

Feb. 18, 1969

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3,427,995

INFLATABLE DUNNAGE BAG FOR RAILWAY CARGOS

Filed Oct. 28, 1966

Sheet 1 of 3

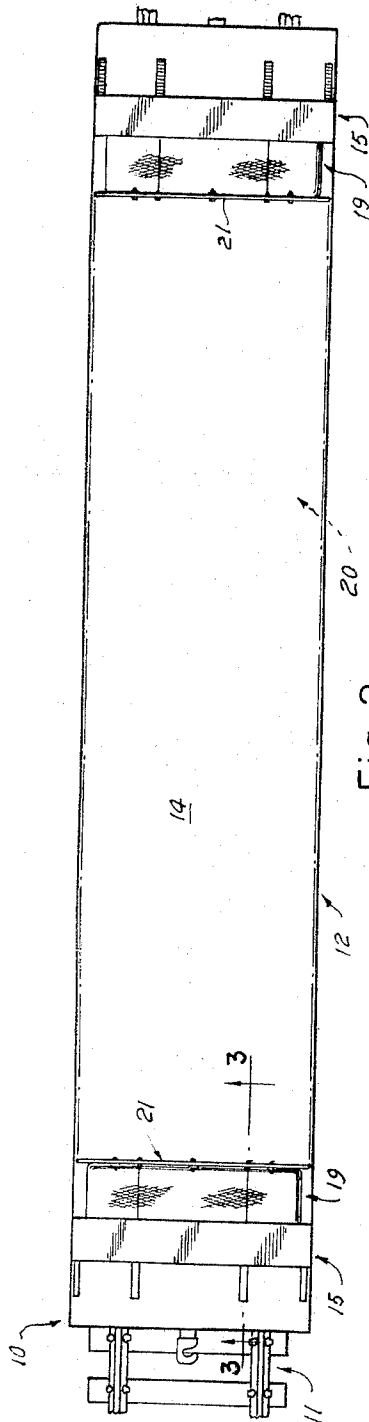


Fig. 2

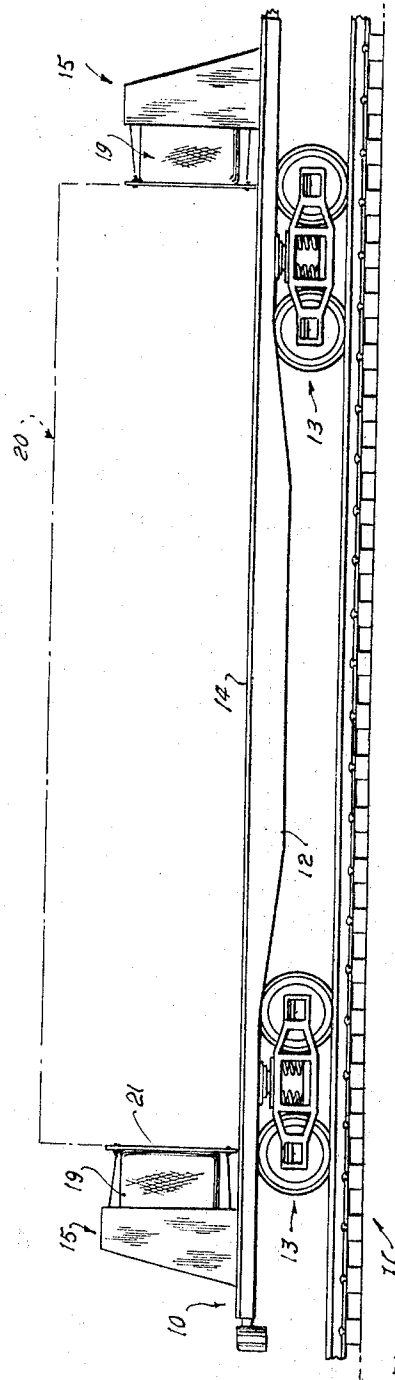


Fig. 1

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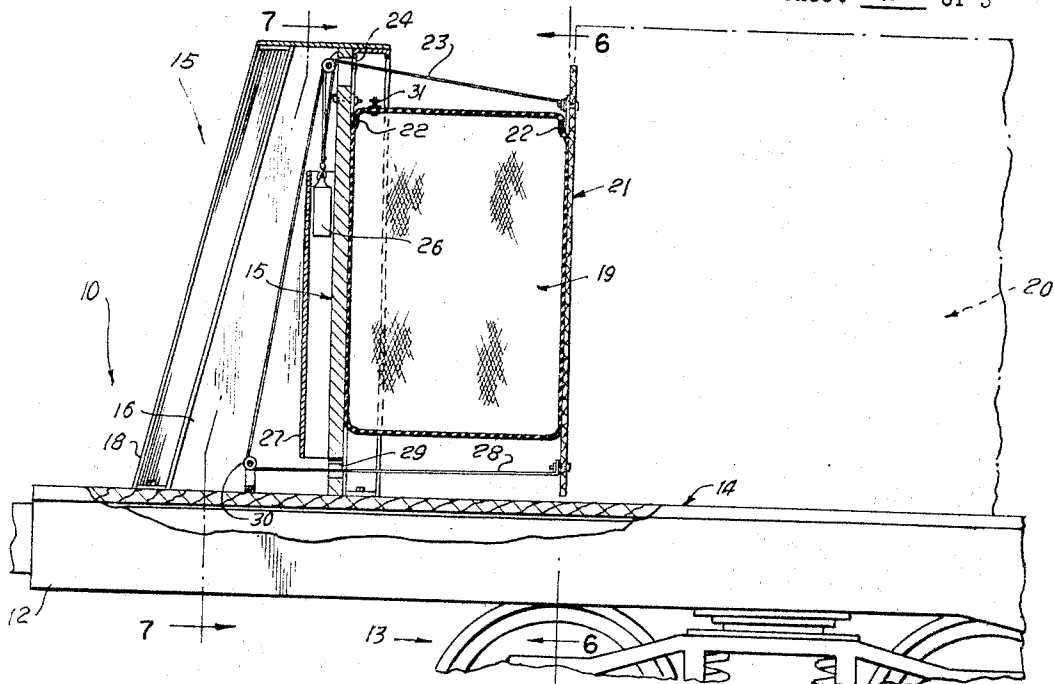


Fig. 3

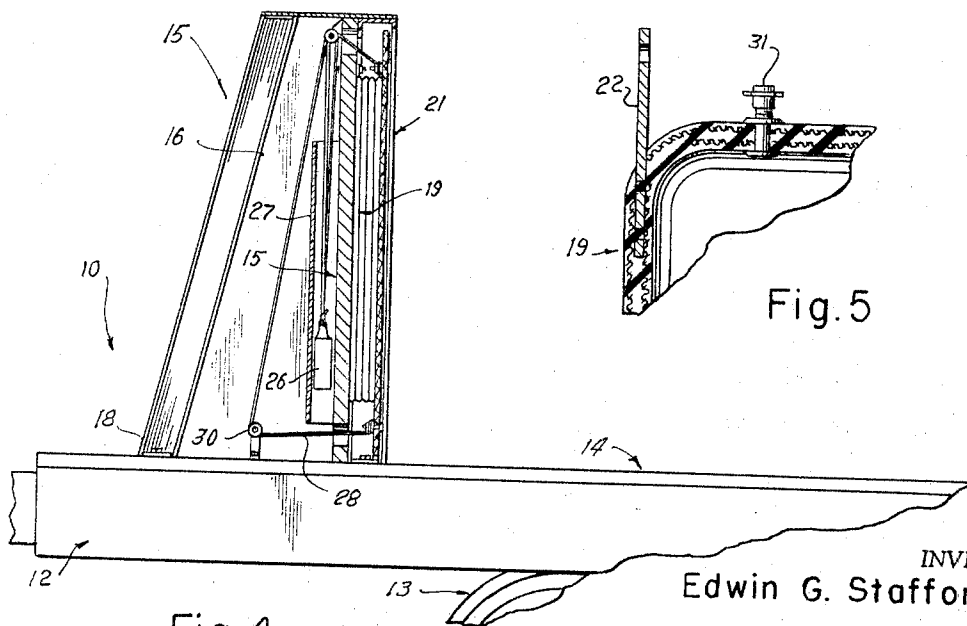


Fig. 4

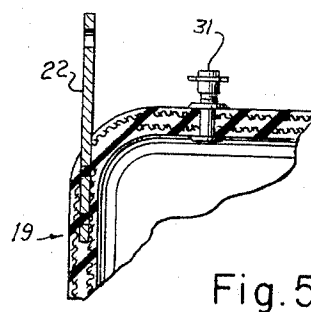


Fig. 5

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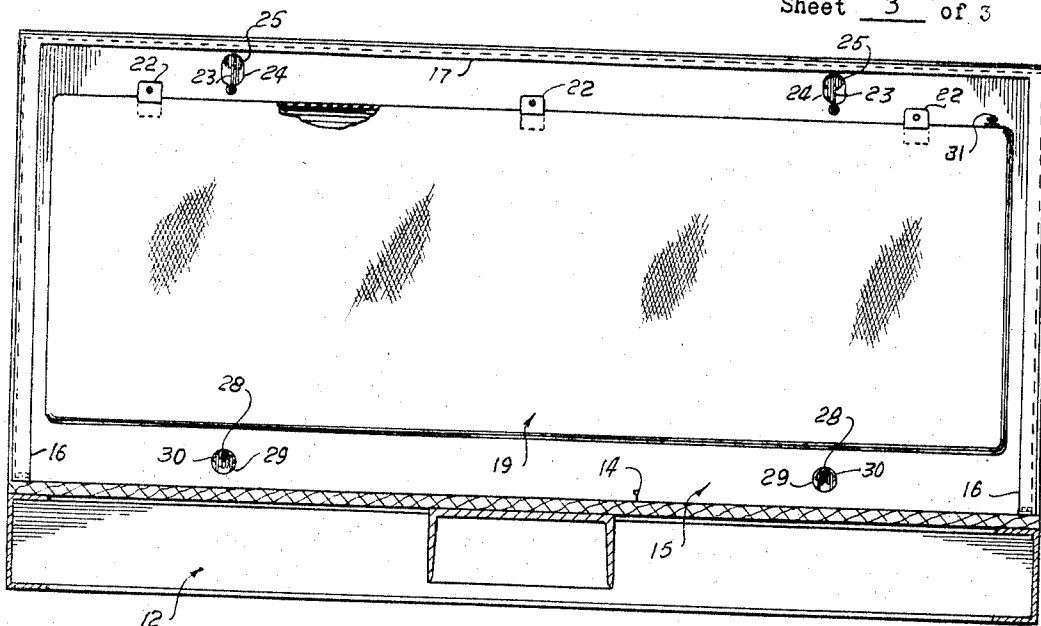


Fig. 6

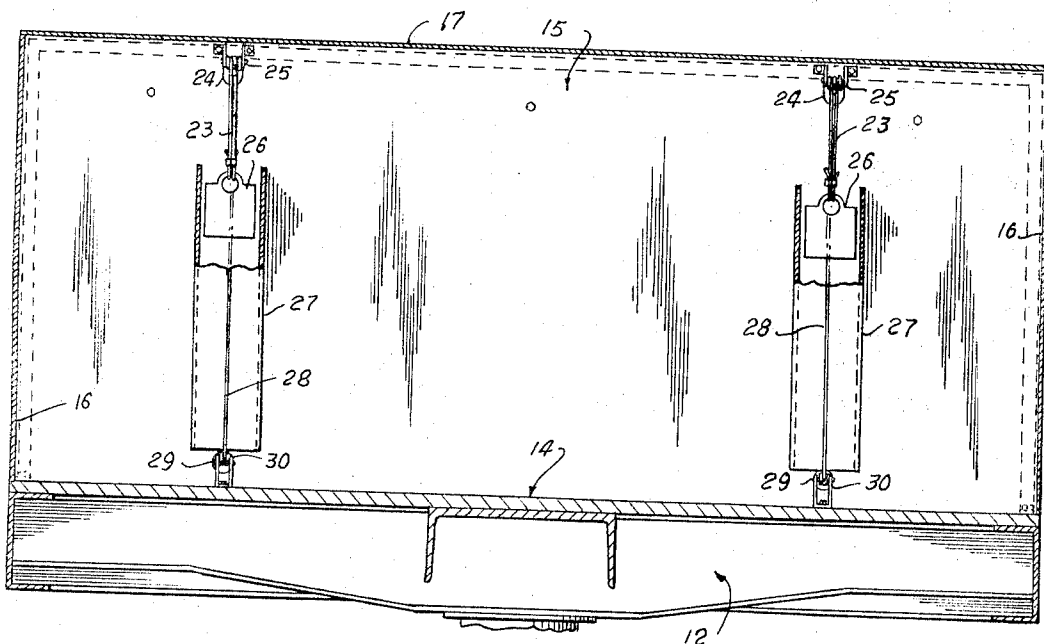


Fig. 7

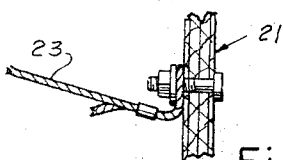


Fig. 8

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INFLATABLE DUNNAGE BAG FOR RAILWAY CARGOS

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3 Claims

ABSTRACT OF THE DISCLOSURE

A movable bulkhead located at each end of a flat car, in addition to the usual stationary bulkheads, and an inflatable and expandable dunnage bag interposed between the stationary bulkheads and their respective movable bulkheads whereby the latter can be moved longitudinally of the car, away from the stationary bulkheads, and against the cargo. The dunnage bags are normally collapsed and capable of inflation by compressed air to a suitable expanded condition to engage and stabilize the cargo while also providing a cushion therefor.

Summary

This invention relates to dunnage equipment for railway flat cars having a stationary bulkhead at each end, and it has particular reference to an inflatable dunnage bag permanently attached to each stationary bulkhead and a movable bulkhead attached to each bag opposite the stationary bulkheads whereby the movable bulkheads are adjustable with relation to articles of cargo on the car.

A prime object of the invention is that of providing, in a railroad flat car as described, as a permanent addition to the respective bulkheads, means whereby the bulkheads are, in effect, expandable as necessary to compensate for differences in the dimensions of the load.

Broadly, the invention contemplates the provision, in a railroad flat car as described, of means including a pair of inflatable bags, one of which is positioned between each of the bulkheads and the load to thereby secure the load against displacement from the car by frictional engagement of the load with said means.

While the foregoing objects are paramount, other and lesser objects will become apparent as the description proceeds, when considered in connection with the appended drawing wherein:

FIGURE 1 is a side elevational view of a railroad flat car having a vertical bulkhead at each end, arranged transversely thereof, and having inflatable dunnage bags embodying the invention incorporated therein, showing the inflatable bags in their operative positions and illustrating the manner in which they are used to secure a load, shown in broken lines.

FIGURE 2 is a top plan view thereof.

FIGURE 3 is a fragmentary elevational view on an enlarged scale, partly in section taken on the line 3—3 of FIGURE 2, showing one of the bulkheads and showing the corresponding inflatable bag in an inflated position.

FIGURE 4 is a view similar to FIGURE 3 showing the inflatable bag in a deflated or collapsed position in which it is substantially enclosed within a housing therefor which forms part of the bulkhead.

FIGURE 5 is a fragmentary sectional elevational view showing in detail a portion of the structure substantially as illustrated in FIGURE 3.

FIGURE 6 is a sectional elevational view on an enlarged scale taken on the line 6—6 of FIGURE 3.

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FIGURE 7 is a sectional elevational view on an enlarged scale taken on the line 7—7 of FIGURE 3, and FIGURE 8 is a fragmentary sectional elevational view showing in detail another portion of the structure substantially as illustrated in FIGURE 3.

Referring to FIGURES 1 and 2 of the drawing, the numeral 10 designates generally a railroad flat car as hereinafter described, and the numeral 11 indicates generally a track on which the car 10 travels.

The railroad flat car 10 has a bed, indicated generally by the numeral 12, which is supported on wheeled trucks 13, in the usual manner, and which includes a floor 14, shown fragmentarily in FIGURE 3.

A pair of stationary bulkheads 15, which are positioned adjacent the ends of the car 10 and are arranged transversely thereof, extend upwardly from the floor 14. As shown best in FIGURES 3 and 4, the bulkheads 15 each have a pair of side plates 16 and a top cover plate 17, and a plurality of elongated braces 18 opposite their opposing faces and are inclined upwardly from the car floor 14. The side plates 16 and the top cover plates 17 of the respective bulkheads 15 extend beyond the sides thereof opposite the adjacent ends of the car 10, and form housings for use as hereinafter described.

The invention includes a pair of inflatable bags, designated generally by the numeral 19, which are positioned between the respective bulkheads 15 and opposite end portions of a load, shown in broken lines in FIGURES 1 to 3 and designated by the numeral 20, and with the bulkheads 15 serve as extensions thereof for frictional engagement with the load 20, in the inflated positions of the bags 19, as shown in FIGURES 1 to 3, to secure the load 20 against displacement from the car 10.

A planar member 21, herein referred to as movable bulkhead and which advantageously may be a plywood panel having length and width dimensions approaching those of one side of the respective bulkheads 15, is disposed vertically and transversely of the car 10 at each end thereof and secured to each of the inflatable bags 19 by anchor plates 22, the opposite sides of the bags 19 being secured to the stationary bulkheads 15 by similar devices, as shown generally in FIGURES 3 and 6, and in detail in FIGURE 5.

The inflatable bags 19 are adapted to be folded or collapsed in the manner of an accordion, and in their deflated positions, as illustrated in FIGURE 4, they are retractable, with the corresponding movable bulkheads 21, in the housings therefor formed by the side plates 16 and the top cover plates 17 of the stationary bulkheads 15.

As shown in FIGURES 3, 4 and 7, two pairs of cables 23 are connected at one end to upper portions of the respective members 21, above the inflatable bags 19, in laterally spaced relation to each other, and are passed through holes 24 therefor in the adjacent bulkheads 15, and over one of two sheaves of corresponding pulleys 25 connected to upper portions of the bulkheads 15, and have their opposite ends connected to weights 26 which are arranged to travel in vertical guides or tunnels 27 attached to the bulkheads 15.

Similarly, two pairs of cables 28, which are connected at one end to lower portions of the respective planar members 21, below the inflatable bags 19, in laterally spaced relation to each other, are passed through holes 29 therefor in the adjacent bulkheads 15, and under corresponding pulleys 30 secured to the floor 14, and then over the other of the pulleys 25, and have their opposite end portions connected to the weights 26. The arrangement is such that the inflatable bags 19, when not inflated, are maintained in their collapsed, folded positions, as shown in FIGURE 4, by tension applied to the cables

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23 and 28 as above described. Obviously, springs (not shown) may be employed as a means for retracting the bags 19 and the movable bulkheads 21 if desired.

The bags 19 are preferably formed of a tough flexible material, such as neoprene, or other suitable material, and provided with valves 31, shown in FIGURES 3 and 5, by which they can be inflated from a source of compressed air. Such a source may be carried on the car if desirable.

What is claimed is:

1. In a dunnage device for lading on railway flat cars having a floor and having a stationary bulkhead at each end, a bracing structure for each of said stationary bulkheads having side plates and a top cover plate extending inwardly therefrom beyond the sides and top thereof defining a stationary housing for each bulkhead open to the car floor, an inflatable bag having its inner wall permanently secured to each bulkhead and embraced by said housing when deflated, a movable bulkhead permanently secured to the outer wall of each of said bags and movable in relation to the distension and deflation thereof, and means for biasing said movable bulkheads toward said stationary bulkheads and said housings whereby to retract the bags and said movable bulkheads into the latter when the bags are deflated, the said biasing means for said movable bulkheads comprising a plurality of cables having one end attached thereto and arranged through the stationary bulkheads, and weights on the free ends of said cables operatively contained in guides therefor on the outer surfaces of said stationary bulkheads.

2. In a dunnage device for railway flat cars having a floor and having a stationary bulkhead at each end there-

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of, and a permanent housing enclosing each bulkhead and open to the car floor, an inflatable dunnage bag secured by one of its opposing walls to each of said stationary bulkheads, a movable bulkhead secured to the opposite wall of each of said bags and extensible and retractible with relation to the stationary bulkheads as said bags are distended and deflated, a plurality of cables attached at one end to each of said movable bulkheads and extended through said stationary bulkheads, each cable having a weight attached to its free end, a series of pulleys for said cables arranged on the outer sides of said stationary bulkheads opposite said bags and said movable bulkheads, whereby said bags and said movable bulkheads are retracted into said housings when the bags are deflated, and guide elements on said stationary bulkheads for said weights.

3. In a dunnage device as described in claim 2, and a bracing structure for said stationary bulkheads having side plates and a top cover plate extending beyond the sides and top thereof to define said housings.

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