

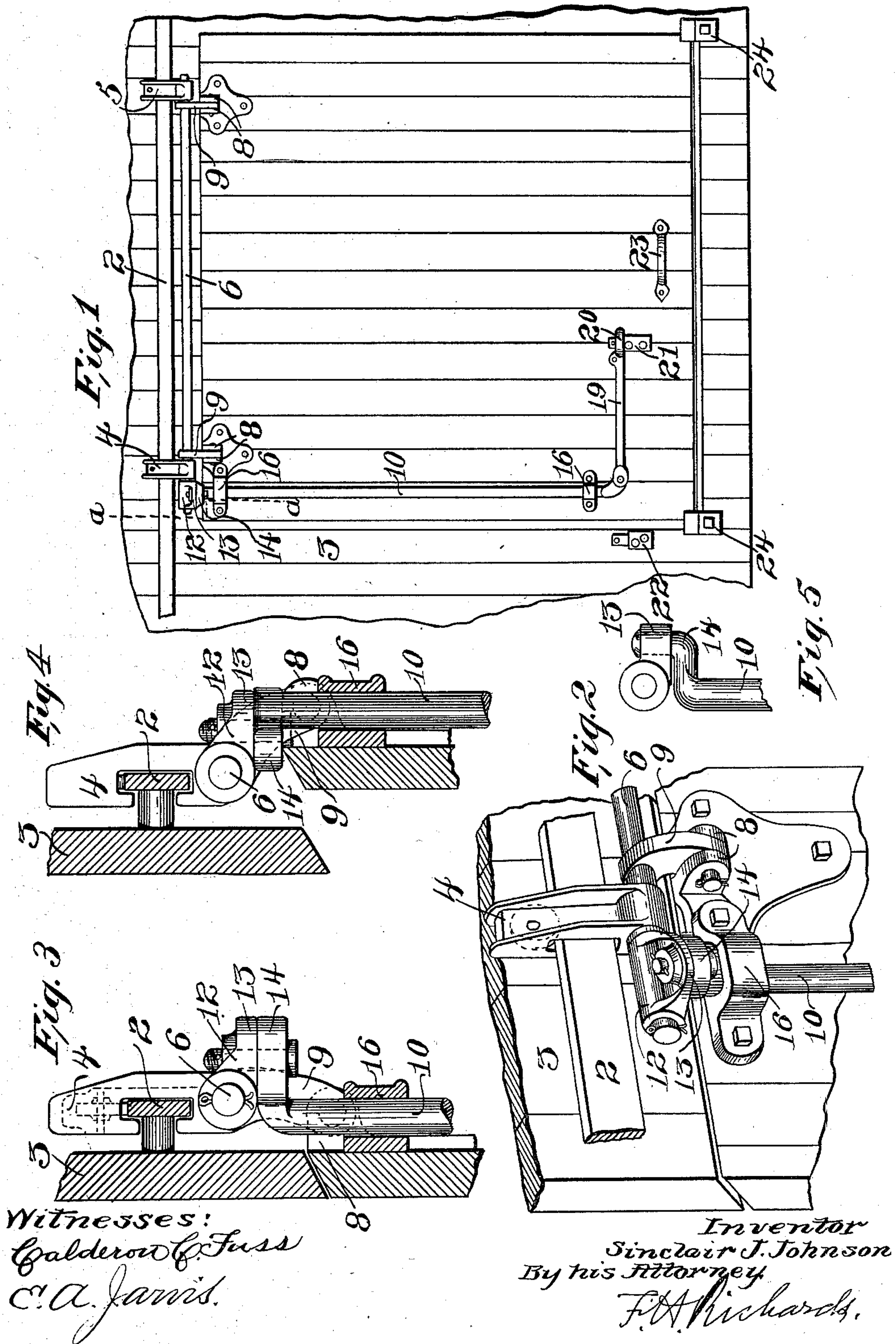
No. 732,947.

PATENTED JULY 7, 1903.

S. J. JOHNSON.
CAR DOOR.

APPLICATION FILED MAY 11, 1903.

NO MODEL.



UNITED STATES PATENT OFFICE.

SINCLAIR J. JOHNSON, OF MONTCLAIR, NEW JERSEY.

CAR-DOOR.

SPECIFICATION forming part of Letters Patent No. 732,947, dated July 7, 1903.

Application filed May 11, 1903. Serial No. 156,544. (No model.)

To all whom it may concern:

Be it known that I, SINCLAIR J. JOHNSON, a citizen of the United States, residing in Montclair, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Car-Doors, of which the following is a specification.

This invention relates to doors, and more particularly to that class thereof known as "freight-car doors," it especially relating to the operating mechanism thereof, the object of the invention being to provide improved mechanism by means of which the door, especially when set into the doorway, can be quickly and readily shifted into position to permit it to be moved away from the doorway.

A further object of the invention is to provide a simplified organization of operating means effective to move the door outwardly and thereby upwardly without the exertion of any power in the direction of the plane of the door.

In the drawings accompanying and forming part of this specification, Figure 1 is a side view of a part of a car-body, showing this improved door-operating mechanism. Fig. 2 is an enlarged perspective view of a part of said mechanism. Figs. 3 and 4 are sectional views taken in line *a a*, Fig. 1, the door being shown closed in Fig. 3 and moved out in Fig. 4; and Fig. 5 is a view of a somewhat different form of actuator from that shown in the other views.

Similar characters of reference indicate corresponding parts in the different figures of the drawings.

In my Patent No. 709,270, dated September 16, 1902, the rock-shaft actuator is shown supported by the hanger and comprises a two-part shaft jointed to form a hinge, so that when desired the door may be swung out from the bottom. In that structure when the actuator 16 was moved so that the flat side of the part 15 was in parallelism with the door it was not possible to swing the door out from the bottom; but in the present structure the door may be swung out from the bottom no matter what the position of the actuator may be. Moreover, by means of the present operating means the door is somewhat better controlled for certain kinds of cars than with the patented organization, while at the same time I have been able to very much simplify the

mechanism, still retaining many of the advantages resulting from the organization hereinbefore referred to—that is to say, by the present mechanism the door-supporting means can still be located above the door, so that all damage thereto is avoided by the backing of wagons against the car, as would be the case were such mechanism located at the bottom or sides of the door. The door can still be shifted upwardly into position to be moved sidewise, whereby it to a certain extent locks itself if closed by its own weight, so that its tendency is to remain shut, which is not the case when the door is supported at the bottom or sides or when movable outward and downward, and whereby also when freight becomes displaced or is jammed against the door it can be more readily moved upward than moved downward, since such downward movement tends to increase the binding effect of the freight, especially as the car-floor prevents the movement of the freight with the door. In practice with doors as ordinarily supported it is frequently necessary to cut into the door in order to get at the freight and relieve it from its binding position against the door, into which position it may have become wedged. This binding effect is overcome by moving the door upwardly, since such upward movement acts to carry the freight away from the floor, and so shift it sufficiently to enable the door to be opened, whereas when the door is moved in the opposite direction the freight is only wedged more firmly against the door and the floor of the car. Furthermore, by having the door shifted outwardly and upwardly the manipulation of the lower end of the door is accomplished with much less labor than is the case when the door is shiftable outwardly and downwardly. Moreover, the advantage of being able to swing the door outwardly from the bottom thereof is still permitted by the present mechanism.

From the foregoing it will thus be seen that by the present organization of mechanism I am able to retain all of the advantages resulting from the organization of mechanism hereinbefore referred to, while also securing certain additional advantages, as well as simplifying the organization.

As a preface to a further description of this improved door-operating mechanism I desire

to state that this improvement may be used with all kinds of freight and box cars, such as refrigerator-cars, &c., and can also be used in connection with structures other than freight-cars, if so desired, so that the term "car-body" as used herein and in the claims is not to be construed as a limitation to structures of that class. Furthermore, the various details of mechanism may be more or less modified or departed from without departing from the scope of the invention.

This improved mechanism comprises in a general way a track supported by the car-body, means shiftable thereon to carry the door sidewise or laterally away from the doorway, means connecting such shiftable means with the door and effective to permit the door to be shifted outwardly and simultaneously with such movement moved in the plane thereof, so as to permit such sidewise or lateral movement of the door away from the doorway, and actuating means supported by the connecting means and effective to exert power upon the door to force the same outward from its side and whereby such door is moved upward without the exertion of power in the direction of the plane of the door. In the preferred form thereof herein shown and described a track 2 is secured to the car-body 3 above the doorway, and upon this track is located the means by which the door is shifted sidewise, and which means is in the form of hanger mechanism, comprising in the present instance a pair of hangers 4 and 5, which in practice I usually provide with rollers engaging the track. These hangers are so constructed that their coming off of the track is prevented. The hangers 4 and 5 are located relatively remote to each other, one preferably adjacent to each upper corner of the door, and are connected to the door by suitable connecting means, which may be in the form of a crank or rock shaft mechanism. In the present instance this connecting-means is in the nature of a rock-shaft mechanism 6. To facilitate this connection, the door is provided with a pair of plates, each having ears 8, to each pair of which ears is bolted or pivoted an arm 9 of the rock-shaft 6, the ends of such shaft extending into the hangers, in which they are suitably journaled. One end of the rock-shaft—that end shown at the left-hand side of the door—extends a suitable distance beyond the hanger and constitutes a support for the upper end of the operating-shaft. The operating-shaft, which is in the form of a rock or crank shaft 10, is carried by a member 12, loosely sleeved and secured in position upon the extended end of the connecting rock-shaft 6, and has a projecting part 13, provided with an opening, to which is pivoted, by means of a suitable pivot or bolt, a corresponding projecting part 14 of the actuating-shaft and which thereby forms the crank in the form shown in Figs. 1, 2, 3, and 4, this crank-arm and pivot being in the form shown in Fig. 5 integral with the shaft. This actuating-shaft is secured to

the door by a pair of keepers 16, the upper one of which has an elongated slot, while the lower one constitutes a pivotal bearing for the shaft. The lower end of the actuator has pivoted thereto an arm or bar 19, provided with a loop-eye 20 for the reception of projections 21 and 22, carried by plates secured to the door and by means of which the operating-shaft is maintained in its shifted positions. The door is provided with a suitable handle 23 for pulling the bottom thereof outwardly. For maintaining the door in its position in the doorway suitable flanged projections 24 are provided which cooperate with a bar, usually flanged, carried on the inside of the door, adjacent to the bottom thereof.

When it is desired to shift the door sidewise, the operating-shaft is turned or rotated, whereby it moves bodily and longitudinally in the slots of the keepers, having cam action relatively to the door, thereby shifting the door outwardly, simultaneously to which the door is moved upward, since the supporting rock-shaft, which is of an integral structure, prevents movement in other directions. From this it will be seen that by the bodily movement of the operating-shaft without any positive linkage connection between such shaft and the rock-shaft connecting means the door is moved outward and upward without the exertion of power in the direction of the plane of the door. When it is desired to swing the door outward from the bottom, this can be readily done, as will be seen, no matter what the position of the operating-shaft may be, since the sleeve being loosely mounted upon the rock-shaft acts as a hinge.

In the present instance it will be noted that the projection 21 is located somewhat nearer the doorway than is the projection 22 on the door. The length of the bar or arm 19 is such that in order to have the projection 21 engage thereby it is necessary that the door be moved laterally on its track a certain distance, whereby the door may be maintained partially open to ventilate the car.

Having thus described my invention, I claim—

1. The combination with a car-body having a doorway and a door, of a track secured to said body above the door, hangers shiftable mounted on said track, integral means connecting the hangers with the door and effective to cause the movement given to the door to be applied at both ends to shift the door outwardly and upwardly, a shaft having a crank connection at its upper end directly with such integral means, and a pivotal bearing adjacent to its lower end with the door, and means carried by the door and against which the shaft has a cam-bearing in the motion imparted by the crank operating to shift the door toward and from its jamb.

2. The combination with a car-body having a doorway and a door, of a track fastened to said body above the door, hanger mechanisms shiftable mounted upon the track, integral

means connecting the hanger mechanism with the door and effective to cause the movement given to the door to be applied at both ends to shift the door outward and upward, a shaft 5 having a crank connection directly with such integral means at its upper end, and means carried by the door and against which the shaft has a cam-bearing in the motion imparted by the crank operating to shift the 10 door toward and from its jamb.

3. The combination with a car-body having a doorway and a door, two independent mechanisms located and operative in directions transverse to each other and free of positive 15 linkage connection, one a mechanism connecting the door with the car-body adjacent to each end of such door for simultaneous movement of both ends outward and upward, and the other an actuating mechanism supported from said connecting mechanism and 20 having a cam action relative to the door and effective to move the door outwardly, the organization being such that on the movement of the door outwardly by its actuating means it is moved upward. 25

4. The combination with a car-body having a doorway, of a door therefor, a pair of rock-shaft mechanisms located and operative in directions transverse to each other and free 30 of positive linkage connection, one supporting the door adjacent to each end thereof for simultaneous movement of both ends outwardly and upwardly and the other having a cam action relative to the door and supported on said connecting rock-shaft and effective to 35 move the door outwardly, the organization being such that on the movement of the door outwardly by its actuating means it is simultaneously moved upward.

5. The combination with a car-body having a doorway of a door set therein, a track carried by said body, hangers mounted on said track, two independent mechanisms located and operative in directions transverse to each 45 other one connecting the door adjacent to each end thereof with said hangers for simultaneous movement of both ends outwardly and upwardly, and the other supported at its upper end on said connecting mechanism 50 and having a cam action relative to the door thereby to shift the door outwardly from its seat, the organization being such that on the movement of the door outwardly it is simul-

taneously moved upwardly and without the exercise of power in the direction of the plane 55 of the door.

6. The combination with a car-body having a doorway, of a door therefor, a track supported on said body, means shiftable on said track, a shaft connecting the door with said 60 shiftable means; a crank-formed actuator secured to the door and having during its movement an appreciable bodily movement relatively to the door, thereby to move such door outwardly, the upper end of such actuator being supported directly from said shaft 65 the organization being such that during the outward movement of the door it is moved upward.

7. The combination with a car-body having a doorway, of a door fitting flush therein, a track carried by said body above the door, a pair of hangers mounted upon said track, a shaft mounted in said hangers and having 70 arms connected with the door, a sleeve loosely mounted upon said shaft, an actuator having its upper end supported by said sleeve, and organized so that it has a cam action relatively to the door whereby the door is moved 80 outwardly and simultaneously with this outward movement it is shifted upward, and whereby also by means of such sleeve the door may be swung from its bottom in whatever position the actuator may be.

8. The combination with a car-body having a doorway, a door fitting flush therein, a track 85 carried by said body, a pair of hangers mounted upon said track, a shaft carried by said hangers and having arms connected with the door, a sleeve loose upon said shaft and having 90 a projecting part, an actuator having its upper end connected with said sleeve and rotatable relatively thereto, a slotted keeper secured to the door and through which said actuator extends, the organization being such 95 that the actuator has a cam action relatively to the door and on the operation thereof the door is moved outwardly whereby it is simultaneously moved upward, such sleeve permitting the door to be swung out from the bottom. 100

Signed at Nos. 9 to 15 Murray street, New York, N. Y., this 6th day of April, 1903.

SINCLAIR J. JOHNSON.

Witnesses:

JOHN O. SEIFERT,
FRED. J. DOLE.