

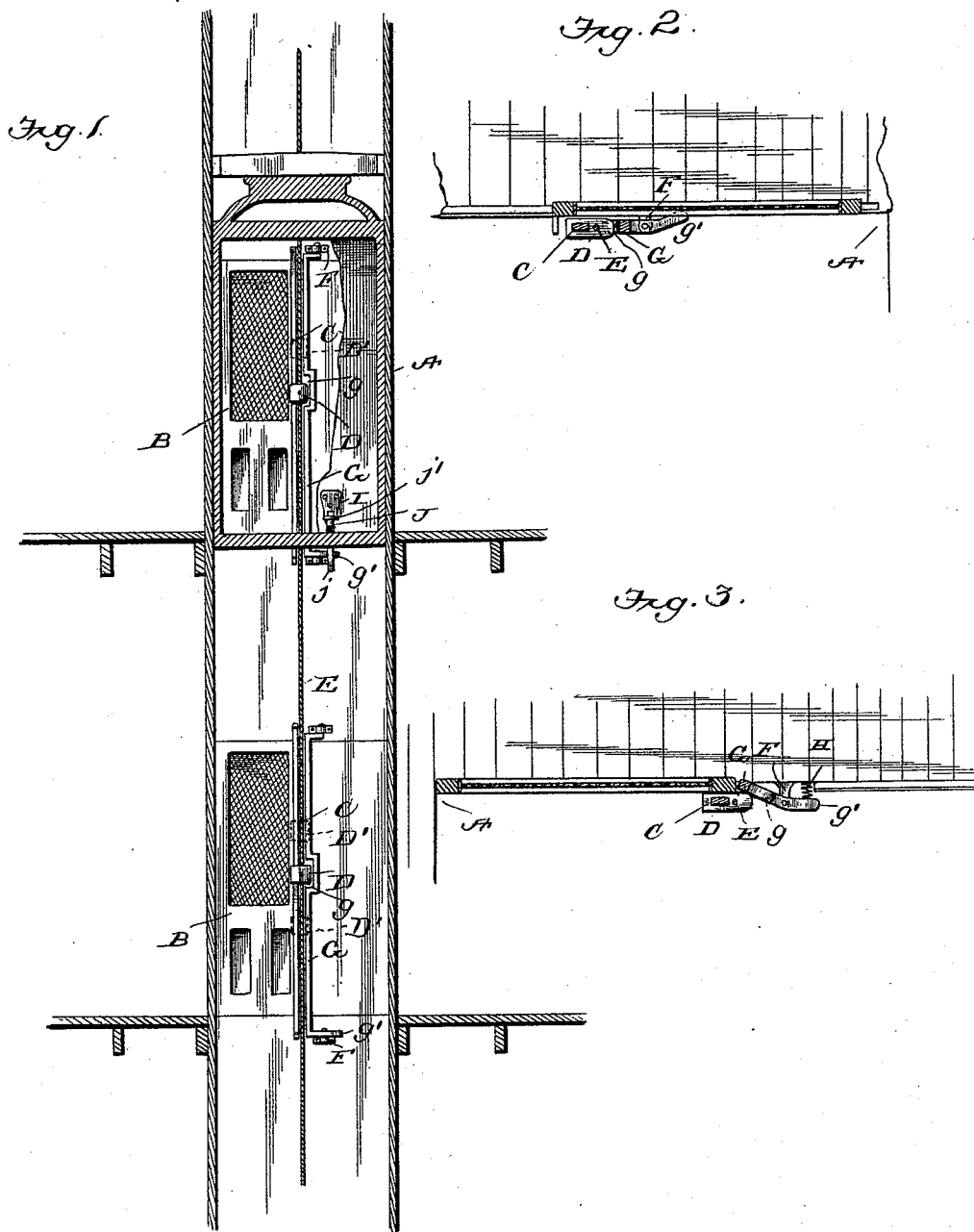
(No Model.)

3 Sheets—Sheet 1.

W. P. KIDDER.
SAFETY DEVICE FOR ELEVATORS.

No. 522,297.

Patented July 3, 1894.



Witnesses

Ph. E. Kidder
Chas. E. Kidder

Inventor
Wellington P. Kidder

By *J. W. Robertson*

Attorney

(No Model.)

3 Sheets—Sheet 2.

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Fig. 4.

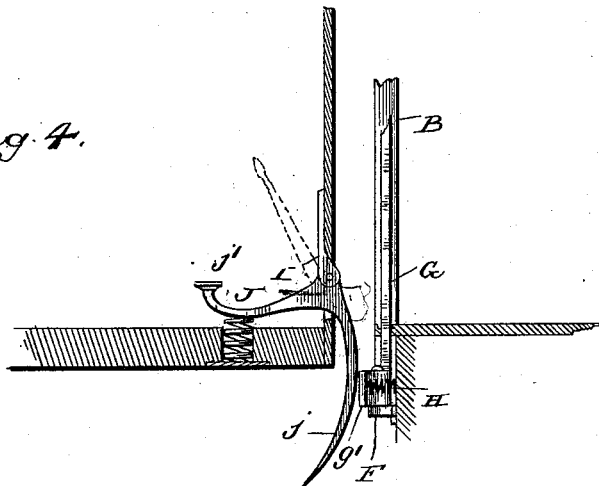


Fig. 8

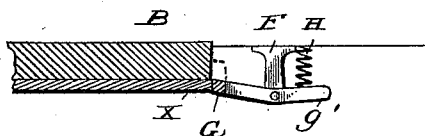


Fig. 9.

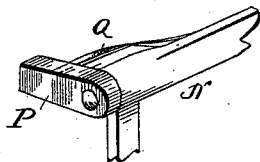


Fig. 10.

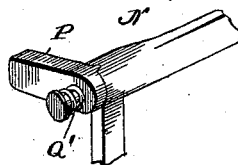
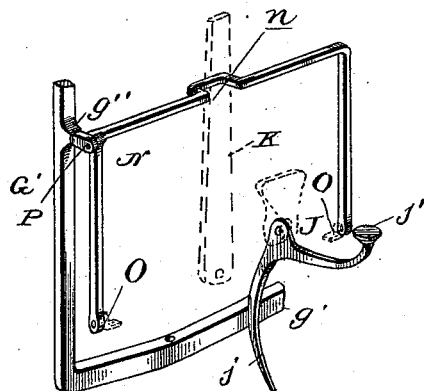


Fig. 11.



Witnesses

John F. Irvine
Thos. C. Robertson.

Inventor
Wellington P. Kidder
By J. W. Robertson
Attorney

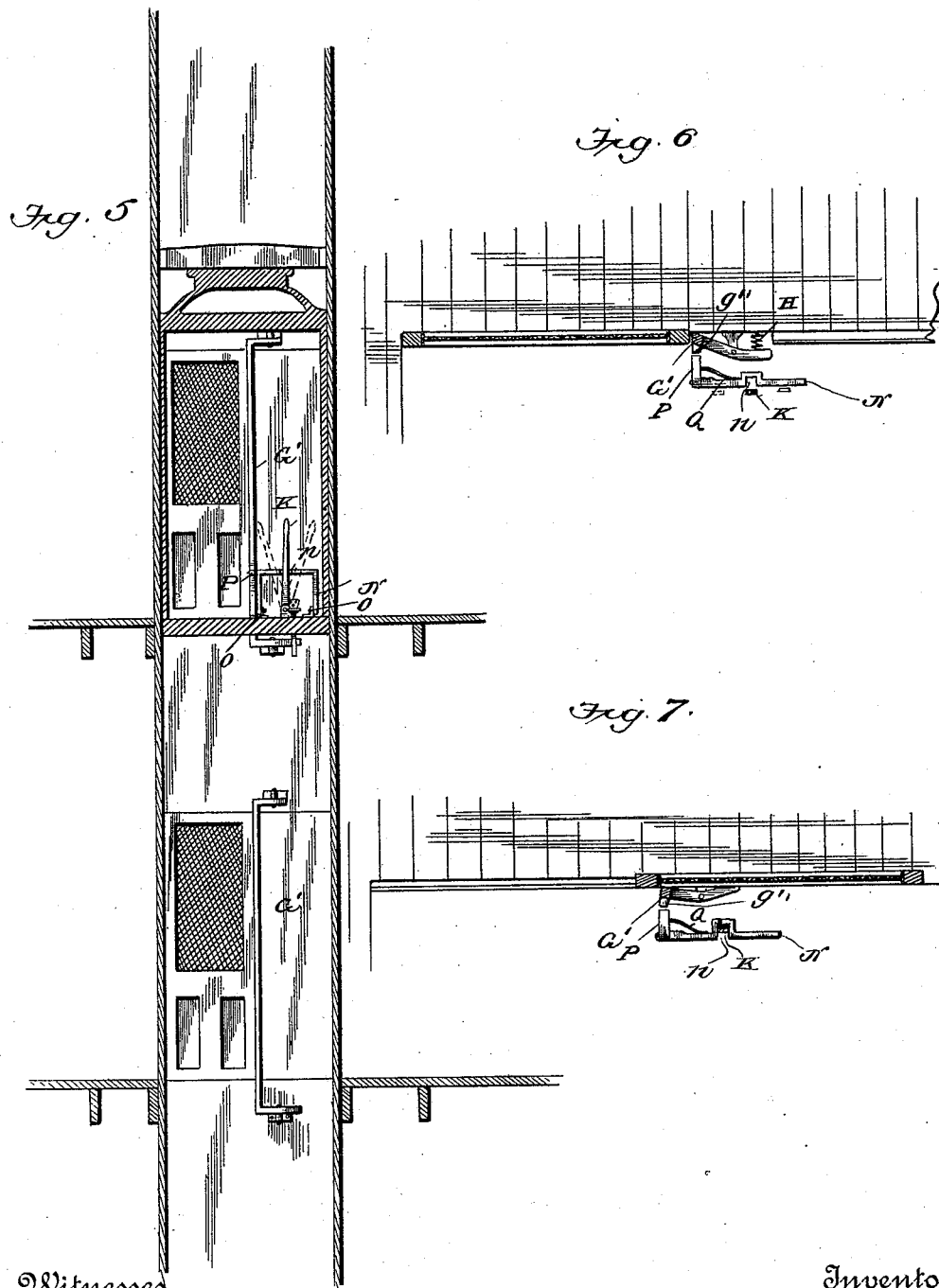
(No Model.)

3 Sheets—Sheet 3.

W. P. KIDDER.
SAFETY DEVICE FOR ELEVATORS.

No. 522,297.

Patented July 3, 1894.



Witnesses

John T. Smith
Thos. S. Robertson

Inventor

Wellington P. Kidder

By his Attorney *J. W. Robertson*

UNITED STATES PATENT OFFICE.

WELLINGTON P. KIDDER, OF BOSTON, MASSACHUSETTS.

SAFETY DEVICE FOR ELEVATORS.

SPECIFICATION forming part of Letters Patent No. 522,297, dated July 3, 1894.

Application filed August 24, 1893. Serial No. 483,952. (No model.)

To all whom it may concern.

Be it known that I, WELLINGTON P. KIDDER, a citizen of the United States of America, 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 in my application, Serial No. 374,327, filed May 15, 1893, for a safety device for a vertically moving gate or gates, and the present invention is designed to provide a somewhat similar device for horizontally sliding doors.

To this end, the invention consists in the construction, arrangement and combinations of parts hereinafter more particularly described and then definitely claimed.

In the accompanying drawings—Figure 1 represents a vertical section of a part of an elevator having an ordinary controlling rope and constructed according to my improvement, with the front of the car removed the better to show the parts. Fig. 2 is a horizontal section of the same, with the well-door open. Fig. 3 is a similar section of the same, with the well-door closed. Fig. 4 is a vertical section, taken at right angles to the others and on a larger scale. Fig. 5 is a vertical section of part of an elevator, with a lever controller, and having the front part of the car removed, as in Fig. 1. Fig. 6 is a horizontal section of the same with the well-door closed. Fig. 7 is a similar section with the well-door open. Fig. 8 shows a modification which will be further described hereinafter. Figs. 9, 10, and 11 are details which will be more fully referred to hereinafter.

Referring now to the details of the drawings by letter—A represents the elevator well; B the door thereof; C a bar fixed at top and bottom to the wall of the well; and D is a stop which is fixed on the controller-rope E and guides the bar C, which rope I shall hereinafter call the controller. Pivoted to brackets F fast to the wall of the well, is a peculiarly shaped bar G, having an offset forming a recess *g*, which bar is arranged in such a manner as to swing in line with the door or with some attachment thereon. At some conven-

ient part of said bar, (preferably at the bottom,) there is an extension *g'*, behind which is a spiral spring H, which tends to force said bar in the path the door travels when it is being opened.

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. The operation of these parts is as follows: Supposing the door to be closed, the bar G will be in line with the door B, as shown in Fig. 3, and cannot be opened until said bar has been swung inward, as shown in Fig. 2. When the car is in motion, the stop D will be in either one of the two positions indicated by dotted lines at D', (or approximately so,) according to the direction the car is traveling, and will thus prevent any movement of the bar G, and consequently the door cannot then be opened, but when the car is at rest, the stop D will be in the position shown in full lines opposite the recess *g*, and the bar G can then be drawn away from behind the edge of the door and the latter opened. After the door is opened, the bar G is held by the door so that it cannot be moved back again, and thus the stop D being held in the recess *g*, the controller is prevented from moving sufficiently to start the car. As soon, however, as the door is shut, the spring H forces the bar back again in line with the door, thus securing it from any movement until the bar G is again swung inward. As soon as the bar has been pushed back by the spring, the stop is no longer held by the walls of the recess, and the controller can then be moved to start the car. When the car is at rest, the bar G can be drawn forward out of the path of the door in different ways, but I prefer to operate the bar by means of the lever J, and preferably by pressing the foot on the treadle *j'*, which, when the car is in the proper position, will cause the curved arm *j* to act upon the extension *g'*, and thus cause the bar G to move toward the car and out of the

path of the door, and then the latter can be opened. I regard this, or the use of the lever shown in dotted lines in Fig. 4, as much the preferable way, because, if the parts are properly proportioned and arranged, the well-door cannot be opened until the car is at the proper position.

In the arrangement shown in Figs. 5, 6 and 7, the lever used in some forms of controlling devices, is locked in position. In this form, a bar G' is used without the offset or recess shown in the previous described construction. Referring now to these figures—K represents the lever ordinarily used for controlling the operating devices, which is arranged to be moved in opposite directions, as shown in dotted lines. At the back of this, is a swinging frame N, pivoted to 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. A foot-lever is employed to move the bar G' , as in the other forms of my invention. The operation of this feature 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 nor-

mal 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 or G' , as the case may be, 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 or 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. 8,) 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. 8) 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.

The construction shown in Figs. 5, 6, 7, 9, 10 and 11 is not specifically claimed herein, as it will form the subject-matter of a division of this application filed November 27, 1893, and bearing the Serial No. 492,140.

What I claim as new is—

1. In an elevator and in combination with the car, the controller thereof and a horizon-

5 tally sliding door, a horizontally movable bar arranged to move into the path of said door after the latter is closed, and to move out of its path to allow the door to open, and a stop
10 connected to the controller and movable parallel to the length of the bar and coacting therewith, substantially as described.

2. In an elevator and in combination with the car, a controller, a stop on said controller
10 and a horizontally sliding door, a bar arranged lengthwise of the door and swinging on vertical pivots arranged, near the path of said door, to swing into the path of the same after it is closed, and to swing out of the door's
15 path to allow it to open, substantially as described.

3. In an elevator and in combination with the car a controller, a stop on said controller, and a sliding door, a bar arranged lengthwise
20 of the door and swinging on pivots arranged near the path of said door and to swing into the path of the same, a spring acting on said bar arranged to normally hold said bar in said path, substantially as described.

25 4. In an elevator and in combination with the car, a controller, a stop on said controller, and a sliding door, a bar arranged lengthwise of the door and swinging into the path of the door, a spring arranged to normally hold the
30 bar in said path, and means for withdrawing said bar from the path of the door, as set forth.

5. In an elevator and in combination with the car a controller, a stop on said controller, and a sliding door, a horizontally swinging
35 bar arranged lengthwise of the door and ar-

ranged to fasten the door closed, and means connected with said car for withdrawing the bar at the will of the operator, as set forth.

6. In an elevator and in combination with the car, a controller a stop on said controller
40 and a sliding door, a swinging bar arranged lengthwise of the door and arranged to fasten the door closed, a spring for automatically moving said bar in one direction as the door closes, and a lever on the car for moving said
45 bar in the opposite direction at the will of the operator, substantially as described.

7. In an elevator and in combination with the car, the controller thereof and a horizontally sliding door, a locking-bar movable into
50 the path of the door when said door is closed, and a stop on the rope engaging the bar to hold it in this position, substantially as described.

8. In an elevator and in combination with 55 the car, the controlling rope and a horizontally sliding door, a bar having a recess and movable into the path of the door when said door is closed, and a stop on the controlling rope engaging the bar to hold it in this posi-
60 tion and passing into the recess when the door is open, substantially as described.

In testimony whereof I affix my signature, in presence of two witnesses, this 21st day of August, 1893.

WELLINGTON P. KIDDER.

Witnesses:

P. B. RESINEUR,
M. P. EVANS.