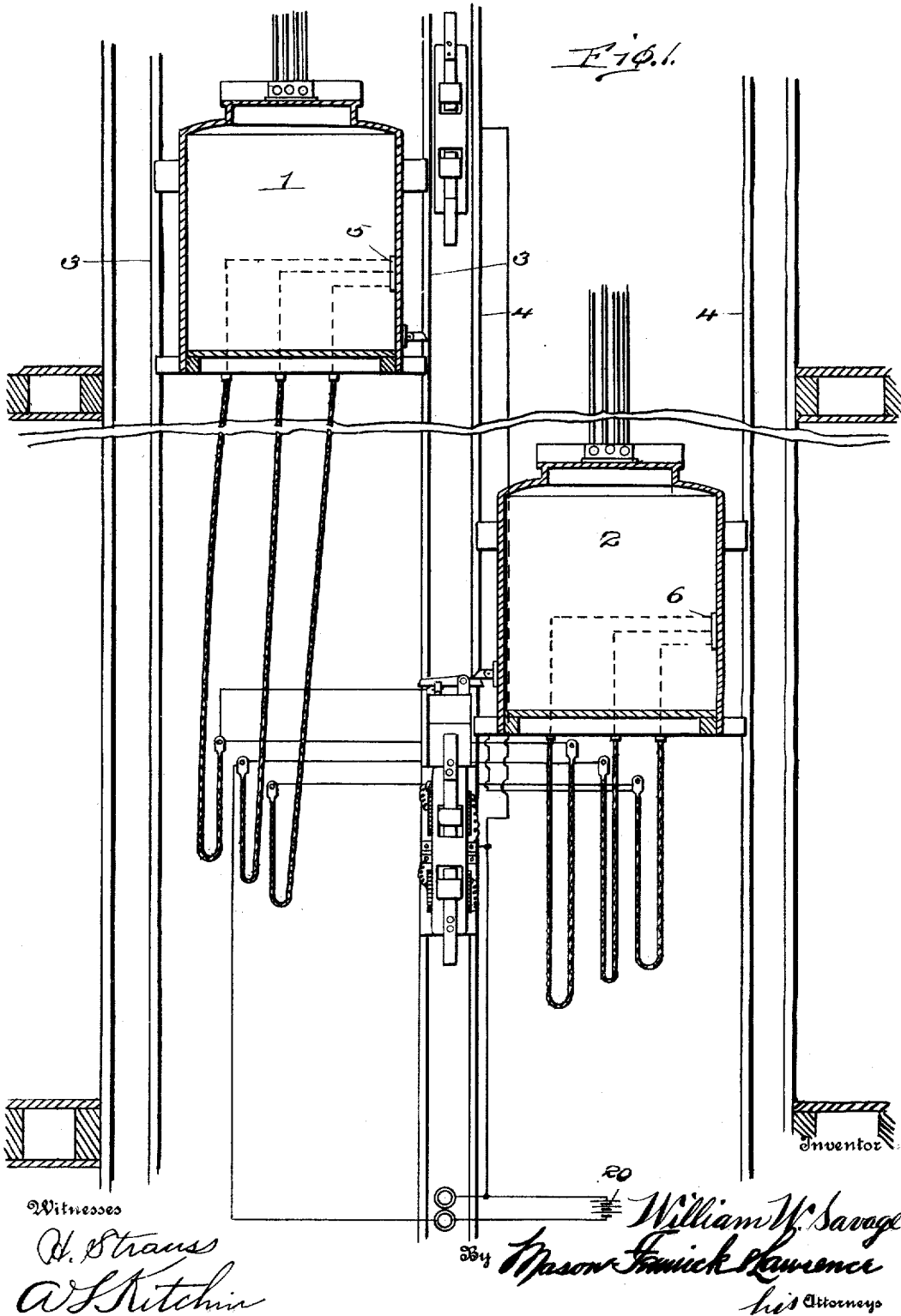


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ELEVATOR ANNUNCIATOR.
APPLICATION FILED FEB. 18, 1909.

961,025.

Patented June 7, 1910.

3 SHEETS—SHEET 1.

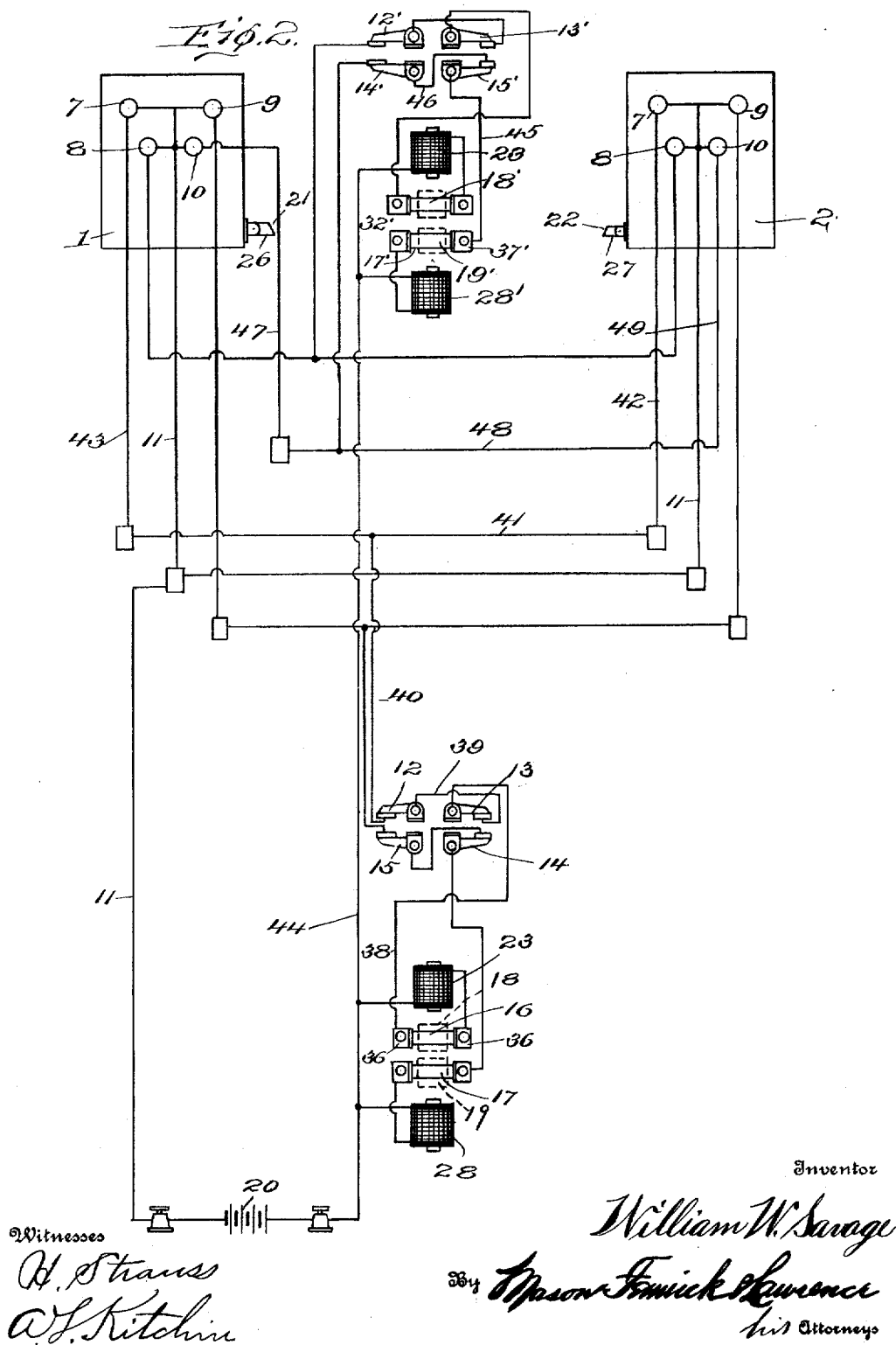


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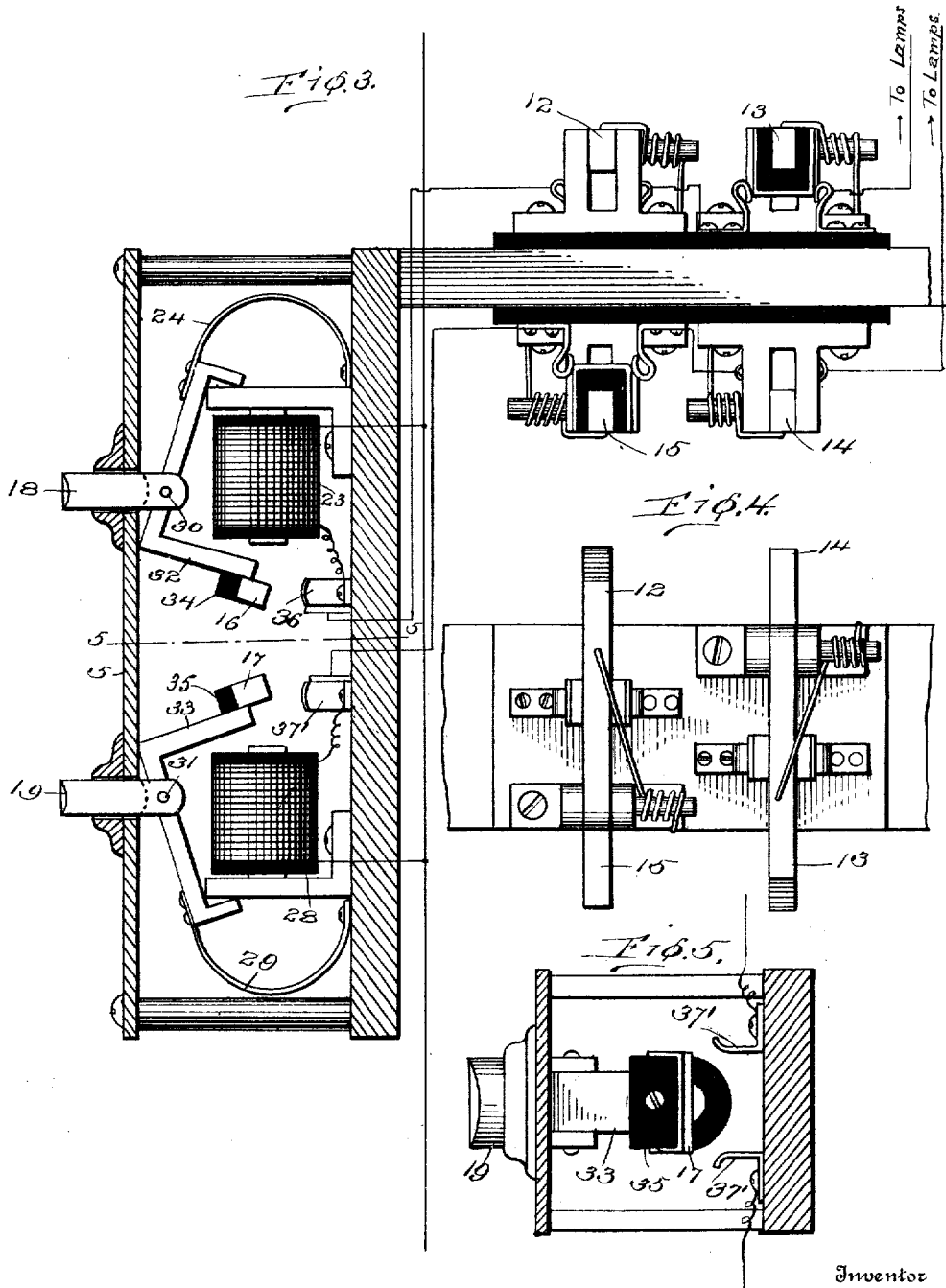


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3 SHEETS—SHEET 3.



Witnesses

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UNITED STATES PATENT OFFICE.

WILLIAM W. SAVAGE, OF BUFFALO, NEW YORK, ASSIGNOR OF ONE-HALF TO ROBERT MODERWELL, OF BUFFALO, NEW YORK.

ELEVATOR-ANNUNCIATOR.

961,025.

Specification of Letters Patent.

Patented June 7, 1910.

Application filed February 13, 1909. Serial No. 478,639.

To all whom it may concern:

Be it known that I, WILLIAM W. SAVAGE, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented certain new and useful Improvements in Elevator-Annunciators; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to improvements in signaling apparatus, and particularly to electrical signals for elevators, and has for an object the provision of improved means for clearly indicating in all of the elevators in any system the call of any person pushing any of the buttons on any of the floors.

A further object of the invention is the provision of improved means so arranged as to indicate in all of the elevators of a system whether a passenger desires to go up or down from any floor and immediately upon the stopping of the elevator for taking such passenger on the cutting out of the signal.

Another object of the invention is the arrangement of a push button which is adapted to be electrically retained in position automatically until one of the elevators has passed the floor upon which the button is located in the direction the passenger desires to go.

A still further object of the invention is the combination and arrangement of push buttons arranged to be electrically retained in position when once pressed and a system of wiring and switches for temporarily switching the current off the means retaining the button depressed, whereby the retaining means is deenergized and the button permitted to open the circuit permanently that has been temporarily opened.

With these and other objects in view the invention comprises certain novel constructions, combinations, and arrangement of parts as will be hereinafter more fully described and claimed.

In the accompanying drawings: Figure 1 is a vertical sectional view through an elevator shaft showing the elevators therein and the circuits diagrammatically. Fig. 2 is a diagrammatical view of the system of wiring for two stories. Fig. 3 is a fragmentary sectional view through the walls of

part of an elevator shaft, push buttons and switches embodying the invention being shown in connection therewith. Fig. 4 is a top plan view of the switching mechanism shown in Fig. 3. Fig. 5 is a sectional view through Fig. 3 approximately on line 5—5.

In the construction of an elevator signaling system embodying the invention an annunciator is placed in each car or elevator and in the annunciator two lamps for each floor, one lamp to indicate when lighted that a passenger desires to go up and the other lamp to indicate when lighted that a passenger desires to go down. All of the buttons on all of the floors are connected electrically with all of the cars or elevators so that when any button on any floor is pressed lights will immediately appear in all of the cars regardless of the position thereof so that the operator in each car will know that a passenger at a certain place desires to go up or down as the signal may indicate. Immediately upon any car passing the button that has been pressed in the proper direction, that is either up or down according to the button pressed, all of the lights in all of the elevators that have been provided with current by the depression of that particular button will be put out so that all of the operators will know that that particular passenger has been taken to his destination.

In order that the invention may be more clearly understood an embodiment of the same is shown in the accompanying drawings in which 1 and 2 indicate cars or elevators that are moved by any desired power in any desired way. The cars 1 and 2 are provided with guides 3 and 4 of any desired kind. Mounted in each of the elevators 1 and 2 are annunciators 5 and 6 in each of which are arranged lamps 7 and 8 that indicate when lighted that a passenger desires to go up, and lamps 9 and 10 that indicate when lighted that a passenger desires to go down. Lamps 7 and 9 are connected to a common return 11 and through suitable wiring to switches 12, 13, 14 and 15 which in turn are connected to switches 16 and 17 outwardly by push buttons 18 and 19. By this arrangement whenever push button 18 is depressed the circuit of the battery 20 is closed through lamps 7 in each cage or elevator 1 and 2. If both elevators are above the first floor upon which button 18 is lo-

cated all of the lamps 7 will remain lighted until one of the elevators has been lowered to the first floor and again moved upward whereupon one of the switches 12 or 13 will be raised by a spring pressed stop 21 or 22 as the case may be. Immediately upon the raising of one of the switches 12 and 13 magnet 23 will be deprived of current and switch 16 be permitted to open the circuit under the action of spring 24. As either of the elevators 1 or 2 moves upward and opens switch 12 or 13 as the case may be temporarily magnet 23 will be deenergized temporarily as just set forth and switch 16 be permitted to open the circuit which will cause the circuit to remain open after switch 12 or 13 as the case may be has been released and closed the circuit at that point. In case the passenger desires to go down from floor 1 to the basement push button 19 is pressed which will close the circuit through lamps 9 of both elevators. The lamps in both elevators will remain lighted until one of the elevators has passed below the first floor whereupon the lights will go out in all of the elevators as catch 26 or 27 as the case may be will engage either switch 14 or 15 and break the circuit temporarily, which temporary breaking of the circuit will deenergize magnet 28. This will permit spring 29 to act upon switch 17 for opening the circuit at that point. After the elevator has passed switches 14 and 15 the same will move to a closed position, but as switch 17 has been opened the circuit will still remain open.

The buttons 18 and 19 are pivotally mounted at 30 and 31 to armatures 32 and 33 that have secured thereto bowed springs 24 and 29 which normally hold the armatures in the position shown in Fig. 3. Secured to the armatures are insulating blocks 34 and 35 respectively to which are secured the switches 16 and 17 that engage their respective sockets formed of spring arms 36—36 and 37—37. The armatures 32 and 33 are adapted to be attracted by magnets 28 and 23 and when so attracted will be moved against the action of springs 24 and 29 until the switches 16 and 17 are in engagement with their respective sockets formed of spring arms 36—36 and 37—37. In the operation of the buttons, magnets 28 and 23 do not attract originally the armatures 32 and 33, but immediately upon the forcing inward of either of the buttons 18 or 19 the respective armature will be forced inward and the respective switch 16 or 17 will be caused to engage its socket for closing the circuit. Immediately upon closing the circuit current will pass through the magnet and through the lamp in the elevator. This will energize the magnet and cause the magnet to hold the armature so as to cause the switch carried thereby to re-

main in engagement with its socket and to thus maintain the circuit closed against the action of the spring which would cause the switch to leave its socket when not positively held therein. Immediately upon the elevator striking one of the switches upon its upward or downward movement for opening the circuit temporarily the magnet would be deprived of its current and the spring that is continually acting against the armature would cause the armature to move to the position shown in Fig. 3. This would open the circuit at this point so that for a short time the circuit would be open at two points, but as the elevator passes on, downward or upward, the circuit is closed in the elevator shaft but the circuit remains open permanently at the buttons.

Arranged in the elevator shaft at some convenient point are a plurality of switches 12, 13, 14 and 15 that are adapted to be operated by spring pressed levers 26, 27, 21 and 22 as the case may be. Levers 26 and 27 are arranged to strike against switches 14 and 15 for opening the same, and levers 21 and 22 are adapted to strike against switches 12 and 13 for opening said switches. The levers 21 and 22, 26 and 27 are all pivotally mounted upon the respective elevators and are spring pressed so as to be held unyieldingly in one position and positively open the respective switches against which the same strike upon one movement of the elevator, but to yieldingly give when moved in the opposite direction. For instance, levers 26 and 27 are arranged to strike against switches 14 and 15 upon the downward movement and to open switches 14 and 15, but upon the upward movement the levers will strike the underneath side of switches 14 and 15 and the levers will move upon their pivot point around the switches which are closed. The levers 21 and 22 act in a similar manner, except in the opposite direction. By this means whenever either of the elevators is going up one of the switches 12, 13, 14 and 15 will be open, and when any one of the elevators is going down the same operation is performed but in regard to another switch.

In order that the operation and the circuits may be more clearly understood the circuit will be traced and the various results obtained pointed out, particular reference being had to the diagrammatical view shown in Fig. 2. In this view the push buttons 18 and 19 are designed to be upon the first floor and push buttons 18' and 19' on the second floor. The switches 12, 13, 14 and 15 are designed to be arranged in the elevator shaft a short distance above the buttons and the switches 12', 13', 14' and 15' are arranged a short distance above the buttons 18' and 19' upon the second floor so that in coming down the elevators will turn out the lights just before reaching the floor

upon which the passenger is waiting and upon the elevators going up the lights will be turned out just after the elevator has passed the floor upon which the passenger is positioned. This is accomplished by the arrangement of the various switches in the elevator shaft above the buttons and by having operating levers 21 and 22, 26 and 27 near the bottom of the elevator. If a passenger is on the first floor and desires to go up he would press button 18 which would cause the switch 16 to engage its socket and close the circuit of the battery or any desired source of current indicated as 20 through magnet 23. After button 18 has been pressed the current will flow commencing with battery 20 through magnet 23, spring arms 36—36, switch 16, wire 38, switch 13, wire 39, switch 12, wires 40, 41, 42, 43, lamps 7 of each elevator, and from thence through common return 11 to battery 20. As will be observed immediately upon pushing the button 18 the respective lamps that indicate the first floor and that a passenger on the first floor desires to go up will be lighted. If all of the elevators are already above the first floor the lamps will remain lighted until one of the elevators has come down to the first floor and gone up past switches 12 and 13. Immediately upon either of the elevators passing switches 12 and 13 one of the levers 21 or 22 will engage one of the switches 12 or 13 and raise the same temporarily or during the time which it takes the elevator to pass the switches. This will open the circuit of magnet 23 at either of the switches 12 or 13 according to which one is operated. Upon the opening of the circuit temporarily at this point magnet 23 will be deenergized and armature 32 will be forced away from magnet 23 by spring 24, and at the same time switch 16 will be opened. Immediately upon the elevator passing switches 12 and 13 these are closed by being spring pressed, but as switch 16 has been opened under the action of spring 24 the same will remain open as there is no magnetism in magnet 23 for holding the same closed. If a passenger was on the second floor and desired to go up button 18' would be pressed and the lights indicating that a passenger on the second floor desiring to go up would be lighted in a similar manner to the way in which the lights were lighted when button 18 was pressed. If a passenger on the second floor desired to go down button 19' would be pressed which would close the circuit of magnet 28'. This would cause the energizing of magnet 28' for holding switch 17' into engagement with the spring arms 37'—37' against the action of a spring similar to spring 29. When the circuit has been closed at this point current will pass from battery 20 over wire 44 to the winding

of magnet 28', and from thence through spring arms 37'—37' and switch 19', wire 45, switch 15', wire 46, switch 14', wires 47, 48, 49 to lamps 10, and from thence back to battery 20 through common return 11. The lamps 10 will thus be lighted immediately upon pressing button 19' and will stay lighted until one of the elevators has opened the circuit at either switch 14' or 15'. If the passenger was on the first floor and desired to go to the basement button 19 would be pressed for closing the circuit at this point which would light lamps 9 in the elevators. The lamps 9 would remain lighted until one of the elevators had passed downward past switches 14 and 15, whereupon the circuit would be opened and button 19 released. By this arrangement of switches and circuits one lamp in all of the elevators will be lighted by a passenger on any of the floors, and by the arrangement of the lights in the elevator indication will be made upon which floor the passenger is situated and in which direction he desires to travel. Also by the lighting of one lamp in all of the elevators at the same time and turning out said lights when the passenger has been taken up will indicate not only to the elevator taking up the passenger but also in all other elevators that the passenger has been cared for.

What I claim is:

1. In a signaling device for elevators, a plurality of lamps arranged in tiers positioned in the elevators, means for indicating the floor represented by said lamps, a plurality of manually operated switches on each floor of the building on which the elevators arranged with said signaling device are located, electrically controlled means for holding said switches closed, means for automatically opening said switches when said electrically controlled means have been deprived of current, a circuit including said switches and said lamps, a plurality of switches interposed in said circuit and operable by the elevators carrying said lamps whereby upon the opening of said last mentioned switches by said elevators the circuit of the electrically controlled means for holding said manually operated switches is opened for deenergizing and permitting the automatic opening of said switches.

2. In a signaling device for elevators, a plurality of lamps for each floor arranged in said elevator, a source of current, a circuit including said source of current and said lamps, a plurality of switches interposed in said circuit, means projecting from said elevators for opening temporarily said switches, and manually closed switches interposed in said circuit and formed with electrically controlled means for holding said switches closed when once manually closed until the circuit is opened by the

means projecting from the elevator temporarily opening one of said first mentioned switches.

3. In a signaling device for elevators, a
5 pair of signal lamps for each floor of building in which the elevator is located, a switch for each of said lamps, a source of current, a circuit including said lamps and said
10 source of current and said switches, means for magnetically holding switches closed after the same have been manually operated, and a spring for each of said switches for the opening of said switches upon de-
15 energizing of said magnetically held means, and a plurality of switches interposed in

said circuit and operated by the elevators carrying said lamps, whereby upon the opening of said last mentioned switches by said elevators, the circuit of the magnetically controlled means for holding said manually
20 operated switches is opened for deenergizing and permitting the opening of said switches under the action of said springs.

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM W. SAVAGE.

Witnesses:

ALBERT STOUT,
FREDERIC W. CLAUS.