

No. 869,839.

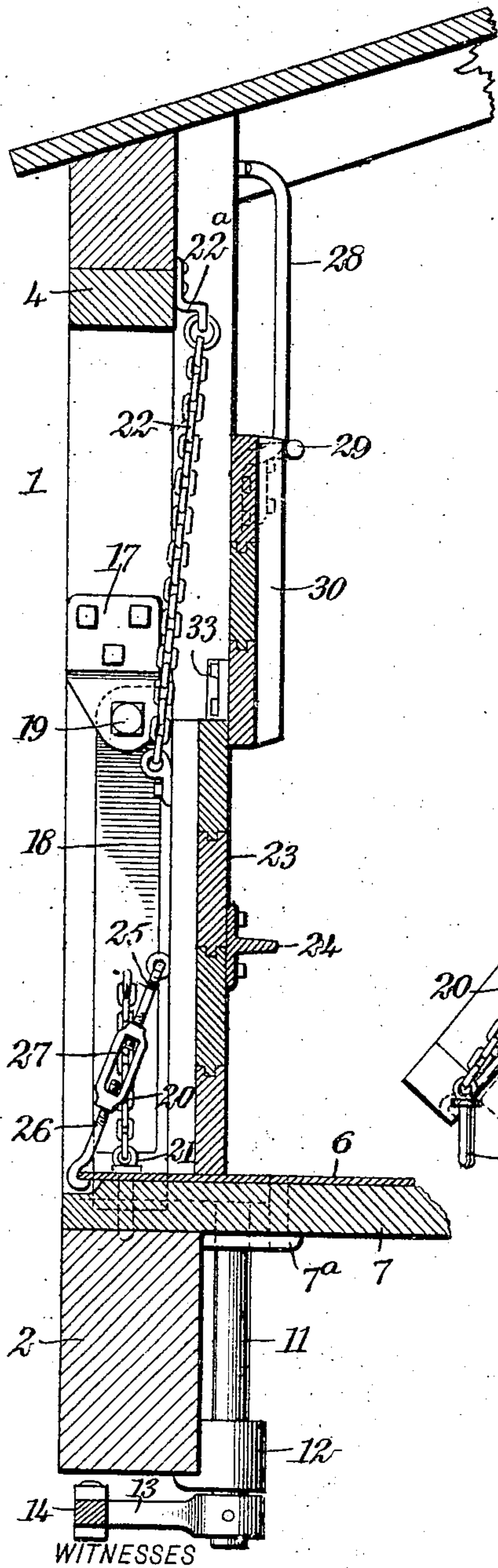
PATENTED OCT. 29, 1907.

R. HALL.
CAR DOOR.

APPLICATION FILED JUNE 26, 1906.

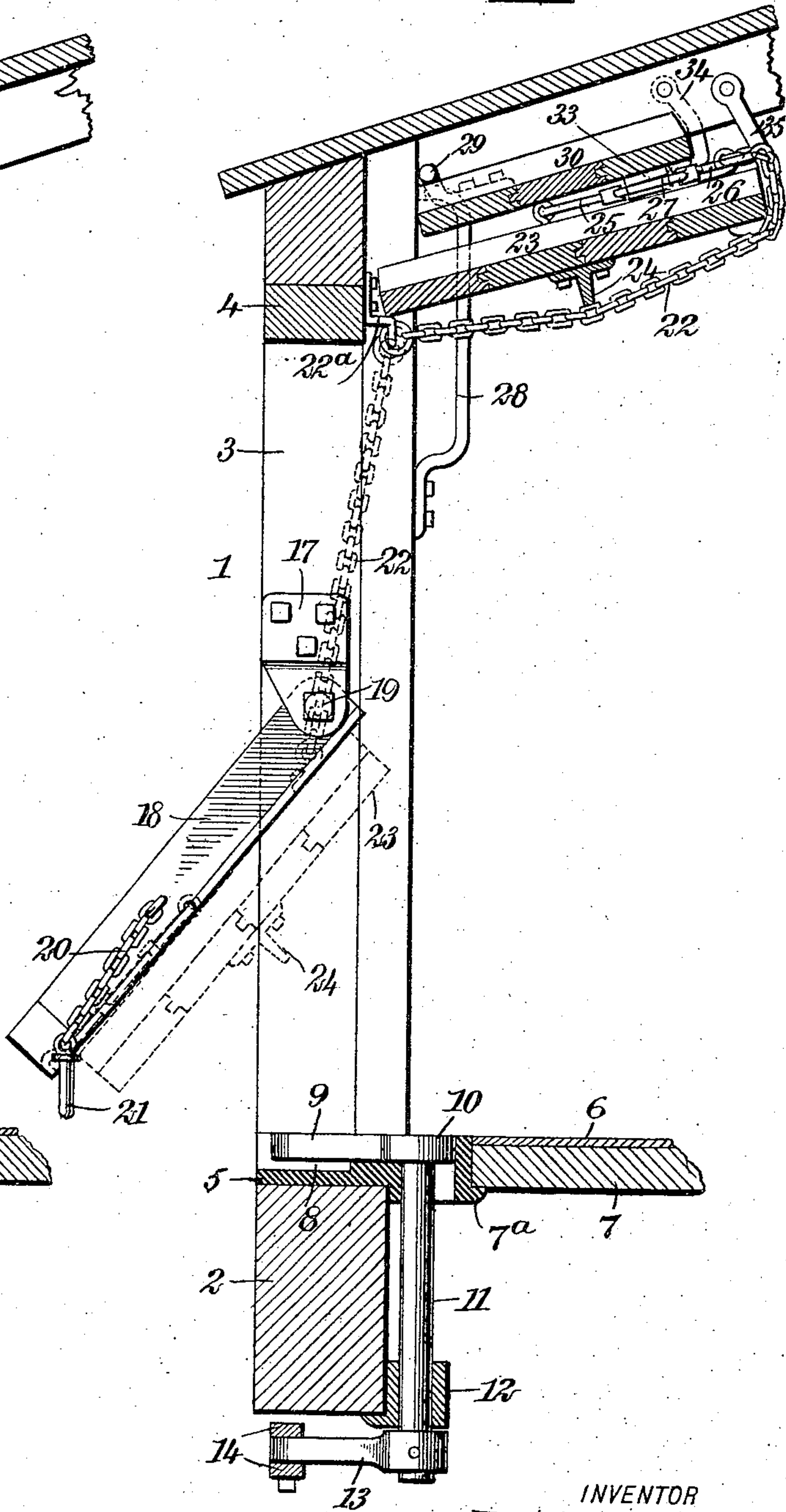
2 SHEETS—SHEET 1.

Fig. 1.



WITNESSES
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Fig. 2.



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2 SHEETS—SHEET 2.

Fig. 3.

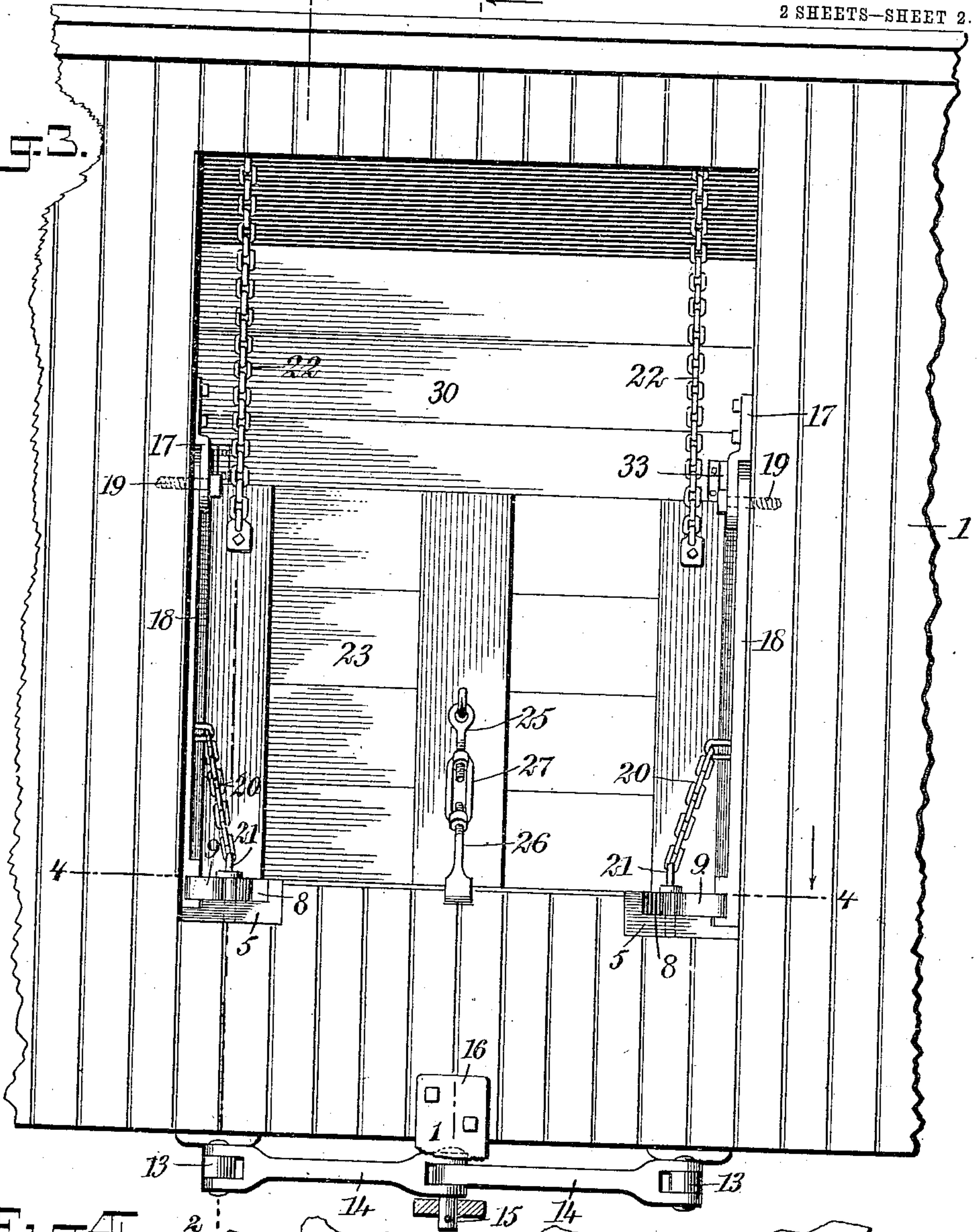
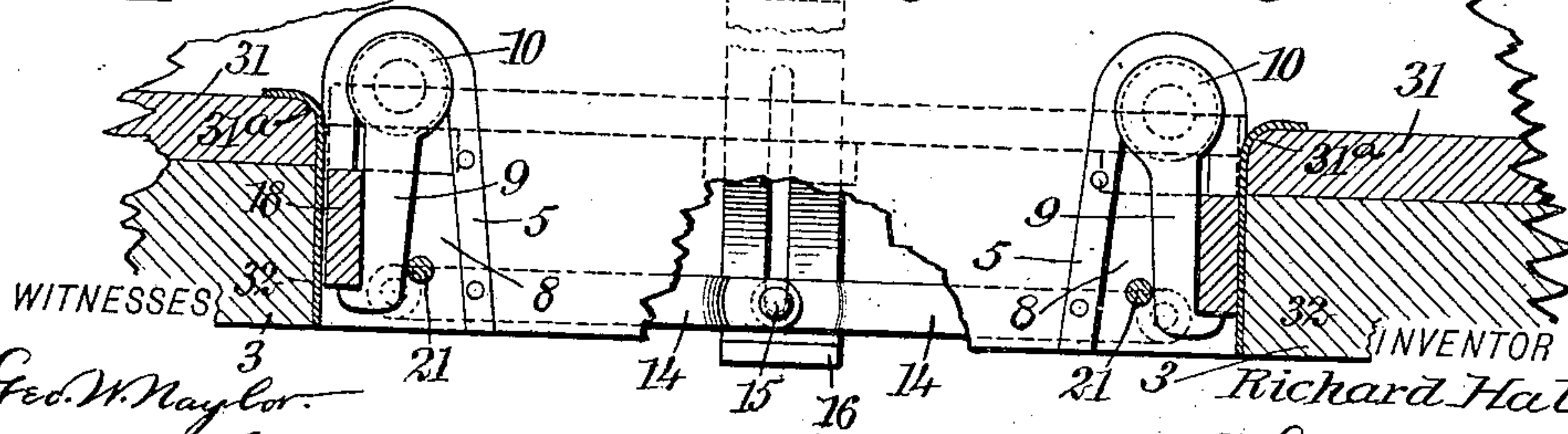


Fig. 4.



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RICHARD HALL, OF KENORA, ONTARIO, CANADA.

CAR-DOOR.

No. 869,839.

Specification of Letters Patent.

Patented Oct. 29, 1907.

Application filed June 26, 1906. Serial No. 323,491.

To all whom it may concern:

Be it known that I, RICHARD HALL, a subject of the King of Great Britain, and a resident of Kenora, in the Province of Ontario, Dominion of Canada, have invented a new and Improved Car-Door, of which the following is a full, clear, and exact description.

This invention is an improved car door to be used auxiliary to the usual door of box cars, and is especially designed to facilitate the unloading of granular materials such as grain, coal, sand and the like.

Among other objects of the invention is to provide a car door that will safely retain the material in the car while loading and when in transit; also a door which can be readily and easily opened so that the material will freely run out to the angle of repose when it is desired to discharge the loaded car.

With this in view, the invention consists of a door having auxiliary door jambs connected to the posts of the door opening to retain it from outward displacement, combined with suitable means for releasing the auxiliary jambs when the material in the car is to be discharged. A second door is arranged to cooperate with the lower door when the car is required to be loaded with material to an unusual height, both of said doors being adapted to be swung to an elevated position and removed out of the way when they are not in use.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a transverse, central section through a car door with my improvement applied thereto, showing the upper and lower doors in closed position, said section being taken substantially on the line 1—1 of Fig. 3; Fig. 2 is a view similar to Fig. 1 with the doors carried to an elevated position and secured as when not in use; also showing the auxiliary door jambs and the lower door in dotted outlines in the position taken by them at the beginning of the unloading operation. This section is taken on the line 2—2 of Fig. 3 looking in the direction of the arrow; Fig. 3 is a side elevation of the doors when closed, as viewed from the outside of the car, and Fig. 4 is a horizontal, sectional view on the line 4—4 of Fig. 3.

Referring to the drawing figures, the numeral 1 indicates an ordinary box car having a door opening surrounded by a bottom sill 2, side posts 3 and a top beam 4. Secured in the lower corners of the door openings are castings 5 seated on the sill 2 and of such height as to be flush with a metal plate fastened to the car floor 7. These castings are flanged at their rear ends at 7^a to receive the floor 7 of the car and are cut out on their top front faces, forming recesses 8 for containing outwardly extended hooks 9, said hooks having enlarged rounded inner ends 10 snugly fitting the

rear ends of the cut out portions 8, and are fixed to vertical shafts 11 journaled in the castings 5 and in brackets 12 secured to the sill 2. The lower ends of these shafts 11 below the brackets 12 are connected to arms 13 extending forwardly, where they are in turn pivotally joined to bifurcated links 14 running longitudinally under the sill 2, and pivotally joined together by a pin 15 passing through their ends, one of the links being bifurcated for receiving the end of the other for this purpose, as shown in Fig. 3. The pin 15 also passes through a slotted bracket 16 secured to the front side of the car passing underneath it, and acts as a guiding means for the links when the latter are operated to swing on the hooks 9.

Secured to each of the side posts 3 of the door opening, about midway of their lengths, are brackets 17 extending downwardly and being offset, providing a space between their lower ends and the posts 3. In these spaces are pivotally mounted auxiliary door jambs 18 on bolts 19 passing through them and the brackets and into the door posts. The door jambs 18 are cut out, as shown, for a considerable portion of their length to insure lightness, and are adapted to enter grooves in the castings 5 and be embraced by the hooks 9 when they are secured in closed relation. To each of these door jambs is attached a chain 20 carrying at its lower end a pin 21 designed to enter a hole in one of the castings 5 just at the rear of one of the hooks 9 when the latter are swung to inward position, thereby securely holding the hooks from accidental displacement.

Suspended from some suitable point above the door opening, as from angular brackets 22^a, and at the inside of the car, are chains 22, one at each side of the door opening and attached at their lower ends to the upper end of a door 23. This door is preferably built up, as shown in Figs. 1, 2 and 3, and is reinforced by a T-beam 24 secured to its inner face, the opposite or outer face of the door being provided with a screw-eye 25 suspended from the door center connecting with an oppositely threaded hook 26 by means of a turn-buckle 27. The hook 26, when the door 23 is lowered to position against the door jambs 18, is designed to engage underneath the metal plate 6, which prevents the door from inward or upward movement when the turn buckle 27 is tightened, a suitable recess being provided in the car flooring, as shown in Fig. 1, to admit the hook beneath the plate, making this locking operation possible.

Secured to the inside of the car at each side of the door opening, and near the car top, are guide rods 28 shaped much after the fashion of a car hand-hold, and on which slidably engage eyed brackets 29 supporting an upper door 30. This door is somewhat wider than the lower door 23 and contacts with jambs 31 fixed to the side posts 3 and the top edge of the door 23 when in closed position, the front face and the rear face of the

upper and lower doors respectively being in the same plane when closed, for this purpose.

As shown in Fig. 4, the rear edge of door jambs 31 secured to the posts 3 have rounded edges 31^a which are covered, as also the posts, with metal plates 32 at each side of the door. This construction prevents undue wearing of the ropes of the unloading scoops usually employed to unload the cars. These rounded edges 31^a, however, would leave openings at the lower corners where the doors 23 and 30 join when in closed position were it not for plates 33 secured to each side of the door 30 completely closing them.

When the doors are not in use, the upper one is carried to an elevated position by sliding it on the guide rods 28 until the eyed brackets 29 rest upon the upper horizontal portions of the guide rods, in which position a hook 34 fastened to the top of the car is engaged with the front face of the door, as shown in Fig. 2. The lower door 23 is also elevated by grasping it at its lower edge and turning it upward until its inner face contacts with the chains 22. The bottom edge of the door, which was formerly the top edge before being elevated in this position, is now grasped and turned until the opposite edge rests on the horizontal portion of the brackets 22^a, and this upward movement of the door continued until a hook 35 pivoted at some suitable point at the top of the car, can be engaged with the under face of the door, as shown in Fig. 2.

In locking the lower door 23 in position, which is to be done before the car is loaded, the auxiliary door jambs must first be locked by the hooks 9, which is accomplished by pulling the links 14 outwardly, thereby turning the hooks through the intermediate gearing on their pivots and throwing them into engagement with the door jambs. The safety pins 21 are then dropped in their respective holes back of the hooks, preventing the latter from accidental displacement. The door 23 is then pulled into engagement with the jambs by turning the turn-buckle 27 after the hook 26 has been passed under the floor plate 6. If the height of the door 23 is insufficient, the door 30 is dropped to position, as shown in Fig. 1.

To unload the car, the pins 21 are first removed and the links 14 pushed backward to disengage the hooks of the auxiliary door jambs. The pressure of the grain or other material on the inside of the car will then swing the lower door and door jambs to an angular position, as shown in Fig. 2, allowing the material to escape until its

angle of repose is reached. The upper door is then elevated, as first described, as also the lower door as hereinbefore indicated. The remainder of the material is then unloaded by scoops in the usual manner.

It will readily be observed from the construction of the door, that when the car is loaded only one-half of the pressure on the lower door will be transmitted to the door posts 3 through the auxiliary door jambs 18, the other half of the pressure on this door being transmitted to the side sill 2 through the hooks 9 connecting the lower ends of the jambs. This is an important feature of the construction, as also the fact that in raising the lower door not more than one-half of its weight is at any time to be lifted in carrying it to an elevated position, the other half of the weight being sustained by the chains 22. This is a desirable feature by reason of the fact that in devices of this character they are to stand rough usage, ordinarily requiring them to be heavily built, consequently entailing much labor in carrying them to operative and inoperative position.

Although I have particularly described the invention in detail, it is to be understood that the scope thereof is limited by the annexed claims only.

Having thus described my invention I claim as new and desire to secure by Letters Patent:

1. In a car door, door posts, door jambs fixed to the inside of the posts, rounded corners on the door jambs, a second set of door jambs carried by the door posts, a lower door contacting with the second set of door jambs, an upper door contacting with said first-mentioned jambs, and means fixed to one of said doors for closing the openings due to said rounded corners.

2. In a car door, pivotally mounted door jambs, hooks for engaging the lower ends of the jambs to hold them in position, a door cooperating with the jambs, vertical shafts fixed to the hooks, and links connected to the shafts and to each other, whereby as they are operated the hooks simultaneously release the jambs.

3. In a car door, pivotally mounted door jambs, a door cooperating with the jambs, hooks for locking the door jambs in position, vertical shafts fixed to the hooks, arms fixed to the vertical shafts, links pivotally connected to the arms and to each other, and a slotted bracket for guiding the links whereby when the links are operated the hooks are simultaneously swung to release the door jambs and the door.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

RICHARD HALL.

Witnesses:

G. C. FRISBIE,
W. G. CAMERON.