No. 858,518. PATENTED JULY 2, 1907.

A. L. JOHNSON.

CORRUGATED BAR.

APPLICATION FILED NOV. 15, 1906.

Fig. 1.

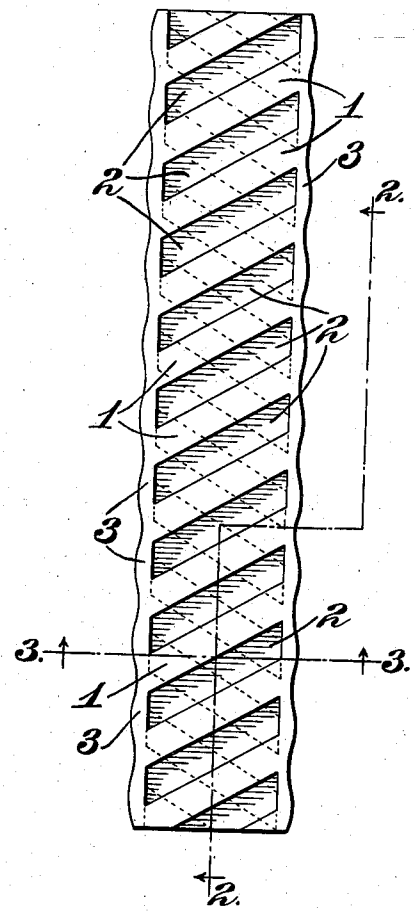


Fig. 2.

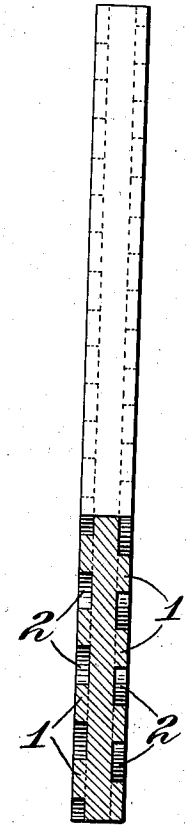
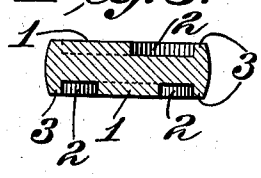


Fig. 3.



Witnesses:

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UNITED STATES PATENT OFFICE.

ALBERT L. JOHNSON, OF ST. LOUIS, MISSOURI.

CORRUGATED BAR.

No. 858,518. Specification of Letters Patent. Patented July 2, 1907.

Application filed November 15, 1906. Serial No. 343,550.

To all whom it may concern:

Be it known that I, ALBERT L. JOHNSON, a citizen of the United States, and a resident of the city of St. Louis and State of Missouri, have invented a new and useful Improvement in Corrugated Bars, of which the following is a specification.

My invention relates to corrugated bars for reinforcing concrete construction and has for its principal objects to produce a new form of corrugated bar having a uniform cross section; to produce a corrugated bar having projections and depressions arranged at such an angle to the axis of the bar that in any right section the area of the section through the projections and depressions will be equal to the area of any other right section; and to secure other advantages hereinafter more fully appearing.

My invention consists in the construction and arrangements of parts hereinafter described and claimed.

In the accompanying drawing which forms part of this specification, and wherein like symbols refer to like parts wherever they occur, Figure 1 is a view of one side of my new form of bar; Fig. 2 is a view of the bar at right angles to the view of Fig. 1 partly in elevation and partly in cross section on the line 2—2 of Fig. 1; Fig. 3 is a cross section on the line 3—3 of Fig. 1.

The present bar is preferably flat and is provided on each of its two wider faces (which are hereinafter referred to as the top and bottom) with a row of alternate ribs and projections 1 and depressions or spaces 2 between the projections. The ribs are parallel to each other and are inclined to the axis of the bar. In the arrangement shown in Fig. 1, the ribs are of equal width and are spaced apart a distance equal to their width. The ribs are inclined at such an angle that the middle points of opposite ends of adjacent ribs are exactly opposite each other, that is, similar points of opposite ends of adjacent ribs on the same face lie in a line or plane at right angles to the axis of the bar. In consequence of this arrangement, the cross-sectional area of the rib or ribs in any right section is equal to the cross-sectional area of the depression or depressions in the same cross-section; and this is true at whatever point the right section may be taken. Consequently, the ribs or projections reciprocally compensate and the cross-sectional area of the bar is uniform throughout its length. It is noted in this arrangement, the slope or inclination of the ribs is such that the longitudinal displacement of the ends of a rib is equal to twice the width of the rib measured parallel with the axis of the bar; that is, the distance between planes passing through similar points in opposite ends of the rib and perpendicular to the axis of the bar is twice the distance between similar points in adjacent ribs. In consequence of this inclination, the initial point of the shoulder of one depression is in substantially the same transverse plane as the final point of the corresponding shoulder of the next adjacent depression.

It is noted that by the arrangement of ribs and depressions hereindescribed, a complete compensation is effected for each series of ribs and depressions; that is, at whatever point a right section may be taken, the area of the rib or ribs of each face in that section is equal to the area of the space or spaces between ribs in the corresponding face in the same section. In other words, there is a complete compensation for each face of the bar. Consequently, the series of ribs and depressions of the top may be made independent of those at the bottom. The inclination of the ribs of the top may be in the same direction as the inclination of the ribs of the bottom; but it is preferable to arrange the ribs of the two series to incline crosswise of each other. When the two series of ribs incline crosswise to each other, the forces acting thereon and tending to move the bar laterally balance or neutralize each other; and this arrangement has the additional advantage that any section through a depression on one face must pass through a portion of the rib of the opposite face.

In the construction illustrated in Figs. 1, 2 and 3, the depressions terminate short of the margin of the bar leaving a fillet 3 at both ends thereof. This fillet tends to resist the forces which tend to move the bar laterally. It also serves materially to strengthen the bar, especially against tensile stresses on the margins thereof. It is noted that in actual practice, it is desirable to make the ribs slightly wider than the depressions.

What I claim as my invention and desire to secure by Letters Patent is:

1. A bar for reinforcing concrete having a series of substantially equal transversely-inclined depressions arranged parallel with each other at a distance apart equal to the width of a depression, said depressions terminating short of the margins of the bar and being inclined at such an angle that the initial point of the shoulder of one depression shall be in substantially the same transverse plane as the final point of the corresponding shoulder of the next adjacent depression.

2. A bar for reinforcing concrete having in each of two opposite faces a series of substantially equal transversely-inclined depressions arranged parallel with each other at a distance apart equal to the width of a depression, said depressions terminating short of the margins of the bar and being inclined at such an angle that the initial point of the shoulder of one depression shall be in substantially the same transverse plane as the final point of the corresponding shoulder of the next adjacent depression.

3. A bar for reinforcing concrete having in each of two adjacent faces a series of substantially equal transversely-inclined depressions arranged parallel with each other and a series of ribs alternating with said depressions and of a width substantially equal to the width of a depression, said depressions terminating short of the margin of the bar and being inclined at such an angle that the initial

point of the shoulder of one depression shall be in substantially the same transverse plane as the final point of the corresponding shoulder of the next adjacent depression, the respective ribs of said adjacent faces being in substantially the same planes.

4. A bar for reinforcing concrete having a series of equal transversely-inclined depressions in each of a plurality of faces arranged parallel with each other and a series of ribs alternating with said depressions and of a width substantially equal to the width of a depression, the depressions of each face terminating short of the margin of the bar and being inclined at such an angle that the sectional area of the depressions in any plane perpendicular to the axis of the bar shall be substantially equal to the sectional area of the ribs of said face in the same plane.

5. A flat bar for reinforcing concrete having a series of substantially equal transversely-inclined depressions arranged parallel with each other at a distance apart equal to the width of a depression, said depressions being inclined at such an angle that the initial point of the shoulder of one depression shall be in substantially the same transverse plane as the final point of the corresponding shoulder of the next adjacent depression.

6. A flat bar for reinforcing concrete having in each of two opposite faces a series of substantially equal transversely-inclined depressions arranged parallel with each other at a distance apart equal to the width of a depression, said depressions being inclined at such an angle that the initial point of the shoulder of one depression shall be in substantially the same transverse plane as the final point of the corresponding shoulder of the next adjacent depression.

7. A flat bar for reinforcing concrete having in each of two adjacent faces a series of substantially equal transversely-inclined depressions arranged parallel with each other and a series of ribs alternating with said depressions and of a width substantially equal to the width of a depression, said depressions being inclined at such an angle that the initial point of the shoulder of one depression shall be in substantially the same transverse plane as the final point of the corresponding shoulder of the next adjacent depression, the respective ribs of said adjacent faces being in substantially the same planes.

8. A bar for reinforcing concrete having a series of equal transversely-inclined depressions in each of a plurality of faces arranged parallel with each other and a series of ribs alternating with said depressions and of a width substantially equal to the width of a depression, the depressions of each face being inclined at such an angle that the sectional area of the depressions in any plane perpendicular to the axis of the bar shall be substantially equal to the sectional area of the ribs of said face in the same plane.

In witness whereof I have signed my name to this specification in the presence of two subscribing witnesses this 30th day of October 1906, at Paris, France.

ALBERT L. JOHNSON.

Witnesses:
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