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MOBILE RAILING ASSEMBLY FOR TRAILERS

Abstract

A railing assembly for use with a flatbed trailer is disclosed. The railing assembly includes cooperable posts extending in an upwardly direction and a plurality of elongated members extending laterally between the cooperable posts. Each of the cooperable posts is supported on a caster system that includes a plurality of casters enabling rolling movement of the railing assembly relative to the flatbed trailer. A connector system is slidably engaged with any of said cooperable posts enabling adjustment of the height of the connector system. The ability to adjust the height of the connector system enables engagement with a variety of flatbed trailer having varying heights and sizes for securing said railing assembly to the flatbed trailer.

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Background/Summary

PRIOR APPLICATIONS [0001] The present application claims priority to U.S. Provisional Patent Application No. 63/645,977 filed on May 13, 2024 and to U.S. Provisional Patent Application No. 63/551,783 filed on Feb. 9, 2024, the contents each of which are incorporated herein by reference.

TECHNICAL FIELD

[0002] The present invention relates generally towards a rail assembly for trailers. More specifically, the present invention relates towards a mobile rail assembly for trailers.

BACKGROUND

[0003] Ever-evolving health and safety standards for employees has made it increasingly necessary to adopt safety measures to prevent workplace injuries. One such example for increased safety measures is the need to prevent employees from falling off flatbed trailers and the like. A railing system has been developed to attach to such flatbed trailers and is disclosed in U.S. Pat. No. 11,591,029, the contents of which are included herein by reference. The system has proven to enhance employee safety and is adjustable to meet the needs of various sized flatbed trailers. However, using the system is known to be somewhat slow due to installation requirements. Specific instances involve multiple uses on large numbers of trailers loading and offloading and in a single truck bay. Therefore, it would be desirable to develop a system that is more quickly adapted for frequent use on a variety of flatbed trailers.

[0004] As such, a need exists for an improved, more rapidly attachable railing system for flatbed truck that provides flexibility for use with a variety of different sized flatbed trucks.

SUMMARY

[0005] A railing assembly for use with a flatbed trailer is disclosed. The railing assembly includes cooperable posts extending in an upwardly direction and a plurality of elongated members extending laterally between the cooperable posts. Each of the cooperable posts is supported on a caster system that includes a plurality of casters enabling rolling movement of the railing assembly relative to the flatbed trailer. A connector system is slidably engaged with any of said cooperable posts enabling adjustment of the height of the connector system. The ability to adjust the height of the connector system enables engagement with a variety of flatbed trailer having varying heights and sizes for securing said railing assembly to the flatbed trailer.

[0006] The addition of the caster system and universal connector system enables the railing assembly to be rapidly moved between flatbed trailers and rapidly connected to the trailers without securing and disassembling individual posts with each flatbed trailer between uses.

[0007] Any of the above aspects can be combined in full or in part. Any features of the above aspects can be combined in full or in part. Any of the above implementations for any aspect can be combined with any other aspect. Any of the above implementations can be combined with any other implementation whether for the same aspect or a different aspect.

Description

BRIEF DESCRIPTION OF THE DRAWINGS

[0008] Advantages of the present disclosure will be readily appreciated as the same becomes better understood by reference to the following detailed description when considered in connection with the accompanying drawings.

[0009] FIG. 1 shows a partially assembled front view of the assembly of the present invention;

[0010] FIG. 2 shows a fully assembled front view of the assembly of the present invention;

[0011] FIG. 3 shows a slot defined by a post of having a strap passing therethrough;

[0012] FIG. 4 shows a post and a hook affixed to a distal end of a strap prior to engagement with an

aperture defined by the post;

[0013] FIG. 5 shows a post and a hook affixed to a distal end of a strap after engagement with an aperture defined by the post;

[0014] FIG. 6 shows a ratchet used to tighten a strap;

[0015] FIG. 7 shows a strap passing through a loop;

[0016] FIG. 8 shows a tube prior to engagement with a tube bracket;

[0017] FIG. 9 shows a tube after engagement with a tube bracket;

[0018] FIG. 10 shows one embodiment of the connector of the present invention;

[0019] FIG. 11 shows an alternative embodiment of the connector of the present invention;

[0020] FIG. 12 shows another view of the alternative embodiment of the connector of FIG. 12 attached to a trailer; and

[0021] FIG. 13 shows an alternative embodiment of the rail assembly having an upper tube and a lower tube extending between the posts.

DETAILED DESCRIPTION

[0022] Referring to FIGS. 1 and 2, the rail assembly of the present invention is generally shown at **10**. The rail assembly **10** includes a plurality of cooperable posts **12** extending in a vertical direction. A caster system **14** supports each of the posts **12**. Each caster system **14** defines a caster frame **16** oriented in a horizontal direction interconnecting spaced first and second caster wheels **18**. A caster support **20** extends upwardly from each caster frame **16** and presents an extension **22** extending vertically to each post **12** so that the post **12** is supported by the caster frame **16** in a vertical orientation.

[0023] A plurality of elongated members **24** extend laterally between the cooperable posts **12**. The elongated members **24** are formed from one of a flexible strap **26** (FIG. 2) or a rigid tube or rod hereinafter referred to rigid members **28**. It should be understood that the rigid members **28** may define an annular cross section, a square cross section, or any other cross section suitable for providing a rigid structure extending between each post **12**. Each rigid member **28** is releasably affixed at opposing ends to one of the cooperable posts **12** as will be explained further hereinbelow. Likewise, each strap **26** is releasably affixed at opposing ends to one of the cooperable posts **12** as will also be explained further hereinbelow.

[0024] A connector system **30** is slidably received by each of the posts **12**. The connector system **30** includes a plurality of connector elements **31**, each of which is configured to slide in a vertical direction on one of the cooperable posts to facilitate engagement with a slot defined by a flatbed trailer to interlock the rail assembly **10** to the flatbed trailer. Thusly, the rail assembly **10** extends along a length of the flatbed trailer for reducing likelihood of an operator falling from the flatbed trailer. It should be understood by those of ordinary skill in the art, some, or even all of the posts **12** include a slidable connector element **31**, the number of which is selected to adequately secure the rail assembly **10** to the flatbed trailer.

[0025] Referring now specifically to FIG. 2, each strap **26** extends between distal **12a** and proximal **12b** posts presenting a safety rail when the assembly **10** is secured to a flatbed trailer. In one embodiment, an upper strap **26a**, a middle strap **26b**, and a lower strap **26c**, extend in a parallel relationship between the distal **12a** and proximal **12b** posts. As shown in FIG. 3, each strap **26** passes through a slot **32** defined by a center post **12c** when extended between the distal post **12b** in the proximal post **12b**.

[0026] As best represented in FIG. 4 and FIG. 5, a distal strap end **34** includes a clasp **36**, in one embodiment in the shape of a hook, that engages an aperture **38** defined by the distal post **12b**. The clasp **36** is optionally permanently affixed to each strap **26**. Alternatively, each strap includes Velcro, snaps or the like to releasably engage the strap **34** to the clasp **36**.

[0027] Referring now to FIG. 6, a proximal strap end **40** is shown secured to the ratchet **42**. The ratchet **42** is affixed to a ratchet bracket **44** that is in turn affixed to the proximal post **12a** by way of weld, rivet, or alternative fastener. Once the distal strap end **34** is secured to the distal post **12b** via

the clasp **36**, the ratchet **42** is used to tighten the strap **26** between the proximal post **12a** and the distal post **12b** in a known manner. It should be understood by those of ordinary skill in the art that each of the straps **26a**, **26b**, **26c** include a clasp **36** and a ratchet **42** as described hereinabove. [0028] Referring now to FIG. 2 and FIG. 7, a plurality of spacers **46** extend perpendicular to the straps **26**. The spacers **46** each define a plurality of loops **48** equal to a number of straps **26** extending between the post **12**, in this embodiment three, although more or less straps **26** may be included in alternative embodiments. Therefore, each strap **26** passes through one of the loops **48** when being extended between the proximal post **12a** and the distal post **12b**. The loops **48** are spaced to be disposed at a same height as each of the straps **26** extending between proximal post **12a** and the distal post **12b**. Thus, the loops **48** maintain consistent spacing between adjacent straps **26** in a vertical direction. In one embodiment, two spacers **46** are disposed between adjacent posts **12**. Alternatively, more or less spacers **46** may be disposed between adjacent posts **12**. Further, the spacers **46** are slidable along the straps **26** so that each spacer **46** maybe positioned the predetermined location.

[0029] Referring to FIG. 8 and FIG. 9, each rigid member **28** is releasably attached to adjacent of the posts **12**. A tube bracket **50** receives an end of each of rigid member **28** so that cooperative apertures **52** of the tube bracket **50** and the rigid member **28** align to facilitate installation of a fastener or pin **54**, the installation of which secures the rigid member **28** end to its respective post **12**. It should also be understood that the rigid member **28** and bracket **50** combination may replace one or more of the straps **26** in an alternative embodiment. Still further, it is within the scope of this invention that the rigid member **28** and bracket **50** combination may replace all of the straps **26** so that the entire assembly **10** takes on a rigid structural form. The rigid members **28** maintain a constant distance between each of the posts **12a**, **12b**, **12c**. Thus, in one embodiment the uppermost elongated member **24** and the lower most elongated member **24** may both be rigid members **28**

[0030] Referring to FIG. 10 and FIG. 11, each of or some of the posts **12** include the connector **30**. In one embodiment, the connector **30** includes an upper connector element **56** and a lower connector element **58**. The upper connector element **56** includes opposing arms **62** defined by an upper horizontal element **64** at an upper vertical element **66** that extends downwardly from the upper horizontal element **64** at a location spaced a first distance from a sliding member **68** that receives post **12**. Likewise, the lower connector element **58** includes opposing arms **70** defined by the lower horizontal element **72** and a lower vertical element **74** that extends downwardly from the lower horizontal element **72** at a location spaced a second distance from a lower sliding member **76**. It should be readily apparent by viewing FIG. 9, that the first distance is less than the second distance enabling the upper connector element **56** to interconnect with a first configured slot defined by a flatbed trailer and the lower connector element **58** to interconnect with a second configured slot defined by a different flatbed trailer. Thus, the assembly **10** may be secured to two or more different styles of flatbed trailers.

[0031] Depending upon configuration of the flatbed trailer, the upper connector element **56** is slid upwardly on the post **12** so one of the upper opposing arms **62** may engage the slot defined by the flatbed trailer. Alternatively, both the upper connector element **56** and the lower connector element **58** is slid upwardly so that one of the lower opposing arms **70** may engage the slot defined by the flatbed trailer while the upper connector element **56** rests in a disengaged disposition on top of the lower connector element **58**.

[0032] An alternative connector element **78** is best represented in FIGS. 11 and 12. The alternative connector element **78** defines opposing alternative arms **80** that define an alternative horizontal element **82** and an alternative vertical element **84**. The alternative vertical element **84** is spaced a predetermined distance from an alternative slide member **86** enabling a universal interconnection with a flatbed trailer by way of a reconfigured alternative vertical element **84**. Thus, only the single alternative connector element **78** is required for universal interconnection with multiple different flatbed trailer configurations.

[0033] Turning now to FIG. 13, an alternative implementation of the rail assembly **110** described above is shown. As will be appreciated from the subsequent description below, the alternative rail assembly **110** is similar to the rail assembly **10** described above in connection with FIGS. 1-12. Like elements are identified with the same element numbers as the earlier described embodiments, but in the **100** series. While the specific differences between these implementations will be described in detail, for the purposes of clarity, consistency, and brevity, only certain structural features and components common between these implementations are discussed and depicted in the drawings of the second implementation of rail assembly **110**. Here, unless otherwise indicated, the above description of the first implementation of the rail assembly **10** may be incorporated by reference with respect to the second implementation of the rail assembly **110** without limitation.

[0034] As with the embodiment disclosed hereinabove, the rail assembly **110** of FIG. 13 includes the posts **112** laterally spaced from one another and supported on the caster system **14**. Here too, a plurality of elongated members **124** extend between adjacent of the posts **112**. In this implementation the plurality of elongated members **124** is supplemented with an upper rigid member **190** and an intermediate rigid member **192**. The upper rigid member **190** and the intermediate rigid member **192** are of similar configuration and are releasably secured between adjacent posts **112** in a same manner as described hereinabove. The upper rigid member **190** and the intermediate rigid member **192** cooperate to provide increased stability to the assembly **110** when affixed to a trailer and enhanced fall protection. A plurality of spacers **146** are coupled to the upper rigid member **190** and extend downward to space the flexible straps **26**.

[0035] The intermediate rigid member **192** defines notched end segments **194** disposed at opposing ends of an inner segment **196**. Each of the notched end segments **194** are releasably connected to adjacent of the posts **12'** to secure the intermediate rigid member **192** to the rail assembly **110**. The notched end segments **194** extend from the opposing ends of the inner segment **196** that is disposed at a higher elevation than the inner segment **196**, in this embodiment elevated above the inner segment **196**. More specifically, the elevated end segments **194** allow the connector elements **178** to be slid upwardly to a height sufficient for coupling the connector element **178**, and thus the rail assembly **110** to the trailer. Because the height of the trailer varies depending on the configuration as well as the weight of the cargo loaded onto the trailer, it is desirable that the connector elements **178** be raisable beyond the height of the intermediate rigid member **192**. This arrangement enables the intermediate rigid member **192** to be located at a height that is believed to best provide stability while still allowing the connector element **178** to be moved an amount to accommodate a plurality of different trailer bed heights. Thus, the vertical spacing of each of the straps **126B**, **126C** with the intermediate rigid member **192** is consistent. The intermediate rigid member **192** is constructed from multiple pieces that have been coupled together via a process such as welding in some instances. Alternatively, the intermediate rigid member **192** is extruded as a single piece of material that has been bent to form the raised outer segments **196**.

[0036] It should be appreciated that the upper rigid member **190** and the intermediate rigid member **192'** may be implemented in either embodiment of the rail assembly **10**, **110**. Therefore, it should be understood to those of ordinary skill in the art that while the first embodiment of the rail assembly **10** and the second embodiment of the rail assembly **110**, as illustrated herein, differ by the inclusion of the upper rigid member **190** and the intermediate rigid member **192**, both are not required. Thus, the first embodiment of the rail assembly **10** may include only the upper rigid member **190** without the intermediate rigid member **192** or may include only the intermediate rigid member **192** without the upper rigid member **190**.

[0037] Obviously, many modifications and variations of the present invention are possible in light of the above teachings foregoing invention has been described in accordance with the relevant legal standards; thus, the description is merely exemplary rather than limiting in nature. Variations and modifications to the disclosed embodiment may become apparent to those skilled in the art and do come within the scope of the invention. Accordingly, the scope of the legal protection afforded this

invention can only be determined by studying the following claims.

[0038] Several instances have been discussed in the foregoing description. However, the aspects discussed herein are not intended to be exhaustive or limit the disclosure to any particular form. Various modifications to these aspects will be readily apparent to those skilled in the art, and the generic principles defined herein may be applied to other aspects without departing from the scope of the disclosure. The terminology that has been used is intended to be in the nature of words of description rather than of limitation. Many modifications and variations are possible in light of the above teachings and the disclosure may be practiced otherwise than as specifically described.

Claims

1. A railing assembly for use with a flatbed trailer, comprising: cooperable posts extending in an upwardly direction; a plurality of elongated members extending laterally between said cooperable posts; each of said cooperable posts being supported on a caster system including a plurality of casters enabling rolling movement of said railing assembly relative to the flatbed trailer; and a connector system being slidably engaged with any of said cooperable posts providing adjustable height of the connector system thereby enabling engagement with the flatbed trailer for securing said railing assembly to the flatbed trailer.
 2. The railing assembly set forth in claim 1, wherein said plurality of elongated members includes at least one of a flexible strap and a rigid member.
 3. The railing assembly set forth in claim 2, wherein said flexible straps extend between said cooperable posts being interconnected at a distal strap end to a distal post with a clasp and being interconnected at a proximal strap end with ratchet that is affixed to a distal post, said ratchet providing adjustment to a length of said flexible strap.
 4. The railing assembly set forth in claim 2, wherein said rigid member releasably engages receptors disposed upon said cooperable posts thereby securing said cooperable posts at a fixed distance defined by a length of said rigid member.
 5. The railing assembly set forth in claim 2, wherein said connector system comprises a connector element including an arm being configured to interlock with said flatbed trailer for releasably securing said rails assembly with said flatbed trailer.
 6. The railing assembly set to forth in claim 5, wherein each of said connector elements is slidably engaged to one of said cooperable posts for providing the adjustable height of the connector system.
 7. The railing assembly set forth in claim 6, wherein said rigid member extending between adjacent posts includes notched end segments being disposed at a different elevation than a central portion of said rigid member thereby providing spacing for adjusting a height of said connector elements.
 8. The rail assembly set forth in claim 1, wherein said caster system includes a plurality of caster frames being fixedly spaced by an elongated member.
 9. The railing assembly set forth in claim 8, wherein each of said caster frames is supported by a plurality of casters.
 10. The railing assembly set forth in claim 1, wherein said plurality of elongated members includes an intermediate post disposed between opposing end posts, each of said posts being fixedly spaced by said rigid member.
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