No. 891,234. PATENTED JUNE 23, 1908

E. F. CRANE.

REINFORCING BAR FOR CEMENTITIOUS BODIES.

APPLICATION FILED FEB. 11, 1907.

Fig. 1

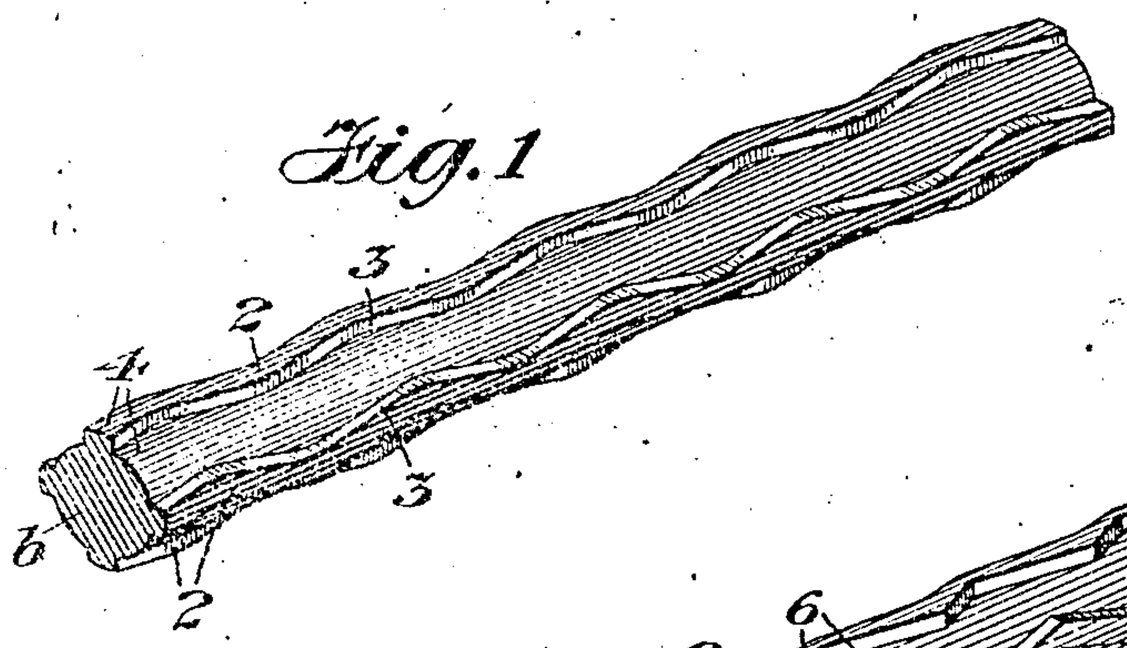


Fig. 2

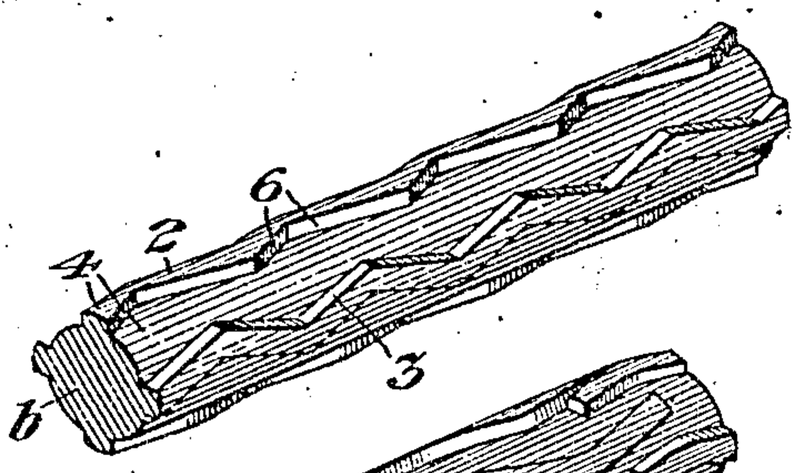


Fig. 3

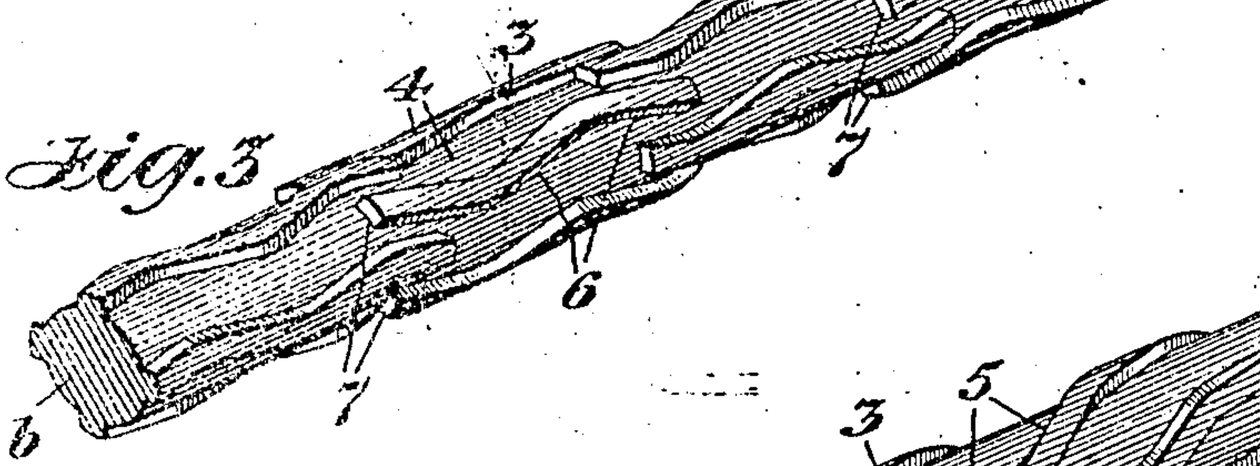


Fig. 4

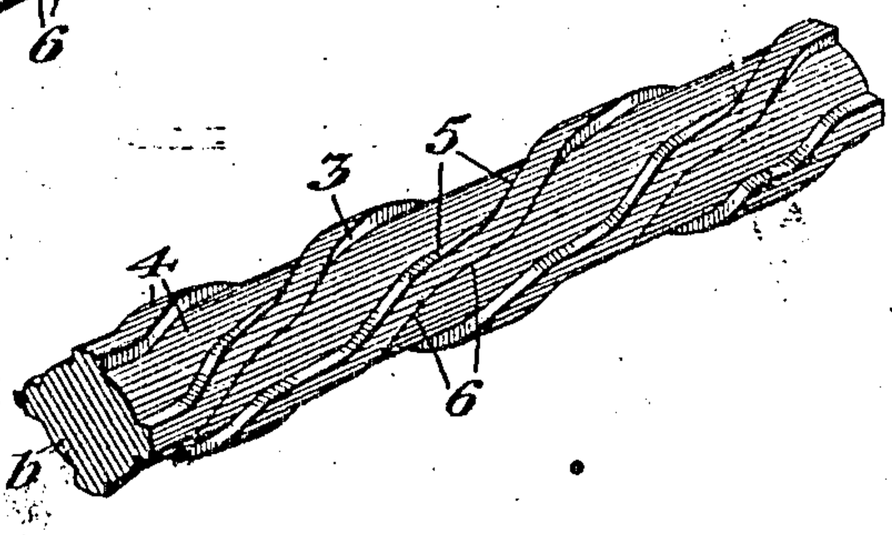
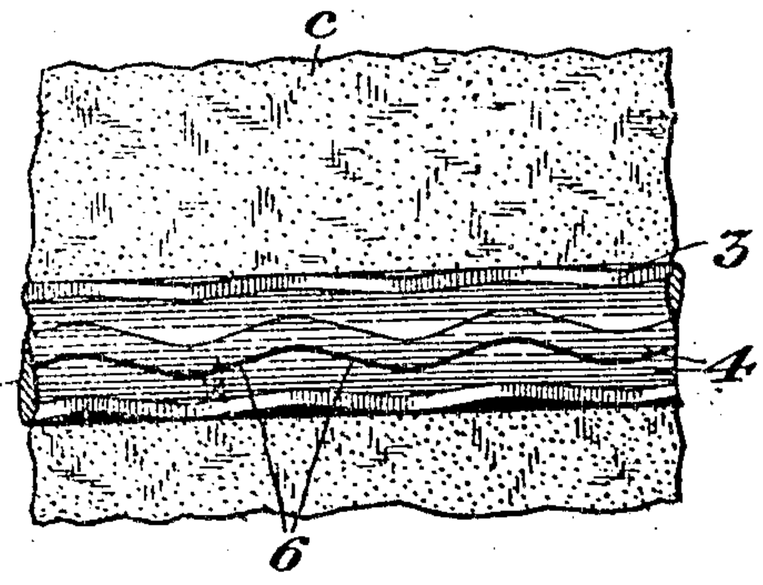


Fig. 5



WITNESSES

Chas. F. Clagett

M. E. Stanton

INVENTOR.

Edward F. Crane

BY

Chas. F. Dane

ATTORNEY.

UNITED STATES PATENT OFFICE.

EDWARD F. CRANE, OF NEWARK, NEW JERSEY, ASSIGNOR OF ONE-HALF TO HARRY A. CRANE, OF JERSEY CITY, NEW JERSEY.

REINFORCING-BAR FOR CEMENTITIOUS BODIES.

No. 891,234. Specification of Letters Patent. Patented June 23, 1908.

Application filed February 11, 1907. Serial No. 356,636.

To all whom it may concern:

Be it known that I, EDWARD F. CRANE, citizen of the United States, and resident of Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Reinforcing-Bars for Cementitious Bodies, of which the following is a specification.

In the use of cementitious substances, such as concrete, for building and other purposes, it is customary to reinforce and impart a desired tensile strength to the same by embedding therein suitable metallic members, such combination of metallic reinforcing members with the cementitious body resulting in the formation of a composite structure capable of resisting both compressive and tensile strains to a very great degree. When metallic members are thus combined with or embedded in a cementitious body, it is desirable that a complete adhesion and union of the two elements should be obtained to prevent movement of one relatively to the other, and this is usually accomplished by providing the metallic reinforcing members with a series of transversely-arranged shoulders for interlocking engagement with the cementitious body. These interlocking shoulders are usually formed by a distortion of some character of the bar constituting the reinforcing member, and such distortion in some instances is of such character as to result in a lessening of the tensile strength of the bar. It is obviously desirable, however, that all the metal entering into or forming part of the bar, including that providing its interlocking shoulders, should be so disposed as to develop its full tensile strength. This is accomplished in the reinforcing-bar disclosed in Letters Patent No. 820,704, issued to me May 15, 1906, by forming the bar with a plurality of parallel spirals of different depths having more or less abruptly-formed shoulders between the same for interlocking engagement with the cementitious body, the said spirals being so arranged that the bar will be of uniform cross-sectional area throughout its length and therefore of uniform tensile strength. I have found, however, that milar results may be obtained by a somewhat different formation of bar, which, in accordance with my present invention in a preferred form thereof, consists in forming the bar with a plurality of longitudinal sinuously-extending ribs, the sides of which, by reason of the sinuous form of the ribs, will present a series of shoulders extending transversely of the length of the bar for interlocking engagement with the cementitious body in which it may be embedded, and which form and arrangement of ribs provide a bar of uniform cross-sectional area throughout its length, and therefore of uniform tensile strength.

Referring now to the accompanying drawing forming part of this specification, Figures 1, 2, 3 and 4 are perspective views of reinforcing bars embodying different forms of my invention, and Fig. 5 is a plan view of the bar shown in Fig. 1, combined with a cementitious body, which latter is partially removed from the bar to disclose the latter.

Similar reference characters designate like parts in the several figures of the drawings.

In the drawings, *b* designates generally a metallic reinforcing-bar formed in accordance with my invention, and *c* designates the concrete or other cementitious body in which, as shown in Fig. 5, the said reinforcing-bar is adapted to be embedded.

The reinforcing-bar *b*, in accordance with my invention as hereinbefore referred to, is preferably formed with a plurality of longitudinal sinuously-extending ribs 2, the sides of which present a series of shoulders 3—3 extending more or less transversely of the length of the bar for interlocking engagement with the cementitious body *c*, the said shoulders being preferably made quite abrupt between the adjacent surfaces 4—4 of the bar *b* in order to provide a more positive interlock between the bar and the cementitious body. A bar thus formed will be of uniform cross-sectional area throughout its length, and therefore of uniform tensile strength, and the transversely-arranged shoulders formed by the sides of the sinuously-extending ribs 2 will present such a considerable shoulder surface for interlocking engagement with the cementitious body as to prevent possibility of movement of one relatively to the other.

The extent and character of sinuosity of the ribs 2 may be more or less varied as desired; for instance, the ribs may be made to sinuate in a continuously curved line, as shown in Fig. 1, or in a more angular line, as shown in Fig. 2, the main requisite being a

transverse shoulder surface for interlocking engagement with the cementitious body sufficient to prevent possibility of movement of one relative to the other. As shown in Figs. 1 and 2, the ribs 2 extend in a generally straight line longitudinally of the bar, but if so desired, the bar may be twisted subsequent to its rolling for the purpose both of causing the sinuous ribs to extend spirally about the bar and thereby increase the area of transverse shoulder surface, as shown in Fig. 4, as well as causing an increase in the tensile strength of the bar.

An important feature of the sinuous form of the ribs 2 is the fact that opposing shoulders are provided, such as 5—5 or 6—6, which operate, not only to lock the bar against longitudinal movement in the cementitious body in a straight line, but also to lock the bar against any turning movement in the cementitious body in a spiral or other direction.

As shown in Fig. 3, the ribs 2 are broken or interrupted in a manner to provide a plurality of rib sections arranged in staggered relation to each other, the ends 7 of which provide transverse shoulders for interlocking engagement with the cementitious body, additional to the shoulders provided by the sides of the ribs.

What I claim is:

1. A metallic reinforcing bar for cementitious bodies, comprising a body-portion substantially cylindrical in cross-section, and a plurality of longitudinally disposed parallel ribs projecting radially from said body portion and having uninterrupted parallel sinuous walls on their opposite sides.

2. A metallic reinforcing bar for cementitious bodies, comprising a body-portion substantially cylindrical in cross-section, and a plurality of longitudinally disposed parallel ribs projecting radially from said body portion and having uninterrupted parallel sinuous walls on their opposite sides, said ribs being circumferentially arranged on said body-portion in staggered relation to one another.

Signed at New York, in the county of New York and State of New York, this 9th day of February, A. D. 1907.

EDWARD F. CRANE.

Witnesses:
R. A. DOLPH WINKOPP;
M. E. STANTON.