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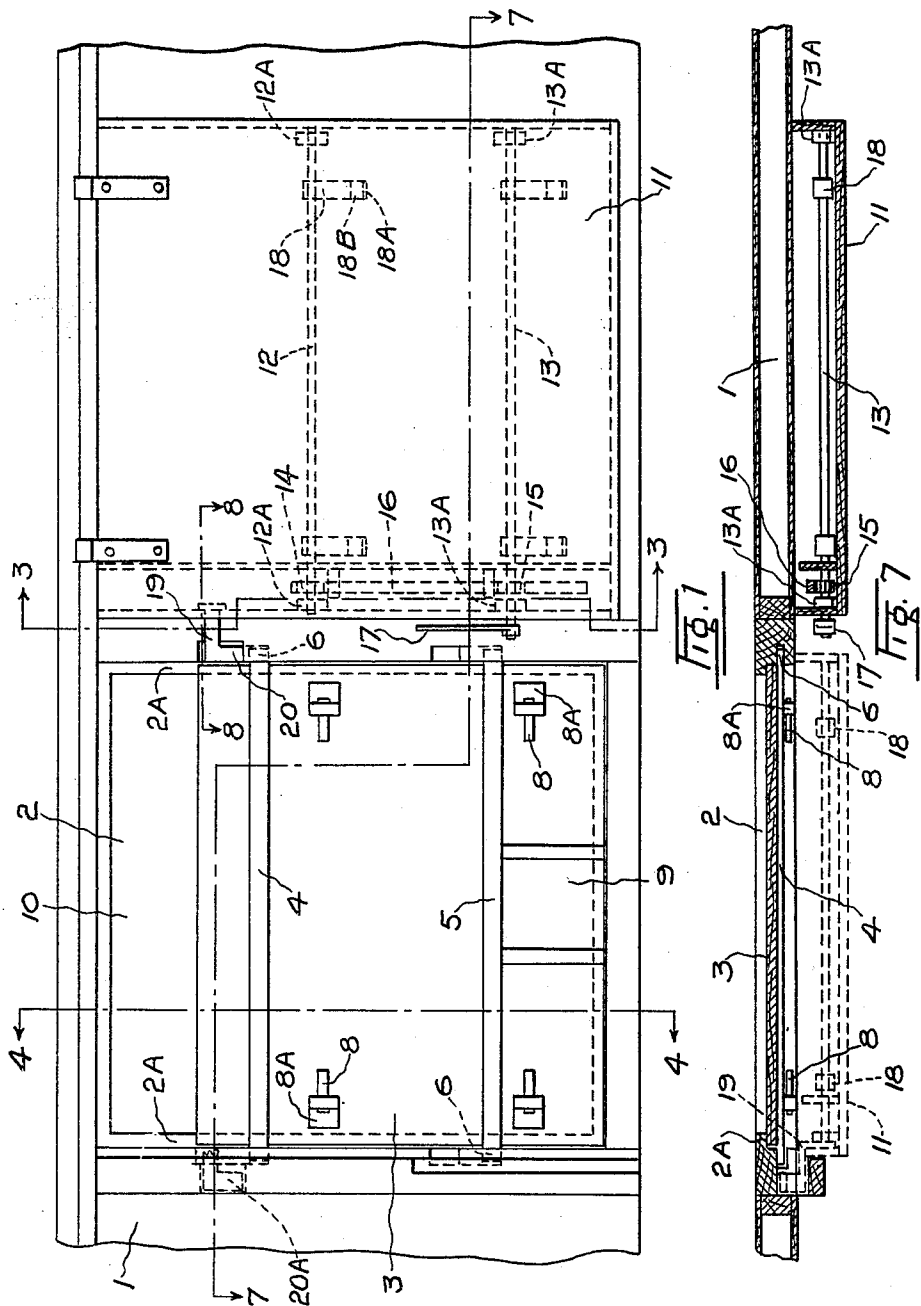
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GRAIN DOOR

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GRAIN DOOR

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The invention relates to new and useful improvements in grain car doors and consists essentially of the novel arrangement and construction of parts wherein an inner or grain door is adapted to be positioned by means of a lever mounted upon the customary sliding door of the car, to be removed thereby and carried by said door when desired into open position.

The objects of the invention are to provide a grain door which once fitted to a car may be opened or closed as desired, but not detached from the car, thus preventing loss and breakages; to provide means whereby the use of nails or other extraneous fastening devices is obviated.

In the drawings:

Figure 1 is an elevational view of a box car side with the sliding door open and the grain door in normal position in the door opening. Figure 2 is an elevational view showing the sliding door (partly fractionated) closed with the grain door raised and removed from the door opening and ready for removal. Figure 3 is a sectional view through the sliding door taken on the line 3—3 of Figure 1. Figures 4, 5, and 6 are sectional views taken on the line 4—4 of Figure 1 showing different progressive positions of the grain door and the lifting mechanism. Figure 7 is a plan view of the grain and sliding doors taken on the line 7—7 of Figure 1. Figure 8 is a plan view of the grain door locking dog taken on the line 8—8 of Figure 1.

In the drawings, like numerals of reference indicate corresponding parts in each figure.

1 represents a side of a grain car having the customary opening 2 provided in both sides with rebates 2A wherein is positioned a grain door 3, said door being of a width slightly greater than the width of the opening 2 to engage the rebates and of a height less than the height of said opening, and provided with two cross bars 4 and 5, the ends 6 of said bars extending beyond the door to engage in slots 7 cut in the jambs of the opening 2 which slots extend inwardly and downwardly in the form of an inverted

J as shown in Figures 4, 5 and 6, whereby said door is retained in position closing the opening 2, the said door is further provided with four short and fixedly positioned bars 8 which are arranged in pairs and are spaced from the face of the door on brackets 8A. A discharge gate 9 of any suitable type is provided at the bottom of said door.

When the said door 3 has been placed in position with the ends of bars 4 and 5 in the slots 7, grain can be delivered to the car through the opening 10 above said grain door and when said car is filled to the required amount the customary door 11 can then be slid into position and locked and sealed in the usual manner.

I have provided the customary or sliding car door 11 with two cross bars 12 and 13 which are journaled in bearings 12A and 13A respectively and upon which are mounted on one end gears 14 and 15 meshing with a rack 16 slidably mounted adjacent the edge of said door, see Figures 1, 2, 3 and 7. The bar 13 is fitted with a lever 17 secured thereto adjacent the gear 15, the bars 12 and 13 are further provided with arms 18 terminating at their outer ends in hooks 18A having elongated bights 18B in which the bars 8 are adapted to be received and to slide during the lifting of the grain door. Secured to the edge of the sliding door 11 is a cranked bar 19 having a depending portion 20 at its free end which is adapted to overlie one end 6 of the bar 4 when the grain door is in fixed or normal position and the sliding door is open to prevent the displacement of the grain door, which bar projects into the slot 7 beyond the end 6 of the bar 4 on the opposite side of the grain door, as shown in dotted line as at 20A in Figure 1, when the sliding door is closed.

When it is desired to unload the car at destination, the seal is broken and the lever 17 is given a downward turn thus rocking the bar 5 and through the rack and pinion movement the bar 4 to swing the arms 18 inwardly and upwardly from the position shown in Figure 4 to that shown in Figure 6. The initial movement causes the hooks 18A of the arms 18 to engage the bars 8 as

shown in Figure 5, the subsequent movement of the arms raises the grain door 3 and lifts the ends 6 of the bars 4 and 5 upwardly and outwardly out of the slots 7 and brings the grain door into close proximity with the inner face of the sliding door 11, so that the said door can be moved to open position and carry the grain door with it.

Suitable locking means are provided to secure the lever 17 at either end of its stroke in position and when it is desired to replace the grain door to cover the opening 2 the customary door is slid into closed position, lever 17 is then raised, thus swinging the grain door inwardly lowering the ends 6 of the bars 4 and 5 into the slots 7 to retain said door in the opening 2 and to disengage the arms 18 from the short bars 8. The door 11 is then moved to open position so that the car can be again loaded through the opening 10 above the grain door.

It will be noted that when the grain door is removed, it is carried and retained upon the inner face of the customary or sliding door, so that said grain door is immune from the abuse and damage that grain doors of the ordinary type are subjected to when removed from the car door opening.

What I claim is:

1. The combination with a box car having a door opening and an outer door adapted to close said opening, a grain door normally detached from the outer door adapted to fit within said opening, means upon the outer door adapted to be brought into engagement with the grain door at divers spaced points to remove it from the opening and secure it to said outer door whereby said grain door is removed as the outer door is opened.

2. The combination with a box car having a door opening and an outer door adapted to close said opening, an inner door, spaced bars projecting from said door, means upon the outer door for engaging each of the bars and for carrying the inner door and for placing said door into closing position within the opening, said means being adapted to release the door when so placed to permit the inner door to remain as a closure to the opening and to permit the opening of the outer door.

3. The combination with a box car having a door opening, a sliding door adapted to close said opening and to be withdrawn therefrom, a grain door adapted to fit said opening, means upon the sliding door adapted to be brought into engagement with the grain door to raise and withdraw it from the opening and to secure it upon the inner face of the sliding door, said means being adapted to lower and position said door within the opening and permit the sliding door to be opened independently of said grain door.

4. The combination with a box car having a door opening, a sliding door adapted to close

said opening and to be withdrawn therefrom, a grain door adapted to fit said opening, means upon the sliding door adapted to be brought into engagement with the grain door to withdraw it from the opening and secure it upon the inner face of the sliding door, said means being adapted to position said door within the opening and permit the sliding door to be opened independently of said grain door, and means on the sliding door for preventing the removal of the grain door from the opening when the sliding door is in full open position.

5. The combination with a box car having a door opening and a sliding door therefore, said door having jambs provided with substantially vertical slots, a grain door having side projecting members adapted to enter said slots and secure the door within the opening and manually operable means for raising the grain door to remove the members from the slots and for securing the grain door to the sliding door.

6. The combination with a box car having a door opening and sliding door therefore, said door having jambs provided with substantially vertical slots, a grain door having side projecting members adapted to enter said slots and secure the door within the opening and manually operable means for raising the grain door to remove the members from the slots and for securing the grain door to the sliding door, said manually operable means comprising a rotatable bar carried by the sliding door, hooked arms extending from said bar and complementary members upon the grain door adapted to be engaged by said arm whereby the rotation of the bar carries the grain door in a curvilinear path towards the sliding door.

7. In grain car doors the combination with a box car of customary construction, the customary sliding door thereof provided on its inner side with two cross bars upon which are mounted a plurality of arms arranged in spaced pairs, said bars carrying gears at one end thereof adapted to mesh with a rack secured adjacent the edge thereof, one of said bars having a lever mounted thereon adjacent the gear thereof, and a grain door adapted to be positioned by means of cross bars engaging slots in the jambs of the car door opening, and provided with four short bars arranged in spaced pairs, and adapted to be interposed between the car side and first mentioned door when said door is in closed position.

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