

H. W. DREW.
GRAIN DOOR FOR FREIGHT CARS.
APPLICATION FILED MAR. 3, 1910.

973,486.

Patented Oct. 25, 1910.

2 SHEETS—SHEET 1.

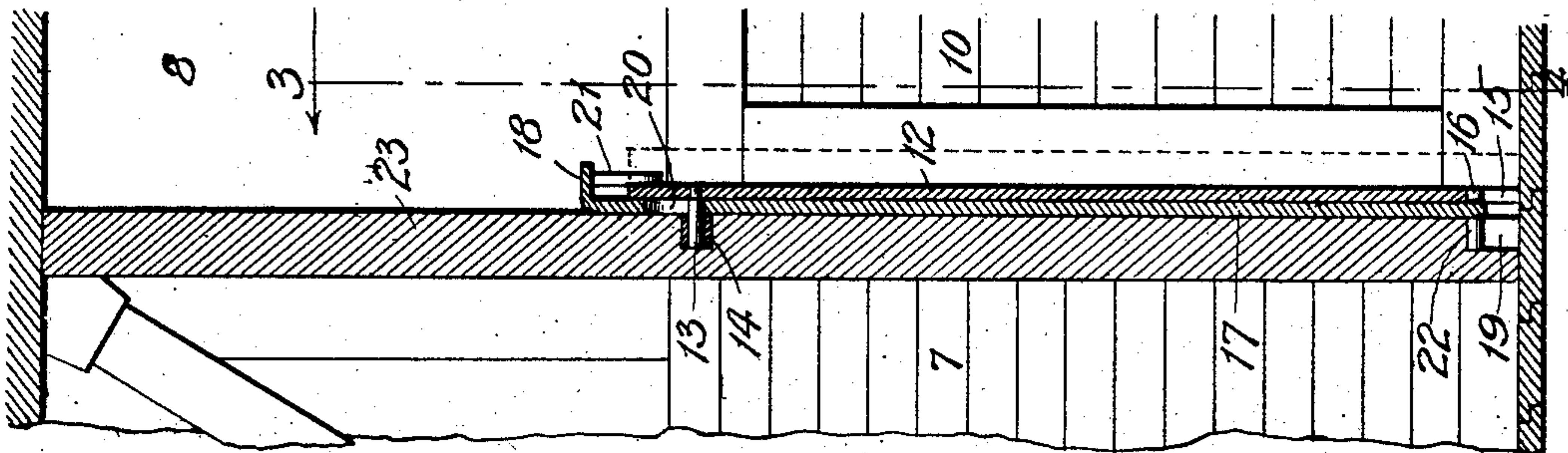
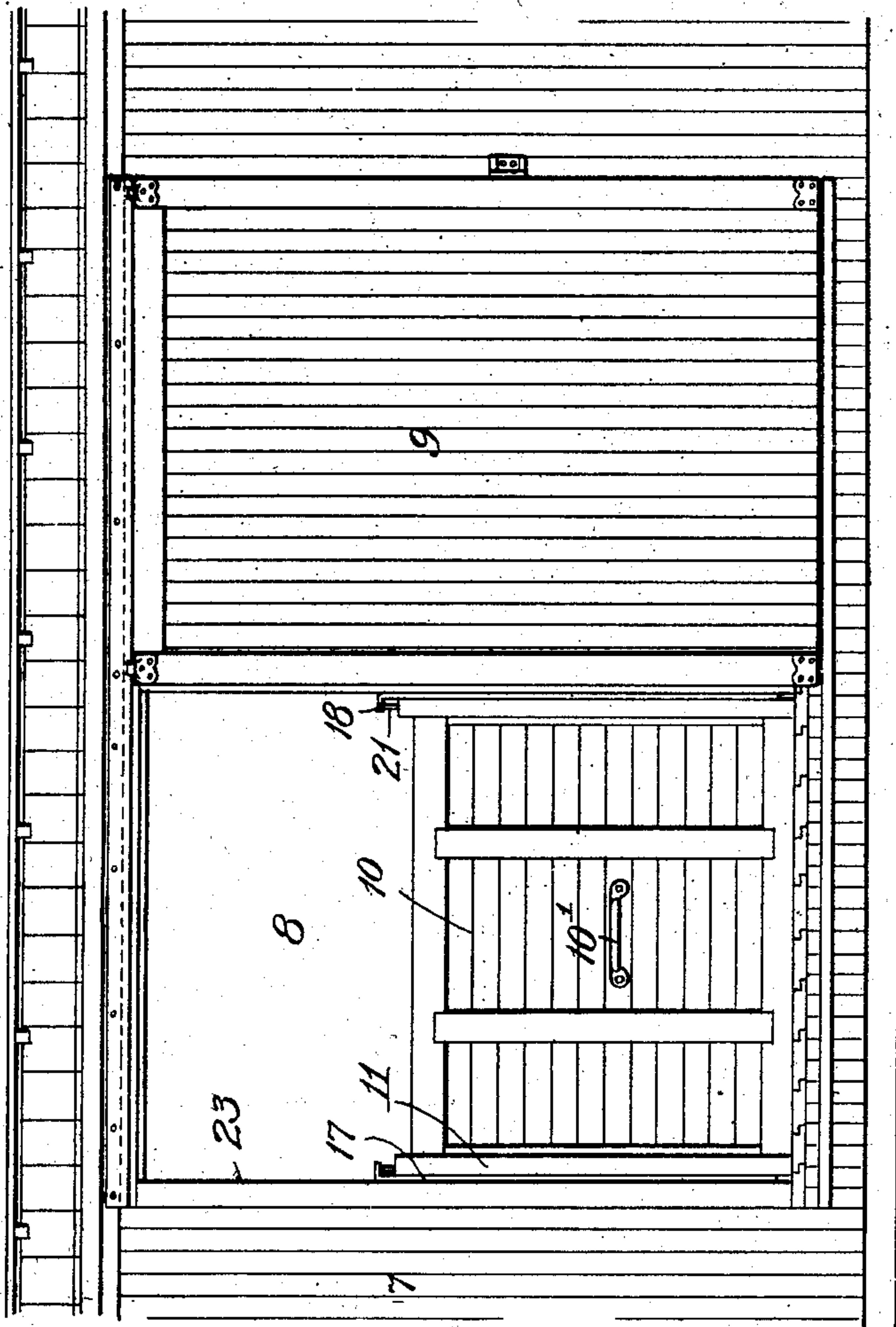


Fig. 2.

Fig. 1.



Witnesses:
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G. F. Chase.

Inventor:
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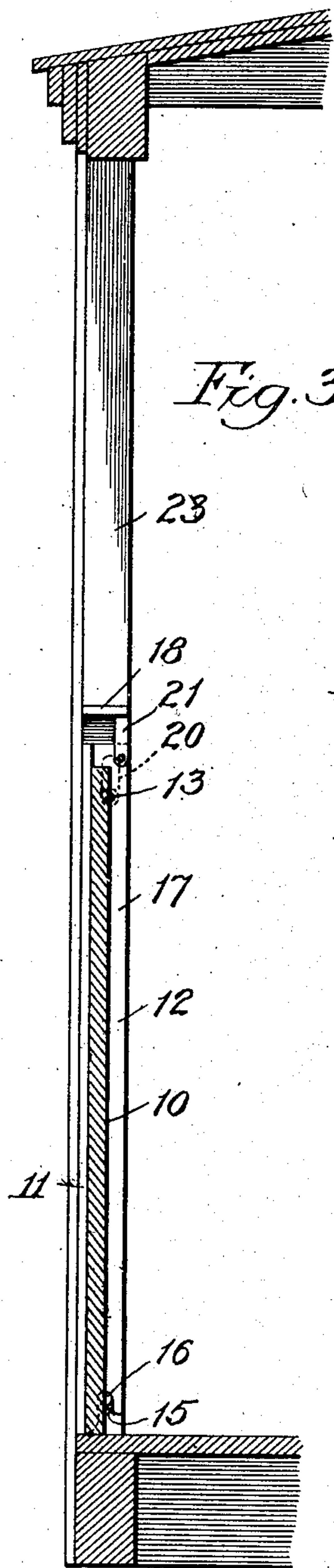


Fig. 3.

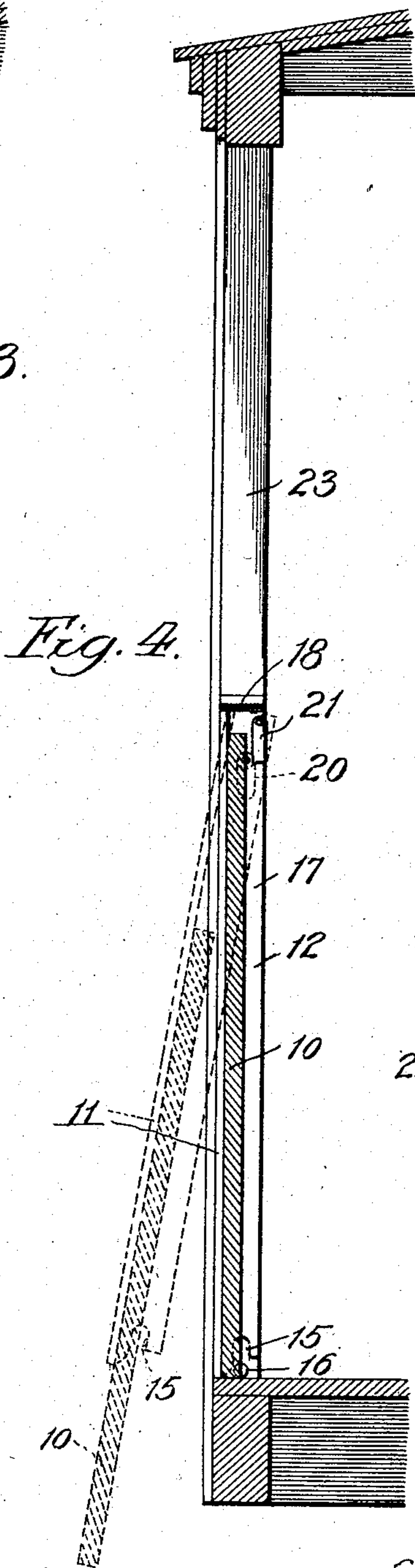


Fig. 4.

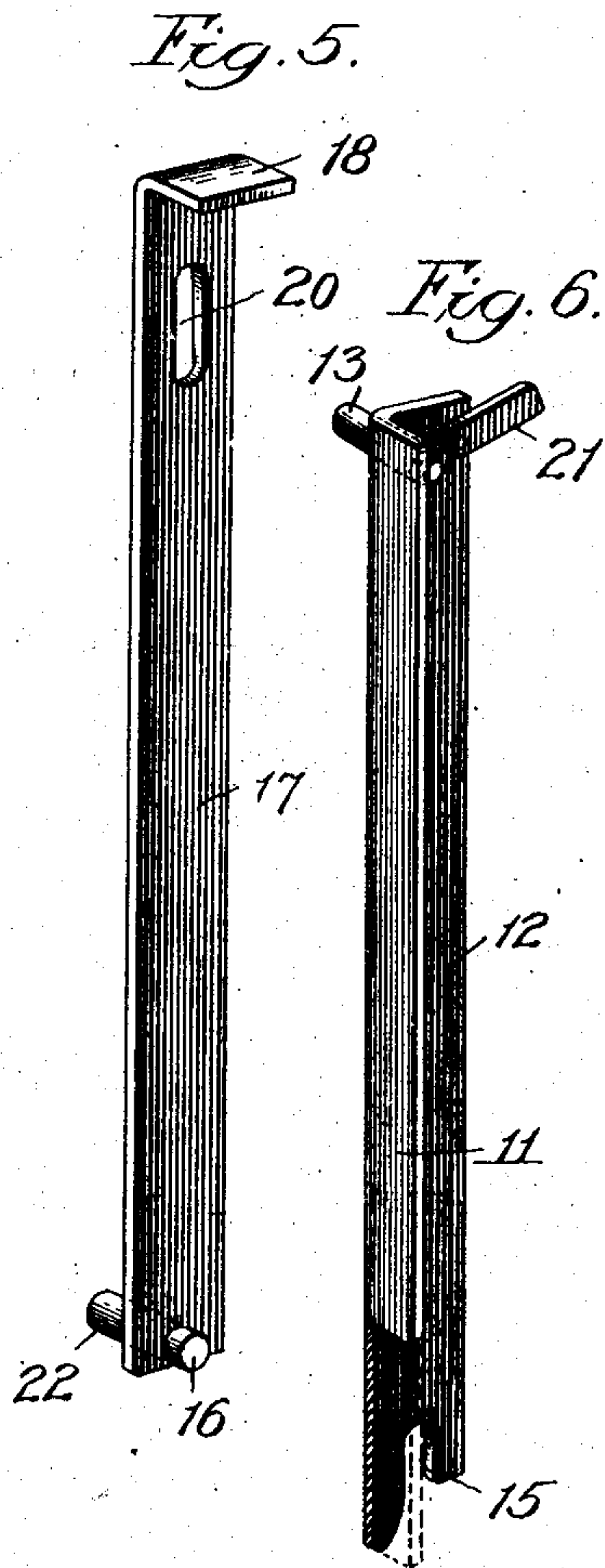


Fig. 5.

Fig. 6.

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UNITED STATES PATENT OFFICE.

HERBERT W. DREW, OF CHICAGO, ILLINOIS.

GRAIN-DOOR FOR FREIGHT-CARS.

973,486.

Specification of Letters Patent.

Patented Oct. 25, 1910.

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To all whom it may concern:

Be it known that I, HERBERT W. DREW, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Grain-Doors for Freight-Cars, of which the following is a specification.

The principal object of my invention is to provide a new and improved door to be placed across the lower part of the side door opening of a freight car to securely retain grain in the car.

Another object of my invention is to provide a grain door for freight cars that may be readily opened when desired to release the grain from the car, but that shall remain securely closed at other times.

A still further object of my invention is to provide a grain door for freight cars that shall be pivotally supported on the side posts of the door opening at its upper corners, and shall have releasable locking mechanism at its lower corners.

These and various other objects of my invention will be made apparent in the following specification and claims, taken in connection with the accompanying drawings. In these drawings I have illustrated one specific embodiment of the invention, leaving the invention itself to be defined in the appended claims.

Referring to these drawings,—Figure 1 is a side elevation of a freight car comprising my improved grain door. Fig. 2 is a vertical detail section on an enlarged scale, looking in the same direction as in Fig. 1. Figs. 3 and 4 are vertical cross sections taken on the line 3—4 of Fig. 2, looking in the direction of the arrows, the mechanism being shown in two different operative positions in these two figures. Figs. 5 and 6 are perspective views of certain bars which are elements of the structure and will be more fully described hereinafter.

The freight car as shown in Fig. 1 has the usual side wall 7 with a door opening 8 and outer side door 9. The supplemental grain door 10 has the handle 10' by which it may be readily manipulated. The ends of this door 10 rest against the flanges 11 of the angle iron bars 11—12, these being shown most clearly in Fig. 6. Each bar 11—12 has a trunnion 13 at its upper end which lies in the trunnion bearing 14 in the respective side post 23 that bounds the door opening.

The lower end of each bar 11—12 has a notch 15 which normally engages the stud 16 carried on the lower end of the bar 17. This bar 17 has a vertically extending slot 20 near its upper end which engages the already mentioned trunnion 13. The stud which has been referred to, in the bottom of the bar 17, is extended through and forms a projection 22 on the opposite side which engages the slot 19 in the side post 23. Thus it will be seen that the bar 17 is definitely constrained to slide through a limited distance in an up-and-down direction. The upper end of this bar 17 is bent over, as indicated by the reference numeral 18. A button 21 is pivoted on the upper end of the bar 11—12 and when in the position shown in Figs. 2 and 3 serves to hold the sliding bar 17 in its uppermost position.

When the sliding bar 17 is up, the stud 16, carried thereby, engages the notch 15 on the lower end of the angle bar 11—12, and thus both the upper and lower ends of said angle bar 11—12 are held against displacement. Under these circumstances, the flange 11 acts as an abutment against which the corresponding end of the door 10 may rest. When it is desired to open the door to release the grain, the pivoted tongue 21 may be knocked down from the position shown in Figs. 2 and 3. Then a suitable force applied as by hand or by a blow of a hammer on the head 18 will drive the sliding bar 17 down so as to carry the stud 16 in the lower end thereof out of the notch 15 in the lower end of the angle-bar 11—12. The pressure of the grain against the door 10 will at once force its lower edge outwardly, swinging the angle-bars 11—12 about their upper ends to the position shown in dotted lines in Fig. 4. The door 10, as soon as it escapes the door-sill on which it has normally been resting, will be free to drop downwardly, as shown in dotted lines in Fig. 4.

When it is desired to re-assemble the door to its proper position for retaining grain, the angle-bars 11—12 can be pushed back into vertical position and the slides 17 raised so as to make the studs 16 engage the notch 15. Then the parts can be locked in position by means of the pivoted tongue 21.

It will be observed that I have invented a grain door that is exceedingly simple in its mechanism, secure for the intended purpose of retaining grain in the car, and yet

that can be very readily released when desired for the purpose of emptying the grain in the car through the side door openings thereof. It is one advantage of this device that the grain door itself is a plain panel of either wood or sheet metal, as may be desired, and that all the mechanism is separate therefrom. It will also be observed that the metal bars lying adjacent to the side posts of the door are kept in place by the door itself when in normal position. But when the door is removed, then the metal bars can be readily drawn away from the side posts of the door and removed to any convenient place. To do this, it is merely necessary to withdraw the studs 13 and 22 from the respective sockets in which they are shown in Fig. 2 of the drawings.

I claim:

1. In combination, side posts, flanged bars adjacent thereto, each bar being pivotally attached at its upper end to the respective side post, a grain door lying against the flanges of these bars, and locking mechanism for the lower ends of said bars.

2. In combination, side posts, vertically extending bars adjacent thereto, pin and slot connections between the side posts and the respective bars whereby the latter may slide vertically to a limited extent, pivoted bars adjacent to the sliding bars, the pivot being at the upper ends, interlocking connections between the lower ends of the pivoted and sliding bars, said connections being adapted to be disengaged when the sliding bars are at one extreme of their movement, and engaged when at the other extreme, and a door lying against said pivoted bars.

3. In a device of the class described, a side wall having a door opening, a detachable door to go across the lower part of said opening and freely detachable abutments for the ends of the door, said abutments being pivotally connected at their upper ends to the side posts of the door opening and having releasable locking connections at their lower ends.

4. In a device of the class described, a side wall having a door opening therein, a vertically sliding and a pivoted bar adjacent to each side post of the door opening, the pivot being near the top end of the bars, the said bars being adapted to swing outward, interlocking mechanism at the opposite end adapted to be engaged or disengaged by movement of the sliding bar, additional interlocking means at the top end to prevent movement of the sliding bar and a door engaging with said bars.

5. In a device of the class described, a side wall having a door opening therein, side posts having upper and lower recesses therein, a swinging bar having a trunnion engaging the upper recess, another bar having

a slot engaging the said trunnion, and a stud engaging the lower recess, and a door resting against the swinging bar mounted on the pivot trunnion.

6. In combination, side posts, vertically sliding bars detachably retained thereagainst, complementary bars detachably pivoted at their upper ends on said side posts and coacting with said sliding bars at said pivots and also releasably coacting with the other end of said sliding bars, and a door laterally retained by said pivoted bars.

7. In combination, side posts, vertically sliding flat bars, longitudinally slotted at the upper end and double studded at the lower end, one stud engaging with a lock slot in the adjacent posts and the other engaging with another element, said bars being detachably retained against said posts, detachable complementary bars each revolvably mounted on a trunnion attached thereto at the upper end and passing through a slot in one of said sliding bars and engaging with a socket in the adjacent side posts, each of said complementary bars being provided with a flange and also with a longitudinal slot extending upward from its lower end and adapted to normally engage with one of said slide bar studs and release therefrom when said slide bar is depressed, and a door normally engaging with said flanges.

8. In a device of the class described, a side wall having a door opening therein, side posts having upper and lower recesses therein, a pair of pivotally suspended outward swinging flange bars trunnioned to the upper recesses aforesaid, another pair of bars auxiliary to the first said bars each having a longitudinal slot to engage a trunnion aforesaid, and a pair of oppositely extending lateral studs at the lower end adapted to detachably engage with the adjacent post on one side and bar on the other side respectively, and a door lying against said flange bar, said door being free to be slid upward or downward at any time and to be swung outward and lowered away from the said bars when the bars are mutually disengaged at the bottom.

9. In combination, side posts, vertically sliding bars mounted thereon, additional bars pivoted at their upper ends on said side posts, interlocking mechanism at the lower ends of the bars adapted to be disengaged when the sliding bars go down, a button at the upper end on each side to control said sliding bars, and a door resting against the pivoted bars.

In testimony whereof, I have subscribed my name.

HERBERT W. DREW.

Witnesses:

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