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R. C. KEOGAN

REINFORCED CONCRETE BEAM

Filed Nov. 29, 1920

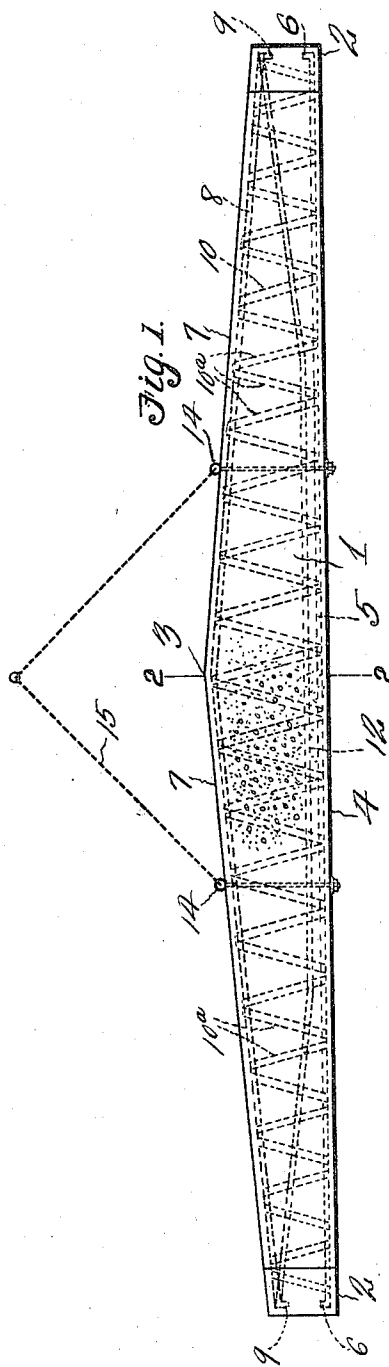


Fig. 3.

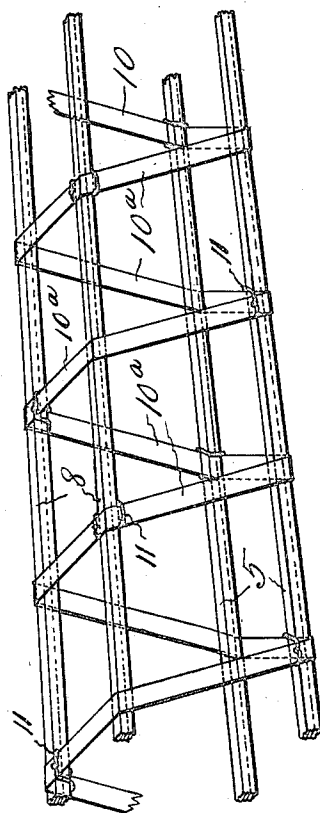
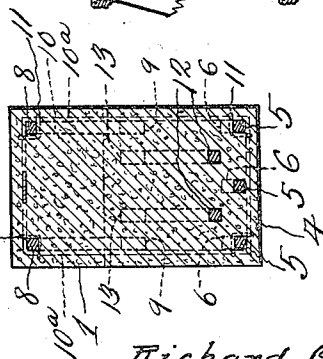


Fig. 2.



Richard C. Keogan
INVENTOR.

BY *George F. Altsh*
ATTORNEY.

UNITED STATES PATENT OFFICE.

RICHARD C. KEOGAN, OF SOUTH BEND, INDIANA.

REENFORCED-CONCRETE BEAM.

Application filed November 29, 1920. Serial No. 427,130.

To all whom it may concern:

Be it known that I, RICHARD C. KEOGAN, a citizen of the United States, residing at South Bend, in the county of St. Joseph and State of Indiana, have invented certain new and useful Improvements in Re-enforced-Concrete Beams, of which the following is a specification.

The invention relates to concrete beams and has for its object to provide a device of this character which may be made of considerable length and so reenforced that the beam will stand a maximum load centrally without sagging appreciably or cracking.

A further object is to provide a concrete beam substantially rectangular shaped in cross section and of greater vertical thickness centrally and tapering toward the ends. Also to provide reinforcing means for said beams, said reinforcing means comprising reinforcing metallic bars imbedded in the beam adjacent its upper and lower faces and equally spaced from said upper and lower faces having their ends provided with angled portions for anchoring the ends of the metallic bars within the beam.

A further object is to provide a spirally wound metallic member extending around the reinforcing bars and tied to said bars, said spirally wound metallic member forming means for preventing outward spreading of the metallic bars when the beam is supported by its ends and supporting a load.

A further object is to provide adjacent the lower face of the beam longitudinally disposed truss rods, the ends of which extend upwardly and outwardly and terminate in angle portions adjacent the angled portions of the upper reinforcing rods, thereby supporting the central load of the beam and allowing the concrete beam of considerable length to be used.

With the above and other objects in view the invention resides in the combination and arrangement of parts as hereinafter set forth, shown in the drawings, described and claimed, it being understood that changes in the precise embodiment of the invention may be made within the scope of what is claimed without departing from the spirit of the invention.

In the drawings:—

Figure 1 is a side elevation of the beam,

showing the reinforcement therein in dotted lines.

Figure 2 is a vertical sectional view taken on line 2—2 of Figure 1.

Figure 3 is a detail perspective view of a portion of the reinforcing bars and the spiral metallic winding thereon.

Referring to the drawings the numeral 1 designates a beam formed from plastic material, preferably concrete and 2 the ends thereof which are adapted to rest upon supporting columns. The beam 1 is thicker at a central point 3 than at its ends 2 however it tapers toward the ends 2, thereby giving greater central strength for supporting a load. Extending longitudinally through the beam 1 adjacent its under face 4 are spaced reenforced rods 5, the ends of said rods are provided with angled portions 6, which form anchoring means for anchoring the ends of the rods 5 and preventing longitudinal movement of said rods. Imbedded in the beam 1 adjacent its upper faces 7 and equally spaced therefrom are reinforcing rods 8, said rods extending downwardly from their central portion and terminating adjacent the ends of the beam in right angled portions 9 which form means for anchoring the ends of said rods against longitudinal movement when the beam is supporting a load.

To prevent buckling inwardly or outwardly of the rods 5 and 8, said rods have spirally wound around the same a metallic strap 10, which is tied by metallic clips 11 to the rods 5 and 8 wherever the strap engages the rods 5 and 8. When the beam is supporting a load, it will be seen that the sides 10^a of the strap will hold the reinforcing rods 5 and 8 against inward or outward buckling, thereby allowing the beam to support a considerable load. As a further brace for the beam reinforcing truss rods 12 are imbedded in the beam adjacent its lower side 4, said truss rods having their ends extending upwardly and outwardly and terminating in angled portions 13 adjacent the angled portions 9 of the reinforcing rods 8, thereby distributing the strain from a central point to points adjacent the ends of the beam.

It has been found that a beam so constructed can be made of considerable length, for instance a beam 52 feet in length and

supported only at its ends has been found to support a load of seven tons, the maximum sag at its center approximating one half inch. During this test breaks or cracks
5 did not appear in the concrete body.

If so desired eye bolts 14 may be imbedded in the beam so that the same may be easily handled by means of a conventional form of sling 15.

10 The invention having been set forth what is claimed as new and useful is:—

An elongated reenforced concrete beam adapted to be fabricated and hoisted to position, said beam comprising horizontally
15 disposed spaced reinforcing bars, said bars

being imbedded in a concrete body adjacent the bottom thereof, spaced reinforcing bars imbedded in the concrete body adjacent the upper side thereof and disposed in registering vertical planes with the first mentioned
20 bars, said bars adjacent the upper side of the concrete body extending downwardly and outwardly from a central point, a member wound around all of said bars, said member comprising a plurality of straight portions,
25 said straight portions connecting the bars together at angles other than right angles.

In testimony whereof I affix my signature.

RICHARD C. KEOGAN.