

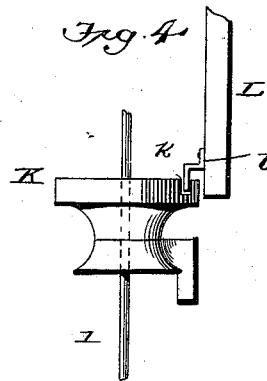
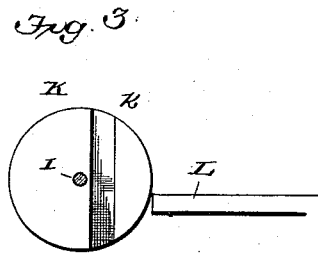
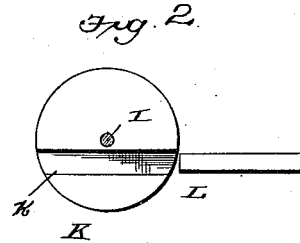
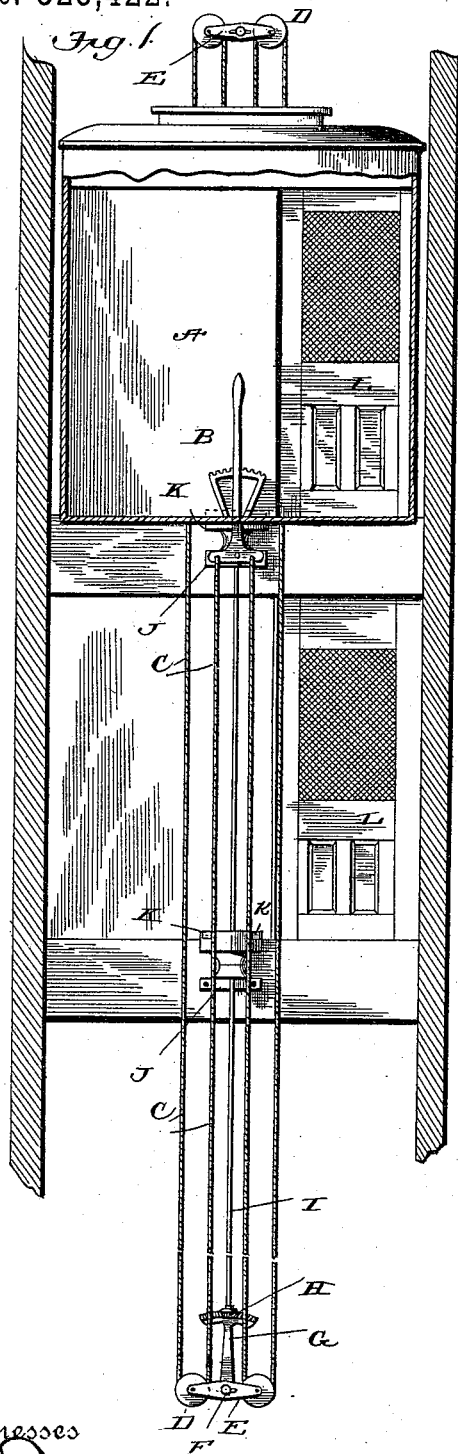
(No Model.)

2 Sheets—Sheet 1.

W. P. KIDDER.
SAFETY DEVICE FOR ELEVATORS.

No. 525,422.

Patented Sept. 4, 1894.



Witnesses
John E. Smith
Thos. E. Robertson.

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

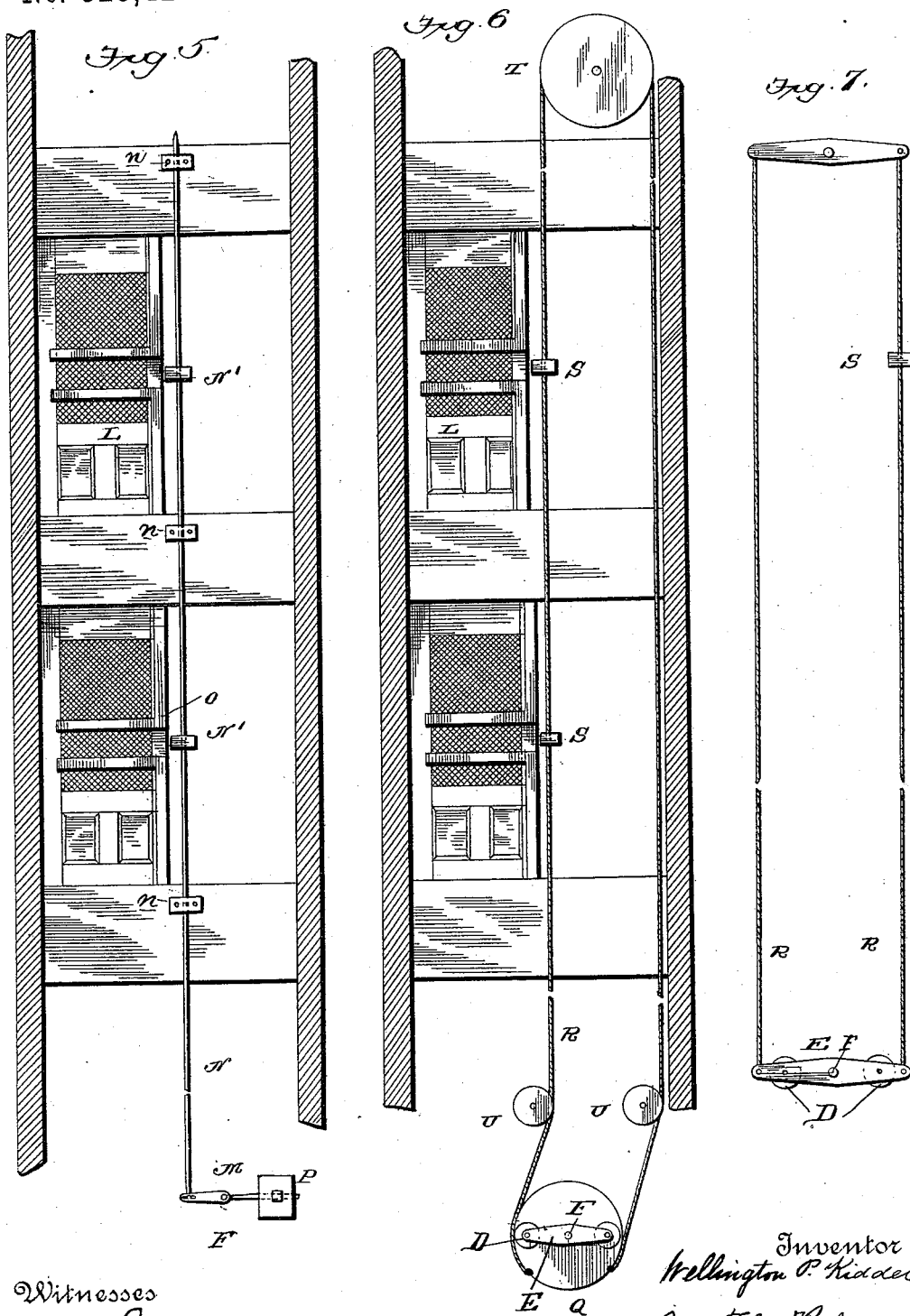
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UNITED STATES PATENT OFFICE.

WELLINGTON P. KIDDER, OF BOSTON, MASSACHUSETTS.

SAFETY DEVICE FOR ELEVATORS.

SPECIFICATION forming part of Letters Patent No. 525,422, dated September 4, 1894.

Application filed May 22, 1893. Serial No. 475,081. (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 relates to safety devices on the principle of that shown in my Patent No. 495,094, dated April 11, 1893, but of different construction, part of which may be used in connection with the stops shown in my aforesaid patent and also with the stops shown in my application for a patent, Serial No. 473,780, filed May 11, 1893, and is designed to use such safety devices in connection with the starting levers or "controllers" sometimes used in lieu of the usual operating rope. To enable me to use my aforesaid safety devices with such starting levers, I have devised a plan of connecting the stops with said starting levers, which is shown in the accompanying drawings, fully described herein, and then definitely claimed at the end hereof.

In the accompanying drawings—Figure 1 is an elevation showing the car, well doors, &c., looking toward the well doors. Fig. 2 is a plan of the same with the stop in position to allow the door to open. Fig. 3 is a plan showing the door locked by the stop. Fig. 4 is a modification showing a different connection between the door and stop. Fig. 5 is a modification with stops such as shown in my application before referred to, but with a rigid stop carrier, instead of the rope as shown in said application. Fig. 6 is an elevation of another modification in which supplemental ropes are employed to carry the stops. Fig. 7 is another modification of the rope stop carrier.

Referring now to the details of the drawings by letter and particularly to Figs. 1 to 3, A represents the car which may be operated in any suitable way, and is provided with the starting lever or controller B, to which is connected the valve operating ropes C, which pass over and under pulleys D mounted on levers E, the lower one of which should be connected with the valve or other device for setting the hoisting apparatus in motion and

is fixedly attached to a shaft F, but as this device is well known and forms no part of my invention, it is unnecessary to further describe the same.

On the shaft F, I secure a toothed segment G, which gears with a pinion H, on a shaft I, mounted in suitable bearings J, and carrying a series of disks K, one for each well-door, each disk having a groove *k* of sufficient width to allow the bottom of a well door L to slide through it.

The operation is as follows: Supposing the car to be in motion, the stop will be in the position shown in Fig. 3, and the well door cannot be opened as its edge would come in contact with the disk K, but as the operator moves the lever B to the position shown in Fig. 1 to stop the car, the segment operates on the pinion H, thus turning the shaft I and causing the stop to assume the position shown in Fig. 2, in which position the well door can be opened. After the door is opened, the lever B is locked fast and thus the shaft I cannot be turned, and so the car cannot be started, as no motion can be given to the lever or levers E, because the shaft I is kept from turning by the door L being in the groove *k*; but when the door is closed, it will have been moved out of the groove *k* and then the shaft I and the gearing connected thereto can be readily moved and the car started.

It is obvious that instead of the bottom of the door being made to pass through the groove, in the disk K, shown in Figs. 1 to 3, a projecting plate *l* such as is shown in Fig. 4 extending along the bottom of the door L may be arranged to pass through a groove in the disk K in the same manner as the door passes through the groove. Such a projecting plate, I should consider as part of the door and where I use the word "door" in the claims at the end of this specification, I mean a door either with or without such a projecting plate as the case may be.

In the modification shown in Fig. 5, I attach to the shaft F a lever M to one end of which is pivoted a rod N running in suitable guides *n* and carrying the rising and falling stops N' which co-act with the door stops O, as shown in my application above referred to or with the doors as shown in my aforesaid Patent No. 495,094. The lever M is preferably

provided with a counterbalance weight P. The rod N may be sufficiently rigid to dispense with the guides for the stops shown in my application, Serial No. 473,780. Instead of using the shaft I or rod N, I may use a rope to carry the stops, as shown in my above mentioned patent and application, in which case I attach to the shaft F a pulley Q (see Fig. 6) to which I connect the ends of the stop rope R having stops S fast thereon, which rope passes around a pulley T at the top of the elevator well. At U are shown guide pulleys to deflect the stop rope in the desired position, to suit the doors, but these will not be required in all cases. Instead of using the pulleys Q T, I may provide the levers E with extensions as shown in Fig. 7, to which I attach ropes R, one of which carries the stop S. Any movement imparted to the starting lever will of course give motion to the levers E, and these in their turn will give motion to the ropes R, and thus the stop S will be moved up and down, or left at the central position as desired. Of course where ropes are used to carry the stops, there should be guides employed to keep them in position, although I have not shown them in the drawings. Wires, rods, straps, chains or other similar equivalents may be used in lieu of the rope R if desired, without departing from the spirit of my invention, and the better to define my invention I shall generally use the term "stop carrier" in lieu of "rope" in my claims.

When referring to the device or devices carrying the stops I do not limit myself to the particular form of operating lever and connections shown, but intend to attach my supplementary stop connection with any and every form of controlling device I may find convenient to use it with, and should consider any such controlling device or controller as an equivalent of the lever and ropes shown in the drawings, except in claims where a lever and rope are specifically referred to.

I am aware that it has been proposed to provide a door with a plate or stop adapted to enter a groove in the bottom of a car, so that said car cannot readily be moved until the door has been closed; but such an arrangement is essentially different from mine, inasmuch as there is nothing in such device to prevent the moving of the rope to start the hoisting machinery, which may therefore be started, with the probability of breaking off the plate or stop from its fastenings or damaging the door or elevator cage, and with the further liability of damage to life or limb after such first-mentioned damage had been accomplished, while with my invention the hoisting machinery cannot be started until the door is closed. I am also aware that a swinging door has been provided with swinging projections adapted to pass through recesses in movable stops, but this is also objectionable, because the door can be used as a lever of considerable power when being swung open, and thus the stops may be broken or

displaced by the great power that can be exerted by the projections on the door coming into contact with the stops, as such projections form the short arm of a lever, while the door forms a long arm thereof, and thus great damage may result from an attempt to open the door when the stops are in position to keep it closed. With my arrangement, on the contrary, the door slides and thus cannot be used as a lever, and any attempt to open the door when the stops are arranged so as to keep it closed would only act to "cant" the door over to the top as it strikes against the stop at the bottom, and thus serve to jam the door fast, so that it could not be opened, and the greater the force exerted under these circumstances, the faster the door would be held closed.

What I claim as new is—

1. The combination in an elevator and with the car and well doors thereof, of a controller for the motive power, a supplemental stop carrier operated by but distinct from said controller, and supplementary stops for fastening the doors closed, mounted on, carried by and moving with said supplemental stop carrier.
2. The combination in an elevator and with the car and the well doors thereof, of a lever mounted on the car, ropes connecting it with the hoisting mechanism, and a stop carrier distinct from the rope and having secured to and moving with it stops for each well door, constructed and arranged to simultaneously lock all of said doors connected to and moving simultaneously with the lever, substantially as described.
3. In an elevator and in combination with the well doors thereof, a turning shaft running from floor to floor, and stops for each door mounted on and operated by said shaft and securely fastening said doors closed, substantially as described.
4. In an elevator and in combination with the well doors thereof, a turning shaft, and stops for each door mounted on, carried and operated thereby and securely fastening said doors closed, substantially as described.
5. In an elevator and in combination with the well doors and the car thereof, a turning shaft running to the different floors and grooved disks mounted thereon, constructed to receive the doors in the grooves when the car is at rest, substantially as described.
6. In an elevator and in combination with the well doors, the car and controller thereof, a stop carrier distinct from the controlling rope running to the different floors, stops for fastening each door securely closed, mounted on and carried by said carrier and intermediate mechanism, substantially as described, between the controller and the stop carrier, as set forth.
7. In an elevator and in combination with a well door, the car and controller thereof, a shaft connected with the controller, a toothed segment on said shaft, a pinion gearing with

such segment, a shaft on which said pinion is mounted, and a stop connected to said shaft, substantially as described.

5 8. In an elevator and in combination with a well door, the car and the starting lever thereof, the ropes C, levers E, shaft F, segment G fast on shaft F, pinion H meshing with said segment, the shaft I carrying said pinion, and the grooved disk K mounted on

said shaft and co-operating with the well door, so substantially as described and shown.

In testimony whereof I affix my signature, in presence of two witnesses, this 19th day of May, 1893.

WELLINGTON P. KIDDER.

Witnesses:

EDWARD S. BEACH,
F. L. GOODHUE.