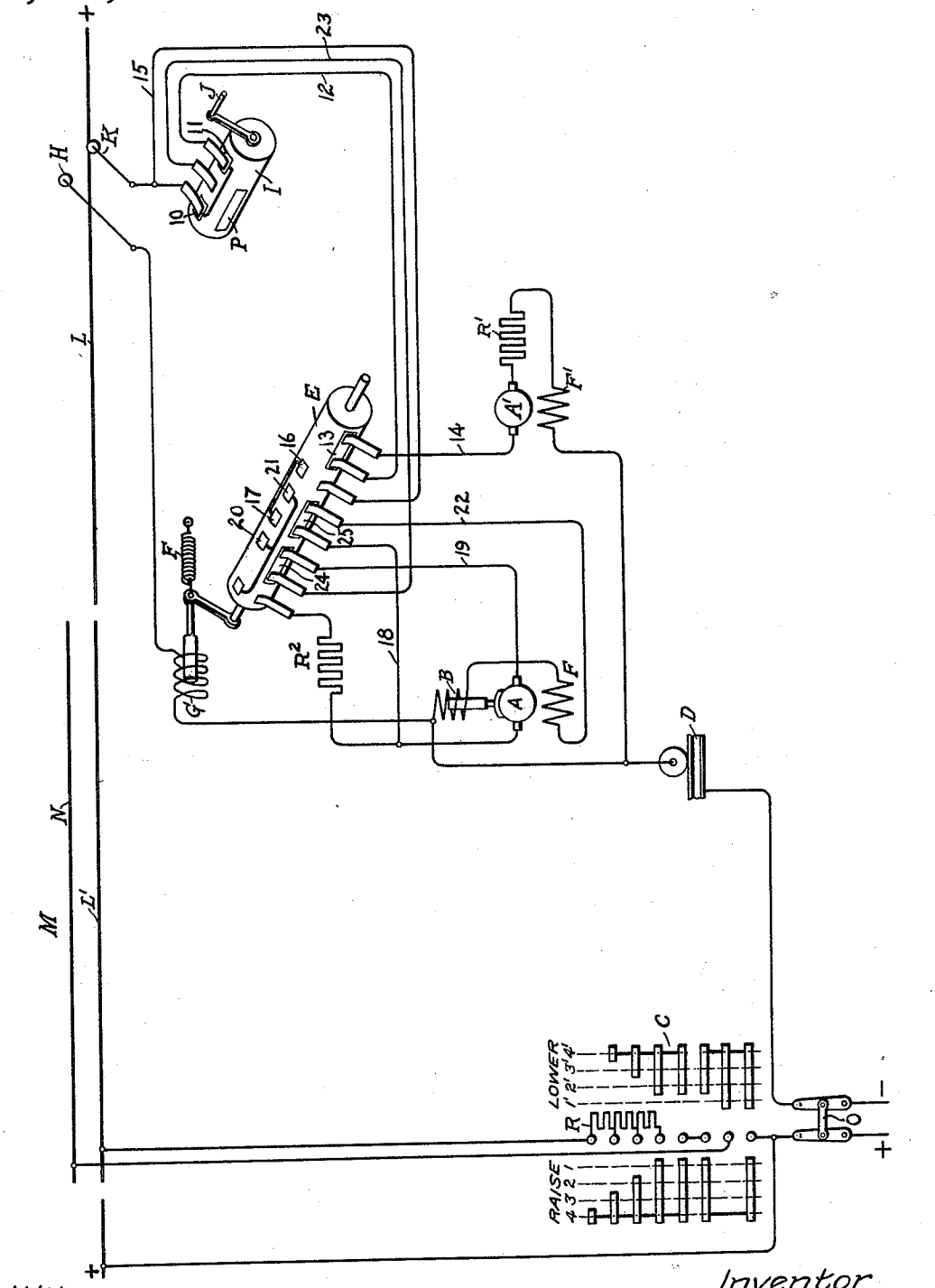
C. SCHIEBELER.

HOISTING CONVEYANCE.

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1,102,550.

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UNITED STATES PATENT OFFICE.

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HOISTING-CONVEYANCE.

1,102,550. Specification of Letters Patent. Patented July 7, 1914.

Application filed April 25, 1911. Serial No. 623,192.

To all whom it may concern:

Be it known that I, CARL SCHIEBELER, a subject of the King of Prussia, residing at Wilmersdorf, Germany, have invented certain new and useful Improvements in Hoisting-Conveyances, of which the following is a specification.

This invention relates to the control of electric motors and has special reference to the control of motors used in places where the number of conductors employed is exceedingly important, as, for instance, in electric railways and the like.

While my invention is capable of general application to electric railways, it is particularly applicable to overhead or suspension railways. Railways of this character are commonly employed for automatically conveying material from one station to another when the operator is located at a station to control the hoisting and lowering operation. At each station, which may be either a loading or an unloading station, the car must be stopped and the bucket or cage lowered by the operator. The cage is then again hoisted until it reaches the proper position and the car travels on. In systems of this character it is exceedingly important that the system of connections be as simple as possible.

One of the objects of my invention, therefore, is to provide a simple and reliable system employing a minimum number of sliding conductors in which a bucket or cage may be raised and lowered by the operator, after which the car travels until it is again stopped at a station.

Other objects and purposes of my invention will appear in the course of the following specification in which I have shown my invention embodied in concrete form for purposes of illustration.

In the accompanying drawing I have shown a diagrammatic illustration of one embodiment of my invention.

Referring to the drawing, A represents the armature and F the field of the motor for raising and lowering.

C represents the controller for said motor having various hoisting or raising positions 1, 2, 3 and 4 on the left-hand side and corresponding lowering positions 1′, 2′, 3′ and 4′ on the right-hand side.

B represents the actuating winding for releasing a brake on the motor and D the rail upon which the car travels.

A′ represents the armature and F′ the field of the traveling motor, that is, the motor which causes the car to travel.

R is the resistance for the circuit of the hoisting and lowering motor and R′ is the resistance in the circuit of the armature A′.

E is a reverser for reversing the motor armature A and is likewise provided with contacts for controlling the armature A′. This reverser is of the ordinary drum type and is biased or spring pressed to the position shown in the drawing by means of the spring F and is adapted to be moved to the opposite direction so as to engage the opposing contacts by the energization of electromagnetic winding G. One terminal of this winding connects with the sliding conductor H, while the other goes to the rail D.

A limit switch I of the drum type is arranged to be moved by the cage to change the circuit connections in a well-known manner. This may be accomplished in the usual manner by providing means whereby the handle J of the switch will be moved into the position shown in the drawing when the cage reaches the upper limit of its movement and be moved in the opposite direction when the cage descends. Three fingers are provided for this switch, each of which is connected with a finger on the reverser E. One of these fingers is connected with the sliding shoe K.

L represents the trolley wire or conductor from which the traveling motor A′ receives its current.

M is a loading or unloading station and at this station the trolley wire L is provided with a section L′ which is insulated from the remainder of the trolley wire and is energized only through the controller C. This trolley section is to be engaged by the sliding shoe K. At this station there is also a deënergized trolley wire section N adapted to be engaged by the shoe H. This section

likewise is energized only through the controller C and is provided for the purpose of energizing winding G to operate the reverser.

As thus constructed and arranged the operation of my device and the various circuit connections are as follows: With the parts in the position shown in the figure, the car is traveling along on the rail D with the shoe or trolley K on the trolley wire L. All the parts including the two motors, reverser, and limit switch, are located on the car, while the controller C is located in the station. The travel of the car is not now under the control of controller C which is now in the off position. Current to the traveling motor will now be from the positive trolley wire L through the trolley shoe K, contact 10 on the limit switch I, contact 11, conductor 12, thence to contact 13 on reversing switch E, conductor 14, armature A′, resistance R′, field F′ to negative side of the line. The bucket or cage is in the raised position and the car travels along until it comes to the station M. As soon as the shoe K passes off of the trolley wire L the traveling motor A′ is stopped, thereby stopping the car at the station with the shoes K and H in contact with the trolley wire sections L′ and N respectively. The operator now wishing to lower the cage, turns the controller C to the first position 1′. This first movement of the controller in the lowering direction energizes the winding G directly across the line and immediately shifts the reverser E in the opposite direction against the tension of the spring F. In doing so, it likewise breaks the circuit of the traveling motor A′ at the contact 13. The operator now turns the controller to the position 2′ in which the circuits will be as follows: From the positive side of the switch O, through the controller segments to the resistance R, thence to trolley section L′, shoe K, conductor 15, contact 16 on the reverser E to contact 17, conductor 18, armature A, conductor 19, contact 20, contact 21, conductor 22, field F, brake magnet B to negative rail D. The resistance R^2 is likewise connected in parallel with the armature A to increase the field strength and prevent the motor from running too fast in descending. The controller may now be moved on to positions 3′ and 4′ and the cage lowered to the desired position. When the cage has started to lower, the limit switch I is shifted to the opposite position, in which two of the contact fingers of the switch are in engagement with the segment P. The operator now wishing to hoist the cage, turns the controller to the left. Before the hoisting position is reached, and, in fact, as soon as the controller leaves the position 1′, the magnet G is deënergized and the reverser E automatically returns to the position shown in the drawing. When the operator now turns the controller to the left, the hoisting circuit will be established from the positve side of the switch O through the resistance R, trolley L′, shoe K, contact P on the limit switch, conductor 23, contact 24 on the reversing switch, conductor 19, armature A, conductor 18, contact 25, conductor 22, field F, brake winding B to the negative rail D. The current through the motor is now reversed and the cage is hoisted. When the cage reaches the uppermost position the limit switch I is again shifted back to the position shown in the drawing, thereby again establishing connections to the armature A′ of the traveling motor, as before. The car will now travel out of the station under the control of the operator until the shoes pass off of the sections L′ and N. When the shoe K passes off of L′ it passes on to the trolley wire section which is continuously energized and the car therefore continues to travel independently of the operator. It is only when the car comes into the station at which the deënergized trolley wire sections N and L′ are located that the operator has any control over the car or the motors. It is understood, of course, that a controller C is located at each station and that the cars come into the control of the operator at the controller as soon as they arrive at the station. By arranging the reversing switch so that it is biased to one position, the connections are greatly simplified and it is possible to obtain results above described with the use of only two sliding conductors or shoes.

While I have described my invention as embodied in concrete form and as operating in a specific manner for purposes of illustration, it should be understood that I do not limit my invention thereto, since various modifications thereof will suggest themselves to those skilled in the art without departing from the spirit of my invention, the scope of which is set forth in the annexed claims.

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

1. A carrier system having a hoisting and lowering station, trolley wire sections located at said station, a hoisting and lowering motor and a traveling motor energized from one of said sections, a reverser for the hoisting and lowering motor having actuating means energized by another of said sections, a single controller for the circuits of said motors and means in said circuits for preventing traveling motor from operating irrespective of the position of the controller when the load holding means is in other than its highest position.

2. A carrier system comprising a hoisting and lowering motor, a controller therefor

movable in opposite directions from the off position for raising and lowering respectively, a traveling motor, a reverser biased to one position, electromagnetic means energized through the controller for moving it to the opposite position, and connections whereby the traveling motor will be energized in only one position of the reverser and the hoisting and lowering motor reversed in the opposite positions thereof.

In witness whereof, I have hereunto set my hand this 11th day of April, 1911.

CARL SCHIEBELER.

Witnesses:

OSKAR SINGER,

CONRAD KUFFERMANDY.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."