No. 715,181. Patented Dec. 2, 1902.

H. A. TURNER.

FREIGHT CAR.

(Application filed Feb. 7, 1902.)

(No Model.) 3 Sheets—Sheet 1.

Fig. 1.

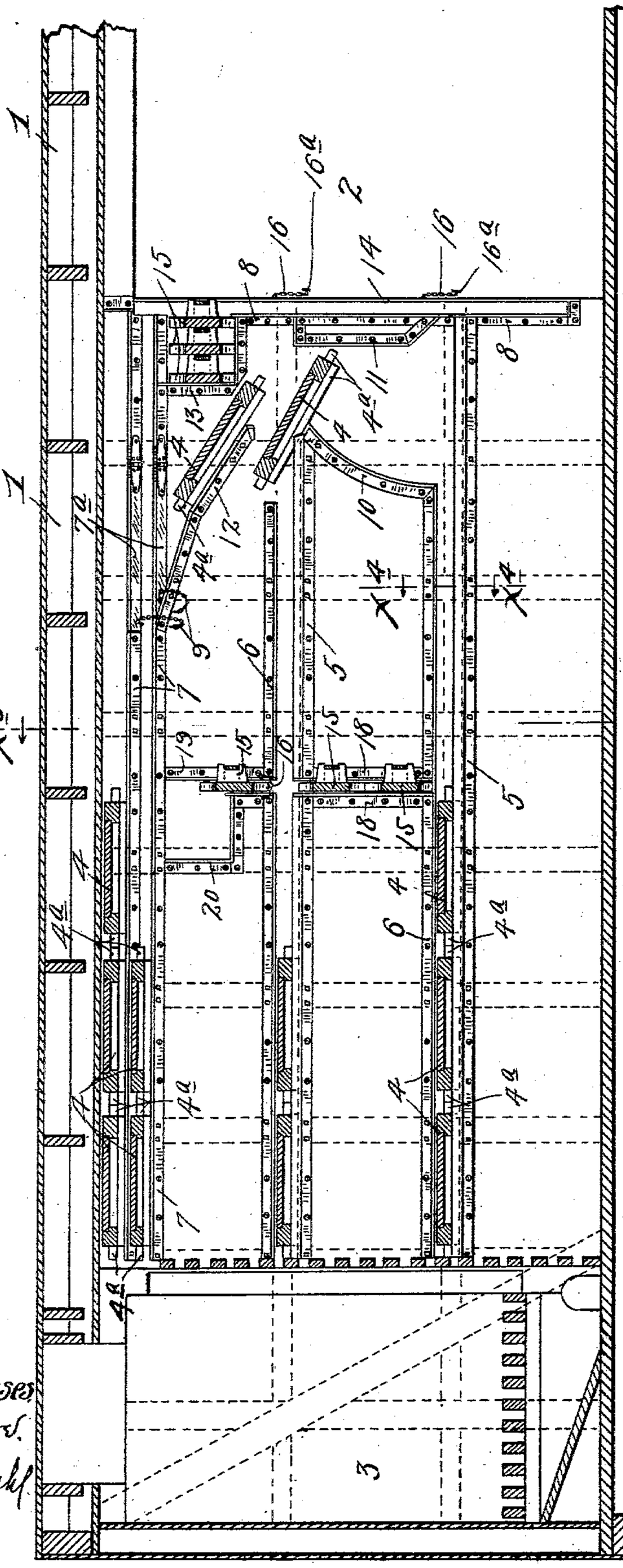
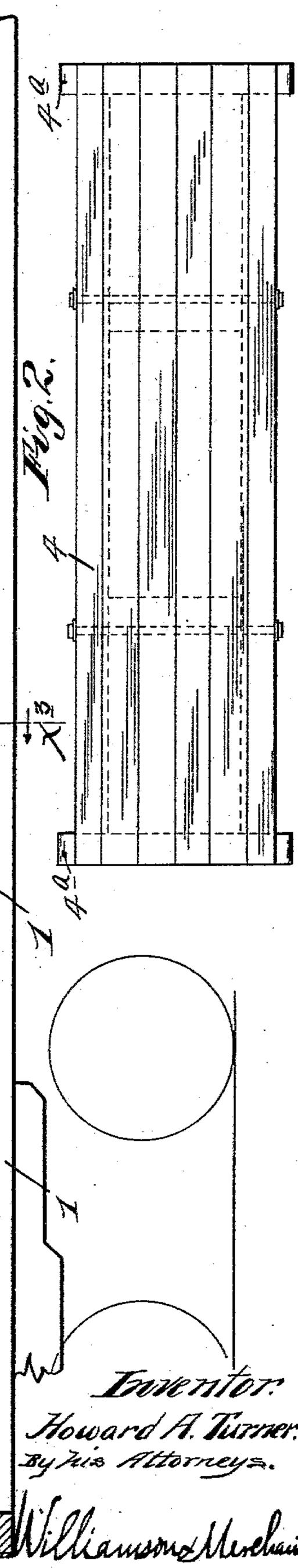


Fig. 2.



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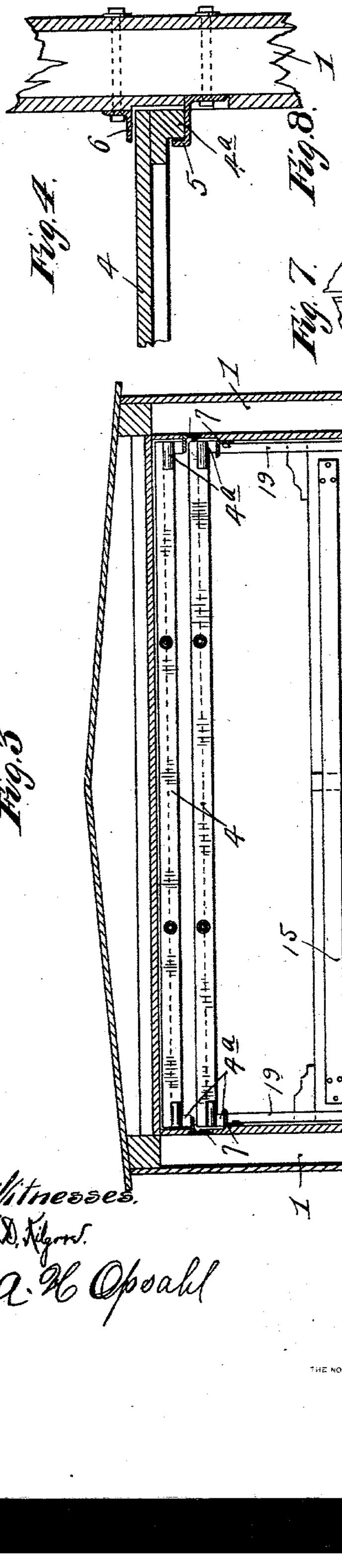

Witnesses.
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A. H. Opsahl

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By his Attorneys.
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(No Model.) 3 Sheets—Sheet 3.

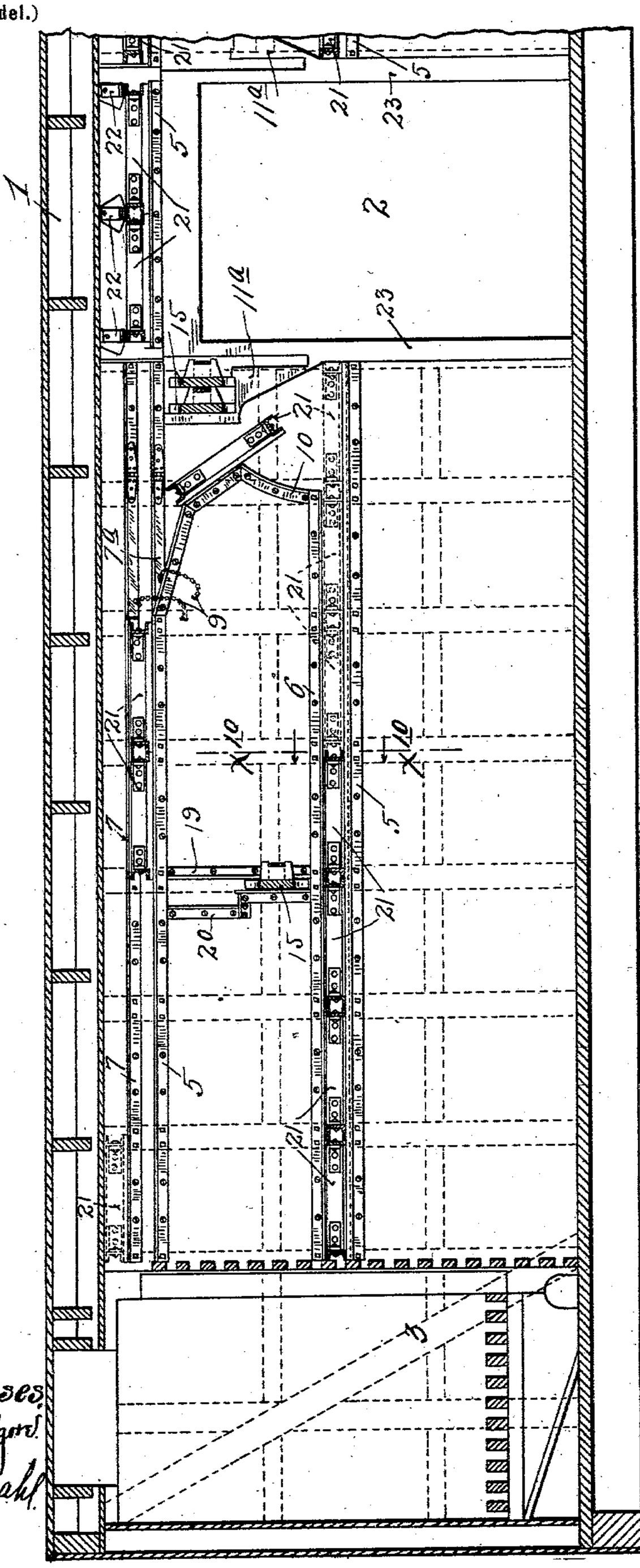

Fig. 9.

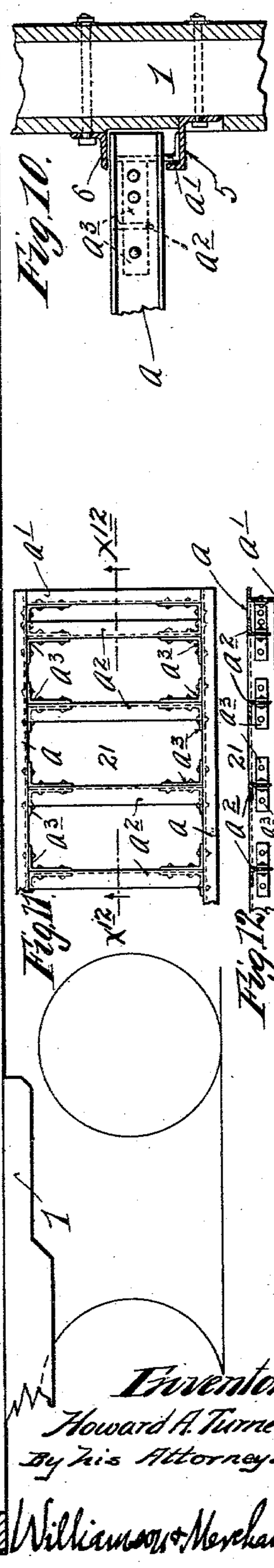

Fig. 10.

Fig. 11.

Fig. 12.

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UNITED STATES PATENT OFFICE.

HOWARD A. TURNER, OF MINNEAPOLIS, MINNESOTA.

FREIGHT-CAR.

SPECIFICATION forming part of Letters Patent No. 715,181, dated December 2, 1902.

Application filed February 7, 1902. Serial No. 92,992. (No model.)

To all whom it may concern:

Be it known that I, HOWARD A. TURNER, a citizen of the United States, residing at Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain new and useful Improvements in Freight-Cars; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to freight-cars of the class which are convertible from single to multiple deckers, and conversely, in order to better adapt the same for use in the shipment of different classes of freight.

In the drawings the invention is illustrated as applied to refrigerator-cars; but it will be understood that several features of the invention are equally applicable to other classes of cars where convertible decks are desirable, such as stock-cars.

In some features my present invention is in the nature of an improvement over my own prior patent, No. 670,400, of date March 19, 1901.

The general object had in view is to increase the capacity, add strength and security, and facilitate the handling of the freight.

To these ends my invention consists of the novel devices and novel combinations of devices hereinafter described, and defined in the claims.

The invention is illustrated in the accompanying drawings, wherein like notations refer to like parts throughout the several views.

In said drawings, Figure 1 is a longitudinal vertical central section through part of a car embodying my invention. Fig. 2 is a plan view of one of the deck-sections shown in Fig. 1, but detached from the car. Fig. 3 is a vertical cross-section on the line $x^3\,x^3$ of Fig. 1, with some parts broken away. Fig. 4 is a detail in cross-section on the line $x^4\,x^4$ of Fig. 1. Figs. 5 and 6 are details in plan and edge view of one of the cross retaining-bars detached and turned down flatwise with the truss uppermost in Fig. 5 and turned up edgewise in Fig. 6. Fig. 7 is a detail in inside elevation looking at the retaining-guides for the cross-bars shown in Figs. 5 and 6. Fig. 8 is a detail looking at one of the guides for the cross-bars shown in Fig. 7 from the side in respect to said view or looking lengthwise of the car. Fig. 9 is a view similar to Fig. 1, but showing a modification as to the number of the convertible decks and in the nature of the deck-sections, the deck shown in Fig. 9 being of proper form to afford a beef-rack. Fig. 10 is a detail in cross-section on the line $x^{10}\,x^{10}$ of Fig. 9. Fig. 11 is a detail in plan view showing a part of one of the deck-sections of Fig. 9 detached, and Fig. 12 is a section on the line $x^{12}\,x^{12}$ of Fig. 11.

The car-body 1 is provided with the customary door-openings 2 in its side walls, and, being a refrigerator-car, is also provided with the customary ice-boxes 3 at its opposite ends. This car is equipped with suitable shiftable deck-sections 4, having downwardly-extended flanges at their ends. As shown in Figs. 1 to 4, inclusive, the deck-sections 4 are supposed to be made of wood and the down-flanges at the ends of the sections are afforded by the wooden end pieces 4^a of the section, which are of the proper dimensions to extend below the body or batten portion of the deck-section, as best shown in Fig. 4. To the side walls of the car are fixed sets of supporting-rails 5 for upholding the deck-sections 4 when in working position and permitting the same to be moved lengthwise thereof when shifting from working to idle positions, as will later more clearly appear. These supporting-rails 5 are of the proper construction to afford upturned flanges for coöperation with the downturned flanges fixed to or constituting a part of the deck-sections 4. As shown, the said supporting-rails 5 are in the form of **Z**-bars, one angle of the **Z** interlocking with the corresponding angle of the end pieces on the sections 4, as clearly shown in Fig. 4. The deck-sections 4, therefore, interlock with the **Z**-bar-supporting rails 5 when in working position, and hence the deck-sections 4 interlock or tie together the sides of the car in such a manner as to prevent any material spreading of the same. The fit between the interlocking parts of the deck-sections and their supporting-rails is sufficiently loose to permit the ready manipulation or sliding motion of the deck-sections 4 on their supporting-rails 5, as is desirable under normal conditions; but if some great overload should be placed on the car or some accident occur thereto,

tending to bulge outward the sides of the car, the deck-sections will then come into play and serve as cross-ties, interlocking or connecting together the sides of the car, thereby greatly strengthening the car-body and limiting the spreading action of the side walls in respect to each other.

Directly above the supporting-rails 5 are located guard-rails 6, shown as formed of angle-bars, which guard-rails 6 are properly located to permit freedom for the shifting movements of the deck-sections, while preventing the vertical displacement thereof from their working positions.

To the sides of the car, near the roof of the same, are fixed sets of rails 7 for supporting the deck-sections 4 in their idle positions as near as possible to the roof of the car and which for convenience of distinction may be called the "idle-position" rails. The contrast is with the other rails 5, which support the deck-sections in working position and which, therefore, for convenience of distinction may be called the "working-position" rails.

To the sides of the car directly adjacent to the door-openings 2 are fixed angle-iron strips 8, which form the limiting-stops to the forward movement of the deck-sections 4 on the working-position rails 5. Guideways are provided which permit the deck-sections 4 to be shifted from their working to their idle positions, and these guideways are of such construction as to permit the deck-sections to be passed therefrom to either or to both sets of the working rails 5, as may be desirable. Gates are provided in the idle-position rails 7 for passing the deck-sections to and from their idle positions and locking the same therein. As shown, these gates are formed by hinged sections 7^a in the rails 7, as clearly shown in Fig. 1, which hinged sections swing in a horizontal plane and may be locked in their closed positions by chain-secured pins 9 or other suitable means.

The guideways which permit the deck-sections to be shifted from working to idle positions are, as shown, formed by the parts marked 10 11 12 13 and portions of the vertical angle-iron strip 8. All of said parts are of angle-iron. The guide members 10 are of curvilinear form and extend from the lowermost pair of guard-rails 6 to a junction with the upper pair of working-position rails 5. The guide 11 extends from a point on the vertical strip 8 in line with the guard-rails 6 inward and upward on an angle and then rises vertically to the level of the faces of the upper pair of working-position rails 5 and turns outward to a junction with the vertical angle-iron strip 8, thus affording a shoulder at the upper ends of the guides 11 for receiving the forward sides of the deck-sections before entering the decks into the gap between the guide members 12 and 13. The position of the members 13 is partly incidental to another purpose, which will later appear; but the members 12 are properly located and properly spaced apart in respect to the members 13 to permit the deck-sections 4 to pass upward on the members 12 and be guided thereby to the gaps afforded in the idle-position rails when the gate-sections are in their open positions. All these guides, 10 to 13, inclusive, are of such construction and such location in respect to each other and in respect to the rails 5, 6, and 7 and the vertical strip 8 that the said deck-sections may be freely shifted as required to move the same from their working into their idle positions, but that the deck-sections cannot be removed from the car without doing violence thereto. Otherwise stated, the deck-sections are interlocked with their guides and supporting-rails in all positions which the deck-sections can assume, and hence said deck-sections cannot be removed from the car without first removing some of the parts which confine or lock the same to the car while being shifted from one position to another.

As compared with my own prior patent the feature of novelty in respect to the shiftable deck-sections and their confining guiding parts is the addition of the flanged interlock between the deck-sections and their supporting-rails 5, whereby the deck-sections will prevent or limit the spread of the side walls of the car, and the presence of the two sets of supporting-rails, affording a triple decker instead of a two decker, as in my prior patent, with the gap or passage in the shifting guideways, which permits the deck-sections to be distributed onto either or to both sets of working-position rails 5, as may be desired.

With the angle-iron vertical strips 8 coöperate additional angle-iron strips 14, secured to the sides of the car flush with the door-openings 2 and properly spaced apart from the members 8 to coöperate therewith and afford retaining-guides, between which are mounted the heads of the retaining cross-bars 15. These bars are shown detached in Figs. 5 and 6 and in working or idle positions in Figs. 1 and 3. The sets of angle-iron members 13 are so disposed relative to each other and the vertical strips 8 as to coöperate with the members 8 and the members 14 to afford idle-position supports for the cross-bars 15, so as to hold the latter as near as possible to the roof of the car and out of the road when loading the car, as shown in Fig. 1. After the car has been loaded the cross-bars 15 are dropped down into their vertical guideways afforded by the members 8 and 14 into the position shown in Fig. 3. Said cross-bars 15 will then be supported in their working position by chains 16 or other suitable devices. As shown, the chains 16 are made fast at one end and at the other end are provided with a headed hook 16^a, which is adapted to engage with the keyhole-slot 17 in the guide-plate 8 and become locked thereto in a manner which is obvious from an inspection of Figs. 7 and 8. Both of the guide-bars 8 and

14 might be provided with such keyhole-slots 17 and chains 16 be provided with headed hook 16ª at both ends and the same purpose be subserved. It is equally obvious that the chains 16 might be made fast to the cross-bars 15 and be used substantially in the same way. One is shown so secured in Fig. 5. One or both of the guide-plates 8 and 14 being provided with a number of keyhole-slots 17 it is obvious that the cross-bars 15 may be supported in their guides at any desired vertical adjustment or height relative to the working decks.

In the drawings I have shown additional sets of guides marked 18, 19, and 20 for supporting such cross-bars 15 at an intermediate point about half-way between the door-openings 2 and the ice-boxes 3 of the car. The guides 18 and the lower ends of the guides 19 and 20 are in vertical alinement with each other and extend, respectively, to the supporting-rails 5 and the guard-rails 6 of the uppermost member of the working decks, thereby permitting the cross-bars 15 to be shifted into the recess or angle afforded by the members 20 for holding the cross-bars in their uppermost or idle positions as near as possible to the roof of the car. The cross-bars 15 may be supported in their guides 18 and 19 in any desired positions, just as before described in respect to the guides 8 and 14.

In the modification shown in Fig. 9 provision is made only for a single shiftable deck, or, in other words, the car shown is only a double decker; but provision is made for holding the shiftable deck-sections in either of two working positions, one position being at the proper distance below the roof-level for suspending dressed beeves and the other working position being about midway of the vertical height of the car for permitting freight to rest on the faces of the shiftable decks. The deck-section 21 in this modification, Figs. 9 to 10, inclusive, are of metal and of suitable form to constitute a beef-rack. Otherwise stated, these deck-sections 21 are composed of channel-bars a a', constituting, respectively, the sides and ends of the sections, and of angle-bars a^2, connecting the side bars a with corner angle-irons a^3, applied at the joints between the said parts a and a^2. Thus constructed the sections 21 are of open skeleton form of the proper shape and the proper strength to permit the dressed beef to be suspended therefrom by the application of suitable hooks thereto when the sections 21 are on their uppermost set of working-position rails 5, while at the same time said sections 21 will support any desired kind of freight likely to be shipped in refrigerator-cars on the faces of the sections 21 when the same are in working position on the lowermost set of said rails 5. When in use as a beef-rack, the hocks of the beeves project upward through the openings between the cross-ties a^2 of the rack and for several inches above the faces of the sections 21, and the clearance required for this purpose makes it necessary that said upper set of working-position rails 5 should be located a short distance below the roof of the car. It is therefore desirable to provide the sets of idle-position rails 7 at the highest available level onto which the deck-sections 21 may be shifted when not in use, so as to render available several additional inches of clearance for load below the said deck-sections when in said idle position. It may be noted that the idle-position rails 7 may serve as the guard-rails for the upper set of working-position rails 5. In order to utilize the entire car when loaded with beeves or other freight suspended from above, I mount a pair of deck-sections 21 onto supporting-rails 5, located directly above the door-openings 2, and these two deck-sections have only a vertical shift from working to idle position, or conversely, and when in idle position they are held up by hooks 22, which engage under parts of the sections. The working-position rails 5 stop at the door-posts 23, and the said posts are of proper form to serve as stops to prevent the deck-sections from being moved off from the ends of said rails at the door-openings. The guides 11ª in Fig. 9 correspond to the guides 11 in Fig. 1; but, as shown in Fig. 9, the guides 11ª are formed integral with the door-post 23. The end channel-bars a', forming parts of the deck-sections 21, (shown in Fig. 9,) extend downward below the other portions of the deck-sections, as best shown in Figs. 10 and 12, and the downwardly-extended parts of said end channel-bars a' afford the interlocking flanges on the decks for coöperation with the upturned interlocking flanges of the Z-bar-supporting rails 5. Hence the deck-sections 21 interlock with their supporting-rails 5 in the same way as the deck-sections 4. (Shown in the other views.) As shown, the deck-sections have down-flanges, which engage with up-flanges on the supporting-rails 5 to afford the interlock; but it must be obvious that the interlock might be between the deck-sections and the guard-rails 6, or any other suitable locking-rail might be provided for that purpose.

It is obvious that the ice boxes or cages 3 are only needed in refrigerator-cars and that when dispensed with the supporting-rails 5 for the deck-sections would extend from the door-posts to the ends of the car and the necessary increased number of deck-sections would be provided. It must be further understood that if the shiftable deck-sections are to be applied to stock-cars such sections should have substantially continuous faces and should make close joints with each other when in working position. In refrigerator-cars open joints or skeleton-work deck-sections are desirable for securing a good circulation of the air and for the better handling of the beef or other freight; but in stock-cars the deck-sections must be sufficiently close on their faces to prevent the feet of the

animals from passing therethrough. It will be further understood that some of the details of construction might be changed without departing from the spirit of my invention.

What I claim, and desire to secure by Letters Patent of the United States, is as follows:

1. In a car, the combination with independent shiftable deck-sections, of idle-position supporting-rails, several sets of working-position supporting-rails, and guideways permitting said deck-sections to be shifted from their idle positions onto any or all of said sets of working-position rails, which guideways are so constructed and disposed that the deck-sections can pass therethrough but cannot be removed from the car, substantially as and for the purposes set forth.

2. In a car, the combination with independent shiftable deck-sections, of sets of supporting and guard rails, for said deck-sections, which deck-sections and some of said rails are provided with positively-interlocking parts whereby the deck-sections, when in working position, will prevent or limit the spreading of the sides of the car, substantially as described.

3. In a car, the combination with independent shiftable deck-sections having flanges on their ends, of locking-rails secured to the sides of the car and provided with flanges which positively interlock with the deck-flanges, when the decks are in working position, whereby the decks will prevent or limit the spreading of the sides of the car, substantially as described.

4. In a car, the combination with shiftable deck-sections having downturned flanges on their ends, of working-position supporting-rails fixed to the sides of the car and having upturned flanges which coöperate with said end flanges on the sections to afford a positive interlock between the said parts, substantially as and for the purposes set forth.

5. In a car, the combination with the shiftable deck-sections having the downturned flanges on their ends, of the supporting-rails fixed to the sides of the car and having the upturned flanges which interlock with said deck-flanges, and the guard-rails fixed to the sides of the car and overreaching the faces of the deck-sections, when in working position, substantially as described.

6. In a car, the combination with independently-shiftable deck-sections, of several sets of supporting-rails fixed to the sides of the car and vertically spaced apart from each other, for supporting said deck-sections in working positions, upper or idle position rails fixed to the sides of the car, near the roof of the same, and guideways through which the said deck-sections may be shifted from working to idle positions, or conversely, and which guideways are so constructed and disposed that the deck-sections can pass therethrough but cannot be removed from the car, substantially as described.

7. In a car, the combination with shiftable deck-sections, of several sets of supporting-rails fixed to the side walls of the car for upholding said deck-sections in proper working positions, idle-position rails fixed to the sides of the car, near the roof of the same, guideways through which the deck-sections may be shifted from idle position onto any desired set of said working-position rails, without permitting the decks to be removed therefrom, and gates in the idle-position rails for permitting the deck-sections to pass to and fro therefrom and to be locked thereon, in idle position, substantially as described.

8. In a car, the combination with retaining cross-bars for holding articles in their loaded positions of guides for said cross-bars which guides permit the bars to be shifted from working to idle positions without permitting the bars to be removed from the car, substantially as described.

9. In a car, the combination with retaining cross-bars and vertical guides for the same, of chains securable to said guides and adapted to hold the cross-bars at any desired vertical adjustment, in working position, substantially as described.

10. A car having independent shiftable deck-sections composed of skeleton metallic frames made up of channel and angle bars suitably connected and spaced apart from each other, and which frames, when in working position, coöperate to form a beef-rack from which dressed beeves may be suspended, and which deck-sections form a part of the car and cannot be removed therefrom, substantially as described.

11. In a car, the independent shiftable deck-sections composed of the skeleton metallic frames having the channel-bar sides a, the channel-bar ends a', the angle-bar cross-ties a^2 and the corner-irons a^3 applied to the joints between the said parts a and a^2, with the cross-ties spaced apart from each other, and which frames so formed coöperate to form a beef-rack from which dressed beeves may be suspended, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

HOWARD A. TURNER.

Witnesses:
JAS. F. WILLIAMSON,
F. D. MERCHANT.