A. ANDRÉN.

SIGNALING APPARATUS.

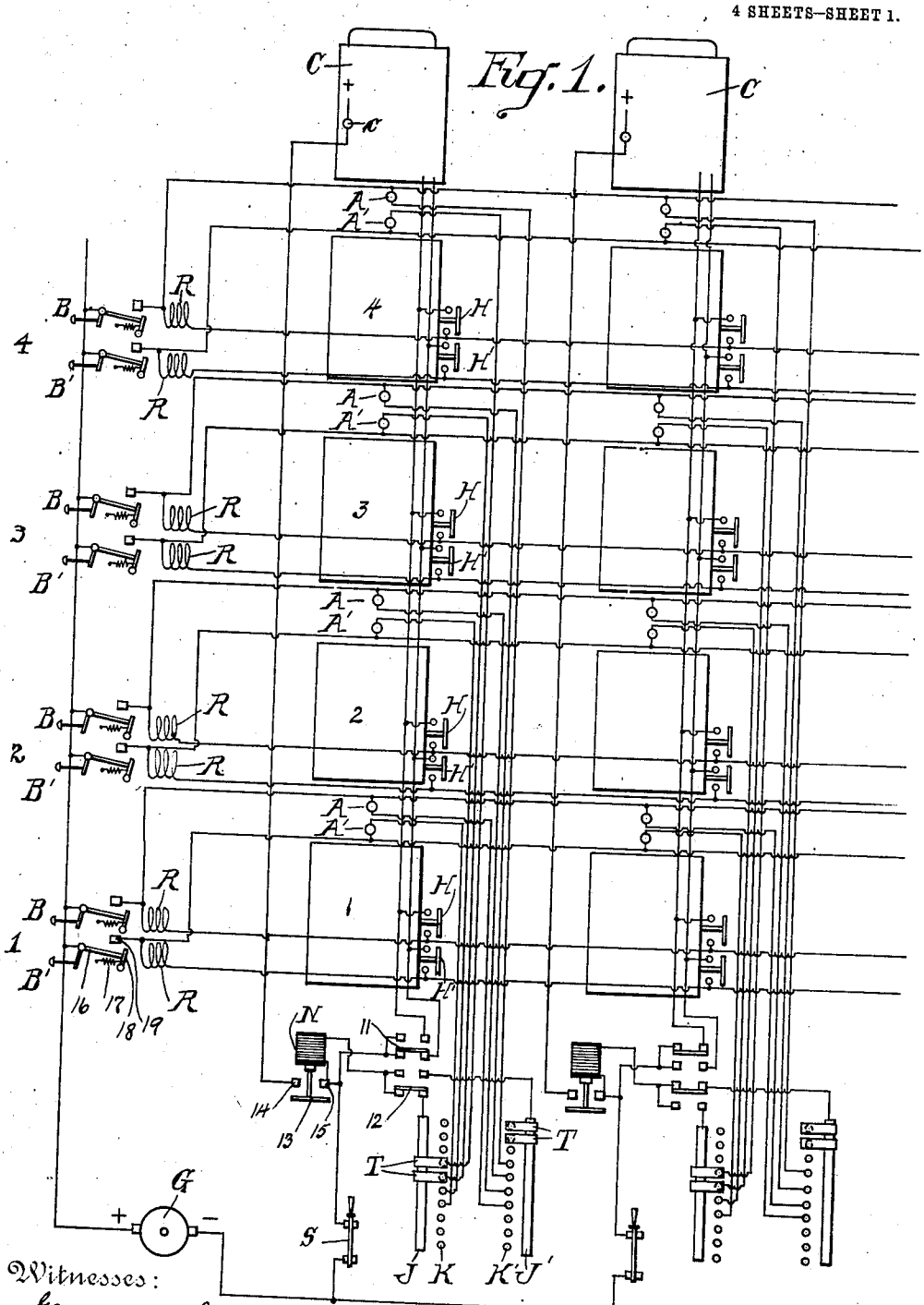
APPLICATION FILED JAN. 26, 1909.

1,109,950.

Patented Sept. 8, 1914.

4 SHEETS—SHEET 1.

Fig. 1.



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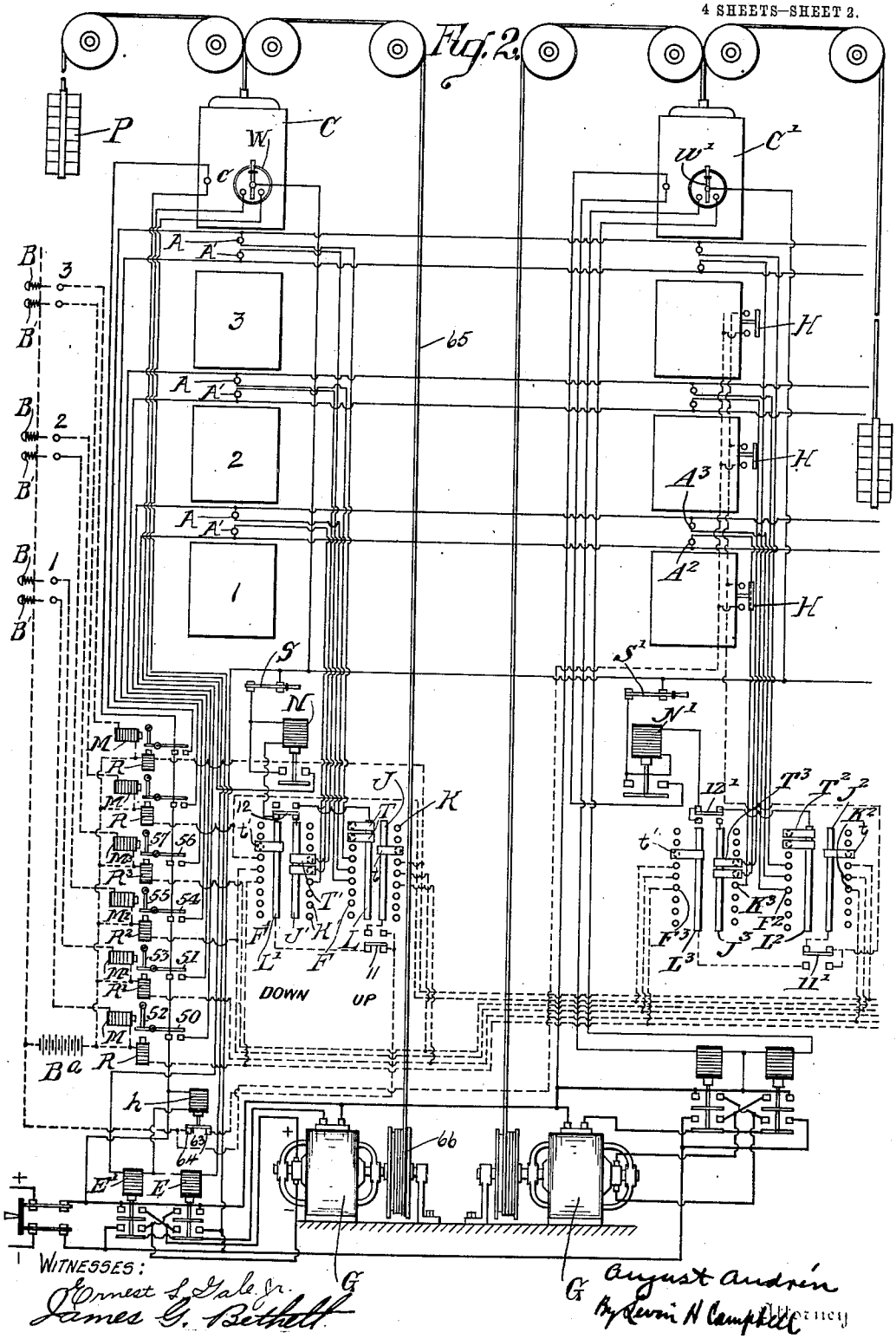
4 SHEETS—SHEET 2.

Fig. 2.



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4 SHEETS—SHEET 3.

Fig. 3.

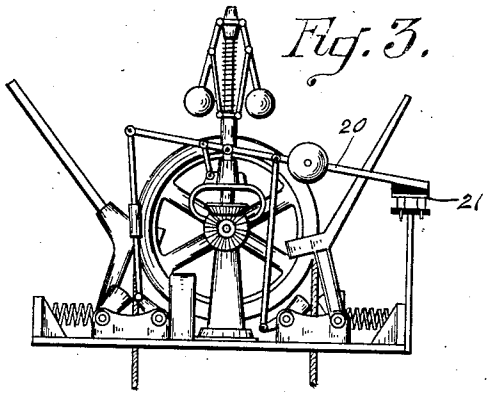


Fig. 4.

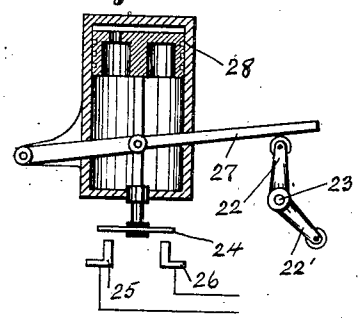


Fig. 5.

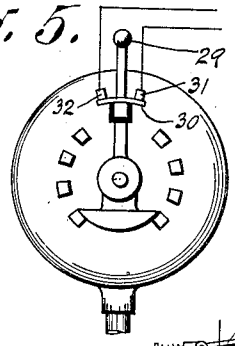


Fig. 6.

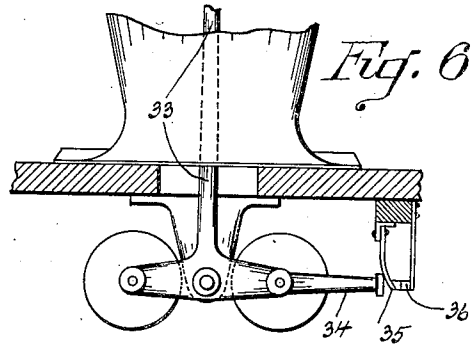


Fig. 7.

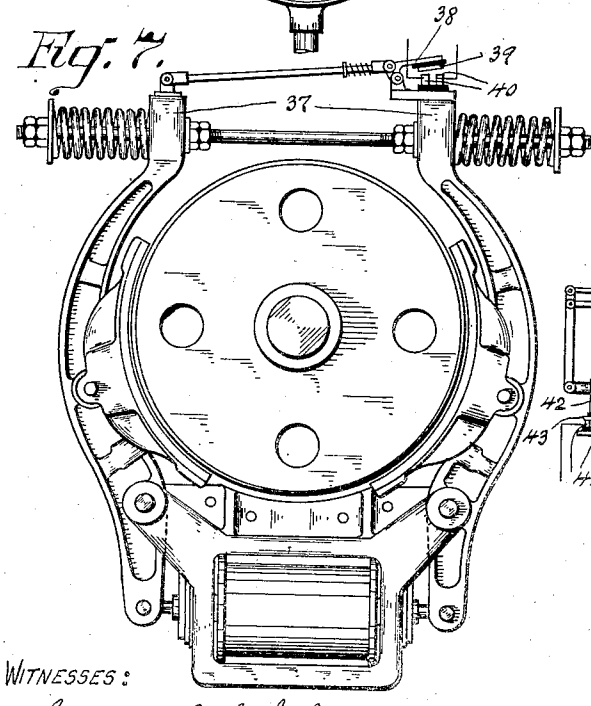
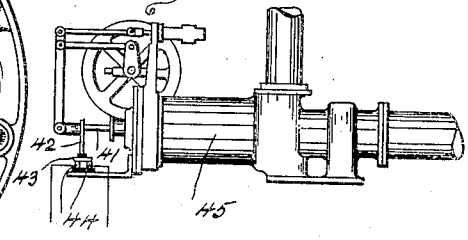


Fig. 8.



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4 SHEETS—SHEET 4.

Fig. 9.

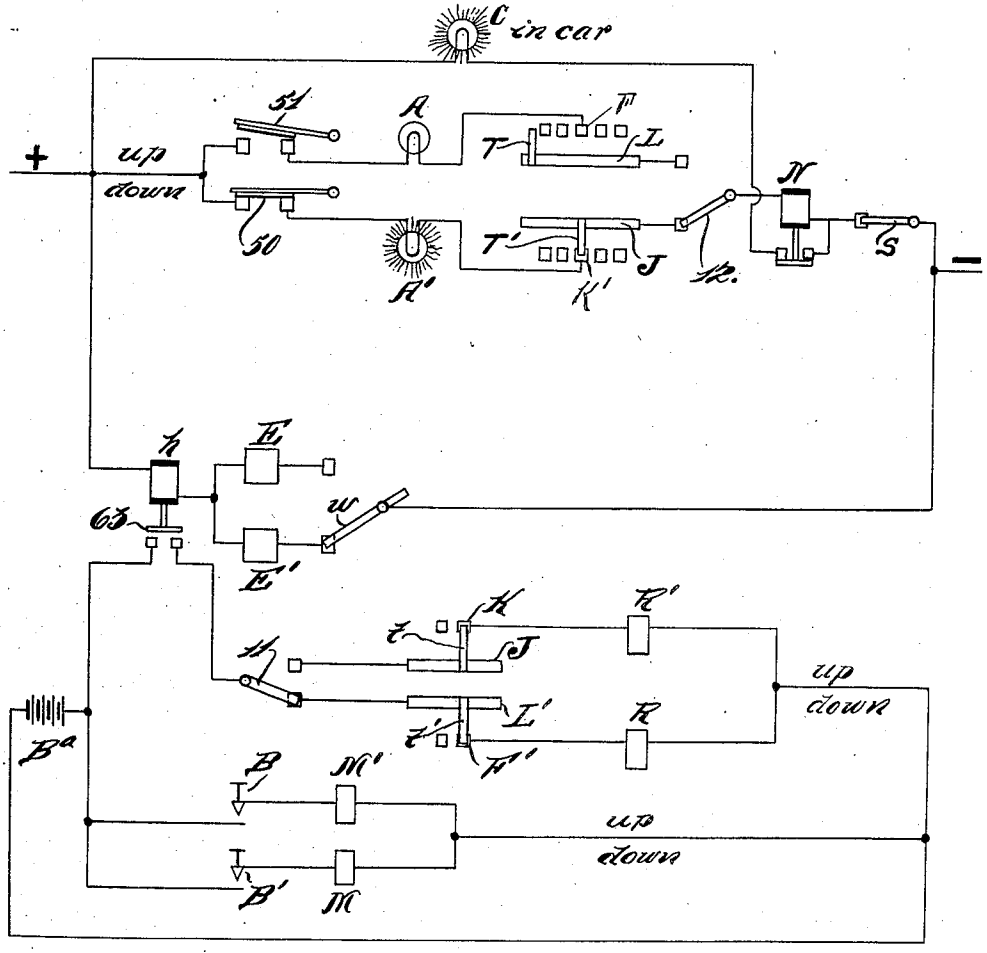
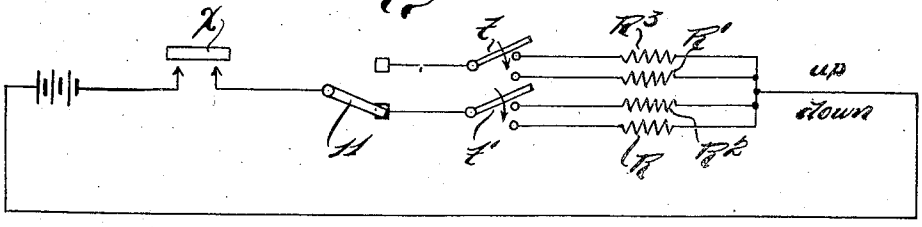


Fig. 10.



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August Andrén
by Howson & Howson
attorneys

UNITED STATES PATENT OFFICE.

AUGUST ANDRÉN, OF BROOKLYN, NEW YORK, ASSIGNOR, BY MESNE ASSIGNMENTS, TO ELEVATOR SUPPLY & REPAIR COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

SIGNALING APPARATUS.

1,109,950. Specification of Letters Patent. Patented Sept. 8, 1914.

Application filed January 26, 1909. Serial No. 474,275.

To all whom it may concern:

Be it known that I, AUGUST ANDRÉN, a subject of the King of Sweden, residing in Brooklyn, in the county of Kings and State of New York, have invented a new and useful Improvement in Signaling Apparatus, of which the following is a specification.

My invention relates to improvements in signaling apparatus, more particularly described as electric signaling apparatus for elevators, and known in the latter art as "flash signals."

One of the objects is to provide means whereby a signal once given by a waiting person remains in force until the person has been taken as a passenger.

A further object is to provide means whereby an elevator car may pass a floor without disturbing any signal already sent from the said floor.

A still further object is to provide means whereby no action of a car operator is necessary to maintain the existing condition of any given floor signals when his car passes the floor without stopping.

A further object is to provide means for automatically restoring the signal system to normal or inactive position when an elevator car stops at a floor from which a signal has been given.

For the attainment of these ends and the accomplishment of other new and useful objects, my invention consists in the features of novelty in the construction, combination and arrangement of the several parts hereinafter more completely described, and claimed in the appended claims.

It frequently occurs that it is inexpedient for a car operator to stop the car for every signal, and it has been found necessary to provide means for suspension of the restoring action when a car operator passes a floor without attending to the signal. One improvement herein described consists of a means of "selective restoration," which consists in keeping normally "open" the circuit which includes the common wire of the restoring magnets, until the stop signal receives operative attention from a car operator, and then automatically closing the restoring magnet circuits by the action of the car operator taking on passengers.

In the accompanying drawings, Figure 1 is a diagrammatic arrangement of a flash signal system embodying my "selective restoration" device; Fig. 2 is a diagrammatic arrangement of the same, including a supplementary source of current supply and motors with control system for operating the elevator cars; and Figs. 3 to 8, inclusive, are various devices for automatically closing restoring magnet circuits in my "selective restoration" system. Switch 63 in Fig. 2 is also such a switch. Figs. 9 and 10 are diagrams of parts of the system.

Referring to Fig. 1, four floors of an installation of two elevators are shown with corresponding up and down push-button switches B and B′, and up and down floor lamps A and A′. The equipment for each elevator car is identical, hence the description of one will suffice for any number of cars in the same installation. Each car C is provided with a commutator device, comprising strip contacts J, J′, segmental contacts K, K′, and sliding contacts T moving in accordance with the movement of the car. The directional switches 11 and 12 also directly associated with the commutator device are automatically operated by the up or down movement of the car to their respective up or down positions. The magnet N when energized, draws up the contact bar 13 to the contacts 14, 15, thereby completing a circuit to the car signal lamp *c*. Restoring magnets R are adapted to return the push-button switches to their normal or inactive position. When a push-button B or B′ is operated, the movable contact 16 connects with the fixed contact 19, and is held in place by the armature member 18, which latter member is subject to the action of the spring 17 when the contact 16 is operated. The energization of release magnet R attracts the armature member 18, and thus allows the contact member 16 to fall by the weight of gravity and thus resume its original position. The method of "selective restoration" is here shown as conditional upon the action of a car operator in stopping the car to receive a passenger. This action will cause the operation of a restoring switch, two of which H and H′ are shown for each floor in Fig. 1, to correspond with the up and down push-button switches for each floor.

At the right of Fig. 2 only one switch H is shown at each floor, this controlling all

the up and down restoring circuits of its car. Closure of the restoring switch may be effected in various ways. The means may be varied to suit different machinery or installations without altering the restoring devices. Following are descriptions of some of the various means for closing this restoring switch:

Fig. 3 represents a centrifugal or speed device of the well known automatic governor type, in which, when the speed of rotation falls below a predescribed minimum, the rod 20 falls, carrying the contact 21 with it and making the required connection.

Fig. 4 represents a contact member 24 held up from the contacts 25, 26 by means of the engagement of the lever 27 with one of the arms 22, 22′ of the operating or controlling device 23. A spring or gravitation will cause the contact 24 to drop when the elevator car is stopped, and the dash-pot 28 will delay this closure long enough to insure that time for taking on passengers has elapsed.

Fig. 5 shows a contact switch directly actuated by an electric controlling car switch. When the hand lever 29 is in a neutral position as shown, the contact bar 30 makes connection between the fixed contacts 31, 32, thus making the desired connection.

Fig. 6 represents the wheel and lever device of a hydraulic elevator. Swinging the lever 33 to the right or left in the operating positions causes the arm 34 to be respectively lower or higher than the central position, and it is only in this latter position that contact 35 is pressed into engagement with contact 36.

Fig. 7 represents a contact switch closed by the brake mechanism. When the brake operates, the arms 37 are pressed inwardly toward each other, the pivoted lever 38 carrying contact 39 is forced downward, and the desired connection is made between contact 39 and fixed contacts 40.

Fig. 8 represents a contact closed by the action of the main valve of a hydraulic elevator. To the valve stem 41 which moves in the cylinder 45 is connected the arm 42 carrying the contact member 43. When the valve stem 41 assumes the stopped position, the contact member 43 makes connection with the fixed contacts 44, as shown in the figure.

These various means for closing a circuit are shown and described in order that it may be evident that any convenient method may be adopted to render my scheme of "selective restoration" applicable to the various types and kinds of elevators. In order that my invention may be more readily understood, the action of the restoring switch H in connection with an ordinary flash signal system, will be explained.

Referring to Fig. 1, let it be assumed that a car C is in the upper portion of its trip, traveling downwardly; a person at the floor marked 3 desiring to go down presses the button B′ on that floor, contact is made thereby, and when the car C nears the said floor the floor lamp A′ lights in the well known manner. The magnet N, preferably a low resistance series type, is included in the directional switch common wire, its action closing a circuit which lights the car signal lamp *c*. In this exemplification two restoring switches H and H′ are shown for each floor, one (H) for the up-going car, and the other (H′) for the down-going car, to correspond with the restoring magnets for switches B and B′. When the car operator opens the door to receive the waiting person, the switch H′ for floor 3 is operated, thereby completing a circuit through the corresponding restoring magnet R and returning the corresponding switch 18 to its normal position.

It is evident that some action of a car operator, preferably that of opening the elevator door, is necessary to operate the restoring switch H or H′. Therefore, if for any reason, it is inexpedient for a certain car operator to stop at a given floor, the passing of that floor will not prevent the signal from appearing in subsequent cars until some car stops at the floor, or until some car operator gives the attention demanded by the signal. Fig. 2 illustrates how this same object may be accomplished in substantially the same way as previously described, but differing in some of the details. The motor G receives current from the supply means (+ and −), and an auxiliary source of current supply B^a is provided for energizing the releasing magnets M and restoring magnets R. The commutator device comprises two sets of strip and segmental contacts for the up and the down travel of the elevator car; F, L, J, K being the up contacts and F′, L′, J′, K′ the down contacts, and the up and down directional switches 11 and 12 are automatically operated by the commutating device. Follower contacts *t* and *t′*, not shown in Fig. 1, are for the purpose of closing circuits to the restoring magnets R when the elevator car stops at a given floor. A switch W in the car controls the operation of the motor G, the magnets E and E′ being suitably arranged to close connections to the motor G in the well known way to reverse the direction of rotation. The magnet *h* is also included in the common wire of the two magnets E and E′ and is energized whenever either of the latter is energized; thus the contact 63 makes connection with the fixed contacts 64 when the magnet *h* is deënergized, thus permitting a circuit to be closed through the contact *t* or *t′* of the commutator device, and through the restoring mag-

net R corresponding to the floor where the stop is made.

A single restoring switch H is shown at each floor in connection with the signal apparatus for the other car C (Fig. 2), in which the operation of the same is similar to that of the restoring switches shown in Fig. 1, with the exception that only one switch is employed for both up and down travel of the car, the follower t or t' of the commutating device connecting with the proper restoring magnet R when the car is stopped. Observe that, as the switches H are in parallel, each one performs for its car exactly the same function as the switch 63 performs for the car at the left, *i. e.* it keeps open the restoring circuits of that car while the car is running. The magnet N, preferably of the low resistance type, is included in series in the common wire for each of the floor lamps, and is energized when they are lighted, thereby closing a circuit to the car signal lamp c as previously described.

Figs. 9 and 10 show (diagrammatically) the circuits of the elevator at the left of Fig. 2. Referring to Fig. 9, assume that the car is at rest somewhere in the shaft. Now if the operator wishes to go down he throws his lever W as shown, so as to energize the motor-controlling magnet E'. This, we will assume will cause the elevator to start down. Closing push-button switch B' energizes the down setting-magnet M, which releases its pivoted lever 50 and closes the connection between the source of power and the down lamp A'. When the moving brush T' strikes that lamp's stationary contact, it closes the circuit by way of circuit-shifting switch 12 and lights the lamp. At the same time it energizes magnet N, which closes a local circuit and lights the lamp C in the car. Throwing operator's lever W has also closed the circuit through magnet h, which has opened the switch 63 which controls the restoring circuits for that car. At the middle of the figure is shown the restoring circuits. When the operator throws his lever W to the central position to stop his car, the magnet h is deënergized, closing switch 63. The circuit is then closed from the source of power by way of circuit-shifting switch 11 to stationary bar L', and moving brush t', and as this will touch restoring contact F' when the car is at the floor, the down restoring magnet R will be energized. This of course will raise contact lever 50 and break the circuit through floor lamp A', and also deënergize magnet N which controls the car light, thus restoring the car and floor signals to their normal condition. Circuit-shifting switches 11 and 12 are of course thrown from one side to the other as the car reverses its direction of movement. The corresponding circuits for the up direction will be evident. The diagram is equally correct for the circuits of the car at the right (for its commutator is exactly the same) except that in the diagram switch 63 represents any one of the switches H, and magnet h is omitted.

In Fig. 10 I have shown a more simplified diagram of the restoring circuits for two floors. In this figure R, R' are the down and up restoring magnets for the first floor, for example, and R^2 and R^3 the down and up restoring magnets for the next floor. X represents the switch 63 of Fig. 2, or any of the switches of Figs. 3 to 8, or any one switch H of car C' of Fig. 2. 11^a is the circuit-shifting switch 11 or 11'. When the car is running, switch X is open. t and t' are similarly moved by the car to selectively control the restoration. When the switch X closes it will close whatever restoring circuit has been selected by the moving brushes t, t'.

The motor G is shown with the pulley sheave 66, about which passes the cable 65. The cable 65 supports the car C and the weight P in the ordinary well known manner. The switch S is for cutting out the signaling system for any elevator by preventing signal lamp c from being lighted. The magnet N is also cut out thereby and the floor signal lamps A and A' for the particular elevator car will not be lighted.

I desire not to be limited to the exact details as herein set forth, as it is evident that various changes may be made by those skilled in the art without departing from the spirit and scope of my invention; but

What I claim and desire to secure by Letters Patent of the United States is:—

1. In an elevator car signaling apparatus, the combination of a signaling device, means for automatically and selectively restoring the signal, and a centrifugal governor operated by the car and controlling said restoring means.

2. In an elevator car signaling apparatus, the combination of a signaling device, and means for automatically and selectively restoring a signal governed by the stopping of a car.

3. In an elevator signaling apparatus in combination, signaling means, means for setting the same, up and down restoring circuits, a normally open switch, and means controlling the same governed by the stopping of the car, and circuit-shifting switch mechanism connecting said first switch with said circuits alternately.

4. In an elevator signaling apparatus in combination, signaling means, means for setting the same, up and down restoring circuits, a normally open switch, means controlling the same governed by the stopping of the car, circuit-shifting switch mechanism connecting said first switch with said

circuits alternately, and means operated by the car and adapted to select the proper restoring circuits.

5. In signaling apparatus, the combination of devices for signaling a car to stop at a station, means for automatically restoring the device to its normal position governed by the stopping of the car, and circuits and a signal for another car whereby a car passing the station does not prevent the cars following from receiving the stop signal.

6. In electric signaling apparatus for elevators, the combination of signaling stations, signal devices in the cars, means for causing signals from said stations to appear in the cars only as they approach the corresponding signal station, and a device for automatically causing the signal to disappear when a car stops at the station from which the signal is sent.

7. In elevator apparatus, the combination of a motor, controlling apparatus for the motor, signaling apparatus for a car, floor signaling stations, means for signaling the car from the stations, and means for causing the signal automatically to disappear when the motor stops the car at a station and to prevent the same is the car is not so stopped.

8. In elevator apparatus, the combination of signaling devices in the cars, floor signaling devices, means for energizing the car signals from any floor, and means for automatically deënergizing the signal in a car when that car stops in response to a signal.

9. In an annunciator system for moving cars, a plurality of electrically operated signals, circuits for said signals, circuit holding devices for said signal circuits, releasing means for said holding devices and mechanism governed by the stopping of a car at the point designated by a signal for controlling said releasing means.

10. The combination with a movable car, a station indicating signal and means for operating said signal, of means governed by stopping said car at the station designated by said signal for canceling the same.

11. In a signal system for a movable car, a plurality of signals, means for operating said signals and means governed by stopping said car for independently canceling the said signals.

12. The combination with a movable car, of a station designating signal, means for operating said signal and means for canceling said signal, said latter means comprising a normally ineffective member moved in accordance with the movement of said car, and a device coöperating with said member governed by the stopping of said car.

13. The combination with a movable car, of signals, means for operating said signals and means for canceling said signals, said latter means comprising a normally ineffective member moved in accordance with the movement of said car, and a device coöperating with said member controllable by the movement of the car.

14. In an elevator signaling apparatus in combination, a car, electrically-operated signaling means, means for operating the same comprising a passenger's-button at each floor and mechanism corresponding to each button and set thereby, restoring mechanism comprising a selecting device moved correspondingly with the car whereby the restoring mechanism is adapted to restore all said passenger's-button-set mechanisms in succession and correspondingly with the movement of the car, a normally-open switch controlling said restoring mechanism and rendering it incapable of accomplishing the restoration of any of said passenger's-button-set mechanisms, said switch being controllable by the operator of the car and adapted when closed to put said restoring mechanism in condition such that the selecting device may accomplish the restoration of each of said button-set mechanisms.

15. In an elevator signaling apparatus in combination, a car, signaling means, means for operating the same comprising a passenger's-button at each floor and mechanism corresponding to each button and set thereby, restoring mechanism adapted to restore said passenger's-button-set mechanisms individually, a switch controlling said restoring mechanism and when open rendering it incapable of accomplishing the restoration of any of said passenger's-button-set mechanisms, and means operated by the starting and stopping of the car for opening and closing said switch.

16. In an elevator signaling apparatus in combination, a car, signals at the floors, circuits for the same, means for operating the signals comprising a passenger's-button at each floor and a commutator operating automatically to close the signal circuits in succession as the car travels, means operating to limit the signals given to those corresponding to the direction of movement of the car, and a single signaling device carried by the car and operated by each of said floor signal circuits.

17. In an elevator signaling apparatus in combination, a car, signals at the floors, circuits for the same, means for operating the signals comprising a passenger's-button at each floor and a commutator operating automatically to close the signal circuits in succession as the car travels, means operating to limit the signals given to those corresponding to the direction of movement of the car, and a single signaling device carried by the car and a magnet for operating the same energized by each of said floor signal circuits.

18. In an elevator signaling apparatus in combination, signaling means, means for set-

ting the same, up and down restoring circuits, a switch normally open while said car is running at full speed, means controlling the same governed by the starting and stopping of the car, and circuit shifting switch mechanism connecting said first switch with said circuits alternately.

19. In an elevator signaling apparatus in combination, signaling means, means for setting the same, up and down restoring circuits, a switch normally open while said car is running at full speed, a centrifugal governor controlling the same governed by the starting and stopping of the car, and circuit shifting switch mechanism connecting said first switch with said circuits alternately.

In testimony whereof, I have signed my name to this specification in the presence of two subscribing witnesses.

AUGUST ANDRÉN.

Witnesses:
ERLE L. AUSTELT,
W. H. BRADY.

Corrections in Letters Patent No. 1,109,950.

It is hereby certified that in Letters Patent No. 1,109,950, granted September 8, 1914, upon the application of August Andrén, of Brooklyn, New York, for an improvement in "Signaling Apparatus," errors appear in the printed specification requiring correction as follows: Page 4, line 17, for the word "station" read *stations;* same page, line 28, after the word "same" insert the word *when;* and that the said Letters Patent should be read with these corrections therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 29th day of September, A. D., 1914.

[SEAL.]

R. F. WHITEHEAD,
Acting Commissioner of Patents.

DISCLAIMER.

1,109,950.—*August Andrén*, Brooklyn, N. Y. SIGNALING APPARATUS. Patent dated September 8, 1914. Disclaimer filed June 21, 1922, by the assignee, *Elevator Supplies Company, Inc.*

Enters this disclaimer:

"(1) as to claim 14, of every 'normally open switch' now called for in the combination of elements therein claimed, except such as is controllable indirectly by the car operator and closed automatically through operation of some car mechanism which is operated in the routine running of the car, and

"(2) as to claims 2 to 5 inclusive and 9 to 12 inclusive, every means or mechanism therein specified as 'governed by' stopping the car except such as, after it has operated and caused the cancellation for one floor, requires, before it can again accomplish the signal-cancelling function for another floor, some action of mechanism which takes place in consequence of the act of stopping the car."

[*Official Gazette June 27, 1922.*]