

H. PETTIT.
Bridges.

No. 136,177.

Patented Feb. 25, 1873.

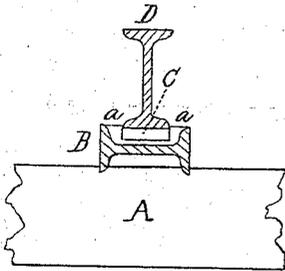


FIG I -

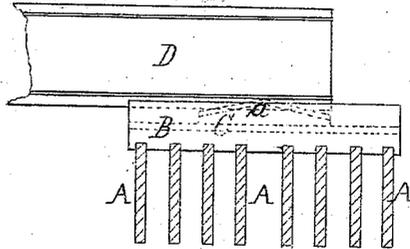


FIG II -

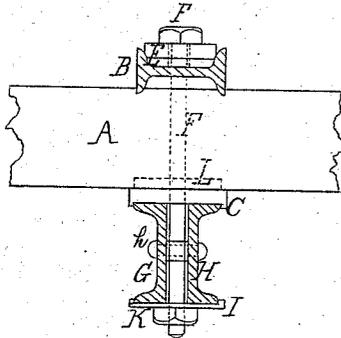


FIG III -

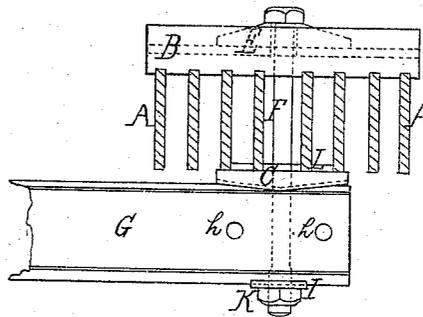


FIG IV -



FIG V -

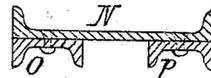


FIG VI -

Witnesses:

Wm. R. Wright,
J. Bonsall Taylor.

Inventor.

Henry Pettit,
by His Atty.
Horace Binney, 3rd.

UNITED STATES PATENT OFFICE.

HENRY PETTIT, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR OF ONE-HALF HIS RIGHT TO JOSEPH M. WILSON, OF SAME PLACE.

IMPROVEMENT IN BRIDGES.

Specification forming part of Letters Patent No. 136,177, dated February 25, 1873.

To all whom it may concern:

Be it known that I, HENRY PETTIT, of the city and county of Philadelphia, in the State of Pennsylvania, have invented a new and useful Improvement in Bridges; and I do hereby declare the following to be a full, clear, and exact description thereof, which will enable others skilled in the art to which it appertains to make and use the said improvement, reference being had to the accompanying drawing, which forms a part of this specification, and in which—

Figures 1 and 3 are vertical sections of two several forms of the said improvement taken in the direction of the length of the bridge. Figs. 2 and 4 are elevations corresponding to Figs. 1 and 3, respectively, and taken transversely to the length of the bridge; and Figs. 5 and 6 are cross-sections of modifications of the flanged cross-girder.

The same parts are denoted by the same letters in all the figures.

The object of this invention is to prevent the unequal distribution of strain among the several links composing a chord, which frequently occurs where such links support beams or girders of considerable length, as in the case of floor-beams resting on the lower chord-links of an iron truss-bridge. When such beam or girder is subjected to the strain caused by a rolling load its middle portion will be more or less deflected downward and its extremities correspondingly raised, thereby tending to throw the entire weight of the load upon the inner links on each side. Another cause tending to the same effect is, that the upper edges of the supporting-links are frequently not in the same horizontal plane, so that, even when not loaded, the beam does not rest evenly upon them all.

In order to secure the equal distribution of the weight among the several links on each side, I have devised the following improvement, which consists of a flanged cross-girder resting on said links, and also of a block combined with said girder, which devices are constructed and arranged as hereinafter described.

A A in the drawing represent the links which form the lower chord of a bridge-truss, a part only of the length of the link being shown in Figs. 1 and 3. B is the flanged cross-girder, consisting of a piece of I-beam placed on its

side so that the lower flanges shall rest on the links. C is a block, which rests on the web and between the upper flanges of beam B. The lower surface of C is made to fit the side of B exactly, and its upper surface is beveled (or it may be curved) downward from the middle toward each end, as shown in dotted lines in Fig. 2. Upon the top *aa* of the beveled block, as shown in Figs. 1 and 2, rests one end of the floor-beam D, whose other end rests in like manner on a block supported by a flanged cross-girder and links on the other side of the bridge, which, being all precisely like those already shown, are not represented in the drawing.

To prevent lateral movement of the floor-beam the blocks C may be made with a central longitudinal groove wide enough to receive the bottom of said beam, which rests between the lips on either side, as shown in Fig. 1. When the beam D is subjected to a load its extremity outside of the line of support *aa*, Figs. 1 and 2, is elevated, and the part between its center and said line of support is depressed, the beveled or curved surface of block C permitting the free deflection of the beam. The block C must be of sufficient height and length to prevent the floor-beam from coming into contact with the cross-girder when deflected. I prefer to make the cross-girder of rolled iron, and the block C of cast-iron or cast-steel.

As already stated, the upper edges of the links A A are often not in the same plane. The employment of the flanged girder B, however, with the edges of its flanges resting on the links, permits this defect to be easily counteracted, enabling me to adjust the bearing of said girder evenly on all the links by clipping or slotting the flanges with a chisel.

Figs. 3 and 4 represent another form of my improvement, in which the floor-beam is suspended from the cross-girder. On the washer E, which rests on said girder, is supported the head *f* of the suspension-bolt F, which passes through the girder and block C. The floor-beam is in this case composed of two channel-bars, G H, united by rivets and sleeves *h*, and rests on the plate or washer I and nut K. The block C is placed below the links, and in an inverted position, its flat surface against their lower edges. It may be cast with a lug; L,

grooved or slotted to receive the links. The nut K is screwed up to bring the top of the floor-beam against the middle line of the bearing-block. When the middle of the beam G H is depressed by a load the bevel of block C will permit the end to rise freely.

Where the great weight of the floor-beams demands a greater bearing-surface than the edges of the flanges of B, I rivet to the lower side thereof a piece of T-iron, M, as shown in Fig. 5, so that three edges rest on the links. A still greater number of bearing-edges may be obtained by substituting for the I-beam B

a channel-bar, N, with two smaller channel-bars, O and P, riveted thereto, as in Fig. 6. In both these cases the ends of the rivets must be countersunk.

What I claim as my invention, and desire to secure by Letters Patent of the United States, is—

The combination of the flanged cross-girder B and the beveled block C, substantially as shown and described.

Witnesses: HENRY PETTIT.
JOHN R. BINGAMAN,
THOMAS LEE.