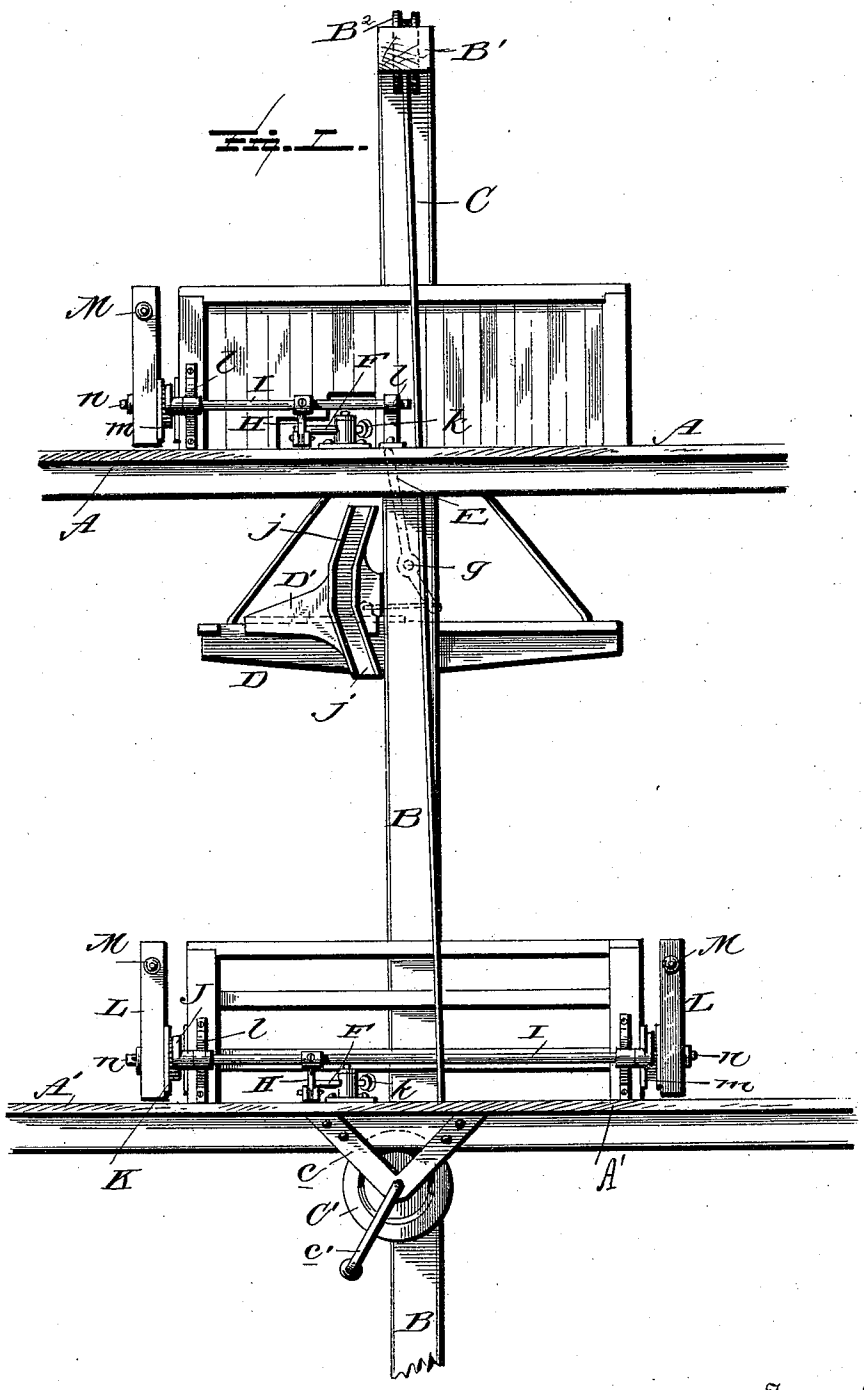
(No Model.) 2 Sheets—Sheet 1.

G. L. GILBERT.

ELEVATOR.

No. 456,194. Patented July 21, 1891.



Witnesses
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(No Model.) 2 Sheets—Sheet 2.

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Fig. 2.

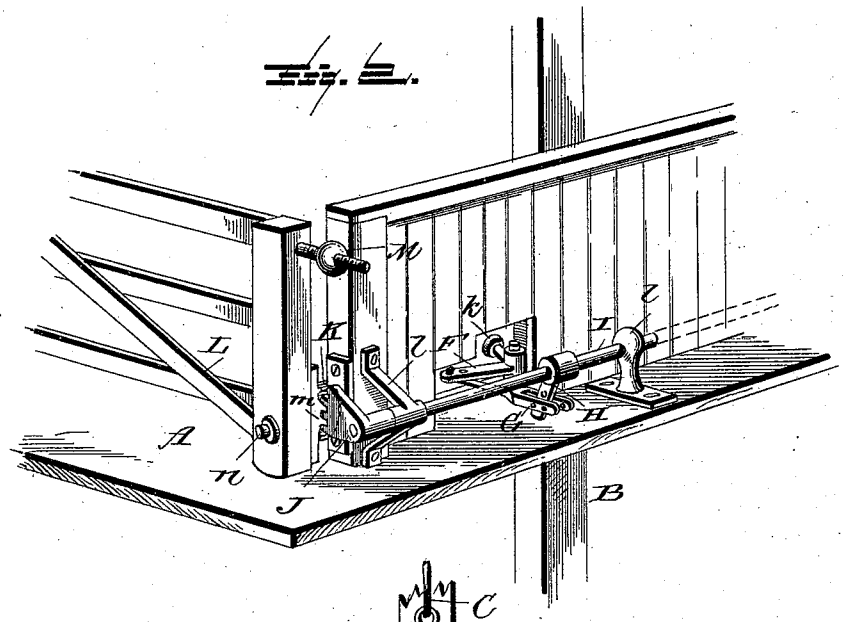


Fig. 3.

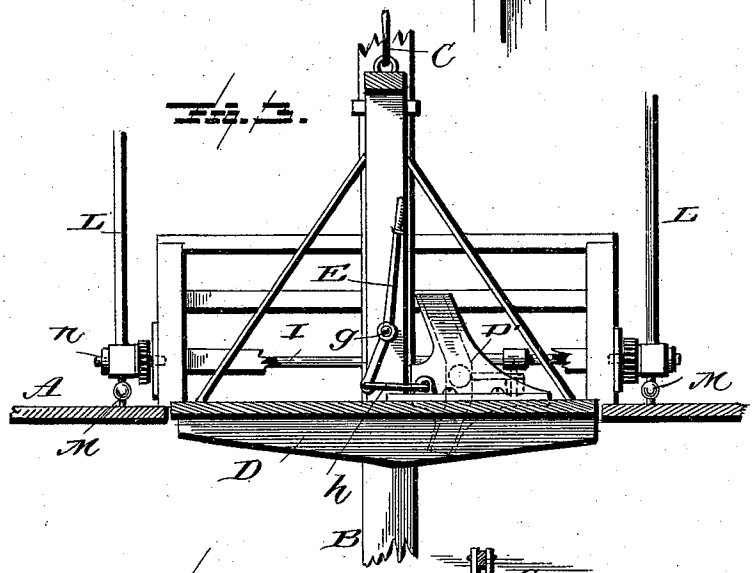
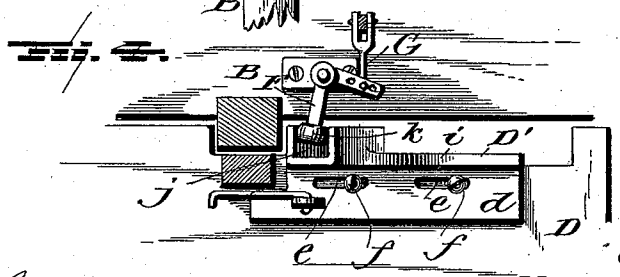


Fig. 4.



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UNITED STATES PATENT OFFICE.

GIDEON L. GILBERT, OF DAYTON, OHIO.

ELEVATOR.

SPECIFICATION forming part of Letters Patent No. 456,194, dated July 21, 1891.

Application filed March 27, 1891. Serial No. 386,629. (No model.)

To all whom it may concern:

Be it known that I, GIDEON L. GILBERT, a citizen of the United States, residing at Dayton, in the county of Montgomery and State of Ohio, have invented certain new and useful Improvements in Elevators; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters of reference marked thereon.

This invention relates to certain new and useful improvements in elevators; and it has for its immediate object to provide a simple, cheap, and efficient automatic mechanism for operating the gate or gates for the purpose of preventing injury and loss of life by accidents caused by carelessness in leaving the gates open. I provide novel mechanism for so actuating the gates by the movement of the car that the said gates will be opened as the platform approaches a landing, opening the gates wide when the platform is at the landing and closing them as the car moves away from the said landing. I may operate two gates, one upon each side of the platform, or only one, as the circumstances may require. I provide the platform or carriage with a double cam, which serves to operate the gates both in the upward and downward movements of the car, and arrange this cam so that it may be thrown out of operation when it is desired to run the car without operating the gates. A bell-crank lever is provided with one arm in the path of the said cam, the other end being so connected with mechanism as to throw the gate from a horizontal to a vertical position. The gate cannot remain open, except when the platform is at the landing. At all other times it must remain closed. Thus no attention on the part of the operator is necessary.

Other objects and advantages of the invention will hereinafter appear, and the novel features thereof will be specifically defined by the appended claims.

The invention is clearly illustrated in the accompanying drawings, which, with the letters of reference marked thereon, form a part of this specification, and in which—

Figure 1 is a view at right angles to the gates, showing two floors of a building equipped with my improvements, the parts being shown in side elevation with the car between the floors. Fig. 2 is a perspective detail showing the mechanism which actuates the gate through the medium of the cam. Fig. 3 is a vertical section showing the car at a landing and the gates thrown up. Fig. 4 is a detail in top plan showing the cam engaging with the arm of the bell-crank lever.

Like letters of reference indicate like parts throughout the several views.

Referring now to the details of the drawings by letter, A designates a floor of a building, and A′ another. Of course, although I have chosen to illustrate the invention in connection with but two floors, it will be understood that the same construction may be employed in a building fourteen stories high, if desired; but two are considered sufficient for the purpose of illustrating the invention.

B designates the uprights at opposite sides of the shaft and which serve as guides for the car. At the upper ends they are connected by the cross-piece B′ supporting the pulley B^2 over which the hoisting-cord passes. This hoisting-cord C is connected at one end with the car, as seen best in Fig. 3, and its other end secured to and designed to be wound upon the drum C′, which is suitably journaled in supports, as *c*, (shown in Fig. 1,) and provided with suitable crank-handle *c′*, as shown, by the turning of which the elevator may be raised and lowered as desired.

The novel features of the present invention may be employed with elevators raised and lowered by other means equally as well, and therefore I do not wish to restrict myself to its employment in connection with the form of hoisting means shown.

The car D may be of any of the known or preferred forms, being suitably braced, as shown. At one corner it has secured thereto adjustably a casting D′, which has a horizontal portion *d*, which is provided with elongated slots *e*, through which pass the screws *f*, as seen best in Fig. 4, allowing of longitudinal movement of the casting when desired, as will be readily understood from Fig. 4. A lever E is provided, pivoted at *g* to the upright of the car and connected with the said casting in any suitable manner, as by the rod or link *h*, as seen in Fig. 3, the said lever being under the control of the operator in the car, and by

which the plate may be moved to throw the cam portion of the casting into or out of operative position. This casting is formed with a vertical portion *i*, substantially flush with the outer edge of the car and formed with a double cam-groove *j*, extended beyond the edge of the elevator, as seen in Fig. 4. At each landing I pivot on a vertical pivot a bell-crank lever F, as seen best in Figs. 2 and 4, the inner arm of the lever projecting in the path of the double cam, as seen in Fig. 4, and preferably provided with a roller *k* to lessen the frictional contact. To the other arm of the bell-crank lever is pivotally and adjustably connected the arm G, the outer portion of which is bifurcated, as seen in Fig. 2, and between the bifurcations of which is adjustably pivoted the crank-arm H, which is fast upon the horizontal shaft I, as seen best in Fig. 2, the said shaft being journaled in suitable bearings *l* and carrying at one or both ends a segmental gear J, as shown in Fig. 2. This gear meshes with a gear-wheel K, carried by a plate *m*, fast on the inner face of the gate L, which is pivoted at its lower edge on the shaft or pivot *n*, as seen in Fig. 2.

The gate may be of any known or preferred form of construction, and is provided near its upper edge at the pivot end with a weighted arm M, which serves as a counter-balance to aid in moving it from a horizontal to a vertical position, and also as a rest and stop therefor to limit its movement, as seen in Fig. 3.

The operation will be readily understood. When the casting D′ is thrown out by its lever so as to be out of the path of the bell-crank lever, the car moves up and down without operating the gates; but when the casting is thrown in so as to be in the path of the said lever as the car approaches a landing the cam engages the inner arm of the bell-crank lever and causes it to move on its pivot, rocking the shaft I, and through the medium of the segmental gear engaging the gear on the gate, causing the gate to turn on its pivot into a vertical position, as seen in Fig. 3. As the car proceeds on its course the roller of the bell-crank lever riding in the cam-groove moves in the other direction and the gates are thrown down. The parts are so proportioned that the gates are full open when the car is exactly at the landing, and the moment the car leaves the landing either going up or down the gates begin to move back to their closed position. All this is automatic, requiring no attention on the part of the operator.

The mechanism is simple, very efficient for the purpose for which it is designed, and can be readily applied to elevators now in use.

Various modifications in detail may be resorted to without departing from the spirit of the invention or sacrificing any of its advantages.

What I claim as new is—

1. The combination, with the car and the pivoted gate, of the casting on the car, having a double cam-groove, the gear moving with the pivot of the gate, the rock-shaft parallel with the gate-pivot, the segmental gear on one end of the rock-shaft, the crank-arm on the shaft, the arm G, pivotally connected with the crank-arm, and the bell-crank lever pivotally connected at one end with the arm G and at the other end carrying a roller working in the cam-groove of the casting, substantially as specified.

2. The combination, with the car and the gate, of the pivot of the gate, carrying a plate *m*, secured to the inner face of the gate, and formed with gear K, moving with the pivot, the rock-shaft, the segmental gear thereon, the cam on the car, and intermediate connections, substantially as specified, between the rock-shaft and the cam, as set forth.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

GIDEON L. GILBERT.

Witnesses:
J. C. PATTERSON,
B. S. MURPHY.