

G. W. DRAKE.
GRAIN DOOR.
APPLICATION FILED JAN. 31, 1913.

1,090,695.

Patented Mar. 17, 1914.

2 SHEETS—SHEET 1.

Fig. 1.

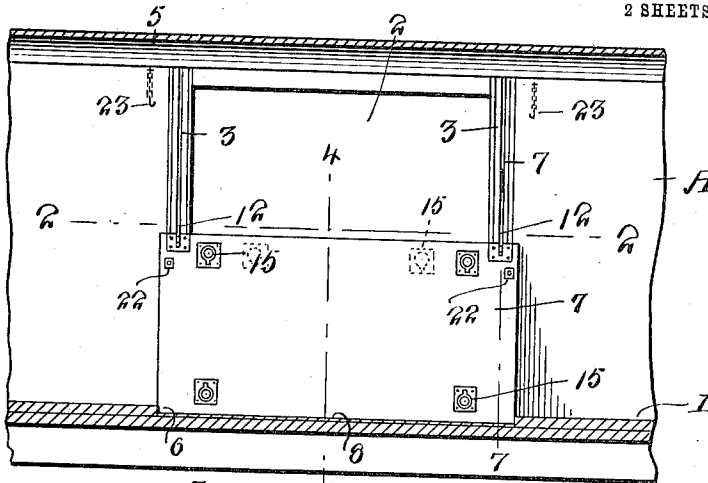


Fig. 2.

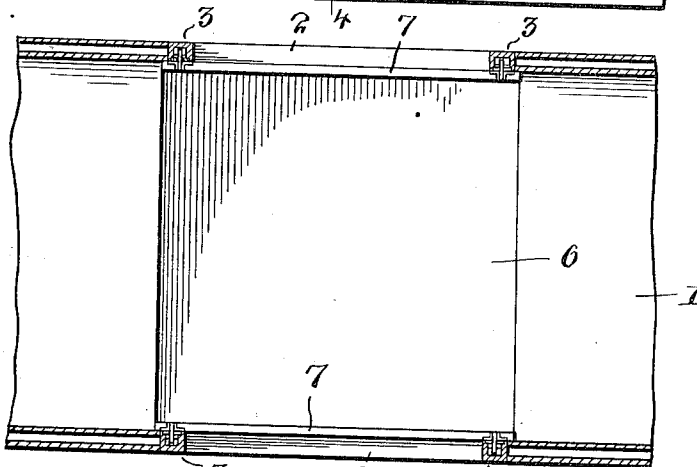
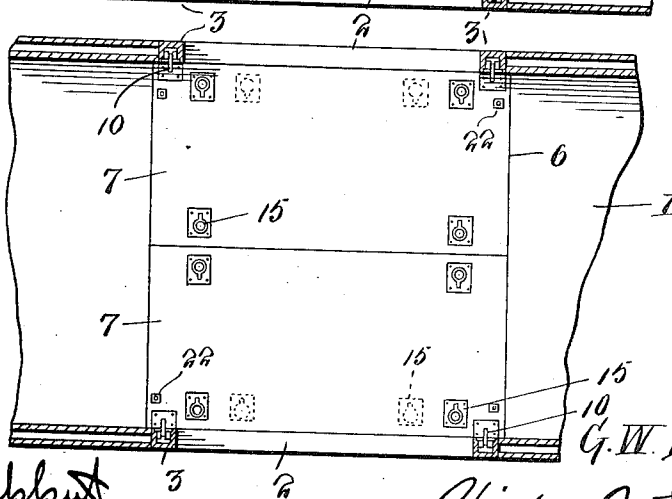


Fig. 3.



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Witnesses

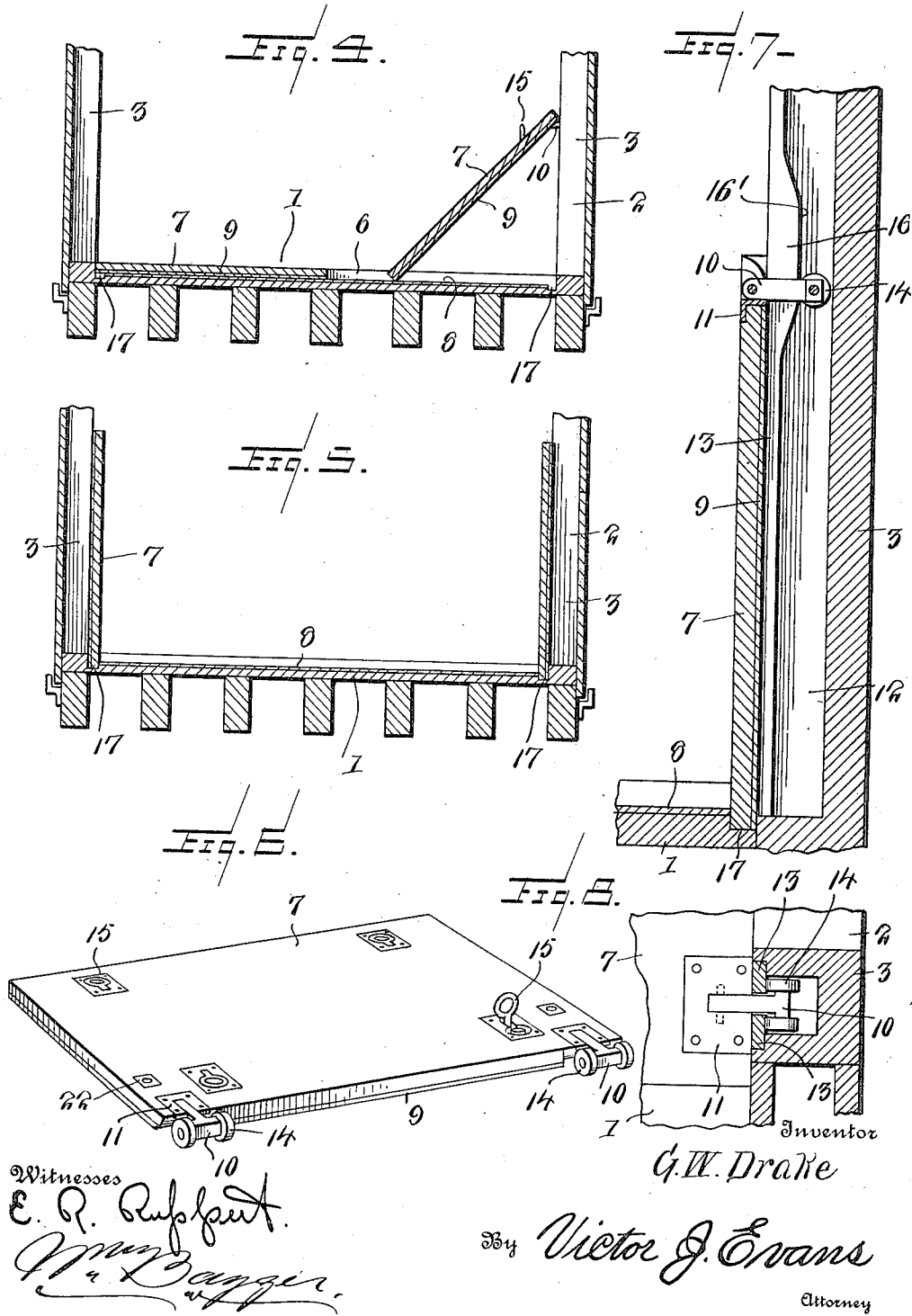
E. Q. Ruppert.
Wm. Dagg.

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2 SHEETS—SHEET 2.



UNITED STATES PATENT OFFICE.

GEORGE WILLIAM DRAKE, OF CHICAGO, ILLINOIS.

GRAIN-DOOR.

1,090,695.

Specification of Letters Patent.

Patented Mar. 17, 1914.

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To all whom it may concern:

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

This invention relates to grain doors for railroad cars, and it has for its object to produce a grain door of simple and inexpensive construction which shall at all times be associated and connected with the car; which while not in use as a grain door shall occupy an entirely non-obstructing position so as not to interfere with the loading of the car with other material; which when in position as a grain door shall form a tight joint with the door frame or casing, thereby preventing leakage; and which may be installed at a moderate expense and operated easily, efficiently and economically.

With these and other ends in view which will readily appear as the nature of the invention is better understood, the same consists in the improved construction and novel arrangement and combination of parts which will be hereinafter fully described and particularly pointed out in the claims.

In the accompanying drawings has been illustrated a simple and preferred form of the invention, it being, however, understood that no limitation is necessarily made to the precise structural details therein exhibited, but that changes, alterations and modifications within the scope of the claims may be resorted to when desired.

In the drawings,—Figure 1 is a fragmentary longitudinal vertical sectional view of a car body to which the invention has been applied, the grain door being shown in obstructing position with respect to the door opening. Fig. 2 is a horizontal sectional view taken on the line 2—2 in Fig. 1. Fig. 3 is a view similar to Fig. 2, but showing both grain doors in a non-obstructing position with respect to the door openings. Fig. 4 is a transverse sectional view taken on the line 4—4 in Fig. 1, and showing one grain door in the act of being moved from a non-obstructing to an obstructing position with respect to the door opening. Fig. 5 is a view similar to Fig. 4, but showing the grain door arranged for use as such. Fig. 6 is a perspective detail view of one of the grain doors detached. Fig. 7 is a sectional detail view taken on the line 7—7 in Fig. 1.

Fig. 8 is a horizontal sectional view, enlarged, through one of the door jambs and a portion of the grain door.

Corresponding parts in the several figures are denoted by like characters of reference.

The car A to which the invention is applied is provided with a floor 1, with door openings 2 bounded at the sides thereof by the jambs 3, with side walls and with a roof 5. The floor of the car has a recess 6 to accommodate the grain doors 7 which are made of such dimensions that the two grain doors together will occupy substantially the width of the car, the length of each grain door being sufficiently in excess of the width of the door openings to properly obstruct the lower parts of the latter. The floor of the car where it is weakened for the purpose of forming the recess 6 may be reinforced by a plate 8 of sheet steel, and the grain doors may be likewise reinforced by sheet metal plates 9.

Each grain door is provided at one edge thereof with hingedly supported shanks or T-heads 10 for the proper mounting of which housing plates 11 may be provided; said T-heads are accommodated in vertical slots 12 formed in the door jambs. The jambs 3 are provided with metallic reinforcing plates 13 overhanging the slots 12 and forming tracks on which rollers 14 mounted on the shanks or T-heads 10 may ride. The edges of the grain doors from which the shanks 10 extend are positioned adjacent to the lower ends of the door openings when the grain doors are accommodated in the recess 6 in the floor of the car. Each grain door is provided with suitably arranged rings 15 forming handles whereby it may be manipulated, said rings being accommodated in proper recesses in the faces of the door, to enable the latter to be conveniently lifted from the recess in the car floor and also pushed upwardly from its obstructing position when it shall be desired to unload the car. The straps 13 forming the tracks upon which the anti-friction rollers 14 are guided are provided near their upper ends with inwardly offset cam portions 16. These cam portions have upwardly extended flat face portions 16' lying in substantially parallel relation to the inner faces that constitute the track portions of the straps 13 and serving, when the door is partly lifted for the purpose of permitting grain to pass beneath the lower edge

thereof, to maintain the upper portion of the door in engagement with the straps 13, thereby preventing leakage and waste. The car floor is provided adjacent to each door opening with a groove or recess 17.

From the foregoing description, taken in connection with the drawings hereto annexed, the operation and advantages of this invention will be readily understood. It will be seen that the grain doors will normally be accommodated in the recess 6 in the floor of the car and that when thus accommodated they lie flush with the remaining portion of the surface of the floor, and that the rings or handles 15 lie flush with the surfaces of the grain doors so that no obstructions will be formed to the use of trucks within the car when the latter is to be loaded or unloaded. To adjust the grain doors for use as such, the edges of said grain doors which are connected with the door jambs in the manner described are lifted, the opposite edges being now permitted to slide in the direction of the door opening. The hinge connection of the shank or T-head 10 with each grain door permits the latter to be gradually moved to an upright position when, by engagement of the anti-friction rollers with the cam portions 16 of the straps 13, the upper edge of the door will be moved in the direction of the door jambs. The lower edge of the door is now dropped into the groove or recess 17, and the door will now be in position. When thus positioned, the grain door forms an absolutely tight closure which prevents leakage and loss of grain. In unloading the car, the grain door may be pushed upwardly until eyes or keepers 22 with which it is provided may be engaged by hooks 23 suspended in a convenient position, thereby serving to support the grain door while the grain is being discharged or unloaded. The grain doors may be easily and quickly moved to or from their respective positions, and when accommodated in the recess in the car floor will in no wise obstruct the interior of the car.

Having thus described the invention, what is claimed as new, is:—

1. A car having a floor provided with a recess and door jambs provided with vertical slots extending from the floor upward and with straps overhanging said slots, in combination with a grain door accommodated in the recess in the car floor, and T-

heads hingedly connected with the grain door and extending within and slidably engaging the slots in the door jambs.

2. A car having a floor provided with a recess and door jambs provided with slots extending from the floor upward and with straps overhanging the same, a grain door accommodated in the recess in the car floor, T-shanks hingedly connected with the grain door and extending within and slidably engaging the slots of the door jambs, and anti-friction rollers on said T-heads engaging the straps, said straps having inwardly offset cam portions near their upper ends, and said cam portions having upwardly extended flat faces substantially parallel to the faces of the straps.

3. A car having a floor provided with a recess and door jambs provided with vertical slots extending from the floor upward and with straps overhanging said slots, said floor being also provided with a groove adjacent to the door opening which is bounded at the sides thereof by the jambs, a grain door accommodated in the recess in the floor and having T-heads carrying friction rollers extending within and slidably engaging the slots of the door jambs, said T-heads being hingedly connected with the grain door to permit the latter to be lifted and one edge thereof to be seated in the groove adjacent to the door opening.

4. A car having door jambs provided with vertical slots extending from the floor upward and with straps overhanging said slots, a grain door, T-shanks hingedly connected with said grain door at one edge thereof, said shanks extending within the slots of the door jambs and having anti-friction rollers riding on the overhanging straps; said straps being provided near their upper ends with inwardly offset cam portions having upwardly extended faces lying substantially parallel to the faces of the straps and the car floor being provided adjacent to the door opening with a groove adapted to receive one edge of the grain door.

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

GEORGE WILLIAM DRAKE.

Witnesses:

E. H. ELLIOTT,
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