decay. The smoothness of the outside of the covered chords leads to the appearance of the bridge, and the avoidance of any necessity for fitting around large bolt-heads and nuts lessens the expense of applying the covering.

As a whole, my improved bridge possesses these advantages: There is present, by the use of iron exclusively in the posts, truss-rods, and lower chords, all the strength of iron in the whole bridge, the wooden upper chords being fully as desirable in that position as iron ones, so far as strength is concerned. By reason of the covering whereby said upper chords are protected they are rendered more durable than has been done heretofore, and brought substantially to an equality with iron in this particular. The wooden chords being much less expensive than iron ones, my bridge has all the good qualities of an iron one, and also some peculiar advantages arising from the use of the wooden chords at a considerably less cost than has heretofore been practicable. By the use of the line of stiffening-rods F lighter iron posts C can be used than has heretofore been practicable, and a still further saving is thus effected. My improved iron corner-block, A',

also simplifies somewhat the construction of the upper chords and end posts over that usually employed.

I am aware that it is not new to cover the wooden chords of bridges with sheet-iron. My invention in that particular only embraces the peculiar covering described.

I am further aware that many of the features shown in my bridge are old and well known, and I therefore disclaim that which is not specifically claimed as new.

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

1. The combination, with the wooden chords or other similar parts of a bridge, of cleats K and sheet-metal coverings L L' L², constructed and arranged as shown and described, and for the purposes specified.

2. In a bridge, the combination of the top chords, A, end posts, B, struts C, diagonal truss-rods D, vertical truss-rods E, tie-rods F, and lower chords, G, all substantially as shown and described, and for the purposes specified.

SOLOMON HAYES GODMAN.

Witnesses:

JNO. E. LOCKRIDGE,
W. W. WINSLOW.