

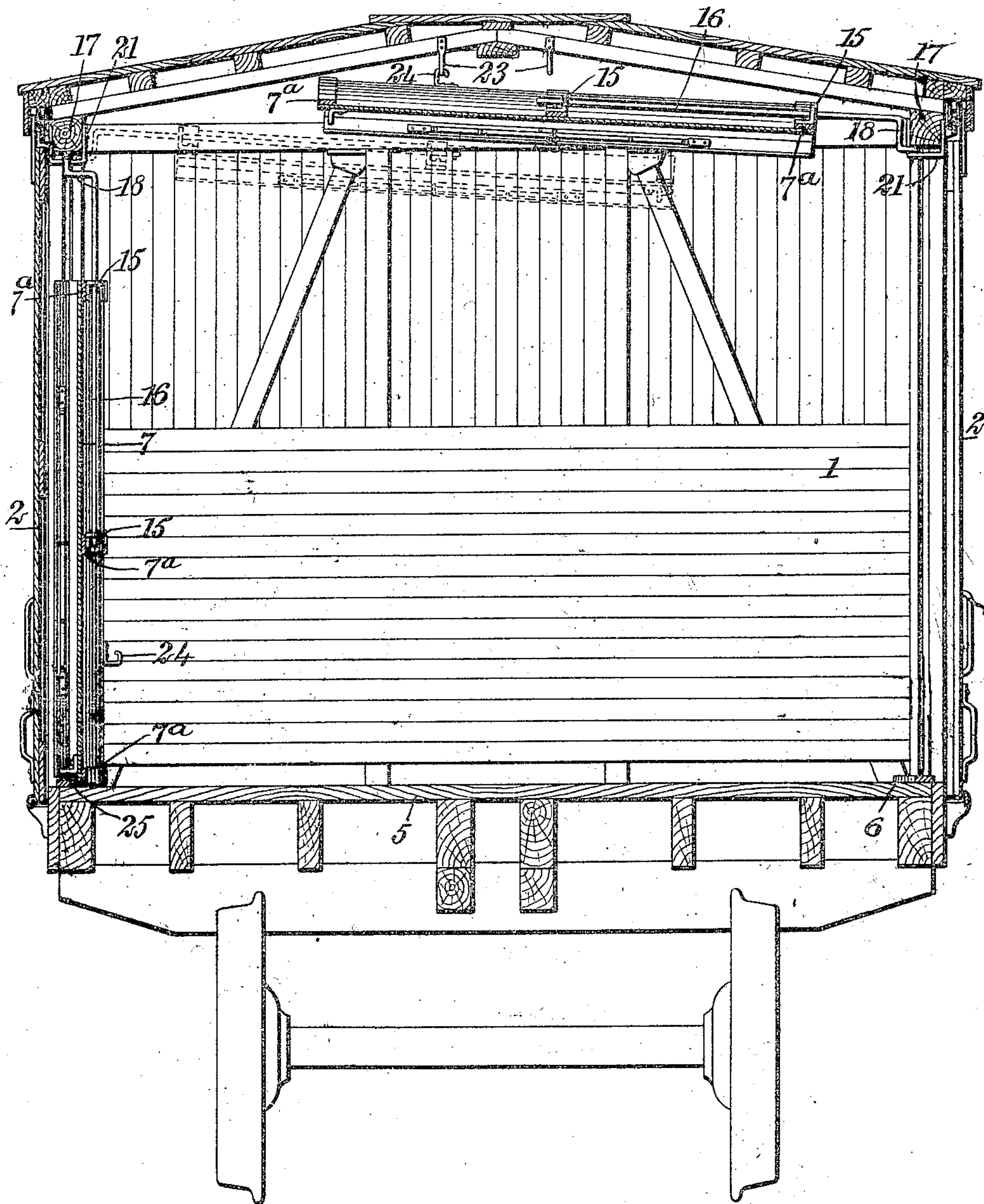
No. 844,193.

PATENTED FEB. 12, 1907.

E. SCHREIBER.  
GRAIN DOOR FOR CARS.  
APPLICATION FILED FEB. 28, 1906.

2 SHEETS—SHEET 1.

Fig 1.



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2 SHEETS—SHEET 2.

Fig. 2.

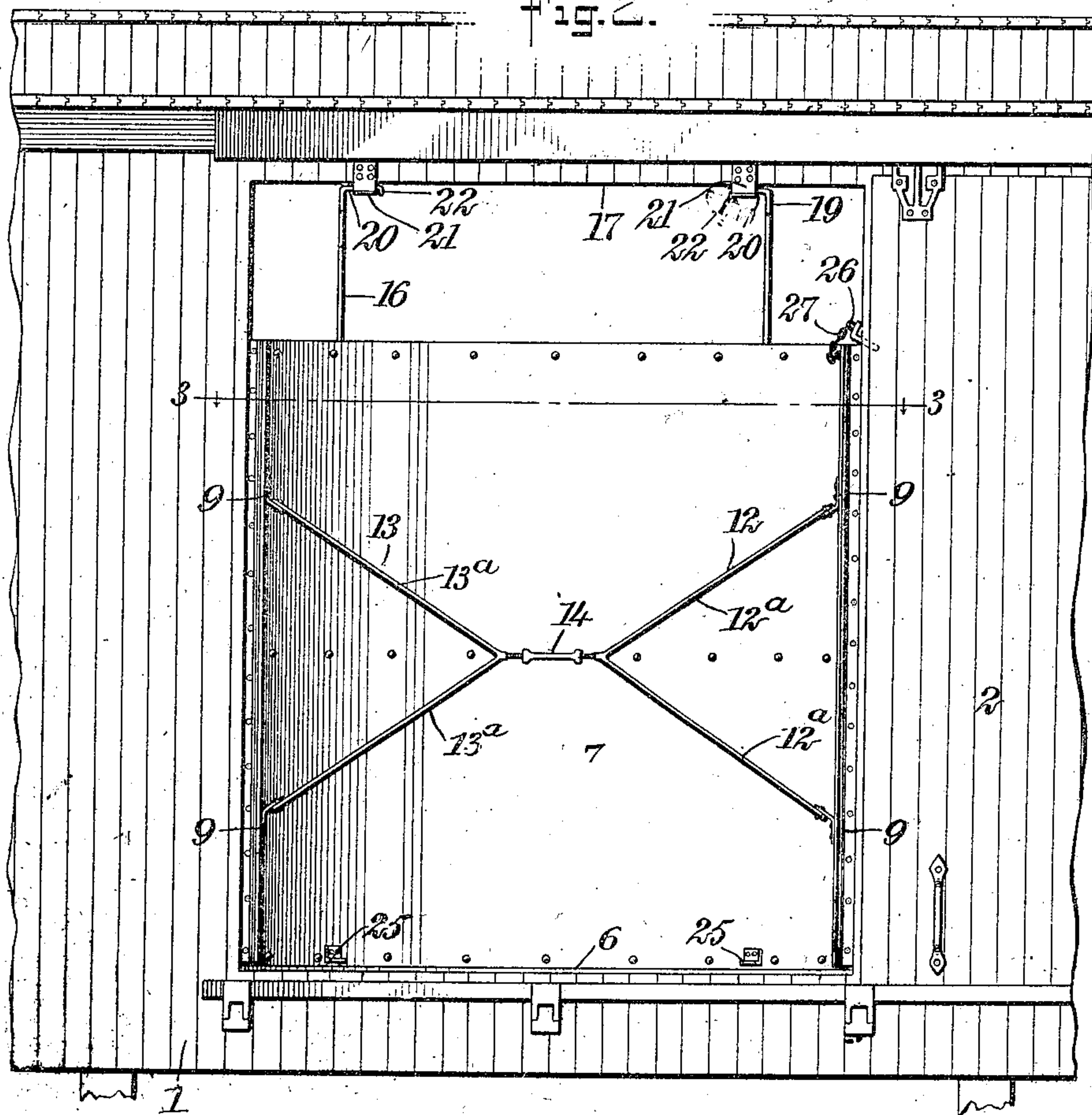
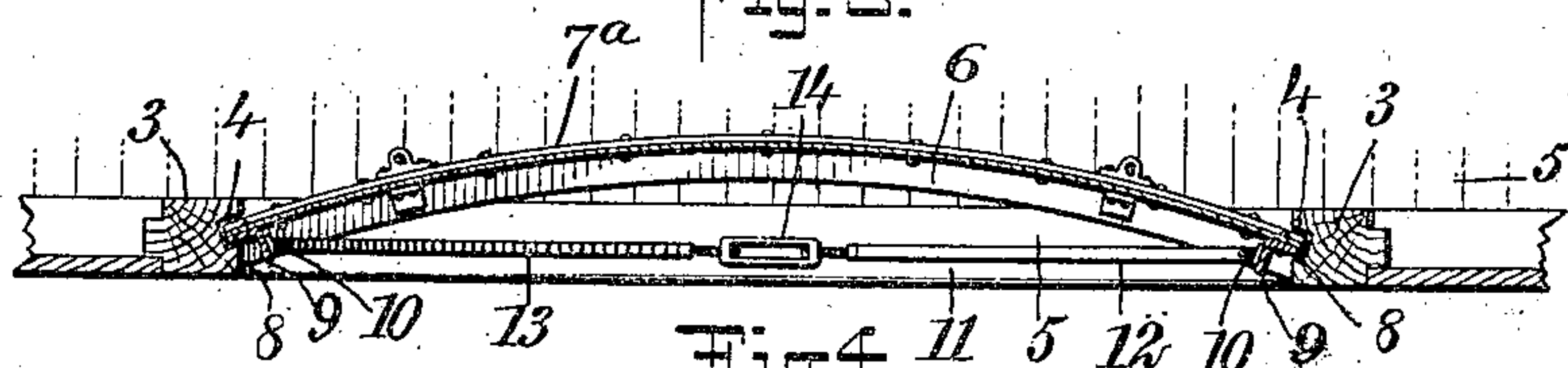
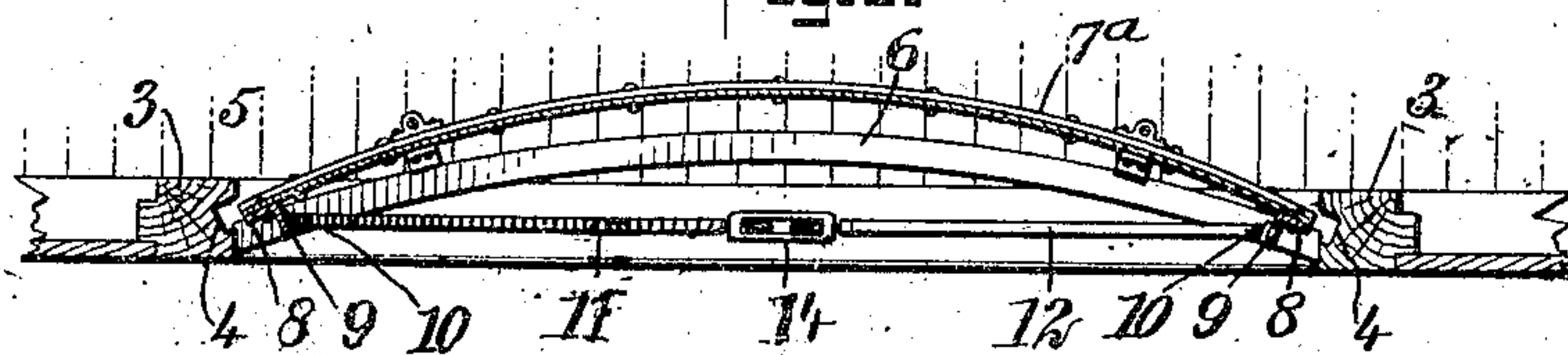


Fig. 3.



194.



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# UNITED STATES PATENT OFFICE.

EMILE SCHREIBER, OF ATCHISON, KANSAS.

## GRAIN-DOOR FOR CARS.

No. 844,193.

Specification of Letters Patent.

Patented Feb. 12, 1907.

Application filed February 28, 1906. Serial No. 303,374.

*To all whom it may concern:*

Be it known that I, EMILE SCHREIBER, a citizen of the United States, and a resident of Atchison, in the county of Atchison and State of Kansas, have invented a new and Improved Grain-Door for Cars, of which the following is a full, clear, and exact description.

This invention relates to grain-doors such as are used on freight-cars for preventing the leakage of grain in shipment.

The object of the invention is to produce a grain-door of simple construction which may be readily closed or opened and held out of the way so as to clear the doorway.

More specifically, the purpose of the invention is to produce a door which will be of very light construction, but which is admirably adapted to support the pressure of the grain within the car.

The invention consists in the construction and combination of parts, to be more fully described hereinafter and particularly set forth in the claims.

Figure 1 is a cross-section through a grain-car, taken in line with the doorways, one of the doors being represented as open as in removing the grain. Fig. 2 is a side elevation of the middle portion of the car and showing one of the grain-doors in closed position. Fig. 3 is a cross-section taken substantially on the line 3-3 of Fig. 2 and representing the door in a closed position; and Fig. 4 is a view similar to Fig. 3, but representing the door in the act of being opened.

Referring more particularly to the parts, 1 represents the body of the car, which may be of any suitable construction and provided with the usual doorways on each side closed by the usual sliding doors 2. Referring now especially to Figs. 3 and 4, in applying my grain-door to a car of this description I provide the side faces of the jambs 3 with vertical grooves 4, the side faces of the said grooves 4 being inclined for a purpose which will appear more fully hereinafter. Upon the floor 5 of the car lies a strip 6, which constitutes a sill adapted to be engaged by the lower edge of the door 7. This sill 6 is of curved form, as shown, its convex side being disposed toward the central longitudinal axis of the car. The inner end of this sill aligns substantially with the outer side of the grooves or slots 4, referred to above. The grain-door 7 is

formed, preferably, of a single sheet of steel, which is curved so as to conform to the curvature of the sill 6, which it engages at its lower edge, as stated. The side edges of the door 7 project into the grooves 4, at which point the edges of the door are reinforced by vertical strips 8, preferably consisting of angle-irons. These angle-irons present outwardly-projecting flanges 9, to which brackets 10 are attached, and to these brackets are attached pivotally the extremities of a link 11, which link is formed in sections 12 and 13, having their adjacent extremities threaded to receive a connecting-turnbuckle 14. These link-sections 12 and 13 are preferably V-shaped, presenting diverging arms or branches 12<sup>a</sup> and 13<sup>a</sup>. It should be understood that the resiliency of the steel plate 7 tends to straighten the same into a less curved position than that which it is obliged to assume by reason of the link 11. For this reason it will be understood that when the turnbuckle 14 is turned in the proper direction to draw in the link-sections 12 and 13 the side edges of the door will be withdrawn from the grooves 4.

Upon the rear side of the door guide-brackets 15 are attached, and through these guide-brackets pass loosely guide-bars 16 for the door. These guide-bars extend upwardly to a point near the lintel 17 of the doorway. At this point they are formed with substantially horizontal forward extensions or necks 18, as indicated in Fig. 1. Beyond these necks they have upward extensions 19, which are bent laterally to form horizontal shanks 20, which pass under the lintel 17 and longitudinally of the doorway, as shown. These shanks are received by hangers 21, which are substantially U-shaped, the legs of the U being attached, respectively, to the forward and rear side of the lintel, as shown in Fig. 1. These hangers are preferably formed of bar-iron and form an elongated eye under the lintel, which receives the shank, as indicated. The extremities of each of the shanks 20 are preferably turned downwardly to form a retaining-nib 22, which tends to prevent accidental removal of the shank.

On the inner side of the car-body and near the roof I provide shackles 23, which hang downwardly and afford means for hanging the grain-doors in a substantially horizontal



position and at an elevation within the car-body, as indicated in Fig. 1. I provide two of these hooks, so that either of the doors may be hung up first. In order to facilitate the fastening of the doors in this manner, each door is provided on its inner face with a hook 24. When either of the doors is being hung in this manner, it will be understood that it will be swung inwardly into the interior of the car until it is raised into a substantially horizontal position, being supported on its upper edge by the guide-bars 16. It will then be slid downwardly toward the extremities of the guide-bars and then inwardly, so as to enable its hook 24 to engage the shackle 23. If it is desired to hang up both doors, one door will be hung first, as just described, and the other door will be swung inwardly, and this hook will be applied to the turnbuckle of the door already hung. In Fig. 1 in dotted lines the door at the left is represented as supported on a turnbuckle on the other door in the manner just described.

To enable the grain-door to be pried up with a suitable instrument, such as a crowbar, I provide the lower edge thereof on the outer side with cleats 25, under the edge of which the crowbar may be inserted. In this way a sufficient quantity of grain may be allowed to escape so as to enable the door to be forced back toward the interior of the car and so as to hang the same therein in the manner described above. Before forcing the door inwardly in the manner just described the turnbuckle 14 will be rotated in a proper direction, so as to draw the edges of the door inwardly, disengaging them from the groove 14.

In order to prevent any danger of the grain-door becoming raised accidentally when the car is in motion, I provide a removable stop-pin 26, which is received in the jamb of the door, as indicated in Fig. 2, just above the upper edge of the grain-door. As indicated, this pin projects into the path of the door and prevents the same from being raised. For convenience the pin is attached, by means of a suitable chain 27, to an adjacent point of the door.

Especial attention is called to the curved form of the grain-door. By reason of its curved form the door may be of very light construction, while at the same time it will be amply strong and stiff enough to resist the pressure of the grain from within.

In order to stiffen the door 7, I attach binding-strips 7<sup>a</sup> at the upper and lower edges and at the middle thereof. These strips may be riveted to the door, as indicated, and they serve as stays, which assist in keeping the door in shape and render it more springy.

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

1. A grain-door, consisting of a curved plate having means adapted to draw the edges thereof toward each other or force the same apart.

2. A grain-door, consisting of a flexible plate having a link of adjustable length and attached substantially at the opposite edges thereof, whereby said edges may be drawn together or forced apart.

3. A grain-door consisting of a flexible plate having a link formed of sections attached near the vertical edges of said plate, and a turnbuckle connecting said link-sections and affording means for contracting or extending said link.

4. A car having a doorway, a grain-door mounted in said doorway and consisting of a curved, flexible plate having means for extending the same, said doorway having means at the jambs thereof for retaining the edges of said plate.

5. A car having a doorway presenting jambs with vertical grooves therein, in combination with a grain-door consisting of a curved, flexible plate the edges whereof are adapted to engage said grooves, and means for contracting or extending the width of said plate.

6. A car having a doorway presenting substantially vertical guide-grooves in the jambs thereof, a curved sill resting on the car-floor and having its convex side disposed between the central, longitudinal axis of the car, a flexible plate constituting a door having its lower edge normally resting against said sill and having its edges received in said grooves, and an adjustable link connecting said edges and affording means for drawing said edges inwardly or forcing the same apart.

7. A car presenting oppositely-disposed doorways, doors mounted in said doorways and adapted to swing inwardly into the interior of said car, said doors consisting of curved plates having their convex faces disposed inwardly and having links connecting their vertical edges, and means for supporting one of said doors, when sprung inwardly, from the roof of the car, the other of said doors having a hook adapted to engage the link on the opposite door to support the same.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

EMILE SCHREIBER.

Witnesses:

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