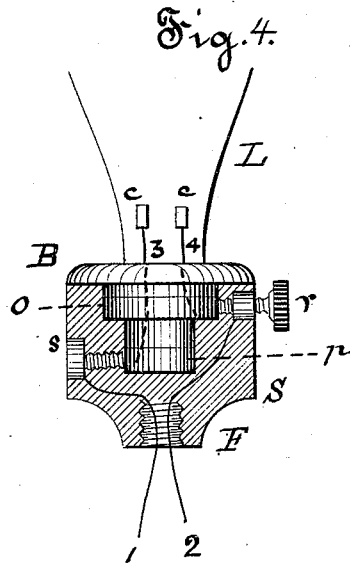
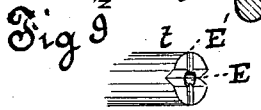
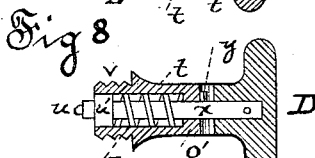
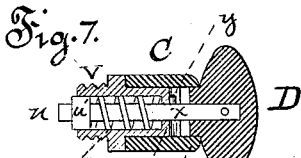
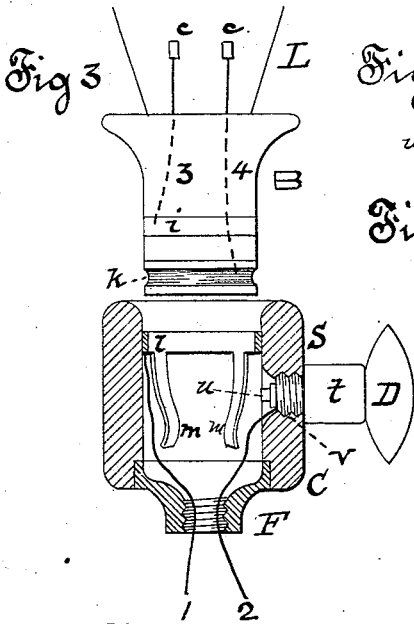
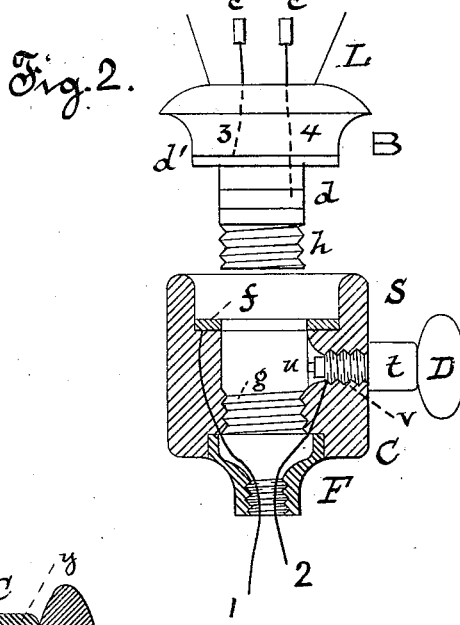
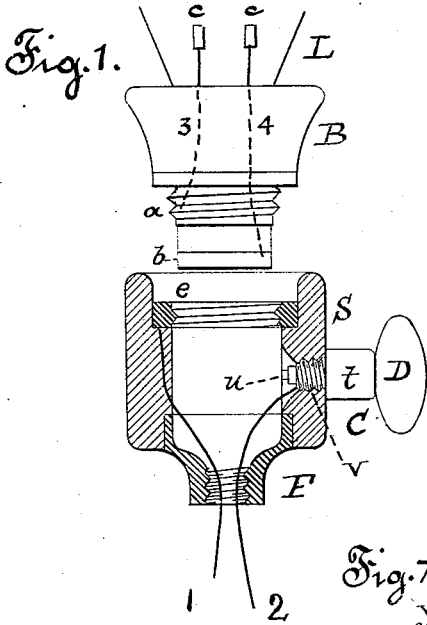


T. A. EDISON.

ELECTRIC LAMP AND SOCKET OR HOLDER.

No. 251,554.

Patented Dec. 27, 1881.



Attest

D. D. Mott
W. W. Seely

Inventor =

Thos. A. Edison
per Dyer & Miller

Atty.

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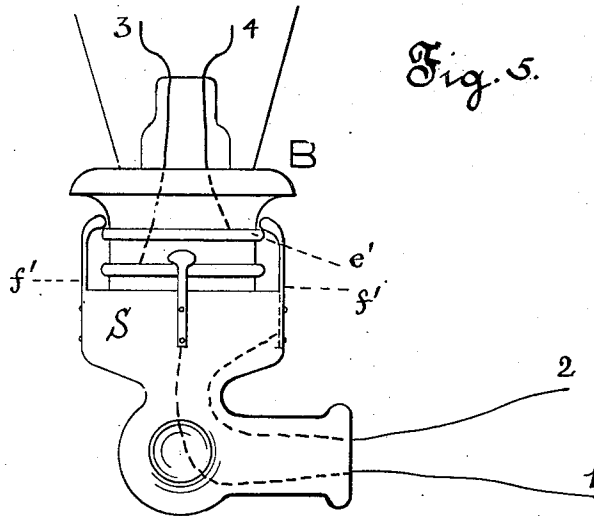


Fig. 5.

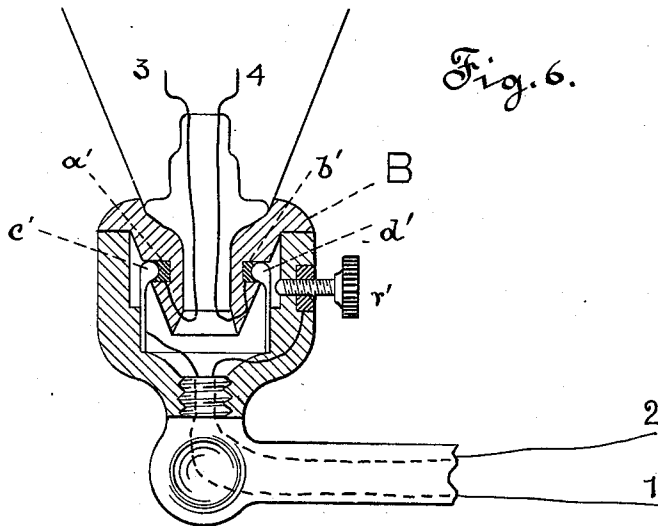


Fig. 6.

Attest:

D. D. Mott
H. W. Beely

per

Inventor:

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per *Wm. H. Miller*
Attys.

UNITED STATES PATENT OFFICE.

THOMAS A. EDISON, OF MENLO PARK, NEW JERSEY, ASSIGNOR TO THE
EDISON ELECTRIC LIGHT COMPANY, OF NEW YORK, N. Y.

ELECTRIC LAMP AND SOCKET OR HOLDER.

SPECIFICATION forming part of Letters Patent No. 251,554, dated December 27, 1881.

Application filed March 26, 1881. (No model.)

To all whom it may concern:

Be it known that I, THOMAS A. EDISON, of Menlo Park, in the county of Middlesex and State of New Jersey, have invented a new and useful Improvement in Electric Lamps and Sockets or Holders; and I do hereby declare that the following is a full and exact description of the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

In a system of electric lighting where the lamps used consist of an incandescing conductor hermetically sealed in a glass inclosing-globe it is desirable that the lamp and its supporting-socket should be so constructed that the lamp may be readily removed from or placed in the socket, and that at the same time by the act of placing in or removing the lamp from the socket the appropriate circuit-connections to the conductor be formed, subject, however, and only, to the control of a suitable circuit-controller for throwing the current through the lamp when desired. Such an arrangement of a separate complete removable electric lamp and suitable socket or holder is shown in application No. 2,172, hitherto filed by me. In such the lamp is held to the socket by the friction between the neck of the lamp and the socket. It is desirable, however, to sometimes reverse the ordinary relation in space of the lamp and socket—that is, to hang the lamp from the socket or to support the lamp horizontally—in order that the light therefrom may be unimpeded beneath the lamp by any shadow-producing parts. In such an event a more positive and reliable connection than friction is desirable between the lamp and its socket or holder, to furnish which is the object of a portion of this invention. This may be accomplished in the following manner: Secured to the glass neck of the lamp is a second neck, designated hereinafter, the neck made of any suitable insulating material, upon the exterior of which are fastened two metal bands, one clamp of the incandescing conductor being connected electrically to one band and the other clamp to the other band. One of the bands is formed into a male screw-thread. The socket is also made of insulating mate-

rial hollowed out to receive the neck from one end and formed with a screw-thread at the other end, by which it may be attached to any ordinary gas-fixture, chandelier, or bracket. The socket is provided with a suitable circuit-controller, preferably such a one as is hereinafter described, to which one of the main conductors is connected. Upon the interior of the socket is a metal band, which may be formed into a female screw-thread, and to which leads the other main conductor. One or two turns of the screw-thread is sufficient, and the parts are so arranged and proportioned that when the lamp is placed in position one of the metal bands upon the neck takes upon and forms contact with one within the socket, while the other band upon the neck is in position to be impinged upon by the circuit-controller when manipulated. Another method, instead of forming one of the neck-bands into a screw-thread, is to make it concave, and to attach to the band or ring within the socket curved spring-fingers, which shall take therein and hold the lamp firmly within the socket; or the insulated neck may be beveled slightly and two concavities made therein, one on either side, in the bottom of which are metal plates, to which lead the wires from the two clamps of the incandescing conductor. From the bottom of the interior of the socket two spring-fingers rise, terminating in small balls, which take and are held into the concavities by the resilience of the spring-fingers; or upon the exterior of the neck a ledge or projection may be formed, over which slip spring-fingers attached to the outside of the socket. All these forms serve to carry out the idea of this invention, holding the lamp securely within its socket irrespective of the relative position of the two.

A circuit-controller is also desirable in which arrangement or provision is made to indicate when it is in best position to complete or to break the circuit, and to retain it securely in such position until it be positively and designedly moved therefrom, to furnish which is the object of another portion of this invention. This is accomplished in the following manner: The circuit-controller is seated in the wall of the socket, and forms the socket terminal of

one of the conductors leading thereto. The part seated therein should be screw-threaded for attachment to the socket, and is made hollow for a portion of its length. Through it and its otherwise solid outer head passes a rod carrying the contact-point upon its inner end, and terminating upon the outside in a suitable thumb-piece of insulating material. The solid outer head has two grooves or indentations extending across its diameter at right angles to each other, one being somewhat deeper than the other. These have beveled sides, in order that a pin secured to and extending from the rod before mentioned may be easily forced therefrom by force applied to the thumb-piece. Near the inner end of the rod is a washer, against which takes a spiral spring wound around the rod, so that it forces the rod inwardly as far as is permitted by the pin thereon. When the rod is turned by the thumb-piece so that the pin takes in the deeper indentation the spring forces the rod inwardly sufficiently to close the circuit, while when the pin takes in the shallower the circuit remains open, in either event, however, the stress of the spring holding the pin in the indentation or groove into which it has been turned against any accidental displacement.

The construction of the neck and socket for the lamp and of the circuit-controller is clearly shown in the drawings, in which—

Figures 1, 2, 3, 4, 5, and 6 show the forms of neck and socket, and Figs. 7, 8, and 9 details of the circuit-controller.

In Figs. 1, 2, 3, 4, 5, and 6, S is the socket, made of insulating material, hollowed out to receive the neck B of lamp L, the lamps being indicated by lines representing their lower portion only. The socket is provided with the screw-threaded end F, made of a separate piece, attached to the socket or made integral with the socket for attachment to any suitable support or fixture.

Secured in the socket is the circuit-controller C, formed as follows: *t*, its stem, is a cylinder of insulating material, screw-threaded at one end, V, for its securement to S, over which, if desired, may be sleeve *t'*, of insulating material, as shown in Fig. 4. The outer end of the cylinder is a head, *o'*, solid, except for an aperture, through which passes the rod *x*, carrying contact-point *u*. Upon the rod *x* is a head or washer, *u'*, and forming or bearing against which takes the spring *z*, wound around *x*, and serving to force *u u'* out from *t*. Upon the head *o* of *t* are cut the diametrical grooves E E', of which one, E, is much deeper than the other, as shown, both having inclined or beveled sides. A pin, *y*, attached to and extending out from *x*, takes in these grooves. Upon its extreme outer end the rod *x* should be provided with an insulating thumb-piece, D. From this it will be seen that as D is turned the stress of the spring *z* pulls *y* into one of the grooves, and holds it there, unless force be applied sufficient to raise it therefrom; that when the pin *y* falls into E the extra depth

thereof permits the spring to force *u* out farther than when the pin takes in E', and these distances are so proportioned that when the pin *y* is in E the circuit shall be closed, and broken when the pin *y* is in E'.

In Fig. 1 two metal bands or rings, *a b*, are put upon the neck B, one of which, *a*, is formed into a male screw-thread. From these bands in all the forms shown wires 3 4 lead to the clamps *c c* of the incandescing material.

Upon the interior of the socket, Fig. 1, is the metal band *e*, formed into a female screw-thread, to which is connected the main conductor 1, the other main conductor, 2, being connected to C. The act of placing B within S and fastening it therein by the screws *a e* completes also the circuit-connections, one branch then being 1 *e a 3 c*, the other being 2 S *b 4 c*.

In Fig. 2, *d d'* are the rings or bands upon the neck connected to *c c*, the screw-thread being formed separately therefrom at *h* and integral with the body of the neck, if desired. When placed in position the band or ring *d'* takes upon and contacts with *f* in the socket, completing the circuit 1 *f d' 3 c*, while *d* is in position for C to complete the circuit 2 C *d 4 c*.

In Fig. 3, *i k* are the rings or bands upon the neck, *k* being formed into a concavity. *l* is a ring within S, from which extend curved springs *m*, rounded at their outer extremities. When placed in position the figures *m* take in the concavity of *k*, holding the two parts together, while at the same time a circuit, 1 *l m 4 c*, is completed, and *i* is in position for C to control the circuit 2 C *i 3 c*.

In Fig. 4 the bands *o p* on B are plain, a screw, *s*, being turned to take against *p*, completing circuit 1 *s p 3 c*, and at same time holding the lamp and socket together, while *o* is put in position for *r*—a simple screw circuit-closer—to control the circuit 2 *r o 4 c*. It is to be noticed that the arrangement of the bands in these forms, one above the other, insures proper connections, irrespective of the relative position of any two points in the same longitudinal or transverse plane of the lamp and socket, and obviates the necessity of careful adjustment present when the contact-plates are in the same longitudinal or transverse plane.

In Fig. 5 a shoulder, *e'*, is formed upon the exterior of B, over which slide and take fingers *f'*, attached to S, whereby the two are held together.

In Fig. 6 the lower part of B is beveled, at the top of the bevel grooves or concaves *a' b'* being made upon opposite sides, in the bottom of which are metal plates *x x x*, connected to *c c* by the conductors 3 4.

Extending upwardly from the base of S are spring-fingers *e' d'*, ending in small balls, (or the ends thereof may be simply curved,) to one of which, *e'*, is connected the main conductor 1. When the parts are placed in position the round or ball ends of *e' d'* take into the concavities of B, holding the two parts to-

gether while one circuit is completed *via* 1 *c'* 30
a' 3 *c*, and *d'* is in such position that *r* may
 control the other *via* 2 *r'* *d'* 4 *c*.

By any of these forms the lamp is held to
 its socket in so firm a manner that the lamp
 may be placed in any desired position rela- 35
 tively to its socket or holder, while the act of
 placing or holding or removing the lamp com-
 pletes or destroys automatically the circuit-
 connections therethrough. 10

What I claim is—

1. The combination, with an incandescent
 electric lamp and its socket, detachable from
 each other and adapted to be used in a com- 15
 plete or round wire circuit, of controllable
 means for positively holding them in position
 together, and means for automatically com-
 pleting the circuit-connections between them
 through both limbs or members of the circuit
 upon placing them together in position, sub- 20
 stantially as set forth.

2. An incandescent electric lamp having
 contact plates or rings upon its neck or base,
 arranged one above the other on the base of 25
 the lamp, forming the terminals of both limbs
 or members of a complete or round wire cir-
 cuit, substantially as set forth.

3. The combination, with a separate remov-
 able incandescent electric lamp and its socket,

of means for holding them positively in posi- 30
 tion relatively to each other, substantially as
 set forth.

4. A circuit-controller for an electric lamp,
 provided with a pin adapted to take in prop- 35
 erly-arranged grooves or notches in the cylin-
 der of the controller, thereby retaining it in
 position to make or break the circuit, as de-
 sired, and against accidental displacement,
 substantially as set forth.

5. A circuit-controller consisting of a cyl- 40
 nder, a rod therein, a spring adapted to pro-
 ject the rod from the cylinder, and means, as
 described, for limiting and determining at will
 the action of the spring upon the rod, substan-
 tially as set forth. 45

6. In a circuit-controller for electric lamps, 45
 the combination of a cylinder with grooves, as
 described, upon its head, a spring-acted con-
 tact-rod passing therethrough, and a pin at-
 tached to the rod and taking in the grooves, 50
 substantially as set forth.

This specification signed and witnessed this
 7th day of March, 1881.

THOS. A. EDISON.

Witnesses:

H. A. BARR,
 E. D. ALTHUS.