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RAILWAY FREIGHT CARS AND DOOR MEANS THEREFOR

Filed June 5, 1967

4 Sheets-Sheet 1

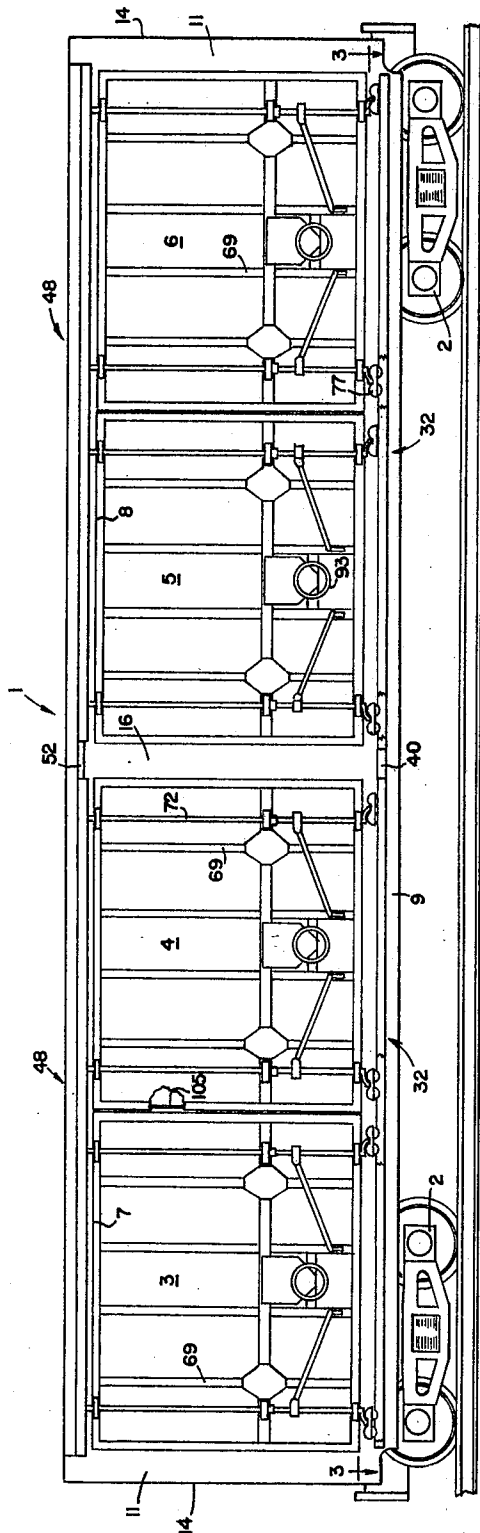
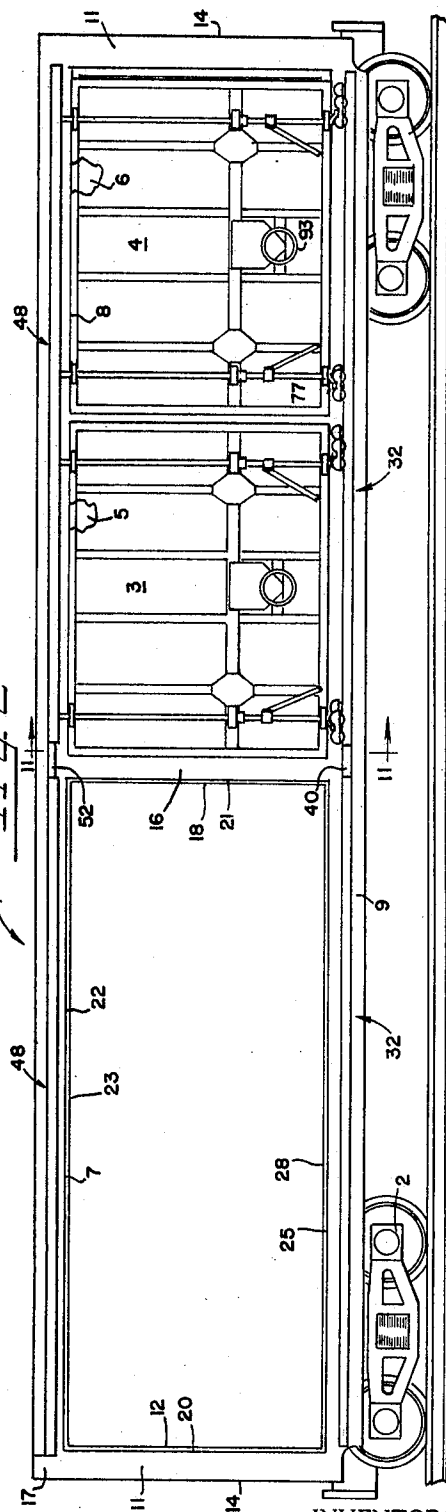


Fig. 1

Fig. 2



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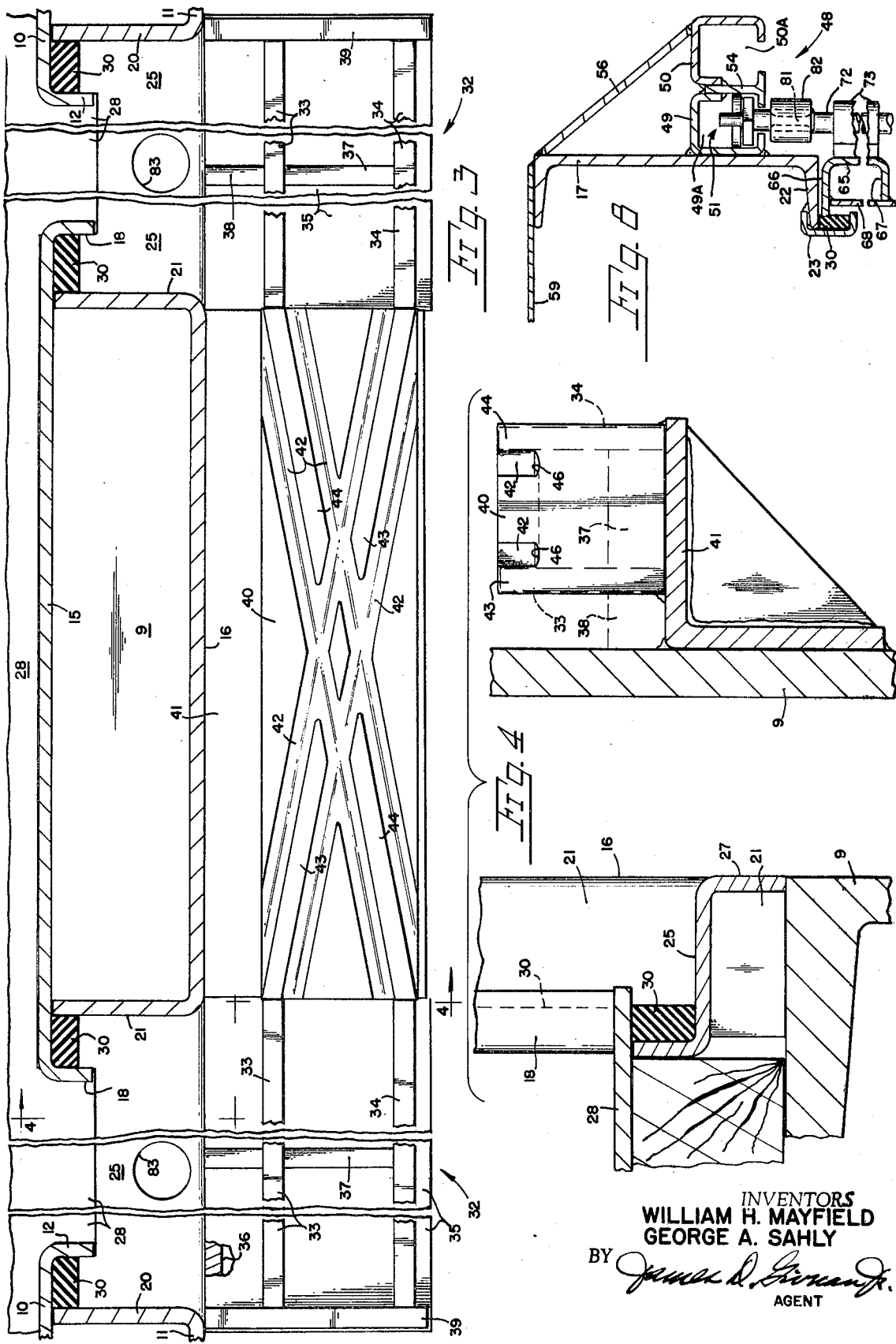
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4 Sheets-Sheet 2



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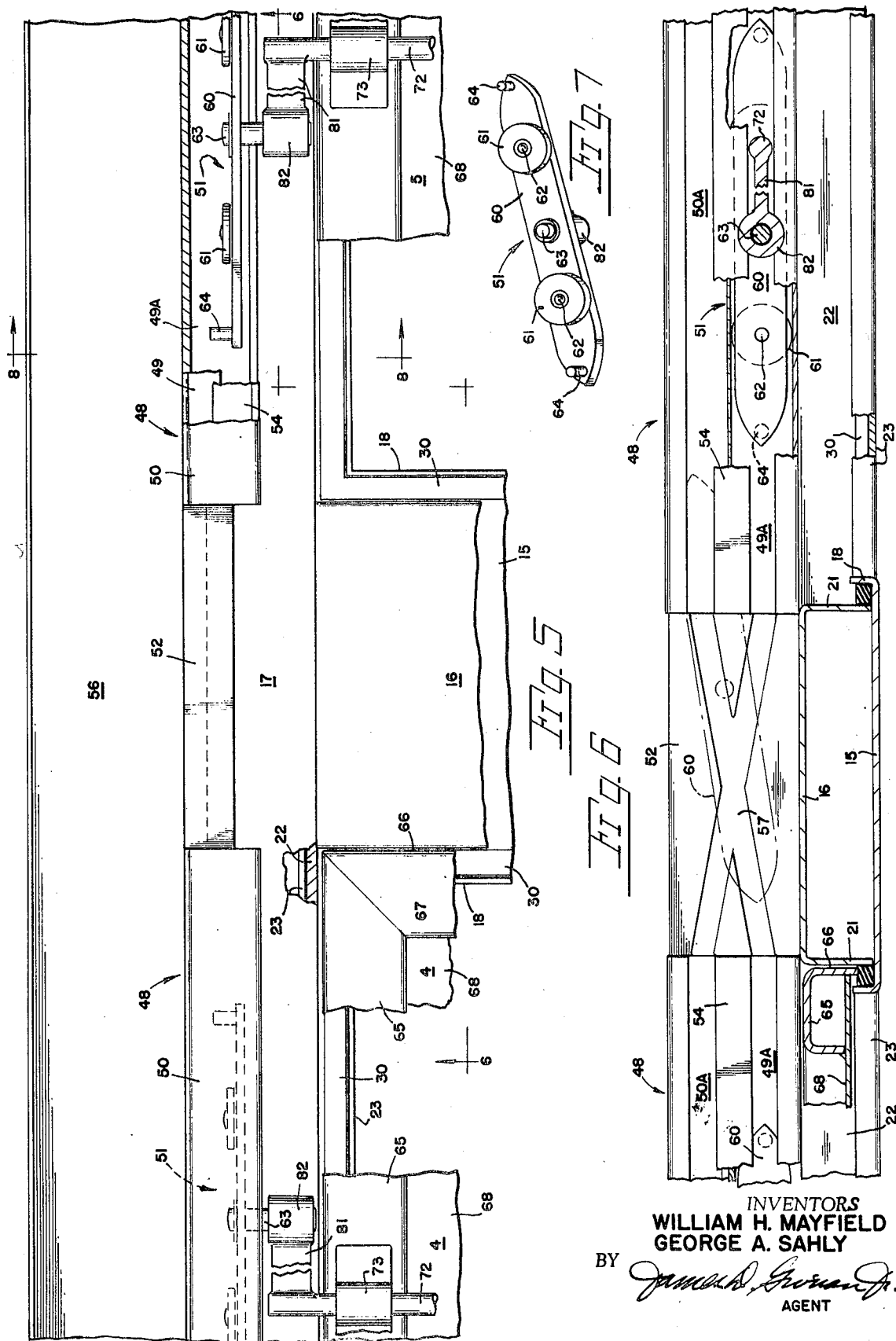
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4 Sheets-Sheet 3



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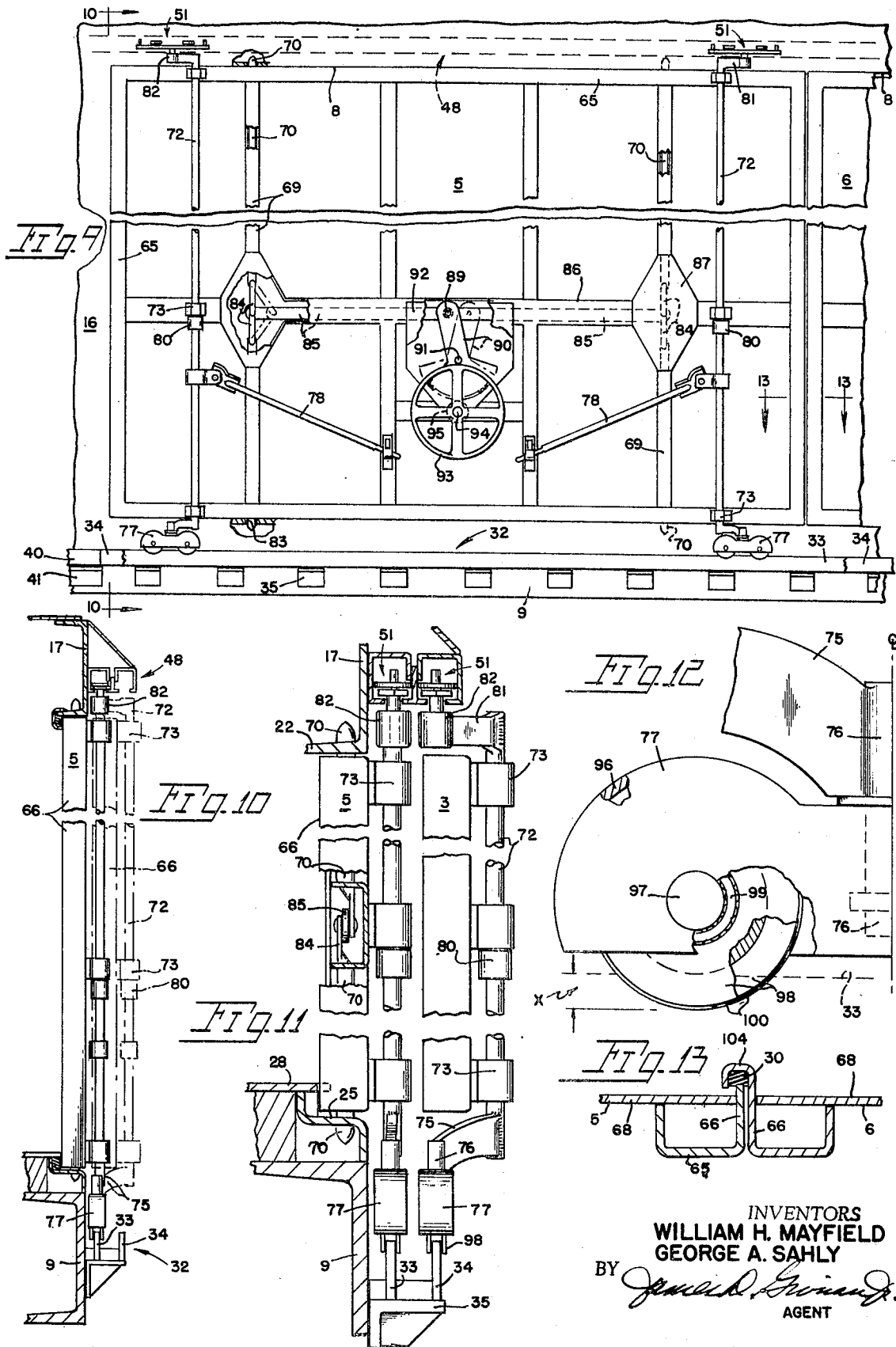
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RAILWAY FREIGHT CARS AND DOOR MEANS THEREFOR

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4 Sheets-Sheet 4



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RAILWAY FREIGHT CARS AND DOOR MEANS THEREFOR

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10 Claims

ABSTRACT OF THE DISCLOSURE

Railway freight car construction providing extended doorway openings along its sides to permit unencumbered and expeditious loading operations by reason of direct access from either side to any part of the car interior. Doors of the plug-sliding type are carried by track means permitting same to be longitudinally relocated permitting access to either half of the car's interior, such relocation including moving the doors outwardly and alongside like doors positioned within the closed half of the car.

BACKGROUND OF THE INVENTION

The present invention relates to freight car construction and more particularly that class of freight cars having doorway openings wider than standard to facilitate loading and unloading operations. The tracks supporting the doors of the present car extend substantially lengthwise of the car and include provision for both longitudinal door travel and for overlapping the doors into side-by-side relationship.

Previous developments in this field have been generally directed toward increasing doorway width by use of two door disposed in an adjoining manner within each sidewall of the car. These door arrangements provide increased access but are not completely satisfactory by reason of the fact that considerable man-hour effort is still required to properly spot or locate the lading in place lengthwise within the car from the door entrance. This particular shortcoming is emphasized when the lading is of longer than usual length such as various manufactured wood products or when such lading may be conveniently palletized for lift truck loading. In the latter instance to obtain the benefits of such loading the exceptional width of the present car's doorways permits efficient lift truck access to the car's interior even with large sized stacks of palletized lading.

The prior art applicant is aware of discloses various types of car construction all being directed toward the goal of providing increased access to the car's interior and for the most part such efforts have included various door arrangements within a car sidewall wherein a plug-sliding type door is combined with a sliding door. Further improvements have utilized plural, combination plug-sliding doors and conventional sliding doors to provide plural doorway openings along the car side but even these are limited as are those arrangements first mentioned to providing openings substantially less in width than those achieved by the present construction.

The instant invention permits direct access from either side of the car to either half of the car's interior through an uninterrupted doorway span. Accordingly, a car embodying the present invention may be rapidly loaded by use of lift trucks and the like and into which lumber products of considerable length may be directly moved and spotted in place without time-consuming load maneuvering. Heretofore while existing door arrangements did somewhat facilitate car entry of the load it was still necessary to relocate the same by longitudinal movement within

the car either manually or by mechanized means if maneuvering room existed.

A further object of this invention is the provision of a freight car body wherein combination plug-sliding type doors are disposed along each side of the car in place of a stationary side wall without impairment of the car's structural integrity. Additionally, the car's construction permits exceptionally wide access areas wherein doors may be locked in place in a flush relationship with the side frame members of the car.

Another important object is achieved by the novel door carrying tracks disposed along each of the car's sides and including crossover means for outward movement of a door traversing same. Such movement permits said door(s) to be temporarily moved into a laterally spaced, overlapping relationship from other doors locked in place within a doorway opening. The crossover means providing for such movement is of uncomplicated structure, safe and reliable in operation and permits convenient lengthwise relocation of a car door by a single individual.

The present invention further provides door construction which in combination with the perimeter of the doorway opening makes provision for weather sealing the car. It is a further object of this invention to provide a car having the above capabilities and yet lending itself to economical construction. Along this line it will be noted that the door structure provided is substantially the same for all doors effecting both labor and material fabrication economies. Further, such door construction supports rod means for locking a door in place and actuated by a single hand wheel for vertical rod movement into engagement with the doorway perimeter.

SUMMARY

Briefly, the present car structure is directed toward providing a car having plug-sliding type doors located along the sides of a car and track means for said doors allowing their repositioning to permit unobstructed access to both halves of the car from either side of the car. The novel double tracks and crossover means provide for switching movement of a door during its longitudinal travel along the car side. Door construction provides adequate clearance for side-by-side positioning thereof without exceeding car width restrictions. Further, door retention means is included as a safety feature in case of damage to the door's supporting tracks.

DRAWING DESCRIPTION

FIG. 1 is a side elevational view of a freight car embodying the present invention with the doors closed and is typical of both sides of the car;

FIG. 2 is a view similar to FIG. 1 with the left half of the car open for loading with consequent side-by-side repositioning of the opened doors alongside closed doors in the right half of the car;

FIG. 3 is a plan view of a lower door supporting track with sections removed and taken along line 3—3 of FIG. 1;

FIG. 4 is a sectional, elevational view in two parts and taken along line 4—4 of FIG. 3 showing both details of a bottom door sill and of track and crossover means;

FIG. 5 is a fragmentary, side elevational view of the upper portion of a typical vertical center section of the present car including fragments of adjacent doors, upper tracks, crossover means and door trolleys;

FIG. 6 is a sectional view taken upwardly along irregular line 6—6 of FIG. 5 showing a car center section, upper track crossover means and trolleys;

FIG. 7 is an upper perspective view of a trolley removed from the upper track and from its door;

FIG. 8 is a sectional, elevational view taken along line 8—8 of FIG. 5 and showing the upper track and a trolley

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carried therewithin in association with door and door header fragments;

FIG. 9 is an elevational view of a typical plug-sliding type door for use with the present car with associated upper and lower track means and with fragments removed to show a door locking arrangement;

FIG. 10 is a sectional elevational view of a door taken approximately along line 10—10 of FIG. 9 showing in broken lines the door laterally withdrawn from its doorway and positioned for longitudinal travel along the side of the car;

FIG. 11 is a sectional, elevational view taken approximately along lines 11—11 of FIG. 2 and showing the side-by-side disposition of an opened door to a closed door;

FIG. 12 is an enlarged detail view of a flanged wheel carried within one end of a roller carriage; and

FIG. 13 is a sectional, plan view taken along line 13—13 of FIG. 9 showing provision for weather sealing the common edges of pairs of doors.

DESCRIPTION OF PREFERRED EMBODIMENTS

With continuing reference to the drawings wherein reference numerals identify parts as set forth in the specification, the reference numeral 1 indicates generally a freight car of standard outer dimensions supported in the usual manner by wheel carrying trucks 2. In FIG. 1, doors of the combination plug-sliding type are indicated at 3, 4, 5 and 6 with doors 3 and 4 closing a doorway opening 7 and doors 5 and 6 closing a doorway opening 8, said doorways hereinafter conveniently referred to as left and right doorways respectively. While only doorways 7 and 8 and doors therefor are shown and described it is to be understood that they are typical of the doors and doorways provided along the opposite side of the car 1. The uninterrupted doorway openings or spans so provided enable direct access to the car's interior and in a car of standard outer dimensions each such opening is approximately twenty-five feet or so in width.

The car framework to the extent important to understanding the present invention includes lower channel-shaped members as at 9 comprising part of the floor structure and extending lengthwise of the car along each side thereof. Identical corner posts at the ends of the car and comprising part of the end walls 14 are each formed from pairs of opposed inner and outer channel beams 10 and 11 joined by welding in an offset manner to locate a flanged portion 12 of the inner beam 10 (FIGS. 2 and 3) within the door opening as later elaborated upon.

A typical vertical center section of the car's frame comprises inner and outer channel beams 15 and 16 also welded in an opposed relationship and supported by said lower channel-shaped member 9, terminating upwardly in supporting engagement with an upper channel-shaped member 17 of the roof structure. Similar to the first mentioned flanges 12 of the corner posts the flange and portion 18 of the center section channel beam 15 are each located within a doorway opening.

The outer ends of the doorway openings 7 and 8 are defined by flanges 20 of the corner post beams 11 while the flanges 21 of center section beam 16 define the inner extent thereof.

Defining the upper limit of each door opening is the aforementioned channel-shaped member 17 of the car frame whose horizontally directed flange portion at 22 supports a channel iron member 23 extending longitudinally of each doorway as typically shown in section in FIG. 8. The lower limits of each doorway opening are provided by the web portion 25 of a Z-shaped member whose upright flanges 26 and 27 are secured to lower channel-shaped frame member 9 and the underside of an outwardly projecting door plate member 28 coplanar with the car floor.

From the foregoing it will be evident that the car framework so constructed provides a sturdy assembly permitting the use of a single center section at the midpoint along each side of the car. Continuing, it is also believed

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apparent that the use of offset channel members along the sides and upper limit of each door opening is particularly advantageous for the installation of strips of resilient weather proofing means at 30 which in cooperation with the door's perimeters seals the car's interior as later described. The same material is also conveniently received intermediate the web 25 of the Z-shaped member and the underside of door plate 28.

While a vertical section has been shown and described it is to be understood that present car structure may be modified including dispensing of said center sections and further modifying the corner posts without departing from the spirit and scope of the present invention.

Secured along each side of the car to the lower channel-shaped members 9 and extending substantially the length of the car is lower track means indicated generally at 32 and comprising inner and outer horizontally spaced rail elements 33 and 34 best shown in the plan view in FIG. 3 and in dashed lines in FIG. 4. Gusseted angle iron sections 35 are spaced therealong in supporting engagement with the rails with their vertical flanges 36 in welded securement to the web of the car frame member 9. Gusset plates 37 recessed below the top of the rail elements 33 and 34 serve to bridge the rails at intervals reinforcing same against lateral deflection with smaller gusset plates at 38 serving to space and further reinforce the rails by welded securement to the web of member 9. Transverse end plates 39 are also secured to an angle iron section and the web.

The lower track means 32 is centrally divided into a left and a right section by a crossover block 40 at the car mid-point in communication with each of the rails 33 and 34 and supported centrally of the car by an angle iron 41. The block is formed to provide continuations of the track rails which diagonally intersect at the block's mid-point and function to switch door carrying roller carriages from inner to outer rails and vice versa upon longitudinal travel of a door. It has been found practical to mill a steel block forming valleys or ways as at 42 which define the diagonal rail continuations at 43 and 44. A diamond shaped frog is indicated at 45. Viewing the block in the end elevation of FIG. 4 discloses that the valleys are preferably formed to a predetermined depth and thereat terminating in a concave bottom surface 46 for purposes hereinafter set forth.

Upper track means indicated generally at 48 cooperate with lower track means 32 for guided movement of the car doors and as generally shown in FIGS. 5 through 8 includes inner and outer guide track elements 49 and 50 horizontally spaced from each other and extending longitudinally above the doorway openings 7 and 8 defined by each side of the car. Each of the guide track elements 49 and 50 defines an internal area 49A and 50A for the reception and retention of pairs of trolleys generally indicated at 51 associated with each door. Upper crossover means 52 is centrally located of the car at its mid-point and spaced above its lower counterpart whereat it functions to diagonally interconnect the opposite inner and outer guide track elements of the upper track means for switching movement of the trolleys. The upper and lower crossover means separate their respective track means into left and right sections as viewed in FIG. 1.

The guide tracks of the upper track means each include formed, elongate members in horizontal relationship having an intermediate, inverted T 54. Horizontal flanges on the guide tracks cooperate with the flanges of the inverted T 54 to form elongate passageways which receive trolley spindles. It will be seen, with particular reference to FIG. 8, that the flange arrangement constitutes a safety feature in that the trolley 51 and hence the door associated therewith is retained against separation from the car in the event of damage occurring to the lower track means as could possibly occur from careless handling of mechanized loading equipment.

The guide tracks are rigidly secured to the web por-

tion of upper channel-shaped member 17 by linear welds and by an inclined plate 56 welded in place along its margins to outer track guide 50 and upper portion of the web of the member 17. A roof is indicated at 59 in FIG. 8.

Supported also by the channel-shaped member 17 of the car's framework is the upper crossover means 52 shown in the form of a block which, as shown in FIG. 5 is located interjacent the doors 4 and 5, and is formed with intersecting ways 57 which in cooperation with trolley elements direct the trolley's traversing same through the guide track switching movement from inner to outer tracks and vice versa.

The upper crossover block shown, if desired, may be dispensed with and the inner and outer track guide elements 49 and 50 extended and formed into converging segments to provide crossover means.

A typical trolley comprising the upper part of mounting means for a door includes an elongate base 60 curved adjacent its ends and having a pair of horizontally disposed rollers 61 rotatably carried by pins 62. A spindle 63 depends from the base and extends downwardly for journaled reception within an offset arm as later described. Each trolley of the pair of trolleys associated with a single door is, with the door in a locked position, disposed within the inner track guide element 49. The rollers 61 are of a diameter permitting loose, rolling engagement along the track guides while inwardly spacing the trolley base 60 therefrom. Pin-like followers 64 project upwardly from the trolley base for guided engagement through the ways 57 of the upper crossover block 52 upon movement of the trolley therethrough during longitudinal travel of its door. Shown in broken lines in FIG. 6 is a typical trolley having partially negotiated switching movement from an inner to an outer track guide (or vice versa) wherein it will be seen that only the upper portion of the followers 64 engage the ways to direct the trolley. The curved ends of base plate 60 provide sufficient clearance to facilitate their movement into and out of the internal areas 49A and 50A of the track guides. Depending on certain dimensions of the upper crossover block and trolleys it may be found desirable to terminate the upright portion of the T 54 at a point somewhat removed from the crossover block 52 to further facilitate passage of the trolley base 60 during switching travel.

The doors 3 through 6 have previously referred to as each being of the combination plug-sliding type which is to say the doors are laterally positionable of the car inwardly within their respective doorway openings by door mounting means to an "in" position and oppositely to an "out" position into a first vertical plane laterally spaced from the car's structural members defining said doorway opening. With the doors along one side of the car closed to the "in" position, the combined inner planar surfaces of the doors being in mutual horizontal alignment in effect provide a flat inner wall of the car.

Each door 3 through 6 has a perimeter formed of generally channel-like members 65, a typical section of which is shown in FIG. 6. An exception to the channel formation for doors 3 and 6 is later described with general reference to FIG. 13. The outer flange 66 of each of the four channel members 65 of a typical door is somewhat longer than its inner flange counterpart 67 and extends inwardly relative to a steel plate 68, the latter comprising the main portion of the door. The flanges 66 when the door is closed to the "in" position cooperates with the resilient strips 30 to form a seal. Intermediate channel members as at 69 are symmetrical in section and vertically located along the outer surface of steel plate 68 of the door for purposes of stiffening same with the outer pairs of channel members serving a dual purpose by additionally housing lock rods 70 for the doors as more fully described later. From the above door struc-

ture described it will be apparent that upon said doors being closed into the "in" position within their respective doorway opening, the planar steel plate 68 of each door will seat against the outwardly projecting flanges 12, 18, 23 and door plate 28 earlier described in connection with the car structure and located about said doorway openings.

Door mounting means in addition to trolleys 51 includes vertical shafts for each door indicated at 72 and journaled as at 73 permitting their rotational movement to impart outward withdrawal movement to a door from its flush "in" position within its opening 7-8. Crank arms 75, as best shown in FIG. 9, are integral with the lower end of the door mounting shafts and terminate outwardly in vertical pins 76 journaled within roller carriages 77 whereby upon said rotational movement being imparted to the shafts through conventional, pivoted levers 78 the doors will move laterally outward to said first vertical plane to clear the door opening in the manner common to a combination plug-sliding type door. Such an "out" position is shown in broken lines in FIG. 10. In the "out" position collars 80 secured to each of the mounting shafts 72 carry the door weight.

The upper ends of the door mounting shafts 72 carry arms 81 which terminate in bosses 82 which receive the spindle 63 of a trolley 51. Accordingly, rotation of mounting shafts 72 causes their displacement about the upright, aligned axes of the carriage pins 76 and trolley spindles 63 with consequent positioning of the door to the "out" position previously described.

FIGS. 9 and 11 show a pair of lock rods 70 typical of the present door structure associated with one of the doors and adapted for rectilinear, vertical movement into locking engagement with a pair of keepers 83 in the form of aligned apertures formed within the web portion 25 of the Z-shaped member and the flange 22 of frame member 17 previously described in the car frame structure. The door channel members 69 each slidably house lock rods 70 which are in upper and lower sections and are linked at their inner ends by toggle arms 84 to a locking bar 85 slidably housed within an enlarged door channel member 86. A cover plate 87 houses the toggle linkage.

The locking bar 85 extends horizontally intermediate the toggle linkage described and loosely receives near its center, a post 89 carried by a quadrant gear 90, the latter being pivotally mounted as at 91 to the steel plate 68 of a door and is housed within a gear casing 92. A hand wheel 93 is journaled with insaid casing by means of a stub shaft 94 which carries a pinion 95 at its inner end in mesh with said quadrant gear. From the foregoing it will be seen that upon counterclockwise rotation of the hand wheel in FIG. 9 the upper or post carrying portion of the quadrant gear will swing to the right moving locking bar 85 and both sets of toggle arms 84 to the offset, broken line position of FIG. 9 to retract their respective locking rods. Hand wheel 93 is of narrow dimension in section and spaced outwardly from the adjacent door channel members 68 a minimum distance to permit its convenient gripping without jeopardizing the side-by-side clearance of the doors shown in FIG. 11.

The roller carriages 77, as shown in FIG. 12, are part of the door mounting means each comprising a pair of side plates secured in a spaced apart relationship by a top plate 96 having arcuate segments at each of its ends. Pairs of corresponding aligned apertures in each side plate each receive an axle shaft 97 for a double flanged wheel 98 and preferably including a roller bearing 99 for minimum resistance to rolling movement. It has been found very advantageous to form the outer circumferential wall of each flange indicated at 100 with a convex shape for the purpose of centering the flanges of each wheel while rolling within the valleys 42 of the lower crossover block which, as aforesaid, have concave bottom walls at 46. The transverse spacing of the wheel

flanges may accordingly exceed for necessary clearance the width of the rail continuations 43-44 of the crossover block without resulting in undesirable wobbling of the wheel as it traverses the same. The vertical dimension x of FIG. 12 is approximately equal to the height of the rail continuations 43-44. The pins 76 carried by the crank arms 75 are pivotally mounted within the top plate 96 and an apertured internal plate member 101 of the roller carriages.

As shown in the sectional view of FIG. 13, the common or abutting sides of doors 5 and 6 are provided with a weatherproofing arrangement wherein a continuation of the resilient strip 30 is secured with a doubled-back flange 104 of a slightly modified channel-like member 65 of the door 6. A similar arrangement is provided for weather proofing intermediate the doors 3 and 4 with a double-back flange 105 (FIG. 2) being formed on the channel-like member 65 of door 3 which abuts door 4. A strip 30 is therein provided to resiliently receive the outer flange 66 of the adjacent channel-like member 65 of door 4. It will be apparent that each of the doors 3 and 6 by reason of their doubled-back flanges can only be moved to the "out" position after its adjoining doors 4 and 5 respectively have been so moved.

In opening the doors from their closed position of FIG. 1 to provide access to the car's interior through the extended doorway opening 7, or alternately the equally dimensioned doorway opening 8, the doors of the side to be opened are unlocked by turning hand wheels 93 counterclockwise retracting the locking rods 70 of the doors. To configure the car for loading as shown in FIG. 2, the door 4 would, after being unlocked, be moved to the "out" position within said first vertical plane by outward rotation of the levers 78 from their normal stowed positions within cradles. At the completion of such outward movement, the door is now laterally offset from the structure defining doorway opening 7 thereby permitting longitudinal travel in said first vertical plane with its associated roller carriages 77 and trolleys 51 moving along inner rail elements 33 and inner guide track elements 49. Upon traversing the lower and upper crossover means 40 and 52 the carriages and trolleys of door 4 are respectively located on outer track element 34 and within outer guide track element 50 of the right section of lower and upper track means. Accordingly, door 4 after traversing the crossovers along with its carriages 77 and trolleys 51 are now located in a second vertical plane and in side-by-side spaced relationship to closed doors 5 and 6, such relationship shown typically in FIG. 11. Door 3 is then subsequently positioned in a like manner.

Upon completion of loading the left half of the car, the door 3 is rolled back through the crossovers and positioned opposite the left side of the doorway opening 7 whereupon inward swinging movement of the temporarily raised levers 78 will seat the door to an "in" or closed position for subsequent locking. Door 4 is then similarly moved back through the crossovers and longitudinally back into place opposite partially closed opening 7 for subsequent inward lateral movement to its "in" position by means of its levers 78. The foregoing operation sequence is then repeated with the doors 5 and 6 being moved onto the outer track and guide track elements of the left section of upper and lower track means and into overlapping relationship with the now locked doors 3 and 4 thus allowing access to the right half of the car. Upon completion of loading through doorway 8 the doors 5 and 6 are returned to the right half of the car on the inner track elements and secured in place.

Since both sides of the car are constructed in a like manner it will be apparent that loading in the above manner may be from either side.

The invention having now been described what is desired to be secured under a Letters Patent is:

1. In a railway freight car having extended doorway

openings oppositely disposed from the car mid-point and extending along the length of at least one of the cars sides, the improvement comprising,

doors adapted to close each of said doorway openings with the doors closing one of said openings movable in a generally longitudinal manner relative to the car side into side-by-side relationship with the doors closing the other of said openings,

lower and upper track means each including inner and outer track elements affixed to the car side respectively adjacent the lower and upper limits of said doorway openings, said track means being separated at the car mid-point into left and right sections,

means mounting each of said doors on said track means for longitudinal door travel therealong and for lateral door opening movement out of a door opening into a first vertical plane and for opposite closing movement into the door opening, and

lower and upper crossover means for said track means affixed to the car side interjacent the doorway openings with said crossover means including diagonally intersecting ways in respective communication with said inner and outer elements of said track means to receive said door mounting means upon longitudinal travel of a door whereby upon said door mounting means traversing said intersecting ways in one direction the mounting means will be diverted diagonally from inner track elements of one section to the outer track elements of the other section to locate the door mounted thereon in a second vertical plane thereby permitting further longitudinal travel of the door into side-by-side relationship with another of said doors located within a door opening.

2. The combination as claimed in claim 1 wherein said inner and outer track elements of said lower track means comprise rails and said lower crossover means includes diagonally intersecting rail continuations communicating the inner and outer track rails of one section respectively with the outer and inner track rails of the other section.

3. The combination as claimed in claim 1 wherein said mounting means includes trolleys movable along said upper track means and said inner and outer track elements of said upper track means each define elongate internal areas for the reception of said trolleys and further a downwardly opening passageway of a lesser magnitude than the width of said trolley whereby said trolley and door associated therewith are restrained against downward movement in the event of damage to said lower track means.

4. A railway freight car having at least one extended doorway opening defined by the car's frame along each side of the car with said opening adapted to be closed by two or more doors, said doors each being movable laterally outward of said opening and also in a generally longitudinal manner relative to the car side into side-by-side lateral relationship with other of said doors, lower and upper track means parallel to each car side each including horizontally spaced inner and outer track elements and affixed to each side of the car respectively adjacent the lower and the upper limits of said doorway openings, said track means having left and right sections, mounting means for each of said doors normally mounting same on said inner track elements of said lower and upper track means permitting lateral positioning of the door between "in" and "out" positions with the "out" positions permitting subsequent longitudinal travel along a car side within a first vertical plane located outward of the car side, and lower and upper crossover means affixed to each side of the car interjacent two doors and each in respective communication with said lower and upper track means, both of said crossover means having diagonally disposed means communicating inner and outer track elements of one section with the outer and inner track elements of the other section whereby upon outward positioning of the doors closing one doorway opening to an "out" position and

upon subsequent longitudinal travel thereof along said inner track elements the last mentioned doors will, by virtue of said crossover means, be switched onto lower and upper outer track elements and into side-by-side relationship with closed doors.

5 5. A railway freight car having substantially rectangular floor and roof structures and a pair of upright end walls extending intermediate the ends of said floor and roof structures to provide an elongated freight car body wherein each of the opposed elongate sides of the car are substantially open between said end walls and said floor and roof structures to constitute doorways, doors adapted for closing each of said doorways and each movable in a generally longitudinal manner relative to the car side into side-by-side relationship with another of said doors, lower and upper track means each including inner and outer track elements horizontally affixed to the elongate car sides below and above said doorways, said upper and lower track means having left and right sections, means mounting doors on said track means for longitudinal travel therealong and also for lateral door movement of said doors outwardly from the elongate sides into a first vertical plane and for opposite lateral movement into a doorway, lower and upper crossover means affixed to the car side interjacent two of said doors and in respective communication with said lower end upper track means to denote said left and right sections thereof to receive said mounting means upon longitudinal travel of a door whereby upon said mounting means traversing said crossover means in one direction the mounting means will be switched from inner track elements of one section to outer track elements of the other section thereby locating the door associated therewith in a second vertical plane permitting further longitudinal travel of the door into side-by-side lateral relationship with another of said doors located within a door opening.

6. The railway freight car as claimed in claim 5 wherein said inner and outer track elements of said upper track means each comprise guide tracks defining internal areas, said mounting means includes trolleys for longitudinally negotiating said internal areas, each of said trolleys comprising an elongate base plate having horizontally disposed roller means adapted for rolling contact interiorly of said guide tracks.

7. The railway freight car claimed in claim 5 wherein each of the elongate sides of the car defines a pair of longitudinally spaced doorway openings, and having an

upright center section disposed therebetween, said doors comprises pairs of doors normally disposed within and closing each of said openings and each of said doors being of the combination plus sliding type.

8. The railway freight car claimed in claim 7 wherein each of said end walls includes a corner post of channel beam construction and said center section is also of channel beam construction with flanged portion of said corner post and center section channel beams extending inwardly into said doorways, said floor and roof structures including longitudinally disposed members also extending inwardly into said doorways, said flanged portions and said members being adapted to receive weather proofing means contactable by said doors when in a closed position within said doorways.

9. The railway freight car claimed in claim 5 wherein said mounting means for said doors includes vertical mounting shafts journaled thereupon and each in pivoted offset attachment at its lower end with a roller carriage normally supported by the inner element of said lower track means and upwardly in pivoted attachment with a trolley normally associated with the inner element of said upper track means whereby rotational movement of each of said shafts will impart lateral movement to remove said door from its doorway and into said first vertical plane outward of the car side for longitudinal travel along said side, said inner and outer elements of said lower track means comprising rails, and said lower crossover means including diagonally intersecting rail continuations communicating the inner and outer rails of one section with the outer and inner rails of the other section.

10. The railway freight car claimed in claim 9 wherein said roller carriages are provided with flanged wheels with the flange portion of each wheel having a curved circumferential wall and said lower crossover means having a wheel contactable surface curved to correspond to said circumferential wall.

References Cited

UNITED STATES PATENTS

756,524	4/1904	Rashkin	49—213
2,930,332	3/1960	Cook et al.	105—378

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