This invention relates to improvements in grab iron constructions for railway cars and it consists of the matters hereinafter described and more particularly pointed out in the appended claims. The term "grab iron" as used herein is intended to include any hand hold or grab handle that is attached to a railway car for use by trainmen in boarding the car. The invention, however, is herein illustrated and will be hereinafter described as a grab iron for use on the roof of a freight car, but this is to be considered only in the illustrative sense and not by way of limitation.

One of the objects of the present invention is to provide a grab iron construction for use in connection with the lateral section of a grating type of running board for a railway car, which, though comprising but a few parts for simplicity, has a safety factor in strength beyond that required by safety appliance laws.

Another object of the invention is to provide a construction of this kind which provides a rigid support of maximum area on the running board section for the feet of the grab iron and whereby said feet may be rigidly secured to the board section without causing the lateral tipping of the bars of the section when the associated attaching bolt is drawn up tight.

Again, it is an object of the present invention to provide a grab iron construction that requires no special bolts or nuts for applying the same to a car and which may be used in a position directly over the running board supporting members on the associated car roof or in a position at one side thereof.

The above mentioned objects of the invention, as well as others, together with the advantages thereof, will more fully appear as the specification proceeds.

In the drawing:

Fig. 1 is a fragmentary plan view of one corner portion of a freight car roof and associated longitudinal and lateral running board sections thereof, with the improved grab iron construction incorporated therein.

Fig. 2 is a fragmentary plan view on an enlarged scale of parts appearing in Fig. 1 and which will be more fully referred to hereinafter.

Fig. 3 is a detail vertical sectional view through a part of the structure shown in Fig. 2, on a further enlarged scale, as taken on the line 3—3 of Fig. 2.

Fig. 4 is a view similar to Fig. 3 showing a modified form of grab iron construction embodying the invention.

Referring now in detail to that embodiment of the invention illustrated in the drawing, 10 indicates the roof of a freight car having a longitudinal running board 11 along its ridge and a lateral section 12. The last mentioned section 12 extends parallel with and adjacent one end 13 of the roof and is the one upon which trainmen walk to the running board 11 after boarding the car, by means of the usual ladder on the side of the car, in line with the outer end of the section 12.

The sections 11 and 12 of the running board are each of the open grating type and each includes a plurality of laterally spaced, edgewise disposed longitudinal bars 14 and a plurality of longitudinally spaced edgewise disposed cross bars 15.

The longitudinal bars are of an edgewise height greater than the cross bars which are so connected thereto that the top edges of both the longitudinal and the cross bars are disposed in the same plane. The bars 14 and 15 may or may not have serrated top edges and said bars may be operatively secured together in any approved manner. However, as the particular structure of the said bars and the manner of securing them together constitutes no part of the present invention, the same does not require a detailed description.

The longitudinal board comprises a plurality of sections, each having a bolted connection with supporting members 16 in turn fixed to the roof of the car. The lateral section 12 of the running board is supported in spaced relation above the roof by supporting members 17 and 17a, in the form of flat metallic straps, fixed at their inner ends to the roof 10 beneath one of the sections 11 of the longitudinal board. The outer end of the supporting members 17 and 17a are bent to pass above the eave of the car and then be suitably fastened to the car body.

18 indicates a grab iron of substantially an L shape having one leg 19 arranged transversely of the bars 14 and having the other leg 20 arranged parallel with said bars. The free end of each leg of the grab iron is formed with a downwardly offset apertured foot 21. The junction of the legs of said bar passes through an eye 21a provided with an apertured foot 22 similar to the foot 21 before mentioned. The feet 21 and 22 are flat circular ones of a diameter greater than the distance between two adjacent bars 14.

A plug or block 23 having a center hole, is fixed in the lateral section 12, one for each of the feet 21 and 22 respectively. Each block, as shown in Figs. 2 and 3 is disposed in the space between the two outermost adjacent bars 14 at each side of said lateral section so as to be disposed above the associated members 17—17a which support said section 12 in spaced relation above the car roof.

Each block which is square in plan, is of such a width that its opposite sides engage opposed faces of two adjacent bars 14—14. Each bar is of a thickness more than half the height of said bars 14 and portions of the sides of said
block are beveled to receive the welds 24 (see Fig. 3) which affix the block to said bars. The top surface of said block is disposed substantially flush with the top edges of said two adjacent bars.

In applying the grab iron, bolts 25 are inserted through holes in the supporting members 17—11a so as to extend up through said members, said bolts and the feet of the grab iron respectively. Thereafter a nut 26 is applied to the top threaded end of each bolt and is screwed downwardly thereon so as to secure the feet of the grab iron to the board section 12. The nuts 26 are drawn down tightly on the bolts so as to force the feet into tight engagement not only with and upon the top edges of the bars 14—14 but also with and upon the top surface of the blocks or plugs 23. Thereafter end of the bolt above the nut is upset to lock the nut in place.

It is pointed out that with the blocks 23 having a thickness greater than half the height of the bars 14—14 between which they are disposed, the bottom surfaces of said blocks are disposed below the longitudinal median line of the bars. Thus when the nut is drawn up tight on its bolt, the blocks so hold the bars 14—14 that their bottom margin cannot spread outwardly under bolting pressure. Thus while welds 24 are used to attach the blocks 23 to the board section 12 as before mentioned, said welds are not so arranged as to require the same to support the weight of a trainman while boarding a car to which the improved grab iron has been applied nor is the grab iron dependent entirely on the weld for its support.

In some instances railroads may require a grab iron of a different dimension so that its feet will not be disposed over the supporting members 17—11a but will be disposed in spaces between two adjacent bars 14—14, arranged inwardly from the outermost spaces as heretofore described. In order to provide a suitable abutment for the head of the nut, under such conditions, a bridge piece in the form of a washer 27 is positioned against the bottom edges of the two adjacent bars, all other parts being the same as heretofore described. This arrangement appears in Fig. 4. Said bridge piece or washer then functions as the shoulder or stop for the bolt head.

The blocks or plugs 23 mentioned provide additional area of support for the feet of the grab iron so that when the nuts 26 are drawn down tight on the bolts 25, said feet have a good firm seating engagement with the lateral board 12 as a whole. Thus the grab iron cannot work loose under the jarring and jolting the car receives under actual road conditions.

The structure involved is a simple one and it provides a strong grab iron, having a safety factor beyond that required by safety appliance rules and regulations. It is a vital piece of equipment where failure may mean death or serious injury to the trainman. Hence, its simple rugged character is a distinct improvement contributing to safety.

While in describing the invention, I have referred in detail to the form, arrangement and construction of the parts involved, the same is to be considered only in the illustrative sense so that I do not wish to be limited thereto except as may be specifically set forth in the appended claims.

I claim as my invention:

1. In combination with a running board or the like for a railway car that embodies therein laterally spaced, substantially parallel bars, means disposed between and welded at opposite sides to opposed faces of two adjacent bars with its top surface substantially flush with the top surfaces of said two adjacent bars, a grab iron or the like including a foot engaged with said top surface of said first mentioned means and with the top surface of said two adjacent bars, a member engaged with the bottom surface of said two adjacent bars and disposed below said first mentioned means, and means extending through said first mentioned means, said foot and said member respectively for securing them together in operative relation.

2. In combination with a running board or the like for railway cars that embodies therein laterally spaced, substantially parallel, vertically edgewise disposed bars, a block-like element disposed to opposed faces of two adjacent bars, said block-like element having such a configuration that its bottom surface is below the median line of said opposed faces when its top surface is substantially in the plane of the edge of said two adjacent bars, a grab iron or the like including a foot engaged upon said top surface of said block-like element and with the top edge of said two bars, a member engaged with the bottom edge of said two adjacent bars, and means extending through said member, said block-like element and said foot respectively for securing them together in operative relation.

3. In combination with a running board or the like for a railway car that embodies therein laterally spaced, substantially parallel, vertically edgewise disposed bars, means disposed between and fixed to opposed faces of two adjacent bars with its top surface flush with the top edge of said two adjacent bars, a grab iron or the like having a foot engaged with said top surface of said means and with the top edge of said two adjacent bars, a member engaged with the bottom edge of said two adjacent bars below said first mentioned means, and means extending through said first mentioned means, said foot and said member respectively for securing them together in operative relation.

4. In combination with a running board or the like for a railway car that embodies therein laterally spaced, substantially parallel, vertically edgewise disposed bars, means disposed between and fixed to opposed faces of two adjacent bars with its top surface flush with the top edge of said two adjacent bars, a grab iron or the like having a foot engaged with said top surface of said means and with the top edge of said two adjacent bars, a member adapted to support said running board or the like in spaced relation above the roof of a railway car and with which the bottom edge of said two adjacent bars engage, and means extending through said first mentioned means, said foot and said member respectively for securing them together in operative relation.

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