M. PAULSON.

GRAIN DOOR FOR RAILWAY CARS.

APPLICATION FILED NOV. 19, 1907.

909,111.

Patented Jan. 5, 1909.

2 SHEETS—SHEET 1.

Fig. 1.

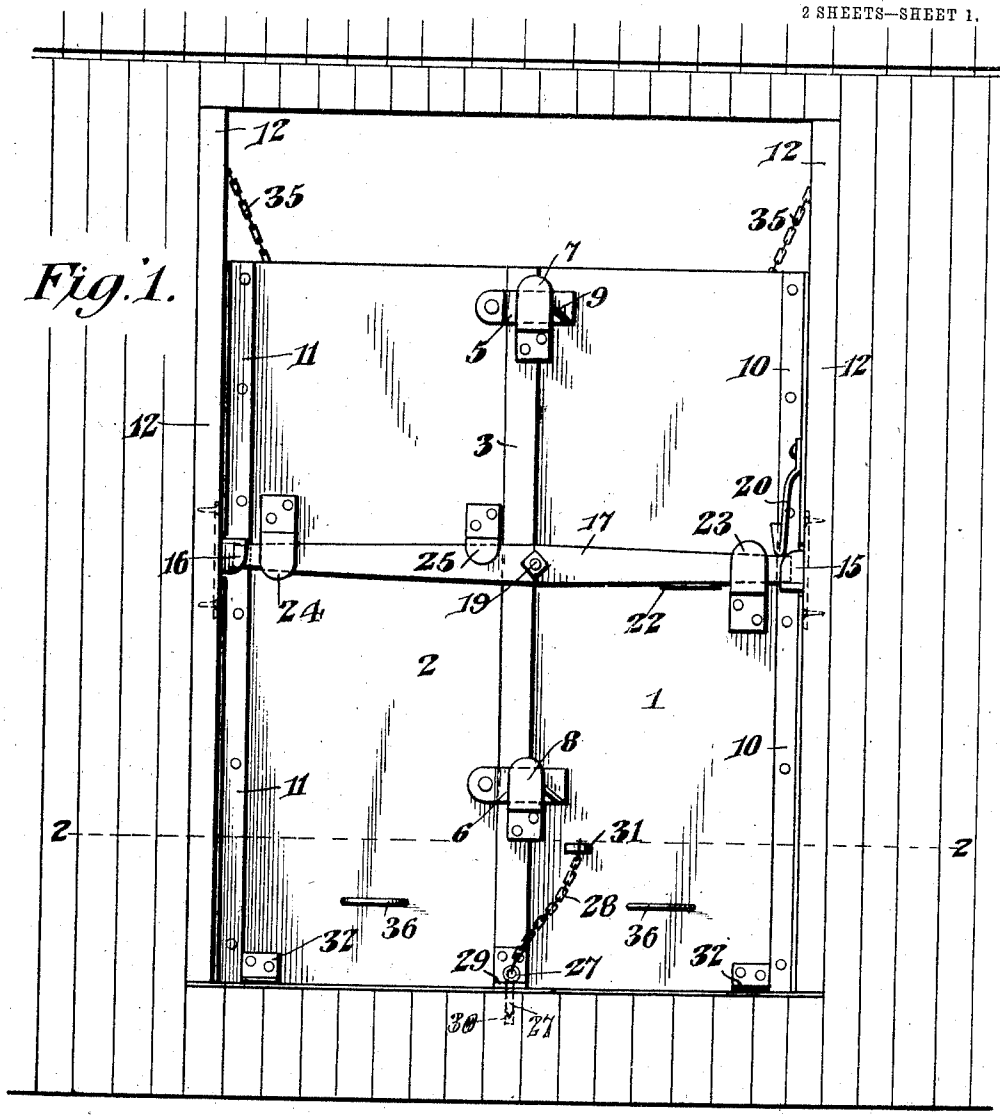
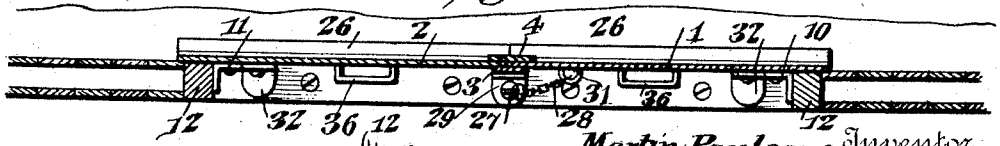


Fig. 2.

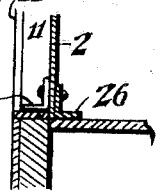


Witnesses

Jas. K. McCathran

H. F. Riley.

Fig. 6.



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2 SHEETS—SHEET 2.

Fig. 3.

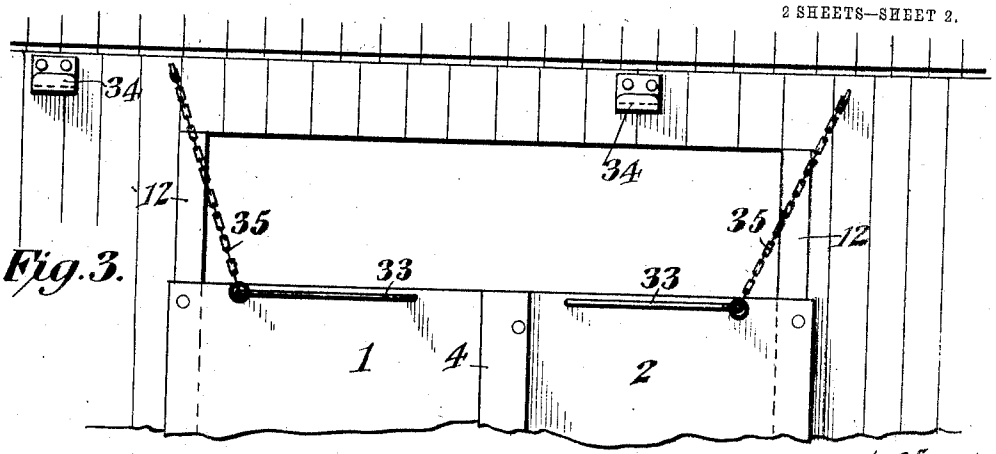


Fig. 4.

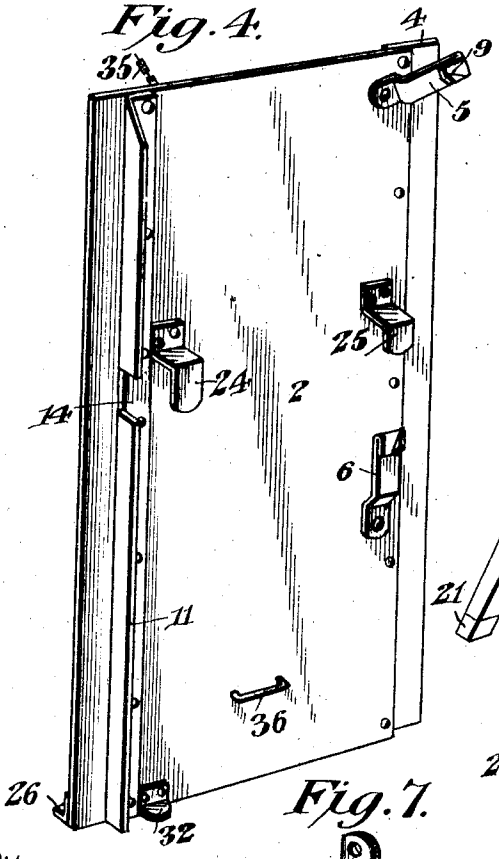


Fig. 5.

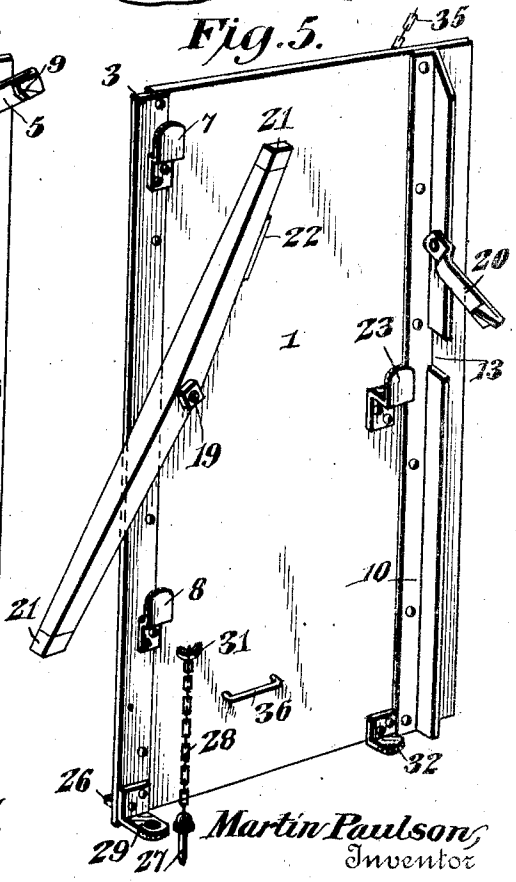


Fig. 7.



Witnesses

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UNITED STATES PATENT OFFICE.

MARTIN PAULSON, OF OMAHA, NEBRASKA, ASSIGNOR TO PAULSON GRAIN DOOR CO., OF OMAHA, NEBRASKA, A CORPORATION OF NEBRASKA.

GRAIN-DOOR FOR RAILWAY-CARS.

No. 909,111. Specification of Letters Patent. Patented Jan. 5, 1909.

Application filed November 19, 1907. Serial No. 402,875.

To all whom it may concern:

Be it known that I, MARTIN PAULSON, a naturalized citizen of the United States, residing at Omaha, in the county of Douglas and State of Nebraska, have invented a new and useful Grain-Door for Railway-Cars, of which the following is a specification.

The invention relates to improvements in grain doors for railway cars.

The object of the present invention is to improve the construction of grain doors for railway cars, and to provide a pair of grain doors of great strength and durability, adapted to effectually prevent the escape or loss of grain at car doors.

A further object of the invention is to provide a pair of grain doors of this character, adapted to be readily placed in position and capable of being easily opened and quickly removed without first removing a portion of the grain to relieve the grain door of interior pressure.

With these and other objects in view, the invention consists in the construction and novel combination of parts hereinafter fully described, illustrated in the accompanying drawings, and pointed out in the claims hereto appended; it being understood that various changes in the form, proportion, size and minor details of construction, within the scope of the claims, may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

In the drawings—Figure 1 is an elevation of a pair of grain doors, constructed in accordance with this invention, and shown applied to a car. Fig. 2 is a horizontal sectional view, taken substantially on the line 2—2 of Fig. 1. Fig. 3 is an elevation of the upper portions of the doors, showing the inner faces of the same and the interior of the car. Figs. 4 and 5 are perspective views of the doors detached. Fig. 6 is a detail sectional view. Fig. 7 is a detail perspective view of the right hand keeper for the pivoted cross bar.

Like numerals of reference designate corresponding parts in all the figures of the drawings.

1 and 2 designate right and left hand grain doors, designed to be constructed either of wood or metal. In the accompanying drawings the grain doors 1 and 2 are constructed of stout sheet metal, but when it is desired to construct them of wood, it is only necessary to provide metal plates for the pivot bolts of the clamps, hereafter described, as a single movable bolt will tear out of the wood.

The grain doors are provided at their inner abutting edges with vertical overlapping strips 3 and 4, constructed of suitable metal and adapted to form a grain tight joint at the inner vertical edges of the doors, and at the same time reinforce and strengthen the same. The metallic strip 3 is riveted, or otherwise secured to the outer face of the right hand door, and it overlaps the outer face of the left hand door. The other metallic strip 4 is secured to the inner face of the left hand door, and extends beyond the inner edge of the right hand door and overlaps the inner face of the same.

The inner edges of the right and left hand doors, when the latter are closed, are firmly clamped together by means of upper and lower clamps 5 and 6 and upper and lower keepers 7 and 8. The pivoted clamps 5 and 6 consist of metallic plates or pieces, pivoted at one end to the outer face of the left hand door, and provided adjacent to the same with angular bends to clear the vertical strip 3, and to arrange their engaging portions in the same plane as the openings or recesses of the upper and lower keepers 7 and 8. The upper and lower keepers 7 and 8 are constructed of suitable metal, and consist of lower attaching portions and upper substantially L-shaped portions. The clamps swing downward into the recesses formed by the inner L-shaped portions of the keepers 7 and 8, and they are provided near their free ends with shoulders 9 for engaging the side edges of the keepers, whereby the grain doors are locked against horizontal movement in any direction. The upper ends of the keepers 7 and 8 are rounded, and the clamps engage the keepers with a cam action tending to draw the doors toward each other in their own plane. The shoulders may be conveniently formed by bending the free ends of the clamps back on themselves, as shown, but the clamps may consist of castings, or be formed in any other preferred manner.

The grain doors are provided near their outer vertical edges with vertical angle bars 10 and 11, secured to the outer face of the grain doors and having outwardly extending wings or flanges, spaced from the outer vertical edges of the doors and forming recesses to receive the door posts 12. The outer por-

tions of the doors extend beyond and engage the inner faces of the door posts, and the outwardly extending flanges of the angle bars fit the side faces of the door posts. The grain doors are thereby held against outward and lateral movement, when in engagement with the side of a car. The vertical flanges of the doors fit tightly against the door posts or jambs 12, and the cam action of the clamps in drawing the doors together enables the vertical flanges to be fitted in place against the said jambs or door posts besides tending to make a tight joint at the inner overlapped edges of the doors. The outwardly extending wings or portions are cut away between their ends to provide recesses or openings 13 and 14, which are arranged to receive outer keepers 15 and 16. The outer keepers 15 and 16, which are adapted to be engaged by the ends of a pivoted locking or cross bar 17, consist of vertical attaching plates and horizontally projecting half sockets or pockets 18, composed of two vertical sides and a connecting horizontal portion. The pockets of the keepers are reversely arranged, the pocket of the right hand keeper being in an upright position and the pocket of the left hand keeper being inverted to permit the cross bar 17, when turned on its pivot, to swing into engagement with the outer keepers. The outer keepers by extending into the openings or recesses of the angle bars serve to effectually prevent the door from accidentally raising.

The cross bar 17 is pivoted to the right hand door by a bolt 19, or other suitable fastening device, and it is locked in its closed position by means of a gravity catch 20, pivoted at its upper end to the outwardly extending flange of the right hand door and adapted to be swung downward into engagement with the upper face of the right hand end of the cross bar 17. The ends 21 of the cross bar are designed to be covered with suitable metal to prevent them from being worn by the outer keepers, and a suitable wear plate 22 is secured to the lower edge of the right hand portion of the cross bar to prevent it from being injured when it is knocked upward to disengage it from the keepers.

The grain doors are provided at their outer portions with reversely arranged hooks 23 and 24 for engaging the cross bar, and an inverted hook 25 is mounted on the left hand door adjacent to the inner edge thereof for engaging the cross bar to prevent the grain from getting between the doors.

The grain doors are provided at their lower edges with inwardly extending horizontal flanges 26, preferably formed by angle bars, and adapted to prevent the escape of grain at the bottom of the doors. The inner edges of the doors are locked against outward movement by means of a stay pin 27, connected with the right hand door by a short chain 28, and adapted to extend through an ear 29 of the right hand door and engage a socket 30 of the bottom of the car. The chain is linked into a suitable eye 31 of the door, and the ear or lug 29, which is provided with a perforation to receive the stay pin, extends from the right hand door and may be applied to the same in any suitable manner. It is preferably provided with a vertical attaching portion, which is riveted, or otherwise secured to the lower end of the vertical strip 3 of the right hand door. It positively locks the inner portion of the right hand door against inward or outward movement, and as the left hand door engages the inner face of the right hand door, it will prevent the said left hand door from being forced outward by the grain. The doors are provided at their lower edges with outwardly projecting lifts 32, located adjacent to the angle bars 10 and 11 and adapted to enable the doors to be pried up sufficiently to clear the bottom of the car in case the doors extend behind a threshold plate. In practice the threshold plate will very seldom be more than one eighth of an inch in thickness, so that the recesses or cut away portions 13 and 14 will have to be only a very little larger than the keepers 15 and 16 to permit the necessary play of the parts to disengage the lower edge of the car door from the threshold plate.

The grain doors are provided at their inner faces with horizontal hanger loops 33, located adjacent to the upper edges of the doors, and adapted to engage hanger hooks 34 when the doors are hung up out of the way. The hanger loops also receive short chains 35, secured at their upper ends to the side of the car above the door opening, and provided at their lower ends with links through which the hanger loops 33 pass. The chains 35 prevent the doors from falling out of the car. When the hanger loops are engaged with the hooks 34, the other ends of the doors may be supported adjacent to the top of the car by any suitable means, as will be readily understood.

When it it desired to open the grain doors, the gravity latch is swung upward; the stay pin is then removed from the socket 30 of the bottom of the car, and the upper and lower clamps are disengaged from the inner keepers 7 and 8. The cross bar is then knocked out of the pockets of the outer keepers and swung clear of the intermediate and outer hooks of the rain doors. The pressure of the contents of the car will then push the doors out.

Each door is provided on its exterior with a handle 36, located at the lower portion of the door and adapted to facilitate the placing of the doors in position and capable also of enabling the doors to be handled with

greater convenience when storing them away.

Having thus fully described my invention, what I claim as new and desire to secure by Letters Patent, is:—

1. The combination of a pair of grain doors arranged to lie in a common plane and adapted to fit between the jambs and provided at their inner edges with strips secured, respectively, to the inner and outer faces of the said doors and each adapted to overlap the other door, keepers mounted on one of the doors, and clamps pivoted to the other door and extending through the keepers and having their free ends formed with shoulders to engage the keepers at the far side edges thereof with a cam action tending to draw the doors toward each other in their own planes.

2. The combination with a car having a door opening, of a pair of grain doors arranged to lie in a common plane and having inner overlapped edges and provided adjacent to their outer edges with exteriorly arranged vertical flanges fitted between the jambs of the car, keepers mounted on one of the doors, and clamps pivoted to the other door and extending through the keepers and having their free ends formed with shoulders to engage the keepers at the far side edges thereof with a cam action tending to draw the doors toward each other in their own planes and enabling the vertical flanges to be fitted in the door opening of the car.

3. The combination with a car, of keepers mounted on the car at opposite sides of the door opening, grain doors fitting against the interior of the car and provided adjacent to their outer edges with vertical flanges engaging the car in the door opening and cut away to receive the said keepers, whereby the doors are held against vertical movement, and door locking means for engaging the keepers.

4. The combination with a car, of keepers projecting from opposite sides of the door opening and having reversely arranged pockets, grain doors detachably secured together at their inner edges and provided at their outer edges with means for engaging beneath the keepers, whereby the doors are held against vertical movement, and a cross bar pivoted to one of the doors and arranged to engage the pockets of the keepers.

5. The combination with a car having a door opening, of a pair of grain doors having inner overlapped edges and having their outer edges fitted against the inside of the car, said doors being also provided adjacent to their outer edges with exteriorly arranged vertical flanges fitting into the door opening and fitted against the jambs, and fixed devices located within the door opening and projecting from the jambs and interlocked with the vertical flanges of the door.

6. The combination with a car having a door opening, of a pair of grain doors having inner overlapped edges and having their outer edges fitted against the inside of the car, said doors being provided adjacent to their outer edges with exteriorly arranged vertical flanges extending into the door opening and fitted against the jambs and provided with recesses, fixed keepers located within the door opening and projecting from the jambs, and extending into the recesses of the vertical flanges of the door, and means for engaging the keepers for retaining the vertical flanges in interlocked relation with the same.

7. The combination with a car provided with hanger hooks, of grain doors having horizontal hanger loops mounted on the inner faces of the doors at the upper ends thereof and adapted to engage the hanger hooks, and chains secured to the car and slidable on the hanger loops.

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

MARTIN PAULSON.

Witnesses:
CHAS. CHRISTENSEN,
PETER W. ANDERSEN.