

July 19, 1927.

1,636,592

C. B. CUSHWA

GRATING

Filed April 26, 1926

Fig. 4.

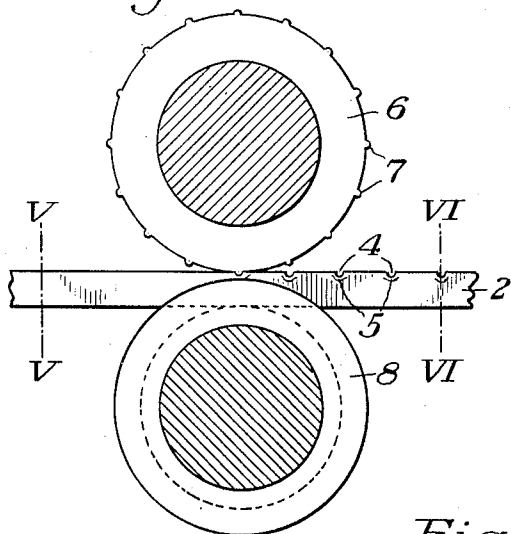


Fig. 5. Fig. 6

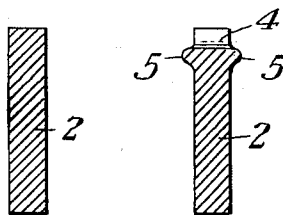


Fig. 1.

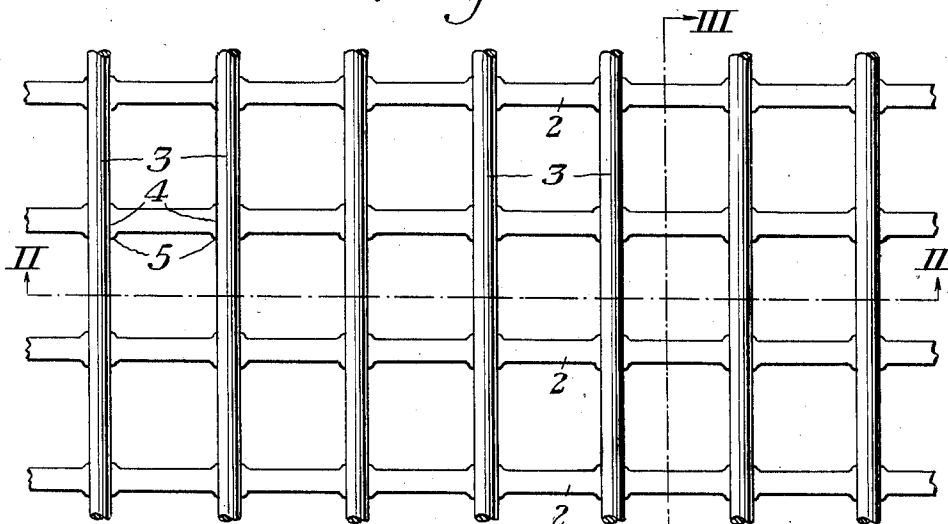


Fig. 2.

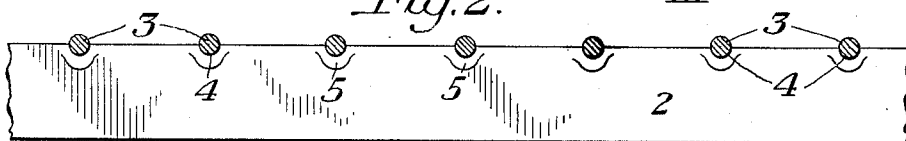
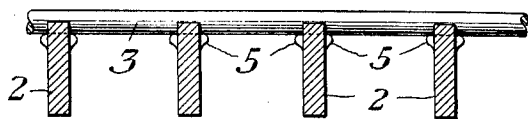


Fig. 3.



INVENTOR

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UNITED STATES PATENT OFFICE.

CHARLES B. CUSHWA, OF YOUNGSTOWN, OHIO, ASSIGNOR TO THE COMMERCIAL SHEARING AND STAMPING COMPANY, OF YOUNGSTOWN, OHIO, A CORPORATION OF OHIO.

GRATING.

Application filed April 26, 1926. Serial No. 104,657.

This invention relates to a grating and method of making the same, and is particularly adaptable for use in connection with grating of the type employed for covering openings in floors, walls, or the like.

The invention relates particularly to grating of the type employing longitudinal girder bars and cross members secured to the bars and maintaining the same in spaced relationship.

An important object of the invention is to provide a rigid efficient grating which may be economically constructed from simple sections, preferably strip material and small rounds.

Another object of the invention is to provide an improved method of engaging the cross members with the girder bars.

In the accompanying drawings, illustrating the present preferred embodiment of my invention—

Figure 1 is a top plan view of a grating;

Figure 2 is a sectional view on the line II—II of Figure 1;

Figure 3 is a sectional view on the line III—III of Figure 1;

Figure 4 illustrates the method of forming depressions in the girder bars;

Figure 5 is a section on the line V—V of Figure 4; and

Figure 6 is a section on the line VI—VI of Figure 4.

In the illustrated embodiment, there is shown a grating comprised of longitudinal girder bars 2 connected by cross members 3. The girder bars 2 support the cross members 3 in depressions 4, said depressions being formed to substantially the contour of the connecting members 3.

It will be observed that the cross members 3 are maintained in such position that they extend slightly above the upper edge of the girder bar, thereby forming an improved frictional surface on the grating, said frictional surface being particularly desirable on a grating used to cover an opening in a side-walk or street.

Each cross member 3 is preferably attached to the girder bars 2 by spot welding the same at various intersections. In order to provide secure engagement between the elements of the grating, I preferably form the depressions 4 in the girder bars 2 in such a way that a reinforcing bead 5 is formed alongside the depressions, preferably along

the cross member 3 at each side of the girder bar, thereby providing an extended area of contact between the elements and efficiently utilizing all of the material employed.

The depressions 4 are preferably formed by a roll 6 (Figure 4) having equally spaced protuberances 7 on the periphery thereof, the contour of the protuberances 7 being such as to form depressions 4 in the girder bars substantially conforming to the shape of the cross members 3. Pressure for indenting the girder bars is provided by an idler roll 8, the roll 8 being shrouded to guide the strip material forming the girder bars squarely between the rolls.

While the illustrated method of shaping the girder bars gives very satisfactory results, it is obvious that other methods may be employed.

Thus I provide an improved grating wherein the girder bars are not materially weakened by cut-out portions for the reception of the cross members. On the contrary, I prefer to utilize all of the material in the girder bars, merely depressing the surface thereof at spaced intervals an amount sufficient to provide secure retention of the cross members. In this manner I secure an engaging surface at each intersection which is wider than the width of the girder bar at that intersection. By upsetting or deforming the metal of the girder bars at the points of connecting, substantially without cutting of the metal, the cross-sectional area of the girder bars at such points is left relatively large, and the value of the section modulus is not materially reduced.

While I have illustrated and described the present preferred embodiment of my invention, it will be understood that changes may be made in the structure disclosed therein and method of making the same without departing from the spirit of the invention or the scope of the following claims.

I claim:

1. In a grating, a plurality of girder bars having depressions at intervals in the upper edges thereof, the depressions being pre-formed substantially without loss of metal, and a plurality of cross members connecting the girder bars, said cross members lying in the depressions and protruding above the upper surface of the girder bars.

2. In a grating, a plurality of girder bars having depressions at intervals in the upper

edges thereof, the depressions being preformed substantially without loss of metal, and a plurality of cross members connecting the girder bars, said cross members lying in the depressions and protruding above the upper surface of the girder bars, all of the cross members being fastened to at least some of the girder bars.

3. In a grating, a plurality of girder bars having substantially semi-circular depressions at intervals in the edges thereof, the depressions being preformed substantially without loss of metal, and a plurality of substantially round cross members connecting the girder bars, said cross members lying in the depressions and protruding beyond the surface of the girder bars.

4. In a grating, a plurality of girder bars having substantially semi-circular depressions at intervals in the edges thereof, the depressions being preformed substantially without loss of metal, and a plurality of substantially round cross members connecting the girder bars, said cross members lying in the depressions and protruding beyond the edges of the girder bars, all of the cross members being welded to at least some of the girder bars.

5. In a grating, a plurality of girder bars, the girder bars having depressions in the edges thereof at spaced intervals, the depressions being preformed substantially without loss of metal, a plurality of cross members connecting the girder bars, said cross members lying in the depressions and protruding beyond the edges of the girder bars, and reinforcing beads adjacent the depressions.

6. In a grating, a plurality of girder bars, said girder bars having substantially semi-circular depressions in the edges thereof at spaced intervals, the depressions being preformed substantially without loss of metal, a plurality of substantially round cross members connecting the girder bars, said cross members lying in the depressions and protruding beyond the edges of the girder bars, and reinforcing beads adjacent the depressions, all of said cross members being fastened to at least some of the girder bars.

7. In a grating, a plurality of girder bars, said girder bars having substantially semi-circular depressions in the edges thereof at spaced intervals, the depressions being preformed substantially without loss of metal, a plurality of substantially round cross members connecting the girder bars, said cross members lying in the depressions and protruding beyond the edges of the girder bars, and reinforcing beads adjacent the depressions and bearing against the cross members, all of said cross members being welded to at least a portion of the girder bars.

8. In a grating, a plurality of girder bars having depressions at spaced intervals in the edges thereof, the depressions being preformed substantially without loss of metal, and a plurality of cross members connecting the girder bars and being supported thereby, said cross members lying in the depressions and being welded to at least some of the girder bars.

In testimony whereof I have hereunto set my hand.

CHARLES B. CUSHWA.