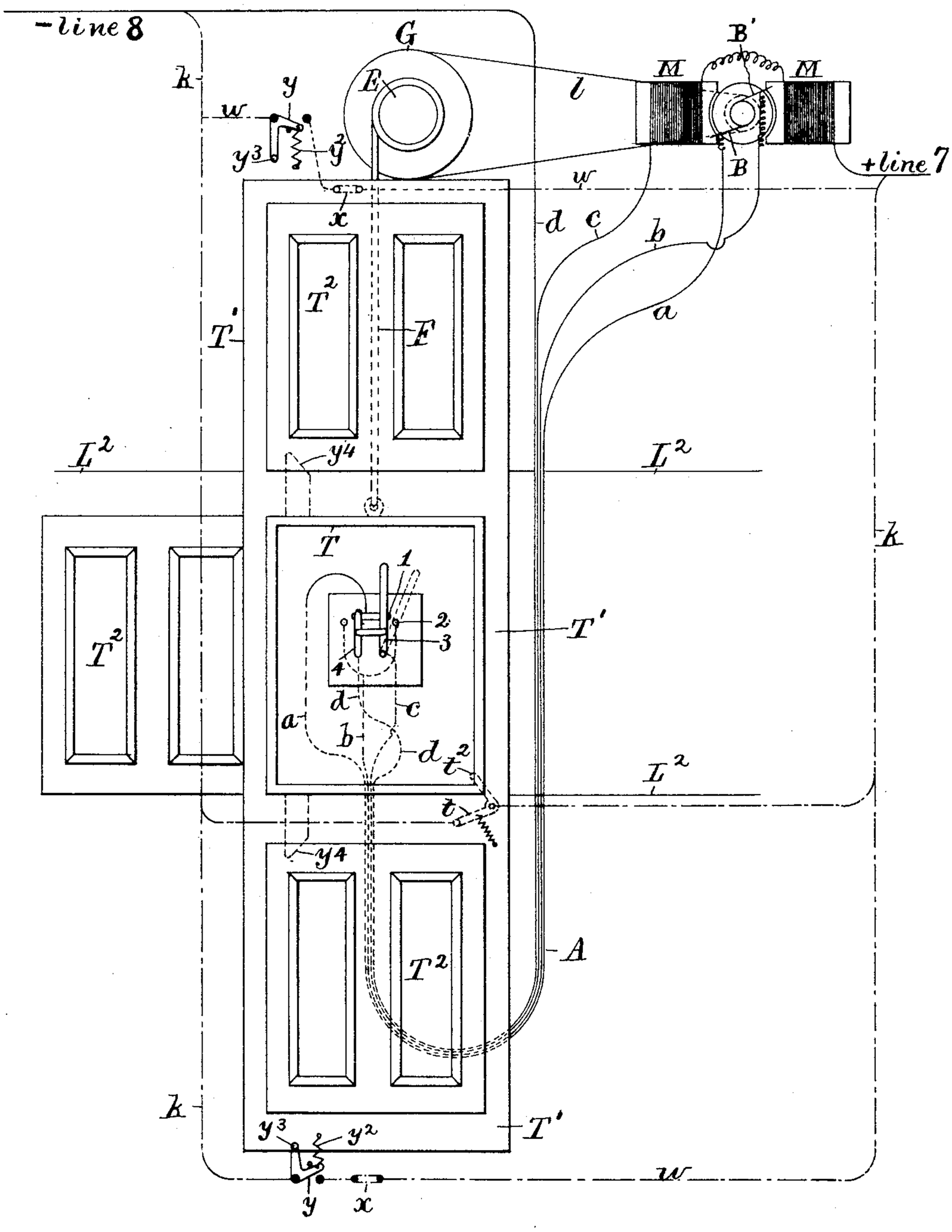
(No Model.)

W. BAXTER, Jr.

ELECTRIC ELEVATOR.

No. 481,386. Patented Aug. 23, 1892.



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UNITED STATES PATENT OFFICE.

WILLIAM BAXTER, JR., OF BALTIMORE COUNTY, MARYLAND.

ELECTRIC ELEVATOR.

SPECIFICATION forming part of Letters Patent No. 481,386, dated August 23, 1892.

Application filed July 19, 1888. Renewed October 31, 1890. Serial No. 369,873. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM BAXTER, Jr., a citizen of the United States, residing in the ninth election district of the county of Baltimore, State of Maryland, have invented certain new and useful Improvements in Systems of Operating Electric Elevators with Cable-Conductors for Constant Current, fully described and represented in the following specification and the accompanying drawing, forming a part of the same.

This invention consists in a particular arrangement of the circuits connected with a switch upon the moving car through the medium of a flexible cable, the construction being adapted for a current of constant strength, and the construction in one form being provided with switches to stop the car automatically at the top and bottom of the hoistway.

The annexed drawing is a diagram of a hoistway provided with landings, door-frames, and landing-doors, and a hoisting-drum connected with the car by a rope and rotated by a belt from an electric motor.

In the drawing, M are the field-coils of the motor. B and B′ are the commutator-brushes of the same. T is the car, T′ the door-frames situated at the several landings, and T^2 the doors, one of which is shown pushed open. The cable A, connecting the motor to the car, is shown formed of four conductors *a*, *b*, *c*, and *d*, which are perfectly insulated from one another. The motor being series-wound, the positive current from the main-line wire 7 passes through the field-coils and is connected with the conductor *c*. The brush B is connected with the conductor *a* and the brush B′ with the conductor *b*, while the conductor *d* is connected with the negative line-wire 8.

The car-switch consists in two pivoted levers 3 and 4, connected, respectively, with the conductors *c* and *d*. The levers are electrically connected when in their normal position, as shown in the drawing, by a bar 1, and the entire current is then shunted around the armature, passing from the field-coils of the motor directly to the line-wire 8 through the conductors *c d* and the levers 3 4. To actuate the motor in opposite directions, the bar is connected with the conductor *a*, and contacts 2 at each end of the bar are both connected with the conductor *b*. The shifting of the switch to the right, as indicated in dotted lines in the drawing, operates then to throw the current from the field-coils (through the conductor *c* and lever 3) into the contact-stud 2, conductor *b*, and brush B′, the current passing from the opposite brush through the conductor *a* to the bar 1, and thence through the lever 4 and conductor *d* to the line-wire 8. The movement of the levers in the opposite direction shifts the lever 4 from contact with the bar 1 into contact with the stud 2 and leads the current into the brush B, from whence it passes through the armature, and from the brush B′ through the lever 4 to the line-wire 8.

It will be seen from the above description that the motor may be stopped or caused to rotate in either direction by a proper movement of the switch-levers, and that the hoisting mechanism (shown connected directly with a pulley upon the motor-armature by means of the belt 1) would be correspondingly affected and the car caused to ascend or descend or to stop, according to the movement of the switch.

It is immaterial what form of switch be placed upon the car, as various forms of switches are already well known for performing the same functions.

Another shunt-circuit is shown in the drawing for the insertion of switches to stop the car automatically at the top and bottom of the hoistway by stopping the electric motor or affecting the electric circuit in any equivalent manner. The lines *k* represent the shunt-circuit connecting the line-wires 7 and 8, and *y* are switches held normally open in the said circuit by springs y^2. The switches are shown provided with arms y^3, and wedges y^4 are provided upon the car T to move such switches in opposition to the springs y^2 and to thus close the circuit when the car has reached the limit of its travel. By means of such switches any accident may be prevented arising from negligence on the part of the operator when the car is at either end of the hoistway. When the car is stopped by the operation of the switch *y*, the circuits through the car or landing switches would be inoperative until the shunt-circuit was opened, for which purpose hand-switches *x* are provided within the reach of the operator when the car

is thus stopped, the opening of which would break the shunt-circuit and cause the current to flow in the proper course through the car or landing switches.

The drawing represents circuits adapted for a current of constant strength, in which case the switches *y* would be held normally open. The switches *x* would in such case be held normally shut and would then be closed automatically as soon as the operator's hand was withdrawn.

Having thus set forth my invention, what I claim herein, and desire to secure by Letters Patent, is—

1. In an electric-elevator system adapted to a current of constant strength, the combination, with the moving car, of an electric motor wound in series, four insulated electric conductors inclosed in a flexible cable, having one end attached to the car, a switch upon the car, having contacts connected, respectively, with the commutator-brushes of the motor, one of the terminals of the field-coils, and one pole of the generator, and a movable connector in the said switch adapted to vary the course of the current through the motor and to thereby vary the movements of the hoisting mechanism, as and for the purpose set forth.

2. In an electric-elevator system in which a car or platform hoisting device is operated by a stationary electric motor, the combination, with the electric motor and the car or platform moved thereby, of an operative electric circuit adapted for a current of constant strength, a switch in said circuit adapted to vary the course of the current in the motor to vary the movement of the hoisting mechanism, one or more shunt-circuits around the motor, normally-open switches placed in such shunt-circuits, suitable mechanism actuated by the car at the end of its travel to move such switches and thereby short-circuit the motor, and hand-switches adapted to reopen such shunt circuit or circuits to restore the current to the operative circuits, substantially as herein set forth.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

WILLIAM BAXTER, JR.

Witnesses:
L. LEE,
THOS. S. CRANE.