

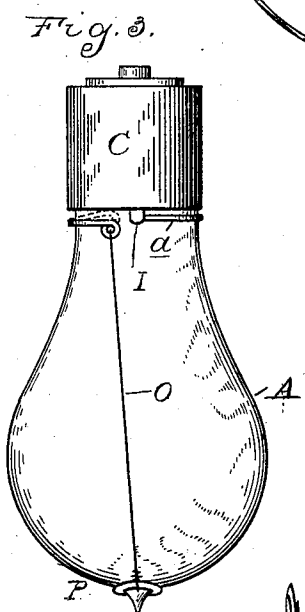
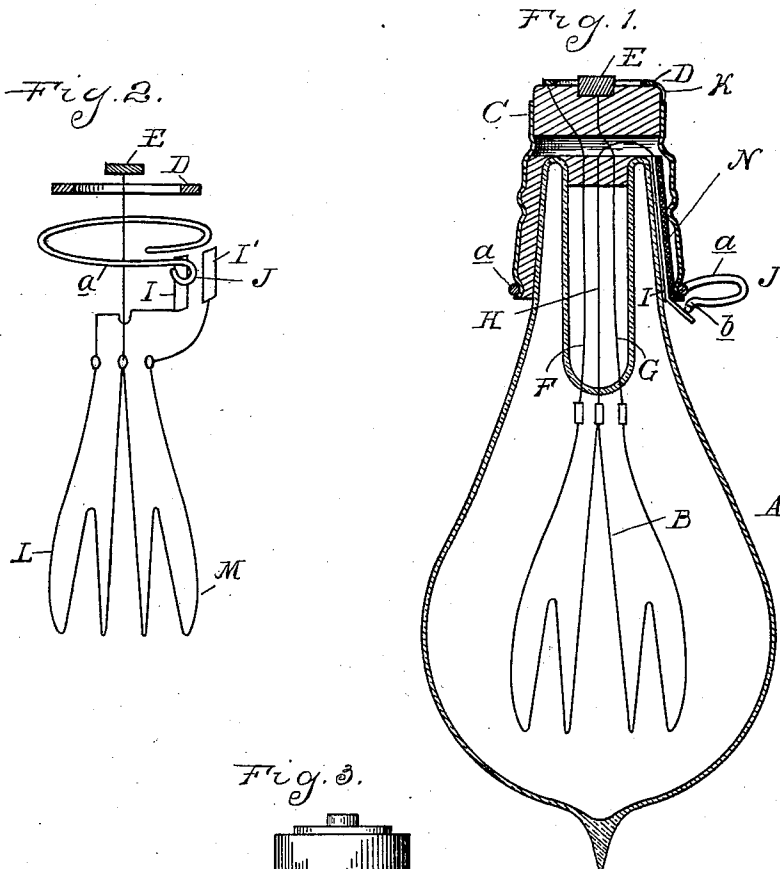
No. 678,320.

Patented July 9, 1901.

A. H. MILLER.  
INCANDESCENT ELECTRIC LAMP.

(Application filed Oct. 1, 1900.)

(No Model.)



Witnesses  
E. Smith  
W. B. Ogilby

Inventor  
Andrew H. Miller  
By [Signature] Attys.

# UNITED STATES PATENT OFFICE.

ANDREW H. MILLER, OF CHESANING, MICHIGAN, ASSIGNOR OF ONE-HALF  
TO LESTER P. BURROWS, OF SAME PLACE.

## INCANDESCENT ELECTRIC LAMP.

SPECIFICATION forming part of Letters Patent No. 678,320, dated July 9, 1901.

Application filed October 1, 1900. Serial No. 31,707. (No model.)

*To all whom it may concern:*

Be it known that I, ANDREW H. MILLER, a citizen of the United States, residing at Chesaning, in the county of Saginaw and State of Michigan, have invented certain new and useful Improvements in Incandescent Electric Lamps, of which the following is a specification, reference being had therein to the accompanying drawings.

The invention relates to incandescent electric lamps; and it is the object of the invention to obtain a lamp in which the intensity of light may be varied.

The invention consists in the means employed for varying the path of the current through the lamp-filament; further, in the peculiar construction of the switch, and, further, in the construction, arrangement, and combination of parts, as hereinafter described and claimed.

In the drawings, Figure 1 is a longitudinal section through a lamp-bulb to which the improvement is applied. Fig. 2 is a diagram showing a modified construction. Fig. 3 is an elevation of another modification.

A is a lamp-bulb of ordinary construction except as hereinafter described.

B is the filament, C the metal cap or band adapted to fit in the lamp-socket, and D and E the terminal contacts for forming electric connection with the external circuit. As shown, the contact E is centrally at the end of the lamp, and the contact D is of annular form and surrounds the contact E. This particular arrangement is not, however, essential.

In the construction shown in Fig. 1 the opposite ends of the filament B are connected, respectively, with the contacts D and E by means of the conductors F and G, while a conductor H connects with the filament at an intermediate point. This latter conductor is connected to a contact I, which, through the operation of a switch, such as J, may be electrically connected to the contact D.

As shown in Fig. 1, the switch J consists of a metallic band *a*, engaging a groove in the casing C and having a projecting end *b*, adapted in one position of said band to bear upon the contact I, which latter projects out from the space between the cap C and the lamp-bulb.

With the construction thus far described when the lamp is engaged with its socket and the switch J turned into a position where it connects with the contact I the greater portion of the current will pass through that section of the filament included between the conductor G and conductor H, while only a small portion passes completely through the filament to the conductor F. This is for the reason that a shunt is formed through which the current passes from the contact E, through the conductor G, to the filament, thence to the conductor H and contact I, thence through the switch J to the metallic cap C, and through an electric connection, such as K, from said cap to the contact D. The effect of this arrangement is to produce a light of normal intensity, a portion of the filament only being luminous. If it is desired to decrease the intensity of the light, by shifting the position of the switch J so as to disconnect from the contact I the shunt is broken and the current is compelled to travel through the entire filament and by way of the conductor F to the contact D. This will result in so greatly increasing the resistance of the circuit as to diminish the intensity of light.

In Fig. 2 I have shown a modification in which the current is normally passed through one section of the filament, such as L, and upon shifting the switch is passed in multiple through both sections of the filaments L and M. With this construction the contact E is permanently connected with the intermediate point in the filament between the sections L and M, while the switch J is adapted to connect with either or both of two contacts I and I', respectively connected to the ends of the filaments.

In Fig. 3 I show a modified form of switch in which the flexible band *a* is secured to the contact I at one end and is adapted to press at its other end against the metallic cap C. To break the connection, a cord O, connected to the free end of the band *a* and provided with a ring P at its lower end, is drawn downward and may be secured by engaging the ring P with the glass point at the lower end of the lamp-bulb.

What I claim as my invention is—

1. In an incandescent lamp, the combina-

tion with the terminal contacts for electric connection with the external circuit and a filament connected between said contacts, of a switch upon the external surface of the lamp and free of the lamp-socket controlling the path of the current through said filament whereby the intensity of the light may be altered.

2. In an incandescent lamp, the combination with the terminal contacts for electric connection with the external circuit, of a filament connected between said contacts, an intermediate connection with said filament extending free of the lamp-socket and a switch for connecting said intermediate connection with one of said terminal contacts whereby a shunt is formed through a portion of said filament.

3. In an incandescent lamp, the combination with the terminal contacts for connecting with the external circuit, of a filament, a switch for changing the path of the current through said filament between said terminal

contacts, a string for operating said switch and a ring at the end of said string for engaging with the depending point of the lamp-bulb, to hold said switch in one position.

4. In an incandescent lamp, the combination with the filament, the metallic cap for the bulb connected to one of the terminals thereof and a central contact connected with the other terminal, of an intermediate connection with said filament, a terminal contact therefor projecting from between said cap and bulb free of the lamp-socket and insulated from the former and a wire loop adapted to bridge between said metallic cap and intermediate terminal contact or to be moved to break connection therebetween.

In testimony whereof I affix my signature in presence of two witnesses.

ANDREW H. MILLER.

Witnesses:

O. W. DAMON,

CHAS. W. CHEENEY.