

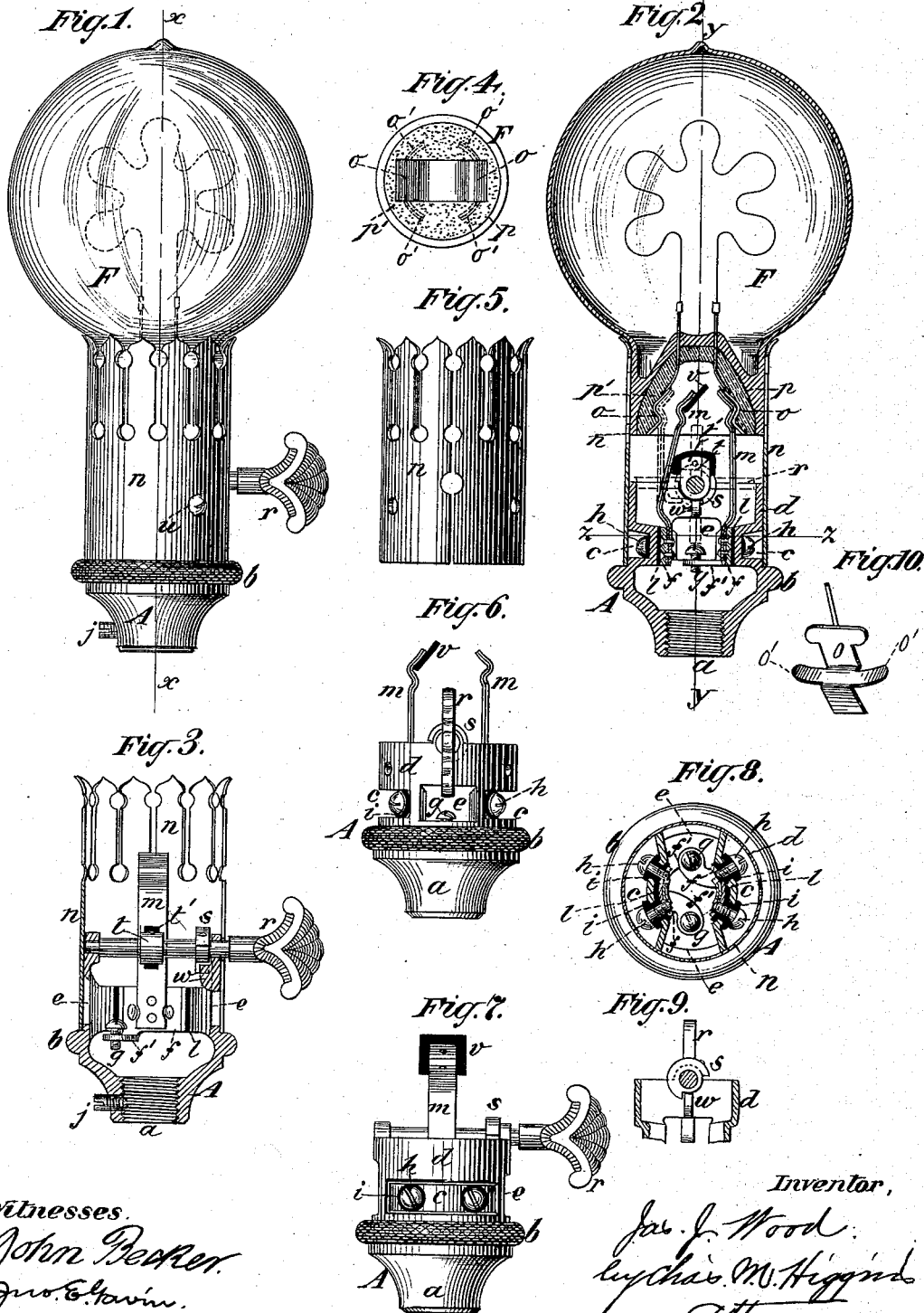
(No Model.)

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INCANDESCENT LAMP SOCKET AND SWITCH.

No. 384,815.

Patented June 19, 1888.



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INCANDESCENT-LAMP SOCKET AND SWITCH.

SPECIFICATION forming part of Letters Patent No. 384,815, dated June 19, 1888.

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To all whom it may concern:

Be it known that I, JAMES J. WOOD, of Brooklyn, Kings county, New York, (assignor to THE FULLER ELECTRICAL COMPANY, of New York city,) have invented certain new and useful Improvements in Incandescent Electric Lamps, of which the following is a specification.

My improvement applies more especially to the holder for incandescent lamps into which the neck of the globe fits and makes connection with the circuit-wires.

My invention aims to improve the holder in the matter of simplicity and neatness of construction and ease and accuracy of operation, and to dispense entirely with the screw movement heretofore employed in inserting the lamp in or removing it from the holder, and to employ instead a simple slip movement; also, to improve the construction of the circuit closing and opening key and the circuit-connections with the holder, so as to render the same more effective, simple, and convenient.

My invention therefore lies in several details of construction relating to the aforesaid parts, whereby an improved holder possessing the described advantages is secured, as hereinafter fully set forth and claimed.

In the drawings annexed, Figure 1 represents a front side elevation of my improved lamp-holder, and Fig. 2 a central vertical section thereof on a plane at right angles to Fig. 1, or on the line *xx*. Fig. 3 is a vertical section of the holder in the plane of view of Fig. 1, or on line *yy* of Fig. 2. Fig. 4 is an inverted plan of the neck of the lamp, showing the contact-terminals of the carbon-loop. Fig. 5 is an elevation of the clasping-sleeve of the holder into which the lamp fits. Fig. 6 is an elevation of the holder, viewed at right angles to the position of Fig. 1, and with the aforesaid clasping-sleeve removed. Fig. 7 is an elevation of the holder with the sleeve removed and in the position of Fig. 1. Fig. 8 is a sectional plan on line *zz* of Fig. 2, and Fig. 9 is a fragmentary vertical section in the line of view of Fig. 2, showing a detail of the circuit opening and closing key. Fig. 10 is a perspective view of one of the lamp-contacts removed.

Referring to the drawings, the main part or socket-base of the holder is indicated by A, and may be briefly described as a hollow casting or tube of irregular form, preferably cast in brass. The lower end of this tube is tapered to a narrow neck, *a*, which is threaded interiorly, and thus adapted to screw upon the gas or electric-light fixture in the same manner as would a gas-burner, and is provided with a pointed set-screw, *j*, whereby it may be secured to the fixture. Above the neck *a* the socket is formed with a bold knurled bead or rim, *b*, and above this bead the socket is turned to a true tubular or cylindrical form, as best shown in Figs. 6, 7, and 2. On this cylindrical part *d* of the socket is slipped the elastic sheet-metal sleeve *n*, (see Figs. 1, 2, 3, and 5,) the lower edge of which rests on the bead *b*, while the upper edge is slit into a number of elastic spring-tongues to admit and grasp the neck of the lamp when inserted therein, as fully shown in Figs. 1 and 2.

Just above the bead *b* a deep recess, *c*, indents the exterior of the socket-tube *d* on diametrically-opposite sides, each recess extending around the socket about one-third of its circumference, as fully shown in Figs. 2, 6, and 7. On each side of the socket, at right angles to the indentations *c c* and just between the ends thereof, openings *e e* are made directly through the socket, as well shown in Figs. 6, 8, 7, 2, and 3, so that at these openings the eye can look clear through and across the interior of the socket, and the hand can insert a tool into or through the same, as will be readily understood.

Referring to Figs. 2, 6, and 8, it will be seen that the indentations *c c* form circumferential projections within the bore of the socket and opposite each other, and on the concave face of these projections are screwed small sheet-metal clips *f f*, which are bent with radially-projecting ears *f' f'*, which project horizontally out into the hollow of the socket overhanging the neck *a* and directed toward the openings *e e*. The ears *f'* are each provided with a little clamping-screw, *g*, and each ear is of course isolated from the other, as shown best in Figs. 8 and 2. The eared clips *f f'* are each secured on the inner face of the indentations *c* by two screws, *h h*, inserted from the exterior, their

tips screwing into the clips, while the heads and necks of the screws are insulated from the metal of the socket by insulating sleeves *i*. (Well shown in Figs. 8, 6, and 7.) The clips *f f'* are also insulated from the socket by insulating-plates *l*, interposed between the two, as fully shown in Figs. 2 and 8, so that the clips are thus insulated from each other and from the socket.

10 It may now be seen that the heads of the screws and sleeves *h i* lie within the indentations *c c* within the circumference of the cylindrical part *a* of the socket, and hence do not protrude on the surface, in the way of the elastic sheet-metal sleeve *n*, in which the neck of the lamp is received, which sleeve fits over the recess *c c* without touching the screws *h*, as shown in Fig. 2.

Now, in connecting the circuit-wires with the holder the sleeve *n* is removed and the wires (not shown in the drawings) are of course raised up out of the nipple onto which the neck *a* screws, the protruding ends of the wires being thence passed up through the neck *a* centrally between the ears *f'*, (see Fig. 8,) and the neck *a* is then screwed firmly down on the nipple. The ends of the wires, which should have been stripped of their covering, are then bent out radially within the hollow of the socket in opposite directions toward the openings *e* over the ears *f'*, and under the heads of the screws *g*, for which purpose the openings *e*, as will now be appreciated, are very convenient, as they enable the electric fitter to see the wires and insert tools to bend and manipulate the same in a very effective manner. When the wires are thus bent under the heads of the screws *g*, the screws can then be screwed down tight by a driver or wrench inserted through the openings *e*, or down vertically through the interior of the socket from the open mouth at the top of the tubular part *d*, as will be understood from the drawings. The clips and their ears *f* thus form the binding-posts for the circuit-wires within the socket, and to each of the clips *f* is riveted a contact-spring, *m*, which springs *m* project up into the socket above the tube *d*, but not above the top of the sleeve *n*, and form the circuit-terminals in the socket to connect with the terminals of the lamp, as shown in Fig. 2. These springs are preferably made of two or more flat and thin layers of German silver, so as to obtain flexibility, conductivity, and strength, and their upper ends or tips are hooked into an inclined or latching form of hook, as fully shown in Figs. 2, 3, 6, and 7. One of the springs normally assumes a straight upright position in the socket, as shown in Fig. 2, while the other spring is normally bent or sprung inward out of the perpendicular toward the other spring, as shown in Fig. 2, but of course never touches it, as will be understood.

In order to prevent the springs from coming into contact at their tips and thus making a short circuit, an insulating guard-plate, *v*, is riveted to the top of one of the springs, as

well shown in Figs. 2, 6, and 7, and projects beyond the tip of the spring on all sides; and hence, if ever the tips of the springs are forced together from any cause, the contact will be non-conducting, and hence safe, as will be readily appreciated.

Referring to Fig. 2, *o o* indicate the copper contact-pieces forming the terminals of the carbon-loop within the neck-socket of the lamp, which contacts are bent into a flaring hooked form to correspond to the hooked tips of the springs *m*, as well shown in Fig. 2, also in Fig. 10, where one of the contacts is shown in perspective. These contacts are formed with lateral prongs, and are embedded in a plaster filling, *p'*, in the glass neck *p* of the lamp, and connect with the fine copper-wire terminals of the carbon-loop, which are soldered to said contacts, as shown in Figs. 2 and 10. A central cavity is thus left in the plaster filling between the contacts, which are thus isolated from each other, the shape of this cavity being an oblong rectangle in plan view or cross section, as shown in Fig. 4, with the contacts *o* on the narrow sides thereof, while its shape in vertical section is that of a blunt arrow-head, as seen in Fig. 2.

Now, the glass neck *p* of the lamp is made a nice fit for the sleeve *n*, and is therefore adapted to be easily slipped into or out of the slitted tip of the sleeve, which is yielding and elastic, and will therefore grasp the neck with a firm yet elastic pressure when the neck is inserted as shown in Figs. 1 and 2, and thus hold the lamp securely in the holder, yet in such a way that it may be removed or inserted by a simple slipping movement which is novel with my holder and a great advantage over those requiring a screw-movement to insert or remove the lamp.

It will also be noted by referring to Fig. 2 that when the lamp is thus slipped into the holder-sleeve the tip of the straight contact-spring *m* will immediately spring into engagement with one of the hooked contacts *o*, the hooks on spring and contact thus engaging together to retain the lamp firmly in the holder, yet will yield to a positive upward pull when it is desired to remove the lamp from the holder, as will be readily comprehended. If, therefore, after the lamp is slipped into its socket and the straight spring *m* is engaged therewith, as shown in Fig. 2, the bent spring *m* be then pressed out into engagement with the opposite contact, as indicated by dotted lines, the lamp will become locked in the socket and a firm connection made between both terminals of the circuit and the terminals of the carbon-loop, thus throwing the loop in circuit and therefore lighting the lamp, as will be readily understood. The bent spring *m* is thus flexed in or out to close or open the circuit and thus light or extinguish the lamp by turning the key *r* one way or the other. This key *r* has its manipulating end of course on the exterior of the holder, and its axis passes diametrically

through the holder just at the top of the tubular part *d*, and turns in little bearing-sockets bored in the same on each side, as best shown in Figs. 3, 6, and 7. The axis or spindle of the key passes freely through the first bearing, but is stepped into the last, as fully shown in Fig. 3, thus preventing inward endwise movement, and a collar, *s*, is fixed on the spindle within the first bearing, as shown in Figs. 2, 3, 6, 7, and 9, which prevents outward endwise movement, as will be understood. On the middle of the key-spindle is fixed a little cam-hub, *t*, having an inserted insulating-facing, *t'*, which is arranged in relation with the bent spring *m*, as fully shown in Figs. 2 and 3; hence when the key *r* is turned in a vertical plane, as seen in Figs. 1, 2, and 3, the cam *t t'* will be turned up vertically away from the bent spring *m*, thus allowing the spring to bend inward and keep out of contact with the terminal *o* in the neck of the lamp, thus keeping the circuit open and the lamp extinguished. If, however, the key *r* is turned into a horizontal plane, as indicated by dotted lines in Fig. 2, the cam *t t'* will be rotated toward the spring, and the insulating-face *t'*, pressing against the same, will press the spring outward into contact with the terminal in the lamp-neck, as indicated by dotted lines, and thus close the circuit and light the lamp, as before stated.

The rotary motion of the key *r* to light or extinguish the lamp, as just described, is limited by the collar *s*, having its periphery recessed with a notch, either end of which will strike against a stop-flange, *w*, cast on the inside of the tube *d*, as well shown in Figs. 2, 3, and 9, and thus prevent the key from being turned too far one way or the other.

The sleeve *n*, as may be understood from Fig. 5, is formed from a sheet of brass slit into a number of tongues at one edge, as shown, and thence curved into a tubular form, as shown, the meeting edges of which are, however, left unjoined, so that the tube is thus cleft, and its elasticity will allow the cleft to open to slip the sleeve down over the tube *d*, past the spindle of the key *r*, and to finally seat on the flange *b*, as fully shown in Figs. 1 and 2, the cleft of the sleeve being notched to loosely encircle the spindle, as shown in Fig. 5, and the sleeve being firmly fastened in place by a screw, *u*, screwed into the tube *d* on each side of the cleft, as will be readily understood from Figs. 1, 5, and 6, thus rendering this part of the construction very efficient and at the same time neat and simple and inexpensive.

It will now be readily seen, from what has been described and by reference to Figs. 2 and 8, that the entire exterior of the holder is insulated from the internal circuit parts. Thus it will be seen that the key *r* can convey no current from the springs *m* to the outside of the holder or to the operator's hand, as the key is fully insulated by the non-conducting cam-face *t'*. It will be also seen that only the glass neck of the lamp contacts with the sleeve

n, and hence no current can pass at this point. It will be further seen that the clips *f*, to which the springs *m* and circuit-wires connect, are insulated from the holder *A* by the plates *l*, and that the screws *h*, which hold these clips, are insulated from the holder and embedded in the recesses *c*, where they cannot touch the sleeve *n*; hence perfect immunity from the current is obtained on the entire exterior of the holder, so that there is no possibility of receiving shocks or causing other accidents from an external flow of the current. It will be further seen that the simple slip movement required to insert or remove the lamp in its holder is a great advantage of my construction, as it is accomplished very easily and quickly, and is more adapted to the manipulation of ordinary persons, to many of whom a screw motion is unhandy and difficult to perform accurately.

In addition to the insulation and the ease of operation described, it will be seen that a further advantage is that the circuit-wires can be easily connected with the clips in the base of the holder, and all these advantages are secured with a comparatively simple and inexpensive construction, employing comparatively few parts, and these placed in such a way that they are easily put together and easily visible and accessible afterward, which combined features render my invention a desirable improvement in incandescent lamp holders.

What I claim as my invention is—

1. The combination, with an electric incandescent lamp having terminal conductors or contacts in its base or neck, of a holder or tube to receive the neck of the lamp having an internal straight contact-spring, *m*, adapted to spring into engagement with one of the lamp-terminals when the lamp is slipped into the holder, with a second contact-spring, *m*, normally bent away from the opposite terminal of the lamp, and with a manipulating key to press said bent spring into or out of contact with the lamp terminal, substantially as herein shown and described.

2. In an electric-lamp holder, the sustaining-socket *A*, formed with the indentations *c c*, in combination with circuit-connections fastening to the interior of the holder at or near the indentations, with screws fastening said connections and embedded in said recesses, and the external clasp-sleeve, *n*, embracing the socket outside of said recess, substantially as herein shown and described.

3. An electric-lamp holder formed by the combination, with the socket *A*, having the internal binders, *f*, and contact-springs *m m*, of a manipulating-key for acting on one of the springs, and the external clasp-sleeve, *n*, slit to permit its passage over the key and embracing at its base a neck on the socket *A*, substantially as and for the purpose set forth.

4. The combination, with the holder *A*, of the binders *f f'* and springs *m m*, with the insulation *l l*, insulated fastening-screws *h*, the

key *r*, its cam *t* and its insulating cam-face *t'*, and the surrounding clasp-sleeve *n*, substantially as herein shown and described.

5 5. In an electric-lamp holder, the combination, with the contact spring or springs *m*, of the key *r*, with its operating-cam and its stop-collar *s*, with the fixed stop *w*, arranged and operating substantially as set forth.

10 6. In an electric-lamp holder, the combination, with two contact-springs arranged to ap-

proach each other and to engage with the contacts of the lamp, of an insulating guard-plate placed at and secured to the top of one or both springs to prevent electric contact between the two, substantially as herein set forth. 15

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