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E. B. FLINT

2,429,677

GRATING

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Fig. 1

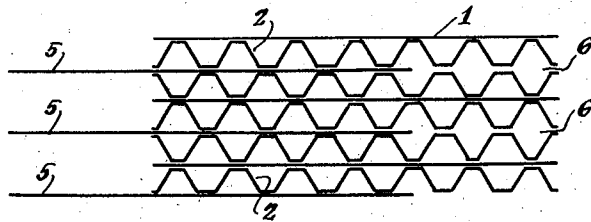


Fig. 2

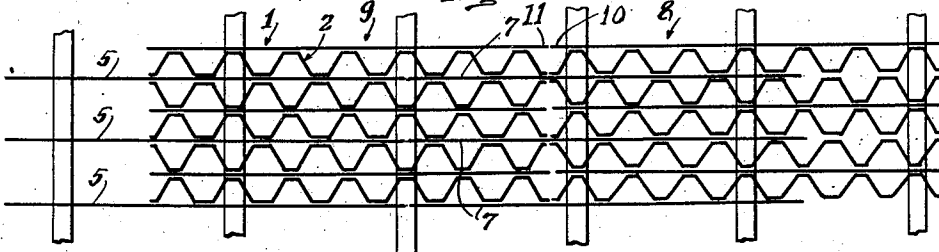


Fig. 3

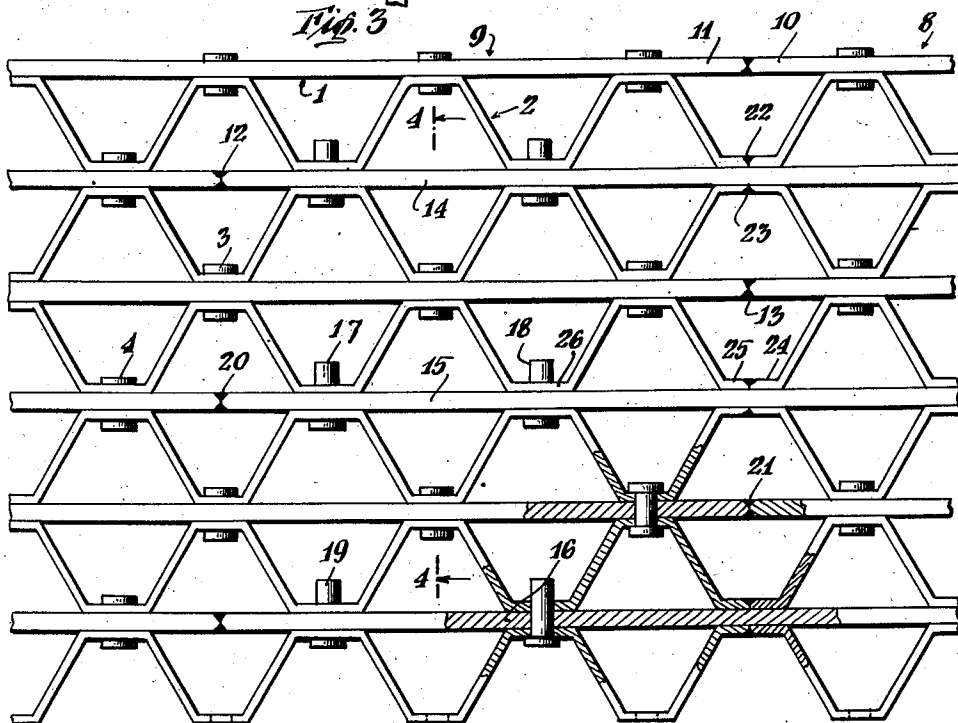
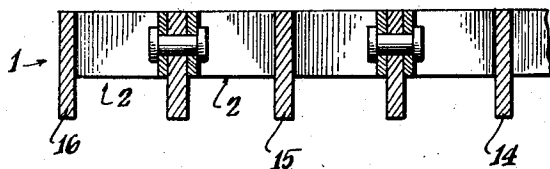


Fig. 4



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GRATING

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1 Claim. (Cl. 189—82)

1

This invention relates to grating structures and it is among the objects of the invention to provide grating structures which can be assembled in a continuous flooring without leaving hardly any perceptible indication of places of jointure.

Another object of the invention is to provide grating structure having a uniform open mesh pattern throughout its area.

Other objects and advantages of the invention are described in the following specification and illustrated in the accompanying drawings wherein the principle of the invention and the best mode of embodying the same are disclosed.

Referring to the drawings,

Fig. 1 is a schematic showing of a single grating panel embodying the present invention;

Fig. 2 is a schematic showing of adjacent grating panels;

Fig. 3 is a detail of a portion of the joined ends of two adjacent panels;

Fig. 4 is a section on line 4—4 of Fig. 3.

The grating panel of the present invention is for constructing a composite grating structure made up of a number of similar panels which are placed adjacent one another. For use as open floorings for buildings, ships and bridges, it is desirable that the grating panels be connected together so as to provide a continuous structure having no apparent joints or joints which would create an annoyance particularly during the passage of vehicles thereover. In a continuous grating structure employing the panels of the present invention, the straight bars and the crimped strips of each intermediate panel are arranged in two sets so that one set provides tenon connections at one end of the panel and the other set provides mortise connections at the other end of the panel, the end of each straight bar of one panel being arranged to fit between the ends of a pair of crimped strips of another panel or, in an alternative construction, the ends of each crimped strip of one panel being arranged to fit between the ends of a pair of straight bars of another panel. The breaks between the straight bars of connected panels and between the crimped strips of connected panels lie in more than one line at each end of a panel. The breaks or joints between aligned bars and crimped strips of joined panels can be distributed to overlie different supporting beams, but the splice formed is sufficiently strong to lie between beams. In addition, the over-all design of the meshes of the grating is not altered, with the result that the design of the open meshes at the jointures of panels is the same as that of the

2

open meshes in the remaining portions of the panels. The straight bars are unbent throughout their lengths and crimped strips are so cut at their ends as to continue their design over abutting strips.

The grating panels shown in the drawings demonstrate the principle of the invention. Each panel is composed of straight bars 1, arranged parallel to each other and separated by crimped strips 2 located one between each pair of parallel straight bars and fastened thereto at points of contact therewith. Rivets 3, 4 are commonly employed at the points of contact, as illustrated in the drawings, but welding may be used in place of rivets, if desired. Each panel is usually in the general shape of a rectangle of any desired length with a width depending upon the number of straight bars and crimped bars assembled together. A plan for a single panel is illustrated in Fig. 1 and interengaged panels are illustrated in Fig. 2.

As may be readily seen in Fig. 1, the odd-numbered straight bars are staggered with respect to the even-numbered straight bars and at one end of the panel every other straight bar has a length 5 which extends beyond the ends of the crimped strips. The staggering of alternate straight bars provides spaces 6 between the crimped strips 2 at one end of the panel for accommodating lengths 7 of straight bars of a similar grating panel corresponding in length with the length 5 of the straight bars which extend beyond the other end of the panel. All of the panels are interchangeable.

When the straight bars 1 and crimped strips 2 are assembled in the shop to form a panel, they are permanently joined together at all points of contact between straight bars and crimped strips. As they are laid in place a succeeding panel 8 is placed in abutting relation with a previously-laid panel 9, with the ends 10 and 11 of the straight bars of the respective panels 8 and 9 in an abutting or closely-abutting relation, Fig. 3. All of the ends of the straight bars of the adjoining panels are brought in the same relation, for example, as shown at 12 and 13. The lengths of the even-numbered bars 14, 15, 16 extend into the spaces between the crimped strips of the previously-laid panel 9. After adjacent panels have been placed together in this manner, field rivets, such as 17, 18, 19 are placed in holes previously provided in the bars and strips, or, if desired, welding connections may be used. The field rivets are shown in the drawing as not being upset. When the adjoining panels have been

connected together, the abutting ends of the straight bars may be welded together, as shown at 20, 21; and so also the abutting ends of the crimped strips, as shown at 22 and 23. The portions 24, 25 of the crimped strips which contact the straight bars are each approximately equal to half of the regular contacting portions 26. Because of the construction employed, the design of the meshes in the grating surface which are within or border the area of the joined ends of the bars and strips are not altered from the regular design of the open mesh throughout the constructed flooring. Neither the straight bars nor the crimped strips are required to be bent or distorted from their natural pattern.

While I have described in detail a panel construction having every other straight bar extending beyond the crimped strips at one end of the panel and ending short of the crimped strips at the other end of the panel it should be readily appreciated that the same principle would be employed in a panel having every other crimped strip extending beyond the straight bars at one end of a panel and ending short of the straight bars at the other end of the panel. So also, other than alternate straight bars or crimped strips could be staggered, if desired.

It is consistent with good design that the grating panels be so laid that the welded connections will overlie a beam, as shown in Fig. 2. It is, however, an important accomplishment of the present invention that the panels provide a means of splicing which affords as much strength at the splices as there is in the remaining portions of the grating structure.

A common form of grating structure employs crimped strips of less depth than that of the straight bars, as illustrated in Fig. 4, but it is to be understood that the invention disclosed herein is applicable with other designs of grating having bars and strips of other proportions and of different mesh design.

What is claimed is:

A composite open-mesh grating structure comprising a plurality of panels, each panel being

composed of straight bars arranged parallel to each other and separated by crimped strips located one between each pair of said parallel straight bars and fastened thereto at all points of contact therewith, said straight bars and crimped strips of the panels being in the form of standard structural shapes and all of the straight bars and crimped strips, respectively, of intermediate panels being in end-to-end relationship with the straight bars and crimped strips, respectively, of adjacent panels so that the straight bars are aligned and continuous over their ends and the crimped strips are aligned and continuous over their ends, welded joints between the ends of aligned straight bars and of aligned crimped strips, the straight bars and the crimped strips of each intermediate panel being arranged in two sets so that one set provides tenon connections at one end of each intermediate panel and the other set provides mortise connections at the other end of each intermediate panel whereby adjacent panels are adapted to be enmeshed, and means for securing together the mortise and tenon connections of adjacent panels, said last-named means being other than said welded joints, the panels of said grating structure being joined by said welded joints and by said last-named means in such manner that the grating structure has the same size meshes locally of the joined panel-ends as are contained in the remainder of the panels.

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