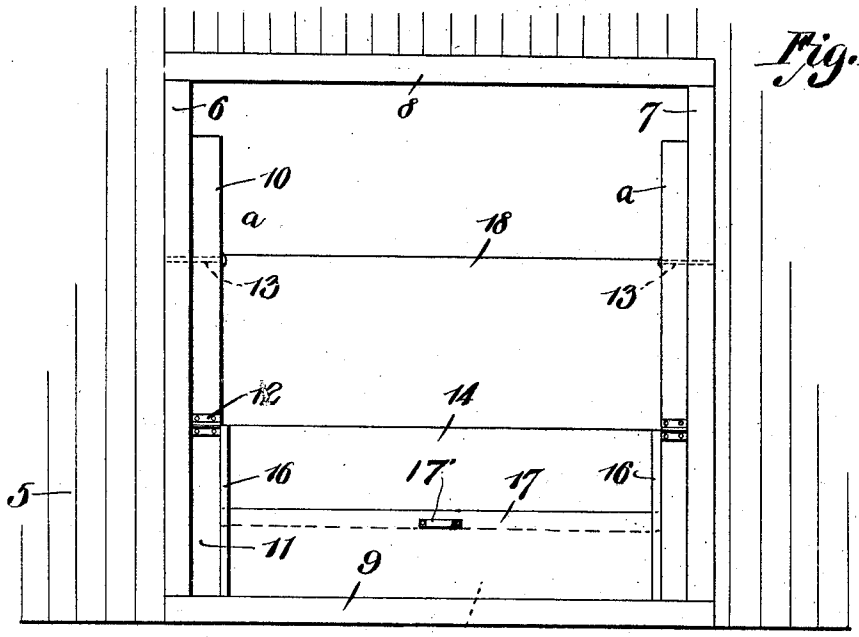
A. G. CHRISTOPHERSON.

GRAIN DOOR.

APPLICATION FILED OCT. 1, 1910.

991,274. Patented May 2, 1911.

Fig. 1.



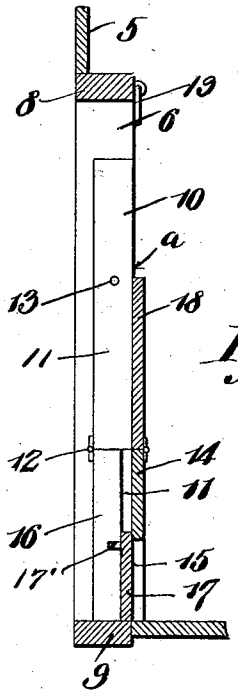


Fig. 2.

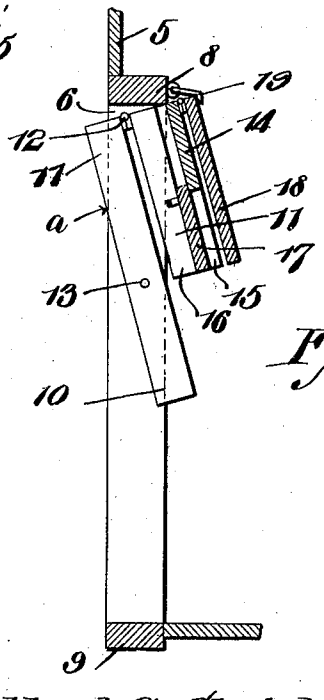


Fig. 3.

Witnesses

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UNITED STATES PATENT OFFICE.

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GRAIN-DOOR.

991,274. Specification of Letters Patent. Patented May 2, 1911.

Application filed October 1, 1910. Serial No. 584,899.

To all whom it may concern:

Be it known that I, ALBERT G. CHRISTOPHERSON, a citizen of the United States, residing at California Junction, in the county of Harrison and State of Iowa, have invented new and useful Improvements in Grain-Doors, of which the following is a specification.

This invention relates to improvements in grain doors for cars and has for its object the provision of a device of that kind to be pivotally secured to the sides of the door frame and comprising a plurality of pivoted sections adapted to fold one upon the other when the door is moved inwardly and upwardly and to engage with the sides of the door frame to prevent return movement.

With these and other objects in view which will more fully hereinafter appear, the present invention consists in certain novel details of construction and arrangement of parts, hereinafter fully described, illustrated in the accompanying drawings, and more particularly pointed out in the appended claims; it being understood that various changes in the form, proportion, size, and minor details of the device may be made, within the scope of the appended claims, without departing from the spirit or sacrificing any of the advantages of the invention.

In the accompanying drawings, forming part of the specification;—Figure 1 is a side elevation of the door from the outside. Fig. 2 is a vertical cross section showing the door in closed position. Fig. 3 is a similar view showing the door in raised position.

Similar numerals of reference are employed to designate corresponding parts throughout.

The body of the car is designated in general by the numeral 5, the sides of the door frame by the numerals 6 and 7, the top of said frame by the numeral 8 and the lower side or sill by the numeral 9.

The door forming the subject matter of the present invention comprises a pair of hangers *a*. These hangers each include an upper portion 10 and a lower portion 11, the said upper and lower portions of each hanger being arranged end to end and united at their meeting ends by a hinge 12, the hinges being arranged on the outer faces of the portions 10 and 11, as shown in Fig. 1. The hangers are somewhat less in length than the sides 6 and 7 of the door frame, and the upper portions 10 of the hangers are somewhat greater in length than the lower portions 11. Connection between the door frame and the hangers is established by means of pivot pins 13 passing through the medial portions of the upper portions 10 and into the opposed inner faces of the sides 6 and 7 of the frame. The pivot pins 13 are so disposed that the upper sections 10 may be swung outwardly and upwardly and then inwardly to a position parallel with the sides 6 and 7 without engaging with the top 8 of the frame. The lower portions 11 of the hangers are united by means of a panel 14, the said panel being somewhat greater in length than the distance between the sides 6 and 7, so that when the lower portions 11 of the hangers have their lower ends bearing on the sill 9, the extending end portions of the panel will bear on the rear faces of the sides 6 and 7, thus preventing outward movement of the parts. The panel 14 is fixedly secured to the lower portions 11 of the hangers, and is provided with a door opening 15 arranged between the lower portions 11 and opening at its ends directly onto the sides 6 and 7.

Secured to the opposed inner faces of the lower portions 11 of the hangers and extending parallel with the said lower portions and corresponding in length to the latter are guide strips 16, the inner sides of said guide strips being spaced from the adjacent face of the panel 14. Arranged in the space between the guide strips and adjacent face of the panel is a sliding door 17, the said door being of a size to completely seal the door opening when moved to one position as shown in Fig. 1. The door is provided with a suitable handle 17′.

While I have shown the door 17 to be of the sliding type still it must be understood that I am not to be limited to this specific structure, since it will be evident that the said door might equally as well be pivoted to the panel 14 in which event the guide strips 16 will be eliminated and any preferred form of fastening means may be employed to hold the door against outward movement.

The panel 14 corresponds in width, approximately to the length of the lower portions 11 of the hangers, and hingedly united to the upper side of the panel 14 is a supplemental panel 18. The supplemental panel 18 corresponds in area to the area of

the panel 14, or approximately so, and is adapted to be moved so that one of its sides will bear on the upper side of the panel 14, when a comparatively large quantity of grain is placed in the car.

When the parts are positioned as shown in Fig. 1 and the grain is to be unloaded the sliding door 17 is raised, whereupon the grain will fall through the door opening 15. After sufficient grain has passed through the door opening to permit the supplement panel 18 to be moved downwardly and over the inner face of the panel 14, the sliding door is then closed, after which the hangers are turned upwardly and inwardly on their pivots. It will be seen as the hangers move upwardly and inwardly the upper portions 10 will turn on their hinges 12, whereby the said lower portions will assume a vertical position during the turning movement of the upper portions. As the turning movement of the upper portions continues and the parts move to the positions shown in Fig. 3, the lower portions 11 will fold onto the portions 10 when the latter are parallel with the sides 6 and 7 and the extending end portions of the panel 14 will abut against the opposite sides 6 and 7, thus preventing downward and outward movement of the hangers.

With this construction it will be manifest that the door may be raised in a comparatively easy manner, thus obviating the usual necessity of moving the door parallel with the roof of the car and securing the same to the roof by means of a hook or the like. When the door is in raised position accidental downward and inward movement of the same is prevented by means of a hook 19 or the like pivoted at one end to the medial portion of the top 8 of the frame, the engaging end of said hook being adapted to frictionally engage with one of the panels.

From the foregoing, it is evident that I have provided a device which is comparatively simple in structure and inexpensive to manufacture, embodying few parts and these so arranged that the danger of derangement will be reduced to a minimum.

I claim:—

1. In a car, the combination with the door frame; of a door including a pair of hangers each formed of an upper and lower part hinged together at their meeting ends, the upper parts of said hangers being pivoted to the opposite sides of the door frame, and a panel connecting the lower parts of said hangers.

2. In a car, the combination with the door frame; of a door including a pair of hangers each formed of upper and lower parts hinged together at their meeting ends the upper parts of said hangers being pivoted to the opposite sides of the door frame, and a panel connecting the lower parts of said hangers.

3. In a car, the combination with the door frame; of a door including a pair of hangers of less length than the door frame, each of said hangers formed of upper and lower parts of unequal lengths and hinged together at their meeting ends the upper parts of said hangers being pivoted midway between their ends to the opposite sides of the door frame, and a panel connecting the lower parts of said hangers.

4. In a car, the combination with the door frame; of a door including a pair of hangers each formed of upper and lower portions hinged together at their meeting ends, the upper portions of said hangers being pivoted to the opposite sides of the door frame, a panel connecting the lower portions of said hangers and provided with a door opening, and a sliding door arranged to cover the opening of the panel.

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

ALBERT G. CHRISTOPHERSON.

Witnesses:

HARRY P. ALLSTRAND,

RAY HARRIS.