(No Model.)

W. H. ELKINS.

ELECTRIC ARC LAMP.

No. 444,977. Patented Jan. 20, 1891.

Fig. 1.

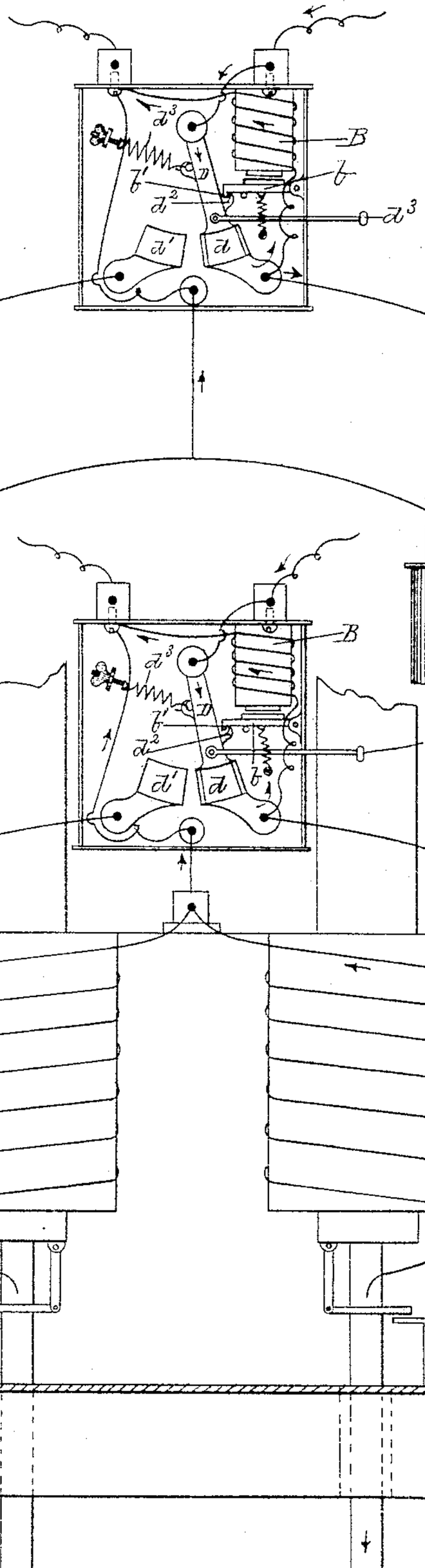

Fig. 2.

Witnesses.
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UNITED STATES PATENT OFFICE.

WILLIAM HENRY ELKINS, OF HORNELLSVILLE, ASSIGNOR OF TWO-THIRDS TO HENRY E. IRVINE, OF NEW YORK, N. Y.

ELECTRIC-ARC LAMP.

SPECIFICATION forming part of Letters Patent No. 444,977, dated January 20, 1891.

Application filed July 26, 1890. Serial No. 360,096. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM HENRY ELKINS, of Hornellsville, Steuben county, in the State of New York, have invented a new and useful Improvement in Electric Lamps and Switches therefor, of which the following is a specification, reference being had to the accompanying drawings, illustrating my invention.

My invention is the combination of two lamps with a spring-switch composed of two blocks and a spring-actuated movable portion which is controlled by a magnet whose coil is part of a shunt-circuit, like terminals of the lamps being connected with the switch-blocks and the other terminals of the lamps with the main circuit, the whole so arranged that the shunt-circuit is broken when the first lamp is cut out.

In the drawings I show two constructions embodying my invention.

In Figure 1 there are two independent single lamps A A′, each in its own case, all too well known to require description. Lamp A is shown in circuit, lamp A′ being out of circuit. When for any reason, such as the carbons being burned out or the carbon-rod sticking, the resistance between the carbon points in lamp A is sufficiently increased to allow a sufficient current to pass through magnet B, so that magnet B attracts its armature *b*, a switch D, controlled by or through magnet B and its armature *b*, is released and its contact *d* brought into contact with contact *d′*, electrically connected with lamp A′, thus automatically cutting out lamp A and cutting in lamp A′. Armature *b* is best formed with a hook *b′* and switch D with a hook d^2, the switch being actuated by a spring d^3 when the hooks *b′* d^2 are moved out of engagement by the movement of the armature toward the magnet.

In Fig. 2 I show two sets of carbons—that is, two lamps A A′ in one case and mounted on one frame. It will be plain to all skilled in the art that I am not limited to any number of lamps, whether they be arranged in separate cases or in a single case. The magnet B is shown as a shunt-magnet to lamp A, and its function is too plain to those skilled in the art to require description. To further illustrate the operation, suppose lamps A A′ are adjusted to use about fifty volts each. As soon as the voltage in lamp A reaches, say, fifty-five, owing to the rod sticking or running down its full length, or for any other reason, there is an increase of current through magnet B, which is of high resistance and in shunt with lamp A, and armature *b* is attracted, with the results above described. Switch D is best provided with a handle d^3 to more easily move the switch into circuit with lamp A when the carbons in lamp A′ are burned out or at any other required time.

I am aware of the patents, Reissue No. 11,002, to Noble, May 7, 1889, No. 324,305, to Cutten, August 11, 1885, No. 294,294, to Waterhouse, February 26, 1884, and No. 322,496, to Stanley, July 21, 1885, and disclaim all that is shown in them, for in all of them the circuit through the coil of the switch-controlling magnet remains closed after the operation of the switch, while in my invention the switch is contrived not only to break the circuit through one of the lamps and make it through the other, but also to break the shunt-circuit.

What I claim as my invention is—

In combination, a spring-switch with two blocks, a shunt-magnet controlling the movable member of the spring-switch, two lamps, conductors connecting the like poles of the lamps to one of the main terminals, other conductors connecting the other poles of the lamps to the switch-blocks of the spring-switch, and a shunt-circuit of which the coil of the switch-controlling magnet forms a part and with one of its terminals connected to one of the switch-blocks, all substantially as set forth.

WILLIAM HENRY ELKINS.

Witnesses:

EDWARD S. BEACH,

JOHN R. SNOW.