

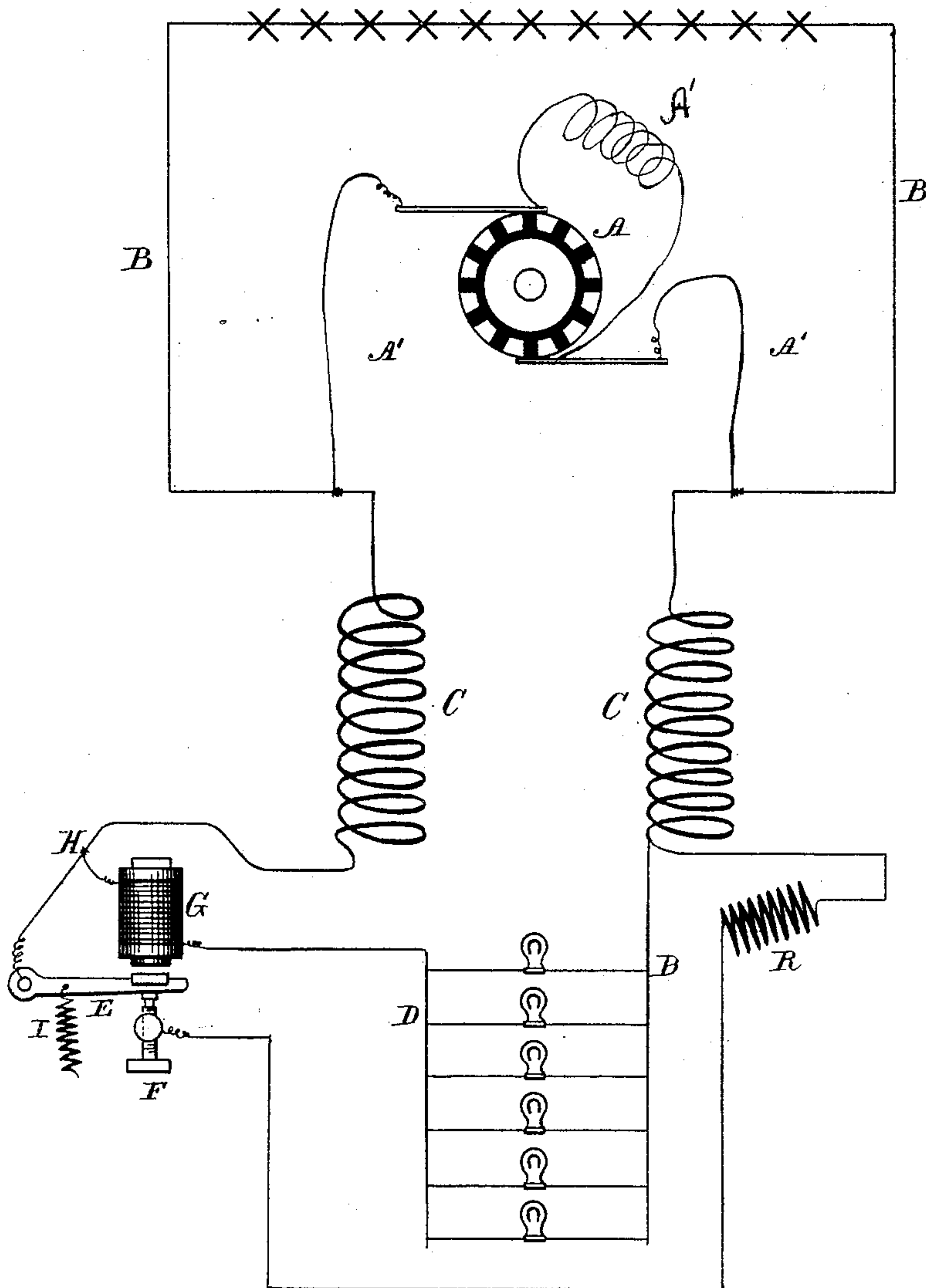
(No Model.)

R. MACKIE.

CIRCUIT FOR ELECTRIC LIGHTING.

No. 337,005.

Patented Mar. 2, 1886.



Witnesses

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UNITED STATES PATENT OFFICE.

ROBB MACKIE, OF TROY, ASSIGNOR TO JOHN B. TIBBITS, OF HOOSICK, N. Y.

CIRCUIT FOR ELECTRIC LIGHTING.

SPECIFICATION forming part of Letters Patent No. 337,005, dated March 2, 1886.

Application filed July 3, 1885. Serial No. 170,571. (No model.)

To all whom it may concern:

Be it known that I, ROBB MACKIE, of Troy, in the county of Rensselaer and State of New York, have invented an Improvement in Circuits for Electric Lighting, of which the following is a specification.

This invention is especially intended for closing the electric circuit through the field-helices when the dynamo-electric machine is in a state of rest, in order that the current may first pass through such field-helices when the machine is started, and I provide for switching the current automatically, so as to include a line-circuit with its lamps or other working devices in the same circuit as the field-helices.

By this improvement I am enabled to connect to the dynamo two external or line circuits—one containing arc-lamps in series or incandescent lamps arranged in the usual manner, and the other containing incandescent lamps in multiple arc or multiple series—and to prevent the resistance of the incandescent lamps interfering with the development of the electrical energy, because the circuit containing such incandescent lamp is not included in the exciting-circuit until the field-helices are energized to the maximum amount.

In the drawing I have represented by a diagram my improvements.

A represents the commutator and brushes; A', the coils of the armature; C C, the field-helices.

B denotes an external or line circuit containing arc-lights placed in series.

D represents an external circuit containing incandescent lamps placed in multiple arc.

G is an electro-magnetic switch in the circuit of the incandescent lights.

E is an armature to the electro-magnet G. I is a spring to the said armature, and F is a contact-block.

When the dynamo is not in operation, the spring I keeps the armature E in contact with F. When the machine is started, the electric circuit is completed and the current passes through the armature-helices A', field-helices C, and, by F, through the armature E, thus energizing the field-helices to the maximum, and

the arc-lights in the circuit B are instantly brought into action, the said circuit B being a shunt to the circuit through the field-helices. If, now, the incandescent lamps are in circuit or are brought into circuit by a switch, the current divides at H, a portion passing through the electro-magnetic switch G and through the incandescent lamps, and the armature E is moved, breaking contact with the point F, thus causing the incandescent lamps in the circuit D to be included in the shunt-circuit through the field-helices.

It is to be understood that the number of incandescent lamps in the circuit D is to be proportioned to the current passing through the field-helices, and that the resistance of the field-helices and the incandescent lamps is to be equal or greater than the resistance of the arc-lights in the circuit B. If, now, the incandescent lights are turned off, or they should break, the current will not pass through the helix G, and the circuit through the field-helices will be instantly restored by the spring I, closing contact automatically between E and F, so as not to interfere with the action of the machine in the arc-light circuit.

The dynamo should be provided with an automatic regulating device, by which the current developed will be in proportion to the demand, and there should be a resistance at R in the circuit of the field-helices equal, or nearly so, to the resistance of the incandescent lights, in order that the ultimate resistance in the circuit through the field-helices may not be materially changed by turning off or on the incandescent lights, and, if desired, each of the incandescent lamps can be provided with the automatic switch or cut-out G E F I and resistance R, so that any one incandescent lamp may be turned out.

The electro-magnetic switch may be made with a stationary core to attract the armature-switch, or with a solenoid-core to move the switch.

I claim as my invention—

1. The combination, with the field-helices in a dynamo, of an electro-magnetic switch and a branch circuit containing incandescent lamps, substantially as set forth, for directing

the current through the incandescent lamp after the field-helices become energized, substantially as set forth.

2. The combination, with the dynamo-electric machine containing a commutator, armature-coils, and field-helices, of a shunt circuit having arc-lights in series, a circuit included in the circuit of the field-helices and containing incandescent lights, and an electro-mag-

netic switch to bring the incandescent lamps into the circuit of the field-helices, substantially as specified.

Signed by me this 17th day of June, A. D. 1885.

ROBB MACKIE.

Witnesses:

GEO. S. HUBBELL,
GEO. R. SIKES.