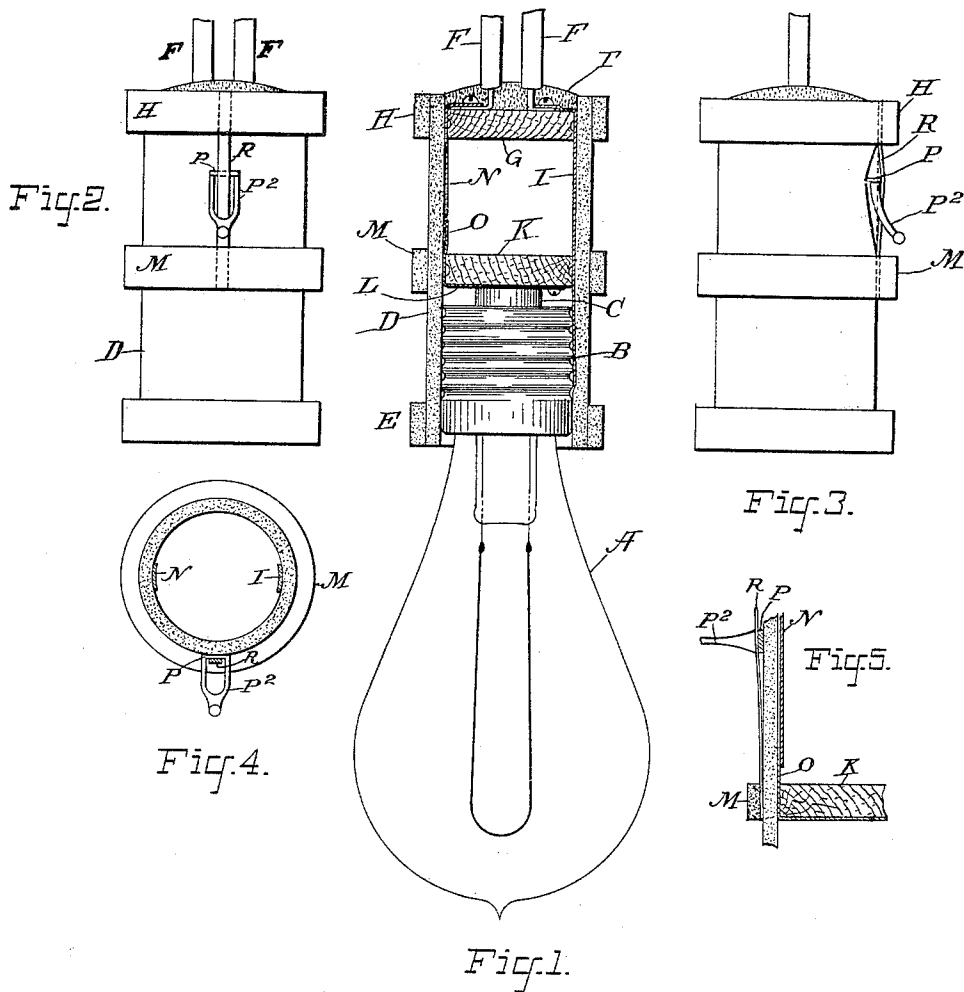


(No Model.)

D. H. PIFFARD.
INCANDESCENT LAMP SOCKET.

No. 467,983.

Patented Feb. 2, 1892.



ATTEST:
J. H. Hurdle
T. F. Courcy

INVENTOR:
David H. Piffard

By H. C. Townsend
Attorney

UNITED STATES PATENT OFFICE.

DAVID H. PIFFARD, OF PIFFARD, NEW YORK.

INCANDESCENT-LAMP SOCKET.

SPECIFICATION forming part of Letters Patent No. 467,983, dated February 2, 1892.

Application filed June 25, 1891. Serial No. 397,473. (No model.)

To all whom it may concern:

Be it known that I, DAVID H. PIFFARD, a citizen of the United States, and a resident of Piffard, in the county of Livingston and State of New York, have invented a certain new and useful Incandescent-Lamp Socket, of which the following is a specification.

My invention relates to the construction of a socket and switch designed for holding incandescent lamps in situations where the apparatus is liable to corrosion or deterioration from the action of moisture or chemical vapors which attack metals.

The object of my invention is to provide a simple and effective substitute for the socket and switch heretofore employed in such situations; and it consists, essentially, in a socket or holder composed of a tube of soft rubber or similar elastic material open at the end which receives the neck of the lamp and adapted to hug said neck closely, so as to support the lamp and form a seal against the entrance of vapors to the contacts within, in combination with suitable contacts mounted within said rubber tube and adapted to register with those on the neck or base of the lamp when the latter is forced into the end of the tube.

My invention consists, further, in the special constructions and combinations of devices, as hereinafter more particularly described, and then specified in the claims.

It is well known in the art that various expedients have been resorted to for the purpose of permitting incandescent lamps to be used in exposed situations of the kind hereinbefore mentioned without the short-circuiting or destruction of the electric contacts or connections, and for this purpose resort has been had to porcelain socket-shells or similar expedients, packing-rings, and such like devices. It is well known, further, that the ordinary sockets or holders for incandescent lamps are unsuited for use in exposed situations, because the ordinary metal employed will rapidly rust or corrode. Moreover, in the case of metal sockets it is the practice to provide, in addition to the socket-shell of metal, suitable interior fastening devices mounted upon the support for the electric contacts.

In my invention the use of the tube of soft rubber or similar material open at its end enables me to depend solely upon the elasticity of the end of the tube itself for holding the

lamp in place, while, moreover, the interior parts are effectually sealed from the action of the vapors, and the exposed parts, being of rubber, are themselves not attacked.

In the accompanying drawings, Figure 1 is a vertical central section through a socket and switch constructed in accordance with my invention and having a lamp inserted into the socket or holder. Fig. 2 is a side elevation of the socket. Fig. 3 is a side elevation taken at right angles to Fig. 2. Fig. 4 is a cross-section through the holder in the line of the mechanism which operates the switch-contact. Fig. 5 illustrates a modification of the invention.

I have herein illustrated my invention as carried out in a socket provided with contacts adapted to register with contacts on the base or neck of an Edison lamp. The necessary modification in the disposition of the socket-contacts when lamps of other constructions are employed will be readily understood by electricians.

A is the globe of the lamp, having at its base two terminals of the ordinary description, one of which B consists of a screw-threaded metal collar, while the other C is formed as a stud or projection from the end of the base, such terminals B C being in connection, respectively, with the two entering conductors to which the ends of the filament are attached.

D is a tube, which receives the neck of the lamp at one end and serves thereby as a socket or holder for the lamp. This tube I preferably make of some elastic or flexible material—such as rubber—which will withstand the action of moisture or chemical vapors or fumes and will thereby protect the metallic parts contained within it. Being of elastic material it will grasp the lamp-collar firmly, and an effective seal will thereby be formed between the interior wall of the tube and the collar itself. To assist in forming a good joint at this point the compression-ring E may be applied to the end of the tube. This compression-ring is conveniently made also of rubber, so as to be somewhat elastic.

F F are the supply wires or conductors, which are attached to the socket and supply the electric current to the contacts within the socket with which the lamp-terminals make connection. The supply-wires F are preferably covered with insulating material, and their bared ends are attached to a disk or

block G of some insulating material, suitably fastened in the opposite end of the tube from the lamp. The disk or plate G may be held in place in any desired manner—as, for instance, by a compression-ring H of some elastic material. One of the wires F is fastened in metallic connection with a strip of conducting material I, which extends along the interior of the tube D into position to be engaged by the collar B, as indicated. The end of the strip I thus engaged forms one of the socket-contacts. The other socket-contact consists of a plate or strip of conducting material L, which is fastened upon the under side of a disk or partition K of insulating material, secured within the tube D, as indicated—as, for instance, by means of a compression-ring M or by other suitable devices. The plate L extends around the edge of the disk K into position to be engaged by the end of a spring or plate N, to which the other of the wires F is fastened upon top of the disk G, as shown. The free end of the plate L forms at O, in conjunction with the free end of the spring N, the contact of the turn-off switch for the lamp. Said switch or turn-off is operated by compressing or expanding the flexible or elastic wall of the chamber in which said contacts are contained, thereby giving motion to one or the other of them.

Motion may be given to the contact by any desired mechanism on the outside of the chamber—as, for instance, by means of a cam-piece P, which is held between the outer wall of the chamber and a strip or rod R, fastened upon the tube by means of the rings H M or other suitable devices. The mechanism for compressing or moving the flexible or elastic wall of the chamber may be placed in immediate proximity to the switch-contacts, so as to act directly upon the same, or may be placed on a diametrical line at right angles thereto. In the latter case the compression of the side wall of the elastic chamber will cause the chamber to bulge on a diametrical line at right angles thereto, allowing the spring N, which is given a bias tending to draw it away from the contact O to move out of contact with the latter and break the electric circuit to the lamp. The compression-cam is provided with a suitable operating-arm P² and is shown in Fig. 3 in position to compress the wall of the chamber and cause it to move inward, thus causing the chamber to expand on a line at right angles. When the cam is turned by means of the arm P² so that the latter will stand out at right angles to the chamber or socket, then the wall will assume its normal position and the elastic chamber will resume its normal shape and will move the spring N into contact with spring O, thereby closing the circuit.

As will be obvious, the position of the two contacts of the switch with relation to one another might be reversed, as indicated in Fig. 5, and the cam arranged, as shown, so as to operate upon the flexible wall next the

spring N, and thereby to move the latter inwardly against a bias tending to move it outwardly into contact with the switch-contact O. In this case the compression or movement inward of the wall of the chamber would break the circuit.

The chamber in which the contacts are contained is effectually sealed for all practical purposes by the compression of the tube around the disk K and the disk G, as well as by the tight fit of the neck of the lamp in the lower end of the tube.

To assist in the production of an effectual seal a cementing or sealing material T may be filled in around the conductors F and upon the disk G after the conductors are secured to the strips N and I. This cementing sealing substance may be of any suitable material adapted to withstand the action of moisture or the vapors to which the device is exposed in the situation of intended use.

I do not limit myself to any particular way of securing the switch-contacts in place within the sealed chamber, nor to any particular form or disposition of the socket-contacts with which the lamp-terminals make connection, the essence of my invention consisting in mounting the switch-contacts within a sealed chamber, a wall or walls of which are made flexible for the purpose of permitting movement to be communicated to the switch-contacts by an external mechanism.

I prefer to employ in carrying out my invention a single tube D, of elastic material, adapted to form a socket at one end for the lamp and to hug the neck thereof closely to form a good seal and having at its opposite end a chamber containing the switch-contacts, one of which connects properly with the circuit-wire or conductor secured in position by the end of the tube or chamber.

What I claim as my invention is—

1. In a lamp socket and switch, the combination, substantially as described, of a continuous tube of soft rubber or similar elastic material, the open end of which forms a socket adapted to hug the lamp-neck closely and form a seal, socket-contacts mounted in position to register with those of the lamp when the latter is forced into the open end of said tube, switch-contacts mounted in a closed sealed space at the opposite end of said tube and connected, respectively, with the socket-contacts and with the supply-wires, and mechanism mounted upon the tube external to the same for compressing the same laterally, and thereby operating upon the inclosed contacts of the switch, as and for the purpose described.

2. In an incandescent-lamp socket or switch, the continuous tubular shell D of elastic material, such as rubber, forming at one open end an elastic socket or holder, which grasps the lamp-neck directly and forms a seal therewith to protect the interior contacts of metal, socket-contacts within said rubber shell adapted to register with those upon the lamp

and suitably supported upon an intermediate disk or partition, switch-contacts mounted within said continuous tubular shell at the opposite end thereof from the lamp and connected with suitable conductors entering the end of the shell and sealed by a cementing insulating substance applied around them, and mechanism mounted upon the side of the tube and adapted to compress the wall thereof laterally and to maintain it compressed for the purpose of holding the switch-contacts within the shell in either closed or open position.

3. As a new article of manufacture, a lamp socket or holder consisting of a tube of rubber or similar elastic material, as described, forming at one end an elastic socket adapted to grasp the lamp-neck firmly and form a seal at such point, and electric conductors passing into the other end of the said tube of rubber for connection with said socket-contacts, in combination with a suitable cementing or sealing substance for closing the end of the tube into which said conductors pass, as and for the purpose described.

4. In an incandescent-lamp socket and switch, the combination, substantially as described, with a tube of elastic material forming at one end a socket for the lamp, of a supporting disk or plate fastened at the opposite end of the tube and having the supply-wires attached to it, a strip or piece of conducting material extending from one of said supply-wires through the interior of the tube to the end which receives the lamp-neck, a disk or supporting-plate fastened at an intermediate portion of the tube within the same and carrying the other socket-contact, and a spring lying upon the inside of the tube within the sealed chamber and connected with the other supply-wire, as and for the purpose described.

5. In an incandescent-lamp socket and switch, the combination, substantially as described, with a tube B, of elastic material, of disks or plates K G, compression-rings H M, a conducting-strip I, fastened to the plate G and in electrical connection with one of the supply-wires secured thereto, the spring N, also fastened to said plate and in connection with the other supply-wire, and a contact O, fastened to the plate K in position to make and break connection with the spring N and itself electrically connected with a contact on the opposite side of the plate K, adapted to form connection with a lamp-terminal.

6. In an incandescent-lamp socket and switch, a tube of elastic material forming at one end a socket for the lamp and at the other end having a solid chamber containing the turn-off switch, and a cam mounted on the outside of said tube for operating the switch-contacts within said chamber, as and for the purpose described.

7. An incandescent-electric-lamp socket consisting of a tube of soft rubber or similar elastic material, forming at one end an elastic socket adapted to receive a lamp-neck

and made continuous or unbroken at the point where it receives the lamp, so as to form an air-tight joint, said tube having at its other end a plate or partition, to which the supply-conductors or the conductors leading to the switch-contacts are secured.

8. In an incandescent-lamp socket, a tube D of elastic material, such as rubber, forming at one end an elastic socket or holder, which grasps the lamp-neck firmly and forms an effective seal therewith and having at its lower end a disk or partition, to which the supply-conductors are fastened or secured, in combination with a cementing insulating material applied around the conductors and over said plate or partition.

9. As a new article of manufacture, a lamp socket or holder consisting of a tube of rubber or similar elastic material, as described, forming at one end an elastic socket adapted to grasp the lamp-neck firmly and form an effective seal at such point and having its opposite end suitably sealed, as described, to prevent ingress of moisture to the socket-contacts mounted within the tube, as and for the purpose described.

10. A holder for an incandescent lamp and switch, consisting of a tube of rubber or similar elastic material, as described, one end of said tube forming an elastic socket adapted to grasp the collar of the lamp firmly and form an effective seal therewith and having the switch-contacts mounted in a sealed chamber formed by a part of said tube, whose end or portion opposite the end receiving the lamp is suitably sealed against the entrance of moisture or corrosive vapors.

11. A socket or holder for incandescent lamps, composed of a tube of soft rubber or similar elastic material open at the end which receives the neck of the lamp and adapted to hug said neck closely, so as to support the lamp and form a seal against the entrance of vapors to the contact within, in combination with suitable contacts mounted within said rubber tube and adapted to register with those on the neck or base of the lamp when the latter is forced into the end of the tube.

12. In a switch for incandescent electric lamps or other devices, the combination, substantially as described, of a tube of elastic material, such as rubber, having the switch-contacts located within it and sealed at its ends to protect the contacts from corrosive vapors or gases, and mechanism external to said tube for compressing the wall thereof laterally and maintaining it compressed for the purpose of holding the switch-contacts within the tube in either closed or open position.

Signed at Geneseo, in the county of Livingston and State of New York, this 16th day of June, A. D. 1891.

DAVID H. PIFFARD.

Witnesses:

THEO. F. OLMSTED,
JAS. B. HARRIS.