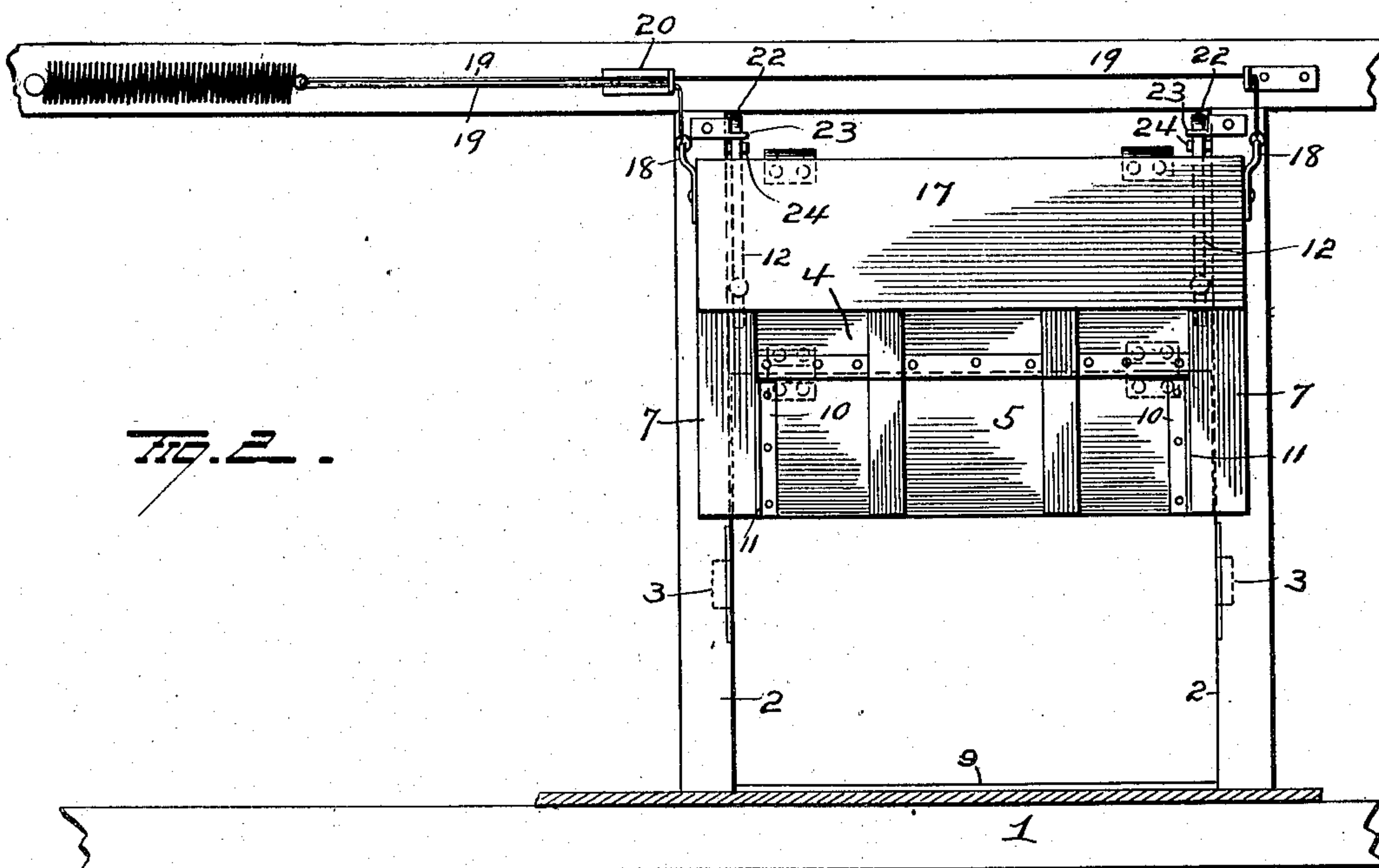
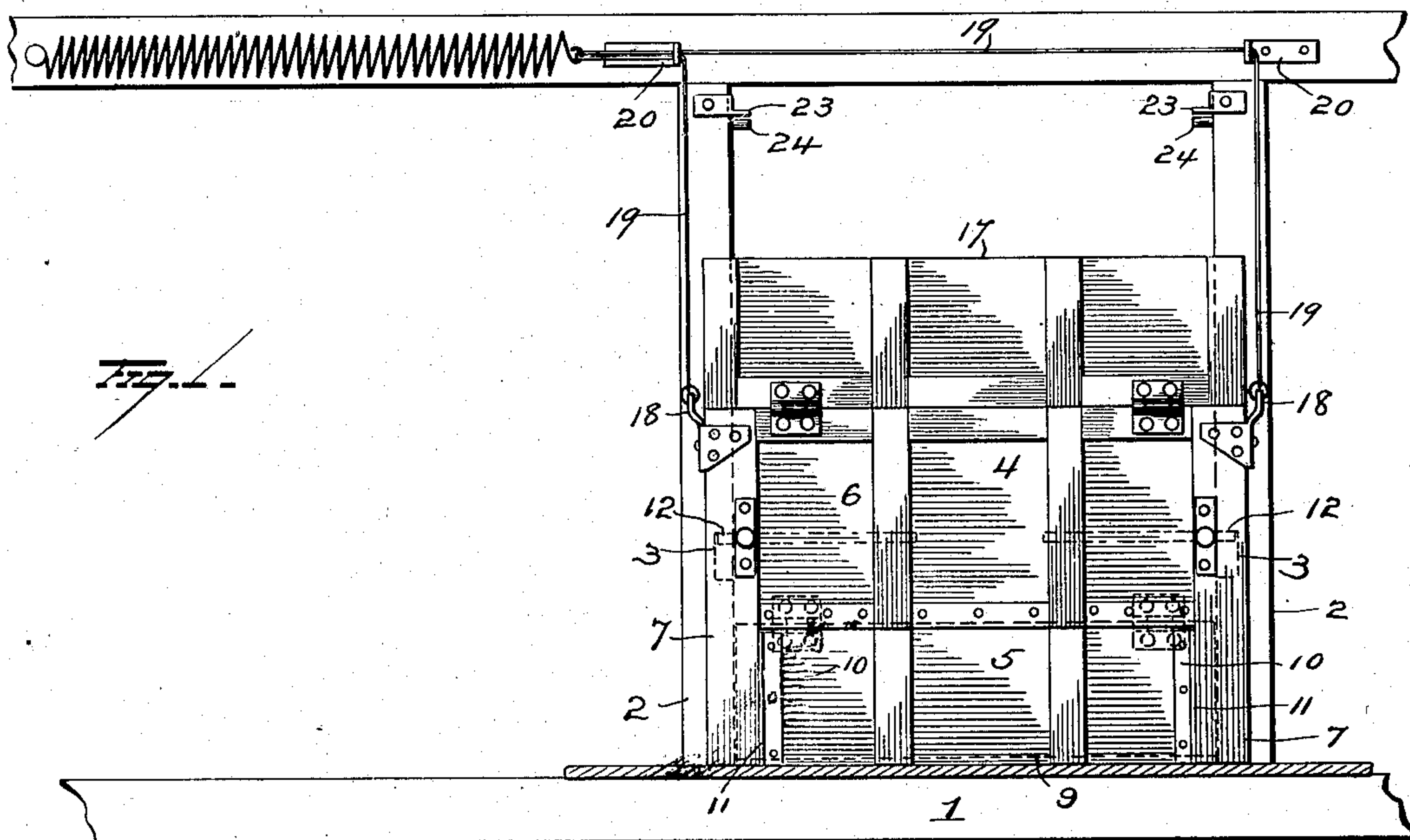


J. HENRY.  
GRAIN DOOR FOR CARS.  
APPLICATION FILED NOV. 16, 1907.

924,065.

Patented June 8, 1909.

2 SHEETS—SHEET 1.



WITNESSES

E. J. Nottingham  
G. J. Downing

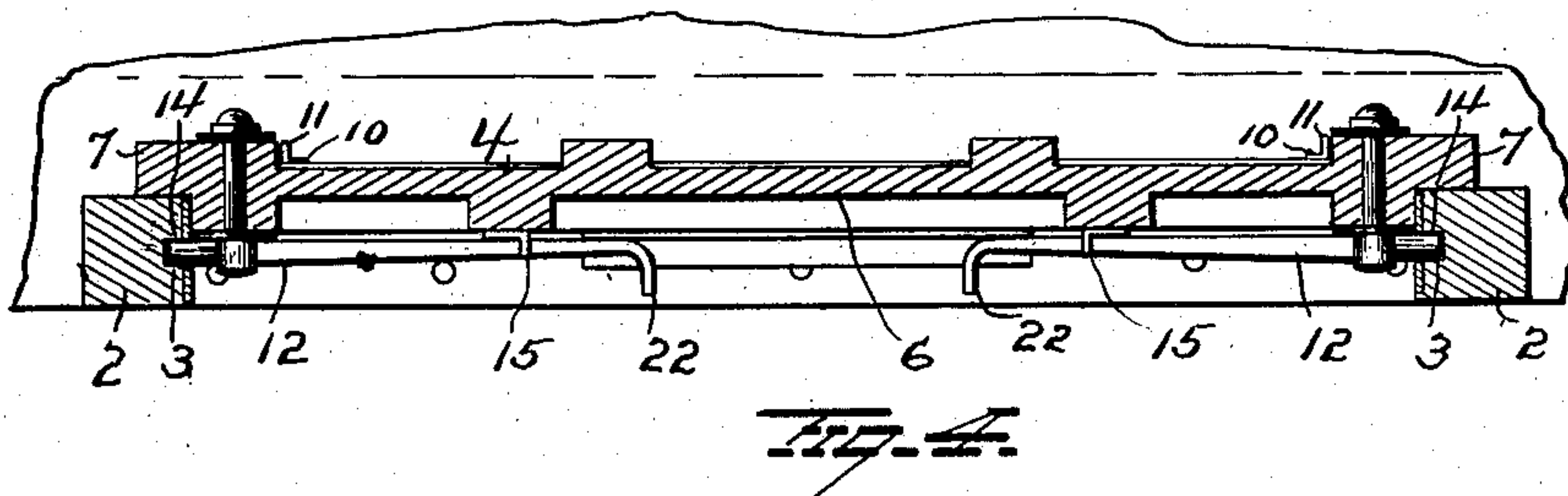
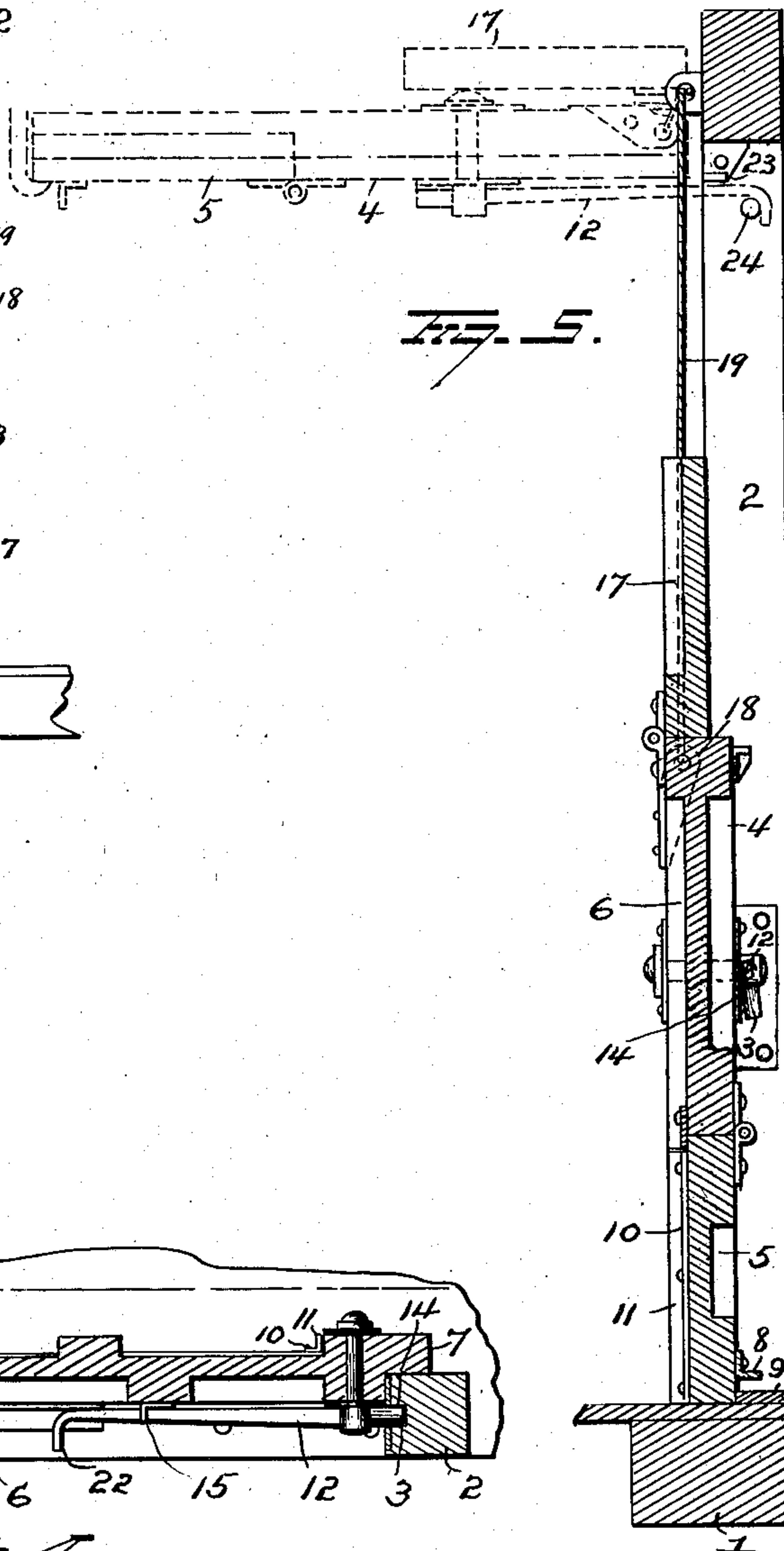
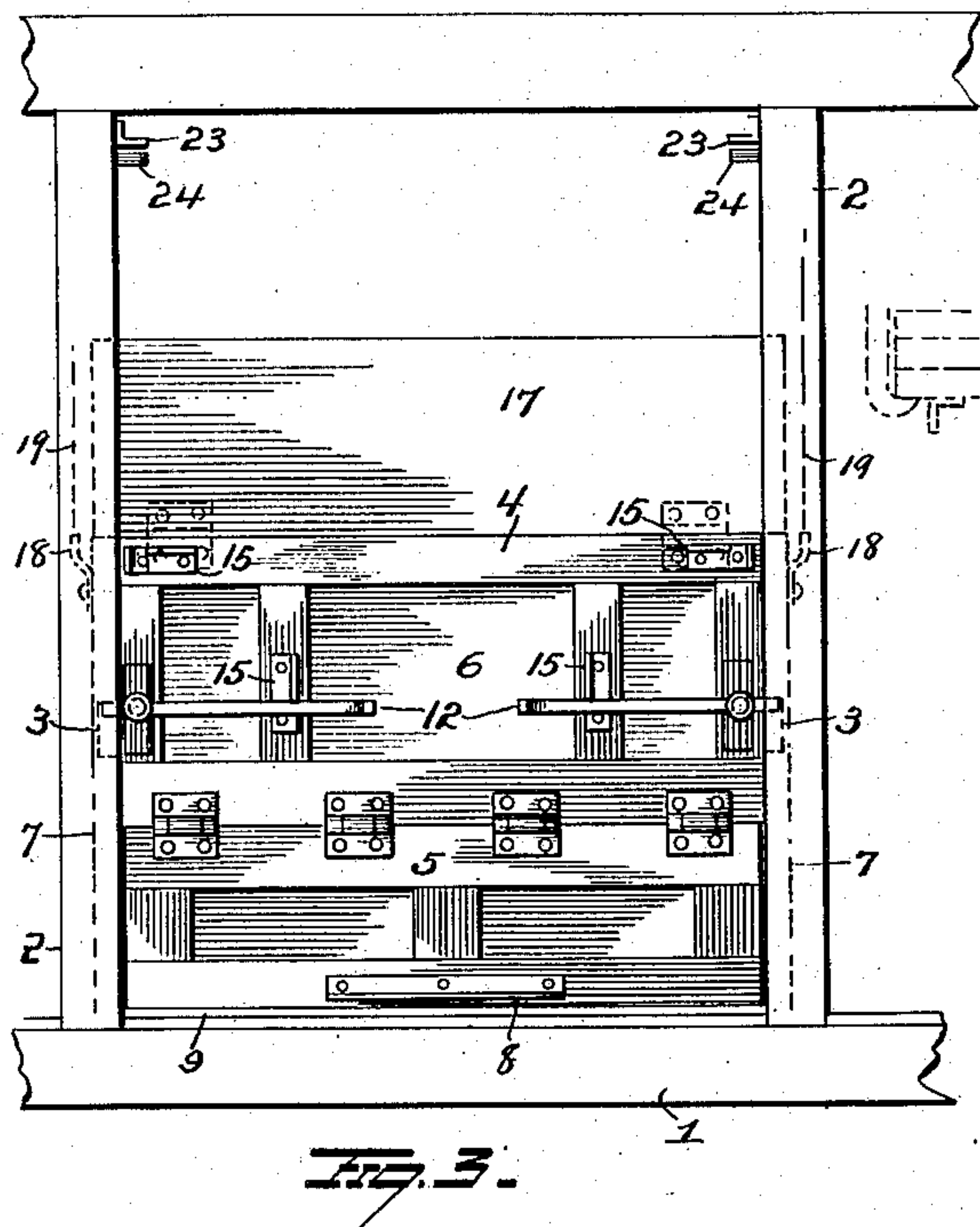
INVENTOR

J. Henry  
By H. A. Seymour  
Attorney

J. HENRY.  
GRAIN DOOR FOR CARS.  
APPLICATION FILED NOV. 16, 1907.

924,065.

Patented June 8, 1909.  
2 SHEETS—SHEET 2.



WITNESSES  
G. W. Nottingham  
G. F. Downing

INVENTOR  
J. Henry  
By H. A. Seymour  
Attorney



# UNITED STATES PATENT OFFICE.

JOHN HENRY, OF GRAND FORKS, NORTH DAKOTA

## GRAIN-DOOR FOR CARS.

No. 924,065.

Specification of Letters Patent.

Patented June 8, 1909

Application filed November 16, 1907. Serial No. 402,421.

*To all whom it may concern:*

Be it known that I, JOHN HENRY, of Grand Forks, in the county of Grand Forks and State of North Dakota, have invented certain new and useful Improvements in Grain-Doors for Cars; and I do hereby 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 appertains to make and use the same.

My invention relates to an improvement in grain doors for cars the object being to provide means for automatically elevating or moving the door out of the way, after it has been unlocked and the pressure of the grain against same removed.

With this end in view my invention consists in the parts and combinations of parts as will be more fully explained and pointed out in the claims.

In the accompanying drawings, Figure 1 is a view in elevation of a section of a car from the inside showing the door in its locked position. Fig. 2 is a similar view showing the door elevated. Fig. 3 is a similar view from the outside showing the locking mechanism. Fig. 4 is a view in horizontal section through the door and posts. Fig. 5 is a view in vertical section, showing the door in its operative position in full lines and in its folded position against the underside of the roof, in dotted lines.

1 represents the side sill, and 2 the door posts of an ordinary box car, each post being provided with a recess or keeper 3, the inner wall of which is beveled inwardly from its top, for a purpose to be hereinafter explained.

The door is composed of an upper main section 4, and a lower section 5 hinged to the main section, and adapted to swing outwardly so as to permit of the free discharge of all the grain adjacent to the doors. The upper section of the door comprises a top panel 6, extending from one door post 2 to the other, and having an easy fit between them, and the strips or battens 7 to which the panel is secured at its ends. These end strips or battens 7, overlap the inner faces of the posts 2, and absolutely prevent the door from being forced out by a pressure from within. The battens 7 project below the panel 6, and when in operative position, rest on the sill 1, as shown in Figs 1 and 2.

The lower section 5 of the door, is hinged to panel 6, the hinges being on the outside

so as to permit section 5, to swing outwardly when it is desired to discharge the grain from the car. This lower hinged section 5 of the door, is overlapped at its ends by the battens which prevent it from swinging, or being forced inwardly, and its lower end is adapted to rest against the inner edge of the door sill 9, which latter as shown is secured to the side sills of the car between the posts 2.

With the door in place, with the lower edge of the door projecting below and engaging the inner edge of the sill, the lower or hinged section will be held against any swinging movement, hence in order to release the lower section, so as to permit it to swing outwardly, the door fastening devices, to be hereinafter described, must first be released, and the door moved bodily upwardly, by means of a bar or stick inserted between the door sill and the shoulder 8 near the lower edge of the door. As soon as the swinging section of the door is clear of the door sill, the pressure of the grain will force it outwardly, thus permitting the grain which will gravitate out, to be discharged.

The swinging section of the door is provided on its inner face with the flanged strips 10, the flanges 11 of which bear against the edges of the battens 7 and prevent the escape of any grain at these points.

Pivotally secured to the outer face of the upper section 4 of the door, are the locking bars 12, the shorter ends of which, when the bars are turned to a horizontal position, enter the socketed keepers 13 in the posts 2, and lock the door in place. The inner walls of the keepers are inclined upwardly and outwardly so that the bars 12, which enter the keepers from below, engage the inclined walls as shown at 14, and forcibly pull the gate into contact with the inner faces of the post, while the contact of the locking bars with the top walls of the keepers, force the gate solidly down onto the floor of the car.

The upper section of the gate is provided on its outer face with the shouldered plates 15, two of which are for holding the locking bars 12 horizontally or in their locking positions, and two for holding the bars in vertical position. The shoulders on these plates have inclined surfaces over which the yielding or spring shanks of the bars ride, when moving to their two positions, the shoulders operating to hold the bars in these



positions against the possibility of accidental displacement. To move the bars from one position to another, it is simply necessary to flex or bend the bar outwardly until it is clear of the shoulder holding it in place, and then turn it on its axis until it is in its other position.

If desired I may provide the upper section of the door with an inwardly folding hinged leaf 17, which forms an upper extension, and which may be used in extra heavy cars, or when it is desired to load above the top of the main section of the door.

The door thus constructed is provided at its side edges, near its top, with the brackets 18 to which the free ends of the cords or cables 19 are attached. These cords or cables extend upwardly and pass through eyes (or sheaves) 20 secured to the car frame in a plane above the door opening, and are secured at their free ends to the end of a coiled spring the latter being secured to the car frame to one side of the door and preferably in the plane of the eyes 20. The spring is of a strength to lift and sustain the door in its elevated position, and the parts are so constructed that the tension or power of the spring is slightly greater than the weight of the door, hence but slight power is required to lower the door to its operative position.

The upper ends of the locking bars 12, are bent inwardly at their upper ends as at 22, and as the door is elevated, their bent ends pass between the guiding brackets 23 and the supporting pintles 24, the bent end of the bars 12 projecting toward the latter. By now turning the gate inwardly and upwardly toward the roof of the car, the bent ends of the locking bars engage and pivot on the pintles 24 and support the upper end of the gate, suitable hooks or other devices being attached to the roof of the car for engaging and holding the free or lower end of the gate in a position immediately under the roof.

When the gate is released from the roof and turns to its vertical position, the hooked ends of the bars 12, become disengaged from the pintles 24 thus leaving the gate free to be pulled down into its operative position.

When the door is not in use, it can be moved up and then turned against the roof of the car and secured in this position out of the way, by the hooks or any suitable fastening device before referred to.

When it is desired to convert the box car into a grain car, the door is lowered, and is secured in place by turning the locking bars from their vertical positions to horizontal positions, the handles or shanks of the locking bars, being readily accessible from the inside of the car.

To discharge the grain from the car, the locking bars are turned to disengage the

keepers, and the door bodily raised by a bar or stick inserted between the door sill and the shoulder on the door. As soon as the swinging section of the door clears the door sill, the pressure of the grain forces said swinging section outwardly thus permitting the grain to flow from the car. All the grain bearing against the door, will gravitate out, and as soon as all that will naturally flow from the car has passed out, the door will then be free to be raised out of the way, thus permitting the remaining grain to be shoveled out.

It is evident that many slight changes might be resorted to in the relative arrangement of parts shown and described without departing from the spirit and scope of my invention hence I would have it understood that I do not wish to confine myself to the exact construction herein shown and described, but,

Having fully described my invention what I claim as new and desire to secure by Letters-Patent, is:—

1. In a grain door for cars, the combination of a door, bars on the door for locking same in operative position, and pintles adjacent to the top of the door frame, the locking bars on the door, adapted to engage said pintles when the door is elevated and turned upwardly and cooperating with said pintles to form temporary hinges.

2. In a grain door for cars, the combination a door, bars on the door for locking same in operative position, the upper ends of said bars being bent outwardly, and pintles on the car frame adapted to be engaged by the bent ends of the locking bars when the door is elevated and turned up against the underside of the top of the car, said locking bars adapted to cooperate with said pintles to form temporary hinges.

3. The combination with a car and pintles on the door posts, of a vertically movable grain door, and pivoted bars on the door cooperating with the door posts to lock the door and cooperating with said pintles to form temporary hinges.

4. The combination with a car and pintles and guide brackets in front thereof on the door posts below the lintel, of a vertically movable door, and hook bars on the door, said hook bars movable between the guides and pintles on the door posts and arranged to project above the guide brackets when the door is raised and adapted to cooperate with said pintles to form temporary hinges for the door.

In testimony whereof, I have signed this specification in the presence of two subscribing witnesses.

JOHN HENRY.

Witnesses:

A. N. MITCHELL,  
GEORGE F. DOWNING.