

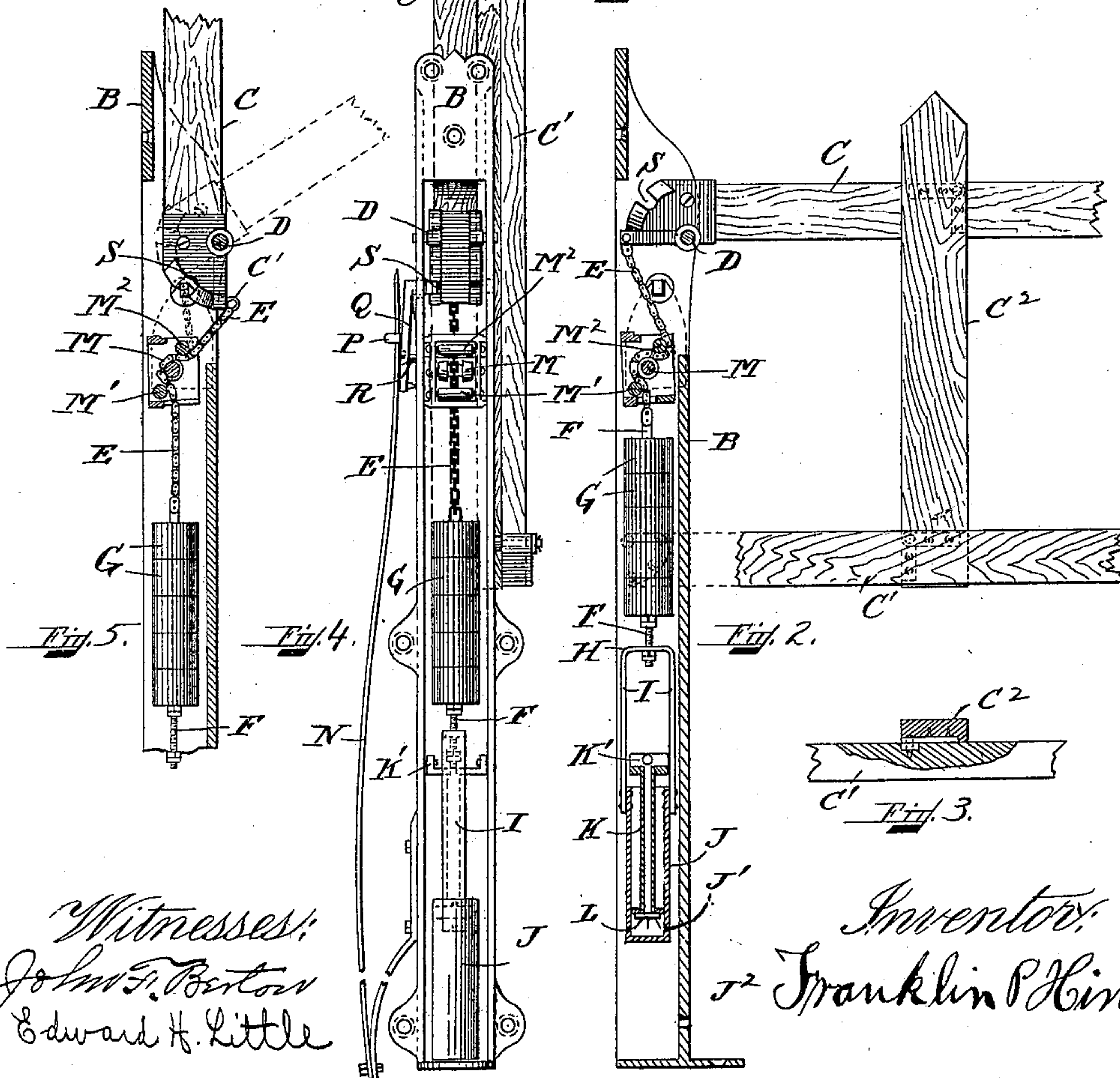
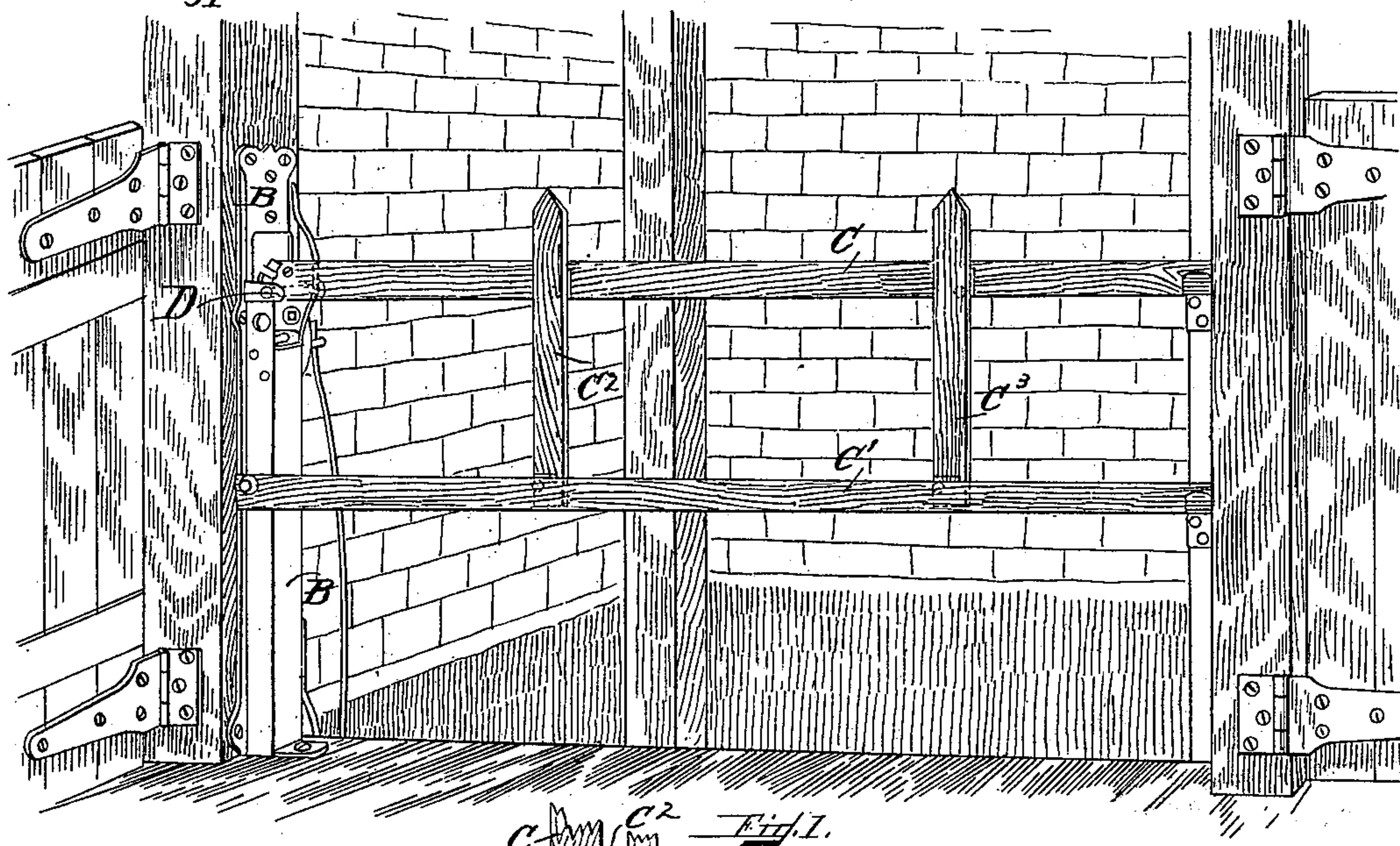
No. 621,670.

Patented Mar. 21, 1899.

F. P. HINDS.
ELEVATOR GUARD.

(Application filed Nov. 6, 1897.)

(No Model)



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UNITED STATES PATENT OFFICE.

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ELEVATOR-GUARD.

SPECIFICATION forming part of Letters Patent No. 621,670, dated March 21, 1899.

Application filed November 6, 1897. Serial No. 657,608. (No model.)

To all whom it may concern:

Be it known that I, FRANKLIN P. HINDS, of Boston, in the county of Suffolk and State of Massachusetts, have invented a new and useful Improvement in Elevator-Guards, which will, in connection with the accompanying drawings, be hereinafter fully described, and specifically defined in the appended claims.

In the drawings, Figure 1 is a perspective view showing a guard embodying my invention in position as when guarding an elevator-well. Fig. 2 is a central vertical section through a portion of the guard and through the hollow iron post or casing to which the guard is pivoted and which contains the counteracting devices that regulate the drop of the guard, as shown therein. Fig. 3 is a detail showing in horizontal section how the vertical slats are pivotally attached or hinged to the upper and under guard-rails so as to fold compactly when the guard is raised. Fig. 4 is a rear view of the raised guard and the spring locking attachment acted upon by the car and the counteracting devices for regulating the fall of the guard when released by the car. Fig. 5 is a sectional detail showing in side view the position of the counteracting-weight and its connecting-chain when the guard is up and in dotted lines the position of said parts when the guard has begun to fall.

This guard may be constructed with a single bar extending across the passage to the well or with a plurality of bars connected by hinged slats, as shown in the drawings, the parts being arranged to fold together compactly when the guard is raised.

The features of novelty in this guard consist chiefly in the devices employed for causing the guard to automatically drop and restraining and graduating its fall by a combination of counteracting-weights and an adjustable pneumatic device, the weights first acting independently and then together with the pneumatic device in regulating the fall of the guard. These and other novel features are hereinafter fully described, and pointed out in the claims.

Fig. 1 illustrates what is sometimes termed a "half-automatic" guard—that is, it is raised by hand and held locked in that position by the presence of the car at the guarded pas-

sage, and when released by the moving of the car away from the passage it then falls automatically into its guarding position, (shown in Fig. 1,) being restrained and regulated in its descent by the devices above mentioned, which safely limit the speed of its fall and the force of its impact upon any object which it may accidentally encounter in its fall or that serves as the intended stop to its downward movement.

Referring to Fig. 1 of the drawings, A represents one side of a doorway opening into an elevator-well and affording access at that point to the car which moves up and down therein; B, the hollow iron post or casing bolted to side A and containing the devices which restrain and regulate, as before stated, the fall of the pivoted gate or guard; C, the guard, which may comprise a single bar or an additional lower bar C', connected with C by hinged slats C² C³. The guard C is pivoted to post B at D, forming a lever, with D as its fulcrum, the long arm of which extends across the passage-way leading to the elevator, while its short arm is attached by a chain E to a rod F, carrying a number of weights G, strung thereon, while rod F is attached to a yoke H, with a limited freedom of play vertically through the center of said yoke. The yoke H is secured, through straps I I', to the movable cylinder J. A fixed tubular piston K, attached to a cross-bar K', attached to post B, carries a valve L on its lower end, which is fitted to operate closely in the movable cylinder, so as to produce pneumatically a counteracting restraint upon and regulation of the falling guard, but to offer no practical resistance to the raising of the guard, which is done by hand, while the fall is by gravity and automatically regulated, as stated. The guard is self-closing at all times, and, except when raised by hand to the position indicated in Fig. 4 and locked in that position by the car acting on devices to be explained, it automatically assumes the guarding position. (Shown in Fig. 1.) When the guard is raised by hand, as stated, to open the passage-way to the well and to the platform of the car, a projecting spring N, Fig. 4, is arranged to come within the path of and to be acted upon by the car, so as to cause its upper end, which

passes through a loop P on the back of a locking-bar Q, loosely supported on a stud R in the post, to press the upper and bent end of the bar through an opening in post B into a notch S in the inner end of bar C, thereby locking the bar in that position until the car moves up or down, and thus releases spring N, when the latter will react by its elastic force, withdraw the locking-bar from notch S, and release the bar C, which will then be started on its downward movement by the stress of weight G, suspended thereon, as indicated in Fig. 5. In this figure it will be seen that the chain E in passing from guard C to the weight-rod F draws over a central pulley or roll M and under a roll M', which turn on studs fixed in a block attached to the interior of the post B and in such a manner that the weights G, suspended on the chain, tend to cause the guard when released to start on its downward movement, and when it has proceeded about one-eighth of its descent, as indicated by the dotted lines in said Fig. 5, the chain is then caused thereby to draw more nearly vertical and around a roll M², also turning on a stud fixed in the said post - block, and by such changed direction counteracts the movement downward of the guard and alone restrains its fall until the free play of rod F in yoke H has reached its upward limit, when the pneumatic device is brought into action by the falling guard, which then draws upon the yoke and raises the cylinder J against the pressure of the air between valve L and the bottom of the cylinder, and thus reinforces the counteracting-weights and exerts more restraint upon the guard. A vent may be made in the movable cylinder at J' and is adjustable by means of a suitable screw-plug threaded therein, as is common in pneumatic door-checks, which screw-plug may be accessible for purposes of adjustment with a screw-driver through a hole J² in the post, as shown in Fig. 2.

The practical operation of the guard is as follows: When the car is at a doorway to be used, it bears against the spring-arm N, and thereby presses the locking-bar Q so that its upper offset end bears against the side of the short arm of the guard-lever C. The operator throws up the bar or guard, and when it is in its vertical position the locking-bar Q enters the notch S in the guard and secures it in that position. When the car is moved away from the door in either direction, it releases the spring-arm N, which then by its reaction withdraws bar Q from notch S, and thus releases the guard. The chain E at this time is so connected with the short arm of the pivoted guard that the weight G, suspended thereon, pulls the guard forward and starts it on its fall, and when it has reached about the position indicated by dotted lines in Fig. 5 the chain will have passed inward, so as to draw against the descending movement of the guard and will so counteract the guard alone until the nut on the lower end of the weight-

rod is brought to bear against the under side of yoke H. To this point the weights have been adjusted to counteract alone the movement of the guard and prevent its too sudden and forceful fall, but are not sufficient to restrain the increasing force of the falling guard. Hence the pneumatic device which, being properly adjusted to the requirements of the guard, now comes into play and, cooperating with the weights, assists in regulating and checking the downward movement of the guard to a nicety, insuring its prompt descent, but without such force and violence as to either damage the guard itself or injure any object or person that it might encounter in its fall and avoiding the jar and noise which usually accompanies the dropping of such guards and increases the wear and tear of the same.

I claim—

1. An elevator-guard composed of a pivoted bar the long arm of which extends across and guards the passage to the elevator-well, counteracting-weights incased at the side of the opening into the well and connected with the short arm of the said bar; and a pneumatic check constructed, and arranged in said case, so as to cooperate with said weights in regulating the fall of the bar substantially as specified.

2. An elevator-guard composed of a pivoted bar the long arm of which extends across and guards the passage to the elevator-well, counteracting-weights incased at the side of the opening into the well and connected with the short arm of the said bar; a lower bar pivoted to the post or side casing and connected with the upper bar by hinged slats arranged to fold between the two bars when the guard is raised; and a pneumatic check constructed, and arranged in said case, so as to cooperate with said weights in regulating the fall of the guard substantially as specified.

3. An elevator-guard comprising the combination of the guard C, pivoted as at D, to a side post or case B; a counterweight G, connected with the short arm of guard C, by a chain passed between guide-rolls, so as first to cause the guard to fall and then to restrain its fall; and a cooperating pneumatic device composed of a yoke H, the weight-carrying rod F, connected with and arranged to play freely in said yoke; side straps I extending from the yoke to a cylinder J, and attached thereto; the cross-bar K and the hollow stationary piston attached thereto and having valve L; the cylinder J, arranged to be moved up and down on said hollow stationary piston K, and all operating together substantially as and for the purpose specified.

Signed at Boston, Massachusetts, September 18, 1897.

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Witnesses:

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