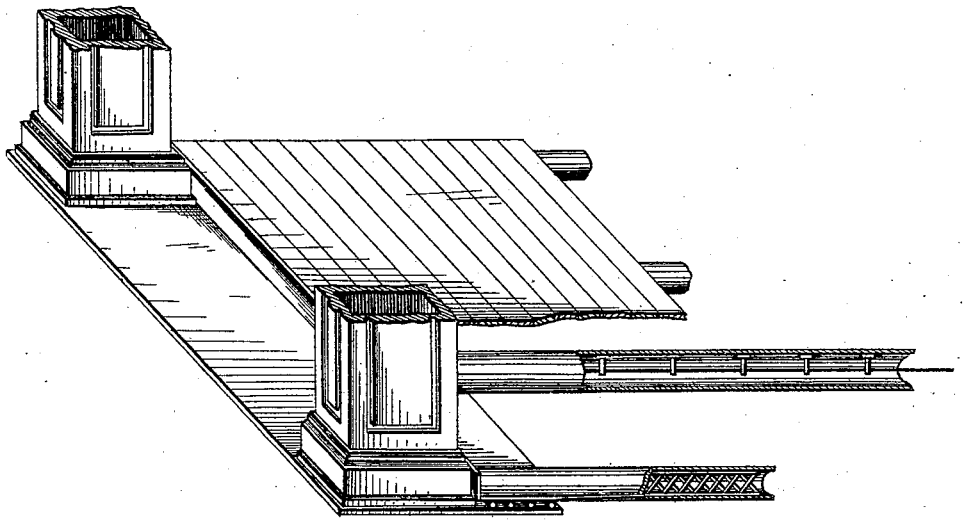
J. FOSTER.

GIRDERS FOR BRIDGES.

No. 183,291. Patented Oct. 17, 1876.



Witnesses:

William Keene

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UNITED STATES PATENT OFFICE.

JOSIAH FOSTER, OF HONESDALE, PENNSYLVANIA.

IMPROVEMENT IN GIRDERS FOR BRIDGES.

Specification forming part of Letters Patent No. **183,291**, dated October 17, 1876; application filed December 4, 1873.

To all whom it may concern:

Be it known that I, JOSIAH FOSTER, of Honesdale, in the county of Wayne, in the State of Pennsylvania, have invented new and useful Improvements in Tubular Girders for Bridges and other similar purposes; and I do hereby declare that the following specification, taken in connection with the drawings furnished, is a full, clear, and exact description thereof, which will enable others skilled in the art to construct the same.

My invention relates to the construction of bridges particularly adapted for long spans, embodying great strength and much less weight than the ordinary truss-bridge; and it consists in the employment of two or more tubes, arranged side by side, for the reception of sleepers or ties, upon which rests the flooring or rails. Said tubes are strengthened by the employment of truss-work arranged and secured within, which serves to make the structure self-sustaining, &c. Chords, as an additional means of supporting the structure, are employed, which may be used with the truss-supports or without.

The object of my invention is the employment of tubes, arranged together in such a manner as to make a comparatively light structure, embodying great strength, subject to be re-enforced at will by the addition of truss-supports within, or the use of chords, or both together, capable of being entirely completed at the shop before its final erection.

Referring to the drawing, the figure is a perspective view of my invention, with tubes in partial section.

To enable others skilled in the art to construct my invention, I will describe it in detail.

The tubes may be constructed in any of the known ways. Generally, boiler-iron is used, riveted together in the usual manner, and may be made in sections of suitable lengths for ready handling, and of a diameter sufficient for the strength required to support the weight to be applied thereon—that is to say, for a bridge of from one hundred to five hundred feet span, from three to six feet in diameter is believed to be sufficient, when only two tubes are employed, when re-enforced by truss-supports or chords.

For railway and similar purposes, in longer spans, and where greater weight is to be applied, several tubes may be employed and arranged side by side, similar to the representation in the drawing, with the roadway arranged upon their top. The truss-supports which are arranged within are formed of iron, by casting or forging, secured in position either through the entire length of the tubes, or at those points most likely to yield under the superincumbent weight. No particular form is essential, although the drawing exhibits a convenient and strong formation.

Said truss-supports may be made in single pieces or in sections, and bolted, or otherwise, (within,) in a vertical position, to the road-bed, with one or more rows in a tube. In small tubes the truss may be dispensed with, and chords substituted therefor, in connection with props, as shown in the drawing, secured by nuts or anchors at or near the ends of the bridge to suitable plates or masonry. Suitable piers or beds of masonry are provided, upon which to rest the ends of the structure.

In long spans I secure the ends of the tubes to a plate, which serves as a carriage, arranged upon slides or upon rolls, to allow action in its expansion and contraction of the bridge caused by atmospheric changes, &c. The floor beams or ties may be bolted to the tubes crosswise, and the flooring or track laid upon them, as shown in the drawing.

Having thus set forth my invention, I do not claim, broadly, the use of a tube, nor the means of supporting the structure at its center by cables; but,

Having thus set forth its construction, what I claim as new, and desire to secure Letters Patent of the United States for, is—

The combined arrangement of the chords and props and the truss-work in the interior of tubular girders, substantially as herein described, and for the purpose set forth.

In witness that I claim the foregoing I have hereunto signed my name before two witnesses this 7th day of November, A. D. 1873.

JOSIAH FOSTER. [L. S.]

Witnesses:

JOHN DANE, Jr.,

H. M. WILSON.