G. M. GRAHAM.

REINFORCING FRAME FOR CONCRETE STRUCTURES.

APPLICATION FILED MAY 6, 1908.

910,469.

Patented Jan. 19, 1909.



Fig. 1.

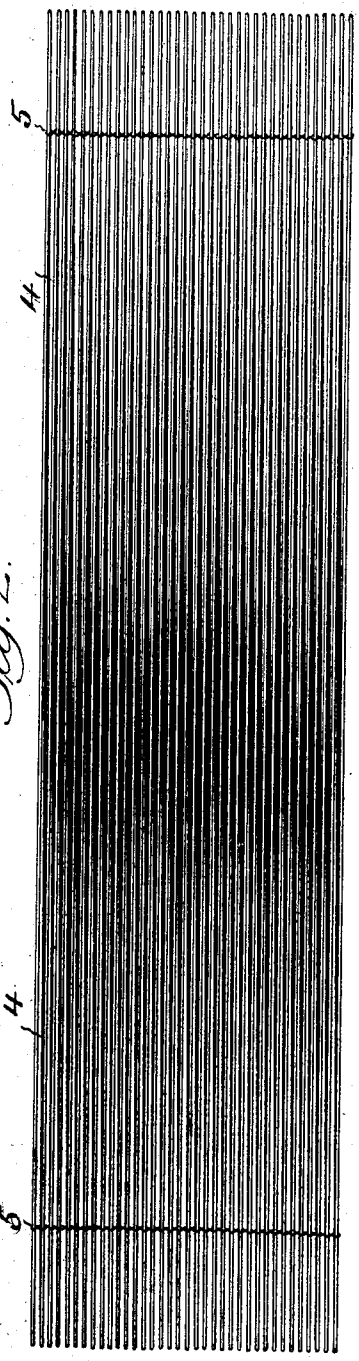


Fig. 2.

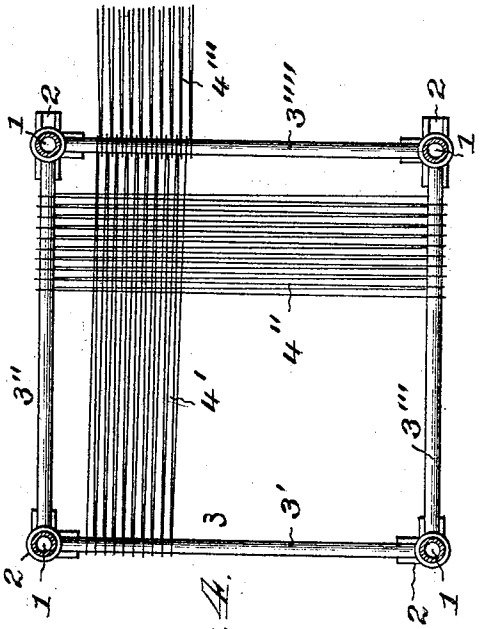


Fig. 4.

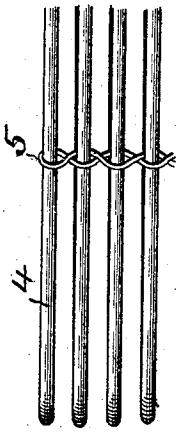


Fig. 3.

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UNITED STATES PATENT OFFICE.

GEORGE M. GRAHAM, OF CHICAGO, ILLINOIS, ASSIGNOR TO G. A. EDWARD KOHLER, OF CHICAGO, ILLINOIS.

REINFORCING-FRAME FOR CONCRETE STRUCTURES.

No. 910,469. Specification of Letters Patent. Patented Jan. 19, 1909.

Original application filed December 10, 1907, Serial No. 405,887. Divided and this application filed May 6, 1908. Serial No. 431,084.

To all whom it may concern:

Be it known that I, GEORGE M. GRAHAM, a citizen of the United States of America, and a resident of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Reinforcing-Frames for Concrete Structures, of which the following is a specification.

This invention relates to skeleton reinforcing frames for concrete structures of the type shown in my former patent No. 865,490, dated Sept. 10, 1907, and has for its object to provide a convenient and efficient structural arrangement of the continuous spiral rod or wire windings by which the skeleton centers of the frame are formed, and with which the rapid and convenient erection of the structure is effected, all as will hereinafter more fully appear.

In the accompanying drawings:—Figure 1, is a side elevation of the bundle of windings. Fig. 2, is a top view of the same. Fig. 3, is an enlarged fragmentary view of the same. Fig. 4, is a plan view illustrating the method of erecting the skeleton reinforcing frame.

Similar numerals of reference indicate like parts in the different views.

The present subject matter is a division of the invention originally set forth in my application for patent for method of erecting reinforced concrete structures, Serial Number 405,887 filed December 10, 1907, and involves in part the same construction and arrangement of parts described in said original application, as follows:

1 represents a series of vertical posts or columns to which a series of horizontal girders 3 are secured in right angle relation by suitable corner fittings 2, preferably of the type shown in my patent No. 865,489 of Sept. 10, 1907. Four of such girders connected as described, constitute the border frame of a single unit of the reinforcing frame of a concrete structure, and additional units will utilize in their formation, a girder of the next adjacent unit or units.

4 is the skeleton web or center for each unit aforesaid, and which consists of continuous wrappings of a single wire around the cylindrical border members 2 of the unit.

The novel feature of the present improvement consists in the formation of the aforesaid continuous windings 4 as a coil or bundle having the elongated form shown in Fig. 1. In such coil or bundle the individual windings have uniform size and form and are secured together side by side in the form of a compact bundle by twisted tie wires 5 arranged near the respective ends of the bundle as shown in Figs. 2 and 3; as so connected the individual windings of the bundle will have a spaced relation to permit of an interleaving of the adjacent ends of two of the bundles together in the erection of the reinforcing structure in manner set forth in detail in my aforesaid application for patent Serial No. 405,887.

The bundles or coils of windings above described can be accurately and economically produced at a factory and transported to the place of erection and there applied to the cylindrical border members of the frame in the manner described in my aforesaid application. Such method of using the present bundles of windings in the erection of the reinforcing frame is illustrated in Fig. 4, and involves the following series of steps or operations: The initial coil 4′ of windings is slipped upon the initial girder 3′ after which said girder is coupled to its supporting columns or posts. The second coil 4″ of windings is then slipped inside or outside the initial coil 4′ as found most convenient, and in right angle relation, after which a second girder 3″ is passed through one end of the last mentioned coil 4″ of windings, and then coupled in place on and to its supporting columns or posts. At this stage in the erection of the reinforcing structure having two or more units in adjacent relation, the coil 4‴ of windings of the next adjacent unit will be interleaved with the coil 4′ of windings previous to the succeeding operations. The third girder 3‴ is then slipped into the coil 4″ of windings, and the fourth girder 3⁗ through the interleaved ends of the coils 4′ and 4‴ of windings, after which said girders 3‴ and 3⁗ are moved to place and coupled to their columns or posts, thus effecting the preliminary erection of the first unit. The succeeding units are erected by a series of similar operations. With the completion of such preliminary erection of one or more units, the coils or bundles of windings aforesaid, after having their respective free ends or terminals attached to the girders, are spread apart into the re uired spaced relation. With such spreading or spacing of the individual windings of a coil, each individual

strand thereof is readily and effectively brought to a common and uniform tension, to in like manner receive the normal stress or load imposed upon the unit as a whole, and afford a very strong and substantial structure with a minimum amount of material.

Having thus fully described my said invention what I claim as new and desire to secure by Letters Patent, is:—

1. As an element in reinforcing frames for concrete structures, a wire coil having a flat elongated link form with the individual windings of a counterpart size and secured together side by side in spaced relation to permit of an interleaving of the adjacent ends of two of the coils together.

2. As an element in reinforcing frames for concrete structures, a wire coil having a flat elongated link form with the individual windings of a counterpart size and twisted tie wires arranged near the respective ends of the coil and securing said windings together side by side in spaced relation to permit of an interleaving of the adjacent ends of two of the coils together.

Signed at Chicago, Illinois, this 2nd day of May, 1908.

GEORGE M. GRAHAM.

Witnesses:
ROBERT BURNS,
HENRY MOE.