

(No Model.)

2 Sheets—Sheet 1.

W. P. KIDDER.
SAFETY DEVICE FOR ELEVATORS.

No. 540,169.

Patented May 28, 1895.

Fig. 1.

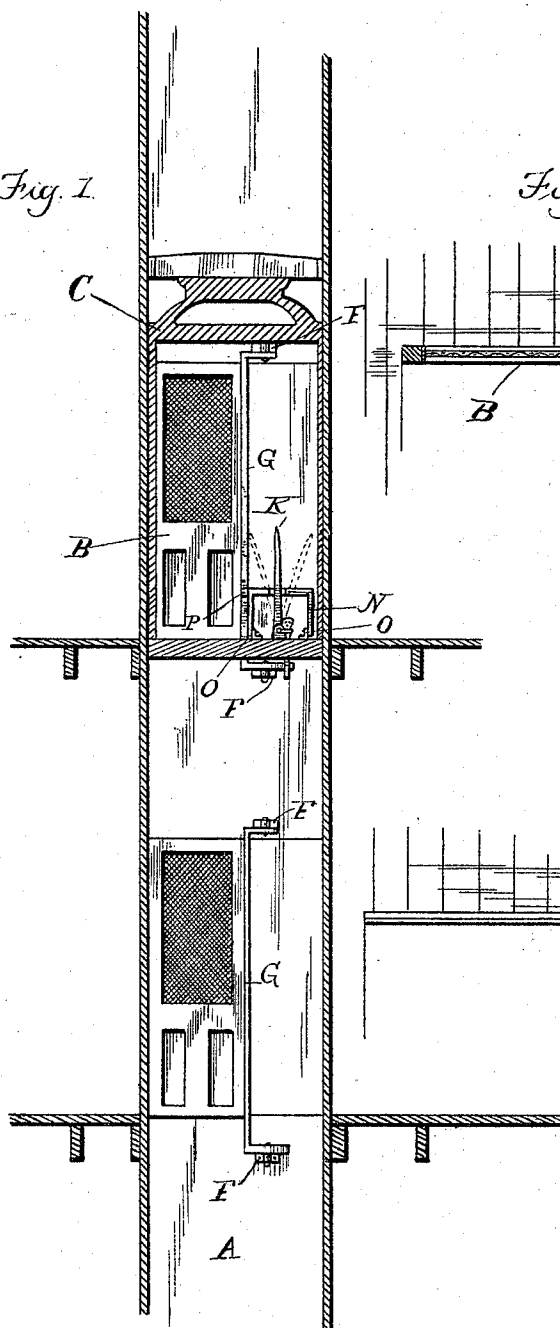


Fig. 2.

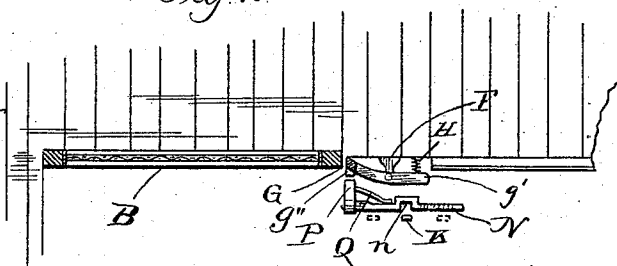
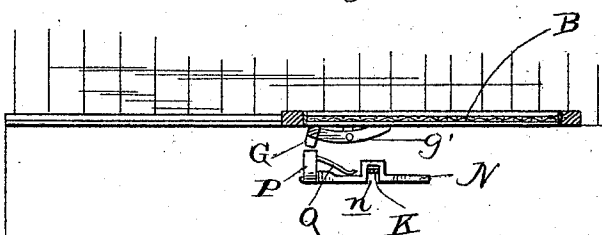


Fig. 3.



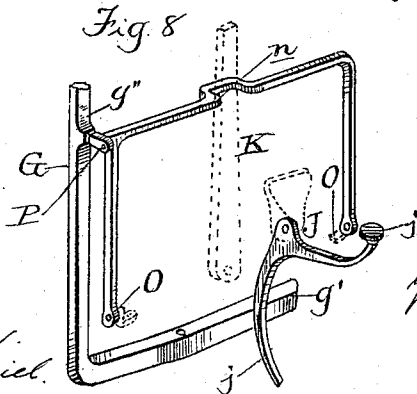
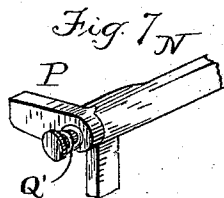
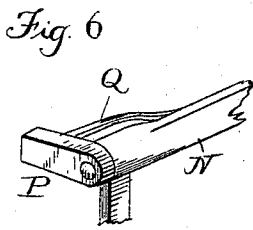
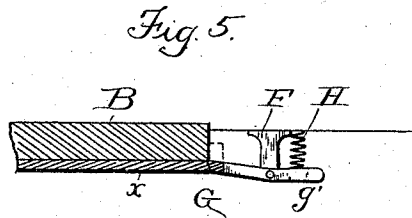
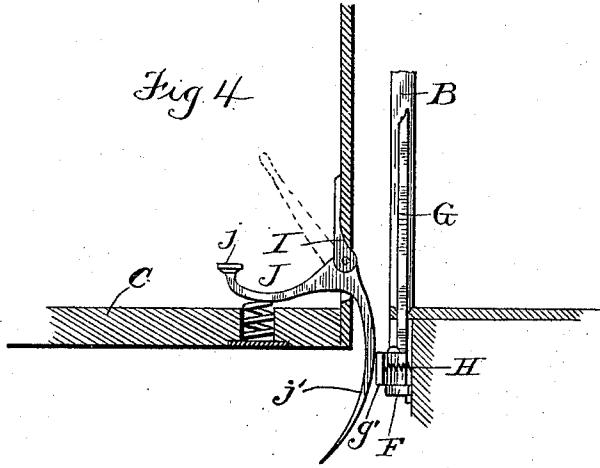
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UNITED STATES PATENT OFFICE.

WELLINGTON P. KIDDER, OF BOSTON, MASSACHUSETTS.

SAFETY DEVICE FOR ELEVATORS.

SPECIFICATION forming part of Letters Patent No. 540,169, dated May 28, 1895.

Original application filed August 24, 1893, Serial No. 483,952. Divided and this application filed November 27, 1893, Serial No. 492,140. (No model.)

To all whom it may concern:

Be it known that I, WELLINGTON P. KIDDER, a citizen of the United States, residing at Boston, in the county of Suffolk, and State of Massachusetts, have invented certain new and useful Improvements in Safety Devices for Elevators, of which the following is a specification, reference being had therein to the accompanying drawings.

This improvement is a modification of the invention shown and claimed in my application, Serial No. 483,952, filed August 24, 1893, (patented July 3, 1894, No. 522,297,) and is filed as a division of said application. It is intended to show the combination of a lever controller with a swinging bar in such a manner that the door is locked when the car is moving and the lever controller is locked when the door is open.

To these ends the invention consists in the construction, arrangement, and combination of parts hereinafter more particularly described and then definitely claimed.

In the accompanying drawings, Figure 1 is a vertical section of part of an elevator with a lever-controller and having the front part of the car removed, the better to show the parts. Fig. 2 is a horizontal section of the same with the well-door closed. Fig. 3 is a similar section with the well-door open. Fig. 4 is a vertical section on a larger scale, with parts omitted to more clearly illustrate the parts shown. Fig. 5 shows a modification which will be further described hereinafter. Figs. 6, 7, and 8 are details which will be more fully explained in the following description.

Referring now to the details of the drawings by letter—A represents the well of the elevator, B the door thereof, and C the car intended to be connected with the hoisting machinery in the usual manner, but as said hoisting machinery and the rope connecting the operating lever K with the device for setting the hoisting machinery in motion forms no part of my invention and is of the common and well-known form, I have not shown the same, it being unnecessary to the full understanding of my invention.

Pivoted to brackets F, fast to the wall of the well, is a bar G, having at some convenient part (preferably the bottom) an extension

g' , behind which is a spiral spring H, tending to force said bar into the path the door travels when it is being opened, or into the path of some attachment thereon.

Pivoted to a bracket I, attached to the side of the car or to any convenient part thereof, is a lever J, something of the shape of what is called a "bell-crank lever," having a curved arm j projecting outside the car and another arm inside the car, preferably terminating in a foot-piece or treadle j' . Instead of the treadle-lever shown in full lines, the lever may have an extension upward inside the car, as shown in dotted lines in Fig. 4, to be used as a hand-lever.

Mounted in the car in any suitable way is the ordinary controlling lever K, which is arranged to move in either direction, as shown in dotted lines. At the back of this is a swinging frame N, pivoted to the brackets O at or near the floor of the car, which frame has a locking-bar at the top having an offset or recess n opposite the place the lever K occupies when the car is at rest.

Pivoted to the edge of the frame N is a tappet P, and at Q is a spring which normally holds said tappet in a horizontal position, but will allow it to swing to a vertical position, either upward or downward, and then return to its normal position. On the bar G is a projection g'' , which is so proportioned that it nearly touches the projecting end of the tappet P.

The operation of my improvement is as follows: When the car is in motion, the bar G is behind the edge of the door, and it cannot then be opened because the foot-lever is not in position to operate on the said bar G, and, moreover, the lever K will prevent the frame N being moved sufficiently to permit bar G to swing away from the edge of the door, but when the car is in the proper position and at rest, the lever will be vertical, and then, when the operator presses his foot upon the treadle J, the bar G will swing out of the path of the door toward the car, which causes the projection g on the bar G to act on the tappet P and push the frame inward, causing the walls of the recess on the frame N to engage with the lever K, thus locking the car stationary. The door can now be opened and as long as it is

opened, the door keeps the bar G stationary, maintaining the engagement of the frame with the lever K until the door has been closed, when the bar G will be pushed back by the spring H, thus securing the door and then the frame N will fall back against the side of the car, leaving the lever in a condition to be moved to start the car.

In case the door should be opened by any extraordinary means at the time the car is passing the door, (which seems almost impossible with this arrangement,) the tappet P would come in contact with the projection on the bar G and if said tappet were fixedly connected to the frame, breakage would result, and for this reason I pivot the tappet to the frame, and provide the spring Q which will securely hold the tappet in its normal horizontal position, but will allow it to yield so as to occupy a vertical position, and thus pass the projection on the bar G without damage resulting.

I prefer to so arrange the parts that the bar G cannot be operated directly by hand, and that it shall always be moved by the lever J, either by the use of the foot on the treadle, or by the hand on the lever shown in dotted lines, for then the door cannot be opened unless the car is at rest and in the proper position opposite the door to be opened, but if it is preferred by others, the entrance to the car may be made wide enough to allow of the operator moving the bar G by hand; or an opening may be made in the side of the car to admit of this being done, and thus the lever H may be dispensed with.

In some cases I may secure the tappet in its position by a friction device, which will yield and allow the tappet to swing upward or downward, as the case may be, in case it should meet with an obstruction. Fig. 10 shows such a device, in which the tappet is secured to the frame N by a bolt having a spring Q' between its head and the tappet. The latter has a projection which fits into a corresponding recess in the frame N, and the spring will thus always tend to hold the tappet horizontally, but the spring would yield and allow the tappet to yield, in case it met with an obstruction.

Instead of swinging the bar behind the edge of the door, I may sometimes attach a plate or bar x, (see Fig. 5) to the door, and swing

the bar behind such plate or bar, and where, in the following claims, I refer to a door I mean to be understood as considering such plate or bar as part of the door.

I consider it important that the pivots, on which the door-locking bar turns, shall be arranged near the path of the door, for then the door would remain fastened even if there were no spring or other means used to keep said locking-bar in its locking position.

Instead of the major part of the bar G passing into the path of the door, as shown in most of the figures of the drawings, I may make a projecting lug on the rear side of the bar (as indicated in dotted lines in Fig. 5) pass into the path of the door or the plate or bar secured to it. This lug may be made integral with the bar or attached thereto, and I wish to be understood as considering all three of these forms, viz: the bar without the lug, the bar with such lug formed thereon, or a bar having the lug connected thereto, as equivalent constructions in the following claims.

What I claim as new is—

1. In an elevator and in combination with the car, the controlling lever thereof, and a sliding door, a locking-bar movable into the path of the sliding door, a recessed bar adapted to engage with the controlling-lever and the locking-bar when the door is open, substantially as described.

2. In an elevator and in combination with the car, the controlling-lever thereof, the door, and a locking bar for said door, a lever locking-bar co-acting with the controlling-lever and door locking bar, and provided with a tappet yieldingly connected thereto, substantially as and for the purpose set forth.

3. In an elevator and in combination with the car, the controlling-lever thereof, the door, and the locking-bar, a lever locking-bar engaging with the controlling-lever, and having a tappet pivoted thereto, to engage with the door locking-bar, and a spring for holding the same in the operative position, substantially as described.

In testimony whereof I affix my signature, in presence of two witnesses, this 25th day of November, 1893.

WELLINGTON P. KIDDER.

Witnesses:

ALBERT W. BROWN,
JOHN F. NELSON.