July 17, 1923. 1,461,839

H. M. TENNESON

GRAIN CAR DOOR

Filed July 8 1920 2 Sheets-Sheet 1

Fig. 1.

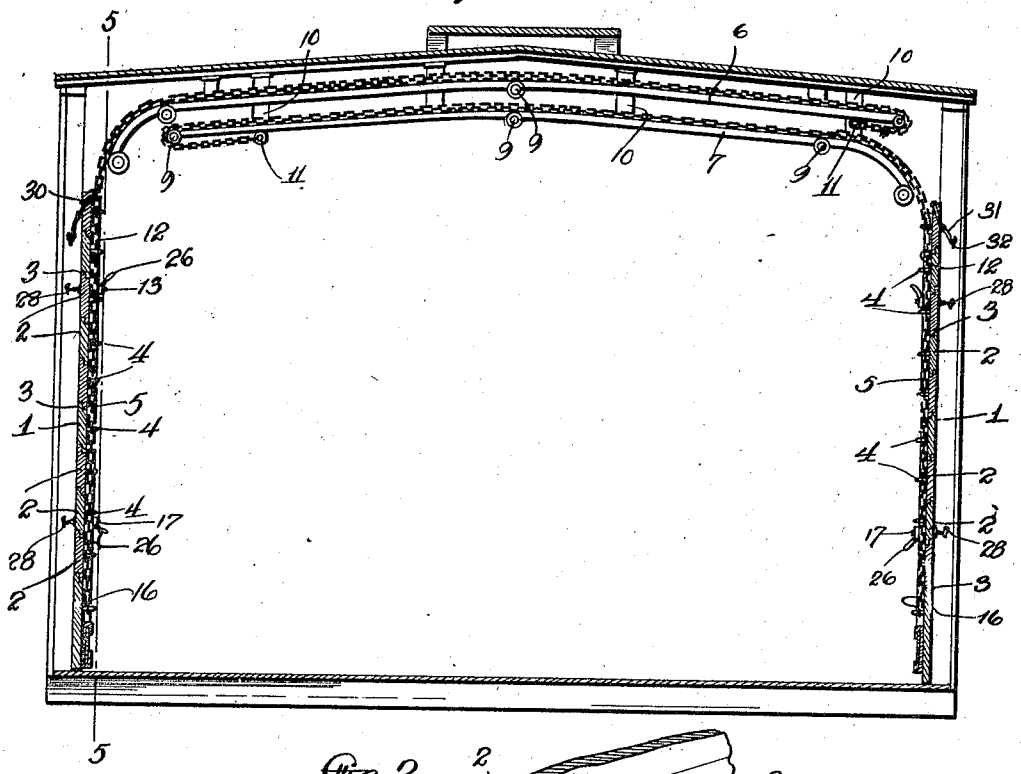


Fig. 2.

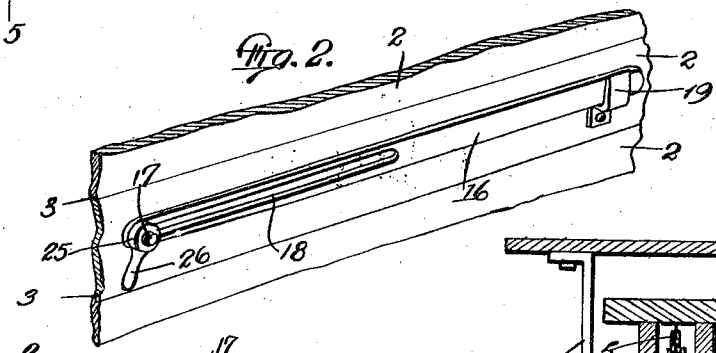


Fig. 4.

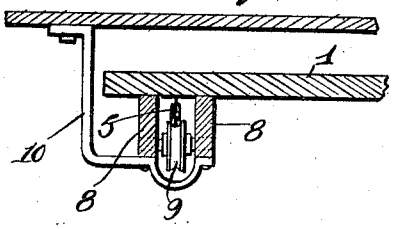
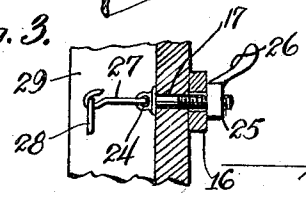


Fig. 3.



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July 17, 1923.

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Fig. 5.

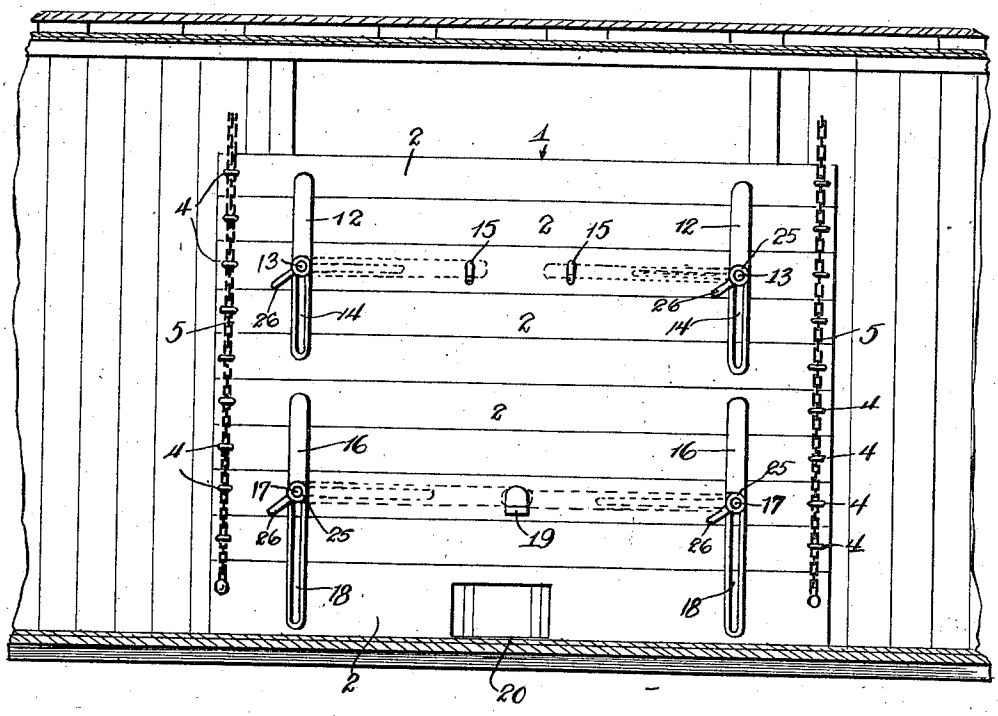
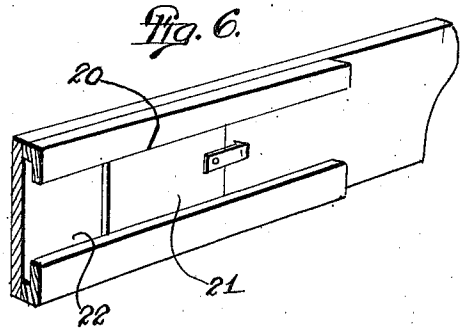


Fig. 6.



Harry M. Tenneson

INVENTOR.

Patented July 17, 1923. 1,461,839

UNITED STATES PATENT OFFICE.

HENRY M. TENNESON, OF GALESBURG, NORTH DAKOTA.

GRAIN-CAR DOOR.

Application filed July 8, 1920. Serial No. 394,643.

To all whom it may concern:

Be it known that I, HENRY M. TENNESON, a citizen of the United States, residing at Galesburg, in the county of Traill and State of North Dakota, have invented certain new and useful Improvements in Grain-Car Doors, of which the following is a specification.

This invention relates to grain car doors and the primary object of the invention is to generally improve the structure used for forming a door to prevent grain from leaking out of the car while the same is in transit.

One of the objects of the invention is to provide a flexible door which may be opened and closed by raising the door to a position beneath the roof of the car or lowering the door to close the door way in the car, provision being made for rigidly holding the door in operative position.

Another object of the invention is to provide a door comprising connected strips arranged so as to affect a tight closure when the door is in operative position, but which may be readily released to be moved to an open position.

Other objects of the invention will appear upon consideration of the following detail description and accompanying drawings, wherein:—

Figure 1 is a transverse section through the body of the car and showing the doors in operative position.

Figure 2 is a perspective view of a portion of one of the doors.

Figure 3 is a detail section of one of the fastening elements for the door.

Figure 4 is a detail fragmentary section of a portion of the supporting means for the door.

Figure 5 is a longitudinal section taken approximately on the line 5—5 of Fig. 1, and

Figure 6 is a perspective view of the outlet opening structure to permit the grain to be removed from the car.

Referring to the drawings by numerals, the car body is of the usual construction and it is to be understood that the door structure may be adapted to be used on different types and sizes of cars. Each doorway is provided with one of the doors 1 and each door consists of a plurality of strips 2 which have their marginal edges provided with tongues 3 which provide lap joints for the stripes 2 when the door is in operative position. Each strip is provided at each end with an eyelet 4 and chains 5 are connected to the eyelets so that the strips 2 may be moved in unison when the chains are pulled. In the top of the car body, beneath the roof thereof, I have provided the rails 6 and 7 which provide trackways for receiving the doors when they are moved to inoperative position. Each rail 6 consists of parallel rail members 8 laterally spaced apart and supporting in the space between them, the pulleys or wheels 9 over which the chains 5 are adapted to travel. Since the chains are connected to the strips of the door and since the strips are loosely connected at their joints it will be obvious that the door will readily follow the line of the track when the chains are pulled upwardly. The track section 7 is below the track section 6 so that the door at one side of the car may be drawn upon the track 6 while the door at the opposite side will be drawn over the track 7 and beneath the track 6. The tracks 6 and 7 are supported by suitable hangers 10 illustrated in Fig. 4 and showing the door resting upon the sections of the trackway in a manner that will permit the door to readily slide over the tracks. The chains are of sufficient length to extend across the trackways when the doors are in closed position and suitable fastening elements 11 are provided for the ends of the chains so that the loose ends may be retained in position when the device is in operative position.

As shown in Fig. 5, there are ten strips provided in the door and these are adapted to be held in rigid position by the movable brace cleats 12. The uppermost pair of cleats extend across five of the strips 2 and each cleat is provided with a pivot bolt 13 extending through a slot 14 which extends from the middle of the cleat to a point near the end thereof. A supporting bracket 15 is provided for each cleat to support the end thereof when the cleats are swung to the position shown by dotted lines in Fig. 5 thus disengaging the cleats from the strips 2 and permitting them to readily turn over the curved ends of the tracks when the doors are drawn upwardly to open position. The lowermost cleats 16 are slightly longer than the uppermost cleats 12 since the lowermost strip of the series is wider than the other strips. The cleats 16 are provided with pivot bolts 17

and elongated slots 18 through which the pivot bolts pass and permit the cleats to be moved to the positions shown by dotted lines in Fig. 5 and also by full lines shown in Fig. 2, so that the ends of the cleats may be supported in a bracket 19.

The lowermost strip of the series is provided with an outlet opening 20 closed by a door 21 which is adapted to travel through grooves 22 whereby the opening may be opened and closed to control the discharge of the grain from the car.

To effect a tight hold for the door, the bolts 13 and 17 extend through the door and each has an eyelet at one end on the outside surface of the door as indicated at 24 while the opposite end of the bolt is screw threaded to receive a turn nut 25 equipped with a handle member 26. The eyelet 24 receives a hook 27 which is adapted to engage an eyelet 28 mounted in the door post 29. These hooks 27 are releasably engaged with the eyelets 28 so that the door may be quickly released when it is desired that the doors be opened. The uppermost strip is provided with a downwardly extending angularly disposed bolt 30 at each end thereof, and the hook 31 is adapted to engage an eyelet 32 disposed in a position to cause the hook to be maintained at an angle as shown in Fig. 1 so that a downward and outward pull is exerted by the hooks to draw the door downwardly thus assisting in maintaining the door tightly in position.

The advantages of the structure referred to will be readily appreciated and attention is directed to the fact that the cleats 12 and 16 when in the position shown by full lines in Fig. 5, will rigidly maintain the door in proper position so that buckling will be prevented. The cleats may be readily swung to positions parallel with the strips 2 so that the door will be as flexible as desired when it is to be opened. The chains may then be drawn across the tracks and pulleys so that the door structures will readily follow over the curved ends of the trackways and be disposed in a position near the roof of the car and consequently out of the way. When the car is filled with grain and the doors are closed, the retaining bolts will prevent movement of the door and the grain will not leak from the car. The closure door 21 may be opened to empty the car of the grain and the size of the opening may be controlled as desired.

Minor changes in the details of construction may be made without departing from the scope of the claim hereunto appended.

What I claim is:—

In combination with a car having a door way, a plurality of strips forming a grain door, lap joints at the marginal edges of the strips, means flexibly connecting the strips, screw bolts passing through certain strips, brace cleats having slots at one end carried by the screw bolts and adapted at times to extend transversely across the joints of said strips, wing nuts threaded on the bolts for clamping the cleats in adjusted positions, and hooks pivoted to the opposite ends of said bolts adapted to engage eyelets carried by the door way to effect a tight closure when the door is in operative position.

In testimony whereof, I have affixed my signature in the presence of two witnesses.

HENRY M. TENNESON.

Witnesses:
J. R. MILLER,
N. G. MILLER.