No. 713,476. Patented Nov. 11, 1902.

J. MONTGOMERY.

GRAIN CAR DOOR.

(Application filed Mar. 10, 1902.)

(No Model.) 2 Sheets—Sheet 1.

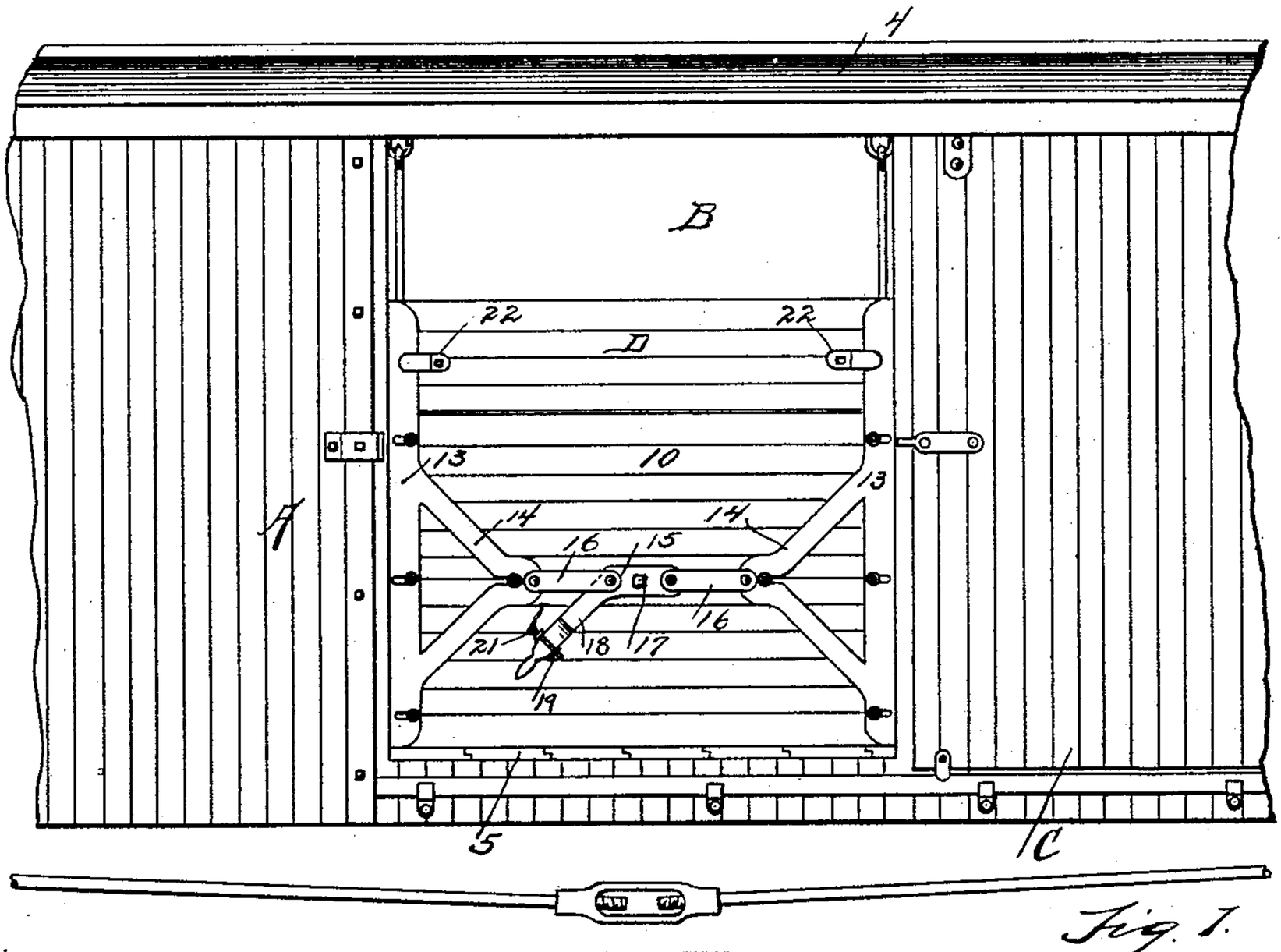

Fig. 1.

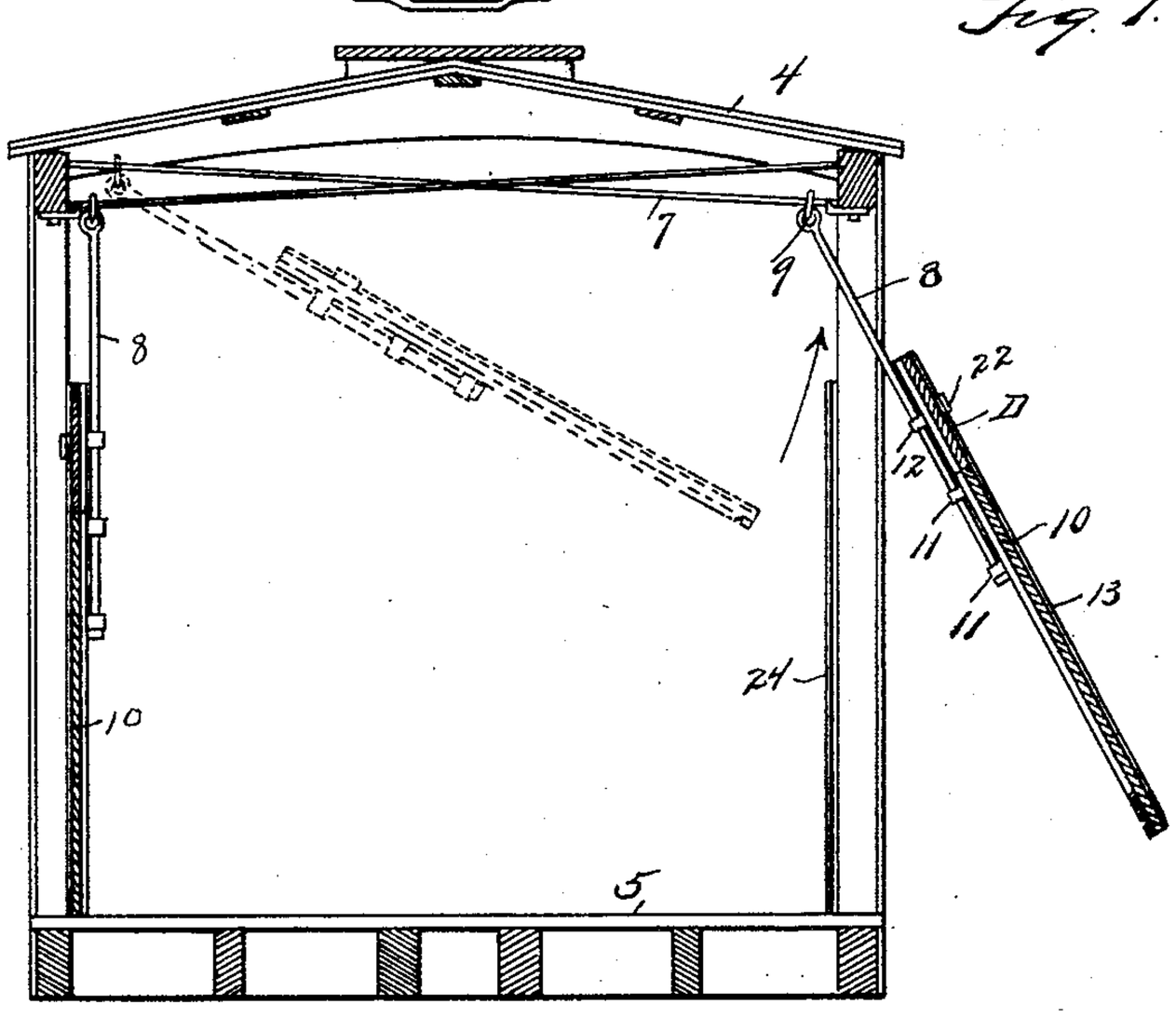

Fig. 2.

WITNESSES

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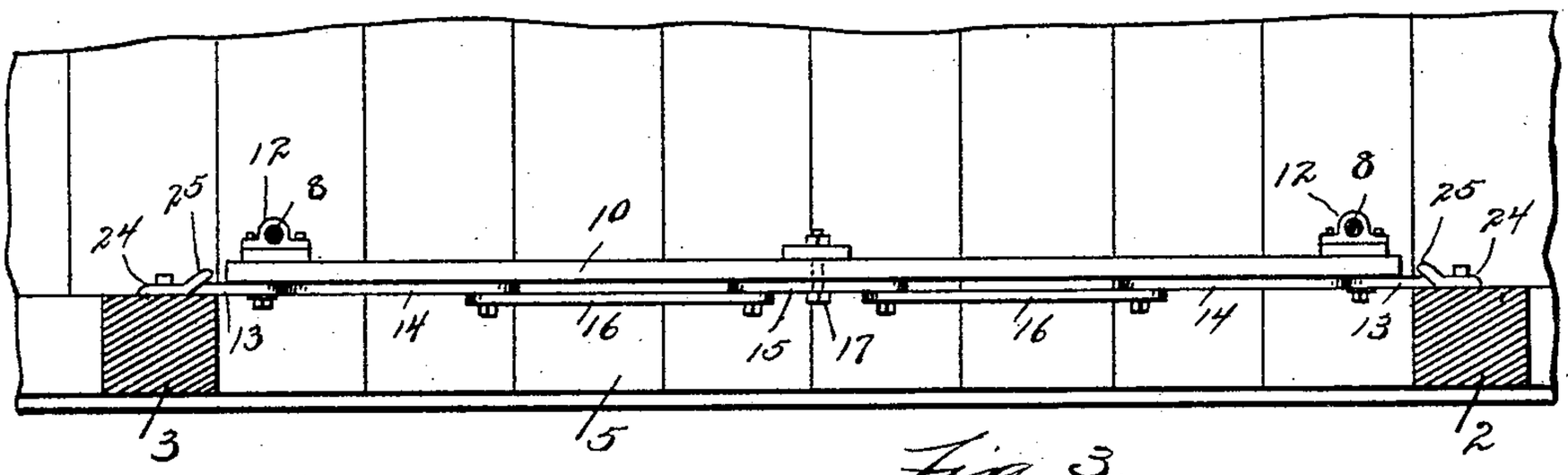

Fig. 3.

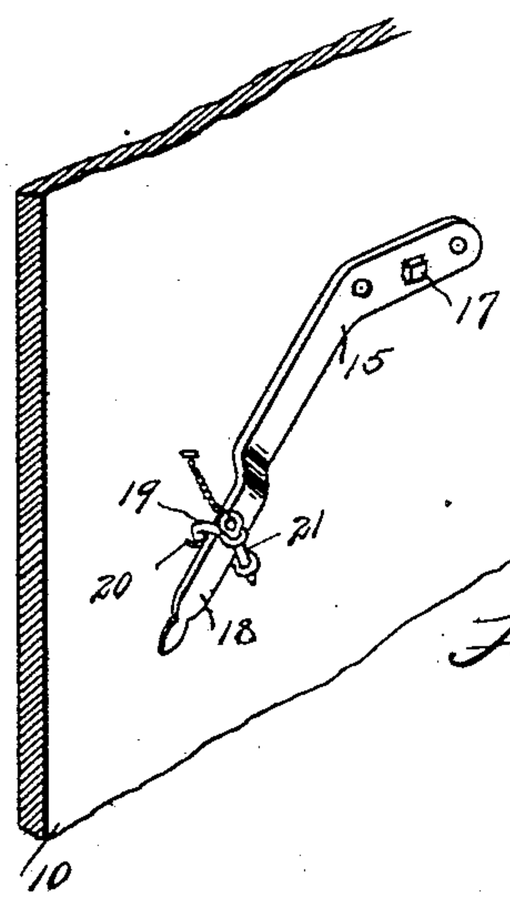

Fig. 4.

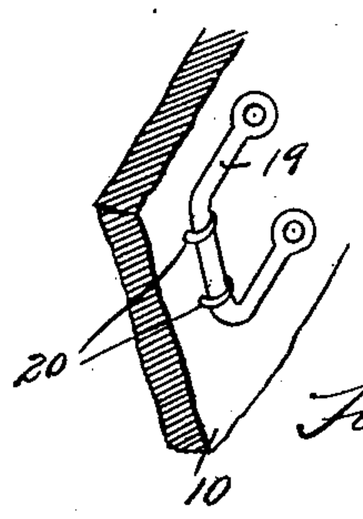

Fig. 5.

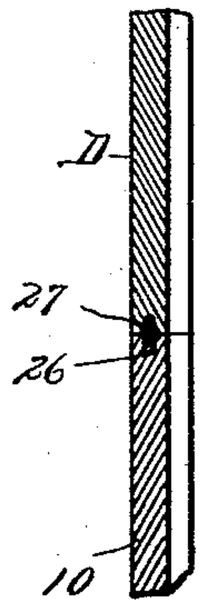

Fig. 6.

WITNESSES

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UNITED STATES PATENT OFFICE.

JOHN MONTGOMERY, OF SIMCOE, CANADA.

GRAIN-CAR DOOR.

SPECIFICATION forming part of Letters Patent No. 713,476, dated November 11, 1902.

Application filed March 10, 1902. Serial No. 97,440. (No model.)

To all whom it may concern:

Be it known that I, JOHN MONTGOMERY, a subject of the King of Great Britain, residing at Simcoe, county of Norfolk, Province of Ontario, Canada, have invented a certain new and useful Improvement in Grain-Car Doors; and I declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

This invention relates to car-doors, and has for its object a car-door adapted to close tightly the side opening of a freight-car and to be used for retaining in the car loads of material thrown into the car loosely, such as grain, coal, or stone.

The object of the invention is to produce a door which will hold tightly against the pressure of loads of such loose material, but which can be opened readily and easily notwithstanding such pressure and which can be shifted to a position out of the way of those loading or unloading the car when it is desired to have the door-opening entirely free and unimpeded.

In the drawings, Figure 1 is a side elevation of the door part of a car with the door in place closing the opening. Fig. 2 is a cross-section showing the door at the left opening in place to close the opening and the door at the right swung to permit the escape of a load, and it shows in dotted lines the door swinging to its out-of-the-way position. Fig. 3 is a plan of the closed door. Fig. 4 is a detail of a bolt-actuating lever. Fig. 5 is a detail of the catch which holds the bolt-actuating lever. Fig. 6 is a section showing the junction between the main part of the door and an auxiliary door used with it.

A indicates the car with door-opening B.

2 and 3 indicate the posts at the sides of the door-opening.

4 indicates the roof of the car. 5 indicates the floor.

C indicates the sliding-door, hung at the outside of the car.

Across the car are drawn (for each door) two rods, one of which is seen at 7 in Fig. 2. The two rods are parallel and extend from the top of the door-opening across the car to the opposite side and to the top of the plate just under the roof, preferably having a slight upward slant from the door to the opposite side of the car. These rods are strained tightly and are of sufficient strength to sustain the weight of the door next to be described.

From the rod 7 is suspended a door by means of hangers 8. Each hanger is suspended from the rod 7 by a link 9, and it is connected to the door 10 by binding-eyes 11 12. These may be screw-eyes, but are preferably plates provided with eyepieces, and are arranged to be held by bolts that pass through the door 10 and are secured on the opposite side of the door by rivets or by nuts. The door itself is made of any suitable material and is of a horizontal length to engage closely between the door-posts 2 and 3, being so short that it will swing freely through the opening between them. The hangers 8 can also swing freely through the door-opening. On each end of the door and on the outside thereof is a plate 13, that constitutes a bolt. Each plate 13 extends vertically across the entire width of the door, which is preferably made in two sections, as will be described later. The plate is provided with brackets 14, and each plate, with its bracket, is secured to the door by bolts which pass through slots in the plate. The slots are arranged to allow the plate to slide, so that each plate may extend beyond the end of the door or may be retracted to a position such that it does not lengthen the door. The two plates 13 are each connected to a rock-lever 15 by links 16. The rock-lever 15 is pivotally connected to the middle of the door by pivots 17 and is pivotally connected to each link 16, and each link 16 is pivotally connected to the bracket of the bolt-plate which it serves to actuate. The rock-lever 15 is provided with an actuating-handle 18, by means of which it can be turned on its pivot, and the lever is arranged to be locked and held by a catch 19. The catch 19 may be of any suitable form; but a desirable form is shown in Fig. 5 and consists of a clevis-shaped or staple-shaped catch with an eye at the end of each branch and which is itself held to the door by staples 20, driven into the door over the cross-bar of the clevis. A pin 21, fastened to the door by a short

chain, is slipped through the eyes of the clevis with the handle-bar of the rock-lever engaged between the branches of the clevis and under the pin.

There is preferably an auxiliary section to the door held by bolt-eyes 12 to the hanger 8. The auxiliary section D and the section 10 of the door are both arranged to slide on the hangers 8, and the hanger 8 is provided with a head underneath the lower bolt-eye 11 to prevent the escape of the door 10 therefrom. The section D of the door is provided with an overhanging lip 22 at each end, which engages over the bolt-plate 13, but does not interfere with the sliding action of the bolt-plate. To each post and on the inside thereof is secured a vertical plate 24, with a lip part 25, which extends obliquely outward to allow the bolt-plate 13 to engage between the post and the lip.

The door is secured in position by swinging it in until the bolt-plates register properly with the lip-plates 24, and the lever 15 is then turned to force the bolt-plate beyond the ends of the door and into engagement between the lip-plates and the post, and the lever is then locked in position and the door is secured. The upper section D may be lifted, sliding on the hangers 8 and leaving an opening between itself and the lower section of the door for the insertion of the spout of a grain-loader, and after the car has been loaded the upper section drops or is pushed down to engagement with the lower section. Preferably the top edge of the lower section is grooved with a groove 26, and a tongue 27, inserted in the lower edge of the upper section D, engages in the groove, making a tight joint.

The door is easily opened by retracting the bolt-plates 13 by means of the lever 15 and when freed will swing outward easily to allow for the first part of the unloading of a car. The door may be now immediately stored in the top of the car by pushing the ring 9 along the track-rod 7 until the lower edge has traveled far enough upward and inward to allow it to be swung up and caught. The door may be raised directly upward and along the rod 8 to drop down through the eyebolts 11 and 12.

If it is desired to swing both the right and the left hand door up to the top of the car at the same time, the hangers of one should be run across the car until they engage with the rods nearly over the hangers of the second door. Then one door may be swung up underneath the other and secured by any suitable fastening device.

The rod 7 engages through two eye-plates on the main section of the door, making it substantially rigid with the door, but capable of sliding to shorten the distance between the top of the rod and the top of the door.

What I claim is—

1. In combination with suspension-rods arranged across the top of the car, hangers suspended therefrom to swing freely through the door-opening, a door having a length to swing freely between the door-posts connected to said hangers and provided with extension bolt-plates, and holding-plates engaged to the door-posts arranged to engage the bolt-plates of the door, substantially as described.

2. The combination of a suspended swinging door provided with slidable bolt-plates and with means for actuating said bolt-plates, suspension-rods, track-rods arranged to sustain the suspension-rods to swing through the door-opening, substantially as described.

3. In a combination with a main door-section, extension bolt-plates held thereto, means for actuating the extension bolt-plates, swinging hangers arranged to sustain the door and to swing through the door-opening, and an auxiliary section engaging on the hangers above the main section and arranged to slide on said hangers, substantially as described.

4. The combination of the posts of a doorway, a suspended door, suspension-rods engaging through two eyebolts on said door and arranged to swing through the door-opening, track-rods along which the suspension-rods travel, and means for bolting the door, substantially as described.

In testimony whereof I sign this specification in the presence of two witnesses.

JOHN MONTGOMERY.

Witnesses:

M. A. COLLVER,

TOM. J. AGAR.