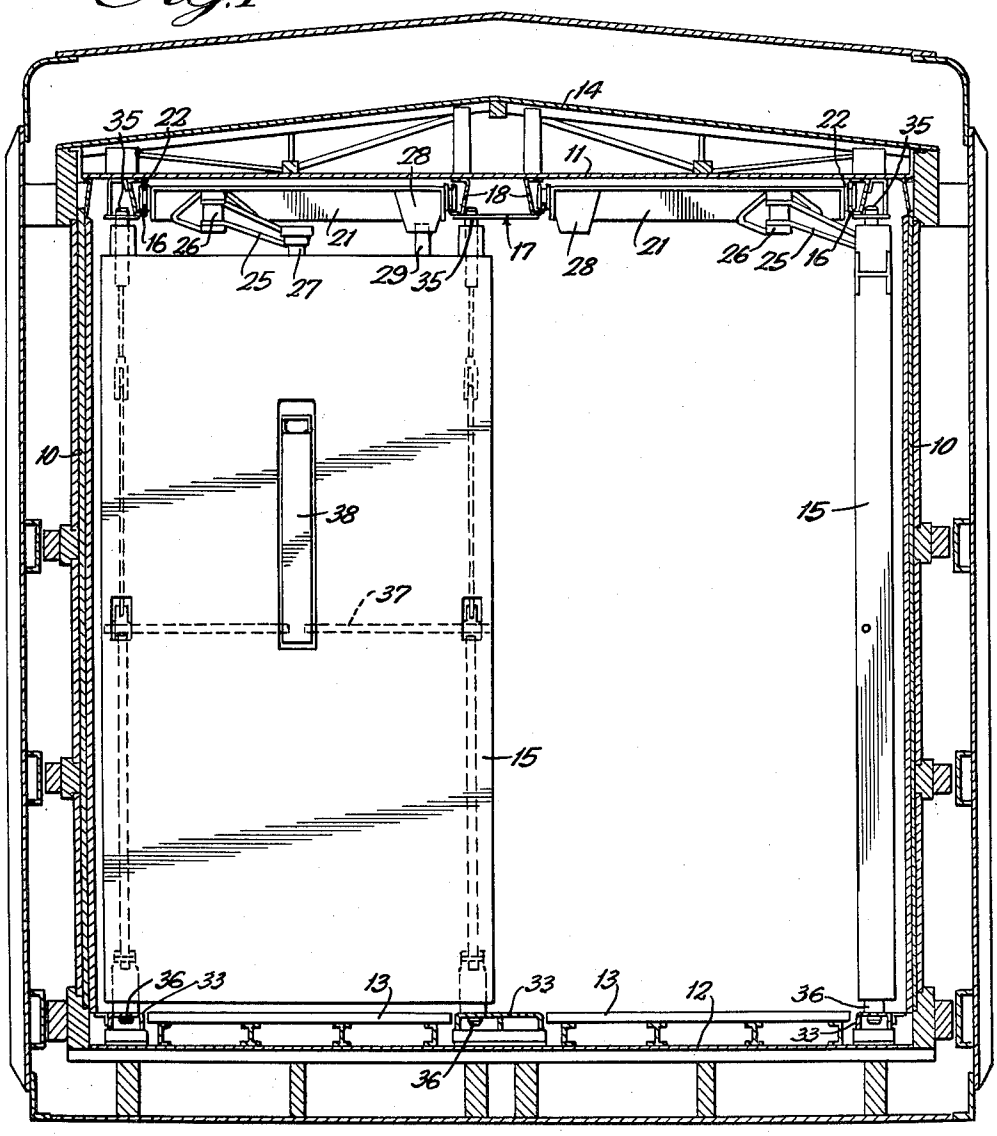
Jan. 30, 1962 R. M. LOOMIS ET AL 3,018,741

LADING SEPARATING MEANS

Filed Aug. 26, 1959 4 Sheets-Sheet 1

Fig. 1



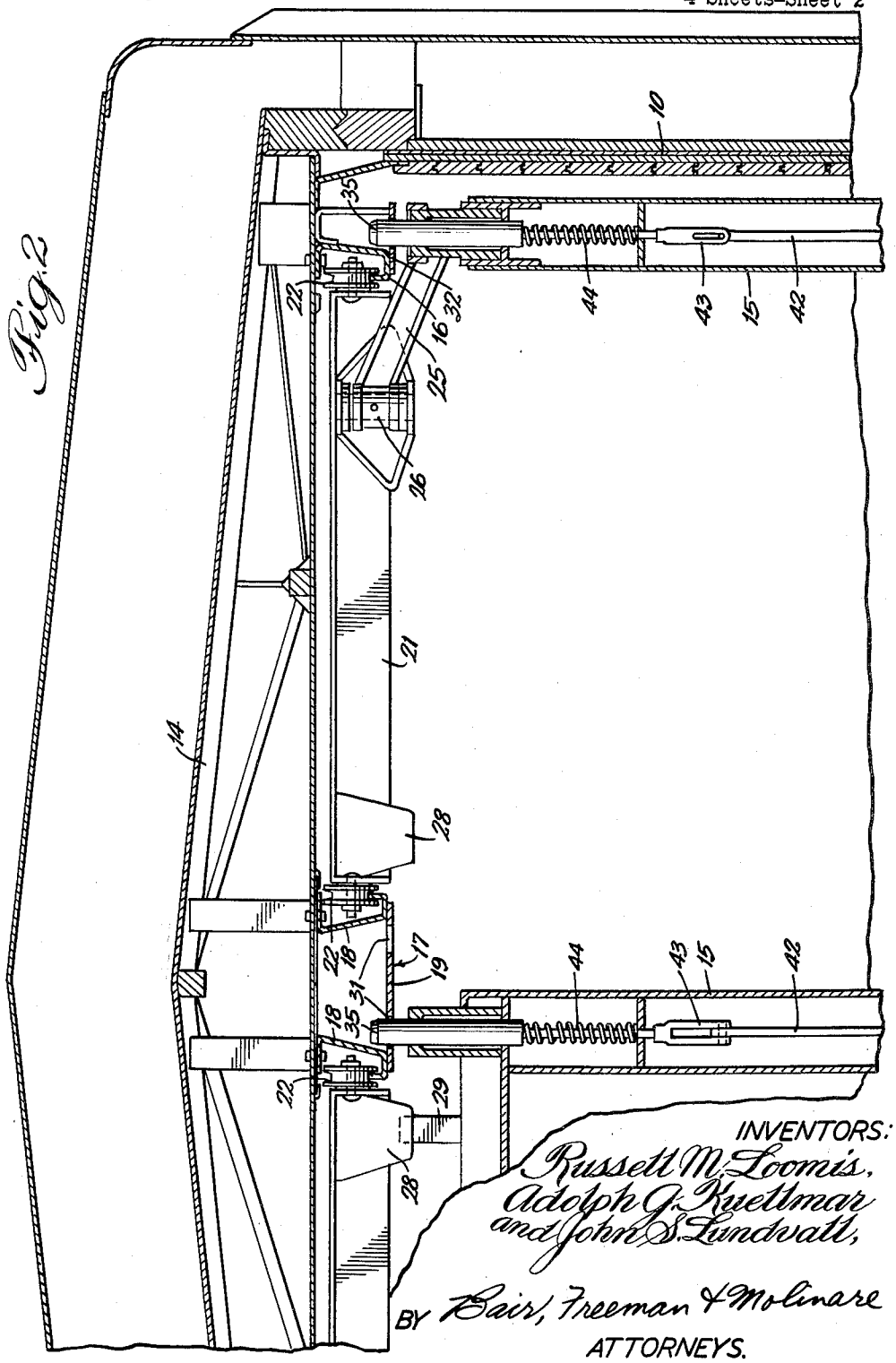
INVENTORS:
Russell M. Loomis,
Adolph J. Ruettimar
and John S. Lundvall,
BY Bair, Freeman & Molinare
ATTORNEYS.

Jan. 30, 1962 R. M. LOOMIS ET AL 3,018,741

LADING SEPARATING MEANS

Filed Aug. 26, 1959 4 Sheets-Sheet 2

Fig. 2



INVENTORS:
Russell M. Loomis,
Adolph J. Ruettimar
and John S. Lundvall,

BY Bair, Freeman & Molinare
ATTORNEYS.

Jan. 30, 1962 R. M. LOOMIS ET AL 3,018,741

LADING SEPARATING MEANS

Filed Aug. 26, 1959 4 Sheets-Sheet 3

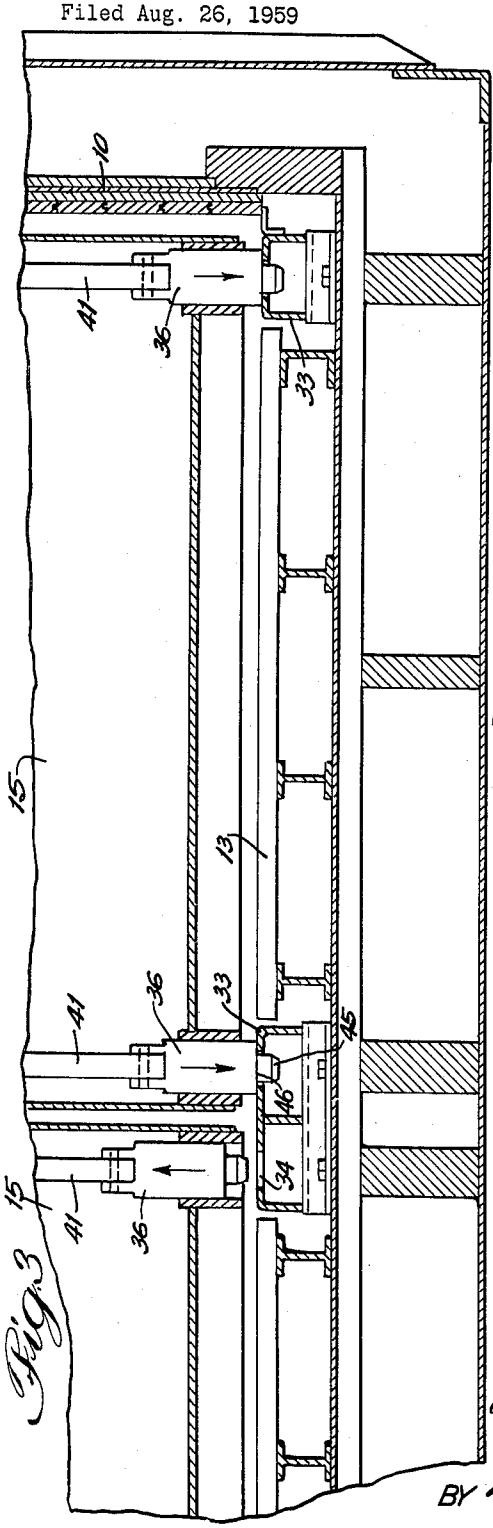


Fig. 3

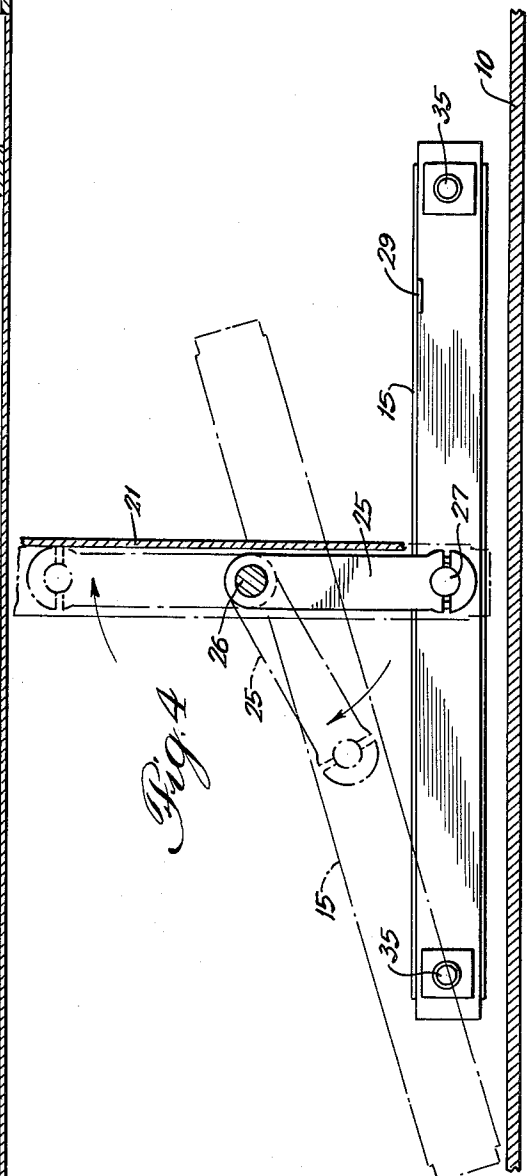


Fig. 4

INVENTORS:
Russell M. Loomis,
Adolph J. Kuettmar
and John S. Lundvall,
BY Bair, Freeman & Molinare
ATTORNEYS.

Jan. 30, 1962 R. M. LOOMIS ET AL 3,018,741

LADING SEPARATING MEANS

Filed Aug. 26, 1959 4 Sheets-Sheet 4

Fig. 5

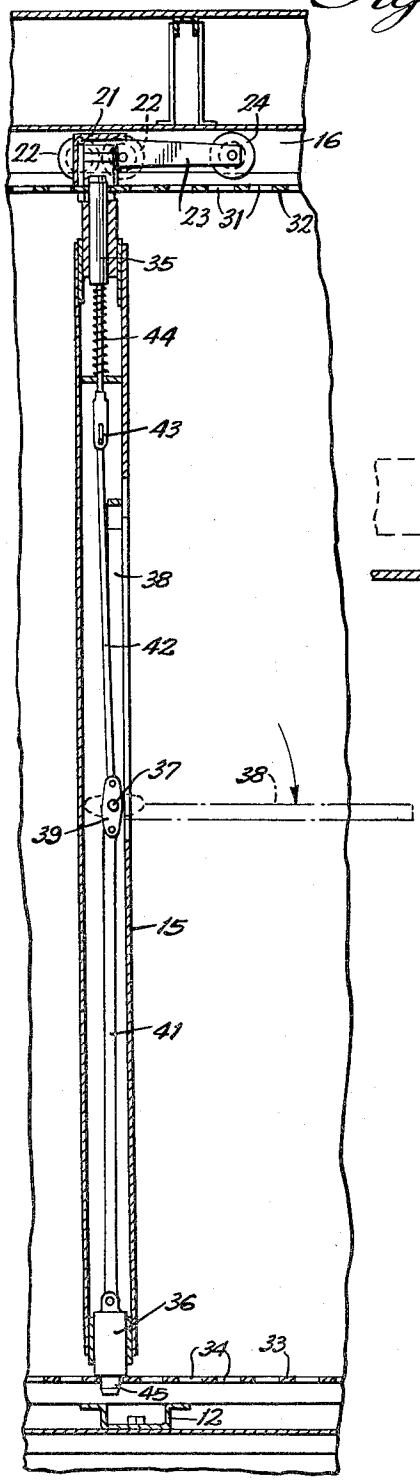
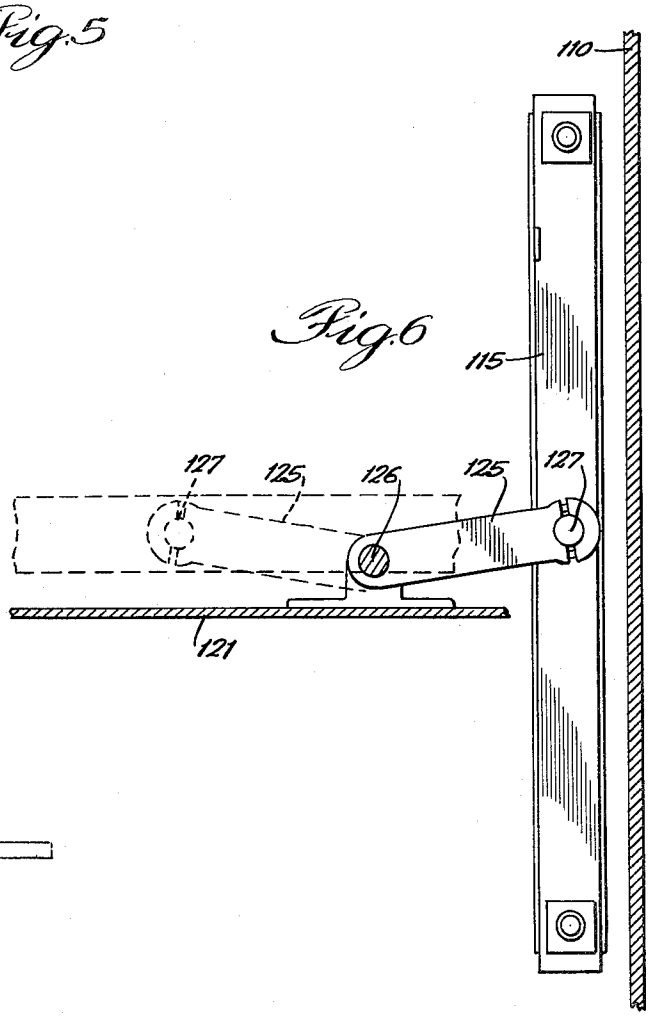


Fig. 6



INVENTORS:
Russell M. Loomis,
Adolph J. Ruettimar
and John S. Lundvall,

BY Bair, Freeman & Molinare
ATTORNEYS.

United States Patent Office 3,018,741 Patented Jan. 30, 1962

3,018,741

LADING SEPARATING MEANS

Russell M. Loomis, Palos Heights, Adolph G. Kuellmar, Chicago, and John S. Lundvall, Park Ridge, Ill., assignors to Union Asbestos & Rubber Company, Chicago, Ill., a corporation of Illinois

Filed Aug. 26, 1959, Ser. No. 836,288
5 Claims. (Cl. 105—376)

This invention relates to load separating means and more particularly to load dividing doors supported in a railway car, or similar vehicle, and movable to different positions therein to separate the lading space into a plurality of separate compartments. For properly separating lading in railway cars and similar vehicles, the separating doors must be very strong and rugged to withstand the loads and impacts imposed thereon in service which means that they are relatively heavy. They must also be so supported in the lading space that they can be moved relatively easily from place to place therein and must be capable of being securely latched in different positions. These several requirements make it difficult to produce a completely satisfactory lading separating means and those heretofore proposed have not been entirely satisfactory in all respects.

It is accordingly one of the objects of the present invention to provide lading separating means which satisfies all of the commercial requirements in being easy to move to different adjustable positions, securely latched in the different positions and extremely strong without requiring excessively large and heavy supporting and latching means.

Another object is to provide lading separating means in which the lading separating doors are pivotally supported on generally horizontal pivoted arms near the roof of the car for pivotal movement on the arms between open and closed positions and for bodily movement through swinging of the arms to stored positions adjacent a side wall of the lading space.

Preferably the arms are supported on beams movable longitudinally of the car on tracks so that the doors are bodily movable to any desired position lengthwise of the car.

A further object is to provide lading separating means in which the weight of the door is removed from the supporting means when the door is latched in either its open or closed position.

According to a feature of the invention, the door is latched by latching means, including vertically movable latch pins projecting from the bottom of the door, and which engage the floor of the car to lift the weight of the door from the supporting means in their latched positions.

The above and other objects and features of the invention will be more readily apparent from the following description when read in connection with the accompanying drawings, in which:

FIGURE 1 is a transverse section through a railway car equipped with lading separating means embodying the invention;

FIGURE 2 is a partial enlarged section of the upper part of the car;

FIGURE 3 is a partial enlarged section of the lower part of the car;

FIGURE 4 is a partial plan view illustrating movements of the supporting arm and the door;

FIGURE 5 is a partial longitudinal section illustrating the latch operating means; and

FIGURE 6 is a partial view similar to FIGURE 4 illustrating a modified construction.

While the lading separating means of the invention is applicable to any type of lading space, it is particularly

illustrated as applied to a railway car having side walls, indicated generally at 10, a roof, indicated generally at 11, and a floor, indicated at 12. The floor may be provided with the usual lading receiving racks 13 which are spaced slightly above the actual floor itself to receive the lading. As shown, the roof of the car is supported by transverse beams 14 which serve also to carry the supporting means for the lading separating doors, as described hereinafter.

The lading space within the car is adapted to be separated by doors 15 which are movable from place to place in the car and which can be latched in any one of a plurality of closed or stored positions in the car. While the doors may be of any desired construction, they are preferably hollow, as shown in FIGURE 5, with face plates on the opposite surfaces thereof to provide a smooth surface for engagement with the lading. It will be appreciated, of course, that the doors could, if desired, be perforated or could be of any other preferred different type of construction.

To support the doors for movement to different positions in the car, tracks 16 are secured in the upper part of the car adjacent to the side walls thereof. As best seen in FIGURE 2, each of the tracks is formed of an elongated strip of sheet metal bent to a generally C-shape and providing a straight upwardly extending flange adjacent to the interior of the car to serve as a track. The track structures are secured to the roof of the car to be supported by the beams 14.

A double track structure, indicated generally at 17, extends along the center line of the car and is provided with two generally C-shaped track members 18 having upwardly extending flanges thereon to form tracks facing respectively toward the side walls of the car. These track members are secured to the roof of the car and are connected by a latch plate 19 at their lower edges, whose purpose will appear more fully hereinafter.

A transverse beam 21 is mounted on each pair of track members 16 and 18 for movement lengthwise of the car on the track members. As shown, each beam 21 is of L-section and carries rollers 22 at each of its ends which ride on the upwardly extending flanges of the track members 16 and 18. As best seen in FIGURE 5, each end of the beam is provided with an arm 23 extending along the track and carrying a roller 24 at its free end fitting between the upturned bottom flange on the track and the upper surface thereof to limit twisting or tilting of the beam.

Each of the beams has pivoted thereto a generally horizontal arm 25 which is pivoted to the beam on a vertical pivot 26 at one end of the arm. Each of the pivots 26 is spaced from the adjacent side wall of the car, but is closer to the side wall than to the center of the distance between the tracks 16 and 18, as shown. One of the doors 15 is pivoted centrally of its width and at its upper edge to the free end of each of the arms 25 on a vertical pivot 27. Preferably the pivots 27 or the pivots 26, or both, have a small degree of free movement vertically and will support the door so that its lower edge is spaced just above the floor racks 13 while permitting the door to be elevated a slight amount from this position. Swinging of each of the doors relative to the beam from which it is supported is limited in one direction by stop means shown as comprising a plate 28 fixed to and projecting slightly below the beam and a stop finger 29 secured to the upper edge of the door at one side thereof to engage the plate 28 when the door is in its closed position. It has been found that this construction greatly simplifies proper aligning of the doors in their closed positions and also makes it easier to move the doors and beams lengthwise of the car when the doors are being adjusted.

The doors are adapted to be held in any one of a plurality of positions in the car by cooperating latching means on the car and the doors. The latch plate **19** forms a part of such latching means and for this purpose is provided with two sets of spaced openings **31** adjacent its edges. Similar plates **32** are formed as a part of the track structures **16** and are formed with spaced latching openings therein. At the floor of the car, as best seen in FIGURE 3, channel-shaped latching strips **33** are secured with their webs upward to be flush with the upper surfaces of the floor racks **13** and provided with series of spaced latching openings **34** therein.

Each of the doors carries four latching pins with two latching pins **35** at its upper edge near its opposite sides and two latching pins **36** at its lower edge near its sides. The latching pins **35** and **36** may be moved between their released and latched positions by a mechanism, as illustrated in FIGURE 5. As there shown, each door is provided with a shaft **37** extending across its width and which is adapted to be turned by a handle **38**. Preferably, the door is formed with a recess in one face in which the handle **38** may be received when the latch pins are extended to their latching position so that the face of the door is flush. Each shaft **37** carries a pair of cross heads **39** at its opposite ends and the cross heads **39** are directly connected through links **41** to the lower latch pins **36**, as shown in FIGURE 5. Links **42** connect the cross heads to the upper pins **35** through lost motion connections **43** and springs **44** are provided urging the upper latch pins upwardly to their latching positions.

According to one feature of the invention, the lower latch pins **36** are provided with reduced tips **45** of a size to enter freely into the latching openings **34** in the latch strips **33** and with enlarged body portions joined to the reduced tips through shoulders **46** which of larger size than the latching openings **34**. The linkage is so proportioned that when the handle **38** is moved upward from the release position shown in dot-dash lines in FIGURE 5 to the full line latching position, the lower latch pins **36** will move down to the point where the shoulders **46** engage the upper surfaces of the latch strips **33** which define the floor of the car before the handle reaches its full upper position. The small amount of remaining movement of the handle to move it to its full latch position within the recess in the door will project the latch pins **36** further downward from the door, causing the latch pins **36** to raise the door slightly and to remove the weight thereof from the supporting means, including the arm **25**, pivot **26** and beam **21**. These supporting parts may therefore be made only heavy enough to support the door for movement from one position to another in the car without being required to absorb any of the shocks or loads imposed upon the door during operation of the car.

In using the lading separating means of the invention, the doors **15** may be swung to the stored position shown at the right in FIGURES 1 and 2 for loading the car. In this position, the arms **25** are swung around so that their free ends lie closely adjacent to the side wall of the car, as particularly illustrated in FIGURE 4, and the doors are turned about the pivots **27** to a position adjacent and parallel to the side walls of the car. The doors may be latched in this position, if desired, and should be so latched if the car is to be moved with the doors in the stored position. This can be accomplished by swinging the handle **38** upward into the recess in the door thereby causing the latch pins **35** and **36** to project into the latch openings in the strips **16** and **33** to hold the doors securely in the stored position. It will be noted that the weight of the doors when latched is picked up by the lower latch pins **33** so that the doors are supported solely by the latch strips and all strain is removed from the arms **25**, the pivots **26** and **27**, the beams **21** and the tracks.

When the car is loaded and the doors are to be moved to their closed positions, the latches may be released by swinging the handle **38** down to the dot-dash line position of FIGURE 5 and the arms **25** may be swung out to the position shown at the left of FIGURE 1 and in dot-dash lines in FIGURE 4. In this position, the pivots **27** lie centrally between the tracks **16** and **18** and the doors can be swung to their closed positions, as shown. The doors can also be moved lengthwise of the car by moving the beams **21** along the tracks to the desired position in the car and can be latched in this position by raising the handles **38** into the recesses in the doors. At this time also the weight of the doors will be picked up by lower latch pins **36** so that all strain is removed from the tracks, beams, arms **25** and pivots **26** and **27**. This enables these parts to be made relatively light, merely sufficient to support the weight of the doors without being required to absorb any of the shocks incident to travel of the loaded vehicle. It will thus be seen that the doors are supported with complete flexibility for movement to closed or stored positions in any part of the car. Due to the fact that the arms **25** are pivoted they will move freely and easily so that the doors can be swung with a minimum of effort from one position to another and can be securely latched in any position to which they are moved.

FIGURE 6 illustrates a modified construction wherein parts corresponding to like parts in FIGURES 1 to 5 are indicated by the same numerals, plus **100**. By comparison of FIGURE 6 with FIGURE 4, it wil be observed that the principal difference is that the arm **125** is made slightly longer than the arm **25** of FIGURE 4 so that it never moves into a position completely parallel with the beam **121**. Thus, with the door in its stored position adjacent to the side wall **110** of the car, the arm **125** lies at a slight angle to the beam **121** rather than being parallel to it. Similarly, in the closed position of the door, as shown in dotted lines, the arm **125** is at a slight angle to the beam **121**. With this construction, slightly more flexibility in the degree of movement of the door is provided so that the parts need not be made quite as accurately as with the construction of FIGURES 1 to 5. Furthemore, this construction is better able to accommodate slight variations in the width of a car while still enabling the doors to be moved closely adjacent to the car side walls for storage or to the desired position transversely of the car for functioning as lading separators. Otherwise, the construction is the same as FIGURES 1 to 4 and functions in the same manner.

While two embodiments of the invention have been shown and described herein, it will be understood that they are illustrative only and not to be taken as a definition of the scope of the invention, reference being had for this purpose to the appended claims.

What is claimed is:

1. In a car having spaced side walls, a floor and a roof, lading separating means comprising tracks extending longitudinally of the car adjacent to the roof and projecting inwardly from the side walls of the car, a transversely extending beam mounted on the tracks for movement longitudinally of the car, a generally horizontal arm underlying the beam and pivoted at one end on the beam on a vertical axis spaced from one side wall of the car, the other end of the arm being swingable from a position adjacent to said one side wall and beneath the adjacent track to a position between said vertical axis and the other side wall, and a door pivoted at its top centrally of its width to said other end of the arm on a vertical axis and supported thereby above the floor of the car.

2. The construction of claim 1 including interengaging parts on the beam and on the top of the door near one edge thereof to engage when the arm is in the last named position thereof and the door is parallel to the beam to limit turning of the door relative to the beam.

3. The construction of claim 1 including latch strips

in the car adjacent to the roof and on the floor each formed with a series of latching openings, latching pins movably carried by the door for outward movement into the openings including vertically movable pins extending below the bottom of the door having reduced tips to enter the openings and shoulders to engage the latch strips, and operating means to move the latch pins and moving the vertically movable pins far enough below the door to engage the shoulders with the latch strip and pick up the weight of the door thereon.

4. In a car having spaced side walls, a floor and a roof, lading separating means comprising a pair of single tracks extending lengthwise in the upper part of the car adjacent to the side walls respectively and projecting inwardly therefrom, a double track extending lengthwise in the car at its center line, a pair of beams movably supported respectively on the double track and each of the single tracks, a generally horizontal arm pivoted at one end on each of the beams on a vertical axis intermediate the length of the beam and underlying the beam, the free end of each arm being swingable from a position adjacent to the adjacent side wall of the car and beneath the adjacent single track to a position between the adjacent side wall and center line of the car, a door pivoted at its top centrally of its width to the free end of each arm and suspended therefrom above the floor of the car, each door being of a width equal to substantially half of the width of the car, the doors being movable from positions parallel and adjacent to the respective side

walls of the car when the arms are in the first named position to transverse aligned positions in the car when the arms are in the last named position and latching means to latch the doors in different positions in the car.

5. The construction of claim 4 in which the latching means includes latch members on the floor of the car formed with openings therein, latch pins movable vertically downward from the lower edge of the door having tips of a size to enter the openings and body portions larger than the openings to engage the latch members, and operating means to move the pins downward a distance greater than that required to move their body portions into engagement with the latch members whereby the latch pins will pick up the weight of the door.

References Cited in the file of this patent

UNITED STATES PATENTS

906,322	Spradling	Dec. 8, 1908
1,263,930	Rixson	Apr. 23, 1918
1,412,107	Evans	Apr. 11, 1922
2,155,463	Angell	Apr. 25, 1939
2,360,029	Wieden	Oct. 10, 1944
2,494,682	Aspin	Jan. 17, 1950
2,495,903	Mooreman	Jan. 31, 1950
2,516,527	Oltz	July 25, 1950
2,517,823	Angell	Aug. 8, 1950
2,543,143	Wells et al.	Feb. 27, 1951
2,674,207	Kerbaugh et al.	Apr. 6, 1954