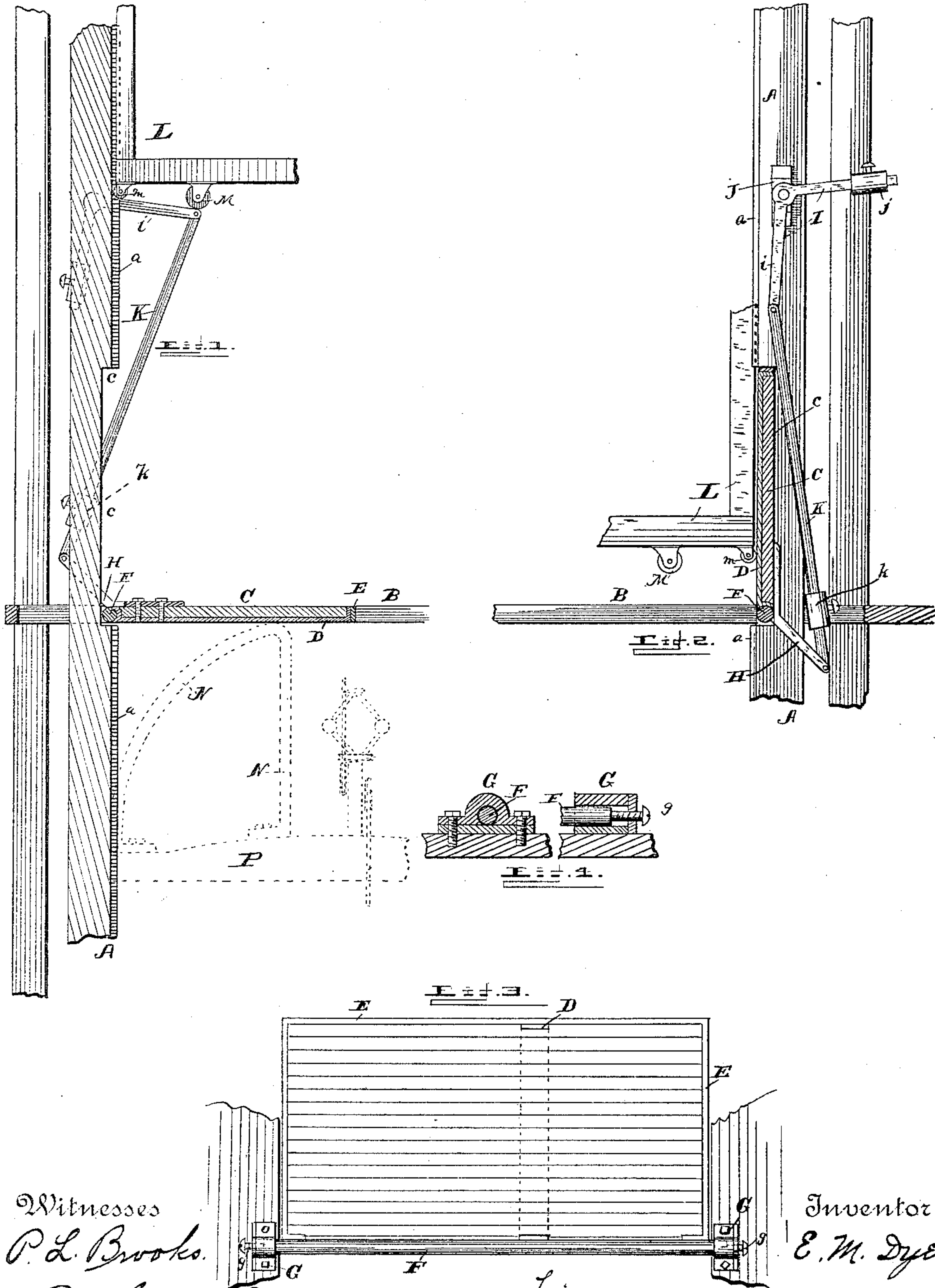


(No Model.)

E. M. DYE.  
HATCHWAY GUARD.

No. 442,310.

Patented Dec. 9, 1890.



Witnesses  
P. L. Brooks.

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# UNITED STATES PATENT OFFICE.

EARL M. DYE, OF BUFFALO, NEW YORK.

## HATCHWAY-GUARD.

SPECIFICATION forming part of Letters Patent No. 442,310, dated December 9, 1890.

Application filed March 21, 1890. Serial No. 344,731. (No model.)

*To all whom it may concern:*

Be it known that I, EARL M. DYE, of Buffalo, in the county of Erie and State of New York, have invented certain new and useful  
5 Improvements in Hatchway-Guards; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon,  
10 which form part of this specification, in which--

Figure 1 is a vertical sectional view through a portion of an elevator-hatchway, showing my improved devices for automatically operating the hatchway-doors, a portion of the  
15 elevator-car being also indicated in dotted lines and the door being closed, the car presumably ready to descend. Fig. 2 is a similar view of the parts, showing the door opened  
20 during the descent of the car. Fig. 3 is a detail view of a hatch-door and its hinge or journal bearings. Fig. 4 is a detail.

This invention is an improvement in devices for automatically operating the hatch-  
25 way doors or covers of elevator-shafts at the different stories or floors of the building in which the elevator is located; and it consists in hinged doors which close over the hatchway, in combination with a series of levers  
30 of peculiar construction and combination and weighted, which are engaged and operated by contact with devices on the elevator-car during the ascent and descent of the latter, so that the hatch-doors will be opened during  
35 the passage of the car, but immediately closed thereafter, all of which will be clearly understood from the following description and claims.

Referring to the drawings by letter, A designates one of the guide-rails for the elevator-car; *a*, the guide or catch-strip thereon; B, a  
40 hatchway, and C one of the doors or covers thereof. This door lies at right angles to rail A, and can be turned up thereagainst, the rail being recessed on its inner face at *c* to  
45 accommodate the door, so that when raised the inner or lower face of the door lies flush with the face of the rail A. The door C is preferably formed of wood having its front and side edges bound by a metallic band E,  
50 and at its rear or hinged edge is secured a rod F.

D is a metal strip set into a transverse recess in the under face of the door, so that its outer face is flush with the face of the door, 55 and its opposite ends are attached to the rod and frame. The ends of rod F project beyond the ends of the door and are journaled or secured in boxes G G, which have set-screws *g g* in their ends that impinge against the  
60 ends of rod F, and by adjusting which the door can be shifted or adjusted longitudinally to cause the strip D thereon to accurately register with the strip *a* when the door is raised. This strip serves a double purpose. 65 It strengthens the doors and tends to hold them in perfect shape, and it also acts as a track for the friction or guide rollers on the elevator-car to travel over.

H designates an angular bracket-arm secured to the rear edge of door C, opposite and  
70 connected to strip D and projecting rearwardly beyond the same and beside rail A, by depressing the rear end of which the door C will be swung upward and opened. 75

I designates a bell-crank lever pivoted at its bend on a pin or support J, attached to rail A above the recess *c* therein and at the side thereof facing arm H. On one end of this crank is a weight *j*, adjustably secured  
80 thereon by a set-screw, by reason of which the other arm *i* of the crank is projected beyond the face of the rail A into the path of the elevator-car.

K designates a pitman-rod pivotally connected at its opposite ends to the ends of  
85 arms H and *i*, as shown, so that by rocking the bell-crank lever a reciprocating motion is imparted to pitman K, and the door C will be caused to open or close. The weight *j* always tends to force arm *i* of lever I upward  
90 to a horizontal position, thereby through the connections closing the door C, and when the arm *i* is depressed weight *j* is swung upward and arm H is rocked downward, causing the  
95 door C to swing open.

In order to counterbalance the weight of the door, I weight the end of arm H or lower end of pitman K, as indicated at *k*, so that, considering the door and arm H as a unity, 100 they are balanced on rod F, thereby enabling the door to be operated with facility upon the rocking of lever I.

L indicates the car of ordinary construc-



tion and having usual appliances to coact with strip *a* to guide it in its vertical movements. On the bottom of this car are mounted in proper hangers friction-rollers *M m*, in such position that when the car descends they will impinge against the arm *i* of lever *I*, if it be not lowered. Roller *m* projects slightly beyond the edge of the car, and roller *M* is set back in such position that it will strike the end of arm *i* when the latter is about horizontal, and as the car descends it will force arm *i* down sufficiently to cause door *C*, through the connections described, to open before the car-bottom passes the upper end of recess *c*, and when roller *M* disengages the arm *i* roller *m* engages the same and thereby keeps the door *C* open until the car has passed below the edge of the open door and is guided by strip *D*, by which means the door is kept open until the car has descended through the hatchway. The weight *j*, however, will cause the immediate closing of the door upon the descent of the car, and in order to prevent slamming of the door or too hasty closing thereof a curved guard *N* is attached to the roof of the car in position to engage the face of the strip *D* and lower the door gradually as the car descends. This curved strip when the car ascends engages the strip *D* and raises and swings the door *C* upward until the rollers or guide appliances on the body of the car have come into engagement with strip *D*, this upward lifting of the door through arm *H* and pitman *F* pulling arm *i* downward out of the way, and as the car rises out of engagement with piece *D* the roller *m* again comes into engagement with arm *i* and prevents the same being swung outward into engagement with the side of the car, but allowing it to gradually swing upward as the car rises, thus insuring the gradual closing of the door *C* as the car ascends.

In practical use the lever, cranks, and doors

are duplicated for each hatchway, such arrangement being obvious and the operation of the parts in the duplicate devices being as described.

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

1. The combination of the door, the rearwardly-projecting arm *H*, attached to the rear edge thereof, the bell-crank lever *I* above the door, having a rearwardly-projecting weighted arm and a forwardly-extending arm *i*, projecting into the path of the car, and the pitman *K*, connected to arm *i* and arm *H*, with the car, having the rollers on the bottom thereof adapted to engage arm *i* and the guards on top of the car, all substantially as specified.

2. The combination of the rail *A*, having guide-strip *a* and recess *c*, with the door *C*, having a guide-piece *D* and a longitudinally-adjustable hinge-rod *F*, and the journal-boxes *G G*, provided with screws *g g*, substantially as described.

3. The combination of the guide-rail *A*, having a recess *c*, the hatch-door *C*, adapted to be swung up and rest partly in said recess, and provided with a transverse guide-strip *D* and a rearwardly-projecting arm *H*, the bell-crank lever *I*, having an arm *i*, projecting in the path of the car, the pitman connecting arm *i* with arm *H*, the weight adjustably secured on the other arm of lever *I*, and the counterbalancing-weight *k*, with the car, the guard *N* on top thereof, and the friction-rollers *M m* on the bottom thereof, substantially as and for the purpose specified.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

EARL M. DYE.

Witnesses:

GEO. H. PETERMANN,  
REINHARD KJEFER.