United States Patent [19]

Adler

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[54] **ROLL-IN BULKHEAD**

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[52] U.S. Cl. ..... **105/376**, 105/369 A, 105/369 S

[51] **Int. Cl.** **B60p 7/14**

[58] **Field of Search** ..... 105/369 A, 369 D, 105/376

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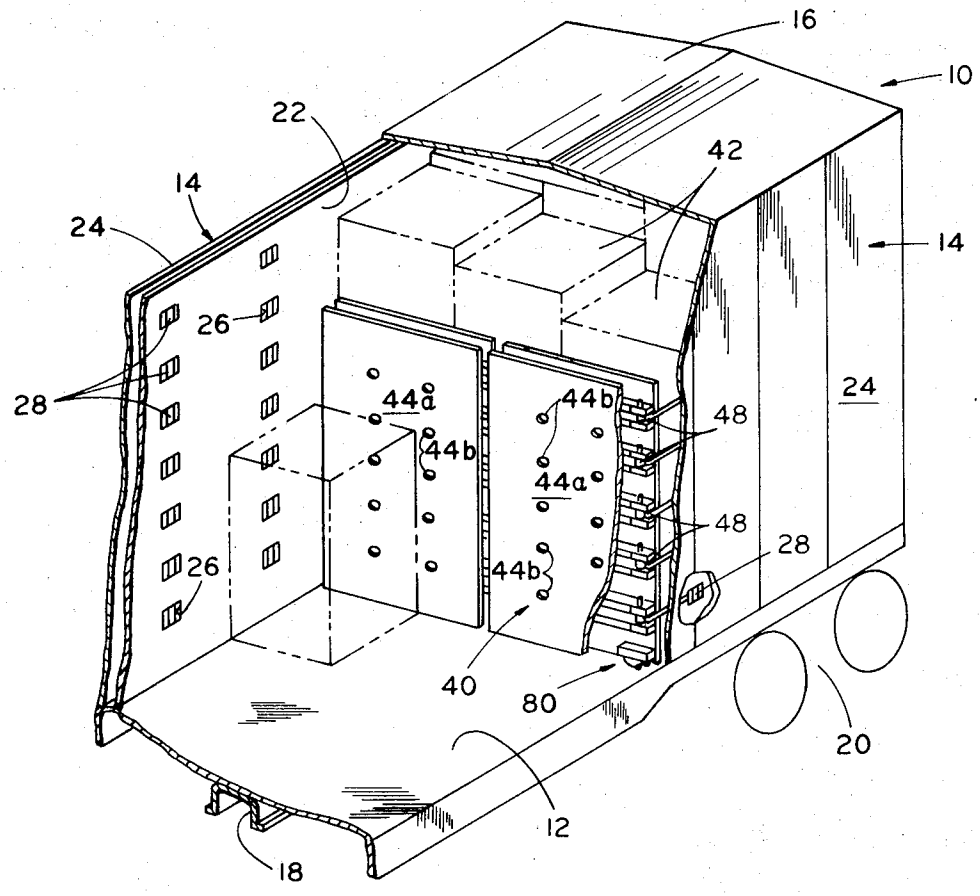
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[57] **ABSTRACT**

A manually positioned and rollable bulkhead including ratchet type restraining strap takeup devices to secure the bulkhead between the side walls of a railway vehicle so as to confine and restrain a load.

6 Claims, 6 Drawing Figures



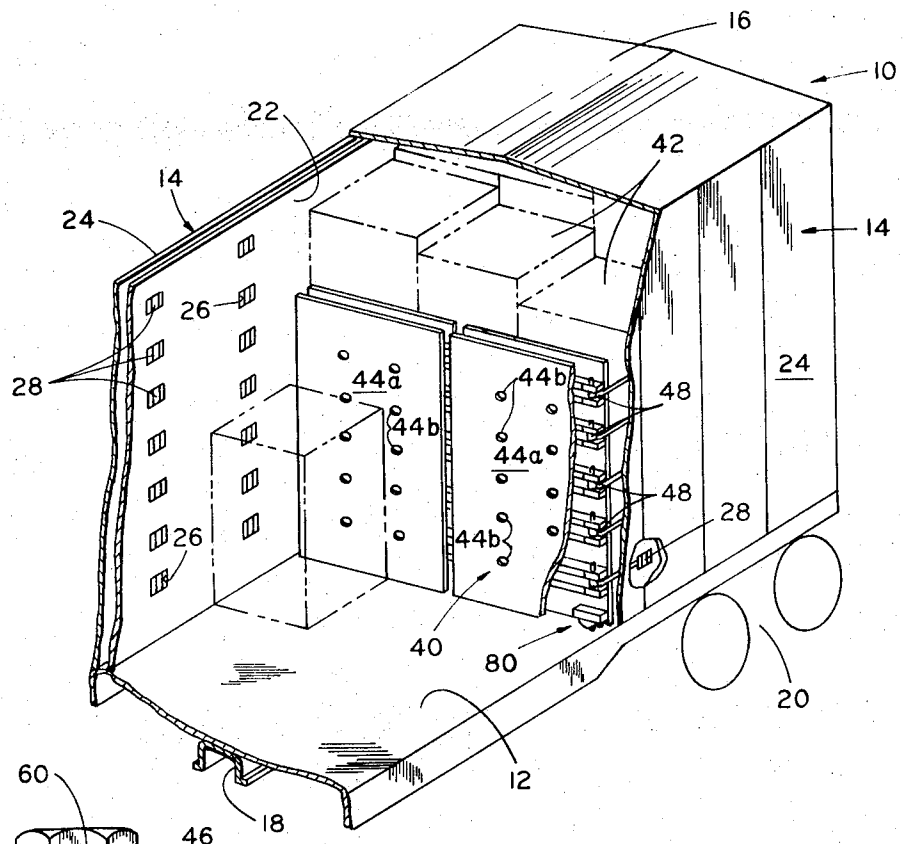


FIG.1

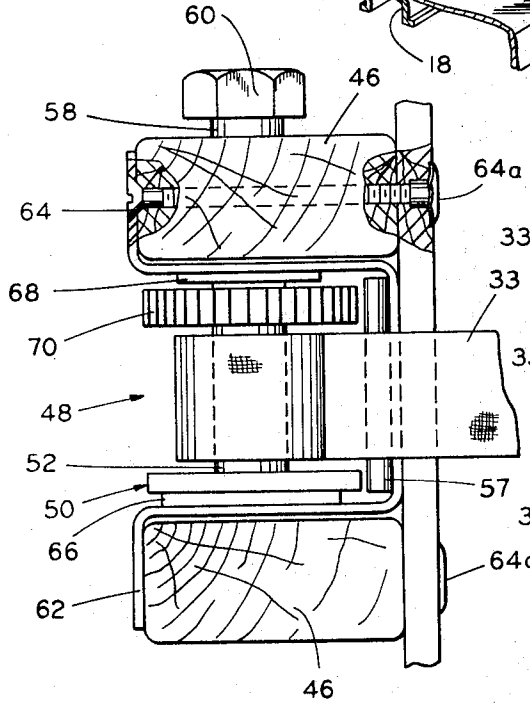


FIG.5

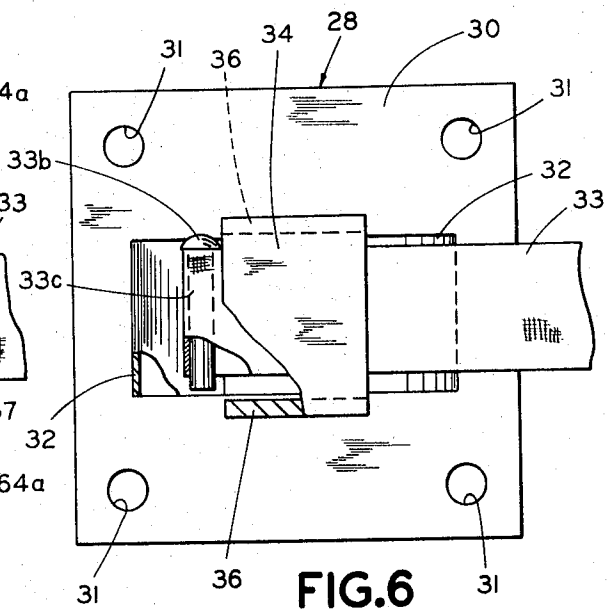


FIG.6

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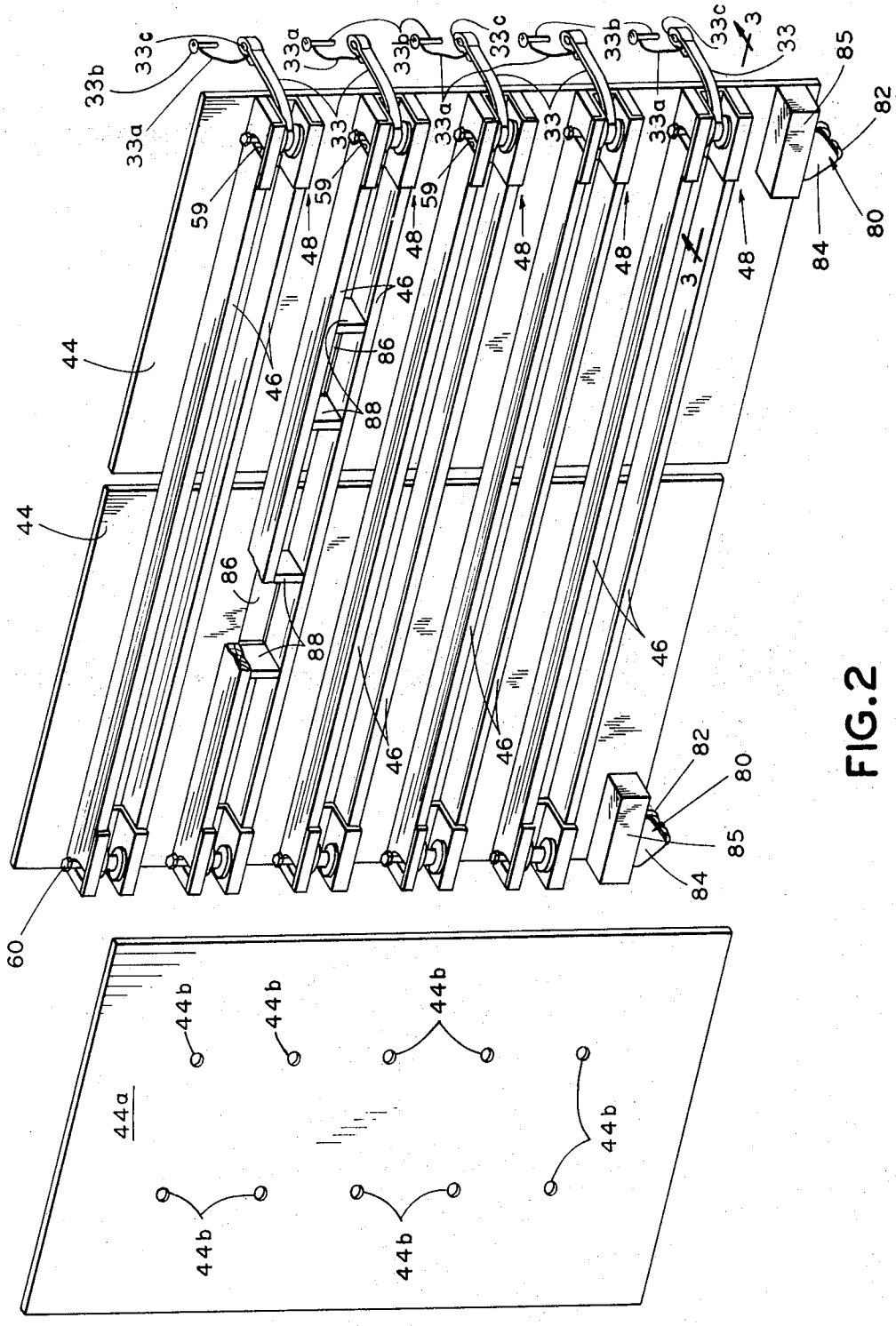


FIG.2

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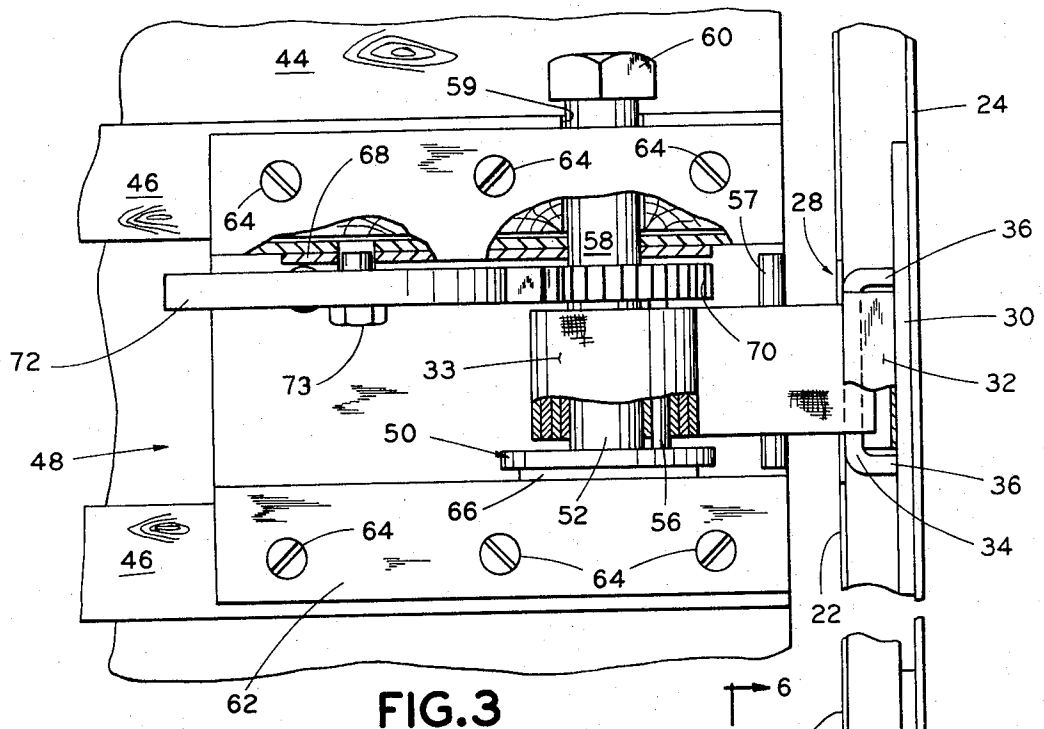


FIG.3

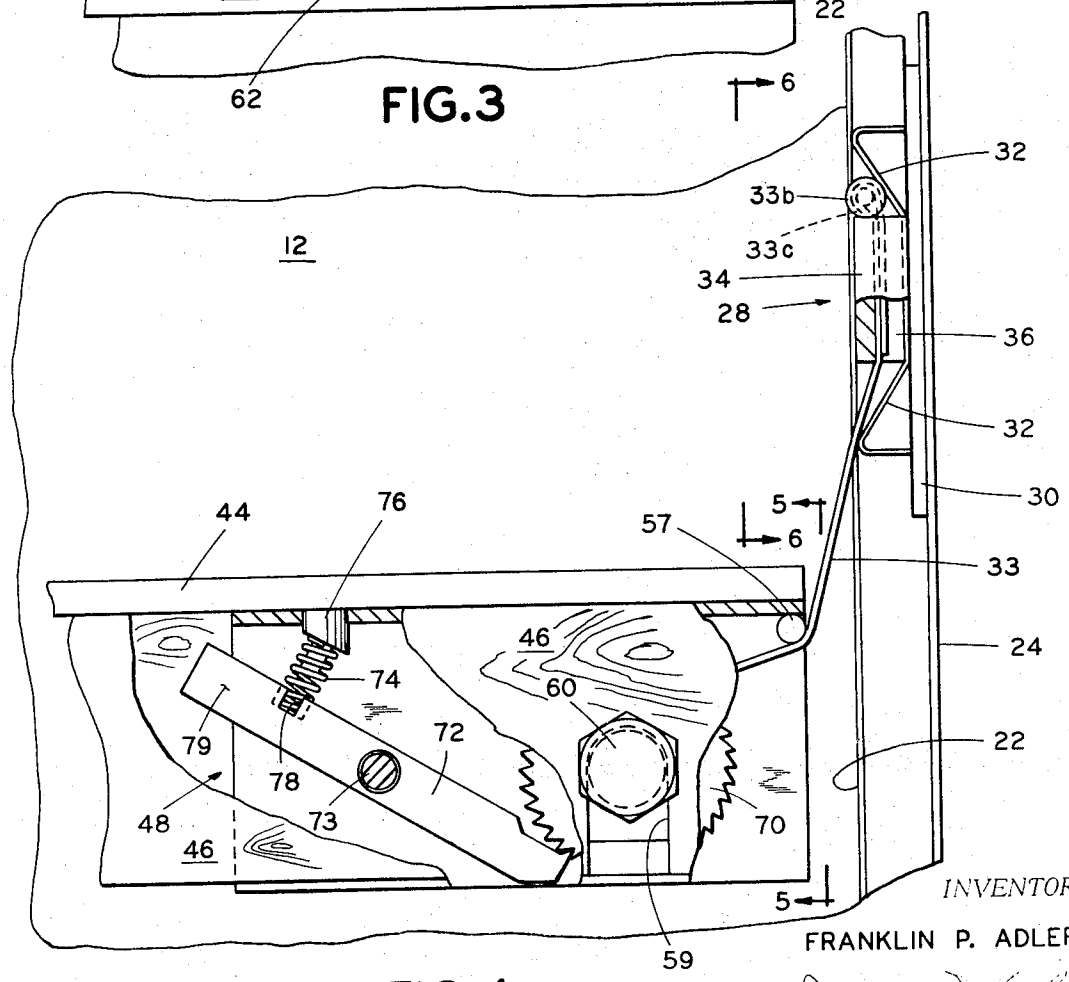


FIG.4

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ROLL-IN BULKHEAD

BACKGROUND OF THE INVENTION

1. Field of the invention

This invention relates to railway freight vehicles and in particular to portable restraining devices or bulkheads which are used to restrain the cargo within a railway freight car.

2. Description of the prior art

Prior art load bracing and dividing devices or bulkheads are generally large and bulky and require auxiliary mounting and supporting devices within the railway vehicle. Also, portable bulkheads have had the effect of being expensive and heavy, therefore requiring additional positioning and lifting devices to move the bulkhead into its operative position. The present invention provides a lightweight portable bulkhead which may be manually lifted and rolled into position on existing freight cars without the addition of any customized auxiliary mounting or bracing equipment being added to the interior of a freight carrying vehicle.

SUMMARY

The nature of this invention pertains to a portable bulkhead which may be placed in a box car as a load divider and restrainer. The edges of the bulkhead are provided with takeup devices which include straps attachable to anchors recessed within the inner sides of the car. Rollers attached at the bottom portion of the bulkhead permit easy movement of the bulkhead into its operative position. In operation the bulkhead is positioned transversely in the railway vehicle and straps are anchored within recessed holding devices in the side walls and then attached to the accumulating and tensioning devices of the bulkhead for tightening. To facilitate lifting the bulkhead from a trackside position into the railway vehicle a pair of openings are provided in the bulkhead to permit insertion of lifting arms of a forklift truck which may be used to lift the bulkhead onto the car.

It is an object of the present invention to provide a portable rolling bulkhead having securing devices at its outer edges.

It is another object of the present invention to provide a portable bulkhead mounted on rollers to facilitate moving the bulkhead into position on the railway vehicle.

Additionally it is an object of the present invention to provide a bulkhead having ratchet type takeup devices at its outer edges which receive straps extending from strap anchors in the walls of the vehicle and which are then tensioned by gathering of the strap onto a spool.

Another object of the present invention is to provide a bulkhead which is manually positionable and includes lifting and holding portions to facilitate ease of handling.

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 a pictorial illustration of a portion of a railway freight vehicle employing the movable bulkhead of the present invention;

FIG. 2 is a pictorial of the bulkhead of the present invention;

FIG. 3 is a view taken transversely of the railway vehicle and showing wall mounted anchor and the ratchet takeup mechanism involved in the present invention;

FIG. 4 is a top view with parts in section of the device illustrated in FIG. 3;

FIG. 5 is a view taken along lines 5—5 of FIG. 4;

FIG. 6 is a view taken along lines 6—6 of FIG. 4.

DETAILED DESCRIPTION

Referring now to FIG. 1 where there is illustrated a portion of the railway freight car employing the present invention, it is noticed that the railway vehicle **10** includes the usual floor **12**, side wall units **14** and roof structure **16**. A center sill **18** extends between truck members **20** and functions in a supportive manner. The side wall units **14** are of a double thickness comprising an inner side wall **22** and an outer side wall **24**. The inner and outer side walls **22, 24** respectively generally comprise a thin metallic sheet type of construction which is light in weight and durable while providing an integrally sound and strong side wall unit. The inner side wall **22** includes a plurality of cutouts **26** which are conveniently spaced along the side wall unit and provide mounting and access means for a lading hold-down strap anchor assembly **28** which is accessed through the cutout **26**.

The strap attaching anchor assembly **28** includes a mounting plate **30** as best illustrated in FIG. **6**. The plate **30** includes openings **31** into which a filler metal is placed for securing the plate **30** to the outer side wall **24** as illustrated in FIGS. **3** and **4**. Also included in the lading strap anchor assembly **28** is a strap guide member **32** which aids in securing the bulkhead tie down strap **33**. A retainer cord **33***a* is fastened to the rivet type securing member **33***b* and to the end of loop portion **33***c*. As illustrated in FIG. **6** when the strap **33** is threaded around and under the U-shaped tie down member **34** having leg portions **36**, the rivet **33***b* is inserted into the loop **33***c* to secure the strap in the strap anchor assembly **28**.

As illustrated in FIG. **1**, the portable bulkhead **40** of the present invention is positioned transversely of the railway vehicle **10** and functions to divide and restrain cartons **42** within the freight vehicle to protect the cartons from shifting which can result in their damage. The bulkhead **40** comprises preferably a pair of adjacent sheets of plywood **44** spaced from one another to permit manual handling of the bulkhead after final assembly. The plywood sheets **44** are attached to and supported by the reinforcing members **46** which extend substantially the entire width of the members **44** and include at their end portions accumulating and tensioning means **48** which gather an associated tie down strap **33**.

As indicated in FIGS. **1** and **2**, the portable bulkhead may include a second set of plywood sheets **44***a* which are positioned after the bulkhead is secured into position. The sheets **44***a* are used to provide a smooth surface for abutting lading since irregular surfaces have been known to cause lading to become caught or hung up and damaged. Sheets **44***a* may contain openings **44***b* to make them less subject to pilferage.

The accumulating or tensioning means **48** includes a strap gathering assembly having a movable spool **50** with a central portion **52** about which is gathered the strap **33**. Extending parallel with and spaced from the central portion **52** is a securing bar **56** which is used to

initially secure the strap **33** to the spool of the ratchet member. A shaft extension portion **58** extends upward from the spool **50** through a slot **59** in the reinforcing members **46.** The top portion of the extension **58** includes a head **60** which may be conveniently sized to receive a socket or a wrench for turning the spool to gather and tension the strap **33.**

The spool **50** is mounted in and carried by the hat-shaped mounting unit **62** which comprises a plate member contoured to fit between vertically spaced reinforcing members **46** and is retained in position by the screw fasteners **64** which may include a locknut **64***a* as best illustrated in FIG. **5.** Vertically spaced of the spool **50** are a pair of flat plate washers **66,68.** A round bar wear reducing member **57** is positioned at the outer margin of the mounting unit **62** (as best illustrated in FIG. **4**) and spaces the strap from any sharp edges which would cause it to fray and produce early failure.

A ratchet gear **70** forms one end of the spool **50** and includes a plurality of ratchet teeth which are engaged by the pivoted detent **72** so as to allow one way locking rotation of the spool as the strap **33** is tightened. The detent **72** is pivoted at **73** and biased by the helical spring **74** which is positioned by the spring retainer **76** which is secured to the mounting unit **62.** The spring **74** is received within a socket portion **78** of the detent **72** to hold the spring in position as the ratchet gear **70** is rotated. It is evident from the portion described and illustrated in FIG. **4** that to release the detent **72** from engagement with the ratchet gear **70** the spring force is overcome by pushing on the release portion **79** of the detent **72** causing the detent to pivot out of engagement with the ratchet gear **70** and thereby releasing tension from the strap **33.**

Referring now to FIG. **2,** it is noticed that the bulkhead **40** is mounted on a roller or wheel assembly **80** which includes wheels **82** mounted on a caster or framing unit **84** which is secured to a block unit **85** for attachment of the wheel assembly **80** to the bulkhead **40.** The roller assembly **80** permits ease of handling and makes the bulkhead truly portable since it may be moved and positioned manually. As also illustrated in FIG. **2,** the bulkhead includes a pair of spaced openings **86** reinforced by the framing members **88** which openings are provided for insertion of the lift members of a fork lift truck for lifting the bulkhead from trackside onto the railway freight car.

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 cargo restraining device for a railway freight vehicle and positionable transversely of the vehicle, said vehicle also having side walls extending between spaced floor and roof units and having tie down anchor means contained therein, said restraining device including attaching strap means and associated strap accumulating ratchet members, the improvement comprising:

sheet means forming bulkhead wall portion and also including a plurality of vertically spaced and horizontally extending reinforcing framing members arranged in pairs and fixedly attached to said sheet means;

said restraining device having end edge portions and mounting plate means attached thereto thereby providing a mounting and attaching means for said strap accumulating ratchet members;

said strap means being positioned adjacent the end edge portions and including flexible tie down strap means having connecting portions receivable within said wall mounted tie down anchor means for fixedly securing the restraining device in said transport vehicle;

said strap accumulating ratchet members including spool means operatively and rotatably connected to attaching strap means, and a spool rotating extension protruding through an adjacent horizontally extending reinforcing member and having an actuating head portion;

said strap gathering spool means having a ratchet gear portion and having a locking pawl means engageable with said ratchet gear of the spool means to thereby provide unidirectional strap tightening rotation of said spool means.

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

said mounting plate means having a hat shaped cross section and including mounting leg portions attached to the framing members thereby affixing the strap accumulating ratchet members flush with the associated reinforcing framing members.

3. The invention according to claim **27,** and:

said ratchet member including a ratchet gear positioned within the mounting plate means and forming an end of said spool means;

resilient biasing means urging said locking pawl into engagement with said ratchet gear of the spool means.

4. The invention according to claim **1,** and:

said strap means having a free end loop portion and an associated retainer member insertable into said loop to thereby lock the strap means onto the anchor means of an adjacent vehicle side wall.

5. The invention according to claim **1,** and:

roller support means attached to said restraining device and rotatable about an axis transverse to the length of said restraining device to thereby permit rolling positioning of the restraining device within the transport vehicle.

6. The invention according to claim **1,** and:

said restraining means having a pair of spaced openings positioned between a pair of reinforcing framing members to thereby provide points for power lifting of the restraining means.

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