I. Rogers.
Truss Bridge.

No. 37,642. Patented Feb. 10, 1863.

Fig. 1.

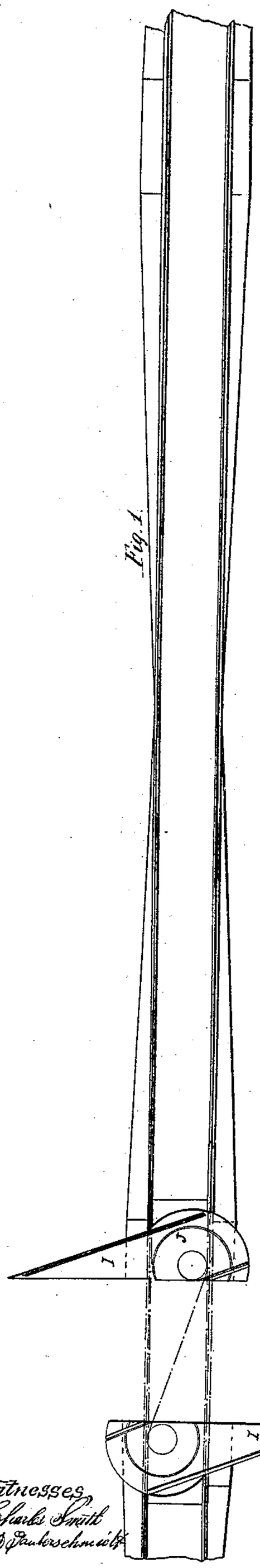

Fig. 2.

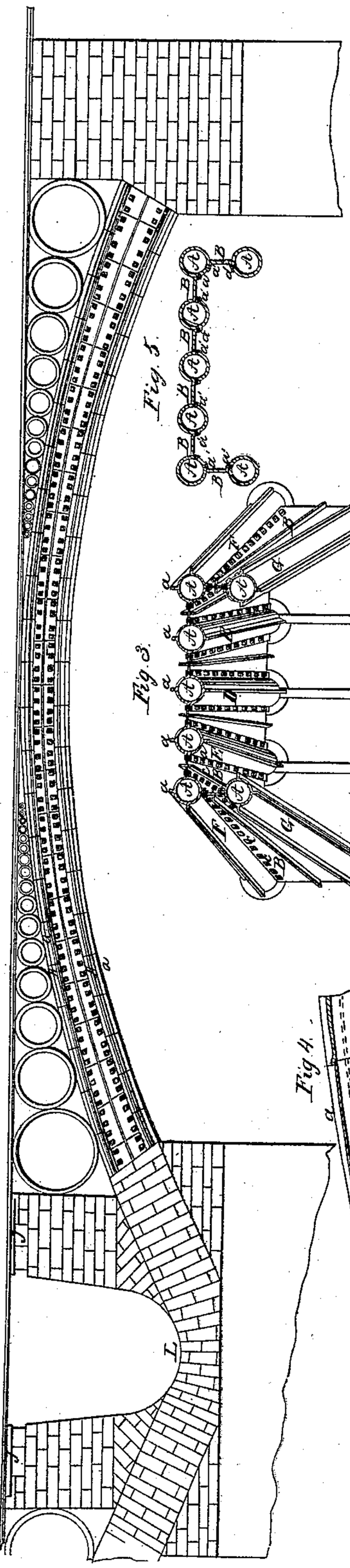

Fig. 3.

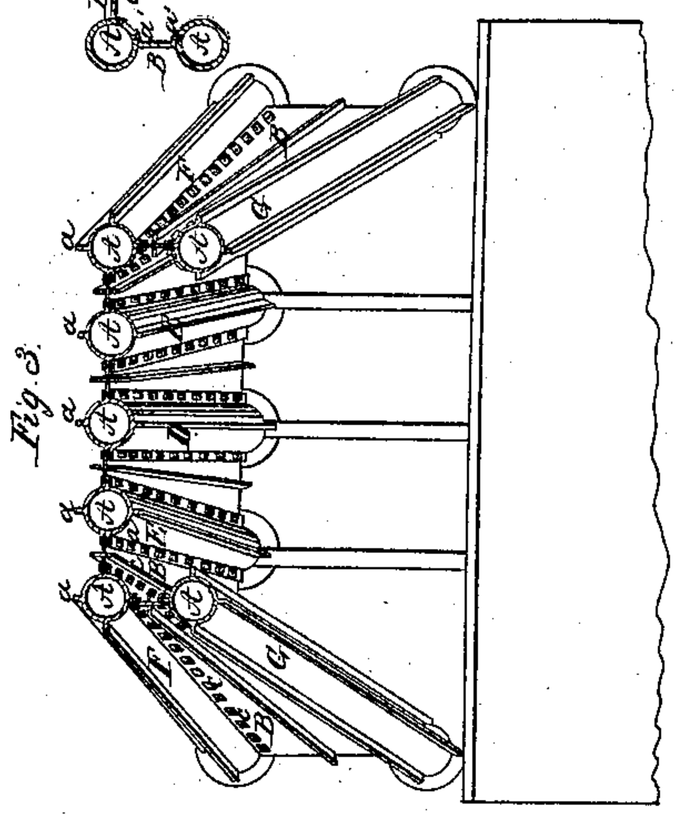

Fig. 4.

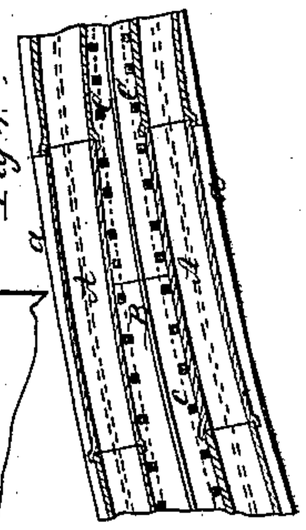

Fig. 5.

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UNITED STATES PATENT OFFICE.

ISAIAH ROGERS, OF WASHINGTON, DISTRICT OF COLUMBIA.

IMPROVEMENT IN BRIDGES.

Specification forming part of Letters Patent No. **37,642**, dated February 10, 1863.

To all whom it may concern:

Be it known that I, ISAIAH ROGERS, of Washington, in the county of Washington and District of Columbia, have invented certain new and useful Improvements in Bridges; and I do hereby declare the following to be a full and exact description of the same, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a plan of a bridge illustrating my improvements. Fig. 2 is a side elevation of the same. Fig. 3 is a verticalt ransverse section of the same on a larger scale. Fig. 4 is a longitudinal section of two tubes with their attached plates.

Similar letters of reference indicate corresponding parts in the several views.

My present improvements consist, first, in a peculiar combination of arched flanged tubes and connecting plates; second, in a peculiar device for sustaining the thrust between two adjacent arches.

To enable others skilled in the art to which my invention appertains to fully understand and use the same, I will proceed to describe its construction and operation.

A A A in Figs. 2, 3, and 4 represent tubes formed of either cast or wrought iron, or other material, with longitudinal flanges *a a*, which impart additional rigidity and strength, and afford means of attachment. B B B represent rolled or cast iron plates attached to the flanges *a* by bolts C, so as to constitute strong and rigid connections between the tubes A.

To construct a span of a bridge with the elements above stated upon the most efficient principles, I first erect, with the aid of a suitable scaffold, a single arch, D, (straight horizontally,) formed by the attachment of a sufficient number of the tubes A, placed end to end. The tubes may go together with sockets, one end of each being rabbeted, as shown at Fig. 4, to receive the end of the next, and the connecting-plates B are so placed as to break joints with the tubes. For the support of the material for this single arch but little scaffolding in required, and the arch once erected, itself constitutes a scaffold to assist in the erection of the adjacent tubular arches E, which are then connected to the center arch, D, by the plates B, as represented. A third pair of arches is then erected on the outside of the second, and so on as far as may be needful, each succeeding pair being spread farther apart at the base or spring and converging toward the summit in the manner shown in Figs. 1 and 3, so as to afford great lateral strength, the outer arched tubes constituting powerful horizontal braces. A second, and, if necessary, a third, arch of tubes may be erected, as shown at G, underneath the outside arches F, and, if needful, under the center and at any other necessary places, such additional arched tubes being attached to the remainder by plates and bolts, and converging from the base to the summit, as already explained.

To make the tubes converge vertically and horizontally in the manner described, the connecting-plates are tapered, as represented in Fig. 4. An arch may be successfully constructed in this manner with a span of one thousand feet and a rise of one hundred.

The device for sustaining the vertical thrust of the arch in places where the use of a drawbridge with sufficient depth of water for the passage of vessels renders an immediate bearing or abutment between the arches impracticable consists in forming an inverted arch, as shown at L, beneath the channel and extending from base to base of the two adjacent arches, with such a gradually changing curve as may afford a solid bearing. This is clearly represented in Fig. 1.

The flanges by which the connecting-plates B are attached to the tubes A, instead of being made upon the tubes, may be made upon the connecting-plates, as shown at *a'* in Fig. 5. This will be a preferable form when the tubes are of wrought-iron.

The transverse joints between the tubes may be formed by sockets in the manner described or by flanges, couplings, or in any other suitable manner.

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

1. The combination of the hollow flanged tubes A *a* and connecting-plates B, attached together by screw-bolts C or other suitable means for the formation of arches, in manner substantially as herein shown and described.

2. In combination with a bridge constructed substantially as above described, the inverted arch L, employed in the manner explained to form an abutment between two adjacent arches.

ISAIAH ROGERS.

Witnesses:

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JAMES H. GRIDLEY.