

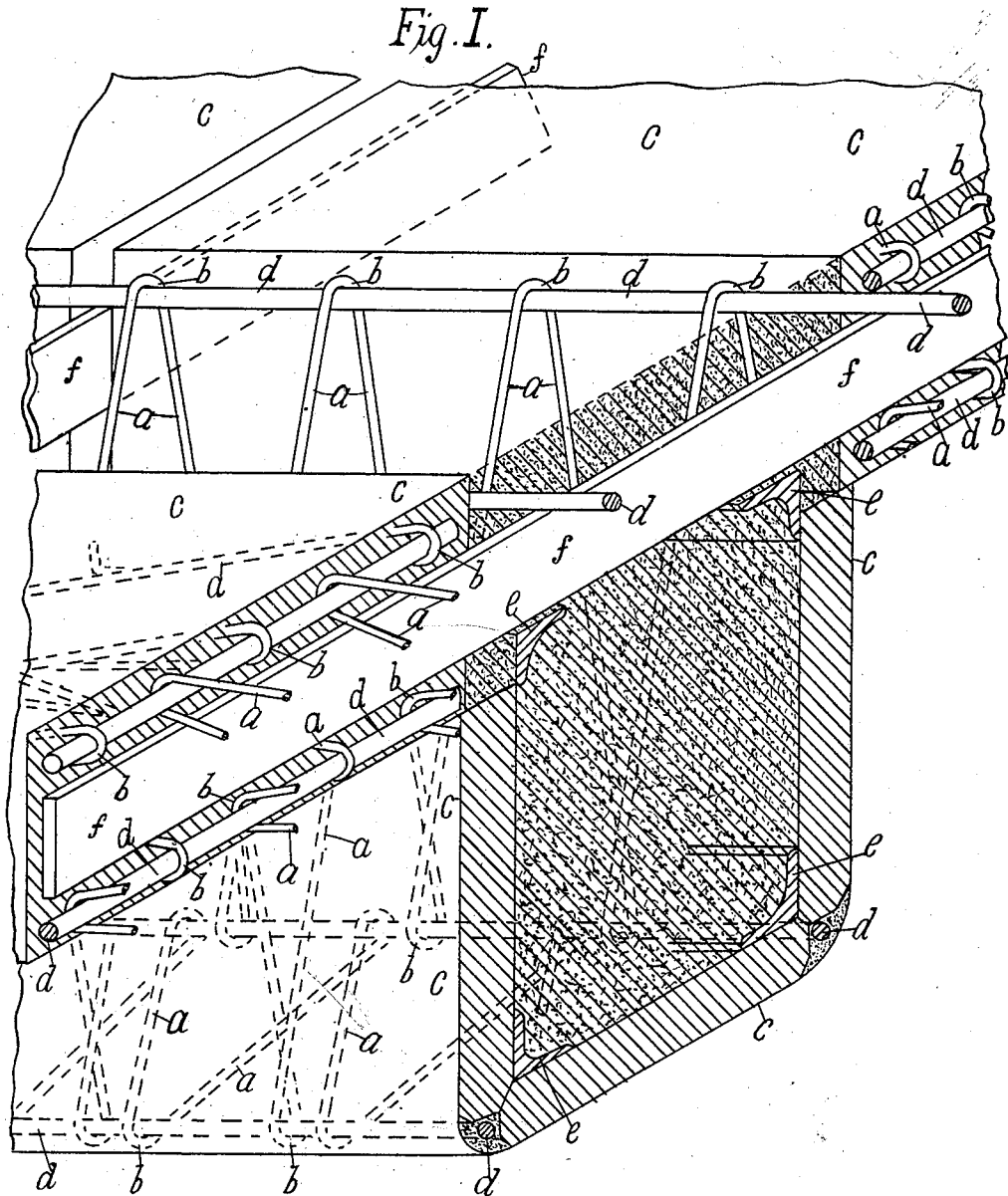
No. 863,555.

PATENTED AUG. 13, 1907.

E. C. POOLE.
REINFORCED CONCRETE BEAM OR COLUMN.

APPLICATION FILED JUNE 12, 1906.

3 SHEETS—SHEET 1.



Witnesses
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Ch. Kessler

Inventor
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By *James L. Noyes*
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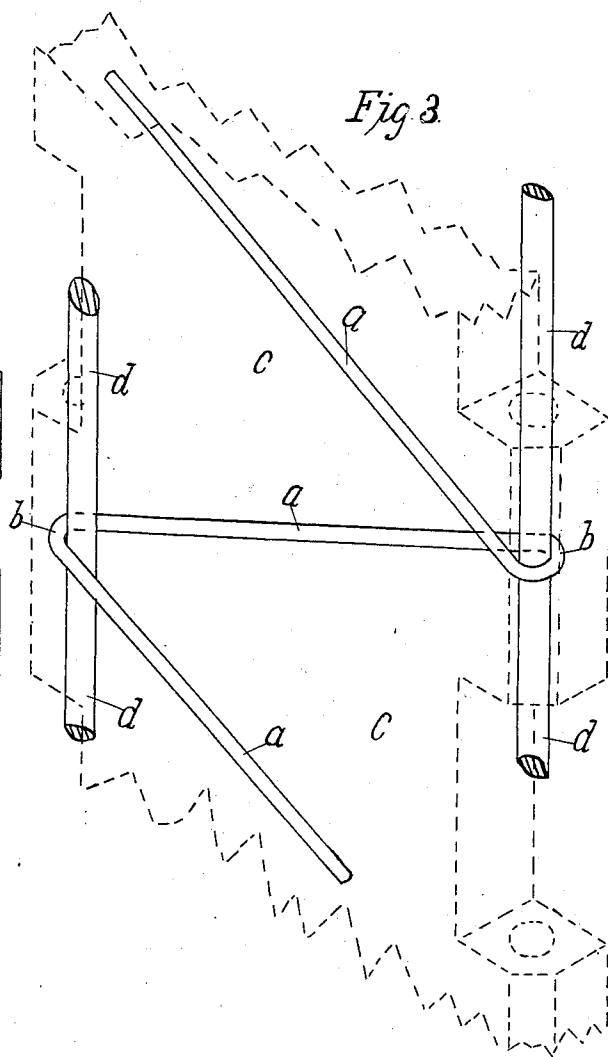
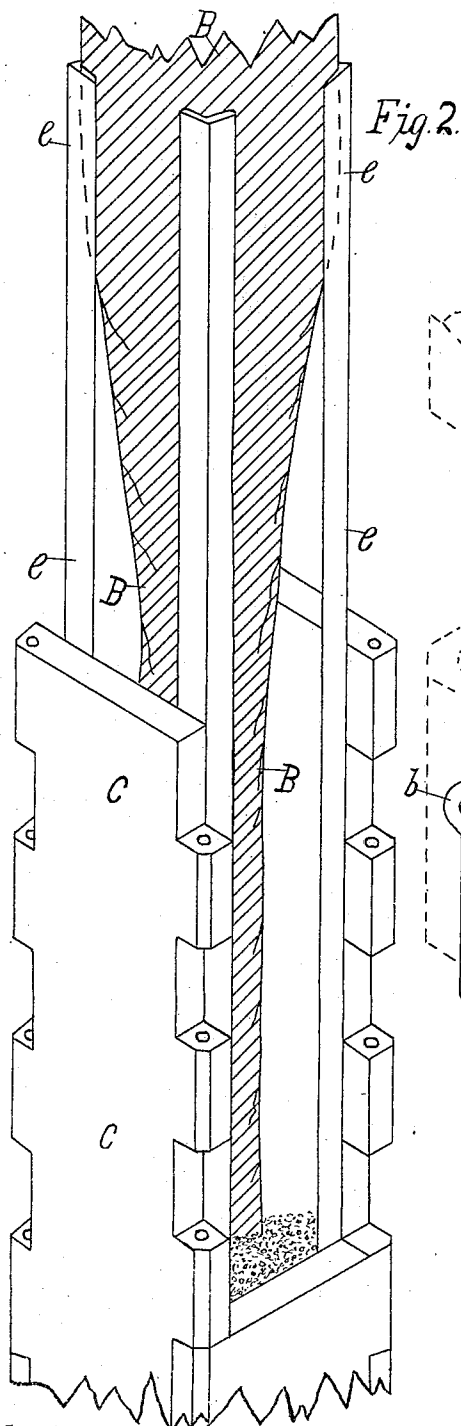
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3 SHEETS—SHEET 2.



Witnesses
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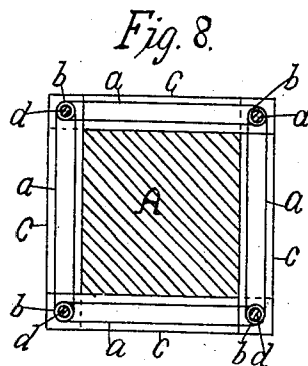
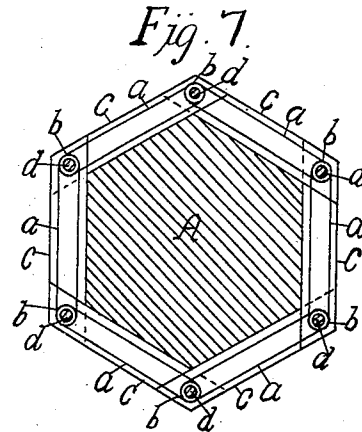
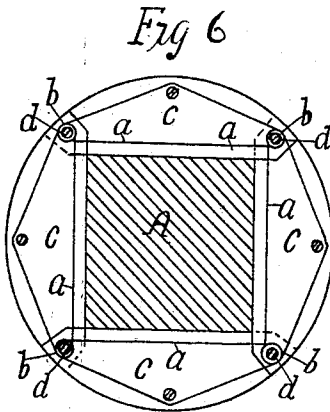
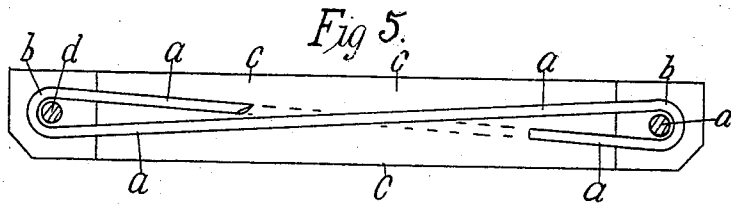
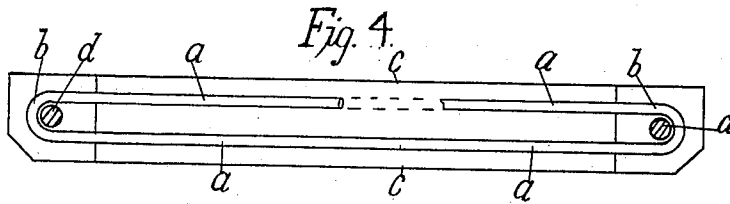
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3 SHEETS—SHEET 3.



Witnesses
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UNITED STATES PATENT OFFICE.

EDWARD COOPER POOLE, OF SOUTHAMPTON, ENGLAND.

REINFORCED CONCRETE BEAM OR COLUMN.

No. 863,555.

Specification of Letters Patent.

Patented Aug. 13, 1907.

Original application filed January 19, 1906, Serial No. 296,842. Divided and this application filed June 12, 1906.

Serial No. 321,422.

To all whom it may concern:

Be it known that I, EDWARD COOPER POOLE, civil engineer, a subject of the King of Great Britain, residing at 61 High street, Southampton, in the county borough of Southampton, England, have invented certain new and useful Improvements in Reinforced Concrete Beams or Columns, (which is a divisional application of the original application filed January 19, 1906, Serial No. 296,842,) of which the following is a specification.

My invention relates to armored or reinforced concrete construction, and comprises improvements in armored or reinforced concrete slabs, pieces, or blocks, and means for joining such slabs or blocks together to form a monolithic whole in their combination to form permanent structures and casings for concrete construction to enable concrete construction or work to be carried out or erected under conditions in which it would be difficult or impracticable to execute such work, either as original, repair or supplementary work.

The main object of my invention is to provide reinforced or armored concrete slabs or pieces of various convenient portable sizes, provision being made so that when the slabs or pieces are assembled, they may be joined together to form a structure or casing which when filled in with concrete, or concrete and metal in any form, will become a monolithic whole in which the armor is so placed that an evenly distributed strain is provided for throughout the entire structure.

According to and in carrying out my invention, I reinforce that is strengthen the concrete slabs or pieces by means of iron or steel bars of any approved section arranged to cross or recross the breadth, and also if desired, the length of each slab or piece in a continuous diagonal alternating direction; the said bars where they are bent over at the edges of the slabs or pieces forming a series of loops or eyes which project somewhat beyond the edges of the slabs or pieces so that when the slabs or pieces are brought together they may be connected by iron or steel rods.

In the accompanying drawings which form a part of this specification, I have shown my improved construction of reinforced slabs, pieces, or blocks assembled together to form structures or casings for the construction, repair, or strengthening of concrete or other work.

Description of the drawings—

Figure 1. illustrates in isometrical perspective, the application of my invention to a floor construction.

Fig. 2. illustrates in isometrical perspective, the application of my invention to the repair or strengthening of piles and other columns or pillars. Fig. 3. is a detail showing in isometrical perspective, the metal reinforcement and connection of the slabs used in the strengthening or construction of columns. Fig. 4.

shows in cross section, the reinforced slab, and Fig. 5.

shows in cross section, a modification of the same. Figs. 6, 7, and 8, show in cross section, various shapes of casings for concrete piles, columns, or pillars.

In the drawings the same letters and figures are used to denote the same or corresponding parts throughout the various figures.

With reference to the drawings: *a* designates the iron or steel bar or bars which I employ; these may be of any approved section, and according to my invention are arranged to cross and recross the breadth, and if necessary or desired, the breadth and length of each slab or piece in a continuous diagonal alternating direction without interrupting the continuity of the armor or reinforcing metal bar or rod, and so as to provide for an evenly distributed strain throughout the entire ferro-concrete slab, piece, or structure. The said bars *a* where they are bent over, namely at the edges of the slabs or pieces, are so bent as to form a series of loops or eyes *b* which project somewhat beyond the edges of the slabs or pieces.

c denotes the concrete slab or block, and *d* denotes the rod by which adjacent slabs may be joined as hereafter more fully described. The slabs *c* may have plain edges with the metal loops or eyes *b* of the continuous bar *a* projecting alternately on the edges of the slabs with the rod *d* passing through the eyes *b* and connecting the slabs *c*; or the edges of the slabs *c* may be grooved to contain the eyes *b*, or the eyes *b* may be embedded in the concrete formed as teeth along the edges of the slabs.

The concrete slabs or pieces *c* reinforced with the continuous bars *a* looped at *b*, are made in molds, the concrete being consolidated either by ramming in the usual way, or by pressure in hand or mechanical presses. The slabs or pieces *c* are then stacked to dry and mature; and when matured can be placed together so as to form the desired structure and immediately take the stress intended for them; thus allowing the work of building the structure or casing to proceed very rapidly, no waiting being necessary for the concrete in the structure to mature before loading it or plastering, or otherwise finishing it.

As previously stated, to join the slabs or pieces together to form the structure or casing, I employ iron or steel rods *d* which I insert or place through the loops or eyes *b* of the reinforcing rods *a* on the meeting edges of the adjacent slabs *c*; thus joining piece to piece and the whole together; the joints or meeting edges of the slabs thus formed being then grouted together with cement mortar or other suitable material or substance.

In constructing a column, pillar, or pile, I make the same of a number of the reinforced slabs or pieces *c* connected together by the rods *d* so as to form a hollow column of any desired form or size, in which may be arranged vertical iron or steel rods, bars, or angles, to

provide against bending stresses; the remaining space so inclosed by the slabs, being filled in with concrete rammed in the usual way; it will be seen that the column A is constructed in the form of a hollow casing composed of the reinforced slabs *c* connected together by the bars *a* in vertical series so as to form a hollow column A which is vertically strengthened by corner angle irons *e* and filled in with concrete. In this example of the carrying out of my invention, the column A is adapted to support a ceiling or floor composed of reinforced concrete slabs *c* connected together by the rods *d* in the manner before described; a like construction can be employed to form pillars or piles of any required size or section. The slabs *c* may be erected, and the column A completed length by length until the required height is obtained.

In the employment of the reinforced slabs *c* for the strengthening or repair of columns, pillars, and piles, the example shown is that of a decayed timber pile. On reference it will be seen that in this case I build a casing composed of the reinforced slabs *c* (connected by bars *d*) length by length round the decayed timber pile B, such slabs being, when required, placed and connected round the pile B above the water level and then lowered; other slabs *c* being then connected and lowered until a sufficient number have been placed in vertical series to reach a firm bottom and extend up above the water level; steel or iron rods, bars, or angles *e* may, if required, be placed vertically in the space between the slabs *c* forming the casing and the decayed pile. The casing formed by the connected slabs *c* is then filled in with concrete thus completing the repair, strengthening, and protection of the pile B. The slabs *c* may be joined together and connected as shown, and the casings may be of form to suit any section of column, pillar, or pile.

My improved system of casing and filling in with concrete can obviously be used in strengthening or fire-proofing columns and the like in any existing structure. My improved system of employing casings of reinforced concrete slabs can also be used in forming beams and all such like structures, the beam slabs *c* being connected to each other and to the floor slabs *c* by the

loops *b* and the rods *d* before described; additional armor *e* being introduced in the space inclosed by the slabs *c* to take the bending stresses, the beam being made solid by concrete rammed in the usual way.

It is obvious that slabs or pieces made according to my invention being formed in molds, may be ornamented in any manner possible by stamped or pressed methods as shown.

My system of construction can be applied to every description of reinforced or armored concrete structures, but it is especially suitable for tidal work, strengthening existing structures in erections where great rapidity of erection is essential, temporary buildings, and ornamental buildings.

In the construction of a complete building or a wall of any kind each and every piece *c* being provided with loops *b* and connected by rods *d* to its adjoining piece or pieces, all are connected together thus forming a complete monolithic whole.

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

1. A column composed of a casing of slabs, each having a continuous strand of wire around which the slab is permanently molded, said wire bent upon itself to form diagonally disposed portions overlapping each other at their terminals to produce alining eyes which project beyond opposite sides of the slab, rods inserted in the eyes to unite the slabs, a plastic material embedding the eyes and bonding the rods, a core within the slab casing, and longitudinal brace bars intermediate the core and the said casing.

2. A column composed of a casing of slabs each having a continuous strand of wire around which the slab is permanently molded, said wire bent upon itself to form diagonally disposed portions overlapping each other at their terminals to produce alining eyes which project beyond opposite sides of the slab, bonding rods engaging the eyes for connecting the slabs together to form a unitary casing, a plastic material embedding the eyes and the rods and a frame composed of longitudinal metal bars within the latter and adapted to receive a concrete core.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

EDWARD COOPER POOLE.

Witnesses:

FREDERICK J. CHEESBROUGH,
FRANK JOHNSON.