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J. S. BENDER.

COMBINED GRAIN DOOR AND LOADING AND UNLOADING PLATFORM FOR BOX CARS.

APPLICATION FILED JUNE 12, 1905.

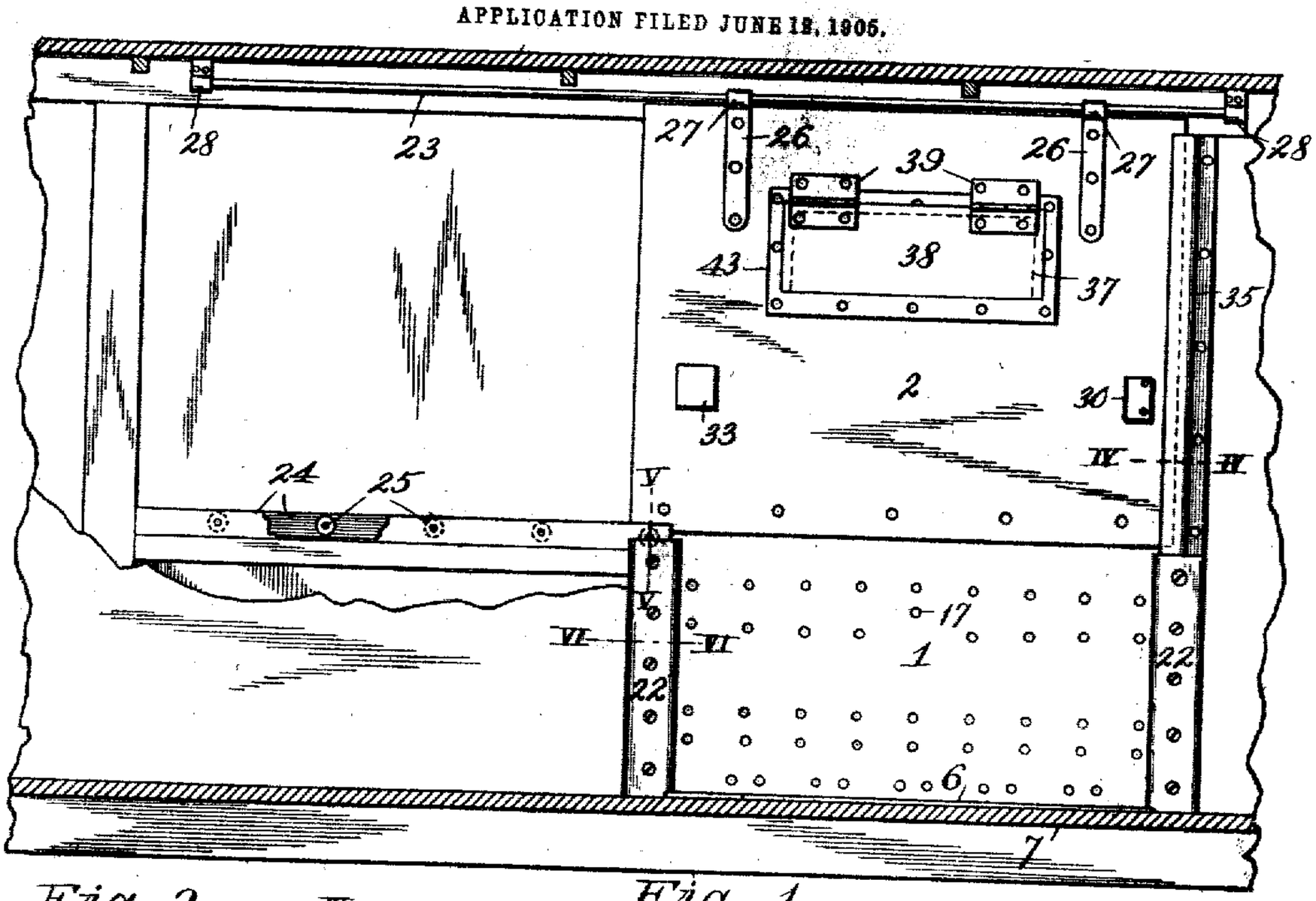

Fig. 1.

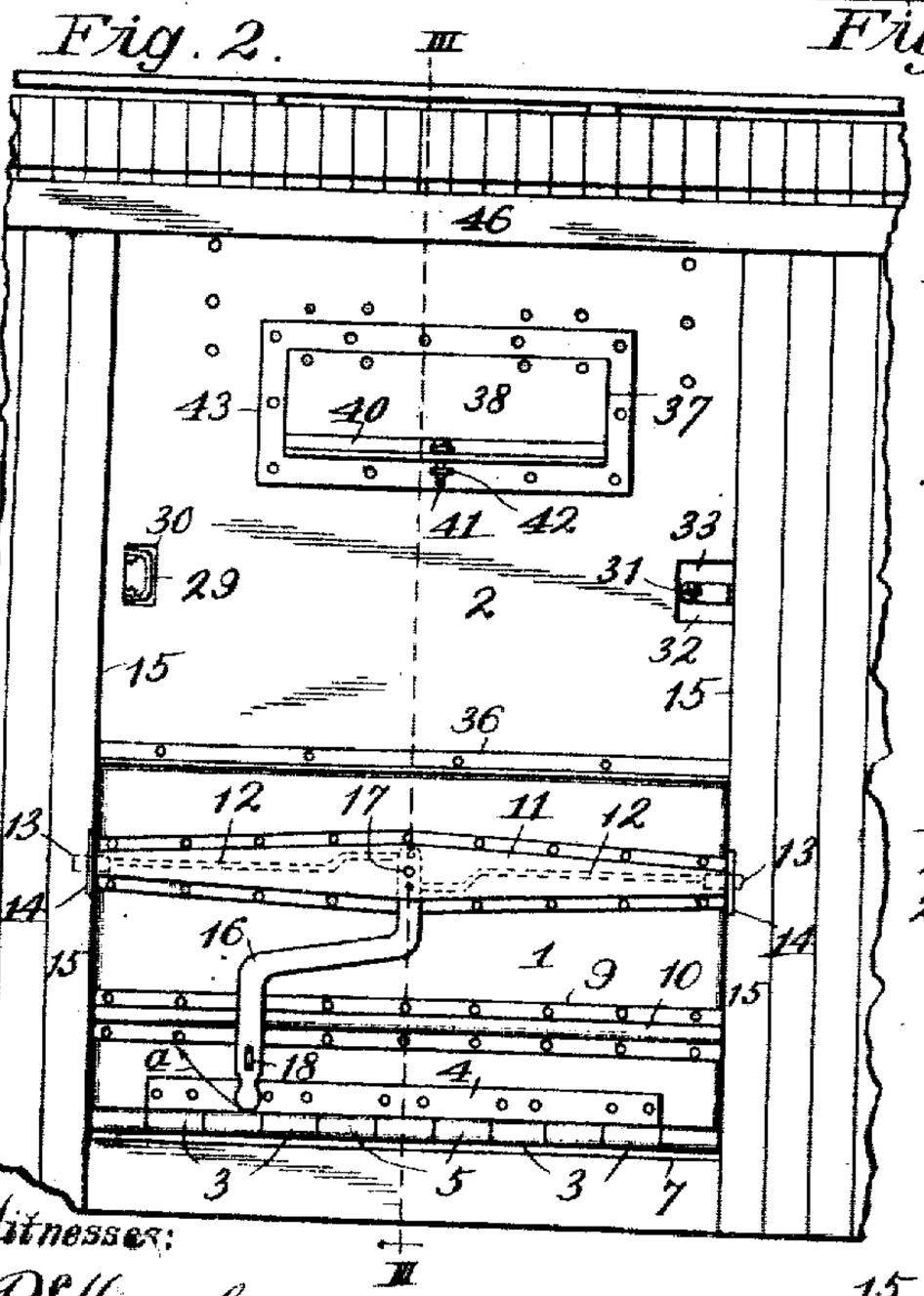

Fig. 2.

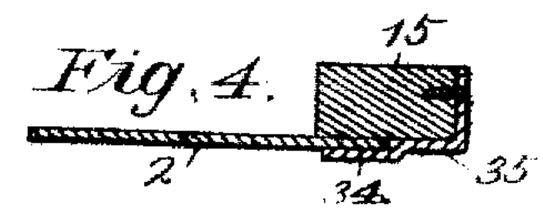

Fig. 4.

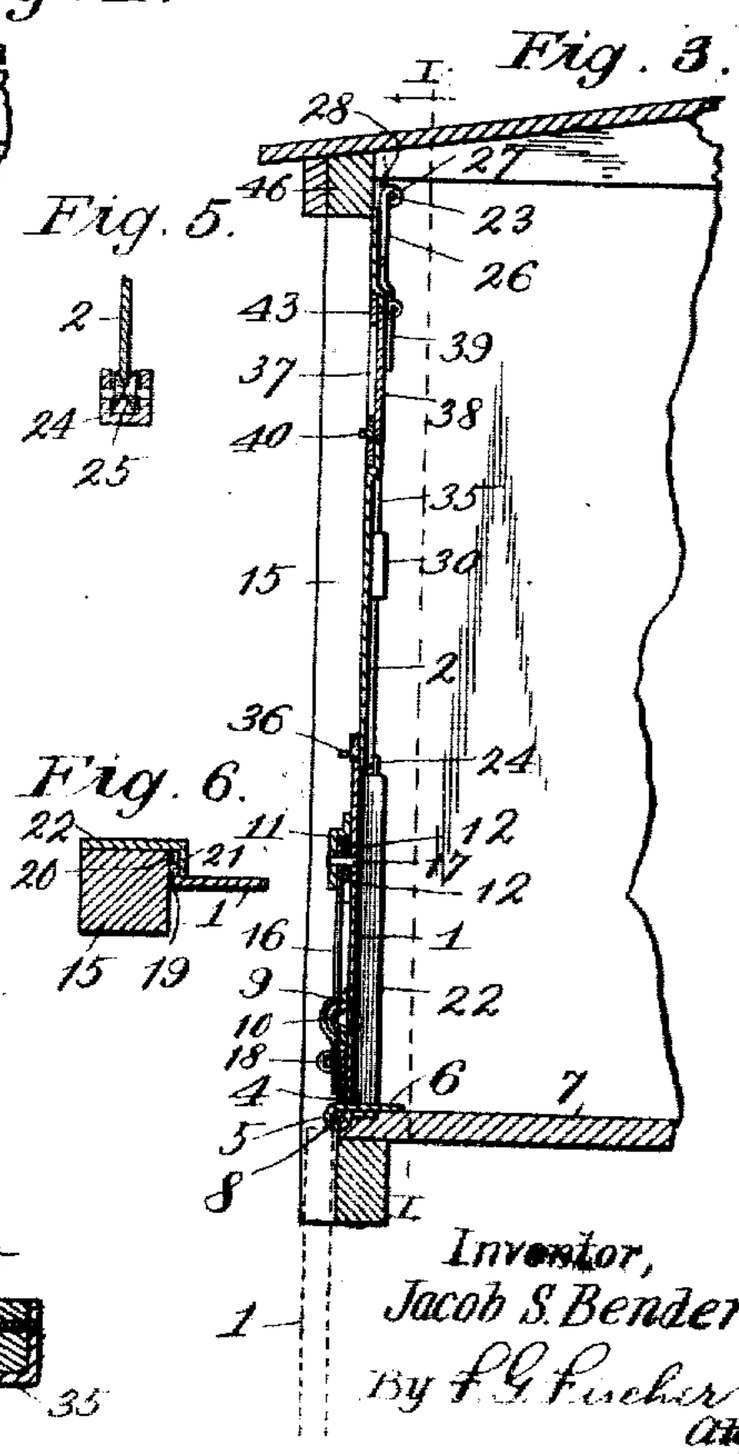

Fig. 3.

Fig. 5.

Fig. 6.

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UNITED STATES PATENT OFFICE.

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COMBINED GRAIN-DOOR AND LOADING AND UNLOADING PLATFORM FOR BOX-CARS.

No. 814,014. Specification of Letters Patent. Patented March 6, 1906.

Application filed June 12, 1905. Serial No. 264,805.

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 Combined Grain-Doors and Loading and Unloading Platforms for Box-Cars, of which the following is a specification.

My invention relates to improvements in combined grain-doors and loading and unloading platforms for box-cars; and one of my objects is to provide a door for cars which will effectually prevent the leakage of grain and when opened will present a platform sufficiently rigid to truck over.

A further object is to provide an all-metallic door for box-cars which will be more durable and easier opened when unsealed than the ordinary wooden door now in general use.

Another object is to arrange the two sections forming the door in such a manner that they will fit so snugly against each other and the door-jambs of the car as to exclude all rain, sleet, &c., from the door-openings, and thus protect the contents of the car from damage.

The invention consists in the construction, combination, and arrangement of parts hereinafter described, and pointed out in the claims; and in order that the invention may be fully understood reference will now be made to the accompanying drawings, in which—

Figure 1 represents a broken longitudinal section of a box-car provided with my improvements taken on line I I of Fig. 3. Fig. 2 is a broken side elevation of same. Fig. 3 is a transverse section taken on line III III of Fig. 2. Fig. 4 is a broken transverse section of the upper door-section, the door-jamb, and an angle-plate, taken on line IV IV of Fig. 1. Fig. 5 is a broken detail vertical section of the lower portion of the upper door-section and its lower track member, taken on line V V of Fig. 1. Fig. 6 is a broken cross-section of the lower door-section, door-jamb, and an angle-plate. Fig. 7 is a longitudinal section of a box-car provided with a modified form of upper door-section, taken on line VII VII of Fig. 8. Fig. 8 is a transverse section of same, taken on line VIII VIII of Fig. 7. Fig. 9 is a detail perspective view of the modified door-section. Fig. 10 is a longitudinal section of one side of the box-car and the modified door-section, taken on line X X of Fig. 7.

In carrying out the invention I employ a lower door-section 1 and an upper door-section 2. Said lower door-section is provided at its lower terminal with hinge members 3, united at their upper ends with an integral longitudinal strip 4, riveted to the door in order to reinforce the latter. Said hinge members fit snugly between the hinge members 5 of a threshold-plate 6, secured to the floor 7 of the box-car, the hinge members 3 and 5 being secured together with a pintle 8. Section 1 is further reinforced near its lower portion with a horizontal brace 9, riveted thereto and provided with a longitudinal bead 10. It is also reinforced near its upper end with a horizontal casing 11, riveted thereto, which in addition to bracing the upper portion of the section protects a pair of locking-bolts 12, arranged in said casing and adapted to hold the door in a closed position. Casing 11 is enlarged at its central portion to better brace the weakest part of section 1 and tapers toward its ends to snugly fit and guide the terminals of bolts 12. The enlarged central portion of the casing also gives ample space for the operation of the upper end of a hand-lever hereinafter described.

Bolts 12 are reinforced at their outer terminals with enlarged rectangular portions 13, adapted to enter sockets in keepers 14, secured to the door-jambs 15. The inner ends of bolts 12 are bent in opposite directions and pivoted a suitable distance apart to the upper portion of a hand-lever 16, fulcrumed upon a pin 17, located midway between the pivoted inner ends of the locking-bolts, so that when said lever is moved in the direction indicated by arrow *a* the bolts will be withdrawn from their keepers and the door may be opened.

By bending the bolts as above described their rectangular ends will enter the sockets squarely instead of at an angle thereto, as would be the case if they extended straight from their pivoted to their rectangular ends. Pin 17 is secured to section 1 and casing 11. Lever 16 is bent in such shape that its handle terminates near one side of the door, so that an operator may stand at one side of the latter while unlocking section 7, and thus be out of the way when it swings downwardly.

In order that the section may be sealed

when closed, I provide it with a projecting staple 18, adapted to extend through a slot in the lower portion of the hand-lever, which latter may be disengaged from said staple after the seal has been removed by springing its lower end outwardly.

To insure grain and weather proof joints when the lower section is closed, I provide its opposite ends with inturned flanges 19, adapted to fit snugly into pockets 20, formed between door-jambs 15 and the outturned flanges 21 of a pair of angle-plates 22, secured to the door-jambs.

The upper door-section 2 is arranged to slide backwardly from the door-opening upon a track comprising an upper member consisting of a rod 23 and a lower member comprising a channel-bar 24 and antifriction-rollers 25, mounted therein for the reception of the lower end of section 2, the upper end of the latter being provided with a pair of arms 26, having looped upper terminals 27, loosely embracing member 23, which latter is supported by brackets 28. Section 2 may be readily opened or closed with a handle 29, pivoted in a recess 30, pressed in the section, so that it will not strike the rear door-jamb when it is pushed backwardly with said section until the front edge of the latter is flush with said door-jamb. Thus the full width of the door-opening may be exposed when desired.

In order that the section may be sealed when closed, I provide it with a staple 31, adapted to receive the slotted end of a hasp 32, hinged to the rear door-jamb. Staple 31 is arranged in a recess 33, pressed in the section for the same purpose that handle 29 is arranged in recess 30. When section 2 is closed, its forward edge fits snugly within a pocket formed between the adjacent door-jamb and a flange 34 of an angle-plate 35, secured to said door-jamb. In order to provide a grain and weather proof joint, its lower end extends downwardly far enough to lap the upper edge of section 1, and its lower portion is provided with a water-table 36, which projects over the upper edge of section 1 and reinforces the lower portion of section 2.

The contents of the car may be inspected or it may be loaded with grain without opening either of the sections through an opening 37 in section 2 of sufficient size to receive the discharge end of a grain-spout. Said opening is normally closed by a wicket 38, secured at its upper portion to hinges 39 and provided at its lower outer edge with a water-table 40, which projects beyond the lower edge of the opening 37 and prevents water from entering therein. Said wicket is secured when closed by a pin 41, extending through the water-table, and a staple 42, which latter projects from the lower outer portion of a casing 43, the sides and upper portion of which are overlapped by the wicket, as shown in Fig. 1, in order to form tight joints at these points. By placing the fastening devices of the wicket as shown said wicket may be opened from the outside of the car.

In practice the door may be opened by disengaging hand-lever 16 from staple 18 and pulling it upwardly in the direction of arrow *a* to release the locking-bolts from their keepers 14. The pressure of the grain within the car will then force section 1 open, which will drop down to the vertical position shown by dotted lines, Fig. 3, so that the grain may discharge into the receiving end of an elevator-spout. If, however, the grain is to be unloaded into a wagon, section 1 may be let down upon the tail-board of the latter and be used as a shoveling-board. After the grain near the door-opening has been discharged access may be had to the car by pushing the upper section 2 backwardly

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

1. The combination with a box-car and the door-jambs thereof, of a grain-door, a section forming the lower portion of said door and hinged at the threshold of the door-opening, a sliding section forming the upper portion of the door and lapping the upper portion of the lower section, and an angle-plate secured to one of the door-jambs to form a pocket for the reception of the forward edge of the upper section, substantially as described.

2. The combination with a box-car, of a grain-door, a section forming the lower portion of said door and hinged at the threshold of the door-opening, a sliding section forming the upper portion of the door and lapping the upper portion of the lower section, arms 26 secured to the upper portion of said upper section, looped terminals 27 on the upper ends of said arms, brackets secured to the upper inner portion of the car, a rod extending through loops 27 and carried by the brackets, and means for guiding the lower portion of the upper section, substantially as described.

3. The combination with a box-car, of a grain-door, a section forming the lower portion of said door and hinged at the threshold of the door-opening, a sliding section forming the upper portion of the door and lapping the upper inner portion of the lower section, means for supporting and guiding the upper portion of said upper section, antifriction-rollers upon which said upper section is arranged to travel, and a channel-bar 24 in which said rollers are mounted, substantially as described.

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

JACOB S. BENDER.

Witnesses:
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J. MOORE.