July 8, 1924. 1,500,832

R. G. LUDWIK

WIRE TIE FOR REENFORCING RODS AND BARS

Filed May 28, 1923

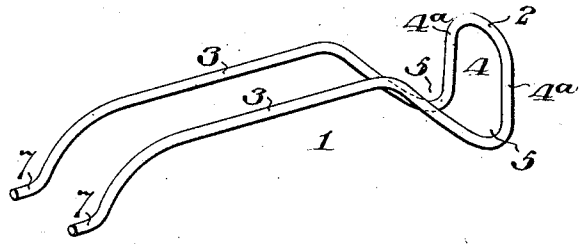


Fig. 1

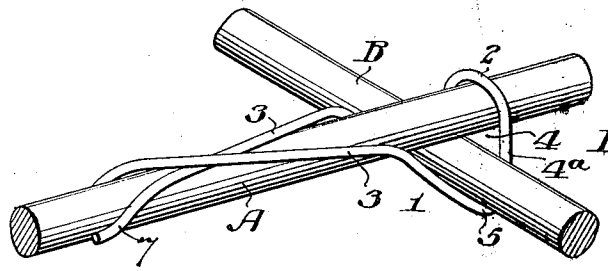


Fig. 3.

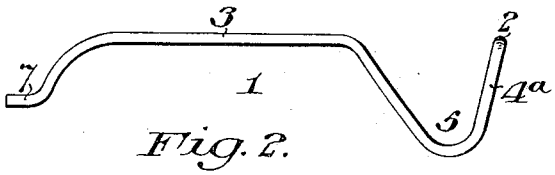


Fig. 2.

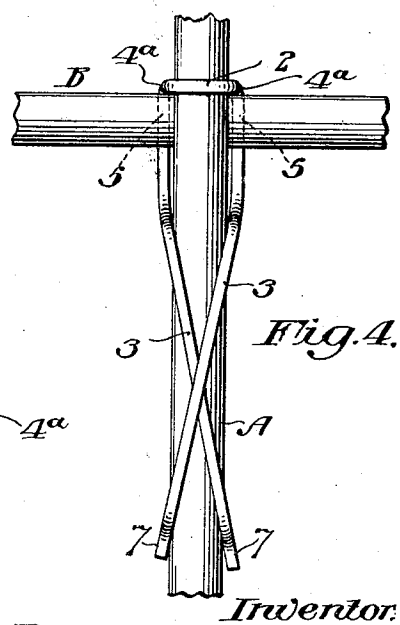


Fig. 4.

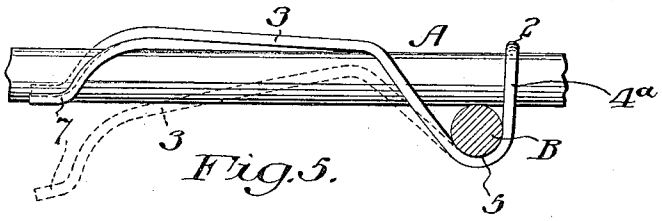


Fig. 5.

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UNITED STATES PATENT OFFICE.

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WIRE TIE FOR REENFORCING RODS AND BARS.

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To all whom it may concern:

Be it known that I, RICHARD GIFFORD LUDWIK, a citizen of the United States, and a resident of the borough of Brooklyn, county of Kings, State of New York, have invented certain new and useful Improvements in Wire Ties for Reenforcing Rods and Bars, of which the following is a specification.

My invention relates to structures designed to secure together reenforcing rods and/or bars at their crossing points; such rods and/or bars being subsequently embedded in concrete floors, pavements, roads and the like, for the purpose of strengthening and reenforcing the same.

My invention comprises a wire tie member adapted to be clamped around such rods and/or bars at their crossing points and the main object of my invention is to provide a simple and effective device, of minimum cost, for retaining such crossed bars and/or rods in proper angular relation with respect to each other.

A further object of my invention is to provide a wire tie member of simple construction, which may have a substantially symmetrical arrangement of parts, that is to say, my improved tie member comprises a bifurcated element of wire, with a loop at one end of the same; each of the side portions making up such bifurcated structure extending from said loop in substantial parallelism; having the same shape or contour, and terminating in free ends.

These and other features of my invention are more fully described hereinafter; reference being had to the accompanying drawings, in which:

Figure 1, a perspective view of a tie member within the scope of my invention.

Fig. 2, is a side elevation of my improved wire tie before the same is placed in use.

Fig. 3, is a perspective view illustrating my improved tie member applied to a pair of crossed reenforcing bars or rods.

Fig. 4, is a plan view of the arrangement shown in Fig. 3, and

Fig. 5, is a side elevation of the same.

Tie members have long been employed for securing together crossing bars and/or rods of metallic reenforcement, and this practice is too common to require extended mention. In the accompanying drawings, I have illustrated an improved form of wire tie made in accordance with my present invention, and the manner of employing the same for securing together reenforcing rods and/or bars placed in angular relation, at the crossing points of the same.

My improved tie members may be constructed from spring wire of suitable gauge and of such a nature that when applied to the crossing rods and/or bars, the retaining or locking portions will provide constant tension to hold the parts firmly clamped together. For convenience of description, the bar or rod indicated at A, will be referred to as the "longitudinal" bar, and the bar indicated at B, will be referred to as the "transverse" bar.

Referring to Fig. 1, it will be observed that my improved tie member, indicated generally at 1, may be made of a suitable length of wire of proper gauge bent at a point substantially midway of its length as at 2, to form two arms 3; an open loop 4 connecting the said arm portions. Each of the arms 3 is additionally bent adjacent to said loop 4 to provide loops 5, offset with respect to the loop 4, and substantially at right angles thereto.

As initially constructed and prior to use, the plane of the greater portion of the arms 3 is substantially at right angles to the plane of the short runs 4^a forming the loop 4, so that if the tie member 1 is placed over the longitudinal bar with its loop 4 resting on the same, and the loops 5 are then brought under the transverse bar underlying said longitudinal bar, any strain applied to said arms 3 will tend to hold the bars in the relationship mentioned. In such position and before the strain is applied, the arms 3 are disposed substantially as indicated by dotted lines, Fig. 5.

The free ends of the arms 3 may be slightly curved as at 7 to provide what may be termed open hooks, that is to say, while they constitute offset projections or extensions for lateral engagement with a bar, they are not hooks in the sense that they can be employed as a support and, in fact, in the preferred construction, the actual terminals of the same may be again bent to a plane substantially parallel to that of the arms 3.

After the loops 4 and 5 of the tie have been placed in engagement with the crossing bars or rods A and B, in the manner indicated in the drawings, one of the arms 3 is

extending diagonally across the longitudinal bar, and the end of the same is pressed down into lateral engagement with said longitudinal bar; its inherent tension being sufficient to retain it in the position indicated. In this position, a portion of such end may extend below the plane of the upper surface of such longitudinal bar and may extend to or below the plane of the under surface of said bar, although this is not essential. In like manner, the other arm 3, is extended diagonally across the longitudinal bar, and over the arm 3 first applied, the end of the second arm engaging the longitudinal bar at a point substantially opposite the engagement of the end of the first applied arm. As will be understood, the lateral engagement of the end of the second applied arm will be in a plane above that of the end of the first applied arm since the second arm must overlie the first.

The crossing of the arms in the manner indicated and the engagement of the end portions of the same, which ends may be curved, on opposite sides of the longitudinal rod or bar binds the reenforcing rods or bars at their crossing point and the lateral engagement of the ends of the arms 3 with the longitudinal bar insures the retention of the same in their diagonal position with respect to said longitudinal bar.

A further feature of convenience in use is the fact that my improved tie member is devoid of hook ends, hence there is no danger of one tie structure being caught by or tangled with others when workmen are handling the same preparatory to placing them in proper relation with respect to reenforcing rods and/or bars at the crossing points of the same. This ease of handling permits quick assembly, and in practice, assembly of reenforcing bars and/or rods and connections of the same with my improved tie shows a material increase in the number applied in unit spaces of time over ties heretofore in use.

I claim:

1. A tie for the junction of reenforcing bars, comprising a wire member having a loop adapted to one of said bars, a pair of loops continuous with the first named loop and adapted to a bar crossing the first; all of said loops being of substantially the same depth, and arms extending from said pair of loops and adapted to cross over and engage the bar adapted to the first-mentioned loop.

2. A tie for the junction of reenforcing bars, comprising a wire member having a loop adapted to one of said bars, a pair of loops continuous with the first named loop and adapted to a bar crossing the first; all of said loops being of substantially the same depth and arms extending from said pair of loops and adapted to cross over the bar engaged by the first mentioned loop; said arms having ends for lateral engagement with said bar on opposite sides of the same.

3. A tie for the junction of reenforcing bars, comprising a wire member having a loop adapted to fit over one of said bars, a pair of loops continuous with the first named loop substantially at right angles thereto and adapted to a bar crossing the first; all of said loops being of substantially the same depth, and arms extending from said pair of loops and adapted to cross over and engage the bar adapted to the first mentioned loop.

4. A tie for the junction of reenforcing bars, comprising a wire member having a loop adapted to one of said bars, a pair of loops continuous with the first named loop substantially at right angles thereto and adapted to a bar crossing the first, arms extending from said last mentioned loops and adapted to cross over the bar engaged by the first mentioned loop, and curved ends carried by said arms and adapted to lie on opposite sides of said bar in tensioned engagement therewith.

5. A tie for the junction of reenforcing bars, comprising a wire member having a loop adapted to rest on one of said bars, a pair of loops continuous with the first named loop and in planes substantially at right angles thereto; said pair of loops fitting under the bar crossing the first, and arms extending from said pair of loops and adapted to be crossed over the bar engaged by the first mentioned loop; said arms having ends adapted to lie in tensioned engagement with said bar.

6. A tie for the junction of reenforcing bars, comprising a wire member having a loop adapted to rest on one of said bars, a pair of loops continuous with the first named loop and in planes substantially at right angles thereto; said pair of loops fitting under the bar crossing the first, and arms extending from each of said pair of loops and adapted to be crossed over the the bar engaged by the first mentioned loop, said arms having ends adapted to lie in tensioned engagement with said bar on opposite sides of the same.

7. A tie for the junction of crossed reenforcing bars, comprising a wire member having a loop adapted to rest upon and substantially fit over the uppermost of said bars, a pair of loops continuous with the first named loop and in planes substantially at right angles thereto; said pair of loops fitting under the lower bar, and arms disposed in parallel relation extending from said pair of loops and lying on opposite sides of the uppermost bar; said arms being adapted to be crossed over the uppermost bar and having ends adapted to lie on

opposite sides of said uppermost bar in tensioned engagement therewith.

8. A tie for the junction of crossed reenforcing bars, comprising a wire member having a loop adapted to rest upon and substantially fit over the uppermost of said bars, a pair of loops continuous with the first named loop and in planes substantially at right angles thereto; said pair of loops fitting under the lower bar, and arms disposed in parallel relation extending from said pair of loops and lying on opposite sides of the uppermost bar; said arms being adapted to be crossed over the uppermost bar and having curved ends adapted to lie on opposite sides of said uppermost bar in tensioned engagement therewith.

In witness whereof I have signed this specification.

RICHARD GIFFORD LUDWIK.