

Oct. 10, 1944.

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2,360,029

ADJUSTABLE PARTITION FOR CARS AND THE LIKE

Filed Aug. 26, 1941

6 Sheets-Sheet 1

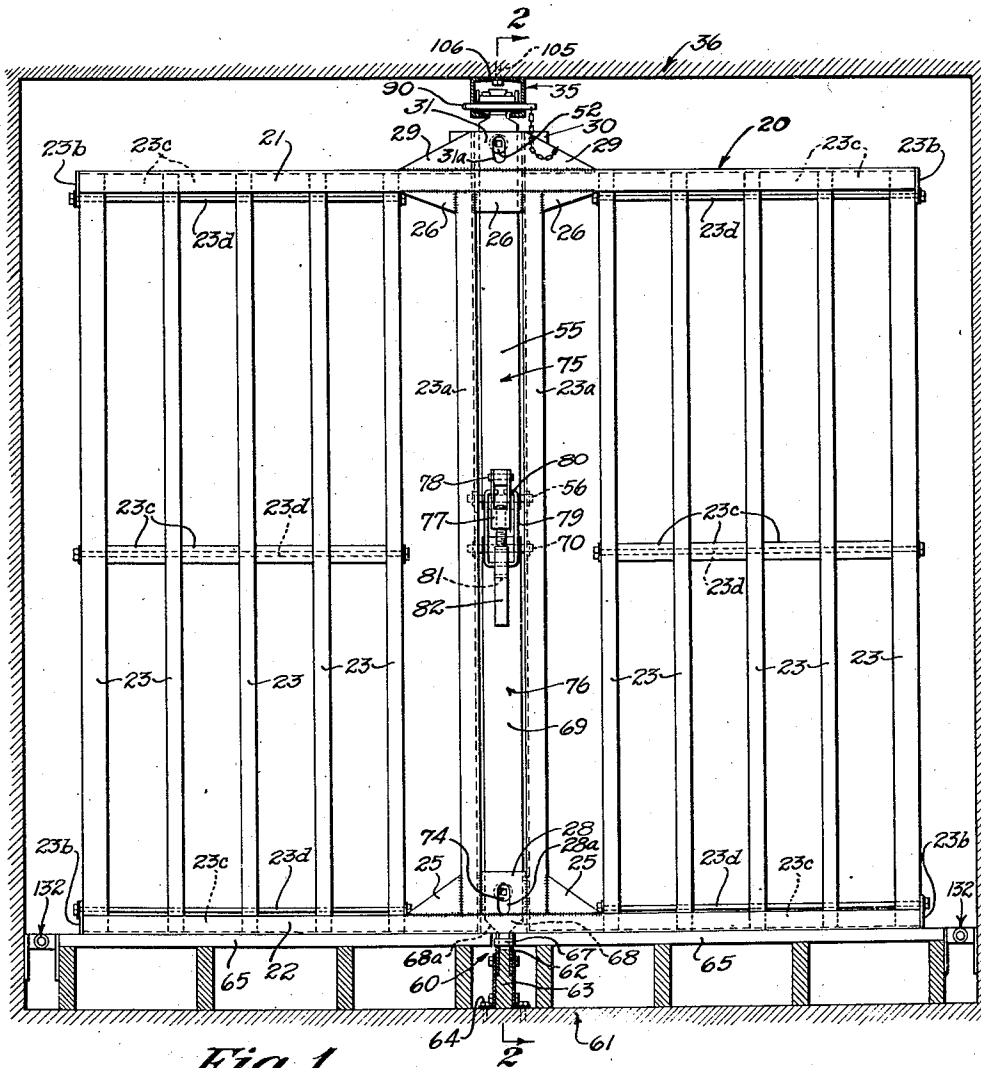


Fig. 1

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6 Sheets-Sheet 2

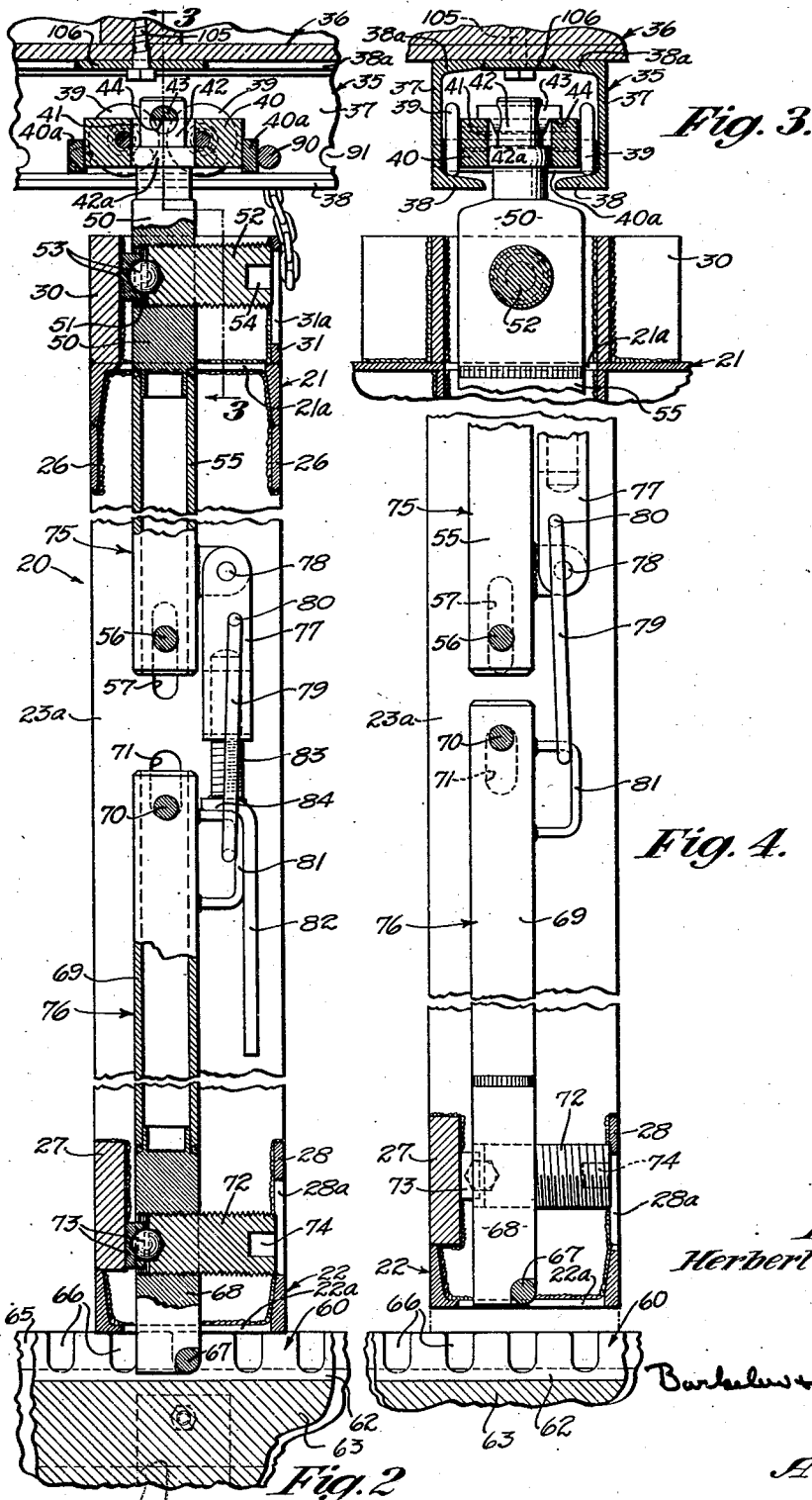


Fig. 3.

Fig. 4.

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6 Sheets-Sheet 3

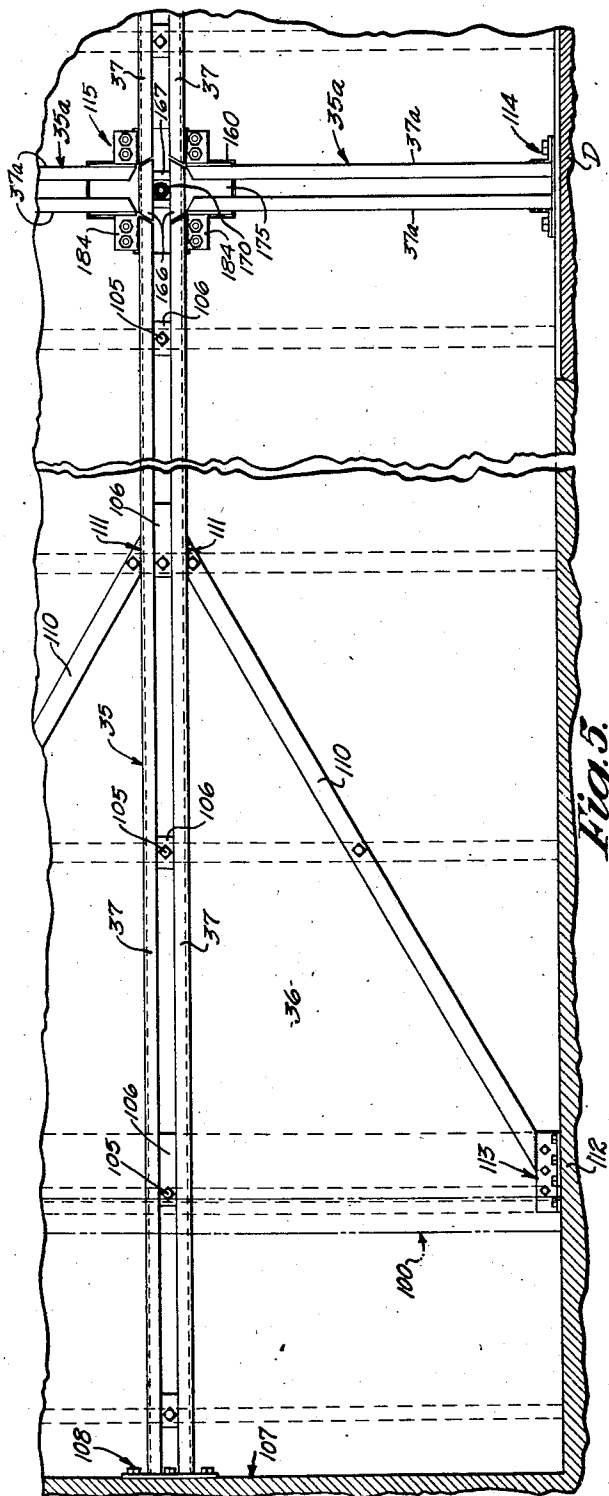


Fig. 5.

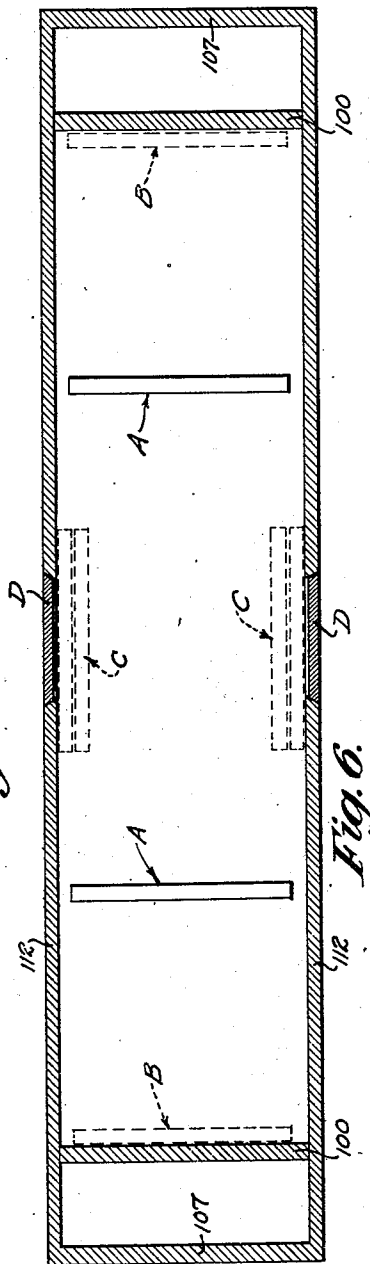


Fig. 6.

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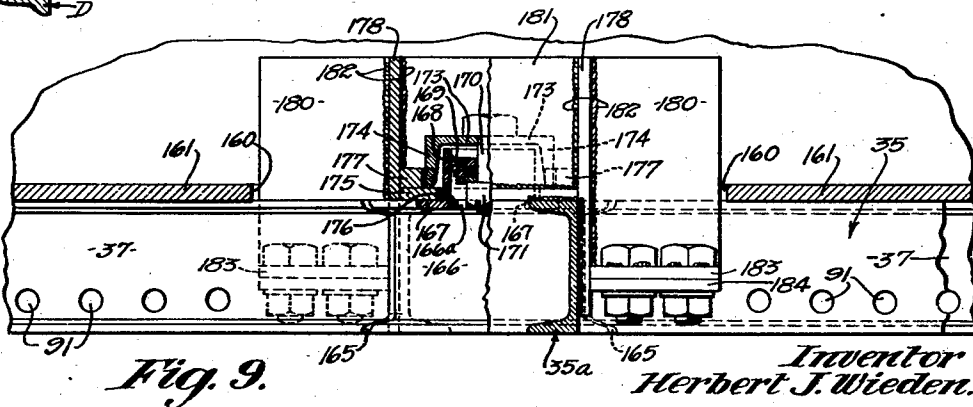
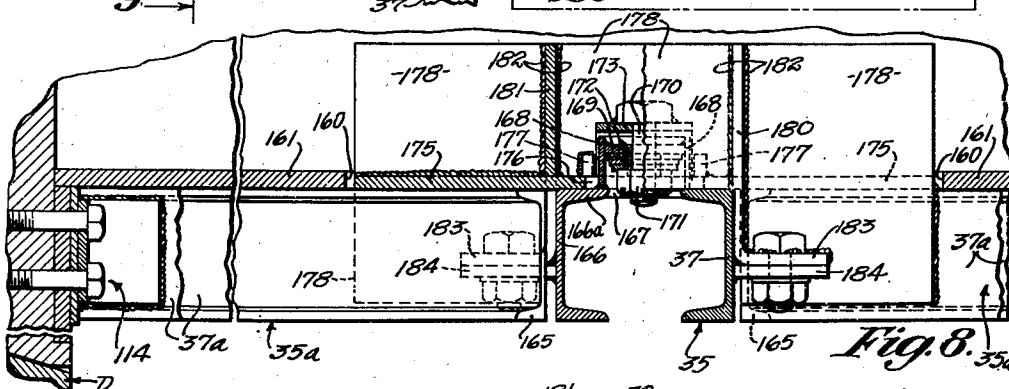
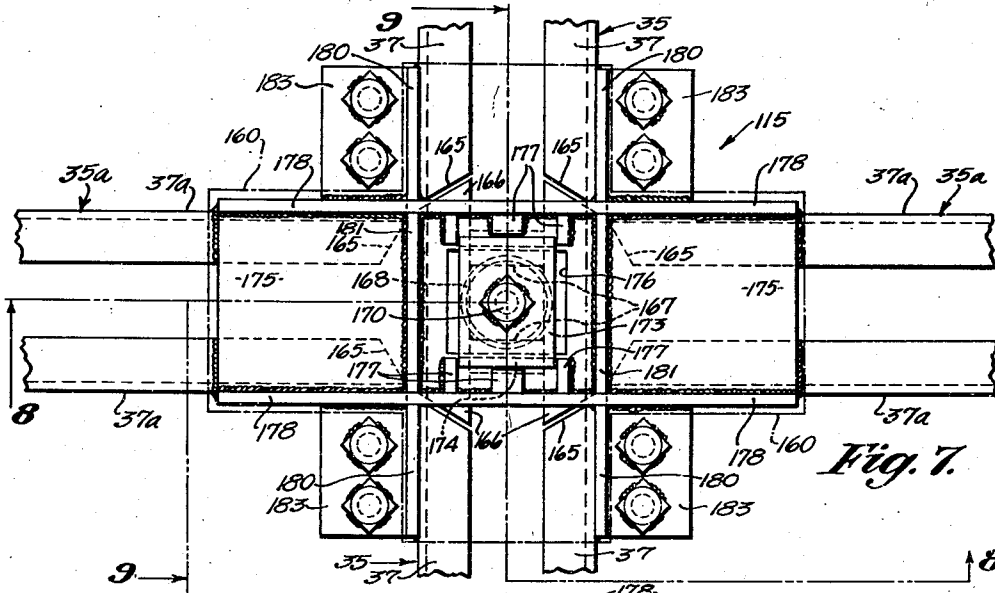
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6 Sheets-Sheet 4



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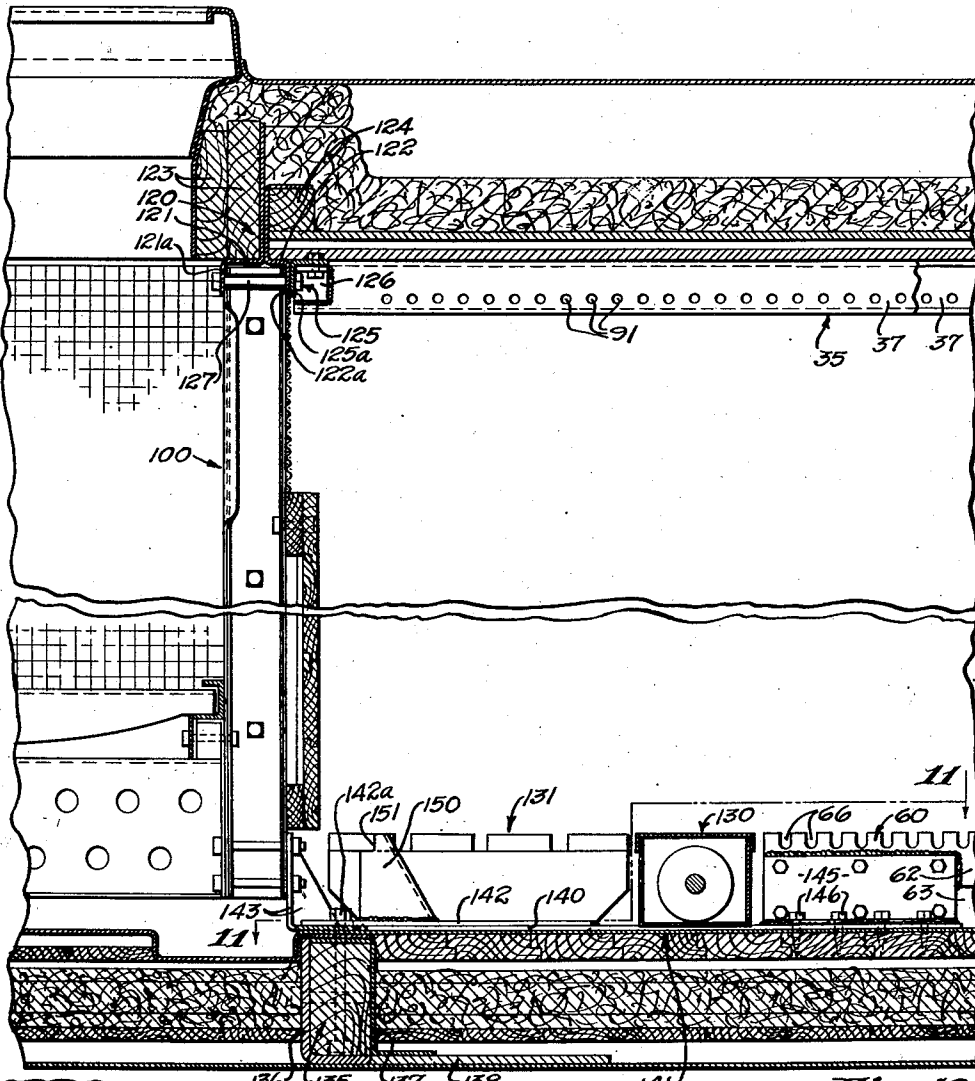


Fig. 10.

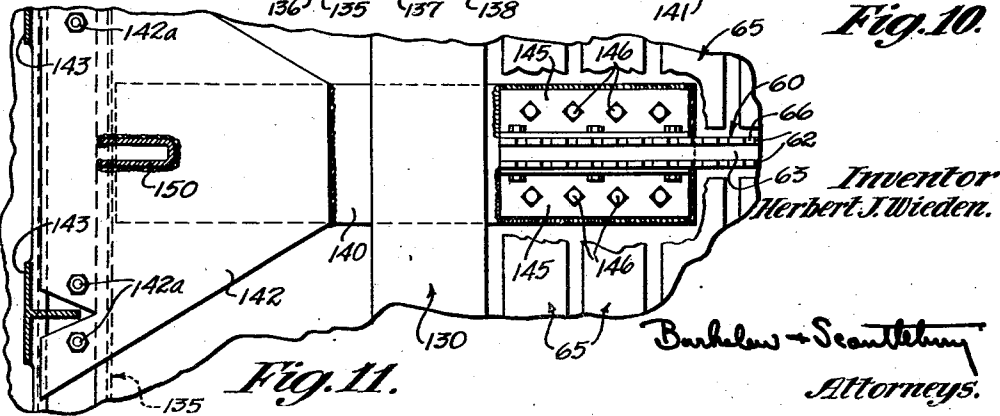


Fig. 11.

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Fig. 12.

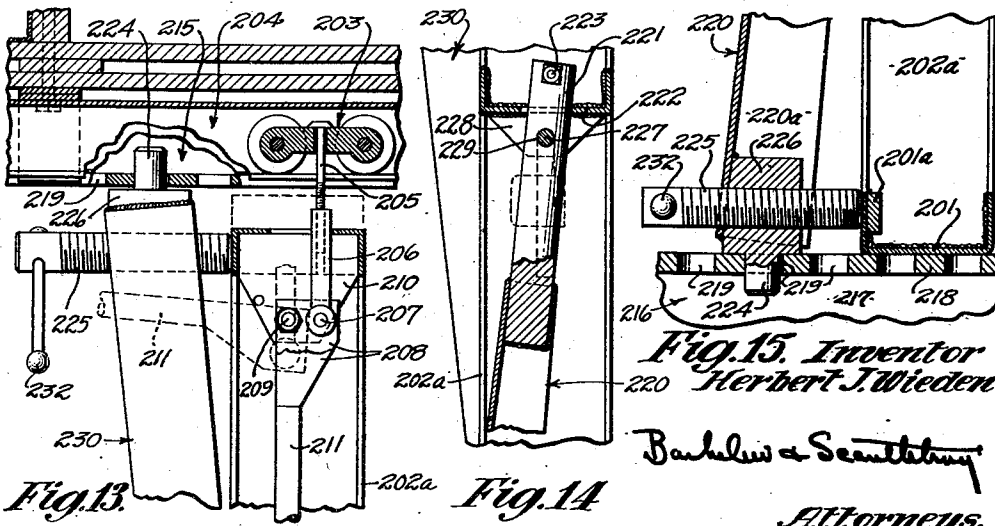
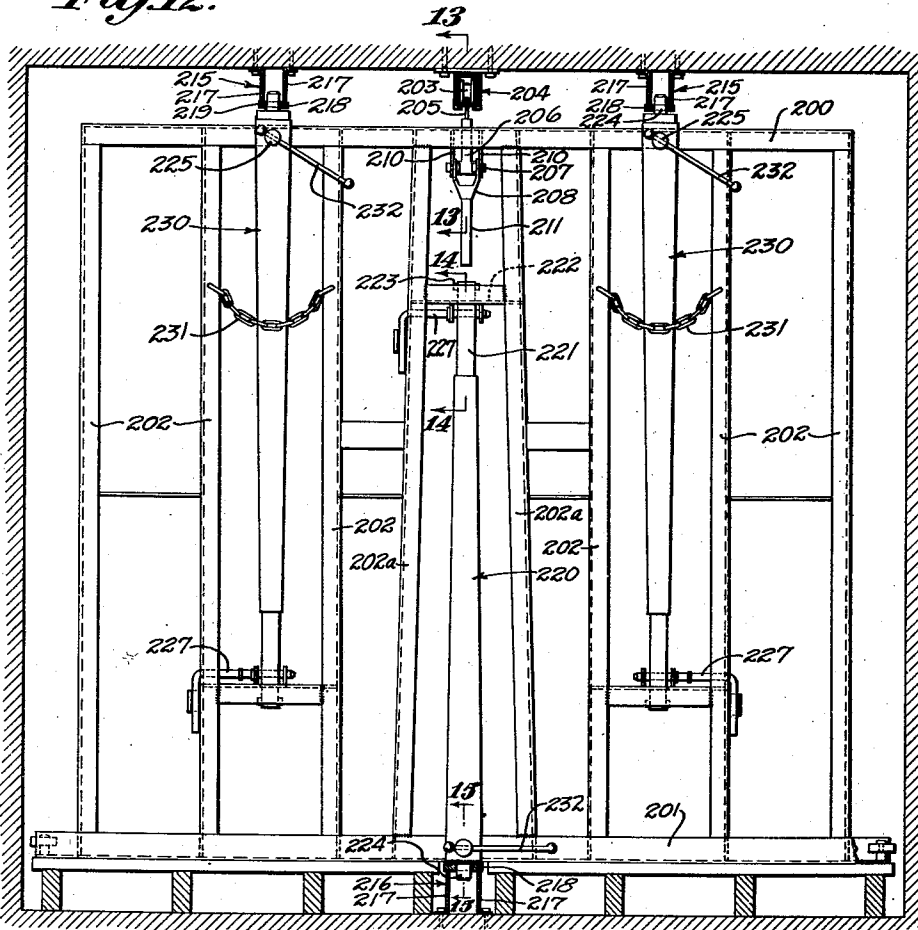


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UNITED STATES PATENT OFFICE

2,360,029

ADJUSTABLE PARTITION FOR CARS
AND THE LIKEHerbert J. Wieden, Los Angeles, Calif., assignor
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Application August 26, 1941, Serial No. 408,294

30 Claims. (Cl. 105—369)

This invention has to do with movable and adjustably settable dividing walls of a type useful for certain purposes particularly in railway cars. Such movably settable walls may be used for instance as movable bulkheads to form collapsible ice bunkers, for separating or dividing the ice load from the lading, or may be used for any other similar purpose. They are also useful as movably settable load dividers, performing the function of an adjustably settable wall for holding a partial car load in place. Many if not all of the features of the present invention are of general application and utility and may be used for any of the purposes, in any space enclosing structure, to which a movably settable wall is adapted. However in their present preferred design the devices which will be described in the following specification have been designed particularly for use as load dividers and so, but without limitation, the devices and the invention will be described in their uses as load dividers.

Load dividers are generally used in the manner now briefly described.

They are usually of such size that when placed crosswise of a car they will substantially fill the cross section of the car interior, and they are usually mounted in such manner that they may be moved endwise of the car and secured in various positions. One or more such load dividers may be used, and where two are used the desirable movements and settings are somewhat as follows:

When not in use they may be moved longitudinally to positions against the end walls or the ice bunker bulkheads; or it has been proposed to swing them up to positions under the car roof. The general purpose of load dividers is to permit partial unloading of less than car load lots at small markets, with a convenient means for properly bracing the remainder of the load. In loading a car, using two load dividers, the dividers are usually first placed temporarily in one end of the car. A part load is then loaded into the other end of the car until say a quarter load is placed. One of the dividers is then moved against or adjacent that partial load and secured in position by some securing means. The other divider is then moved into the loaded end of the car, and the other end of the car then loaded with a partial load; and the second divider is then moved and set against or adjacent that partial load.

If the central part of the car is to be fully loaded it is still desirable to secure the dividers in place against the two end loads, so that the central load is not relied upon to brace the whole

load. The present invention, among other things, provides a divider structure which can be forced with one face against an end load and does not present any projections on its other face to interfere with the central load. As far as known, other dividers have not provided practicable means or arrangements for doing that; and thus have usually been forcibly secured against the end loads only when there is no center load present.

In the usual use of load dividers the central load, if present, will be the load to be unloaded first; the dividers then being secured against or adjacent the two end loads to brace them in position. Then at subsequent unloadings the two end loads may be removed one after the other by moving the dividers first to one end of the car and then to the other.

Various arrangements for mounting or supporting and for securing load dividers have been proposed; but for one reason or another no known load divider has been fully satisfactory in practical use. In some cases the mounting or support has been such that longitudinal thrusts have not been satisfactorily transmitted between the load divider and the body or frame of the car. In many cases the securing means for the divider has not been satisfactory, and in many proposed dividers the securing means has materially interfered with the load. And in most of the known dividers, no provision is made for forcing the divider against the load.

It is a general object of this invention to provide a load divider structure, together with a system of support and securing, which will overcome the objections to previous load dividers, which involves simple and easily operated devices, and which is provided with an efficient means of securing it and setting or forcing it against the load in any position; provided with suspension means which enables the dividers easily to be placed in any desired location in the car either when in use or when out of use; and provided with a system for transmission of longitudinal thrusts to the car body or frame. And it is also one of the objects of the invention to provide a securing and clamping arrangement which is simple, effective and strong and which preferably is of such a nature as to lie at all times between the two opposite faces of the divider frame where it does not interfere with the load.

The general nature of the invention will be best understood from the following detailed description of preferred forms of the divider, its securing and clamping means, and its suspension

and thrust transmitting means. Such preferred forms, illustrative of the invention are shown in the accompanying drawings in which:

Fig. 1 is a view in transverse vertical section of the car, showing the present preferred form of load divider;

Fig. 2 is an enlarged fragmentary section taken on line 2—2 of Fig. 1;

Fig. 3 is a fragmentary section on line 3—3 of Fig. 2;

Fig. 4 is a section similar to the lower part of Fig. 2 but showing the load divider lifted into position for moving it about the car;

Fig. 5 is a fragmentary bottom plan of the rail and trackage system adjacent the car roof;

Fig. 6 is a plan diagram illustrating different typical positions in which the load dividers may be placed;

Fig. 7 is an enlarged top plan of the central portions of the track and rail system shown in Fig. 5, showing the turn-table structure which is located at the intersection of the longitudinal and transverse tracks;

Fig. 8 is a section taken as indicated by line 8—8 on Fig. 7;

Fig. 9 is a section taken as indicated by line 9—9 on Fig. 7;

Fig. 10 is a fragmentary longitudinal vertical central section of a typical car structure showing how the upper suspension rails and the lower securing rails are structurally tied into the car structure;

Fig. 11 is a fragmentary plan on line 11—11 of Fig. 10;

Fig. 12 is an elevation, transversely across the car showing a modified form of load divider structure;

Fig. 13 is an enlarged fragmentary section on line 13—13 of Fig. 12;

Figs. 14 and 15 are respectively similar sections on lines 14—14 and 15—15 of Fig. 12.

In the preferred form of load divider shown in Figs. 1 to 4 the main frame 20 of the divider is made up of top and bottom transverse frame elements 21 and 22, and spaced vertical members 23 and 23a. All of these frame members may be constructed of channel or other steel forms and tied together in any suitable manner, as by welding. The preference however is to use steel for members 21, 22 and the two central uprights 23a, and to use wood for uprights 23. The outermost uprights 23 are tied to 21 and 22 at the corners by brackets 23b, and spacer blocks 23c and tie bolts 23d space and hold the other uprights. Generally, the whole frame of the divider is constructed so as to have ample rigidity and at the same time to be of small weight, and of an open construction so as not to interfere with circulation in refrigerator cars and the like. The frame may be made of solid or of solid surfaced construction wherever a solid partition is desired, as in a bulkhead for an ice bunker.

At the central bottom portion of the divider frame certain stiffening gusset plates 25 are welded into the structure as indicated, and similar plates 26 are welded into the upper parts of the structure. At the bottom of the structure, between the two central vertical members 23, two plates 27 and 28 are welded into the structure in such positions that their outer faces are flush with the two outer faces of the whole frame structure. The plate 27 is relatively heavy, forming the thrust plate taking thrust forces when the divider is forced against the load in the car.

The other plate 28 is merely a confining plate. At the upper center of the divider, above upper horizontal frame member 21, a box-like structure is welded to the frame. This structure includes reinforcing gussets 29, a heavy thrust plate 30 and a lighter confining plate 31.

The frame structure just described is one which is capable of forming a wall or partition across a whole car interior, to "divide" one part of the interior from another. However, as the general function of the device is that of bracing or holding a partial car-load, the form and structure of the frame member may be any structural form which is desired for load bracing and holding.

The preferred supporting and operating mechanism which is shown in the form of divider illustrated in Figs. 1 to 4, comprises a mechanism or device which not only affords support for the divider when it is moved from place to place, but also affords means for forcibly clamping the divider against the load. These illustrations also show another preferred feature, which is that of allowing the divider to be swung or swivelled around to any desired angular position, either when it is lifted for moving, or when it is clamped in place.

The variant form of divider shown in Figs. 12 and following, embodies some variations from those most preferred features. But both forms embody clamping or forcing devices of the same general nature, and capable of being entirely contained within the space between the two opposite faces of the divider frame. And in the preferred form shown in Figs. 1 to 4 the clamping devices are entirely contained within that space when the divider is forced against the load, as well as when the divider is not in use.

In the form shown in Figs. 1 to 4, the divider is hung on a rail 35 which performs both the functions of a guiding and supporting track and also of an end-thrust rail. The manner in which this rail is mounted under the car roof structure, in directions and extents, will be described later. For the instant purpose of describing the divider itself, it is only necessary that rail 35 be understood to extend longitudinally under the roof structure 36 of the car.

As shown in these figures, rail 35 is preferably made up of two inwardly facing channels 37 whose lower flanges 38 afford tracks for the wheels 39 of a supporting trolley. This trolley has a body 40 on which wheels 39 are journaled, and the body has a vertical bore 41 to take the vertical swivel trunnion 42 which supports the divider frame. The upper end of swivel trunnion 42 has a cross-pin 43 which is cut away at its ends as indicated at 44 to provide a good downward bearing upon the upper face of trolley body 40. The structure is such that swivel trunnion 42 may swing about its vertical axis, and also such that the swivel trunnion is not confined too closely to a vertical axis. The trunnion engages the wall of bore 41 only at its enlarged lower portion 42a, and cross-pin 43 is formed so that the trunnion may limitedly tilt from its vertical axis in any direction with relation to trolley body 40.

Swivel trunnion 42 is formed on the upper end of a block 50 which has a transverse screw-threaded bore 51. A transverse setting or clamping screw 52 fits the threaded bore and at one end bears on thrust bearing 53 which in turn bears against the heavy thrust plate 30. The other end of clamp screw 52 is confined endwise by plate 31, a vertically elongated slot 31a providing

for convenient access to the wrench socket 54 in the end of screw 52. As will be seen, the divider moves vertically, as well as transversely, with relation to the parts just described, and the vertically elongated slot 31a provides for access to the clamp screw in any position of the divider frame. Thrust bearing 53 is not secured to thrust plate 30, but merely confined against plate 30 by screw 52 which is confined endwise by plate 31. Thus, the divider frame may move vertically with reference to thrust bearing 53.

Swivel trunnion 42 and block 40 form the upper portions of a vertically extending arm 75 which functions both as a support for the divider frame and as one member (a thrust transmitting member) of the clamping mechanism through which the divider frame is set or forcibly clamped against the load. The remainder of this arm, which is swingingly and slidably pivoted to the divider frame, is formed by a tube 55 which extends down in the divider frame and carries at its lower end a transverse pin 56 which plays in vertical slots 57 in the two adjacent vertical frame members 23a of the divider frame.

The arm 75 and the trolley may together be viewed as a composite member supporting the frame on the track, and with reference to which the frame is laterally movable.

A lower thrust and locking rail 60 extends longitudinally over the central part of the car floor 61. This rail 60 is here shown as being composed of two laterally spaced plates 62 spaced by a member 63 which is secured to the floor as at 64. The upper edges of plate 62 are preferably flush with the upper surface of lading rack 65, and are provided with spaced notches 66 into any pair of which a transverse abutment pin 67 may be dropped.

The abutment pin 67 is preferably secured, as by welding, across the lower end of the lower block member 68 of a lower clamping arm 76 whose main and upper portion is formed of a tubular member 69 similar to member 55 of the upper clamping lever. The lower end of block 68 is narrowed, as indicated at 68a in Fig. 1, so that it enters between the two spaced plates 62 of rail 60 abutment pin 67 projecting at opposite sides of the lower end of block 68 to enter notches 66. The upper end of tubular member 69 carries a transverse pivot pin 70 which plays in vertical slots 71 in the two adjacent vertical frame members 23a. Block 68 carries a setting or clamping screw 72 which bears at one end against the thrust bearing 73 which rides against thrust plate 27; the clamping screw 72 being confined longitudinally by plate 28 which has a vertically elongate slot 28a for convenience of access to the wrench socket 74 of screw 72.

Where the arms 75 and 76 pass through the webs of channels 21 and 22, the webs are slotted at 21a and 22a. The slots guide the arms in their movements transversely of the frame. These slots need not be closely fitting on the arms.

The two adjacent ends of the upper and lower arms 75 and 76, are interconnected by a device whose function is to move the two arms vertically with reference to each other; more specifically to raise and lower the lower arm with reference to the upper one. This device is shown in the form of a quick operating linkage which embodies a lever element 77 pivoted at 78 to upper clamping arm 75 and a link 79 which is pivoted at its upper end 80 to lever element 77 and which

engages a stirrup 81 mounted on the upper end of lower clamping arm 76. The lever element 77 has an extending handle 82 screw-threaded at 83 into lever element 77, so that the position of shoulder 84 on the handle may be adjusted with reference to pivot 78. When the parts are in the position shown in Fig. 2 shoulder 84 lies over the upper end of stirrup 81 so that lower arm 76 is held down and its lower end is prevented from accidentally rising out of engagement with lower rail 60. In the position of Fig. 4 the handle 82 has been thrown to its uppermost position. When this is done link 79 is raised and first engages the upper end of stirrup 81. Further upward motion of link 79 then raises lower arm 76 until its pin 70 comes up against the upper end of slots 71. In this relative position, the lower end of clamping arm 76 is substantially flush with, or slightly above, the lower edge surface of the main frame of the load divider. Further upward swinging of handle 82 and upward movement of link 79 then raises the whole load divider frame so that its lower edge is lifted off lower rail 60 and lading rack 65. At the end of the movement the link pivot 80 swings over center with reference to lever pivot 78, and the whole load divider frame is then supported entirely on the supporting trolley through the medium of swivel trunnion 42. Then the divider may be moved along the upper track 35 to any desired position in the car, and it may be turned on the swivel axis to any desired orientation in the car.

Through these descriptions of the present invention, the invention is shown as applied to a car which has a lading rack spaced over the car floor proper. The invention is illustrated in that application in order to show how various parts are applied to cars of the type having lading racks, and further in order to show how provision is made in the rail and track arrangements to accommodate an air impeller such as is used for air circulation in refrigerator cars. However, in the broader aspects of the invention, the lading rack which is here illustrated may be regarded as the car floor. The present invention may be applied to a car floor without a lading rack as well as to one with a lading rack, and the lading rack may be looked at as a part of the car floor structure. In any case, when the load divider is put into operative position, its lower edge rests upon the floor structure, either the floor proper, or the lading rack.

When the divider frame is to be put into operation and clamped against a load, it is moved to the desired position by running it along upper rail 35, and a transverse abutment pin 90 is inserted in a selected pair of holes 91 in the two upper rail members 37. The trolley body 40 is then moved up against pin 90; the body being provided at its ends with abutment pieces 40a which project laterally so as to contact pin 90 at points close to rail members 37. In this position of the parts, when the divider frame is then lowered by lowering handle 82, the lower abutment pin 67 is directly over and will enter a pair of notches 66 in lower rail 60, the lower edge of the divider frame being meantime lowered onto the upper edge of the rail and onto the car floor. The parts are then all in the position shown in Fig. 2, with the weight of the divider frame supported on the car floor. Then operation of clamping screws 52 and 72 will set and force the left-

hand face of the divider up against the load with any desired pressure.

It will be noted that head portion 42a, abutment pieces 40a and pin 90 are in substantial horizontal alinement, to avoid a couple in the body 40 of the trolley when transverse loads are applied to the divider.

The longitudinal spacing of holes 91 in the upper rail 35, and of notches 66 in lower rail 60, are equal; and that spacing is less than the range of clamping movement which is effected by the clamping screws 52 and 72. Thus the divider is in effect adjustable to an infinite number of positions along the rails.

Fig. 6 is a diagram showing various typical positions into which the load dividers may be placed. Positions A show typical positions for holding end loads against the end wall of the car or against bulkheads 100. It may be remarked that although the ice bunker bulkheads may be broadly regarded as the end walls of the car, those end walls are here shown as bunker bulkheads so that the application of the rails and tracks to that type of car may be illustrated and described. Positions B illustrate how the dividers may be placed against the end walls or bulkheads. They are here shown in position one against each bulkhead; but both can be placed against or adjacent either bulkhead. Positions C show how the dividers may be placed against or just inside either car door D. The rail and track arrangement for facilitating placement of the dividers in any of these positions, and for transferring longitudinal thrusts between the dividers and the car framing will now be described.

In Fig. 5, a bottom plan of the rail arrangement under the car roof shows the general preferred track arrangement and also shows one arrangement for transferring thrusts between the longitudinal rail and the car body structure. In this figure the longitudinal rail is generally designated 35. The members 37 of the longitudinal rail are stiff enough to be more or less self-supporting when supported at the ends; but the rail is occasionally secured to the car roof structure 36 by lag bolts or other bolting means, such as indicated at 105. These bolts engage small plates 105 which extend between and are welded to the inner edges of upper flanges 38a of channel members 37. Figures 2 and 3 show the structure more clearly.

As illustrated in Fig. 5 the longitudinal rail 35 may be continued to the end wall structure 107 of the car and there secured, as indicated at 108, to the end frame structure of the car. The longitudinal rail being thus secured at both ends, longitudinal stresses are thus transferred both in compression and tension between the load divider and the car structure. Fig. 5 shows upper rail 35 extending and secured to the end wall structure, passing through or over the ice bunker bulkhead 100 if there is such a bulkhead in the car. In addition to being structurally secured to the car at the ends, the central rail may also be provided with diagonal tension members 110, connected to the rail as at 111 and connected as at 113 to the side frame structure 112 of the car.

A cross rail or track 35a is also provided for transport of the load dividers to and from the positions indicated at C in Fig. 6. The outer ends of these transverse rails 35a are secured, as at 114, to the longitudinal side framing of the car above the car doors D. At the central point of intersection of the longitudinal rail 35 and transverse rail 35a a turntable structure 115 is prefer-

ably provided. This turntable structure is shown in detail in Figs. 7, 8 and 9, reference to which will shortly be made.

Instead of structurally connecting the upper longitudinal rail to the car end wall in the manner shown in Fig. 5, it may be structurally connected at its ends to certain transverse frame members of the car structure, as shown in Fig. 10. Here the end of rail 35 is shown as being structurally connected to a transverse frame member, generally designated 120. This transverse frame member 120 is one which typically lies over the ice bunker bulkhead 100 and forms a part of the car frame structure which supports the bulkhead and transmits any end thrusts to which the latter is subjected. Typically the frame member 120 may be comprised of a pair of members 121 and 122, formed in angular cross section and associated with wooden beam members 123 and 124. The end of rail 35 may be secured to the members 121 and 122 by such a bracket and bolting structure as is illustrated at 125, Fig. 10 showing such structure as it appears on the near channel 37 of rail 35, it being understood that the far channel is similarly equipped. Describing only that part of the structure which is shown on the near channel, bracket 126 is secured, as by welding, to said channel. The horizontal leg of bracket 126 is bolted to the horizontal leg of angle 125a, while the vertical leg of the latter is bolted at 127 to the downwardly extending flanges 121a and 122a of members 121 and 122; the flanges being those which take between them the upper end bulkhead 100.

Figs. 10 and 11 also show a typical preferred arrangement for structurally tying the ends of lower rail 60 into the car frame structure; and they also show an arrangement which accommodates not only the lading rack but also an air impeller of the general type and placement which is disclosed in the Van Dorn Patent No. 2,214,210, issued September 10, 1940, and in the copending application of Herbert J. Wieden, Ser. No. 390,548, filed April 26, 1941. The general outline and position of such an air impeller is indicated at 130 in Fig. 10; it lies below the level of the lading rack and extends transversely across the car at a point adjacent but preferably spaced somewhat from the bunker bulkhead 100. Between air impeller 130 and the bulkhead it is preferred to use sections of lading rack, as illustrated at 131, separate from the sections of lading rack 65 which occupy the major portion of the car. It will be understood that sections 65 of the lading rack are usually hinged at their longitudinal outer edges, as indicated at 132 in Fig. 1, so that the lading rack may be raised against the side walls; and the longitudinal lower rail 60 is accommodated in the space between the adjacent inner edges of the lading rack sections. The two smaller lading rack sections 131 are also preferably arranged in the same manner.

The typical car structure shown in Figs. 10 and 11 has a framing including a cross beam element 135, which includes certain steel structural members such as illustrated at 136 and 137. The member 135 is connected directly to structural plate 138 which is typically the plate that is connected directly to the car bolster. It is through plate 138 and the structural member 135 that longitudinal thrusts are transmitted, and consequently the structural member 135 is usually joined into the frame structure of the car for transmission of thrusts.

A longitudinally extending plate 140 is laid on

the car floor structure 141, with one end under the end of rail 66 just beyond impeller unit 130, and with its other end welded to a gusset plate 142 which is secured by bolts 142a or otherwise to the structural member 135. This transverse structural member 135 is also typically the one which supports and takes end thrust from the lower edge of bunker bulkhead 100, through the medium of the brackets shown at 143. And gusset plate 142 may be laid over the feet of brackets 143, as indicated.

The end of plate 140 which lies under the end of rail 60 is secured to the rail by angle brackets 145 which may be welded and bolted to the rail members 62 and 63, and welded to plate 140. And the angle brackets and plate 140 may be held down to the floor by lag screws 146 or similar means.

It will be understood that in cars which are not equipped with such an air impeller unit as shown at 130 the lower longitudinal rail 60 may be continued on, either to the end wall of the car or to the bunker bulkhead 100 and there directly structurally connected with such a frame member as 135. In that case, the connection of the rail with 135 will provide for thrust transmission both in tension and compression. However, in the illustrated arrangement, provision is made only for thrust transmission in tension to both ends of longitudinal rail 60.

To facilitate placement and clamping of the load divider against bulkhead 100 (or, in effect, against the end wall of the car) a bracket such as shown at 150 is welded to gusset plate 141. This bracket has its upper end about flush with the upper surface of the lading rack and has a notch 151 in its upper end to accommodate thrust pin 67 of the divider structure. Upper rail 35 extends clear to the end of the car or to bulkhead 100 and its series of pin holes 91 extend to locations which will take the upper thrust pin 90 when the divider is to be clamped against the car end or bulkhead.

Referring now to Figs. 7, 8 and 9, the central portions of the longitudinal rail 35 are shown, and also the central portions of the transverse rail 35a. The structure of the transverse rail or rails is substantially the same as that of the longitudinal rail. The transverse rails, like the longitudinal rails, lie up against the ceiling of the car, and the ceiling is cut away along the dot-dash line indicated 160 in Fig. 7 to provide an upwardly extending recess for the upwardly extending parts of the turntable structure. In Figs. 8 and 9 the ceiling is indicated at 161 and the cut-away of the ceiling is indicated by the numeral 160. In these views the individual channel members of the longitudinal rail are designated 37, and the corresponding individual channel members of the transverse rail are designated 37a. The securings for the ends of the transverse rail to the side wall structure of the car are designated 114 as in Fig. 5.

At their inner ends, symmetrically about the axis of the turntable, the several channel members 37 and 37a are cut obliquely as indicated at 165. The two channel members which form the turntable track are shown at 166. In the drawings these two members are shown in positions where they form continuations of the longitudinal rails 37; they are turned to a position at right angles to that shown to form a continuation of the transverse rail member 37a. Two transverse webs 167 extend horizontally across the gap between the inner edges of the upper

flanges 166a of the turntable channels 166. On these webs 167 and also on flanges 166a an upwardly extending cylindric sleeve 168 is welded, and a disk 169 is welded across the upper interior of sleeve 168. The supporting pivot bolt 170 extends down through disk 169 and has its nut 171 below disk 169, washers 172 being interposed. The head of bolt 170 rests upon and is preferably welded to upper horizontal part 173 of a stirrup which has depending legs 174 at its ends. These stirrup legs 174 rest upon the upper surface of a horizontal plate 175 which has a substantially square aperture 176 through it. The length of the stirrup is long enough to span the aperture but the width of the stirrup is narrower than the aperture so that the stirrup can be removed downwardly through the aperture by tilting, after the turntable members 166 have been removed downwardly when nut 171 is removed. Welded lugs 177 serve to position the stirrup.

Horizontal plate 175 is of the same width as the over-all width dimension of the transverse rail 35a and is welded to the upper surfaces of its rail members 37a. Two vertical plates 178 are welded to the outside surfaces of the transverse rail members 37a, the lower edges of these plates being near the lower edges of members 37a and upper edges being substantially above the upper edges of 37a. The plates 178 extend continuously across the gap between the two sets of rail members 37a, above the level of their upper edges. Below the level of the upper edges of 37a the two plates 178 are cut out so as to form the transverse openings which accommodate turntable members 166 when they are in the positions shown in Fig. 7. Vertical plates 180 and 181 form a similar reinforcing and interconnecting structure between the longitudinal rail members 37, except that plates 180 and 181 are not initially integral plates but are made so in effect by being welded at their edges, at 182, to the plates 178. Plates 180 are preferably not welded to longitudinal rail members 37, but are preferably connected to them by fastenings which may conveniently be set up when the trackage system is installed in a car. Thus plates 180 are provided at their lower edges with outturned brackets 183, and brackets 184, welded connected with longitudinal rail members 37, are bolted to brackets 183.

Without further description it will be understood how the trolley of either divider can be transferred between the longitudinal and transverse tracks, to facilitate movement of the dividers to and from positions against the car doors. The track members of the turntable are of course long enough to accommodate the trolley.

Figs. 12 to 15 show a modified structure of the load divider itself and modified track and thrust rail structures. The general arrangement of the track and of the thrust rails, and their interconnection with the structure of the car frame may be the same as the arrangements and interconnections before described. It is only the particular track and rail structure and the particular divider structure which is somewhat different.

The divider frame is shown as made up of horizontal top and bottom frame members 200 and 201, and spaced vertical members 202. The two central vertical members 202a may be somewhat inclined. Trolley 203 runs on a track 204 which has inturned lower flanges much like the track previously described. The swivel trunnion

205 of this trolley is adjustably threaded into a sleeve 206 which is pivoted at its lower end at 207 to a hanger member 208. Hanger member 208 is pivoted at 209 to a pair of frame brackets 210, and an operating handle 211 depends from hanger 208 when the hanger is in its normal position shown in full lines Figs. 12 and 13. This is the position in which the divider frame is lowered to rest on the car floor or the lading rack. By throwing the handle to the dotted line position of Fig. 13, pivot 207 is thrown over center with relation to pivot 209 and the whole divider frame is raised to a position off the car floor and is then suspended solely from the trolley for movement between positions in the car. With handle 211 in its normal position, it lies entirely between the two opposite faces of the divider.

In this form of divider structure the supporting track on which the divider is transported from place to place is separate from the upper thrust rail or rails; and also in this form of divider two upper thrust rails are illustrated, and one lower thrust rail. The upper thrust rails 215 and lower rail 216 are shown as embodying flanged side plates 217 which are secured respectively to the ceiling and floor, and apertured face plates 218 welded to the side plates. Apertures 219 in these face plates are longitudinally spaced by distances less than the effective clamping range of the clamp screws. Fig. 14 shows the structure of the upper end of the lower clamping lever 220, and Fig. 15 shows the structure at its lower end. The upper end of lever 220 has a cylindric portion 221 which extends loosely through a horizontal plate 222 which is mounted between the two vertical members 202a. A transverse pin 223 prevents the upper end of the lever from dropping entirely away from plate 222. When the clamping lever is in use its lower end 220a is placed in the relative position shown in Fig. 15 outside one face of the divider frame, the projecting pin 224 on the lower end of the lever is engaged in an appropriate hole 219, and clamping screw 25, which is threaded through a block 226 in the lower end of the lever, is forced against the side or flange of lower horizontal frame member 201. That flange may be reinforced with a welded plate 201a. When the clamping lever is in use to force the divider frame against a load, a handled pivot pin 227 is run transversely through pivot brackets 228 and through a pivot bore 229 in the upper part of lever 220 to form a pivot for the lever and to prevent it from rising away from the lower rail 216.

The two clamping levers 230 which engage the two upper thrust rails 215 are of the same structure and arrangement as described for clamping lever 220, except that levers 230 are relatively inverted. The upper levers need no further description and have the same numerals applied to their parts. Two chains 231 are loosely attached to uprights 202 to prevent the upper ends of levers 230 from falling out of substantially vertical position when their upper ends are moved downwardly to disengage from the thrust rails.

To release this form of divider, the clamping screws are backed off by operation of their handles 232, and pivot pins 227 are removed. The lower lever may then be lifted and its lower end placed inside the channel member 201 which forms the lower horizontal frame member. The upper levers may then be lowered and they may be placed within the space between the two opposite faces of the divider

frame. To get everything within the space defined by those two faces, the three levers may be turned through 90° about their longitudinal axes so that the clamping screws then lie in planes parallel to the faces of the divider and will thus lie in the space between those two faces.

In the last described form of divider the clamping arrangements project beyond one face of the divider frame when in use, and when inside the frame are not usable for clamping. The divider may be stored against the car end wall or bulkhead or door in a minimum space, and any suitable securing means may be used for holding it in place. When this divider is placed between two loads, its clamping means may either be used and one load arranged to accommodate, or the clamping means may be placed out of use in the frame and the divider held in place by the loads. When one load is removed then the frame may be clamped against the other.

The first described form of divider has the advantage that its clamping apparatus is always wholly within the frame, whether in use or not; so that the divider always occupies the minimum space, even when clamped against a load.

In both forms of divider, the frame is so mounted that it may be adjusted or may adjust itself to diagonal positions when it is forced against a load which does not present face square across the car. In Fig. 12 the central hanger is swivelled, and the central lower rail engagement at the pin 224 is of a swivelling nature; so that the frame may be put into diagonal positions by appropriate settings of the upper pins 224 in their rails and appropriate manipulations of the upper clamp screws 225.

In Figs. 1-4, the upper support and clamping means contains the swivel at trunnion 42 on the central axis of the frame. The lower clamping means, also on the central axis, preferably has enough looseness of engagement with the lower rail and the frame to allow a desired amount of swivelling action—abutment pin 67 need not fit notches 66 closely, and cross-pin 70 preferably does not fit slots 71 closely. Clamp screw 72 need not fit tightly endwise between plates 27 and 28. Thus a swivelling action to the desired extent may be allowed in connection with the lower arm 76 without the necessity of incorporating a swivel structure in the arm itself. As a result, frame 23 will accommodate itself to load faces which are not square across the car. And it is apparent from the previous descriptions of both divider forms that they may be adjusted to positions against a load face which is not vertical.

I claim:

1. In car-interior partitioning and like systems which include a supporting track affixed to a car structure and a frame adapted to be supported on the track and having a load contacting face; the improvement in supporting and securing means for the frame, which includes the combination of supporting means comprising a supporting member movable along the track and a supporting and thrust transmitting member mounted on the frame, movable with relation thereto in a direction transverse of the plane of the frame and connected with the supporting member to support the frame therefrom, means in association with the track forming a thrust taking abutment for the supporting means, and means associated with the thrust transmitting member and the frame operative

to adjustably set the frame relative to the said member in a direction transverse of the plane of the frame.

2. Improvements in car-interior partitioning and like systems as specified in claim 1, further characterized by the connection between the thrust transmitting member and the supporting member being in the nature of a swivel.

3. Improvements in car-interior partitioning and like systems as specified in claim 1, further characterized by the thrust transmitting member being also movable with relation to the frame in a vertical direction, and there being means associated with said member and the frame for moving them relatively vertically.

4. Improvements in car-interior partitioning and like systems as specified in claim 1, further characterized by the supporting track being arranged overhead under the car roof and the connection of the thrust transmitting member to the supporting member lying in a central vertical axis of the frame, so that the frame may be suspended solely from the supporting member.

5. Improvements in car-interior partitioning and like systems as specified in claim 1, further characterized by the thrust transmitting member being in the form of an arm lying substantially in the plane of the frame, the arm having an outer end external of the frame connected with the supporting member, and having an inner end internal of the frame and pivotally and slidably connected thereto.

6. Improvements in car-interior partitioning and like systems as specified in claim 1, further characterized by the supporting track being arranged overhead under the car roof, the thrust transmitting member being in the form of a vertical arm lying substantially in the plane of the frame and with its upper end connected with the supporting member, the lower end of the arm lying within the frame and pivotally and slidably connected thereto, and there being means associated with the arm and frame for moving them relatively vertically.

7. In car-interior partitioning and like systems which include an overhead supporting track under the car roof and a frame adapted to be supported from the track and having a load contacting face; the improvement in supporting and securing means for the frame, which includes the combination of supporting means comprising a supporting member movable along the track and an upper supporting and thrust transmitting member mounted on the frame movable with relation thereto in a vertical direction and in a direction transverse of the plane of the frame and connected with the supporting member to support the frame therefrom, means in association with the track forming a horizontal thrust taking abutment for the supporting means, means forming an abutment to take horizontal thrust at the floor of the car, a lower thrust transmitting member mounted on the frame movable with relation thereto in a vertical direction and in a direction transverse of the plane of the frame and having a formation adapted to engage the thrust taking formation at the car floor when the member is lowered with relation to the frame, the upward vertical movement of the lower thrust transmitting member with relation to the frame being limited, means for raising the lower member with relation to the upper thrust transmitting member and thereby raising the frame, and means asso-

ciated with the frame and the two thrust transmitting members operative to forcibly move the frame relative to said members in a horizontal direction transverse of the plane of the frame.

8. Improvements in car-interior partitioning and like systems as specified in claim 7; further characterized by the two thrust transmitting members being in the form of vertical arms, the upper arm being connected at its upper end to the supporting member and extending downwardly in the frame, the lower arm having the thrust engaging formation at its lower end and extending upwardly in the frame, the respective lower and upper ends of the arms being slidably and pivotally connected with the frame, and the said forcing means being applied to the respective upper and lower free ends of the arms.

9. In car-interior partitioning and like systems which include a supporting track affixed to a car structure and a frame supported on the track and having a load contacting face; the improvement in securing means for the frame which includes a plurality of end thrust rails mounted in the car structure and structurally connected to the thrust transmitting structure of the car, a plurality of thrust transmitting arms mounted on the frame and lying substantially in its plane with their outer ends substantially at the periphery of the frame and their inner ends within the frame, the inner ends being slidably and pivotally connected to the frame so that the arms may be moved longitudinally of themselves and their outer ends may be moved transversely of the plane of the frame, cooperating means on the rails and the outer ends of the arms adapted to transmit thrust between the rails and arms, said means being engageable and disengageable by movement of the arms longitudinal of themselves, and forcing means associated with the outer ends of the arms and the frame whereby the frame may be forcibly moved relative to the outer ends of the arms in a direction transverse of the plane of the frame.

10. In car-interior partitioning and like systems which include a supporting track affixed to a car structure and a frame adapted to be supported on the track; the improvement in supporting and securing means for the frame which includes a support which engages the track and connects to the frame to support the frame from the track, the track being equipped with abutment forming means which limits the movement of the support on the track, the frame being movable relative to the support in a direction transverse of the frame, and adjustable setting means engageable with the support and the frame and acting to set the support in adjusted transverse position relative to the frame.

11. In car-interior partitioning and like systems which include an overhead supporting track under the car roof and a frame adapted to be supported from the track; the improvement in supporting and securing means for the frame which includes the combination of, a supporting means comprising a supporting traveller movable along the track and an upper supporting member mounted on the frame to move vertically with relation to the frame and supportingly connected with the traveller, the frame at its lower edge having thrust transmitting means engageable and disengageable, by respective downward and upward movements, with a formation fixed with respect to the car body and adapted to take horizontal thrust, and means associated with the upper supporting member and the

frame for raising the frame with relation to the upper supporting member and for raising the thrust transmitting means out of thrust engagement with the fixed thrust formation.

12. Improvements in car-interior partitioning and like systems as specified in claim 11, further characterized by horizontal-thrust taking means associated with the track and the supporting means.

13. Improvements in car-interior partitioning and like systems as specified in claim 11, further characterized by there being a swivel in the connection between the upper supporting member and the traveller, located on the central vertical axis of the frame, and by the lower thrust transmitting means being also located on said vertical central axis.

14. Improvements in car-interior partitioning and like systems as specified in claim 11, further characterized by the lower thrust transmitting means being a member which is limitedly vertically movable with relation to the frame, and the frame raising means being applied directly between the upper supporting member and the lower thrust transmitting member to first raise the lower member to the upward limit of its movement on the frame and then to raise the frame.

15. Improvements in car-interior partitioning and like systems as specified in claim 11 and in which the wall forming frame has two opposite load engaging faces; further characterized by the upper supporting member and the frame raising means having positions, when the frame is lowered, entirely between the planes of the frame faces.

16. Improvements in car-interior partitioning and like systems as specified in claim 11, further characterized by the upper supporting member being in the form of a vertical arm with its lower end slidably and pivotally connected with the frame.

17. In car-interior partitions and the like which include a frame adapted to be placed across a car and having a load contacting face; the improvement which includes a thrust transmitting arm whose length extends in a direction substantially parallel to the frame face with its outer end in the vicinity of an outer edge of the frame, the arm being connected with the frame, at a point inward of its outer end, by a sliding pivotal connection, so that the arm may be moved longitudinally in a direction substantially parallel to the frame face to extend its outer end beyond the edge of the frame, and so that the outer end of the arm may also be moved transversely of the frame face; the outer end of the arm being provided with means for engaging thrust formations which are fixed with respect to the car body; and adjustable setting means engageable with the thrust transmitting arm and the frame and acting to set the thrust transmitting arm in adjusted transverse position relative to the frame.

18. In car-interior partitions and the like which include a frame adapted to be placed across a car and having a load contacting face; the improvement in securing means for the frame which includes a thrust transmitting member mounted on the frame, movable with relation to the frame in a direction transverse of the plane of the frame, and also movable with relation to the frame in a direction of the plane of the frame, and the thrust transmitting member being provided with means for engaging thrust formations extendible outside an outer edge of the frame and adapted to engage thrust formations

which are fixed with respect to the car body, and adjustable setting means engageable with the thrust transmitting member and the frame and acting to set the thrust transmitting member in adjusted transverse position relative to the frame.

19. Improvements in car-interior partitions and the like as specified in claim 18, further characterized by the adjustable setting means including means for forcibly adjusting the relative transverse position of the frame and thrust transmitting member.

20. Improvements in car-interior partitions and the like as specified in claim 18, further characterized by the transversely movable thrust transmitting member being in the form of an arm with its thrust engaging means on an outer end and with an inner end within the frame and pivotally connected thereto.

21. Improvements in car-interior partitions and the like as specified in claim 18, further characterized by the thrust transmitting member being in the form of an arm which lies in a position substantially parallel to the plane of the frame, the arm having an inner end slidably and pivotally connected to the frame and having an outer end extensible beyond an outer edge of the frame.

22. Improvements in car-interior partitions and the like as specified in claim 18, further characterized by the thrust transmitting member being in the form of an arm which lies in a position substantially parallel to the plane of the frame, the arm having an inner end slidably and pivotally connected to the frame and having an outer end extensible beyond an outer edge of the frame, and the adjustable setting means including means applied to the arm near its outer end for forcibly adjusting the relative transverse position of the outer arm end and the frame.

23. Improvements in car-interior partitions and the like as specified in claim 18, further characterized by the thrust transmitting member being in the form of an arm which lies at all times wholly between the spaced load contacting faces of the frame, the arm having an inner end slidably and pivotally connected with the frame, its outer end being provided with the thrust formation engaging means and being extensible beyond an outer edge of the frame, the frame having a thrust plate at one of its faces near the frame edge, and the means for adjustably setting the thrust transmitting member relative to the frame including a screw threaded into the arm near its outer end and bearing against the thrust plate.

24. In car-interior partitions and the like which include a frame adapted to be placed across a car and having two spaced load contacting faces; the improvement in securing means for the frame which includes a thrust transmitting member mounted on the frame and having a position entirely between the planes of the faces of the frame, said thrust member being movable with relation to the frame in a direction transverse of the plane of the frame, and being provided with means for engaging thrust formations which are fixed with respect to the car body, and adjustable setting means engageable with the thrust transmitting member and the frame and acting to set the thrust transmitting member in adjusted transverse position relative to the frame.

25. Improvements in car-interior partitions and the like as specified in claim 24, further characterized by the adjustable setting means including means for forcibly adjusting the relative

transverse position of the frame and thrust transmitting member.

26. Improvements in car-interior partitions and the like as specified in claim 24, further characterized by the thrust transmitting member and the setting means both lying substantially
5 entirely between the planes of the faces of the frame.

27. Improvements in car-interior partitions and the like as specified in claim 24, further characterized by the thrust transmitting member being in the form of an arm which lies at all times wholly between the spaced load contacting faces of the frame, the arm having an inner end slidably and pivotally connected with
10 the frame, its outer end being provided with the thrust formation engaging means and being extensible beyond an outer edge of the frame.

28. Improvements in car-interior partitioning and like systems as specified in claim 1, further characterized by the adjustable setting means
15 including means for forcibly moving the frame

relative to the thrust transmitting member in a direction transverse of the plane of the frame.

29. Improvements in car-interior partitioning and like systems, as specified in claim 11, further characterized by horizontal thrust taking means
5 associated with the track and the supporting means, the upper supporting member being movable horizontally with relation to the frame, and means for adjustably setting the relative horizontal position of the supporting member and the
10 frame.

30. Improvements in car-interior partitioning and like systems as specified in claim 11, further characterized by horizontal thrust taking means
15 associated with the track and the supporting means, the upper supporting member and the lower thrust transmitting means being movable horizontally with relation to the frame, and means for adjustably setting the horizontal positions of the supporting member and thrust transmitting means relative to the frame.
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HERBERT J. WIEDEN.

CERTIFICATE OF CORRECTION.

Patent No. 2,360,029.

October 10, 1944.

HERBERT J. WIEDEN.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 8, second column, line 40, for the claim reference numeral "18" read --24--; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 10th day of April, A. D. 1945.

Leslie Frazer

Acting Commissioner of Patents.

(Seal)