C. R. OTIS.

Improvement in Elevators.

No. 131,896. Patented Oct. 1, 1872.

Fig: 1

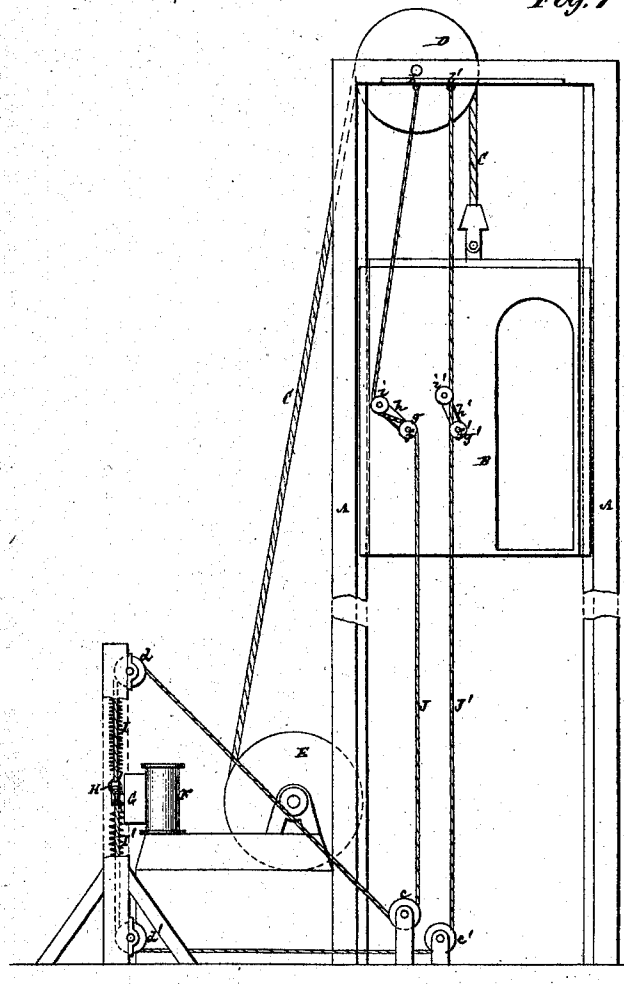


Fig: 2

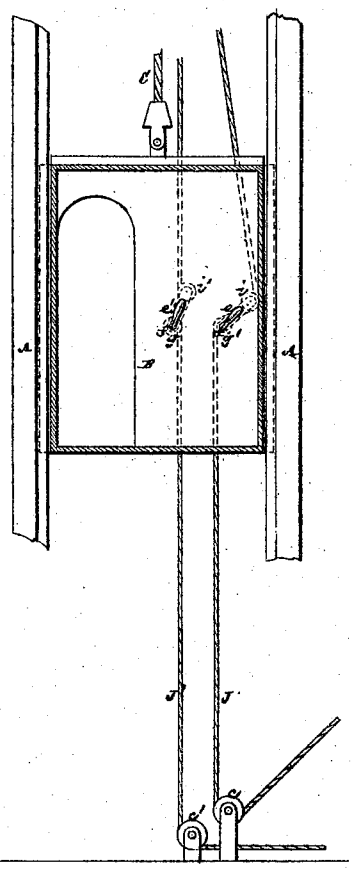
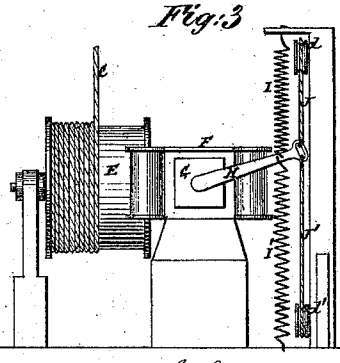


Fig: 3



Witnesses:

Thos Hamer

Ferd Busch

Charles R. Otis

per Munn & Allen

Attorneys

AM. PHOTO-LITHOGRAPHIC CO. N.Y. (OSBORNE'S PROCESS.)

UNITED STATES PATENT OFFICE.

CHARLES R. OTIS, OF YONKERS, NEW YORK.

IMPROVEMENT IN ELEVATORS.

Specification forming part of Letters Patent No. **131,896**, dated October 1, 1872.

CASE E.

To all whom it may concern:

Be it known that I, CHARLES R. OTIS, of Yonkers, in the county of Westchester and State of New York, have invented a new and useful Improvement in Passenger and other Elevators Operated by Steam; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing forming part of this specification, and in which—

Figure 1 represents a side elevation of a steam-elevator with my improvement applied; Fig. 2, a sectional elevation of the same, in part, looking in an opposite direction to Fig. 1; and Fig. 3, an end elevation, showing the operating-engine and winding-drum.

Similar letters of reference indicate corresponding parts throughout the several figures of the drawing.

This invention relates to steam-elevators for use in hotels and other buildings or places; and consists in a novel application of means, including certain combinations and arrangements of parts or devices whereby the engine, which is a reversing one to operate the car or platform both in its ascent and descent, is controlled or set and kept in motion in either direction by the operator within the car holding on to a rope or chain, or ropes or chains, preferably arranged on the outside of the car, up within or near the hoistway, and connected with the valve by which the engine is controlled or reversed, and so that, on said operator releasing hold of such controlling rope or chain, the valve of the engine is automatically closed and the engine and winding-drum consequently arrested in their motion. By these means not only is the engine under control of the operator within the car, but, in case of any obstruction being interposed to stop or interfere with the proper motion of the car, the operator is at liberty to follow his natural impulse of releasing hold of the controlling rope or chain for the purpose of ascertaining the cause of the impediment without risk as to the continued winding or unwinding of the hoisting-rope, inasmuch as such action on part of the operator causes the winding-drum to be automatically stopped, and hence the hoisting-rope is relieved from excessive strain, as in winding, and from forming slack in unwinding, thereby reducing the liability to or obviating accident.

In the accompanying drawing, A A are the guides or uprights of the hoist-way; B, the ascending and descending car therein; C, the hoisting-rope, passing over a pulley, D, and down to the winding-drum E, which is driven by a reversing double-cylinder engine, F, or any other engine capable of being reversed. G is the valve-chest containing the valve by which the engine F is stopped and started and its motion controlled in a given direction and reversed when required, according to the position assumed by a handle or lever, H, attached to the valve. Thus the handle or lever H will here, for convenience' sake, or by way of illustration—for the action may be varied—be assumed to occupy a horizontal position when the valve is adjusted to arrest the motion of the engine in both directions of its travel, and accordingly as said lever is raised or lowered from such position, and according to the extent to which it is raised or lowered, will the engine be run slow or fast in either the one direction or the other. This in itself is no new application of the valve to steam hoisting-machines. Said valve, however, is here arranged so that the position which it naturally assumes when not acted upon by outside influence is a closed one. This may be accomplished in various ways and either by weights or springs or by steam or compressed air; but it will suffice here to illustrate the same as effected by two springs, I I′, arranged so as to pull in opposite directions on the lever H and serving to hold said lever in its closed position of the valve. Arranged up the hoistway, and preferably outside of the car, so as to avoid passing through the latter, and being interfered with by it, are a pair of ropes or chains, J J′, fastened to the upper portion of the hoistway at *b b′* and passing below, round, or over and under pulleys *c d* and *c′ d′*, respectively, and attached in a reverse manner—that is, the one above and the other below—to the lever H, so that, accordingly as pull is made on the lever H by the one rope or the other, will said lever be diverted from its normal position of closing the valve to an opening position of the valve, to run the

engine in either direction and at any desired speed, according to the extent of pull or hold on the controlling-rope J or J′, and when hold is released from such rope the valve closes by the action of the spring or springs I I′. The hold on either of these ropes J J′, to control the motion of the car, is made by the operator within the latter in a running manner, as, for instance, by handles *e e′* attached to pivots *f f′* passing through the sides of the car and having attached to their outer ends pulleys *g g′* and arms *h h′*, which carry pulleys *i i′*, arranged on the reverse side of the ropes J J′, they respectively control, to that on which the pulleys *g g′* lie, so that, by suitably turning and holding on to either handle *e* or *e′*, the rope J or J′ will be deflected or bent and pulled upon to adjust and hold the valve-lever H in its required position for running the engine, and at the same time the car, by the pulleys *g h* or *g′ h′*, have a free running motion up or down the ropes J J′, the one of which latter controls the car in the one direction and the other in the other. On the operator releasing hold of the handle *e e′*, then the spring or springs I I′ straighten the rope such handle controls, and the valve is automatically adjusted to its normal or closing position, which stops the engine and winding-drum. Springs may, if desired, be applied to the devices handled by the operator to control the ropes, for the purpose of quickly returning said devices, when released, to their normal position and for controlling the ropes or connections by which the engine-valve is opened and reversed by the operator within the car and the valve caused to automatically close itself on said operator releasing hold of the ropes or other connections.

What is here claimed, and desired to be secured by Letters Patent, is—

1. The combination of the ropes or chains J J′, arranged on the outside of the car, with the valve which controls the engine that operates the winding-drum, substantially as specified.

2. The combination, with the ropes or chains by which the engine-valve is controlled, of means or devices capable of a running hold upon said ropes or chains, and arranged so as to be under the control of the operator within the car, for the purpose of actuating the valve, essentially as described.

3. The combination of a self-closing valve, operating to start, stop, and reverse the engine, with the ropes or chains by which said valve is controlled, and means or devices having a running hold upon the ropes or chains and under the control of the operator within the car, for the purpose of starting, stopping, and reversing the engine, and whereby, on releasing hold of the same, the valve is automatically closed, substantially as and for the purposes herein set forth.

CHAS. R. OTIS.

Witnesses:
JAS. HENDERSON,
EDWARD J. FENNELL.