

(No Model.)

M. F. KIDD.

AUTOMATIC DOOR FOR ELEVATOR HATCHWAYS.

No. 281,632.

Patented July 17, 1883.

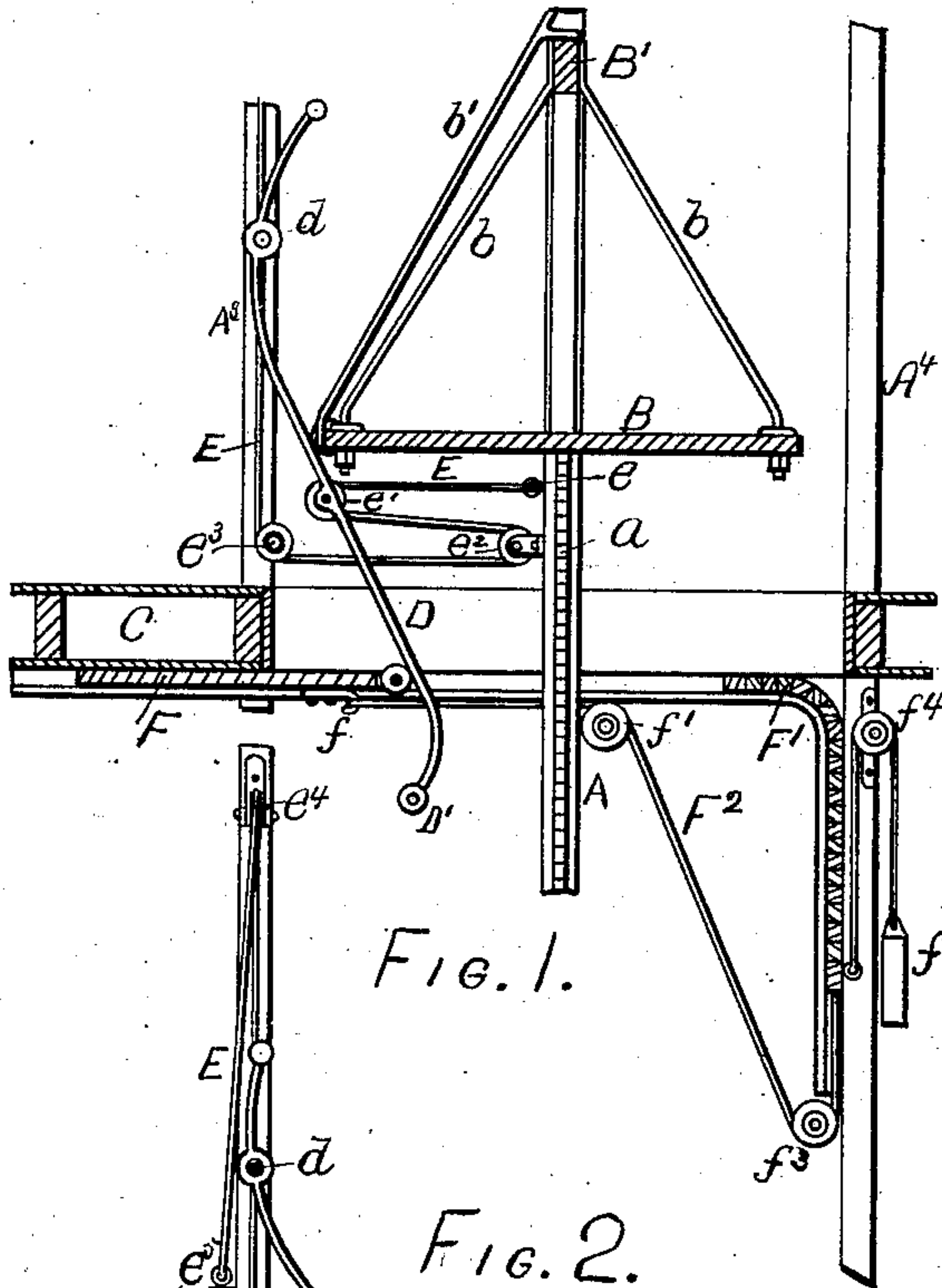


FIG. 1.

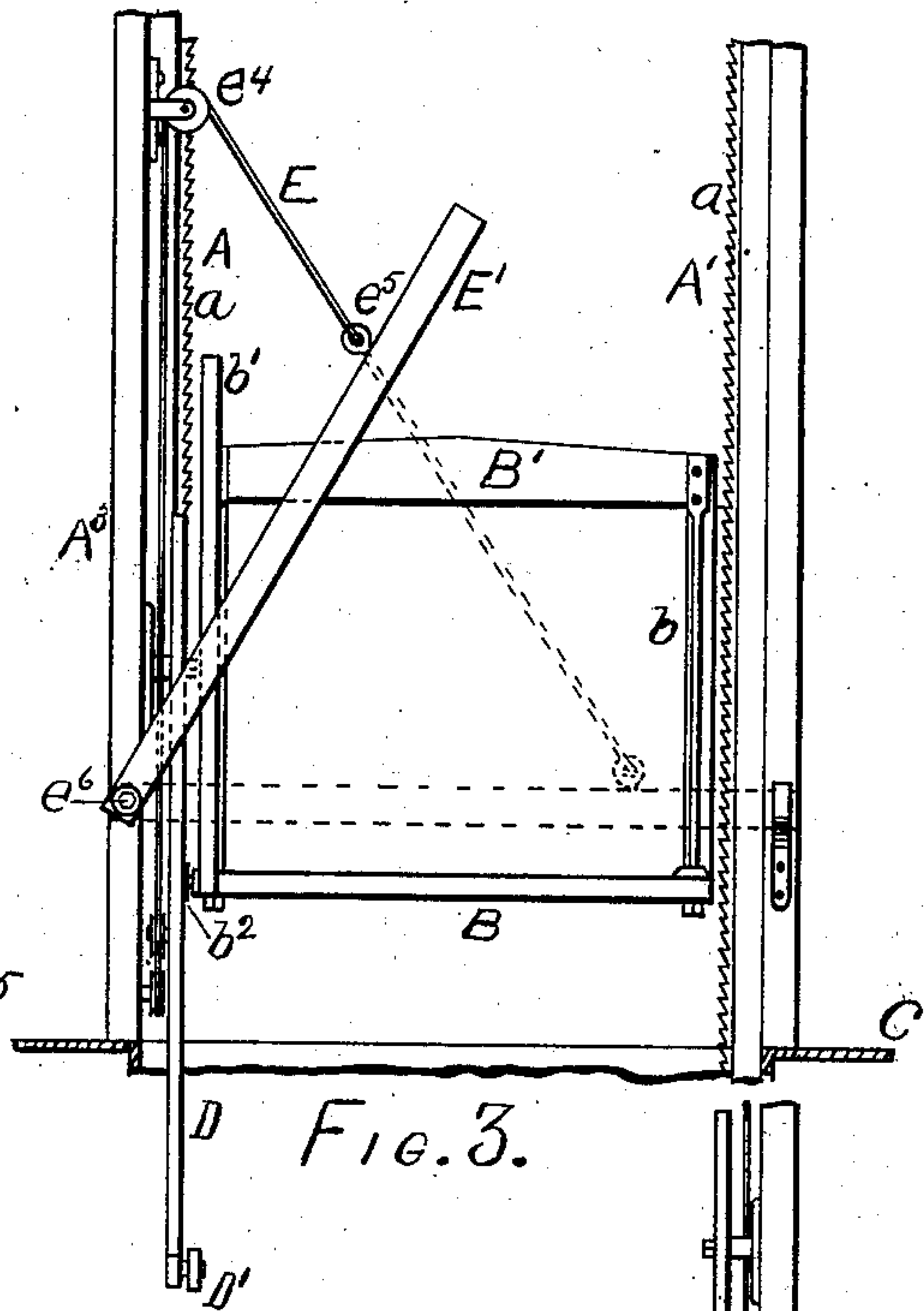


FIG. 3.

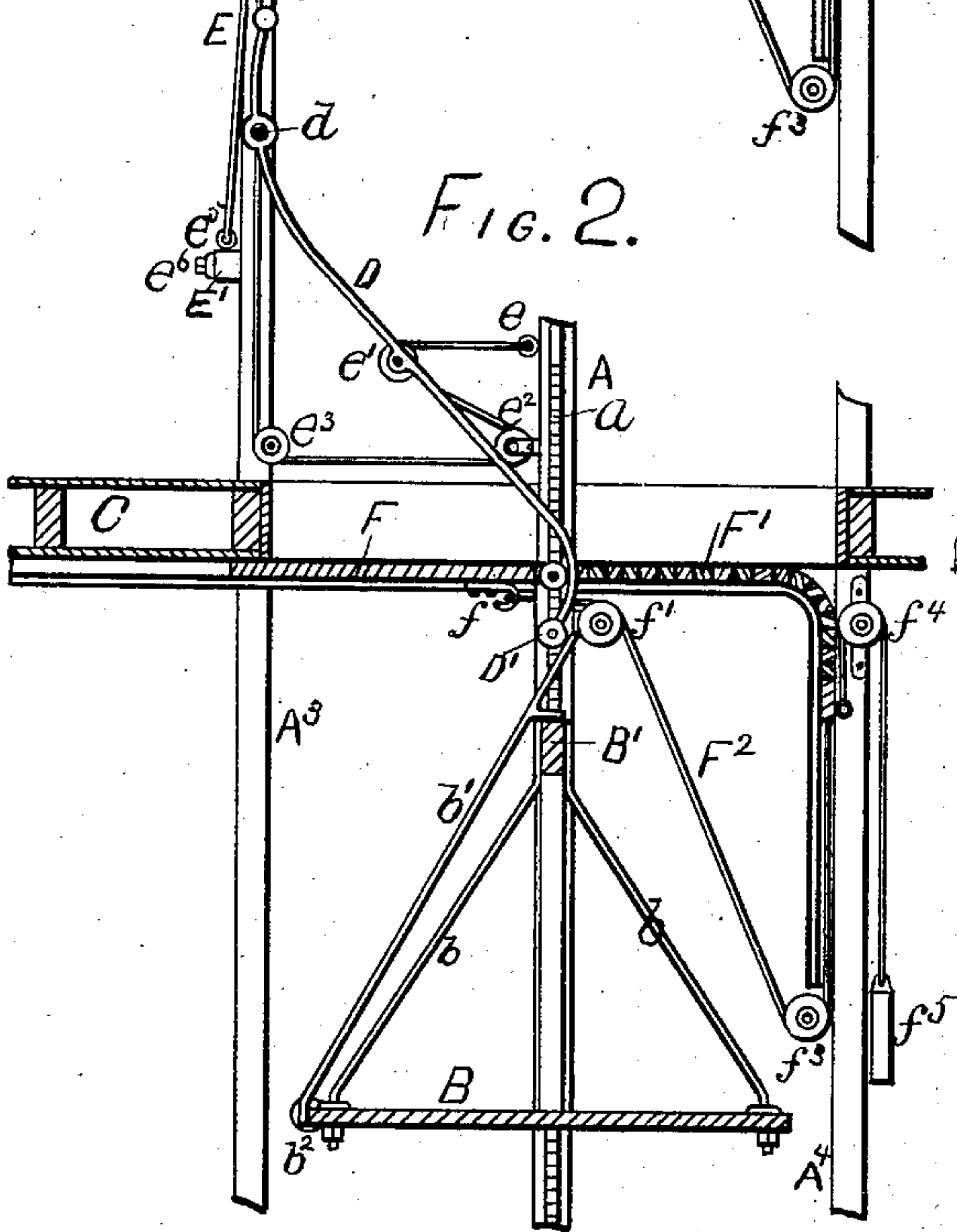


FIG. 2.

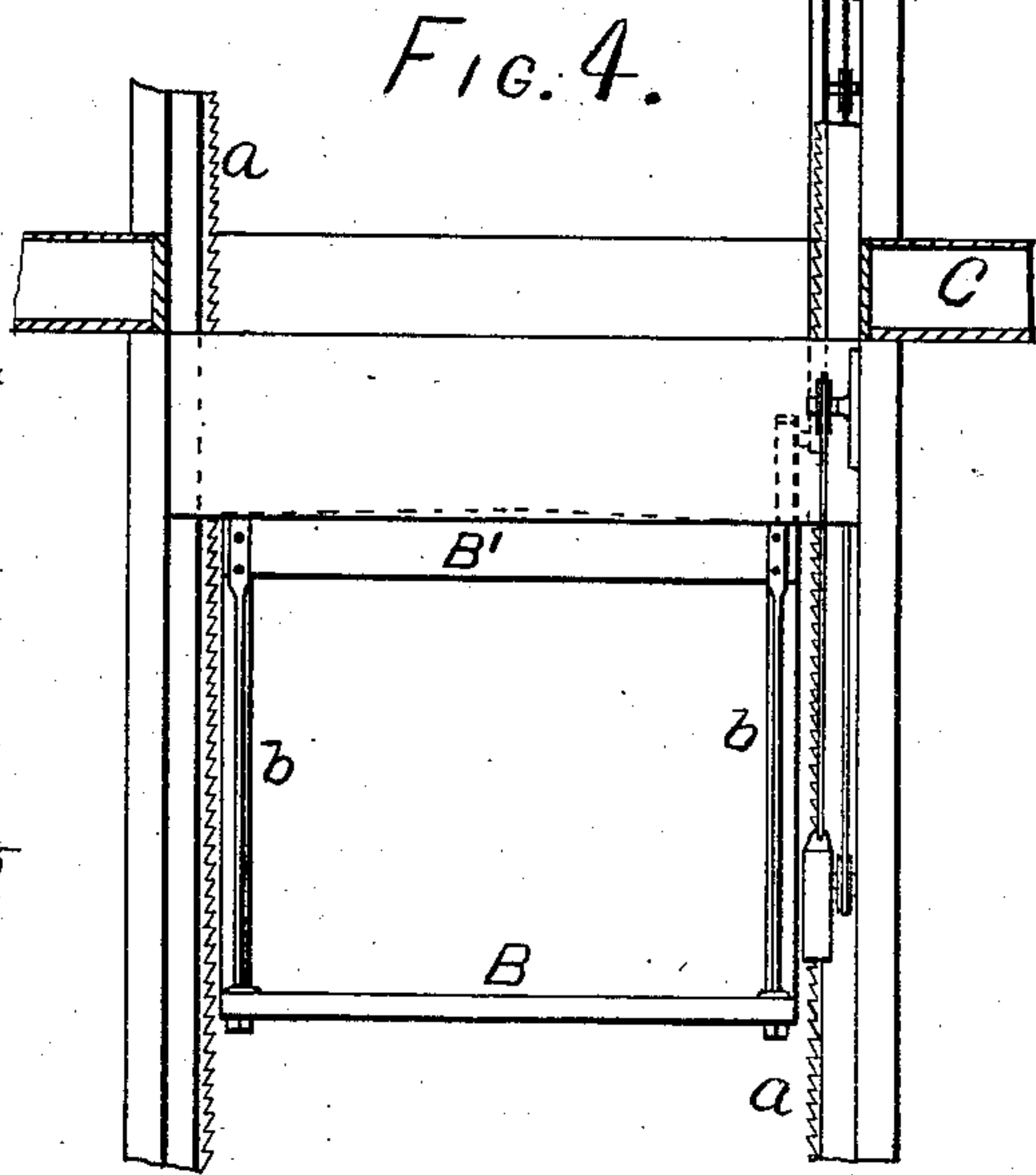


FIG. 4.

Witnesses

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AUTOMATIC DOOR FOR ELEVATOR-HATCHWAYS.

SPECIFICATION forming part of Letters Patent No. 281,632, dated July 17, 1883.

Application filed March 16, 1883. (No model.)

To all whom it may concern:

Be it known that I, MICHAEL F. KIDD, a citizen of the United States, residing at Baltimore, Maryland, have invented certain new and useful Improvements in Automatic Doors for Elevator-Hatchways, of which the following is a specification, reference being had to the accompanying drawings, forming part hereof, in which—

Figure 1 is a section, front to rear, of an elevator provided with my improvements, showing one floor with the elevator above it. Fig. 2 is a similar view, showing the elevator below the floor. Fig. 3 is a transverse section, looking from the front, and Fig. 4 is a similar section, looking from the rear, of the elevator.

Like letters of reference indicate the same parts in all the figures.

The object of my invention is to furnish elevators with automatic devices, whereby the hatchway will be closed and opened, when desired, by the action of the elevator in rising and falling, and the opening on each floor will be securely guarded by a bar or door, which shall also be automatically raised and lowered as the elevator rises and falls; and to this end my elevator consists in the construction, arrangement, and combination of devices, as will be first fully described hereinafter, and then specifically pointed out in the claims.

Referring to the drawings by letter, A and A' are the standards, extending from top to bottom of the building, upon which are erected the racks *a a*.

B is the floor, B' the cross-beam, and *b b* the holding-braces of an ordinary elevator.

b' is a bar secured at its upper end to the cross-beam B', and at its lower end to the floor B.

C is the floor of the building.

D is a lever, rod, or bar, pivoted at *d* to a supplementary standard, A³, erected at one side of the front of the elevator-hatchway, similar to one marked A⁴ on the opposite side. This lever, rod, or bar is provided at its free extremity with an anti-friction roll, D', which bears on the inclined bar *b'* as the elevator is ascending.

E is a cord or rope attached at *e* to the standard A, and thence extending to and over a pulley, *e'*, attached to the bar D, thence back over a pulley, *e''*, attached to the standard A,

thence to and around a pulley, *e'''*, and upward over a pulley, *e''''*, attached to standard A³, and finally at its other end secured at *e'''''* to a bar or door, E', pivoted to said standard A³, and engaging, when down, with a hasp or catch on the standard A⁴.

F F' are sliding doors. In this instance F is shown as a rigid door sliding horizontally, and F' a flexible door sliding horizontally and downward in suitable ways; but I desire to be understood that these doors may be, if desirable or necessary, because of the circumstances surrounding each particular case, both rigid and sliding horizontally, as F now does, or both flexible and sliding downward, as F', or both flexible and sliding horizontally and upward, without departing from the spirit of my invention.

Attached to the door F at *f* is a cord or rope, F², which passes over a pulley, *f'*, secured to standard A, thence downward around pulley *f''*, attached to a fixed portion of the building, thence upward and attached to the outer or lower end of door F'. There is also attached to said door F' another cord, F³, which passes upward over a pulley, *f'''*, and has a weight, *f''''*, secured to the lower end.

b'' is a pulley attached to the floor of the elevator.

The operation of my device is as follows: The elevator being in position shown in Fig. 2, with doors all closed, it is started upward in the usual manner. The upper end of the inclined bar *b'* strikes under the roller D' on the lower end of the bar or lever D, and said bar *b'*, passing up behind said lever D, forces it outward toward the front of the elevator. The lever D, bearing against a friction-roller on the door F, forces said door back into its ways, carrying with it the cord F², which, being connected to the end of door F', causes it also to be moved backward in its ways, so that when the elevator has reached the level of the floor above, the hatchway is clear for it to pass through. In the meantime, while this operation is being performed, the same motion of the lever D draws on the cord or rope E, and causes the door or bar E' to be raised out of the way. It being desirable to further continue the ascent of the elevator, the weight *f''''* will by its action on cord F³ over pulley *f'''*

cause the door F' to be closed, and by reason of its connection therewith through the medium of cord F^2 the door F' will also be closed. This action takes place gradually, as the doors are only allowed to close as fast as the bar D is allowed to move by the movement of the roll b^2 over it. Supposing the elevator to be now at the upper end of its stroke and above the floor C , it is started downward, as usual; the roller b^2 strikes the bar D , forcing it against the door F , as before, causing that door to open and carry door F' with it, as above set forth, and when the elevator has passed below the floor C the same gradual closing of the doors $F F'$ takes place as before, the roller D' this time passing gradually over the bar b' on the elevator. During each of these actions the bar or door E' is opened, as before described, and closed gradually by its own weight.

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

1. The combination, with an elevator provided with a bar, b' , of a pivoted bar, D , sliding doors, and means for connecting said doors to each other and to the pivoted bar D , whereby, by the action of said bar b' upon said pivoted bar, the ascending elevator automatically opens the doors, as set forth.

2. The combination, with an elevator provided with a roller, b^2 , or equivalent anti-friction device, of the pivoted lever D and doors $F F'$, connected together, and the cord and weight attached to door F' , whereby the doors are automatically and gradually closed as the elevator passes above the floor, as set forth.

3. The combination, substantially as described, of the elevator having roller b^2 , bar D ,

pivoted to standard A^3 , and door F , attached to door F' by cord F^2 , and sliding in ways, as shown, whereby the lowering of the elevator automatically opens the doors, as set forth.

4. The combination, with the elevator, of the bar D , pivoted at d to standard A^3 , the bar or gate E' , pivoted at e^6 to said standard, and the cord and pulleys $E e' e^2 e^3 e^4 e^5$, substantially as set forth, whereby, by the action of the elevator, the bar or gate E' is automatically opened or closed.

5. The combination of the elevator having inclined bar b' , pivoted bar D , having roller D' , roller b^2 , doors $F F'$, cord and pulley $F^2 f' f^2 f^3$, and weighted cord F^3 , as and for the purpose set forth.

6. The combination, with the elevator and the swinging bar D , of the doors $F F'$, connected together and engaging with said bar D , and the pivoted bar or gate E' , connected by cords and pulleys to said bar D , whereby the action of the elevator causes said bar D to automatically open and permit of the gradual closing of said doors $F F'$ and bar or gate E' , as set forth.

7. The combination, with an elevator, of the bar b' , the pivoted bar D , and the sliding doors actuated by said pivoted bar, as and for the purpose set forth.

8. The combination, with the elevator having the roller b^2 , of the pivoted bar D and the sliding door actuated by said pivoted bar, as and for the purpose set forth.

In testimony whereof I have set my hand hereto in presence of two witnesses.

MICHAEL F. KIDD.

Witnesses:

HARRY DEMUTH,
JAMES I. KIDD.