E. N. HUNTING.

REINFORCED CONCRETE STRUCTURE.

APPLICATION FILED MAR. 2, 1908.

947,750.

Patented Jan. 25, 1910.

2 SHEETS—SHEET 1.

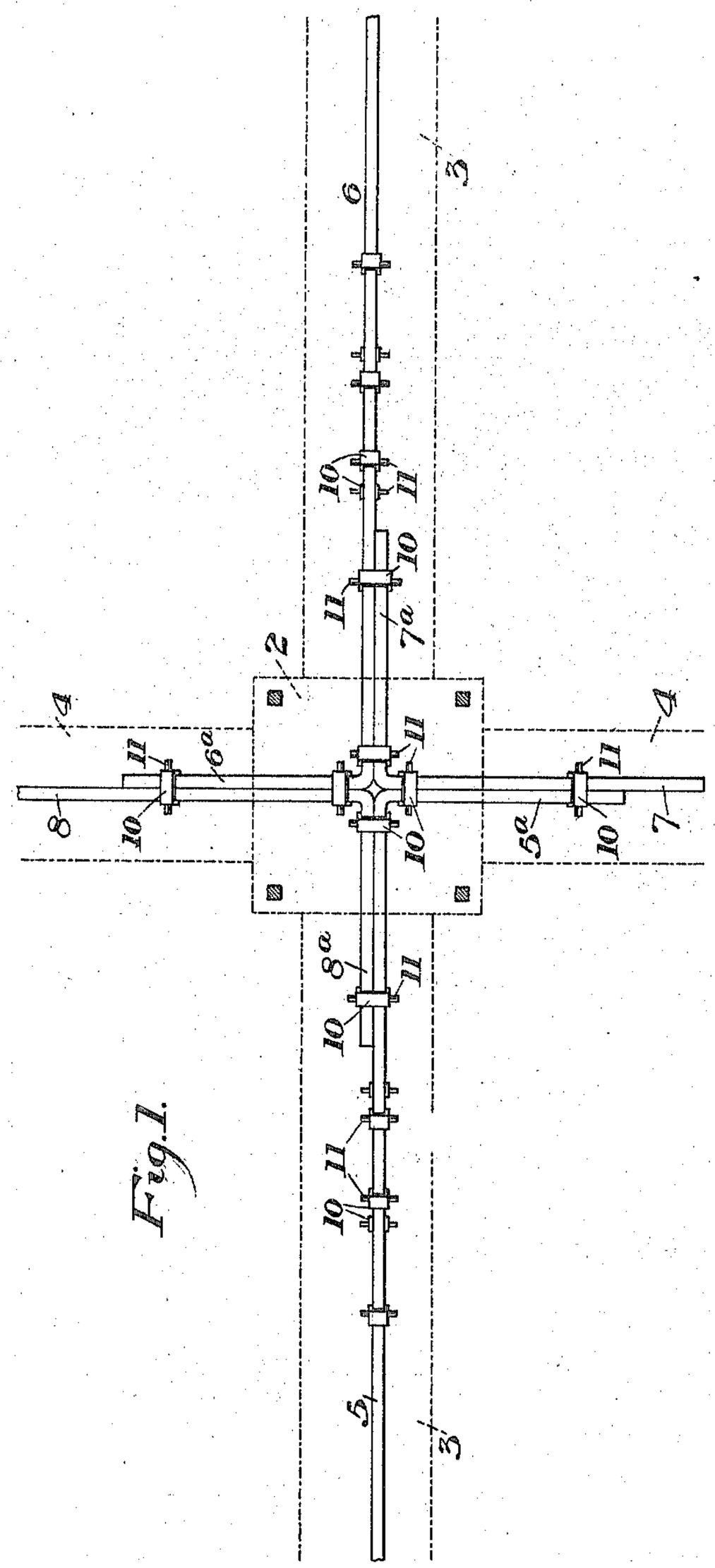

Fig. 1.

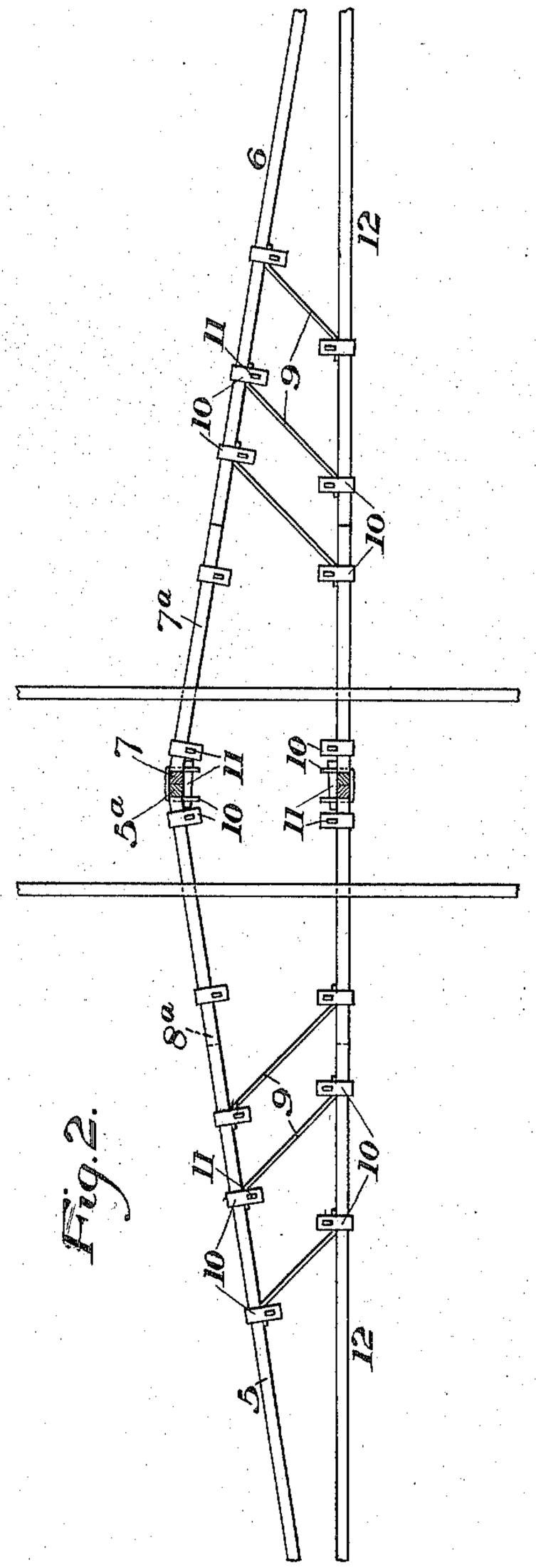

Fig. 2.

WITNESSES

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R. A. Balderson

INVENTOR

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by Bakewell, Byrnes & Parmelee,

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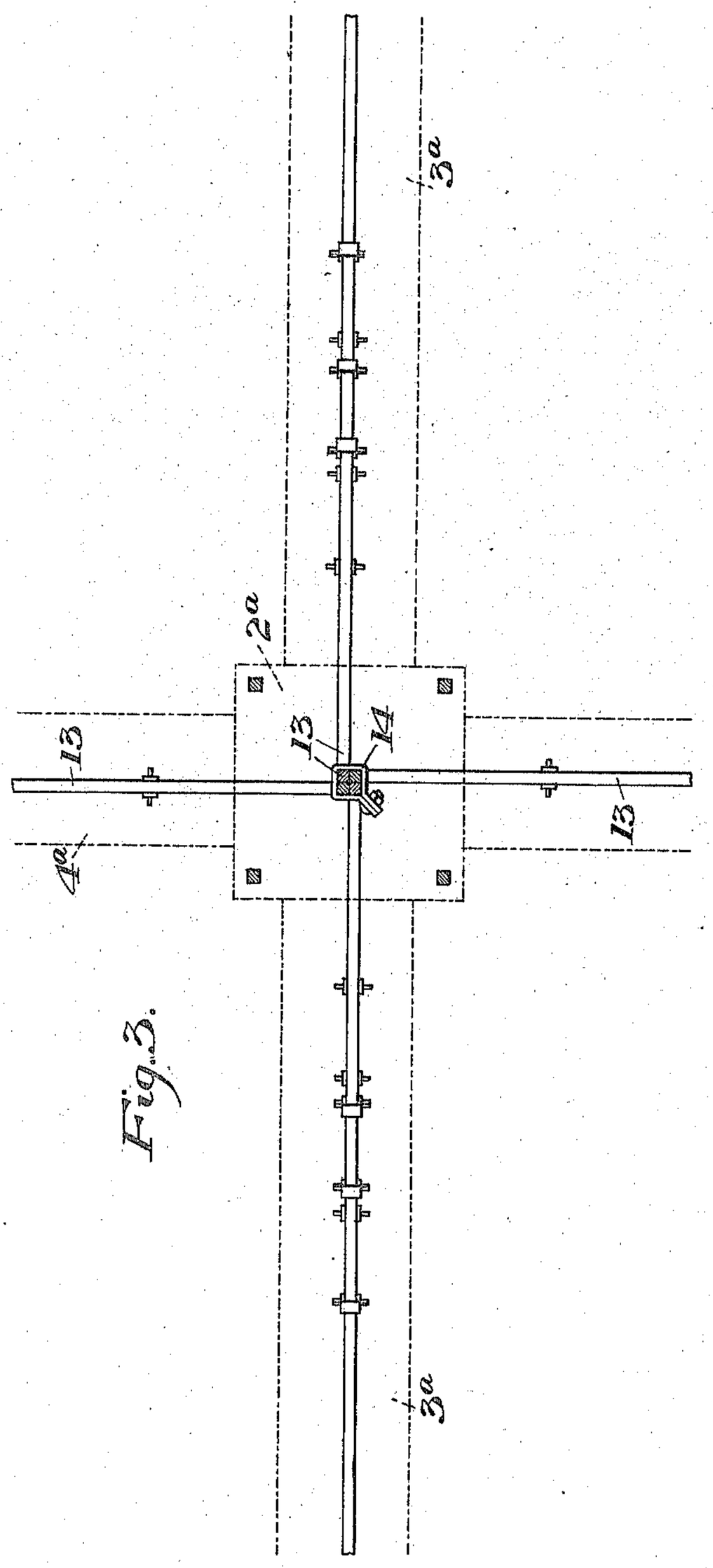

Fig. 3.

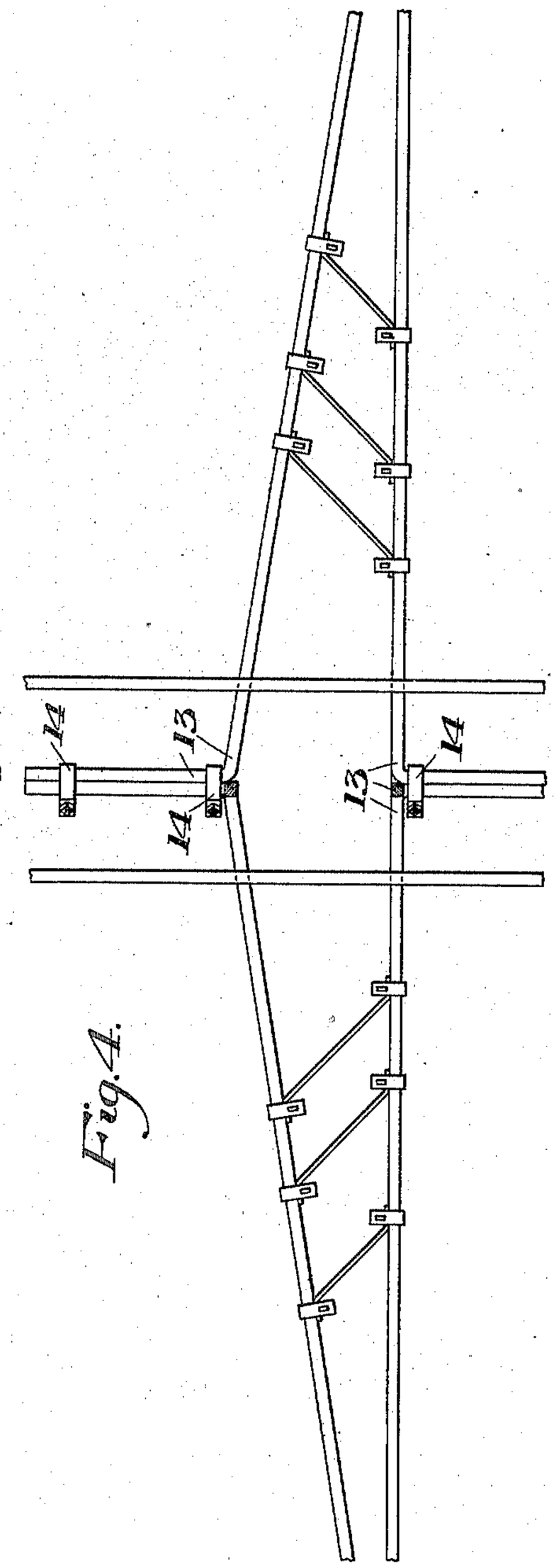

Fig. 4.

WITNESSES

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UNITED STATES PATENT OFFICE.

EUGENE N. HUNTING, OF YOUNGSTOWN, OHIO, ASSIGNOR TO THE GENERAL FIRE-PROOFING COMPANY, OF YOUNGSTOWN, OHIO, A CORPORATION OF OHIO.

REINFORCED CONCRETE STRUCTURE.

947,750. Specification of Letters Patent. Patented Jan. 25, 1910.

Application filed March 2, 1908. Serial No. 418,644.

To all whom it may concern:

Be it known that I, EUGENE N. HUNTING, of Youngstown, Mahoning county, Ohio, have invented a new and useful Improvement in Reinforced Concrete Structures, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a partial top plan view showing one form of my improved beam and girder connection; Fig. 2 is a sectional elevation of the same; Fig. 3 is a plan view showing a modification; and Fig. 4 is a sectional elevation of the construction shown in Fig. 3.

My invention relates to reinforced concrete beam and girder constructions; and particularly to the manner of disposing of and connecting the ends of the reinforces in such structures, the object being to provide for the connections of the ends of the reinforces in such a manner that the stresses will be transmitted by the metal directly through the vertical columns or posts of the structure without depending upon the concrete in which the metal is embedded to transmit such stresses.

The precise nature of my invention will be best understood by reference to the drawings, which will now be described, it being premised, however, that various changes may be made therein by those skilled in the art, without departing from my invention, as defined in the appended claims.

Referring first to the structure shown in Figs. 1 and 2, the numeral 2 designates a vertical post or column of concrete, and 3 and 4 the connecting horizontal beams. Embedded in each of the concrete beams 3 and 4 is a metallic reinforcing truss which, in the present instance, is composed of an upper member or chord, a lower member or chord, and a series of oblique bracing members. The upper member 5 of the reinforce in one of the beams 3 has its end portion bent at right angles into one of the transverse beams 4. as shown at 5^a, while the upper chord 6 i the other beam 3 is similarly bent at right angles in the opposite direction into the other beam 4, as shown at 6^a. In a like manner, the upper chords 7 and 8 of the reinforces in the beams 4 are bent at right angles in opposite directions and these bent portions are extended into the respective beams 3, as shown at 7^a and 8^a. 9 designates the oblique bracing members which may or may not be employed.

The bent end portion of each of the upper chord members is secured by one or more sleeves or clamps 10 to the adjacent reinforcing member and the beam into which it is bent and alongside of which it lies. Into each of the sleeves or clamps is driven a wedge 11 which closely binds the members together. The lower chords 12 of each of the reinforces may simply extend into the column and terminate therein, or they may, as shown, be connected in precisely the same manner as the upper chords. That is, each lower member is bent at right angles into one of the adjacent beams and is secured to the main reinforcing member in that beam. This construction provides for a very secure and rigid connection for the ends of the reinforcing members, each member having a portion bent to form a part of the reinforce of another beam. In this manner, a strong central connection is effected and the stresses on the reinforces are communicated through the metallic members directly from one to the other, without dependence upon the surrounding bed of concrete.

In the construction shown in Figs. 3 and 4, the ends 13 of the upper and lower chord members, instead of being bent horizontally into an adjacent beam are bent vertically at right angles, the ends of the upper chord members being bent vertically upward into the vertical post or column 2^a, while the ends of the lower chord members are bent vertically downward into said column. These bent ends are brought into close relation to each other and are securely bound together by clamps 14, which may be similar to the clamps 10. In this construction, the ends of the reinforces are also directly connected to each other so that stresses are directly transmitted from one to another, while at the same time, the vertical concrete posts or columns are greatly strengthened.

I do not limit myself to the bent reinforcing trusses constructed in the manner herein shown and described, the essential feature of my invention being the bending of each reinforcing member at an angle and securing it to an adjacent member as set forth in the claims, whatever the construction of the reinforce itself. These reinforces may be metal bars of any desired

cross section and the bent ends may be secured together in various ways other than by the particular form of clamps described.

I claim:

1. In a reinforced concrete structure, a central column, and a plurality of concrete beams joining the same, a metallic reinforcing member embedded in each beam and extending into the column, the end portions of all the reinforcing elements being brought together within the central portion of the column and each such portion then bent outwardly into another beam and secured to the metallic reinforcing member therein; substantially as described.

2. In a reinforced concrete structure, a concrete column, a plurality of concrete beams joining the same, a plurality of reinforcing elements extending at an angle to each other into different beams, and having their adjacent end portions brought together and then bent at an angle each into another beam and secured to the metallic reinforcing member therein; substantially as described.

3. In a reinforced concrete structure, four trusses at an angle to each other, and having each an upper chord and a lower chord, the chords of each truss being bent at an angle and secured to a similar chord, in a truss at an angle thereto; substantially as described.

4. In a reinforced concrete structure, four trusses at an angle to each other, and having each an upper chord and a lower chord, bracing members connecting the upper and lower chords of each truss, the chords of each truss being bent at an angle and secured to a similar chord in a truss at an angle thereto; substantially as described.

5. In a reinforced concrete structure, a concrete column, radiating reinforcing trusses joining the column, and having each an upper and a lower chord, the chords of each truss being bent at an angle within the column and secured to a similar chord therein of a truss at an angle thereto; substantially as described.

In testimony whereof, I have hereunto set my hand.

EUGENE N. HUNTING.

Witnesses:

A. P. WHITE,

M. E. MURRAY.