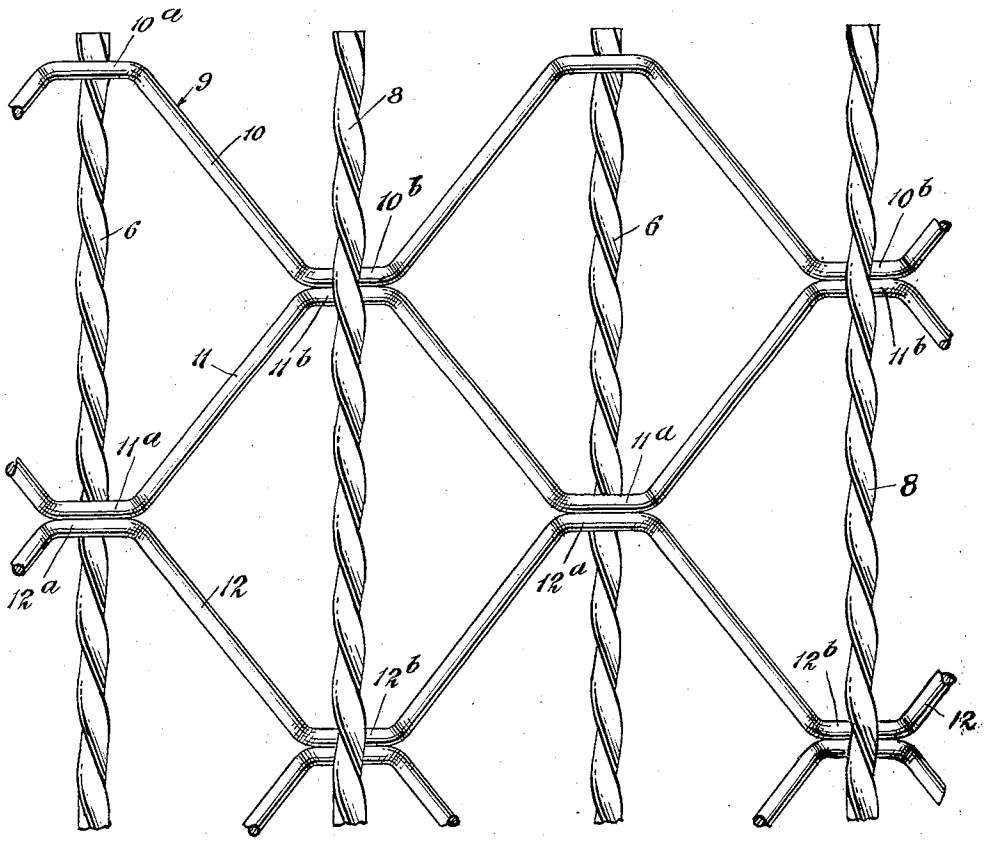
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REENFORCING MEMBERS FOR CONCRETE

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Fig. 1



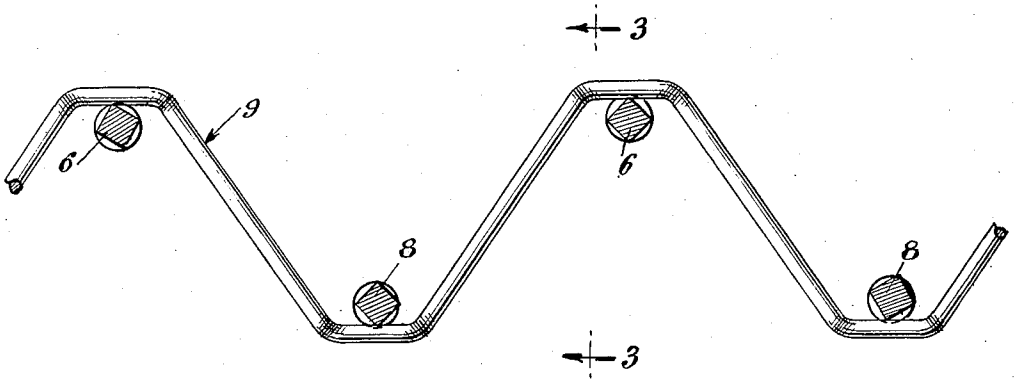


Fig. 2

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Fig. 3

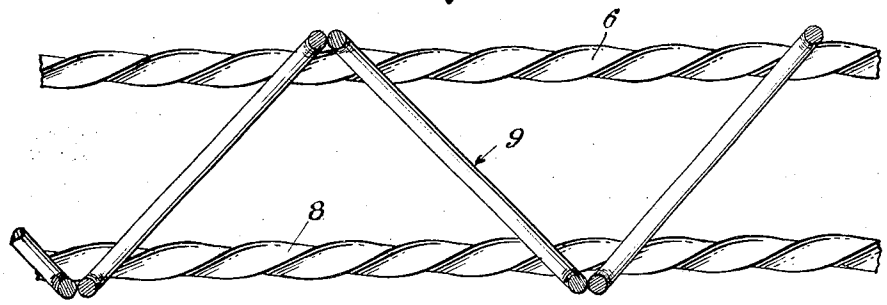


Fig. 4

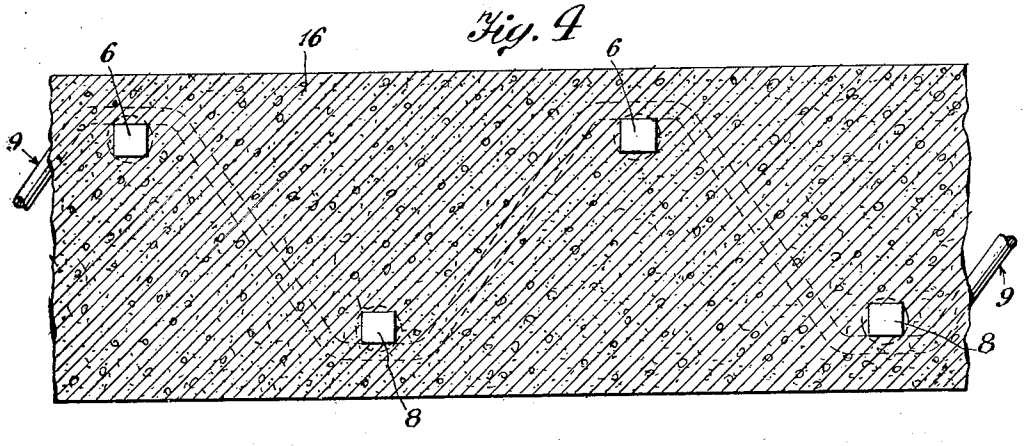
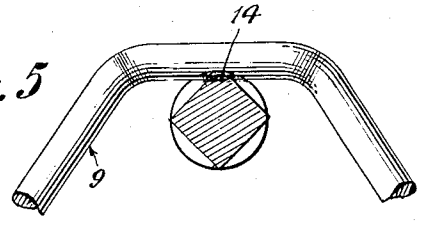


Fig. 5



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UNITED STATES PATENT OFFICE

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REENFORCING MEMBERS FOR CONCRETE

Application filed March 25, 1930. Serial No. 438,662.

This invention relates to improvements in fabricated metallic structures, it being a primary object of the invention to provide a relatively strong and rigid skeleton metallic structure for use in reenforcing concrete.

It is a further object to provide a structure of this character which may be readily welded together to form in effect an integral skeleton framework to be embedded in concrete or the like.

The above and other objects will appear more fully from the following description when considered in connection with the drawings, in which:

Fig. 1 is an elevational view of a section of the metallic structure constructed according to one embodiment of my invention.

Fig. 2 is a transverse sectional view taken at right angles to Fig. 1.

Fig. 3 is a similar view taken at right angles to Figs. 1 and 2.

Fig. 4 is a sectional view of a mass of concrete showing the construction of my reenforcing member in situ; and

Fig. 5 is a detail view illustrating the connection between the bars and connecting members of the structure.

In the embodiment of the invention illustrated in the drawings there are provided two spaced series of longitudinal bars 6 and 8, the bars 6 being arranged in an upper plane and the bars 8 in a lower plane spaced beneath the plane of the bars 6 where the structure is arranged horizontally as shown in Fig. 2 for example.

Each of the bars is preferably formed from a square bar twisted throughout its length so as to provide a number of points at various angles to which the cross-connecting members will be attached.

The cross-connecting members are indicated generally at 9, three separate members of which are indicated by the numerals 10, 11 and 12 respectively. These members, as shown, connect alternately with the upper and lower bars, passing first across an upper bar 6 then beneath a lower bar 8, etc. The members 9 are thus stepped into higher and lower planes corresponding generally to the planes of the bars 6 and 8. The members 10 to 12 are further extended in a zigzag path so that they extend longitudinally of the bars 6 and 8 as they connect between these bars. Successive connecting members are thus formed with portions which reach toward the next succeeding connecting members alternately as the members extend from bar to bar. Thus the member 10 is formed with a portion 10*a* connected above the bar 6 and with a portion 10*b* connected beneath the bar 8. Likewise the member 11 is formed with a portion 11*a* attached above the bar 6 and with a portion 11*b* extended to a position adjacent the portion 10*b* and attached beneath the bar 8, each connecting member thus being attached to successive bars and extended backwardly and forwardly to points adjacent the next succeeding connecting member at each bar forming a double truss.

The construction disclosed herein is particularly useful in that the connecting members 10, 11, 12, etc. can be readily attached to the bars 6 and 8 by means of the electric resistance method of welding. This follows from the fact that each portion of the structure is readily available for the pressure required in this type of welding and from the further fact that each bar is formed with a relatively pointed portion engageable by a connecting member so as to give the necessary resistance and thus develop the necessary heat for welding. The connecting members 10 to 12, etc. are accordingly shown as attached to the bars 6 and 8 at each of the contact points between the connecting members and bars by means of a welded joint as indicated for example at 14.

While the structure described above has many and varied uses its primary purposes is for reenforcement in concrete structure as shown in Fig. 4. It will be readily understood that the fabricated structure may be suitably placed on the surface to receive the concrete 16 and that the concrete may thereafter be poured over the structure and, due to the general open character of the reenforcing structure, the concrete will readily fill every opening in the structure and become attached to the bars 6 and 8 and connecting members 9.

It will thus be seen that my invention contemplates the use of bars and connecting members readily available on the open market and which may be assembled and welded together with a minimum of difficulty and expense.

The finished product possesses a high degree or rigidity and is particularly adapted for being embedded in concrete in which it permits the flow of concrete to every open part of the framework and to which it is firmly attached when the concrete has become set.

Having now described my invention, I claim:

1. In a metallic framework for concrete reenforcement, a plurality of staggered metallic bars, alternate bars being arranged in transversely spaced planes, cross connecting members rigidly connected alternately with bars in the different planes, said connecting members extending obliquely with respect to the length of said bars as they extend alternately to bars in the different planes, each connecting member extending to a plurality of bars in each plane.

2. In a metallic framework for concrete reenforcement, a plurality of twisted multisided metallic bars forming longitudinal members, said bars being arranged alternately in spaced planes, a plurality of cross connecting members extending in a zigzag path to a plurality of bars in each plane for connecting the bars in one plane with the bars in the other plane and means for rigidly and permanently attaching said connecting members to said bars.

3. In a metallic framework, a series of longitudinal bars arranged alternately in spaced planes, cross connecting members welded to said bars and extending from each bar to the next adjacent bar to form a series of upright and inverted unobstructed arches extending across said framework, said connecting members extending backwardly and forwardly in zigzag paths longitudinally of said bars to points of connection with a plurality of said bars in each plane.

4. In a metallic framework, a series of longitudinal bars arranged alternately in spaced planes, cross connecting members welded to said bars and extending from each bar to the next adjacent bar, said connecting members extending backwardly and forwardly in zigzag paths to points of connection with a plurality of said bars in each plane, the points of connection of each of said connecting members with said bars being adjacent the points of connection of proximate connecting members to the same bars.

5. In a metallic framework, a series of longitudinal bars arranged alternately in spaced planes, cross connecting members welded to said bars and extending from each bar to the next adjacent bar, thes pace between successive bars in the same plane being otherwise unobstructed, each of said connecting members being extended alternately to points adjacent the points of connection of connecting members on each side of said first-named members and extending to and being connected to a plurality of bars in each plane.

6. In a metallic framework, a series of longitudinal bars arranged alternately in vertically spaced planes, cross connecting members each welded to a plurality of said bars in each plane, said members extending from each bar to the next adjacent bar by passing over the upper bars and beneath the lower bars, said connecting members extending backwardly and forwardly with respect to the length of said bars in zigzag paths to points of connection with said bars.

Signed at New York in the county of New York and State of New York this 22nd day of March A. D. 1930.

GEORGE I. STANFORD.