Sept. 20, 1932. W. B. LUCAS 1,878,872

ELEVATOR INDICATOR

Filed Jan. 21, 1929 2 Sheets-Sheet 1

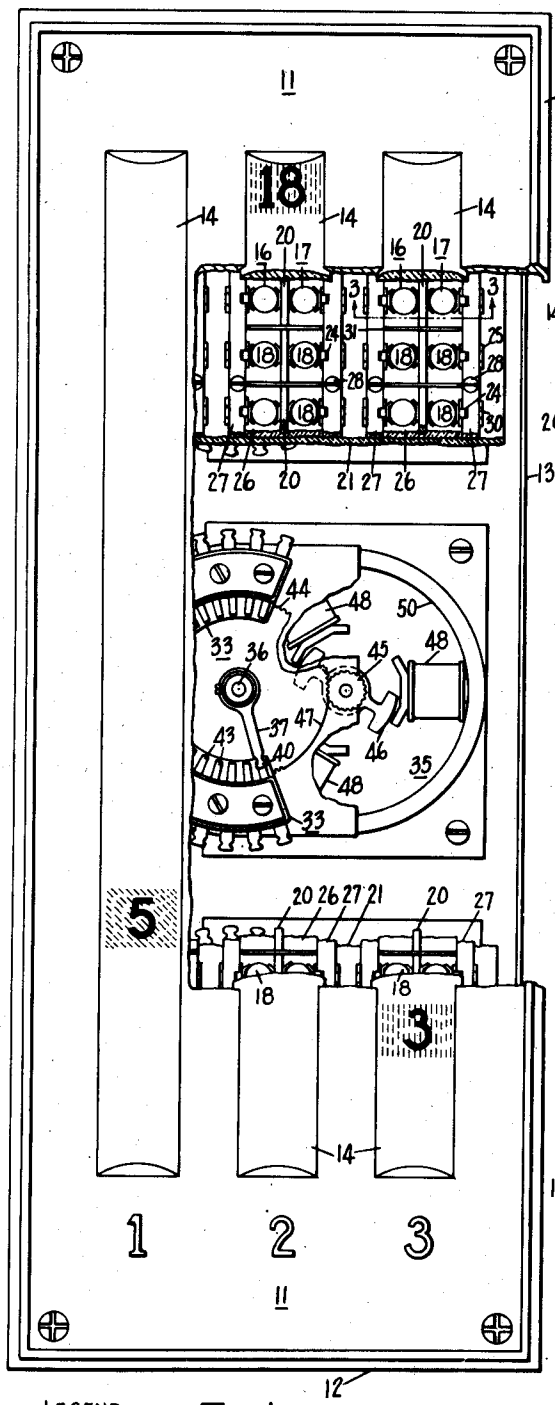


FIG. 1

LEGEND
RED
GREEN

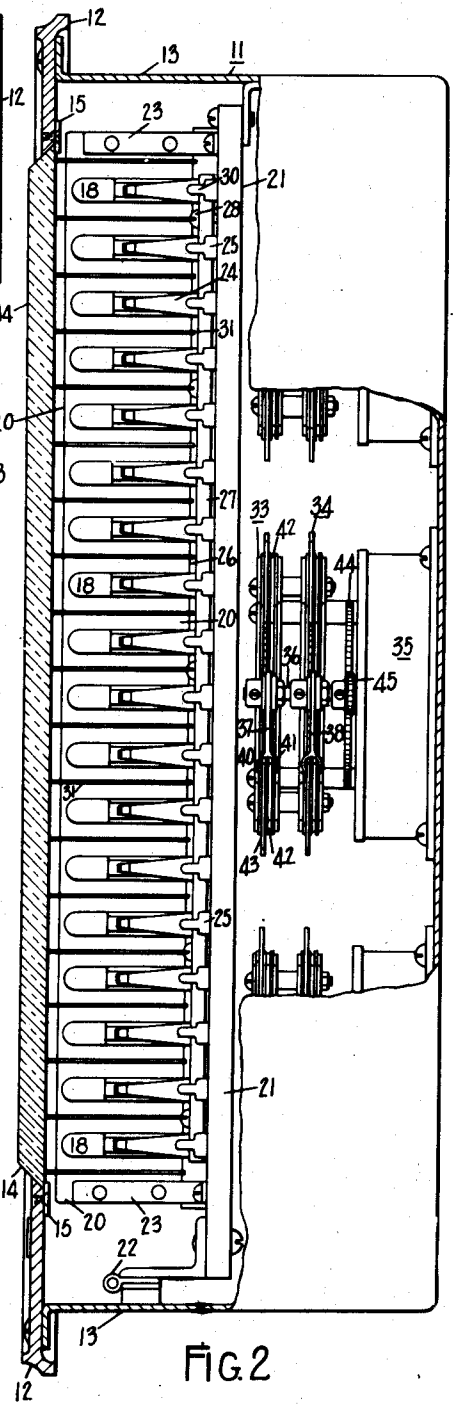


FIG. 2

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ELEVATOR INDICATOR

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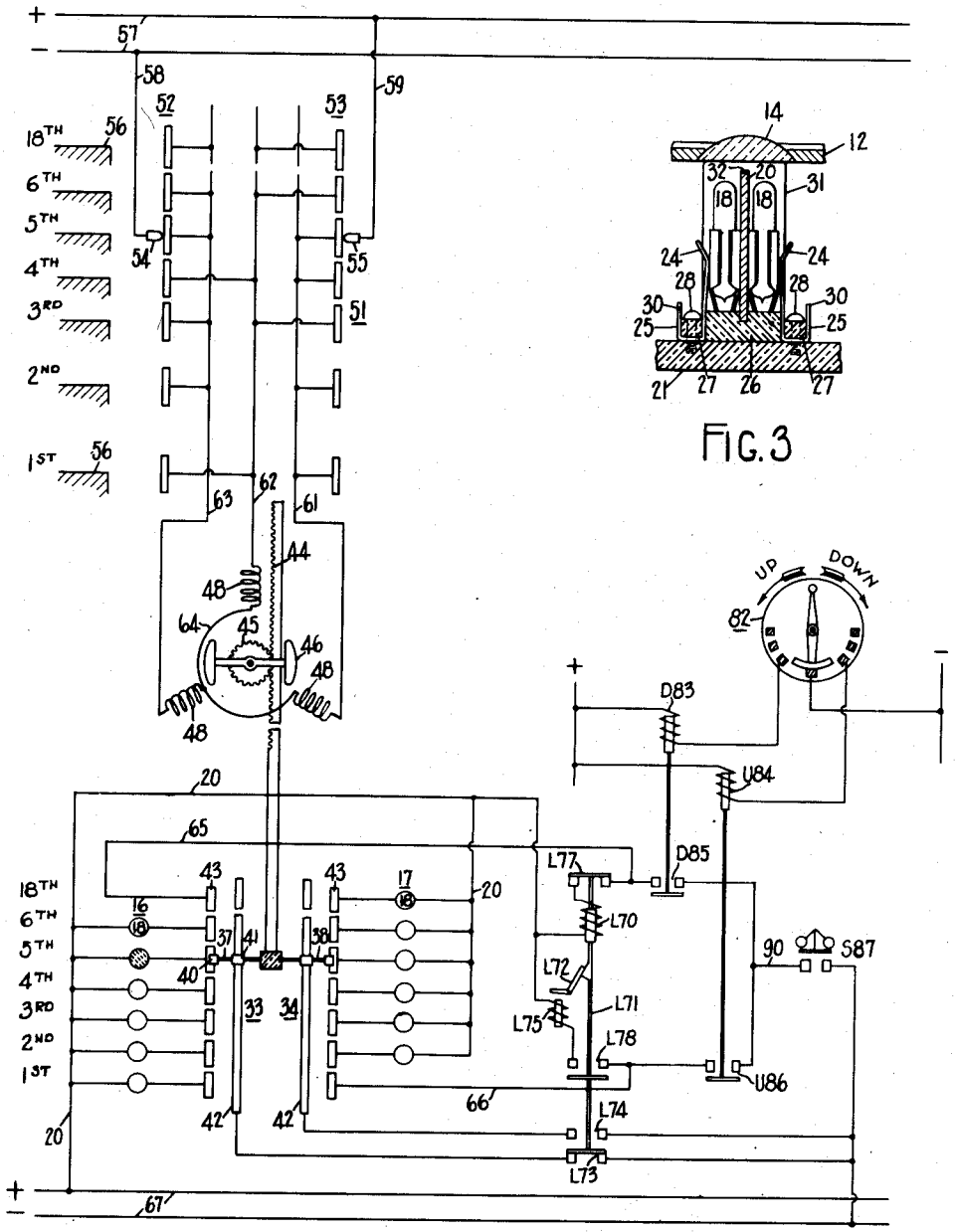


FIG. 4

FIG. 3

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Patented Sept. 20, 1932 1,878,872

UNITED STATES PATENT OFFICE

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ELEVATOR INDICATOR

Application filed January 21, 1929. Serial No. 333,852.

This invention relates to elevator signal and indicating systems.

One feature of this invention is the provision of a compact indicator for an elevator system to indicate the position and direction of travel of the elevator car.

A second feature of this invention is the provision of an elevator car position indicator with a single set of indicating floor symbols arranged to be displayed in either one or the other of two colors to indicate also the direction of travel of the elevator car.

A third feature of this invention is the provision of a direction-of-travel indicator for an elevator car the control of which is correlated with the control of the elevator car.

A fourth feature of this invention is the provision of an electric control for a direction-of-travel indicator for an elevator car which is unaffected by inching movements of the elevator car in either direction to bring the platform of the car level with a floor.

A fifth feature of this invention is the provision of a starters' indicator for a bank of elevator cars in which both the position and direction of travel of each car is indicated by the display of a small area of light representative of the car. By this arrangement there are no other indications to distract the eye.

A sixth feature of this invention is the provision of a starter's indicator for a bank of elevator cars which requires only a small fixed number of wires leading to the starter's indicator regardless of the number of floors served by the cars.

Other features and advantages will become apparent from the following description and appended claims.

The invention will be described, by way of illustration, as embodied in an indicator for a starter having supervision over a bank of three elevator cars.

In carrying out the invention there is provided an indicator with a window which is illuminated from the rear, as by differently colored electric light bulbs, in either one or the other of two colors to be indicative of the direction of travel of the elevator car. There may be provided an electromagnetic latching switch interconnected with the direction controls of the elevator car to control the color display of the direction-of-travel indicator in accordance with the direction of the car travel, the electromagnetic latching switch being operable to change the color of the display, however, only after the elevator car has attained some predetermined speed, greater than the speeds attained in inching. There may also be provision for displaying the floor symbols of a flashlight position indicator, for example, a starter's indicator, in either one of two colors as indicative in addition to the position of the elevator car, of whether the car at that position is on an up or a down trip. In addition, provision may be made for controlling the indicator by means of repeater-motor-operated selector-switch mechanism positioned adjacent the indicator, the repeater motor being actuated by means of a car-operated commutating device positioned in the penthouse, and being connected thereto by a small fixed number of wires extending the height of the hatchway.

In the drawings:—

Figure 1 is a front elevation of a starter's indicator embodying the invention, with parts thereof broken away to show details of construction;

Figure 2 is a side elevation of the starter's indicator of Figure 1, also with parts broken away to assist in the understanding thereof;

Figure 3 is a sectional view along the line 3—3 of Figure 1 illustrating the manner of mounting the indicator flashlight bulbs; and

Figure 4 is a schematic wiring diagram of the apparatus comprising the starter's indicator for one elevator car, and illustrating a mode of interconnection of the direction-of-travel indicator control with the elevator car control.

Referring to Figures 1 and 2, the starter's indicator, designated as a whole as 11, may be mounted on the starter's panel, the panel usually being positioned at the lower terminal floor near the bank of elevators. This indicator has a display plate 12 serving as a cover for casing 13 in which are mounted the display devices and other parts of the apparatus. The casing 13 is divided into two sec-

tions by means of an inner panel 21 which mounts a portion of the enclosed display devices and which is pivoted as at 22 to permit ready access to the parts in rear of the panel 21. The cover plate 12 has vertical slots therein, one for each of the elevators in the bank, in this instance, three. In each slot is secured a lens strip 14, as by means of cleats 15. Painted or otherwise affixed to or formed on the rear surface of each lens are opaque floor symbols, shown as numerals, which outline themselves against the rest of the illuminated section when there is illumination in the rear of the corresponding section of the lens strip. From subsequent explanation it will be apparent that only one floor symbol in each elevator indicator may be illuminated at a time, hence only the fifth, eighteenth and third floor symbols for the first, second and third elevators respectively are shown as displayed in Figure 1. It is to be understood, however, that floor symbols, in this instance, for eighteen floors, extend the whole length of each lens strip and are displayed individually by appropriate illumination in the rear thereof.

Within the casing 13 and behind each lens strip 14 are two rows 16 and 17 of flashlight bulbs 18, each row extending the length of the corresponding lens strip and being adapted to illuminate its corresponding lens strip in a distinctive color. In the embodiment illustrated the bulbs in the left row 16 are colored green, and the bulbs in the right row 17 are colored red. The bulbs may be any type and may be mounted in any appropriate manner. In the starter's indicator illustrated, the bulbs 18 are the type generally known as the "telephone switchboard" type. The mounting for these consists, for each elevator, of a common 20, made of a strip of copper extending directly in rear and substantially the length of the lens strip 14 and held uprightly on one of its long edges to the inner panel 21 by means of the brackets 23. Against the long flat faces of the common are placed the bulbs with one of their contact faces bearing thereagainst. The bulbs are held in this position by spring strips 24, one for each bulb, which are insulated from each other and which bear against the other of the bulb contact faces. These strips are held in position by having extensions 25 thereof clamped between a base block 26 and a long clamping strip 27. The clamping strip 27 is in turn appropriately fastened by screws 28 to the inner panel 21. This construction is clearly shown in Figure 3. The extensions 25 are bent around the clamping strip and have provided at their ends suitable terminal lugs 30.

The arrangement and spacing of the bulbs for each elevator indicator is such that there is a pair of bulbs, one green-colored and one red-colored, behind each floor symbol, with each bulb in the pair adapted to illuminate the corresponding floor symbol. In order to confine the illumination from each pair of bulbs to its corresponding floor symbol, light shields 31 with notches 32 are fitted over each common 20 between each pair of bulbs. As a result of this construction, the floor symbols for each elevator may be displayed in either of two colors, which for illustration have been assumed to be green and red. Referring to Figure 1, and noting the color legend, it may be seen that the fifth floor symbol for elevator #1 is displayed in green, the eighteenth floor symbol for elevator #2 is displayed in red, and the third floor symbol for elevator #3 is displayed in red.

The floor symbols for each elevator may, by a variety of mechanisms, be selectively illuminated in accordance with the position of the corresponding elevator car with respect to the floors to thereby indicate the position of the elevator car. The mechanism illustrated comprises for each elevator two selector switches, denoted generally by 33 and 34, mounted in the rear of casing 13 of the starter's indicator 11 and suitably actuated in common by means of the repeater motor adjacent thereto and generally designated by 35. The selector switches 33 and 34 have respectively metallic wiper arms 37 and 38 insulatingly secured to a shaft 36. As the selector switches are identical in construction, only one, as 33, is described in further detail. The outer end of wiper arm 37 is fork-shaped to provide an upper brush 40 and a lower brush 41. Lower brush 41 contacts with a continuous arcuate metallic plate 42. Upper brush 40 engages individually, upon rotation of the wiper arm, an arcuate series of metallic strips 43 radially arranged and insulatingly mounted from each other and from the metallic plate 42. The rotation of the selector switch shaft, therefore, completes a circuit from the metallic plate 42 to the strips 43 individually and in succession.

The shaft 36 to which the two selector switch wiper arms 37 and 38 are secured has also secured thereto a large gear 44. Meshing with the gear 44 is a small pinion 45 which is driven by the armature 46 of the repeater motor 35. The larger gear 44 is incompletely formed on part of its surface, as at 47, the object of which will later appear. The repeater motor 35 includes in addition to the soft iron armature 46 three field coils 48 spaced equidistantly around the interior of a circular iron frame 50. The field coils are secured at one of their ends to the frame 50 so as to permit the coils to project radially inward toward the center of the frame, at which point the armature 46 is mounted to rotate in the plane of the coils. The energization of successive field coils around the circular frame, for example, singly or in pairs, attracts the armature to posi-

tions always in advance of its old positions, so that the armature is thereby rotated. As is well recognized with this type of motor, the rotation is accomplished in steps dependent upon the rate at which the sequence of energization of the coils, or the combinations of coils, is changed. This sequence of energization of the field coils is, in this instance, accomplished by means of commutating mechanism operating synchronously with the elevator car, and normally positioned in the pent-house.

Referring to the schematic wiring diagram as shown in Figure 4, a suitable commutating mechanism arrangement, denoted generally by 51, comprises two rows of stationary contacts 52 and 53. which may be positioned on a floor controller in the pent-house, and two movable contacts 54 and 55 moving synchronously with the elevator car, and engaging respectively row 52 and row 53 of the stationary contacts. The individual stationary contacts in each row are spaced linearly at an appropriate reduced scale in accordance with the heights of the floors served by the elevator car. The commutating mechanism may be arranged on a floor controller with the movable contacts secured to the moving crosshead so as to be moved with a linear motion in accordance with the movement of the elevator car. It is believed sufficient, in order to simplify the drawings and description, to denote along the path of the contacts 54 and 55 the positions of these contacts for the corresponding positions of the car with respect to the various floors. This is accomplished by the portions of floor sections 56, each of which is appropriately labeled to designate the floor which it represents. Thus, in Figure 4, contacts 54 and 55 are opposite the fifth floor section 56, signifying that the elevator car is opposite the fifth floor. For convenience, only the lower six and the top or eighteenth floors are illustrated in Figure 4.

To the mc ble contacts 54 and 55 are respectively connected the leads 58 and 59 from a supply line 57 so that the movable contacts are made "alive". The individual contacts in the two rows of stationary contacts 52 and 53 are connected to three leads 61, 62 and 63 in the manner illustrated in Figure 4, so that, as the movable contacts are jointly raised from the first floor position upwardly over the rows of stationary contacts, the leads are rendered "alive" in the following sequence: 61—62; 61—63; 62—63; 61—62; 61—63; etc. These three leads are extended from the pent-house, assuming that the commutating device is there positioned, to the floor at which the starter's indicator 11 is positioned, and they are respectively connected to corresponding terminals of the field coils 48 of the repeater motor. The remaining terminals of the field coils are joined together by the lead 64. It is apparent that the above sequence of energization of the leads 61, 62 and 63 in accordance with the position of the elevator car with respect to the various floors similarly energizes the field coils 48 in pairs and causes rotation of the armature 46 in equal steps, which steps of rotation are therefore in accordance with the position of the car.

The ratio of the large gear 44 to the small pinion 45 is such that each step of rotation of the repeater motor armature moves the wiper arm for each selector switch 33 and 34 from engagement with one contact strip 43 to engagement with the adjacent contact strip 43. In order to clearly illustrate this cooperation between the repeater motor armature and the selector switches, in conjunction with the circuit connections for the starter's indicator, the rotary selector switches and the large gear 44 are, in Figure 4, developed and illustrated as giving linear movements to the wiper arms. The same reference numerals are used for parts in Figure 4 which correspond with similarly functioning parts in the other figures.

Continuing with the description of Figure 4, selector switch 33 is arranged to control the illumination of the green or left-hand row of flashlight bulbs 18, and selector switch 34 is arranged to control the illumination of the red or right-hand row of flashlight bulbs. Each contact strip of the selector switch 33, except the contact for the top, or eighteenth, floor symbol, is connected to the green flashlight bulb for the corresponding floor symbol. To the top contact is connected a lead 65, the purpose of which will appear later. Each contact strip of the selector switch 34, except the contact for the lower, or first, floor symbol, is connected to the red flashlight bulb for the corresponding floor symbol. To the lower contact is connected a lead 66, the purpose of which will also appear later. The remaining terminals of all the bulbs connect with the common 20, which is connected to one side, as plus, of a suitable supply line 67. The plate 42 of selector switch 33 is connected through the contacts L 73 to the other, or minus, side of the supply line 67, while the plate 42 of selector switch 34 is connected through the contacts L 74 to the minus side of the supply line. Thus, when the circuit through the contacts L 73 is completed, the selector switch 33 is rendered "alive," and the green bulbs may be illuminated. When the circuit through the contacts L 74 is completed, the selector switch 34 is rendered "alive" and the red bulbs may be illuminated.

Contacts L 73 and L 74 are contacts of a latching switch the parts of which are denoted by the prefix L. A suitable arrangement of latching switch is schematically illustrated and comprises a latching coil L 70

which, upon energization, attracts a plunger L 71 upwardly, a latch L 72 arranged to engage a shoulder on the plunger when it is attracted to its upper position, a releasing coil L 75 which, upon energization, disengages the latch L 72 from the shoulder on the plunger and permits the plunger to drop to its lower position, and contact bridges secured to the plunger, arranged to complete or open circuits through various contacts upon movement of the plunger. Thus, in the lower position of the plunger L 71 as shown in Figure 4, the circuit through contacts L 73 is completed, while in its upper position the circuit through contacts L 74 is completed. The latching switch also controls circuits through two other sets of contacts L 77 and L 78, the functions of which will be apparent later.

A suitable arrangement for correlating the control for the starter's indicator and the direction controls for the elevator car is shown, for convenience, in an elementary wiring diagram. The car switch 82, when moved clockwise, completes a circuit for the down direction relay coil D 83, and when moved counterclockwise, completes a circuit for the up direction relay coil U 84. Relay D, upon operation, causes the engagement of its contacts D 85, while relay U, upon operation, causes the engagement of its contacts U 86. The contacts of these relays which control the direction of car travel and other contacts which they may have, depending upon the particular installation, are not shown. There is also provided a speed responsive switch arranged to engage its contacts S 87 at some predetermined speed greater than the speed acquired while inching the elevator car.

Assume that the elevator car has been stopped at the fifth floor on an up trip, this being the position of the parts illustrated in Figure 4. The fifth floor green lamp is lit, signifying an up direction of travel of the elevator car. The circuit for this lamp may be traced from the plus of supply line 67, by way of common 20, through the fifth floor green lamp, contact strip 43 of selector switch 33, wiper arm 37, plate 42 of selector switch 33, and contacts L 73, to the minus of the supply line. Assuming the elevator car continues its up trip, the contacts U 86 close as a result of the counterclockwise movement of the car switch 82, and when the car attains the predetermined speed at which the speed responsive switch operates, the circuit through the speed responsive switch contacts S 87 is completed. Nothing, however, happens at this time as the circuit through contacts L 78 is open. As the elevator car leaves the fifth floor and approaches the sixth floor, the movement of the wiper arm 37 extinguishes the fifth floor green lamp and illuminates the sixth floor green lamp. Assuming that the operator of the car desires to stop at the sixth floor, he centers the car switch and the elevator hoisting machinery is controlled to bring the car to a stop at the sixth floor. During the process of stopping, the contacts S 87 have opened, but, as before, nothing happens at this time. If, for some reason, the car overruns to some extent, the operator may bring the car back to the floor level by moving the car switch 82 clockwise to a slow speed control position and thereby inch the car down at an appropriate reduced speed. Throwing the car switch clockwise causes the engagement of contacts D 85. As a result, there is a circuit from the plus side of the supply line 67, by way of common 20, through the latching coil L 70, contacts L 77, contacts D 85, to the lead 90 which connects with one of the contacts S 87. The circuit is yet incomplete, however, due to the open contacts S 87, and as a consequence the latching coil L 70 remains unenergized. The car may thus be inched down to the floor level at speeds under which the speed responsive switch is set to operate, without affecting the color of the display of the floor symbols, or in other words, without affecting the direction-of-travel indicator. When the car has been inched to the proper level, the operator centers the car switch, and contacts D 85 disengage.

The operation of the indicator for continued travel of the car in the up direction is believed from the foregoing descriptions to be apparent and therefore to require no further comment.

Assume, however, the operator for some reason does not take the car upwardly from the sixth floor, but reverses its direction and brings it down to a lower floor. The down direction contacts D 85 are engaged upon the down operation of the car switch; and when the car attains the predetermined speed at which the speed responsive switch operates, the contacts S 87 are engaged and the circuit above traced for inching downwardly to the sixth floor is completed. As a result, latching switch coil L 70 is energized, latching switch plunger L 71 is raised to its upper position, latch L 72 engages the shoulder thereon to maintain it in the upper position, the circuits through contacts L 73 and L 77 are broken and the circuits through contacts L 74 and L 78 are made. The breaking of the circuit through contacts L 77 and the making of the circuit through contacts L 78 respectively deenergize the latching coil L 70 and prepare for energization of the releasing coil L 75. The breaking of the circuit through contacts L 73 and the making of the circuit through contacts L 74 respectively deenergize the selector switch 33 and render "alive" the selector switch 34. Accordingly, the red set of bulbs are adapted to be illuminated, thereby signifying by means of the red display of the floor symbols that the car is travel-

ing in the down direction. While the car is so traveling, the selector switch 34 selectively illuminates the red lamps for the floor symbols in accordance with the positions of the elevator car.

Let it be assumed that the operator attempts to stop the car at the fourth floor, but actually the car overruns a little, this time below the floor. In stopping, contacts S 87 and D 85 are separated, and in inching back up to the fourth floor level the contacts U 86 are closed. As a result, there is a circuit from the plus side of the supply line 67, by way of common 20, through releasing coil L 75, contacts L 78 and U 86 to lead 90. The circuit is yet incomplete, however, due to the contacts S 87 remaining open during inching, and as a consequence the releasing coil L 75 remains unenergized. The car may thus be inched up to the floor level at speeds under which the speed responsive switch is set to operate without affecting the color of the display of the floor symbols, or in other words, without affecting the direction-of-travel indicator.

Assuming that the operator proceeds to take the elevator car on upward, the contacts U 86 close and subsequently, after the proper speed is passed, the contacts S 87 close. The circuit above traced when the car was inched upwardly to the fourth floor is completed. As a result, releasing coil L 75 is energized and latch L 72 is withdrawn from engagement with the shoulder on the plunger L 71. Accordingly, the plunger falls back to its lower position, breaking circuits through contacts L 78 and L 74 and making circuits through contacts L 77 and L 73. The breaking of the circuit through contacts L 78 and the making of the circuit through contacts L 77 respectively deenergize the releasing coil L 75 and prepare for energization of latching coil L 70. The breaking of the circuit through contacts L 74 and the making of the circuit through contacts L 73 respectively deenergize the selector switch 34 and render "alive" the selector switch 33. Thus, the green set of bulbs are adapted to be illuminated, thereby signifying by means of the green display of the floor symbols that the car is traveling in the up direction.

Let it now be assumed that the elevator car is approaching the upper terminal floor, illustrated as the eighteenth floor, and that wiper arm 37 of selector switch 33 is engaging with the corresponding contact 43. A circuit is thereby completed from the plus of the supply line 67, by way of common 20, through the latching coil L 70, contacts L 77, lead 65, upper left contact 43, wiper arm 37, plate 42 of selector switch 33, and contacts L 73, to the minus of the supply line 67. As a result, latching coil L 70 is energized, and the previously described operation thereof ensues to render selector switch 34 "alive" to illuminate the red set of bulbs. Since the wiper arm 38 is also at the position corresponding to the upper terminal position of the car, the floor symbol for the eighteenth floor is illuminated red, thereby signifying that the subsequent direction of travel of the elevator car will be down.

When the elevator car approaches the lower terminal floor and wiper arm 38 of selector switch 34 is engaging with the corresponding contact 43, a circuit is completed through the releasing coil L 75. This may be traced from the plus of supply line 67, by way of common 20, through the releasing coil L 75, contacts L 78, lead 66, lower right contact 43, wiper arm 38, plate 42 of selector switch 34, and contacts L 74, to the minus of the supply line 67. As a result, the latching switch plunger L 71 is returned to its lower position and the selector switch 33 is rendered "alive" to illuminate the green set of bulbs. Since wiper arm 37 is also at the position corresponding to the lower terminal floor position of the car, the first floor, the floor symbol for the first floor is illuminated green, signifying that the subsequent direction of travel of the elevator car will be up.

This invention, therefore, provides an electrically controlled direction-of-travel indicator which is unresponsive to reversals in direction for the purpose of inching. It also provides an automatic reversal in the indication of direction of travel at the terminal floors. It provides in addition a compact combination of a position indicator and a direction-of-travel indicator. It is particularly advantageous as a starter's indicator for a number of cars, in which form it has been illustrated, in that the positions of the cars and their directions of travel are immediately apparent by a glance at the indicator. This results from the fact that the entire display on the indicator, for both the position and the direction of travel for each car, is reduced to a small area of light representative of the car. Accordingly, there is nothing to divert the attention of the eye from each car-representing light area. And since the indications for all the cars are confined to a small display plate which has only one row of floor symbols displayed by each car irrespective of the direction of travel of the car, supervision of a large number of elevators by one man is readily accomplished.

It is to be noted that the schematic wiring diagram illustrated in Figure 4, and the description of operation described in connection therewith is for simplicity limited to one elevator corresponding to #1 of the starter's indicator. It is believed apparent that the apparatus and circuits for each of the other elevators may be similar in construction and operation.

Attention is directed to the fact that in the illustrated and preferred construction of

the starter's indicator the selective illumination of the bulbs to indicate the position of the car is accomplished by means of switching mechanism located adjacent the bulbs. To actuate this mechanism in accordance with the positions of the car with respect to the floors there is provided the repeater motor 35 geared to this mechanism and controlled by the remotely positioned commutating mechanism 51. As a result, the number of leads from the first floor of the building where the starter's indicator is positioned and extending the full height of the building to the top thereof where the commutating mechanism is normally positioned, is a small fixed number of wires independent of the number of floors served by the elevator. If desired, however, the selective illumination of the bulbs to indicate the position of the car may be accomplished in manners other than that described without departing from the spirit of this invention.

When the selective illumination of the bulbs is accomplished by the mechanisms illustrated in the preferred embodiment, it is to be noted that the selective illumination of the bulbs for the various floors is controlled by equal rotary movements of the selector switches regardless of any differences in the heights between the floors served. It is to be also noted that the construction of the commutating mechanism 51 shown is illustrative only. This mechanism may readily be constructed in manners other than that described, which may nevertheless cause the operation of the repeater motor in a similar manner, so that the passage of the elevator car from the zone of one floor to the zone of the next, irrespective of the distance between floors, results in the display of the proper floor symbols.

It is to be additionally noted in connection with the preferred embodiment, that in the event that a repeater motor should, for any reason, get out of step or synchronism, with the movement of its corresponding car so that the floor symbols displayed for that car would not be indicative of the true position of the car, the mechanisms are automatically reset during the next approach of the car to one or the other of the terminal floors so that thereafter the floor symbols displayed are truly indicative of the position of the car. This is accomplished by selector-switch, terminal-position, motion-limiting devices, the preferred form of which involves the incompletely formed surface 47 on the large gear 44, although of course other and varying constructions may be used to effect the same results. The small pinion 45 is unable to further mesh with the large pinion 44 when it encounters surface 47, and as this surface is arranged to engage the pinion when the wiper arms of the selector switches are in their terminal positions, motion of the wiper arms in the same direction as their approach to the respective terminal positions is effectively prevented. Thus, if a car is descending and for some reason the floor symbols are displayed a floor or two in advance of the true car positions, the pinion 45 runs against surface 47 for the lower terminal position of the selector switches when the car is still a floor or two above this lower terminal floor. As the selector switches and repeater motor are unable to rotate any further in the direction corresponding to down, the car "catches up" with the indicator so that when the car is at the lower terminal floor, the mechanisms are in step and the first floor symbol is displayed. On the other hand, if the car is descending and for some reason the floor symbols are displayed for a floor or two in rear of the true car positions, the mechanisms and the car are automatically brought in step by a similar cooperation of the pinion 45 with the other end of the surface 47 upon the next approach of the car to the upper floor terminal.

Attention is directed to the fact that although the source of electrical energy 57 is illustrated in Figure 4 as direct current, alternating current may be just as well used if desirable, as the armature of the repeater motor, being made of soft iron, tends to align itself parallel to the lines of magnetic flux between two energized coils irrespective of the magnetic polarity of the field pole faces.

If desired, the display of the floor symbols may be appropriately advanced any desired amount in accordance with the direction of travel of the elevator car, either by actually advancing the movable contacts of the commutating mechanism in the desired directions, or by any other suitable means.

It is believed apparent that manners of display for the floor symbols other than that shown may be used if desired without departing from the spirit of this invention. For example, instead of the lens strips 14, there may be substituted plain glass strips, or separate jewels for each floor symbol. The use of strips is preferred over the use of individual jewels, however, as the space required to permit the display of the same number of floor symbols is appreciably less with the former than with the latter.

Attention is directed to the fact that the illustrated and described embodiment of this invention is both a direction-of-travel indicator and a position indicator. The use of the features incident to the direction-of-travel indicator is not confined to the combination with the position indicator, however, for these features may be readily used in a direction-of-travel indicator independently of a position indicator.

As many changes could be made in the above construction and many apparently widely different embodiments of this in-

vention could be made without departing from the scope thereof, it is intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

What is claimed is:

1. An indicator for an elevator car comprising; a display member; a plurality of floor symbols, one for each of a plurality of floors served by said car, mounted on said member; a row of light bulbs, one bulb for each of said floor symbols, said bulbs being adapted to illuminate their respective floor symbols in one color; an additional row of light bulbs, one bulb for each of said floor symbols, the bulbs of said additional row being adapted to illuminate their respective floor symbols in a second color; means for rendering operable the light bulbs in either row in accordance with the direction of travel of the car; and means to selectively illuminate the light bulbs which have been rendered operable in accordance with the position of the car with respect to the floors.

2. An indicator for an elevator car comprising, a display plate, translucent floor symbols, one for each of a plurality of floors served by said car, positioned on said plate and adapted to be displayed by illumination in the rear thereof, a plurality of sources of illumination in the rear thereof, one source of illumination for each floor symbol, adapted to illuminate the corresponding floor symbols in two colors, means for confining the illumination from each source of illumination to the floor symbol for which it is provided, direction controlling means for the car, means controlled by said direction controlling means to restrict the illumination from all of said sources to either one of the two colors as indicative of the direction of travel of the car, and controllng means for causing the illumination of said sources of illumination for effecting the selective display of said translucent floor symbols in the color as determined by the restricting means in accordance with the position of the elevator car with respect to said floors.

3. A position and direction-of-motion indicator for an elevator car comprising, a display plate with a single translucent floor symbol thereon for each floor served by the car, a pair of light bulbs of different colors for each floor symbol, arranged at the rear of said plate so that either bulb of each pair is adapted to illuminate the corresponding floor symbol, switching means to alternately render operable all bulbs of one color and all bulbs of the other color, means to operate said switching means at the terminal positions of the car to render all bulbs of one color operable for the "up" trip of the car and to render all bulbs of the other color operable for the "down" trip of the car, and means responsive to the movement of the car to selectively illuminate the operable bulbs in accordance with the position of the car.

4. A position and direction-of-motion indicator for an elevator car comprising, a display plate with a single translucent floor symbol thereon for each floor served by the car, a pair of light bulbs, of different colors, for each floor symbol, arranged at the rear of said plate so that either bulb of each pair is adapted to illuminate the corresponding floor symbol, switching means to alternately render operable all bulbs of one color and all bulbs of the other color, means adapted to operate said switching means upon changes in the direction of car travel to render all bulbs of one color operable for travel of the elevator car in one direction and all bulbs of the other color operable for travel of the elevator in the other direction, and means responsive to the movement of the car to selectively illuminate the operable bulbs in accordance with the position of the car.

5. A position and direction-of-motion indicator for an elevator car comprising, a member with a single translucent floor symbol thereon for each floor served by the car, a pair of differently colored light bulbs for each floor symbol, said bulbs being arranged at the rear of said member so that either bulb of each pair is adapted to illuminate the corresponding floor symbol, switching means to alternately render operable all bulbs of one color and all bulbs of the other color, means adapted to operate said switching means at the terminal floor positions of the car and also upon changes in the direction of car travel to render all bulbs of one color operable to indicate travel of the car in one direction and all bulbs of the other color operable to indicate travel of the car in the other direction, and means responsive to the movement of the car to selectively illuminate the operable bulbs in accordance with the position of the car.

6. A position and direction-of-travel indicator for an elevator car comprising, an elongated translucent strip, a set of floor symbols extending the length of said translucent strip and adapted to be displayed thereon upon illumination thereof, means adapted to illuminate said floor symbols in two colors and selectively in accordance with the position of the car with respect to the floors, and means to limit the illumination of said floor symbols to one or the other of said colors dependent upon the direction of travel of the car.

7. In a starter's indicator for a plurality of elevator cars, a display plate at a terminal floor, a single set of light-transmitting floor symbols for each car mounted on said plate, two differently colored rows of similarly-colored light bulbs for each car arranged at the

rear of said plate and behind the corresponding set of floor symbols so as to illuminate the floor symbols individually in either of the two colors, means for rendering operable the light bulbs for either one of the rows of bulbs for each car in accordance with the direction of travel of that car, and means to selectively illuminate the bulbs for each car, which have been rendered operable, in accordance with the position of the car in the hatchway.

In testimony whereof, I have signed my name to this specification.

WILLIAM BATES LUCAS.