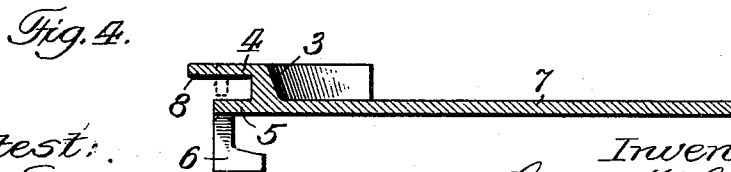
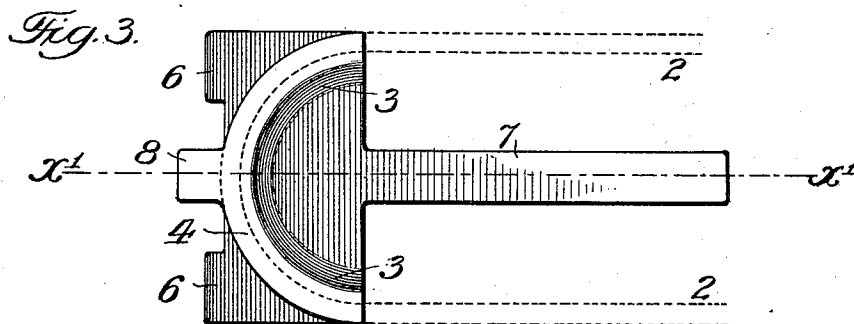
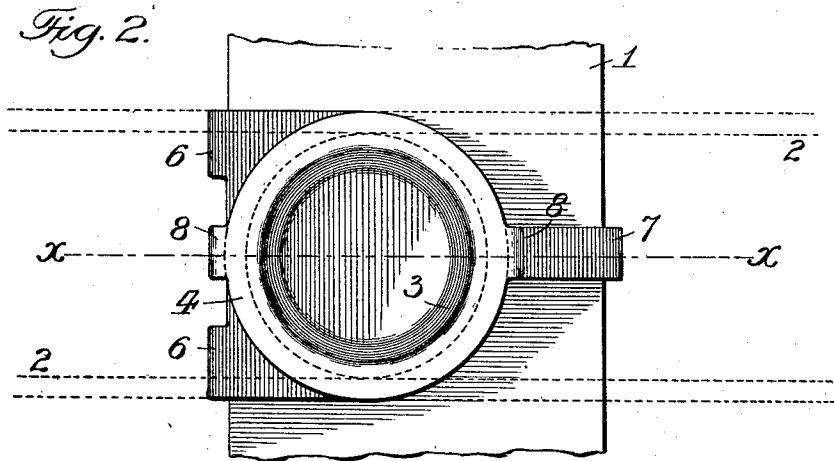
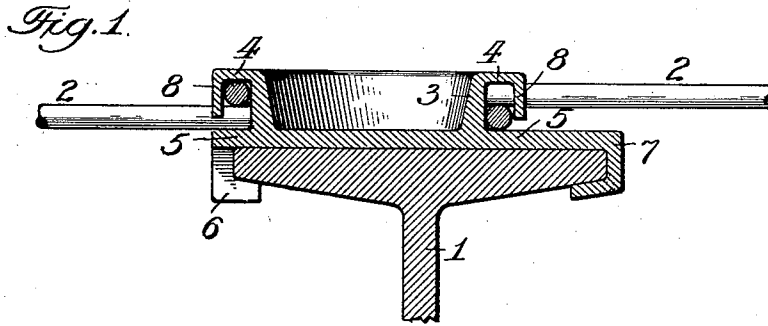


G. M. GRAHAM.
FITTING FOR REINFORCED CONCRETE STRUCTURES.
APPLICATION FILED AUG. 22, 1907.

1,007,556.

Patented Oct. 31, 1911.



Attest:
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UNITED STATES PATENT OFFICE.

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SUSPENSION STEEL CONCRETE COMPANY, A CORPORATION OF DELAWARE.

FITTING FOR REINFORCED CONCRETE STRUCTURES.

1,007,556.

Specification of Letters Patent.

Patented Oct. 31, 1911.

Application filed August 22, 1907. Serial No. 389,654.

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 Fittings for Reinforced Concrete Structures, of which the following is a specification.

This invention relates to runner brackets for use in the reinforced concrete structure which constitutes the subject matter of my prior Letters Patent No. 868,921, dated October 22, 1907. And the present improvement has for its object to provide a simple and efficient structural formation of runner brackets adapted for ready attachment to the marginal supporting frame of a floor or other unit of a concrete structure, and around which the wire, comprising the reinforce center for such floor or other unit, is rove or laced back and forth upon a series of the runner brackets attached to the marginal supporting frame in a manner which admits of each individual strand, of the center so formed, being brought to a common and uniform tension and to assume in an equal and uniform degree the normal stress or load imposed during the process of erection, and in subsequent actual use, all as will hereinafter more fully appear.

In the accompanying drawings: Figure 1, is a sectional elevation on line $x-x$ Fig. 2, of one form of the runner bracket in place upon a beam of the marginal supporting frame of a concrete structure. Fig. 2 is a plan view of the same. Fig. 3 is a plan view of another form of the runner bracket with the fastening clip or tongue at one side of the bracket in an unbent condition to permit the application of the bracket to a girder. Fig. 4 is a vertical section of the same on line $x'-x'$ Fig. 3.

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

Referring to the drawings, 1 represents one of the series of structural iron members of any usual form in cross section, and united together at their meeting ends, or otherwise held in proper relation, to constitute a rectangular marginal frame, which in connection with the center of wire hereinafter described constitutes a skeleton reinforce unit for a floor or other portion of a reinforced concrete building or structure as

set forth in detail in my prior Patent No. 868,921.

2 is the skeleton wire center of the marginal frame aforesaid, and such center in the present invention is formed by a series of wire strands arranged in spaced relation, and in crossed or opposite directions. Such strands are connected to the marginal frame aforesaid by the series of runner brackets hereinafter described, and by means of which a single continuous length of wire may be employed in forming the series of wire strands above referred to, and so that each individual strand can be brought to a common and uniform tension to bear in an even and uniform manner the normal stress or load imposed upon the skeleton reinforce as a whole. The result being that a very strong and durable reinforce structure is provided with a minimum amount of metal.

The attainment of the results above described in an effective and practical manner, constitutes the main feature of novelty of the present invention, and comprises accordingly a structural formation and arrangement of runner brackets for receiving the return bends in the single wire comprising the skeleton reinforce center, and the connection of such brackets to the marginal frame, as follows:—The runner bracket above referred to comprises, a vertical wall portion 3, and out turned top and bottom horizontal flanges 4 and 5, which in connection with said vertical wall 3 provides a marginal bearing groove or cavity for a wire of the crossed skeleton wire center of the structure before described. In the present improvement the aforesaid wall and flanges have a curvilinear shape, and in one species of the runner brackets are of the annular form shown in Figs. 1 and 2, and in another species are of the semi-circular form shown in Figs. 3 and 4. The first mentioned species are intended for use on the series of intermediate girders to receive the crossed wires of the skeleton centers from both sides of each intermediate girder, while the other species of the runner brackets are intended for use on the series of outer girders to receive the crossed wires of the skeleton center which extends from the inner side of an outer girder to the next opposed intermediate or outer girder, in accordance with the extent of the structure. 6 are hook shaped attaching clips integrally formed on the lower flanges 5 and at the

base of the vertical wall 3 of runner brackets, and projecting outwardly therefrom for engagement over an edge of a horizontal flange of the girder as shown in Fig. 1. And while a single attaching clip 6, of the proper width, may be employed as the means of attachment it is preferable to provide a pair of the same in spaced relation as shown in Figs. 2 and 3, as affording a more stable attachment, and better adapted to resist the twisting stress upon the brackets in the operation of drawing the reinforcing wires to the required tension during the erection of the structure. 7 are fastening tongues integrally formed on the lower horizontal flange or web 5 of the runner brackets in opposed relation to the clips 6 aforesaid, and adapted to be bent around the other edge of the flange of the girder 1, after the runner brackets are in position, and to prevent accidental disengagement during the erection of the structure. The grooves in the periphery of the runner brackets are preferably made of the substantially rectangular form shown in Figs. 1 and 4, as it has been found from extensive practical experience that such form of groove offers a minimum frictional resistance to the drawing of wire of the gage required, into proper position. A material part of the present invention consists in making the runner bracket of a diameter equal to the distance between the individual strands of the reinforcing wire center 2, with a view to impose parallel relation and an equal spacing throughout, upon said strands, and at the same time provide a large bearing diameter around which the bends in the wire strands may be drawn with ease and uniformity in the process of erection. As so constructed the structural formation and arrangement of the curvilinear vertical wall and upper and lower horizontal flanges heretofore described has practical and commercial value in affording the requisite strength with a minimum degree of lightness and cost of production. 8 are ears arranged on the free ends of the upper horizontal flanges 4 of the runner brackets and adapted to be bent down over the peripheral grooves beneath said flanges,

to hold the wires in place, against accidental disengagement from such grooves.

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

1. A runner bracket for reinforced concrete structures, comprising a body portion formed with peripheral grooves rectangular in cross section and having integrally formed ears adapted to be bent down in front of the peripheral grooves, and means for attaching said body portion to a girder or the like, substantially as set forth.

2. A runner bracket for reinforced concrete structures, comprising a body portion formed with peripheral grooves, and with integrally formed attaching clips and having integrally formed ears adapted to be bent down in front of the peripheral grooves, substantially as set forth.

3. A runner bracket for reinforced concrete structures, comprising a body portion formed with peripheral grooves, and with oppositely arranged and integrally formed attaching clips and having integrally formed ears adapted to be bent down in front of the peripheral grooves, substantially as set forth.

4. A runner bracket for reinforced concrete structures, comprising a body portion formed with peripheral grooves rectangular in cross section and with oppositely arranged and integrally formed attaching clips and having integrally formed ears adapted to be bent down in front of the peripheral grooves, substantially as set forth.

5. A runner bracket for reinforced concrete structures, comprising a peripherally grooved body portion of a semi-circular form and provided with oppositely arranged and integrally formed attaching clips and with integrally formed ears adapted to be bent down in front of the peripheral grooves, substantially as set forth.

Signed at Chicago, Illinois, this 12th day of August 1907.

GEORGE M. GRAHAM.

Witnesses:

ROBERT BURNS,
FRANK S. REID.