March 26, 1940. J. T. WALSH 2,194,922

FREIGHT CAR APPARATUS

Filed March 20, 1939 2 Sheets-Sheet 1

Fig. 1.

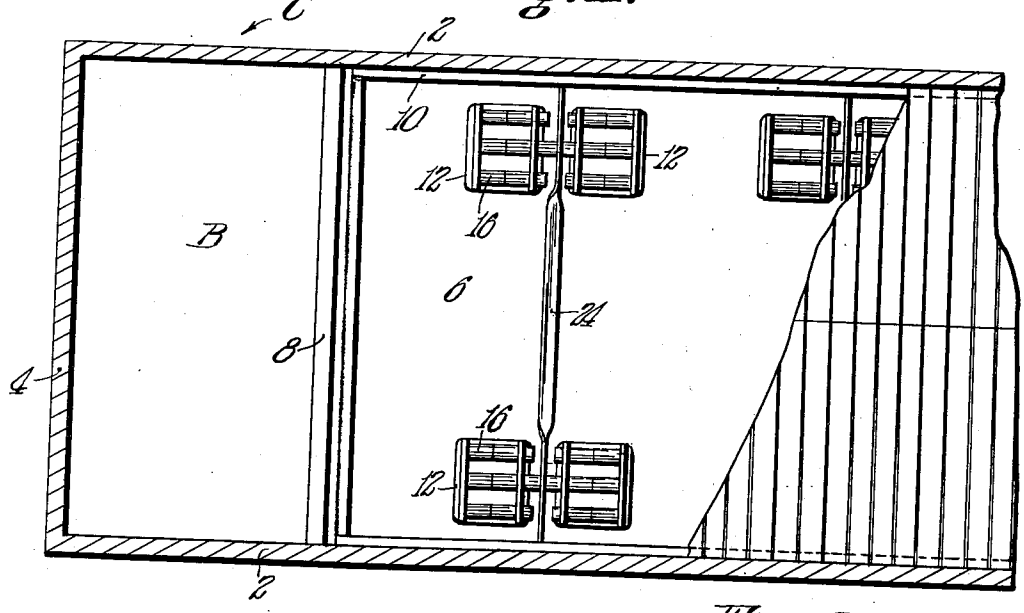


Fig. 2.

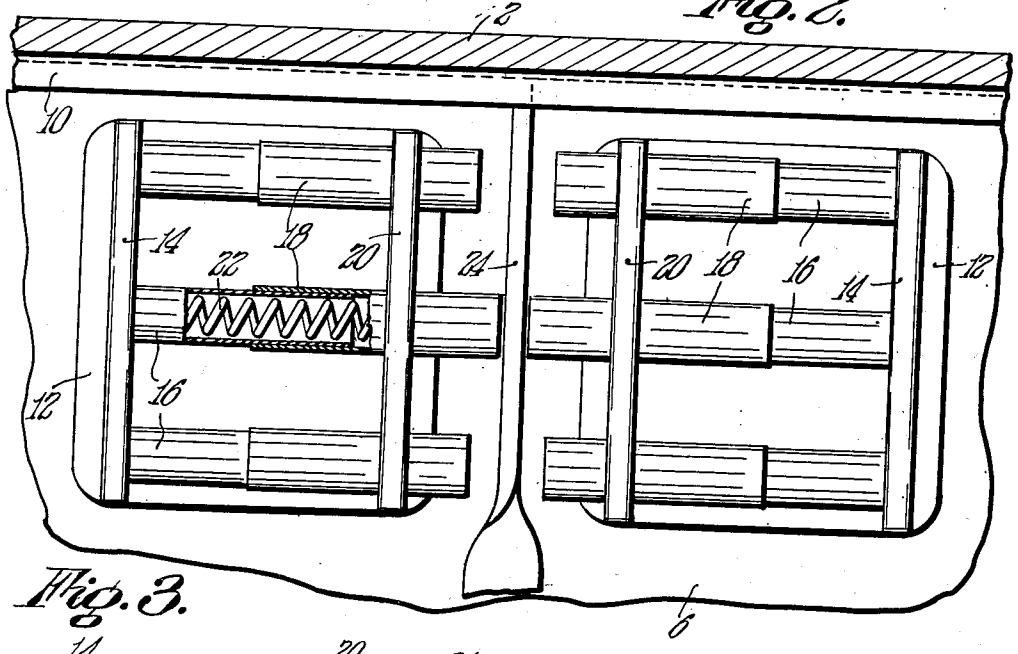
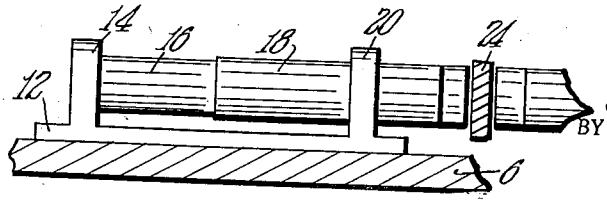


Fig. 3.



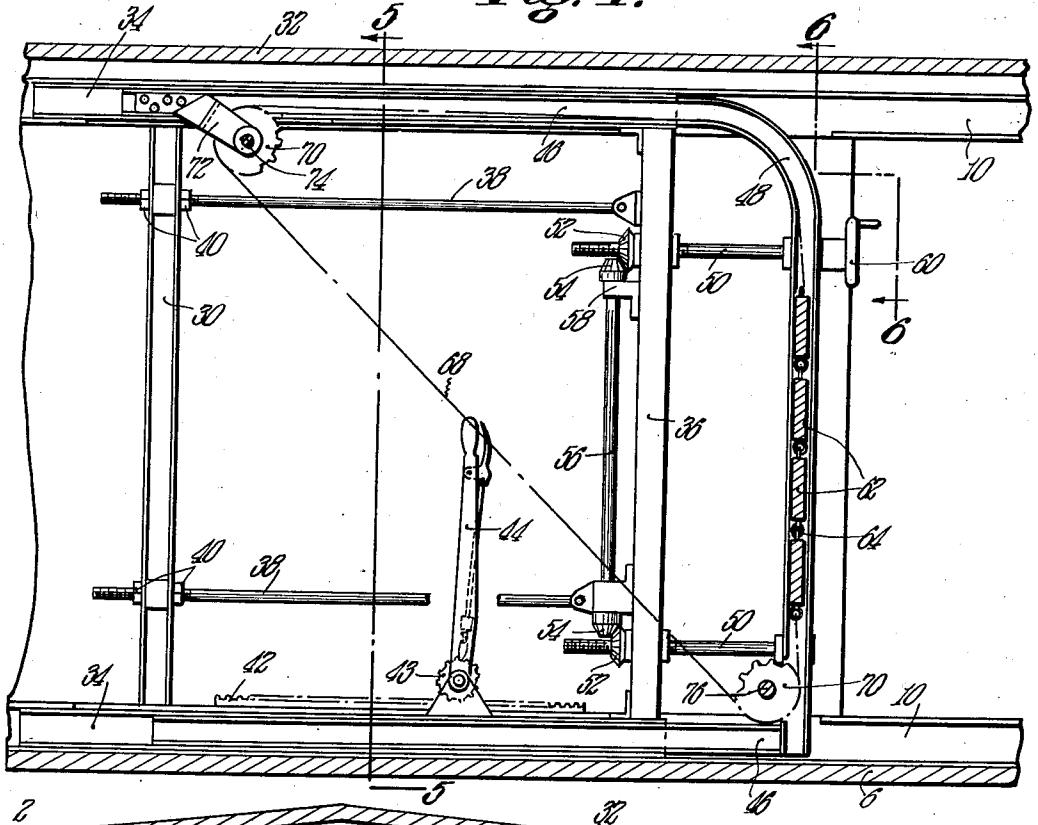
INVENTOR.
John T. Walsh.
BY
Walter C. Ross
ATTORNEY.

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FREIGHT CAR APPARATUS

Filed March 20, 1939 2 Sheets-Sheet 2

Fig. 4.



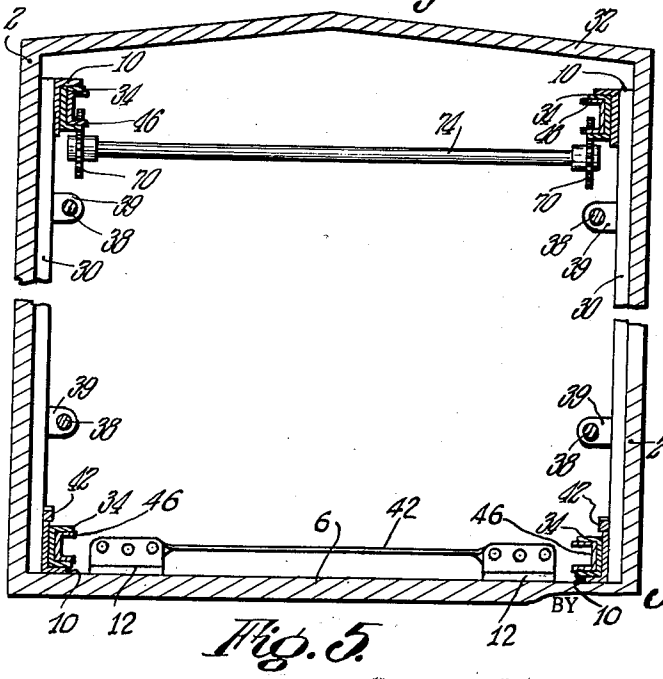
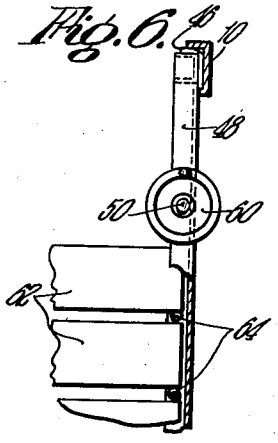


Fig. 5.

Fig. 6.



INVENTOR.

John T. Walsh.

Walter C. Rose.

ATTORNEY.

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FREIGHT CAR APPARATUS

John T. Walsh, Westfield, Mass.

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7 Claims. (Cl. 105—369)

This invention relates to improvements in what are known in the freight-carrying business as closed type equipment and which are more commonly known as freight cars having top walls and side doors as contrasted with coal cars, for example.

The invention relates more particularly to the provision of novel apparatus for associating with a freight or refrigerator car of common form in such a way that the contents of the car are supported more firmly and safely than is now the practice.

It is a principal object of this invention to provide apparatus whereby crates or boxes of vegetables, for example, are packed tighter than is now possible and they may be piled one upon the other in the car in such a way that when the car is subjected to the usual shocks encountered during the course of a journey, they will not tend to shuffle or fall over so as to injure the vegetables as is now the case. I accomplish this by means of a novel movable support as will appear.

As a special feature of the invention, supporting or bracing apparatus is provided which is adjustable so as to accommodate cartons or boxes of various sizes. That is to say, crates of celery, for example, are of a more or less standard size which is much different than the size of the crates which now commonly carry grapefruit. Consequently, it can be readily seen that the number of crates of grapefruit which any given car will carry is different than the number of crates of celery that same car will carry.

It will therefore be seen that no matter how tightly the crates are packed in a car, there will invariably be spaces between some of them and the distance of these spaces will vary depending upon the size of the boxes. It is these spaces, of course, which permit the boxes to slide and crush into adjoining boxes, causing packages to break and loosening up the entire load. Sometimes they will topple over so as to cause still greater damage to the goods.

It is now common practice, when loading a refrigerator car, to first pack one end and then the other with the number of crates it can contain and there is always more or less space between the halves. It is usual to insert between those crates in one end of the car and those in the other end a removable upright gate of a standard thickness and size and this has the objection that when the gate is removed and the car is bumped or moved, the contents are loosened so that damage results.

It is particularly important that special packages, such as those containing perishable goods, be held in place against shifting. Under present practise cars carrying such special goods are not allowed what is referred to as the "stop-off privilege", that is to stop for partial unloading, for the reason that when the center gate is removed and part of the car has been unloaded, any jolting of the car would cause the balance of the load to shift or slide with consequent damage and at great cost to the carrier. The use of the apparatus of my invention, however, will result in the holding in place of a partial load, wherefore cars so equipped and carrying these special goods could be permitted the stop-over privilege.

In other words, the usual gate, not being adjustable, is of little value even when the car is filled and is of no value when the car has been partially unloaded. According to my invention, however, I provide means whereby the crates are held firmly in place up against the end walls of the car, regardless of their number or size but at the same time I render them readily accessible for removal when desired.

Various other novel features and advantages of the invention will be hereinafter more fully referred to in connection with the accompanying description of the preferred form of the invention, reference being had to the drawings, wherein:

Fig. 1 is a partial plan view showing the base supporting means of the invention;

Fig. 2 is a plan view on an enlarged scale of a portion of the means shown in Fig. 1;

Fig. 3 is a side elevational view of what is shown in Fig. 2;

Fig. 4 is a side elevational view of the adjustable bracing means of the invention;

Fig. 5 is a sectional view on the line 5—5 of Fig. 4; and

Fig. 6 is a sectional view on the line 6—6 of Fig. 4.

Referring now to the drawings in detail, the invention will be more fully described.

The base part of the apparatus of the invention will first be described. In the drawings, Fig. 1 is a sectional view through a car C having vertical side walls 2, end walls 4 and a floor 6. Adjacent the end wall 4 is a partition wall 8 which forms what is called an ice bunker B.

Extending around the inside of the car proper and extending upwardly from the floor 6 is a frame-like member 10 of rigid material such as iron. The frame is preferably spaced from the

partition wall 8 as shown so as to permit slight movement thereof longitudinally of the car.

At spaced points along the floor 6 are a plurality of what I call spring-supporting units. Each unit preferably includes two pairs of oppositely disposed plate members 12 of rigid metal having upstanding parts 14 at their outer ends, as shown.

One pair of the members 12 of each unit is disposed adjacent one side wall 2 and the other pair is in alignment therewith and disposed adjacent the opposite wall 2. Extending away from each part 14 in the direction of the part 14 of the other member 12 of the pair are one or more tube or sleeve members 16. Preferably there are three of such tubes as shown having their ends secured in some way to the parts 14.

Slidably carried by the forward ends of the tubes 16 are other tubes 18. These latter are guided for sliding movements relative to the parts 14 as by an apertured upright member 20 associated in some manner with the plate 12.

Within the telescoped sleeves 16 and 18 are spring members 22 arranged in such a way that the tube 16 is yieldingly urged away from part 14. At the same time, any shock given the forward ends of the tubes 18 will cause the same to move rearwardly and compress the springs 22, the tubes returning, under the action of the springs, to forward positions when the shock is over.

Transversely of the car and between the pairs of plates of each unit extend rigid bars 24 having their opposite ends secured to the frame 10, the latter being preferably channel-shaped. According to the preferred embodiment of the invention, the bars are twisted intermediate their ends, as shown, so as to have their greater parts substantially horizontal so as not to interfere with the circulation of air from one end of the car to the other.

The arrangement is such that when the car is bumped, the supporting frame 10 moves longitudinally of the car moving with it the bars 24 and causing them to contact the ends of tubes 18. This contact causes the sleeves to telescope and the springs take up the shock.

Preferably, one of the springs 22 of each set is longer than the others. Thus, the middle sleeve 18 takes the initial, and possibly more severe, shock while the shorter springs serve to minimize it still further.

I then lay on top of these various units what I call a rack member. This consists of a plurality of adjacently-disposed strips 26 of wood or the like joined together to provide an auxiliary floor. The strips are preferably spaced apart, as shown, to facilitate circulation of air.

This floor will be about the same length and width as the frame 10 and is preferably hinged thereto so as to move therewith. Preferably the rack is divided longitudinally and also transversely to permit its being swung up on its hinges (not shown) for cleaning purposes, etc.

In any event it will be appreciated that when the frame and rack move as when the car is jarred, the spring units take up the shock. A similar frame member 10 extends around the upper side of the car as shown clearly in Fig. 5.

As stated, I associate with the base supporting means what I call bracing means and this is adjustable to accommodate crates of various sizes. That is to say, I make it possible to load one end of the car with orange crates, for example, and the other end with crates of lettuce and they all are firmly supported against shifting.

This means extends adjacent the side walls 2 of the car, as will now appear, and so cooperates with the base as to prevent the upper crates from moving off the lower ones when the car is jarred.

It is the practice to provide doors in the approximate middle of each of the side walls 2 of the car and these are, of course, to permit the loading and unloading of the car. I provide a pair of adjustable gate members which extend transversely of the car approximately midway of the doors and these are so arranged as to be movable towards and away from one another so as to brace the contents in the opposite ends of the car.

Extending away from opposite ends of each of said transverse adjustable gates in the direction of the adjacent end of the car are sets of other members. These sets of members extend longitudinally of and substantially adjacent the side walls of the car and it will be understood that there are two sets associated with the forward gate member and two sets associated with the rear gate member, each being substantially similar in construction.

In Figure 4, one of said sets is shown extending towards the forward end of the car from the far side of the forward adjustable gate. An upright member 30, preferably of channel-shaped metal, has its opposite ends rigidly secured to the upper and lower frames 10 and the car will have an upper wall 32.

A substantially U-shaped member, also preferably formed of channel metal, has side arms 34 slidable in the channels of said upper and lower frames and the arms are connected by an upright member 36. As the arms of the U-shaped member slide in the main frames, they, of course, move member 36 towards and away from upright 30, with which it is substantially parallel.

Extending from the member 36 towards upright 30 are one or more bolts 38 which have their opposite ends extending through suitable bearings 39 associated with upright 30 as shown. The said opposite ends are threaded as indicated and there may be nuts such as 40 associated with the bolts which, upon being tightened, will prevent movement of the bolts relative to member 30 and which, upon being loosened, will permit such movement.

To facilitate such movement, when desired, I provide a rack 42 on the lower main frame 10 and associate with the lower side arm 34 a lever and ratchet member 44 having a gear 43 for engaging rack 42 and adapted to be actuated to move the U-shaped member relative to the frames 10. That is to say, the gear mechanism shown is adapted to move the U-shaped member so that the arms 34 slide in the channels 10 in one direction or the other, although it is to be understood that other moving means may be employed.

Another more or less U-shaped member has side arms 46 slidable in the channel members 34. An upright part 48 connects the arms 46 and preferably the upper end portion of said part 48 is somewhat curved as shown.

One or more horizontal rods 50 extend between the members 36 and 48 and are journalled for rotation in suitable bearings associated therewith. Gears 52 may be associated with the rods 50 and these will be in mesh with face gears 54 provided on opposite ends of a vertical rod 56 journalled for rotation in suitable bearings 58 carried by the member 36.

A manually engageable member such as 60 is carried by the front end of one of the rods 50. Thus by rotating said one rod, its engagement with the other rod 50 by means of the gear arrangement just described will cause the member 48 to be pulled towards the member 36 with the arms 46 sliding in the channels 34.

It will now be seen that the first-mentioned U-shaped member may be moved relative to the stationary upright 30 and since the second-named U-shaped member is associated with the first one as described it will move with it relative to the end wall of the car. Then when still further adjustment is desired, the second U-shaped member is adjustable relative to the first.

As stated, the parts 48 (there is one facing the one shown on the opposite side of the car and in alignment therewith) are channel-shaped. The channels face inwardly and receive opposite ends of a plurality of transversely-extending bar members 62.

These bars 62 may be of iron and more or less flexible connecting means such as eyes 64 may secure the bars together so that they form a normally vertical gate as shown. A flexible chain such as 68 has its opposite ends attached to the upper and lower sides of the gate and the chain engages sprockets 70, one adjacent the top of the car and another adjacent its lower side.

In the form shown, the upper sprocket 70 is associated with a bracket 72 attached to the upper arm 46 and a transverse rod 74 extends between the oppositely disposed upper sprockets. The lower sprockets 70 may be similarly associated with the lower arms 46 and a transverse rotatable rod 76 may extend between them.

It will thus be seen that rotation of the sprockets in one direction, by any suitable means, will move the gate up and rotation in the opposite direction will move it down. Preferably some means is provided to properly guide the chain 68 and for this purpose it may have associated with it dummy blocks (not shown) which will ride in the channels 48 and 46.

In order that the adjustment will be equal on both sides of the car, some form of pressure gauges (not shown) may be associated with the members 48 or the gate member in order that the pressure under which the crates are held may be determined and made uniform on both sides.

The gate shown in Fig. 4 will be adjustable, by virtue of the slidable U-shaped members, relative to the forward or left-hand end wall of the car. Thus, the left-hand end of the car may be tightly packed with crates and the gate shown caused to bear with the desired pressure against the load in that end of the car.

It will be appreciated that the bar members 62 forming the gate ride in the channels 48 and 46 so as to be movable between a truly vertical position where they will hold the crates in place and a more or less horizontal position underlying the roof of the car where removal of the crates is permitted. It will also be seen that when only one end of the car is to be unloaded, as during "stop-off", only one gate need be lifted and the other may remain in holding position so that the crates in the opposite end of the car will not be disturbed.

If desired, there may be rack members similar to that on the floor of the car extending vertically and closely adjacent the side walls (and end walls if desired) of the car. These may serve to enclose the packages and prevent their spreading out as well as to space the crates away from the mechanism just described.

Preferably, too, there are suitable slide bearings (not shown) associated with the top of the car to co-operate with the upper frame 10 and strengthen the construction. These will serve to prevent the whole loading device from what is called "jumping", that is moving upwardly off the floor, when the car is jolted.

Similar bearings may be provided between the side walls of the car and the loading apparatus to prevent objectionable sidewise movement.

It will be appreciated that when the packages in opposite ends of the car are tightly packed and the transverse gate members have been adjusted to their best bracing position, there will be a space between the gates. That is to say, as contrasted with prior art practise where there is always more or less space between the packages and the removable gate, I provide no space between the crates and the gates but only between the gates.

I have found it possible to utilize this space by filling it in tightly with still more packages. This may be done by lifting the gates after the crates in opposite ends have been pushed towards the end walls of the car as much as they can be and then forcing packages into the space which will, of course, prevent any movement of the crates longitudinally of the car.

While I have described the invention in great detail and with respect to the present preferred form thereof, it is not desired to be limited thereto since changes and modifications may be made therein without departing from the spirit and scope of the invention. The invention may be embodied in other specific forms without departing from the essential characteristics thereof. The present embodiments are therefore to be considered in all respects as illustrative and not restrictive, the scope of the invention being indicated by the appended claims rather than by the foregoing description, and all changes which come within the meaning and range of equivalency of the claims are therefore intended to be embraced therein.

What it is desired to claim and secure by Letters Patent of the United States is:

1. In a car having top, bottom, side, and end walls, supporting apparatus of the class described comprising in combination, a horizontal frame member supported on the bottom wall for longitudinal movements, spring means associated with said bottom wall and said frame member for taking up shocks when the car is jolted, and substantially vertical bracing means associated with said frame member for bracing packages supported above said spring means, said bracing means including a pair of transversely-extending gate members guided in said frame member for adjustable movements relative to one another and relative to said end walls, said gate members also being movable vertically.

2. In a car having top, bottom, side and end walls, supporting apparatus of the class described comprising in combination, a horizontal frame member supported on the bottom wall for longitudinal movements, spring means associated with said bottom wall and said frame member for taking up shocks when the car is jolted, a rack member carried by said frame member above said spring means and substantially vertical bracing means associated with said frame member and adjustable relative thereto towards and away from said end walls for bracing packages sup-

ported on said rack member, said bracing means including a pair of transversely-extending gate members and guide means associated therewith slidable in said frame member, said gate members being movable vertically.

3. In a car having top, bottom, side and end walls, supporting apparatus of the class described comprising in combination, a horizontal lower frame member supported on the bottom wall, uprights extending upwardly from opposite sides of said lower frame member, an upper frame member carried by the upper ends of said uprights, both of said frame members being generally channel shaped with the channels facing inwardly, U-shaped members having horizontal side arms slidable in the channels of said frame members and vertical connecting members, and a transverse gate member having its opposite ends normally guided by said connecting members.

4. In a car having top, bottom, side and end walls, supporting apparatus of the class described comprising in combination, a horizontal lower frame member supported on the bottom wall, uprights extending upwardly from opposite sides of said lower frame member, an upper frame member carried by the upper ends of said uprights, both of said frame members being generally channel shaped with the channels facing inwardly, U-shaped members having horizontal side arms slidable in the channels of said frame members and vertical connecting members, a transverse gate member having its opposite ends normally guided by said connecting members, and means for moving said U-shaped members relative to said frame members.

5. In a car having top, bottom, side and end walls, supporting apparatus of the class described comprising in combination, a horizontal lower frame member supported on the bottom wall, uprights extending upwardly from opposite sides of said lower frame member, an upper frame member carried by the upper ends of said uprights, both of said frame members being generally channel shaped with the channels facing inwardly, U-shaped members having horizontal side arms slidable in the channels of said frame members and vertical connecting members, a transverse gate member having its opposite ends normally guided by said connecting members, and means for moving said U-shaped members relative to said frame members, said gate member being movable vertically.

6. In a car having top, bottom, side and end walls, supporting apparatus of the class described comprising in combination, a horizontal lower frame member supported on the bottom wall, uprights extending upwardly from opposite sides of said lower frame member, an upper frame member carried by the upper ends of said uprights, U-shaped members having horizontal side arms slidable relative to said frame members and vertical connecting members, said side arms being channel-shaped, other U-shaped members having horizontal side arms slidable in said channels and vertical connecting members, and a transverse gate member having its opposite ends associated with the last-named connecting members.

7. In a car having top, bottom, side and end walls, supporting apparatus of the class described comprising in combination, a horizontal lower frame member supported on the bottom wall, uprights extending upwardly from opposite sides of said lower frame member, an upper frame member carried by the upper ends of said uprights, U-shaped members having horizontal side arms slidable relative to said frame members and vertical connecting members, said side arms being channel-shaped, other U-shaped members having horizontal side arms slidable in said channels and vertical connecting members, and a transverse gate member having its opposite ends associated with the last-named connecting members, means for moving said other U-shaped members relative to the first-named U-shaped members.

JOHN T. WALSH.