(No Model.)

G. H. TREADGOLD & J. E. MILLS.

GRAIN CAR DOOR.

No. 568,183. Patented Sept. 22, 1896.

Fig. 1.

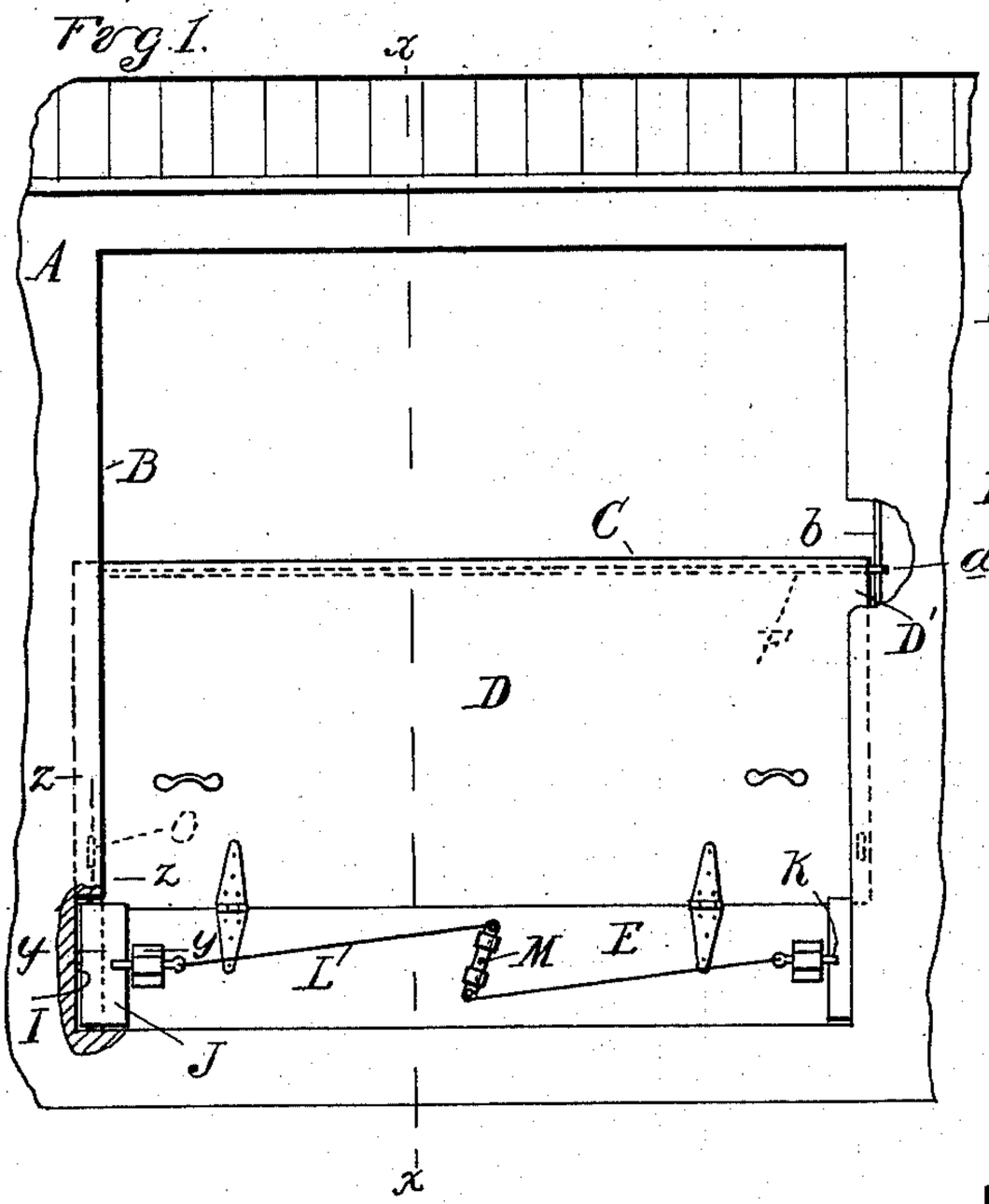


Fig. 2.

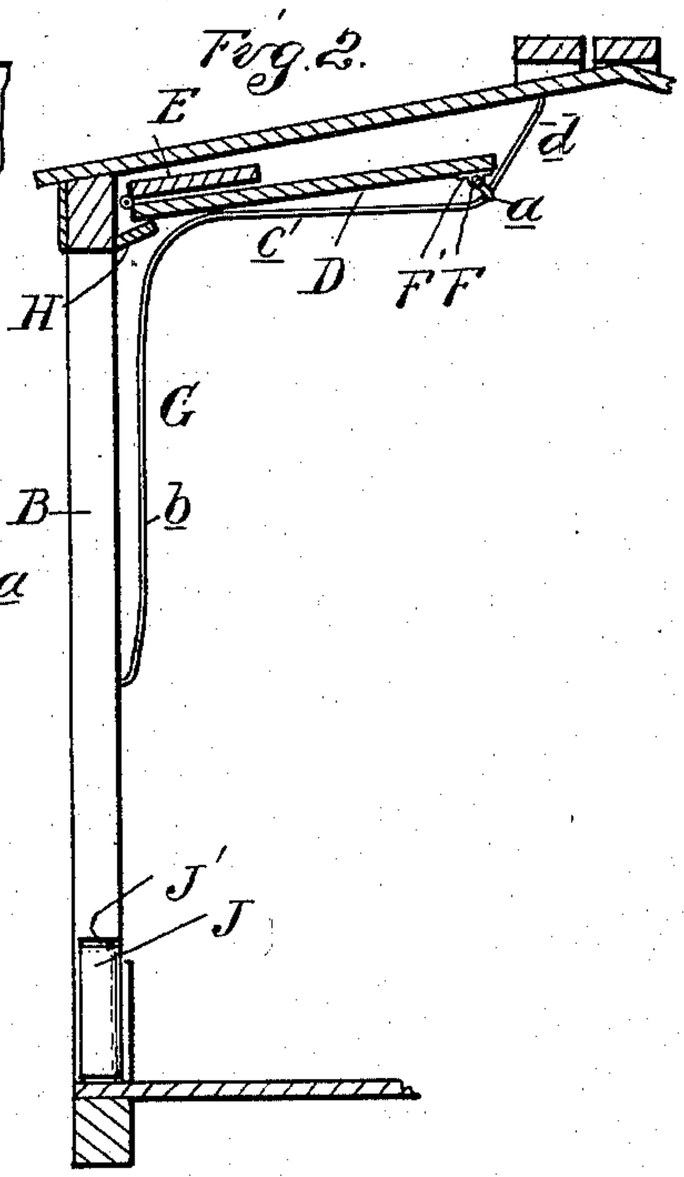


Fig. 3.

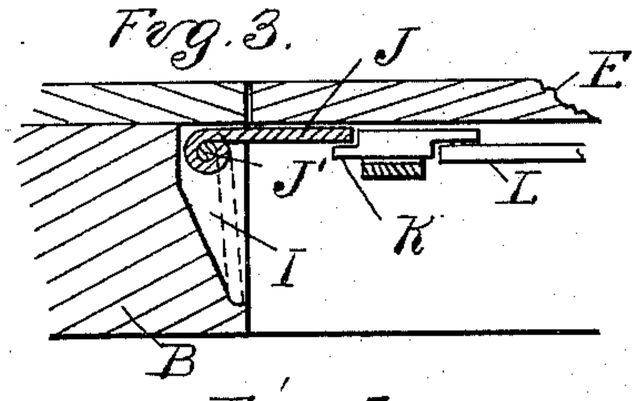


Fig. 4.

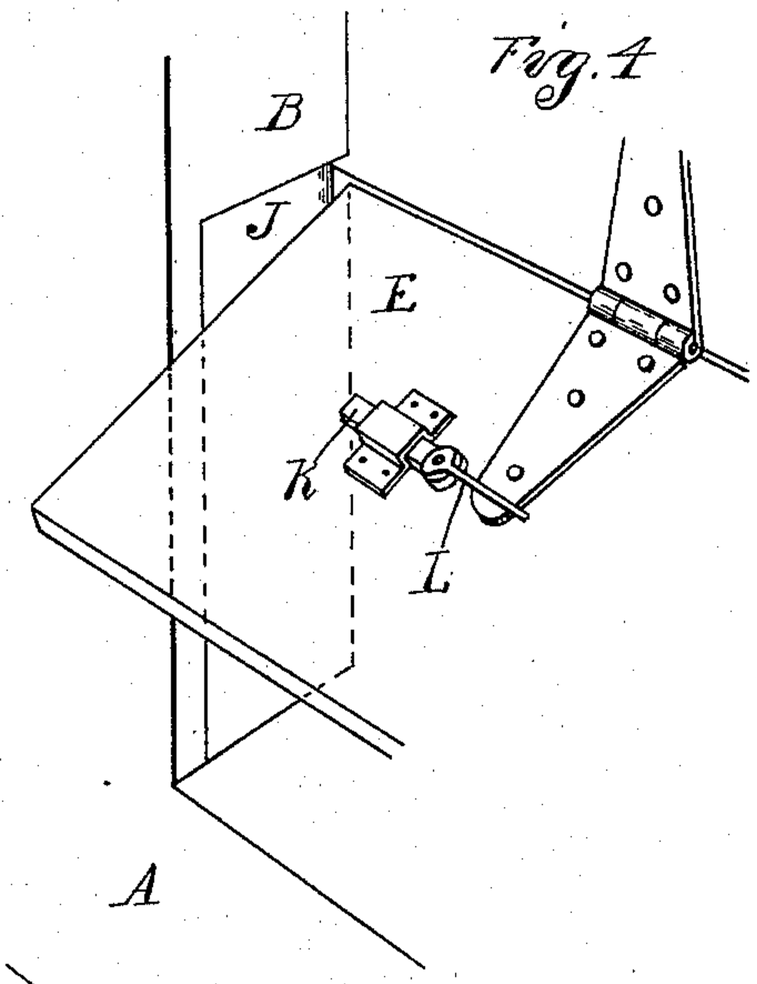


Fig. 5.

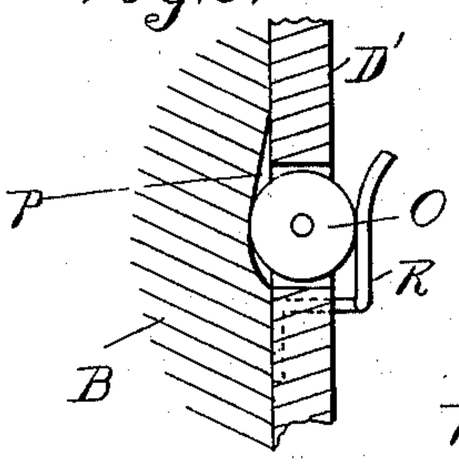
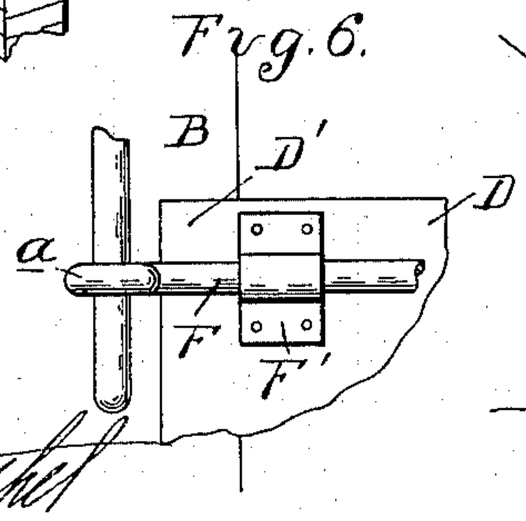


Fig. 6.



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UNITED STATES PATENT OFFICE.

GEORGE H. TREADGOLD AND JOHN E. MILLS, OF PORT HURON, MICHIGAN.

GRAIN-CAR DOOR.

SPECIFICATION forming part of Letters Patent No. 568,183, dated September 22, 1896.

Application filed December 9, 1895. Serial No. 571,498. (No model.)

To all whom it may concern:

Be it known that we, GEORGE H. TREADGOLD and JOHN E. MILLS, citizens of the United States, residing at Port Huron, in the county of St. Clair and State of Michigan, have invented certain new and useful Improvements in Grain-Car Doors, of which the following is a specification, reference being had therein to the accompanying drawings.

Our invention consists in the peculiar construction and arrangement of parts and especially in the devices employed for closing and locking the auxiliary door and for securing the door when in its raised position, all as more fully hereinafter described.

In the drawings, Figure 1 is a front elevation of the door in its closed position. Fig. 2 is a cross-section on line *x x*, Fig. 1, showing the door in its raised position. Fig. 3 is a horizontal section through the door-casing and auxiliary door on line *y y*, Fig. 1. Fig. 4 is a perspective view looking from the front and showing the auxiliary door in its open position. Fig. 5 is a vertical longitudinal section through the door-post on line *z z*, Fig. 1; and Fig. 6 is an elevation of a corner of the main door, showing its attachment to the guide-rails.

A is the car.

B is the door-casing, and C is the door comprising the main door D and the auxiliary door E, hinged to the lower edge of the main door. The door D is of greater width than the door-opening and bears upon the inner face of the casing.

F is a rod extending across the upper end of the door D and secured thereto by suitable fastenings F, so as to be free to swivel thereon. At each end of this rod is formed an eye *a*, adapted to slidingly engage with the guide-rails G, secured on each side of the casing. These guide-rails comprise portions *b*, extending up the side of the casing, and portions *c*, extending laterally toward the center of the car terminating in the upwardly and inwardly inclined portions *d*.

H is a shelf or supporting-ledge formed above the door-opening. The auxiliary door E is of a width to fit between sides of the casing and is adapted to open outwardly.

I are recesses formed in the sides of the door-casing of a height somewhat greater than the width of the auxiliary door. J are plates pivotally secured at J′ within these recesses, so as to fold outwardly against the door E, covering the crack between it and the casing, or to fold in the recesses I, allowing the door E to pass by them.

K are bolts slidingly secured to the door E, adapted to lock the overlapping ends of the plates J to said door. These bolts are preferably connected by the rods L to a centrally-pivoted lever M, provided with sockets with which an operating-handle may be engaged.

O are antifriction-rolls secured to the inner faces of the overlapping edges D′ of the main door. P are recesses formed in the casing B, in which said rolls engage in the closed position of the door.

The closed position of the door is shown in Figs. 1 and 3 of the drawings, in which the overlapping edges D′ of the door D fit closely against the inner faces of the door-casing, and the auxiliary door E is closed and locked by the hinged plates J, which fold over said door and are held in that position by the bolts K.

To open the door, the bolts K are withdrawn from their engagement with the plates J by means of the lever M and connecting-links L, and as soon as said plates are unlocked the pressure of grain on the inside will open the door E, forcing the plates J into the recesses I, as shown in Fig. 4. The pressure against the door D is thus released and the door may then be lifted by the operator, the eyes *a* sliding up the portions *b* of the rails G. In lifting the door the rolls O run up the inclined faces of the recesses P and then up the sides of the casing, diminishing the power required to lift the door.

When the door is raised to the laterally-extending portion *c* of the guide-rail, the upper end may be carried inwardly, the rod F revolving in its bearings so as to admit of the eyes *a* passing around the bends in the rails. The door E may then be folded over the main door D and the lower end of the main door raised, so as to rest it upon the shelf or ledge H, the eyes *a* of the rod F being forced up the inclined portion *d* of the rails to allow the door to pass above the shelf.

When resting on the shelf, the weight of the door will force the eyes *a* down the inclined portion of the rails, holding said door securely upon the shelf.

We preferably provide at each side of the casing locking-rails R, which extend over the edges D′ of the door opposite the recesses P. When the door is in its closed position, the rolls O will engage with the rails R and hold the door against the casing.

What we claim as our invention is—

1. The combination with the door-casing, of a vertically-raising door having a bearing upon the inner face of the door-casing and slightly wider than the door-opening, an auxiliary door of a width slightly less than the door-opening hinged horizontally to the lower edge of said main door and adapted to open outwardly between the sides of the casing and fold back on the main door, plates pivoted in recesses in the sides of the casing and adapted to fold over the outer face of said auxiliary door and cover the cracks between said door and casing, and means carried by the door for locking the overlapping plates and hinged door in the closed position, substantially as described.

2. In a grain-car door the combination with a vertically-raising door having a sliding bearing upon the inner face of the door-casing, of the eyes *a* swiveled to upper end of said door, the guide-rails G with which said eyes have a sliding engagement and comprising the vertical portions *b* the lateral portions *c* and inclined portions *d*, and the shelf or ledge H above the door-opening upon which the lower edge of the door is adapted to rest, substantially as described.

3. In a grain-car door, the combination with the vertically-raising main door having a sliding bearing upon the inner face of the door-casing, and an outwardly-opening auxiliary door hinged to the lower edge of the main door and adapted to be folded up upon the same, of the eyes *a* swiveled to the upper end of the main door, the guide-rails G having the vertical portions *b*, the lateral portions *c* and inclined portion *d* and the shelf or ledge H above the door-opening adapted to support the lower ends of the folded doors, substantially as described.

4. The combination with the vertically-raising door, having a sliding bearing on the inner face of the door-casing, the eyes *a* swiveled to the upper end of said door, and the guide-rails G with which said eyes have a vertically-sliding engagement, of recesses P formed on the inner face of the casing, locking-rails R opposite the recesses P, and antifriction-rolls O on the door adapted to run on the door-casing and engage with the recesses P and rails R in the closed position of the door to hold the same against the casing, substantially as described.

In testimony whereof we affix our signatures in presence of two witnesses.

GEORGE H. TREADGOLD.
JOHN E. MILLS.

Witnesses:
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O. F. BARTHEL.