Sept. 3, 1929. H. WESTON 1,727,147

METAL REENFORCEMENT FOR CONCRETE STRUCTURES

Filed Jan. 16, 1925 2 Sheets-Sheet 1

FIG. 2.

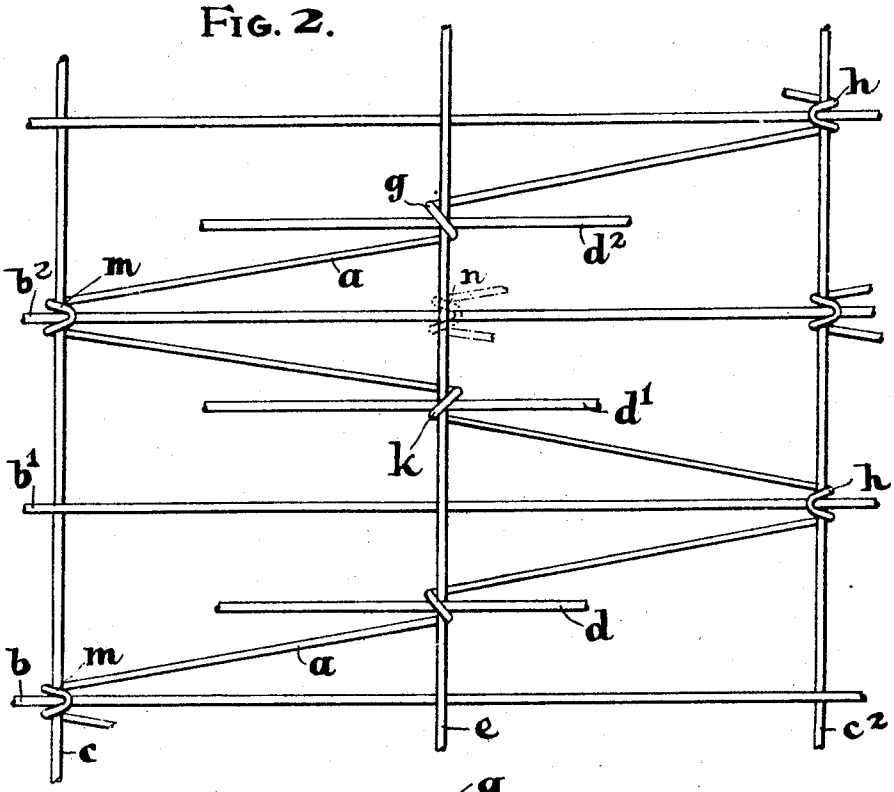
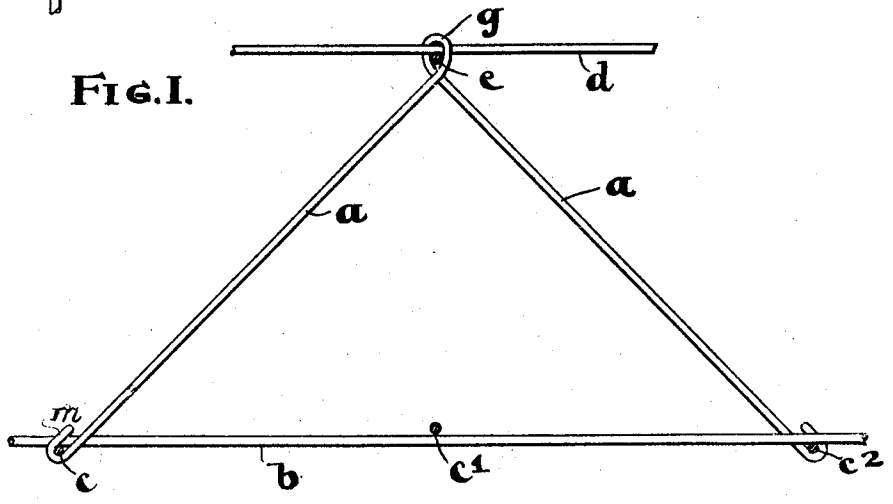


FIG. 1.



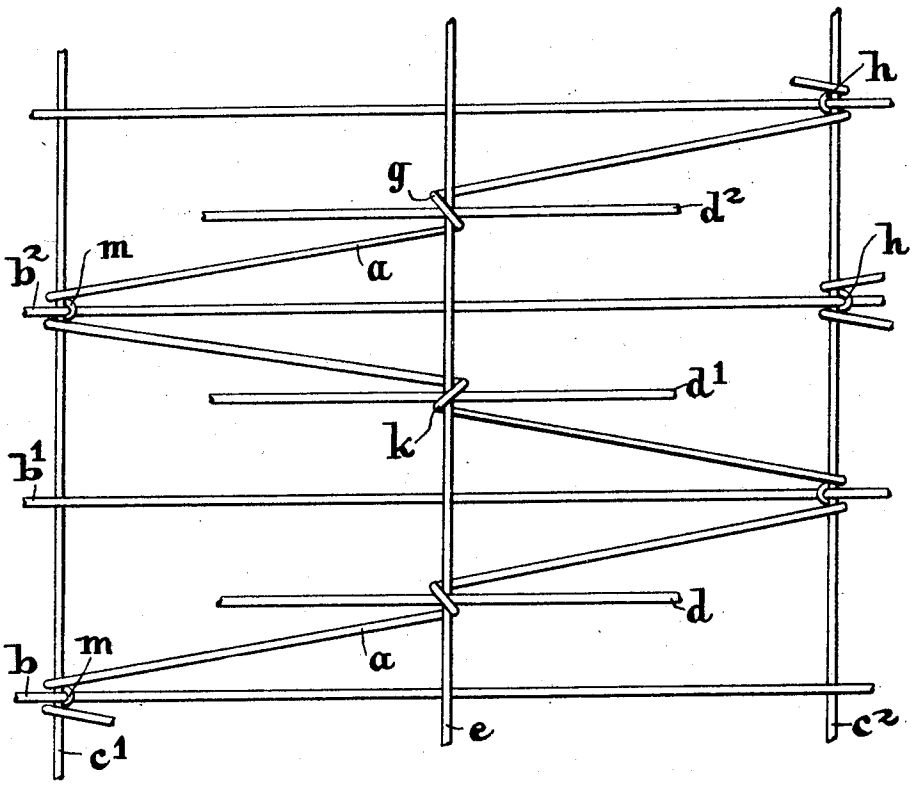
INVENTOR:
HARRY WESTON.
By Edward Williams
HIS ATTORNEY.

Sept. 3, 1929. H. WESTON 1,727,147

METAL REENFORCEMENT FOR CONCRETE STRUCTURES

Filed Jan. 16, 1925 2 Sheets-Sheet 2

FIG. 3.



INVENTOR:
HARRY WESTON.
By Edward Williams
HIS ATTORNEY.

Patented Sept. 3, 1929. 1,727,147

UNITED STATES PATENT OFFICE.

HARRY WESTON, OF SUTTON, ENGLAND.

METAL REENFORCEMENT FOR CONCRETE STRUCTURES.

Application filed January 16, 1925, Serial No. 2,819, and in Great Britain February 6, 1924.

This invention relates to metal reenforcements for concrete structures, such as floors, road foundations, rafts and the like and has for its object to provide an improved form of reenforcement.

Where iron or steel wires or rods are used to reenforce concrete structures and foundations it has been customary in some cases to provide two layers of transverse and longitudinal rods connected together and held in their relative places by means of stays or truss members which may be in the form of wires or rods to which the longitudinal and transverse members are secured to give rigidity and strength to the complete structure so that it will have sufficient strength to withstand heavy rolling loads. In building such structures, in order to economize in the cost it is usual to employ unskilled labour and in making the connections, unless the operation is carefully supervised there is a risk of some of the members being bent or placed under strain so that they will not stand the stresses and strains they are eventually called upon to carry. The object of this invention is to provide truss or trestle members which are formed so as to readily interlock with the longitudinal and transverse members in both the top and bottom layers where two layers are used, or can be used for tying these members together where only one layer of reenforcement is used.

This invention consists in bending the wire or rods of which the trestle is formed so that the straight rods may be passed easily through the bends, a transverse and a longitudinal rod passing through each bend and making a rigid structure with the trestle.

More particularly this invention consists in constructing a framework of trestles spaced at such distance from each other as required to give sufficient strength to the reenforcement and securing to the trestles top and bottom longitudinal and transverse members, the top longitudinal and transverse members both passing through loops formed in the apices of the trestles, while the bottom transverse rods are arranged in hooks having a looped end and formed at the lower extremities of the limbs of the trestle and are locked therein by means of the longitudinal rods which pass through loops formed in the ends of the hooks.

The accompanying drawings illustrate the invention, Fig. 1 being a side elevation and Fig. 2 a plan view of one section of a double layer trestle reenforcement. Fig. 3 illustrates a plan view of a modified construction.

Referring to Figs. 1 and 2, a represents the rod or wire of which the trestle members are formed, b, b^1 b^2 etc., are the longitudinal members in the lower layer c, c^1, c^2 etc., the transverse members in this layer and d, d^1, d^2 and e are the longitudinal and transverse members respectively in the upper layer. The member a is bent as shown at the left hand side in Fig. 1 into the form of a hook m in which the lower transverse member c is laid and the lower longitudinal member b is passed through the loop formed in the end thereof. The rod a passes upward diagonally and is given practically a complete turn at g and through the loop so formed the upper transverse member e and the upper longitudinal member d are passed. The rod a then passes downward diagonally and is formed into a second hook at h in which the transverse member c^2 is laid, the longitudinal member b^1, being passed through, the upper part of the hook. The rod a again passes upward diagonally and a second loop k is formed in it through which the upper transverse member e is passed and the upper longitudinal member d^1. The rod then passes downward diagonally and is formed into a further hook at m in which the lower member c lies, the lower longitudinal member b^2 being passed through above member c. The above operations are repeated until the desired width of section is obtained. The succeeding trestle may be connected as shown in dotted lines at n.

When the lower ends of the trestles do not engage the intermediate transverse members such as c^1, Fig. 1, these members may be threaded alternately above and below the longitudinal members and tied thereto by wire or hooks or in any other convenient manner. This of course is unnecessary where each transverse member is engaged by a portion of the trestle. It will be understood that a complete framework according to the present invention may consist of upper and lower layers of transverse and longitudinal members connected by trestles at suitable intervals, these being spaced as required to give sufficient reenforcement to the structure to carry the load which it is intended to bear. Additional rods can of course be added to the structure and tied to the framework formed by the trestles and upper and lower layers in any convenient manner so as to provide additional strength should this be required at any particular region.

In the modification illustrated in Fig. 3 the construction is very similar to that described above with the exception that the hooks *h*, and *m* are bent in the opposite direction so that they first pass over the longitudinal members c^1, c^2 etc., and are then bent under them, the transverse members being threaded through the hooks as shown in the drawing. This I find gives a more rigid structure in practice and when this form is used for embedding in concrete to form a road, if loose boards are laid on it the barrows conveying the mixed concrete can be run over these boards to the points at which they are to be employed without deforming the frameworks.

In addition to being suitable as a reenforcement for ferro-concrete structures a framework such as above described can be utilized by itself as a support for the roof boards of buildings and for many other purposes. Where used for roofing some at least of the transverse and/or longitudinal members would be in the form of angle irons or light beams of sufficient strength to give rigidity to the structure.

What I claim as new and desire to secure by Letters Patent of the United States is:—

1. A framework or reenforcement suitable for use in ferro-concrete structures comprising the combination of a plurality of transverse and longitudinal rods connected together and held in their relative positions by means of stays or trestle members these stays consisting of wires or rods bent at the connecting points into hooks and loops through which a transverse and a longitudinal rod passes.

2. A framework or reenforcement suitable for use in ferro-concrete structures comprising the combination of a plurality of transverse and longitudinal rods connected together and held in their relative positions by means of diagonal stays or trestle members these stays consisting of wires or rods bent at the connecting points into hooks and loops through which a transverse and longitudinal rod passes.

3. A framework or reenforcement suitable for use in ferro-concrete structures comprising the combination of a plurality of trestle members spaced at the required distance apart to give the desired strength and longitudinal and transverse members secured to said trestle members, by being respectively laid in hooks and passed through loops formed in the trestle members whereby these members are securely locked together substantially as described.

4. In a framework or reenforcement suitable for use in ferro-concrete structures as claimed in claim 1, a trestle member consisting of a continuous length of wire or rod bent alternately into loops and hooks, substantially as and for the purpose described.

5. In a framework or reenforcement suitable for use in ferro-concrete structures the combination of a trestle member consisting of a continuous length of wire or rod bent alternately into loops and hooks, an upper and a lower layer of transverse and longitudinal members, said longitudinal and transverse members of said upper layer being interlocked with each other and with said trestle by said loops, and said longitudinal and transverse members of said lower layer being interlocked with each other and with said trestle member by said hooks.

6. A framework or reenforcement suitable for use in ferro-concrete structures, comprising the combination of longitudinal and transverse rods arranged in two planes, each plane having both longitudinal and transverse rods, and a continuous trestle member extending diagonally back and forth between the said planes and having loops and hooks formed therealong for engaging and holding said longitudinal and transverse members in each plane in its proper relation.

7. A framework or reenforcement suitable for use in ferro-concrete structures, comprising the combination of, longitudinal and transverse rods arranged in two planes, each plane having both longitudinal and transverse rods, and a continuous trestle member extending back and forth between the said planes and having loops and hooks formed along its length, said loops engaging and securing the rods of one of said planes and said hooks engaging and securing the rods of the other of said planes.

8. A framework or reenforcement suitable for use in ferro-concrete structures, comprising the combination of, a plurality of longitudinal and transverse rods arranged in different planes, and a continuous trestle member formed with loops and hooks alternately arranged throughout its length and bent so as to engage the longitudinal and transverse rods of each plane at the points where said loops and hooks are formed, said loops and hooks being so formed that where they engage said longitudinal and transverse members no additional securing means are necessary to hold the structure together.

9. A framework or reenforcement suitable for use in ferro-concrete structures consisting of a diagonal shaped trestle member bent back and forth upon itself and having formed along its length integral transverse and longitudinal rod receiving means, transverse rods for said framework and longitudinal rods therefor that frictionally engage said rod receiving means on said trestle member for locking the rods and trestle member together as a unit.

In witness whereof I have hereunto set my hand this ninth day of December, 1924.

H. WESTON.