

P. T. LARGE.
 REINFORCING BAR FOR CONCRETE CONSTRUCTION.
 APPLICATION FILED APR. 5, 1907.

931,320.

Patented Aug. 17, 1909.

Fig. 1.

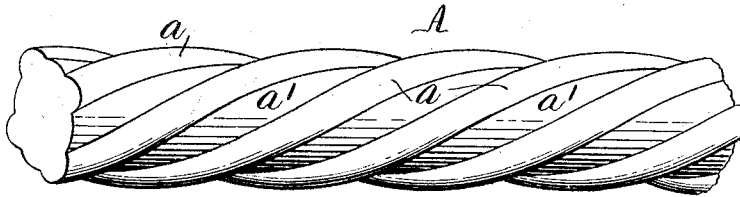


Fig. 2.

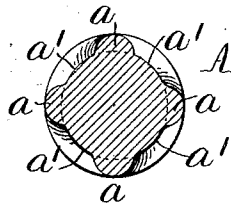


Fig. 3.

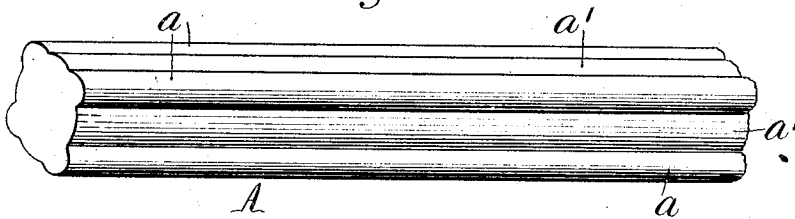
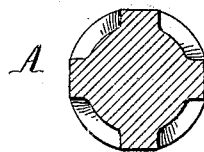


Fig. 4.



Witnesses:
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UNITED STATES PATENT OFFICE.

PRESTON T. LARGE, OF NORTH TONAWANDA, NEW YORK, ASSIGNOR TO BUFFALO STEEL COMPANY, OF TONAWANDA, NEW YORK.

REINFORCING-BAR FOR CONCRETE CONSTRUCTION.

No. 931,320.

Specification of Letters Patent.

Patented Aug. 17, 1909.

Application filed April 5, 1907. Serial No. 366,515.

To all whom it may concern:

Be it known that I, PRESTON T. LARGE, a citizen of the United States, residing at North Tonawanda, in the county of Niagara and State of New York, have invented a new and useful Improvement in Reinforcing-Bars for Concrete Construction, of which the following is a specification.

This invention relates to improvements in reinforcing bars for concrete construction, and more particularly to that class of bars which are commonly known as twisted bars.

Twisted bars of square cross-section have long been used. The corners of these bars form sharp helical edges which wind about the bar while the sides or surfaces of the bar between the corners remain flat. It has been found that these sharp or wedge-like helical edges and the intervening flat surfaces do not form a firm and continuous union with the concrete when embedded therein for the reason that the concrete tends to shrink away from the flat surfaces and the sharp corners or edges of the bar tend to cleave the concrete, causing it to crack.

The object of this invention is to overcome these objections by constructing a twisted reinforcing bar provided with helical ribs or ridges having broad or rounded peaks instead of sharp or wedge-like edges, and in which there are no flat sides or surfaces between the ridges. Such a bar, when embedded in the concrete, forms a more intimate and continuous union therewith and does not tend to cleave the concrete nor permit any movement thereof independent of the bar. Moreover, in twisting square bars, the corners of the bar which form the helical ridges, being a greater distance from the center of the bar, are stretched to a greater extent in the twisting than the intervening sides of the bar and are therefore more liable to be ruptured. This considerably reduces the strength of the bar and also limits the angle or pitch which can be given to the helical ridges, thus preventing the ridges from extending as near transversely of the length of the bar as is desirable for the best results. A round bar, on the other hand, owing to the uniform distance of all parts of the surface metal from its center, can be twisted to a much greater degree without rupturing such surface metal. It is, there-

fore, a further object of this invention to employ in the place of the twisted square bars heretofore used, a twisted round bar provided with suitable helical ribs or ridges. Inasmuch as the twisting of such a round bar does not tend to diminish its strength and as it has no sharp edges or corners to be ruptured thereby, the bar can be twisted to the extent necessary to give the desired angle or pitch to the helical ridges.

In the accompanying drawings: Figure 1 represents a perspective view of a section of a reinforcing-bar embodying the invention. Fig. 2 is a cross-section of the same. Fig. 3 is a perspective view of the bar before the same is twisted. Fig. 4 is a cross-section of a twisted bar of slightly modified form.

Like letters of reference refer to like parts in the several figures.

A represents a reinforcing bar which is round in cross-section, as will appear from Fig. 2, and is provided at suitable intervals upon its surface with helical ribs or ridges *a a* separated by convex portions *a' a'* of such surface. The ribs or ridges, shown in Figs. 1-3, are substantially semicircular in cross-section, which is preferable, but they could also be of somewhat different cross-sectional shape, for instance, as shown in Fig. 4, in which the edges are of substantially rectangular cross-section. The ridges in both bars have broad and more or less flat peaks as contradistinguished from sharp or wedge-like peaks. In the drawing, four of these ribs or ridges are shown, but it is obvious that a greater or less number could be used, depending upon the size of the bar and the nature of the work for which it is intended. In making these bars, the bar with the straight longitudinal ribs or ridges, shown in Fig. 3, is produced by rolling between suitable rolls forming a pass of a shape corresponding to the cross-sectional shape of the bar. This bar is then twisted, preferably while hot, in a well known manner. By thus rolling the bar in a substantially circular pass it acquires the additional strength and elasticity of a round bar, and by forming the ribs therein in the same operation the bar with its ribs can be produced as cheaply as the common square bar.

The sides or surfaces *a' a'* of the bar between the ribs instead of being flat, as in twisted square bars, are convexed. As the concrete will the more firmly adhere to such

convexed surfaces, a close union between the bar and the concrete is thus obtained.

I claim as my invention:

5 A reinforcing bar for concrete which comprises a round bar having a plurality of longitudinal ribs of uniform cross-section spaced about the bar, said bar being subsequently twisted, whereby said ribs are made
10 rection, helically of the bar and throughout

its length; the said bar being otherwise free of surface irregularities, every peripheral portion of the bar being substantially convex.

Witness my hand, this 29th day of March, 1907.

PRESTON T. LARGE.

Witnesses:

J. G. JOSEPH,

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