

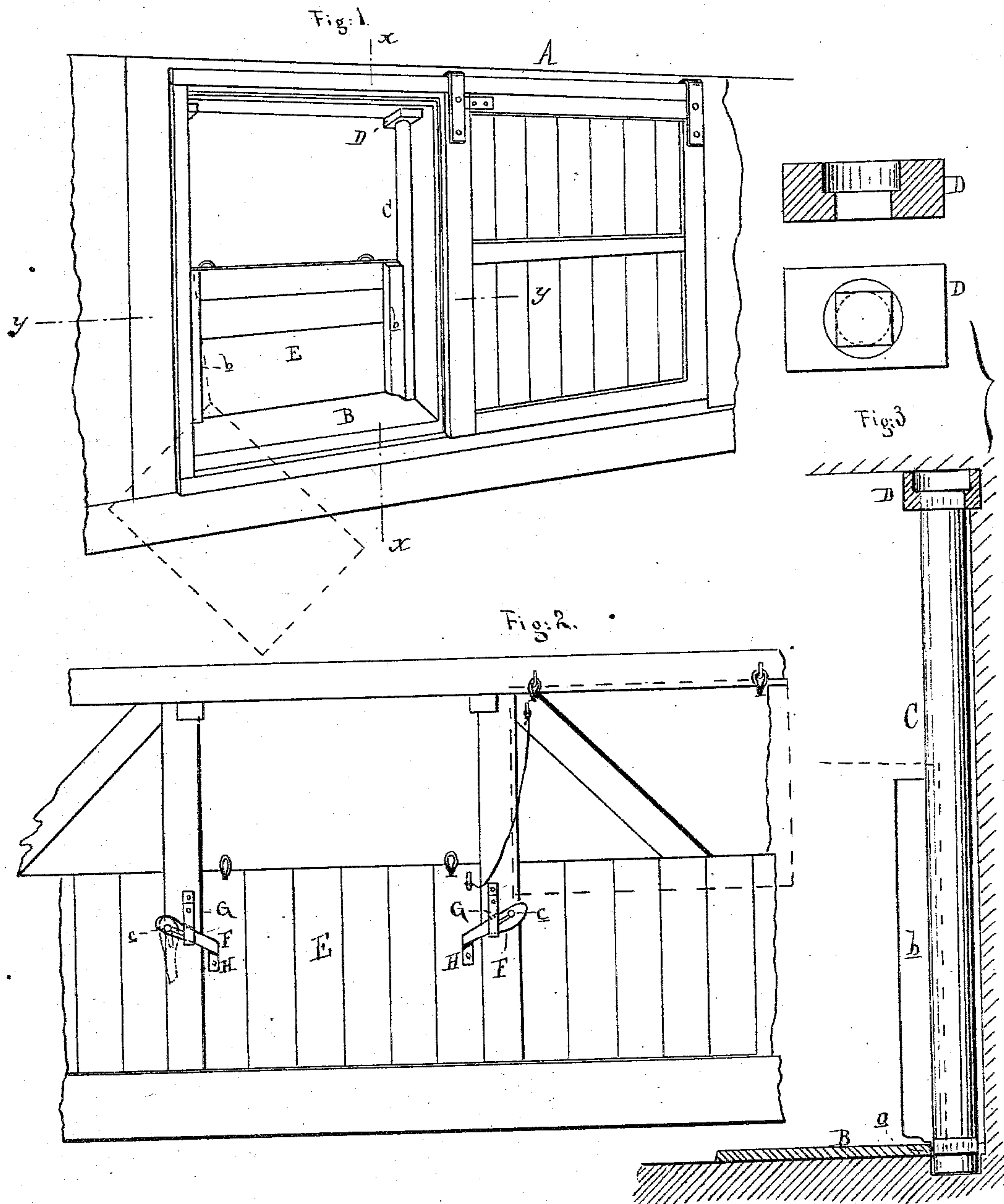
(No Model.)

2 Sheets—Sheet 1.

J. J. TREAT.
GRAIN CAR DOOR.

No. 280,972.

Patented July 10, 1883.



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By

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(No Model.)

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Fig. 4

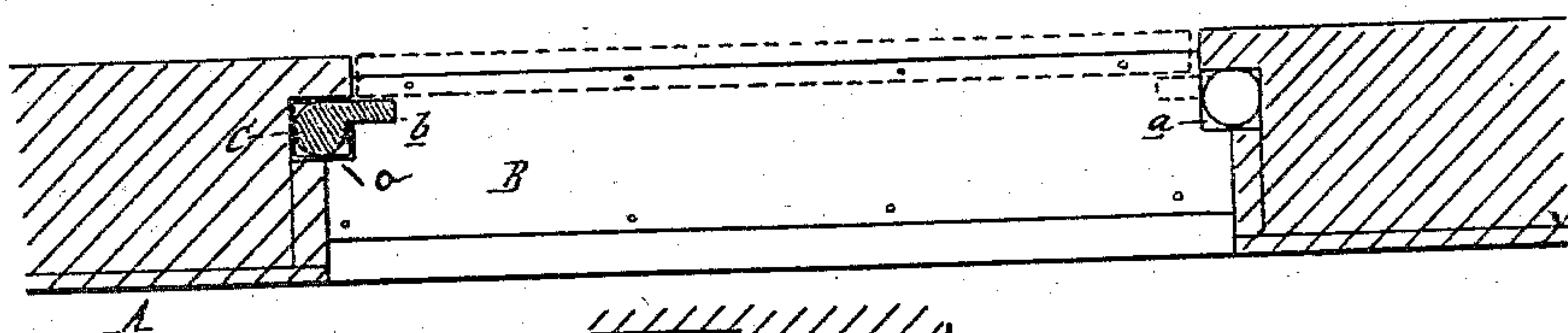
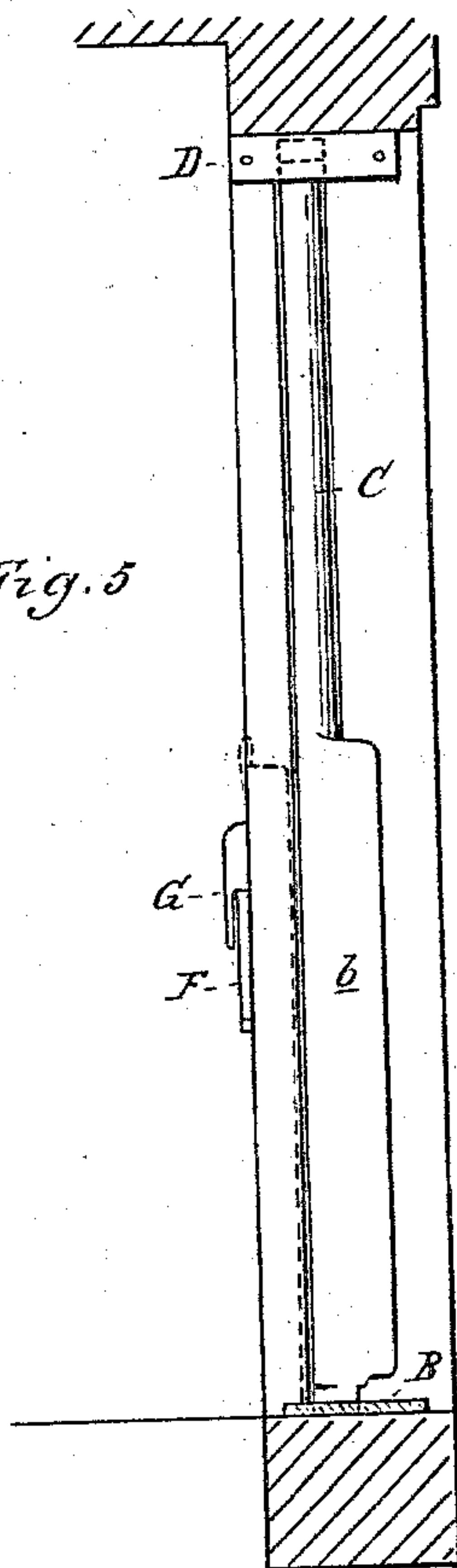


Fig. 5



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UNITED STATES PATENT OFFICE.

JAIRUS J. TREAT, OF DETROIT, MICHIGAN.

GRAIN-CAR DOOR.

SPECIFICATION forming part of Letters Patent No. 280,972, dated July 10, 1883.

Application filed February 20, 1882. (No model.)

To all whom it may concern:

Be it known that I, JAIRUS J. TREAT, of Detroit, in the county of Wayne and State of Michigan, have invented new and useful Improvements in Grain-Car Doors; and I hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, which form a part of this specification.

10 The nature of this invention relates to certain new and useful improvements in the construction and method of securing what are usually denominated "grain-doors" for freight-cars.

15 The peculiar shape of wheat and other grains is such that vibration—as in transportation in railway-cars, when in bulk—causes each particular berry to act as a wedge, exerting a lateral pressure upon all its sides; hence the inability to employ for such transportation cars provided with the ordinary doors, for, while they might be able to withstand the pressure, it would be almost impossible to open them against that pressure when necessary to discharge the load. Grain-doors, I am aware, have been provided for cars wherein this difficulty has been sought to be obviated; but in their construction and operation they only partially avoided the objections.

30 The object of the present invention is to provide a grain-door which will be rigidly supported against pressure from any direction and held firmly in place while in use; but upon a slight change being made in the fastenings or supports when necessary to unload the car, the pressure of the grain will force the door out of its position, and it, being attached to the body of the car by means of a chain, and being provided with means for hanging it up inside the car when not required for use, can be readily covered and hung up without interfering with the room in the body of the car when it is desired to use the same for other freights.

45 Figure 1 is a perspective of a cross-door, showing my improved method of securing the same against pressure from the inside, the view being taken from the outside of the car. Fig. 2 is an elevation taken from the inside of the car. Fig. 3 is a sectional detail, showing one

of the partially-rotating door posts or jambs and the method of controlling its movements. Fig. 4 is a horizontal sectional view through the line *y y*, Fig. 1; and Fig. 5 is a vertical sectional view through the line *x x*, Fig. 1. 55

The invention consists in so constructing and securing the door that when the door-jambs are partially rotated they allow the pressure on the inside of the door to force it outward; also, in the peculiar construction and operation of the semi-rotating supports or jambs; also, in the peculiar arrangement of devices upon the inside of the car for holding the door in position against a vertical movement, and in the peculiar construction, arrangement, and operation of the parts, as more fully hereinafter described. 60 65

In the accompanying drawings, A represents a section of the side of a freight-car with a doorway, the same being of the usual construction. In the bottom of this doorway is placed an iron threshold, B, extending the whole length of the doorway on the floor. A rectangular slot, *a*, is cut in each end of the threshold, and in the sill of the car, immediately below such slot, there is a round hole to receive the lower end of the partially-rotating door-jamb C, there being one of these jambs on each side of the doorway. This jamb C is preferably made of cast metal, and is a round shaft squared at top and near the bottom, just above the rounded part, which is stepped into the hole below the slot in the threshold, and is provided with a flange, *b*. The upper end of the shaft is stepped in a support, D, with a rectangular hole of sufficient size to allow the squared upper end of the shaft to enter it, and from the upper side of this support this square hole is enlarged to a circular one of sufficient diameter to allow the squared head of the jamb to rotate freely. These jambs being in position to hold the door in place, the rounded end of the shaft is stepped into its hole, and the squared portion just above it engages with the rectangular slot in the ends of the threshold, and the upper squared end of the shaft engages with the square portion of the hole in the support, with the flanges *b* on each shaft facing toward each other, thereby forming a very rigid and firm support against the pressure 80 85 90 95 100

ure from the inside against the door E, which rests against the two flanges. When it is desired to unload the car, each of these partially-rotating jambs is raised by a pinch-bar applied under the lower ends of the flanges, or otherwise, as is most convenient, until the squared portions of the shaft are elevated above their engagement with the rectangular slot in the threshold and the squared hole in the upper support. The pressure of the grain on the inside of the door will partially rotate such shafts and fold the flanges inward against the door-posts, allowing the door to pass out through the opening, with the grain following it. When in this position the jambs have been rotated a quarter-turn, the squared portions of the shafts will drop into their sockets and hold the rotating jambs rigidly in that position again.

The door is secured to the side of the car by means of a chain, and is provided with loops upon its upper edge, by means of which, when the car is unloaded, the door may be hung up against the inner wall of the car and out of the way until such car is again required for grain-shipment, when it is put in place, the door-jambs having been rotated to their original position, that the flanges may form the rest for the door. Upon the inner side of the car-wall, and on each side of the door, there is hung by means of a pin, *c*, a sliding bolt, *F*, the pin passing through a slot in such bolt, as shown. A hook-stop, *G*, is secured to the side of the car, and each edge of the door is provided with a stop, *H*. When the door is in position, this slide bolt or latch engages with the lower side of the hook-stop *G* and the upper edge of the stop *H*, and there being one of these fastenings on each side of the door, they hold the same by the diagonal position of the bolts or latches against upward movement and against inward movement.

I am aware of Patent No. 156,540, of 1874; but in that construction it is necessary to form slots in the door to receive the staples, and also to entirely remove the key before the door is released. In my construction the door

is simply provided with the inclined lug, and may be released by withdrawing the key a short distance—that is, from over the stop *H*—whereupon it disengages itself, dropping into the position shown in dotted lines in Fig. 2.

By the use of a grain-door of this character there are no obstructions in the floor alongside the car-wall to prevent the free use of the steam-shovel in unloading, and no obstructions in the way of storing other fruit when the car is used for other purposes than that of transporting grain.

What I claim as my invention is—

1. In a car, the combination, with the loose door *E*, of the rotating supports *C*, having flanges *b*, and means, substantially as described, for locking and unlocking said flanged supports, substantially as specified.

2. In a freight-car, the combination, with the loose door *E*, of the door-threshold, and sockets *D*, provided with square and round recesses, and the supports *C*, provided with flanges *b*, and with square and round portions at the ends to engage with the recesses in the threshold and blocks *D*, substantially as described, and for the purpose set forth.

3. In a freight-car, the combination of a loose door, *E*, and semi-rotating supports *C*, having folding flanges *b*, said flanged supports being located one at each end of the outside of the door, whereby the pressure of the grain in the car will partially rotate said supports and push the door outward when the fastening devices are released, substantially as described.

4. The combination, with a freight-car and the loose door *E*, of the guides *G*, fastened to the door-frame, the sliding bolts *F*, and the stops *H*, secured to the door, said bolts and stops acting together to hold the door from moving either inwardly or upwardly, substantially as described.

JAIRUS J. TREAT.

Witnesses:

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