

No. 883,353.

PATENTED MAR. 31, 1908.

J. B. SMILEY.
GRAIN DOOR FOR FREIGHT CARS.

APPLICATION FILED DEC. 31, 1906.

2 SHEETS—SHEET 1.

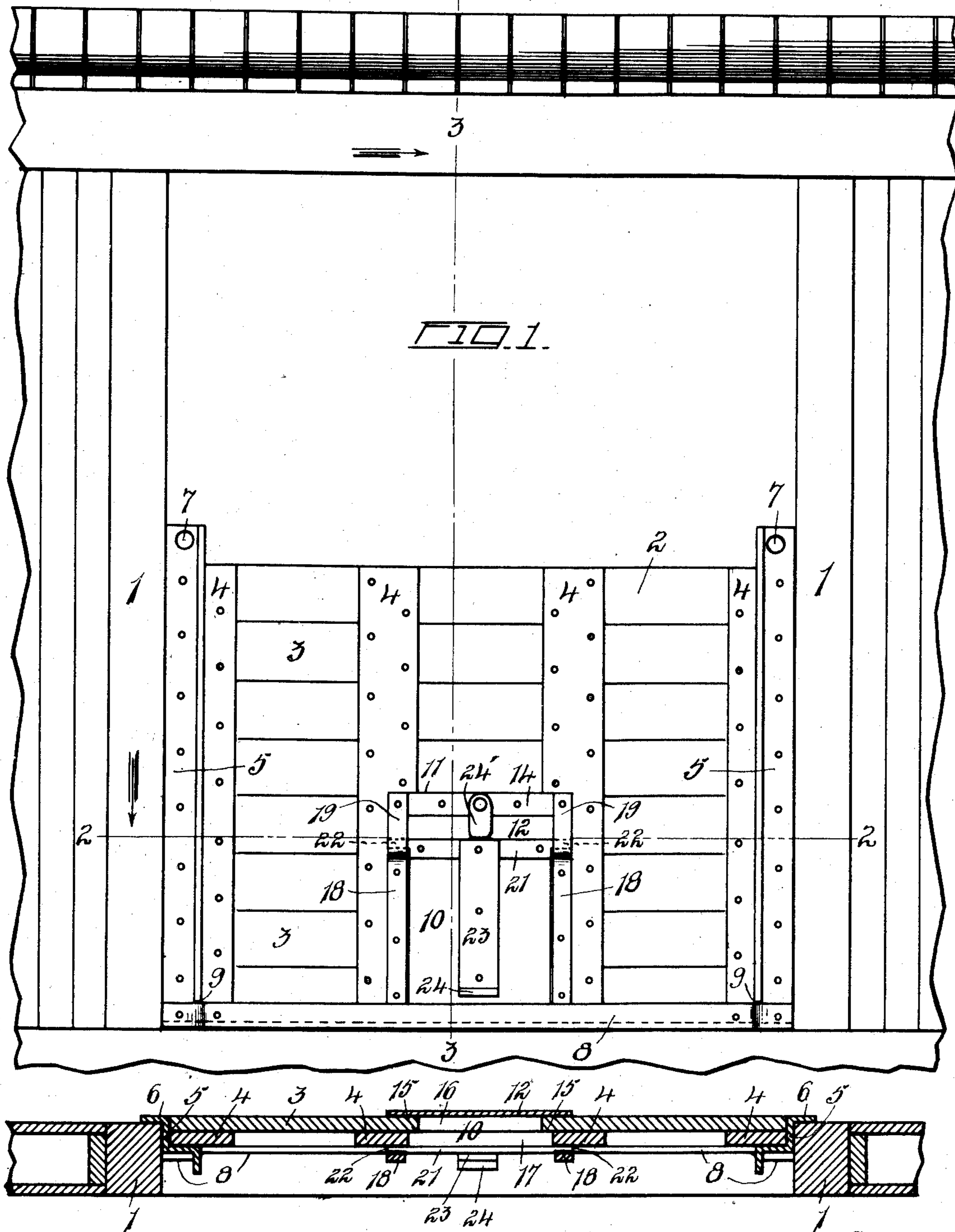


FIG. 2.

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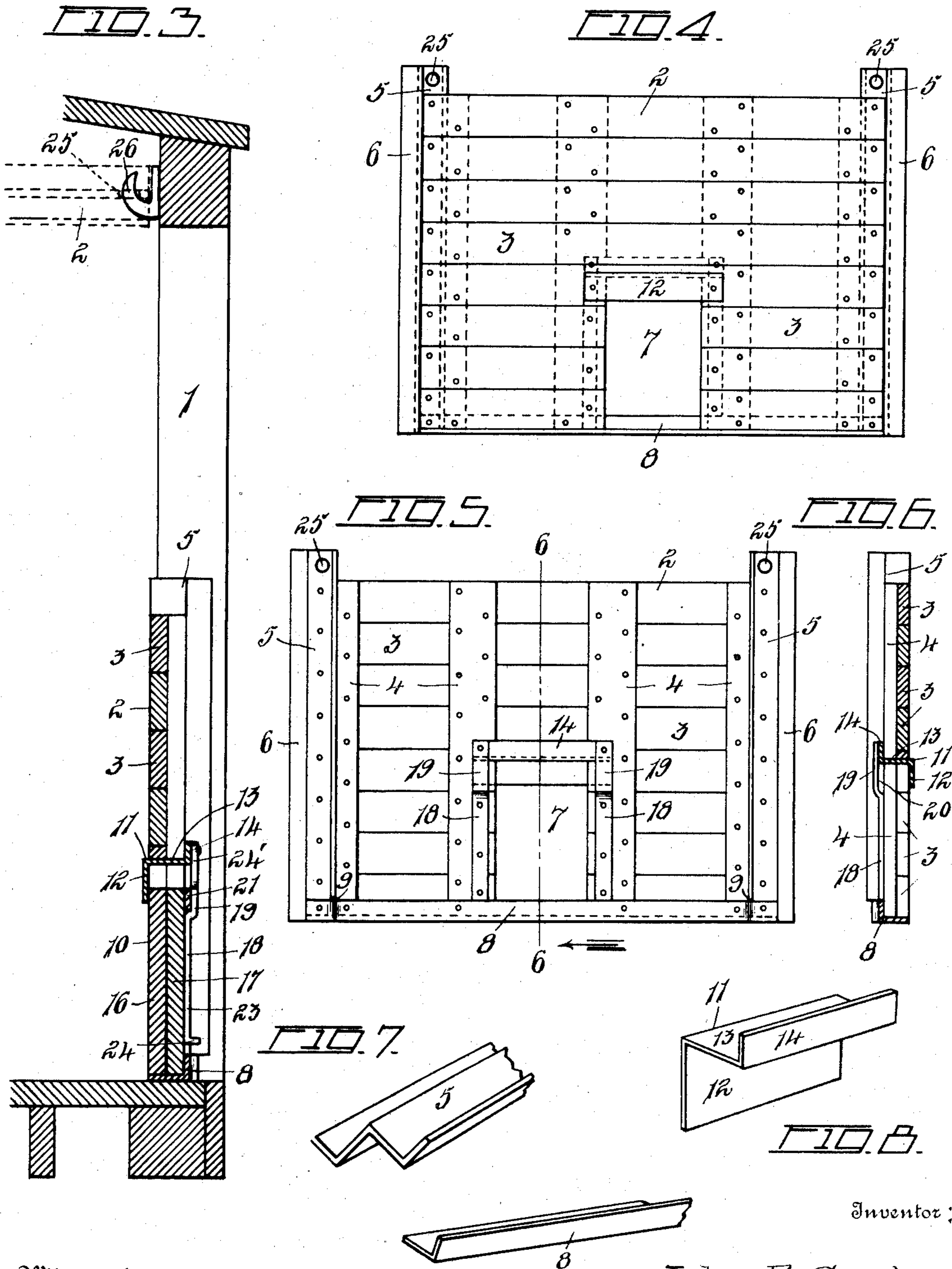
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FIG. 9.

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UNITED STATES PATENT OFFICE.

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GRAIN-DOOR FOR FREIGHT-CARS.

No. 883,353.

Specification of Letters Patent.

Patented March 31, 1908.

Application filed December 31, 1906. Serial No. 350,311.

To all whom it may concern:

Be it known that I, JOHN B. SMILEY, a citizen of the United States, residing at South Omaha, in the county of Douglas and State of Nebraska, have invented certain new and useful Improvements in Grain-Doors for Freight-Cars, of which the following is a specification.

This invention relates to grain doors for freight cars, having for its object the provision of a door which will form a close grain tight joint or union with the door posts or jambs of the car to effectually prevent any leakage of grain in transit; and further to provide the door proper with an auxiliary or relief door which is possessed of an outwardly swinging movement to permit a suitable amount of grain to escape to thereby relieve in part the pressure against the door, enabling the grain door to be completely opened with ease and the grain to escape.

With the above and other objects in view my invention further consists in the novel details of construction and combination of parts to be fully described in the following specification and then pointed out in the claims.

Referring to the accompanying drawings forming a part of this specification, wherein like characters of reference denote similar parts throughout the several views:—Figure 1 is a side elevation of a freight car showing my invention applied thereto, Fig. 2, is a longitudinal section on line 2—2, of Fig. 1, Fig. 3 is a vertical section on line 3—3 of Fig. 1, Fig. 4, is a front view showing the grain door detached and in side elevation, Fig. 5 is a similar view of the rear of the grain door, Fig. 6, is a vertical section on line 6—6 of Fig. 5, Fig. 7, is a perspective view of the W-shaped bars carried by the grain door proper, Fig. 8, is a similar view of the angular hood secured to the door proper at the top of the relief door opening, and Fig. 9, is a similar view of the angle iron which spans the lower side of the relief door opening.

1, denotes the door posts or jambs with which the joint is formed with the grain door proper, 2.

The grain door proper is composed of a plurality of horizontal pieces 3 and vertical braces 4, suitably secured thereto the vertical edges at each end of the door having the W-shaped bars 5, secured thereto so that the inner portions 6, of said bars 5, will abut the

door posts 1, and thereby not only restrict the outward movement of the door 2, but further prevent such door being nailed to the posts 1. By inspection of Fig. 2 it will be observed that bars 5 closely engage the sides as well as inner ends of door posts 1, thereby forming a close union between the two, which effectually prevents the escape of grain. It will further be noted that bars 5, embrace end braces 4 and thus not only add to the strength of the door at these points but also protect such braces against wear and tear in removal and setting of the door from and into closed position. The door 2, is formed with a rectangular opening 7, which is adjacent the lower end thereof and extends through the lower end, in which the relief door is received, the lower side of which is spanned by angle iron 8, which thereby forms the fourth side of the opening 7, the base of said angle iron being secured to the lower edge of door 2, and the web of which engages the braces 4 and bars 5, the latter being cut away as indicated at 9, to receive angle irons 8. Thus angle iron 8 not only strengthens the door 2, at its bottom and protects the same in use, but it further by virtue of its upwardly projecting web provides an abutment or stop for the relief door 10 which limits the outward movement thereof.

11 denotes an angular hood which is secured to the door 2, at the top of the relief opening thereof, this hood having an inner downwardly extending portion 12, which engages the inner face of relief door 10, intermediate portion 13, and outer upwardly extending portion 14, which is secured to braces 4 on each side of the opening 7.

By reference to Figs. 1 and 2 it will be noted that braces 4, are cut away at their lower portions so as to have their vertical edges adjacent opening 7, disposed to the rear of the pieces 3, of door 2, to thereby form shoulders 15, against which relief door 10 may abut. Relief door 10, is formed of two members the outer one 16 of which is of less width than the inner one 17, which thereby provides for the reception of shoulders 15 and enables close engagement therewith, as will be manifest from Fig. 2.

Each side of the relief door opening 7, is skirted by vertical bars 18 which at their lower portions are secured to braces 4, as shown in Fig. 5, and at their upper portions

are offset as indicated at 19, to provide spaces 20, in conjunction with the exposed faces of bars 4, as shown clearly in Fig. 6, the offset portions 19 being secured to vertical portion 14 of the angular hood 11, thereby not only providing a rigid structure, but further protecting braces 4 in use. Member 17 of the relief door receives on its outer face and at its upper edge a hinge bar 21, which is rigidly secured thereto, the extremities of this hinge bar being reduced as indicated at 22, Fig. 1, and being received in spaces 20. It will thus be obvious that relief door 10 may be moved vertically in spaces 20, and also swung outwardly at its lower end.

The member 17 of the relief door 10, is further strengthened by a vertical bar of metal 23, secured thereto, the lower end of which is turned outwardly as at 24, to provide a hand hold in raising door 10, vertically, the upper end of bar 23 being engaged by a gravity tongue 24', which is pivoted to member 14, of hood 11, and which frictionally engages the upper edge of bar 23, and thereby normally prevents upward movement of relief door 10. By inspection of Fig. 3 of the drawings it will be observed that the relief door 10, is capable of sufficient vertical movement to enable the same to clear the vertical portion of angle iron 8, at the inception of its outward swinging movement.

Each of bars 5, is provided with an opening 25, which receives hooks 26, on brackets stationarily supported at the upper end of the car to secure the grain door in position when out of use.

The operation of the relief door is manifest from the preceding description. Tongue 24', being moved free of engagement with bar 23, the relief door is first raised, conveniently by use of hand grip 24, sufficiently to clear the lower edge thereof, of the upwardly projecting web of angle iron 8, when the same may be swung outwardly by virtue of hinge bar 21.

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

1. A grain door formed with a relief door opening, an angular hood secured to the door at the top of such opening having, upwardly and downwardly, extending portions on opposite faces of said door, vertical bars secured to the outer face of the door and having offset upper ends secured to the upwardly extending portion of said hood, a relief door in said opening engaging the downwardly extending portion of the hood, and a hinge bar on said relief door engaging said offset ends of said vertical bars.

2. A grain door having an opening extending through its lower edge, an angle iron of substantially the same length as said door composed of a base and web secured to the

lower edge of said door and spanning said opening, a hood having a downwardly extending part on the inner side of said door, and a relief door in said opening normally engaging said web of the angle iron and said downwardly extending part of the hood.

3. The combination in a grain door of the character described having a rectangular opening near its lower edge, of bars skirting the vertical edges of said opening and having offset portions, an angle iron forming the lower edge of said door and the fourth side of said rectangular opening, a relief door working within said opening and against said angle iron, a bar secured to the upper outer edge of said relief door, having projecting ends forming pivots held within the offsets of said bars, so that said relief door may be moved vertically upward and then pivotally without, and a pivotally held tongue secured to said grain door adapted to be held in a pendent condition to ride against the upper edge of said relief door, to lock said relief door against vertical displacement.

4. In combination with the door posts of a grain car, a grain door, W-shaped bars secured to the vertical edges of said door and having one portion adapted to engage the rear faces of said posts, another portion the outer side faces of the posts and a third portion engaging the outer face of said door, said door having an opening therein extending through its lower edge, an angle iron extending approximately the length of said door having its base secured to the lower edge of the door and having its web engaging the outer face of said door and a relief door in said opening to seat on said base and engaging said web.

5. A grain door formed with a relief door opening, a hood comprising a horizontal part engaging the top wall formed by said opening, a downwardly extending part on the inner face of the door, and an upwardly extending part on the outer face of the door, vertical bars secured to the outer face of said doors and having offset upper ends secured to said upwardly extending part of the hood, a relief door in said opening, a hinge bar on said door having reduced ends received in said offset ends of the vertical bars, a vertical bar central of the width of said relief door, and a tongue pivoted to said upwardly extending part of the hood and engaging the top end of said bar of the relief door.

6. A grain door formed with a relief door opening, an angle iron of approximately the same length as said door secured by its base to the lower edge of the door and having its web engaging the outer face of said door, and a relief door having its lower edge seating on said base and its outer face engaged by said web.

7. A grain door having angle bars secured to its vertical edges, said bars each having

a part to engage the rear face of the door posts of a car, a second part to engage the outer side face of said posts and a third part to engage the outer face of said door, and an angle iron secured along the bottom and outer face adjacent to the bottom of said door, said vertical bars extending above the top edge of said door, whereby said vertical bars and said angle iron protect all of the edges of the door.

8. A grain door having a relief door opening therein extending through its lower edge, a relief door in said opening, and means to protect the lower bottom edge and the outer face at the bottom of said door, said means extending approximately the length of said door, forming the fourth side of said relief

door opening and an abutment limiting the outward movement of said relief door.

9. A grain door having a relief door opening, a hood secured at the top of said opening and having a downwardly extending part on the inside of the door, a relief door in said opening, a hinge bar carried by said relief door, and means secured to the outer side of said hood for providing bearings to receive said hinge bar.

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

JOHN B. SMILEY.

Witnesses:

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