United States Patent [19]

DiGiovanni

[11] **3,740,022**

[45] **June 19, 1973**

[54] **LOADING DOCK SAFETY GUARD**

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[22] Filed: **Feb. 14, 1972**

[21] Appl. No.: **226,150**

[52] **U.S. Cl.** **256/24,** 256/59, 256/65

[51] **Int. Cl.** **E04h 17/14**

[58] **Field of Search** 256/24, 59, 65, 21, 256/22, 66–70; 182/113, 106

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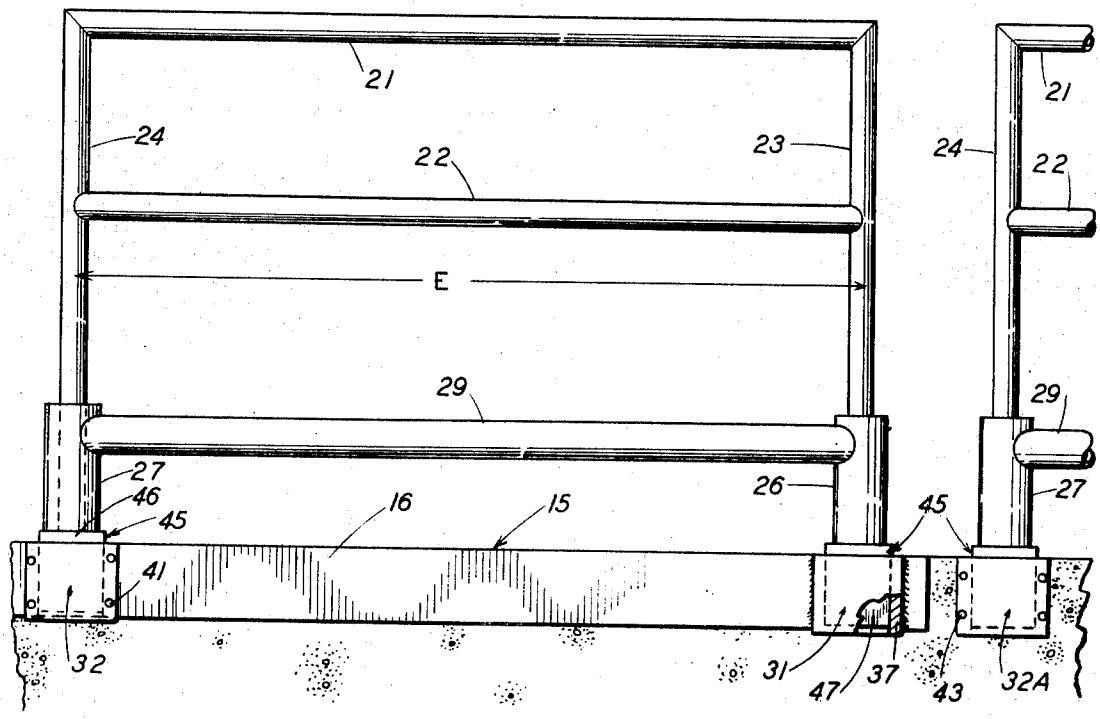
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[57] **ABSTRACT**

A spaced pair of U-shaped anchor receptacles is fixed to the side of the loading dock and a short sleeve rises from each receptacle. The sleeves are hollow to accept a fence section with a horizontal railing at a low position and a second horizontal railing at a high position, the high and low railings guarding against people and equipment overstepping the dock.

6 Claims, 6 Drawing Figures



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FIG. 1.

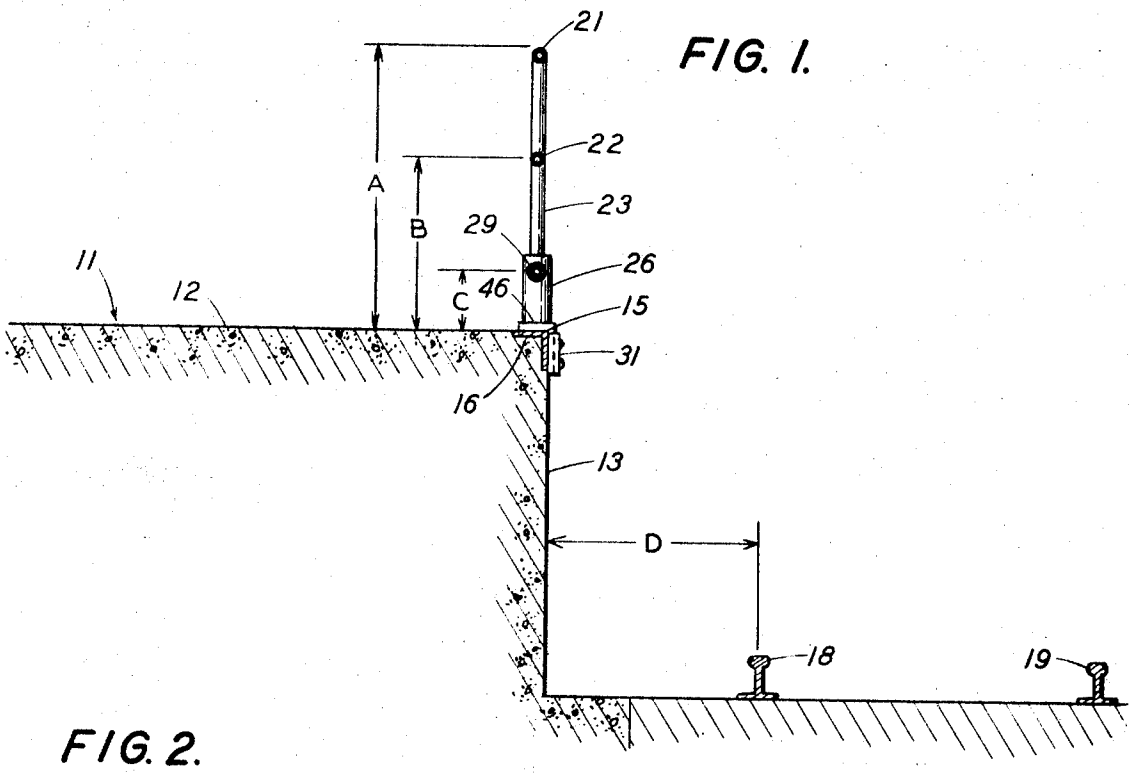
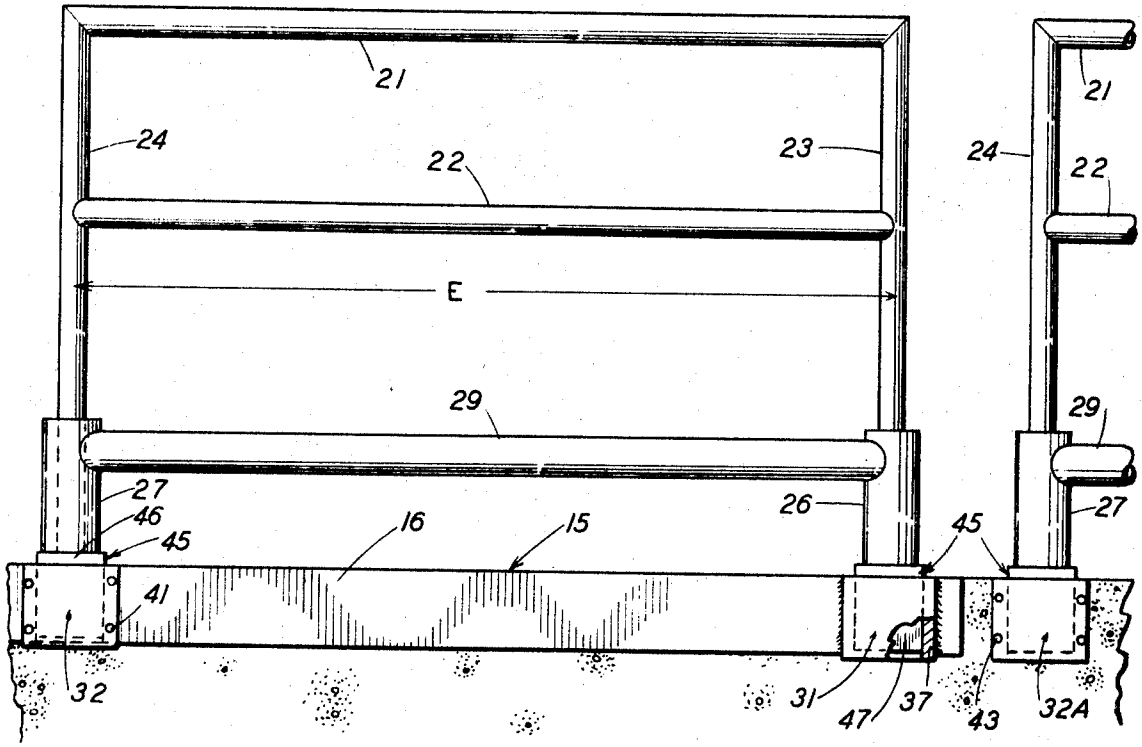


FIG. 2.



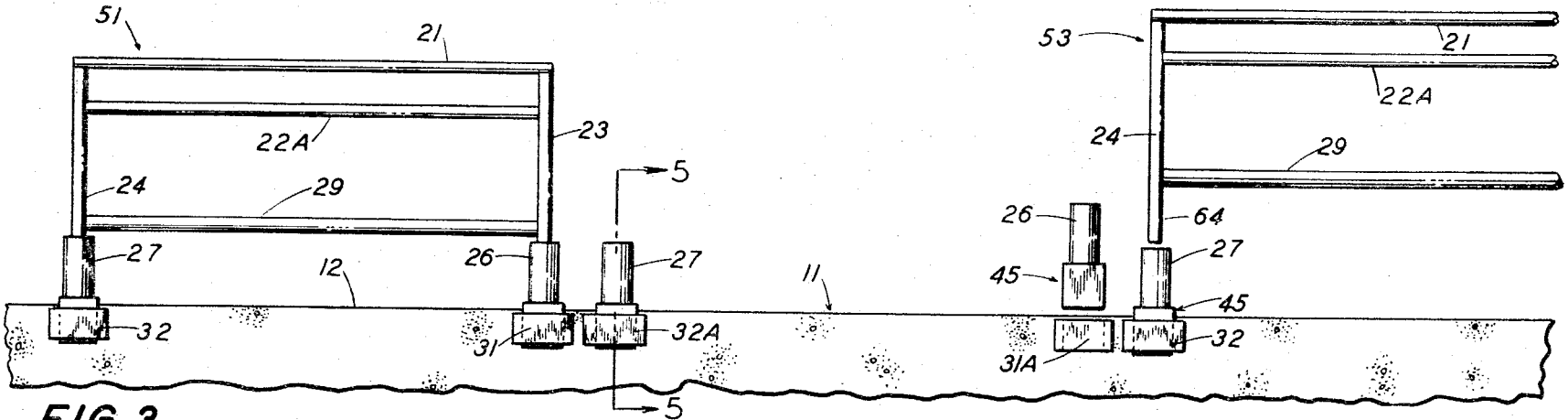


FIG. 3.

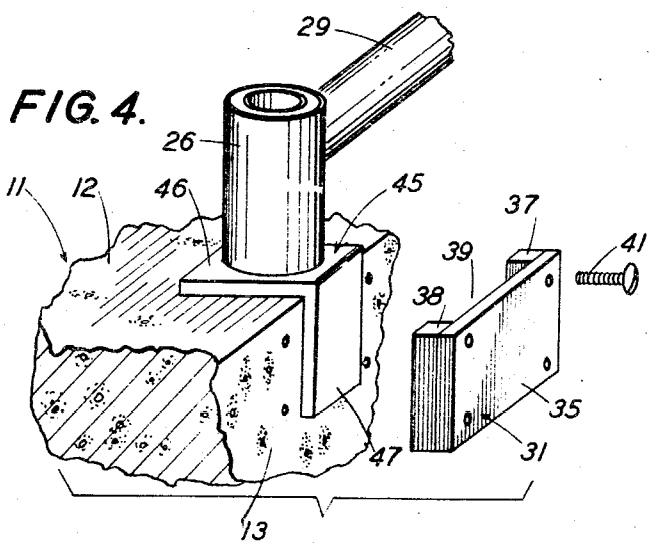


FIG. 4.

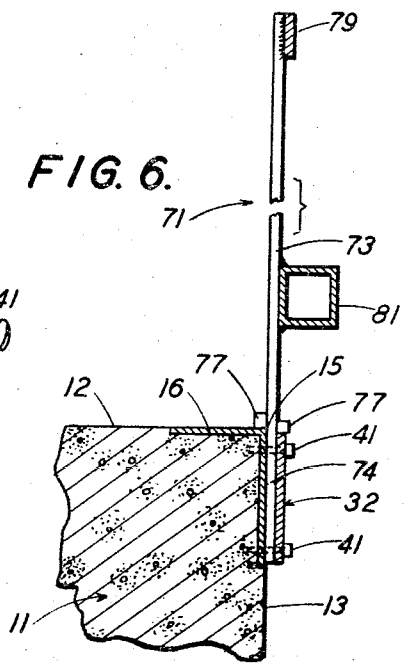


FIG. 6.

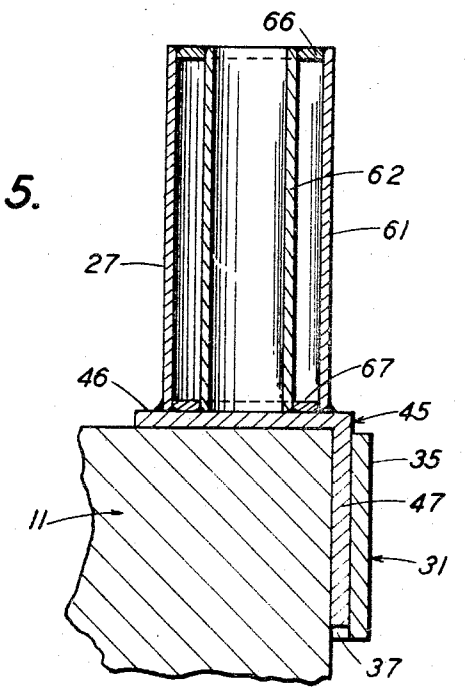


FIG. 5.

LOADING DOCK SAFETY GUARD

BACKGROUND OF THE INVENTION

The invention relates to guard rails and particularly to removable guard rails for loading docks.

Demountable rail fences, such as that disclosed by McElroy in U.S. Pat. No. 3,374,986 issued Mar. 26, 1968 entitled "Demountable Rail Fence," have been successful in their particular field. However, none has previously been applicable to guard rails for loading docks because of the particular problems of such docks. Among the problems is the necessity for providing guard rail mounting apparatus which protrudes only a minimum distance into the space beyond the loading dock because of needed clearance distances between the edge of the dock and such facilities as railway sidings and truck maneuvering areas. The guard rail must guard against accidental displacement from the dock not only of stacked merchandise but of mechanical equipment such as forklift trucks and of laboring personnel. The amount of bend resistance necessary to restrain by a forklift truck is greater than that necessary to retain a worker, so preferably differing strength characteristics may be provided in the horizontal guard rails adapted to prevention of falling of these two classes. Additionally, the guard rail designs must meet the safety standards of various regulatory governmental bodies and still remove easily and replace quickly so that the dock can be used to its fullest capacity for loading and unloading.

The invention provides a legislatively acceptable guard rail which meets safety requirements without inhibiting the utility of the dock.

SUMMARY OF THE INVENTION

The invention contemplates a loading dock safety guard which comprises shallow attachment receptacles fixed to the dock near its outer edge as defined by the dock deck and the dock vertical face. Pluralities of pairs of attachment receptacles may be spaced along the dock edge. Each attachment receptacle receives guard anchor portions which may comprise an L-shaped flange having a hollow sleeve fixed thereto in vertical orientation. A vertical post rises from each anchor portion and an upper horizontal guard rail extends between the vertical posts of an attachment receptacle pair. A lower guard rail is fixed between the spaced pair of guard anchor portions. Preferably the lower horizontal guard rail is more resistant to bending than the upper guard rail.

The attachments, the anchors, the vertical posts and the horizontal guard rail are easily detached one from the other. Preferably the attachment receptacles are on the vertical face of the dock slightly below the dock front edge, which is usually defined by either an elongate angle iron flush with the deck and the face or a substantial wooden beam.

The safety guard of the invention affords a substantial safety device easily removable from the dock edge which can be fabricated from readily obtainable structural materials. These and other advantages of the invention are apparent from the following detailed description and drawing.

BRIEF DESCRIPTION OF THE DRAWING

FIG. 1 is a fragmentary transverse sectional view of a dock equipped with the safety guard of the invention;

FIG. 2 is a fragmentary front elevation of the embodiment of FIG. 1;

FIG. 3 is a fragmentary front elevation of a dock showing the elements of the invention in differing attitudes of assembly;

FIG. 4 is a fragmentary exploded perspective view of the dock attachment receptacle and anchor of the invention;

FIG. 5 is a fragmentary sectional elevation taken along line 5—5 of FIG. 3; and

FIG. 6 is a fragmentary sectional elevation, similar to FIG. 5, of an alternate embodiment of the invention.

In the various Figures like reference characters are used to denote like elements.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

FIG. 1 shows in cross-section a conventional dock installation wherein a dock **11** has a deck **12** and a vertical face **13** which define an edge **15** protected by an angle iron sheath **16** which may extend the length of edge **15.** The dock **11** is served by a railway siding indicated by the spaced rails **18, 19.** The dimension D between rail **18** and face **13** is conventionally a standard spacing for clearance between the dock and railroad cars on the rails. The dock height is conventionally determined by the railway car floor. Clearances and dock height may vary where the dock is designed to service trucks, although most truck beds have a height commensurate with that of the floor of railroad cars. In either instance, the space outward from face **13** is usually restricted and projection beyond the dock face is undesirable.

In FIGS. **1, 2,4** and **5** an embodiment of the loading dock safety guard of the invention is shown. An upper horizontal guard rail **21** and an intermediate horizontal guard rail **22** are supported on vertical posts **23, 24** which are removably seated in vertical anchor sleeves **26, 27,** respectively. A lower guard rail **29** is fixed at each of its ends to the vertical sleeves **26, 27.**

Normally the height A of the upper rail **21** is about 43 inches, although this dimension varies with different installations. Preferably the height B of intermediate rail **22** above the deck **12** is about half way between upper rail **21** and lower rail **29.** The lower rail is a distance C above the deck which may be **10** to **14** inches. A pair of anchor receptacles **31, 32** is fixed to the dock edge. The spacing between receptacles varies with the installation, although it may average six to eight feet. As can be seen from FIG. **4,** each receptacle has the horizontal configuration of a shallow U and may be made from a front plate **35** and parallel spacer plates **37, 38.** The three plates combine to define an anchor cavity **39.**

The receptacles **31, 32** may be secured to the dock edge **15** in various ways. In FIG. **2** the dock edge is shown as shielded for part of its length by angle iron sheath **16.** Receptacle **31** is joined to the sheath by welding, as indicated in FIG. **2.** Alternatively the sheath may be secured by a plurality of screws **41** threadably secured in the sheath angle iron or be concrete anchor bolts **43,** as in the case of receptacle **32A** of FIG. **2,** shown secured directly to the concrete face **13.**

Each vertical sleeve **26, 27** of the embodiment of FIG. **1** is secured to an L-shaped angle **45.** The angle has a horizontal base plate **46** and a downward web **47.** In each instance the web **47** fits removably into the an-

chor cavity 39 of the receptacle and is thereby anchored to the deck at its edge.

The guard anchor of the embodiment of FIG. 1 therefore comprises the angle 45, the sleeves 26, 27 and the guard anchor pairs are connected by lower guard rail 29. Preferably the pairs of anchor receptacles are uniformly spaced along the dock edge so that the vertical post and rail assemblies may be used interchangeably between pairs of anchor receptacles.

FIG. 3 illustrates the elements of the invention in various attitudes of assembly. A post and rail assembly 51 at the left of FIG. 3 is different from the previously described post and rail assemblies in that the intermediate horizontal rail 22A is closer to the top rail 21A and lower guard rail 29A is fixed between the vertical posts 23, 24 instead of between the vertical sleeves 26, 27, as in the embodiment of FIG. 1. The post and rail assembly 51 is in place in the anchors which are retained within the receptacles 31, 32. To the right of FIG. 3 a post and rail assembly 53 similar to the assembly 51 is shown elevated from the anchor and sleeve 27 such that the assembly is free to be removed from the edge of the dock. A pair of anchor receptacles 31A, 32A are shown intermediate assemblies 51 and 52 with the post and rail assembly completely removed. Additionally, rightward anchor assembly of sleeves 26 and angle 45 has been removed from receptacle 31A, thus illustrating that the dock deck 12 can be completely cleared, if desired, in a short time interval with the apparatus of the invention. Naturally, the anchors and post and rail assemblies can, with equal facility, be restored to the pairs of anchor receptacles in short order.

FIG. 5 shows in detailed cross-section a preferred construction for the sleeves, such as the sleeve 26 of that Figure. The anchor angle iron 45 is shown at the edge of the dock 11 with its downward web 47 retained between front plate 35 and side retainers, such as retainer 37. Sleeve 26 comprises an outer hollow cylinder 61 and an inner hollow cylinder 62. The inner cylinder receives the lower portion of the vertical posts like portion 64 of FIG. 3. Outer cylinder 61 may be welded at its bottom edge to the base plate 46 of the anchor angle iron. Annular spacers 66, 67 at the top and bottom, respectively, of the sleeve may be welded to the cylinders to maintain central registry for the inner cylinder 62.

Such construction achieves a rigid sleeve with minimal weight and utilizes easily assembled conventional supplies.

Ease of fabrication is also an advantage of the alternate embodiment of FIG. 6, wherein a dock safety guard generally designated 71 is fragmentarily shown in section. The dock safety guard is fixed at an edge 15 of a dock 11 shown fragmentarily. The dock has a deck 12 and a vertical face 13. An anchor receptacle similar to the receptacle 32 of FIG. 2 is fixed near the dock edge by fasteners like the fasteners 41. A vertical post 73 has an anchor portion 74 comprised of a downward post portion 76 and a pair of horizontal stops 77. The stops are on opposite sides of post portion 76 such that they may register against deck 12 and the top of anchor receptacle 32 to retain the vertical post in proper orientation within the receptacle. Either one or both of the stops 77 may be used.

A horizontal guard rail 79 extends between spaced vertical posts, like the post 73. It may be welded or otherwise attached to the post 73. A lower guard rail 81, which may be of square tubing, is secured to the lower portion of the vertical post above the stops 77.

As in the previously described embodiments, the lower guard rail is preferably capable of resisting bending to a greater degree than the upper guard rail, since the lower guard rail is to retain wheeled equipment on the dock.

An intermediate quard rail between the upper and lower rails may be used, but is not shown in FIG. 6.

The illustrative embodiments described herein portray the ease of fabrication and of installation of the dock safety guard of the invention. While various embodiments have been shown and described, it is evident that other variations within the scope of the invention will occur to those skilled in the art. It is therefore desired that the invention be measured by the appended claims rather than by the illustrative embodiments above.

I claim:

1. A dock safety guard for removable attachment at the outer edge of a loading dock having said edge defined by a vertical face and a horizontal deck, the combination comprising at least one pair of spaced anchor receptacles secured to the dock; a pair of guard anchors each having a base plate adapted to seat on the dock deck, a depending web adapted to seat in the receptacle and an upwardly extending sleeve; a vertical post removably fitted into the sleeve of each guard anchor, a lower guard rail, means securing the lower guard rail with respect to the anchor receptacles, and an upper guard rail extending between vertical posts, said upper guard rail and posts being removable from said anchor receptacles.

2. A dock safety guard in accordance with claim 1 wherein the means securing the lower guard rail with respect to the anchor receptacles is means fixing each end of the lower guard rail to the vertical post adjacent the guard anchor.

3. A dock safety guard in accordance with claim 2 wherein the lower safety rail has a greater resistance to bending than the upper guard rail.

4. A dock safety guard in accordance with claim 1 wherein said guard anchors are removable from said anchor receptacles.

5. A dock guard in accordance with claim 1 wherein each receptacle comprises a vertical plate, a side retainer at each vertical edge of the plate and means for attaching the receptacle to the vertical surface of the dock.

6. A dock guard in accordance with claim 1 wherein the lower guard rail is fixed at its ends to each of a pair of guard anchors, the lower guard rail having greater resistance to bending than the upper guard rail.

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