

No. 891,023.

PATENTED JUNE 16, 1908.

J. J. WHITACRE.
CONCRETE REINFORCEMENT.
APPLICATION FILED DEC. 20, 1907.

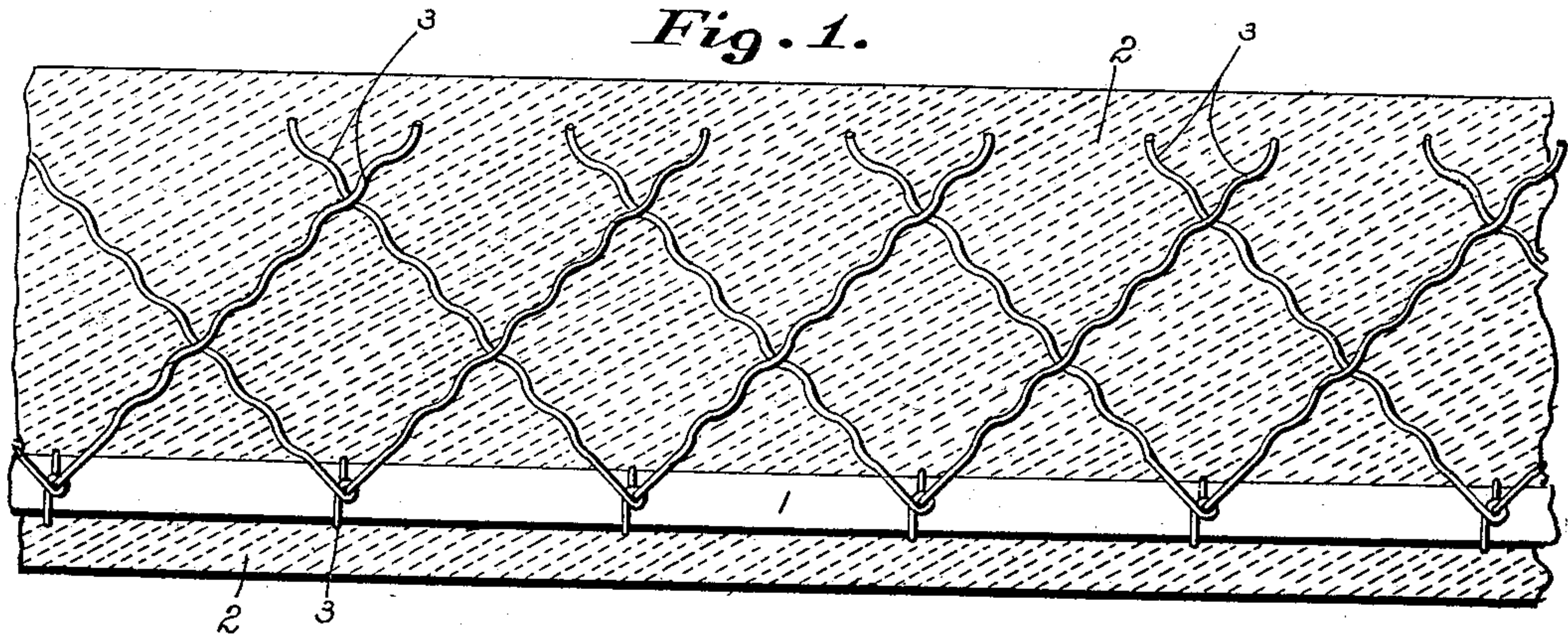


Fig. 3.

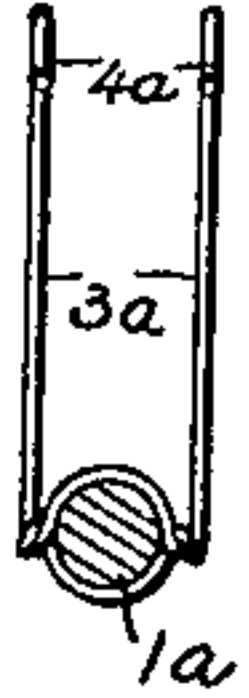


Fig. 2.

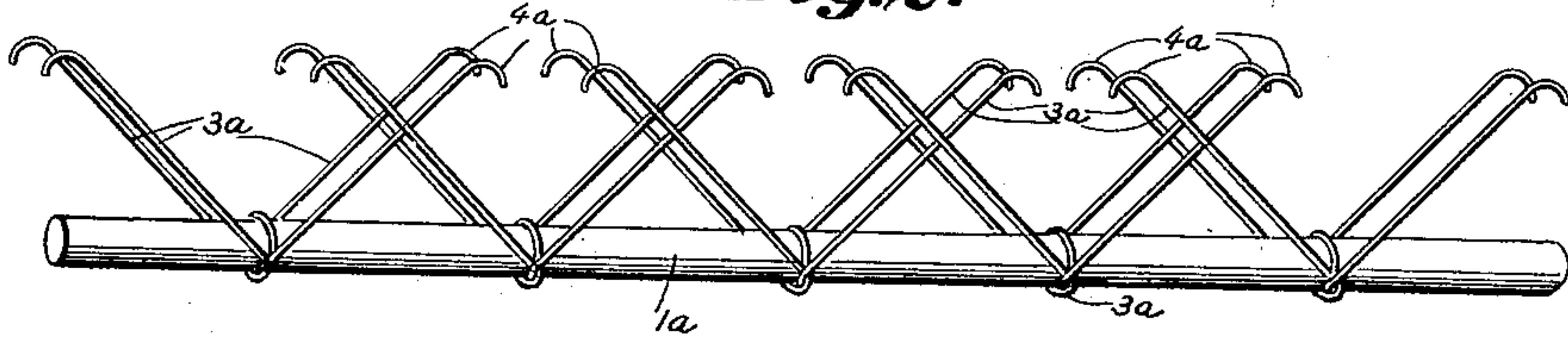


Fig. 5.

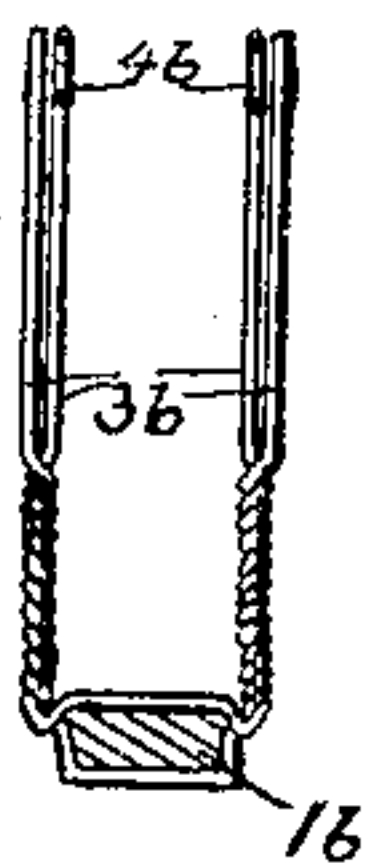


Fig. 4.

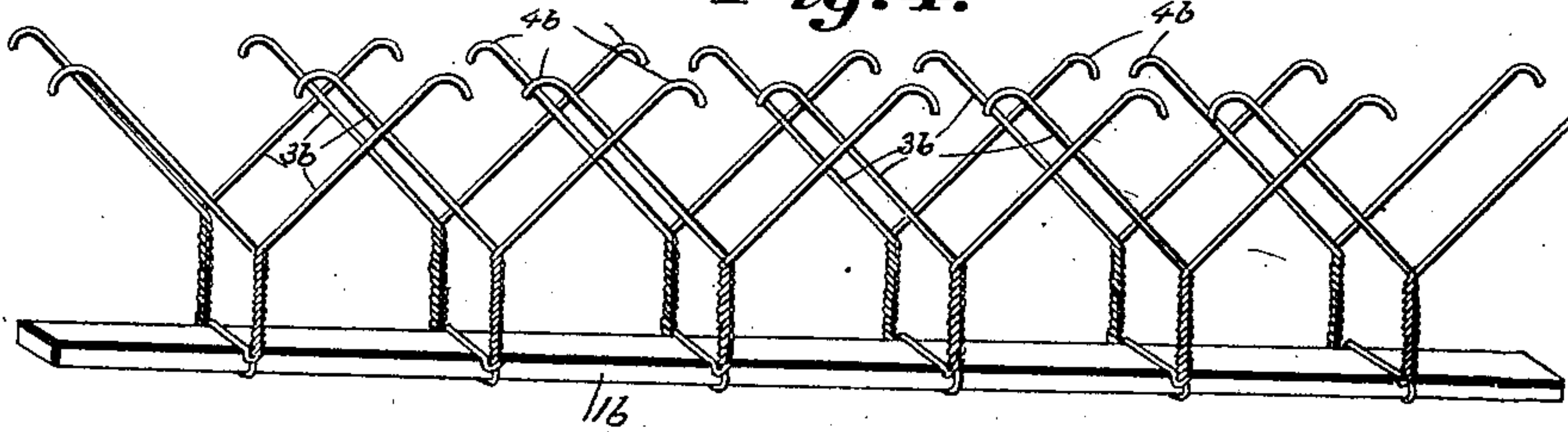


Fig. 7.

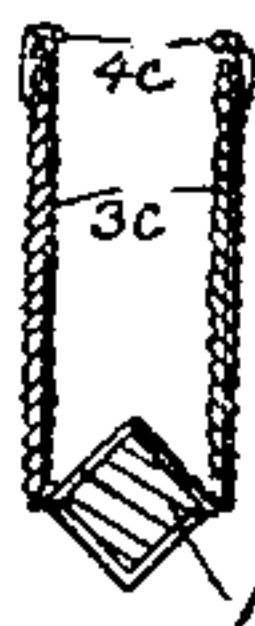
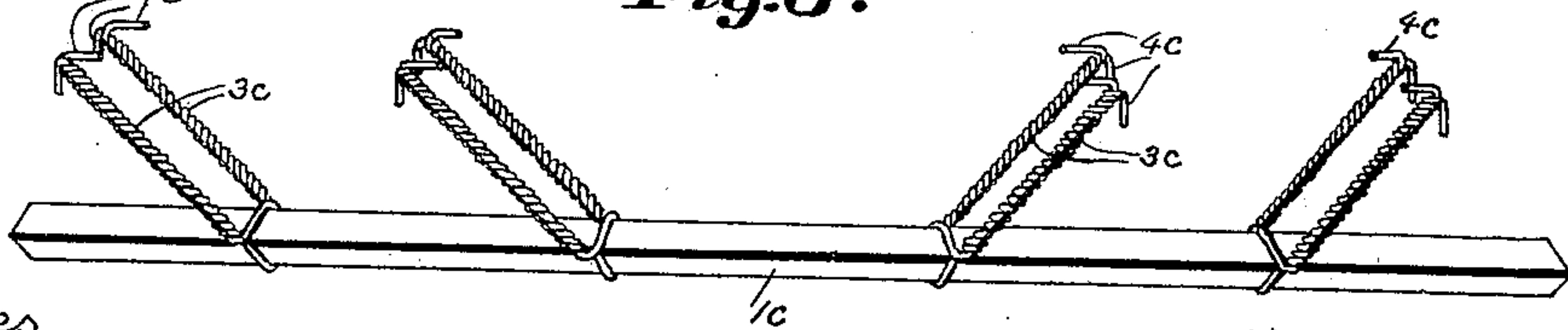


Fig. 6.



Witnesses

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CONCRETE REINFORCEMENT.

No. 891,023.

Specification of Letters Patent.

Patented June 16, 1908.

Application filed December 20, 1907. Serial No. 407,281.

To all whom it may concern:

Be it known that I, JOHN J. WHITACRE, a citizen of the United States, residing at Canton, in the county of Stark and State of Ohio, have invented a certain new and useful Concrete Reinforcement, of which the following is a specification.

The invention relates to a metallic reinforcement for a concrete beam, wherein a main longitudinal metallic member is employed in or near the lower portion of the beam, to which main member subordinate members are connected at intervals and are inclined upward in various directions toward the upper portion of the beam; and the object of the invention is to provide a reinforcement which can be conveniently made and put in place as the work progresses and during such making the subordinate members can be located, inclined and arranged with reference to each other, in any desired manner best suited to the respective parts of the beam and the varying requirements of construction. This object is attained by the construction and arrangement illustrated in the accompanying drawings, in which—

Figure 1 is a longitudinal vertical section of a portion of a concrete beam showing a form of the metallic reinforcement therein in which each subordinate member overlaps two adjacent subordinate members; Fig. 2, a perspective view showing the reinforcement as made with a round main bar and having the subordinate members inclined directly upward from the sides thereof to overlap each other; Fig. 3, a cross section of the same; Fig. 4, a perspective view showing the reinforcement as made with a flat rectangular main bar and having the twisted portion of the subordinate members extended upward a short distance, and thence separated and inclined in opposite directions to overlap each other; Fig. 5, a cross section of the same; Fig. 6, a perspective view of the reinforcement as made with a square main bar placed on edge, and having the twisted portion of the subordinate members inclined upward from the side edges of the main member with the free ends bent in opposite directions; and Fig. 7, a cross section of the same.

Similar numerals refer to similar parts throughout the drawings.

The main bar 1 is located longitudinally to be embedded in the lower portion of the concrete beam 2 when the same is formed around the metallic reinforcement, and this member

can be formed square and set on one side as shown in Fig. 1; or it may be round in cross section, as shown at 1^a in Figs. 2 and 3; or it may be flat and rectangular, as shown at 1^b in Figs. 4 and 5; or it may be formed square and set on edge, as shown at 1^c in Figs. 6 and 7; the particular cross section of the main bar not being an essential feature of the present invention. The subordinate members in each case are made of a plurality of flexible wires 3, and in the forms illustrated two wires are employed, one of which is laid transversely over and the other is laid transversely under the main bar, at the sides of which the wires are engaged and tightly twisted together so as to practically secure the subordinate members to the main member at the places selected for that purpose. The respective wires of the subordinate members having been twisted together at the sides of the main member, the individual wires are then separated and extended in various directions to be embedded in the body of the concrete beam when the same is formed around them in any manner best suited to the requirements of the construction and the loads to be placed upon the beam.

In Fig. 1 the individual wires 3 of each subordinate member are inclined upwards in opposite directions from the sides of the main bar and the several subordinate members are located near enough to each other so that each diverging individual wire will overlap the oppositely diverging wires of two adjacent subordinate members, thus making a very strong bond throughout the beam; and the individual wires may be slightly crimped, as illustrated, to increase their adhesion in the cement.

In Figs. 2 and 3 the individual wires 3^a are wrapped around the round bar 1^a, and after being twisted together at the sides thereof, are inclined upwards in opposite directions so that the diverging wires of each subordinate member overlaps the oppositely inclined diverging wires of the next adjoining subordinate members. In this form of construction the ends 4^a of the individual wires are preferably bent or hooked downward to increase the hold of the same in the cement.

In Figs. 4 and 5 the individual wires 3^b are wrapped around the flat rectangular main bar 1^b and are twisted together at the sides thereof. A greater number of twists are made in this form than in the forms of construction hereinbefore described, and the

twisted portions of the subordinate members are directed upward a short distance from the sides of the main bar, whence the individual wires are separated and diverge to overlap the oppositely diverging wires of the adjoining subordinate members, the ends ^{4^b} of the wires being preferably bent or hooked as before, to increase their hold in the cement.

In Figs. 6 and 7 the individual wires ^{3^c} are wrapped around the square main bar ^{1^c} which is placed on one edge, and the wires are tightly twisted together at each side edge of the main bar. In this form of construction the individual wires are twisted together for the greater part of their length, and the twisted portions of each subordinate member is inclined diagonally upward, preferably in opposite directions from the middle portion of the main bar, and in this form of construction only a small portion at the ends of the individual wires are not twisted together and these free ends ^{4^c} are separated and extended in different directions to hook into the body of the cement. In this form of construction the twisted portions of the subordinate members form a very complete bond in the cement by reason of the irregularity of their twisted surfaces. And it will be noted, in general, that by applicant's particular form of reinforcement, the subordinate members form tension truss members on each side of the main bar, and that the exact location, distribution and character of the tension truss members can be controlled and regulated at will by the workman, as the reinforcement is put in place, to suit the varying strains and other requirements of the construction.

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

1. A metal-reinforcement for a concrete beam comprising a main bar and a series of subordinate members consisting of a plurality of wires wrapped respectively over and under the main bar and twisted together at

the sides thereof and thence extended upward therefrom to form tension truss members on each side of the main bar.

2. A metal-reinforcement for a concrete beam comprising a main bar and a series of subordinate members consisting of a plurality of crimped wires wrapped respectively over and under the main bar and twisted together at the sides thereof and thence extended upward therefrom to form tension truss members on each side of the main bar.

3. A metal-reinforcement for a concrete beam comprising a main bar and a series of subordinate members consisting of a plurality of wires wrapped respectively over and under the main bar and twisted together at the sides thereof and thence extended upward therefrom to form tension truss members on each side of the main bar, the ends of the wires being bent to form hooks.

4. A metal-reinforcement for a concrete beam, comprising a main bar and a series of subordinate members consisting of a plurality of wires wrapped respectively over and under the main bar and twisted together at the sides thereof, and thence separately inclined upward in diverging directions to form tension truss members on each side of the main bar.

5. A metal-reinforcement for a concrete beam, comprising a main bar and a series of subordinate members consisting of a plurality of wires wrapped respectively over and under the main bar and twisted together at the sides thereof, and thence separately inclined upward in diverging directions to form tension truss members on each side of the main bar, the diverging wires of one subordinate member overlapping the diverging wires of adjacent subordinate members.

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Witnesses:

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