

(No Model.)

2 Sheets—Sheet 1.

J. S. MUCKLÉ.  
ELEVATOR.

No. 579,071.

Patented Mar. 16, 1897.

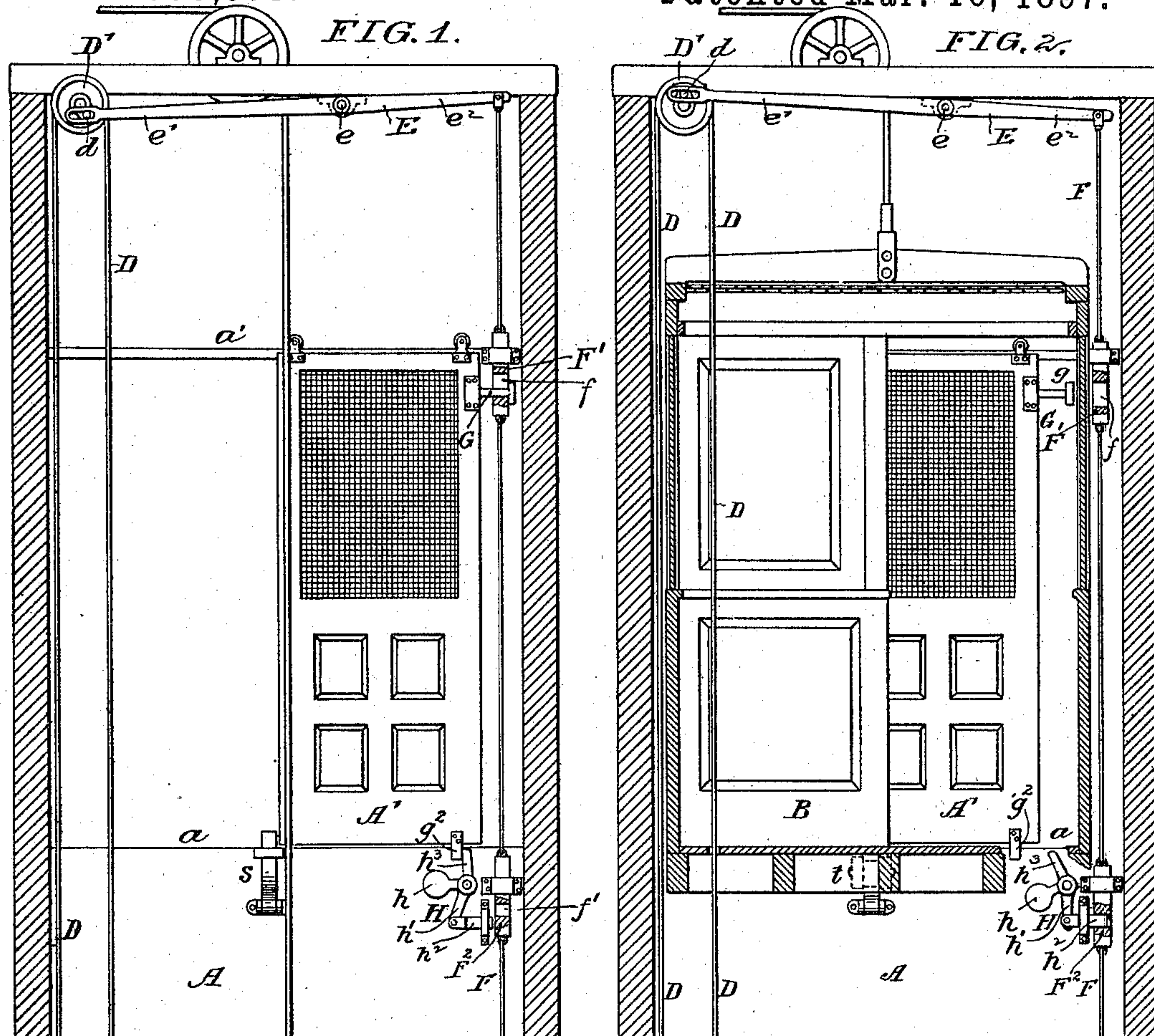


FIG. 4.

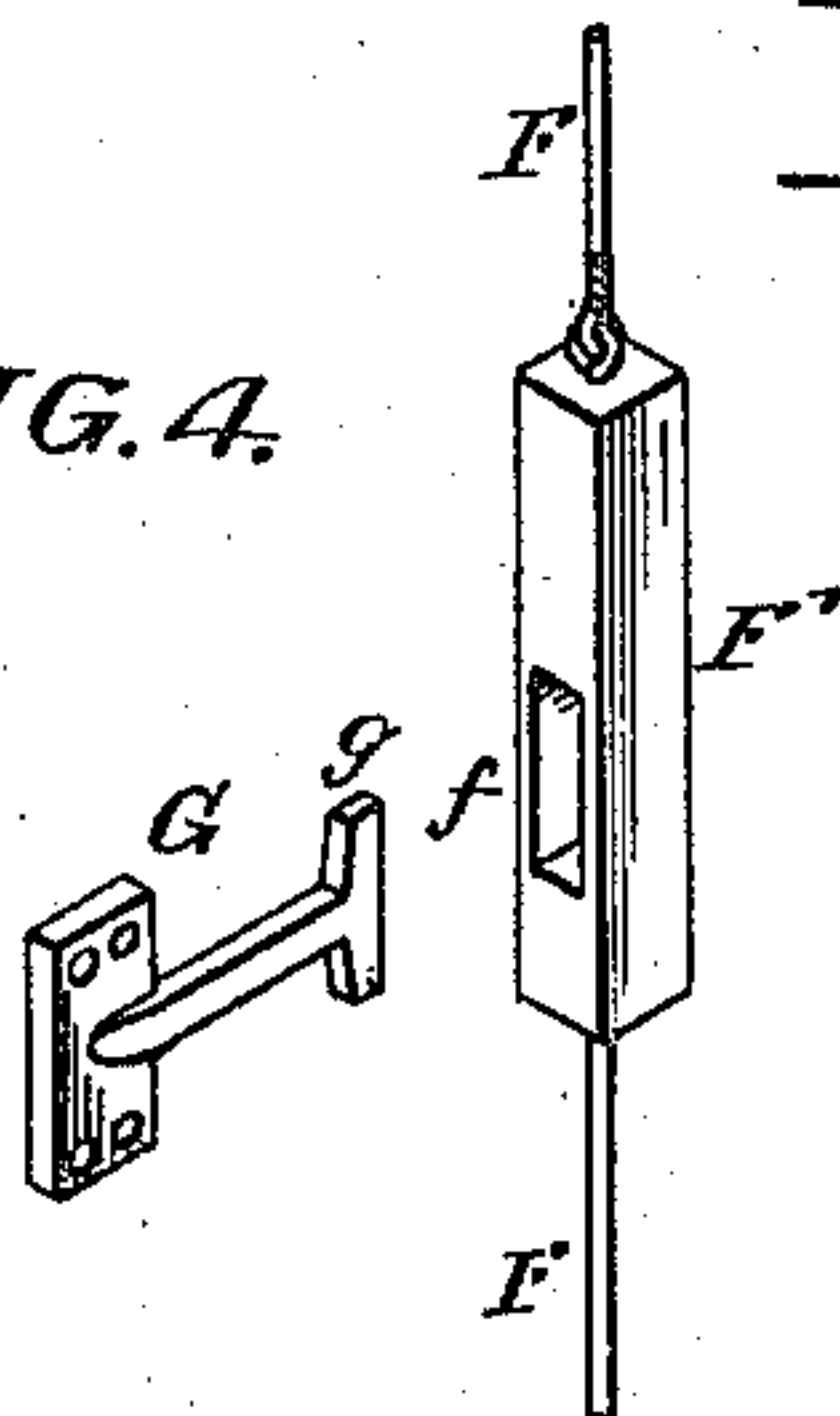


FIG. 9.

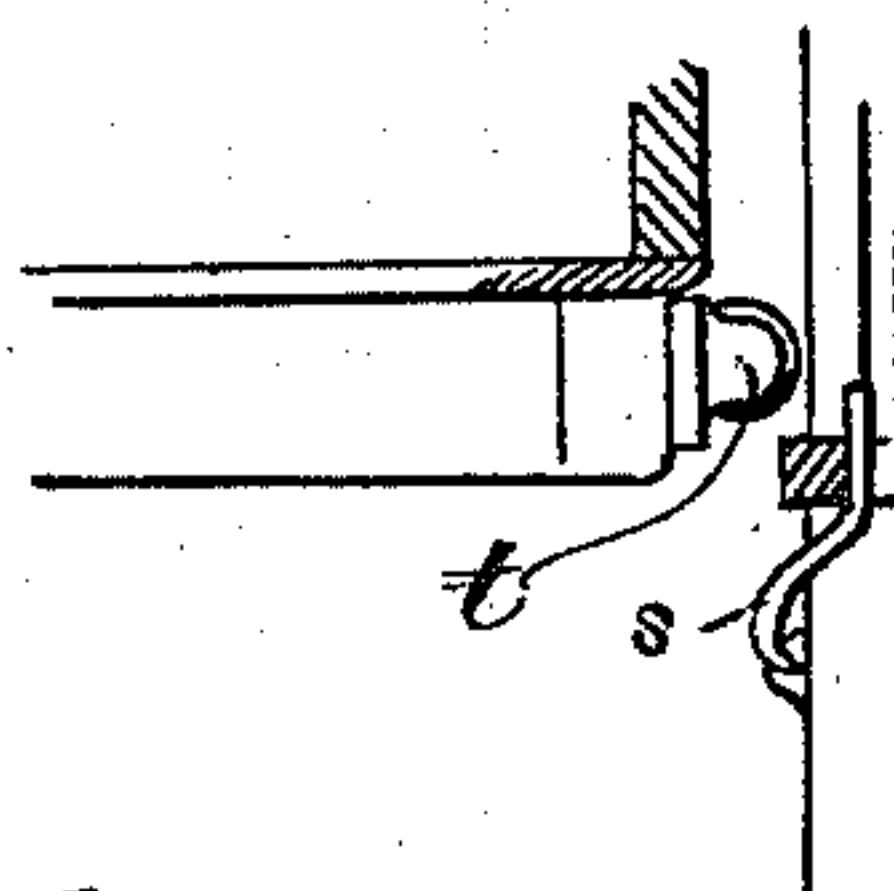
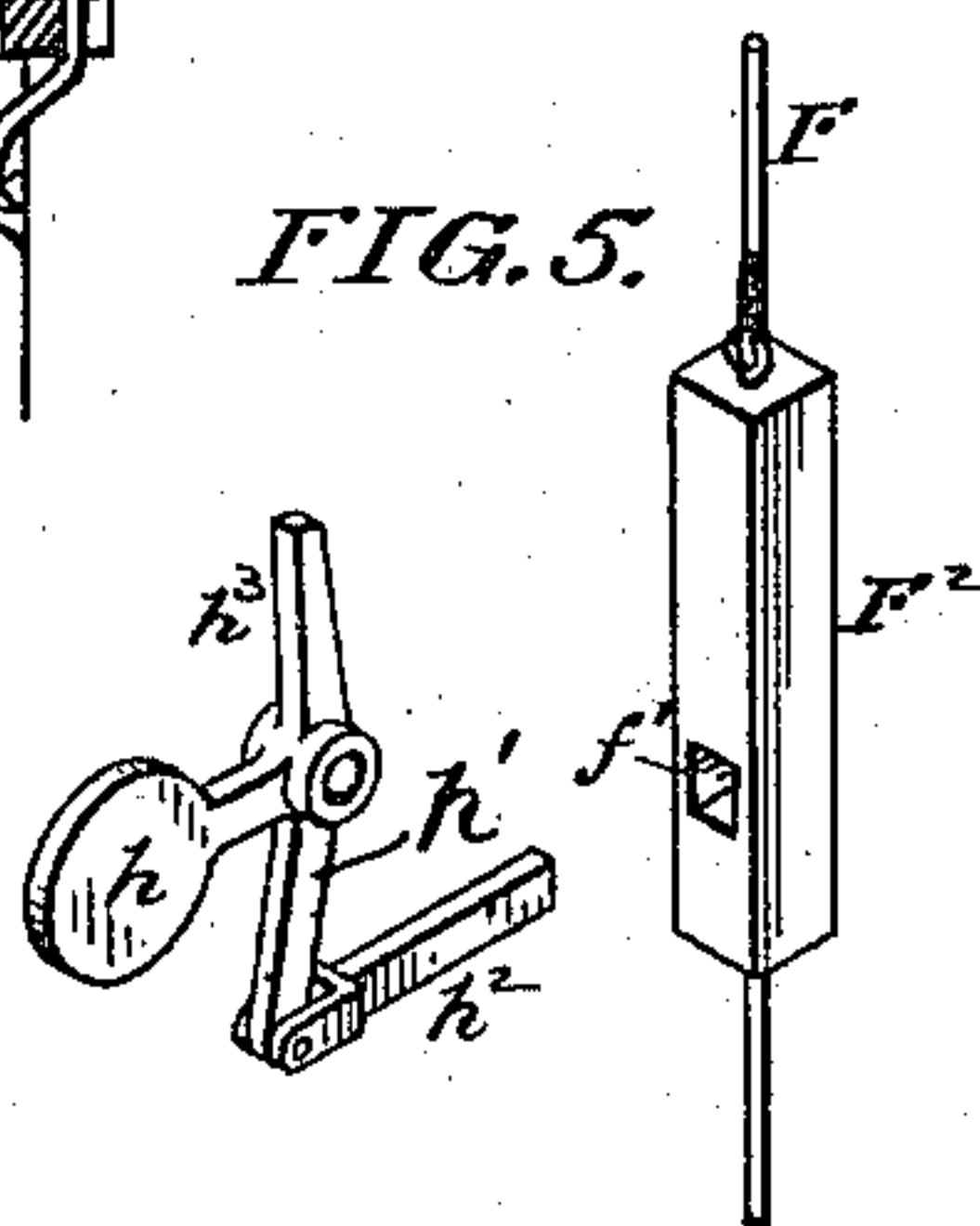


FIG. 5.



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by his Attorneys  
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(No Model.)

2 Sheets—Sheet 2.

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FIG. 3.

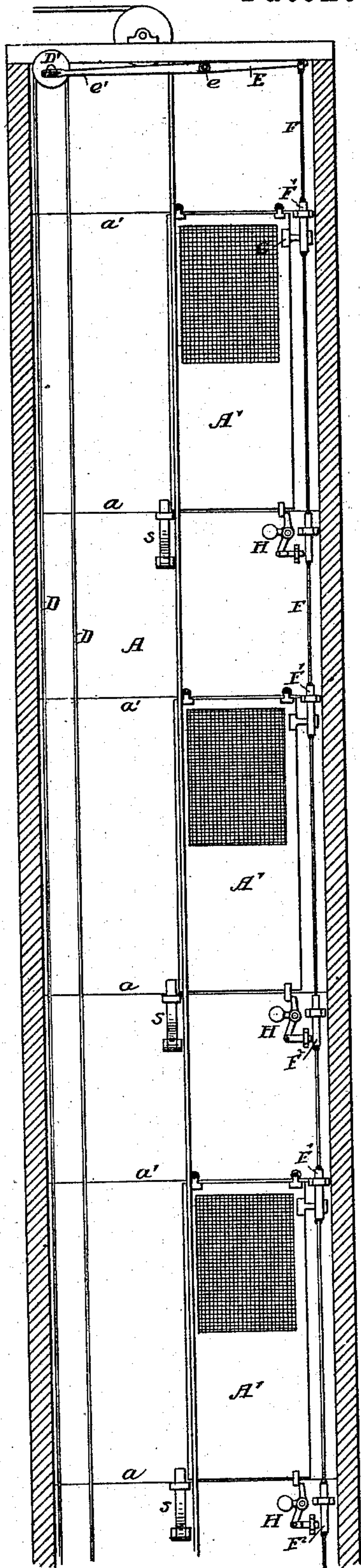


FIG. 7.

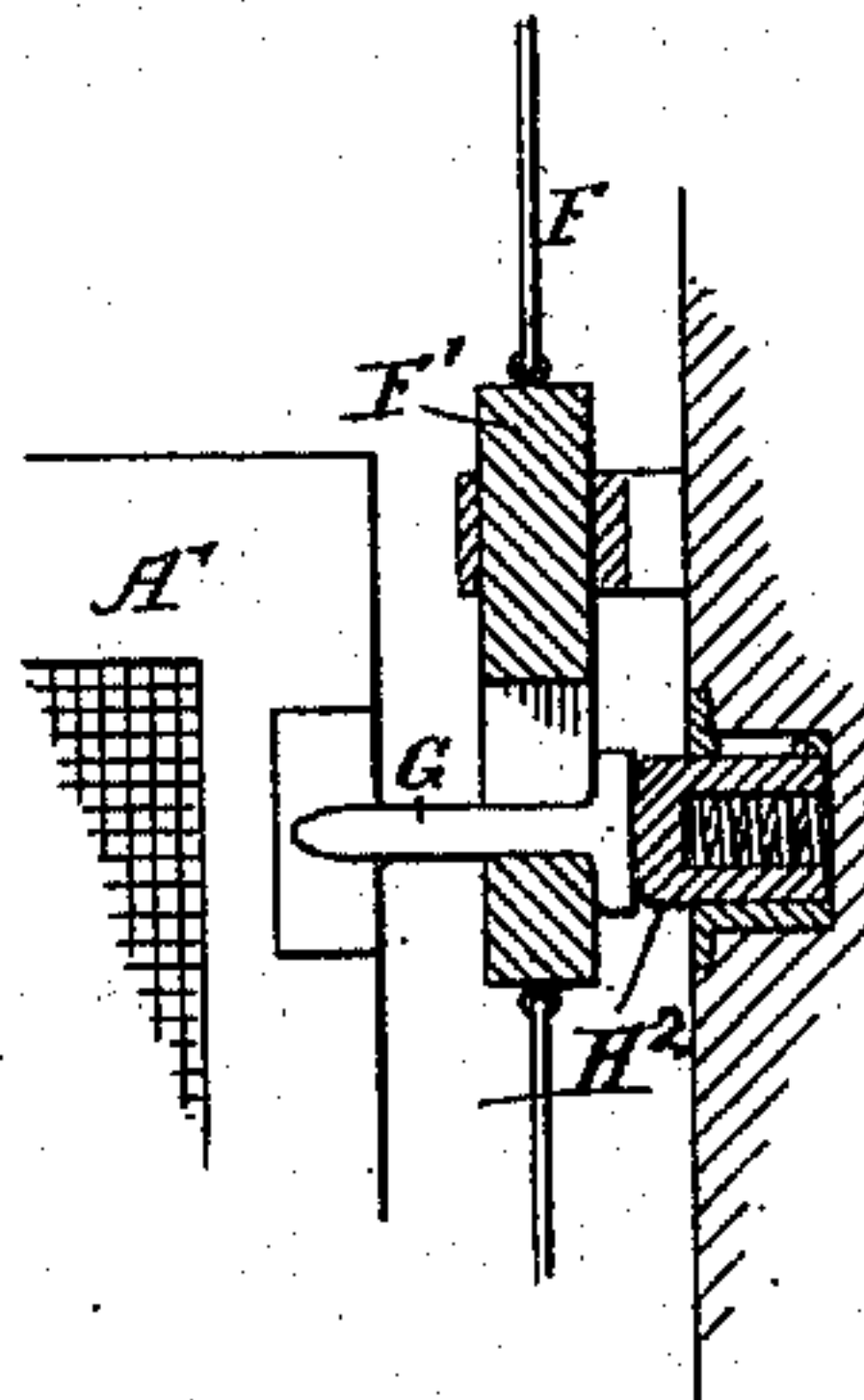


FIG. 6.

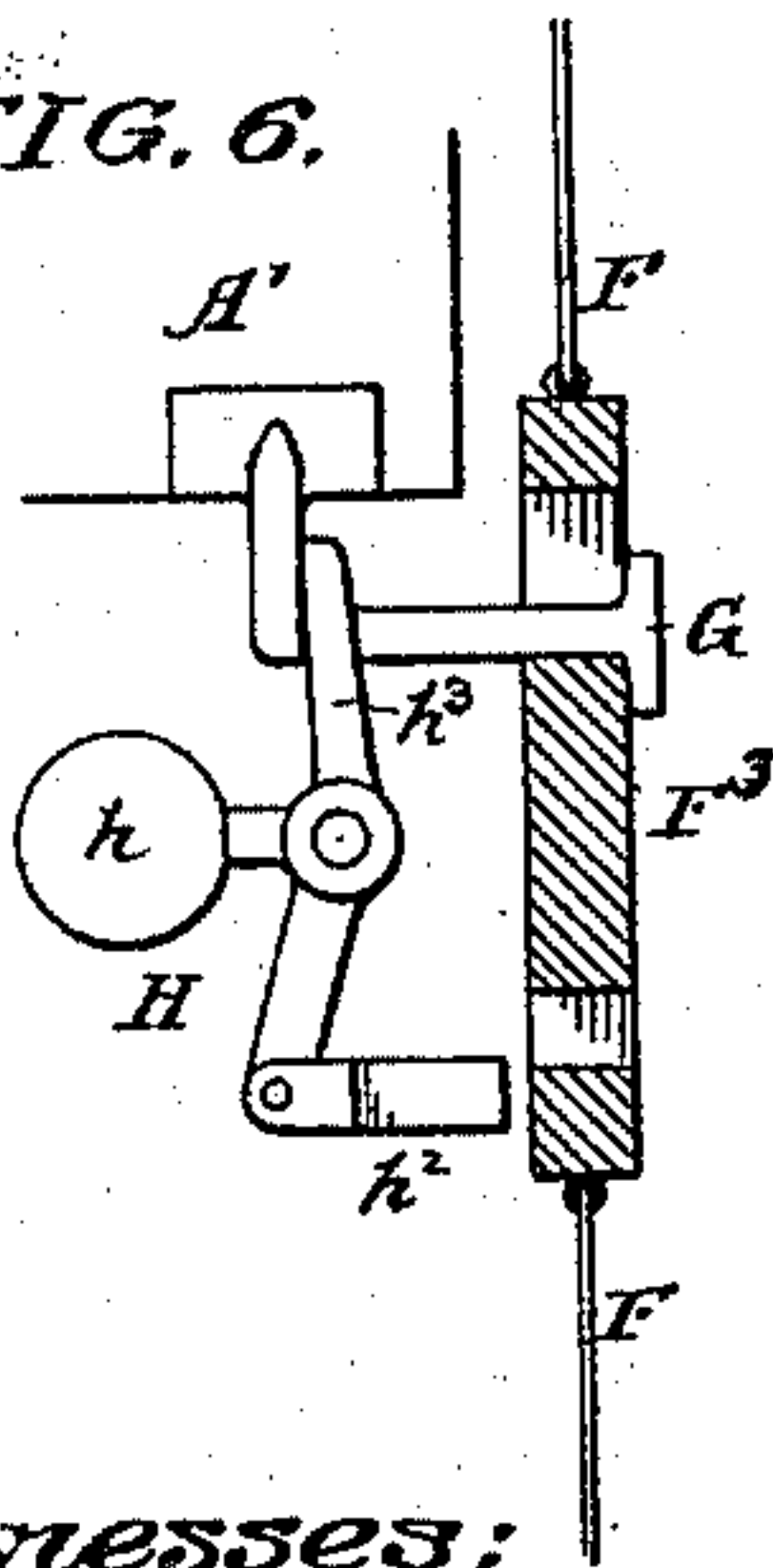
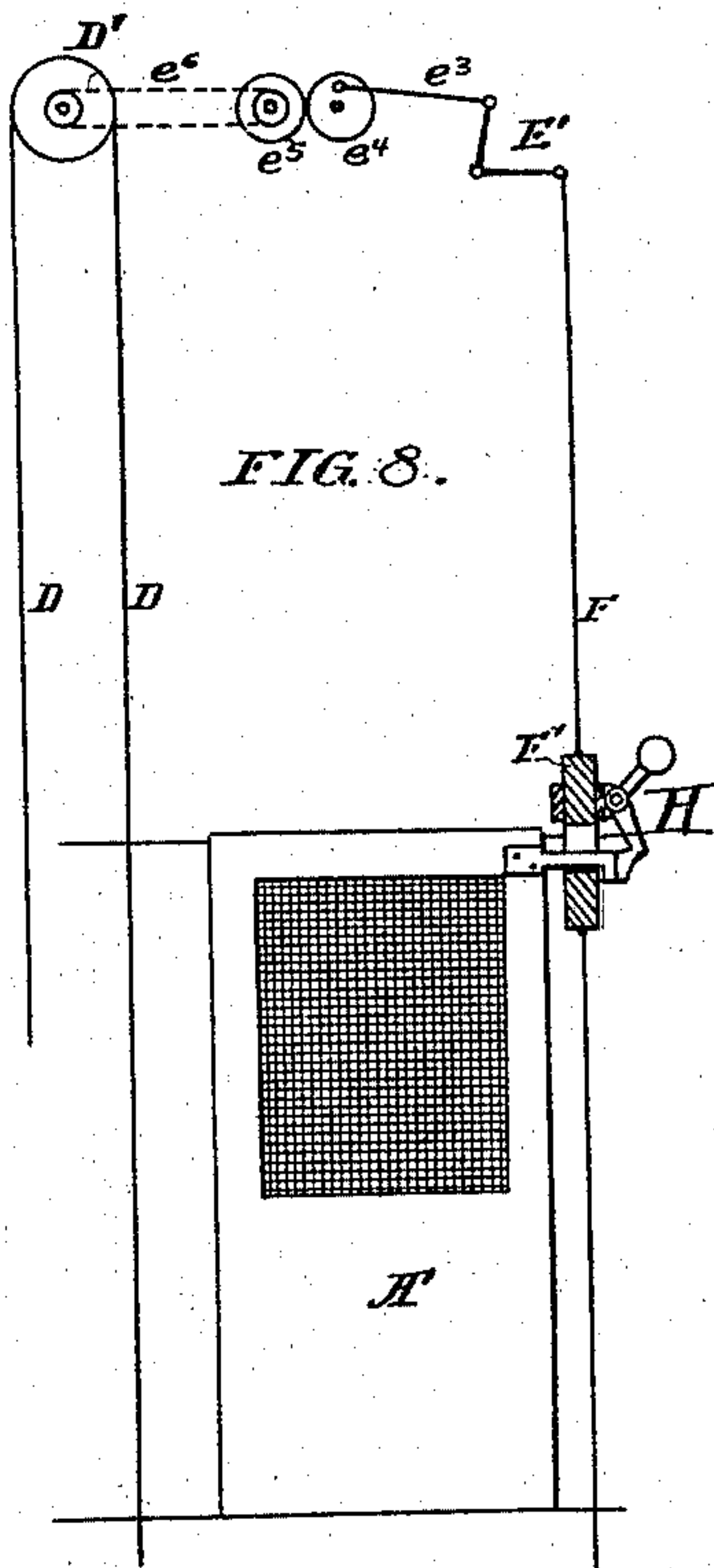


FIG. 8.



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# UNITED STATES PATENT OFFICE.

JOHN S. MUCKLÉ, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO M. R. MUCKLÉ, JR., & CO., OF SAME PLACE.

## ELEVATOR.

SPECIFICATION forming part of Letters Patent No. 579,071, dated March 16, 1897.

Application filed February 20, 1896. Serial No. 580,119. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN S. MUCKLÉ, a citizen of the United States, residing in Philadelphia, Pennsylvania, have invented certain  
5 Improvements in Elevators, of which the following is a specification.

The object of my invention is to provide means for locking the landing-doors of elevator-wells when the operating rope or rod is  
10 free and to lock the rope or rod when one of the doors is free. This object I attain by coupling the rope-wheel at the head of the elevator-well with locking mechanism, as fully described hereinafter.

15 In the accompanying drawings, Figure 1 is a view from an elevator-well, looking toward a landing-door, the door being locked. Fig. 2 is a view similar to Fig. 1 with the car at the landing, the door unlocked and partly  
20 opened. Fig. 3 is a view from the elevator-well, showing a series of landing-doors locked. Figs. 4 and 5 are detached perspective views of the locks. Figs. 6 and 7 are views of modifications of my invention. Fig. 8 is a diagram view of a further modification, and Fig.  
25 9 is a side view of the door-latch.

A is the elevator-well. A' are the doors at the different landings *a*. These doors in the present instance are hung from rails *a'* by  
30 means of trolleys, but it will be understood that the door may be hung in any manner without departing from my invention.

B is the elevator-car, which is connected to the ordinary hoisting mechanism. The car  
35 has a doorway to coincide with the landing-doorway, but the door on the car is dispensed with in this instance, but may be used, if desired.

D is the controlling rope or rod, one run extending through the car within easy reach of  
40 the operator, the other run extending outside of the car. The rope D passes over a wheel D' at the upper end of the elevator-well and connected to the controlling mechanism at the  
45 base of the well. The rope and wheel are preferably so connected that when the rope is moved in one direction or the other the wheel D' will be turned.

Arranged at each elevator landing-door are  
50 blocks, either two, as shown in Figs. 1 and 2,

or a single block, as shown in Fig. 8. These blocks are connected to the wheel D' in any suitable manner. In Figs. 1 and 2 they are connected through a rope or rod F, which is  
55 attached to one arm of a lever E, pivoted at *e* at the head of the elevator-well. The opposite arm *e'* of this lever is slotted, and adapted to the slot is a crank-pin *d* on the side of the wheel D', so that as the wheel D' is turned by  
60 the controlling-rope motion will be imparted to the blocks through the lever and rope or rod F. The above-described parts form the locking mechanism at one time for the car and at another time for the door.

On each door A' is a headed bolt G, adapted  
65 to a cavity in one of the blocks, and on the wall of the elevator-well is a bolt H, which is also adapted to one of the blocks. The bolts G and H may be adapted to independent blocks, as shown in Fig. 1, or adapted to a single  
70 block, as shown in Figs. 7 and 8, or each block may have two openings, one for one bolt and the other for the other bolt.

Referring now to Figs. 1 and 2, two blocks F' F<sup>2</sup> are shown, one at the upper portion  
75 of the door and the other directly below the door. These blocks F' F<sup>2</sup> are adapted to suitable straps and have cavities *f f'* for the bolts described above. Secured to the door in this instance is a headed bolt G. The  
80 head *g* of this bolt will freely pass through the hole *f* in the block F' when the block is in the position shown in Fig. 2; but when the block is moved to the position shown in Fig. 1 it passes back of the head *g* of the bolt and  
85 prevents the door from being opened, the door being closed when in this position.

Pivoted to the wall of the elevator-well, directly under the door in the present instance, is a bolt H, consisting, as shown in Fig. 5, of  
90 a lever having three arms and a bolt proper, *h<sup>2</sup>*. One arm, *h*, of the lever is weighted, another arm, *h'*, is connected to the said bolt proper, *h<sup>2</sup>*, which is adapted to pass into the hole *f'* in the block F<sup>2</sup>, and the other arm, *h<sup>3</sup>*,  
95 of the lever projects into the path of a lug *g<sup>2</sup>* on the door A', so that when the door is closed the bolt proper, *h<sup>2</sup>*, is held away from the block by the lug *g<sup>2</sup>* acting on the arm *h<sup>3</sup>*, and the operator can move the controlling-rope; 100



but when the elevator-car comes to a stand opposite a landing and as the door is opened the bolt H is released and is shot into the hole  $f'$  of the block  $F^2$ , and as there is no lost motion between the block and the rope the controlling-rope cannot be operated.

The opening of the door withdraws the headed bolt G from its block, so that the mechanism is under the control of the bolt fixed to the elevator-well, and not until the door is closed and the bolt H withdrawn from its block simultaneously with the projection of the bolt G of the door into its block can the controlling-rope be operated, and the moment this rope is operated the blocks will be moved vertically, thus locking the door in its closed position.

When only one block is used, as shown in Fig. 8, the bolt H may simply consist of a two-armed lever, one arm being weighted and the other arm adapted to project into the opening of the block, the headed bolt G in this instance acting to remove the bolt H' from engagement with the block.

A single block may be arranged, as shown in Fig. 6, having two openings and the bolt G, arranged at a point adjacent to the bolt H, one hole of the block being adapted to receive the headed bolt G and the other adapted to receive the bolt H.

In Fig. 7 I have shown a single block and a headed bolt G on the door, but I have substituted a spring-bolt  $H^2$  for the bolt H. This spring-bolt follows the bolt G as it is withdrawn from the block when the door is opened, as in Fig. 8, entering the hole in the block and thus locking the controlling-rope. When the door is closed, the headed bolt on the door forces the spring-bolt out of the hole as it enters and holds it out until the door is again opened.

In Fig. 8 I have shown in place of the lever E at the head of the well a bell-crank lever  $E'$ , connected by a rod  $e^3$  to a gear-wheel  $e^4$ , which in turn meshes with a gear-wheel  $e^5$ , driven by a chain  $e^6$  from a pinion on the shaft of the controlling-rope wheel  $D'$ . The action of this device is similar to that shown in Fig. 1.

In order to prevent the opening of a door at one landing when the car is standing at another landing, I provide a cam-face latch  $s$ , hung on the wall of the elevator-well. This latch engages with the projection on the door, and on the car is a striker  $t$ , Figs. 2 and 9, preferably in the form of a roller, which, as the car reaches the landing, forces in the latch  $s$  at that landing and frees its door during the time only when the car is at the landing, so that if the operator wishes to open the door he can bring the car to a standstill and simply push open the door, the door being free of both the latch  $s$  and the block, the other doors, however, being locked by their respective latches  $s$ . Thus it will be seen that the doors are locked when closed and while the car is in motion by the blocks con-

nected to the controlling mechanism, and also by independent latches which are operated only by the car, and when the car is at a landing with the door open it cannot be moved by the operator until the door is closed, as the bolt on the elevator-wall engages its block, preventing the operator from moving the operating-rope.

I claim as my invention—

1. The combination of an elevator-well, a landing-door, a car adapted to travel in said well, controlling mechanism, a bolt on the door and a bolt on the wall of the well, locking mechanism connected to the controlling mechanism and adapted to be engaged either by the bolt on the door or the bolt in the well, substantially as described.

2. The combination of an elevator-well, a landing-door, a car adapted to travel in the well, a controlling-rope, a wheel at the head of the elevator-well around which the rope passes, a block and rope therefor connected to the wheel, a bolt on the door and a bolt on the wall of the elevator-well adapted to engage the block alternately, substantially as and for the purpose specified.

3. The combination of an elevator-well, a landing-door, a car, a controlling-rope and locking mechanism therefor, a bolt on the door adapted to engage said locking mechanism and a bolt on the well-wall adapted to engage said mechanism when not engaged by the bolt on the door, a latch on the well-wall to prevent the opening of the door and a striker on the car adapted to act upon the latch when at the landing so that the door can be opened, substantially as described.

4. The combination of an elevator-car, its controlling-rope, a wheel over which the rope passes, a lever so arranged as to vibrate as the wheel is turned, a cord, blocks on said cord arranged at intervals opposite the landing-doors of the elevator-well, said blocks having openings, landing-doors, bolts on the landing-doors adapted to engage with one set of blocks, a lever hung in the elevator-well engaging with the other set of blocks and acted upon by the door so that the door is locked when the elevator is in motion, and when the elevator is at a standstill opposite a landing the door is free to be opened, the opening of the door locking the controlling mechanism, substantially as described.

5. The combination in an elevator-car, of the landing-doors, the elevator-well, a headed bolt on each door, a weighted lever hung on the wall of the elevator-well adjacent to the door, a lug on the door acting upon said lever, a bolt controlled by the lever, the elevator-car, controlling-rope therefor, a wheel over which the rope passes, a crank-pin on the wheel, a lever having a slotted arm adapted to the crank-pin, a cord attached to the lever and extending down the elevator-well and having perforated blocks at intervals arranged opposite the headed bolts on each



door and opposite the bolts connected to the  
weighted levers, the parts being so arranged  
that when the door is locked by the blocks  
the elevator-car is free to move, and when the  
5 door is opened, the controlling mechanism is  
locked, substantially as described.

In testimony whereof I have signed my

name to this specification in the presence of  
two subscribing witnesses.

JOHN S. MUCKLÉ.

Witnesses:

H. F. REARDON,  
WILL. A. BARR.