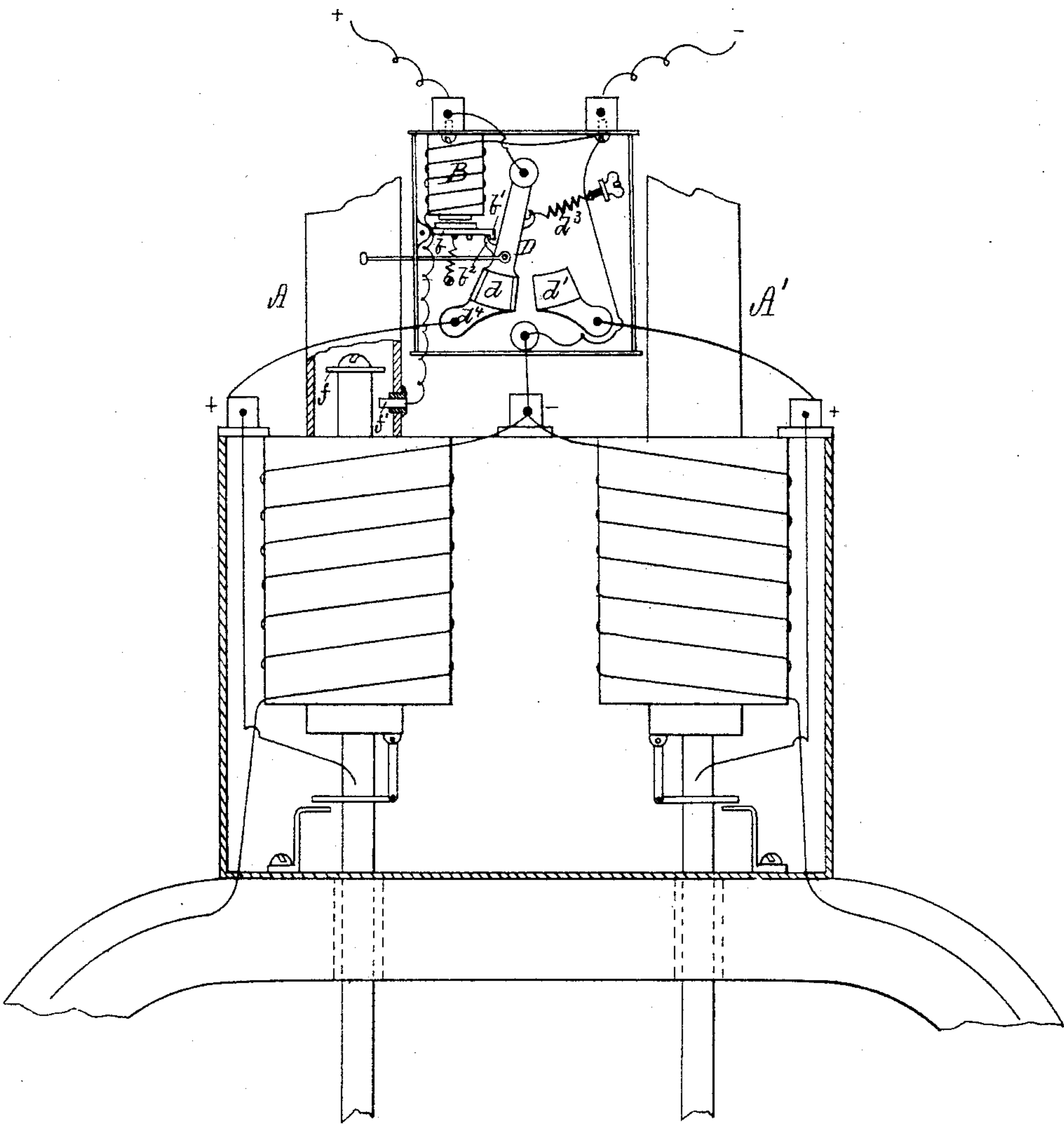


(No Model.)

W. H. ELKINS.  
MULTIPLEX ARC LAMP.

No. 445,136.

Patented Jan. 20, 1891.



Witnesses.

*Laurens W. Mollen*  
*John R. Snow*

Inventor

*William H. Elkins,*  
*by his attorneys,*  
*Maynard & Beach*

# UNITED STATES PATENT OFFICE.

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

## MULTIPLEX-ARC LAMP.

SPECIFICATION forming part of Letters Patent No. 445,136, dated January 20, 1891.

Application filed October 25, 1890. Serial No. 369,271. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM HENRY ELKINS, of Cambridge, in the county of Middlesex and State of Massachusetts, have invented  
5 a new and useful Improvement in Electric Lamps, of which the following is a specification, reference being had to the accompanying drawing, making a part hereof, and which is an elevation, partly in section, illustrating two arc lamps connected by a shunt-circuit and an automatic switch, all embodying my invention in the best form now known  
10 to me.

In a previous application for United States  
15 Letters Patent. Serial No. 360,096, filed July 26, 1890, I have described all that is shown in the drawing, except only the electrodes  $f f'$  and the peculiar shunt-circuit of which they form a part; and my present invention is the  
20 combination of two lamps with a switch whose movable portion is controlled by a shunt-magnet whose circuit remains open until the electrodes  $f f'$ , controlled by the carbon-carrier of the first lamp, come into contact, thereby  
25 closing the shunt-circuit, which energizes its magnet and shifts the switch.

In the drawing there are two lamps A A', one in circuit, the other out of circuit. The lamp A operates precisely as usual until its  
30 carbon-holder comes down far enough to bring electrode  $f$  into contact with electrode  $f'$ , when the shunt-circuit through magnet B is closed. Then as the carbons of lamp A are burned out the resistance between them is increased sufficiently to cause a current through magnet B  
35 strong enough to attract its armature and shift switch D, thereby bringing contact  $d$  into contact with block  $d'$ , electrically connected with lamp A' and separating contact  $d$  from block  
40  $d^1$ , thus automatically cutting out lamp A and cutting in lamp A'.

The construction and operation of the parts marked A, A', B,  $b$ ,  $b'$ , D,  $d$ ,  $d'$ ,  $d^2$ ,  $d^3$ , and  $d^4$  are fully described in my pending application,  
45 and these parts are individually too well known to require further description.

The main feature of my former invention is to connect two arc lamps by an automatic switch controlled by a circuit through magnet B, which broke that circuit when the switch  
50 operated, and while this invention is highly desirable in connection with my present invention it will be obvious that my present invention consists in keeping the circuit through magnet B open until it is closed by  
55 the descent of the movable carbon-carrier, and that it may be used either with or without my former invention above referred to; but both inventions are here shown, because an apparatus for connecting two independent  
60 lamps which embodies both is in my judgment the best form of apparatus for embodying either.

What I claim as my invention is—

1. In combination, a switch with two blocks, 65 a shunt-magnet controlling the movable member of the 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 blocks  
70 of the switch, and a shunt-circuit, of which the coil of the controlling-magnet forms a part, and which contains two electrodes  $f f'$ , controlled by the carbon-carrier of one of the lamps, all substantially as set forth. 75

2. In combination, a spring-switch with two blocks, a shunt-magnet controlling the movable member of the 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 blocks of the spring-switch, and a shunt-circuit of which the coil of the switch-controlling magnet forms a part, and which is adapted to be  
80 made and broken at two places, one by the contacts  $f f'$ , controlled by the carbon-carrier, and the other by the contacts  $d d^1$ , controlled by the switch, all substantially as set forth. 85

WILLIAM HENRY ELKINS.

Witnesses:

EDWARD S. BEACH,  
JOHN R. SNOW.