

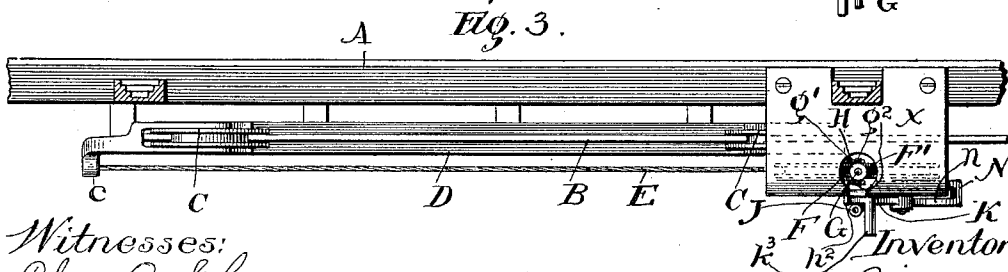
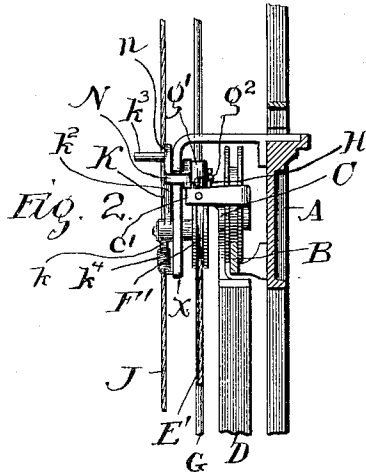
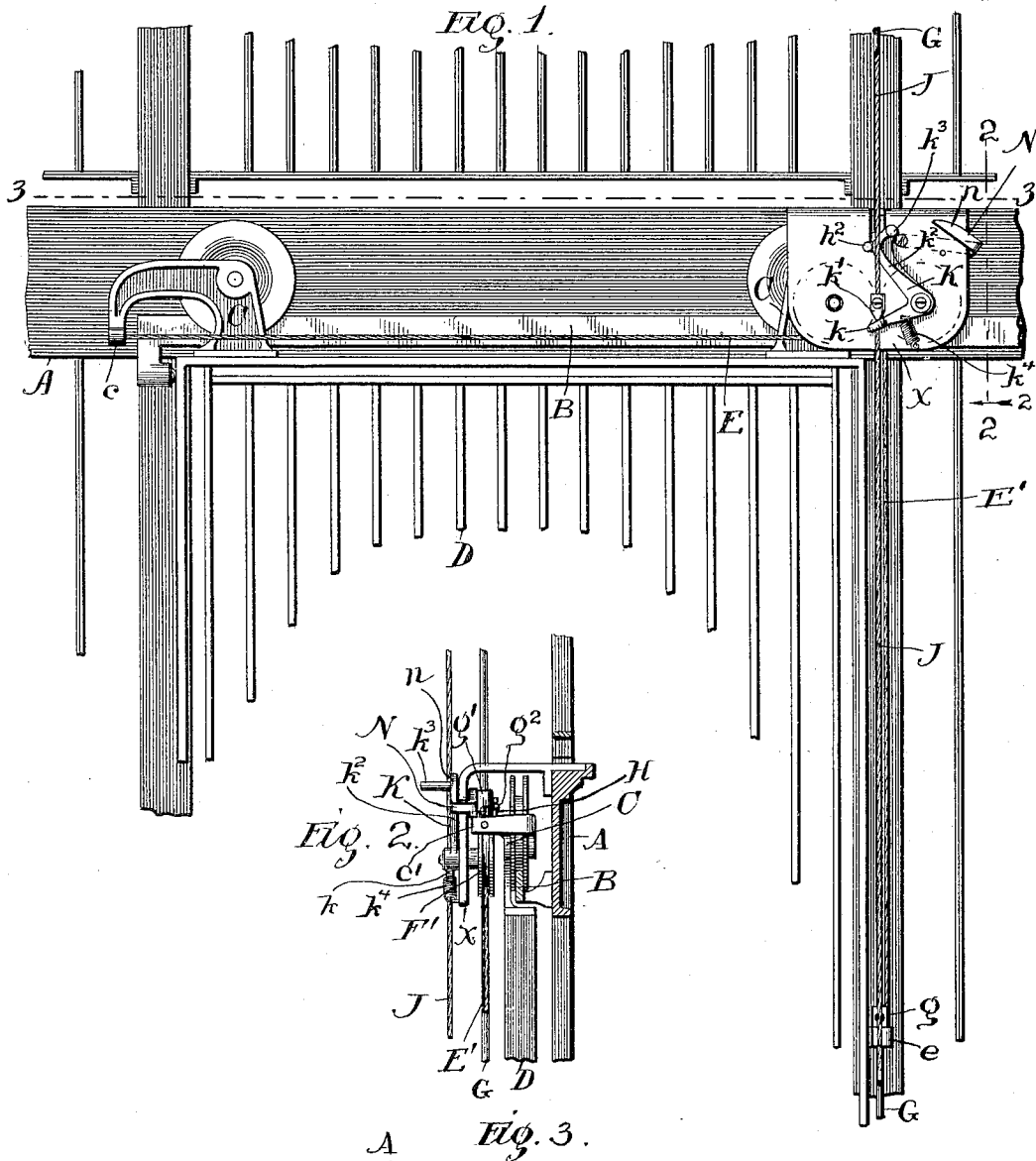
H. BITNER.

OPERATING DEVICE FOR ELEVATOR DOORS.

(Application filed Sept. 20, 1900.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses:
Chas. O. Shervey
S. Bliss.

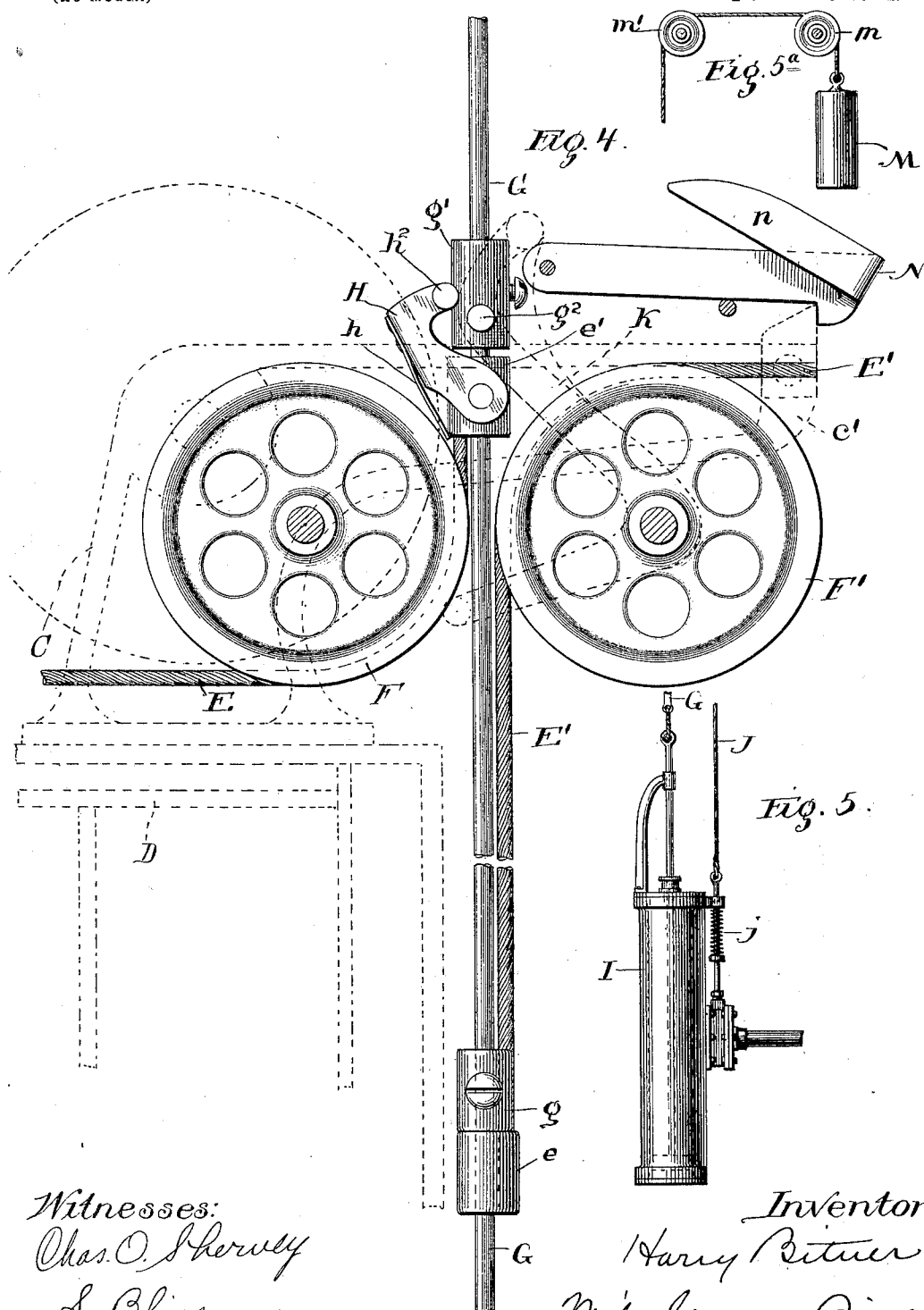
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2 Sheets—Sheet 2.



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UNITED STATES PATENT OFFICE.

HARRY BITNER, OF BERWYN, ILLINOIS, ASSIGNOR TO THE WINSLOW BROS. CO., OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

OPERATING DEVICE FOR ELEVATOR-DOORS.

SPECIFICATION forming part of Letters Patent No. 699,363, dated May 6, 1902.

Application filed September 20, 1900. Serial No. 30,578. (No model.)

To all whom it may concern:

Be it known that I, HARRY BITNER, a citizen of the United States of America, residing at Berwyn, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Operating Devices for Elevator-Doors, of which the following is a specification.

My invention relates to certain improvements in operating devices for elevator-doors, the object of which is to operate by a single wire, rod, or cable a series of doors in such a manner that any one of them may be opened without affecting the rest.

Furthermore, it is the object of the invention to limit the motion of the wire or cable to such range as may be necessary for the movement of the doors and to allow it to remain stationary when none of the doors are in motion.

To such end the invention consists in certain novel devices for actuating said rod and also for connecting it with the doors in such a way as to operate the latter in the desired manner.

In the drawings, Figure 1 is an elevation of the upper part of the elevator-inclosure looking from the inside and showing the upper part of a door in connection therewith. Fig. 2 is a vertical transverse section in line 2-2 of Fig. 1 looking in the direction of the arrow 2. Fig. 3 is a plan of the top of the door, the parts above the same being cut away in line 3-3 of Fig. 1. Fig. 4 is an elevation, on a larger scale, of the connecting devices between the rod and door. Fig. 5 is an elevation of a fluid-motor adapted to be placed in the basement, and Fig. 5^a is an elevation of a counterbalance intended to be located in the attic.

Referring to the drawings, the frame of the inclosure is lettered A and supports a track B, upon which run door-hangers C, suspending the door D. The framework also supports a bracket X, upon which are carried certain devices through which the connecting-rod is enabled to operate the door. The door-hangers C are provided with horizontal extensions *c c'*, the latter being shown in dotted lines in Fig. 4, to which are attached, respectively, cords E E', running over pulleys F F', supported upon the bracket and acting to turn

the cords from horizontal into vertical directions. The cord E' passes downward from the pulley F' and is secured to a slide *e*, adapted to move freely upon the connecting-rod, which is lettered G. A block *g*, adjustably secured to the rod, limits the upward movement of the slide *e* upon the latter. The cord E extends upward from the pulley F and is secured to a slide *e'*, also working freely upon the rod G, and provided with a pivoted hook H, adapted to hook over a lug *g*² upon a block *g'*, also adjustably secured to the rod G. The hook H is pressed by a spring *h*, having a bearing upon the slide in a direction tending to engage it with the lug *g*², and said hook has upon its free end an inward extension *h*², passing through the bracket X and adapted to be engaged to force the hook out of engagement with the block *g'*. The hook is supported by the bracket itself when thus forced out of engagement. When the hook is engaged with the block, the reciprocation of the rod G opens and closes the door. When disengaged, the rod merely runs up in the slide *e* in the upward movement and slides down through the same in the downward movement. The rod is operated by a fluid-motor I, controlled by means of a wire J, normally held in its lowest position by a spring *j*, and raised by a lever K, pivoted to the bracket X, having an arm *k*, adapted to engage a button *k'*, and another arm *k*², adapted to engage the hook H to throw it out of engagement with the block *g'*. A pin *k*³ upon the latter arm of the lever offers means by which the lever may be moved by any suitable devices arranged upon a car. A spring *k*⁴ tends to hold the lever in the position shown in Fig. 1, in which the connecting-rod G is free to move upward and downward without affecting the door. A weight M, hung upon pulleys *m m'* and connected with the rod, raises the latter whenever permitted to do so by the motor I, and the latter has sufficient power to overcome the weight and draw the rod down. A gravity-latch N, pivoted to the bracket, hooks over the extension *c'* of the door-hanger C and is provided with an oblique extension *n*, engaged by the lever K, to release the latch.

The operation of the device is as follows: Taking the parts as shown in Fig. 1, in which

the reciprocation of the rod for the operation of another door has no effect upon the one here shown, if the lever K be swung to the right it will strike the portion *n* of the latch, release the latter, and at the same time will permit the hook H to engage the block *g'*. The arm *k* at the same time has raised the wire J, set the motor I into operation in an upward direction, permitting the rod G to be drawn upward by the weight M drawing upward upon the cord E and slacking up the cord E'. This pulls the door to the right and opens it. As soon as the lever is released it springs back into its original position, reversing the motor and drawing downward upon the rod, which closes the door, and as the hook H is drawn down upon the lever K the latter forces the hook out of engagement with the block *g'* and releases the door from the rod. At the same time the latch N engages the door and holds it closed.

The particular devices herein shown are to a considerable extent non-essential, and the invention is not limited thereto.

25 I claim as new and desire to secure by Letters Patent—

1. The combination with a horizontally-reciprocable door, of a vertically-reciprocable rod, a pair of pulleys respectively upon opposite sides of said rod, a flexible connection secured to one side of the door passing around one of said pulleys along said rod in one direction and having a limited sliding engagement therewith, a flexible connection secured to the other side of the door passing over the other pulley and having means of temporary engagement with the rod, means for reciprocating the rod and means for effecting such temporary engagement; substantially as described.

2. The combination with a horizontally-reciprocable door, a vertically-reciprocable rod, and pulleys upon opposite sides thereof, of flexible connections secured to the opposite edges of the door extending over the respective pulleys and along said rod in opposite directions, slides secured to said connections and guided on the rods, a block secured to said rod and adapted to engage one of said slides in the direction which closes the door, a block secured to said rod adjacent to the other slide and a device for effecting engagement between the latter slide and the adjacent block and thereby open the door; substantially as described.

3. The combination with a horizontally-reciprocable door, of a vertical reciprocable rod, pulleys journaled adjacent to said rod, cables leading from the opposite edges of the door, around the pulleys in opposite directions, slides secured upon the ends of said cables and sliding upon the rod, blocks secured upon the rod, one of which is adapted, when the rod is moving in one direction, to draw the adjacent slide with it, a spring-pressed hook upon the other slide adapted to hook upon the adjacent block, means for reciprocating

the rod and means for throwing the hook into or out of engagement with the block; substantially as described.

4. The combination with a horizontally-reciprocable door, of a vertically-reciprocable rod, pulleys adjacent to the rod, cables extending from opposite edges of the door around the pulleys in opposite directions, slides secured to said cable and guided upon the rod, a block upon the rod adapted to engage one of the slides to move the door in one direction, a block secured to the rod adjacent to the other side and adapted to be temporarily connected with the adjacent slide to move the door in the opposite direction, devices for reciprocating the rod and an operating-lever adapted to effect the engagement of said block and slide and to start the device for reciprocating the rod; substantially as described.

5. The combination with a horizontally-reciprocable door, of a vertically-reciprocable rod, pulleys adjacent thereto, cables extending from the opposite edges of the door around the pulleys in opposite directions, slides secured to said cable and guided upon the rod, a block secured upon the rod adjacent to one of the slides and adapted to engage said slide in the movement of the rod in one direction to move the door in one direction, a block secured upon the rod adjacent to the other slide, a spring-pressed hook pivoted upon the latter slide adapted to hook upon the adjacent block, a lever adapted, when in one position, to hold the hook out of engagement with the block to permit the rod to be reciprocated without affecting the movement of the door, and a motor for reciprocating the rod connected to said lever, whereby the movement of said lever into a second position permits of the connection between the hook and block and starts the motor; substantially as described.

6. The combination with a horizontally-reciprocable door, of a vertically-reciprocable rod, pulleys adjacent thereto, cables extending from the opposite edges of the door around the pulleys in opposite directions, slides secured to said cable and guided upon the rod, a block secured upon the rod adjacent to one of the slides and adapted to engage said slide in the movement of the rod in one direction to move the door in one direction, a block secured upon the rod adjacent to the other slide, a spring-pressed hook pivoted upon the latter slide and adapted to hook upon the adjacent block, a lever adapted, when in one position, to hold the hook out of engagement with the block to permit the rod to be reciprocated without affecting the movement of the door and a motor for reciprocating the rod connected to said lever, whereby the movement of the lever into a second position allows the spring-hook to engage the block and starts the motor to move the rod in one direction and the return of the lever to the first position starts the motor in the opposite direction; substantially as described.

7. The combination with a horizontally-reciproable door, of a vertically-reciproable rod, pulleys adjacent thereto, cables extending from the opposite edges of the door around
5 the pulleys in opposite directions, slides secured to said cable and guided upon the rod, a block secured upon the rod adjacent to one of the slides and adapted to engage said slide in the movement of the rod in one direction
10 to move the door in one direction, a block secured upon the rod adjacent to the other slide, a spring-pressed hook pivoted upon the latter slide and adapted to hook upon the adjacent

block, and a lever, lying in the path of the hook and adapted to crowd the same out of
15 engagement with the block, when said hook is moved upon the lever; substantially as described.

In witness whereof I have hereunto set my hand, at Chicago, in the county of Cook and
20 State of Illinois, this 18th day of September, A. D. 1900.

HARRY BITNER.

Witnesses:

CHAS. O. SHERVEY,
S. BLISS.