

C. H. Parker. Truss Bridge.

No 93,638.

Patented Aug. 10, 1869.

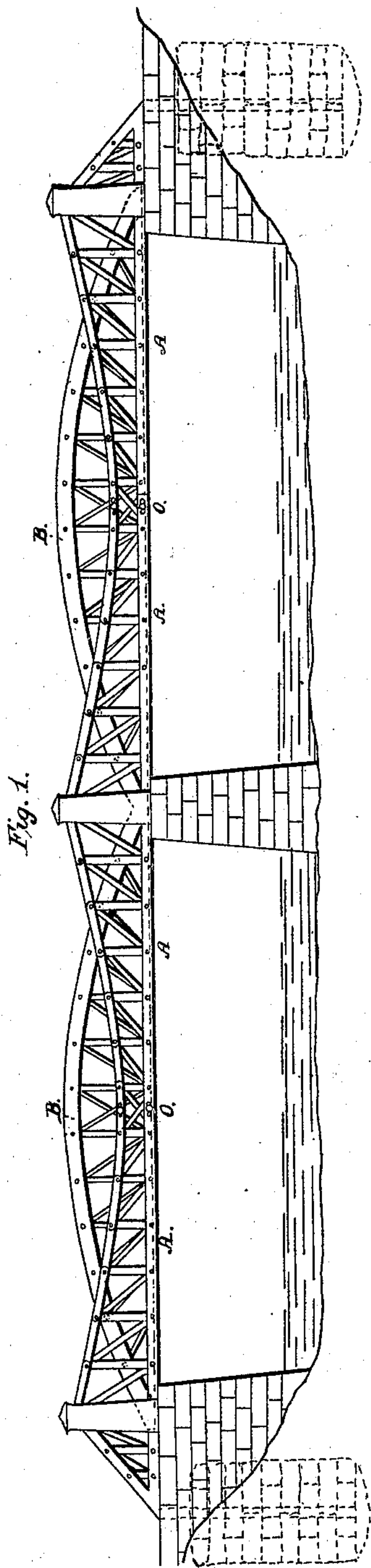


Fig. 2.

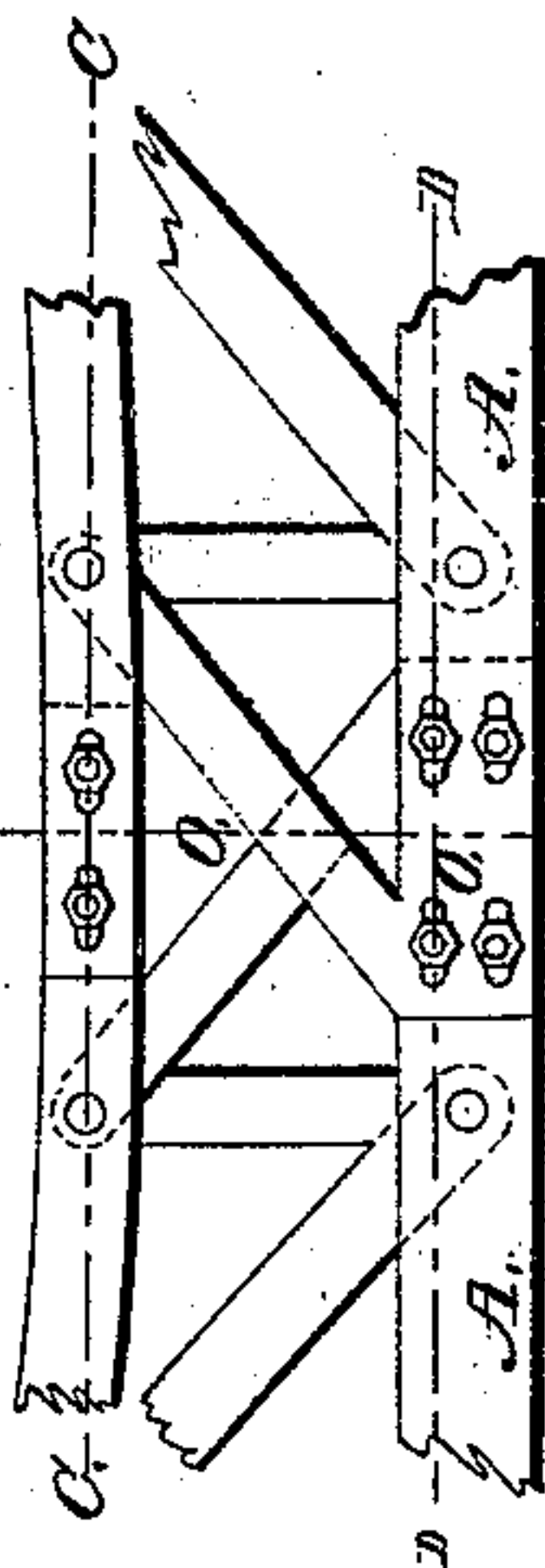


Fig. 4.

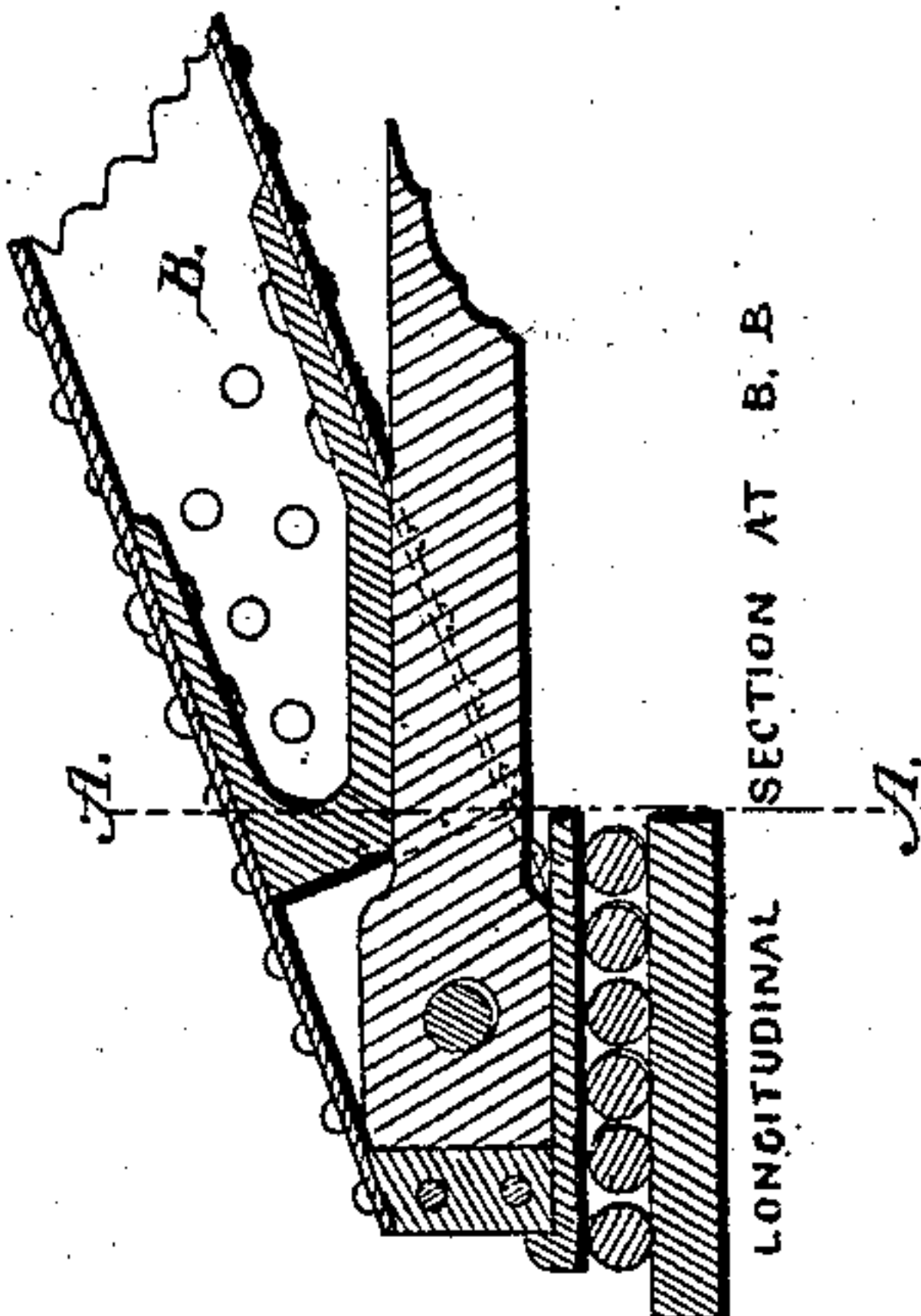


Fig. 5.

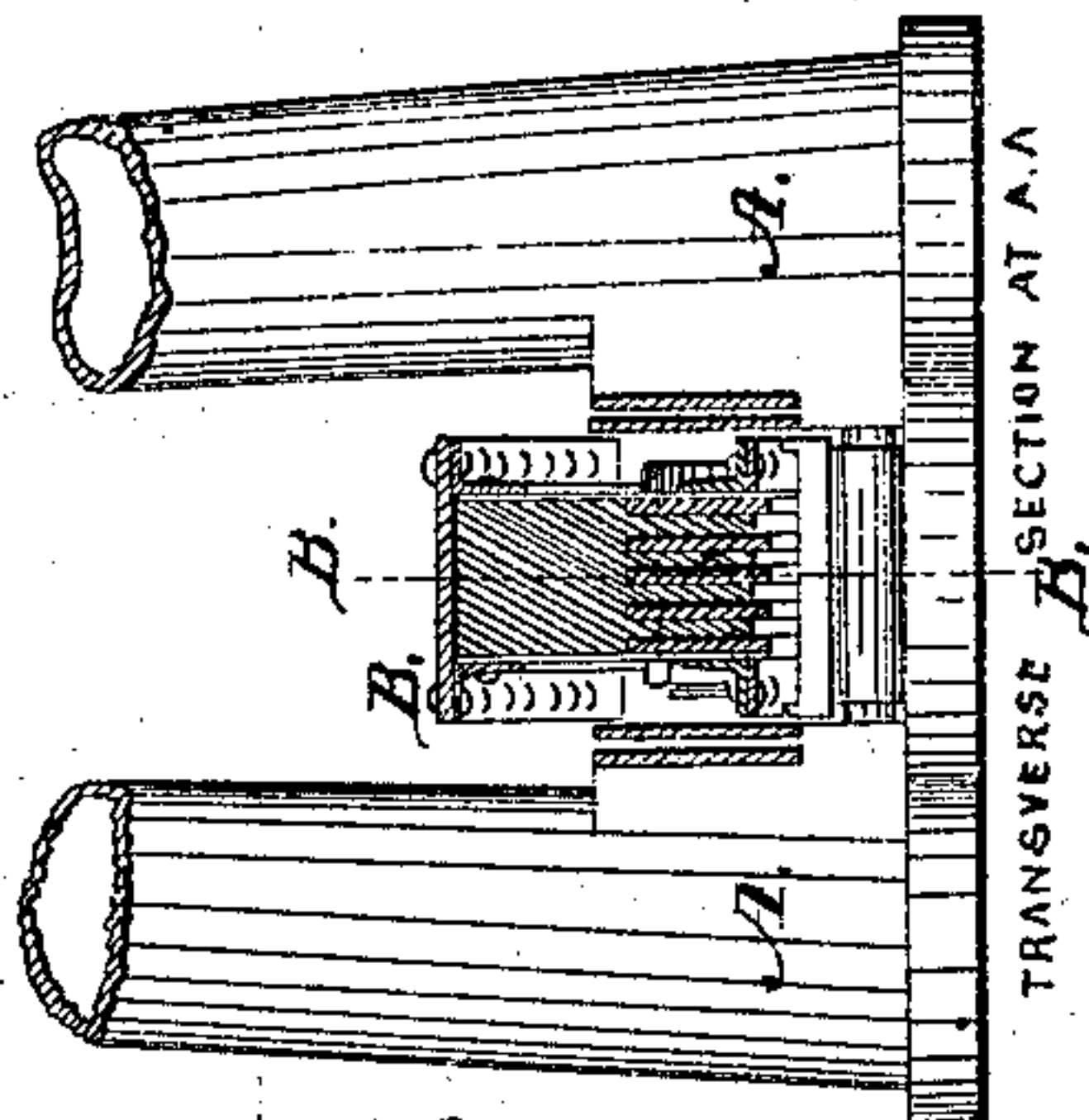
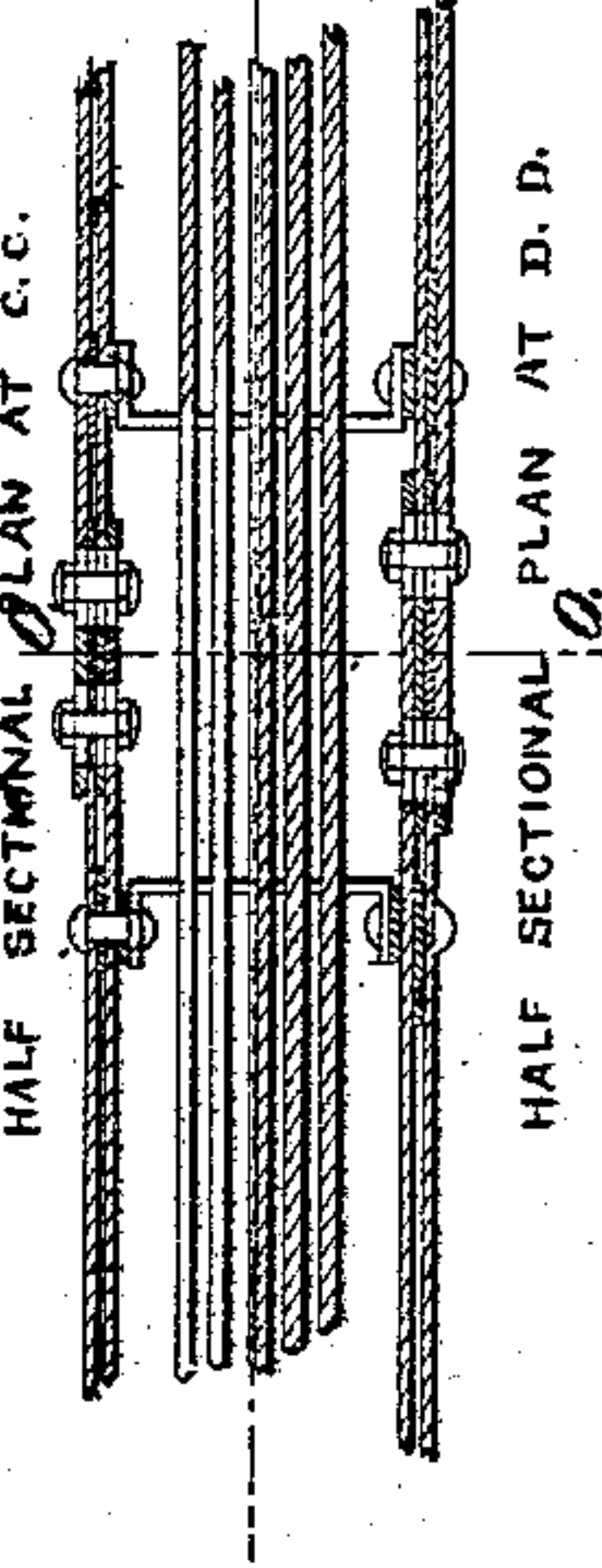


Fig. 3.



Witnesses.

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Inventor.

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per A. B. K. K. K.
att'y.

United States Patent Office.

CHARLES H. PARKER, OF BOSTON, MASSACHUSETTS.

Letters Patent No. 93,638, dated August 10, 1869.

IMPROVED BRIDGE.

The Schedule referred to in these Letters Patent and making part of the same.

To whom it may concern:

Be it known that I, CHARLES H. PARKER, civil engineer, of Boston, county of Suffolk, and State of Massachusetts, have invented certain new and useful Improvements in Bridges; and I hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, in which—

Figure 1 is a side elevation of a bridge embodying my invention.

Figures 2, 3, 4, and 5 are detailed views of detached parts.

The system of bridging, which I claim as my invention, is composed of two distinct and separate systems combined, neither one of which, alone, is new.

The foundation or primary system is the cantilever A A, &c., anchored back to the shore, either by a wholly or partially-fixed anchorage, or in continuous spans, each half span serving as an anchorage for its adjacent half of the next span. To provide for the expansion and contraction of the cantilevers, they are left with a free joint at the centre of the span, as shown at c, figs. 1, 2, 3. This joint may be as shown, or in any other mode equivalent.

The design is to proportion the cantilever so as to carry, with a low factor of safety, the fixed weight of the superstructure, or, in other words, the "useless" load.

This part of the system is designed to be distinct and separate from the other part of the combination, the chord of the cantilever being no part of, nor acting as a chord of the other system.

The cantilever is to be built by projection, and in any of the styles or methods known in the simple cantilever bridge, and is to serve for false works during the erection of the other system.

The secondary system is composed of a system of independent girder, B, supported at both ends, and covering the same clear span as the cantilever or cantilevers.

It can be made with a curved or straight top, of any of the types known, as the bowstring-girder, Warren girder, &c. To provide for contraction or expansion in this secondary system, it is made free and independent of the primary system, and allowed free movement on rolls, or their equivalent, toward the abutments, pier, or points of support, as shown in figs. 4 and 5.

The design is to proportion this secondary system to carry the external, rolling, or "useful" load, with a high factor of safety. Its action is distinct from the primary system.

The weight of the whole of the secondary system is carried temporarily by the primary system of cantilevers during erection, but after the joining of the arch or top-member in the centre, the cantilever is relieved of the weight of this member, which weight is transferred to the seating of the arch or top-member, on the pier or abutment.

The weight of the tie-chord and the intermediate bracings between the top and bottom-members of the secondary system, together with the floor-beams, and all the roadway, is to be carried permanently by the primary system of cantilevers.

The advantages of this system, are, that the complete separation of the "useful," external, or rolling load upon the superstructure, and the useless or fixed weight of superstructure, enables me to design the sustaining-power of the fixed load, with a small factor of safety, while the sustaining-power of the "useful" or external rolling load, being separated from and no part of the part carrying the fixed load, can be designed with a high factor of safety.

Thus the strains occasioned by the two, can be dealt with separately and more economically.

It also enables me to construct the sustaining-power of the superstructure of metal, and the sustaining-power of the "useful" or rolling load temporarily of wood, with a view to save first cost and to eventually replace the wood by iron, without disturbing the primary system, which supports the weight of the superstructure; and, furthermore, in metallic structures, each system takes care of its own expansion and contraction, independent of and without affecting the other.

What I claim as new, and desire to secure by Letters Patent, is—

The combination of two distinct systems of bridging, composed of a cantilever or cantilevers, with a wholly or partially-fixed anchorage, free to expand at its unsupported end or centre of a span, where two meet, with a system of independent girder, supported at both ends and covering the same clear span as the cantilever, and free to expand toward the abutments or points of support, the chord or chords of one system being distinct and separate from the chord or chords of the other, substantially as herein shown and set forth.

In testimony whereof, I have signed my name to this specification, before two subscribing witnesses.

C. H. PARKER.

Witnesses:

WM. A. BLODGETT,
C. CURRY.