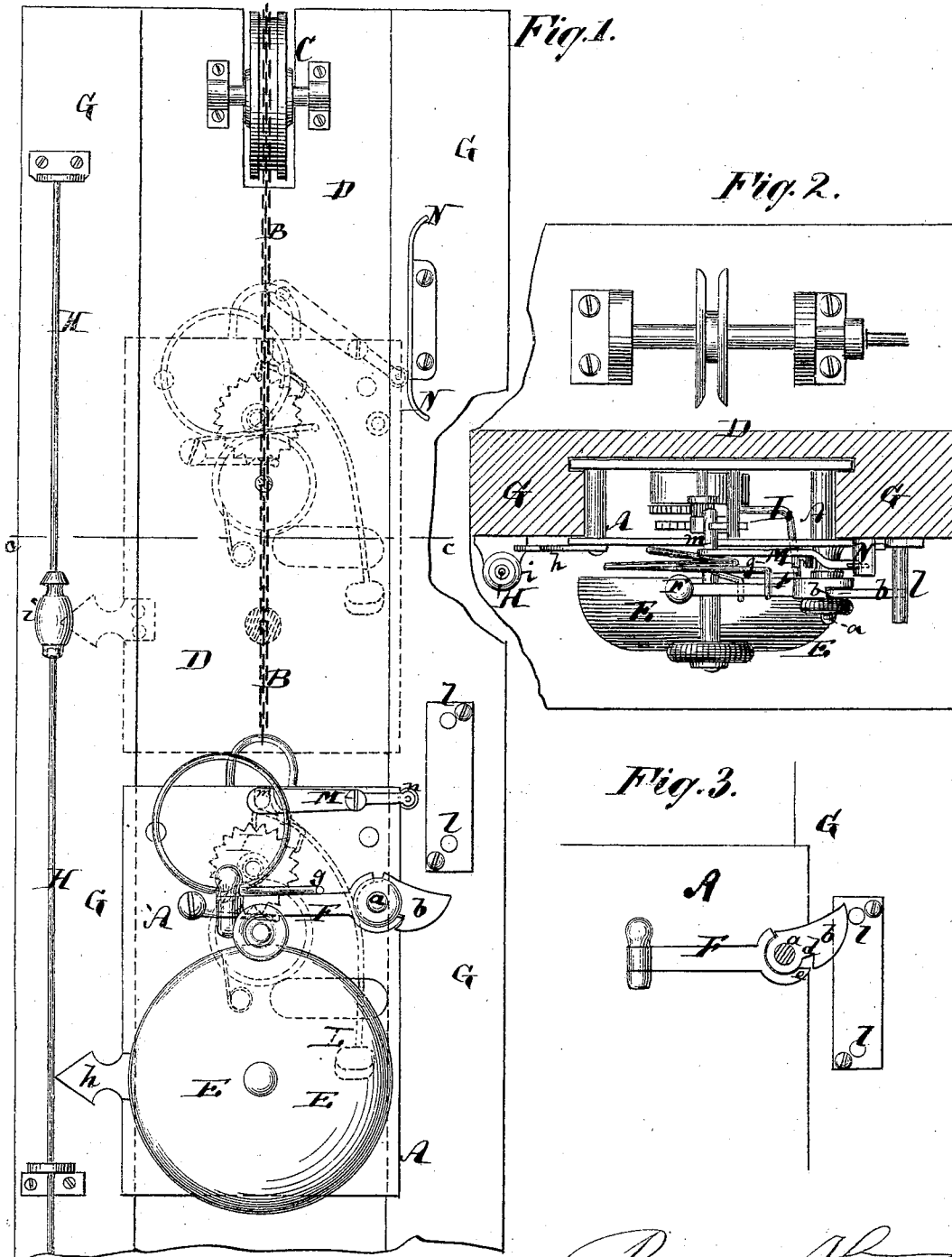


B. HOWARD.

Alarms and Indicators for Elevators.

No. 150,321.

Patented April 28, 1874.



Witnesses  
John Decker  
Fred Hayes

Benjamin Howard  
by his Attorneys  
Brown & Allen

# UNITED STATES PATENT OFFICE.

BENJAMIN HOWARD, OF ST. CLAIR, PENNSYLVANIA, ASSIGNOR OF ONE-HALF HIS RIGHT TO JOHN MORRISON, OF SAME PLACE.

## IMPROVEMENT IN ALARMS AND INDICATORS FOR ELEVATORS.

Specification forming part of Letters Patent No. **150,321**, dated April 23, 1874; application filed September 2, 1873.

*To all whom it may concern:*

Be it known that I, BENJAMIN HOWARD, of St. Clair, in the county of Schuylkill and State of Pennsylvania, have invented an Improved Alarm and Indicator for Elevators, of which the following is a specification:

Figure 1 is a face view of my improved alarm and indicator for elevators. Fig. 2 is a horizontal section of the same on the line *cc*, Fig. 1; and Fig. 3, a detail face view of the jointed hammer used on the indicator and alarm.

Similar letters of reference indicate corresponding parts in all the figures.

This invention has for its object to provide for elevators or hoisting apparatus used in hotels, &c., an alarm attachment and indicator by which the engineer may be enabled to know the position of the ascending and descending cage or car, and whereby he will be warned if such car exceeds in its motion the limits within which such motion is to be confined.

My invention consists in connecting with the shaft whereby the elevator is operated a rising and falling alarm, carrying a gong, a hammer, and a trigger, so that as the elevator ascends this alarm and gong will also ascend in the sight of the engineer, and will, in the various positions provided for the stoppages of the elevator or cage—that is to say, when the same is opposite to the several floors, respectively—cause its hammer to strike a blow and thus inform the engineer when such positions have been reached, while when the cage is at its greatest height the trigger attachment to the alarm will be near a fixed cam, and will, if raised to such cam, disengage an alarm attachment, or rapidly-vibrating hammer, that will strike the gong and inform the engineer that the cage is being lifted beyond the proper height. In this manner all danger of accident from a careless stoppage of the car, or from too great an elevation of the same, will be avoided. The reciprocating alarm carries a pointer, by means of which, to the eye of the engineer, the relative position of the alarm and cage may be indicated.

In the accompanying drawing, the letter A represents a sliding frame or plate, connected by a chain, B, that passes over a roller, C, of a stationary frame, D, with the shaft, by which

the cage of the elevator is moved up or down with a shaft that is in gearing with such main shaft, so that when the main shaft is revolved to raise the elevator-cage the slide A will also be raised, but a shorter distance, and when the elevator-cage descends the slide A will also descend in the same proportion. To the slide A is affixed a gong, E, and over the gong is pivoted to the slide a hammer, F, which turns on a pivot-pin, *a*. To the same pin *a* is also pivoted a pawl, *b*, which has a shoulder, *d*, resting on an arm, *e*, of the hammer F, as is more clearly shown in Fig. 3. When the pawl, during the upward motion of the slide A, meets any resistance so as to be swung downward, it will thereby swing the hammer F upward, away from the gong, and when the pawl has passed the resistance whereby it was swung down, the hammer will, by a spring, *g*, be violently forced upon the gong. The slide A moves between two fixed posts, G G, whose height for ordinary purposes may be ten or twelve feet, more or less. These posts, together with the slide, are intended as a miniature representation of the elevator-frame and cage, respectively, and the motion of the slide A, being proportionate to those of the cage proper, will enable the engineer to observe from the slide and its position the position of the cage. To more properly enable the inspection of the cage, a pointer, *h*, is affixed to the slide A, and a rod, H, is attached on the front of one of the posts G, and a sliding button, *i*, fitted upon such rod, so that by reference to the pointer *h* and button *i* the position of the cage itself may be readily observed. Instead of one, there may be two or more buttons fitted upon the rod H. To one of the posts G are secured a series of projecting pins, *ll*, so as to be in the way of the pawl *b* during the upward motion of the slide. When the pawl strikes one of these projecting knobs, *l*, during its upward motion, it will be swung down, and will cause, when passing such knob, the hammer F to be thrown upon the gong and give a signal. The relative positions of the knobs *l l* should correspond to the positions of the several floors of the building in which the cage moves,

so that the engineer will receive a signal from the hammer and gong whenever the cage arrives opposite one of the floors. During the downward motion the pawl *b* swings clear of the knobs *l*, or at least is swung by them so as not to influence the position of the hammer *F*, as is more fully indicated in Fig. 3. To the slide *A* is also secured a suitable clock-work, *I*, which, when liberated, actuates a clapper, *L*, that strikes the interior of the gong *E*. To the face of the slide *A* is pivoted a trigger, *M*, from which a pin, *m*, extends into the clock-work in the way of the escapement or anchor thereof, preventing such anchor from vibrating and the clock-work from operating. But when a friction-roller, *n*, at the outer end of the trigger *M* strikes in its upward motion any obstruction whatsoever, so that the end of the trigger which carries the roller will be depressed, the clock-work will be liberated and set in motion, and will cause the clapper repeatedly and vehemently to strike the gong until the trigger again intervenes and arrests the action of the mainspring. At that part of the frame *G* at which the slide *A* will occupy its uppermost position, while the cage is also in the uppermost proper position, is affixed to one of the posts *G* a projecting cam or curved plate, *N*. The trigger will not reach this plate or cam if the cage is allowed to move within its proper bounds; but if the cage, by accident or carelessness, is allowed to be elevated beyond its

proper uppermost position, the trigger *M* will come in contact with the plate *N*, and will thereby be moved into the position indicated by dotted lines in Fig. 1, so as to liberate the clock-work and sound the alarm as long as the cage is thus held or allowed to remain in the improper position. Thus the engineer, as well as the parties that may wish to control his actions, will be informed of anything that may be wrong in the position of the cage, and accidents will in consequence be prevented.

I claim as my invention and desire to secure by Letters Patent—

1. The up-and-down-movable index or slide *A*, combined with the up-and-down-movable cage of an elevator to join in the motions thereof, substantially as and for the purpose described.

2. The pointer *h*, attached to the slide *A*, and combined with the adjustable button *i* on the fixed rod *H*, as and for the purpose set forth.

3. The gong *E*, hammer *F*, and pawl *b*, applied to the slide *A*, in combination with the stops or projecting knobs *l* on the frame *G*, as set forth.

4. The trigger *M*, pivoted to the slide *A*, and combined with the clock-work and with the fixed cam *N*, substantially as and for the purpose specified.

BENJ. HOWARD.

Witnesses:

A. P. CARR, M. D.,  
JAMES J. COOPER.