

April 25, 1939.

F. TENCH

2,155,694

GRATING

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Fig. 1.

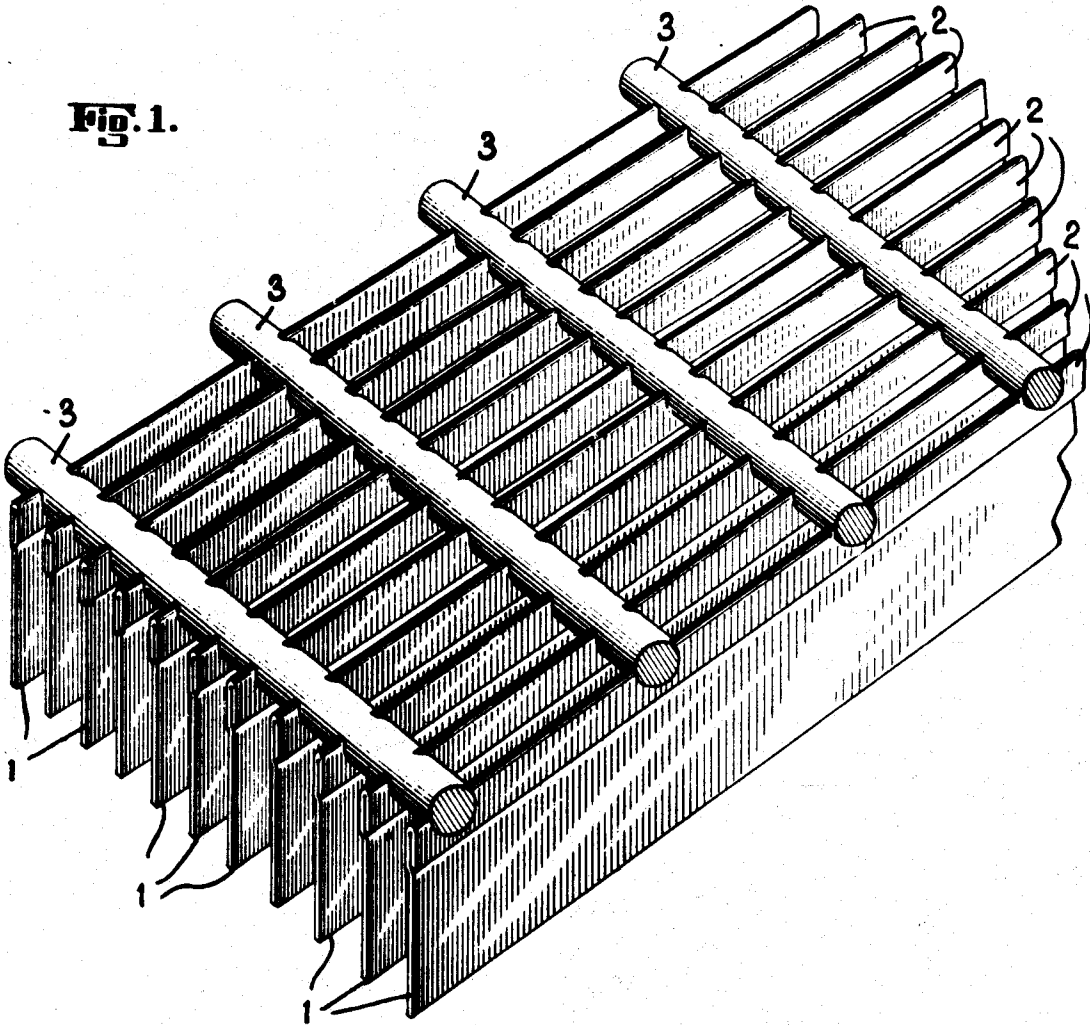


Fig. 2.

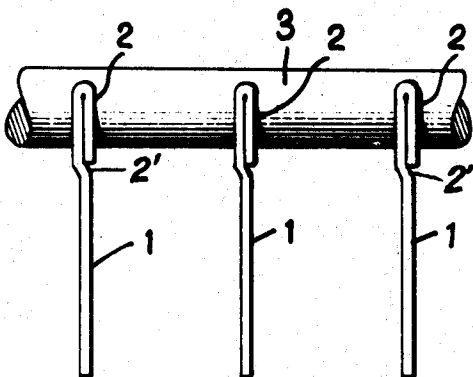
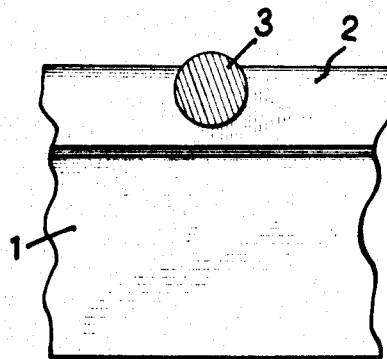


Fig. 3.



INVENTOR

Frederick Tench

BY

Townsend & Decker
ATTORNEYS

UNITED STATES PATENT OFFICE

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GRATING

Frederick Tench, White Plains, N. Y., assignor
to L. T. Corporation, a corporation of New
Jersey

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8 Claims. (Cl. 189—82)

This invention relates to metallic gratings particularly adapted for use as sidewalk or floor gratings and which comprise a plurality of spaced bearing members to which a plurality of spaced crossing members are welded or otherwise secured thereto to form a completed rigid structure.

The principal object of the invention is the production of a grating having a minimum weight of material with a maximum of strength.

A further object of the invention is the production of a grating of the character above described in which the parts employed therefor preferably are standard ones, such, for instance, as ordinary bars and rods of standard dimensions, so that no special manufacture or rolling of the parts making up the finished structure is necessary.

By preference, the bearing or longitudinal members of my improved grating comprise comparatively thin metal plates or bars disposed on edge so as to provide a maximum of resistance to force applied under compression. The upper edges of said bearing bars are preferably bent around or lapped or folded over on themselves in the manner to be presently described and as illustrated to provide a rounded enlargement on the upper edge thereby producing or securing a modified form of T-bar without the employment of a specially rolled bar. This rounded enlargement or head not only considerably increases the strength of the bearing member itself but also provides an abundance of material for the welding of the crossing members thereto and appreciably facilitates the welding operation. The head or enlargement, especially in the case of a sidewalk grating, obviously need be only on the upper edge of the bar or plate and the lower edge may be an integral part of and of uniform cross-section with the body or web portion of the member. It has been found in practice that under compression the bearing member without a head is susceptible to twisting or buckling under great stress but these disadvantages have been eliminated by the present invention. I have also found that when the present construction is employed it has been found feasible to eliminate a large number of bearing bars which would ordinarily be necessary, thereby decreasing the weight of the completed structure without sacrificing any of its strength. Also by providing a head I have found it possible to employ a small or thin gauge of metal bar which also appreciably decreases the weight of the completed structure.

In the accompanying drawing showing a practical illustration of the invention:

Fig. 1 is a perspective view of a portion of the completed grating.

Fig. 2 is an enlarged end elevation of a portion thereof.

Fig. 3 is a side elevation thereof.

Referring in detail to the drawing in which a practical embodiment of the invention is illustrated:

The web portions of the bearing bars are indicated at 1 while 2 indicates the head portions thereof. These bearing bars comprise flat thin metallic plates of standard size and form and the head members 2 thereof are produced by bending around or lapping or folding over on themselves and preferably into engagement therewith the upper ends of said plates to form the member illustrated whereby the heads 2 comprise a double thickness of metal. During the bending and folding operation longitudinal shoulders 2' are produced which lie adjacent the free edges of the bent ends of the web as shown in the drawing. Said heads 2 each has an upper curved or rounded edge or surface, the apex of which is in vertical alignment with the central vertical plane of the web 1 of the bearing bar to produce a balanced symmetrical member of stable equilibrium. These bearing bars or longitudinal members are preferably equidistantly spaced apart from each other and crossing members comprising rods or bars 3 of standard construction and size are welded or otherwise secured transversely thereto at spaced distances preferably by the electrical resistance welding method. The electrical welding is effected in such manner that the crossing rods or members 3 are embedded in the heads of the bearing bars with the exception of a small part only which lies in a plane slightly above the upper surfaces of the upper edges of the apices of the heads of said bearing bars to thereby provide a non-slip tread in the finished product.

It will be obvious from the above description that the grating produced according to the invention may be termed a "self-cleaning" one for the reason that the rounded heads 2 of the bearing bars and the rounded crossing or transverse members 3 provide surfaces over which dirt or other foreign matter will easily slide downwardly intermediate the interstices formed by the bearing bars and the crossing members. Furthermore, the heads of said bearing bars provide a shield for the web portions thereof so that dirt or foreign matter passing through the

interstices of the grating will be deflected by the heads away from the webs to prevent them from sticking to the webs and thereby obviate the clogging of the grating itself.

5 The enlargements or heads 2 of the bearing bars, in addition to providing an increased mass of metal for welding and strengthening the joint, also are useful in preventing the crossing members 3 from cutting into the webs 1 of the bearing
10 bars by the pressure applied by the welder during the welding operation which obviously would be objectionable. Also the increase of welded mass afforded by the enlargement of the bearing bars at their upper edges is useful in providing additional strength at this point where the grating
15 may be called upon to resist twisting and bending forces, and as already indicated, it avoids the weakening effect which would result from using a thin plate having no reinforcement at the edge where the weld is to be formed.

20 The bearing members constructed in the manner described are employed to produce a modified form of T-bar in order to obviate the expense of a specially rolled T-bar although it will be understood that the employment of a rolled T-bar for the bearing members is within the scope of my invention.

It will also be apparent that the structure described and claimed may be used in metallic structures other than gratings.

30 The invention claimed is:

1. A metallic grating provided with a plurality of spaced bearing bars comprising plates set on edge with the upper ends lapped or bent over to provide heads having a double thickness of
35 metal each having a free edge lying adjacent the bearing bar and a plurality of spaced crossing rods welded to said heads.

2. A metallic grating comprising a plurality of spaced plates forming bearing bars set on edge with their upper ends folded over to provide heads having rounded surfaces the apices of which lie substantially in alignment with a vertical plane taken through the centers of said plates and spaced crossing members embedded in and electrically welded to said heads.

3. A metallic structure provided with a plurality of spaced bearing bars comprising plates each having a web and a head integral therewith, said heads overhanging said webs and being
50 formed by bending over the upper ends of said plates to form a plurality of thicknesses of metal in substantial parallelism and spaced crossing

members welded to the heads of said bearing bars.

4. A metallic structure provided with a plurality of spaced bearing plates each having a web and a head integral therewith, said heads being rounded on their upper surfaces and overhanging said webs and being formed by lapping over the upper ends of said plates into engagement with the webs and spaced crossing rods embedded in and electrically welded to said heads.

5. A metallic structure provided with a plurality of spaced longitudinal bars of substantially the same width and depth throughout their lengths and each including a web member and an enlarged head integral therewith, said heads comprising the ends of said webs and being
15 formed by lapping over the ends of said webs whereby said heads are formed of a plurality of thicknesses of the metal of said webs and spaced crossing members welded to the heads of said longitudinal bars.

6. A metallic structure provided with a plurality of spaced longitudinal members comprising plates each having a web and a head integral therewith consisting of a lapped over end of the web, a shoulder on each of said webs positioned in juxtaposition to a free end of said webs and spaced crossing members welded to the heads of said longitudinal members.

7. A metallic structure provided with a plurality of spaced longitudinal bars of substantially the same width and depth throughout their lengths and each including a web member and an enlarged head integral therewith, said heads comprising the ends of said webs and being formed by lapping over the ends of said webs whereby said heads are formed of a plurality of thicknesses of the metal of said webs positioned in substantial parallelism with each other and spaced crossing members welded to the heads of said longitudinal bars.

8. A metallic structure provided with a plurality of spaced longitudinal bars of substantially the same width and depth throughout their lengths and each including a web member and an enlarged head integral therewith, said heads comprising the ends of said webs and being formed by lapping over the ends of said webs whereby said heads are formed of a double thickness of the metal of said webs engaging each other and positioned in substantial parallelism and spaced crossing members electrically welded within the heads of said longitudinal bars.

FREDERICK TENCH.