No. 676,833.

Patented June 18, 1901.

H. BITNER.

OPERATING DEVICE FOR ELEVATOR DOORS.

(No Model.)

(Application filed Sept. 20, 1900.)

2 Sheets—Sheet 1.

Fig. 1.

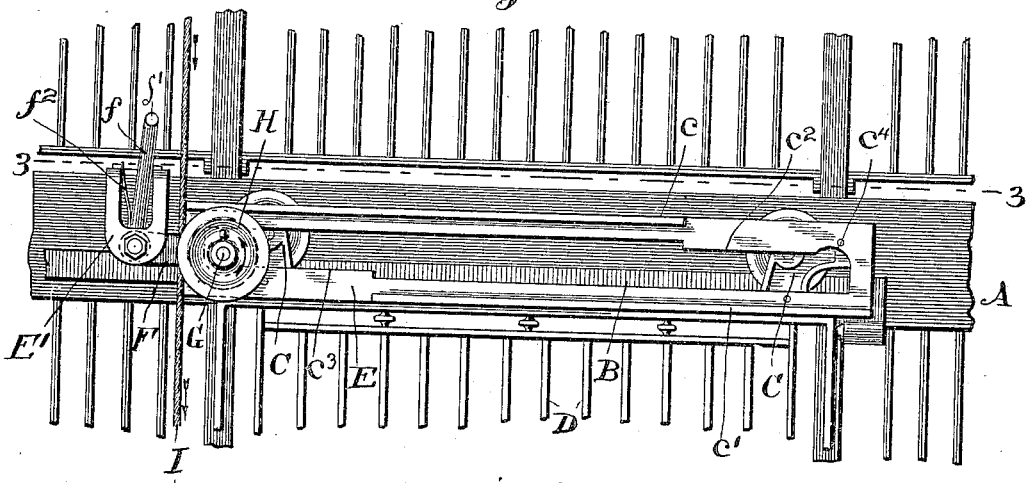


Fig. 2.

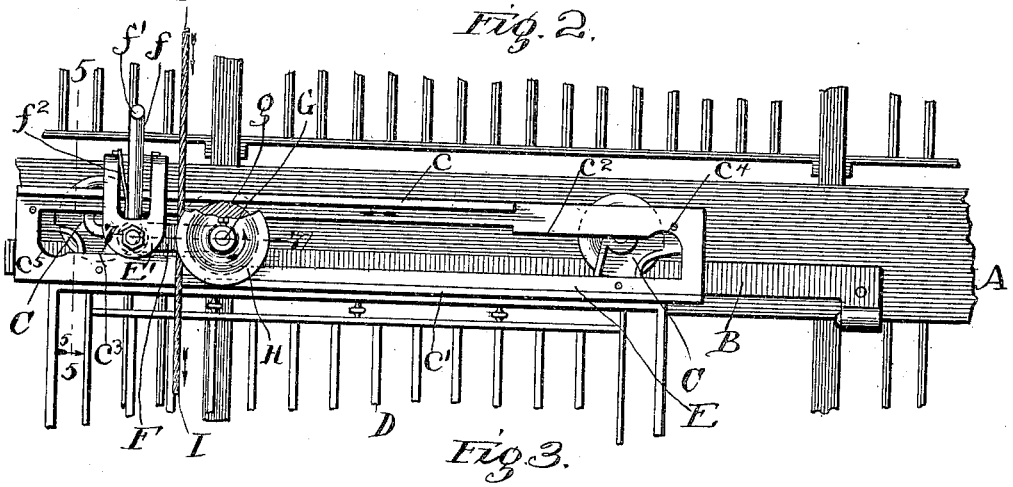


Fig. 3.

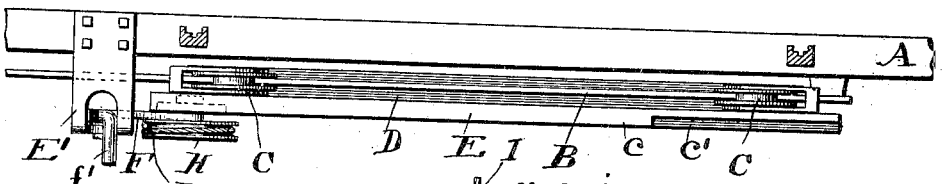


Fig. 4

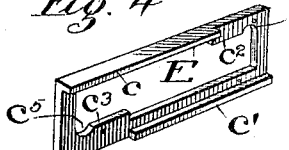


Fig. 5.

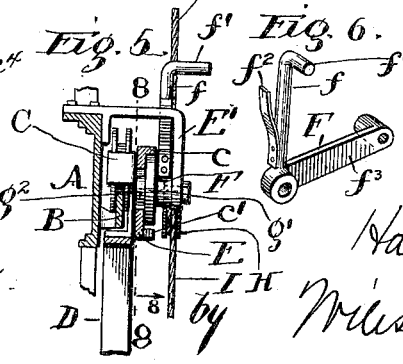
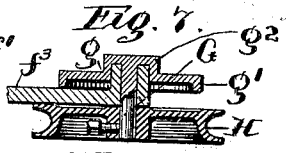


Fig. 6.

Fig. 7.



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No. 676,833. Patented June 18, 1901.

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OPERATING DEVICE FOR ELEVATOR DOORS.

(No Model.) (Application filed Sept. 20, 1900.)

2 Sheets—Sheet 2.

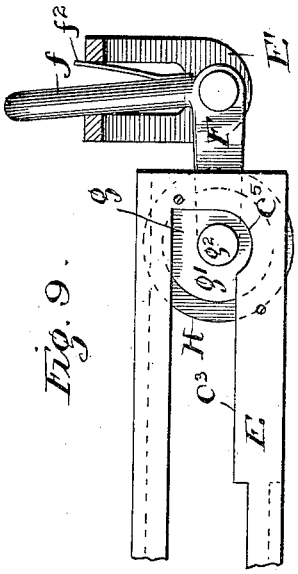

Fig. 9.

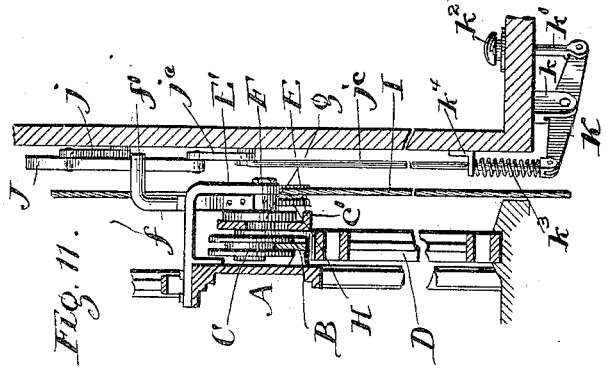

Fig. 11.

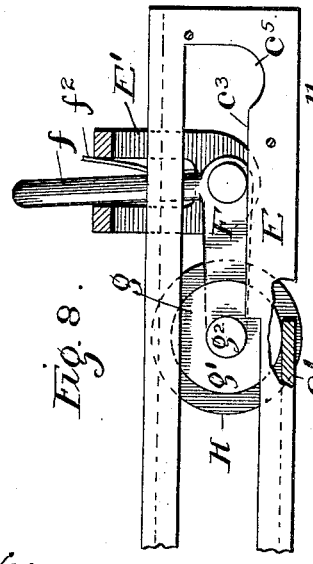

Fig. 8.

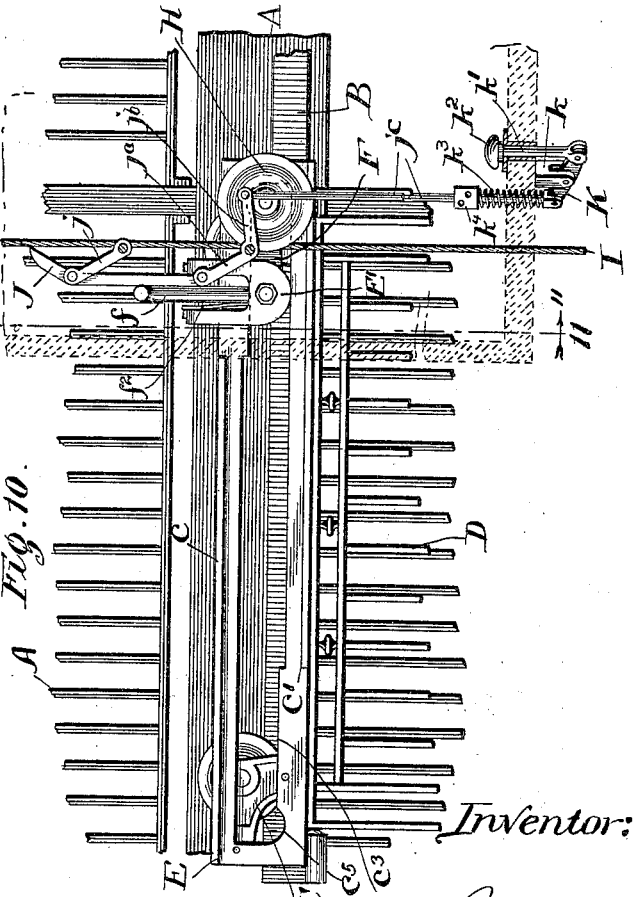

Fig. 10.

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UNITED STATES PATENT OFFICE.

HARRY BITNER, OF BERWYN, ILLINOIS.

OPERATING DEVICE FOR ELEVATOR-DOORS.

SPECIFICATION forming part of Letters Patent No. 676,833, dated June 18, 1901.

Application filed September 20, 1900. Serial No. 30,577. (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 purpose of which is to provide means for automatically opening and closing said doors at the will of the elevator operator and without any effort on his part, except such as may be necessary to set the automatic devices into operation.

The object of the invention is great simplicity, ease of operation, and cheapness of manufacture, and the invention consists in certain novel characteristics to be fully described and pointed out below.

In the drawings, Figure 1 is an elevation looking from the inside of an elevator-well at the upper portion of one of the doors and showing the door in its closed position. Fig. 2 is a similar view showing the door partly open. Fig. 3 is a plan of the top of the door, showing the transom cut away in the line 3 3 of Fig. 1. Fig. 4 is a perspective of a friction-plate to be attached to the top of the door. Fig. 5 is a vertical transverse section in line 5 5 of Fig. 2 looking in the direction of the arrow 5. Fig. 6 is a perspective of a tilting lever. Fig. 7 is a horizontal section in line 7 7 of Fig. 2. Fig. 8 is a vertical section in line 8 8 of Fig. 5 looking in the direction of the arrow 8. Fig. 9 is a similar section showing the parts in a different position. Fig. 10 is a view similar to Figs. 1 and 2, showing the door open and certain additional parts; and Fig. 11 is a vertical section in line 11 11 of Fig. 10 looking in the direction of the arrow 11.

Referring to the drawings, A is the framework of an elevator-inclosure; B, a track secured thereto; C, door-hangers running on the track, and D a door carried by said hangers. A friction-plate E is secured to the inside of the top of the door and has inwardly-projecting flanges along portions of the top and bottom c c' to form friction-tracks and is also cut away in the center, so as to afford other friction-tracks c^2 c^3, acting as continuations of the flanges, but not in the same horizontal plane, being nearer the center line of the friction-plate. Near the ends of the plate recesses c^4 c^5 are cut below the surface of the tracks c^2 c^3. A bracket E′ is secured to the casing overhanging the door-hangers and having pivoted to it inside of the latter an angle-lever F, which is pivoted to the inside of the bracket and has one end f extending through the same. Said end is turned inward at f' to extend into the elevator-well beyond the adjacent parts and afford means of engagement for actuating devices to be carried by the elevator-car. A spring f^2, secured to the lever and bearing upon the bracket, tends to hold the lever as shown in Fig. 1. In the other end, f^3, of the lever is journaled a short shaft G, carrying at the end adjacent to the door a double pulley g, having a portion g' of greater diameter and a portion g^2 of less diameter, the portion of greater diameter being adapted to engage the inwardly-projecting flanges upon the friction-plate and the part of less diameter to travel in the opening in the middle of the plate and engage the friction-tracks c^2 c^3. The opposite end of the short shaft has fast upon it a pulley H, around which runs a constantly-moving cable I, preferably running downward, as shown by the arrows, and returning through any convenient passage or through an adjacent well and operating another series of doors, if desired.

Fig. 1 shows the door shut and the double pulley g out of contact with the friction-plate and running freely without affecting the door. If, however, the lever F be thrown as seen in Fig. 2, the pulley g will be raised until the larger portion strikes the upper flange c, when the friction thereon draws upon the door and opens the latter. As the larger portion of the pulley runs off of the flange the smaller engages the track c^2 and checks the motion of the door at the same time, tending to move it onward at a reduced rate until the recess c^4 is reached, when the door is left in the open position and the friction-pulley again runs freely out of contact with the friction-plate. If the lever F be now permitted to return into the position seen in Fig. 1, to which position it is urged both by the spring

f^2 and by the traction of the cable I, the movement into this position brings the larger portion g' of the pulley g into contact with the lower flange c' of the friction-plate and starts the door toward the closed position, the friction-pulley running off of the flange and onto the track c^3 to check the door before it is quite closed and running off of the latter track as soon as the door is shut to enable the pulley to run freely. Suitable devices may be placed upon the car to operate the lever, and a skeleton outline of the same is shown in Figs. 10 and 11, in which a shoe J is secured to the car by means of two links $j\,j^a$, by means of which it may be thrown into or out of position to engage the lever F, the upper part of the shoe being inclined away from said lever, so that the shoe may be thrown before it reaches the lever and the latter may ride up the inclined portion. A corresponding incline is afforded by the link j^a. An arm j^b upon the link j^a is connected by a rod j^c to a lever K, pivoted to a bracket k, fast to the car and having upon its opposite end a rod k', extending up through the car-floor and terminating in a button k^2. A spring k^3 tends to draw downward upon the rod j^c, said spring bearing upon a block k^4, secured to the car. The spring tends to hold the shoe out of line with the lever F and is overcome by the pressure of the foot upon the button to throw said shoe into position to operate the lever. I do not consider this actuating device as material to my invention and show it only as one means of operating the lever F.

I believe the invention herein shown to be independent of the various details, and therefore do not intend to limit it to the specific construction shown and described.

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

1. The combination with a reciprocable door and a supporting-framework, of a suitably-driven double pulley parallel with the doors and provided with two cylindrical faces of different diameters, suitable friction devices for engagement with said faces to open and shut the door and means for bringing about the engagement between the pulley and said devices; substantially as described.

2. The combination with the inclosure of an elevator-well and a series of reciprocable doors supported thereby, of a driven cable extending from top to bottom of the well, a suitably-supported pulley rotated by said cable adjacent to each door, a two-faced friction-pulley rotated by said driven pulley, said faces being of different diameters, tracks secured to the door for said faces and means for engaging and disengaging the friction-pulleys and the tracks at the proper times to operate the door; substantially as described.

3. The combination with a reciprocable door and supporting-framework, of a tiltable lever mounted upon a horizontal pivot adjacent to said door, a vertical friction-pulley mounted upon said lever and moved vertically thereby, said pulley having two faces of different diameters and friction-tracks secured to the door above and below said pulley to engage said faces, whereby the tilting of the lever brings about engagement with either of said tracks; substantially as described.

4. The combination with a horizontally-slidable door and a supporting-framework, of a vertical friction-plate secured to the top of the door and having two series of tracks arranged one above the other, a bracket secured to the framework, a lever pivoted to the bracket and a suitably-driven double pulley having two faces of different diameters adapted respectively for engagement with the respective members of each series of tracks and means for oscillating the lever upon its pivot to make alternate engagement with the upper and lower tracks; substantially as described.

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

HARRY BITNER.

Witnesses:
CHAS. O. SHERVEY,
S. BLISS.