

J. PEARSON.
DOOR MECHANISM OR THE LIKE.
APPLICATION FILED AUG. 7, 1909.

977,676.

Patented Dec. 6, 1910.

4 SHEETS-SHEET 2.

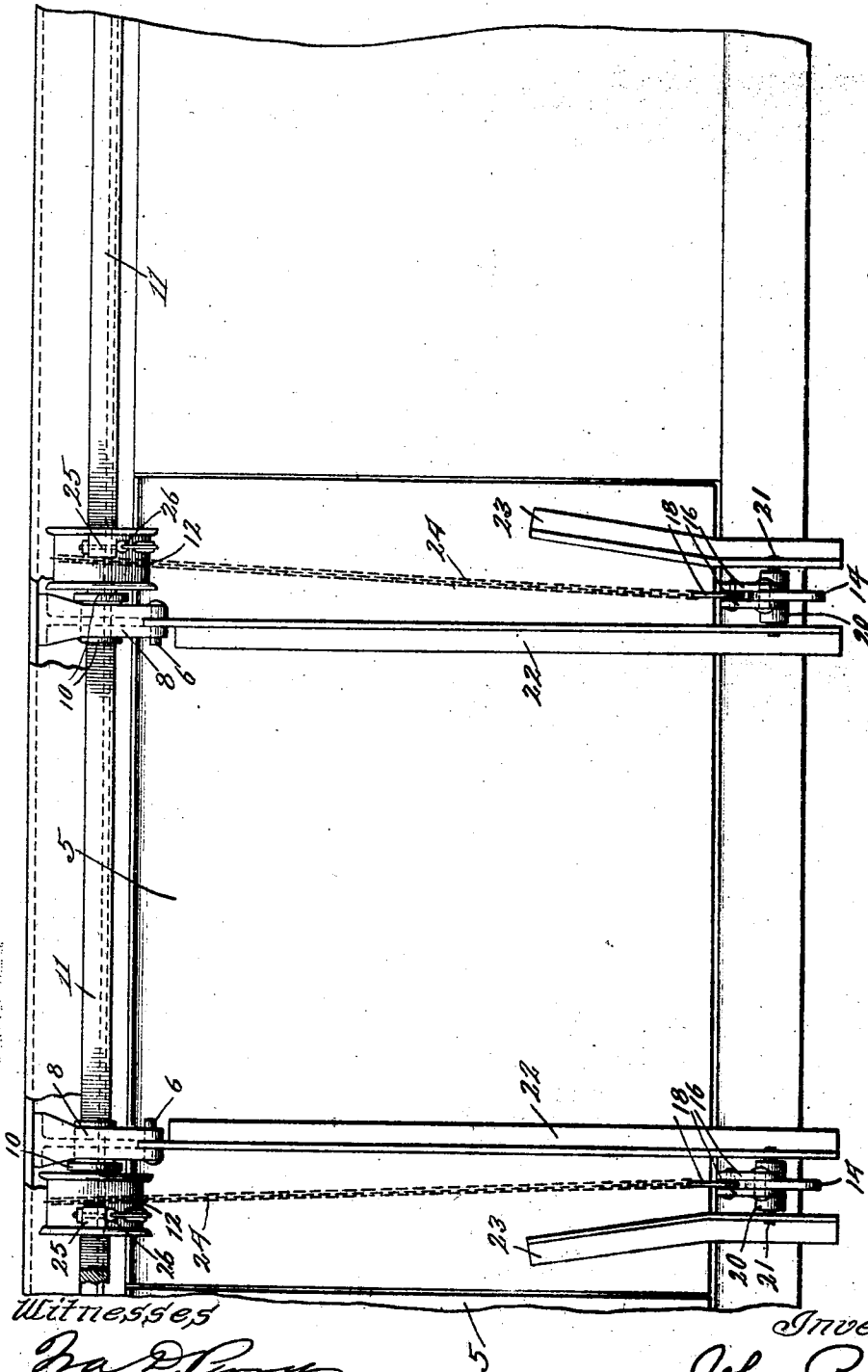


Fig. 2.

Witnesses:

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Alfred J. James

Inventor:

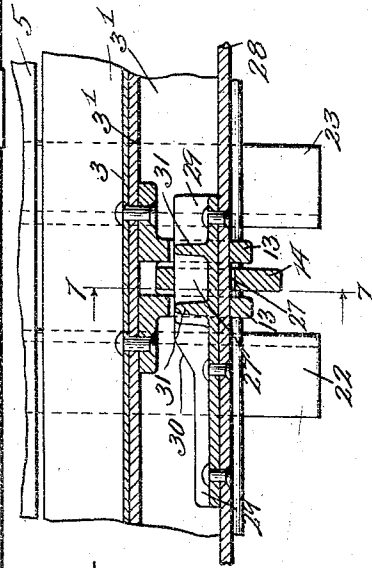
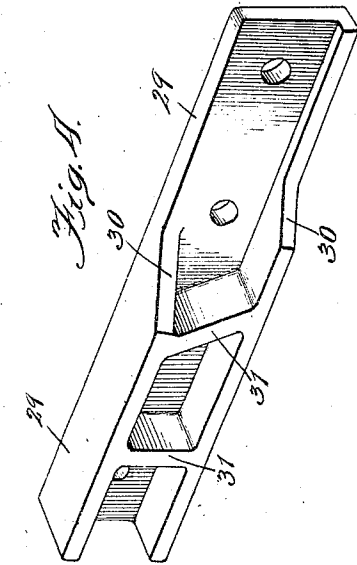
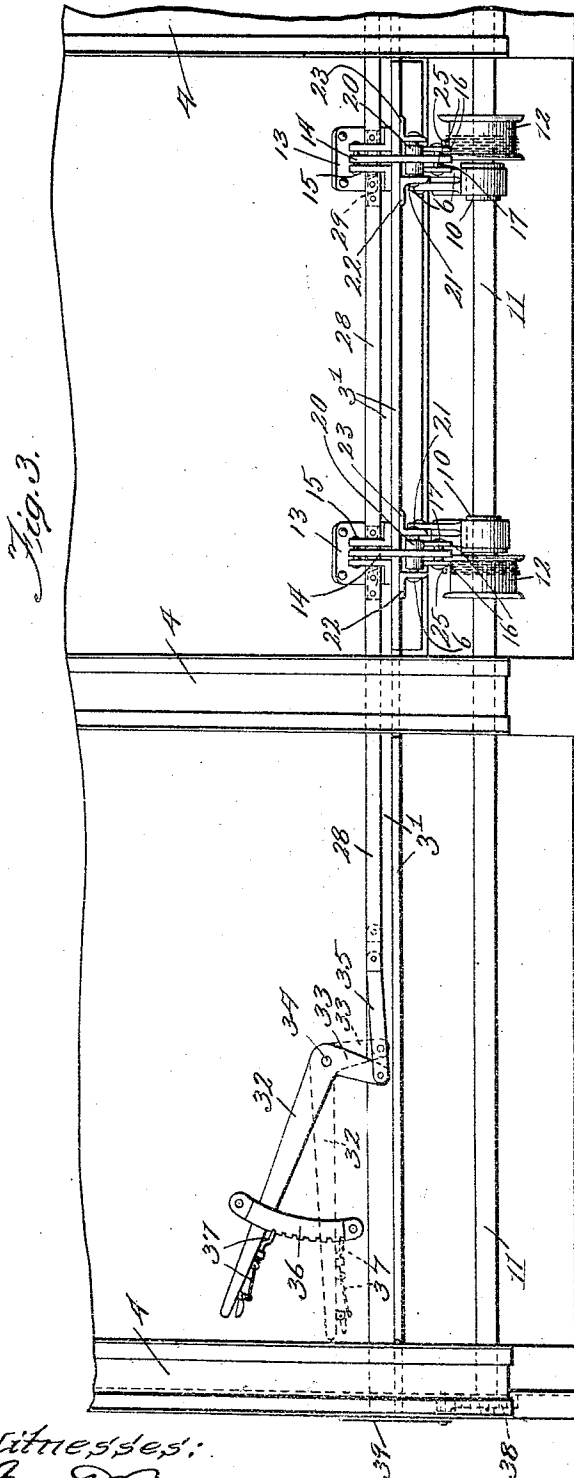
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4 SHEETS—SHEET 3.



Witnesses:
Brad P. King
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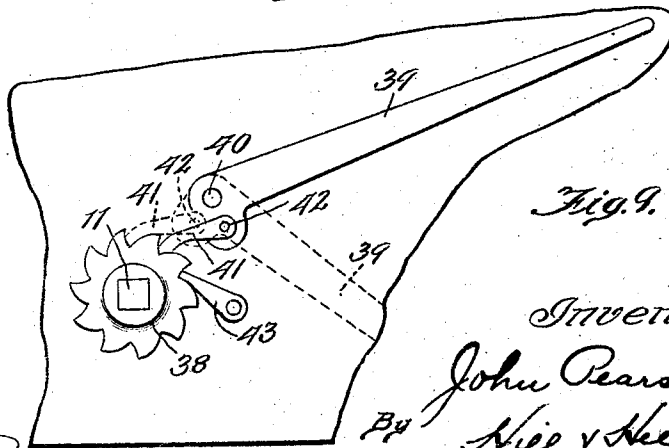
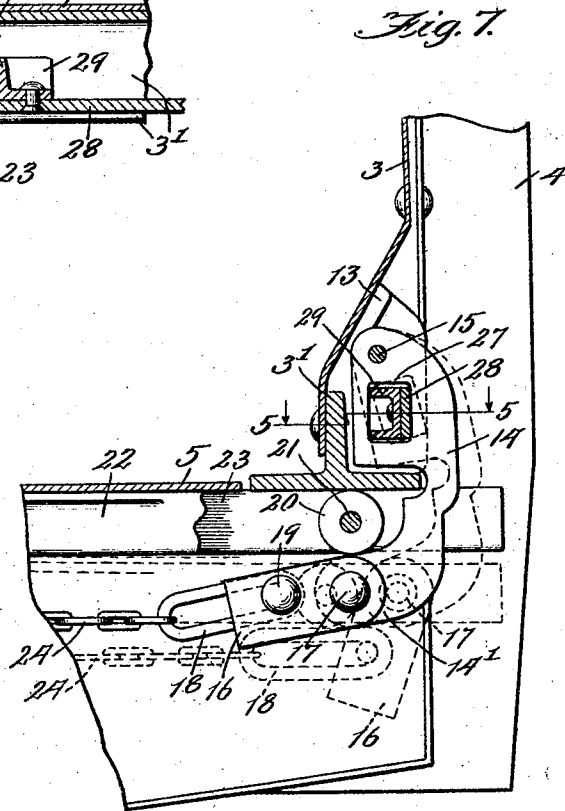
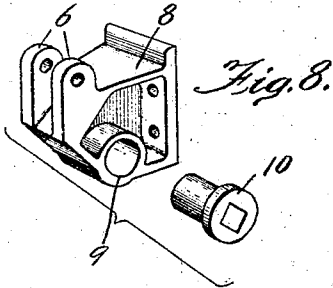
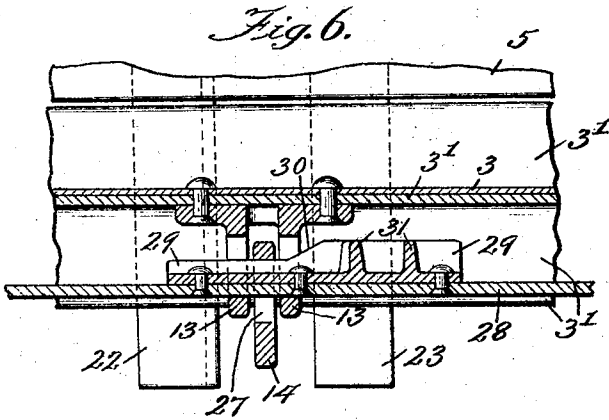
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4 SHEETS—SHEET 4.



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UNITED STATES PATENT OFFICE

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DOOR MECHANISM OR THE LIKE.

977,676.

Specification of Letters Patent.

Patented Dec. 6, 1910.

Application filed August 7, 1909. Serial No. 511,692.

To all whom it may concern:

Be it known that I, JOHN PEARSON, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Door Mechanism or the Like, of which the following is a description.

My invention belongs to that class of devices known as door operating and controlling mechanism, and more particularly relates to a dump car door mechanism and controlling means therefor.

The device has among its objects the production of a simple, efficient and satisfactory device of the kind described that may be used wherever found applicable.

To this end my invention consists in the novel construction, arrangement and combination of parts herein shown and described, and more particularly pointed out in the claims.

In the drawings wherein like reference characters indicate like or corresponding parts, Figure 1 is a sectional view of a portion of a car with my invention applied thereto, one door closed and one door partly open. Fig. 2 is a plan view of a portion of the bottom of the car body showing one door. Fig. 3 is a side elevation of a portion of the car and door operating and controlling mechanism. Fig. 4 is a perspective view of the part 29. Fig. 5 is a sectional view taken substantially on line 5—5 of Figs. 1 and 7. Fig. 6 is a similar sectional view with the several parts in the positions indicated by the dotted lines in Fig. 7. Fig. 7 is an enlarged view and elevation showing the parts on the right hand side of Fig. 1. Fig. 8 is a perspective view of one of the shaft supports and hinge parts, and Fig. 9 is a view and elevation of simple means for operating the shaft members.

Referring to the drawings, a complete car is not shown in all its details, as this forms no part of my invention, it being readily understood that my preferred construction may be used on any form of car to which it may be found applicable. In the construction shown the car is provided with a plurality of dump doors 5—5, etc., on each side, thereof hinged longitudinally of the car, at the center thereof and arranged to form the bottom or floor of the car when they are closed. Referring particularly to

Fig. 1, suitable beams 1—1 and 3¹—3¹ are preferably provided and arranged lengthwise at the center and sides of the car, forming a part of the car body, which are suitably supported from the trucks (not shown) in any preferred manner. A suitable floor 2 may be provided, as may suitable side walls 3 and members 4. The construction of the car body and the other several parts of the car not forming a part of my invention, may be modified and made as desired. As shown, in this figure the doors 5 are arranged on each side of the center beams 1 and pivotally supported by suitable brackets 8 carried by the beams 1. The brackets are preferably extended as shown at 7 and the doors secured thereto by means of pins 6 or their equivalent for the purpose.

Preferably carried by the beams 3¹ are arranged a plurality of members 14, two being shown for each door which members are arranged to support the free edges of the doors when closed. These members are preferably pivotally secured as at 15 to brackets 13 carried by the beams 3¹ and the side walls 3, and are extended as shown at 14¹ so that they may engage a suitable roll 20 carried on a pin 21 or the equivalent for the purpose which is arranged on the beams 22 and 23 on the bottom of the door (see Fig. 2). The members 16 are pivotally arranged at 17 to the extensions 14¹ on the members 14 and are each provided with a pin 19 arranged to pass through a suitable link 18 or its equivalent on a suitable flexible member, as shown a chain 24, to secure the same thereto. It should be noted that the side walls 3 are preferably offset inward (see Fig. 7). When so offset the members 14 are within the outside edges of the post 4 and are consequently protected. The opposite end of the flexible member or chain 24 is secured to what may be termed a drum 12 arranged on a winding shaft 11, which shaft is supported by means of the brackets 8. As shown, the brackets 8 (see Fig. 8) are extended as at 9, a suitable bushing 10 being provided where the winding shaft is a square or the like so that the same may rotate in the bracket. The chain 24 may be secured to the drum in any suitable way, an extension or lug 25 being shown for the purpose, the chain 24 being secured to the extension 25 by means of an eyebolt 26.

Each of the members 14 is preferably

provided with an opening 27 therethrough, through which passes a slidable rod or bar 28 arranged along the outside of the car, which bar carries what may be termed a cam member 29 provided with a cam face 30. As shown, the member 29 is preferably made in the form of a U shaped member, and strengthened by ribs 31. The member 29 may be made integral with the part 28 if desired, but is preferably made separate and secured thereto by means of bolts, rivets, or the equivalent for the purpose. It is of course obvious that the parts may be so arranged that only the member 29 slides or operates in the opening 27. In the preferred construction there are a plurality of bars 28 for example two on each side of the car operated from the ends of the car, each one controlling half the members 14 on its respective side.

Any suitable means may be employed for longitudinally moving the bar 28. As most clearly shown in Fig. 3, I provide a lever 32 provided with an extended end 33, which lever is pivotally secured to the car body at 34 and connected at the extension 33 to the bar 28 by means of a connecting member 35. A guide 36 may be provided and if desired a lock 37 arranged on the bar, the same co-operating with notches in the guide 36 so that the bar 28 may be positively locked in the desired position.

Any suitable means may be employed to operate the shaft 11. Referring to Fig. 9, in which a simple arrangement is shown, 39 represents a lever pivotally secured to the car body at 40 carrying a pawl 41 pivotally secured to the arm at 42, coöperating with a ratchet 38 carried on the shaft 11. A detent 43 may also be provided to prevent rotation of the shaft when taking a new bite on the ratchet. In this construction there is no tendency for the handle or lever 39 to be thrown downwardly when the car is dumped and thereby injuring an operator that may be at the end or between the cars.

Referring particularly to the right hand door shown in Fig. 1, the same is shown in its closed position with the chain 24 under a strain, that is, wound on the drum 12 so that the member 14 is substantially in the position shown with the roll 20 resting upon the hooked end 14¹ so that the weight of the door is carried by the member 14. The member 14 is prevented from swinging outward and releasing the door by means of the chain 24, the bar 28 and member 29. Should the chain be slackened the member 29 will prevent the swinging out of member 14 and opening of the door. Assuming that it is desired to open the door the lever 32 is pushed down in the dotted position indicated in Fig. 3 so that the rod or bar 28 and member 29 are thrown into the position shown in Fig. 6. The chain 24 may

be now unwound or slackened, whereupon the weight of the door will cause the member 14 to swing out as indicated in the left hand side of Fig. 1, so that the door will swing down as the shaft 11 is rotated, the weight of the door being supported by the chain, the member 14 and the connecting means therebetween. To close the door the shaft 11 is rotated to wind the chain 24 on the drum 12 raising the door to its closed position and drawing the supporting member 14 so that the roll 20 rests thereupon. The lever 32 may be then operated to draw the bar 28 and the member 29 back to the position indicated in Fig. 5, thereby positively locking the doors shut. Should any of the members 14 be not drawn into operative position owing to the lengthening of the chain secured thereto or for any other reason, the cam member 29 will force the same into its operative position.

It is thus seen that in the construction shown there is substantially no weight of the door on the chains or winding shaft when the door is closed, but that the free edges of the door are supported directly from the car body by the members 14, which are positively locked into operative position by the bars 28 and members 29. It is of course obvious that there may be any number of doors 5, and that they may be arranged in any preferred way.

Having thus described my invention it is obvious that various immaterial modifications may be made in the construction and combination of parts herein shown and described without departing from the spirit of my invention or that the same may be used wherever found applicable, hence I do not wish to be understood as limiting myself to the exact construction shown and described. What I claim as new and desire to secure by Letters Patent is—

1. In a device of the kind described and in combination, a door hinged at one edge thereof, means for raising said door, hooks coöperating with said raising means for supporting the free edge of said door, supporting means for said hooks and means for positively retaining said hooks in operative position comprising a slidable bar carried by said hook supporting means and engaging said hooks and means for operating said bar.

2. In a device of the kind described and in combination, a door hinged at one edge thereof, means for raising said door, a hook coöperating with said raising means for supporting the free edge of the door, and means independent of said door raising means for positively retaining said supporting hooks in operative position comprising a slidable bar carried by said hook supporting means and engaging said hooks and means for operating said bar.

3. In a device of the kind described and in combination, a door pivotally supported at one edge thereof, means for raising the door, a pivotally supported hook provided with an opening therethrough arranged at the opposite edge of the door, said hook cooperating with the means for raising the door, and means extending through the opening in said hook for retaining the hook in operative position.

4. In a device of the kind described and in combination, a door pivotally supported at one edge thereof, a supporting member pivotally supported at the opposite edge of the door, means cooperating therewith for raising the door, and means independent of said door raising means and supporting member for retaining the supporting member in operative position.

5. In a device of the kind described and in combination, a door pivotally supported at one edge thereof, a hook shaped supporting member for the free edge of the door, a flexible controlling member for said supporting member arranged to support the door throughout the opening or closing thereof means for straining said flexible member, and means slidably connected with said supporting member for positively locking the same in operative position.

6. In a device of the kind described and in combination, a car door pivotally secured at one edge to the car, a plurality of hook-shaped supporting members arranged at the free edge of said door and carried by the car, a winding shaft, a connecting member flexible throughout its length for each of said supporting members, having one end secured thereto and the other end secured to said shaft, and means for locking said supporting members in operative positions at one operation.

7. In a device of the kind described and in combination, a plurality of car doors hinged at one edge to the car body, a plurality of supporting members for each of said doors arranged at the free edge thereof and pivotally carried by the car body, each of said members provided with an opening therethrough with a hooked part arranged to engage the free edge of the door, and means for locking said supporting members in operative position, comprising a longitudinally movable rod arranged along the side of the car and extending through the openings in said supporting members, and means for operating said rod.

8. In a device of the kind described and in combination, a car door pivotally secured at one edge thereof to the car, a plurality of locking members arranged at the free edge of the door and pivotally carried by the car, a winding shaft, and means flexible through its length for connecting said winding shaft and said supporting members, and

means independent of said connecting means for forcing said supporting members into operative position and positively locking the same.

9. In a device of the kind described and in combination, a car door pivotally secured at one edge to the car, a plurality of supporting members arranged at the free edge of said door and carried by the car, a winding shaft, means for operating said shaft, a connecting member flexible throughout its length for each of said supporting members, having one end secured thereto and the other end secured to said shaft, and means for forcing said supporting members into operative position and positively locking the same in said position comprising a movable member arranged along the side of the car, an operating lever for said movable member and means for locking said movable member in the desired position.

10. In a device of the kind described and in combination, a car door, a plurality of brackets, carried by the car and arranged to pivotally support said door, a plurality of hook-shaped supporting members arranged at the free edge of said door and carried by the car, a winding shaft rotatably supported by said brackets, and a plurality of drums on said shaft, a connecting member flexible throughout its length for each of said supporting members, having one end secured thereto, means for securing the other ends of said flexible members to said drums and means for engaging and locking said supporting members in operative positions at one operation of said means.

11. In a device of the kind described and in combination, a car door, a plurality of brackets, carried by the car and arranged to pivotally support said door, a plurality of hook-shaped supporting members arranged at the free edge of said door and carried by the car, a winding shaft rotatably supported by said brackets, and a plurality of drums on said shaft, means for operating said shaft comprising a lever pivotally carried by the car, a ratchet arranged on said shaft and means for operatively connecting said lever and ratchet, a connecting member flexible throughout its length for each of said supporting members having one end secured thereto, with the other end thereof secured to one of said drums and means for engaging and positively locking said supporting members in operative position at one operation.

12. In a device of the kind described and in combination, a plurality of car doors hinged at one edge to the car body, a beam arranged at the free edges of said doors, a plurality of hook-shaped supporting members carried by said beam, means for raising or lowering said doors, said means cooperating with said supporting members, and

means for engaging and locking said supporting members in operative positions at one operation.

13. In a device of the kind described and in combination, a car door, a plurality of brackets carried by the car and arranged to pivotally support said door, a beam arranged at the free edge of said door, said beam offset relatively to the side wall of the car, a plurality of hook-shaped supporting members carried by said beam, a winding shaft rotatably supported by said brackets, a connecting member flexible throughout its length for each of said supporting members having one end secured thereto and the other end to said shaft and means for engaging and locking said supporting members in operative positions.

14. In a device of the kind described and in combination, a beam arranged longitudinally through the center of the car, a plurality of brackets carried by said beam, a plurality of car doors pivotally secured to said brackets, a beam arranged along the side of the car and offset from the wall thereof, a plurality of supporting members for each of said doors carried by said beam, a winding shaft rotatably supported by said brackets, means for operating said shaft comprising a lever and means for operatively connecting said lever and shaft, connecting means between said shaft and said supporting members, and means for locking said supporting members in operative positions comprising a slidable member arranged to engage said supporting members and means for operating said slidable member.

15. In a device of the kind described and in combination, a plurality of beams arranged longitudinally through the center of the car, a plurality of brackets carried by said beams, a plurality of car doors pivotally secured to said brackets, a plurality of hook shaped supporting members carried by the car and provided with openings there-through, a plurality of winding shafts, a connecting member flexible throughout its length for each of said supporting members, having one end secured thereto and the op-

posite end to one of said shafts, said flexible members having slidable connection between their ends with the free edges of said doors and slidable locking bars arranged at the sides of the car and extending through the openings in said supporting members.

16. In a device of the kind described and in combination, a plurality of beams arranged longitudinally through the center of the car, a plurality of brackets carried by said beams, a plurality of car doors pivotally secured to said brackets, a plurality of hook shaped supporting members carried by the car and provided with openings there-through, a plurality of winding shafts extending through and carried by said brackets, a connecting member flexible throughout its length for each of said supporting members, having one end secured thereto and the opposite end to one of said shafts, said flexible members having slidable connection between their ends with the free edges of said doors, and slidable locking bars arranged at the sides of the car and extending through the openings in said supporting members.

17. In a device of the kind described and in combination, a car door, a plurality of brackets carried by the car and extended on one edge to form one part of a hinge, means for pivotally securing said door to said extended bracket part, a plurality of hook shaped locking members arranged at the free edge of the door and pivotally carried by the car, a winding shaft extending through and rotatably carried by said brackets and means flexible throughout its length for connecting said winding shaft and said locking members, and means independent of said connecting means for forcing said supporting members in operative position and positively locking the same.

In testimony whereof, I have hereunto signed my name in the presence of two subscribing witnesses.

JOHN PEARSON.

Witnesses:

ROBERT W. HILL,
CHARLES I. COBB.