No. 870,588. PATENTED NOV. 12, 1907.

A. ROGERS.

REINFORCED CONCRETE STRUCTURE.

APPLICATION FILED MAY 12, 1906.

Fig. 1.

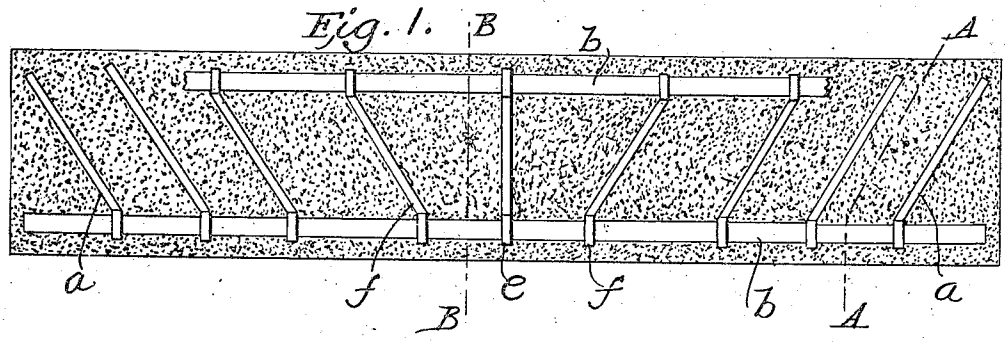


Fig. 2.

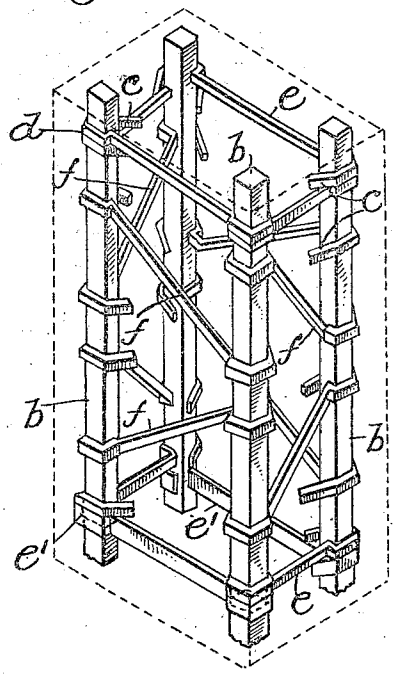


Fig. 5.

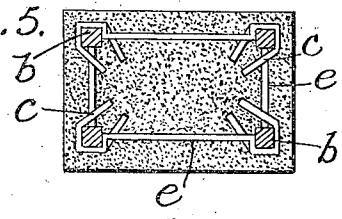


Fig. 4.

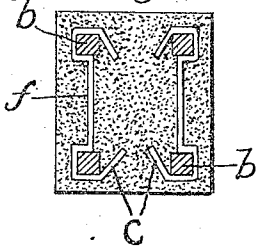


Fig. 3.

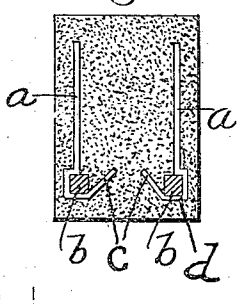


Fig. 6.

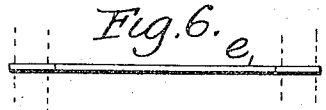


Fig. 7.

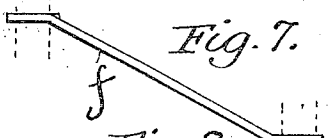


Fig. 8.

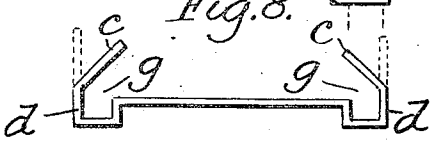


Fig. 9.



WITNESSES

James F. Duhamel,

Margaret Hamilton.

INVENTOR

Alson Rogers.

BY

James Hamilton,

ATTORNEY.

UNITED STATES PATENT OFFICE.

ALSON ROGERS, OF WARREN, PENNSYLVANIA.

REINFORCED CONCRETE STRUCTURE.

No. 870,588. Specification of Letters Patent. Patented Nov. 12, 1907.

Application filed May 12, 1906. Serial No. 316,500.

To all whom it may concern:

Be it known that I, ALSON ROGERS, a citizen of the United States, residing in Warren, in the county of Warren and State of Pennsylvania, have invented certain new and useful Improvements in Reinforced Concrete Structures, of which the following is a specification, reference being had to the accompanying drawings.

My invention relates to structures having a framework made up of metallic members embedded in a matrix of concrete or like imperishable material to give stiffness and structural strength thereto; and the object of my invention is to provide means for tying the metallic frame-members together so that they will be held in proper relation to each other until the concrete has been placed about them.

A further object of my invention is so to fashion such means that they will add to the transverse stiffness of the structure and will become anchored in the concrete as the latter solidifies.

In the drawings illustrating the principle of my invention and the best mode now known to me of applying that principle, Figure 1 shows a girder embodying my invention; Fig. 2 illustrates the method of tying the metallic frame-members together in the case of a column, the limits of the surrounding concrete being shown by the dotted lines; Fig. 3 is a sectional view on the line A—A of Fig. 1; Fig. 4 is a sectional view on the line B—B of Fig. 1; Fig. 5 is a sectional view of Fig. 2, the cutting plane being horizontal and passing just above the uppermost clamps; Fig. 6 is an edge view of a straight clamp; Fig. 7 is a similar view of a diagonal clamp; Fig. 8 is a plan view of the clamps shown in Figs. 6 and 7; and Fig. 9 shows a modified form of clamp used where the frame-members are of circular cross-section.

Referring to Fig. 1, which shows a girder embodying my invention, the anchor-member *a* is formed at one end so as to fit snugly around the main reinforcing bar *b* on three sides; and this end terminates in a finger *c* which lies in prolongation of the side *d* when the anchor-bar is placed upon the reinforcing bar *b* and before the concrete is placed. Before the concrete is placed around the reinforcing bars *b*, the finger *c* is bent inwardly and thereby it serves to anchor the bar *a* and to secure it in position on the reinforcing bar *b*. The free part of the bar *a* extends diagonally outwardly from the reinforcing bar *b* and serves to give stiffness to the structure.

In order to secure a pair of the reinforcing bars *b* together, the clamp-bars *e*, *f* are provided. These clamp-bars are formed at each end with recesses *g* in all respects similar to the recess formed upon one end of the anchor-bar *a*. The walls of the recess *g* closely engage the frame-member or reinforcing bar *b* upon three sides and both ends of the clamp-bars *e*, *f* terminate in a finger *c* identical with the finger *c* upon one end of the anchor-bar *a* and used in a like manner for a like purpose. The central clamp-bar *e* is straight, while the clamp-bars *f* on each side of it have their central portion inclined to the plane of their ends, so that they form practically diagonal braces.

In Fig. 2 the application of my new system of bracing to the frame-members or reinforcing bars *b* of a column is illustrated. At the top and bottom of the column clamp-bars *e* are placed so as to prevent the frame-member *b* from spreading apart or from becoming otherwise displaced. Between the upper and lower sets of clamp-bars *e*, diagonal clamp-bars or braces *f* are placed which connect frame-members upon the same side of the column. Thus, the frame-members *b* are held rigidly in place and great stiffness and structural strength is given to the column with the addition of very little weight and at a very low cost. It will be understood that all the clamp-bars and braces are provided with fingers *c* which are bent inwardly before the concrete is placed and serve to anchor the clamp-bars and braces in place.

In case the length of the frame is to be increased by placing one reinforcing bar in prolongation of another, broad clamp-bars *e'* are used which are of sufficient width to cover the abutting ends of both bars to some distance on both sides of the joint. (See the lower part of Fig. 2).

In the modified form shown in Fig. 9, the recess *g'* is shaped to receive a reinforcing-bar of circular cross-section; and in any case, the recess will be of a form complementary to that of the cross-section of the bar which is to fit into it.

What I claim is:

1. In a reinforced structure, the combination with metallic frame-members the ends of which abut and the filling of cementitious material, of a clamp-bar formed at each end with a recess complementary to the cross-section of the frame-members which engage in it; said clamp-bar being of sufficient width to span the joint between the abutting ends of the frame-members and to overlap both of said ends and being formed at each end with a locking finger which extends inwardly to close the recess and to lock said abutting ends therein.

2. In a reinforced concrete structure, the combination of a pair of frame members; a clamp-bar which engages and locks said members in position, said clamp-bar consisting of a straight bar formed at its ends with recesses in which said members snugly fit filling the same and with locking fingers which extend from the outer wall of each recess inwardly towards each other to close the recesses and lock the frame members therein; and a filling of cementitious material in which said frame members and clamp-bars are embedded.

In testimony whereof I hereunto set my hand this —— day of May, 1906, in the presence of two witnesses at said Warren.

ALSON ROGERS.

Witnesses:
A. A. RIWA,
A. M. ROGERS.