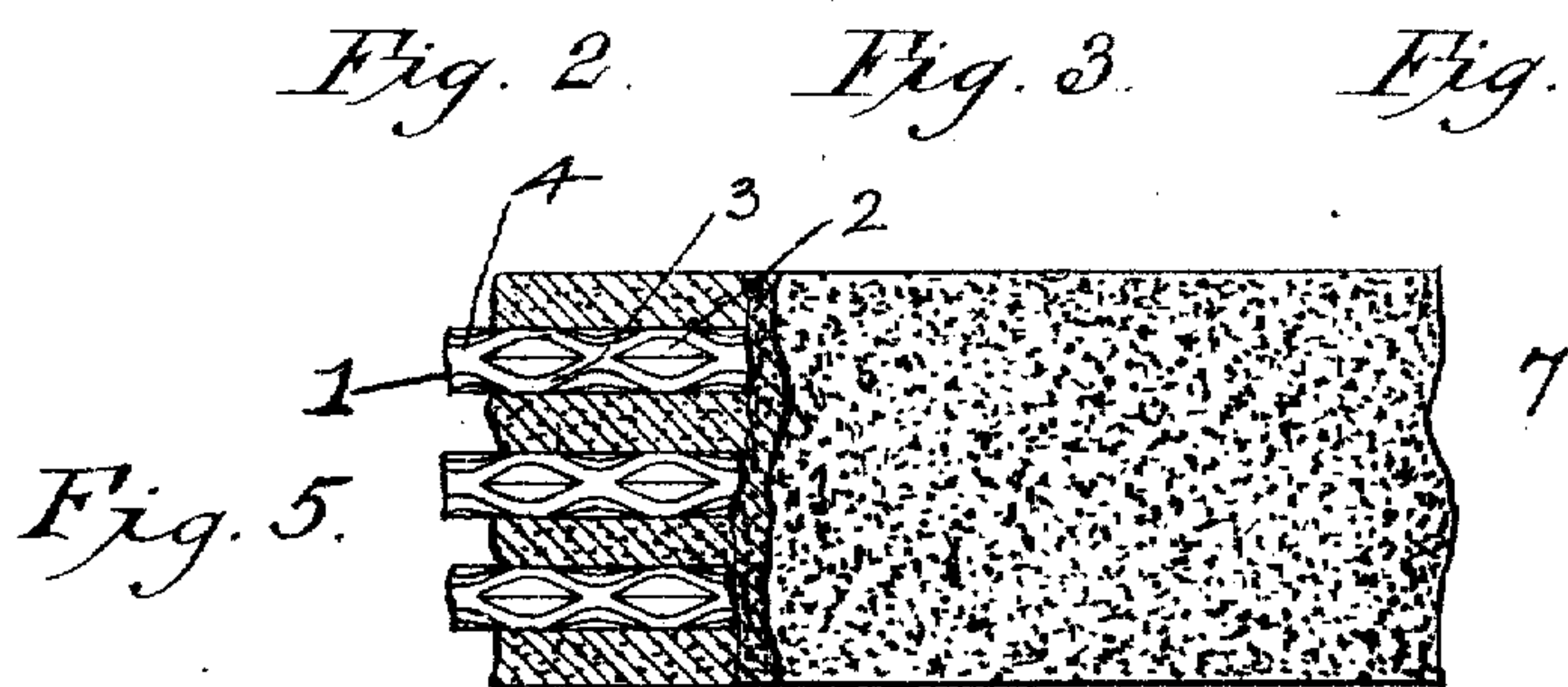
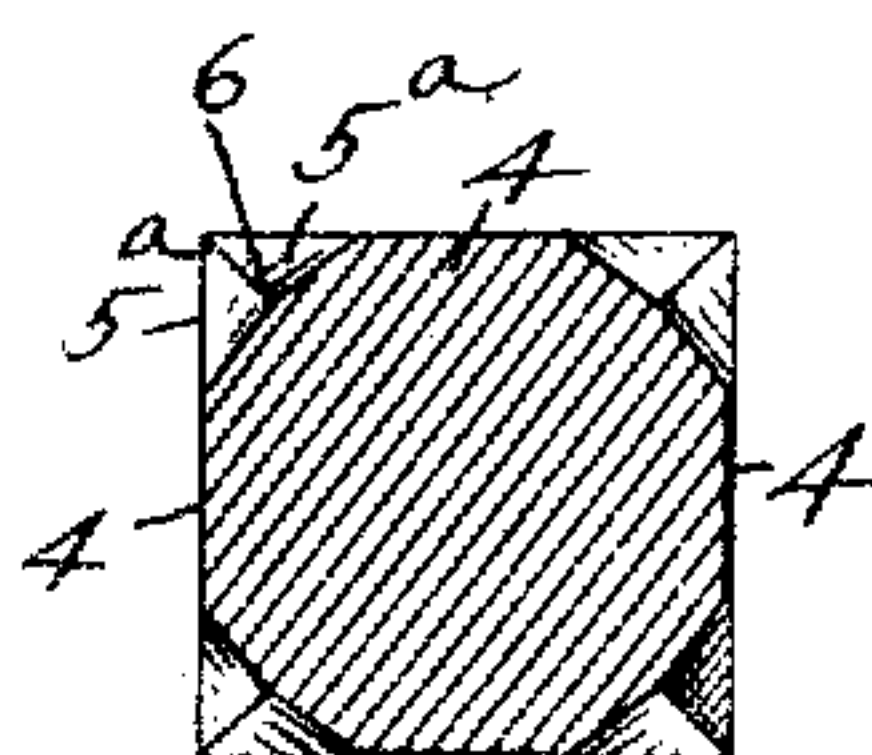
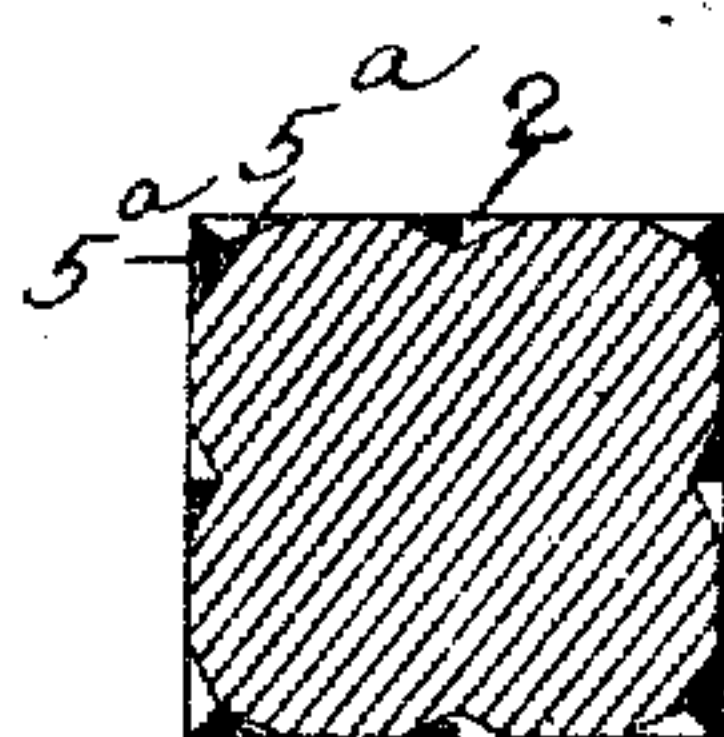
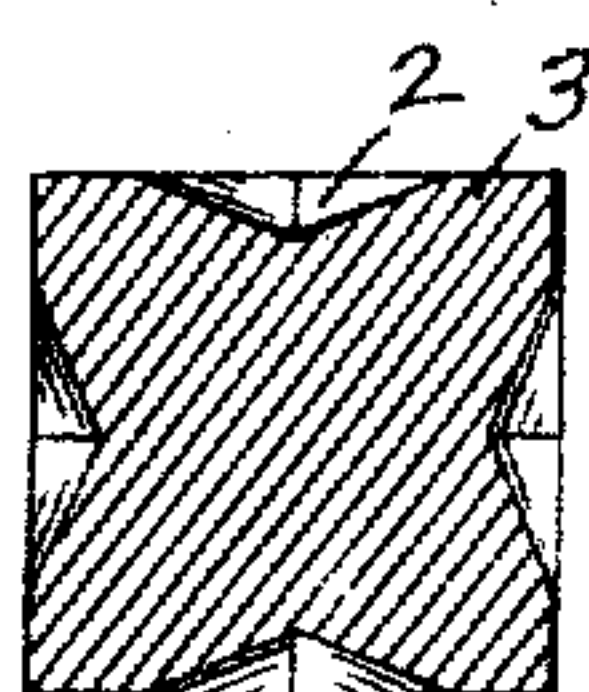
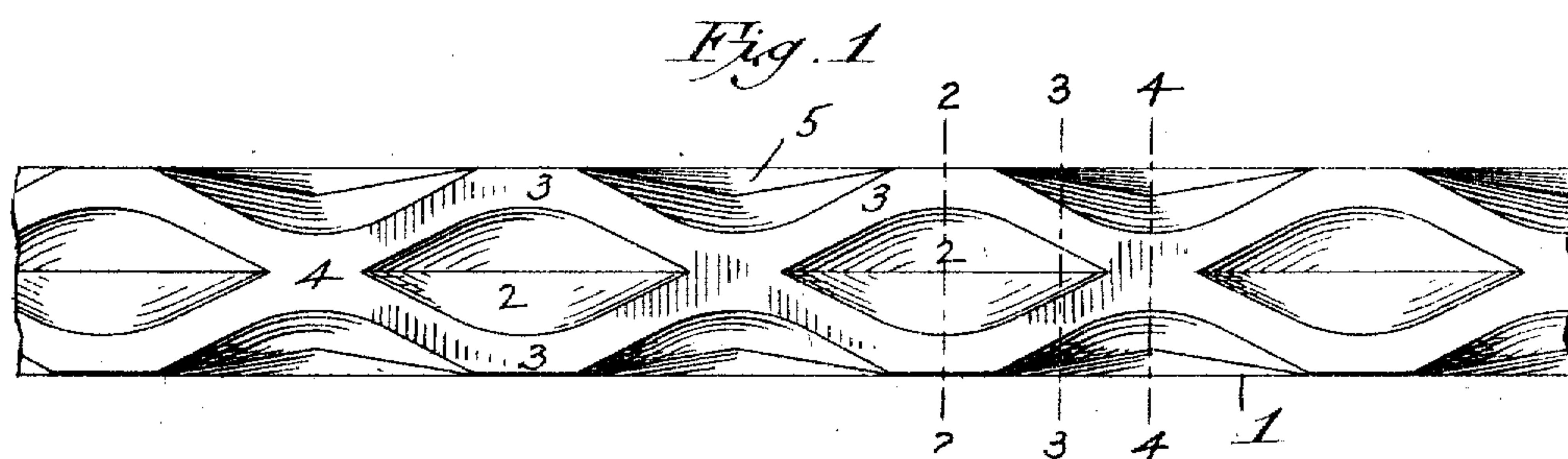


No. 843,424.

PATENTED FEB. 5, 1907.

S. B. WILLIAMSON.
REINFORCING BAR FOR CONCRETE AND LIKE MATERIAL.
APPLICATION FILED AUG. 10, 1905.



Witnesses:-

A. L. Lord.
B. W. Brockell.

Inventor.

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UNITED STATES PATENT OFFICE.

SYDNEY B. WILLIAMSON, OF BALTIMORE, MARYLAND.

REINFORCING-BAR FOR CONCRETE AND LIKE MATERIAL.

No. 843,424.

Specification of Letters Patent.

Patented Feb. 5, 1907.

Application filed August 10, 1905. Serial No. 273,555.

To all whom it may concern:

Be it known that I, SYDNEY B. WILLIAMSON, residing at Baltimore, in the State of Maryland, have invented a certain new and useful Improvement in Reinforcing-Bars for Concrete and Like Material, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings.

My invention relates to reinforcing-bars for concrete, artificial stone, or similar material used in the construction of buildings, bridges, and the like, and has for its objects the provision of a bar of this kind that will form a rigid mechanical bond with the material in which it is embedded, that will retain a relatively large proportion of the original cross-sectional area of the stock from which the bar is formed, that will be substantially uniform in sectional area throughout its length, and that will so engage the material in which it is embedded as to greatly increase the resistance against elongation. These objects are accomplished by the bar shown in the drawings, wherein—

Figure 1 represents a plan view of a portion of a bar constructed in accordance with my invention. Figs. 2, 3, and 4 represent transverse sections on the correspondingly numbered lines of Fig. 1; and Fig. 5 represents a plan view of a beam or similar structure, a portion thereof being broken away to show a plurality of my bars applied thereto.

Describing the parts by numerals, 1 represents a bar constructed in accordance with my invention. Each face of the bar is provided, preferably by passing the stock through suitable rolls, with a series of elongated depressions 2, preferably diamond or lozenge shaped, said depressions being provided between sinuous ribs 3, which are at the original level of the surface of the stock before being subjected to the action of the rolls. The recesses 2, as will appear more particularly from Figs. 2, 3, and 4, are deepest at the center thereof, whence they diminish gradually in depth toward the ends and sides thereof. The ribs 3 at the widest portion of the recesses extend to the side edges of the bar, from which points they approach each other and merge at intermediate of the recesses and at the longitudinal center of the bar.

The corner edges of the bar are provided with recesses 5, said recesses extending

across from the rib portion 4 on one face of the bar to the portion 4 on the adjacent face. These recesses are deepest opposite the central portions 4 of the ribs and decrease uniformly in depth from these points to the junction of the ribs with the corner edges of the bar. Each recess is made up of two parts 5^a, the bottoms of which incline outwardly symmetrically from the adjacent rib toward the corner, meeting in a common vertex line 6, which connects the junctions of the rib portions 3 and the corner edges of the bar. The angle thus formed is within the original corner of the stock. This construction of the recesses 5 will appear more particularly from an inspection of Figs. 2, 3, and 4 of the drawings, and, as will further appear from an inspection of said figures, the depth of the recesses 5 increases as the depth of the recesses 2 decreases, and vice versa.

By the peculiar shape and arrangement of the recesses and ribs the bar, while retaining a very high proportion of the original cross-sectional area of the stock before rolling, is of substantially constant cross-sectional area throughout its length. The provision of the ribs 3 with the recesses 2 is of great importance in maintaining a rigid mechanical bond between the bar and the concrete when the bar is stressed and at the same time in enabling the concrete to resist the elongation of the bar when so subjected to stress. When one of these bars is subjected to stress which elongates the same, such elongation reduces the sectional area of the bar and causes the side edges of the bar and the ribs 3, which inclose the recesses 2, to approach each other. If the recesses are filled with concrete, however, the approaching of the ribs 3 toward each other and the narrowing and elongating of the bar are resisted. Therefore, when the bar is embedded in concrete, as in a beam 7, and the beam and bar are stressed, instead of shrinking away from the concrete it tends, through the action of the ribs, to grip the concrete more firmly within the depressions 2. At the same time the concrete in such depressions sets up a counteracting stress in the bar against elongation, while the arrangement and location of the recesses diminish the horizontal shear in the vicinity of the bar.

While I have shown substantially diamond or lozenge shaped recesses in my bar, it will be evident that the particular shape of such

recesses may be varied without departing from the spirit of my invention.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A bar for the purpose specified, said bar being polygonal in cross-section and having entirely within each face thereof recesses extending into and only partly through the body thereof, said bar having at the intersection of its faces recesses intermediate the recesses in the faces and diminishing in depth from the longitudinal central portion to the ends thereof, whereby a very high proportion of the original cross-sectional area of the stock is preserved throughout its length, shearing is reduced to a minimum and the bar is of substantially constant cross-sectional area throughout its length, substantially as specified.

2. A bar for the purpose specified, said bar being polygonal in cross-section and having each face thereof provided with recesses extending only partly through the bar, said recesses tapering or diminishing in depth from the center thereof and having their centers in the same transverse plane, said bar being also provided with recesses formed in the corner edges thereof, intermediate of the recesses in the faces and diminishing uni-

formly in depth from the longitudinal center to the ends thereof, substantially as specified.

3. A bar for the purpose specified, said bar being polygonal in cross-section and having each face thereof provided with diamond or lozenge shaped recesses, the centers of said recesses being in the same transverse plane and said bar being also provided with corner-recesses intermediate of those in the faces and each diminishing uniformly in depth from the longitudinal center to the ends thereof, substantially as specified.

4. A bar for the purpose specified, said bar being polygonal in cross-section and having within each face thereof diamond or lozenge shaped recesses, said recesses being shallow and diminishing uniformly in depth from the center thereof to the face of the bar, said bar being also provided with recesses in the corner edges thereof intermediate of the former recesses and each diminishing uniformly in depth from the longitudinal center to the ends thereof, substantially as specified.

In testimony whereof I affix my signature in the presence of two witnesses.

SYDNEY B. WILLIAMSON.

Witnesses:

J. B. BRODERICK,
R. S. WILLIAMS.