

C. J. JOHNSON.
GRAIN CAR DOOR.
APPLICATION FILED OCT. 12, 1911.

1,038,148.

Patented Sept. 10, 1912.

2 SHEETS—SHEET 1.

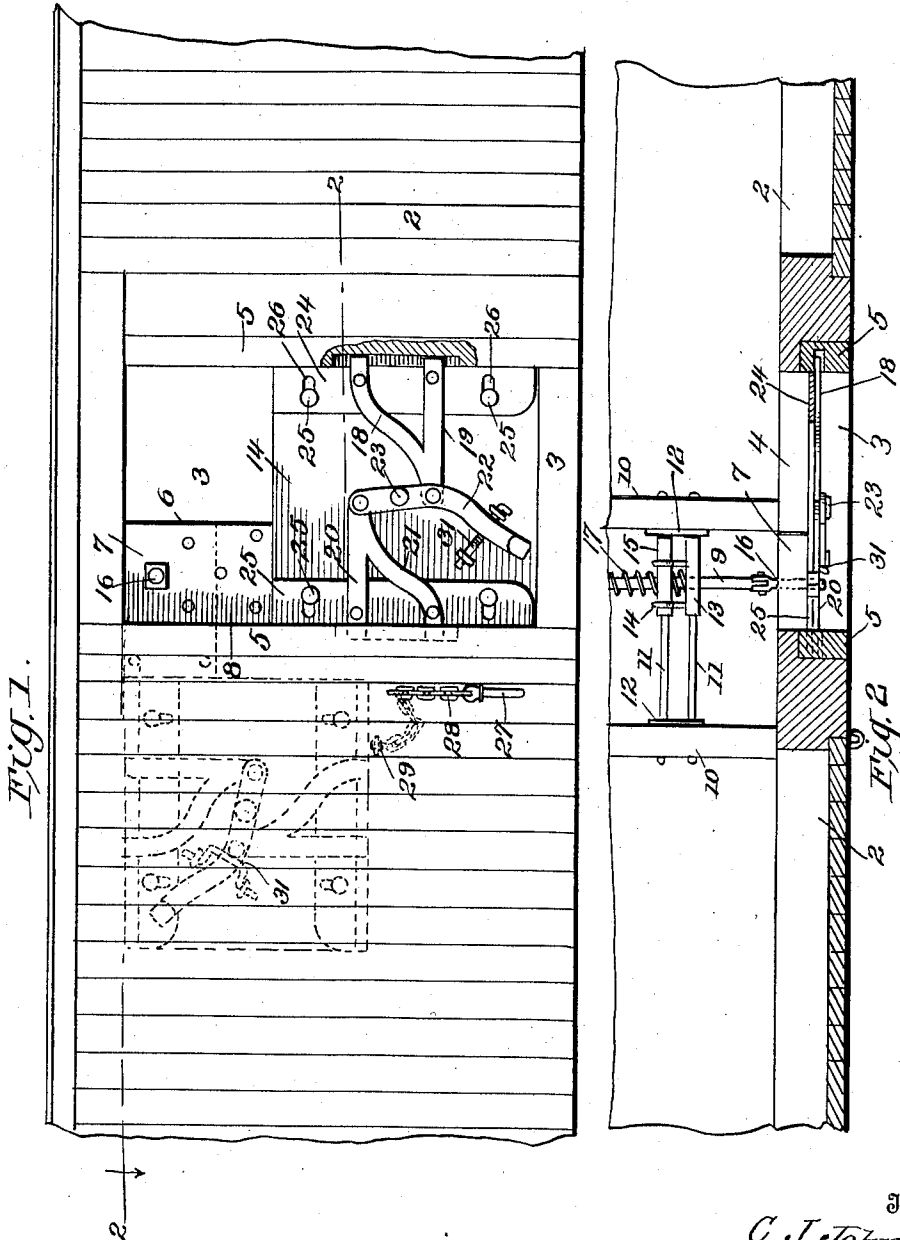


Fig. 1.

Fig. 2.

Witnesses
Edward Espey
Juana H. Tallin

By

A. M. Tracy, Attorney.

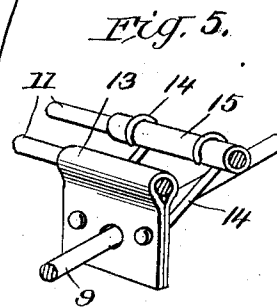
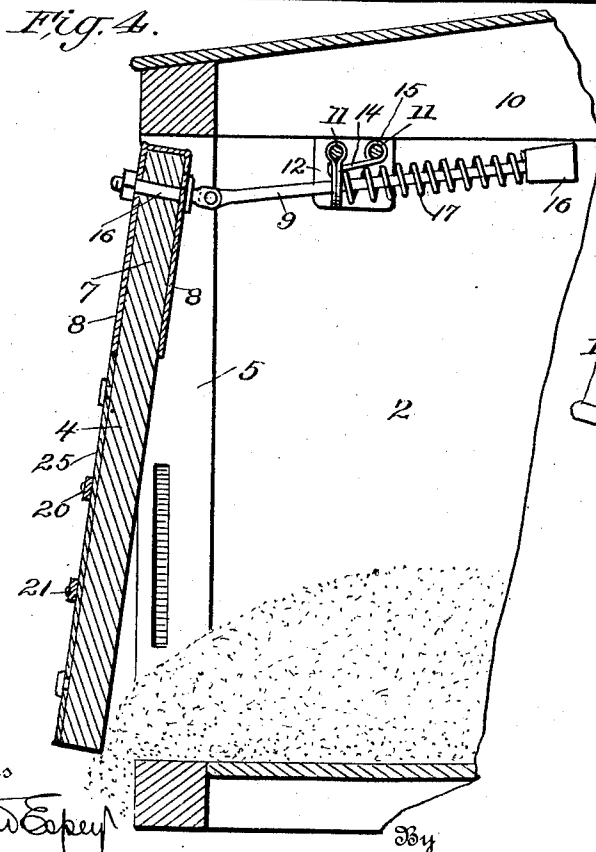
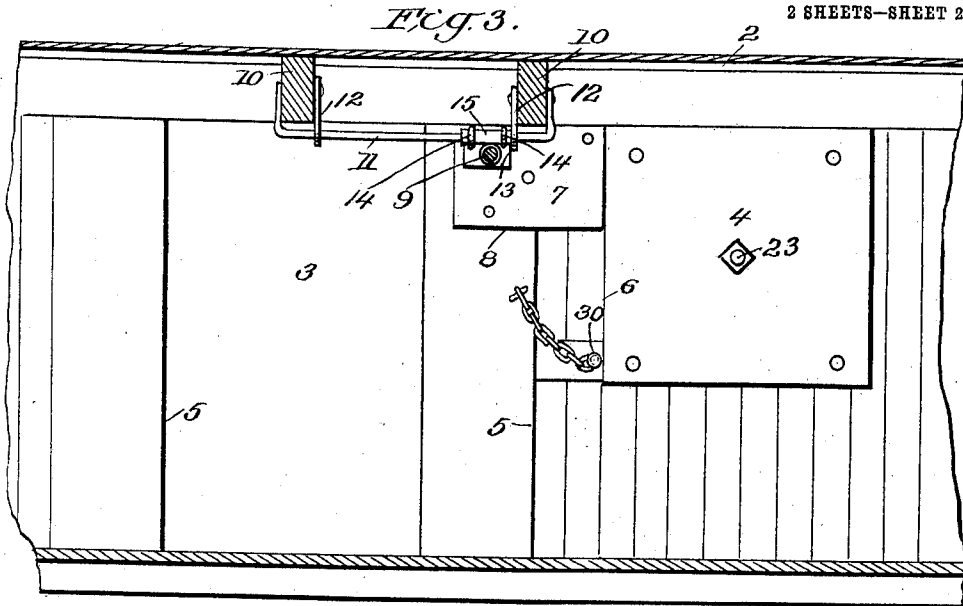
Inventor
C. J. Johnson

C. J. JOHNSON.
GRAIN CAR DOOR.
APPLICATION FILED OCT. 12, 1911.

1,038,148.

Patented Sept. 10, 1912.

2 SHEETS—SHEET 2.



Witnesses
Herman E. Epp
Juana H. Fallon

Inventor
C. J. Johnson

A. W. Macy Attorney.

UNITED STATES PATENT OFFICE.

CHRIST J. JOHNSON, OF CLEAR LAKE, WISCONSIN, ASSIGNOR OF ONE-HALF TO FRANK J. BRANDL, OF CLEAR LAKE, WISCONSIN.

GRAIN-CAR DOOR.

1,038,148.

Specification of Letters Patent.

Patented Sept. 10, 1912.

Application filed October 12, 1911. Serial No. 654,388.

To all whom it may concern:

Be it known that I, CHRIST J. JOHNSON, citizen of the United States, residing at Clear Lake, in the county of Polk and State of Wisconsin, have invented certain new and useful Improvements in Grain-Car Doors, of which the following is a specification.

My invention relates to railroad cars and particularly to doors of grain cars.

The primary object of my invention is to provide a very simple, effective and convenient door for the purpose of closing a door opening of a grain car, and to provide in connection therewith, means whereby the door may be locked in position.

A further object is to provide a grain car door so mounted that when its locking mechanism is released, the pressure of the grain will cause the door to swing outward.

A further object is to provide a door of this character so mounted that it may be swung upon a pivot in a plane parallel to the side of the car, and either upon the inside of the car or upon the outside thereof, and held in such position.

A further object is to provide a door which is both pivotally and hingedly supported so that it may be swung upon its hinge either outward or inward and rotated upon its pivot from a position where it closes the car door opening to a position where it is supported entirely free from said opening, or vice versa.

A further object is to provide in connection with the locking device heretofore referred to, strips movable with the locking device into engagement with the wall of the door opening, said strip acting to seal the space between the edge of the door and the door opening.

Further objects will appear in the course of the following description.

My invention is illustrated in the accompanying drawings, wherein:

Figure 1 is a side elevation of a portion of a car provided with my improved grain door; Fig. 2 is a longitudinal sectional view of one side wall of the car showing the door and its operating mechanism and plan; Fig. 3 is a longitudinal, vertical, fragmentary section through a car and showing the grain door in an elevated position inside of the car; Fig. 4 is an enlarged vertical section taken transversely of the length of the

car through the door opening showing my improved grain door after the bolts have been released and the grain acts to force the lower portion of the door outward; and, Fig. 5 is a perspective view of the carrier.

Corresponding and like parts are referred to in the following description and indicated in all the views of the accompanying drawings by the same reference characters.

Referring to these drawings, 2 designates a car of any ordinary type and formed with a door opening 3. This opening is ordinarily closed by a sliding door, which, however, is not shown as it forms no part of my invention. This door I will hereafter designate as the main door, and the door 4 as the supplementary or auxiliary door. The auxiliary door 4 fits within the jams 5 of the door opening, but is cut away at its upper end as at 6 so as to provide an opening through which grain may be filled into the car. By cutting away the upper portion of the door as at 6, an upwardly projecting extension 7 is left through which the support for the door passes. This upward extension at the upper left hand corner of the door is preferably reinforced by a U-shaped strip of metal 8. A supporting arm 9 passes through the extension 7 and the protecting strip 8 and forms the means whereby the door is supported. This supporting arm 9 is preferably weighted at its inner end so as to counterbalance the door and is mounted upon a slide disposed within the car and movable upon longitudinally extending tracks.

In detail this construction is as follows. Attached to the transverse beams 10 of the car are the longitudinally spaced track members 11 having the form of rods supported in hangers 12. Mounted on these track members is a carrier 13 comprising a plate embracing one of the track members and depending below the same, said plate being braced by upwardly extending hook-shaped members 14 bent around a sleeve 15 fitting the other track member. Through the depending plate 14 of this carrier passes the rod 9 which constitutes the arm for supporting the door. This rod 9 at its inner end is provided with a counter-weight 16 and at its outer end the rod has a hinged engagement with a bolt 16 which passes through the prolongation 7 of the door. This bolt 16 constitutes, it will be seen, an

extension of the arm. The rod or arm 9 is rotatable in the carrier 13 and thus the door may be rotated in planes parallel to the side of the car. As the door is hinged to the exterior end of the rod or arm 9, the door may be swung in a plane at right angles to the side of the car. It will be seen that the carrier may be shifted on the track member 11 into a position in alinement with the door opening or out of such position. A spring 17 acts to draw the door inward and yields to permit the door to be forced out of the door opening.

The locking devices by which the door is held locked within the doorway, consists of two pairs of bolts operated by a lever. The bolts are designated 18 and 19, 20 and 21. One pair of bolts operates to engage one of the jambs of the door while the other bolts operate to engage the other jamb. The lever 22 is pivoted to the door 4 by means of a bolt 23, in any suitable manner, and pivotally attached to the upper end of the lever 22 are the pair of bolts 20—21, and pivotally attached to the lever 22 below the pivot bolt 23 is the pair of bolts 18—19. The jambs 5 of the door opening are recessed or slotted to permit the engagement of the bolts 18—19, and 20—21 with the door jambs to lock the door in position. It will be seen that when the lever 22 is shifted into one position, both pairs of bolts will be projected, and when the lever is shifted into the opposite position, both pairs of bolts will be retracted.

As a means for guiding the bolts and also as a means for sealing the space between the edge of the door and the adjacent door jamb when the bolts are in their projected position, I provide the sliding plates 24—25. These extend the full length of the door at opposite lateral margins and are slidably mounted upon the door by means of bolts 25^a passing through slots 26 in the plates. The bolts 18—19 are pivotally connected to the plate or strip 24, while the bolts 20—21 are pivotally connected to the strip 25. When the lever 22 is moved so as to project the bolts, the strips 24—25 will be forced outward into engagement with the jambs of the door, and when the bolts are retracted, these strips 24—25 will be drawn inward. When the strips are drawn inward, the door may be easily shifted either inward or outward through the door opening.

In the practical operation of my invention, before the car is filled with grain the auxiliary door 4 is put in position in the door opening 3 and locked by shifting the lever 22 to the right, thus projecting the bolts, the car is then filled and after it is filled to the desired amount the main door is closed as usual. When it is desired to unload the car the lever 22 is shifted in the reverse direction to that above described so

as to retract the bolts 18—19 and 20—21 and retract the sealing strips 24—25. The pressure of the grain within the car will now tend to force the lower end of the door outward, the door swinging upon its hinge 16. The door may either be simply allowed to swing outward upon the hinge 16 or it may be drawn outward against the force of the spring 17 until the inner face of the door 4 is slightly beyond the outer face of the side of the car. Under these circumstances the door may be swung upon the bolt 9 into the position shown in dotted lines in Fig. 1, and the door may be supported in this position by means of a pin 27 permanently attached by a chain 28 to the side of the car, this pin being insertible through an opening 29 in the car side, and when so inserted, it will act to hold the door in the position shown in dotted lines in Fig. 1. After the grain has been discharged from the car, the door may be again reinserted into its original position, or if it is desired to use the car for other purposes than carrying grain, the door is pushed inward, the rod or arm 9 sliding through the carrier 13 to this end until it is entirely within the car, and it may then be rotated around its pivotal axis and brought to the position shown in Fig. 3, it being supported in this position by a pin 30 which is insertible into a socket or perforation 31 for the purpose. It will be seen that in this situation the door occupies space only equal to its thickness and leaves the interior of the car practically free from obstruction.

It will be seen that a door as before described is free to swing outward and inward upon its hinges and is also free to be rotated in planes parallel to the plane of the side of the car; it is free to be shifted inward or outward in a plane at right angles to the side of the car or to be shifted longitudinally in a plane parallel to the side of the car. It will also be seen that I have provided very efficient and simple locking means whereby the door may be locked into the door opening and that I have provided means whereby the door may be held either upon the outside of the car or supported upon the inside of the car. While I do not wish to limit myself to any particular means for holding the lever 22 in such position as to project the bolts 18—19 and 20—21, I have shown for this purpose, a latch 31 mounted upon the face of the door 4, this latch being rotatable either into a position where it will prevent the movement of the lever 22 or out of such position.

It will be obvious that many changes might be made in the details of the construction without departure from the spirit of my invention and I therefore do not wish to be limited to the process or details as I have shown what I believe to be the preferable

form of my invention, but it will be obvious that the particular details of the track and the particular detailed construction of the supporting bar or arm 9 may be changed in many respects without affecting the principle of my device.

Having thus described the invention what is claimed is:

1. The combination with a car door, of supporting means therefor shiftable transversely of the car to carry the door into or out of the door opening, said door being rotatable in planes parallel to the side of the car.

2. The combination with a car having a door opening and a car door therefor, of supporting means shiftable transversely of the car to carry the door into or out of the door opening and longitudinally movable with relation to the car, said door being rotatable in planes parallel to the side of the car.

3. The combination with a car having a door opening and a door therefor, of rotatable supporting means for the door shiftable with the door transversely of the car to carry the door into or out of the car through the door opening and shiftable with the door longitudinally of the car, said door being rotatable in planes parallel to the side of the car.

4. The combination with a car having a door opening, of longitudinally disposed tracks mounted within the car, a carrier longitudinally shiftable along said tracks, a door supporting member mounted on the carrier, and a door carried by said supporting member shiftable transversely with relation to the car into or out of the car through the door opening and rotatable in planes parallel to the side of the car.

5. The combination with a car having a door opening, of a longitudinally disposed track located within the car, a carrier longitudinally shiftable upon said track, a door support, a door supporting bar rotatably mounted in said carrier and shiftable thereto in a direction transverse to the length of the car to carry the door into or out of the door opening, and a door mounted upon the end of said bar and shiftable therewith.

6. The combination with a car having a door opening, of longitudinally extending tracks in the car, a carrier slidably mounted on the tracks, a door supporting rod passing through the carrier and rotatable therein, said rod being shiftable

through the carrier in a direction transverse to the length of the car, and a door hinged to the end of the rod, said door being thereby movable upon its hinge in a direction transverse to the length of the car and being shiftable with the rod.

7. The combination with a car having a door opening, of a track supported in the upper end of the car and extending longitudinally thereof, a carrier slidably supported on the track, a rod rotatably mounted in the carrier and extending transversely therethrough, said rod being transversely shiftable through the carrier, and a door hinged at its upper corner to the outer end of the rod.

8. The combination with a car having a door opening, of a longitudinally extending track mounted in the upper portion of the car, a carrier longitudinally shiftable on the track, a counter-weighted rod passing through the carrier, said rod being longitudinally shiftable with the carrier on the track and being transversely shiftable and independently rotatable with relation to the carrier, and a door hingedly connected at one upper corner to said rod whereby the door may be shifted transversely of the car into or out of the door opening, may be rotated upon its hinge to carry the lower portion of the door outward or inward, or may be rotated in planes parallel to the side of the car.

9. The combination with a car having a doorway and a door therefor, and supporting means for the door, said door being shiftable transversely of the car through the door opening and being rotatable upon the supporting means in planes parallel to the side of the car.

10. The combination with a car having a doorway and a door therefor, and supporting means for the door, said door being hinged at its upper end upon the supporting means for outward movement in a vertical plane transverse to the length of the car, said door being bodily shiftable transversely of the car through the door opening and being rotatable with relation to the supporting means in planes parallel to the side of the car.

In testimony whereof I affix my signature in presence of two witnesses.

CHRIST J. JOHNSON. [L.s.]

Witnesses:

W. F. SALGREN,
A. J. McLENNAN.