F. E. PATTON.

FREIGHT CAR DOOR.

APPLICATION FILED MAR. 24, 1916.

1,193,601.

Patented Aug. 8, 1916.

2 SHEETS—SHEET 1.

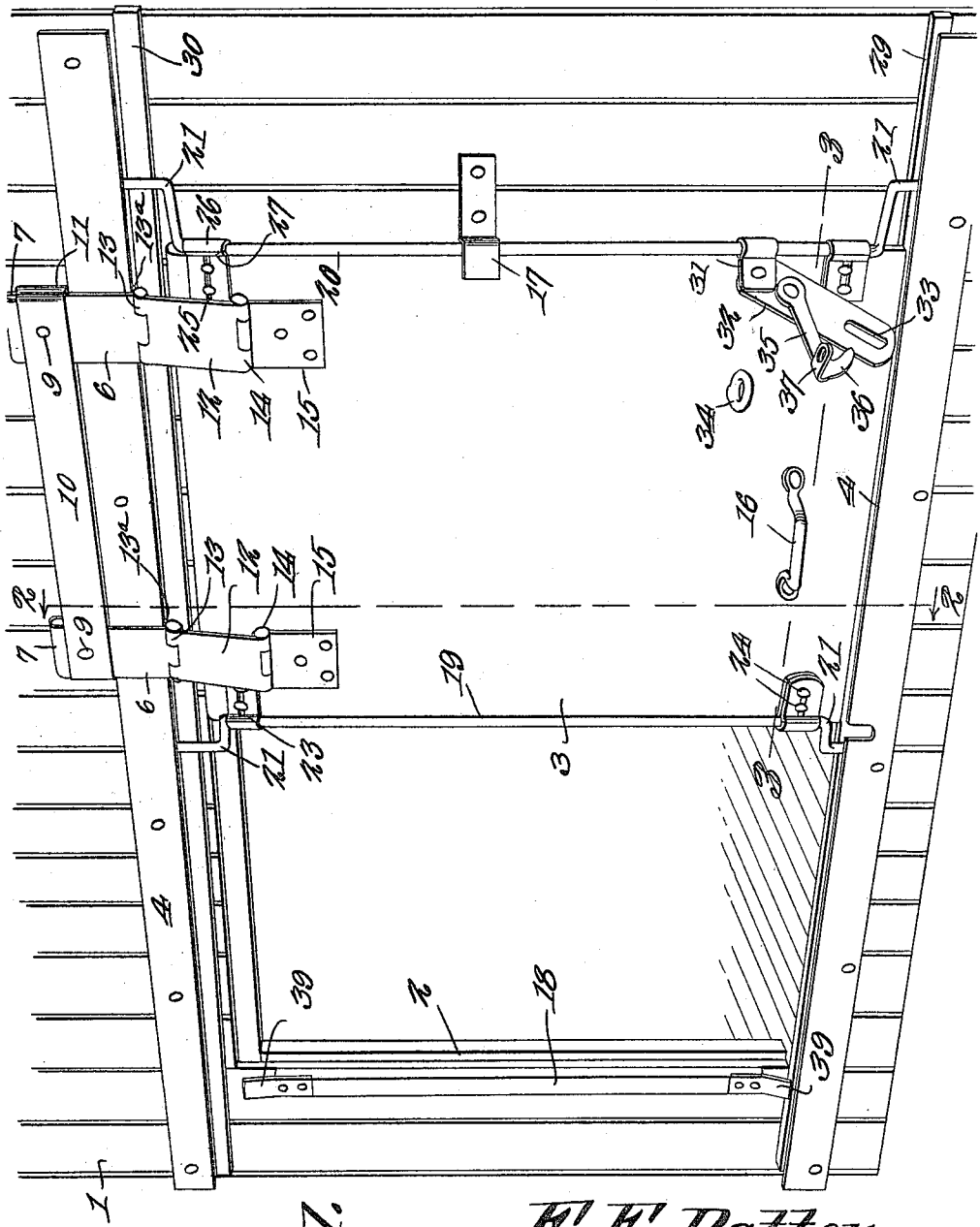


Fig. 1.

Witnesses

J. P. Conein

R. Z. Parker

F. E. Patton

Inventor,

by C. A. Snow & Co.

Attorneys.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

F. E. PATTON.

FREIGHT CAR DOOR.

APPLICATION FILED MAR. 24, 1916.

1,193,601.

Patented Aug. 8, 1916.

2 SHEETS—SHEET 2.

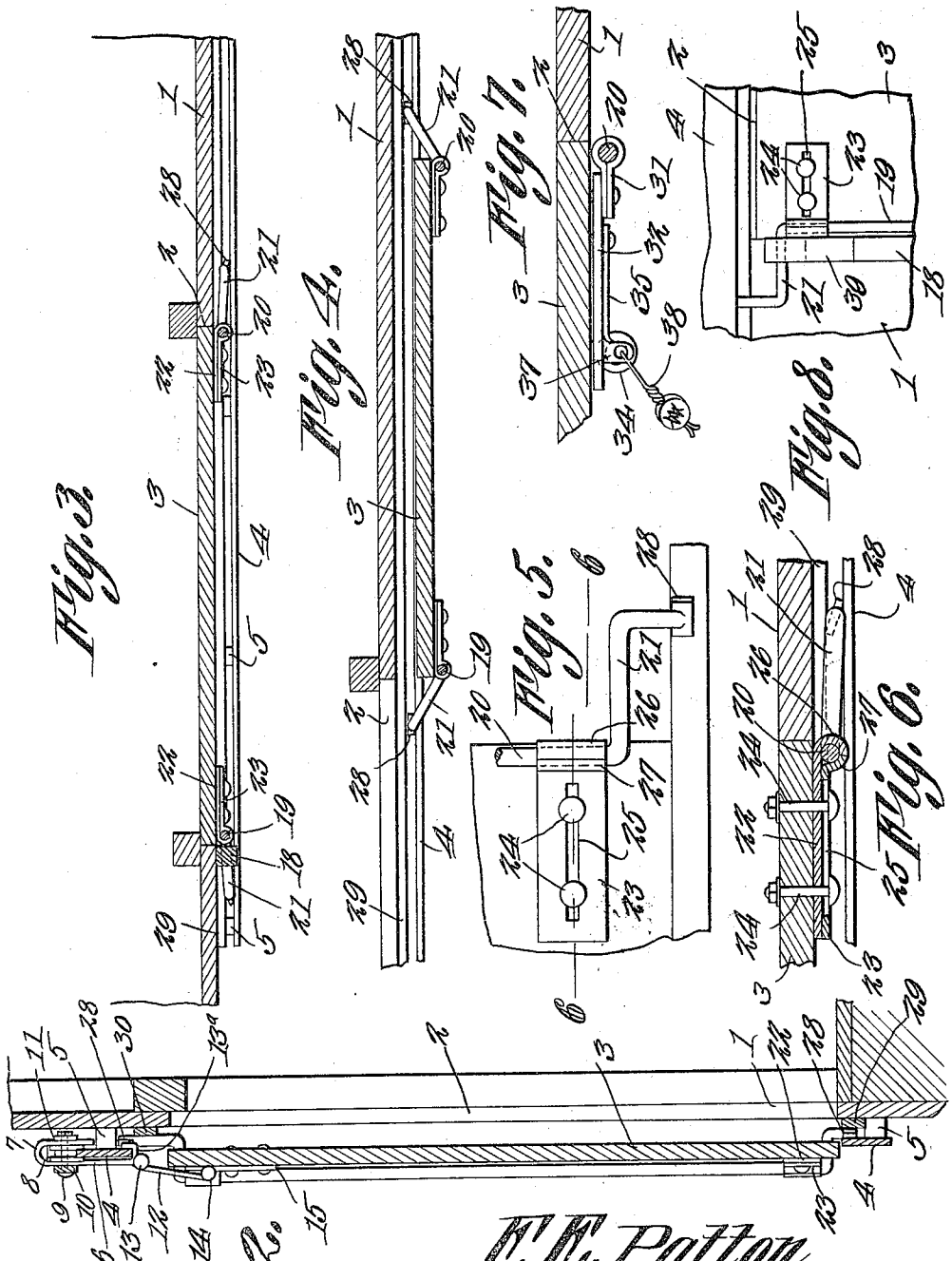


Fig. 3.

Fig. 4.

Fig. 7.

Fig. 8.

Fig. 5.

Fig. 6.

Fig. 2.

Witnesses

J. C. Tumley

R. Z. Parker

F. E. Patton

Inventor,

by C. A. Snow & Co.

Attorneys.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

FRANCIS E. PATTON, OF WILLIAMSPORT, PENNSYLVANIA.

FREIGHT-CAR DOOR.

1,193,601. Specification of Letters Patent. Patented Aug. 8, 1916.

Application filed March 24, 1916. Serial No. 86,442.

To all whom it may concern:

Be it known that I, FRANCIS E. PATTON, a citizen of the United States, residing at Williamsport, in the county of Lycoming and State of Pennsylvania, have invented a new and useful Freight-Car Door, of which the following is a specification.

The present invention appertains to freight car doors, and aims to provide novel and improved means for mounting a sliding door of a freight car or equivalent structure, whereby the door can be moved into the door opening flush with the wall of the car, to provide a tight closure, which is particularly advantageous upon refrigerator cars, and the like.

It is also the object of the invention to provide a door mounting of the nature indicated which is improved generally in its construction and details, to enhance the utility and efficiency thereof, the several parts being readily removed and replaced and the door being readily opened and closed, and sealed.

With the foregoing and other objects in view which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood that changes in the precise embodiment of the invention herein disclosed can be made within the scope of what is claimed without departing from the spirit of the invention.

The invention is illustrated in the accompanying drawings, wherein:—

Figure 1 is a perspective view of the improvements as applied to a freight car. Fig. 2 is a vertical section taken on the line 2—2 of Fig. 1. Fig. 3 is a horizontal section taken on the line 3—3 of Fig. 1, showing the door closed. Fig. 4 is a section on the same line as Fig. 3, but showing the door in open position. Fig. 5 is an enlarged fragmental detail showing one of the cranks and bearing adjacent it. Fig. 6 is a sectional detail taken on the line 6—6 of Fig. 5. Fig. 7 is a detail view illustrating the sealing device for sealing the door in closed position. Fig. 8 is a fragmental elevation showing one of the plates engageable with one of the cranks for moving the corresponding edge of the door into the door opening when the door is closed.

In the drawings, there is illustrated the side wall 1 of a freight car, which can be taken to represent the wall of any structure having the door opening 2 adapted to be closed by a door 3, said door being of such a size as to fit snugly within the opening flush with the surface of the wall 1, whereby to provide a tight fit, to avoid crevices and openings between the door and wall, which is particularly advantageous in refrigerator cars, and the like.

In carrying out the invention, upper and lower longitudinal horizontal rails 4 are secured to the wall 1 above and below the opening 2, and are spaced from said wall by suitable spacers 5. The door 3 is hung from the upper rail 4 by means of a pair of hangers 6, formed from plates of sheet metal, and having their upper ends bent back inwardly, as at 7, to provide housings for the grooved rollers 8 which are mounted for rotation upon bolts or pivot elements 9 engaged through the body portions and bent back portions 7 of the hangers. The rollers 8 engage the upper edge of the upper rail 4 and are disposed near the opposite vertical side edges of the door. It is preferable to connect the two hangers by means of a longitudinal bar 10 overlapping the outer sides of the hangers 6 and having its terminals bent back inwardly, as at 11, and engaged with the inner ends of the bolts 9, said bolts also engaging through the body portion of said bar, whereby to provide a rigid hanger frame. Links 12, constituting flat plates, have their upper ends hinged, as at 13, to the lower ends of the hangers 6, and the lower ends of said hangers have hooks or reflexed ears 13^a engaging the lower edge of the rail 4, to hold the hangers properly assembled with said rail. The links 12 depend from the hangers, and have hinged, as at 14, to their lower ends, plates 15 which are secured in any suitable manner to the inner face of the door 3 near the upper end thereof. The door is thus hung from the hangers 6 through the medium of the links 12, whereby the door can be moved toward and away from the plane of the wall 1, said door being disposed between the upper and lower rails 4, and also being movable longitudinally toward and away from the opening 2 since the hangers 6 can travel along the upper rail 4.

A handle 16 is attached to the outer surface of the door 3 to enable the door to be moved to and from the opening 2, and a removable stop 17 is attached to the wall 1 to

limit the opening movement of the door when it is moved away from the opening 2. A vertical stop strip 18 is secured to the wall 1 adjacent one edge of the opening 2 to limit the movement of the door when it is moved across the opening.

As a means for guiding the door, a pair of vertical rods 19 and 20 are carried by the door adjacent the side edges thereof, and are mounted for oscillatory or rocking movement, the upper and lower ends of said rods having cranks 21 projecting away from the center of the door and having their terminals extending behind the rails 4. A pair of bearings are attached to the door adjacent each side edge thereof and adjacent the upper ends of the door, for carrying the rods 19 and 20, and each bearing embodies a plate 22 resting against the outer face of the door, and a plate 23 resting against the plate 22, said plates being attached to the door by means of bolts or other securing elements 24. The outer plate 23 has a longitudinal slot 25 receiving said bolts, whereby when the bolts are loosened, the plate 23 can be slid longitudinally of itself either toward or away from the respective edge of the door. That end of the plate 22 adjacent the edge of the door has a hook 26 extending through an arc of over 180 degrees, and the corresponding end of the plate 23 is provided with an arcuate lip 27 complementing the hook 26, and providing the bearing proper in which the rod 19 or 20 is journaled for rotation. The terminals of the cranks 21 which project behind the rails are flattened, as at 28, and said flattened portions 28 are so arranged that when the door is moved away from the wall 1, the portions 28 can move easily behind the rails, and when the door is moved into the opening 2 flush with the wall 1, the flattened portions 28 bind against the rails, to assist in holding the door in place, and to avoid the rattling of any of the corresponding parts. A longitudinal wear strip 29 is secured to the wall 1 behind the lower rail 4, and the flattened portions 28 of the lower cranks 21 work between the lower rail and wear strip 29, and a similar wear strip 30 is secured to the wall 1 adjacent the upper rail 4, and the upper cranks 21 bear against said strip 30.

As a means for conveniently and effectively sealing the door in closed position, a radially projecting tongue 31 is attached to the rod 20, and has pivoted thereto a hasp 32 whose slot 33 is engageable with a keeper 34 outstanding from the door 3. A latch 35 is pivoted to the hasp 32 and has a bill or hook 36 insertible downwardly through the aperture of the keeper 34, and the latch 35 has an outstanding apertured ear 37 above the bill 36 for receiving a suitable car seal 38 which is also passed through the keeper 34, whereby to prevent the opening of the car door, without breaking the seal.

Plates 39 are secured to the ends of the stop strip 18 and project therefrom for the engagement of the cranks 21 of the rod 19, and said plates 39 are so arranged that when the door 3 is moved into place across the opening 2, the cranks 21 of the rod 19, which are obliquely disposed, in engaging behind the plates 39 will be moved toward the wall 1, thus moving the adjacent edge of the door into place adjacent the respective edge of the opening 2.

When the door 3 is opened, it is moved away from the wall 1, thereby moving the rods 19 and 20 away from the wall 1, and causing the cranks 21 to assume an oblique position, as seen in Fig. 4, the door being readily slid to and from the door opening. The cranks 21 are preferably arranged to engage the edges of the door, to limit the outward movement of the door away from the wall 1. Now, when the door 3 is moved across the opening 2 to close said opening, the cranks 21 of the rod 19 engaging behind the plates 39 will be forced toward the wall 1, thus moving the respective edge of the door into place adjacent the corresponding edge of the opening 2. The hasp 32 is now swung toward the door 3, thus swinging the rod 20 and its cranks 21, to force the respective edge of the door 3 into the opening 2, and at the same time, the hasp 32 is engaged with the keeper 34. The latch 35 is then engaged with the keeper, and the seal 38 is applied to the keeper 34 and the ear 37, which will prevent the latch 35 from being released, and which will therefore prevent the hasp 32 from being swung away from the keeper 34 without breaking the seal. Thus, when the door is closed, it is moved into the opening 2 flush with the wall 1, to provide a tight fit, which is highly desirable in refrigerator cars, and the like. To open the door, after the seal is broken, the latch 35 is released from the keeper, which allows the hasp 32 to be swung away from the door. This action will rotate the rod 20 whereby to swing the cranks 21 thereof, which will force the respective edge of the door 3 out of the opening 2 and away from the wall 1, whereby the door can be slid away from the opening 2, and as the cranks 21 of the rod 19 leave the plates 39, the entire door will move away from the wall 1 as the door is moved to open position, as seen in Fig. 1. When the door is closed, the rods 19 and 20 being rotated by the inward movement of the door, will cause the flattened portions 28 to bind against the rails 4, thus avoiding the rattling of said rods, and serving to hold the corresponding parts firmly in place. The lower flattened portions 28 bind between the lower rail 4 and wear strip 29, and the upper cranks 21 in bearing against the wear strip 30 will

cause the upper flattened portions 28 to grip the upper rail 4, but when the door is moved away from the wall 1, the flattened portions can move freely along the rails. For this reason, the flattened portions 28 are arranged at an acute angle relative to the cranks 21, as seen in Figs. 4 and 6.

The salient feature of the invention is the utility with which the various parts can be removed and replaced. When the stop 17 is detached, the door together with the rods 19—20 and hangers 6 can be readily removed longitudinally from the rails or track. When it is desired to remove the hangers 6 without removing the door, certain of the hinge pins of the links 12 can be withdrawn, which will at once permit the hangers 6 to be removed from the upper rail 4. When it is desired to remove the rods 19—20, without removing the door, this can be done by loosening the bolts 24, and moving the plates 23 away from the hooks 26, whereby spaces are provided between the hooks 26 and lips 27 for the removal of the rods. The parts can be readily replaced as will be apparent.

Having thus described the invention, what is claimed as new is:

1. The combination with a wall having an opening, of a door adapted to fit in said opening, oscillatory vertical rods carried by the door adjacent the side edges thereof and having cranks at their ends, and upper and lower guiding means for the terminals of said cranks, said guiding means and cranks being so constructed that when the door is moved away from said wall the cranks are slidable freely along said means and when the door is moved within said opening a binding action is produced between said cranks and means.

2. The combination with a wall having a door opening, of upper and lower rails attached to said wall, a door between said rails adapted to fit in said opening, hangers engaging the upper rail, means connecting said hangers and door for permitting said door to be moved to and from said wall, oscillatory vertical rods carried by the door adjacent the edges thereof and having cranks at their ends whose terminals extend behind the rails, means carried by the wall adjacent one edge of said opening to engage the cranks of one rod and move them toward said wall, and a member attached to the other rod for rotating it and adapted to be held against the door by a seal.

3. The combination with a wall having a door opening, of upper and lower rails attached to said wall, a door between said rails adapted to fit in said opening, hangers engaging the upper rail, means connecting said hangers and door and permitting said door to be moved to and from said wall, oscillatory vertical rods carried by the door adjacent the edges thereof and having cranks at their ends whose terminals extend behind the rails, a stop strip carried by the wall adjacent one edge of the opening, plates attached to the ends of said strip and so arranged that the cranks of one rod engage behind said plates, when the door is moved against said stop strip to force said cranks and corresponding edge of the door toward said wall, a keeper carried by the door, and a hasp attached to the other rod to swing against the door and engage said keeper.

4. The combination with a wall having an opening, of upper and lower rails attached to the wall, a door between said rails adapted to fit in said opening, hangers engaging the upper rail, means connecting said hangers and door to permit the door to be moved to and from said wall, strips behind said rails, and vertical oscillatory rods carried by the door adjacent the edges thereof and having cranks whose terminals project between the rails and strips, said terminals being flattened and arranged to bind against the rails when the door is moved into the opening.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

FRANCIS E. PATTON.

Witnesses:
E. E. HOLTER,
C. W. KELLER.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."