A. L. ALVEY.

GRAIN CAR DOOR.

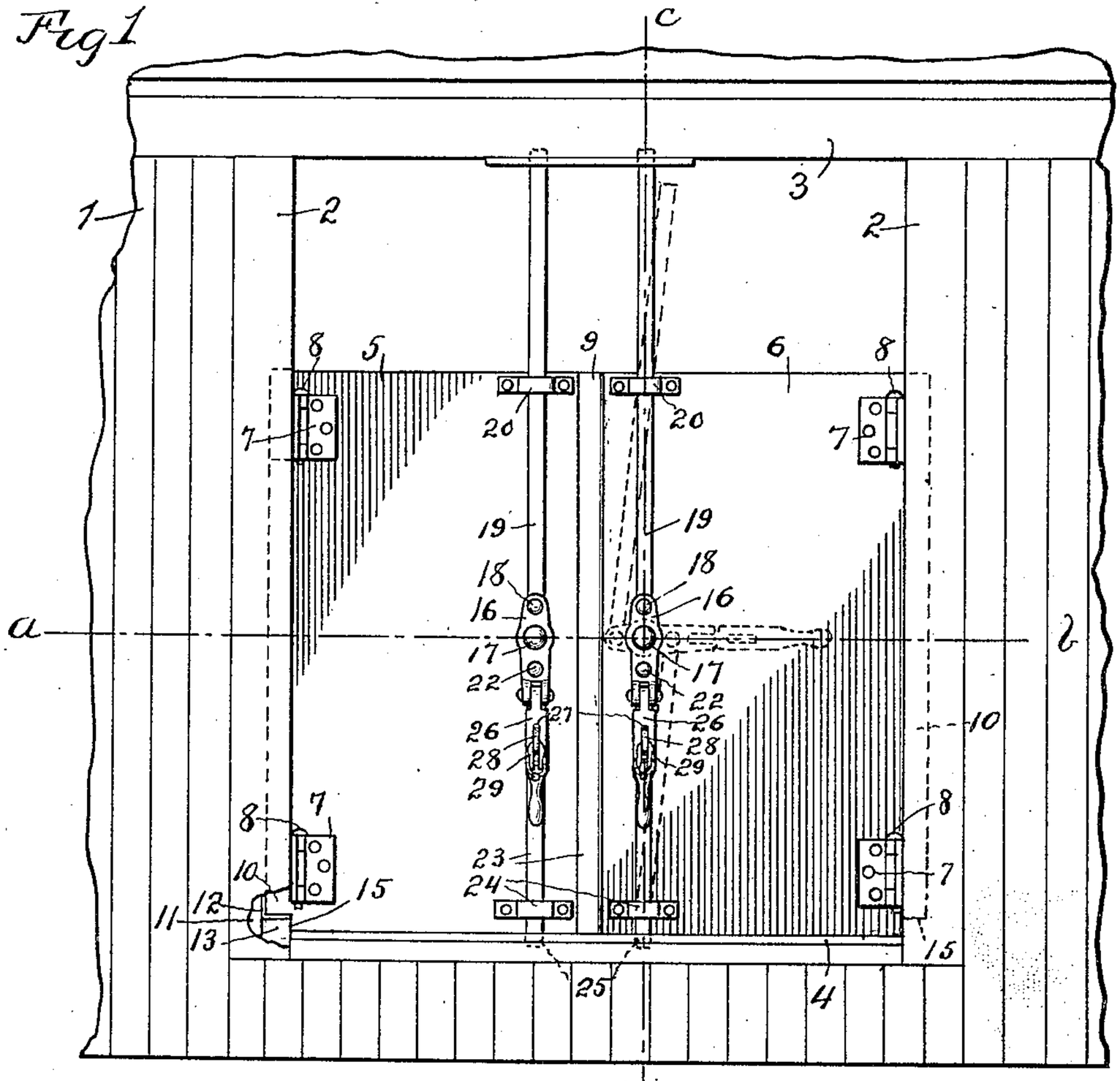
APPLICATION FILED APR. 13, 1911.

998,941.

Patented July 25, 1911.

2 SHEETS—SHEET 1.

Fig 1



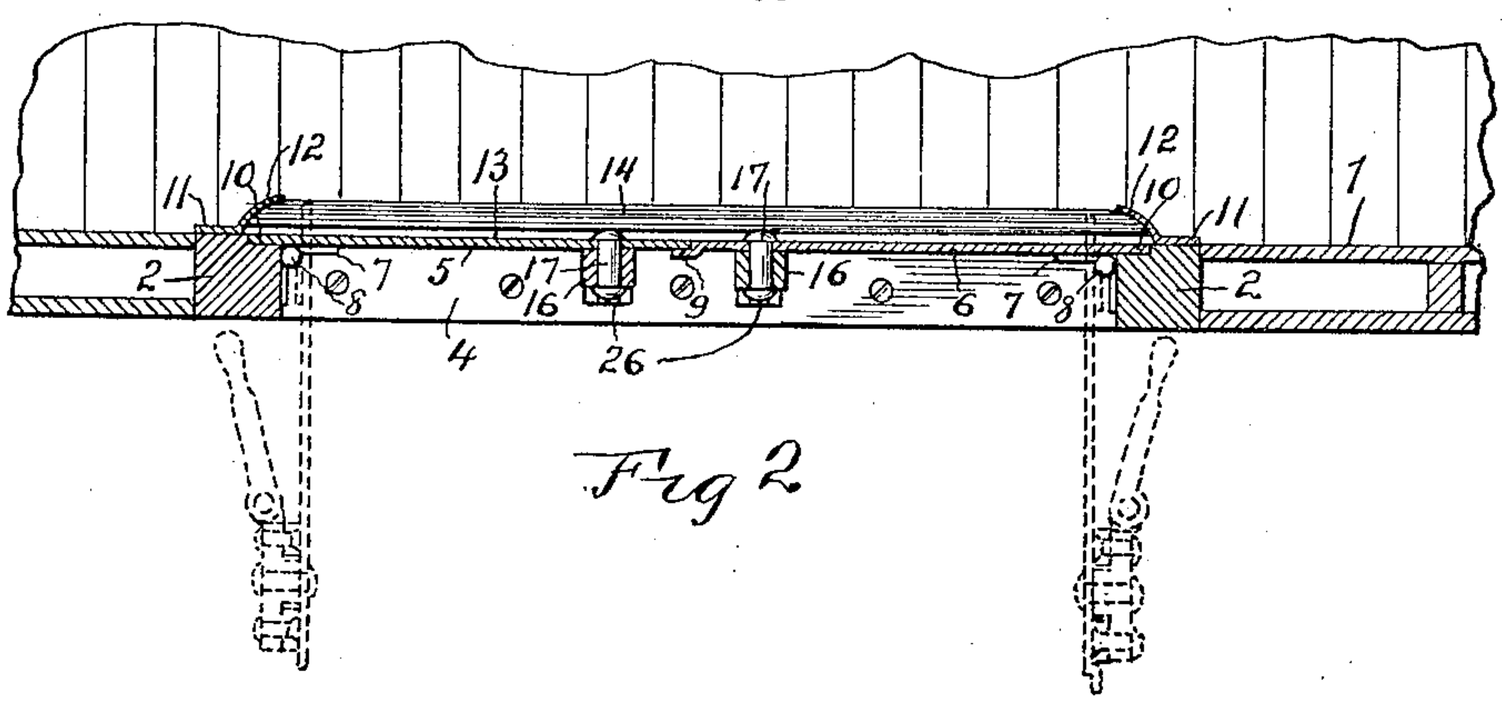


Fig 2

WITNESSES:

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2 SHEETS—SHEET 2.

Fig 4

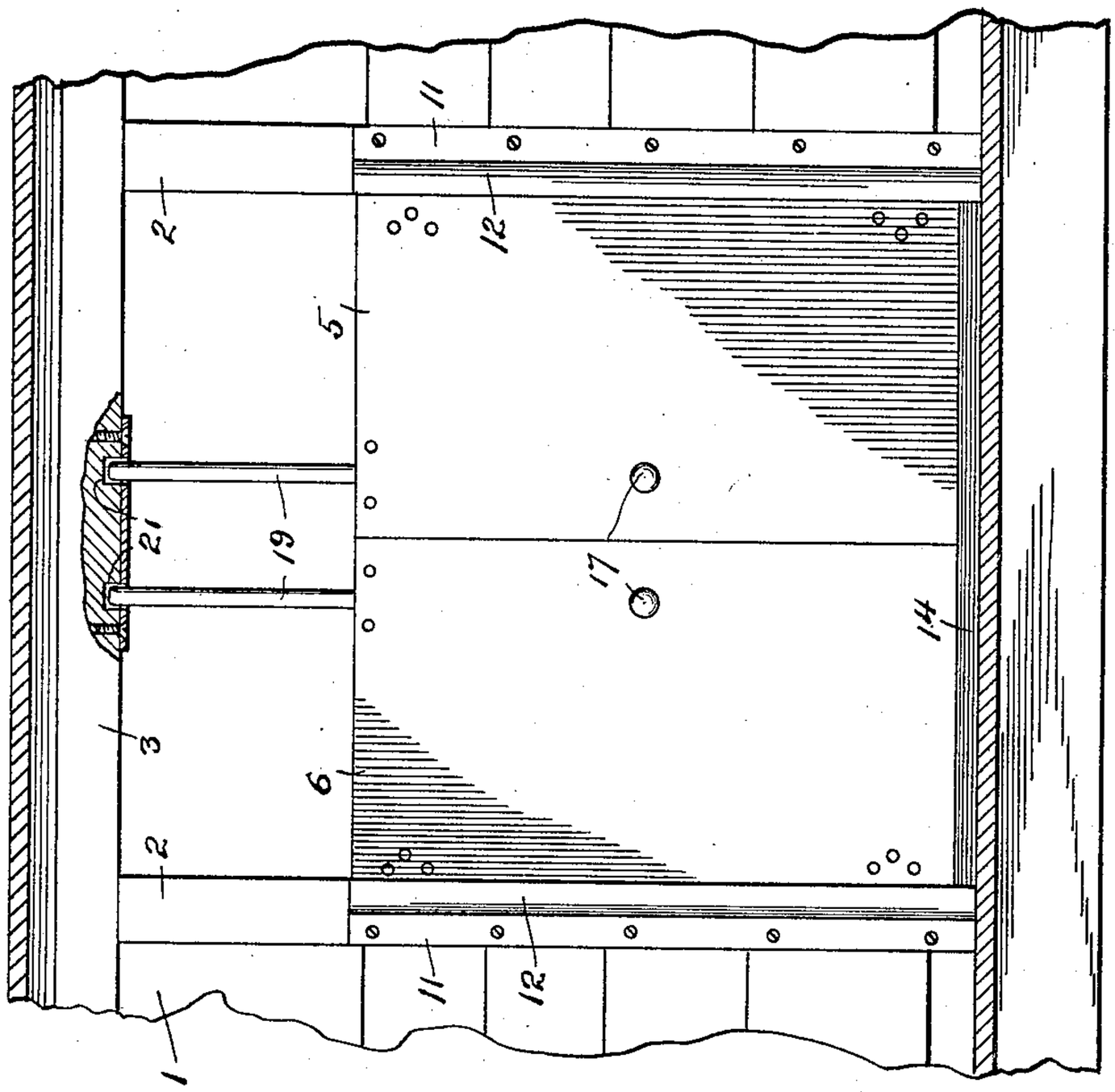
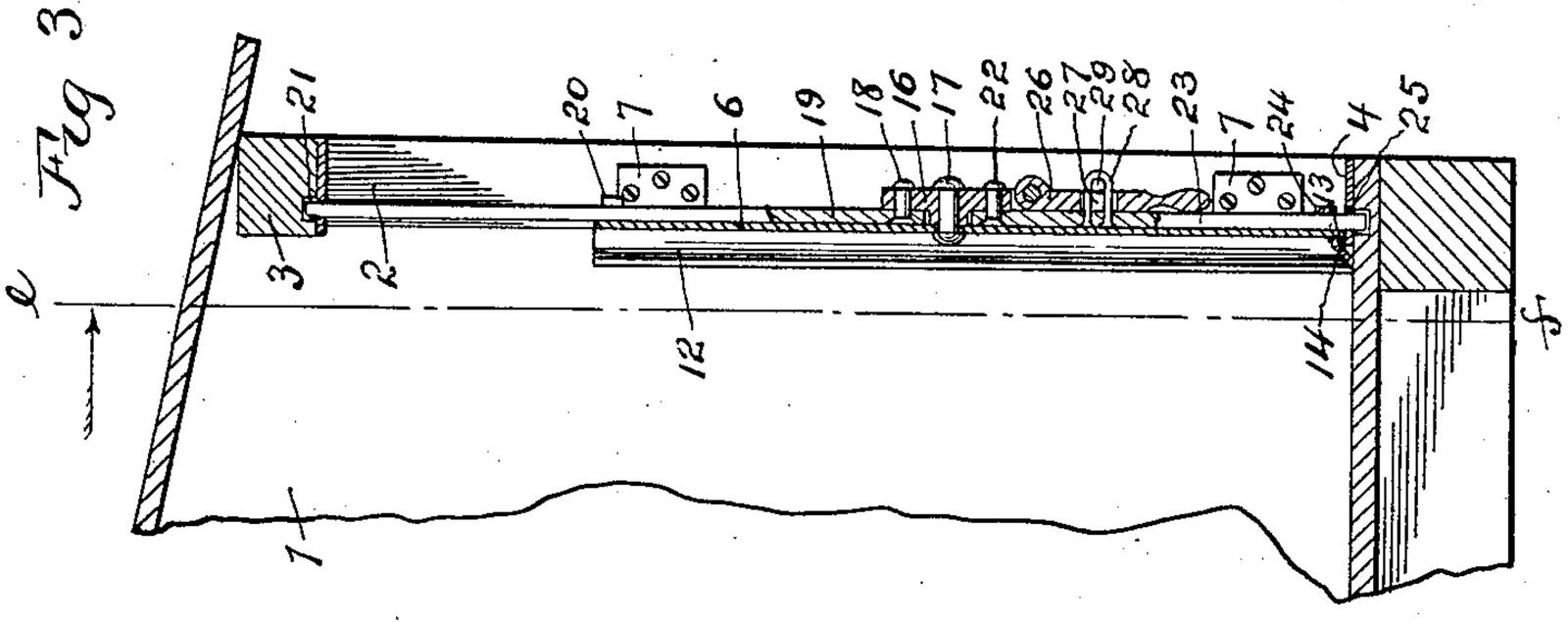


Fig 3



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UNITED STATES PATENT OFFICE.

ANDREW L. ALVEY, OF KANSAS CITY, KANSAS.

GRAIN-CAR DOOR.

998,941. Specification of Letters Patent. Patented July 25, 1911.

Application filed April 13, 1911. Serial No. 620,839.

To all whom it may concern:

Be it known that I, ANDREW L. ALVEY, a citizen of the United States, residing at Kansas City, in the county of Wyandotte and State of Kansas, have invented certain new and useful Improvements in Grain-Car Doors, of which the following is a specification.

My invention relates to improvements in grain car doors.

The object of my invention is to provide a grain car door which may be easily and securely locked in the closed position, and which may be quickly and easily opened when the car is loaded with grain.

A further object of my invention is to provide an outwardly swinging hinged door construction in which, when the car is loaded with grain and the door is closed, the hinges will not be subjected to strain due to grain pressure on the door.

Another novel feature of my invention consists in the sealing means employed for closing the joints around the door when closed, to prevent the escape of grain.

Other novel features of my invention are hereinafter fully described and claimed.

In the accompanying drawings which illustrate one form of my invention, Figure 1 is an outside elevation of a portion of a car provided with my improved construction, the doors being shown in the locked positions. Fig. 2 is a horizontal section on the line *a*—*b* of Fig. 1. In this view the doors are shown in dotted lines in the open position. Fig. 3 is a vertical section on the line *c*—*d* of Fig. 1. Fig. 4 is an inside view of the doors in the closed position, the view being a vertical section on the line *e*—*f* of Fig. 3, a portion of the door lintel being broken away.

Similar reference characters designate similar parts.

1 designates the body of an ordinary grain car having the usual door jambs 2, a door lintel 3, and a door sill 4.

5 and 6 designate respectively two outwardly opening doors pivoted respectively to the jambs 2 by hinges 7, which have vertical pintles 8, which serve as the vertical axes of the doors 5 and 6. The door 6 is preferably provided with a longitudinal flange 9, which, when the doors are closed overlaps the door 5.

The doors 5 and 6 are provided with portions 10 which, when the doors are closed, as shown in solid lines in Fig. 2, overlap and rest against the inner sides of the jambs 2 respectively. By means of this construction, when the car is loaded with grain and the doors are closed, the overlapping portions 10 bear against the jambs 2, thereby relieving the hinges 7 from strain due to grain pressure on the doors.

In order that the grain pressure upon the portions 10 of the doors 5 and 6 may not be sufficient to interfere with the easy opening of the doors, I provide guards which overlap the inner sides of the portions 10, when the doors are closed. Preferably these guards comprise vertical plates 11 respectively secured to the inner sides of the jambs 2 and having vertical arcuate portions 12 which, when the doors are closed, overlap or extend over the adjacent portions 10 respectively. Said arcuate portions 12 are preferably vertical longitudinal flanges arcuate in cross section, the centers of the arcs coinciding respectively with the axial centers of the pintles 8 which are the axes of the doors 5 and 6. The arcuate flanges 12 are disposed so as to just clear the adjacent vertical edges of the doors 5 and 6 when the doors are swung to and fro, thus preventing grain from passing between the edges of the doors and the arcuate flanges 12 at the time the doors are swung from the closed toward the open position.

The door sill 4 is provided at its inner edge with an upwardly extending longitudinal flange 13 against the outer side of which the doors 5 and 6 are adapted to bear when the doors are closed. The flange 13 is preferably provided with an inwardly and downwardly inclined extension 14 which reaches from the upper edge of the flange 13 to the floor of the car body 1, thereby permitting the easy removal of the grain lying on the floor and against the extension 14.

The portions 10 of the doors 5 and 6 are notched at 15, to permit the portions 10 passing over the flange 13 when the doors are swung.

Suitable releasable means may be provided for locking the doors 5 and 6 in the closed positions. For this purpose I preferably provide the following described locking mechanism.

A rock bar 16 is pivoted by means of a rivet 17 to the door 6, the rivet extending through said door at a point adjacent to the flange 9 and near the longitudinal center of

said door. To one end of the rock bar 16 is pivoted by a rivet 18 the lower end of an upwardly extending bar 19 which is slidably mounted in a suitable guide 20 secured to the outer side of the door 6 adjacent to the upper edge thereof. The upper end of the bar 19 is adapted to enter a vertical hole 21 provided in the under side of the lintel 3. To the other end of the rock bar 16 is pivoted by a rivet 22 the upper end of a downwardly extending bar 23, which is slidably mounted in a guide 24 secured to the outer side of the door 6 near the lower edge thereof. The lower end of the bar 23 is adapted to enter a vertical hole 25 provided in the door sill 4. When the rock bar 16 is vertically disposed, as shown in solid lines in Fig. 1, the bars 19 and 23 will be respectively disposed in the holes 21 and 25. When the rock bar is horizontally disposed, as shown in dotted lines in Fig. 1, the bars 19 and 23 will be withdrawn from the holes 21 and 25. To swing the rock bar 16 to and from the locked position a lever 26 is pivoted at one end to the rock bar 16, the pivot of the lever being disposed horizontally when the rock bar is vertically disposed. The lever 26 is provided, preferably with a longitudinal slot 27, adapted to receive therethrough, when the rock bar and bar 23 are vertically disposed, a staple 28 secured to the outer side of the bar 23 and adapted to receive a sealing device 29, for securing the lever in locked engagement with the staple 28.

A similar locking mechanism may be provided for locking the door 5, if desired, although in some cases the locking mechanism which has just been described, will be sufficient for the purpose of locking both doors in the closed position. In the drawings, I have shown two guides 20 and 24 secured to the door 5, and bars 19 and 23 respectively slidably mounted in said guides and pivotally connected to opposite ends of a rock bar 16, which is pivoted to the door 5, the rock bar having secured to it a lever 26 having a slot 27 for receiving a staple 28 secured to the bar 23.

When it is desired to open the doors 5 and 6, the sealing devices 29 are removed from the staples 28, after which the levers 26 are swung outwardly until the levers are clear of the staples 28, after which the levers and rock bars 16 are swung to the horizontal position, thereby withdrawing the bars 19 and 23 from the holes 21 and 25. The doors being thus released, will be swung to the open position, shown in Fig. 2 in dotted lines. By reason of the guard flanges 12, the grain will not offer much resistance to the opening movement of the doors.

I do not limit my invention to the structure shown and described, as many modifications, within the scope of the appended claims, may be made without departing from the spirit of my invention.

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

1. In a grain car door, a door jamb, an outwardly opening door hinged to the jamb and having a vertical axis, the door in the closed position overlapping and resting against the inner side of the jamb, and a vertical guard secured to the inner side of the jamb and having a portion overlapping the inner side of the door when the door is closed for holding the grain from pressing against that portion of the door which overlaps the door jamb.

2. In a grain car door, a door jamb, an outwardly opening door hinged to the jamb on a vertical axis, the door in the closed position overlapping and resting against the inner side of the jamb, and a vertical guard secured to the inner side of the jamb and having a vertical arcuate portion having a center coincidental with the door axis, the arcuate portion overlapping the portion of the door which when the door is closed overlaps the jamb, the arcuate portion being disposed so as to just clear the adjacent edge of the door when the door is swung.

3. In a grain car door, two door jambs, two outwardly opening doors hinged respectively to the jambs and having vertical axes, the doors in the closed positions overlapping and resting against the inner sides of the jambs respectively, and two vertical guards which respectively overlap the inner sides of the portions of the doors which overlap said jambs, for holding the grain from pressing against such portions.

4. In a grain car door, two door jambs, two outwardly opening doors hinged respectively to the jambs and having vertical axes, the doors in the closed positions overlapping and resting against the inner sides of the jambs respectively, and two vertical guards secured to said jambs respectively and provided with vertical arcuate portions which respectively overlap the inner sides of the portions of the doors which overlap the jambs when the doors are closed, the arcuate portions having centers which respectively coincide with the axes of the doors, the arcuate portions being disposed so as to just clear the adjacent edges of the doors when the doors are swung.

In testimony whereof I have signed my name to this specification in presence of two subscribing witnesses.

ANDREW L. ALVEY.

Witnesses:
E. B. HOUSE,
FLORENCE M. VENDIG.