No. 882,308. PATENTED MAR. 17, 1908.

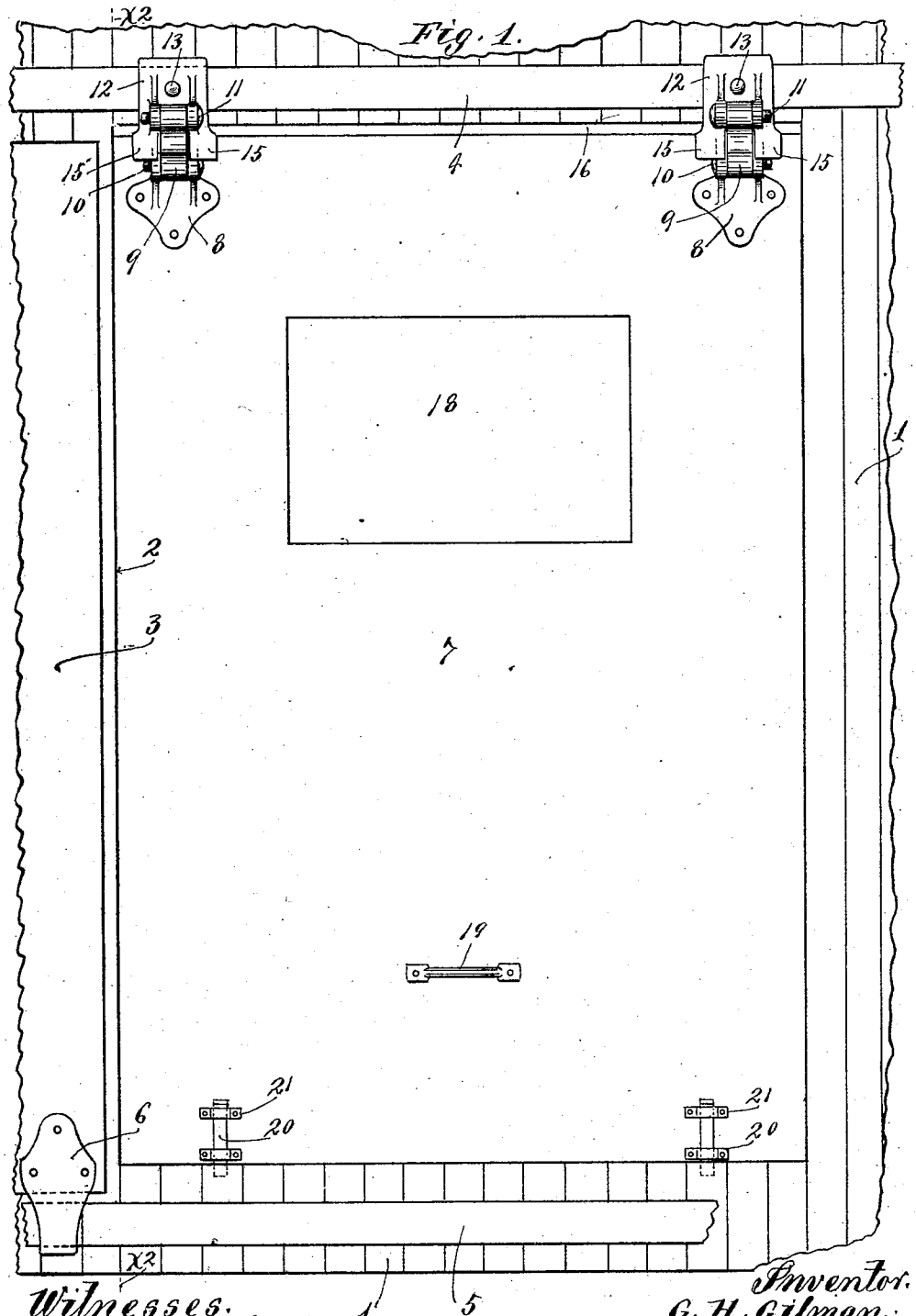
G. H. GILMAN.

GRAIN DOOR FOR CARS.

APPLICATION FILED OCT. 5, 1907.

2 SHEETS—SHEET 1.

Fig. 1.



Witnesses.
A. H. Opsahl.
Malie Hoel.

Inventor.
G. H. Gilman.
By his Attorneys.
Williamson & Merchant

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2 SHEETS—SHEET 2.

Fig. 2.

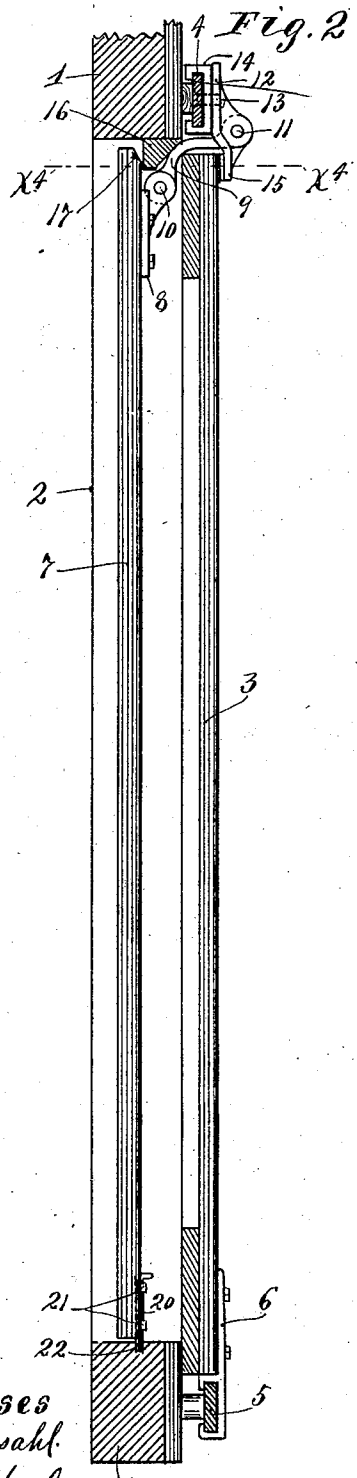


Fig. 3.

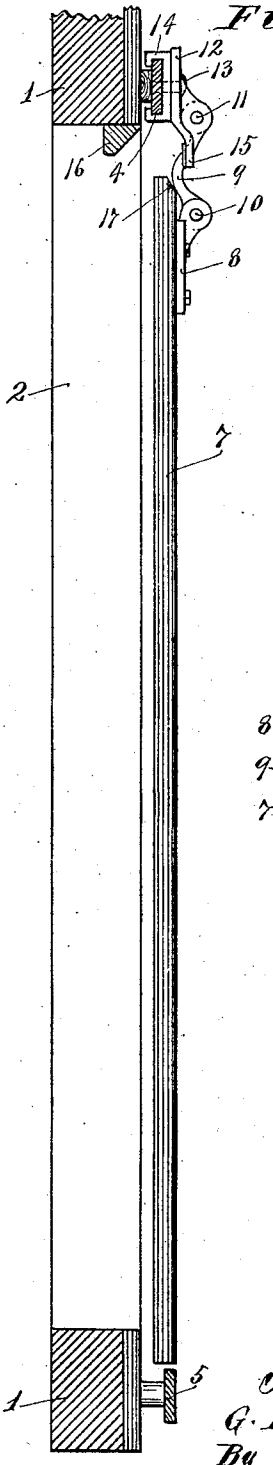
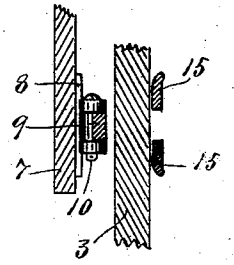


Fig. 4.



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UNITED STATES PATENT OFFICE.

GEORGE H. GILMAN, OF ST. PAUL, MINNESOTA.

GRAIN-DOOR FOR CARS.

No. 882,308. Specification of Letters Patent. Patented March 17, 1908.

Application filed October 5, 1907. Serial No. 396,068.

To all whom it may concern:

Be it known that I, GEORGE H. GILMAN, a citizen of the United States, residing at St. Paul, in the county of Ramsey and State of Minnesota, have invented certain new and useful Improvements in Grain-Doors for Cars; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same

My invention has for its especial object to provide an improved grain door for cars, and to this end it consists of the novel devices and combinations of devices hereinafter described and defined in the claims.

This improved grain door, so-called, while capable of independent use, is especially adapted for use in connection with an outside sliding door that is mounted to slide upon a suitable horizontal guide rail secured to the exterior of the side of the car body.

In the accompanying drawings which illustrate the invention, like characters indicate like parts throughout the several views.

Referring to the drawings, Figure 1 is a view in side elevation, with parts broken away, showing the central portion of one side of a box car of standard construction, and illustrating one of my improved grain doors applied thereto. Fig. 2 is a transverse vertical section taken on the line x^2 x^2 of Fig. 1, but showing the outside car door in a closed position. Fig. 3 is a section taken on the same line as Fig. 2, but with the outside car door moved from a closed and with the grain door dropped into a released position; and Fig. 4 is a detail in horizontal section, taken on the line x^4 x^4 of Fig. 2.

In the drawings, only one side of the car body 1 is shown, but this is provided with the usual side door opening 2 that is adapted to be closed in the usual way by an outside sliding door 3. Horizontally disposed upper and lower guide rails 4 and 5 are rigidly secured to the exterior of the car body above and below the door opening 2, and the outside door 3 is shown as provided with the usual lower edge keeper brackets 6 that embrace and support said door 3 for a sliding movement upon the lower guide rail 5 in the customary way. The upper edge of the outside door 3 is adapted to be held against outward swinging movement by any suitable guides, such as the usual retaining brackets, not shown. In the usual construction, the guide rails 4 and 5 need extend only above and below the door opening and to one side thereof, but for the application of my improved grain door these guide rails, and especially the upper guide rail, should extend over the door opening and a considerable distance on each side thereof.

The so-called grain door or inside door should quite closely fit within the door opening 2, and is arranged for a sliding movement and for a hinge-like swinging movement from an upper guide rail 4. The said grain door 7, in the drawings, is shown as constructed of wood, but may be made of any suitable material. To the exterior of the grain door 7, near the upper corners thereof are rigidly secured hinge plates 8 having laterally spaced lugs to which the lower end of a crooked link 9 is pivotally connected by a pin 10. The upper end of each crooked or curved link 9 is pivotally connected by a pin 11 to the outwardly projecting laterally spaced ears of an upper hinge plate or bracket 12. The upper hinge brackets 12 are rigidly secured by rivets 13 or otherwise to channel-shaped guide heads 14 that are arranged to slide freely upon the upper guide rail 4. The hinge brackets 12 are further provided with laterally spaced depending door guiding shoes 15, the outer edges of which are curved or beveled, as best shown in Fig. 4, for engagement with the outer surfaces of the upper edge portion of the outside door 3. A quite heavy stop cleat 16 extends across the door opening 2 and is rigidly secured to the upper portion of the door frame. The outer edge of this stop cleat 16 is beveled to afford clearance for the crooked links 9, when the grain door is closed, as shown in Fig. 2. Also as shown, the upper edge of the grain door 7 is beveled slightly, as shown at 17.

The grain door is preferably provided in its upper portion with a man-hole or opening 18 through which a person may enter the car when the same is loaded with grain. This opening 18 should, of course, be located above the grain level and, if desired, it may be normally closed by a suitable plate or supplemental door section. The numeral 19 indicates a hand-piece applied to the lower portion of the outer surface of the grain door.

Suitable lock devices are preferably applied to the lower edge of the grain door. These

lock devices may take various forms but, as shown in the drawings, they are afforded by vertically movable lock plungers 20 mounted in guides 21 on said grain door and engageable with depressions or seats 22 on the door sill.

With the construction described, the grain door, when dropped into the position shown in Fig. 3, is capable of being slid upon the upper rail 4 from a position in lateral alinement with the door opening 2, into a position entirely at one side of the said door opening, and vice versa. When the grain door is alined with the door opening, it may be swung into said door opening or into a closed position shown in Fig. 2. To accomplish this closing movement, the lower edge of the door should be held farther outward than the upper edge of the door, and the extreme upper edge of the door should be given an upward swinging movement so that it is lodged inward of and against the stop cleat 16, and then the lower edge of the door should be swung into position and secured to the door sill by means of the lock bolts 20. When the grain door is thus set in a closed position, the crooked or curved links 9 are carried into position above the line of movement of the upper edge of the outside door 3, and the said outside door may then be slid into a closed position, as shown in Fig. 2. In this closed position, the outside door, at its upper edge, is held inward by the beveled shoes or cam portions 15 of the upper hinge brackets 12, and the upper edge of said outside door then engages and positively holds the said crooked links 9 in their positions shown in Fig. 2, so that the said outside door becomes in a sense a lock for securing the inside door or grain door in its closed position, interlocked with the stop cleat 16.

When the door opening 2 is to be entirely opened, the outside door 3 may be slid to one side of the door opening, and the grain door, after being first dropped into the position shown in Fig. 3, may be then slid entirely to the other side of the door opening, in which position it may also be secured when the said grain door is not required for use in the door opening.

The improved grain door above described is of comparatively small cost and is capable of easy application to box cars of standard construction.

What I claim is:

1. The combination with a car body having a door opening and horizontally extended outside guide rails located one above and the other below said door opening, of a grain door supported by said upper guide rail with freedom for sliding and lateral swinging movements, and an outside door mounted for sliding movements on said lower guide rail to and from a closed position, substantially as described.

2. The combination with a car body having a door opening, and an outside guide rail extended horizontally above said door opening, of guide heads mounted to slide on said guide rail and carrying depending door-guiding shoes, a grain door adapted to fit within said door opening, links connecting the upper portion of said grain door to said guide heads, and a slidably mounted outside door arranged to be slid into a closed position with its upper edge portion engaged between said guide shoes and links and holding the latter, and hence said grain door, in a closed position, substantially as described.

3. The combination with a car body having a door opening, a stop cleat secured to the upper portion of said door opening, and an outside horizontally extended guide rail secured above said door opening, of a grain door adapted to fit within said door opening, guide heads slidably mounted on said guide rail and carrying depending door-guiding shoes, links connecting the upper portion of said grain door to said sliding guide heads, a slidably mounted outside door adapted to be moved into a closed position with its upper edge portion located between said guide shoes and links and serving to hold said links pressed inward, and hence the upper edge of said grain door, interlocked with said stop cleat, and means for locking the lower edge of said grain door to the door sill, substantially as described.

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

GEORGE H. GILMAN.

Witnesses:

H. D. KILGORE,

MALIE HOEL.