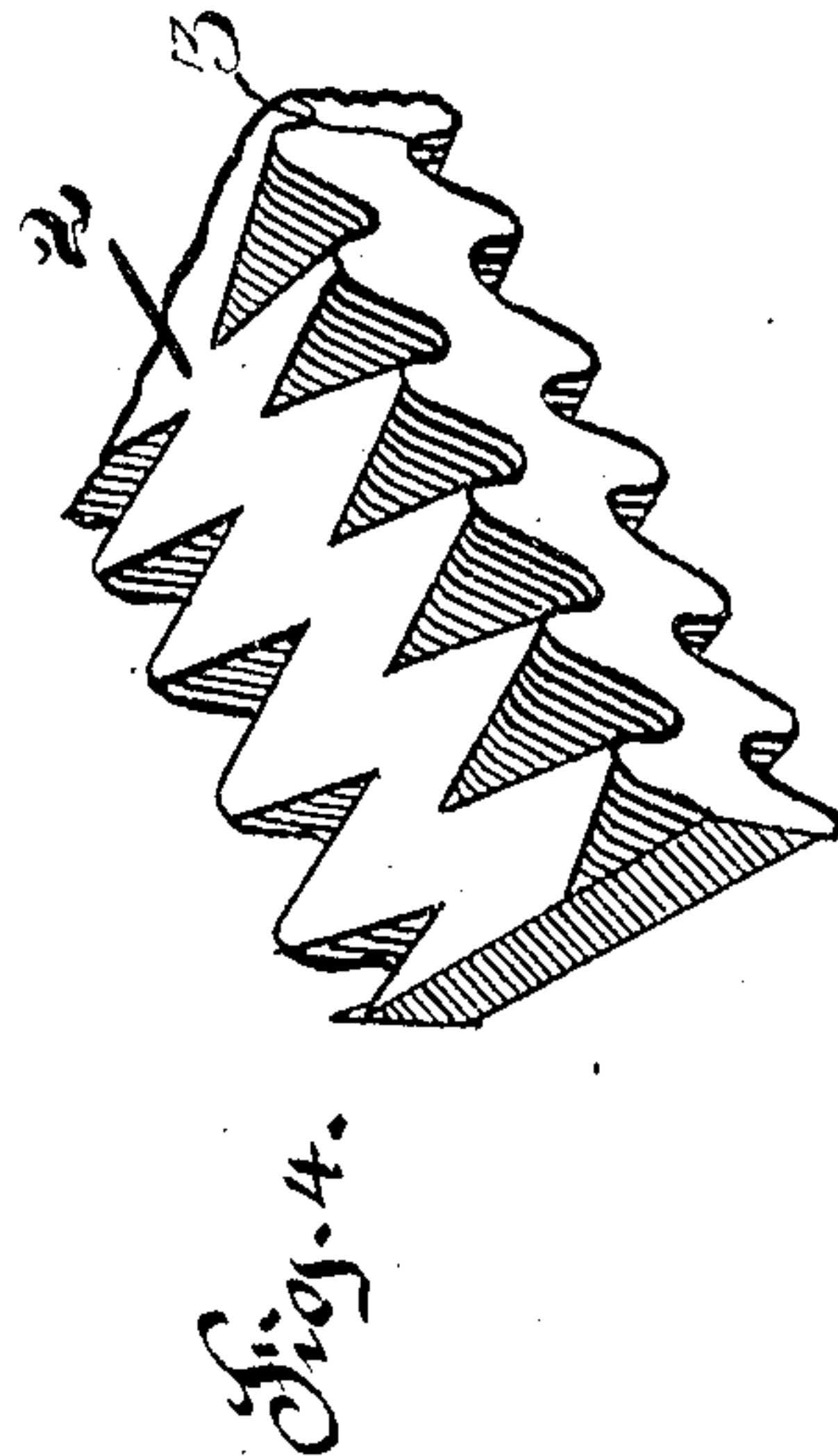
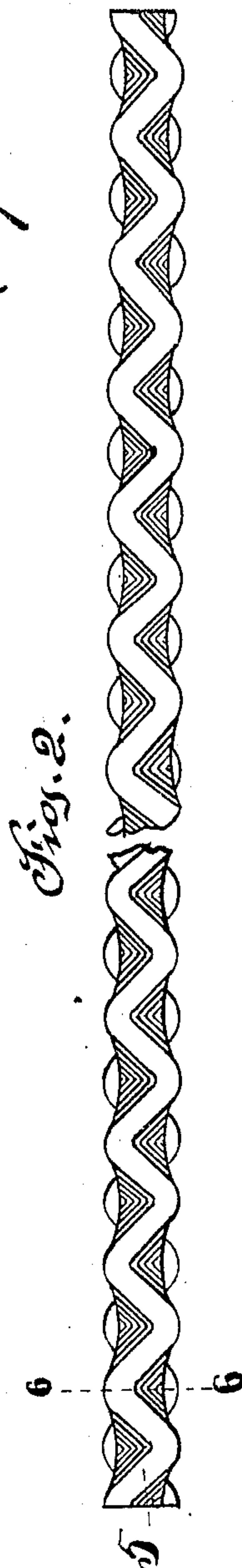
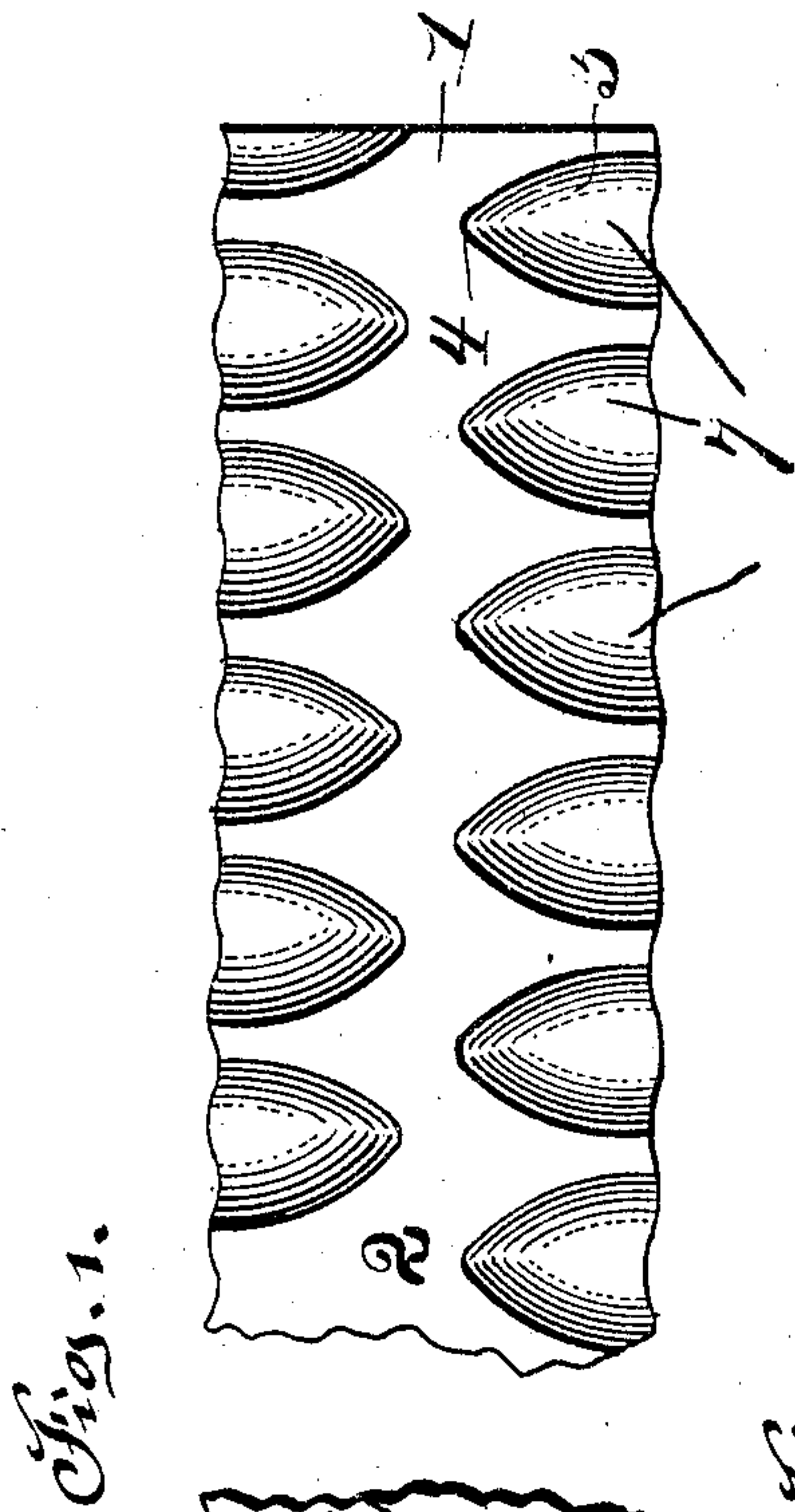


W. G. HUGHES.
REINFORCEMENT BAR.
APPLICATION FILED SEPT. 12, 1905.

943,878.

Patented Dec. 21, 1909.



Witnesses:
Chas. O. Lester,
E. E. Potter,

Inventor,
William G. Hughes.

by A. C. Ewert & Co.
Attorneys.

UNITED STATES PATENT OFFICE.

WILLIAM G. HUGHES, OF PITTSBURG, PENNSYLVANIA.

REINFORCEMENT-BAR.

943,878.

Specification of Letters Patent. Patented Dec. 21, 1909.

Application filed September 12, 1905. Serial No. 278,128.

To all whom it may concern:

Be it known that I, WILLIAM G. HUGHES, citizen of the United States of America, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Reinforcement-Bars, of which the following is a specification, reference being had therein to the accompanying drawing.

10 This invention relates to certain new and useful improvements in tension bars for fire proof construction.

The particular class of fire proof construction to which my invention is applicable is what is known in the art as "concrete and metal" or "reinforcing". In its use it is applied to that particular class of inventions.

20 My improvement contemplates as a primary object a construction, which more effectually equalizes in the shearing stress of the suspended re-inforcements.

I am aware that heretofore there have been various constructions designed to fulfil the purpose of the above, but these constructions have been expensive to manufacture, and are for the most part fragile and ineffective.

30 My invention particularly embodies a tension bar formed from an integral piece of suitable material, which shall involve no extraneous parts, and which shall possess in itself a contour that will withstand and equalize all strain.

35 The detail construction will appear in the course of the following description, in which reference is had to the accompanying drawing, wherein like numerals of reference designate corresponding parts throughout the several views, in which:—

40 Figure 1 is a plan view looking upon either side of my improved tension bar, Fig. 2 is a side elevation thereof, Fig. 3 is a transverse section, Fig. 4 is a perspective view thereof.

45 The tension bar contemplated in the present invention embodies a longitudinal bar 1 which is formed of any material well known in the art, both metal and reinforcement cement being employed to advantage.

50 The bar 1 is formed on each side with depressions which are connected by a central web 2 of uniform thickness throughout the length of the bar. These depressions, as shown, are designated by the numeral 3 and are of substantially V-shape in cross

section, the side walls thereof leading to a meeting point 4 adjacent the web 2. The general configuration thus given to the depressions is that of a semi-pyramid. The depressions 3 on each surface of the bar 1 are more in the form of reentrant corrugations as is shown in Fig. 2, the side 5 of the bar following tortuous lines. Hence the depressions 3 on the same side of the bar 1 but on the opposite surface thereof, are disposed in a staggered relation to one another. The arrangement of the depressions on the same surface of the bar, but on opposite sides thereof, is also similar from a relative standpoint, the relation being staggered, the points 4 of the one depression pointing between the apex 6 of the two opposite depressions on the other side and so throughout the entire length of the bar.

75 Reference being had to Fig. 3, which is a section taken through the apex of one of the depressions 3, it will be observed that along the line of the apex and following the inclination of the depression, the bar is of the same cross sectional thickness throughout its entire length, irrespective of the degree of inclination of the depressions 3.

80 The construction above described, will perfectly equalize all shearing stress or direct stress throughout the entire length of the bar for the reason that although strengthened by the corrugations which are arranged on each surface on each of the sides thereof in a relative and staggered relation, the bar itself is of equal thickness throughout so that no portion of the structure will be of greater size or of greater tensile strength than the other portion.

85 For the purpose of enabling the bar to take a firm grip in the structure to be reinforced, as well as to compensate for any inequality in the edge thereof due to the depressions 3, I have formed the side edges of the bar with corrugations 7 having preferably curved surfaces of a slight degree of pitch.

90 It is obvious that various minor changes may be made without departing from the spirit of my invention as defined in the appended claim. These changes, of course, will include the exact configuration of the corrugations as well as the relative dimensions thereof.

95 Having fully described my invention, I claim:

A tension bar for composite beams, com-

prising a substantially rectangular bar having a central web of uniform thickness and provided on two opposite faces along its marginal edges with V-shaped depressions
5 having side walls leading to a meeting point contiguous to the web, the depressions along one marginal edge being staggered with respect to the depressions along the other and parallel marginal edge on the same face of
10 the bar, and the depressions along the marginal edges on one face of the bar being staggered with respect to the depressions

along the corresponding marginal edges on the opposite face of the bar, the size of said depressions being greatest at the edges of the 15 bar and uniformly diminishing toward and merging with the said central web.

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

WILLIAM G. HUGHES.

Witnesses:

E. E. POTTER,
M. E. WHITE.