Feb. 28, 1939. H. GIDDINGS 2,149,015

FREIGHT CAR

Filed Oct. 19, 1936 4 Sheets-Sheet 1

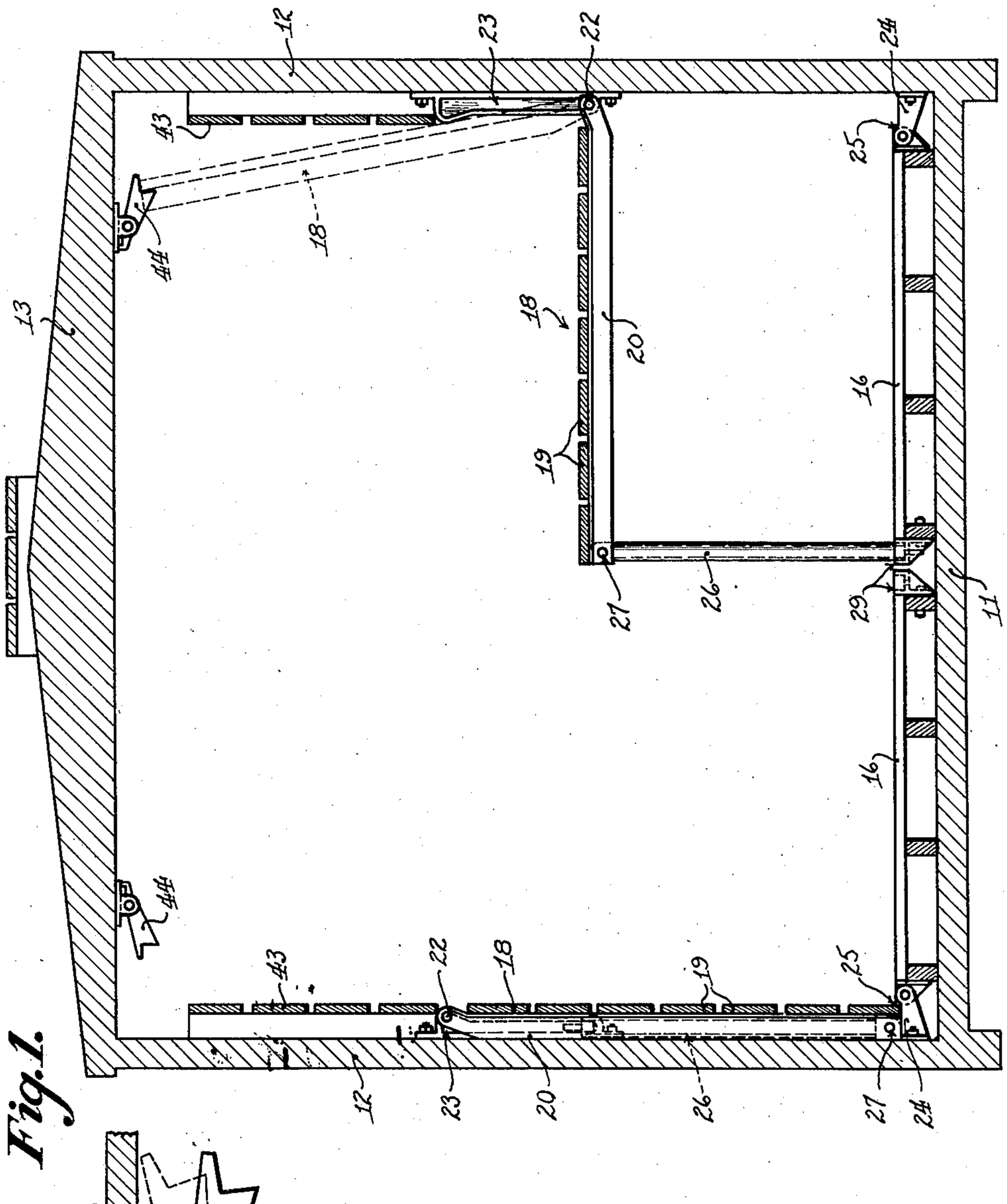

Fig. 1.

Fig. 2.

Fig. 3.

BY

INVENTOR.
Horace Giddings
Booth & Booth
ATTORNEYS

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FREIGHT CAR

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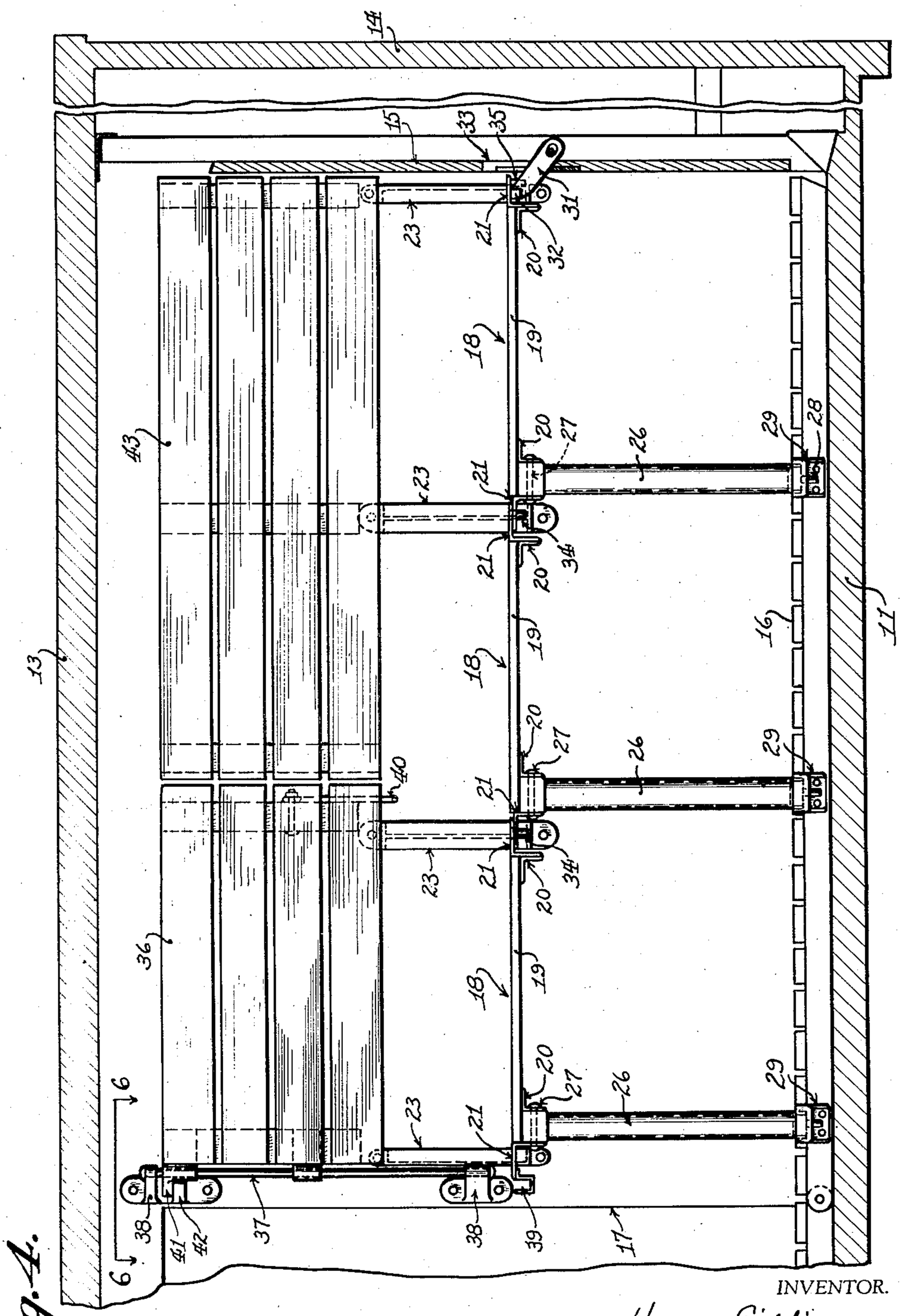

Fig. 4.

INVENTOR.

Horace Giddings

BY Barth & Barth

ATTORNEYS

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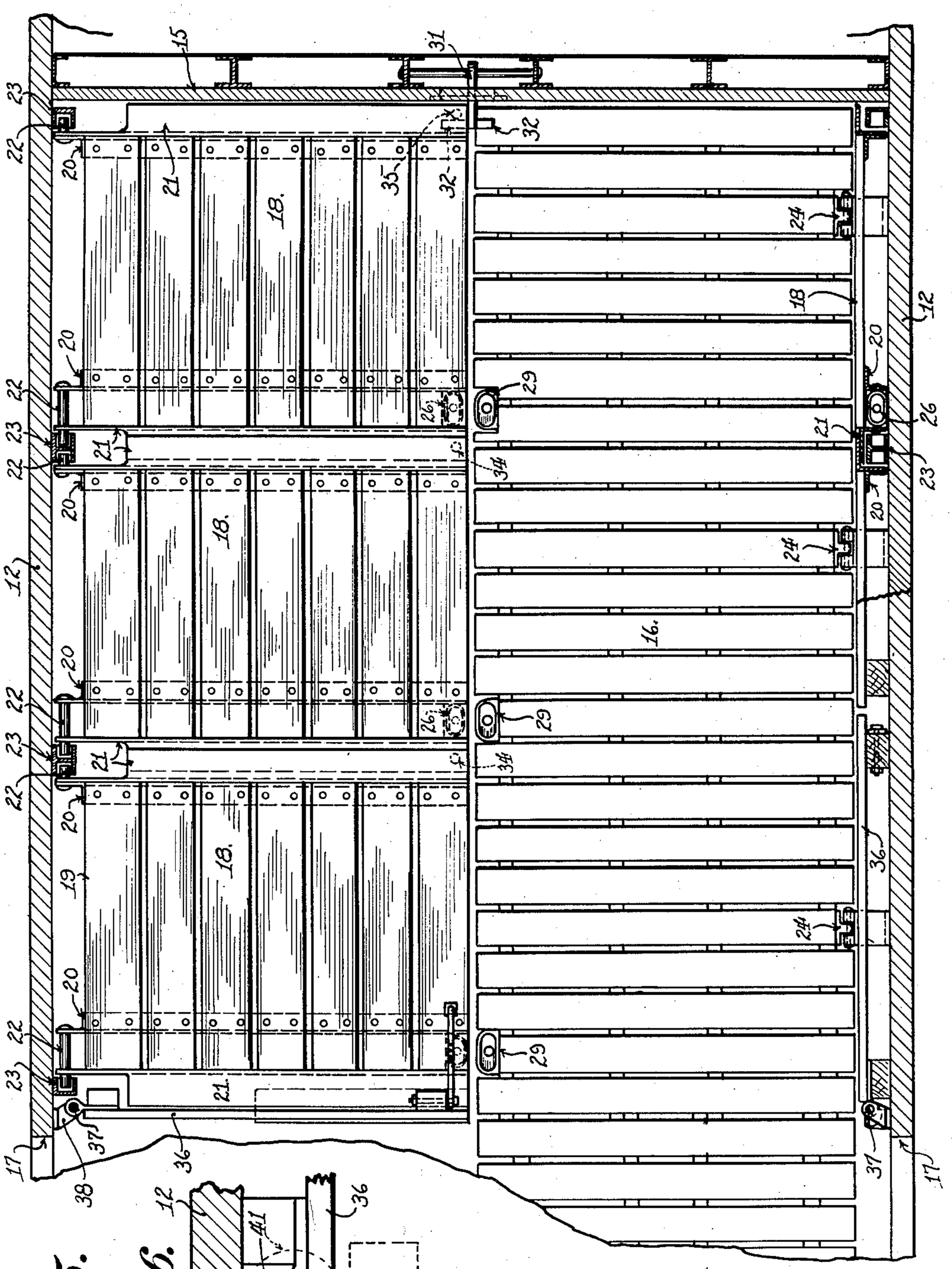

Fig. 5.

Fig. 6.

INVENTOR.

Horace Giddings

BY Booth & Booth

ATTORNEYS

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FREIGHT CAR

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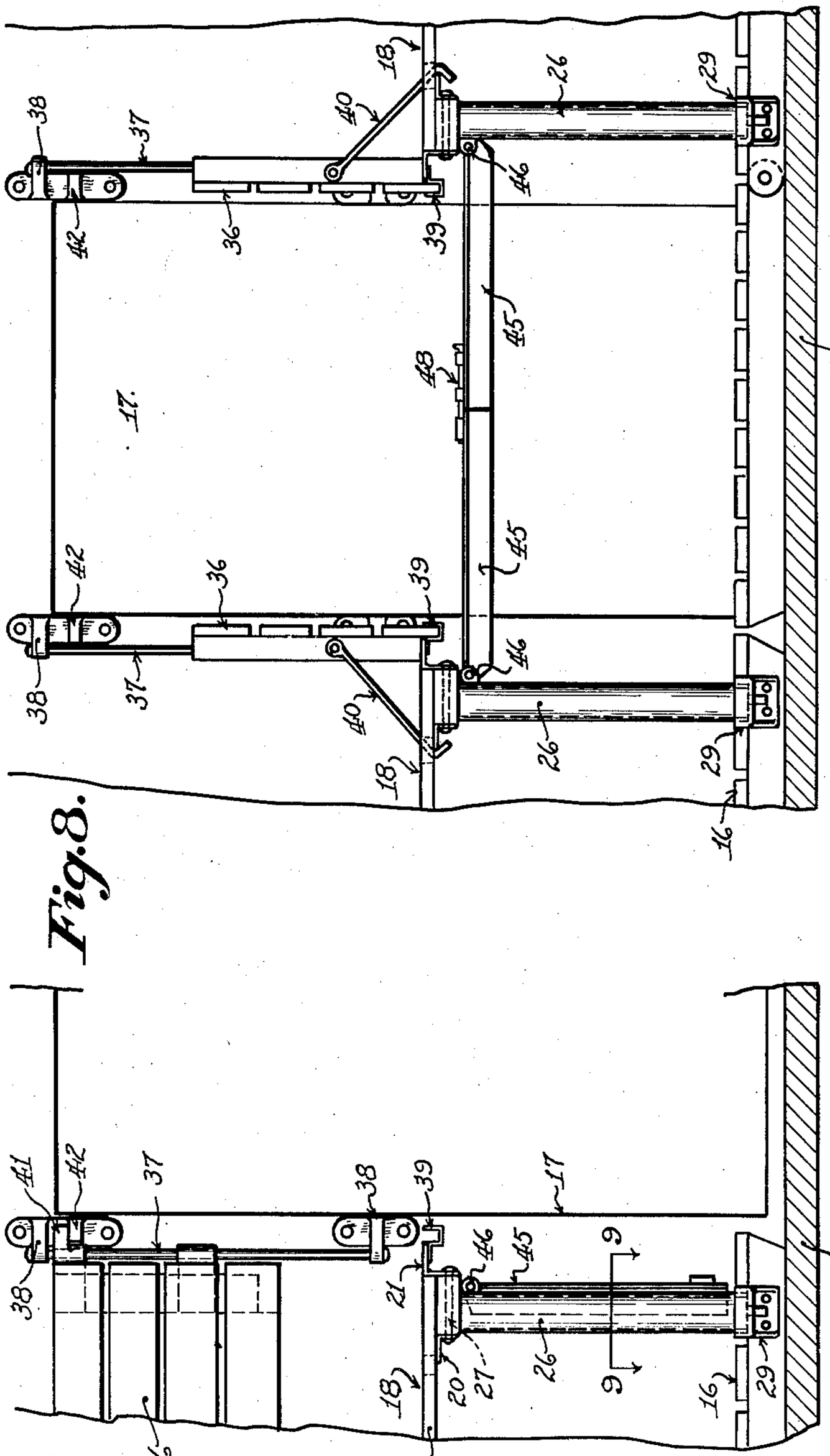

Fig. 8.

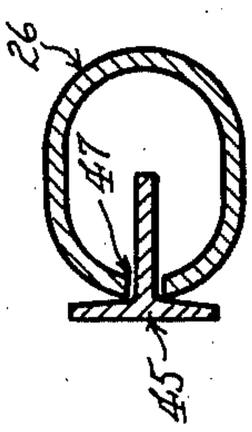

Fig. 9.

Fig. 7.

INVENTOR.

Horace Giddings

BY Barth & Barth

ATTORNEYS

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UNITED STATES PATENT OFFICE

2,149,015

FREIGHT CAR

Horace Giddings, San Francisco, Calif.

Application October 19, 1936, Serial No. 106,297

6 Claims. (Cl. 105—372)

The present invention relates to the interior construction of box cars and refrigerator cars. Although designed primarily for railway cars, and so illustrated herein, it may be applied without material change to closed-body trucks and trailers for highway hauling.

The invention has two principal objects; first, to provide an interior lining, parallel to and spaced from the walls of the car; and second, to make portions of said lining in the form of sectional racks movable to a horizontal position between the floor and the roof, so as to provide an interior deck for double-deck loading.

Certain classes of freight, particularly some kinds of perishables shipped in refrigerator cars, require air spaces between the sides of the lading and the walls of the car, as additional protection against extremes of either hot or cold weather through which the car may pass, such spaces providing for the circulation of air adjacent the car walls to assist in equalizing the interior temperature. The forming and maintaining of such air spaces usually requires some temporary construction within the car at the time of loading, thereby adding to the expense of shipping.

Other classes of freight which would be damaged by being stacked too high require double deck loading. This also necessitates considerable temporary construction in the car which adds to the expense of shipping and may even damage the interior of the car by nailing the temporary construction thereto.

By providing suitable racks permanently mounted within the car which can be positioned either vertically in spaced relation adjacent the side walls, or horizontally to form an upper deck, the car can be used for any kind of freight including those described above without requiring temporary construction of any form. The cost of shipping and the time necessary to load the car are thus materially reduced, and the interior of the car itself is protected from damage caused by such temporary construction.

Other objects of the invention are to provide movable racks as described above which will be securely and rigidly held in either of their operative positions, and to provide racks which can be moved easily and quickly from one position to the other. Still other objects and advantages of the invention will become apparent from the following description, which should be read with the understanding that the form, construction and arrangement of the several parts may be varied within the scope of the claims hereto appended without departing from the spirit of the invention.

A typical embodiment of the invention as applied to a refrigerator car of standard construction will now be described in detail with reference to the accompanying drawings, in which

Fig. 1 is a transverse section of a car showing my interior racks in wall position at the left and in deck position at the right.

Fig. 2 is an enlarged detail of the gravity latch shown in the upper portion of Fig. 1.

Fig. 3 is an enlarged sectional detail of the connection at the lower end of one of the deck supporting posts shown in the lower portion of Fig. 1.

Fig. 4 is a longitudinal section of the car showing the racks in deck position.

Fig. 5 is a horizontal section showing the racks in wall position in the lower portion and in deck position in the upper portion.

Fig. 6 is a horizontal sectional detail taken on the line 6—6 of Fig. 4, showing the hinge of the gate forming rack section.

Fig. 7 is a part sectional elevation taken at the side entrance door of the car showing the end of one of the decks and the mounting of the end gate therefor.

Fig. 8 is a part sectional elevation at the door of the car showing bracing means between the ends of the two deck sections.

Fig. 9 is an enlarged horizontal section taken on the line 9—9 of Fig. 7, showing the tie brace folded into one of the deck posts.

Referring in more detail to the drawings, the reference numeral 11 designates the floor of the car, 12 are the side walls, 13 is the roof, 14 is one of the end walls, and 15 is the transverse bulkhead between the refrigerating and loading compartments. The invention is not concerned with the structural elements of the car, and the details thereof have accordingly been omitted from the drawings. The floor racks commonly used in refrigerator cars are shown at 16, and the side door openings at 17.

In the interior of the car, I provide racks 18, which are movable from a position parallel to and adjacent the side wall as shown at the left in Fig. 1, and in the lower portion of Fig. 5, to a horizontal position above the floor of the car, as shown at the right in Fig. 1, and in the upper portion of Fig. 5. The width of these racks is equal to half the interior width of the car so that when both racks are in a horizontal position they form a continuous upper deck extending across the full width of the car. The racks 18 are

formed in sections, as shown in Figs. 4 and 5, there being three such sections on each side of the car in the longitudinal distance between the bulkhead 15 and the center door 17. The sectional construction of the racks is merely for convenience in shifting them from vertical wall position to horizontal deck position.

Each rack section is formed of a plurality of spaced slats 19 extending longitudinally of the car, and transverse angle irons 20 to which said slats are fastened. At the ends of each rack section there are also provided additional transverse angle irons 21 which provide interlocking means between the sections, as will be described hereinafter. Each section is hinged to the side walls of the car by means of pins 22 which travel vertically in slotted guides 23 secured to the side walls. When the rack section is in vertical position, as shown at the left in Fig. 1, its hinge pins 22 rest at the upper ends of the slotted guides 23 and the slots 19 are spaced from the side wall of the car by the angle irons 20 and 21. The lower edge of the rack in this position rests upon the hinge brackets 24 of the floor racks 16, and is retained from swinging outwardly by shoulders 25 on said brackets.

When the rack section 18 is moved to its horizontal position as shown at the right in Fig. 1, its hinge pins 22 drop down to the lower ends of the guide 23 and support the side of the rack at this point. A post 26, hinged at its upper end at 27 to the under side of the rack, rests upon the floor and supports the inner edge of the rack. The lower end of the post 26 is provided with a dowel 28, as shown in Fig. 3, which engages a hole in a bracket 29 secured to the floor rack 16. The bracket 29 is preferably provided with a socket 30 in which the lower end of the post 26 rests, to assist the dowel 28 in holding it in position. In a car in which the floor racks 16 are not present, the dowel 28 of the post would enter a suitable socket, not shown, in the floor of the car. When the rack is swung to its vertical position adjacent the side wall, the post 26 is swung upwardly and rests between the angle irons 20 and 21, as shown at the left in Fig. 1, and in the lower portion of Fig. 5.

Each section of the rack is provided with a post, as shown in Figs. 4 and 5. The corner of the endmost rack section nearest the bulkhead 15 is supported by a hinged latch 31, Figs. 4 and 5, whose outer end has laterally extending lugs 32 upon which the angle iron rests. The latch 31 is pivotally connected with the bulkhead 15 and swings into a slot 33 therein when not in use. As will be seen from Fig. 4, each section of the rack is supported at one side by its own post 26 and the adjacent side of the next section is supported by the overlapping arrangement of the angle irons 21. These overlapping angle irons have dowels 34 which lock them together to prevent the rack sections from pulling apart endwise. The endmost section also has a dowel 35 which engages the lug 32 of the latch 31 to keep the rack from pulling away from the bulkhead 15. Thus all the sections forming one rack are securely tied together when in horizontal position so that they form a rigid deck.

The racks extend from the bulkhead 15, or from the end of the car if there is no bulkhead, to the center door 17. In order to prevent the lading carried by the deck from sliding off into the space between the doors 17 in the center of the car, I provide gates hinged to the side walls adjacent the door opening, as shown in Figs. 4 to 8 inclusive. When in wall position, the gates 36 are parallel to and spaced from the side walls, as shown in Fig. 4, and the lower portion of Fig. 5. There are four such gates, the length of each being equal to half the width of the car, and each being formed of spaced slats, as shown. Each gate is mounted upon a hinge pin 37 secured in brackets 38 extending from the wall. The hinge pin 37 is long enough so that when the gate is swung outwardly from its wall position, as shown in Fig. 4, to its transverse position, as shown in Fig. 8, it can drop down to the level of the deck formed by the racks 18, its lower edge engaging a U-shaped bracket 39 mounted upon the outer end of the deck. As an additional reinforcement to prevent the gate from being forced outwardly by shifting lading on the deck, I provide a hooked link 40, Fig. 8.

The upper hinge of the gate is provided with means for holding it up when in its longitudinal wall position. This comprises mutually engaging lugs 41 and 42 formed upon the respective relatively movable hinge members, as shown in Figs. 4, 6 and 7. When the gate is elevated to its upper position and swung back against the wall of the car, the lug 41 passes above the lug 42 and holds the gate in said elevated position. When the gate is swung to transverse position, however, the lugs clear each other, as shown in dotted lines in Fig. 6, and the gate may be lowered to engage the bracket 39 at the end of the deck. A lining section 43, Figs. 1 and 4, formed of slats similar to those of the rack sections 18, is fixedly secured to the side wall and extends from the end of the gate 36 to the bulkhead or end of the car. When the deck forming racks 18 and the gates 36 are in position against the side walls of the car, they form, with the fixed sections 43, a continuous slatted lining spaced from the walls and extending from the floor almost to the roof and from the ends of the car, or from the end bulkheads, to the center doors. Thus when the car is used for single deck loading, its side walls are completely lined by spaced slats to provide air passages between the lading and said walls.

When it is desired to use double deck loading, the rack sections 18 are first swung upwardly to the dotted line position shown at the right in Fig. 1 and held in such position by the engagement of gravity latches 44 hinged to the roof of the car, as shown in Figs. 1 and 2. The lower deck lading is then placed upon the floor of the car, and as such lading progresses from the end outwardly toward the center door, the rack sections 18 are successively lowered to horizontal position. It is to be noted that the posts 26, being at the outer sides of their respective rack sections, are not interfered with by the lading which has been stowed under each particular section. When the lower deck lading has been placed in position and the racks 18 lowered to form the upper deck, the remainder of the lading is placed thereupon and the gates 36 are swung across the ends of the upper decks.

A tie brace, as illustrated in Figs. 7, 8 and 9, is preferably provided to connect the deck structures of the two ends of the car across the center space. This brace comprises a T-section member 45 pivotally secured at 46 to the upper end of each post 26 adjacent the door opening. When not in use, the tie member 45 swings downwardly and is partially housed in a slot 47 in the post. After the lading is complete, the opposite tie members 45 are raised to horizontal position, as shown in Fig. 8, and are connected

together in end to end relation by any suitable coupling device indicated at 48. The decks in the two end portions of the car, when thus connected together across the center space, become a rigid structure extending continuously from one end of the car to the other. Any stresses due to sudden starting or stopping of the car are thus transferred to its ends and are not taken by the hinges of the deck forming racks.

I claim:

1. Interior rack construction for freight cars comprising a rack positioned vertically as a lining adjacent each side of the car, the lower edges of said racks being adjacent the floor of the car, a hinge connection between the upper edge of each rack and the side of the car permitting said racks to be swung upwardly through substantially 180 degrees to approximately vertical positions above said hinges, means in the upper portion of the car for releasably holding said racks in the last mentioned position while the floor of the car is being loaded, said hinges permitting said racks to be lowered to horizontal positions to form a deck above said floor load, and means for supporting the inner free edges of said racks when in horizontal position, the outer edges thereof being supported by said hinges.

2. In a closed body freight car having side walls and doors therein, a plurality of interconnected spaced slats forming a vertically disposed lining covering substantially the entire interior surfaces of said walls between the ends of the car and the side doors, said slats providing air spaces between said walls and the lading, and said lining being formed in complementary sections, all the sections adjacent each side wall being in the same vertical plane, some of said sections being hinged to said walls and movable to horizontal positions in which they complement each other to form load carrying decks above the floor extending from the ends of the car to the aisle between said doors, other of said sections being hinged to said walls adjacent said doors and movable to transverse vertical positions to form gates across the ends of said deck at said aisle, and means for supporting said deck forming sections in their horizontal positions.

3. In a freight car having side walls, a pair of movable complementary rack sections forming a continuous deck across the car, the width of each section being equal to half the interior width of the car, a pivotal and vertically slidable hinge connecting the outer edge of each section with its adjacent side wall, said hinges permitting said outer edges to move upwardly when the sections are swung from horizontal position to vertical position adjacent said walls, whereby the sections when in horizontal deck forming position may be spaced above the floor of the car by a distance less than the width of one section, a pair of movable complementary gate members positioned vertically and extending across the car above said deck, and a hinge connecting the outer edge of each gate member with the adjacent wall, the last mentioned hinges permitting both swinging and vertical sliding movement whereby said gates may be moved to positions parallel with and adjacent said walls above said rack sections when the latter are in their vertical positions.

4. In a freight car having side walls, a pair of movable complementary rack sections forming a continuous deck across the car above the floor thereof, a hinge connecting the outer edge of each section with the adjacent side wall, the hinge of at least one section being vertically slidable to permit the outer edge of its section to move upwardly when the sections are swung from horizontal position to vertical positions adjacent the lower portions of said walls, whereby the sections when in horizontal deck forming position may be spaced above the floor by a distance less than the width of the section having the slidable hinge, a gate positioned vertically and transversely above said deck, and a hinge connecting one end of said gate with the adjacent wall, the last mentioned hinge permitting both horizontal swinging and vertical sliding movement whereby said gate may be moved to a position parallel with and adjacent the upper portion of the wall.

5. In a freight car having a side wall and an end wall, a plurality of complementary rack sections hinged to the side wall and movable from vertical positions adjacent said wall to horizontal positions in which they form a sectional load carrying deck above the floor, said deck extending from the end wall of the car toward its center, a gate hinged to the side wall and movable from a position parallel with said side wall to a transverse position in which it extends across said deck, means for connecting said gate when in transverse position with said deck, means for connecting adjacent deck sections together, and means for connecting the deck section adjacent the end wall with said end wall, said connecting means being formed to resist tension and compression stresses in a direction lengthwise of the car, whereby said stresses caused by the inertia of the deck load during starting and stopping of the car are transferred to said end wall.

6. Interior rack construction for freight cars comprising a rack positioned vertically as a lining adjacent each side of the car, the lower edges of said racks being adjacent the floor of the car, a vertically movable hinge connection between the upper edge of each rack and the side of the car permitting said racks to be swung upwardly through substantially 180 degrees to approximately vertical positions above said hinges, means in the upper portion of the car for releasably holding said racks in the last mentioned position while the floor of the car is being loaded, said hinges permitting said racks to be lowered to horizontal positions to form a deck above said floor load, means for supporting the inner free edges of said racks when in horizontal position, the outer edges thereof being supported by said hinges, and the vertical movement of said hinges permitting said deck to be positioned at a distance above the floor of the car which is less than the width of each rack.

HORACE GIDDINGS.