No. 846,913. PATENTED MAR. 12, 1907.

B. DAUGHERTY.

GRAIN CAR DOOR.

APPLICATION FILED NOV. 30, 1905.

Fig. 1.

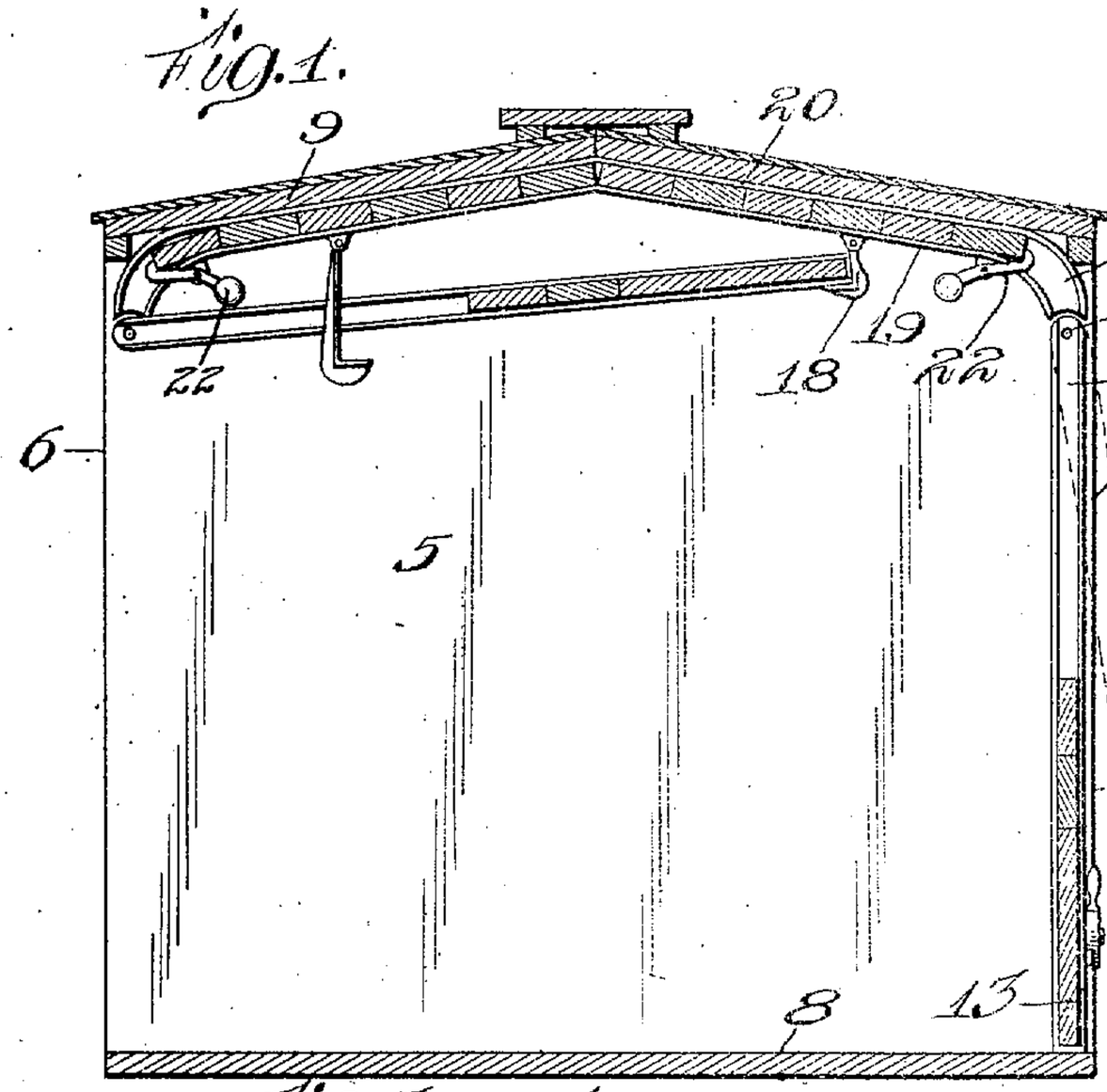


Fig. 2.

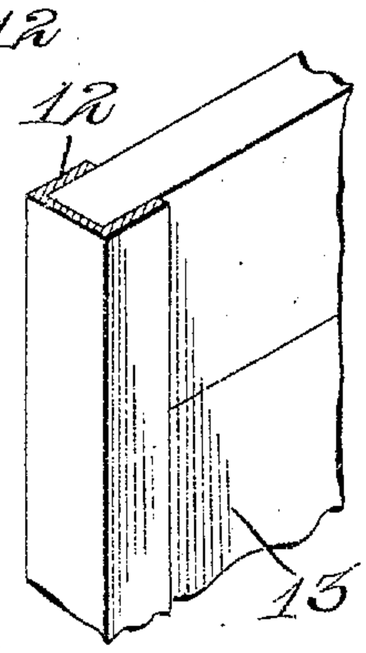


Fig. 3.

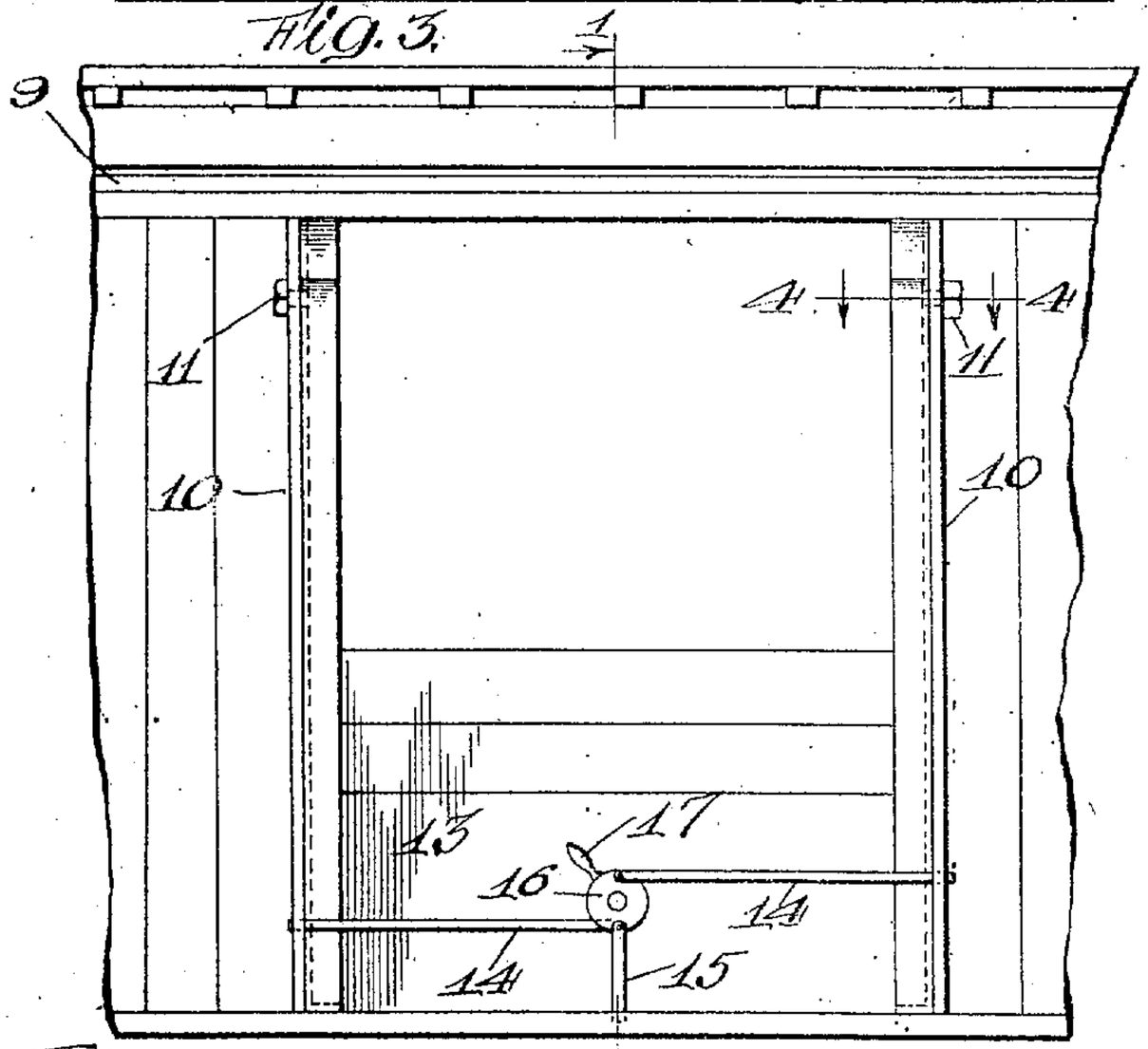
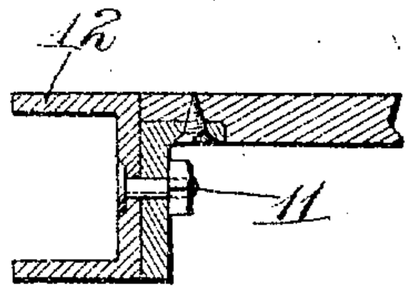


Fig. 4.



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UNITED STATES PATENT OFFICE.

BOYD DAUGHERTY, OF CHICAGO, ILLINOIS.

GRAIN-CAR DOOR.

No. 846,913. Specification of Letters Patent. Patented March 12, 1907.

Application filed November 20, 1905. Serial No. 288,140.

To all whom it may concern:

Be it known that I, BOYD DAUGHERTY, a citizen of the United States, and a resident of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Grain-Car Doors, of which the following is a specification.

This invention relates to improvements in grain-car doors in which the doorway is closed wholly or partly by independently-movable sections in fixed sliding-ways, which sections when not in use are supported beneath the roof of the car.

In prior grain-car-door structures, such as above referred to, the grain or other commodity stored in the car must first be shoveled away from the door and then the several sections lifted to a point adjacent to the roof before the doorway can be entirely cleared, all of which involves manual labor, time, and expense desirable to be avoided.

The object of my invention is to provide a closure for a doorway of grain-cars made up of any number of sections partly or wholly closing the doorway, which closure may be swung to an open position or against the roof of the car without disturbing any of said sections and so constructed that the load adjacent the doorway may be conveniently and quickly discharged adjacent the bottom thereof.

With these ends in view my invention consists in certain features of novelty in the construction, combination, and arrangement of parts by which the said objects and certain other objects hereinafter appearing are attained, all as fully described with reference to the accompanying drawings and more particularly pointed out in the claims.

In said drawings, Figure 1 represents a transverse section through a freight-car, illustrating closures embracing my invention, showing one of the doors swung to the roof of the car, the other one locked in its closed position, with dotted lines indicating the position to which said door is moved when opening the car to discharge and load grain therefrom. Fig. 2 is an enlarged perspective detail showing the door-sections and one of the ways in which they are found; Fig. 3, a detail side elevation of a car, showing a door embracing my invention in its closed position; and Fig. 4, a transverse section on the line 4 4 of Fig. 3, showing the means by which the door is pivoted or hinged in its frame toward the upper end thereof.

Similar characters of reference indicate the same parts in the several figures of the drawing.

5 indicates an ordinary box freight-car provided with the usual doorways 6 and 7 at opposite sides thereof and ordinarily located about the middle of length of the car and extending from the floor 8 substantially to the roof 9 thereof.

At each side of the doorways are bars 10 10, (see Figs. 3 and 4,) and hinged at their upper ends to these side bars by pivots 11 are channel-bars 12, forming the side edges of doors 13, and between the lower extremities of these channel-bars is a single board constituting a fixed connection between the channel-bars and closing the doorway to a corresponding height when the door is in a vertical and closing position therefor.

By hinging the doors, as above described, they are free to be swung both inwardly and outwardly from their closing position and to thereby produce two important results in grain-car structures—viz., that of having the initial discharging of the grain from the bottom of the car and utilizing its gravity for opening its doors and, second, that of providing for swinging the door inwardly up against the ceiling of the car and out of the way when not in use.

In order to lock the door in its closed position, I preferably employ horizontal bolts 14, a vertical bolt 15, pivoted to and actuated by an eccentric 16, operated by hand through the medium of a handle 17, and to hold the door when not in use adjacent to the roof of the car I employ gravity-hooks 18, so arranged that when the door is pushed upwardly against the hook the hook will move outwardly until the door is past it, when by gravity it will swing inwardly against the under side of and hold the door in its elevated position adjacent the roof.

Registering with the channel-bars 11 are corresponding channel-bars 19, occupying an inclined position adjacent the roof of the car, which, as shown, is provided with two doorways and doors, and therefore corresponding channel-bars. The channel-bars 19 are adapted to confine a series of narrow boards or door-sections 20, which may be lowered from the channel-bars 19 into the channel-bars 12 of the door and are preferably of such a number as will, if desired, fill the channel-bars 12, and therefore entirely close the doorway; or, in other words, entirely fill the

door-frame, while at the same time any less number may be used in one or both of said doors, depending upon the height in the car of the commodity to be confined therein from accidental escape through the doorways. The lower end of the channel-bars 19 is sufficiently enlarged at 21 to enable the supplemental door-sections to pass around the necessary curve or angle between those bars and the side bars of the door.

As a convenient means of maintaining the door-sections from accidentally passing by gravity from the channel-bars 19 into the channel-bars 12 a pivoted gravity-stop 22 is arranged across the path of movement of said bars, which said stop is preferably in the form of a gravity-hook, which, as shown, will be pushed out of the way when the door-sections are shoved upwardly against it and which will swing by gravity across the path of said sections as soon as they have passed beyond the point of the hook, and therefore in a position automatically locking the downward movement of said sections.

In the operation of my invention when filling a car with grain or other small material the doors are swung to a closed position and locked through the medium of the bolts 14 and 15, which to that end are forced by the eccentric into corresponding openings respectively in the sides of the door-frame and the floor of the car. Either before loading, but preferably as the loading progresses and the bulk of materials being loaded seems to require it, the door-sections 20, as needed for confining the grain, are moved downwardly to a position next above the door 13 and to each other, as may become necessary to prevent the materials escaping from the car, the number of said sections being, as before stated, sufficient to close entirely both doorways, and especially when the car is used for material or merchandise of any kind, making it desirable to entirely close the doorways of the car and, in fact, convert it into a closed box-car.

In the operation of unloading grain or other fine particles from the car the discharge therefrom is quickened and facilitated owing to the top hinging of the door and the ability to swing the door outwardly away from the bottom or floor of the car, and to which end it is only necessary to release the bolt and ordinarily to utilize the gravity of the materials for forcing the door open. Furthermore, by this outward bottom opening of the car-door the facility for shoveling materials remote therefrom is very much increased, and particularly as compared with grain-car doors now commonly employed and in which the bottom section cannot be opened until all other sections have been one at a time elevated above the same, which not only requires time, but severe manual labor, wholly avoided by the structure of my invention. Again, the top hinging of the door provides for swinging it inwardly out of the way against the roof of the car, and this without transferring any of the door-sections to the grooved way in the roof, and as a result of which said doors may be swung inwardly out of the way before any substantial part of the entire load is discharged from the car and in a condition adapting it for a subsequent load of corresponding height without the necessity of again building up the door through the medium of these sections.

My invention is not limited to the hinging of the door at or toward its upper end, for, obviously, instead thereof the door-frame may be supported on sliding-ways and moved laterally along the side of the car in opening the door, not only for discharging the grain adjacent thereto, but at the same time to entirely move the door beyond the doorway for clearing the same in unloading and also for maintaining the doorways open and the door entirely out of the way when not in use.

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

1. The combination with a grain-car of a door the side edges of which are composed of channel-bars pivoted toward their upper ends and free to swing inwardly and outwardly from the car, and a series of board sections removably fitting between said channel-bars for increasing and decreasing the closure of the door at will, substantially as described.

2. The combination with a grain-car, of a door the side edges of which are composed of channel-bars pivoted toward their upper ends and free to swing inwardly and outwardly from the car, a series of board sections removably fitting between said channel-bars for increasing and decreasing the closure of the door at will and roof channel-bars into which said bars may be shifted from the door and retained, substantially as described.

3. The combination with a grain-car, of a door the side edges of which are composed of channel-bars pivoted toward their upper ends and free to swing inwardly and outwardly from the car, a series of board sections removably fitting between said channel-bars for increasing and decreasing the closure of the door at will and roof channel-bars registering with the door channel-bars when the door is in a vertical position, substantially as described.

In witness whereof I have hereunto set my hand 18th day of November, 1905.

BOYD DAUGHERTY.

In presence of—

JNO. G. ELLIOTT,
M. S. REEDER.