Oct. 23, 1951 W. A. BATES 2,572,431

ANCHOR FOR GRATINGS

Filed March 1, 1946

Fig. 1

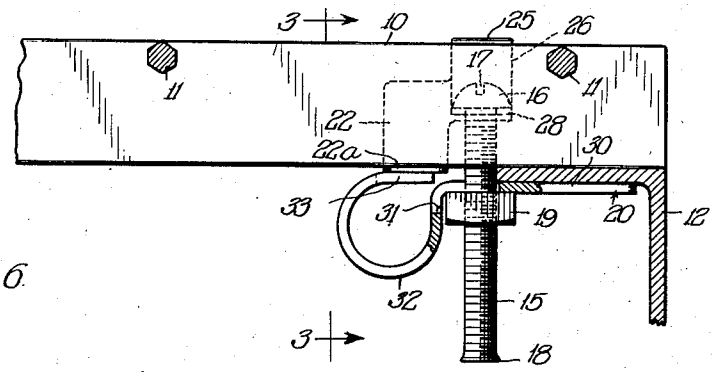
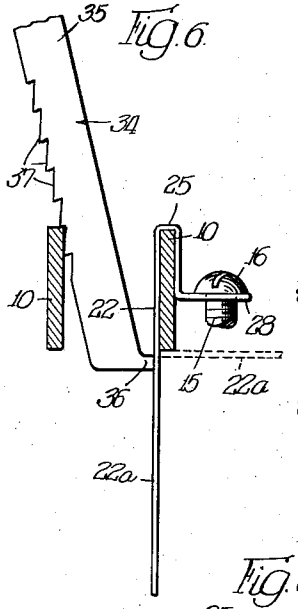


Fig. 6



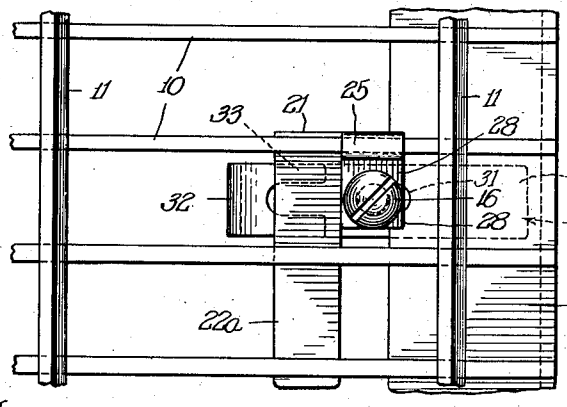


Fig. 2.

Fig. 3.

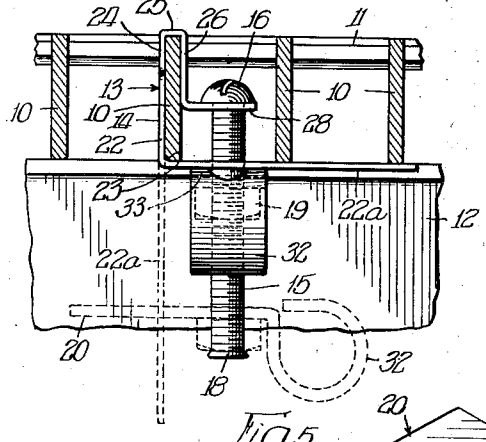


Fig. 4

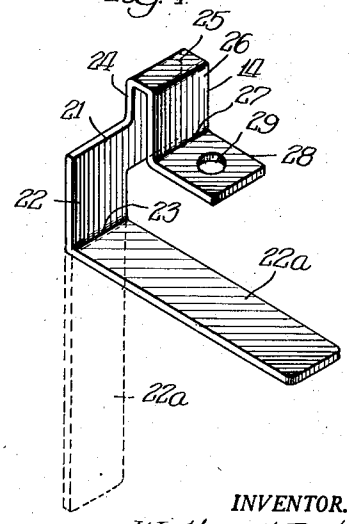
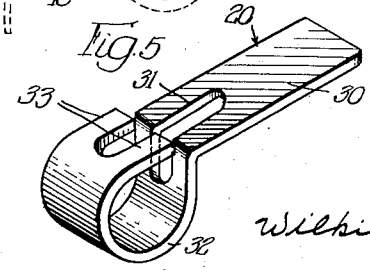


Fig. 5



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ANCHOR FOR GRATINGS

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5 Claims. (Cl. 189—84)

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The present invention relates to improvements in anchors for gratings.

More particularly the present invention relates to means for anchoring gratings such for example as those used in the floors of industrial plants and the like. Gratings of the kind referred to are commonly formed of a plurality of parallel bars called main bars, connected by means of cross bars, the assembly forming a unit adapted to be supported upon side members which may take the form of structural steel shapes of known contour.

An object of the present invention is to provide improved means for holding a grating securely in position upon a supporting member.

A further object is to provide an improved anchor which may be readily assembled and disassembled and which in service performs its function efficiently.

A further object is to provide an anchor which is made up of simple parts, which may be handled as a unit, and which is easy to install and release.

A further object is to provide an anchor for gratings well adapted to meet the needs encountered in service.

Further objects will appear as the description proceeds.

Referring to the drawings—

Figure 1 is a view in sectional elevation taken through a grating having applied thereto one embodiment of the present invention;

Figure 2 is a top plan view of the structure illustrated in Figure 1;

Figure 3 is a sectional view taken along the plane indicated by the arrows 3—3 of Figure 1;

Figure 4 is a perspective view of a holding member forming part of the structure illustrated in the preceding figures;

Figure 5 is a perspective view of a clamping member forming part of the structure illustrated in Figures 1 to 3;

Figure 6 is a view of a tool which may be used in bending the holding member illustrated in Figure 4.

The numerals 10—10 indicate the main bars of the grating, and the numerals 11—11 indicate cross bars which extend through apertures in the said main bars and hold said main bars securely in spaced parallel relationship. The top edges of said main bars 10—10 ordinarily lie in a single plane and the bottom edges of said main bars lie in another plane. The numeral 12 indicates an angle member presenting a horizontal surface for the reception of ends of the main bars 10—10.

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An anchor for holding the grating in position on the angle 12 is indicated as a whole by the numeral 13. Said anchor comprises the following parts: the holding member 14; the bolt 15 having the head 16 provided with the screwdriver slot 17, said bolt being upset at its other end 18; the nut 19; and the clamp 20.

The holding member 14 may be made of sheet metal which may be stamped out of a flat sheet and swedged into the shape illustrated in Figures 3 and 4. Said holding member 14 includes the cross member 21, having at one end thereof the downwardly extending leg 22, having the extension 22a adapted to be bent along the line indicated by the numeral 23. The other end of the cross member is provided with the upwardly extended leg 24, which is bent over to provide the flat portion 25. Said flat portion is bent downwardly as indicated by the numeral 26. Said leg 24 and the portion 26 are spaced apart a distance sufficient to receive a main bar 10. In other words a leg 24 and the portions 25 and 26 provide a U-shaped part adapted to infold the top portion of the bar 10. The portion 26 is bent along the line indicated by the numeral 27 to form the flange 28, said flange being provided with an aperture 29 for snugly receiving the bolt 15.

The numeral 20 indicates, as a whole, a clamp forming a part of the anchor 13. Said clamp 20 is preferably made of spring material and comprises the flat portion 30 having the slot 31 of a size sufficient to receive the bolt 15. The flat portion 30 at one end thereof is provided with the circularly formed portion 32, said circularly formed portion terminating in the two approximately parallel fingers 33—33 disposed in a plane preferably a little above the upper surface of the flat portion 30 of the clamp. The slot 31 preferably extends well into the portion 32 and the fingers 33—33 are spaced apart a distance greater than the diameter of the bolt 15 so that the member 20 may be tipped relative to the bolt 15 for convenience in assembly.

As indicated above, the anchor 13 will preferably be utilized as a unit, the bolt 15 being inserted in the aperture 29 in the holding member 14, and being disposed within the slot 31 in the clamp 20. The nut 19 will have been screwed upon the bolt 15 before the end 18 of said bolt is upset.

Figure 6 illustrates a tool which may be used in bending the extension 22a of the leg 22 about the

lower edge of a main bar 10, said tool, which is indicated by the numeral 34, includes the bar portion 35 provided with the foot 36 extending from one side of one extremity thereof. The opposite side of the bar 35 is provided with a plurality of notches forming teeth 36—36. As indicated in Figure 6, the foot 36 may be located against one side of the extension 22*a* at a region slightly below the bar 10. The next adjacent bar 10 will be engaged by one of the teeth 37—37 and the bar 35 may be swung to bend the extension 22*a* around the bottom of the bar 10 with which it is associated.

The method of installing the anchor 13 according to the present invention may be substantially as follows, reference being had, by way of example, to Figures 1 to 6.

The anchor will be inserted from above the grating. At this time the extension 22*a* of the leg 22 will be in substantially the same plane as said leg 22, that is—in the position indicated in broken lines in Figure 4. The clamp 20 will have the portion 30 thereof disposed in approximately parallel relationship with the main bars 10 so that the bolt 15 and the clamp 30 may be inserted between adjacent main bars 10—10, the leg 24 and the portion 26 being disposed in infolding relationship with one of the main bars 10, with the flat portion 25 engaging the top of said main bar. Inasmuch as the clamp 20 may be tipped relative to the bolt 15, interference with the edge of the angle member 12 and with a cross bar 11 may be avoided. The clamp 20 will then be turned about the axis of the bolt 15 through an angle of approximately 90° into the position indicated in broken lines in Figure 3. This clears the way so that the extension 22*a* of the leg 22 may be bent about the line 23, that is—about the lower edge of the cooperating main bar 10, whereby said extension 22*a* will be located in the position indicated in full lines in Figures 3 and 4 in a position approximately parallel with the flange 28. The clamp 30 will then be swung back into its position parallel with the main bars 10—10, that is—at right angles to the length of the angle member 12. The bolt 15 is then screwed through the nut 19, tightening the flat portion 30 of the clamp 20 against the underside of the extending portion of the angle member 12. The portion 32 of the clamp 20 is located sufficiently close to the bolt 15 to prevent turning of the nut 19 throughout any very considerable degree. In other words, though the slot 31 permits a certain amount of tipping between the clamp 20 and the bolt 15, said slot will not permit movement of the bolt to a sufficient distance toward the right as the parts are viewed in Figure 1 to allow the nut 19 to clear the portion 32 of the clamp 20.

The fingers 33—33 of the clamp 20 will engage the underside of the extension 22*a*, which is now in horizontal position engaging the undersurfaces of several of the main bars 10—10.

The invention has a number of practical advantages, among which may be mentioned the fact that the extension 22*a* of the holding member 14, being located against the undersides of several main bars 10—10, holds said clamping member 14 securely against vertical movement with respect to the grating. A further advantage resides in the fact that the horizontally disposed extension 22*a* forms a seat for the fingers 33—33 of the clamp 20. This balances the pressure on the clamp 20 created by the action of tightening against the undersurface of the angle member 12.

In practice, the thickness of the horizontal portion of the angle member 12 will vary. Consequently, the circularly formed portion 32 of the clamp 20 should be made large enough to take care of the greatest thickness likely to be encountered in the said angle member 12. By reason of resiliency of the circularly formed portion 32 of the clamp, the proper balance of pressure on said clamp is insured regardless of variations, within limits, in the thickness of the member 12.

By reason of the tipping relationship between the clamp 20 and the bolt 15 provided by the slot 31 and the slot between the fingers 33—33, movement of the anchor through the grating is greatly facilitated.

By reason of the fact that the bolt 15 fits snugly within the aperture 29, the advantage is had that when the bolt 15 is tightened, the flange 28 will be bent downwardly out of approximately parallel relationship with the extension 22*a* thereby pinching the bolt 15, thereby resisting any tendency of said bolt to loosen in service.

It will be understood, of course, that it is not necessary, in the practice of the present invention, to provide an elongated cross member 21 (Figure 4), it being perfectly feasible to have the extension 22 in line with the leg 24. In this case, at one or more of the bends such as at the line 27 and/or the line 23, and/or at the edges bounding the flat portion 25, there would be a slight offset so that by the time the member 22*a* is in the horizontal position illustrated in full lines in Figure 4, said member 22*a* would be sufficiently offset to clear the bolt 15. The same result may be attained by providing a loose fit between the leg 24 and the portion 26 with respect to the main bar 10 whereby the extension 22*a* may be moved to one side a sufficient distance to clear the bolt 15.

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. In an anchor, a clamp having an elongated flat portion and a curved portion, said curved portion being curved around an axis parallel with said flat portion and at right angles to the length of said flat portion, said clamp having an elongated slot disposed in said flat portion and extending into the adjacent part of said curved portion, the other extremity of said curved portion being flattened and being provided with a slot facing said first mentioned slot in said flat portion.

2. An anchor for a grating including, in combination, a holding member which includes a folded over portion adapted to infold the top portion of a bar of a grating, said folded over portion being provided with a flange having an aperture therein, said holding member being provided with an extension bendable into operative position approximately parallel with said flange, displaced from the projected area of said aperture, a bolt extending through said aperture, said bolt having a head and a clamp including a flat portion and a resilient curved portion at the end of said flat portion, said clamp at the junction of said flat portion and said curved portion being provided with a slot, the extremity of said curved portion being also provided with a slot, said first

mentioned slot receiving said bolt, said second mentioned slot being also adapted to receive said bolt, and a nut upon said bolt, said head of said bolt and said nut being adapted to apply clamping pressure on said holding member and said clamp when said holding member and said clamp are in operative position on said bar.

3. An anchor for a grating including, in combination, a holding member which includes a folded over portion adapted to infold the top portion of a bar of a grating, said folded over portion being provided with a flange having an aperture therein, said holding member being provided with an extension bendable into operative position approximately parallel with said flange, displaced from the projected area of said aperture, a bolt extending through said aperture, said bolt having a head and a clamp including a flat portion and a resilient curved portion at the end of said flat portion, said clamp at the junction of said flat portion and said curved portion being provided with a slot, the extremity of said curved portion being also provided with a slot, said first mentioned slot receiving said bolt, said second mentioned slot being also adapted to receive said bolt, and a nut upon said bolt, said first mentioned slot being so positioned as to hold said nut sufficiently close to said curved portion so that said curved portion will limit rotative movement of said nut, said head of said bolt and said nut being adapted to apply clamping pressure on said holding member and said clamp when said holding member and said clamp are in operative position on said bar.

4. An anchor for a grating including, in combination, a holding member which includes a folded over portion adapted to infold the top portion of a bar of a grating, said folded over portion being provided with a flange having an aperture therein, said holding member being provided with an extension bendable into operative position approximately parallel with said flange, displaced from the projected area of said aperture, a bolt extending through said aperture, said bolt having a head and a clamp including a flat portion and a resilient curved portion at the end of said flat portion, said clamp at the junction of said flat portion and said curved portion being provided with a slot, the extremity of said curved portion being also provided with a slot, said first mentioned slot receiving said bolt, said second mentioned slot being also adapted to receive said

bolt, and a nut upon said bolt, said bolt having a head provided with a screw-driver slot, the other end of said bolt being upset, said head of said bolt and said nut being adapted to apply clamping pressure on said holding member and said clamp when said holding member and said clamp are in operative position on said bar.

5. An anchor for a grating including, in combination, a holding member which includes a folded over portion adapted to infold the top portion of a bar of a grating, said folded over portion being provided with a flange having an aperture therein, said holding member being provided with an extension bendable into operative position approximately parallel with said flange, displaced from the projected area of said aperture, a bolt extending through said aperture, said bolt having a head and a clamp including a flat portion and a resilient curved portion at the end of said flat portion, said clamp at the junction of said flat portion and said curved portion being provided with a slot, the extremity of said curved portion being also provided with a slot, said first mentioned slot receiving said bolt, said second mentioned slot being also adapted to receive said bolt, and a nut upon said bolt, said first mentioned slot being so positioned as to hold said nut sufficiently close to said curved portion so that curved portion will limit rotative movement of said nut, said bolt having a head provided with a screw-driver slot, the other end of said bolt being upset, said head of said bolt and said nut being adapted to apply clamping pressure on said holding member and said clamp when said holding member and said clamp are in operative position on said bar.

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