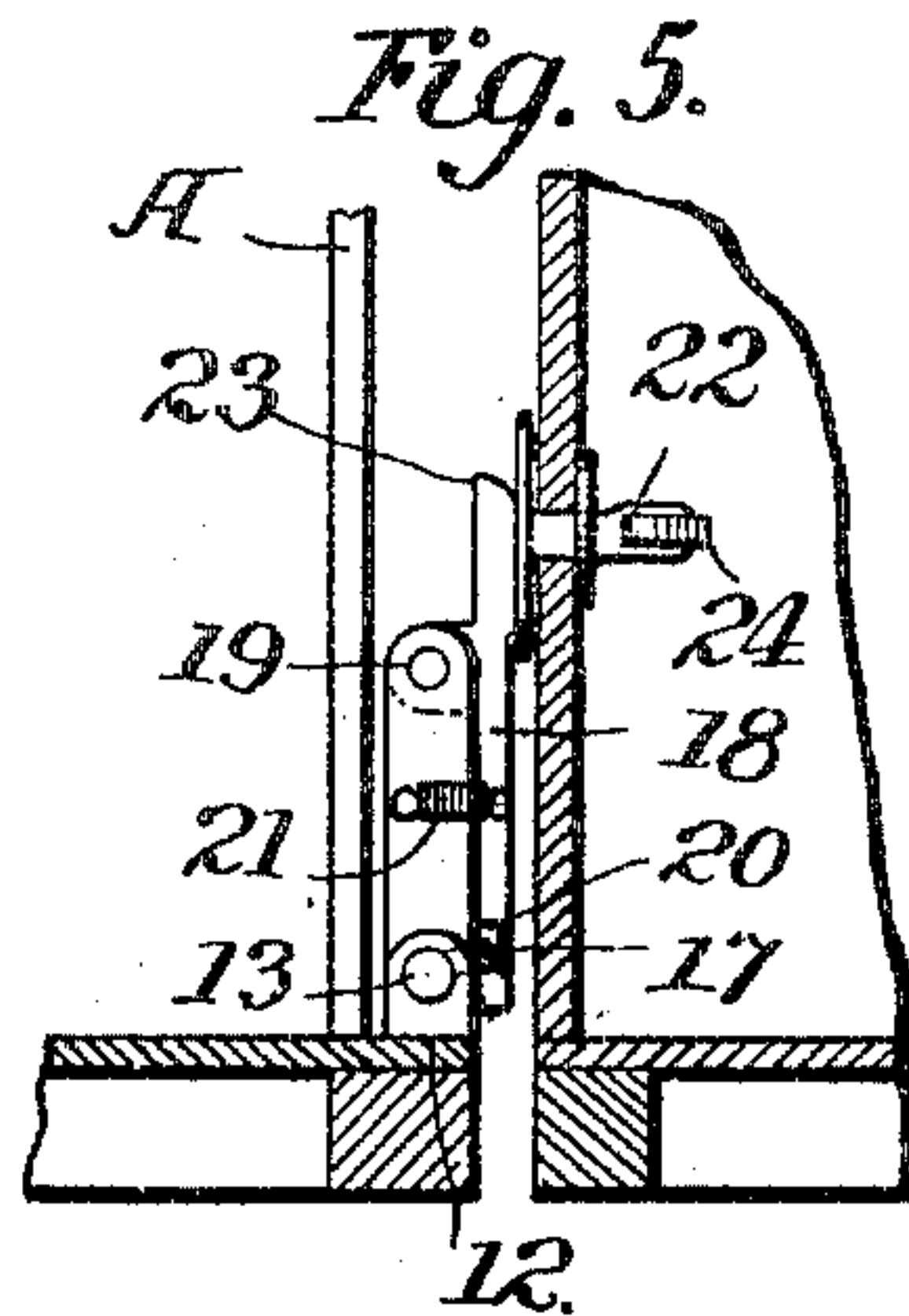
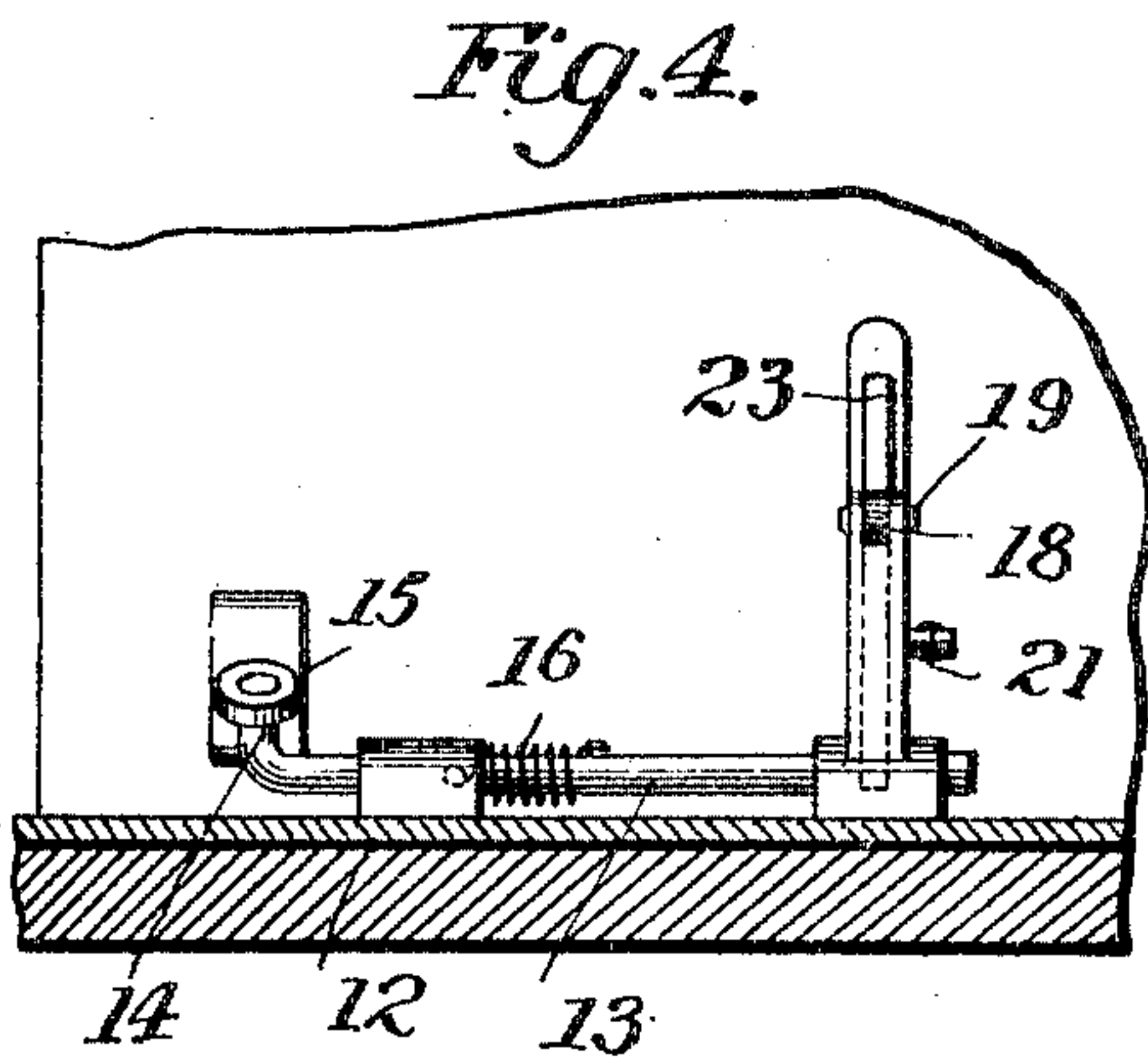
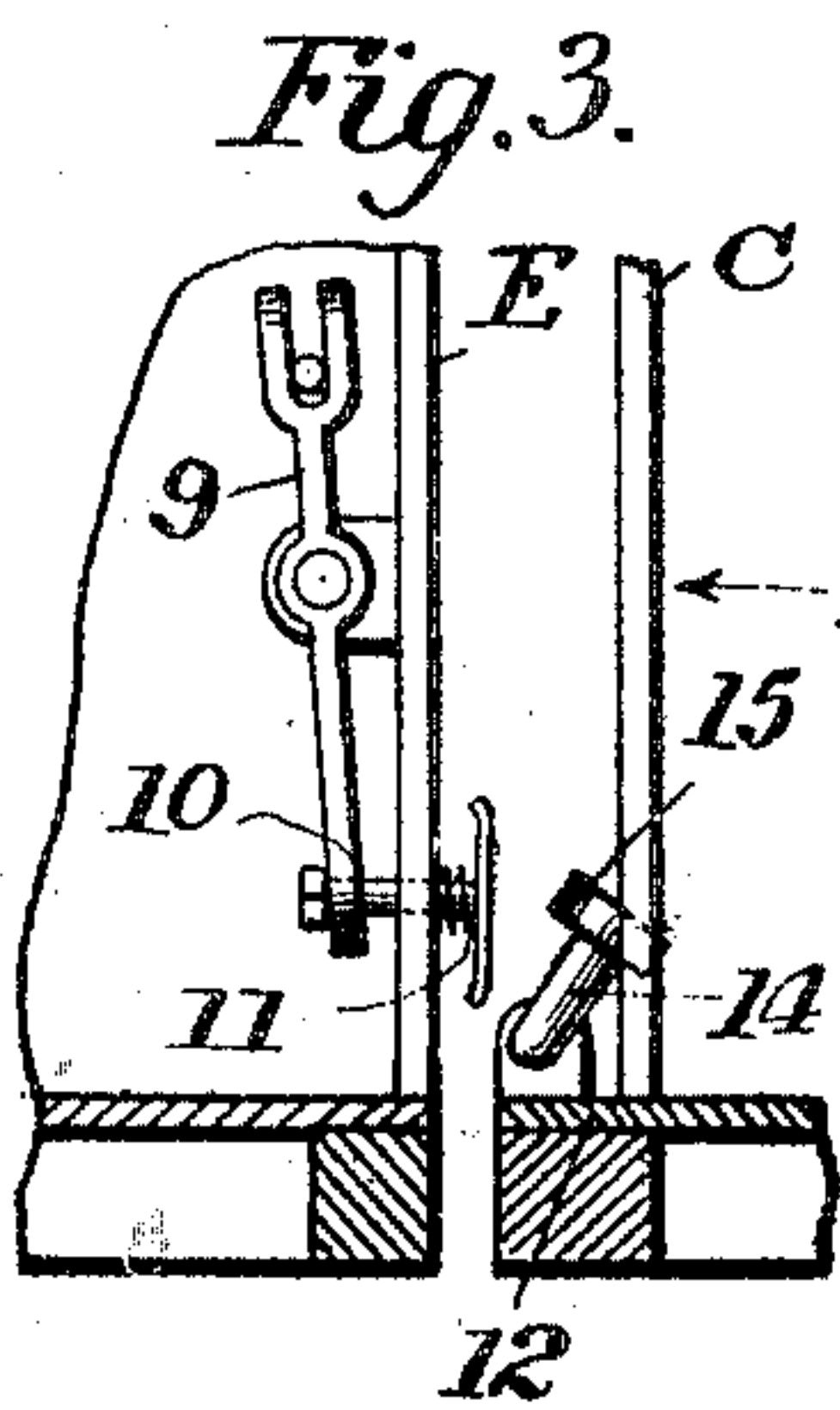
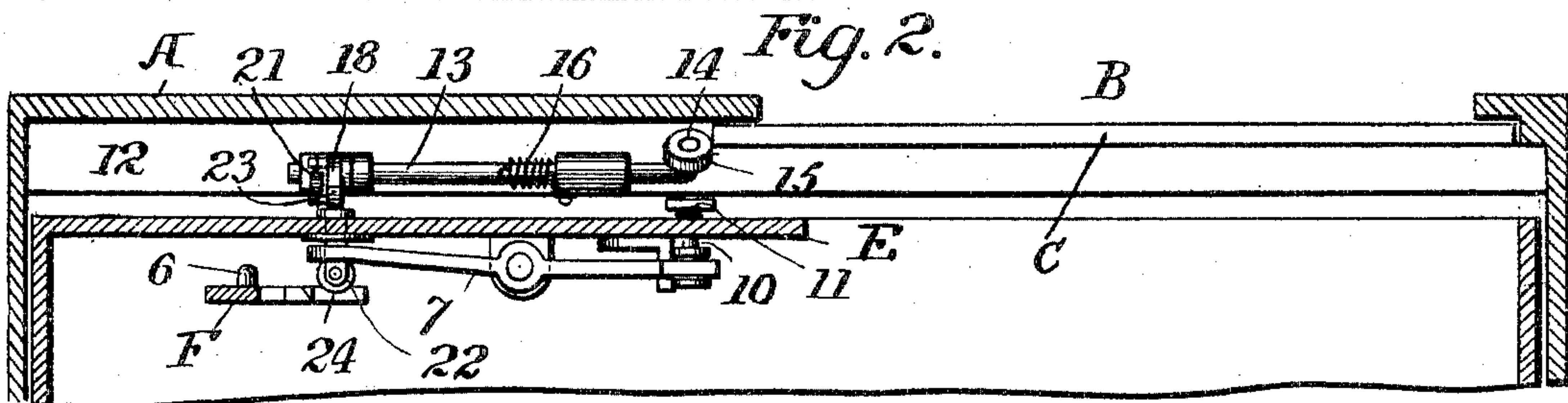
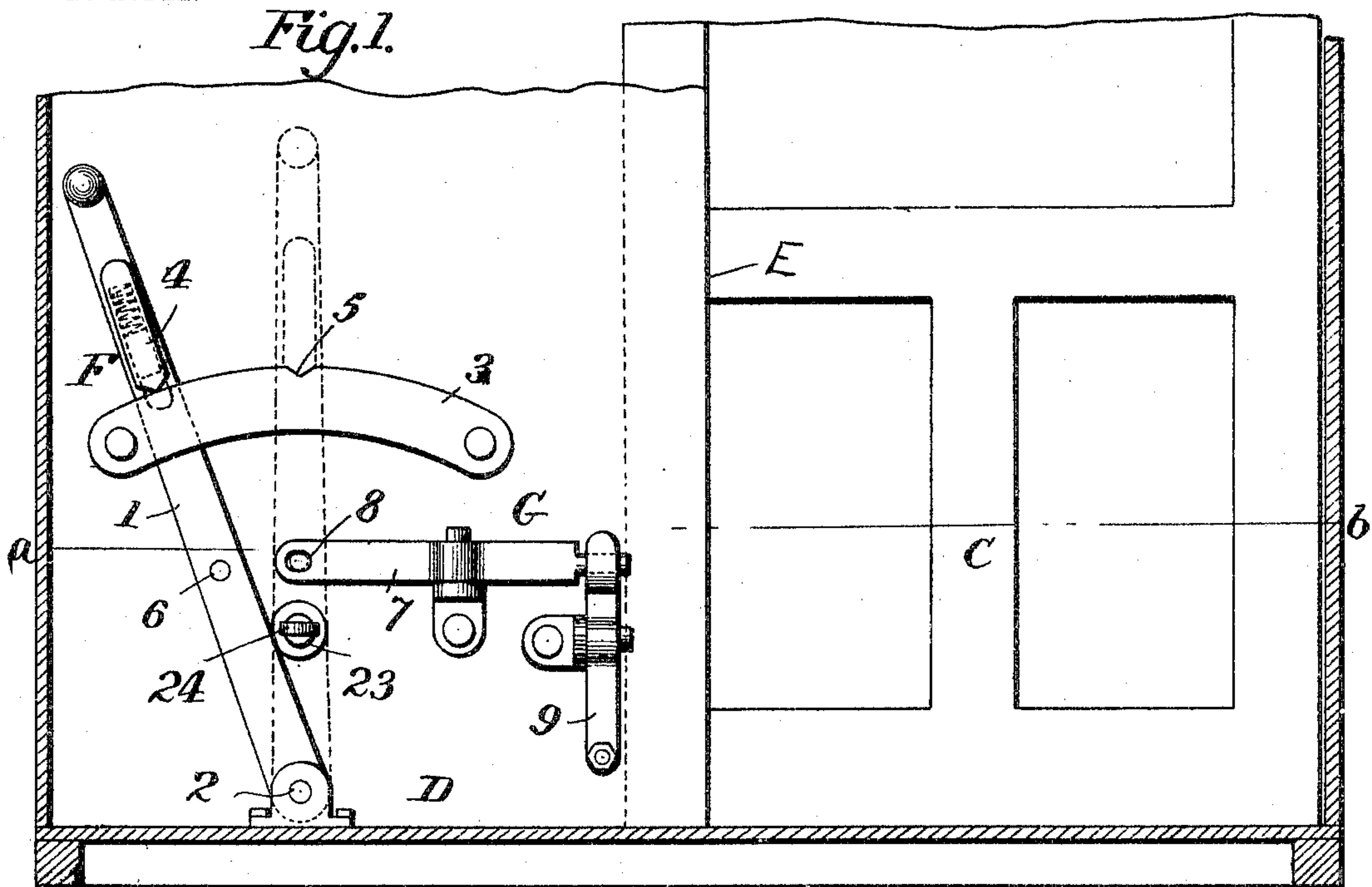


J. C. COTTIE.  
SAFETY DEVICE FOR ELEVATORS.

APPLICATION FILED SEPT. 8, 1904.

NO MODEL.



Witnesses  
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# UNITED STATES PATENT OFFICE.

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YORK, N. Y.

## SAFETY DEVICE FOR ELEVATORS.

SPECIFICATION forming part of Letters Patent No. 776,497, dated December 6, 1904.

Application filed September 8, 1904. Serial No. 223,763. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN C. COTTIE, a citizen of the United States, residing at New York, in the county and State of New York, have invented certain new and useful Improvements in Safety Devices for Elevators, of which the following is a specification.

This invention relates to means whereby an elevator-car may be prevented from being set in motion while the door to the elevator-shaft is open and whereby the opening of the door to the shaft is prevented when the controlling apparatus of the car is in operative position.

The object of the invention is to provide improved apparatus for accomplishing the results above outlined and can be best described in connection with the accompanying drawings, of which—

Figure 1 is a vertical section of an elevator-car, partly broken away, showing the side of the car in which the doorway is located and the door to the shaft. Fig. 2 is a horizontal section on the line *a b* of Fig. 1, showing the shaft and car partly broken away. Fig. 3 is an end view of the mechanism for preventing the operation of the controlling devices when the shaft-door is open. Fig. 4 is a side view of the mechanism shown in Fig. 3 looking in the direction of the arrow, and Fig. 5 is an end view of the apparatus opposite to that shown in Fig. 3.

Referring to the accompanying drawings, the elevator-shaft A has a doorway B, adapted to be closed by a sliding door C. The shaft and door may be of any suitable construction. Within the shaft a car D, which may also be of any approved construction, moves in a well-known manner. In the side of the car which passes adjacent to the door C is a doorway E, through which passage to and from the car may be effected. Within the car is located suitable controlling means, as F, which is so related to mechanism G, which in turn is operatively connected to the door C, that it is impossible to open the door C when the controlling means F is in operative position, and, further, that it is impossible

to move the controlling means from the "off" or inoperative position while the door C is open.

The motive power and its connections to the elevator-car are immaterial to this invention, as any suitable power—such as hydraulic, electric, or other—may be employed. The function of the controlling device F is to turn off the power when it is desired to stop the car and to turn on the power when it is desired to move the car. The means F, which is shown, is of a well-known type which is universally applicable to the control of the various motive powers and would be properly connected with the same by skilled persons, and therefore it is deemed unnecessary to show the details of any specific controlling apparatus operated by the means F, as they would not aid in an understanding of the present invention.

The controlling means F comprises a lever 1, pivoted at 2 and adapted to slide between a pair of arc-shaped plates 3, fixed to the side of the car. The lever 1 is provided with a spring-latch 4, adapted to engage with a notch 5 in one of the plates 3 to secure it in the off position, as shown in dotted lines in Fig. 1. A pin 6 for a purpose as will be hereinafter set forth is fixed to the lever 1.

The mechanism G comprises a lever 7, pivoted to the side of the car about an axis substantially parallel to the lever 1 when the latter is in its off position. The lever 7 has at one end a hole 8, adapted to receive the pin 6, and at its other end is pivoted to a lever 9, which extends substantially at right angles to the lever 7 and is pivoted to the side of the car, so that it may turn about a horizontal axis. The end of the lever 9 opposite that which is pivoted to the lever 7 is secured to a plunger 10, which extends through the side of the car and is normally pressed outwardly by a spring 11.

Upon the outside of the side wall of the car, as upon a ledge 12, preferably fixed to the elevator-shaft, is rotatably mounted a rock-shaft 13, having a bent end or arm 14, constituting a stop adapted to project into the path of the



shaft-door C as the latter is moved back and forth. The end of this arm may be provided with a roller 15 to reduce the frictional engagement between the stop and the door. The stop is normally held in the path of the door by a spring 16.

Fixed to the shaft 13 is a pin 17. A catch 18, pivoted at 19, has a notch 20, adapted to receive the pin 17 when the stop 14 projects into the path of the door and the catch is in position to engage it, in which position it is normally held by a spring 21. A plunger 22 is mounted in the side of the car. At its outer end this plunger is adapted to engage with the tail 23 of the catch 18, so that when the plunger is moved outwardly the catch is moved out of position to engage the pin 17. This outward movement of the plunger 22 is effected by the engagement of the inner end of the plunger with the lever 1 when the latter is in its off position. Normally the plunger is forced inwardly by the spring 21. The inner end of the plunger may be provided with a roller 24 to facilitate smoothness of operation between the plunger and the lever 1, and the operation may be further improved by rounding the edges of the lever 1.

The operation of the apparatus is as follows: Let it be assumed that the car is at a floor and the shaft-door C is closed, as shown in Fig. 1, and that the lever 1 is in its off position—that is, where no power is supplied to the car—as shown in dotted lines in Fig. 1. The plunger 22 is now forced outwardly against the tail 23 and the catch 18 is moved out of position to engage the pin 17. The rock-shaft 13 being therefore unrestrained, the door C may be slid open, when the stop 14 will be moved out of the way against the spring 16. In its movement out of the path of the door C the stop 14 comes against the plunger 10, which is thus forced inwardly against the spring 11 and carries with it the lower end of the link 9. This causes a movement in the opposite direction of the upper end of the link 9, which carries with it the end of the lever 7, which is pivoted thereto, while the opposite end of the last-mentioned lever is moved toward the lever 1, so that the pin 6 enters the hole 8. It will be obvious that any attempt to move the lever 1 in either direction, and thereby to set the car in motion, will now prove ineffectual, and since the lever will not be released until the door has been closed, so that the stop 14 may again move outwardly, it will be obvious that power cannot be supplied to the car while the door C is open. Furthermore, the door cannot be opened while the lever 1 is out of its off position, as shown, for instance, in the full lines of Fig. 1, or when the car is not at the floor. This is because the stop 14 is held from movement out of the path of the door by the catch 18, which engages with the pin 17, and thereby prevents turning of the rock-shaft 13. When a car is at the floor and the le-

ver 1 is in the off position, however, the plunger 22 is forced outwardly by the lever when the rock-shaft is released from the catch, as before described, and the stop 14 may be moved out of the path of the door and the latter may be freely opened.

Without being limited to the precise construction shown and described, what I claim is—

1. The combination with an elevator-shaft having a door, and an elevator-car within said shaft, of a stop adapted to project into the path of said door, a controlling-lever for controlling the movements of said car, means for normally locking said stop in the path of said door, and means operated by said lever to unlock said stop when said lever is in its "off" position, substantially as described.

2. The combination with an elevator-shaft having a door, and an elevator-car within said shaft, of a stop adapted to project into the path of said door, a controlling-lever for controlling the movements of said car, means for normally locking said stop in the path of said door, and means, comprising a plunger movable at right angles to the movement of said lever, operated by said lever to unlock said stop when said lever is in its "off" position, substantially as described.

3. The combination with an elevator-shaft having a door, and a car within said shaft, of a rock-shaft carrying an arm, a spring tending to force said arm into the path of said door, a catch engaging said rock-shaft to lock said arm in the path of said door, a plunger for operating said catch, and a controlling-lever for controlling the movements of said car, said plunger being operated by said lever, substantially as described.

4. The combination with an elevator-shaft having a door, and a car within said shaft, of a stop adapted to project into the path of said door and adapted to be thrown out of said path by said door, a catch normally engaging said stop to hold it in the path of said door, a controlling-lever for controlling the movements of said car, means adapted to engage with said controlling-lever when said lever is in its "off" position, said means being operatively related to said stop so that when said stop is out of the path of said door said means is engaged with said lever, and means operatively related to said lever and said catch whereby said catch is moved to release said stop when said lever is in the "off" position, substantially as described.

5. The combination with an elevator-shaft having a door, and a car within said shaft, of a controlling-lever for controlling the movements of said car, a second lever pivoted about an axis substantially parallel to said controlling-lever when said controlling-lever is in the "off" position, said second lever being adapted to engage with said controlling-lever when the latter is in its "off" position,



a stop movable into and out of the path of said door, and connections between said stop and said second lever whereby said second lever is moved into engagement with said controlling-lever when said stop is moved out of the path of said door, substantially as described.

6. The combination with an elevator-shaft having a door, and a car within said shaft, of a controlling-lever for controlling the movements of said car, a second lever pivoted about an axis substantially parallel to said controlling-lever when said controlling-lever is in the "off" position, said second lever being adapted to engage with said controlling-lever when the latter is in its "off" position, a stop movable into and out of the path of said door, and connections between said stop and said second lever, comprising a plunger, whereby said second lever is moved into engagement with said controlling-lever when said stop is moved out of the path of said door, substantially as described.

7. The combination with an elevator-shaft having a door, and a car within said shaft, of a controlling-lever for controlling the movements of said car, a second lever pivoted about an axis substantially parallel to said controlling-lever when said controlling-lever is in the "off" position, said second lever being adapted to engage with said controlling-lever when the latter is in its "off" position, a stop movable into and out of the path of said door, and connections between said stop and said second lever, comprising a plunger and a third lever at right angles to said second lever and connecting it with said plunger, whereby said second lever is moved into engagement with said controlling-lever when said stop is moved out of the path of said door, substantially as described.

8. The combination with an elevator-shaft having a door, and a car within said shaft, of a rock-shaft, an arm thereon adapted to project into the path of said door, a spring normally holding said arm in said path, a controlling-lever for controlling the movements of said car, a second lever pivoted about an axis substantially parallel to said controlling-lever when said controlling-lever is in its

"off" position, said second lever being adapted to engage with said controlling-lever when the latter lever is in its "off" position, connections between said second lever and said arm, comprising a plunger and a third lever at right angles to said second lever, whereby said second lever is moved into engagement with said controlling-lever when said arm moves out of the path of said door, a catch normally engaging said rock-shaft to lock said arm in said path, and a plunger for releasing said catch, said plunger being adapted to be operated by said controlling-lever as it is moved into its "off" position, to move said catch to release said rock-shaft, substantially as described.

9. The combination with an elevator-shaft having a door, and a car within said shaft, of a controlling-lever for controlling the movements of said car, a rock-shaft having an arm adapted to project into the path of said door, and means controlled by said controlling-lever for locking said rock-shaft against rotation, substantially as described.

10. The combination with an elevator-shaft having a door, and a car within said shaft, of a controlling-lever for controlling the movements of said car, a rock-shaft having an arm adapted to project into the path of said door, and means operatively related to said rock-shaft for locking said controlling-lever in its "off" position, substantially as described.

11. The combination with an elevator-shaft having a door, and a car within said shaft, of a controlling-lever for controlling the movements of said car, a rock-shaft having an arm adapted to project into the path of said door, means controlled by said controlling-lever for locking said rock-shaft against rotation, and means operatively related to said rock-shaft for locking said controlling-lever in its "off" position, substantially as described.

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

JOHN C. COTTIE.

Witnesses:

CHARLES E. BARNES,

WILLIAM A. ELDREDGE.