June 12, 1923. 1,458,327

W. DAHLEN

GRAIN DOOR

Filed Feb. 21, 1922

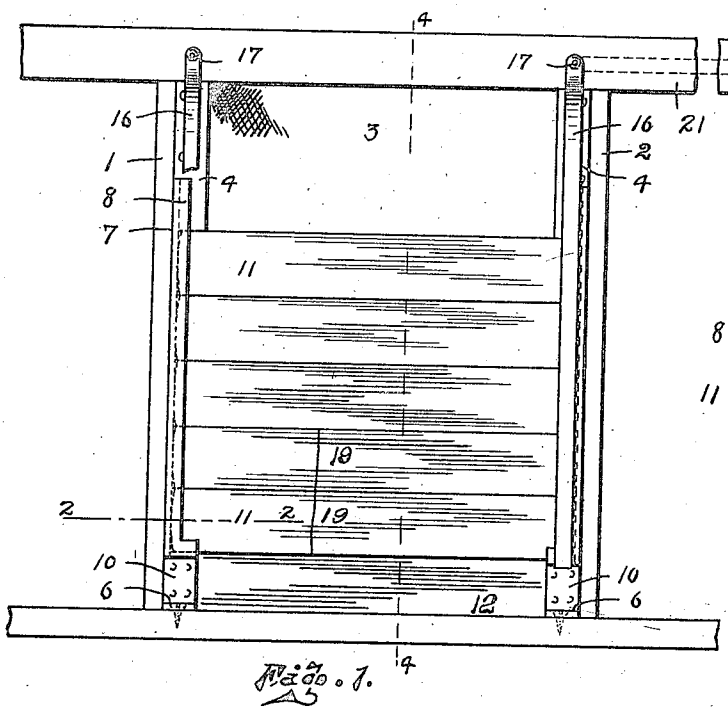


Fig. 1.

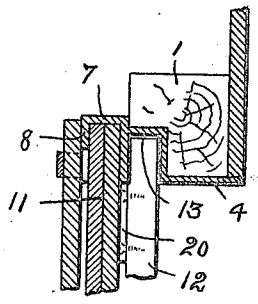


Fig. 2.

Fig. 3.

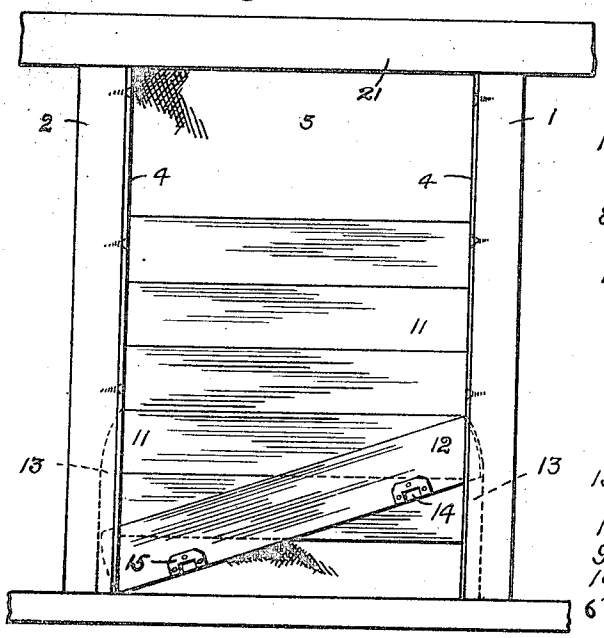
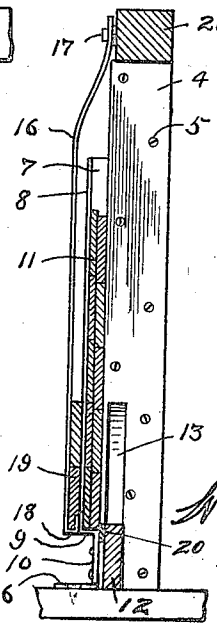


Fig. 4.



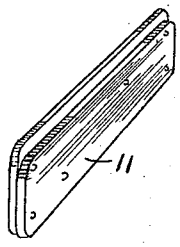


Fig. 5.

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UNITED STATES PATENT OFFICE.

WILLIAM DAHLEN, OF DULUTH, MINNESOTA.

GRAIN DOOR.

Application filed February 21, 1922. Serial No. 538,206.

To all whom it may concern:

Be it known that I, WILLIAM DAHLEN, a citizen of the United States, residing at Duluth, in the county of St. Louis and State of Minnesota, have invented certain new and useful Improvements in Grain Doors, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to railroad car doors and has special reference to what is commonly known as grain doors for cars.

The principal object is to provide means whereby a practical door of this type may be readily produced when necessary from common lumber, with the least amount of effort and skill.

Another object is to provide means whereby such a door may be readily reinforced when desired.

Still another object is to provide convenient means for initially opening the door when the car upon which it is employed is loaded.

Other objects and advantages will appear in the further description of the invention.

Referring to the accompanying drawing forming part of this application and in which like reference characters indicate like parts:

Figure 1 is an inside elevation of one embodiment of the improved door parts being broken away;

Figure 2 is a horizontal vertical sectional view on the line 2—2, Figure 1;

Figure 3 is an outside elevation of the door showing the outer opening board partly raised;

Figure 4 is a central vertical section on the line 4—4 Figure 1; and

Figure 5 is a perspective view of one of the door boards.

1 and 2 represent the rectangularly shaped door posts as commonly found upon railroad cars, between which is formed the usual door opening 3.

About the innermost opposite corners of the two door posts 1 and 2 is installed a generally angularly shaped metal facing 4 the same preferably extending the full width of the face of the posts within the door opening, though it is preferably not of the full width of the posts upon the interior of the car. These metal facings extend the full height of the posts and are securely fastened thereto in any desired manner as for example by large screws 5 and are upon their lowermost ends turned at right angles as at 6 forming foot pieces which may be securely bolted or otherwise fastened to the floor of the car, thus forming additional strengthening members for the posts, this being for the purpose of compensating for any weakening of the posts that might occur from the application of the improved door.

The edge portions of these angle irons 4 are projected inwardly as at 7 at right angles to the inner face thereof and then bent again at right angles towards the door opening as at 8 forming vertical channels longitudinally of the edges thereof, and which channels terminate some considerable distance from the floor of the car approximately the width of one of the boards or members of which the door is composed. At such lower terminations of these channels, bottoms therefor are provided as at 9 by there being securely fastened to the inner face of the angle iron a Z-bar clip 10, clearly shown in Figure 4 of the drawing. These clips which form the lower terminal of the channels provide supports for the door boards as they are placed within the channels and prevent same from extending below such terminations. The door boards 11 are of the proper length to fit within the channels transverse the door opening and are preferably somewhat rounded upon their ends so that either end may be lifted as by a bar or the like from beneath and all of the boards forming the door thus conveniently dislodged when it is desired to open the door.

These boards are each preferably composed of two thicknesses of board material of equal width which are united as by nailing or the like so that the edge of one projects over the edge of the other, as shown in Figure 5 of the drawing. In this manner the boards overlap each other when united upon edge thus effectually breaking

the joints in the door. Furthermore by this improved construction of door board it is apparent that the same may be conveniently provided with common boards when previously prepared ones are not to be had.

As a closure for the space beneath the lowermost one of these before described door boards I provide a single board 12 which is somewhat greater in width than the said opening and in the opposed faces of the door posts 1 and 2 are formed vertically elongated channels 13, the same being in sufficiently close proximity to the inner corners of each post as to leave only the thickness of the metal facing about the post intermediate of it and the door boards 11 when placed within the doorway. The board 12 is rounded somewhat upon its ends so that it may be conveniently slipped into or removed from position externally of the door boards thereabove and cooperating therewith, the channels 13 being of sufficient heighth to permit of the board 12 being removed from or applied thereto diagonally, as shown in Figure 3. A notch 14 is formed in the lower outer edge of the board 12 adjacent each end thereof and which notch I prefer to reinforce by a suitable metal escutcheon or other casting 15, this being for the purpose of providing convenient means for the manual manipulation of the board with a crow bar as from the exterior of the car. In practice the channels 13 thus formed within the door posts would be metal lined for obvious conveniences, and a short filling metal strip 20 is placed upon the inner upper edge of either end of the board 12 to fill the space caused by the thickness of the angle member intermediate of the board 12 and the door board thereabove.

In the event of such a door being designed for a large opening or when it is of abnormal height when in a common car and there being danger of undue stress upon the door proper I have provided means for reinforcement of same comprising two metal straps 16 pivotally suspended as at 17 from the inner side of the lintel or the door opening. These straps are suspended within the car one opposite each door post and are turned inwardly and upwardly at their free ends as at 18 forming hook like members for the reception of a set of boards similar to those illustrated at 11, one of which is shown at 19, though they may be boards having perfectly straight and flush abutting edges, they being simply for the purpose of reinforcing the original door 11 and will naturally bear against same upon the inner side thereof when stress is applied thereto.

When not in use the straps 16 may be swung upon their pivotal supports 17 upwardly and parallel with the lintel or head frame 21 of the car wherein bolts or clips indicated at 22 may be provided and back of the heads of which the members 16 may rest when it is not desired to use the same as reinforcing members.

With this construction of door and assuming the same to be applied to a loaded car, it is evident that access to the same for unloading purposes may be readily accomplished by the raising of one end of the board 12, when the material, as for example grain, would immediately flow through the door opening eventually relieving the pressure against the upper portion of the door, when the latter may be removed one board at a time or the boards may all be raised simultaneously by the raising of one end of the door with a hand spike or bar, as previously described.

I am aware that grain doors have been formed of a plurality of strips or individual boards and I do not claim broadly such idea.

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

1. The combination with a car door of the character described having a removable upper portion spaced above the floor of the car, of a single vertically removable board externally of the upper portion acting as a closure to the space below the upper portion and vertically elongated recesses at either side of the door opening in which the ends of the single board are engaged, said board being removable therefrom only by raising one end foremost.

2. The combination with a car door of the character described of an auxiliary or reinforcing door therefor comprising pivotally mounted depending straps adjacent each end of the door opening and internally thereof and separate door boards removably carried one above the other upon the lower ends of said straps swingingly impinging the inner face of the car door.

3. The combination with a door opening of the character described having door posts at the sides thereof, of angularly shaped recesses longitudinally of the innermost corners of the posts and terminating a distance from the bottom of the opening, a main door composed of a plurality of independent separable boards the ends of which are engaged within said slots, a second pair of slots adjacent the lower ends of the door posts and in close juxtaposition to the outer edge of the main door, a single separable removable door board engaged within said slots and a reinforcing means for said main door comprising pivotally mounted depending straps adjacent each edge of the door and internally thereof, and one or more door boards removably carried upon the lower end of said straps swingingly impinging the inner face of the car door.

4. A car door comprising in combination an upper removable major portion spaced above the floor of the car, a removable minor portion externally of the upper portion and acting as a closure to the space below same, and means at either side of the door opening for holding the minor portion against lateral movement but permitting of same being raised one end foremost, substantially as described.

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

WILLIAM DAHLEN.

Witnesses:
S. C. BRONSON,
S. GEO. STEVENS.