

J. M. RUSH.
GRAIN CAR DOOR.

APPLICATION FILED APR. 20, 1910.

986,646.

Patented Mar. 14, 1911.

2 SHEETS—SHEET 1.

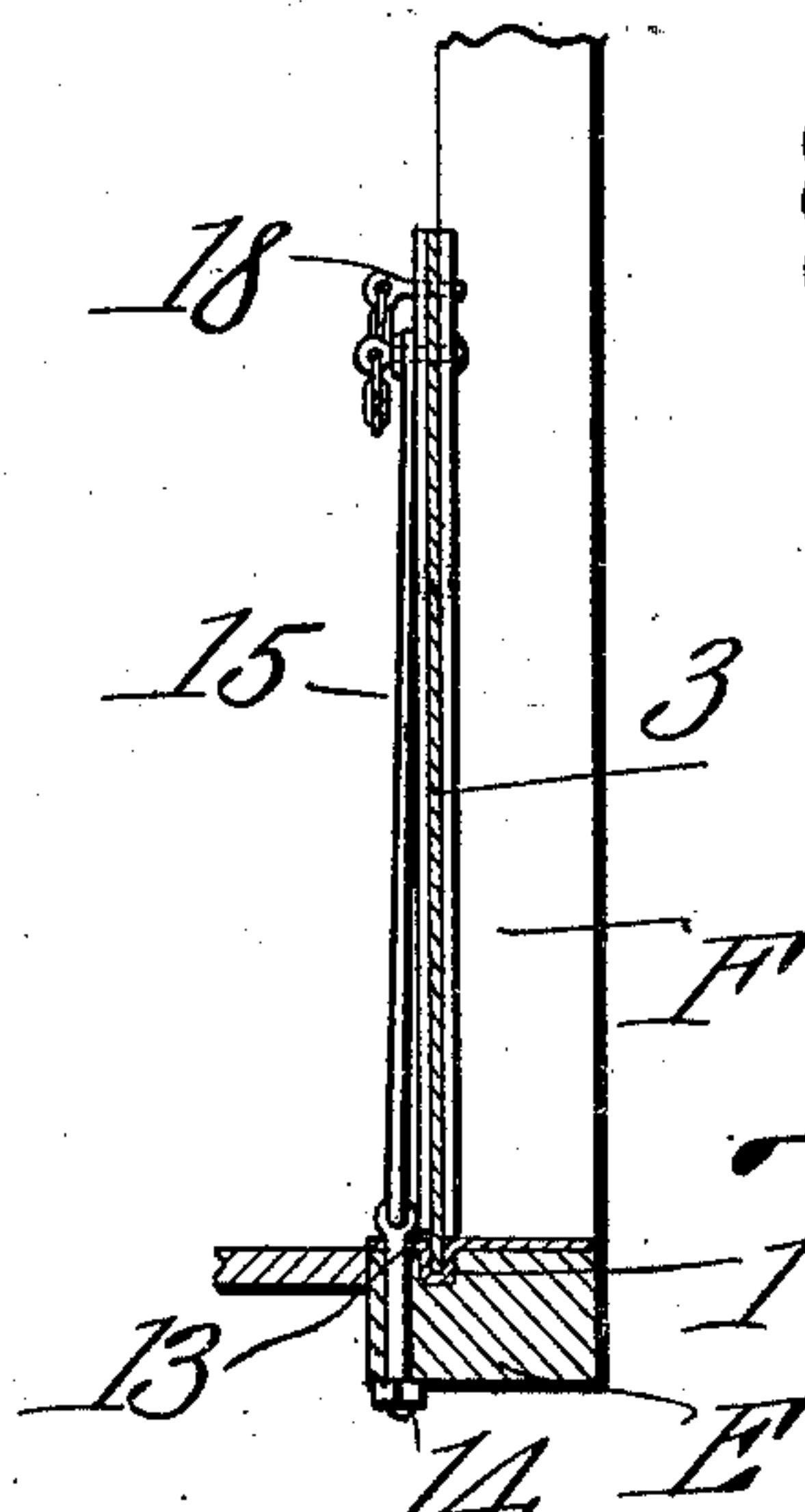
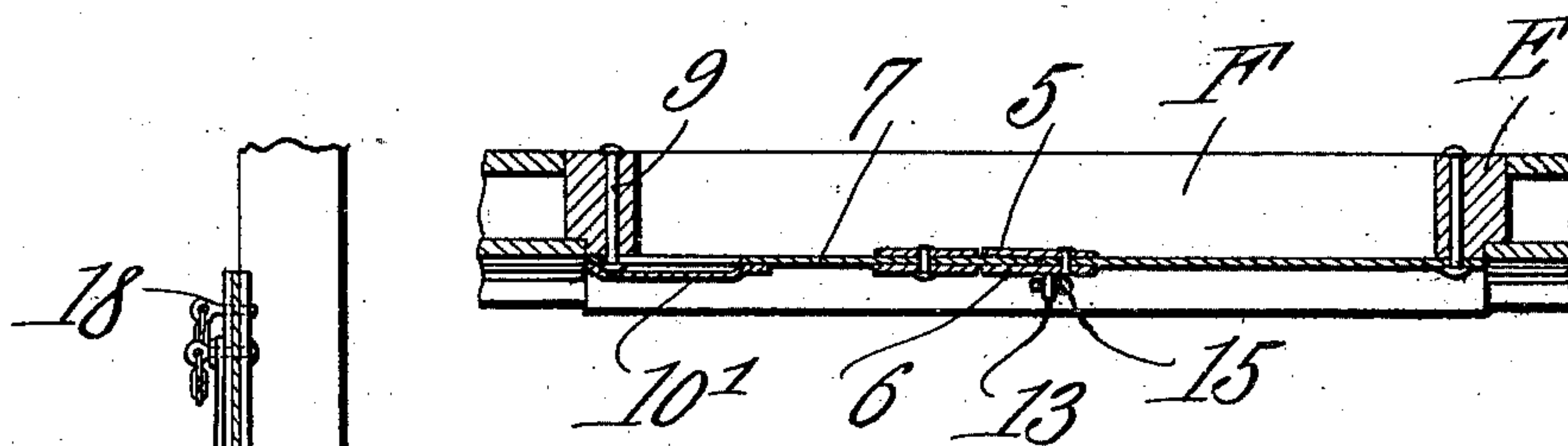
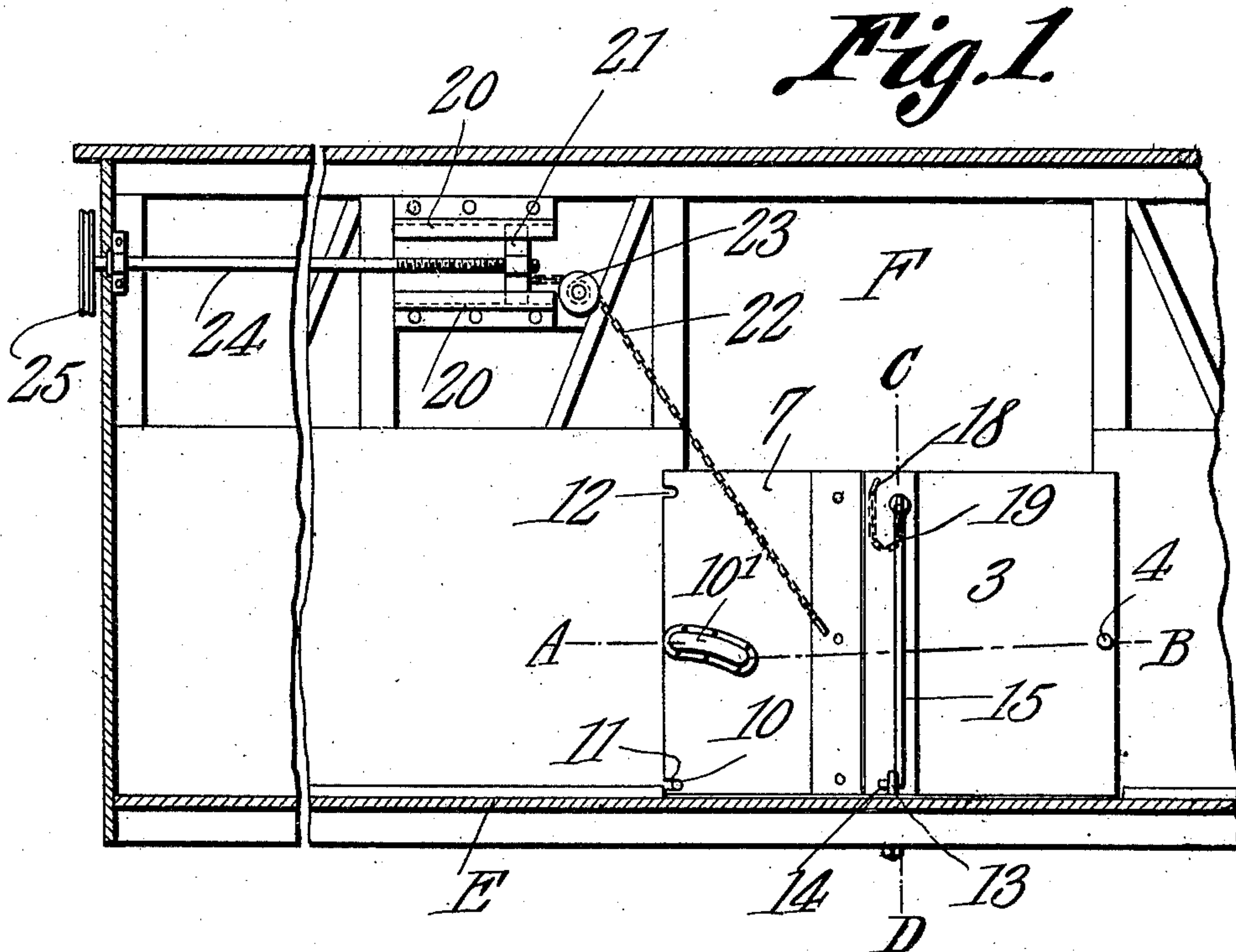


Fig. 3.

Fig. 4.

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2 SHEETS—SHEET 2.

Fig. 2.

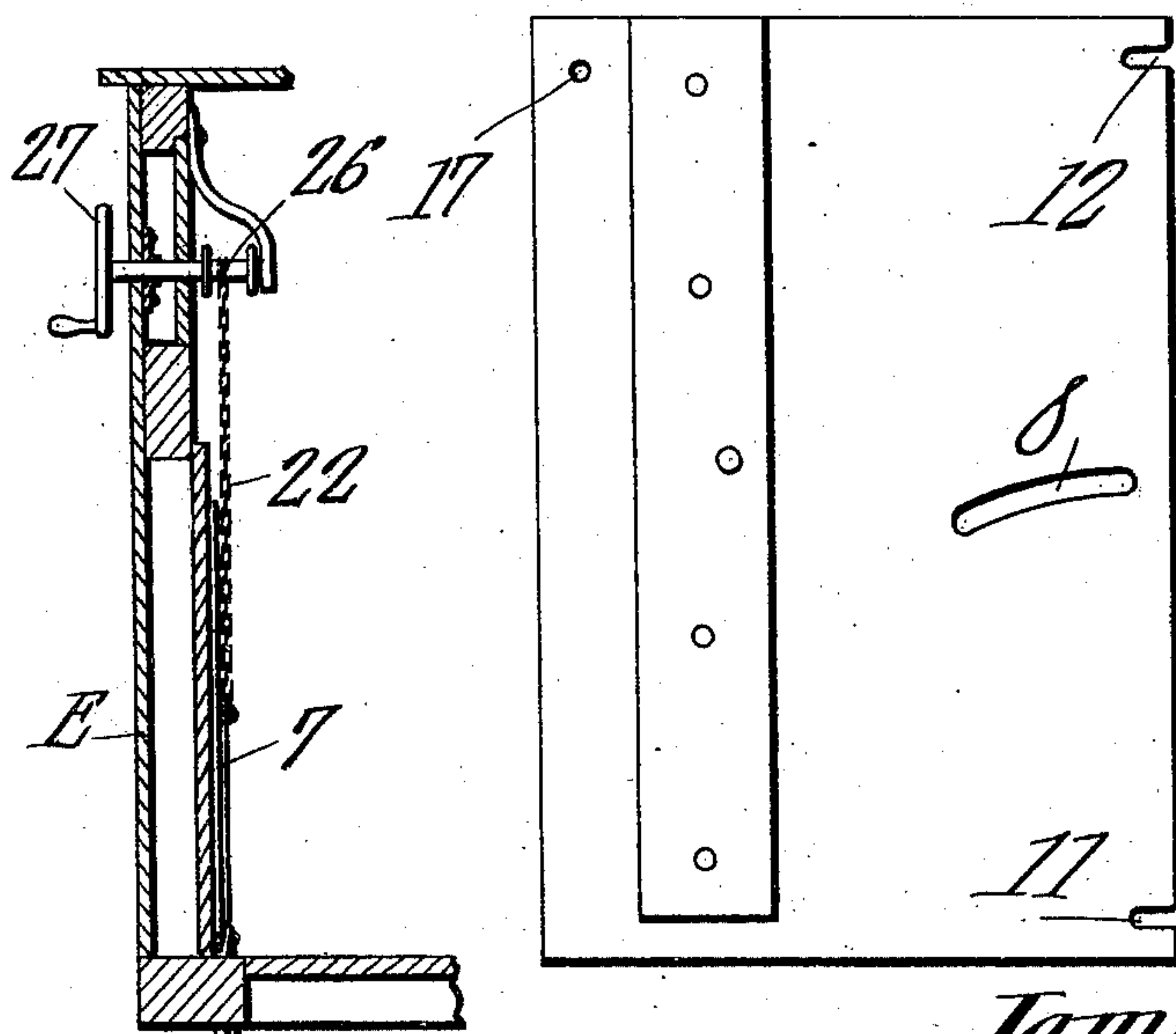
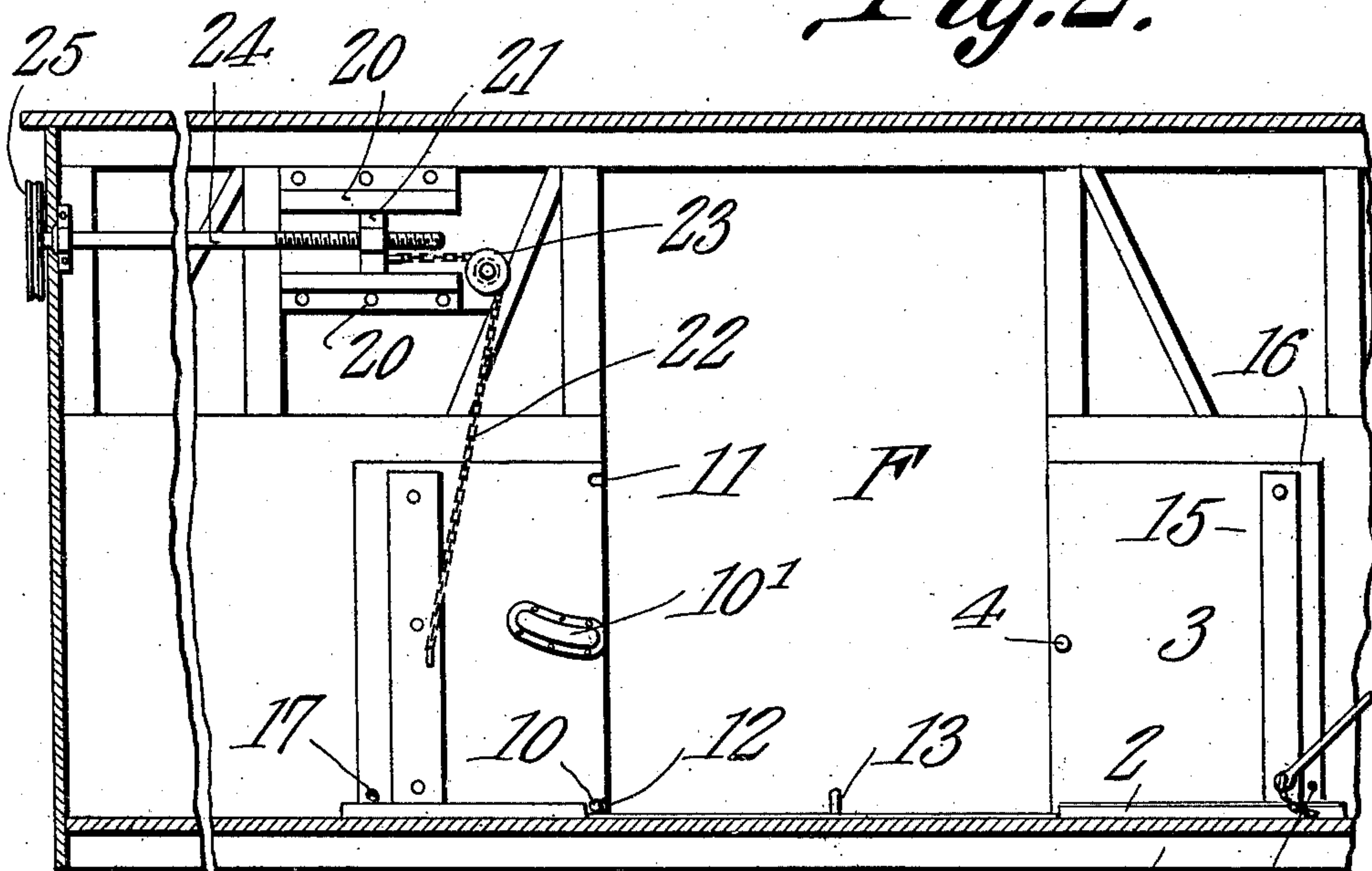


Fig. 5.

Fig. 6.

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UNITED STATES PATENT OFFICE.

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GRAIN-CAR DOOR.

986,646.

Specification of Letters Patent.

Patented Mar. 14, 1911.

Application filed April 20, 1910. Serial No. 556,494.

To all whom it may concern:

Be it known that I, JAMES M. RUSH, a citizen of the United States, residing at Neosho, in the county of Newton and State of Missouri, have invented a new and useful Grain-Car Door, of which the following is a specification.

This invention relates to doors for grain cars and is more particularly designed as an improvement upon the structure disclosed in Patent No. 899,909, issued to me on September 29, 1908.

One of the objects of the invention is to provide a door mounted for swinging movement and which is provided with mechanism whereby it can be opened or closed from a point outside of the car.

Another object is to provide pivoted doors adapted to swing in vertical planes when moving to open or closed positions, the said doors being provided with simple means whereby they may be locked together against independent movement.

With these and other objects in view the invention consists of certain novel details of construction and combinations of parts hereinafter more fully described and pointed out in the claims.

In the accompanying drawings the preferred form of the invention has been shown.

In said drawings:—Figure 1 is a vertical longitudinal section through a portion of a car body and showing the doors in elevation, said doors being closed. Fig. 2 is a view similar to Fig. 1 and showing the doors open. Fig. 3 is an enlarged section on line A—B Fig. 1. Fig. 4 is a section on line C—D Fig. 1. Fig. 5 is an elevation of one of the doors and showing the outer face thereof. Fig. 6 is a transverse section through a portion of a car having modified means for operating the door.

Referring to the figures by characters of reference E designates a car structure having a door opening F and arranged along the floor of the car is a longitudinally channeled sill 1 which not only constitutes the door sill but also extends beyond the sides of the door opening sufficient distances to support the doors when open. Those portions of the sill located beyond the sides of the door opening are preferably formed with upstanding flanges 2 whereby deeper

grooves or channels are produced than along the bottom of the door opening.

The two doors are preferably formed of sheet metal, the door 3 being pivotally mounted adjacent the center of one side edge, as indicated at 4, the pivot being secured to one of the door jambs and being so located that the door, when open, will rest with its lower end seated within the channeled sill strip and at one side of the door opening. When the door is in closed position, its lower edge or end rests within the channeled portion of the strip at the bottom of the door opening and extends slightly more than one-half the distance across the opening, there being face plates 5 riveted or otherwise secured to the door and extending beyond the free vertical edge thereof so as to form a channel 6. This channel is adapted to receive the free vertical edge of the other door 7 which is also preferably formed of sheet metal and has an arcuate slot 8 therein adjacent the center of one longitudinal edge thereof, this slot being adapted to receive a fixed pivot device 9 which extends inwardly from one of the door jambs. A housing 10 is secured upon the door 7 and extends across the slot 8 so as to close said slot from the inside of the car. This slot is provided to permit the door 7 to have a sliding as well as a pivotal movement about the pivot 9 so as to bring either end of the door within the channeled sill strip 1. A stop lug 10 extends from the door jamb to which the door 7 is connected and notches 11 and 12 are formed within the said door adjacent the upper and lower ends thereof, one of these notches being adapted to receive the lug 10 when the door is closed and the other notch being adapted to receive said lug when the door is open.

An eye bolt 13 or the like extends upwardly from the floor of the car close to the center of the bottom of the door opening and is adapted to be detachably engaged by a hook 14 formed at the lower end of a latch strip or rod 15. This rod is pivotally connected at its upper end to the upper end of one of the face plates or strips 6 and is so proportioned that when the door 3 is closed the hook 14 can be swung into engagement with the eye 13 so as to thus hold the door 3 against movement about its pivot 4.

Openings 17 may be formed in the face

strips or plates 6 and within that portion of the door 7 adapted to project between said strips and these openings are adapted to register when the two doors are closed so as to permit the insertion of a locking pin 18 thereinto, this pin serving to prevent the two doors from spreading apart. This pin may be connected to one of the doors by means of a chain 19 or the like.

Secured to one wall of the car structure and adjacent the door opening F, are parallel guide rails 20 having a slide 21 mounted between them, said slide being connected, as by means of a chain 22, to the door 7 at a point preferably adjacent the center of the free vertical edge of said door. This chain 22 extends over a guide sheave 23 journaled upon the side of the car structure and close to the lower rail 20. A screw 24 projects into and engages the slide 21 and extends longitudinally of the car structure and beyond one end thereof, there being a hand wheel 25 or the like upon the projecting end of the screw and whereby the said screw may be readily rotated for the purpose of shifting the slide between the rails 20.

When it is desired to open the door which has been described, the pin 18 is first disengaged from the doors 3 and 7. The rod 15 can then be swung laterally out of engagement with the eye 13. After the two doors have been unlocked in the manner described the screw 24 is rotated so as to draw the slide 21 toward the wheel 25. This will cause chain 22 to pull upwardly and laterally on the door 7 and the said door will swing with the stud 10 as a pivot until the lower free corner of the door has passed upwardly above the center of the door 3. During the swinging movement of the door 7, the slotted portion of said door will of course travel along the pivot 9 until said pivot comes into contact with one end of the slot. Further movement of the slide 21 will thus cause the chain 22 to swing the door 7 about the pivot 9 so as to invert the door and bring the notch 12 into engagement with the lug 10 as shown in Fig. 2. It is of course necessary, after the door 7 has been swung about the pivot 9, to reverse the movement of the slide 21 so as to pay out the chain 22 and thus permit the inverted door to be lowered into the channeled strip 1. After the door 7 has been opened in the manner described, the door 3 can be swung upon its pivot 4 and inverted so as to rest within the channeled strip 1 at one side of the opening F.

When it is desired to close the doors the chain 22 is paid out to its greatest extent and door 3 is swung into closed position and fastened to the eye 13 after which the door 7 is swung closed so as to bring its free vertical edge within the channel formed between the face plates or strips 5. The two

doors can then be secured together in the manner already described and will, obviously, tightly close the lower portion of the opening F. If preferred, and as shown in Fig. 6, the chain 22 can be secured to a windlass or winding shaft 26 journaled in the wall of the car and having a hand wheel 27 or the like secured thereto and outside the car and whereby the chain can be readily wound or unwound for operating the door. This structure of course eliminates the screw and slide shown in Figs. 1 and 2.

It is to be understood that various changes can of course be made in the construction and arrangement of the parts without departing from the spirit or sacrificing any of the advantages of the invention as defined in the appended claims.

What is claimed is:—

1. The combination with a structure having a door opening, and an invertible door pivotally mounted upon the structure and movable in a vertical plane into and out of position partly across the opening, of a second invertible door; a connection between the said second door and structure, and permitting swinging movement of the door in a vertical plane and slidable movement of said door in the direction of said first mentioned door, and means for actuating said slidable and pivotal door.

2. The combination with a structure having a door opening, of a door pivotally mounted upon said structure and adapted to swing about its pivot in a vertical plane into position partly across or wholly removed from the door opening, a second door, a connection between the structure and said second door and permitting the door to swing in a vertical plane to bring either end lowermost and to permit the sliding movement of the door in the direction of the first mentioned door to close the opening.

3. A car structure having a door opening, opposed doors pivotally connected to the structure at opposite sides of the opening and mounted to swing in vertical planes, each of said doors being invertible and movable to partly close the door opening, one of the doors being shiftable in the direction of the other door subsequent to its inversion partly across the opening.

4. The combination with a structure having a door opening, of opposed doors pivotally connected to the structure and mounted to swing in vertical planes about their pivots, said connections being substantially equidistant from the ends of the doors and each door being invertible, the connection between one of the doors and its structure being adapted to permit sliding movement of said door in the direction of the other door to engage said door.

5. The combination with a structure having a door opening, of a door mounted for

swinging movement upon said structure,
said door being movable in a vertical plane
and invertible to assume a position partly
across the opening or at one side of the
5 opening, there being a channel in one edge
portion of the door, a second door pivotally
connected to the structure, said door being
adapted to swing in a vertical plane and be-
ing invertible to assume a position partly
10 across the door opening or at one side there-
of, the connection between said second door

and the structure being adapted to permit
said door to slide into the channel portion
of the first mentioned door.

In testimony that I claim the foregoing 15
as my own, I have hereto affixed my signa-
ture in the presence of two witnesses.

JAMES M. RUSH.

Witnesses:

MONA OSBOURN,
E. F. MUNAY.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,
Washington, D. C."
