No. 685,909. Patented Nov. 5, 1901.

A. COUTURE.

GRAIN CAR DOOR.

(Application filed July 6, 1901.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.

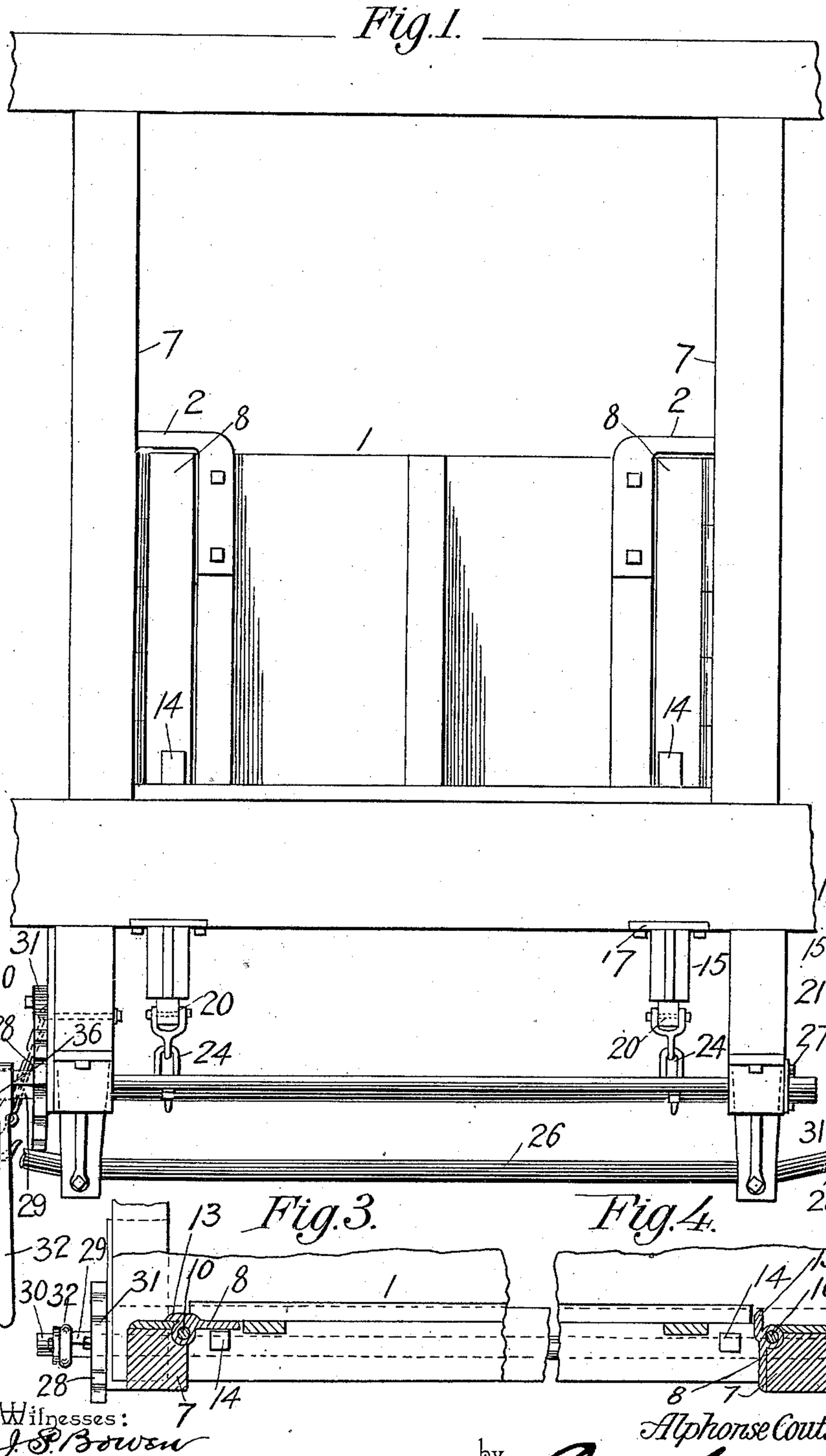

Fig. 2.

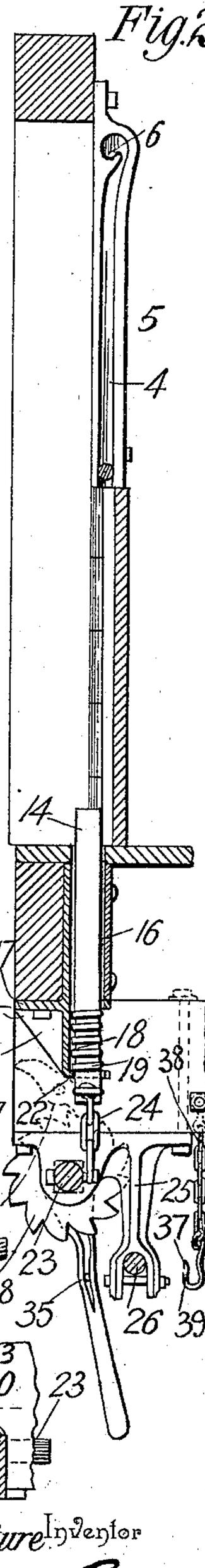

Fig. 3.

Fig. 4.

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Fig. 5.

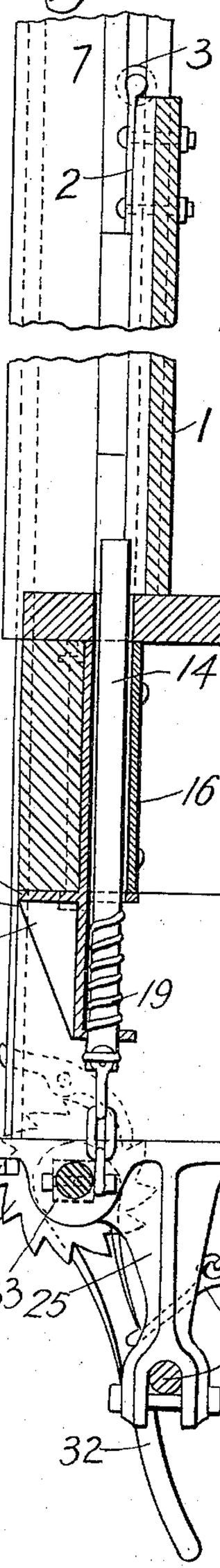


Fig. 7.

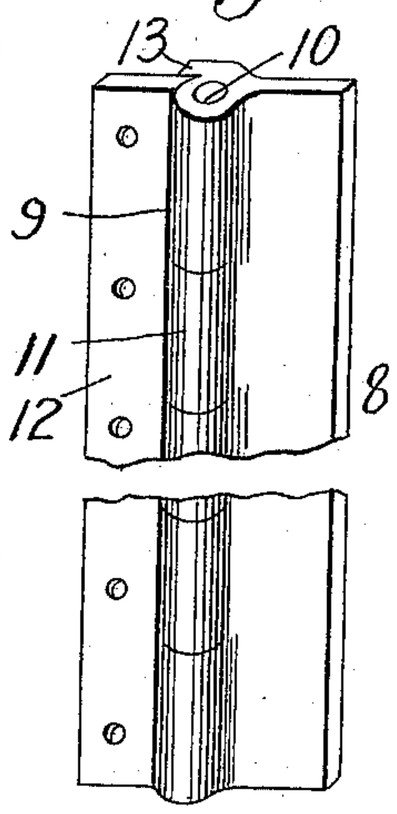


Fig. 8.

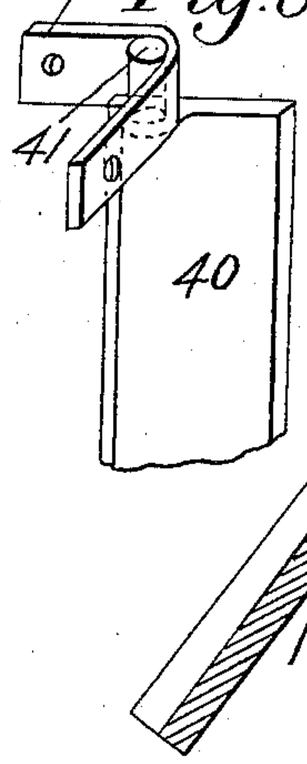


Fig. 6.

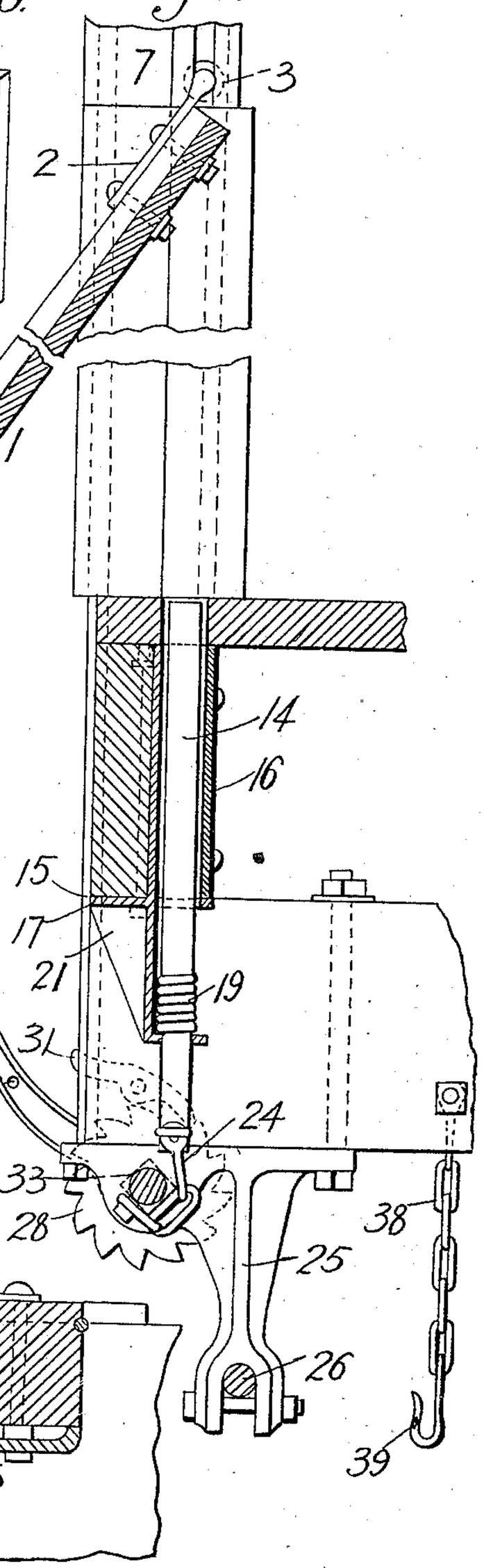
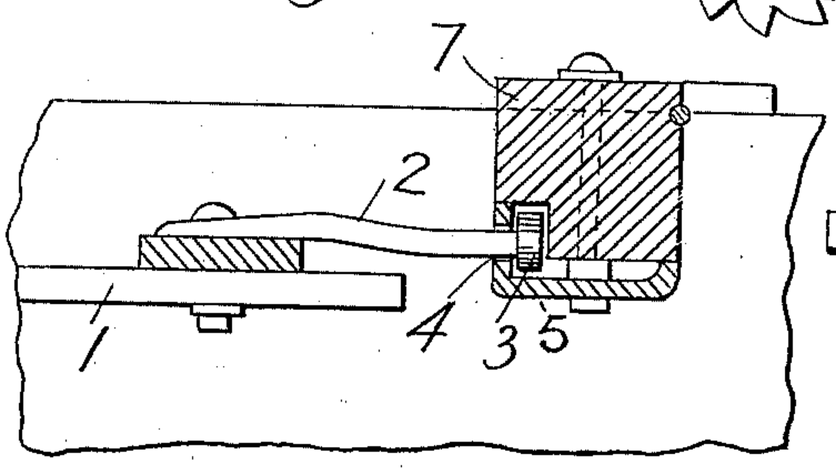


Fig. 9.



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UNITED STATES PATENT OFFICE.

ALPHONSE COUTURE, OF SUPERIOR, WISCONSIN.

GRAIN-CAR DOOR.

SPECIFICATION forming part of Letters Patent No. 685,909, dated November 5, 1901.

Application filed July 6, 1901. Serial No. 67,307. (No model.)

To all whom it may concern:

Be it known that I, ALPHONSE COUTURE, a citizen of the United States, residing at Superior, in the county of Douglas and State of Wisconsin, have invented a new and useful Grain-Car Door, of which the following is a specification.

The invention relates to improvements in grain-car doors.

The object of the present invention is to improve the construction of grain-car doors and to provide a simple, inexpensive, and efficient one, which will be grain-tight and which may be opened and closed in a safe and convenient manner.

The invention consists in the construction and novel combination and arrangement of parts hereinafter fully described, illustrated in the accompanying drawings, and pointed out in the claims hereto appended.

In the drawings, Figure 1 is an elevation of a grain-car door constructed in accordance with this invention and shown closed. Fig. 2 is a vertical sectional view of the same. Figs. 3 and 4 are detail horizontal sectional views illustrating the arrangement of the hinged wings and showing the same closed and open. Fig. 5 is an enlarged vertical sectional view, the door being closed. Fig. 6 is a similar view, the door being open. Fig. 7 is a detail view of one of the hinged wings. Fig. 8 is a detail view illustrating a modification of the same. Fig. 9 is a detail horizontal sectional view illustrating the construction of the upright ways.

Like numerals of reference designate corresponding parts in all the figures of the drawings.

1 designates a grain-door for cars, provided at its upper edge with horizontal trunnions 2, having vertical shanks which are secured to the outer face of the grain-door, preferably to vertical cleats of the same, as clearly illustrated in Fig. 1 of the accompanying drawings. The trunnions, which are provided at their outer ends with circular heads 3, are arranged in upright ways 4, preferably consisting of slots or grooves of bars or castings 5, secured to the door-posts at the inner faces thereof, as clearly indicated in Fig. 2. The bars or castings are provided at the upper ends of the grooves or ways with bearing-recesses 6, forming seats for the trunnions and adapted to hinge the door at the top of the door-posts to permit the said door to be swung upward and suitably secured to the top of the car. The upright ways permit the grain-door to be raised and lowered, as will be readily understood.

The grain-door terminates short of the door-posts 7, and when the door is closed the spaces between it and the door-posts are closed by hinged wings 8 overlapping the ends of the door at the outer face thereof and forming stops for the same. The wings are provided with eyes 9 for the reception of a pintle 10, which also passes through eyes 11 of stationary leaves 12, and the latter are secured to the door-posts at the inner faces of the same. The wings are provided at their inner longitudinal edges with flanges 13, arranged to abut against the stationary leaves when the door is closed, as clearly shown in Fig. 3.

The wings are locked in their closed position, as shown in Figs. 1 and 3, by means of vertically-movable spring-actuated bolts 14, mounted in vertical casings or housings 15 and arranged to extend above the floor of the car to form stops for the wings. The casings or housings, which are provided with vertical and horizontal flanges 16 and 17 for attachment to the car, have depending tubular portions 18 for the reception of the coiled springs 19, and the said bolts are provided at their lower ends with eyes 20. The vertical and horizontal flanges are secured to the bottom and side faces of the adjacent sill or beam of the frame of the car, and the bottom flanges are preferably supported by vertical webs 21. The depending tubular portions of the casings or housings of the bolts are provided with vertical openings 22, and the lower ends of the bolts are connected with a windlass-shaft 23 by means of short chains 24, which are adapted to be wound around the said shaft 23 to withdraw the bolts simultaneously from engagement with the lower ends of the hinged wings to permit the interior pressure caused by grain or other material to force the grain-door outward, and thereby open the

same. The shaft 23 is journaled in suitable bearings of chairs or struts 25 of a truss-rod 26; but any other suitable bearings may be provided. One end of the shaft is perforated for the reception of a key 27 and the other end has secured to it a ratchet-wheel 28 and is provided adjacent to the same with a squared portion 29 and with a rounded portion 30. The ratchet-wheel is engaged by a pivoted gravity-pawl 31, and a lever 32, having a squared opening 33, is arranged on the shaft at the squared and rounded portions thereof, and it is adapted to engage the squared portion for rotating the shaft to withdraw the spring-actuated bolts from engagement with the hinged wings. The lever, which is provided with a perforation 35, is retained on the shaft by a split key 36, and the perforation 35 is adapted to be engaged by a hook 37 of a chain 38, which is secured at one end to the car. The hook has a slot or opening 39, adapted to receive the wire of a car-seal to enable the lever to be sealed to the squared portion of the shaft away from the rounded portion, and when it is desired to rotate the shaft to open the grain-door the seal must be broken. The rounded portion of the shaft permits the lever to be swung downward without rotating the shaft, and it may be moved independently of the same in either direction. The shaft cannot be rotated without oscillating the lever, and the chain, which is sealed to the lever, locks the latter against rotation, so that the seal must be broken when it is desired to disengage the hook from the lever and release the latter. By rotating the shaft the chains or other flexible connections between the same and the spring-actuated bolts are wound around the shaft, and the bolts are withdrawn from engagement with the hinged wings, and the interior pressure will open the grain-door. By this construction the grain-door may be opened from the exterior in a safe and convenient manner and it may be quickly closed when desired.

In Fig. 8 of the drawings is shown another form of wing, and this wing 40 is provided at each end with a pintle 41, which is arranged within a suitable bearing formed by a metal strap 42. The metal strap 42 is approximately L-shaped and is designed to be secured to the door-posts; but any other form of wing may be employed, if desired.

It will be seen that the grain-car door is exceedingly simple and inexpensive in construction and that it may be easily and conveniently opened with perfect safety from the exterior. It will also be seen that the sealing of the operating-lever not only prevents the door from being opened until the seal is broken, but that it also holds the lever out of the way.

What I claim is—

1. The combination with a car having a door-opening, a grain-door arranged at the door-opening and arranged to swing outward, the vertical wings hinged to the car at opposite sides of the door-opening and arranged to receive the ends of the door, and bolts mounted on the car and arranged to project into the paths of the wings and forming rigid stops for holding the wings in engagement with the door, substantially as described.

2. The combination with a car having a door-opening, of the hinged wings located at opposite sides of the opening, a grain-door, and the vertically-movable bolts mounted on the car and arranged to project above the bottom of the same and engaging the wings, substantially as described.

3. The combination with a car, of hinged wings, a grain-door, vertically-movable bolts extending through the bottom of the car and projecting above the same in position for engaging the wings, a shaft mounted beneath the car and connected with the bolts and adapted to withdraw them from such engagement, operating mechanism for rotating the shaft, and means for holding such operating mechanism and for enabling the same to be sealed, substantially as described.

4. The combination with a car having a door-opening, of wings hinged at opposite sides to the same, a grain-door, spring-actuated bolts mounted on the car at the bottom thereof, and projecting upward through the latter in position for engaging the wings, a horizontal shaft mounted beneath the car and connected with the bolts and adapted to actuate the same simultaneously, and means for operating the shaft, substantially as described.

5. The combination with a car having a door-opening, of wings located at opposite sides of the same, a grain-door, vertically-movable bolts extending through the bottom of the car and arranged to engage the wings, a shaft located beneath the car and connected with the bolts, said shaft being provided with a polygonal portion, and a lever having an opening receiving the shaft and conforming to the configuration of the polygonal portion and capable of movement longitudinally of the shaft to carry it into engagement with the said polygonal portion and to disengage it therefrom, substantially as described.

6. The combination with a car, of wings, a grain-door, vertically-movable bolts extending through the bottom of the car and arranged to engage the wings, a shaft located beneath the car and connected with the bolts, said shaft being provided with a polygonal portion, a lever provided with an opening to receive the shaft, and to engage the polygonal portion thereof, and a chain arranged to engage the lever and adapted to receive a seal, substantially as described.

7. The combination with a car, of wings, a grain-door, bolts for engaging the wings, a shaft connected with the bolts and provided

with a ratchet-wheel, a pawl for engaging the ratchet-wheel, a lever adapted to engage the shaft, and means adapted to receive a seal for holding the lever to prevent the latter from being oscillated for rotating the shaft, substantially as described.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

ALPHONSE COUTURE.

Witnesses:
HARRY STETSON,
F. M. THORSON.