Aug. 21, 1934. J. McMULLEN ET AL 1,970,610

LOAD BRACING MEANS FOR RAILWAY CARS AND OTHER TRANSPORT

Filed July 28, 1932 3 Sheets-Sheet 1

Fig. 1.

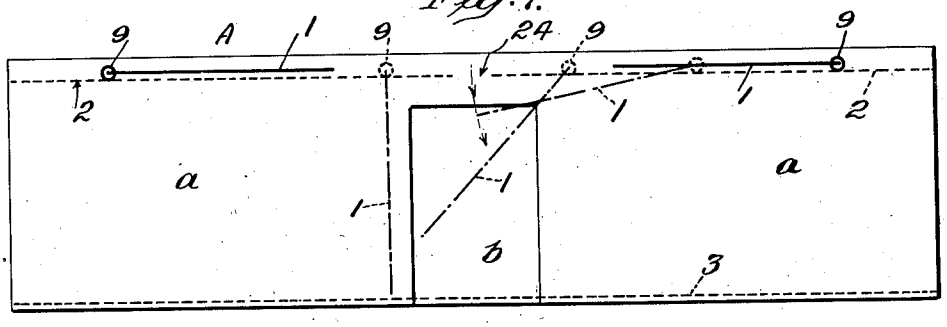


Fig. 2.

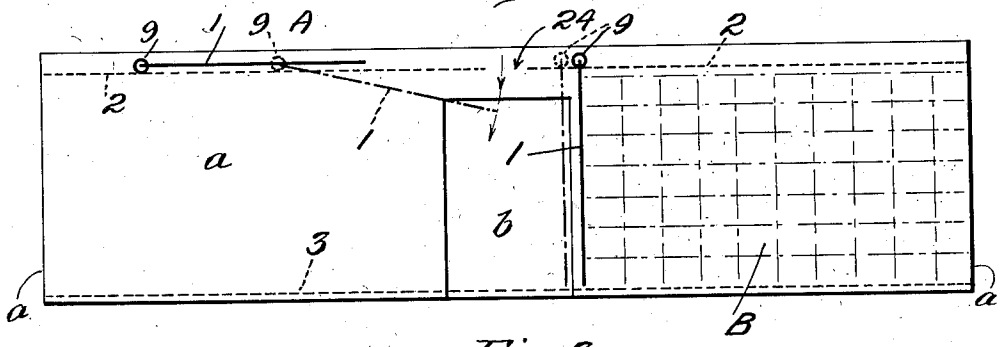
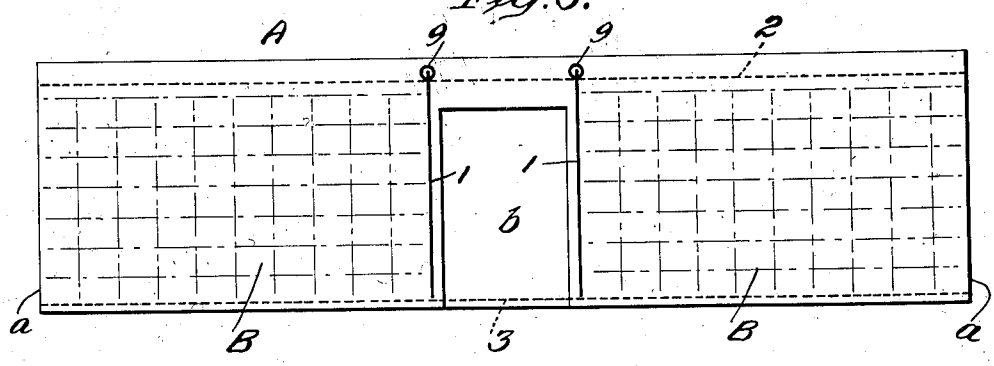


Fig. 3.



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Filed July 28, 1932 3 Sheets-Sheet 2

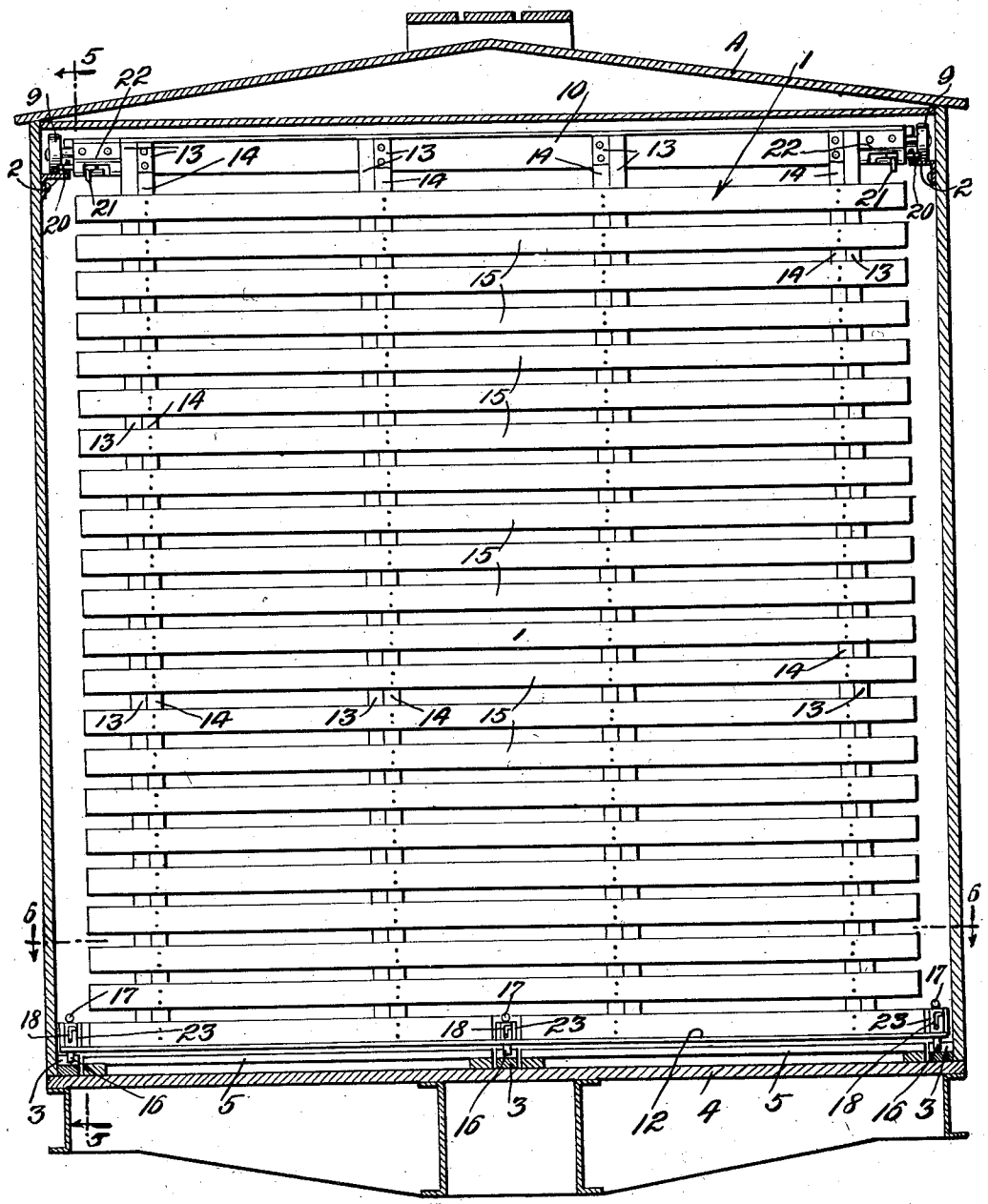


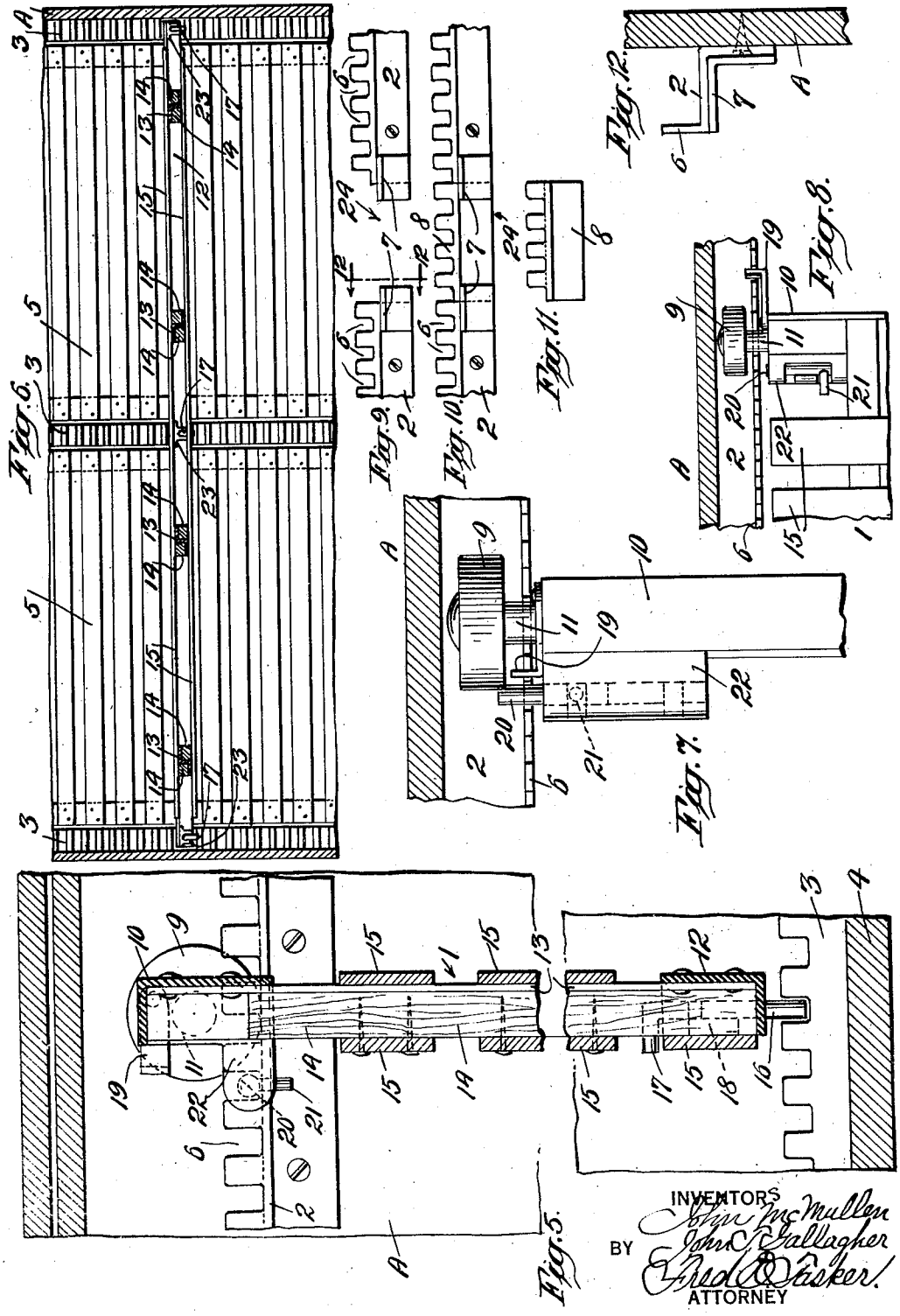
Fig. 4.

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LOAD BRACING MEANS FOR RAILWAY CARS AND OTHER TRANSPORT

Filed July 28, 1932 3 Sheets-Sheet 3



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LOAD BRACING MEANS FOR RAILWAY CARS AND OTHER TRANSPORT

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Application July 28, 1932, Serial No. 625,404

6 Claims. (Cl. 105—369)

This invention relates to adjustable load bracing means for railroad cars and other forms of merchandise transport.

One of the principal objects of the invention is to provide a reliable and efficient load bracing means, in the form of a gate or bulkhead, of simple and economical construction for refrigerator and other freight cars, that is capable of bracing against stacked materials, a portion of or an entire load as occasion demands, an example of load being crates or boxes of fruit or vegetables, so that they will not be shaken or violently disturbed, broken or injured in transit to destroy the same and involve a heavy financial loss, such as commonly occurs with loosely packed loads.

The invention provides essentially two or more similar gates or partitions or other bracing structures upon opposite sides of the car doors, for bracing the fruit or other contents packed in the opposite ends of the car so that it will not chuck or move about in transit; said gates being hung underneath the roof of the car so they can be swung up out of the way when not required for use, and means being supplied whereby the said gates may be moved longitudinally of the car against the crates or boxes of fruit or other merchandise to prevent the same from knocking about in the transit oscillations and shocks of the car.

And the invention may also be said to consist in numerous other features of the construction, combination and arrangement of the several parts, to be hereinafter fully described, illustrated in the accompanying drawings and specifically pointed out in the appended claims.

In describing our invention in detail, reference will be had to the accompanying drawings, wherein like characters denote like or corresponding parts throughout the several views, and in which:

Figures 1, 2, and 3 are diagrammatic views of the outline of a railway car and the leading features of our adjustable load bracing devices in the different main positions that these features occupy in fulfilling their functions.

Figure 4 is an enlarged transverse sectional elevation of one of our improved load bracing gates in its vertical position in a car where it is ready to brace against a quantity of merchandise in the car.

Figure 5 is a vertical section on the line 5, 5, of Figure 4, of the gate, showing cooperating parts on the car, and the gate being broken away centrally in part.

Figure 6 is a horizontal sectional plan view, on the line 6, 6, of Figure 4, the same showing a portion of the car floor and the relation of the gate thereto.

Figure 7 is an enlarged detail top plan view of one end of the gate and the means for support ng it near the roof of the car, and for locking it there.

Figure 8 is a fragment of the gate when supported in its idle horizontal position in the top of the car, and is shown in detail plan view similar to Figure 7.

Figure 9 is a partial side view of the adjoining end portions of the top rack-provided tracks for the gate, and indicates the open gap between said end portions.

Figure 10 is a similar view showing the means for temporarily closing the gap.

Figure 11 is a detail view of the track section used for closing the gap.

Figure 12 is an edge view on the line 12, 12, of Figure 9, with the side of the car in section.

In the present embodiment of our invention, the load bracing devise is adapted for permanent connection to a refrigerator or similar car A, and is adapted for anchoring and holding loads or parts of loads of stacked materials of any kind of merchandise, but with particular reference to the bracing of fruit packages assembled in standard size boxes or crates B and loaded in both ends *a* of the car A through the central door, as *b*. A pair of the gates or bulkheads 1 is employed when bracing a full car, or when the ends of the car are only partially filled, these gates 1 being adapted to be forced tightly against the packed merchandise and then fastened in this position, after which the space between the two gates nearest to the door can be filled in with additional boxes, etc.

The installation of the bracing devices in a car or other transport is made complete and can remain in the car during its entire useful life. In ordinary transit, when the car is deadheading, or when merchandise is being shipped therein which does not require the use of the bracing mechanism, and also during the process of loading the merchandise into the car through the door, the gates or bulkheads are placed in the upper part of the car in a horizontal position under the roof against the ceiling where they will be out of the way and the car operated just exactly as if they were not present.

The entire space taken up by the gates in this horizontal position is only a few inches below the ceiling, so that it is safe to say that no restrictions whatsoever would have to be placed on cars equipped with our improved bracing devices in the kind of merchandise they would carry or the manner of their use.

In the diagrammatic views of Figures 1, 2, and 3, the positions of the essential parts are all indicated in outline for easy comprehension of their movements. The gates 1 when inoperative are shown in their horizontal position under the car roof above the longitudinal tracks 2. There is a gap at 24 between the ends of tracks 2 to allow the projecting lower ends of gates 1 to pass through gaps 24 to a point above the tracks, to allow the gates to be upheld in the horizontal position on the trackways, which is effected by resting the projecting lower ends of the gates on the tracks 2 after these gates have been so lifted and the projecting lower ends passed through these gaps and the gates then pushed into their idle position on the rollers so as to carry the said projecting lower ends of the gates beyond the gaps where they can rest on the tracks. When the gates are being lowered from their idle position so as to take their vertical bracing positions against merchandise B, they assume various inclined positions which are shown in dotted lines. We proceed now to describe all the various parts of the mechanism in detail.

We are taking a typical refrigerator car as an example for illustration, because it carries so much perishable freight, which needs secure packing to prevent injury and loss. But while the bracing device is particularly adaptable for the shipping of fruit or the like in refrigerator cars, it can be used in any other position or situation or other kind of conveyance where bracing of this character is required. Accordingly we do not wish to be restricted to the details of the invention as herein described, except as they are necessarily embraced within the scope of the claims hereto appended.

A designates a refrigerator or other railway car of any approved construction, having the door *b* and the floor bottom construction 4, on which is usually placed the removable and adjustable slat flooring 5, arranged in foldable or other sections, in order to allow the cold air to freely circulate around the fruit or other crates B, or the like, packed in the car on this open work floor. Along each longitudinal edge of the car A, and along a central or median line, a toothed rack bar 3 is securely fastened to the car floor 4, the outer rack bars 3 being outside of the slat sections 5, and the central bar 3 being between them, see Figures 4 and 6, said rack bars being adapted to be engaged by bolts or other locking means on the bottom of the gates 1.

The gates 1 are fully shown in Figure 1 and in the sectional views in Figures 5 and 6. These gates may vary much in their details, but we prefer to have them of an open work structure, to allow a free circulation of the air, and with this end in view, we use L or Z bars 13, in the angles of which are placed upright wooden rails 14 which are held firmly against the adjacent faces of the Z bars by the various series of slats. The upper ends of these combined Z bars and upright wooden rails are securely fastened together into a single structure by the upper angle beam 10, and their lower ends are similarly united by a bottom angle beam 12. The series of wooden uprights 14 on one side of the Z bars 13 are united by a series of slats 15, and the other series of rails 14 on the other side of the Z bars are united by another series of slats 15. Thus the general structure of the gate is rectangular, and it may occupy a vertical position where it is active, or a horizontal position where it is out of the way, and it can be easily shifted from one position to the other.

The parallel horizontal slats 15 on both sides of the uprights 14 and Z bars 13 stop short of touching the side walls of car A so as to leave a sufficient space between the ends of these slats and the sides of the car for easy movement of the gate; but the lower connecting angle beam 12 extends beyond the ends of the slats 15 and its ends come much closer to the car walls, and these ends are provided with suitable castings or frames 23 fastened thereto, or the material of the ends of beam 12 may be bent or shaped for the purpose of carrying the vertical bolts 16 having handles 17 that work in slots 18. These bolts are adapted to drop into the teeth of floor rack bars 3 after the gate is in its vertical position to be locked against the crates. The extended ends of the lower angle piece 12 with the bolt frames 23 are directly above the outer racks 3 so that the ends of the bolts can drop into the rack teeth, (see Figure 5). The handle 17 enables the bolt 16 to be lifted out of the rack 3, and by turning the handle 17 in the slot 18 the bolt 16 can be kept raised out of the teeth of rack 3. At the center of the beam 12 is another similar bolt frame 23, whose bolt 16 engages the teeth of the middle rack 3 so as to more securely fasten the gate in position. Thus three lower points are provided at which three bolts are thus located to effectuate the triple locking. Of course the bolts are only examples of fastening devices that may be used. Others may be substituted, and in place of the racks 3 on the floor, similar racks may be secured to the sides of the car, in which case the bolts at the ends of the beam 12 would have to be arranged to slide horizontally instead of vertically so as to laterally enter the teeth of the racks; and other changes may also be made.

The top beam 10 of the gate is provided at each end with an attached casting 22, which may be made as an integral part or otherwise of beam 10, and either from said castings 22, or from the ends of angle beam 10 project journals 11 that carry rollers 9, that are adapted to roll on the elevated longitudinal tracks 2 that are secured to the sides of the car near the roof. Said tracks 2 have depending vertical flanges secured by screws or other means to the walls of the car, (see Figures 5 and 12) and on their outer edge they have the vertical toothed flanges 6, whose teeth may be engaged by horizontal bolts, as 20, carried in the castings 22, and provided each with a bent operating handle 21. These parts are all clearly portrayed in Figures 4, 5, 7, and 8. When the gate is lifted at its bottom from a vertical to a more or less inclined position, the top end will roll by virtue of rollers or wheels 9 on track 2 inside of rack 6, and thus the gate 1 can be adjusted back and forth, or caused to press more or less closely against the packed merchandise. When the gate is lifted and placed in a horizontal position the pivoted angular finger 19 on one or both ends of gate beam 10, as seen in Figures 7 and 8, can be caused to engage one of the teeth in rack 6, so that the gate is thus held firm and prevented from being shaken or jolted out of place.

The pivoted finger or catch 19 is held on the end of beam 10 by a horizontal pivot pin which allows it to swing up or down in a vertical plane opposite to the flange 6, and it has a right-angled end which drops into an indent or notch in the flange or rack 6. Thus as shown in Figures 7 and 8 it is seen that the pivoted catch 19 may be

caused to engage rack 6 to hold the gate from slipping out of place when it is occupying a horizontal idle position.

The elevated tracks 2 near the car ceiling, as shown in Figures 1, 2, and 9, are formed with a short broken out gap 24 opposite to the door *b*. The object of these gaps 24 is to allow the projecting bolt-carrying ends of the lower gate beams 12, (seen clearly in Figure 6) to be passed up or down through said gaps 24 when either of the gates is being transferred from its working vertical to its horizontal idle position, or vice versa, as indicated in the diagrammatic views. These gaps can be filled with short track sections 8 similar to the track 2, so as to make the latter track continuous after the gate has been placed in its idle horizontal position, and permit rollers 9 to travel along its path on track 2 for a longer distance on track 2. Piece 8 is shown in detail in Figure 11, and in position on track 2 in Figure 10, where the ends of section 8 are seated on supplemental supports 7 secured under the ends of track 2 and projecting slightly beyond the ends into the gap 24, as seen in Figures 9 and 10, and in the edge view of Figure 12.

The operation of the bracing gates may be briefly described as follows: When the gates are not required for use, they are swung up against the ceiling or inner side of the roof of the car by lifting them on the rollers 9 as on pivots, the projecting ends of beam 12 passing through gaps 24 so that the gates may assume their inoperative horizontal position, one or both of them. Because when the gates are thus lifted, and the projecting ends of beam 12 passed through gaps 24, the gates may then be adjusted lengthwise by rolling them on their rollers 9 until the projecting ends of beam 12 have been moved beyond the gaps 24, and then these ends may be caused to rest on the tracks 2 and thus support the gates in the raised position. And when the gates are so placed the latch 19 pivoted on the top part of the gate, (see Figures 7 and 8), may engage teeth 6 to render the gate immovable; and the track sections 8 may be put into place to obviate the discontinuity of said tracks.

When the gates are required for bracing use and the boxes or crates of fruit have been piled into the opposite ends of the car, the gates are separately let down after releasing catches 19 and removing track fillers 8. When the gates have been swung down they will be pushed firmly against the boxes in opposite ends of the car, the gates traveling on the tracks 2 towards and against the boxes, and when a gate is pressing against the pile of boxes with sufficient strength its upper end may be secured in place by interlocking bolts 20 with racks 6, and its lower end may be secured in place by interlocking its bolts 16 with racks 3, all three racks, the gate being then vertical as seen in Figures 2 and 3. After one gate has been localized rigidly against the merchandise B in one end of the car, the other gate may be similarly localized against the merchandise B in the other end of the car.

When loading the car the boxes, crates or other merchandise are placed in position in the ordinary manner.

By the use of our present improved bulkheading means the car A may be loaded with boxes, crates, or the like, for any desired portion of its length and the merchandise held securely against movement by clamping and locking one of the gates against it, as described. This enables the shipper to load a fraction of a carload, and admits of portions of the shipment being delivered at various points, the gate being swung against the ceiling of the car to admit of the removal of the desired part of the shipment and then restored in its clamping position against the outermost part of the remainder of the load. After both ends of the car are suitably loaded, and the gates locked against these loads, the space between the gates and opposite door *b* may be filled full of other merchandise, as much as desired. Further it will be found possible to arrange more than two gates, so as to hold more than two piles of merchandise, in which case the details will be changed as far as may be necessary to make this possible.

Many changes may be made in the details without departing from the invention set forth in the claims. The gate structure may be varied with many different features. The locking or fastening means at top and bottom of the gates may be widely varied and substituted with other equivalent devices. These gates may be applied to any kind of carrier or car, and other modifications may be adopted. Instead of single rollers 9 on each track, as shown, there may be pairs of rollers on each track, the same carried in a frame or holder pivoted, hung or otherwise supported on the ends of the gates, so that the two rollers on each track may run easily on the track in line with each other.

What we claim is:

1. A load bracing device for freight cars, comprising a gate, trackways adapted to be supported near the car roof, said trackways having horizontal running portions and an indented flange, and having also middle gaps and provided with seats at the ends of the gaps, auxiliary pieces for closing said gaps which have indented flanges and are adapted to be supported on said seats when in position to close the gap, rollers on the upper end of the gate that run on said trackways, projecting means, comprising locking means on the lower end of the gate that can pass through the open gaps when the gate is lifted, other locking means on the gate for holding it fast when in vertical position against stacked materials in the car, and said other locking means being on the same end of the gate as the rollers for rigidly engaging the trackways to hold the gate at the top, and said first locking means being on the other end of the gate adapted to engage with floor means to hold the gate at the lower point immovable when clamped against the load, said gate being movable from its vertical active position to a raised horizontal idle position in which it lies on said trackways.

2. A load bracing device for freight cars, comprising a gate, trackways adapted to be supported near the car roof, said trackways having horizontal running portions and an indented flange, and having also middle gaps and provided with seats at the ends of the gaps, auxiliary pieces for closing said gaps which have indented flanges and are adapted to be supported on said seats when in position to close the gaps, rollers on the upper end of the gate that run on said trackways, projecting means comprising locking means on the lower end of the gate that can pass through the open gaps when the gate is lifted, other locking means on the gate for holding it fast when in vertical position against the load in the car, and said other locking means being on the same end of the gate as the rollers for rigidly engaging the indented flanges to hold the gate at the top, and said first locking means adapted to engage with

floor means to hold the gate at the lower point immovable when clamped against the load, and a pivoted catch on the roller-provided end of the gate that is caused to engage the indented rack of the trackways to hold the gate from slipping out of place when it is occupying a horizontal position, said gate being movable from its vertical active position to a raised horizontal idle position in which it lies on said trackways.

3. A load bracing device for freight cars, comprising a gate, trackways adapted to be supported near the car roof and having open gaps with closing sections, said trackways having horizontal running portions and an indented flange, rollers on the upper end of the gate that run on said trackways, longitudinal racks adjacent to the lower end of the gate, locking means on the roller-provided end of the gate for rigidly engaging the indented flanges on the trackways to hold the gate at the top against the load, projecting means at the other end of the gate that can pass through the open gaps when the gate is lifted, said projecting means carrying locking means to engage the longitudinal rack on the car floor and hold the lower end of the gate against the load, and a pivoted catch on the roller-provided end of the gate that is caused to engage the indented rack of the trackways to hold the gate from slipping out of place when it is occupying a horizontal idle position.

4. In a device of the class described, a gate consisting of vertical angular bars, uprights held in the angles of said bars, a top beam fastened to the angular bars, a bottom beam fastened to the lower end of the bars, a series of slats secured to the uprights on one side and another series of slats secured to the uprights on the other side, trackways adapted to be supported near the car roof, said trackways having horizontal running portions and an indented flange, and having also middle gaps and provided with seats at the ends of the gaps, auxiliary pieces for closing said gaps which have indented flanges and are adapted to be supported on said seats when in position to close the gaps, rollers on the upper end of the gate that run on said trackways, projecting means on the lower end of the gate that can pass through the open gaps when the gate is lifted, locking means on the gate for holding it fast when in vertical position against the load in the car, and said locking means being partly on the roller-provided end of the gate to hold the gate at the top and being partly on the projecting means on the lower end of the gate to hold the gate against the load at the bottom, said gate being movable from its vertical active position to a raised horizontal idle position in which it lies on said trackways.

5. In a device of the class described, in combination with a car, a gate consisting of vertical Z-shaped bars, uprights placed in the angles of said bars, a transverse top member secured to the Z bars, a transverse bottom member secured to the Z bars, series of slats on opposite sides of the Z bars secured to the uprights, trackways adapted to be supported near the car roof, the same having horizontal running portions and indented flanges, rollers on the upper end of the gate that run on said trackways, projecting means on the lower end of the gate that can pass through gaps in the trackways when the gate is lifted, locking means on the gate for holding it fast in a vertical position against the load in the car, said gate being movable from its vertical active position to a raised horizontal idle position, and said locking means being partly on the top of the gate for rigidly engaging the trackways to hold the gate at the top and partly on the projecting means on the lower end of the gate to engage with floor means to hold the gate at the bottom, and a pivoted catch on the roller-provided end of the gate that is caused to engage the indented rack of the trackways to hold the gate from slipping out of place when it is occupying a horizontal idle position on the trackway.

6. In a load bracing device for cars and other transport, the combination with a car structure, of a gate or bulkhead arranged transversely in the car and consisting of vertical angle bars, uprights therein, slats secured to the uprights and cross pieces connecting the angle bars, of rack-provided tracks, rollers acting on the tracks and carried by the gate, a detent pivoted on the end of the gate and engaging an idented rack on the tracks for preventing the gate being shifted in a horizontal idle position on the tracks, and locking means for holding the gate in a vertical position against the packed merchandise, the same consisting of bolts on the roller-provided end of the gate engaging the racks of the tracks, and bolts on the other end of the gate engaging longitudinal racks on the car floor, all substantially as described.

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