

S. B. B. NOWLAN.
Construction of Bridges.

No. 136,935

Patented March 18, 1873.

Fig. 1.

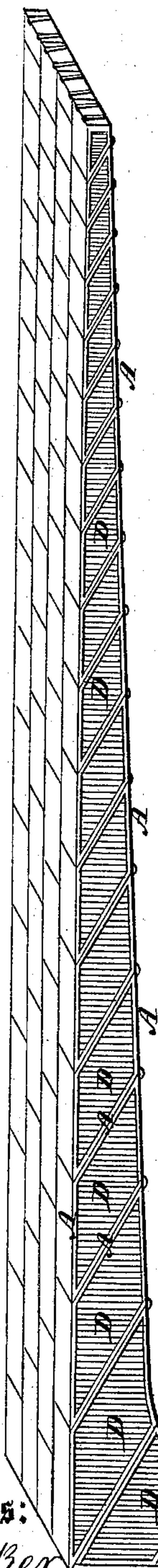


Fig. 2.

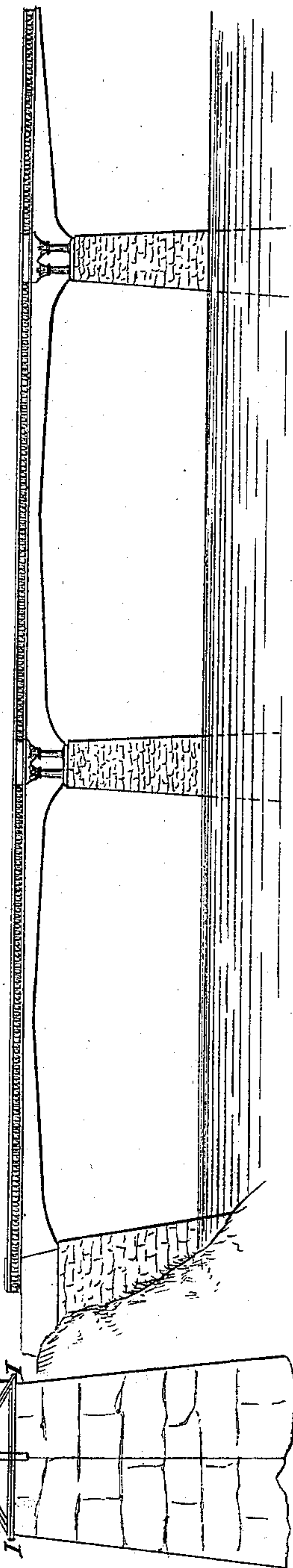
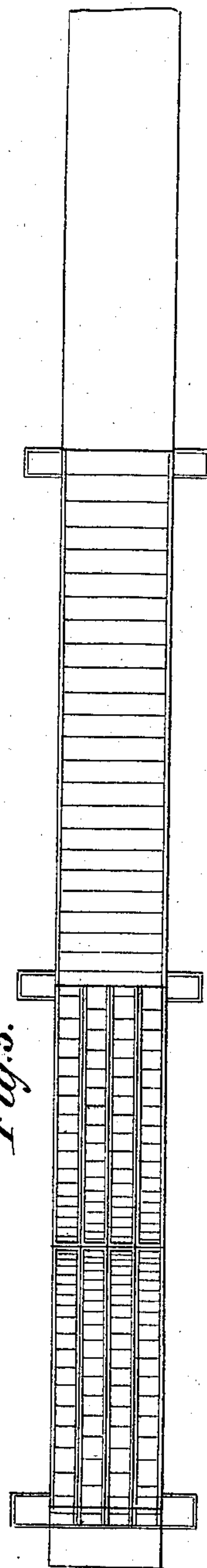


Fig. 3.



Witnesses:

John Becker
Cedguier

Inventor:

S. B. B. Nowlan

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Fig. 4.

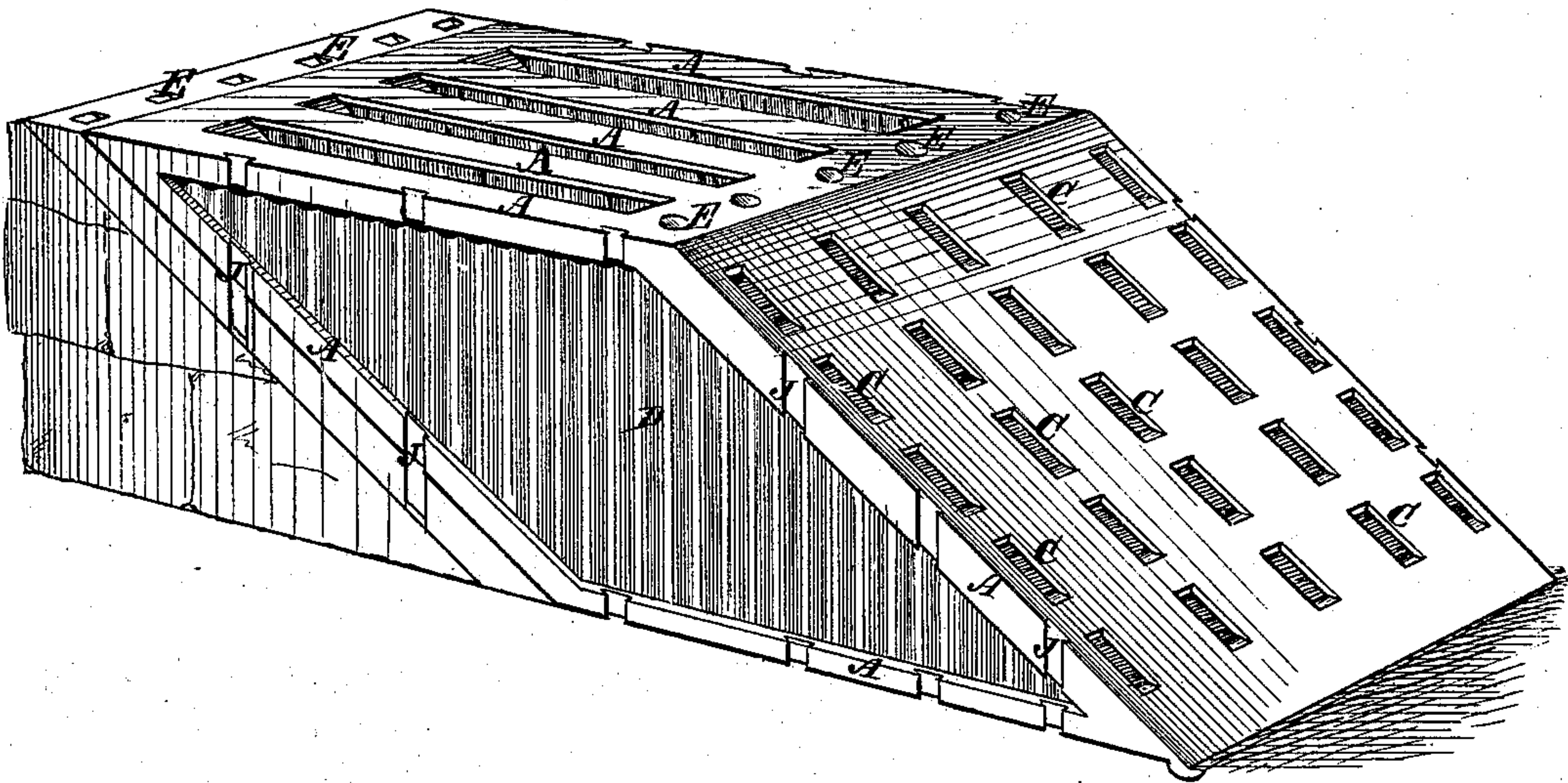


Fig. 5.



Fig. 1.

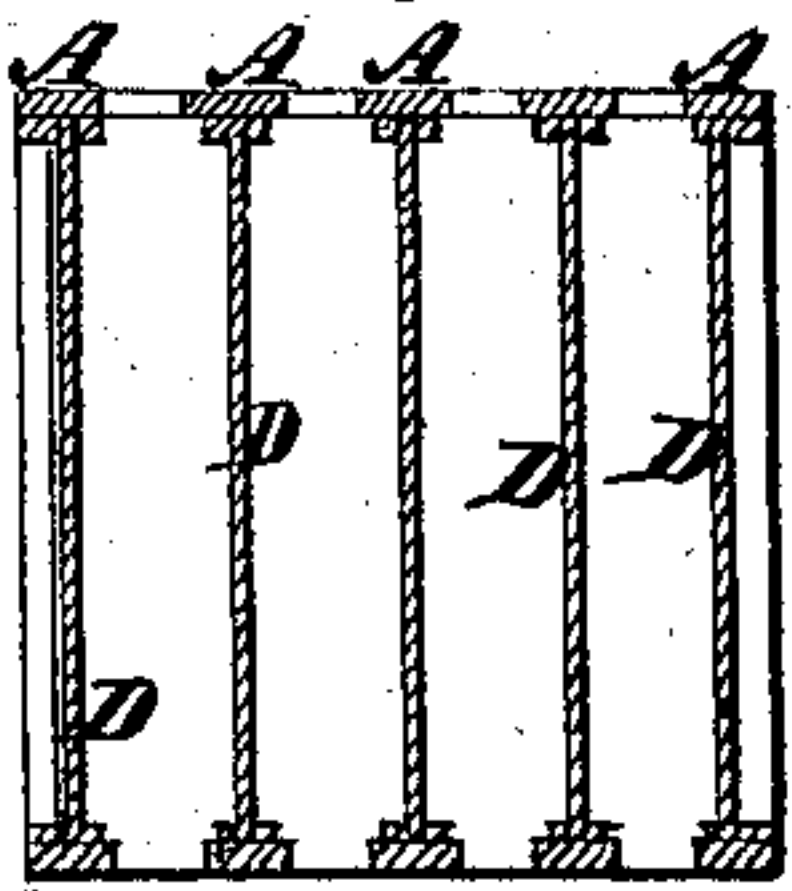
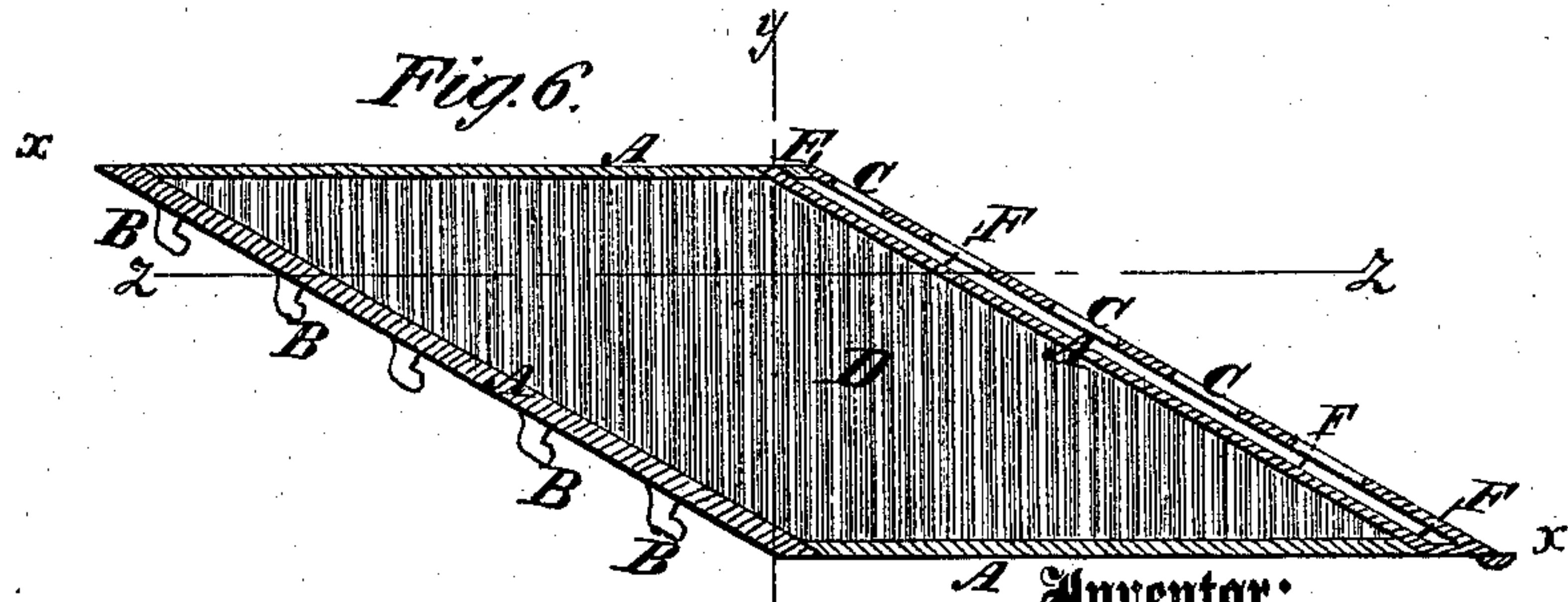


Fig. 6.



Witnesses:

John Becker.
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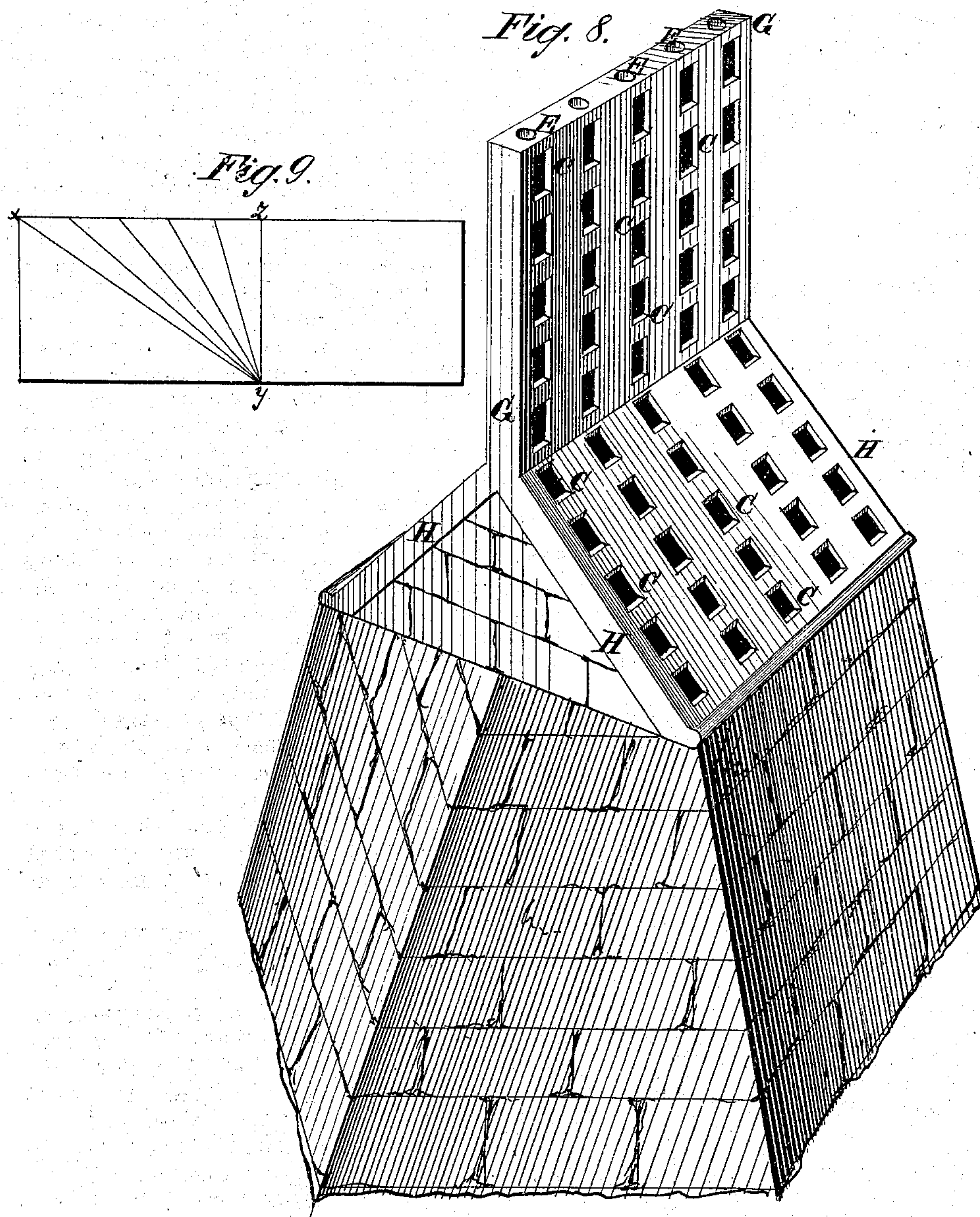
Inventor:

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Witnesses:
John Becker.
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Inventor:
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UNITED STATES PATENT OFFICE.

SAMUEL B. B. NOWLAN, OF NEW YORK, N. Y.

IMPROVEMENT IN CONSTRUCTION OF BRIDGES.

Specification forming part of Letters Patent No. 136,935, dated March 18, 1873.

To all whom it may concern:

Be it known that I, SAMUEL B. B. NOWLAN, of the city, county, and State of New York, have invented a new and useful Improvement in the Construction of Bridges over Navigable Waters, of which the following is a specification:

Figure 1, Sheet 1, is a perspective view of a portion of my improved bridge. Fig. 2, Sheet 1, is a side view of a portion of the bridge. Fig. 3, Sheet 1, is a top view of the same. Fig. 4, Sheet 2, is a detail perspective view of one of the voussoirs. Fig. 5, Sheet 2, is a horizontal section of the same taken through the line *z z*, Fig. 6. Fig. 6, Sheet 2, is a vertical longitudinal section of the same taken through the line *x x*, Fig. 5. Fig. 7, Sheet 2, is a vertical cross-section of the same taken through the line *y y*, Fig. 6. Fig. 8, Sheet 3, is a perspective view of the vertical connecting-plate and the crown-plates to which it is secured. Fig. 9, Sheet 3, is a view illustrating the comparative strength of different inclinations for the lines of connection.

Similar letters of reference indicate corresponding parts.

My invention has for its object to furnish an improvement in the construction of bridges, of any span and of any height, over navigable waters, and which may also be applied to the construction of coffer-dams, roofs, domes, &c. The invention consists in the voussoirs formed by casting frames around vertical parallel plates, and provided with lock flanges or hooks and sockets upon their opposite inclined ends; in the holes and passages in the frames of the voussoirs, in connection with the lock flanges and sockets; and in the vertical connecting-plates and inclined crown-plates, provided with sockets to receive the lock-flanges, and with holes and passages to receive melted composition metal, to adapt said plates to receive the abutting voussoirs, as hereinafter fully described.

D are plates of corrugated boiler-plate iron, rolled iron, semi-steel, charcoal iron, or other suitable variety of iron. Five, more or less, of the plates D are arranged parallel with each other, and at a distance apart of fifteen inches, more or less, and around them is cast a frame-work, A, to form a voussoir for the bridge. The voussoirs are formed with vertical sides, with the tops and bottoms parallel, or nearly parallel, and with their ends inclined at an angle of about thirty-five degrees,

(35°.) Upon one end of each voussoir are formed hook or lock flanges B, and upon the other end sockets C, so that the adjacent voussoirs may be locked together. E are holes opening into grooves or passages F leading through the frames A along each line of sockets C, so that when the voussoirs are locked together melted composition metal may be poured into the said holes E, to flow along the passages F, and around the hook-flanges B, filling all the interstices and making the connection closer.

This construction makes the connection much stronger, and requires much less time than when bolts or rivets are used. By this construction, as each succeeding voussoir is secured in place it will be self-sustaining, and will also be strong enough to sustain a derrick for hoisting the next voussoir into place.

The vertical connecting-plate G is cast in sections in connection with the crown-plates H, which are anchored in the masonry of the piers. The crown-plates H, and vertical connecting-plates G have sockets C formed in them to receive hook-flanges B formed upon the abutting voussoirs, thus forming a vertical and an angular lock, the passages F for the melted composition metal extending from the holes E along both the vertical and angular line of sockets C.

The voussoirs are so arranged as to break joints, as shown in Fig. 1, and are connected laterally by dovetailed steel keys, as seen at the point J, in Fig. 4.

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

1. The voussoirs formed by casting frames A around vertical parallel plates D, and provided with lock flanges or hooks B and sockets C upon their opposite inclined ends, substantially as herein shown and described.

2. The holes E and passages F in the frames A, in connection with the lock-flanges B and sockets C, substantially as herein shown and described.

3. The vertical connecting-plate G and inclined crown-plates H, provided with sockets C and holes and passages E F to adapt them to receive the abutting voussoirs, substantially as herein shown and described.

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Witnesses:

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C. SEDGWICK.