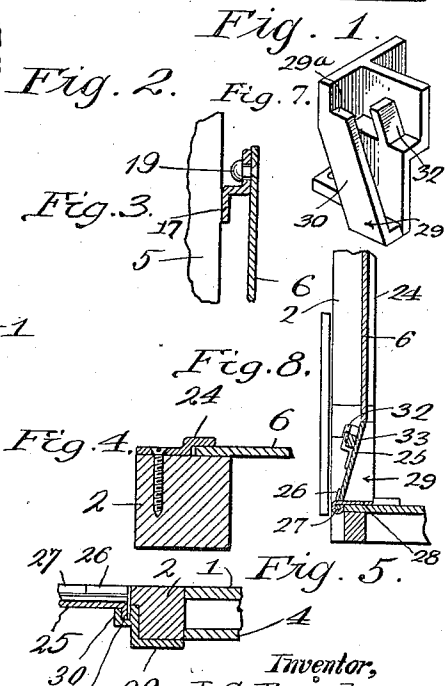
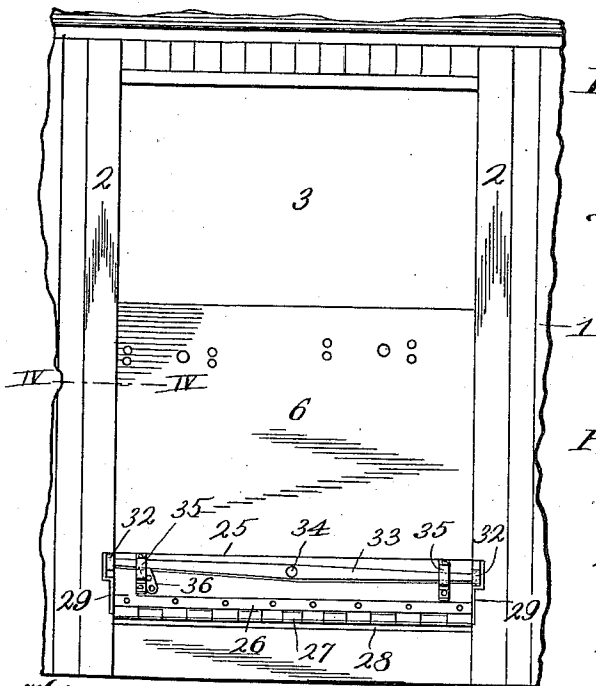
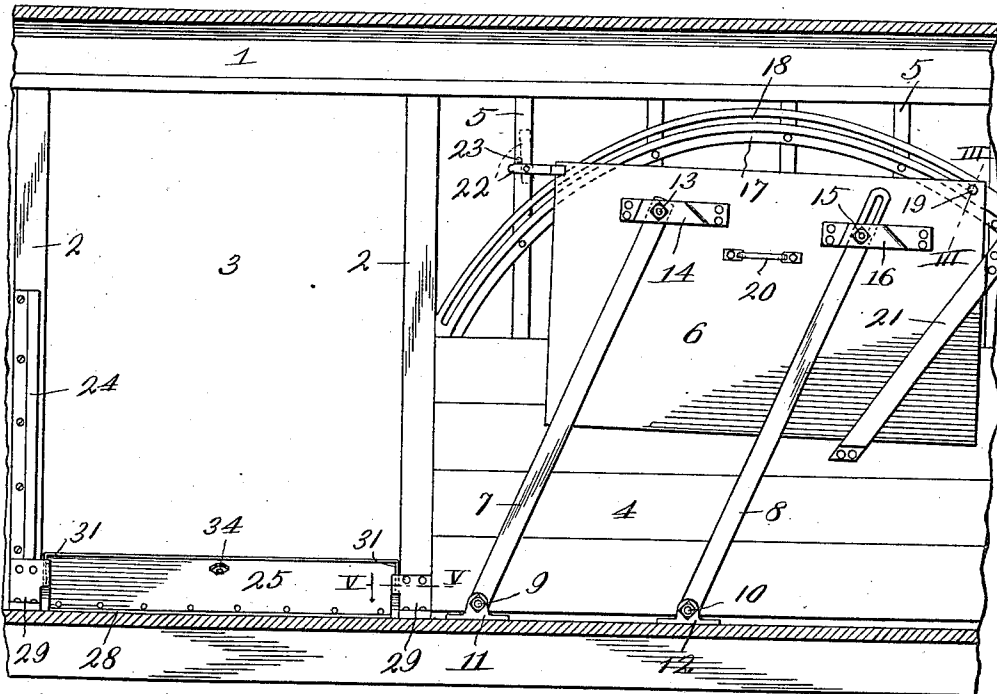


J. S. BENDER.
GRAIN DOOR FOR BOX CARS.
APPLICATION FILED JAN. 16, 1911.

1,045,249.

Patented Nov. 26, 1912.



Witnesses:

R. Hamilton
E. C. Lillian,

Fig. 6.



Inventor,

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Att'y.

UNITED STATES PATENT OFFICE.

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GRAIN-DOOR FOR BOX-CARS.

1,045,249.

Specification of Letters Patent.

Patented Nov. 26, 1912.

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To all whom it may concern:

Be it known that I, JACOB S. BENDER, a citizen of the United States, residing at Kansas City, in the county of Jackson and State of Missouri, have invented certain new and useful Improvements in Grain-Doors for Box-Cars, of which the following is a specification.

My invention relates to grain doors for box-cars, and one of my objects is to provide a simple and inexpensive door of this character that will prevent leakage of grain when closed.

A further object of the invention is to provide a door that can be readily opened or closed, and when in open position will occupy but little space and not be in the way while loading or unloading the box-car.

Further objects of the invention will hereinafter appear, and in order that said invention may be fully understood, reference will now be made to the accompanying drawing in which:

Figure 1 shows a broken section of the interior of a box-car provided with my improved grain door, the same being in open position. Fig. 2 is a broken elevation of the exterior of the box-car with the grain door in closed position. Figs. 3, 4 and 5 are detail sectional views taken on lines III—III, IV—IV, and V—V, respectively, of Figs. 1 and 2. Fig. 6 is a fragmentary side elevation of the lower end of one of the door-jambs. Fig. 7 is a detail perspective view of one of the castings at the lower ends of the door-jambs, and Fig. 8 is a fragmentary vertical sectional view taken through the main and relief doors.

1 designates a box-car of ordinary construction having the customary door-jambs 2 at opposite sides of the doorway 3, a lining 4, the inner surface of which is flush with the inner surface of the door-jambs 2, studding 5 to which said lining is secured.

6 designates the upper section of my improved grain-door, the same consisting preferably of sheet-metal.

7 and 8 designate two arms pivotally secured at their lower ends by bolts 9 and 10 to a pair of ears 11 and 12, respectively. Arm 7 is pivotally-secured at its upper end to the door section 6 by a bolt 13 extending through a loop 14 riveted to said section. Arm 8 has a pin-and-slot connection 15 at its upper end with the upper door section 6, the

pin 15 extending through a loop 16 on the upper door section 6.

17 designates a curved track secured to studding 5 and having an upper slotted portion 18 bent outward flush with the interior surface of the adjacent door-jamb 2 and the lining 4. One of the upper corners of the door section 6 is freely connected to the slotted portion 18 of track 17 by a rivet 19, to hold the door in proper relation to said track.

20 designates a handle secured to the inner side of door section 6 to facilitate the opening and closing of said door section.

21 designates an oblique loop secured to the inner side of the car to limit the opening movement of door section 6 and to support one corner thereof when open, as shown in Fig. 1.

22 designates a latch pivotally-secured to the interior of the car, just above rail 17, to engage one edge of the upper door section 6 and secure the same in open position. Pivotal movement of latch 22 is limited by a pin 23 projecting from the stud to which said latch is pivotally-secured.

24 designates a sheath secured to one of the door-jambs 2 to receive one edge of the upper door section 6 when the same is closed. Said sheath limits the closing movement of section 6 and overlaps the edge of said section, thereby forming a grain-tight joint.

25 designates a lower door section secured by a hinge-member 26 to the hinge-member 27 of a metallic threshold strip 28.

29 designates a pair of castings having outturned flanges 30 to lap the inturned flanges 31 at the ends of door section 25. Said castings 29 also have keepers 32 adapted to be engaged by the ends of a latch-bar 33, employed to hold the lower door section 25 in closed position. Latch-bar 33 is pivotally-secured to the lower door section 25 by a bolt 34 and extends through a pair of loops 35 secured to the lower door section to limit pivotal movement of said latch-bar.

36 designates a pawl pivotally-secured to the lower door section 25, and adapted to engage the adjacent loop 25 and the under side of latch-bar 33 to hold the same in engagement with keepers 32.

When the door sections are closed, one side of the upper section 6 is supported by the overlapping sheath 24 and the notched portion 29^a of the adjacent casting 29, while

the opposite side of said section 6 is supported by rivet 19 and the upper side of the adjacent casting 29, upon which it rests. The lower door section 25 is locked in closed position with its upper edge abutting against the upper section 6, by the latch-bar 33 and keepers 32. Section 6 bears against the inner surface of the door-jambs 2, so that outward pressure of grain prevents leakage by firmly forcing said section against the door-jambs. To open the door, lower section 25 is first lowered and upper section 6 is swung longitudinally to the open position shown in Fig. 1, where it is secured by latch 22, which prevents section 6 from being accidentally closed by jolting of the car while running. When it is desired to close section 6, latch 22 is swung to the dotted position shown in Fig. 1, to clear said section. The pin-and-slot connection 15 permits rivet 19 to follow slot 18 without binding against the track and rendering difficult the operation of section 6.

While I have shown and described the preferred construction of my car-door, I of course do not limit myself to the exact combination and arrangement of parts shown, but reserve the right to make such changes as properly fall within the spirit and scope of the appended claims.

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

1. A grain door for cars, consisting of an upper door section adapted to partly close the doorway of a car or swing longitudi-

nally to an open position against the inner side of the car, a curved track having a pin-and-slot connection with said upper door section, pivotally-mounted arms pivotally-secured to said upper door section, one of said arms having a pin-and-slot connection with the upper door section, and a lower door section adapted to close against the upper door section.

2. In combination with an upper door section, pivoted arms pivotally secured to said door section, an obliquely disposed loop for receiving the inner lower corner of the door section and adapted to engage the inner end and bottom edge of said door section, and a latch to engage the upper outer corner of the door section.

3. In combination with an upper door section, pivoted arms pivotally secured to said door section, an obliquely disposed loop for receiving the inner lower corner of the door section and adapted to engage the inner end and bottom edge of said door section, and a latch to engage the upper outer corner of the door section, and a pin cooperating with the latch and located to hold same stationary when in locked position and to limit the movement of said latch when same is moved to inoperative position.

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

JACOB S. BENDER.

Witnesses:

F. G. FISCHER,
E. C. LILLIAN.