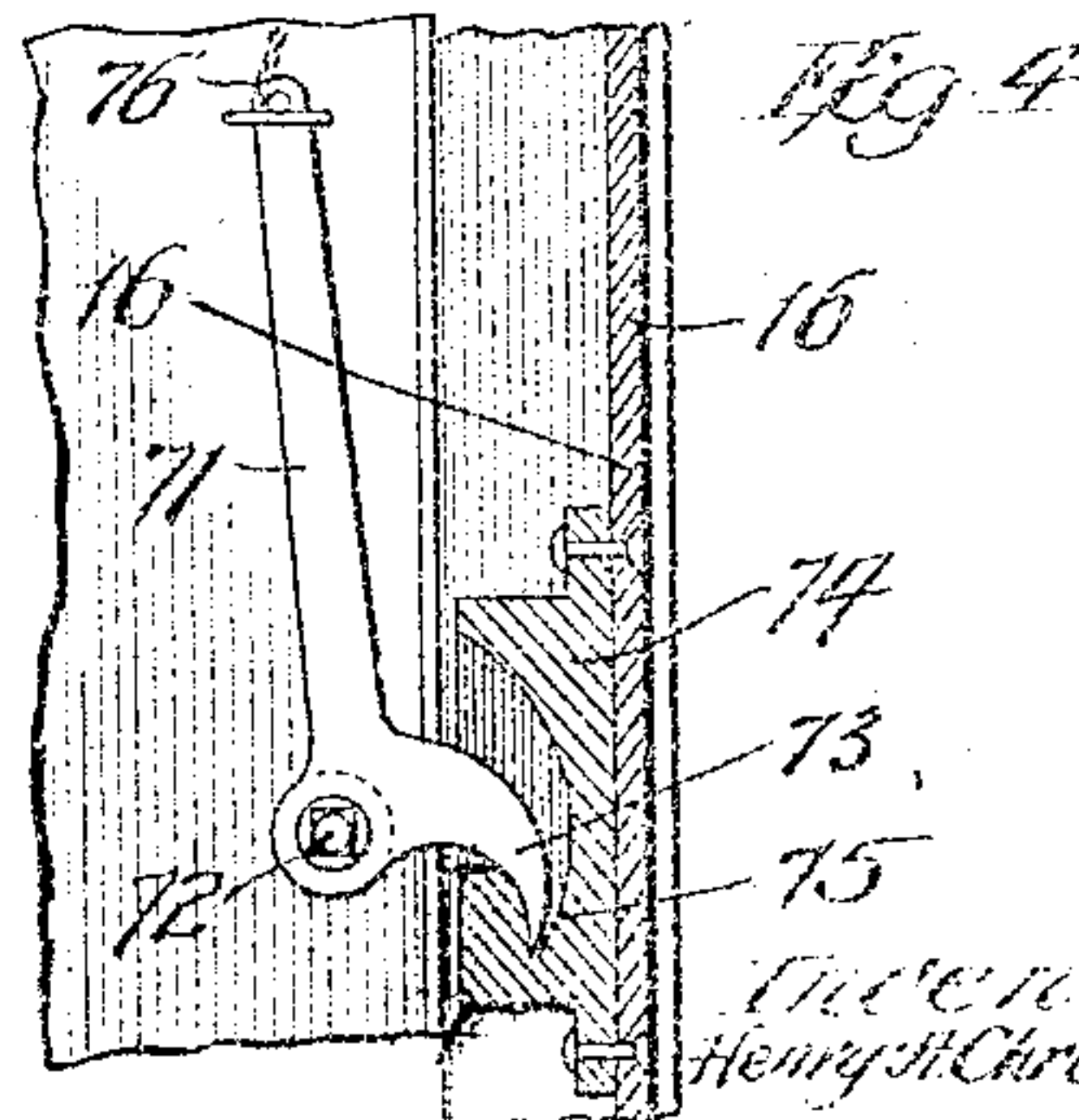
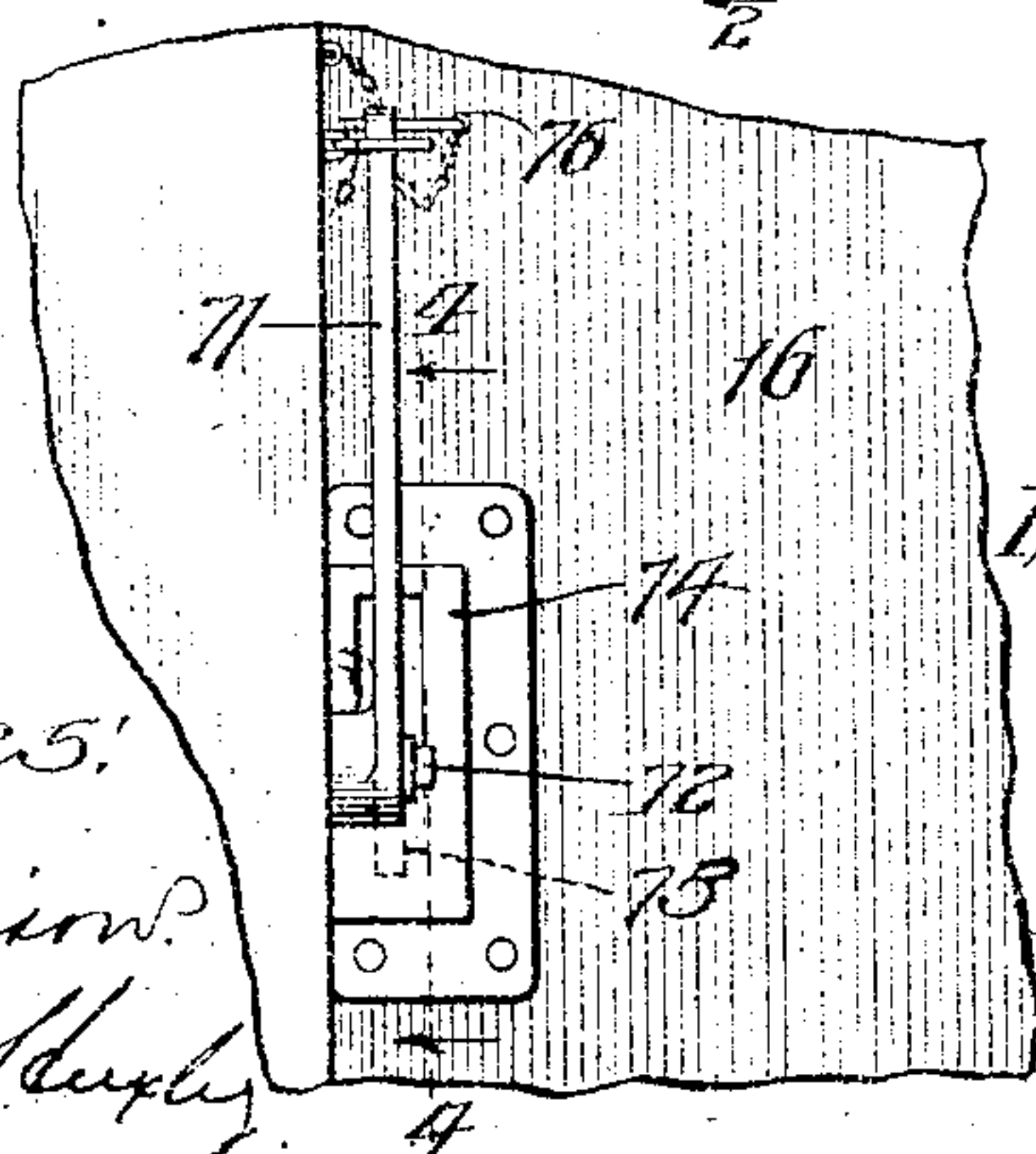
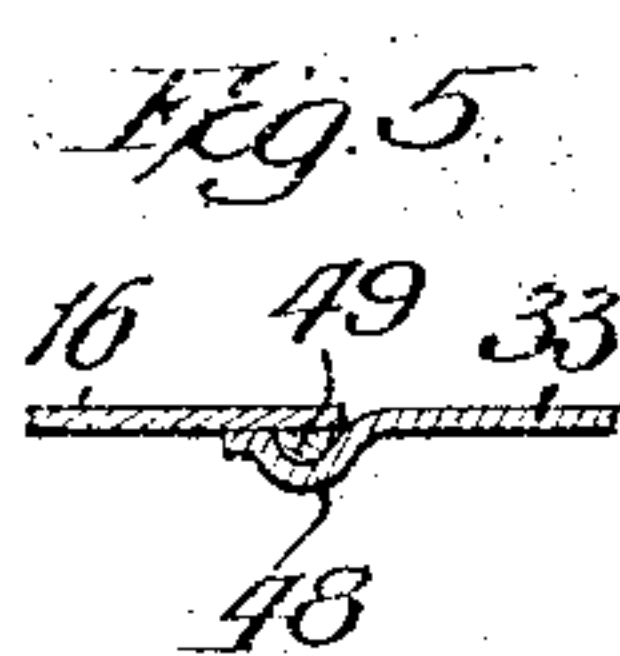


CAR DOOR.

Patented Nov. 15, 1910.

3 SHEETS—SHEET 1.

975,749.



witnesses.

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Henry H. Murphy

Fig. 3.

There is no  
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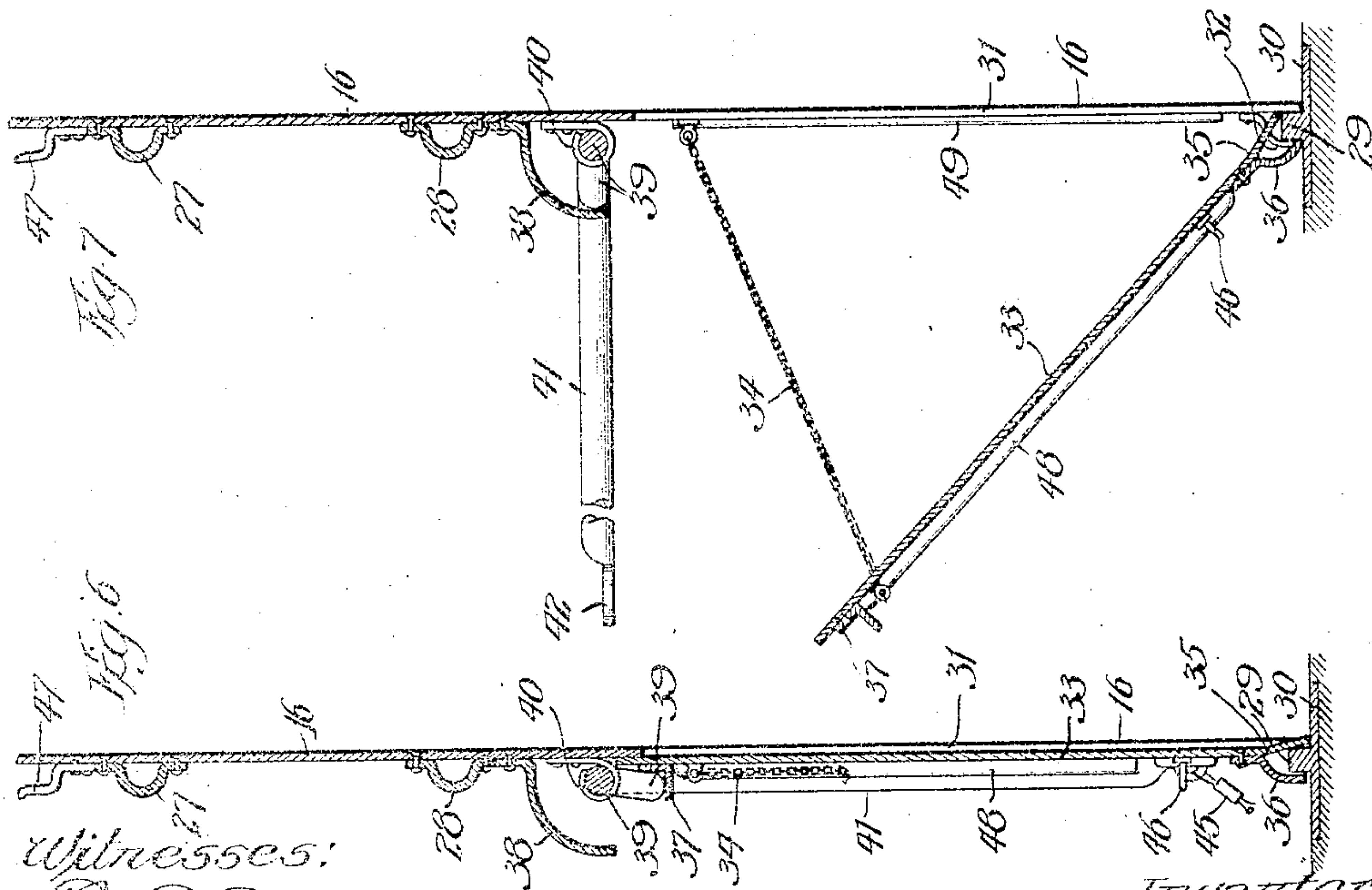
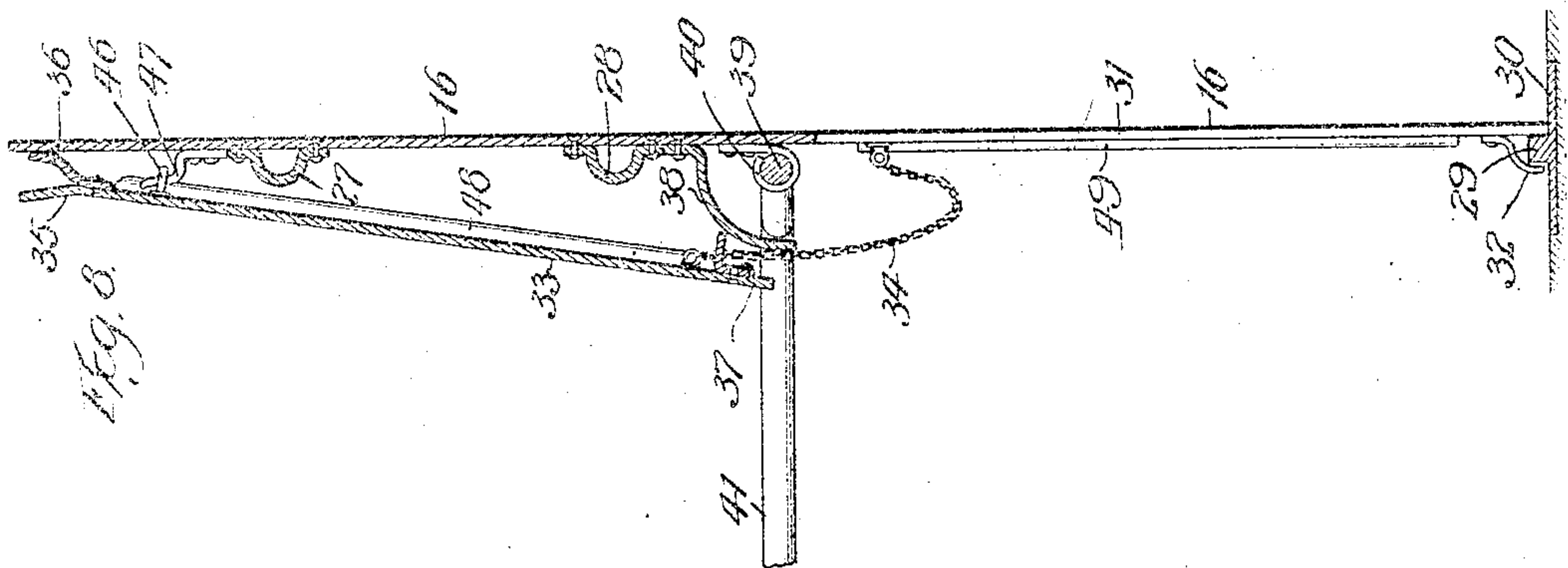
CAR DOOR.

APPLICATION FILED AUG. 1, 1910.

Patented Nov. 15, 1910.

3 SHEETS—SHEET 2.

975,749.



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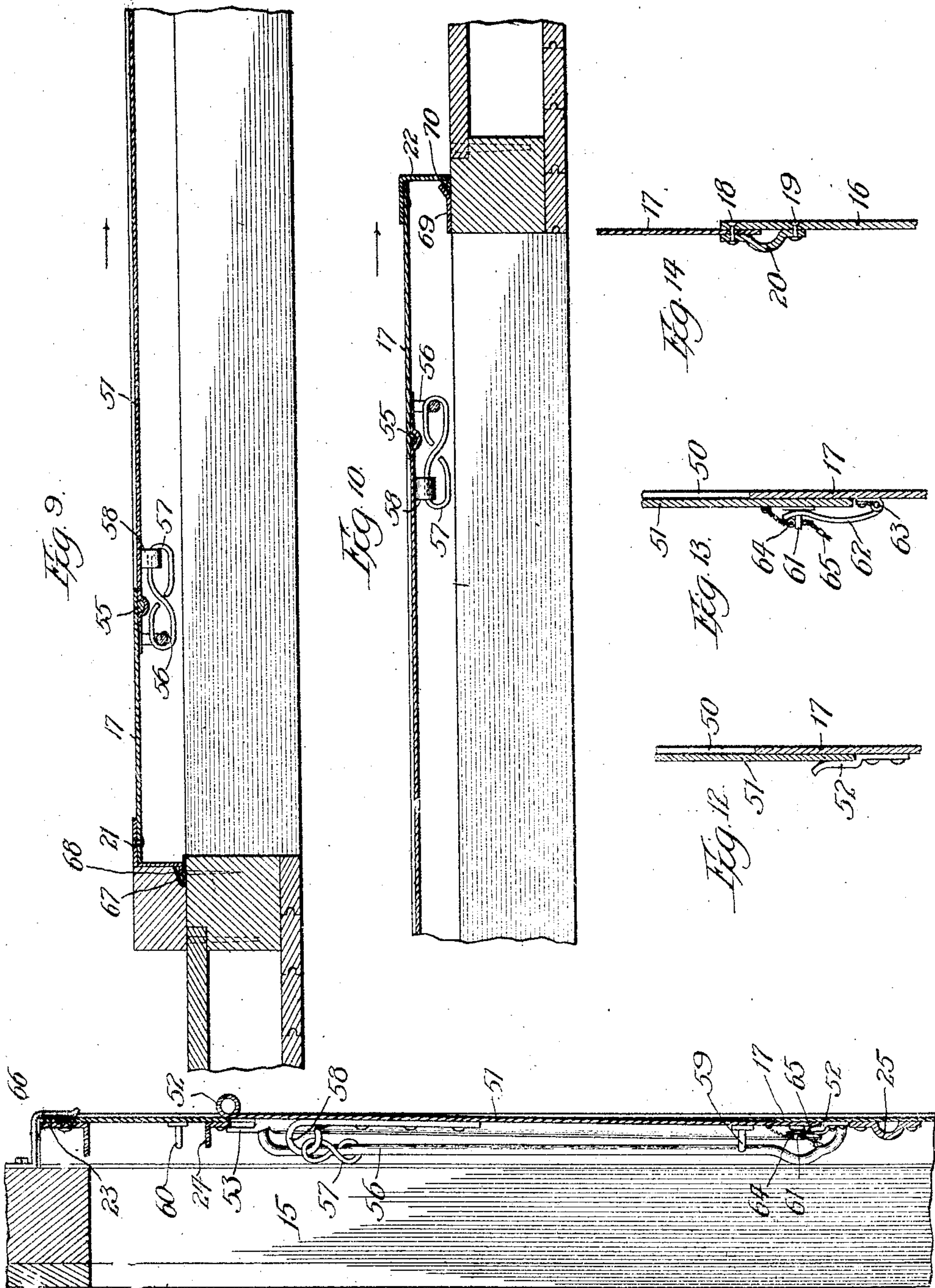
CAR DOOR.

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3 SHEETS—SHEET 3.

975,749.



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Fig. 11

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# UNITED STATES PATENT OFFICE.

HENRY A. CHRISTY, OF KENILWORTH, ILLINOIS.

CAR-DOOR.

975,749.

Specification of Letters Patent.

Patented Nov. 15, 1910.

Application filed August 1, 1910. Serial No. 574,995.

To all whom it may concern:

Be it known that I, HENRY A. CHRISTY, a citizen of the United States, residing at Kenilworth, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Car-Doors, of which the following is a specification.

My invention concerns the doors of railway cars and pertains more especially, though not necessarily exclusively, to doors inside of the car-body combining in their structure the main door for the closure of a doorway opening and one or more closable ports for the entrance and delivery of loading similar to grain, coal and the like.

It has been customary and usual heretofore to provide railway cars with an outside door and with a supplemental or additional grain door which is of use only when the car is transporting grain. These ordinary outside doors are subject to considerable damage and injury owing to their exposed condition, their proper operation is not infrequently interfered with because of climatic conditions, and when damaged or improperly supported on the car side they are frequently a menace to the safety of passengers in cars traveling on adjacent tracks, because they are subject to displacement by winds and the like.

One of the objects of this invention is to provide for each door opening a single door which will perform the function of the ordinary outside door and also be suitable for use as a grain door.

In order that those skilled in this art may have a full and complete understanding of the invention, I have illustrated a preferred and desirable embodiment of the same in the accompanying drawings forming a part of this specification, and throughout the various views of which like reference characters refer to the same parts.

In these drawings,—Figure 1 shows a fragment of a car doorway and illustrates in elevation the outer face of a metallic door embodying the features of construction and advantage of this invention; Fig. 2 is a vertical section through the door on line 2—2 of Fig. 1; Fig. 3 is an elevation of a form and style of locking or tightening means which may be employed in connection with a door of this character if desired or necessary; Fig. 4 is a section on line 4—4 of Fig. 3; Fig. 5 is a horizontal section through the main door and the closure for the lower

port, on line 5—5 of Fig. 1; Figs. 6, 7 and 8 are sections on an enlarged scale through the lower portion of the car-door, illustrating the closure or supplemental door for the lower port, in various positions; Fig. 9 is a horizontal section on an enlarged scale, upon line 9—9 of Fig. 1; Fig. 10 is a similar section, on an enlarged scale, on line 10—10 of Fig. 1; Fig. 11 is a vertical section, on an enlarged scale, through the upper portion of the door, and is similar to the showing in the upper portion of Fig. 2; Fig. 12 illustrates the means of securing in place the lower edge of the upper supplemental door or closure; Fig. 13 illustrates the means for preventing accidental or unauthorized opening of the upper supplemental door; and Fig. 14 illustrates the means for joining together the two plates of different thickness of which the main body of the large door is composed.

By reference to these drawings it will be apparent that the main car door, which is of sufficient width and height to close the entire doorway 15 of the car, is composed of two metal plates 16 and 17, the lower one 16 of which is of heavier construction and of greater thickness than the upper plate. As is perhaps more clearly shown in Fig. 14, these two plates, at their junction, are overlapped and secured together by a row of rivets 18, which, together with a similar row of rivets 19, also fasten to the outer face of the door a hollow stiffening bar or strip 20, bent or shaped to have a central longitudinal rib, as is clearly illustrated. Along each vertical edge, this door is equipped with an angle bar 21 at the front edge, and with an angle bar 22 at the back edge, the main plate or sheet of the door being disposed in front of one flange of each of these bars, while the other flanges of the bars project outwardly, as is clearly indicated in Figs. 9 and 10. Along its top edge, the door is provided with a smaller, stiffening angle bar 23 resting against the outer face of the door and having one flange extended outwardly, as shown perhaps more clearly in Fig. 11. Below this bar the door is also supplied, on its outer face, with another stiffening or strengthening angle bar 24, and is further equipped with a plurality of strengthening ribbed plates 25, 26, 27 and 28, fastened to the door in the usual manner, by means of rivets, and constructed similar to the member 20.



As is shown in Fig. 8, the car floor at the doorway opening is supplied with a rail 29 having a suitable base 30 on which the lower edge of the plate 16 rests and is adapted to slide. On its outer face and at its lower edge, this plate 16, on opposite sides of a lower port opening 31, is equipped with strips 32 to extend over the rib or rail 29, but not necessarily to contact or bear against its base 30, this member 32 acting as a retainer for holding the lower part of the door in proper operative relation with respect to the rail. As I have referred to above, this main door at its bottom edge is provided with an opening or port 31 of substantial size, such opening extending upwardly from the bottom edge of the door. This port is supplied for the purpose of permitting a ready discharge of the grain or other similar lading, and obviously it is necessary to provide the same with some sort of a closure or supplemental door which will effectively and securely prevent leakage of the grain or other lading. To effect this result I use a metal plate 33 somewhat longer and also somewhat wider than the opening 31 which it is intended to close, and I fasten such plate or door 33 to the main door by a pair of chains or cables 34, the construction being clearly illustrated in the various figures. The lower edge of the plate or supplemental door 33 is bent inwardly slightly at 35 and is adapted when the door is closed to be disposed inside of the rail 29, the excess length of the plate 33 for the accomplishment of this result being cut off, as will be readily understood. Along its lower edge, the plate 33 has riveted thereto a curved strip 36 adapted to overlie and be disposed outside of the rail 29 in the closed position of the door, as shown in Fig. 6. Near its top edge and extended longitudinally of the plate 33, the latter has fastened thereto an angle bar 37, the lower flange of which projects or extends outwardly, as shown.

Just below the stiffening rib 28, the main door has riveted to its outer face an outstanding, depending shield or apron 38 adapted to cover and protect an eccentric shaft 39 rotatable or oscillatory in a plurality of strap bearings 40 riveted to the outer surface of the door beneath the apron 38, one end of such eccentric shaft having a laterally bent handle 41 with an apertured end 42 adapted to receive a staple 43 in the closed position of the supplemental door 33, the staple in turn being intended to receive a holding pin 44, which, if desired, may be sealed at 45. When the lower edge of the door 33 straddles the rail 29 and the door is in closed position, the eccentric portions of the shaft 39, by coaction with the stiffening angle bar 37, act to forcibly press the upper edge of the door against the outer face of

the main door beneath the shaft, as shown in Fig. 6, and, due to the great leverage secured by the handle 41, the secure and tight closure of the supplemental or auxiliary door may be effected with little effort. The outer face of the plate 33 has fastened thereto for its manipulation a pair of handles 46 which are adapted to take over a pair of hooks 47 on the main door when this auxiliary door is hung up in open position, as shown in Fig. 8. To secure a tight or grain-proof joint between the vertical edges of the plate 33 and the corresponding parts of the main door, the edge portions of the plate 33 are crimped, as shown in Fig. 5, at 48, for the reception of half-round bars 49 fastened to the plate 16 along the vertical edges of the opening 31. Clearly, then, when the door is pressed home to closed position, no grain, coal or similar lading can leak around the vertical edges. The main car-door also has an upper port or loading opening 50 of rectangular form, of substantially the same length as the lower port, but preferably of somewhat greater width, whereby to permit the ready entrance of a person through such opening into the car-body. In order to close this upper port, I supply the door with another auxiliary door or plate 51, the lower edge of which is adapted to be held in closed relation and overlapping the main door by a plurality of brackets 52, shown in detail in Fig. 12, such brackets being adapted and intended to receive the lower edge of the door 51 between themselves and the outer surface of the main door-plate 17. At its upper edge, the plate 51 is bent to provide a roll or hollow finishing bead 52<sup>a</sup>, which acts both to stiffen the plate and to do away with a raw and sharp edge along the top of the door. The upper portion of this supplemental door 51 is adapted to bear against the inner face of the main door plate 17, as indicated in Fig. 11, and is held in contact with such inner surface by the end parts 53 of the plate 51, which form prolongations or extensions of hollow ribs 54 along the vertical edges of the plate 51, such ribs accommodating half-round bars 55 on the plate 17, which construction is similar to that described above in connection with the lower door 33. These fingers or projections 53 overlap the vertical flange of the angle bar 24, and consequently act to maintain the upper part of the plate 51 against the inner surface of plate or door sections 17. The upper section of the main door is equipped with a pair of vertical rods 56, on which slide a pair of substantially S-shaped members 57 secured to the supplemental door 51 on brackets 58. Near its lower edge, the auxiliary door 51 has a pair of handles 59, and above the upper port the main door has a single central handle 60, the latter being of especial use for grasping when the



operator wishes to enter the car through the upper opening. In order to prevent unauthorized opening of this upper door, it can be supplied with one or more staples 61 co-operating with hinged straps 62 fulcrumed at 63 on the main door, the holes through such straps being adapted to receive the staples 61, through which may be passed the securing pin 64, which, if preferred, may be sealed at 65.

In order to maintain the door in proper grain-tight relation with the side wall of the car, the latter, on the inside of the car, above the doorway opening 15, has fastened thereto a plurality of straps or brackets 66 overlapping the top edge of the door and its inner face, as will be readily understood, acting to hold the door down in place and to hold it laterally in operative relation with the side wall of the car. In order to assist in maintaining a grain-tight relation between the vertical edges of the door and the car side-wall, the forward edge of the doorway is supplied or equipped with a V-shaped metal strip 67 adapted to secure a wedging action with a small flange 68 on the outer edge of angle bar 21. The other vertical edge of the doorway has fastened thereto a wedge strip 69 which coacts in a similar manner with a small flange 70 on the edge of angle bar 22, it being understood that in order to open the door it is moved in the direction indicated by the arrows in Figs. 1, 9 and 10.

As a supplemental or additional holding means for the main door I may use, if found necessary or desirable, a clamping mechanism shown in Figs. 3 and 4, which comprises a lever 71 fulcrumed to the doorway casing at 72, and having a curved wedge arm 73 adapted to coact with a wedge member 74 fastened to the outer face of the door, such member 74 having an undercut part 75 for the accommodation of the end of the arm 73. When this lever 71 is turned on its fulcrum to the right as the parts are viewed in Fig. 4, it draws the door 16, 17 outwardly into tight relation with the side wall of the car and also acts to force the door downwardly against vibration or possible vertical displacement or jarring. Suitable means 76 may be provided for holding the lever 71 in coöperative and binding relation to its companion member 74.

To fill the car with grain or other similar lading, the door 33 is maintained closed and the door 51 is opened by grasping the pair of handles 59 and pushing the same upwardly, the fingers or projections 53 bearing against the vertical flange of the angle 24. This slight upward movement, assuming that the door 51 has been first freed from the hasp or catch 62, permits it to be pulled outwardly beyond the supports 52, in which position it can be readily lowered wholly

away from the opening 50, being supported by the S-shaped loops 57 which slide on the bars 56. The grain may then be introduced through the opening 50 into the car in any approved manner, as through one or more spouts projected through this upper port or opening. The car having been filled to the desired height with the lading, the door 51 is pushed upwardly, the loops 57 sliding on the bar 56, and the upper edge of the door is made to overlap both the inner and outer surfaces of the plate or door sections 16, as shown in Fig. 11, thereby holding the upper edge of the door securely against inner or outer displacement. The lower edge of the door is raised sufficiently to permit it to be slipped over the brackets 52, which hold it effectively in grain-tight relation with the outer surface of the plate or door sections 17. It may or may not be locked in place by using the elements 61 to 65, inclusive. When it is desired to unload the car of the grain, the operator pulls out the pin 44, having first broken the seal 46, and thereby releases the handle 42, permitting the same to be swung upwardly sufficiently to free the lower door or plate 33 from the eccentric portions of the shaft 40.

Owing to the pressure of the grain, the door swings down to the position shown in Fig. 7, this travel being limited by the pair of chains 34. The grain, of course, in this position of the door, pours over its top edge and around its end edges. The operator can now lift the door and hang it on the hooks 47, as shown in Fig. 8, permitting a free and unobstructed flow or discharge of the lading through the opening 31. In order to use this car door as an ordinary door is used, for opening and closing the doorway 15 in the car-body side-wall, it is necessary to have both of the supplementary doors 33 and 51 in closed position, as shown in Fig. 1, and, under these conditions, this door may be readily slid on the base 30 of the rail to open position, the upper end of the door being guided in this sliding action by the brackets 66. Of course, in order to effect this sliding opening of the door, it is first necessary to free the member 71 from its companion coöperating member 74, if these parts are used on the car. When the main door is slid back into closed relation with the doorway, the two flanges 68 and 70 engage the wedge plates 67 and 69, the co-operation of these parts tending to move the whole door laterally sidewise into firm engagement with the side wall of the car, thereby preventing any leakage or loss of the lading if the latter is in the form of small particles like grain.

To those skilled in this art it will be apparent that the combination door which I have invented and constructed is of simple form, is economical to manufacture, is not



readily damaged, is strong and rigid, and the parts thereof, owing to their attachment to the main door, cannot become lost or misplaced, as not infrequently occurs with the grain doors ordinarily in use in cars already equipped with doors of a size sufficient and adapted to close the entire doorway. This new style and form of door takes the place of both the main door and the grain doors in ordinary use.

While I have described one particular embodiment of the invention, the latter is not necessarily limited and restricted to the precise and exact features and details of construction described and shown, because the invention is susceptible of a variety of embodiments, and the minor mechanical features of the door herein set forth may be changed and modified within wide limits without departure from the heart or substance of the invention and without the sacrifice of any substantial benefits and advantages.

I claim:

1. In a construction of the character described, the combination of a car door adapted to close the doorway of a railway car, a rail at the bottom of said doorway on which said door is adapted to slide, said door having an opening at its lower edge, and a closure for said opening cooperating with said rail, the latter assisting in maintaining said closure in proper position over the opening, substantially as described.

2. In a construction of the character described, the combination of a car door adapted to close the doorway of a railway car, a rail at the bottom of said doorway on

which said door is adapted to slide, said door having an opening at its lower edge, a closure for said port cooperating with said rail, the latter assisting in maintaining said closure in proper position over the opening, and an eccentric shaft coacting with said closure to hold the same against the door, substantially as described.

3. In a construction of the character described, the combination of a car door adapted to close the doorway of a railway car, a rail at the bottom of said doorway on which said door is adapted to slide, said door having an opening at its lower edge, a closure for said opening adapted to overlap the inside of said rail and at its top edge to overlap the outer side of said door, and means to hold the top portion of said closure against the outer face of said door, substantially as described.

4. In a construction of the character described, the combination of a car door adapted to close the doorway of a railway car, a rail at the bottom of said doorway on which said door is adapted to slide, said door having an opening at its lower edge, a closure for said opening adapted to overlap the inner side of said rail and at its upper portion to overlap the outer side of said door, and an eccentric shaft mounted on the door and adapted to hold the upper portion of said closure against the outer face of the door, substantially as described.

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Witnesses:

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CLARE L. ROSENOW.