

July 27, 1937.

C. F. CARNEY ET AL

2,088,463

ELEVATOR SYSTEM

Filed May 23, 1935

3 Sheets-Sheet 1

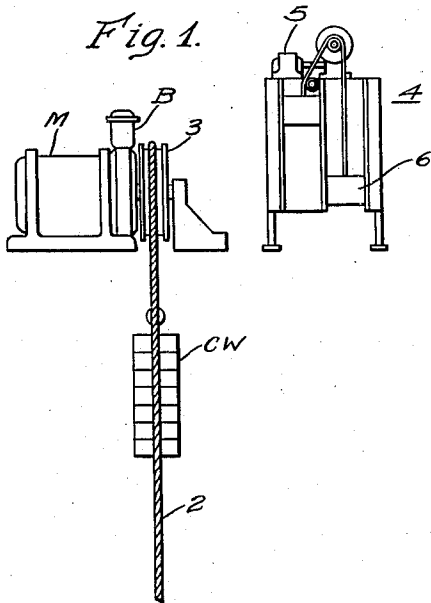
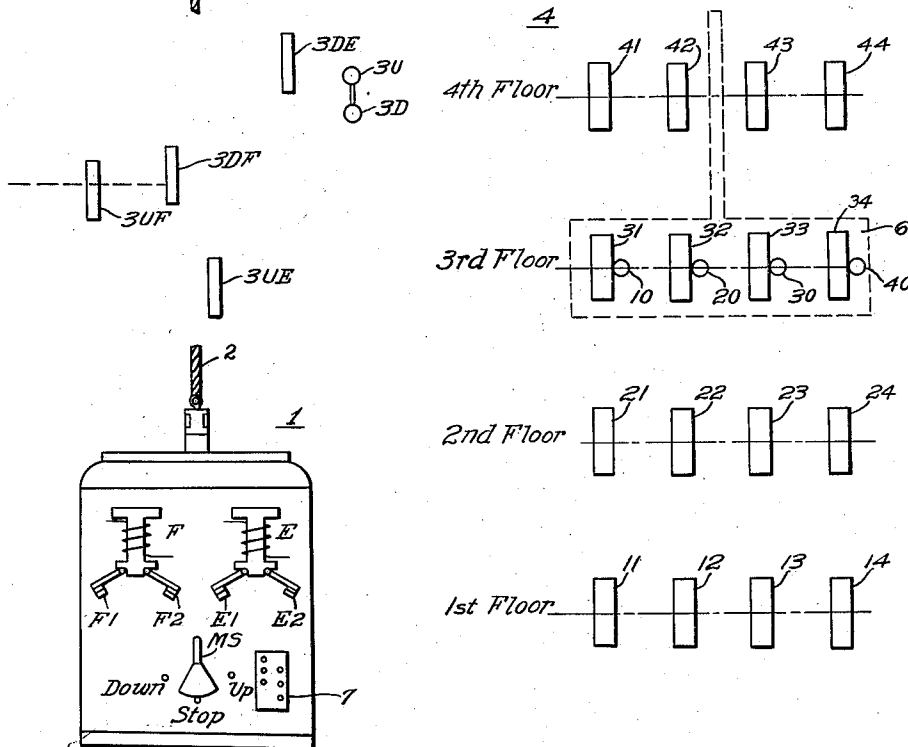


Fig. 2.
To
Floor Selector
Drive



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3 Sheets-Sheet 2

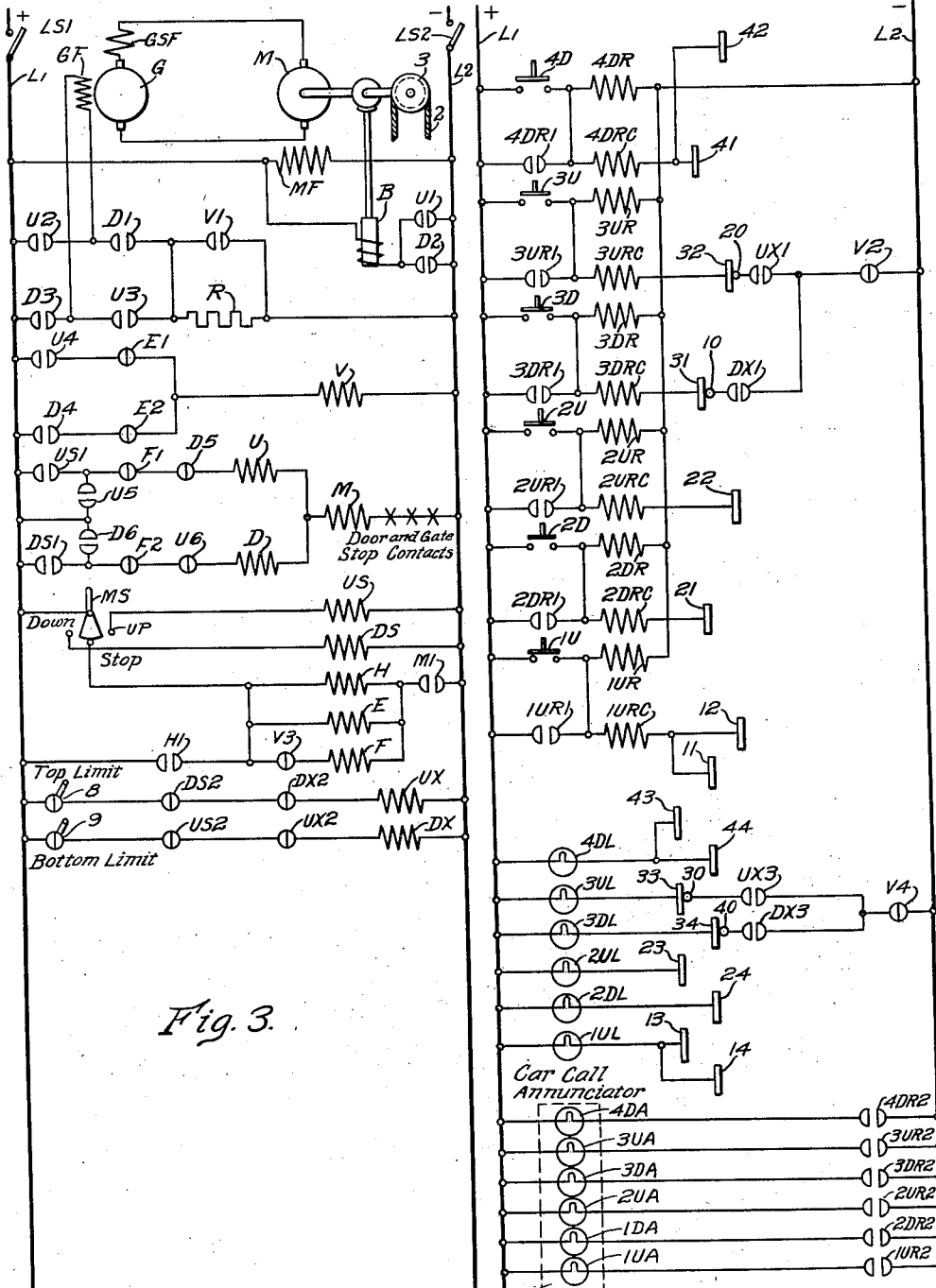


Fig. 3.

Fig. 4.

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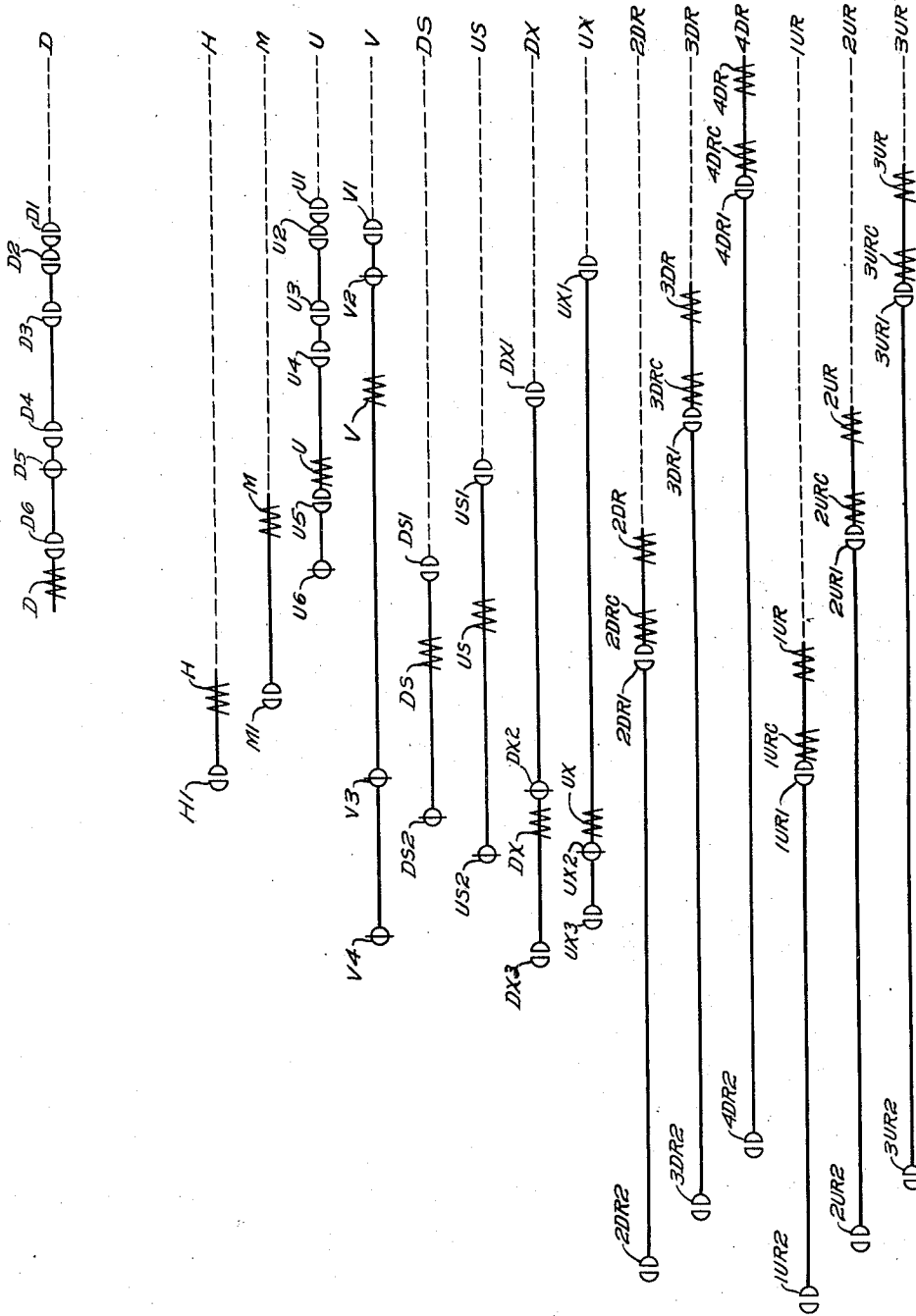
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3 Sheets-Sheet 3



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Fig. 5.

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2,088,463

ELEVATOR SYSTEM

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Application May 23, 1935, Serial No. 22,992

23 Claims. (Cl. 177—336)

Our invention relates, generally, to electric elevators and it has particular relation to control and signal systems therefor.

When night elevator service is provided, it is desirable to reduce the required travel of an elevator car to answer a call to a minimum. In the past, when a call was registered in a "down" direction at an upper floor and the elevator car was at the bottom terminal or a lower floor, it has been necessary for the operator to pass the floor in an "up" direction where the passenger is waiting and approach it in the "down" direction, in order to cancel the call and to energize the appropriate hall lantern. It is obvious that such operation involves considerable lost motion and delay in the operation of the elevator system.

It is, therefore, an important object of our invention to provide, in an elevator system, for indicating to a passenger who has registered a call for one direction that the registered call will be answered by an elevator car as it approaches the floor where the call is registered from the opposite direction.

Another important object of our invention is to provide for indicating, while a car is approaching a floor in one direction, that it will leave the floor in an opposite direction.

A further object of our invention is to provide for lighting the hall lantern corresponding to the next direction of travel of an elevator car as it approaches a floor in the opposite direction.

Still another object of our invention is to provide for reversing the direction preference devices in an elevator system as the elevator car approaches a floor in one direction by operating the master switch in the car to a position corresponding to the next direction of travel of the car while it is still approaching the floor in the original direction for the purpose of canceling the registered call and to indicate that the car will answer the registered call.

A still further object of our invention is to provide, in an elevator system, for canceling a call registered for one direction of travel as the elevator car approaches a floor where the call is registered in the opposite direction.

Generally stated, the object of our invention is to provide a control and signalling system for an elevator car which shall be simple and efficient in operation, and which may be readily and economically manufactured and installed.

Other objects of our invention will in part be obvious and in part appear hereinafter.

Accordingly, our invention is disclosed in the embodiment hereof shown in the accompanying drawings and comprises the features of construction, combination of elements and arrangement of parts which will be exemplified in the construction hereinafter set forth, and the scope of the application of which will be indicated in the appended claims.

For a more complete understanding of the nature and scope of our invention, reference may be had to the following detailed description, taken in connection with the accompanying drawings, in which:

Figure 1 illustrates diagrammatically the arrangement of an elevator car in a shaft;

Fig. 2 illustrates the layout of a floor selector drive which may be used in conjunction with our invention;

Figs. 3 and 4 illustrate diagrammatically the circuit connections which may be used in practicing our invention, it being understood that the circuits shown in Fig. 4 are a continuation of those shown in Fig. 3; and

Fig. 5 is a layout illustrating the relative location of the various contact members and their operating windings for the various switches and relays illustrated in Figs. 3 and 4.

General description

According to our invention, the elevator system is provided with the usual starting and accelerating circuits. The motor which is provided for operating the elevator car in the shaft is arranged to be controlled by means of a Ward-Leonard control system in which the current flow through the field winding of the generator is varied and reversed, as is the customary practice.

At each floor "up" and "down" hall buttons are provided for permitting passengers to register calls in either direction. In order to indicate that the elevator car is to respond to a registered call, each floor is provided with "up" and "down" hall lanterns, the lanterns being energizable to indicate that the car will answer the call corresponding to the hall lantern that is energized.

The elevator car is provided with a manually-operable master switch having three positions, the center position being a stop position, and the extreme positions being, respectively, "up" and "down" positions. When the master switch is operated to either the "up" or "down" position, "up" or "down" preference switches will be operated, depending upon the position of the

master switch, for the purpose of determining which hall lantern will be energized as the car approaches a floor where a call is registered, and also which will permit the canceling of a call. The car is also provided with annunciators which indicate to the operator the floor at which a call is registered and the direction for which it is registered.

Assuming that a call is registered for the down direction at the third floor while the elevator car is at the lower terminal, the corresponding annunciator in the car will be operated, indicating to the operator the floor at which and the direction for which the call has been registered. In order to answer the call, the operator closes the doors and gate and operates the master switch to start the car upwardly. As the car approaches the floor where the call is registered, the operator centers the master switch, thereby initiating a slow-down sequence which will cause the car to be stopped at the floor where the call is registered.

The operator not only centers the master switch to the stop position, but also momentarily places it in the "down" position. This momentary operation of the master switch reverses the direction preference switches so that, as the car approaches the third floor in the "up" direction, the "down" lantern at the third floor will be energized and lighted. The passenger at the third floor is then informed that his call will be answered. In addition, the "down" call is canceled.

Since the master switch is only momentarily operated to the reverse position, no other operation results, provided that it is immediately centered before the car stops. If the master switch is not reversed, then the hall lantern corresponding to the "up" direction at the third floor will be energized, and the call will not be canceled until the car is started from the third floor in the down direction. With a little practice, the operator will be readily enabled to effect the energization of the "down" hall lantern while the car is approaching the floor where a call is registered in the "up" direction, so that a minimum of delay will be involved in answering isolated calls.

Description of apparatus

Referring now particularly to Fig. 1 of the drawings, it will be observed that the reference character 1 designates, generally, an elevator car which may be supported by means of a cable 2 passed over a sheave 3 and balanced by a suitable counterweight CW. The sheave 3 may be driven by means of a suitable motor M, and a brake B is provided for stopping further rotation of the sheave 3 as soon as the motor M is de-energized. In order to control the operation of the signalling system associated with the elevator, a floor selector, shown generally at 4, may be provided having a motor 5 which may be arranged by any suitable means to drive a brush carriage 6.

The layout of the floor selector 4 is schematically illustrated in Fig. 2 of the drawings. It will be observed that the floor selector 4 is provided with "down" call-canceling segments 11, 21, 31, 41 with which a brush 19 is arranged to engage. "Up" call-canceling segments 12, 22, 32, 42 are provided with which brush 20 is arranged to engage. "Down" hall lantern segments 13, 23, 33, 43 are provided with which a brush 30 is arranged to engage. "Up" hall lantern segments 14, 24, 34, 44 are provided with which a brush

40 is arranged to engage. It will be observed that the brushes 19, 20, 30, 40 are carried by the brush carriage 6, which, it will be understood, is operated by the motor 5 in either an "up" or a "down" direction in accordance with the movement of the car 1 in the shaft.

As illustrated in Fig. 1 of the drawings, the car 1 is provided with a slow-down inductor switch E having normally closed contact members E1 and E2, and a landing inductor switch F having normally closed contact members F1 and F2. When the operating windings of the inductor switches E and F are energized, no operation takes place until the contact members thereof are moved into proximity with inductor plates located along the sides of the hatchway in which the elevator car 1 operates. Thus when the operating winding of the slowdown inductor switch E is energized as the car 1 approaches the third floor, and the contact members E1 are moved into proximity with inductor plate 3UE, they will be opened and will remain open as long as the operating winding remains energized. In like manner, if the car 1 approaches the third floor in a "down" direction, and the operating winding is energized, the contact members E2 will be opened when they come into proximity with inductor plate 3DE. In like manner, the contact members F1 and F2 of the landing inductor switch F will be opened as they come into proximity with the inductor plates 3UF and 3DF, respectively, as the car 1 approaches the third floor from either the "down" or the "up" direction.

It will be understood that inductor plates are provided individual to each of the other floors as may be necessary for effecting the slow-down sequence and landing operation of the elevator car 1.

In order to signal to the operator that a call has been registered at a particular floor, a bank of annunciator lights 7 is provided. The circuit connections to the lights of the annunciator bank 7 are illustrated in Fig. 4 of the drawings, and will be described in detail hereinafter.

The elevator car 1 is also provided with a manually-operable master switch MS, which may be actuated by the operator for starting the car 1 in either direction and for stopping it at any floor. It will be observed that the center position of the master switch MS is a "stop" position, and that the extreme positions thereof are, respectively, "up" and "down" positions. The functioning of the master switch MS will be set forth in detail hereinafter.

Referring more particularly to Figs. 3 and 4 of the drawings, it will be observed that the motor M is provided with a main field winding MF that is connected for energization between energized conductors L1 and L2. Line switches LS1 and LS2 are provided, as illustrated, for connecting the conductors L1 and L2 to a suitable source of direct current (not shown). A generator G is provided having a generator series field winding GSF connected in series circuit relation with its armature and the combination being connected across the armature of the motor M.

The generator G is provided with a generator field winding GF, the current through which may be reversed by means of "up" and "down" reversing switches U and D, respectively. The reversing switches U and D are controlled by means of "up" and "down" master switches US and DS, respectively, which are directly controlled by means of the manually-operable mas-

ter switch MS. The master switch MS also controls "up" and "down" preference switches UX and DX which, as will appear hereinafter, are provided for effecting the energization of the desired hall lanterns and for canceling calls that have been registered.

In order to accelerate the motor M, a resistor R is provided which is initially connected in series circuit relation with the generator field winding GF. A speed switch V is provided with contact members which are connected to short-circuit the resistor R in order to provide maximum excitation to the generator G for applying maximum operating voltage to the armature of the motor M.

The operating windings of the slow-down and landing inductor switches E and F are illustrated together with a holding relay H, which is arranged to maintain the operating windings of the inductor switches energized until a complete sequence of operations in stopping the car *1* has been performed. In order to deenergize the operating windings of the inductor switches E and F and of the holding relay H, a reset relay M is provided which is arranged to be operated when either of the reversing switches U or D is operated.

In order to register calls for the "up" direction, hall buttons 1U, 2U, 3U are provided which are arranged to operate, respectively, "up" call-storing relays 1UR, 2UR, 3UR. In like manner, "down" hall buttons 2D, 3D, 4D are provided which are arranged, respectively, to effect the operation of "down" call-storing relays 2DR, 3DR, 4DR. As illustrated, the call-storing relays are of the two-winding type, one winding being the main operating winding and the other winding being a canceling winding, and so arranged that, when energized, the flux generated thereby opposes the flux generated by the main winding, thereby permitting the contact members of the relays to be opened.

Passengers at the various floors are informed that the calls which they have registered will be answered by means of up hall lanterns 1UL, 2UL, 3UL for the up direction, and by means of down hall lanterns 2DL, 3DL, 4DL for the down direction.

As set forth hereinbefore, a bank of annunciators 7 is provided for informing the operator that a call has been registered at a particular floor. The annunciators may comprise incandescent lamps. For the up direction, lamps 1UA, 2UA, 3UA are provided, and for the down direction, lamps 2DA, 3DA, 4DA are provided.

Description of operation

It will be observed that the brush carriage 6 of the floor selector 4 is illustrated in Fig. 2 as being at the third floor, in which position it will be located when the car *1* is at the third floor. The circuit connections that will be made at this time are illustrated in Fig. 4, where the brushes carried by the brush carriage 6 are also illustrated as being at the third-floor position. However, it will be understood that initially when the car *1* is at the first floor, the brush carriage 6 and brushes carried thereby will be located in the first-floor position with the brushes in engagement with their corresponding segments.

The line switches LS1 and LS2 are closed, thereby connecting the conductors L1 and L2 to the source of direct current. Since the car *1* is assumed to be at the bottom terminal, the up preference switch UX will immediately be energized.

L1, top limit switch 3, DS2, DX2, UX, L2

Also "up" hall lantern 1UL will be lighted to indicate that the car is to leave the lower terminal.

L1, 1UL, segment 13, brush 35, UX3, V4, L2

With the car *1* at the first floor, it will be assumed that a call is registered at the third floor for the "down" direction. This call is registered by the passenger depressing the "down" hall button 3D. As a result, the "down" call-storing relay 3DR is energized.

L1, 3D, 3DR, L2

A holding circuit for the "down" call-storing relay 3DR is completed at contact members 3DR1, so that the "down" hall button 3D may be released, and the call will remain registered. The annunciator light 3DA will immediately be lighted to indicate to the operator that a call has been registered at the third floor for the "down" direction.

L1, 3DA, 3DR2, L2

The operator now closes the door and gate and operates the master switch MS to the "up" position. The "up" master switch US is then energized over an obvious circuit, and as a result, the "up" reversing switch U and the reset relay M are energized.

L1, US1, F1, D5, U, M, door and gate safety contacts, L2

At contact members U5, an obvious holding circuit is completed for the operating windings of switch U and relay M. The generator field winding GF is then energized to cause the generator G to apply the proper voltage to the motor M for operating the elevator car *1* in the "up" direction.

L1, U2, GF, U3, R, L2

The brake B is released by the closing of contact members U1 and the car *1* moves upwardly at reduced speed.

A further result of the energization of the "up" reversing switch U is to effect the energization of the speed switch V.

L1, U4, E1, V, L2

The resistor R is then short-circuited and full excitation is applied to the generator G. Consequently, full voltage is applied to the motor M and it operates at maximum speed to move the car *1* upwardly. A further result of the operation of the speed switch V is to open the previously traced circuit for the "up" hall lantern 1UL, and it is extinguished.

It will be understood that sufficient time elapses between the operation of the "up" reversing switch U and the operation of the speed switch V to permit the necessary accelerating sequence to take place for the motor M.

As the car passes the second floor, the operator centers the master switch MS and the holding relay H is then energized.

L1, MS, H, M1, L2

At the same time, the operating winding for the slow-down inductor switch E is energized in parallel circuit relation with the operating winding of the holding relay H. It will be observed that the holding relay H, at contact members H1, completes a self-holding circuit so that further operation of the master switch MS does not affect it or the energization of the operating windings of the inductor switches E and F.

As the contact members E1 of the slow-down inductor switch E are moved into proximity to the inductor plate 3UE, they are opened, and as a result, the previously traced energizing circuit for the operating winding of the speed switch V is opened. This switch is deenergized. As a result, the resistor R is again inserted in series circuit relation with the generator field winding GF and reduced voltage is applied to the motor M, causing the elevator car 1 to be operated at a reduced speed. A further result of the deenergization of the speed switch V is to effect the energization of the operating winding of the landing inductor switch F.

L1, H1, V3, F, M1, L2

The operator not only centers the control switch as set forth, but also momentarily moves it to the "down" position. The "down" master switch DS is then momentarily energized over an obvious circuit. As a result of the energization of the "down" master switch DS, the previously traced energizing circuit for the "up" preference switch UX is opened, and it is deenergized. The "down" preference switch DX is then energized.

L1, bottom limit switch 9, US2, UX2, DX, L2

It will be recalled that the brush carriage 6 is moving upwardly with the car 1. Brush 40 engages down hall lantern segment 34, and, due to the fact that the "down" preference switch DX is energized, the "down" hall lantern 3DL is lighted.

L1, 3DL, segment 34, brush 40, DX3, V4, L2

As soon as brush 10 engages "down" call-canceling segment 31, the canceling winding 3DRC of the "down" call-storing relay 3DR is deenergized, and as a result, the contact members of this relay are opened.

L1, 3DR1, 3DRC, segment 31, brush 10, DX1, V2, L2

In the event that the operator did not momentarily operate the master switch to the "down" position, as just described, the brush 30, on engaging the up hall lantern segment 33, would have completed a circuit for lighting the hall lantern 3UL. This would indicate to the passenger who had depressed the down hall button 3D that the car would stop at the third floor, but would continue in the "up" direction. In addition, the call would not be canceled, unless the car left the third floor in the down direction. It will be obvious, therefore, that a minimum of confusion will result when the operator momentarily operates the master switch MS to the "down" position as the car approaches the third floor in the "up" direction, and the passenger will be informed that the car, although moving in an "up" direction, will answer his call.

Since the car is still moving in the "up" direction and the master switch MS is only momentarily operated to the "down" position, no further operation than that described hereinbefore will take place as a result of this reversal of the master switch MS. It will then be understood that the elevator motor M will not be plugged, and operated in the reverse direction when the master switch MS, under these conditions, is momentarily reversed.

The elevator car 1, continuing movement in the "up" direction, causes the contact members

F1 of the landing inductor switch F to come into proximity to the inductor plate 3UF. These contact members are then opened, and as a result, the "up" reversing switch U and the reset relay M are deenergized. The generator field winding GF is deenergized and the brake B is applied. The reset relay M at contact members M1 opens the energizing circuits for the operating windings of the inductor switches E and F and the holding relay H. They are then deenergized.

The passenger having entered the car, the operator closes the door and gate and operates the master switch MS again to the "down" position. The "down" master switch DS is then energized, and as a result, the "down" reversing switch D and the reset relay M are energized. L1, DS1, F2, U6, D, M, door and gate safety contacts, L2

At contact members D6 a holding circuit is completed for the operating windings of switch D and relay M. The generator field winding is then energized in a reverse direction.

L1, D3, GF, D1, R, L2

At contact members D2 a circuit is completed for releasing the brake B and the car 1 is then operated in the "down" direction at slow speed.

The energization of the "down" reversing switch D also effects the energization of the speed switch V, and the resistor R is again short-circuited.

L1, D4, E2, V, L2

A further result of the energization of the speed switch V is to open the previously traced energizing circuit for the down lantern 3DL, and it is extinguished.

The car 1 then continues to travel downwardly until it is stopped at the first floor in a manner similar to that set forth hereinbefore in stopping at the third floor. It will be obvious that a call at any other floor may be answered in the same manner, and it will also be obvious that more than four floors may be served by an elevator system organized in accordance with our invention. It will be understood that the limited number of floors shown and described herein is for illustrative purposes only.

Since certain further changes may be made in the foregoing construction and different embodiments of the invention may be made without departing from the scope thereof, it is intended that all matter set forth in the foregoing description or shown in the accompanying drawings shall be interpreted as illustrated and not in a limiting sense.

We claim as our invention:

1. In a system for operating an elevator car past a plurality of floors, in combination, manual switch means in the car operable to positions corresponding to either direction of travel and to a stop position, up and down hall lanterns individual to each floor, means responsive to the operation of said switch means while the car is travelling in one direction for initiating a slow-down sequence to stop the car at a floor, and means responsive to the operation of said switch means to the position opposite to that corresponding to the direction in which the car is traveling to effect the energization of the hall lantern at said floor corresponding to the other direction of travel during said slow-down sequence.

2. In a system for operating an elevator car past a plurality of floors, in combination, manual switch means in the car operable to positions

corresponding to either direction of travel and to a stop position, up and down call registering means individual to each floor, means responsive to the operation of said switch means while the car is travelling in one direction for initiating a slow-down sequence to stop the car at a floor where a call is registered for the opposite direction, and means responsive to the momentary operation of said switch means to the position opposite to that corresponding to the direction in which the car is travelling for cancelling said registered call.

3. In a system for operating an elevator car past a plurality of floors, in combination, manual switch means in the car operable to positions corresponding to either direction of travel and to a stop position, up and down preference means disposed to be selectively operated by said switch means for establishing circuits corresponding to the direction of car travel, and means responsive to the operation of said switch means to said stop position for initiating a slow-down sequence to stop the car at a floor, said preference means being responsive to the operation of said switch means to the position opposite to that corresponding to the direction in which the car is travelling for establishing circuits corresponding to the opposite direction of travel as the car continues to approach said floor.

4. In a signaling system for an elevator car operable past a plurality of floors, in combination, a hall lantern individual to each floor and to each direction of car travel, and means for energizing the hall lantern at a floor corresponding to the proposed next direction of operation of the car when the car approaches said floor from an opposite direction.

5. In a system for operating an elevator car past a plurality of floors, in combination, a hall lantern individual to each floor and to each direction of travel, direction preference means for establishing circuits to energize said hall lanterns corresponding to the direction of travel of the car, and means for reversing said direction preference means while the car is approaching a floor in one direction to effect the energization of the hall lantern at said floor corresponding to the other direction of travel as the car continues to approach said floor.

6. In a signaling system for an elevator car operable past a plurality of floors, in combination, an up and a down hall lantern individual to each floor, and means for energizing the hall lantern at a floor corresponding to the next direction of operation of the car while it approaches said floor from an opposite direction.

7. In a system for operating an elevator car past a plurality of floors, in combination, up and down hall lanterns individual to each floor, manual switch means in the car for controlling the operation thereof, and up and down preference means disposed to be selectively operated by said manual switch means for establishing circuits to energize said hall lanterns corresponding to the direction of travel of the car, said preference means being responsive to a further operation of said manual switch means to a position opposite to that corresponding to the direction in which the car is traveling while the car is approaching a floor in one direction for reversing said preference means to effect the energization of the hall lantern at said floor corresponding to the other direction of travel as the car continues to approach said floor.

8. In a system for operating an elevator car

past a plurality of floors, in combination, up and down hall lanterns individual to each floor, manual switch means in the car operable to positions corresponding to either direction of travel and to a stop position, up and down preference means disposed to be selectively operated by said switch means for establishing circuits to energize said hall lanterns corresponding to the direction of car travel, and means responsive to the operation of said switch means to said stop position for initiating a slow-down sequence to stop the car at a floor, said preference means being responsive to the operation of said switch means to the position opposite to that corresponding to the direction in which the car is travelling to effect the energization of the hall lantern at said floor corresponding to the other direction of travel as the car continues to approach said floor.

9. In a signaling system for an elevator car operable past a plurality of floors, in combination, up and down hall lanterns individual to each floor, means for signaling to the car that a call has been registered at a floor for one direction of travel, and means for energizing the hall lantern individual to the direction for which said call is registered regardless of the direction in which the car approaches said floor.

10. In a signaling system for an elevator car operable past a plurality of floors, in combination, up and down hall lanterns individual to each floor, means for signaling to the car that a call has been registered at a floor for one direction of travel, means for energizing the hall lantern individual to the direction for which said call is registered regardless of the direction in which the car approaches said floor, and means for cancelling said call regardless of the direction in which the car approaches said floor.

11. In a signaling system for an elevator car operable past a plurality of floors, in combination, up and down hall lanterns individual to each floor, means for signaling to the car that a call has been registered at a floor for one direction of travel, means for energizing the hall lantern at said floor individual to the direction of approach as the car approaches in a direction opposite to that for which the call is registered, and means for energizing the other hall lantern at said floor to indicate that the car will answer the registered call.

12. In a signaling system for an elevator car operable past a plurality of floors, in combination, up and down hall lanterns individual to each floor, means for signaling to the car that a call has been registered at a floor for one direction of travel, means for energizing the hall lantern at said floor individual to the direction of approach as the car approaches in a direction opposite to that for which the call is registered, means for energizing the other hall lantern at said floor to indicate that the car will answer the registered call, and means for cancelling said call.

13. In a signaling system for an elevator car operable past a plurality of floors, in combination, means for signaling to the car that a call has been registered at a floor, up and down hall lanterns individual to each floor, direction preference means disposed to effect the energization of said hall lanterns corresponding to the direction of travel of the car, and means for reversing said direction preference means while the car is approaching from one direction, a floor where a call is registered for the opposite direction, to

effect the energization of the hall lantern corresponding to the direction in which the call is registered.

14. In a signaling system for an elevator car operable past a plurality of floors, in combination, means for registering a call at any of the floors and signaling to the car that the call has been registered, up and down hall lanterns individual to each floor, direction preference means disposed to effect the energization of said hall lanterns corresponding to the direction of travel of the car, and means for reversing said direction preference means while the car is approaching from one direction, the floor where a call is registered for the opposite direction, to effect the energization of the hall lantern corresponding to the direction in which the call is registered and cancelling the registered call.

15. In a system for operating an elevator car past a plurality of floors, in combination, means for signaling to the car that a call has been registered at a floor, up and down hall lanterns individual to each floor, manual switch means in the car for controlling the operation thereof, and up and down preference means disposed to be selectively operated by said manual switch means for effecting the energization of said hall lanterns corresponding to the direction of travel of the car at floors where calls are registered, said preference means being responsive to a further operation of said manual switch means to a position opposite that corresponding to the direction in which the car is travelling while the car is approaching a floor in one direction where a call is registered for reversing said preference means to effect the energization of the hall lantern at said floor corresponding to the other direction of travel as the car continues to approach said floor.

16. In a system for operating an elevator car past a plurality of floors, in combination, means for registering a call at any of the floors and signaling to the car that a call has been registered at any floor, up and down hall lanterns individual to each floor, manual switch means in the car for controlling the operation thereof, and up and down preference means disposed to be selectively operated by said manual switch means for effecting the energization of said hall lanterns and cancelling calls at floors where calls are registered, said preference means being responsive to a further operation of said manual switch means to a position opposite to that corresponding to the direction in which the car is travelling while the car is approaching a floor in one direction where a call is registered for reversing said preference means to effect the energization of the hall lantern at said floor corresponding to the other direction of travel and to cancel the registered call as the car continues to approach said floor.

17. In a system for operating an elevator car past a plurality of floors, in combination, means for signaling to the car that a call has been registered at a floor, up and down hall lanterns individual to each floor, manual switch means in the car operable to positions corresponding to either direction of travel and to a stop position, up and down preference means disposed to be selectively operated by said switch means for effecting the energization of said hall lanterns corresponding to the direction of car travel, and means responsive to the operation of said switch means to said stop positions for initiating a slow-down sequence to stop the car at a floor

where a call is registered, said preference means being responsive to the operation of said switch means to a position opposite to that corresponding to the direction in which the car is travelling to effect the energization of the hall lantern at said floor corresponding to the other direction of travel as the car continues to approach said floor.

18. In a system for operating an elevator car past a plurality of floors, in combination, means for registering a call at any of the floors and signaling to the car the registration of the calls, up and down hall lanterns individual to each floor, manual switch means in the car operable to positions corresponding to either direction of travel and to a stop position, up and down preference means disposed to be selectively operated by said switch means for effecting the energization of said hall lanterns and cancelling calls at floors where calls are registered, and means responsive to the operation of said switch means to said stop position for initiating a slow-down sequence to stop the car at a floor where a call is registered, said preference means being responsive to the operation of said switch means to a position opposite to that corresponding to the direction in which the car is travelling to effect the energization of the hall lantern at said floor corresponding to the other direction of travel and to cancel the registered call as the car continues to approach said floor.

19. In a system for operating an elevator car past a plurality of floors, in combination, manual switch means in the car operable to either an up or a down position, up and down master control means disposed to be selectively operated in accordance with the position of said manual switch means, up and down reversing means disposed to be operated respectively by said up and down master control means, up and down hall lanterns individual to each floor, means responsive to the operation of said switch means while the car is travelling in one direction for initiating a slow-down sequence to stop the car at a floor, and means responsive to the operation of said switch means to the position opposite to that corresponding to the direction in which the car is travelling to effect the energization of the hall lantern at said floor corresponding to the other direction of travel.

20. In a system for operating an elevator car past a plurality of floors, in combination, manual switch means in the car operable to either an up or a down position, an up and a down master relay disposed to be respectively operated on operation of said manual switch means to the up or the down position, an up and a down reversing switch disposed to be respectively operated on operation of said up and down master relays for effecting the movement of the car in corresponding directions, an up and a down hall lantern individual to each floor, means responsive to the operation of said manual switch means while the car is travelling in one direction for initiating a slow-down sequence to stop the car at a floor, and means responsive to the operation of said manual switch means to a position opposite to that corresponding to the direction in which the car is travelling to effect the energization of the hall lantern at said floor corresponding to the other direction of travel.

21. In a system for operating an elevator car past a plurality of floors, in combination, manual switch means in the car operable to either an up or a down position, an up and a down master

relay disposed to be respectively operated on
 operation of said manual switch means to the up
 or the down position, an up and a down revers-
 ing switch disposed to be respectively operated
 5 on operation of said up and down master relays
 for effecting the movement of the car in corre-
 sponding directions, said reversing switches on
 operation being disposed to complete self-holding
 circuits therefor, an up and a down hall lantern
 10 individual to each floor, means responsive to
 the operation of said manual switch means while
 the car is travelling in one direction for initiat-
 ing a slow-down sequence to stop the car at a
 floor, and direction switch means disposed to be
 15 responsive to the operation of said manual switch
 means to a position opposite to that correspond-
 ing to the direction in which the car is travelling
 to effect the energization of the hall lantern at
 20 said floor corresponding to the other direction
 of travel.

22. In a system for operating an elevator car
 past a plurality of floors, in combination, manual
 switch means in the car operable to positions
 corresponding to either direction of travel of the
 25 car, an up and a down hall lantern individual
 to each floor, means for initiating a slow-down
 sequence to stop the car at a floor, and means

operable while said car is approaching said floor
 in one direction for effecting the energization of
 the hall lantern corresponding to the opposite
 direction of travel to indicate that the proposed
 next direction of movement of the car after it
 5 has stopped at said floor will be in the opposite
 direction.

23. In a system for operating an elevator car
 past a plurality of floors, in combination, manual
 switch means in the car operable to positions
 corresponding to either direction of travel of
 10 the car, an up and a down hall lantern individual
 to each floor, an up and a down call registering
 device individual to each floor, means for initiat-
 ing a slow-down sequence while the car is travel-
 15 ling in one direction to stop the car at a floor
 where a call is registered by one of said call
 registering devices for the opposite direction, and
 means operable while said car is approaching
 20 said floor for effecting the energization of the
 hall lantern corresponding to the direction for
 which the call is registered to indicate that the
 proposed next direction of movement of the car
 after it has stopped at said floor will be in the
 25 direction for which the call was registered.

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