July 26, 1949. W. A. BATES 2,477,228

GRATING

Filed Dec. 21, 1945 2 Sheets-Sheet 1

Fig. 1.

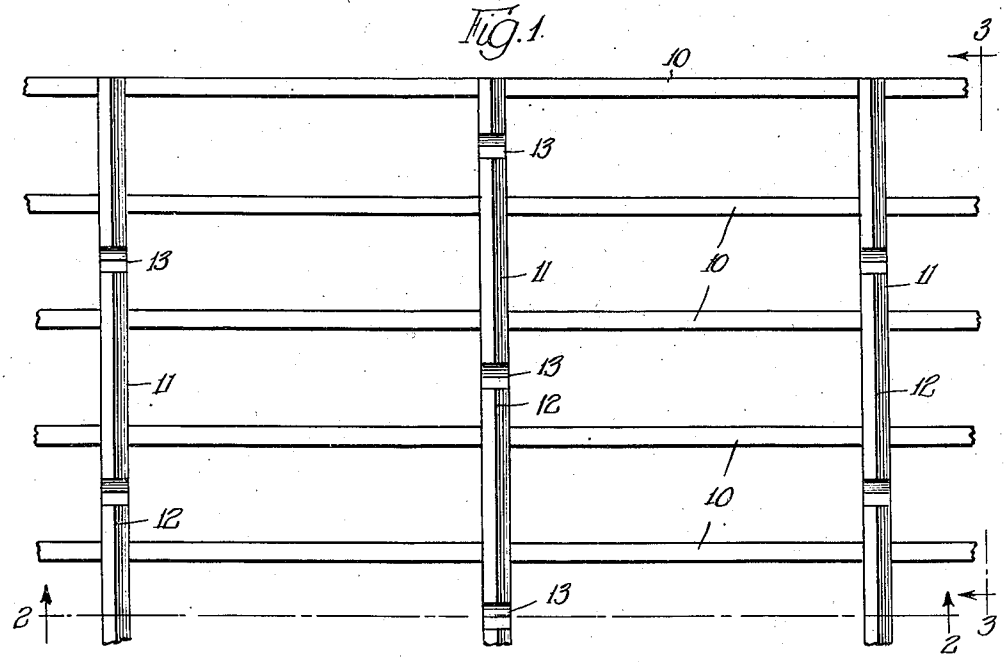


Fig. 2

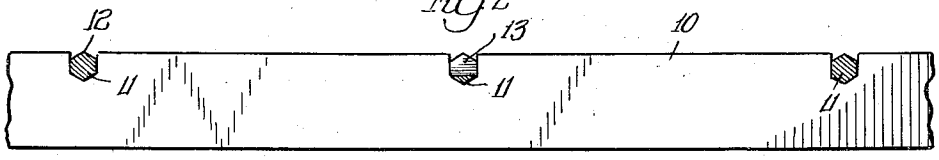


Fig. 3

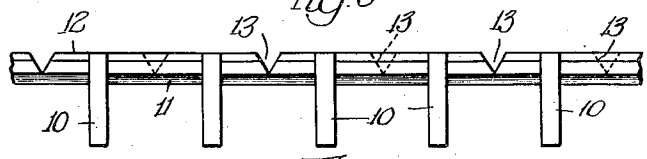
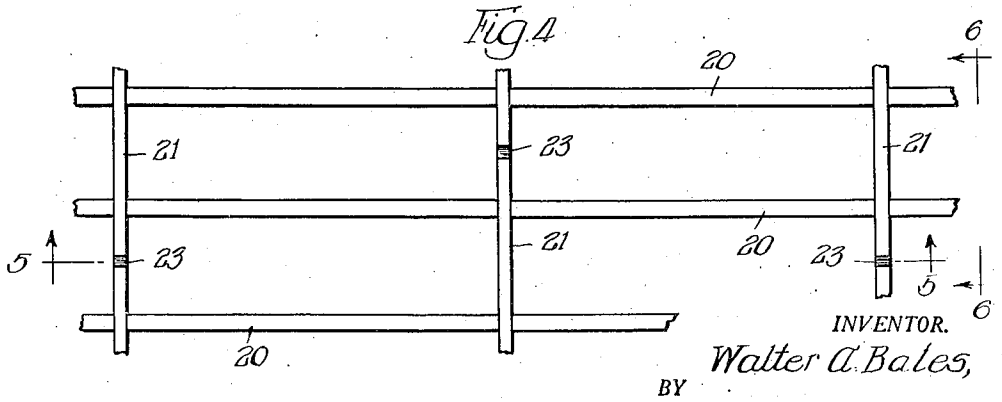


Fig. 4



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July 26, 1949. W. A. BATES 2,477,228

GRATING

Filed Dec. 21, 1945 2 Sheets-Sheet 2

Fig. 5

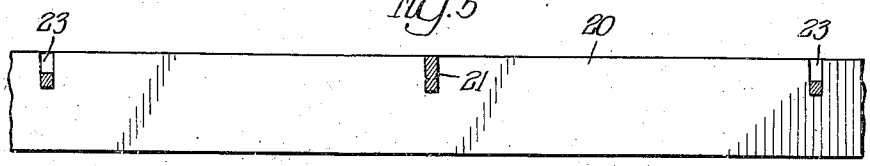


Fig. 6

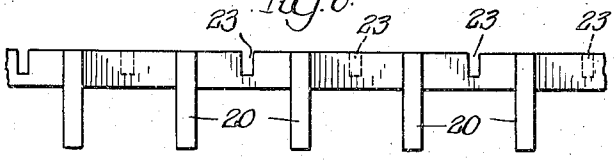


Fig. 7

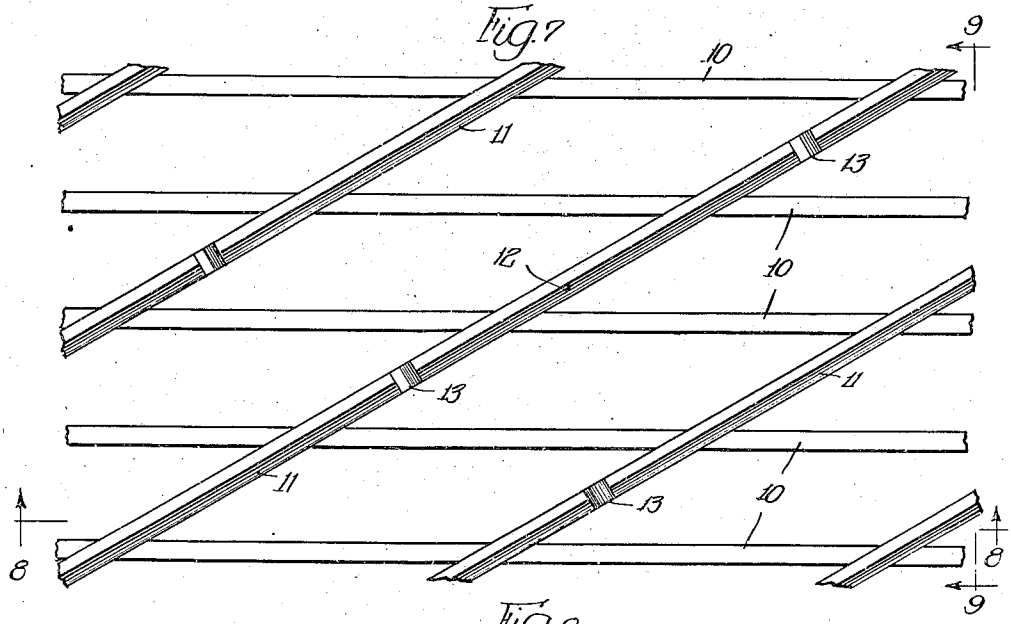


Fig. 8

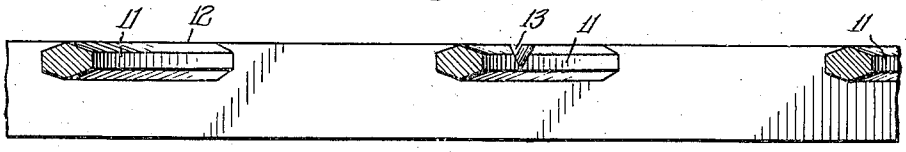
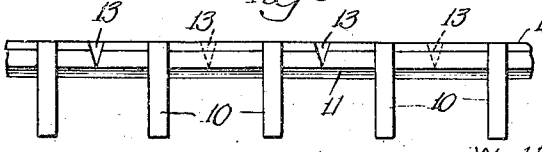


Fig. 9



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Patented July 26, 1949

2,477,228

UNITED STATES PATENT OFFICE

2,477,228

GRATING

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Application December 21, 1945, Serial No. 636,433

2 Claims. (Cl. 189—82)

1

The present invention relates to improvements in gratings.

More particularly the present invention relates to improvements over United States Letters Patent No. 2,184,407, granted December 26, 1939, to the present applicant.

An object of the present invention is to provide a grating which while retaining the elements of strength and the non-skid features of the prior patent above referred to has the further advantage that the grating is held against deformation in service, though it has enough flexibility to adapt itself to conditions encountered in service.

A further object is to provide a grating which while retaining the advantageous features of the prior patent referred to has improved strength.

A further object is to provide a grating of the kind referred to which will lie flat upon its supports.

A further object is to provide an improved grating well adapted to meet the needs of commercial service and which combines the advantages above referred to with cheapness of manufacture.

Further objects will appear as the description proceeds.

Referring to the drawings—

Figure 1 is a top plan view of a grating embodying the principles of the present invention;

Figure 2 is a sectional view taken along the plane indicated by the lines 2—2 of Figure 1;

Figure 3 is an end view taken in the direction of the arrows 3—3 of Figure 1;

Figure 4 is a top plan view illustrating a slightly modified construction;

Figure 5 is a sectional view taken along the plane indicated by the lines 5—5 of Figure 4;

Figure 6 is an end view taken in the direction of the arrows 6—6 of Figure 4;

Figure 7 is a top plan view of another modification;

Figure 8 is a sectional view taken along a plane indicated by the arrows 8—8 of Figure 7; and

Figure 9 is an end view taken in the direction of the arrows 9—9 of Figure 7.

Referring first to the embodiment of the invention illustrated in Figures 1 to 3, the numerals 10—10 indicate the main or longitudinal bars of the grating, which main bars may be of rectangular cross section and are disposed in spaced parallel relationship with one another. Disposed crosswise of the main bars 10—10 are the cross bars 11—11. Said cross bars are illustrated as being of hexagonal cross sectional contour, though other shapes may be chosen if preferred. For practical purposes it is preferred, however, that each cross bar 11 should have an upwardly presented edge 12 disposed in substantially the plane which defines the upper surfaces of the main bars 10—10. In other words, the cross bars 12—12 are set into recesses in the main bars 10—10 and are preferably welded to said main bars. In practice it will doubtless be preferred to use cross bars 11—11 of hexagonal contour, inasmuch as this is a common and commercially procurable shape. Said cross bars 11—11 are disposed in parallel spaced relationship with one another at substantially right angles to the longitudinal bars 10—10.

2

One method of assembly which may be employed is to dispose the cross bars 11—11 in position to engage one edge of each of said cross bars against the upper faces of the main bars 10—10 so that there is only line contact between said cross bars and the main bars. Pressure is then applied to the top of the cross bars while a flow of electric current is provided between said cross bars and main bars. At the beginning of the electric welding operation a quick heat is developed at the regions of contact between the cross bars and the main bars due to their limited contact areas. At the regions of intersection the bars become semi-molten, and the pressure applied to the cross bars pushes said cross bars downwardly until the edges 12 thereof become aligned with the top sides of the main bars 10—10. During this process the main bars 10—10 and the cross bars 11—11 are effectually welded together at their intersections. Any other means and/or method may be employed to secure the cross bars and the longitudinal bars together.

According to the present invention, each of the cross bars 11 is provided with a notch 13 presented upwardly of the grating. According to the embodiment of the invention illustrated in Figures 1 to 3, this notch 13 is V-shaped and extends from the upper edge 12 to a region spaced from the bottom edge of the cross bar 11. As shown in Figures 2, 3, 8 and 9, the notch 13 extends down approximately to the lower edges of the vertical sides of the hexagonal cross sectional contour of the cross bar 11. In other words, the notch 13 extends approximately to the plane marking the upper edges of the two bottom sloping sides of the hexagonal outline of the cross bar 11.

The notches 13 may be disposed substantially midway of adjacent main bars 10—10. In Figures 1, 2 and 3 the notches 13 are illustrated as being spaced apart along each cross bar 11 a distance

substantially equal to the distance between every second pair of main bars **10**. In other words, according to the disclosure in Figures 1 and 3, adjacent notches in each cross bar **11** are spaced apart a distance substantially equal to twice the distance between adjacent main bars. It will be understood, of course, that the spacing of the notches **13—13** may be chosen as desired. For example, the spacing of the notches **13** may be equal to three times or four times or any preferred number of times the distance between two adjacent main bars **10**. In short, the spacing of the notches **13** may be chosen as desired within rather wide limits. It is preferred, however, that the spacing of the notches in each cross bar **11** be staggered with respect to the spacing of the notches in the next adjacent cross bar. However, this staggered relationship need not be followed, and the invention is sufficiently broad to cover a spacing between notches equal to the distance between two adjacent main bars.

Figures 4, 5 and 6 illustrate an embodiment of the present invention in which the cross bars are of rectangular cross section and the notches in said cross bars are of rectangular cross section.

In said Figures 4, 5 and 6, main bars disposed in parallel relationship with each other are indicated by the numerals **20—20**. Cross bars of rectangular cross sectional contour are indicated by the numerals **21—21**. Said cross bars **21—21** are located in corresponding recesses in the main bars **20—20** and are preferably welded to said main bars **20—20**. The cross bars **21—21** are provided with notches **23—23**, which in Figures 4, 5 and 6 are of rectangular contour, though this contour may be modified within wide limits. It is preferred, however, that the contour of the notches **13** or **23** be such that relatively sharp edges are provided at the upper extremity of the corresponding cross bar. In the form of the invention illulstrated in Figures 4, 5 and 6 it is preferred, just as in the embodiment illustrated in Figures 1 to 3, that the planes marking the tops of the cross bars be substantially coincident with the plane marking the tops of the main bars. The spacing of the notches **23** may be varied in the manner discussed above in connection with the notches **13**.

The disclosure in Figures 7, 8 and 9 is closely analogous to the disclosure in Figures 1, 2 and 3. However, in Figures 7, 8 and 9 the cross bars **11—11**, disposed transversely of the main bars **10—10**, instead of being at right angles to said main bars, are arranged diagonally with relation to said main bars. Said cross bars **11—11** are provided with the notches **13—13** disposed in the relationships described in connection with the embodiment illustrated in Figures 1 to 3.

In each of the embodiments there is provided a grating which will present a non-skid surface to the sole of the shoe of a person walking thereon whether said person is walking longitudinally, transversely or diagonally with relation to the grating.

Among the advantages inherent in the present invention are the following: Inasmuch as the cross bars are not completely severed, the result is obtained that each of the main bars receives support from all of the other main bars in the grating, said support being transmitted through the cross bars. In other words, the cross bars, not being completely severed, function efficiently as struts across the grating without sacrificing the non-skid features.

A further advantage is that by reason of the function of the cross bars in acting as struts, lateral movement between the main bars is avoided.

A further advantage accrues from the fact that the cross bars, being partly severed, have a certain amount of flexibility so that the grating will tend to lie flat upon its supports, thereby overcoming a difficulty with certain prior gratings which tended to warp and to rock upon their supports.

It is intended to cover cross bars of a wide variety of shapes, not limited to those illustrated, and to cover notches of a wide variety of contours and spacing, not limited to those illustrated.

Though certain preferred embodiments of the present invention have been described in detail, many modifications will occur to those skilled in the art. It is intended to cover all such modifications that fall within the scope of the appended claims.

What is claimed is:

1. A grating comprising a plurality of spaced main bars, and a plurality of spaced cross bars arranged transversely of said main bars, said cross bars being hexagonal in cross section and being located to have edges thereof uppermost and having notches in their tops but being unsevered below said notches, said notches extending approximately to the lower side edges of said hexagonal cross bars.

2. A grating comprising a plurality of spaced main bars, and a plurality of spaced cross bars arranged transversely of said main bars, said cross bars being hexagonal in cross section and being located to have edges thereof uppermost and having notches in their tops but being unsevered below said notches, the locations of the notches of each cross bar being staggered with relation to the notches in adjacent cross bars, said notches extending approximately to the lower side edges of said hexagonal cross bars.

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