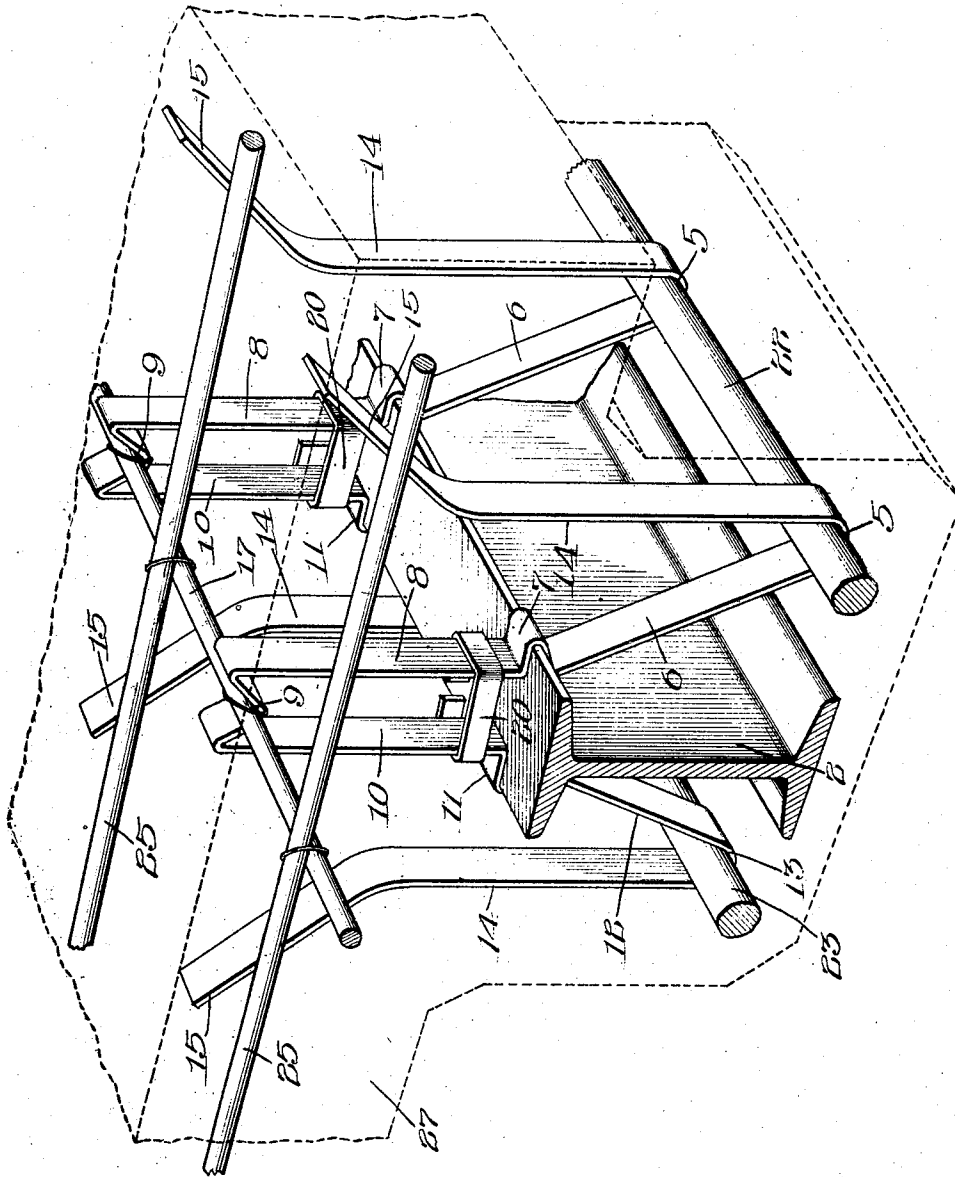


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 SPRING CLIP STIRRUP FOR REINFORCED CONCRETE.
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UNITED STATES PATENT OFFICE.

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SPRING-CLIP STIRRUP FOR REINFORCED CONCRETE.

934,433.

Specification of Letters Patent. Patented Sept. 21, 1909.

Application filed February 21, 1908. Serial No. 417,012.

To all whom it may concern:

Be it known that I, WILLIAM K. FELLOWS, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Spring-Clip Stirrups for Reinforced Concrete, of which the following is a specification.

This invention relates to concrete construction and the object of the invention is to provide a device called, for want of a better name, a stirrup which may be, preferably by spring action, attached to a beam or other main supporting member of a building; a plurality of said stirrups being used upon said beam or beams to take up shearing stresses in the concrete beam or girder and to support reinforcing rods or bars within the concrete to be built around the said rods, and around the main supporting beam or other supporting member.

The invention consists in a device capable of accomplishing these objects which can be easily and cheaply made, and which can be very easily applied to the supporting member in the building without it being necessary to use bolts, rivets, screws, wiring or other similar devices which are complicated and expensive to install.

The invention also consists in the reinforced concrete member produced by the use of the supporting beam, these stirrups and the reinforcing rods.

The invention also consists in features of construction which will be hereafter more fully described and claimed as the specification proceeds.

The single drawing marked Figure 1 shows a perspective view of a girder or I beam 2, embedded in concrete 27, indicated by the dotted lines of the figure. Upon this beam are mounted a plurality of the stirrups of this invention, each comprising in a single piece the portions 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14 and 15. For convenience only one of the stirrups as for instance the front one in the figure will be described in detail the others being duplicates. In order to make each stirrup really a spring clip stirrup which will of its own strength grasp the beam between its portions 7 and 11, as shown, the portions 8 and 10 of the stirrup are made extending upward some distance from the grasping jaws 7 and 11 of the stirrup, said

upwardly extending portions being connected by a U shaped portion 9, as shown, within which a supporting rod 17 may lie and be supported in the manner shown so as to itself support and hold absolutely in place the top reinforcement of the structure during the period of construction. In order to securely lock each stirrup when sprung upon the supporting beam 2, a collar or clip or other similar device 20 is provided adapted to slip down over the members 8 and 10, as shown, to a point adjacent to the jaws 7 and 11, in which position said collar securely locks the jaws upon the beam 2. As it is a particularly important function of the device to support reinforcing rods the members 6 and 12 are made preferably to incline sharply away from the beam proper, as shown, and have at their bottoms saddles or seats 5 and 13 in which the desired reinforcing rods 22 and 23 are respectively adapted to rest and be supported. From these seats or supporting points 5 and 13, the stirrup thence extends in the members 4 and 14 to 3 and 15 respectively, upward and outward toward what is to be the top of the concrete beam 27, to take up shearing stresses in the reinforced concrete beam or girder. In practice these stirrups are used at as frequent intervals along the beam 2 as it is found necessary to provide for said shearing stresses, and these stirrups provide supports for the rods 17, 22 and 23, so that said rods are very rigidly supported at their proper distance and heights with reference to the beam 2, so that when the concrete is filled in around them in the manner shown a strong reinforced concrete construction is formed.

Over the rods 17, top reinforcing rods 25 or similar devices are placed extending in other directions than the direction of the main beam 2 for the purpose of permanently reinforcing a floor, slab or beam or other part made of concrete which is to be carried by the structure described. As heretofore stated one of the important features of the device is to hold these reinforcing rods 25, or wire netting or the like in place while the concrete is being laid.

It will be noticed that this stirrup as here shown, resembles strongly a letter W in which the jaws 7 and 11 are placed about midway of the two middle members, and in which the reinforcing rods are supported at

the angular points of the W. By this construction a very neat and efficient form of device is obtained for the purpose named, though manifestly the specific form may be varied without departing from the broad principle of the invention. Particular attention is called to the fact that by this construction a top rod such as for instance 17 is readily supported above the permanent beam, a thing which, so far as I am aware, has never before been done; also that the two side rods 22 and 23 are very easily supported in proper position at one side of the beam and furthermore that all of this is accomplished by material necessary to provide for shearing stresses and without perforating or otherwise weakening the main beam in any way. Another important feature is that the side rods 22 and 23, by their weight, serve to force the gripping jaws together and lock the stirrup upon the beam irrespective of whether the collar 20 is used or not and of course where a plurality of stirrups are used along the beam as is always the case the rods lock all the stirrups upon the beam, it being impossible to remove one stirrup until the adjacent rods have been removed from all the other stirrups engaged by those particular rods. Another important feature is that the stirrups hold the reinforcing rods rigidly in predetermined positions so that they can not be moved out of said positions during construction as for instance while tamping the concrete. As displaced rods are one of the frequent causes of collapse in concrete buildings this feature of safety is of vital importance. Another important feature is that while the beam supports the stirrups and rods during construction it is necessary to also reinforce the beam so that the total load upon the building will not after construction tear the beam out of the concrete and this is taken care of by the fact that the stirrups are rigidly secured to the beam with the result that the rods and stirrups ultimately reinforce the beam and provide for shear through the lower halves of the jaws 7 and 11. Other methods of attaching reinforcing rods referred to herein require the employment of structural steel setters under union rules. This device makes such expensive labor unnecessary and thereby reduces the cost of the use of standard structural shapes for reinforcement in concrete buildings.

What I claim as new and desire to secure by Letters Patent, is:

1. A hanger clip and spacing device for use in concrete floor construction consisting of a rod or strip of metal provided with a central body portion having means adapted to grip a beam and extensions above and below the gripping means provided with seats adapted to support the reinforcing bars of the floor structure clear off and at a dis-

tance from the beam to which it is designed to be attached.

2. A hanger clip and spacing device for use in reinforced concrete floor structures consisting of a rod or strip of metal provided with a central body portion having means adapted to grip a beam, extensions above and below the gripping means provided with seats adapted to support the reinforcing bars of the floor structure, clear off and at a distance from the beam to which it is designed to be attached and shear members extending upwardly from the lower supporting seats substantially as described.

3. A hanger clip and a spacing device for use in concrete floor construction consisting of a rod or strip of metal provided with a central body portion having means adapted to grip the flange of an I-beam and extensions above and below the gripping means provided with seats adapted to support the reinforcing bars of the floor structure.

4. A hanger clip and spacing device for use in reinforced concrete floor structures consisting of a rod or strip of metal provided with a central body portion having means adapted to grip the flange of an I-beam, extensions above and below the gripping means provided with seats adapted to support the reinforcing bars of the floor structure, and shear members extending upwardly from the lower supporting seats substantially as described.

5. A concrete construction comprising a supporting member, a plurality of stirrups detachably secured along said members said stirrups each being integral structures providing a support for a supporting rod above the top of the beam and supports for reinforcing rods on opposite sides of the supporting member and parallel to its lower portion, supporting and reinforcing rods upon said stirrups and concrete surrounding the whole as and for the purposes set forth.

6. A stirrup of the class described, made in the general form of a letter W, the two middle members being provided with gripping means for securing the device to a supporting member.

7. A stirrup of the class described, made in the general form of a letter W, the two middle members being provided with gripping means for securing the device to a supporting member, and means engaging the upper central portion for securing the stirrup in position.

8. A stirrup of the class described, made in the general form of a letter W, the two interior members being provided with gripping means for securing the device to a supporting member and there being formed at the angular points of the stirrup seats for reinforcing rods running at right angles to the plane of the stirrup, and means engag-

ing the upper central portion for securing the stirrup in position.

9. A stirrup for use in concrete construction consisting of a rod or strip of metal bent so as to provide a central body portion
5 having means adapted to grip a beam, an extension above the gripping means providing a seat for a reinforcing rod and a supplemental device slidable upon the parts of
10 the stirrup above the gripping mechanism

adapted to clamp the stirrup in position upon the member which supports it.

In witness whereof, I have hereunto subscribed my name in the presence of two witnesses.

WILLIAM K. FELLOWS.

Witnesses:

DWIGHT B. CHEEVER,
C. J. CHRISTOFFEL.