

UNITED STATES PATENT OFFICE.

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REINFORCING-BAR FOR CONCRETE WORK.

1,299,407.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, IRWIN ROBERT HENRY CORMACK, a citizen of the Dominion of Canada, and a resident of Toronto, in the county of York and Province of Ontario, (whose post-office address is 146 Winchester street,) have invented a new and useful Reinforcing-Bar for Concrete Work, of which the following is a specification.

My invention relates to improvements in reinforcing bars for concrete work. Reinforcing bars in general use necessitate a number of separate pieces which have to be assembled to make a complete reinforcing member; my invention provides a complete reinforcing member in one unit without welded, soldered or other joints, to which a single bar of square, round or other section may be added to increase the area if required. The reinforcing member may be readily adapted to continuous noncontinuous and cantaliver spans of any length. With reinforcing bars in general use at present, it is a difficult matter to place the bars in their proper relation to the form work, and to retain them in that proper relation while the concrete is being poured. My invention provides members which afford means of spacing the reinforcing bar at the required distance from the forms, thus assuring the proper thickness of concrete covering. I attain these objects by the fabrication of the bar illustrated in the accompanying drawing, in which—

Figures 1, 2, 3 are alternative sections.

Fig. 4 is a part plan.

Fig. 5 is an elevation of a bar as made for spans in which the stresses are continuous over the supports.

Fig. 6 is an angular projection of part of the bar as made for spans in which the stresses are continuous over the supports.

Fig. 7 is a part elevation with dotted lines showing how a bar of square, round or other section may be added to provide additional area.

Fig. 8 is a sectional elevation on the line $q-q$, Fig. 7;

Fig. 9 is a sectional elevation on the line $s-s$, Fig. 7.

The reinforcing bar may be of steel, iron or other suitable material, made in T or cross section with parallel members as shown by solid lines in Figs. 1 and 2 or tapered members as shown in Fig. 3 and by broken

lines in Figs. 1 and 2 either with or without longitudinal grooves as shown in Fig. 3. The bar is cut longitudinally at intervals, and opened or expanded to form a complete unit of positive tensile member with diagonal tensile member and negative tensile member and negative compressive members and with supporting members extending from the positive tensile members. The bar may be made of any suitable area and the parts A, B, C, D may be made any suitable proportion of the total area of the bar.

I prefer to fabricate this bar in the following manner: The bar is cut longitudinally at intervals in the planes E, F, G, indicated by the dotted lines Figs. 1, 2 and 3, also transversely between the dotted lines E and F, also between E and G forming straight cuts H on the line G, and L shaped slots J on the lines E F, with the foot of the L extending to line G and straight slots I on the line E and F, and U-shaped cuts K as shown in Fig. 4.

The metal partly detached by the U-shaped cut K is bent to form the supporting member L as shown in elevation Figs. 5 and 7, and in angular projection Fig. 6, and in sectional elevation in Fig. 9.

The parts A and C partly detached from the main member D by the cuts H and slots J, are expanded by bending at the points M, N, O, P, to any suitable angle with the part D.

The length of the supporting members, the dimension between the negative tensile members and the positive tensile members, the spacing between adjacent diagonal tensile members, the number of diagonal tensile members, the spacing between the two innermost diagonal tensile members at opposite ends of the bar, and the length of the negative tensile member, and the length of the negative compressive member, may be varied by suitable cutting and slotting, the dimension between the negative tensile member and positive tensile member may be varied by varying the angles at M, N, O, P.

The whole section of the bar, where not cut, slotted, or expanded, forms positive tensile reinforcement, the parts A, B, C, D being in one unit, where the side sections A, B, C are cut or slotted, and opened or expanded, the part D continues in the same plane, and forms a continuation of the positive tensile reinforcement, and also forms a negative

compressive reinforcement, when the stresses are continuous over the supports.

From the points M on one or both sides of the bar the parts A continue to the points O, and form the innermost diagonal tensile member, from the point O, the part A continues to points P and form negative tensile members.

From the points N on one or both sides of the bar the parts C extend to the points P where they connect to the parts A by the parts B and form diagonal tensile members; from the outermost point P on one or both sides of the bar, the parts A, B, C continue together to the outermost end, and form a

continuation of the negative tensile member A previously described as extending from points O to the outermost points P.

Claim:

An integral reinforcing bar for concrete work consisting of longitudinal members in adjacent horizontal planes connected to a parallel base member by alternate web members, the web members on one side being midway between the corresponding web members on the opposite side, and projecting supporting members detached on two sides and one end of the base member.

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