No. 701,551. Patented June 3, 1902.

I. L. EDWARDS.

GRAIN CAR DOOR.

(Application filed Jan. 29, 1902.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.

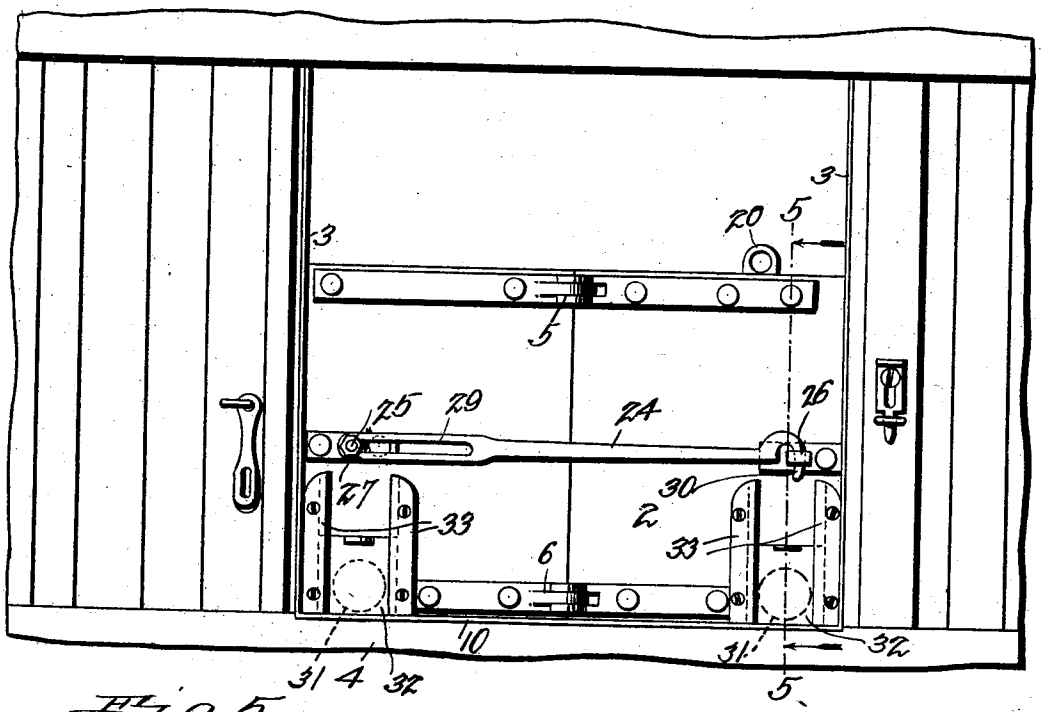


Fig. 5.

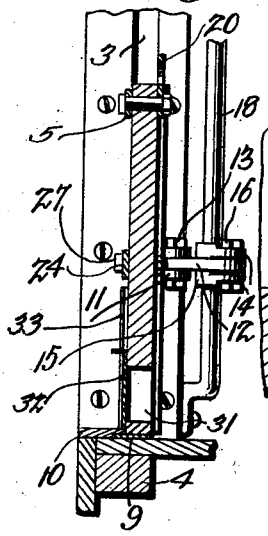


Fig. 4.

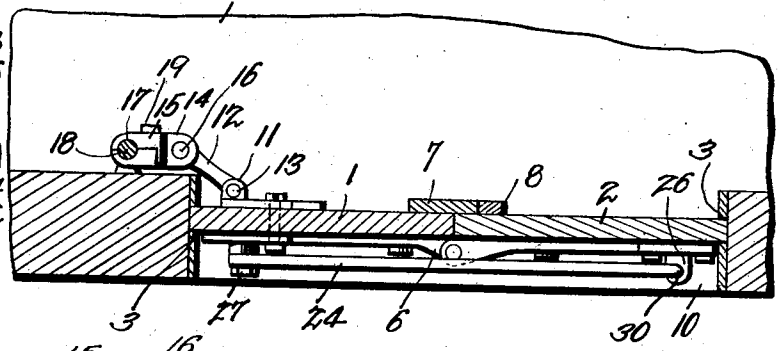
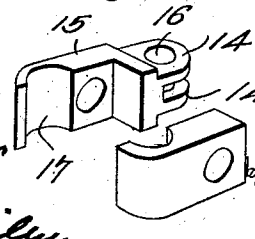


Fig. 6.



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No. 701,551. Patented June 3, 1902.

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(No Model.) 2 Sheets—Sheet 2.

Fig. 2.

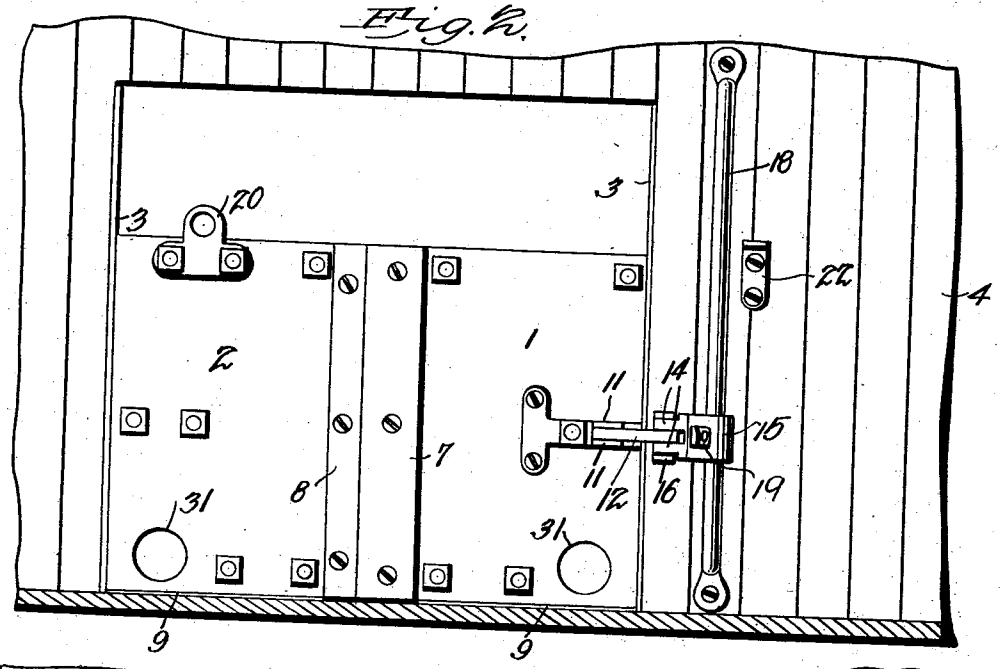
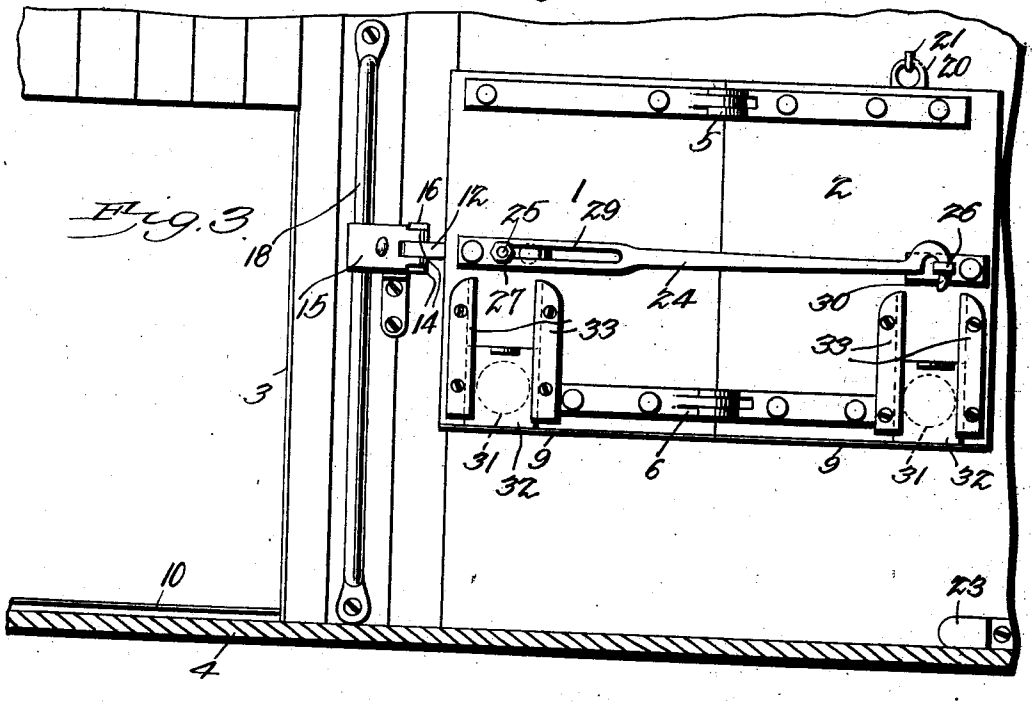


Fig. 3.



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UNITED STATES PATENT OFFICE.

ISAAC L. EDWARDS, OF AURORA, ILLINOIS, ASSIGNOR OF TWO-THIRDS TO EBENEZER A. SANDERS, LOUISE M. COTA, AND AURELIE COTA, OF AURORA, ILLINOIS.

GRAIN-CAR DOOR.

SPECIFICATION forming part of Letters Patent No. 701,551, dated June 3, 1902.

Application filed January 29, 1902. Serial No. 91,757. (No model.)

To all whom it may concern:

Be it known that I, ISAAC L. EDWARDS, a citizen of the United States, residing at Aurora, in the county of Kane and State of Illinois, have invented a new and useful Grain-Car Door, of which the following is a specification.

The invention relates to improvements in grain-car doors.

The object of the present invention is to improve the construction of grain-car doors and to provide a simple, inexpensive, and efficient one adapted to provide grain-tight connections between it and the car at the doorway and capable of enabling the pressure of the grain against the door to be readily relieved or reduced, whereby the door may be easily opened without liability of injuring any of the parts.

A further object of the invention is to provide a door of this character adapted for use either at the side or end of a car and designed to remain permanently on the car and capable of being compactly arranged within the car when it is not in use.

The invention consists in the construction and novel combination and arrangement of parts hereinafter fully described, illustrated in the accompanying drawings, and pointed out in the claims hereto appended.

In the drawings, Figure 1 is a front elevation of a portion of a car provided with a grain-door constructed in accordance with this invention. Fig. 2 is a longitudinal sectional view of the same, showing the inner face of the grain-car door. Fig. 3 is a similar view, the grain-door being swung back against the side of the car to fold it out of the way. Fig. 4 is a horizontal sectional view, the door being arranged as shown in Fig. 1. Fig. 5 is a vertical sectional view on the line 5 5 of Fig. 1. Fig. 6 is a detail view of the clamp, the sections being separated.

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

1 and 2 designate sections of a grain-car door which is designed to be arranged either at the side or end of a car and which has its side edges fitted in vertical ways 3, formed by cleats or bars secured to opposite sides of the doorway of the car 4 and spaced apart, as clearly shown in Figs. 4 and 5. The sections 1 and 2 are hinged together at their inner vertical edges, and the hinges 5 and 6 are preferably arranged at the upper and lower edges of the grain-car door, as clearly illustrated in Fig. 1 of the drawings. The outer vertical edges of the sections of the grain-car door fit snugly between the vertical bars or cleats which form the ways 3, so that there is no liability of grain escaping at those points, and in order to prevent any loss of grain at the inner vertical edges of the sections vertical cleats or strips 7 and 8 are secured to the inner faces of the sections, as clearly shown in Figs. 2 and 4 of the drawings. The vertical cleat or strip 7, which is of greater width than the other cleat or strip 8, is secured to the section 1 of the grain-door and extends beyond the inner vertical edges of the sections and overlaps a portion of the section 2 and abuts against the strip or cleat 8 when the grain-car door is closed. The inner vertical strips or cleats 7 and 8 effectually cover the joint or connection at the inner vertical edges of the sections 1 and 2 of the grain-door and prevent any loss of grain at that point.

The grain-car door is interlocked with the bottom of the car by means of bottom flanges 9, consisting of plates secured to the lower edges of the sections 1 and 2 and extending outward therefrom, as clearly shown in Fig. 5, and adapted when the grain-door is closed to project beneath and interlock with a bar 10, which extends across the bottom of the doorway of the car and which is suitably secured to the same. The bottom flanges of the sections extend into the groove formed by the inner edge of the bar 10, which is located slightly above the floor of the car, and the said flanges prevent the grain-door from being raised vertically in the ways 3 and also confine the grain and prevent any loss of the same at the bottom of the door.

The section 1 is provided at its inner face

with a pair of horizontally-disposed ears 11, formed integral with a T-shaped attachment-plate and receiving one end of a link 12, which is pivoted or hinged between the ears 11 by a pintle or bolt 13 and which is similarly connected to a pair of ears 14 of a clamp 15 by a pintle or bolt 16. The attachment-plate, the link, and the clamp may be of any suitable metal, and the clamp, which is composed of two jaws or sections, is provided with a vertical opening 17, in which is arranged a vertical rod 18. The vertical rod 18 has its ends bent at an angle and secured to the inner face of the adjacent side of the car, and the body portion of the rod, which is offset from the car, forms a pintle and a guide for the grain-door. The grain-door is adapted to break at the center to withdraw the outer vertical edges of the sections from the vertical ways 3 to permit the door to swing inward, and the said grain-door is adapted to be swung around to the position shown in Fig. 3 of the drawings and may be arranged in an elevated position or at the bottom of the car. The clamp has one of its sections or jaws recessed to receive the other, and the two jaws or sections are perforated for the reception of a bolt 19. The section 2 of the grain-door is provided at the upper edge with an eye 20, which is adapted to engage a hook 21 of the side of the car for holding the door in an elevated position, and when the door is arranged at the top of the car the clamp 15 is supported by a bracket 22.

The hinge connection is provided with three joints or pintles, and it permits the sections of the grain-door to be readily engaged with and removed from the ways of the sides of the doorway. The door is locked when closed by a combined brace and latch-bar 24, which is mounted on the stud 25 of one section and which engages the perforated ear 26 of the other section. The stud is preferably formed integral with an attachment-plate, and it has a threaded outer portion for the reception of a nut 27, which secures the combined brace and latch-bar to the stud. The combined brace and latch-bar is provided at one end with a slot 29 to receive a stud, and it has a hook 30 at the other end for engaging the perforated ear, which is formed integral with a suitable attachment-plate. The slot will permit the combined latch-bar and brace to be conveniently arranged when the grain-door is not in use. Instead of employing the latch-bar and brace any other suitable fastening device may be used for securing the grain-door in its closed position.

In order to relieve the grain-door of the pressure of the grain when it is desired to open the door, each section of the grain-door is provided with an opening 31, arranged near the bottom of the car and normally covered by a supplemental door or slide 32, arranged in vertical ways 33 and provided at the top with a suitable grip or handle for enabling it to be readily raised. The ways 33 preferably consist of bars provided with flanges spaced from the grain-door to form grooves for the reception of the slide, which fits snugly against the grain-door. When the supplemental doors or slides are raised to uncover the openings 31, the grain will flow through the openings and will leave sufficient space at the inner face of the grain-door to permit the sections 1 and 2 to be readily disengaged from the ways 3.

What I claim is—

1. The combination of a car provided at opposite sides of its doorway with ways, and a sectional grain-door provided at the bottom with a flange interlocked with the bottom of the car, whereby the grain-door is held against upward movement and the grain is prevented from escaping, substantially as described.

2. The combination of a car provided at the bottom of its doorway with a groove, and a sectional grain-door provided at the bottom with outwardly-projecting flanges fitting in the groove of the car, whereby the grain-door is interlocked with the bottom thereof to hold the door against vertical movement and to provide a grain-tight joint, substantially as described.

3. The combination of a car provided at opposite sides with ways, a grain-door arranged in the ways and composed of sections hinged together and provided at the bottom with flanges interlocked with the bottom of the car, and the vertical cleats or bars secured to the inner faces of the sections and covering the inner edges of the said sections at the joint, substantially as described.

4. The combination of a car, a grain-door composed of sections hinged together and interlocked at their bottom and outer edges with the car and provided with openings, slides normally covering the openings, and means for securing the door, substantially as described.

5. The combination of a car, a grain-door composed of hinged sections, one of the sections being provided with a keeper and a combined brace and latch-bar slidably connected with the other section and provided with means for engaging the keeper, substantially as described.

6. The combination of a car, a grain-door composed of hinged sections, a stud mounted on one of the sections, a keeper arranged on the other section, and a combined brace and latch-bar provided with a slot receiving the stud, said brace-bar being also provided with a hook for engaging the keeper, substantially as described.

7. The combination of a car, a vertical rod secured to the car, a clamp mounted on the rod and adapted to swing horizontally and slide vertically, a grain-door composed of sections, and a link hinged to the clamp and to the grain-door, substantially as described.

8. The combination of a car, a vertical rod secured to the car, a clamp composed of two

sections and having an opening receiving the rod, said clamp being also provided with ears, a grain-door, a plate secured to the grain-door and provided with ears, and a link hinged between the said ears, substantially as described.

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

ISAAC L. EDWARDS.

Witnesses:
H. F. RILEY,
J. ROSS COLHOUN.