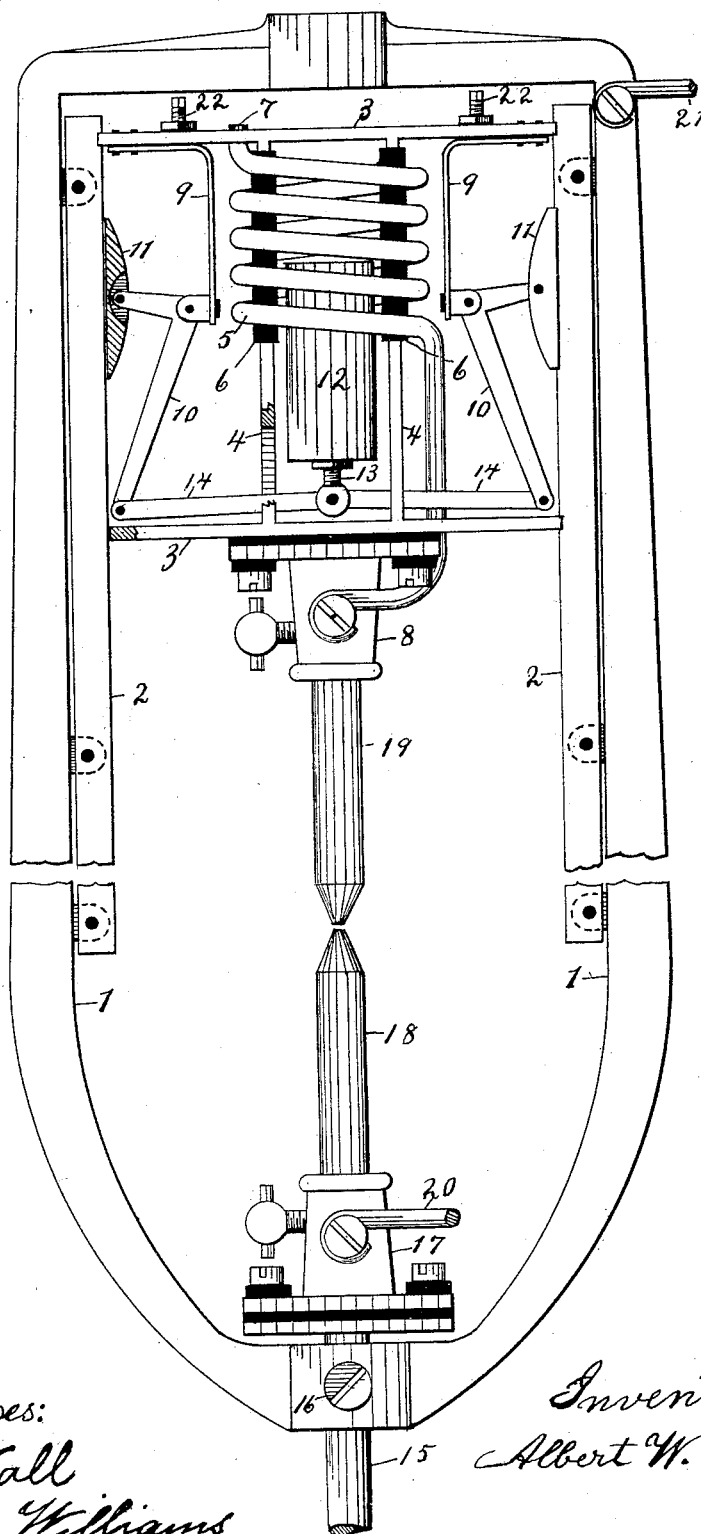


(No Model.)

A. W. SMITH.
ELECTRIC ARC LAMP.

No. 522,276.

Patented July 3, 1894.



Witnesses:
John Wall
Henry Williams.

Inventor:
Albert W. Smith

UNITED STATES PATENT OFFICE.

ALBERT W. SMITH, OF SAN FRANCISCO, CALIFORNIA.

ELECTRIC-ARC LAMP.

SPECIFICATION forming part of Letters Patent No. 522,276, dated July 3, 1894.

Application filed April 2, 1894. Serial No. 506,091. (No model.)

To all whom it may concern:

Be it known that I, ALBERT W. SMITH, a citizen of the United States, residing at San Francisco, in the county of San Francisco and State of California, have invented a new and useful Improvement in Electric-Arc Lamps, and the following is a specification thereof.

The main object of this invention is to produce a cheap, simple, and reliable arc lamp adapted for use with either continuous or alternating currents and adapted to operate in multiple arc from constant potential mains or transformers.

In the drawing herewith 1 is the lamp frame to which the guide bars 2, 2, are secured by rivets as shown.

3, 3 are horizontal cross pieces the ends of which are notched to engage with guide bars 2, 2.

4, 4 are vertical tie pieces uniting cross pieces 3, 3.

5 is a coil of insulated wire wound onto tie pieces 4, 4, and insulated therefrom by insulating material 6, 6. The end 7 of coil 5 is connected to the upper cross piece 3, and its other end is connected to the insulated carbon holder 8.

9, 9 are bent springs riveted to the upper cross piece 3 as shown.

10, 10 are bell cranks pivoted to the lower ends of springs 9, 9.

11, 11 are shoes pivoted on the short ends of bell cranks 10, 10, and are adapted to engage with and grip the guide bars 2, 2.

12 is a movable solenoid core into the lower end of which is screwed the adjustable stem 13.

14, 14 are toggle links connecting stem 13 with the long arms of bell cranks 10, 10.

15 is a stem secured by screw 16, and supporting the insulated carbon holder 17.

18 is the fixed carbon secured in holder 17, and 19 is the movable carbon secured in holder 8.

20 is the lower lamp terminal connected to holder 17, and 21 is the upper terminal connected to frame 1.

The circuit through the lamp is as follows: Starting at the terminal 21 the current flows via frame 1 and guide bars 2, 2 through gripping shoes 11, 11, via springs 9, 9, to the ap-

per cross piece 3, then by way of coil 5 to holder 8, through carbons 19 and 18, and out lower terminal 20.

The mode of operation is as follows: When the lamp is not in circuit the carbons 18 and 19 are in contact. If now the lamp is switched into circuit the core 12 is drawn up by coil 5, and by means of toggle links 14, 14 actuates the bell cranks 10, 10, thus causing shoes 11, 11, to grip guide bars 2, 2, and lift the frame and upper carbon 19 the required distance to form the arc, when the arc becomes lengthened by consumption of carbon, the current is weakened and core 12 descends, thereby diminishing the grip of shoes 11, 11, and permitting the frame to move downward by the action of gravity, and thus feeding the movable carbon the required distance, and thus maintaining a constant arc length. The position of core 12 relative to coil 5 can be adjusted by means of the screwed stem 13, thus obtaining a simple means for adjusting the arc. The springs 9, 9, are adjusted by means of screws 22, 22, to press the shoes 11, 11, against guide bars 2, 2, just hard enough to insure good electrical contact, but not hard enough to retain the whole mechanism against the force of gravity. The angular movement of the bell cranks 10, 10, first increases the pressure on shoes 11, 11, and then causes a lifting of the entire mechanism to separate the carbons as already stated.

What I claim as my invention is—

1. In an arc lamp, a movable frame sliding between fixed parallel guide bars, and directly supporting the movable carbon, a solenoid also directly supported on said movable frame, and connected in series with the arc, and gripping mechanism engaging with said fixed guide bars, said gripping mechanism being adapted when the solenoid is energized to bodily lift said frame and the attached carbon, and thus to form the arc, said gripping mechanism being also adapted to release its grip and thus permit a downward movement of the sliding frame and movable carbon, when the solenoid becomes weakened, as set forth.

2. In an arc lamp, the combination with a sliding frame or cross-head, of a solenoid coil

5 mounted thereon, a core 12 for said solenoid, bell-cranks 10, 10, fulcrumed on the yielding springs 9, 9, gripping shoes 11, 11, mounted on the short ends of the bell-cranks, and links 14, 14, connecting the bell cranks with core 12, the whole adapted when the core 12 is attracted to raise the sliding frame and the carbon 19, and thus to form the arc, as set forth.

ALBERT W. SMITH.

Witnesses:

JOHN WALL,

HENRY WILLIAMS.