

L. LOBENTHAL & J. McCULLOUGH.
SWITCH FOR DOUBLE FILAMENT ELECTRIC LAMPS.

APPLICATION FILED DEC. 30, 1902.

NO MODEL.

Fig. 1.

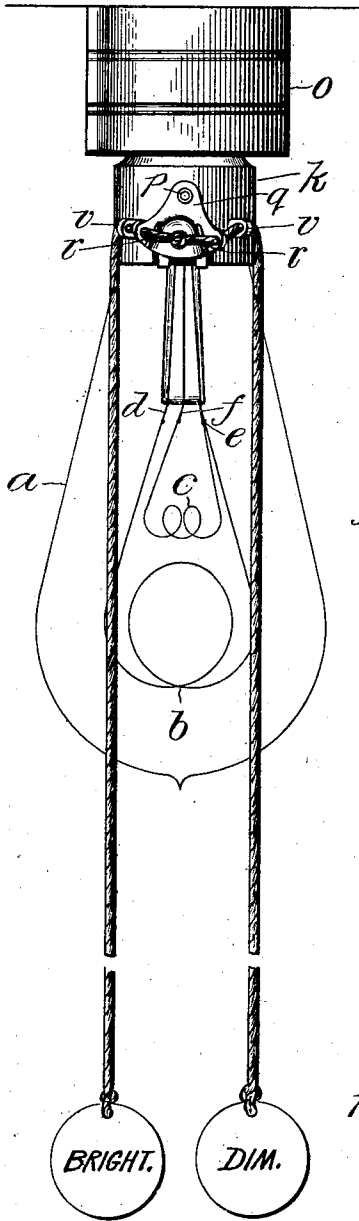


Fig. 2.

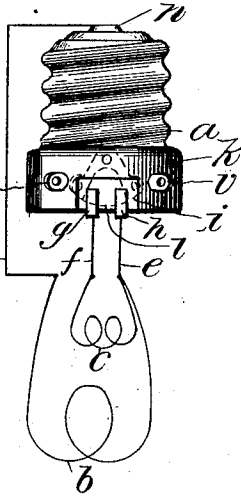


Fig. 4.

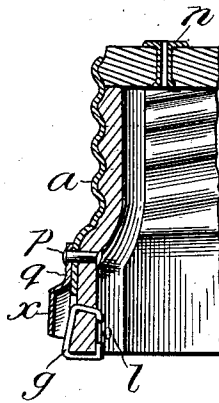


Fig. 6.

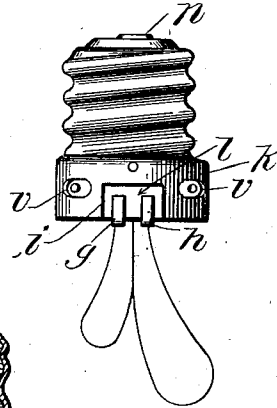


Fig. 3.

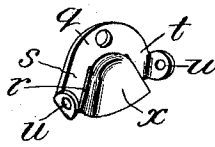
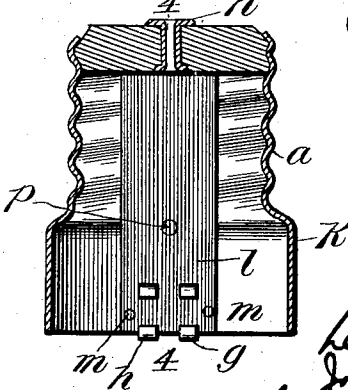


Fig. 5.



Witnesses

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UNITED STATES PATENT OFFICE.

LEVI LOBENTHAL, OF NEW YORK, N. Y., AND JOHN McCULLOUGH, OF
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SWITCH FOR DOUBLE-FILAMENT ELECTRIC LAMPS.

SPECIFICATION forming part of Letters Patent No. 732,644, dated June 30, 1903.

Application filed December 30, 1902. Serial No. 137,212. (No model.)

To all whom it may concern:

Be it known that we, LEVI LOBENTHAL, a resident of New York city, county and State of New York, and JOHN McCULLOUGH, a resident of Newark, county of Essex, and State of New Jersey, citizens of the United States of America, have invented certain new and useful Improvements in Switches for Double-Filament Electric Lamps, of which the following is a specification.

Our invention has for its object to provide means whereby the filaments of a double-filament incandescent electric lamp may be thrown into and cut out of circuit, and thus rendered luminous at will, without necessitating the removal of the lamp from the socket and whereby a lamp having these features is adapted to be used with the ordinary form of socket, thereby permitting the replacement of a single-filament lamp by our improved device without necessitating any change in the fixtures.

The mechanism invented by us is especially applicable when the lamp is located at such a height as not to be readily accessible or when a shade is used, as our improved switch may be actuated by means of cords extending from the switch around guides carried by the base of the lamp to any desired point or to below the shade to permit its ready movement.

Referring to the accompanying drawings, in which corresponding parts are designated by corresponding marks of reference, Figure 1 is a side elevation of a lamp having our invention applied thereto, the lamp being provided with a shade. In this figure our invention is shown as applied to a lamp having a Westinghouse base. Fig. 2 is a diagram showing the circuits embodied in the lamp of Fig. 1 and the lamp being shown as separated from the base and the pivoted switch illustrated diagrammatically for the purpose of better illustration. Fig. 3 is a detail perspective view of the pivoted switch. Fig. 4 is a partial vertical section on line 4 4 of Fig. 5. Fig. 5 is a vertical section taken at right angles to Fig. 4. Fig. 6 is a view of our invention as applied to a lamp having a base of the Edison type and showing a different connection of the filament from that shown in Fig. 1.

The lamp-bulb *a* contains two filaments *b* and *c*. In the form shown one filament is of greater candle-power than the other. Thus the filament *b* may be of sixteen-candle power and the filament *c* of one-candle power. In the circuits shown in Fig. 2 the terminal of the high candle-power filament *b* is connected to the leading-in wire *d*, while the opposite terminal of the said filament is connected to one terminal of the low candle-power filament *c*. A leading-in wire *e* is connected to the joint-terminal of the two filaments and a leading-in wire *f* to the other end of the filament *c*, the leading-in wires *e* and *f* being respectively connected to the contact-plates *g* and *h*, located in a notch *i*, formed in the collar *k*, encircling the base of the bulb, being mounted upon a plate of insulating fiber *l* and being separate from but adjacent to each other. We prefer to fasten the plate of fiber *l* to the interior of one side of the collar by rivets *m*, the collar extending down to the butt of the base, so as to prevent contact between the leading-in wires *e* and *f* and the collar and to secure the contact-plates *g* and *h* upon the insulating-plate by forcing one end of each contact-plate through the insulating-plate and upsetting it. The opposite end of the contact-plate may be turned over upon the edge of the fiber. This is a convenient means of securing the insulating means in place and is shown in detail in Fig. 4.

The leading-in wire *d* of the lamp is connected with the insulated contact stud or button *n* at the base of the lamp.

In Figs. 1 to 5 our invention is shown as applied to a lamp having a base of the well-known Westinghouse type and is adapted for use with the usual Westinghouse fixture. Thus in Fig. 1 we have shown at *o* the usual Westinghouse socket, through which the collar *k* and stud *n* make contact with the opposite sides of the line in the well-known manner. Upon the exterior of the collar, above the contact-plates *g* and *h*, is pivoted by the eyelet *p* a switch *q*, preferably stamped from sheet metal and having in its lower portion downwardly-diverging slots *r*, the metal between each slot and the adjacent side forming a finger *s* or *t*, the ends of which are bent upwardly and perforated, as at *u*, to serve as

levers by which the switch may be moved.

When the switch is in its central or intermediate position, the fingers *s* and *t* are located above, but normally out of contact with the plates *h* and *g*, respectively; but either of the fingers may be brought into contact with its corresponding plate by turning the switch on its pivot, whereby one of the fingers in describing an arc, with the eyelet *p* as a center, will be moved downwardly toward the rim of the base. (Shown in dotted lines in Fig. 2.)

As the plates *g* and *h* are formed so as to project farther from the periphery of the base at the bottom than at the top, (see Fig. 4,) each contact-finger in descending, as described, will sweep over the corresponding contact-plate and finally bind thereon with considerable pressure, insuring a perfect electrical connection between the parts. By this construction the plates also serve as stops to limit the movement of the switch.

It is desirable to provide means for actuating the switch of an electric lamp from a distance, and the form of switch before described readily lends itself to such actuation, and for this purpose we place upon the shell upon each side of the switch perforated posts *v*, through which and through the perforations in the ends *u* of the fingers a cord is passed, the central portion of the cord being knotted between the perforations in the fingers and having upon its opposite ends disks marked with the words "Bright" and "Dim" or their equivalents. By bearing upon an end of the cord the pull will be transmitted to the switch and the latter will be thrown, whereby the electrical connections of the lamp will be varied to effect the desired change in the luminosity, as will be hereinafter described. By the use of guides such as formed by the posts *v* we are enabled to actuate the switch from any desired point and to cause the same motion of the switch with the pull upon the same cord end irrespective of the position of that end or the direction in which it may be led from the base. This is impossible without the use of guides.

The portion *x* of the metal of the switch situated between the slots *r* is struck up and while out of contact with the plates *g* and *h* serves to cover them and to form a shield to intercept any arc that may be formed between the contact-fingers and the plates which might otherwise ignite paper or other inflammable shades placed around the lamp. As the fingers are separated from the central portion *x* by the slots, they may be readily bent to the extent necessary to insure their proper bearing on the plates *g* and *h*, and this dispenses with the necessity of accurately fitting the parts.

With the arrangements of circuits before described it will be seen that if the switch be turned on its pivot so that the finger *t* is in contact with the plate *h* the circuit will be completed from one side of the line through

the contact-stud on the butt, the leading-in wire *d*, the high-power filament *b*, leading-in wire *e*, plate *g*, finger *t*, switch *q*, pivot-eyelet *p*, and collar *k*, back to the other side of the line, and the lamp will give its maximum illumination. The circuit will at the same time be broken between the finger *s* and contact *g* and the low-power filament *c* will be dead. If now the switch is thrown in the opposite direction, the contact between the plate *h* and the finger *t* will be broken and contact between the plate *g* and finger *s* will be made. Current will then flow from one side of the line to the high-power filament *b*, as before described, then through the low-power filament *c*, leading-in wire *f*, plate *h*, finger *s*, and switch *q* to the other side of the base, as before described. Both filaments will then be connected across the line in series; but the current is so far cut down by the sum of the resistance of the two filaments that it is only sufficient to render incandescent the low-power filament. We do not deem it necessary to describe the construction and proportioning of the filaments to accomplish this, as the same is already well known to those skilled in the art and forms no part of our invention.

In Fig. 6 we have shown our invention as applied to a base of the Edison type and illustrated diagrammatically a connection of the filaments similar to that shown in United States Patent No. 676,069, granted June 11, 1901, to Levi Lobenthal, in which one end of each filament is connected directly to the leading-in wire *d*, the opposite ends of the two filaments being connected to the contact-plates *g* and *h*, respectively. With this arrangement it will be seen that a circuit can be completed through either filament independently of the circuit through the other by turning the switch to the position to cause the one or the other of its fingers to make contact. Our invention, therefore, is not limited to the electrical circuits completed through the lamp by the switch, it being directed to the structural features thereof, whereby a convenient and efficient device is obtained capable of being applied to well-known types of lamp-bases and fixtures at small expense.

Having thus described our invention, what we claim, and desire to secure by Letters Patent, is—

1. The combination in a two-filament electric lamp, of a collar surrounding the base thereof, two contact-plates connected to the filaments of the lamp, and a pivoted switch mounted upon the collar, and adapted to make contact with the said plates, substantially as described.

2. The combination in a two-filament electric lamp, of a metallic collar surrounding the base thereof and having a notch in its periphery, two contact-plates connected to the filaments of the lamp, contained in the notch of the collar, but insulated therefrom, and a piv-

oted switch mounted upon and in electrical connection with the collar and adapted to make contact with the said plates, substantially as described.

5 3. The combination in a two-filament electric lamp, of a metallic collar surrounding the base thereof and having a notch in its periphery, an insulating-plate contained between the collar and lamp-bulb, two contact-plates, 10 connected to the filaments of the lamp, contained in the notch of the collar and mounted on the insulating-plate, and a pivoted switch mounted upon and in electrical connection with the collar and adapted to make contact 15 with the said plates, substantially as described.

4. The combination in a two-filament electric lamp, of a metallic collar surrounding the base thereof and having a notch in its periphery, an insulating-plate contained between the collar and lamp-bulb, two contact-plates, 20 connected to the filaments of the lamp, mounted upon the insulating-plate in the notch in the collar and having their ends bent over to grasp the insulating-plate, and a two-arm switch, pivoted upon the exterior of the collar and in electrical connection therewith, and provided with contact-fingers to contact with the contact-plates, substantially as described. 25

30 5. The combination in a two-filament electric lamp, of a metallic collar surrounding the base thereof and having a notch in its periphery, two contact-plates connected to the filaments of the lamp and contained in the notch 35 of the collar, but insulated therefrom, and a switch pivoted upon the exterior of the collar and in electrical connection therewith, and adapted to make contact between the collar and plates, the contact-plates forming stops to limit the movement of the switch, 40 substantially as described.

6. The combination in a two-filament electric lamp, of a metallic collar surrounding the base thereof and having a notch in its top, an insulating-plate contained between the collar and lamp-bulb, two contact-plates connected to the filaments of the lamp, contained 45 in the notch of the collar, and mounted on the insulating-plate, and a switch pivoted upon the exterior of the collar and in electrical connection therewith, and adapted to make contact between the collar and plates, the contact-plates forming stops to limit the movement of the switch, substantially as described. 50

7. The combination in a two-filament electric lamp, of a collar surrounding the base thereof, two contact-plates connected to the filaments of the lamp, and a pivoted switch 55 mounted upon the collar adjacent to the plates, and adapted to make contact therewith, the ends of the plates more remote from the pivotal point of the switch being more elevated than the ends adjacent to the pivotal point, whereby in the movement of the switch it will be forced into close contact with

the plates and finally arrested thereby, substantially as described.

8. The combination in a two-filament electric lamp of a collar surrounding the base 70 thereof, two contact-plates connected to the filaments of the lamp, and a pivoted switch, consisting of two contact-fingers, and an intermediate raised arc-shield, mounted upon the collar, substantially as described. 75

9. The combination in a two-filament electric lamp, of a collar surrounding the base thereof, two contact-plates connected to the filaments of the lamp, and a switch, consisting of a single piece, having its sides formed 80 into contact-fingers, and its center struck up to form an arc-shield, pivoted to the collar, substantially as described.

10. The combination in a two-filament electric lamp, of a collar surrounding the base 85 thereof, two contact-plates connected to the filaments of the lamp, and a switch, consisting of a piece of sheet metal, having slots therein to form flexible contact-fingers on each side and its center between the slots 90 struck up to form an arc-shield, pivoted to the collar, substantially as described.

11. The combination in a two-filament electric lamp, of a collar surrounding the base thereof, two contact-plates connected to the filaments of the lamp and located adjacent to 95 the collar, a pivoted switch mounted upon the collar, and adapted to contact with the said plates, guides on the collar adjacent to the switch, and flexible pieces attached to the switch and passing through the said guides. 100

12. The combination in a two-filament electric lamp, of a collar surrounding the base thereof, two contact-plates connected to the filaments and located adjacent to the collar, 105 a two-fingered switch pivoted on the collar and adapted to make contacts with the said plates, guide-posts on the collar adjacent to the switch, and on opposite sides thereof, and flexible pieces attached to the switch and 110 passing through the said guides, substantially as described.

13. The combination in a two-filament electric lamp, of a collar surrounding the base thereof, two contact-plates connected to the filaments and located adjacent to the collar, 115 a two-armed switch pivoted on the collar and having a perforation in each of its arms, guide-posts on the collar adjacent to the switch and on opposite sides thereof, and a cord passing through the perforations in the switch and through the guide-post, and having 120 an enlarged portion between the perforations in the switch, substantially as described.

Signed by us in New York city, New York, 125 this 23d day of December, 1902.

LEVI LOBENTHAL.
JOHN McCULLOUGH.

Witnesses:

JOHN J. BLAND,
MARTIN M. HALE.