United States Patent [19]

Marulic

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[54] **LADING TIE ANCHOR FOR RAILWAY FREIGHT CAR**

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[52] **U.S. Cl.**.....**105/480,** 105/369 B, 105/409

[51] **Int. Cl.**..... **B61d 45/00**

[58] **Field of Search**..... 105/369 A, 369 B, 409; 296/28 M

[56] **References Cited**

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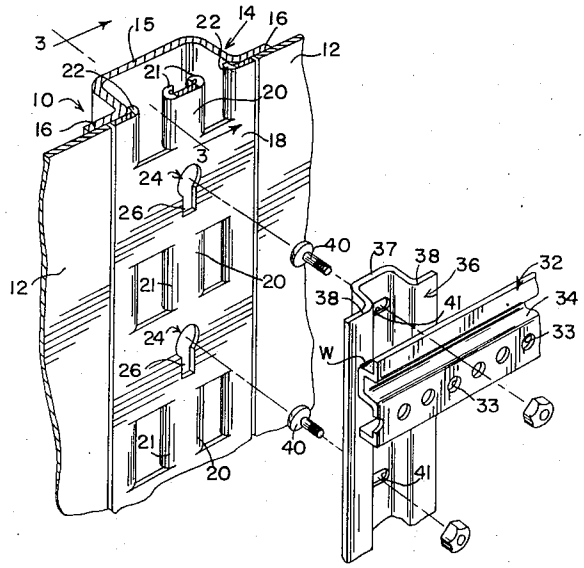
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Assistant Examiner—Gene A. Church
Attorney, Agent, or Firm—Hilmond O. Vogel

[57] **ABSTRACT**

A lading strap anchor nestable in the hollow portion of the vertical wall post and having key slot perforations provided for mounting of belt rails and also including cut-outs providing for attaching and securing of flexible lading straps. The anchor includes a continuous plate member which extends the height of the vertical wall post and closes off the open portion of a hat-shaped wall post thereby forming a continuous reinforced wall post.

4 Claims, 7 Drawing Figures



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SHEET 1 OF 2

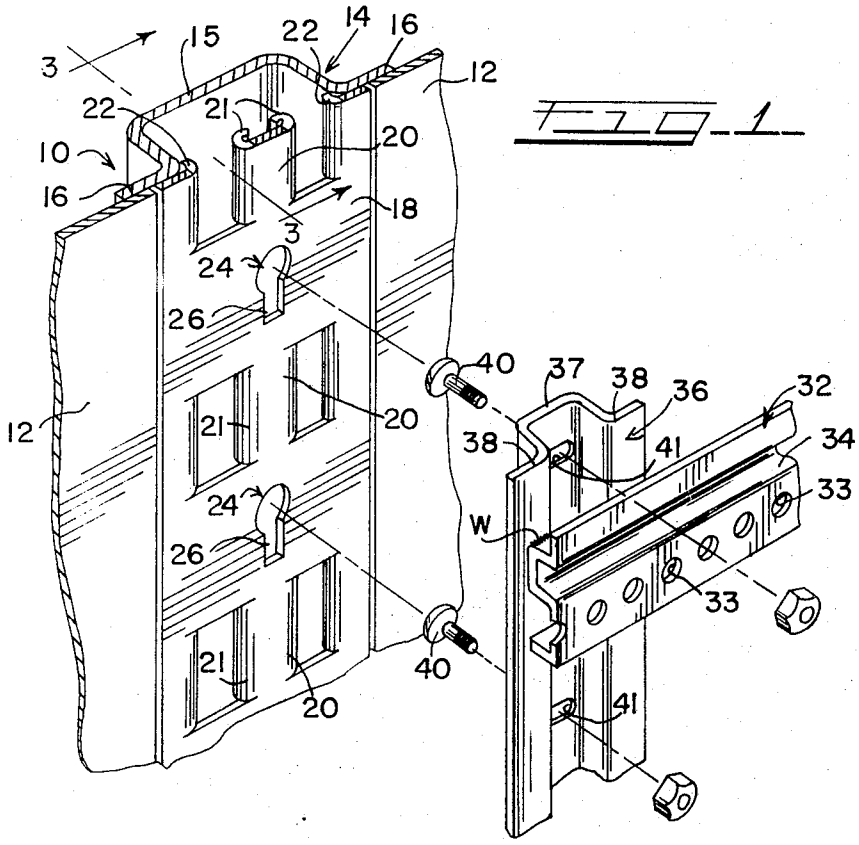


FIG. 1

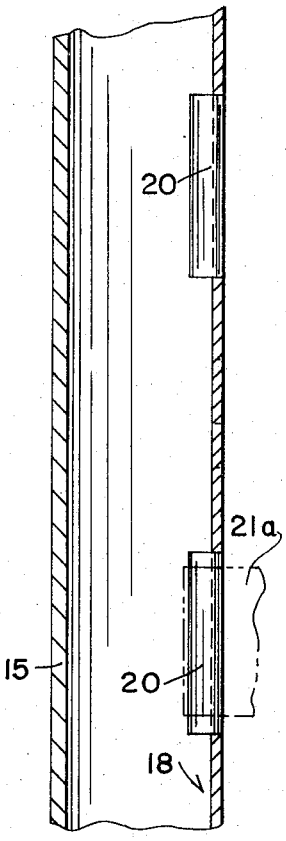
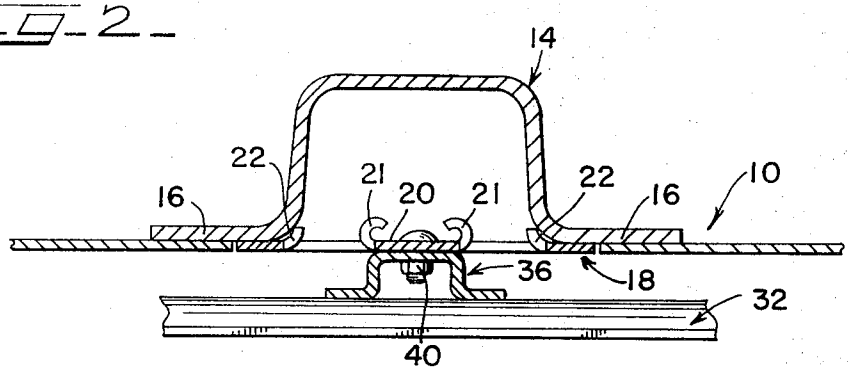


FIG. 3

FIG. 2



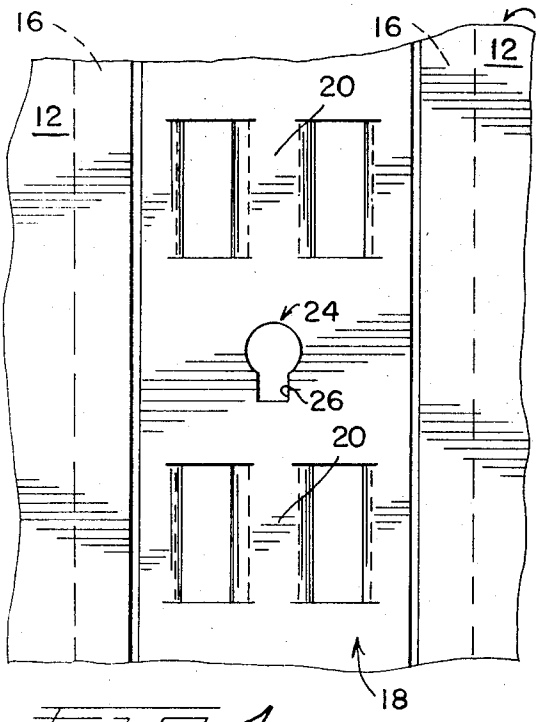


FIG. 4

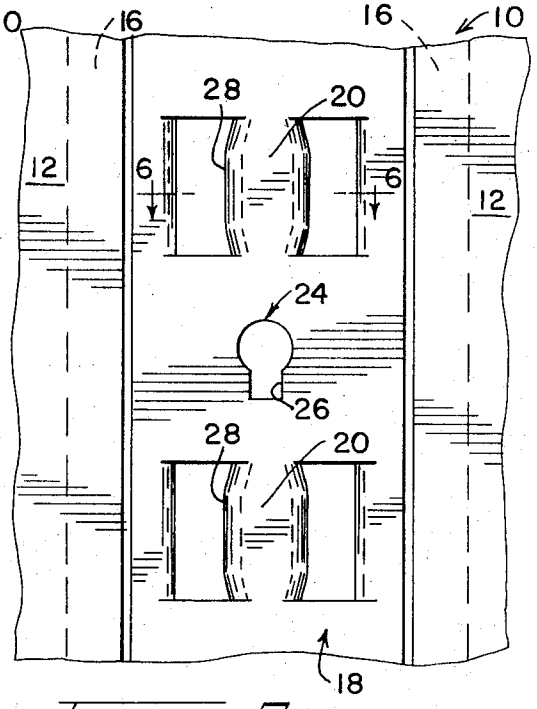


FIG. 5

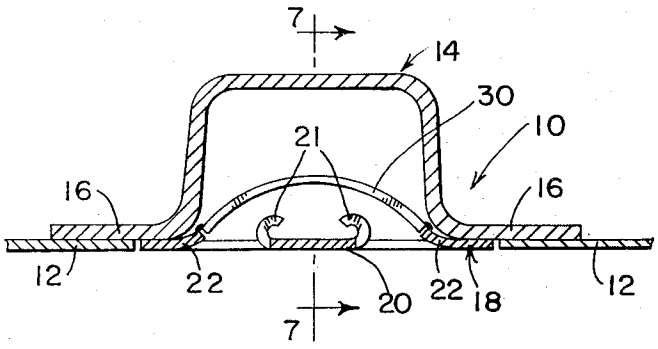


FIG. 6

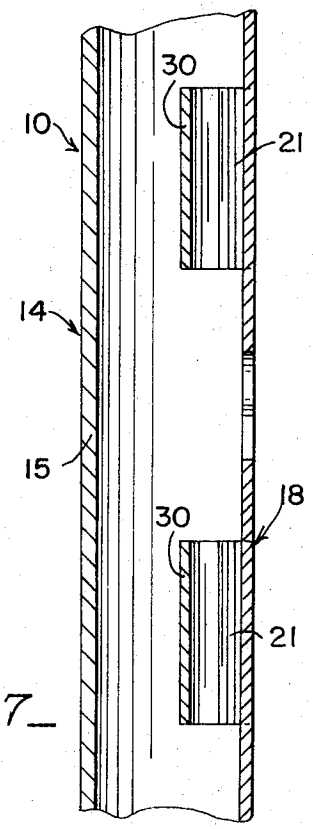


FIG. 7

LADING TIE ANCHOR FOR RAILWAY FREIGHT CAR

BACKGROUND OF THE INVENTION

1. Field of the Invention:

This invention relates to railway freight vehicles and in particular to bracing devices for retaining lading during vehicle movement.

2. Description of the Prior Art:

Prior art lading strap anchor devices and belt rail units are generally independently attached to the vehicle side wall to thereby provide for selective restraining of cargo either by belt rail engaging crossbearers or by the use of flexible lading retaining straps. Prior art lading strap anchors generally require openings be cut in the side wall sheet to provide for flush mounting of the strap anchor and belt rails generally are permanently welded to the vertical wall posts at spaced intervals. The present invention has provided a lading strap anchor and a belt rail assembly which function together inasmuch as both units are mounted rigidly to a vertical wall post and are interconnected by fasteners for removably attaching a belt rail assembly to the interior of a freight car.

SUMMARY

This invention relates to railway freight cars and in particular to those freight cars having attaching means positioned on the interior of each side wall unit for receiving both flexible straps and transversely extending lading retaining bars. This invention provides a vertically extending strap anchor strip which may be mounted on the open portion of a vertical wall post and includes a plurality of vertically spaced openings formed by bending inwardly flange portions which provide round smooth surfaces for attachment and securing of lading retaining flexible straps. The invention also provides strap anchors which are flush with the interior wall sheet of the vehicle. The vertical strip also includes a plurality of spaced key holes which provide selective convenient attaching points for longitudinally extending belt rails which form mounting and attaching means for movable bulkheads or transversely extending bars.

It is an object of the present invention to provide a strap anchor unit which also has a plurality of opening for forming attaching means for belt rails.

It is another object of the present invention to provide a vertically extending filler strip positionable in the open portion of a hat-shaped vertical wall post and having flange portions for an attachment to the wall post, thereby combining with the body of the wall post to form a hollow box beam wall post member having increased strength and rigidity to resist loading on the wall unit.

Another object of the present invention is to provide filler strip having a plurality of vertically spaced key hole openings thereby providing a mounting means for selectively positioning longitudinally extending belt rails in the interior of the freight vehicle.

It is yet another object of the present invention to provide a freight vehicle having a side wall structure including exterior wall posts with hollow portions extending into the freight vehicle and filler strips rigidly positioned across the hollow portion and having inwardly bent flanged openings for attaching flexible lading retaining straps.

It is also an object of the present invention to provide a belt rail attaching plate having a pair of spaced flanged portions for attachment of the belt rail and including a slotted portion with openings adapted to be aligned with the key hole openings of the vertically extending strap anchor strip and yet allowing access to the strap anchor openings for use of lading tie down straps.

It is yet another object of the present invention to provide a strap guide extending beyond each strap anchor opening to guide a flexible strap around the strap anchor for convenient attachment.

Another object of the present invention is to provide a vertically extending strap anchor strip which may be attached to an opening in a vertical wall post and having strap anchor portions with arcuate sides thereby providing a continuous linear contact between the strap anchor and the attaching strap to reduce localized stresses on the strap during movement of the restrained lading.

These and other objects of the invention will become apparent from reference to the following description, attached drawings and appended claims.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is an exploded perspective view of the strap anchor of the present invention;

FIG. **2** is a cross sectional view of the strap anchor assembly;

FIG. **3** is a sectional view taken generally along the line **3—3** of FIG. **1**;

FIG. **4** is an elevational view of the strap anchor;

FIG. **5** is an elevational view of a modification of the present invention;

FIG. **6** is a cross sectional view taken along the line **6—6** of FIG. **5**; and

FIG. **7** is a cross sectional view taken along the line **7—7** of FIG. **6.**

DESCRIPTION OF THE PREFERRED EMBODIMENT

With reference now to the drawings and in particular FIG. **1** in the exploded perspective view of the pertinent parts of the present invention, it is noted that a freight vehicle side wall is designated generally by the numeral **10.** The wall includes a plurality of the usual wall sheets **12** which are joined at a connecting wall post **14** having an open portion extending inwardly into the vehicle. The wall posts of the present invention contemplate a hat-shaped post **14** having a generally U-shaped body portion **15** with depending laterally extending flanges **16** extending therefrom. As noticed in FIG. **1,** the wall sheets **12** are joined to the wall post flanges **16.**

The present invention provides an anchor strip **18** which extends vertically the height of the vertical wall post **14** and is fixedly positioned into the open portion of each wall post, thereby completing the wall post cross section and providing a box-shaped beam member which greatly increases the strength of the vertical wall post and increases the capacity of the post to resist shear loading. The anchor strip **18** includes a plurality of vertically spaced anchors **20** which are formed integrally with strips and have turned-in flanges **21** with end portions turned back towards the anchor strip **18**

to provide a smooth surface on the strap anchor post portions **20** for attachment for flexible strap members **21a**; these rounded flange portions **21a** also increase section strength of the strap anchors **20.** These turned-in flanges **21** also increase the rigidity of the entire anchor strip **18** by compensating for weakening caused by perforating the openings on each side of the strap anchor bars or post portions **20.**

Spaced laterally from the integrally formed anchor portion **20** are the extruded edges **22** which are also formed integrally with the anchor strip **18.** These extruded edges **22** provide a spaced aligning means for positioning the anchor strip **18** in the open portion of a vertical wall post **14.** By turning in the flange portions **22** a smooth surface is provided for contacting a tie down strap thus preventing damage to the strap. Also, as with the turned-in flanges **21,** the extruded edges **22** increase the rigidity of the anchor strip thereby compensating for the openings which have been perforated in the strip to provide the integrally formed anchors **20.** Both the turned-in flanges **21** and the extruded edges **22** provide a funnel shaped insertion openings facilitating threading of a lading hold down strap **21a** about the strap anchor post portions **20.**

Positioned between the vertically spaced anchors **20** are a number of vertically spaced key hole openings **24** having the usual rounded upper portion and a vertically depending slot **26.**

In the modifications shown in FIGS. **5, 6** and **7** the strap contacting edges **28** of each anchor **20** may be arcuate or comprised of a plurality of straight portions which essentially form an arcuate surface. These arcuate sides are oftentimes desirable to prevent high localized stresses in rigid strapping such as steel bands which may undergo high localized stress concentrations during vehicle movement in the event the strapping would be moved from a purely horizontal attached position. The modification also would provide a guide plate **30** extending across the wall post **14** and interconnecting with the extruded edges **22** which have been formed to a lesser extend than the analogous edges **22** in the preferred embodiment of FIG. **2.** Because the extrusion is less severe with the extruded edges **22** in the modification of FIG. **6,** there is formed a continuous plane at the junction of each extruded edge **22** and the attached guide plates **30.**

Referring again to FIG. **1,** it is noted that a belt rail **32** is also provided for with the anchor strip of the present invention which allows not only strap anchors to be attached but also provides a means mounting these popular and common belt rails **32.** The attached to a belt rail at the same level on the opposite wall of the freight car. A hat-shaped mounting plate **36** is provided for forming a convenient attachment between the belt rail **32** and the anchor strip **18.** This mounting plate includes a U-shaped body portion **37** with laterally extending flanges **38** extending therefrom. As noted in FIG. **1,** a weld W may be used to attach each mounting plate **36** at convenient and selective points along the belt rail **32.** Fasteners **40** are provided for attaching the mounting plate **36** into the key hole opening **24** of the anchor strip **18.** These fasteners **40** may be easily positioned within the horizontally extending slots **41** and easily aligned with the associated key hole openings **24.**

Thus, it is noticed that the applicant has provided structure which may be conveniently and easily attached to conventional freight cars which not only increases the strength of the vertical wall posts but provides a strap anchor and also a mounting means for a belt rail. As mentioned previously, these mounting plates **36** may be preassembled to the belt rail **32** or may be initially attached to the anchor strip **18** with the fasteners **40** and subsequently have the belt rail **32** welded or attached by a mechanical fastener thereto. By providing a strap anchor strip **18** within the open side of the vertical wall posts the car inside with is preserved and the side post strengthened. Slotted openings in the strap anchor strip permit adjustable positioning of lading retaining bars and bulkheads thus making the car adaptable to carry various articles which require restraining members to be applied at different levels.

The foregoing description and drawings merely explain and illustrate the invention and the invention is not limited thereto, except insofar as the appended claims are so limited, as those skilled in the art who have the disclosure before them will be able to make modifications and variations therein without departing from the scope of the invention.

What is claimed is:

1. A railway vehicle adapted to restrain transported cargo with both flexible straps and transversely disposed rigid members and including a wall unit comprising a plurality of longitudinally spaced vertical wall posts interconnected by wall sheets and having a generally hat-shaped cross section with laterally extending flanges for attachment of the wall sheets and having an open portion disposed inwardly of the railway vehicle, the improvement comprising:

a strap anchor strip connected over the open portion of at least one of the vertical wall posts to form an enclosed vertical box beam,

said strip including vertically spaced integral pairs of openings,

each of said pairs of openings being laterally spaced relative to each other and forming therebetween an integral strap anchor post portion,

said post portion having laterally spaced vertical edges defining first sides of said openings,

each of said first sides including integral flanges substantially the same width as said strip and extending the height of said openings,

said flanges each having an arcuate portion curved outwardly with respect to said strip and being disposed within said wall post and said integral flange portion further including terminal edges facing each other outwardly of said anchor post portions to rigidify the same,

each of said openings also including second vertical sides spaced laterally with respect to said first sides,

said second sides including vertical curved edge portions facing outwardly within said wall posts,

and belt rail attaching openings provided between said vertically spaced strap anchor post portions, said attaching openings having a contour for removably retaining belt rail fastening means.

2. The invention according to claim **1,**

wherein said contour of said belt rail attaching openings provided between said vertically spaced strap anchor post portions are of a key-hole configuration.

3. The invention according to claim **2,** and:

belt rail means including longitudinally extending belt rail members attached to vertically disposed mounting plates having spaced openings adapted to

align for fastening with the belt rail attaching openings of said strap anchor strip.

4. The invention according to claim **3,** and:

said vertically disposed mounting plates having a hat-shaped cross section and including a base portion with said spaced openings contained therein and said hat-shaped cross section having flanges saced from the base portion and adapted for mounting of said belt rail members.

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