L. E. WOOD.

ELECTRIC LIGHT SOCKET.

APPLICATION FILED DEC. 27, 1918.

1,342,658.

Patented June 8, 1920.

2 SHEETS—SHEET 1.

FIG. 1

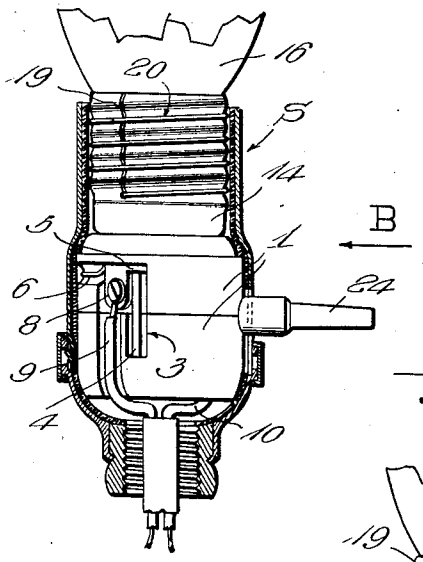


FIG. 2

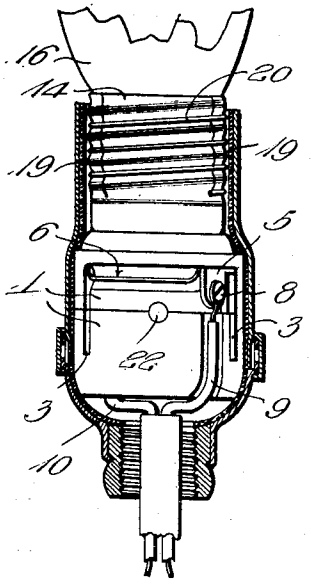


FIG. 3

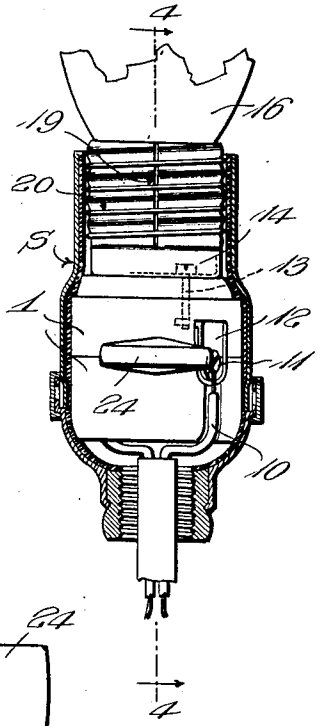


FIG. 4

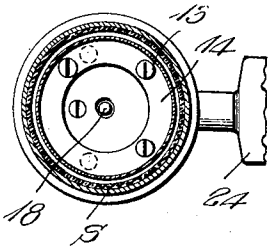
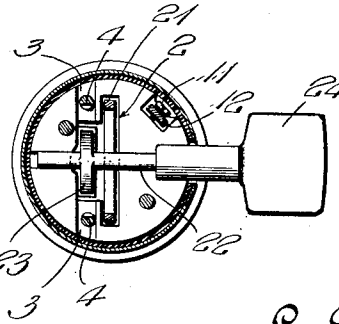


FIG. 5



Witness

Inventor

L. E. Wood

By A. B. Williamson & Co

Attorneys

L. E. WOOD.

ELECTRIC LIGHT SOCKET.

APPLICATION FILED DEC. 27, 1918.

1,342,658.

Patented June 8, 1920.

2 SHEETS—SHEET 2.

Fig. 4

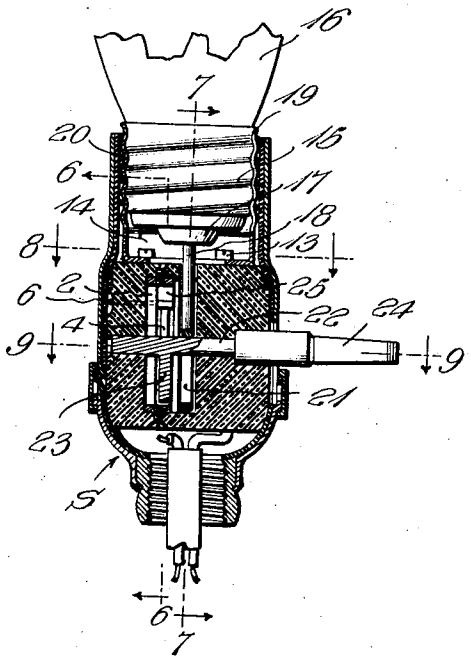


Fig. 5

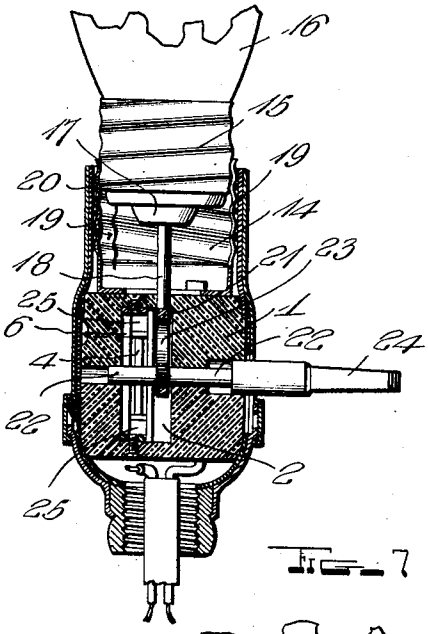


Fig. 7

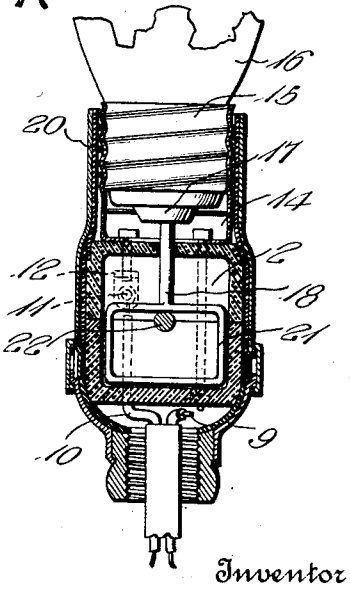


Fig. 6

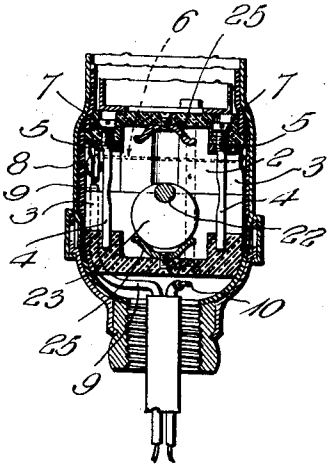


Fig. 10

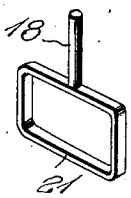
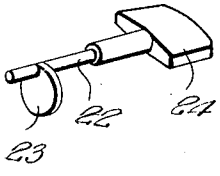


Fig. 11



Witness

Inventor

L. E. Wood

By A. B. Williamson & Co

Attorneys

UNITED STATES PATENT OFFICE.

LOUIS E. WOOD, OF FARRELL, PENNSYLVANIA.

ELECTRIC-LIGHT SOCKET.

1,342,658. Specification of Letters Patent. Patented June 8, 1920.

Application filed December 27, 1918. Serial No. 268,499.

To all whom it may concern:

Be it known that I, LOUIS E. WOOD, a citizen of the United States, residing at Farrell, in the county of Mercer and State of Pennsylvania, have invented certain new and useful Improvements in Electric-Light Sockets; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in means for electrically connecting two coupling members in separable operative engagement, and more particularly to an electric light socket. Considerable difficulty has been encountered when removing broken bulbs from lamp sockets, particularly when the bulb is broken at or closely adjacent to the plug carrying the same, and it has also been rather difficult to remove the bulb without breakage when it has been too tightly screwed into the socket. The principal object of my invention is to overcome these difficulties by the provision of an ejector which will forcibly thrust the bulb plug from the socket by a simple manipulation of the key which controls the passage of current to the bulb; and a further object is the provision of a structure which will break the circuit of the lamp bulb prior to its ejection from the socket, thus eliminating all dangers which would otherwise obtain.

With the foregoing in view, the invention resides in a number of novel features of construction and in the unique association of parts hereinafter fully described and claimed, reference being made to the accompanying drawings.

Figure 1 is a side elevation with the shell of the metal socket and insulating block in section.

Figs. 2 and 3 are similar views looking in the directions indicated by the arrows A and B respectively of Fig. 1.

Fig. 4 is a vertical longitudinal section substantially on the plane designated by the line 4—4 of Fig. 3, showing the relation of parts when the lamp bulb is in operative relation with the socket.

Fig. 5 is a view similar to Fig. 4 but illustrating the manner in which the bulb plug may be ejected from the socket.

Fig. 6 is a detail section on the plane indicated by the line 6—6 of Fig. 4.

Fig. 7 is a similar view on the plane indicated by the line 7—7 of Fig. 4.

Figs. 8 and 9 are transverse sections on the planes of the lines 8—8 and 9—9 respectively of Fig. 4.

Fig. 10 is a perspective view of the combined conductor and ejector.

Fig. 11 is a perspective view of the operating key or shaft.

In the drawings above briefly described, the numeral 1 designates a block of insulation preferably formed of two sections suitably secured together and provided with a recess 2 which at 3, opens through opposite sides of the block. In each of the openings 3 is located a resilient pin or rod 4, one end of these rods being provided with screws 7 passing through terminal plates 5 which are electrically connected by a wire 6 as shown in Figs. 1, 2, and 6, said plates being secured in place by said screws 7. By means of a binding screw or the like 8, one of the current conducting wires 9 is connected electrically to one of the plates 5 as shown in Figs. 1 and 6, while the other wire 10 is connected at 11 to a terminal plate 12, this plate being electrically connected by means of a screw or the like 13, to a metal socket 14 which is secured upon one end of the body 1.

The socket 14 receives the threaded plug 15 of the usual electric lamp 16, and the central terminal 17 of said plug contacts with a combined ejector and current conducting pin 18. This pin, through certain connections to be described, may be connected electrically with either of the rods 4 and it will thus be seen that the circuit of the lamp 16 will be completed, the plug 15 being in contact with the socket 14 in the usual manner. In addition to its current conducting function, the pin 18 serves to thrust the plug 15 from the socket 14 whenever necessary and in order that this may take place, said socket is split at 19 so that it may expand when the plug is forced longitudinally. To hold the socket normally contracted, but to permit expansion thereof when the plug is forced longitudinally by pin 18, a coil spring 20 may be provided, the convolutions of said spring snugly surrounding the socket in sliding contact therewith, and it will be observed that said convolutions are seated in the external grooves formed by stamping the threads of the socket. The outer end

of spring 20 is free of attachment to the socket and thus the convolutions of said spring may have a torsional movement, allowing the spring to expand when the socket expands.

Any preferred means might well be employed for operating the pin 18 as above mentioned, but I prefer to provide the inner end of said pin with a yoke 21 located in and adjacent one side of the recess 2. A manually operable shaft 22 passes transversely through the body 1 and through the yoke 21, spanning the recess 2 as seen for instance in Figs. 4, 5 and 9, said shaft having a lateral projection 23 in the form of a cam which may be thrown into contact with either rod 4 when the shaft 22 is turned by means of a suitable handle 24 of insulation, the handle and shaft forming the key for controlling the current supply as well as for operating the ejector pin 18. One side of the yoke 21 contacts normally with the metal shaft 22 and thus when said shaft is turned so that the cam 23 abuts either rod 4, the circuit of the lamp will be complete. With the parts thus positioned, the current will travel from the wire 9 and binding post 8 to one of the plates 5, and assuming that the cam 23 has been thrown into contact with the pin 4 of this plate, the current passes through such cam and through the shaft 22 to the pin 18. This pin conducts the current to the terminal 17 of the plug 15, from which terminal the electricity passes through the filament of the electric light, then to the metal shell of plug 15, from the latter to the socket 14, from this socket to the plate 12 by way of the screw 13 (see Fig. 3) and finally travels from plate 12 through the wire 10, it being of course understood that the two wires 9 and 10 are connected to any suitable source of current supply. By turning the cam 23 to a neutral position such as seen in Figs. 4 and 6, the current will be cut off, and in order to yieldably retain said cam in an idle position, one or more spring clips 25 may be provided, one being shown at each end of the recess 2.

By pulling outwardly upon the handle 24, the entire shaft 22 slides from the position of Fig. 4 so as to position the cam 23 in the yoke 21. By now turning the handle, the shaft and cam are so turned as to force the plunger or pin 18 outwardly as disclosed in Fig. 5, thus ejecting the plug 5 from the socket 14. It will be observed that when the shaft 22 is pulled outwardly, the cam 23 is moved out of the plane of the rods 4 and thus the circuit cannot be completed while ejecting the broken bulb. After removal of the damaged bulb, the parts may be returned to their normal positions and a new bulb inserted.

By the use of the invention, not only is it possible to disconnect bulb plugs from lamp sockets with ease and without danger of injury, but the same principle may be applied to other forms of electric connections in which two coupling members such as the plug and socket are separably engaged in operative relation and allowed shifting one from the other, without relative turning motion. It will therefore be understood that the terms of the appended claims do not restrict me to the adaptation of the invention to a lamp socket. Furthermore, it will be obvious that the numerous details shown are merely illustrative of the many ways in which the invention may be embodied. The arrangement shown, however, has given thorough satisfaction and may be used in the well known shells S such as those commonly employed upon electric light sockets. Therefore, this form of the device may be preferable in most cases, but need not be followed too strictly.

I claim:

1. An electric light socket having a key-operated switch, and an ejector for lamp bulbs or other plugs, operable by the switch key.

2. A structure as specified in claim 1, said ejector being centrally located in the socket to engage the central contact of the bulb or plug and forming a current conductor.

3. In an electrical connection, a coupling member having a recess and designed for separable operative engagement with another member, a plunger extending into said recess and adapted for contact with said other member, and manually operable means extending into said recess for actuating said plunger to force the two members apart.

4. In an electrical connection, a coupling member having a recess and designed for separable operative engagement with another member, a plunger extending into said recess and adapted for contact with said other member, a manually rotatable shaft extending into said recess, and means on said shaft for operating said plunger to force the two coupling members apart.

5. In an electrical connection, a coupling member having a recess and designed for separable operative engagement with another member, a plunger extending into said recess and adapted for contact with said other member, a yoke on the inner end of said plunger received in said recess, a manually rotatable shaft passing into said recess, and a cam on said shaft operable in said yoke for actuating said plunger to force the two members apart.

6. In an electrical connection, a coupling member adapted for separable operative engagement with another member, and means

operative either as a controlling switch for the current passing through said members or as means for forcing the two members apart.

7. In an electrical connection, a coupling member for separable operative engagement with another member, and a manually operable key shiftable to two positions and acting in one position as current controlling means, and in its other position as means for forcing the two members apart.

8. In an electrical connection, a coupling member adapted for separable operative engagement with another member, and means for first breaking the electric circuit passing through said members and for then forcing said members apart.

9. In an electrical connection, a coupling member adapted for separable operative engagement with another member, a thrust device carried by said coupling member and adapted to thrust against the other member to force the two apart, and a manually operable shaft carried by said coupling member for controlling the passage of current therethrough and for operating said thrust device.

10. A structure as specified in claim 9, said shaft having a single projection for controlling the current and for operating said thrust device, said shaft being shiftable to two positions to locate said projection for either use.

11. In an electrical connection, a coupling member having a recess and adapted for separable operative connection with another member, a contact in said recess, a metal pin passing slidably into said recess, the outer end of said pin being adapted for contact with said other member to conduct current thereto, and manually operable means extending into said recess for co-action with said contact in controlling the passage of current through the coupling, and serving also as means for projecting said pin to force the two members apart, said manually operable means forming an electrical connection between said contact and said pin when engaging the former.

12. In an electrical connection, a coupling member having a recess and adapted for separable operative connection with another member, a contact in said recess, a metal pin passing slidably into said recess, the outer end of said pin being adapted for contact with said other member to conduct current thereto, a metal yoke on the inner end of said pin located in said recess, a manually rotatable metal shaft passing into said recess and through said yoke in contact with the latter, and a projection on said shaft for co-action with said contact in controlling the passage of current through the two members, and for coöperation with said yoke to project said pin and force said members apart.

13. In an electrical connection, a coupling member adapted for separable operative engagement with another member, and a combined conductor and thrust device carried by said coupling member for conducting current therefrom to the other member, and for forcing said members apart when required.

14. In an electrical connection, a coupling member adapted for separable operative engagement with another member, a combined conductor and thrust device carried by said coupling member for carrying current therefrom to the other member, and for forcing the two members apart, and manually operable means for either supplying current to said combined device or for shifting such device to force the two members apart.

15. In an electrical connection, an expansible metal socket threaded to receive a plug, an insulating body on which said socket is secured, current conducting means electrically connected to said socket, a current conducting member separate from said current conducting means and mounted movably in said block, said current conducting member extending into said socket for contact with the terminal on the plug, and means for forcing said current conducting member outwardly to thrust the plug from the socket.

16. In an electrical connection, a coupling member having an expansible threaded socket to which one of the current supply wires is electrically connected, said socket being adapted to receive a threaded plug to which current is to be supplied, a combined conductor and plug ejector carried by said coupling member and extending into said socket for contact with the central terminal of said plug to conduct current to the latter, and means for operating said combined conductor and ejector to force the plug from the socket, provision being made for supplying current to said combined conductor and ejector.

17. A structure as specified in claim 15, said socket being longitudinally split, and a coiled spring whose convolutions surround said socket and are torsionally movable thereon for the purpose specified.

18. In an electrical connection, a metal socket threaded for the reception of a threaded plug, said socket being longitudinally split to permit expansion, thereby allowing the plug to shift endwise within the socket without relative rotation, and a coiled spring whose convolutions surround said socket and are torsionally movable thereon for the purpose specified.

In testimony whereof I have hereunto set my hand.

LOUIS E. WOOD.