

(No Model.)

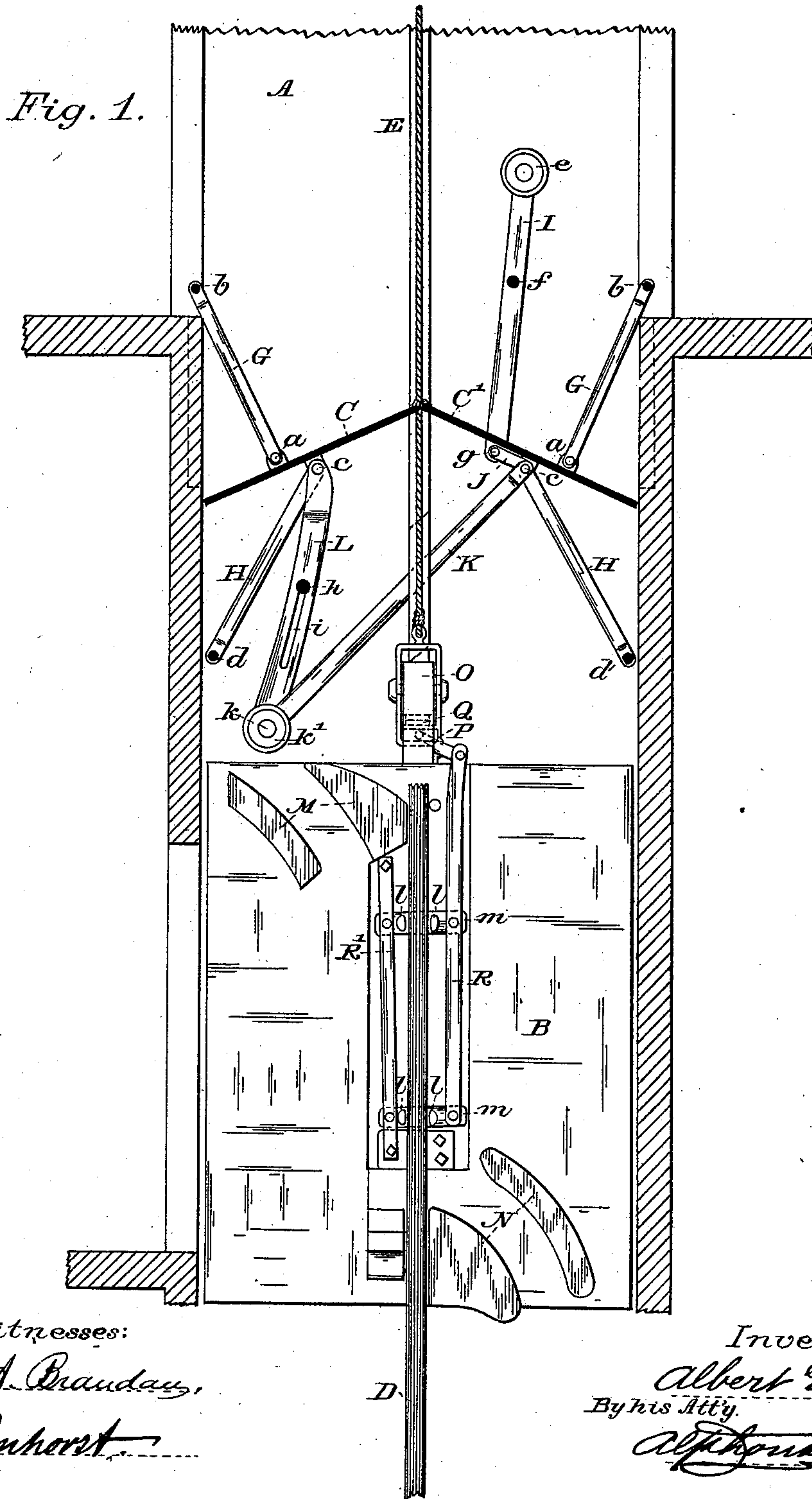
4 Sheets—Sheet 1.

A. G. PAGE.

ELEVATOR.

No. 362,654.

Patented May 10, 1887.



Witnesses:

E. A. Brandau,

F. Imhorst

Inventor:

Albert G. Page
is Atty.

By his Att'y.

Alphonse Smith

(No Model.)

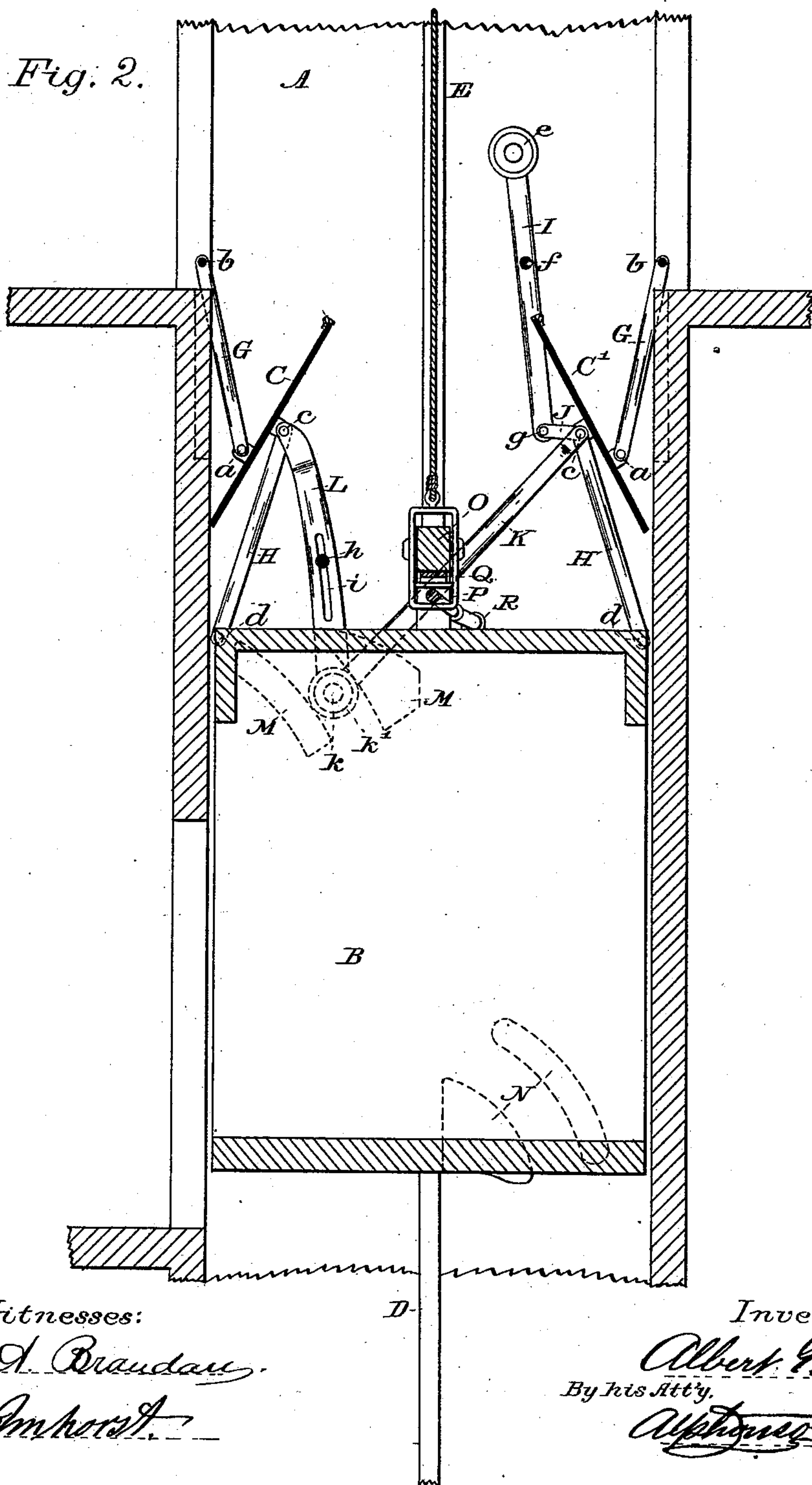
4 Sheets—Sheet 2.

A. G. PAGE.

ELEVATOR.

No. 362,654.

Patented May 10, 1887.



(No Model.)

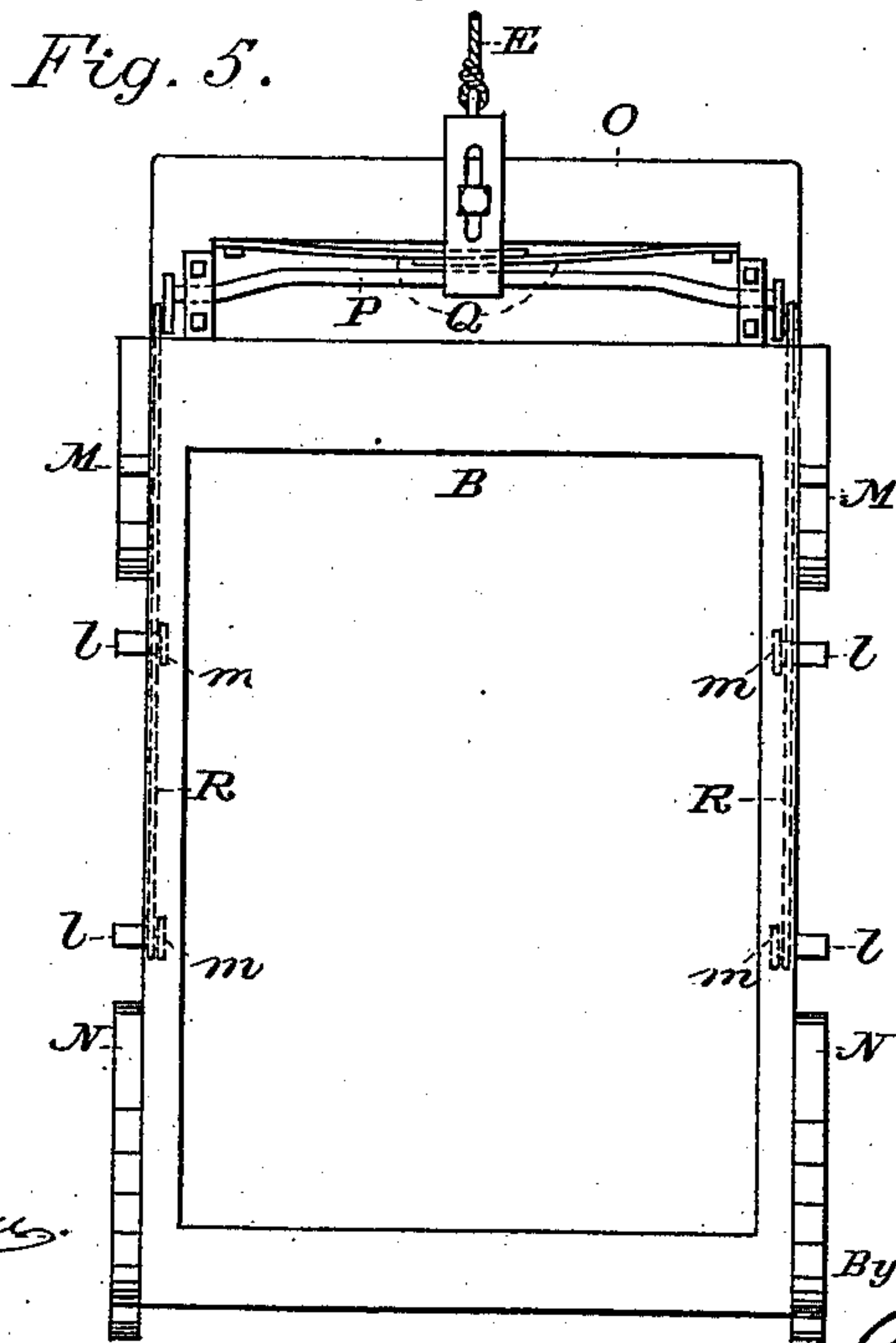
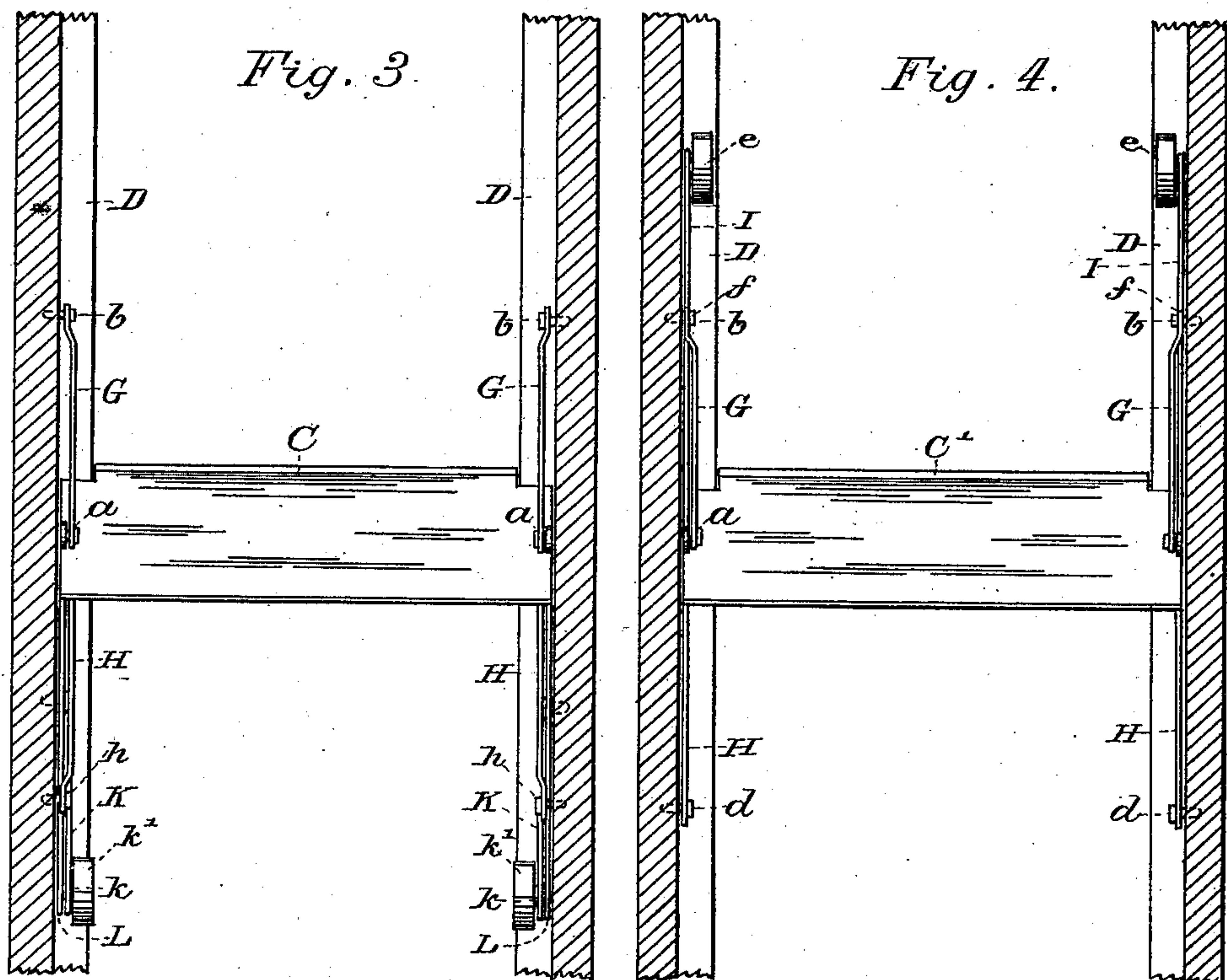
4 Sheets—Sheet 3.

A. G. PAGE.

ELEVATOR.

No. 362,654.

Patented May 10, 1887.



Witnesses:
E. A. Braudau
F. Imhorst

Inventor:
Albert G. Page
By his Att'y
Alphonso J. Smith

4 Sheets—Sheet 4.

ELEVATOR.

Patented May 10, 1887.

Fig. 8.

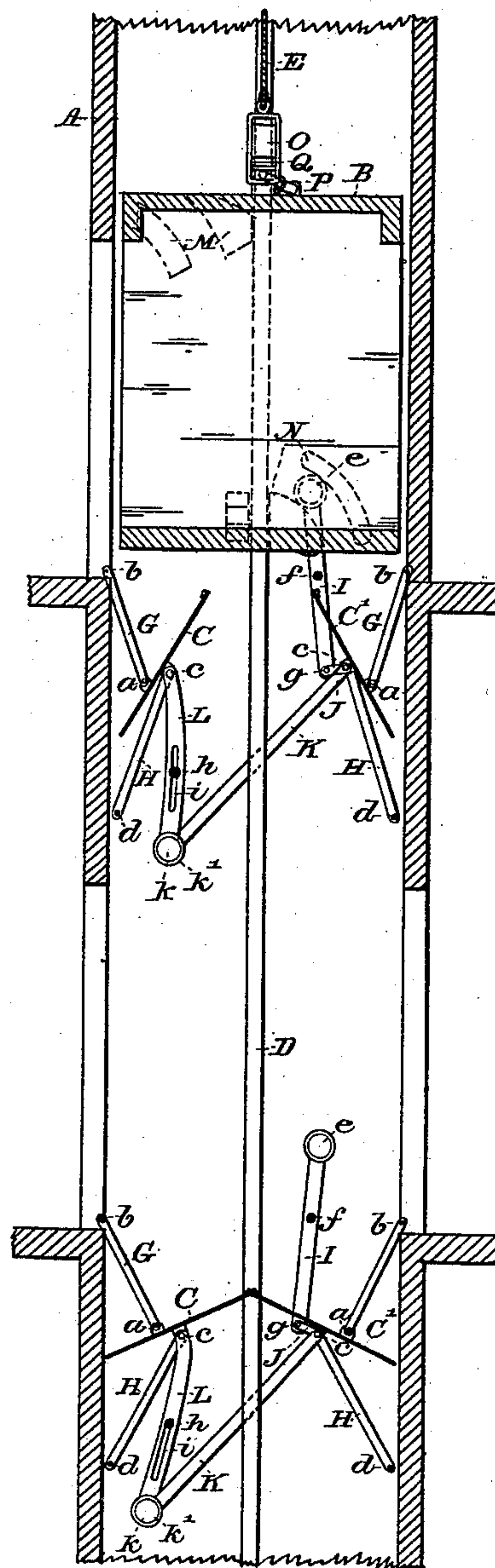


Fig. 7.

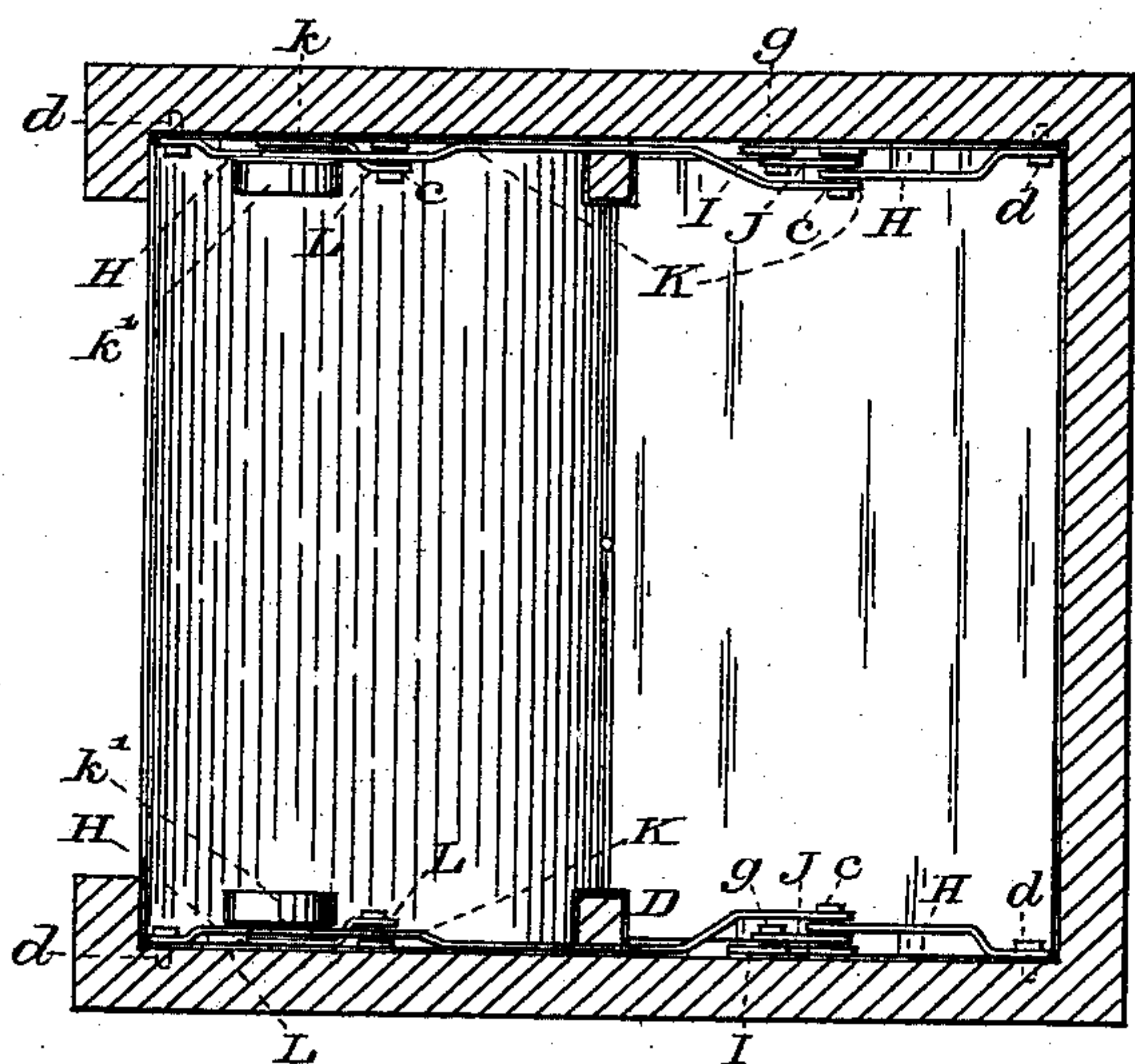
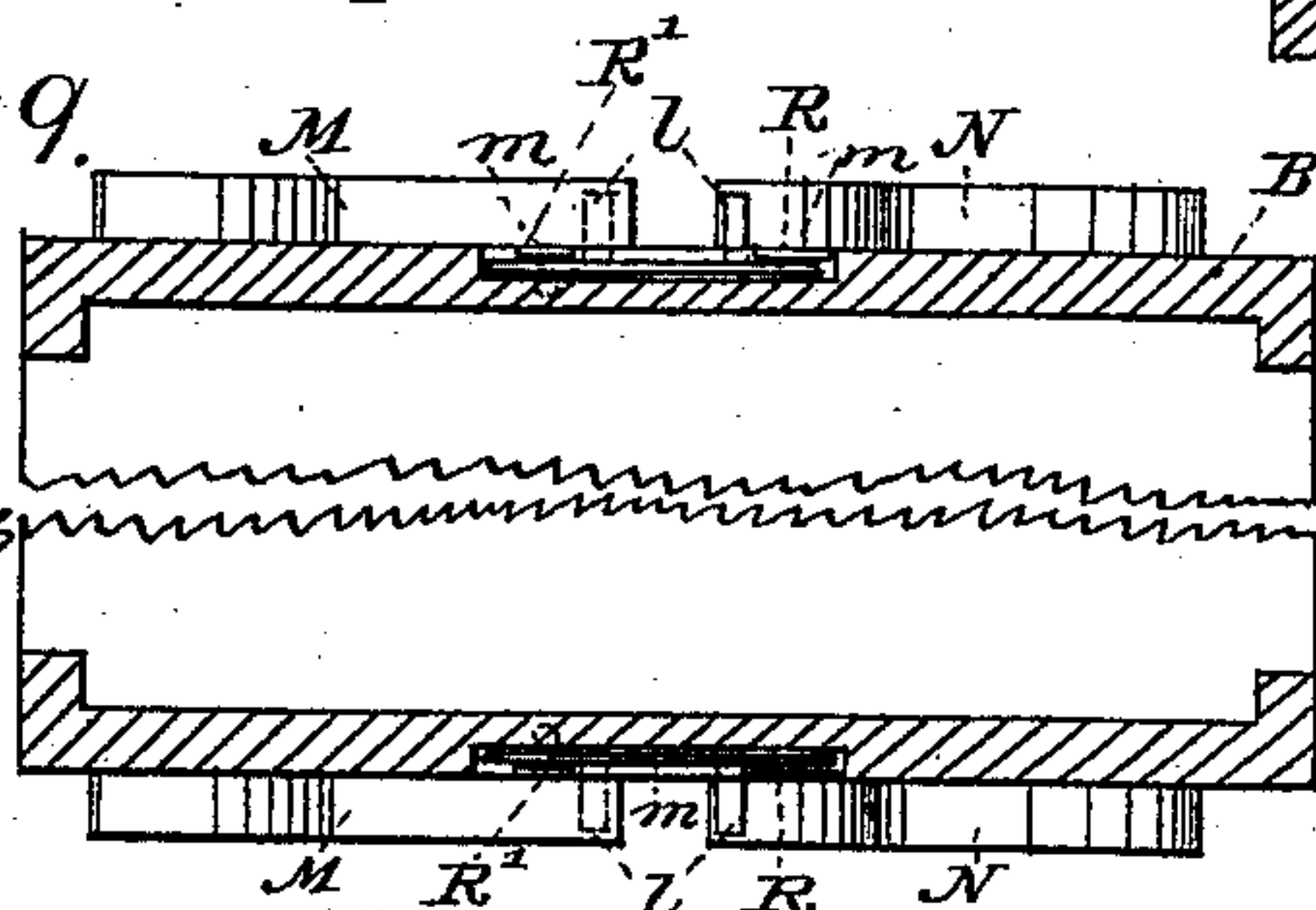


Fig. 9.



Witnesses:

E. A. Brandau

F. Imperst.

Inventor:

Albert G. Page

By his Att'y

Спасибо, Зина

UNITED STATES PATENT OFFICE.

ALBERT G. PAGE, OF SAN FRANCISCO, CALIFORNIA.

ELEVATOR.

SPECIFICATION forming part of Letters Patent No. 362,654, dated May 10, 1887.

Application filed July 9, 1886. Serial No. 207,624. (No model.)

To all whom it may concern:

Be it known that I, ALBERT G. PAGE, a citizen of the United States of America, and a resident of the city and county of San Francisco, State of California, have invented new and useful Improvements in Elevator-Doors, of which the following description is a full, clear, and exact specification.

My invention relates to improvements in elevator-doors, in which I provide automatic opening and closing fire-proof doors for the elevator-shaft to prevent draft, and in case of fire to prevent the flames from passing through the shaft from floor to floor. I have also constructed a gripping device to prevent the cage from falling to the bottom of the shaft or well in case the hoisting-rope should break or become detached from the cage. The fire-proof doors may be made of metal or any other suitable material. I attain these objects by the devices and mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a vertical section through the shaft, showing devices and mechanism for hinging and operating the fire-proof doors and the cage in the act of ascending. Fig. 2 is a view of the fire-proof doors open, showing the cage in the act of descending. Fig. 3 is a section through the shaft, showing the front of the fire-proof doors. Fig. 4 is a section through the shaft, showing the rear of the fire-proof doors. Fig. 5 is a view showing the rear elevation of the cage. Fig. 6 is a plan of the fire-proof doors, looking from above. Fig. 7 is a plan of the fire-proof doors, looking from underneath. Fig. 8 is a side elevation of the shaft, showing the cage in the act of descending. Fig. 9 is a horizontal section of the cage.

A shows the shaft or elevator-well; B, the elevator-cage; C C', the fire-proof doors; D, rod or pipe on which the elevator-cage slides up and down, and on which the grip or clutch *l* operates; E, wire rope, by means of which the cage B is hoisted or lowered.

The wire hoisting-rope is secured by suitable means to movable cross-bar P, and is stopped by a solid cross-piece, O, which is secured firmly to the sides of the cage. Between the solid cross-piece O and the movable cross-bar P are springs Q, which have a downward movement upon the cross-bar P. To the ends

of this cross-bar P is pivoted a movable clutch-rod, R. Pivotally secured to it are cross pieces *m*. They are pivoted at its other end to clutch-rod R', which is firmly secured to the side of the cage. To the face of the rods or bars R R' are secured the grip-shoes *l*, which grip the runner or pipe D whenever the wire rope breaks or becomes disengaged from the cage.

The operation of the clutch is: When the wire rope is released or disconnected from the cross-bar P, then the springs Q, which are secured to the solid cross-piece O, press the cross-bar P downward, thereby acting on the movable clutch-rod R in a downward direction. The short bars *m* come to an angle, thereby shortening the distance between the rods or bars R R', to which the clutch-shoes *l* are secured. These shoes *l* then clutch firmly the pipe D and prevent the cage from falling to the bottom of the well. When the wire rope is lifting the cage or holding it in suspension, then the rod R is drawn upward, releasing the clutch *l*, thus allowing the cage to pass freely up or down the shaft, as required.

The shaft-doors C C' are hinged and operated in the following manner: To the top of the fire-proof doors I secure and pivot rods or bars at point *a*. The other end of these bars I secure and pivot to the side of the shaft at point *b*, thereby hinging the doors from above. To the bottom of the doors I pivot and secure at points *c* the rods or bars H. The other end of these rods I secure pivotally to the sides of the shaft at points *d*. On the door C, at point *e*, I secure pivotally lever L, which near its middle works on the fulcrum-bolt *h*. In the slot *i*, at the lower end of this lever L, I pivotally secure at point *k* the connecting-rod K, also friction-roller *k'*. The other end of this connecting-rod K, I secure pivotally to door C' at point *e*, thereby connecting both fire-proof doors in such a manner that they are worked simultaneously when the cage is passing up or down in the shaft. Furthermore, I secure pivotally to door C', at point *e*, a connecting-rod, J, which I secure pivotally to lever I at point *g*. The lever L works on the fulcrum-bolt *f*, which is secured to the side of the shaft. On top of lever L, I secure pivotally friction-roller *e*.

For the purpose of opening and closing the doors in the ascent and descent of the cage, I have constructed and secured to the sides of the cage guide-blocks M N. When the cage
 5 is below the doors and is ascending, the guide-blocks M will receive between them the friction-roller k' , forcing the bottom of the lever L toward the right, thereby forcing the upper end of lever L toward the left, and, being pivotally secured to door C, will press the door to
 10 the side of the shaft. When the bottom of lever L is pressed to the right, it will then also press on the connecting-rod K and press upward and sidewise the door C' until it rests
 15 against the side of the shaft, thereby making room for the cage to pass upward. When the cage is above the doors, then the guide-blocks N will, by means of the friction-roller e , force the upper section of the lever I to the right,
 20 thereby forcing the lower section of lever I to the left, which, being connected, as described, will close doors C C' simultaneously.

When the cage is descending, the guide-block N works on friction-rollers e and connecting
 25 devices, as described, for opening the doors,

and guide-blocks M work on friction-roller k' and connecting devices for opening and closing the doors in the manner and for the purpose described.

Having thus fully described my invention, 30 what I claim, and desire to secure by Letters Patent, is—

1. The combination of the cross-bar P, spring Q, movable rod R, stationary rod R', cross-pieces or links m , and shoes or clutches l , with 35 the rod D, substantially as set forth.

2. The combination of the doors C C', the bars G, pivoted to the upper faces of the doors at one end and to the sides of the well at their other ends, the rods or bars H, pivotally con- 40 nected to the under faces of the doors, the pivoted slotted lever L, the bolt h , the rod K, having friction-rollers k' , the levers I J, friction-roller e , and the car provided with guide-blocks, as set forth.

ALBERT G. PAGE. [L. S.]

Witnesses:

ALPHONSO B. SMITH,
 WILLIAM COOKE.