

H. M. JENKINS.

DEVICE FOR OPENING OR CLOSING ELEVATOR DOORS.

APPLICATION FILED FEB. 6, 1903.

2 SHEETS—SHEET 1.

NO MODEL.

Fig. 3.

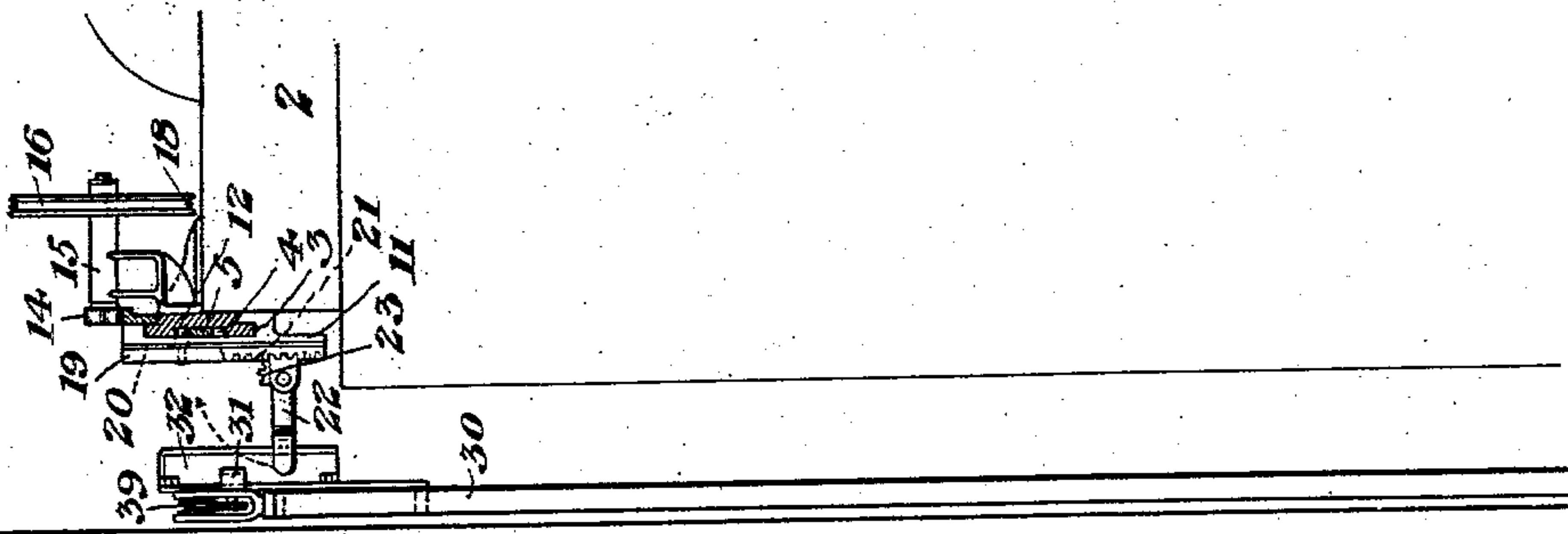
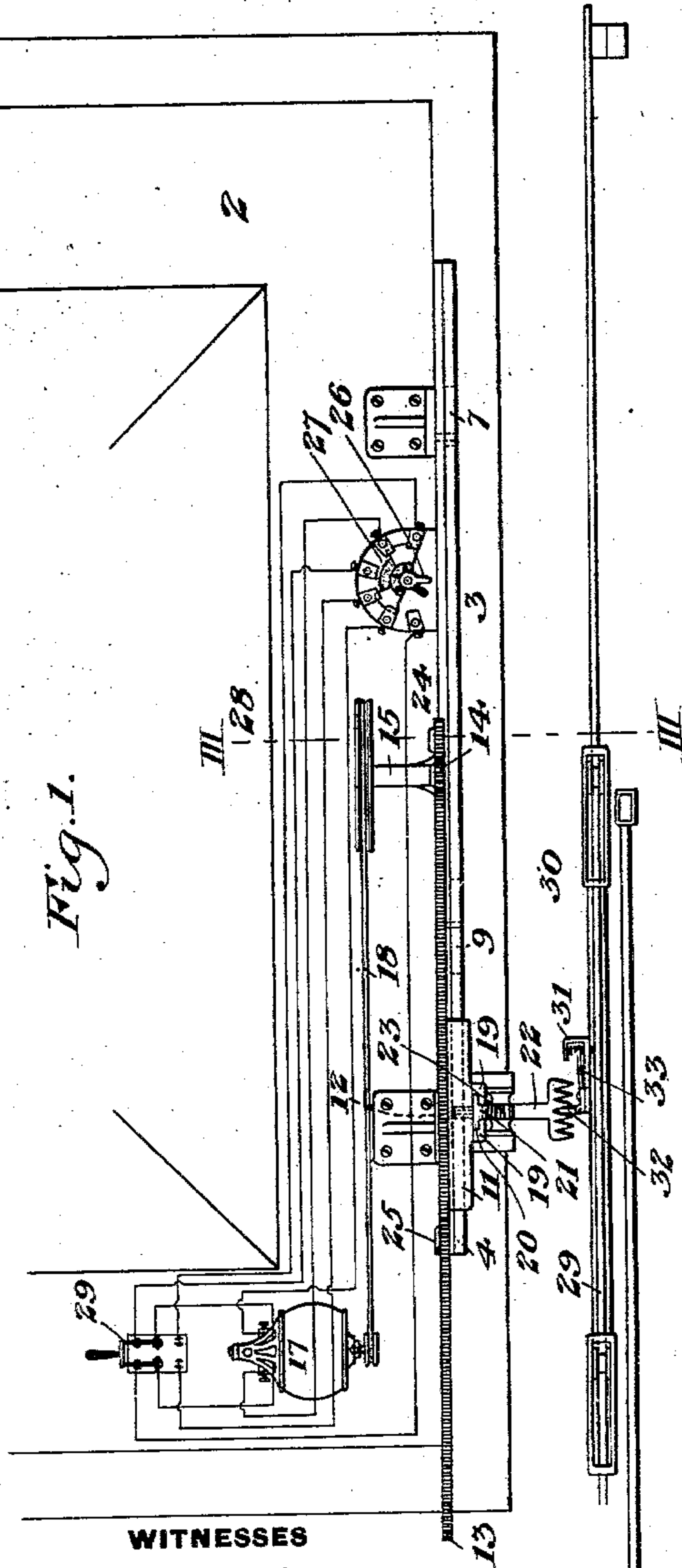


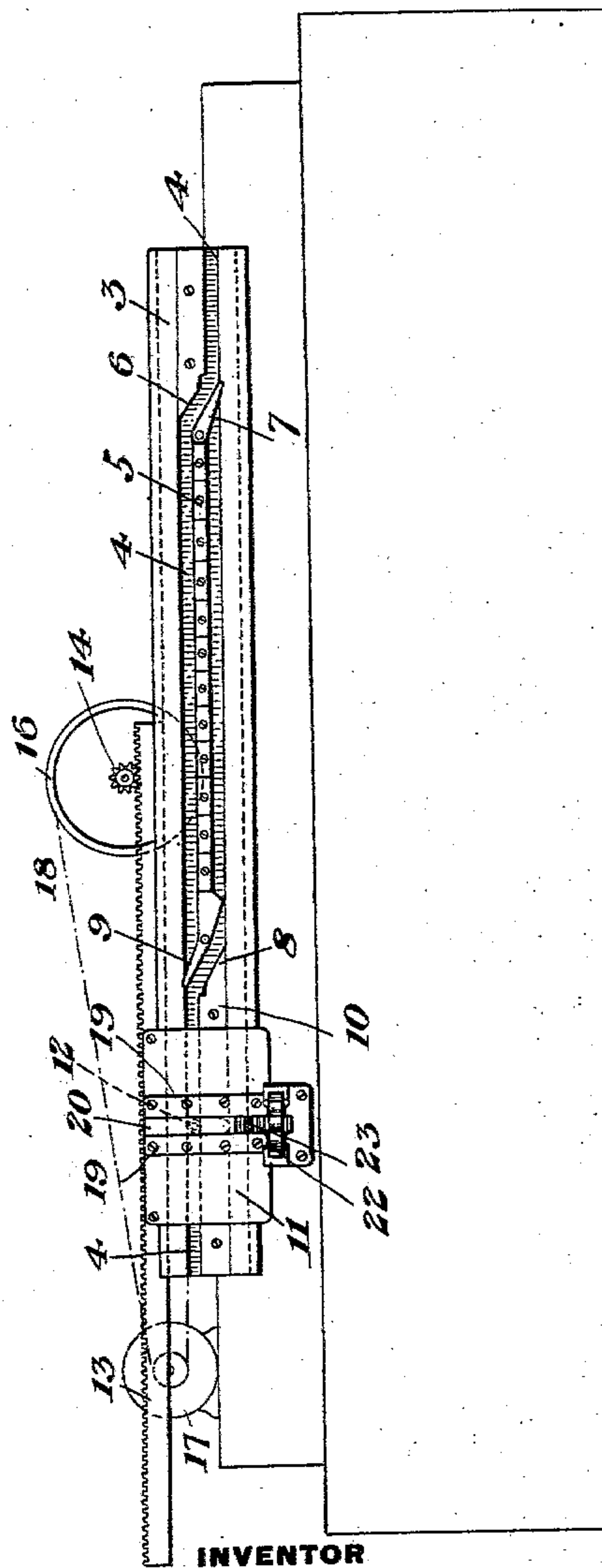
Fig. 1.



WITNESSES

A. M. Stearn,  
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Fig. 2.



INVENTOR

Howard M. Jenkins  
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his Attorney

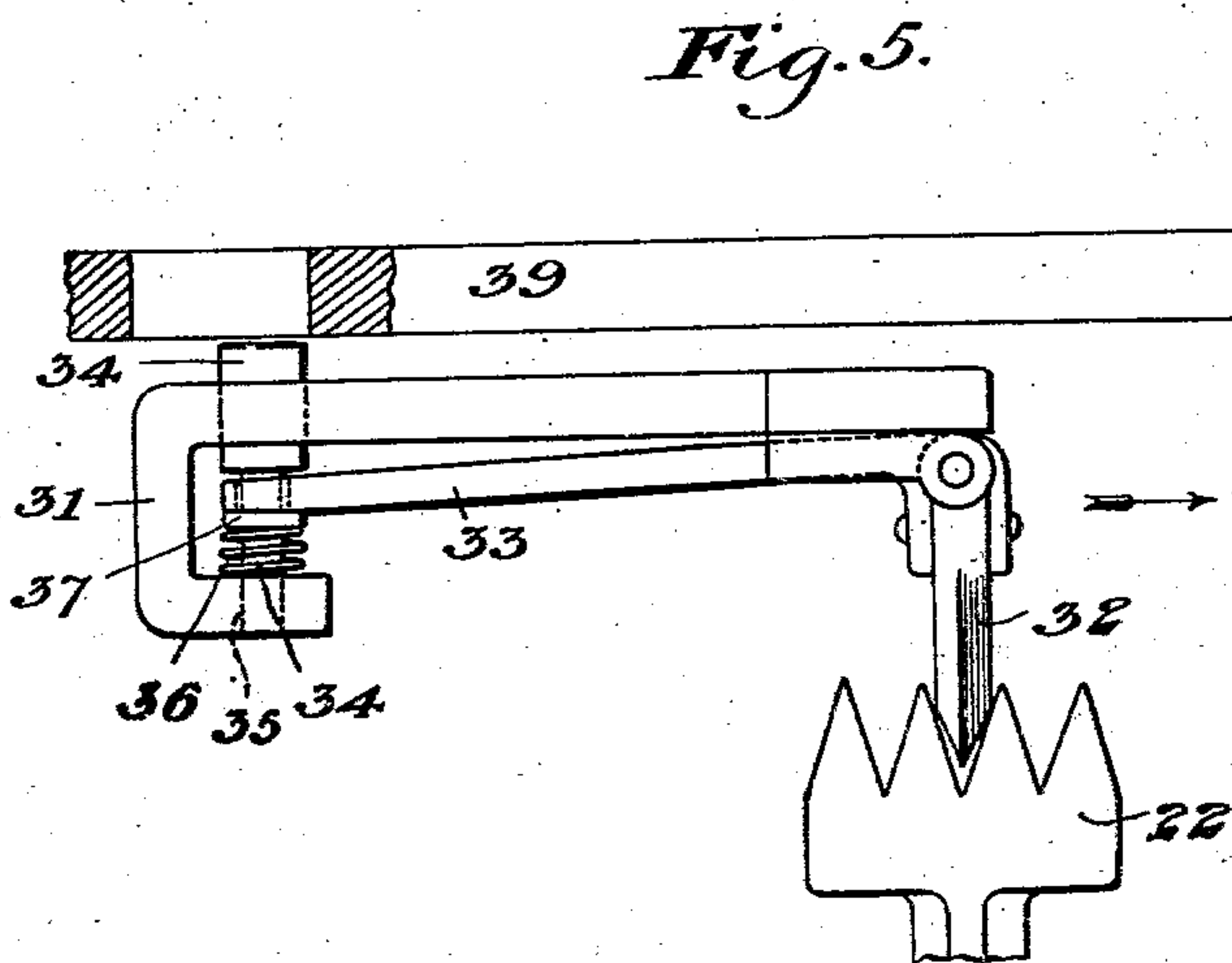
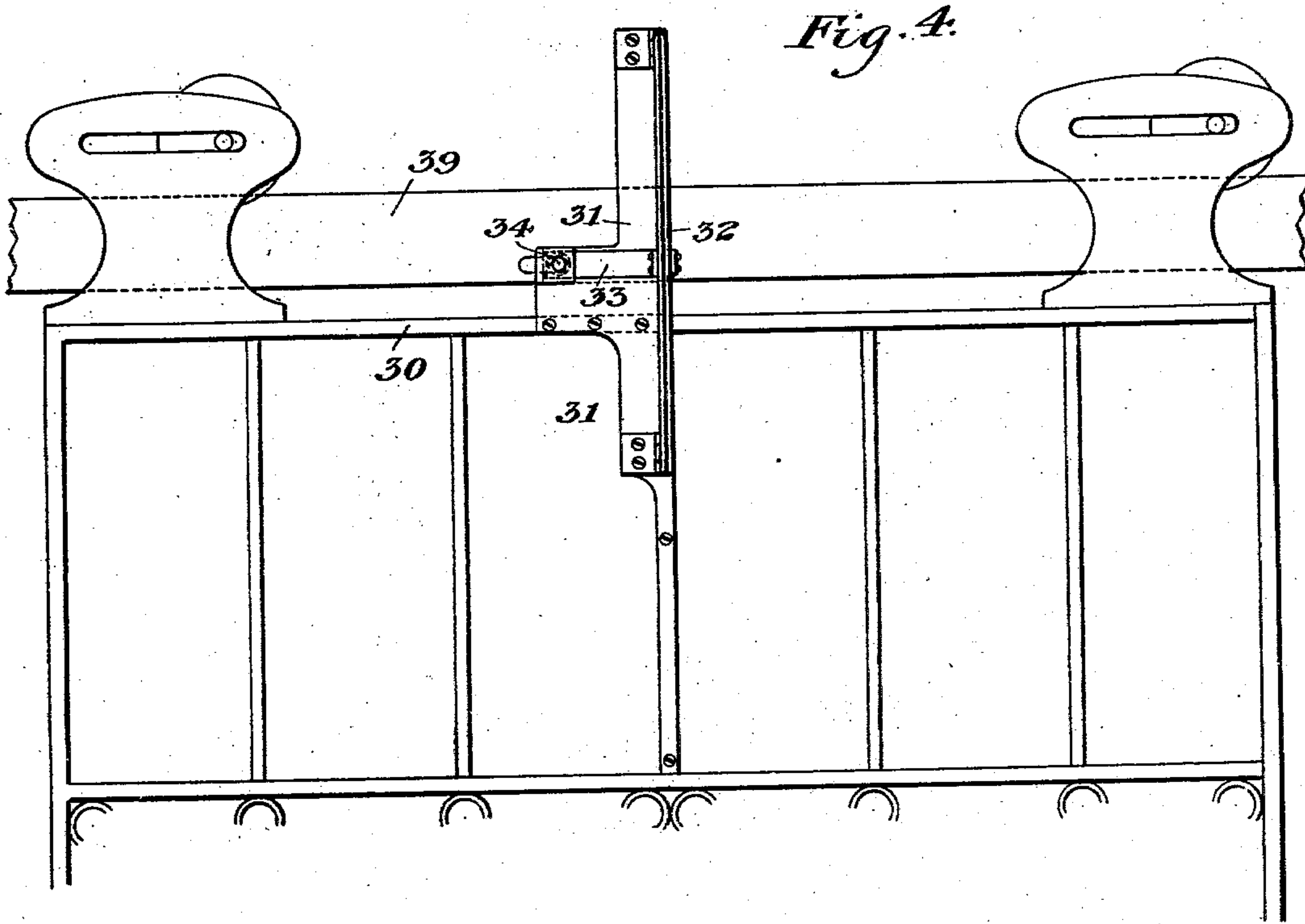
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DEVICE FOR OPENING OR CLOSING ELEVATOR DOORS.

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NO MODEL.

2 SHEETS—SHEET 2.



WITNESSES

*A. M. Steen,*  
*W. F. Stewart*

INVENTOR

*Howard M. Jenkins*  
*by James H. Baskerville*  
*his attorney*



# UNITED STATES PATENT OFFICE.

HOWARD M. JENKINS, OF ALLEGHENY, PENNSYLVANIA.

## DEVICE FOR OPENING OR CLOSING ELEVATOR-DOORS.

SPECIFICATION forming part of Letters Patent No. 740,569, dated October 6, 1903.

Application filed February 6, 1903. Serial No. 142,111. (No model.)

*To all whom it may concern:*

Be it known that I, HOWARD M. JENKINS, of the city of Allegheny, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Devices for Opening or Closing Elevator-Doors, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a plan view illustrating my invention. Fig. 2 is a front view illustrating my invention. Fig. 3 is a vertical sectional view on the line III III of Fig. 1. Fig. 4 is an enlarged view of a portion of the gate, showing the supports; and Fig. 5 is a detached view of the dog with which the clutch engages when the door is opened or closed.

Like symbols of reference indicate like parts wherever they occur.

My invention relates to devices for opening and closing the doors of elevators and other similar doors; and it consists in a traveling arm or saddle provided with a clutch adapted to engage with the door, a motor for driving the arm, and devices for connecting and releasing the clutch, as hereinafter more fully set forth.

I will now describe my invention so that others skilled in the art may manufacture and use the same.

In the drawings, 2 represents the top of the elevator-car, secured to which is a bar 3, in the side of which is a groove 4, which groove at its middle portion is divided into two parts—an upper and a lower groove—by a partition 5. This partition may be formed of a number of separable blocks secured to the bar 3 by bolts or screws, so that by using a greater or less number of blocks the length of the partition may be increased or lessened. Near one end of the bar 3 the groove 4 is diverted upwardly by an incline 6 and a pivoted incline 7, leading the groove to the upper side of the partition 5. Toward the other end of the bar 3 the groove 4 is diverted downwardly by the inclined surface 8 and the pivoted incline 9. This inclined surface 8 is formed by a separate block of metal 10, which so slides in a recess in the bar 3 that the position of the incline may be adjusted toward or away from the other end of the bar 3,

thereby increasing or decreasing the length of the double slot formed by the partition 5. When it is desired to decrease or lengthen this double slot, one or more of the blocks 5 are removed or added, and the block 10 is shifted accordingly. The top and lower faces of the bar 3 constitute a track on which travels the saddle 11, which saddle is provided with L-shaped flanges adapted to inclose the upper and lower portions of the bar 3, and on the inner face of this saddle 11 is a roller 12, which is adapted to travel in the slot 4. This roller 12 is mounted in a vertically-moving slide, as is hereinafter explained. Secured to the upper portion of the saddle is a longitudinal rack 13, which meshes with a pinion 14 on the drive-shaft 15. At the other end of the drive-shaft 15 is a drive-wheel 16, which may be connected with the motor 17 by a belt or other suitable connecting device 18. Secured to the outer face of the saddle 11 are flanges 19, which form a vertical slideway, and mounted or fitting in this slideway is a movable slide 20, which is provided on its outer face with a rack 21 and on its inner face is provided with a stud, which carries the roller 12, and at this point the saddle 11 is cut away, so as to allow of the vertical movement of the roller 12 as the slide 20 is caused to move up or down in the slideway. Pivoted to brackets on the slideway 19 is a toothed clutch 22, which is provided on its inner end with a toothed sector 23, which meshes with the rack 21 in such a manner that when the slide 20 is caused to move up or down the rack 21 will impart a movement to the toothed clutch 22. On the inner face of the rack 13 are two lugs 24 and 25, which are adapted to engage and move the arm 26 of the electric switch 27. This switch 27 is a cut-out and reversing switch adapted to be operated by the movement of the rack 13, and it is connected by suitable circuits with the motor 17 and switch 29, which switch serves to start the motor in either direction, according to the position of the switch-arm 26. Secured to the upper part of the elevator-door 30 is a bracket 31, and in this bracket is pivoted a dog 32, with which the clutch 22 is adapted to engage. This dog is fitted with a bell-crank lever 33, at the outer end of which is an oblong slot through which



passes a pin 34, which extends from one side of the lever 33 and acts as a locking-bolt for the elevator-door. This pin 34 also extends on the other side of the lever 33 into a hole 35 in the bracket 31, and it is surrounded with a spring 36, which bears on one side against the inner face of the bracket and on the other against a collar 37, which is formed on or keyed to the pin.

The operation of these devices is as follows: In the drawings the elevator-door 30 is shown in an open position, the saddle 11 having nearly completed its line of travel on the track 3. When the door is closed, the saddle 11 is at the other end of the bar 3 and the slide 20 is in its lowered position, the roller 12 occupying the lower portion of the groove 4. When the car 2 comes opposite the elevator-door and it is desired to open the same, the operator closes the switch 29, which starts the motor 17 and by the revolution of the pinion 14 causes the rack 13 and the saddle 11 to travel, the roller 12 moving in the groove 4. When the roller 12 reaches the pivoted incline 7, it ascends the same to the upper face of the partition 5, which raises the slide 20 in the slideway 19, and the rack 21, acting on the toothed sector 23, lowers the toothed clutch 22, causing its teeth to engage with the pivoted dog 32 on the elevator-door 30. The further movement of the saddle and clutch pressing on the dog 32 operates the bell-crank lever 33 and withdraws the pin 34 from the track 39, on which the elevator-door travels, thus releasing the door and allowing it to move on its support or track 39 with the movement of the clutch 22 until the lug 24 on the inner face of the rack 13 engages with the switch-arm 26 and so moves this arm as to break the current and reverse the circuit, thereby stopping the motor 17 and the further movement of the door. The door having been opened in the manner described, when it is desired to close the same the switch 29 is reversed, which closes the reverse circuit of the motor, and as this circuit has been closed at the other end through the switch 27, as already described, the motor starts in the opposite direction and imparts a reverse movement to the saddle 11 through the rack 13. When the roller 12 reaches the pivoted incline 9, the roller is carried thereby down the incline 8 into the lower part of the groove 4, which causes the slide 20 to move downwardly in the slideways 19, and by the action of the rack 21 the toothed sector 23 raises the clutch 22, releasing it from the dog 32, which allows the elevator-door 30 to close itself by the momentum which has been imparted to it. As already stated, the position of the pivoted incline 9 may be adjusted so that this release shall take place at

a point where the door has been carried sufficiently far to close itself through its own momentum. After the door has been released in the manner described the rack 13 and saddle 11 continue their movement until they pass under the pivoted incline 7 to the point in the groove 4 from which they started. Just before reaching this point the lug 25 on the rack 13 strikes the arm 26 of the switch 27, breaks the reverse circuit, and connects the primary circuit so that when the switch 29 is again moved the motor shall be started in the opposite direction. When the clutch 22 is released from the dog 32, the force of the spring 36 is free to act on the pin 34 and to cause it to enter its recess when the door reaches the end of its travel, thereby locking the door. It will be noticed that as this lock is operated by the clutch 22 the door can be opened and closed only at a time when the car is opposite the door.

Although I have described and shown an electric motor for operating my improved devices, I do not desire to limit myself to the same, as hydraulic, pneumatic, steam, or other motors may be employed in lieu thereof.

The advantages of my invention will be appreciated by those skilled in the art.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In devices for opening and closing doors, the combination of a traveler provided with a clutch adapted to engage the door, mechanism for driving the traveler, and devices for connecting and releasing the clutch; substantially as described.

2. In devices for opening and closing elevator-doors, the combination of a traveler mounted upon the top of the elevator-car, said traveler being provided with a clutch adapted to engage with the door, mechanism for operating the traveler, and devices for connecting and releasing the clutch; substantially as described.

3. In devices for opening and closing elevator-doors, the combination of a slotted bar mounted upon the top of the elevator-car, a rack adapted to travel on the bar, a pinion meshing with the rack and connected with power mechanism, a pivoted clutch mounted upon the traveler and adapted to engage with the door, mechanism for driving the traveler, and devices for engaging and releasing the clutch from the door; substantially as described.

In testimony whereof I have hereunto set my hand.

HOWARD M. JENKINS.

Witnesses:

A. M. STEEN,

JAMES K. BAKEWELL.