

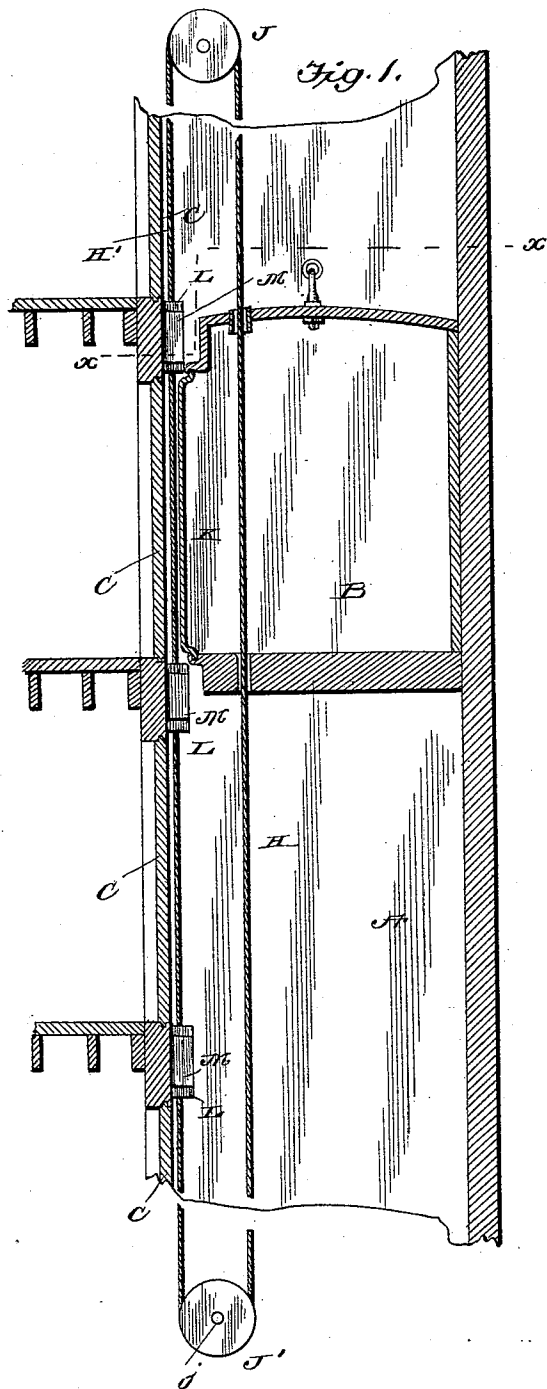
(No Model.)

3 Sheets—Sheet 1.

W. P. KIDDER.
SAFETY DEVICE FOR ELEVATORS.

No. 495,094.

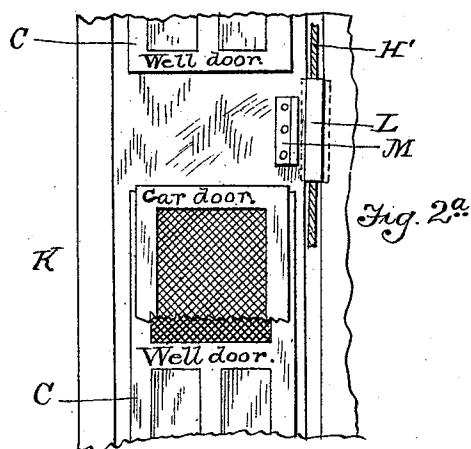
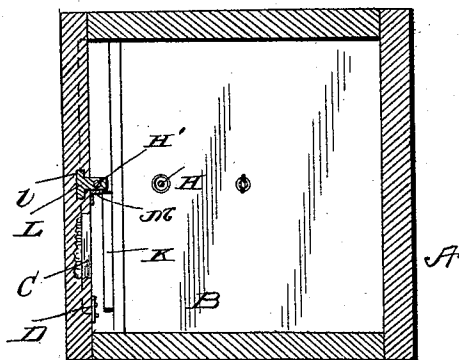
Patented Apr. 11, 1893.



Witnesses

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Fig. 2.



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(No Model.)

3 Sheets—Sheet 2.

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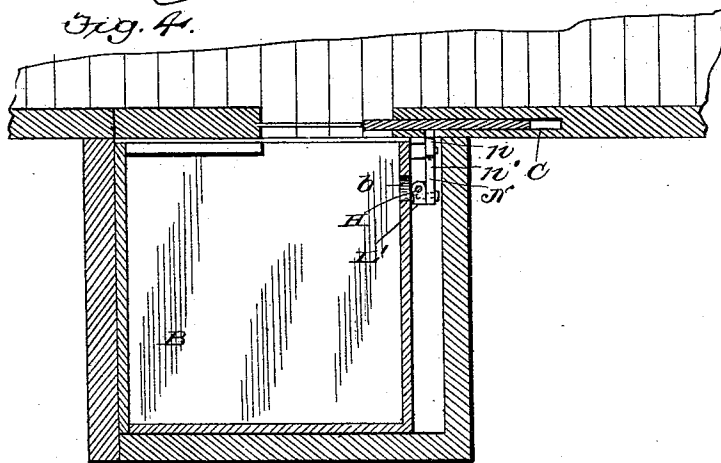
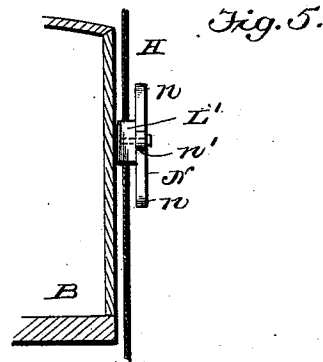
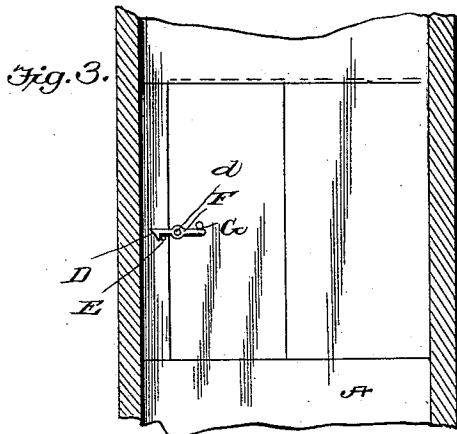


Fig. 7.

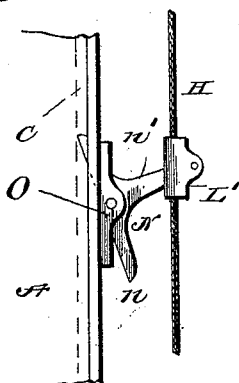
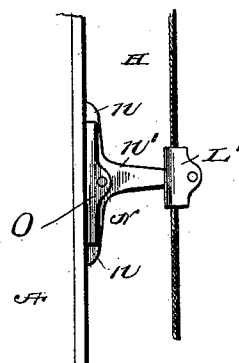


Fig. 6.



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3 Sheets—Sheet 3.

W. P. KIDDER.
SAFETY DEVICE FOR ELEVATORS.

No. 495,094

Patented Apr. 11, 1893.

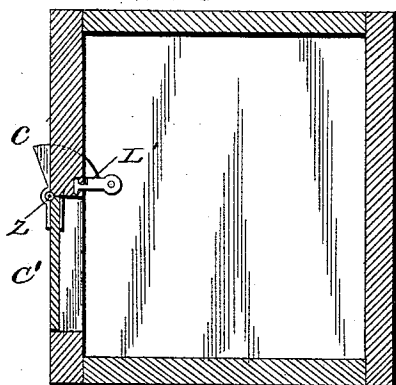


Fig. 8.

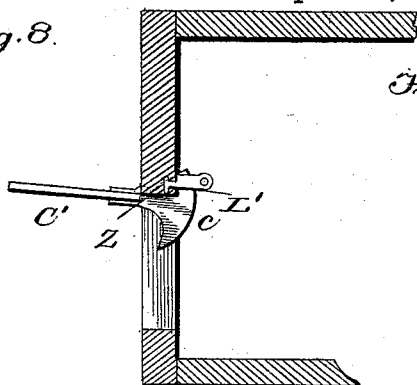


Fig. 9.

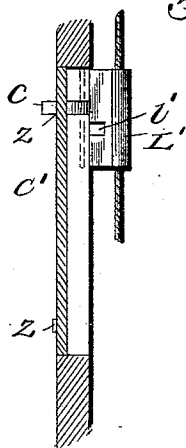


Fig. 10.

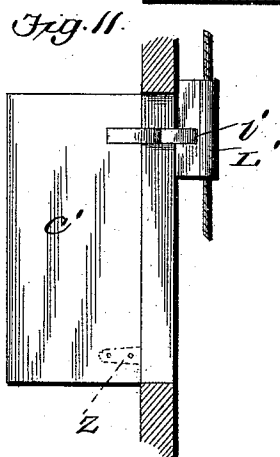


Fig. 11.

Fig. 12.

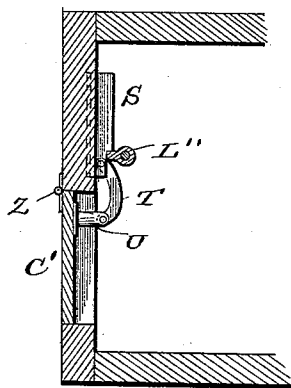


Fig. 13.

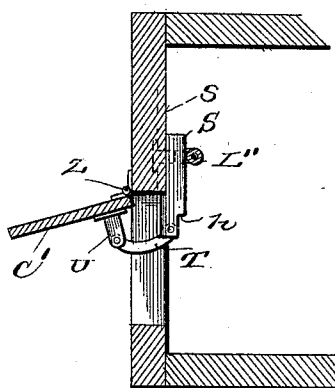
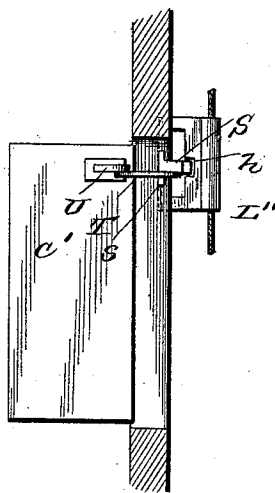


Fig. 14.



Witnesses

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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. 495,094, dated April 11, 1893.

Application filed October 31, 1892. Serial No. 450,529. (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, Suffolk county, 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 designed to provide a means for preventing the opening of the doors of elevator cars and wells except when the car is stationary and in line with a well-door; whereby the many dangerous accidents now caused by starting the car before the door is closed will be prevented, and the invention consists in the peculiar construction, arrangement and combinations of parts hereinafter more particularly described and then definitely claimed.

In the accompanying drawings which show what I now consider the preferable forms of my invention—Figure 1 is a vertical section of an elevator constructed according to my invention. Fig. 2 is a horizontal section of the same on the line *x x* of Fig. 1. Fig. 2^a is a detail showing some of the parts in Fig. 2 in elevation on a larger scale. Fig. 3 is a vertical section of part of an elevator taken at right angles to that shown in Fig. 1. Fig. 4 is a horizontal section of a modification. Fig. 5 is a front view of the door, rope, &c., of the same. Fig. 6 is a side view of the same parts as in Fig. 5. Fig. 7 is a similar view with the parts in a different position. Fig. 8 is a horizontal section of another arrangement in which a swinging well door is employed, showing the door closed. Fig. 9 is a similar view with the door open. Fig. 10 is a vertical section of the same with the door closed. Fig. 11 is a similar view with the door open. Fig. 12 is a horizontal section of another modification with the door closed. Fig. 13 is a similar view with the door open. Fig. 14 is a vertical section also with the door open.

Referring now to the details of the drawings by letter—A represents an elevator well, in which travels the elevator car B, which may be raised and lowered by any suitable means, but as these means form no part of my present invention, it is unnecessary to describe them.

C C represent the doors of the well, each of which may be provided with a hooked latch D, pivoted at *d* and catching over a pin E on the frame surrounding the door-way. It may be provided with a knob F to turn it when desired and a pin G should be set in the door to prevent the hooked end of the latch from falling too low when the door is open.

At H is shown the ordinary operating rope, by which the valve controlling the operating mechanism is moved. This is connected with a companion rope H', in any convenient way, but at present I prefer to connect it as shown in Fig. 1, by making the two ropes of one continuous piece and passing it over a pulley J above and under another one (J') below—the last one being mounted on a shaft *j* that operates the valve. Attached to the companion rope are several blocks or projections L, preferably set between guides *l* on the walls of the well, so as to work freely within said guides. These blocks are so set that when the valve is closed and the car at rest, the upper and lower ones are slightly above and below lines drawn even with the top and bottom of the doors respectively, and the intermediate blocks are set just between lines drawn even with the top of one door and the bottom of the one next above it. With this arrangement, it is evident that when the operating rope is moved to give motion to the car, the companion rope will carry the tops of the blocks L either above a line drawn even with the bottoms of the car and well doors or the bottoms of the blocks below a line drawn even with the tops of said car and well doors, as the case may be, and thus prevent any opening of the same. It will also be seen that when any one of the well doors is open, that said door will be between two of the blocks and thus the operating rope cannot be set in motion until the well door is closed.

As a further security, I set doors K in the elevator car, which project slightly from the car, as shown in Fig. 1; and I attach flanges M to the front walls of the well, so arranged that the door passes by the side of these flanges as the car ascends and descends, but cannot be opened when the car is in motion, as the edge of the door would come in contact with said flanges M. When, however, the car is at rest and on a level with either of the

doors in the elevator well, the door can be readily opened. It will further be seen that the door in the elevator car, when opened, will also act as a stop to prevent the movement of the operating rope, as said door will then be between two of the blocks and thus prevent any motion being given to the rope, so that the car cannot be set in motion when the car door is open.

By the combination of the blocks L and flanges M, the maximum of safety is obtained, because the flanges M prevent the car door being opened when the car is between the well doors, and the blocks L prevent its being opened even when opposite a well door if the car is in motion. If the blocks L did not prevent this, the door might be opened or partially opened when the car was in line with either of the well doors although the car was in motion.

In some cases, I may use the arrangement shown in Figs. 4, 5, 6 and 7. In this case, at each door of the well, a three-armed lever N is pivotally connected at its center to a bracket O attached to the wall of the well, and is also pivotally connected to a block L' on the rope. These blocks may be attached to a companion rope, as in the form shown in Figs. 1, 2 and 3, but I have shown them attached, in this case, to the operating rope, which, in this instance, is preferably arranged outside the car. The latter is provided with an aperture b in its side, through which the operator can pull the rope to stop or start the car. The lever N has two of its arms n n in line with each other, and a third (n') at right angles to the other two.

When the car is at rest, the arms n n of the lever N stand vertically and then the car door can be opened. When opened, the car cannot be started, as the arms n n of the lever will press against the door if any attempt is made to pull the operating rope, so that the latter cannot be moved, nor the car started with the door open. As soon as the door is closed, the rope can be pulled, and then one of the arms n of the lever will pass behind the edge of the door, as shown in Fig. 7, in which position the door cannot be opened until the rope has been again manipulated so as to move the lever into the position shown in Fig. 6, in which case the car is stopped.

In those forms of my invention, shown in Figs. 8 to 14, I employ a moving door C' hinged or pivoted in any convenient manner to the wall of the elevator well, as shown at z.

In Figs. 8 to 11, I attach to the door an arc-shaped bracket c the outer edge of which substantially corresponds to an arc of a circle of which the pintle of the hinge forms the center. In combination with this I employ blocks L' whose outer edges run in guides in the elevator well wall, and have a notch l' of sufficient size to allow of the bracket freely passing through said notch, when the rope is in proper position to keep the car at rest. With

this construction when the door is opened, the bracket will pass through the notch l' and thus prevent the rope being operated until the door is closed; but when the door is closed, the rope can be operated, and as the block descends the notch passes out of line with the bracket and thus the door cannot be opened until the rope is again operated and the car brought to rest.

In Figs. 12, 13 and 14 I employ a slide S running horizontally in suitable guides s in the well wall, which slide is connected by a link T to an arm U attached to the swinging door C'. With this device I employ another series of blocks L'', each of which has a notch l'' which admits of the passage through it of the slide S (as shown in Figs. 13 and 14) when the car is at rest and the door may thus be opened at that time; but when the rope is in such position as to give the car motion, the end of the slide S would come in contact with the block L'' and thus the opening of the door would be prevented.

For convenience in stating my claims, I shall refer to the blocks and levers, generically, as "stops," and mean to include thereby not only the devices shown but any equivalent ones for the same purpose, except in such claims where the devices shown are specifically named.

I have shown different ways of carrying out my improvement, but it is evident that other means may be employed, and I do not, therefore, intend to limit myself to those shown in the drawings. For instance, instead of the rope shown, a wire or rod may be employed to carry the blocks L, and this rod or wire may form part of the operating rope, or be operated by any suitable connection therewith, and I should consider such rod or wire as an equivalent for the rope in the following claims.

What I claim as new is—

1. The combination in an elevator and with the well doors, the car and the valve operating devices, of a series of stops connected with said operating devices and moving simultaneously with the same and adapted to fasten the well doors closed, substantially as described.

2. The combination in an elevator and with the well-doors, the car and operating devices thereof, of a rope connected with said operating devices, and a series of stops on said rope having the double function of keeping the well-doors closed when the car is in motion and preventing the movement of the operating devices when the doors are open, substantially as described.

3. The combination in an elevator and with the car thereof, of doors in both the car and well openings, a rope connected with the operating devices, and stops moved by said rope for fastening both doors in the car and well closed when the car starts, substantially as described.

4. The combination in an elevator and with the car thereof, of doors opening into the well, a rope connected with the operating devices, and a series of stops moved by the rope and adapted to pass behind the edge of the doors when the car is started, substantially as described.

5. The combination in an elevator and with the car thereof, of the door of the car and fixed stops secured to the well arranged to prevent the opening of the car door except when in line with the well doors, substantially as described.

6. The combination in an elevator and with the car the door thereof and the operating rope, of a series of blocks L secured to said rope, arranged to pass behind the edge of the

car door when the rope is moved to operate the car, substantially as described and shown.

7. The combination in an elevator and with the operating rope and car thereof, of a series of blocks L connected to said operating rope, and a door for said car projecting from the body of the car and passing between two of the blocks when opened, whereby the rope is fastened in position while the door is open, substantially as described.

In testimony whereof I affix my signature, in presence of two witnesses, this 25th day of October, 1892.

WELLINGTON P. KIDDER.

Witnesses:

WILLIAM RICHARDSON,
FREDK. S. KEELER.