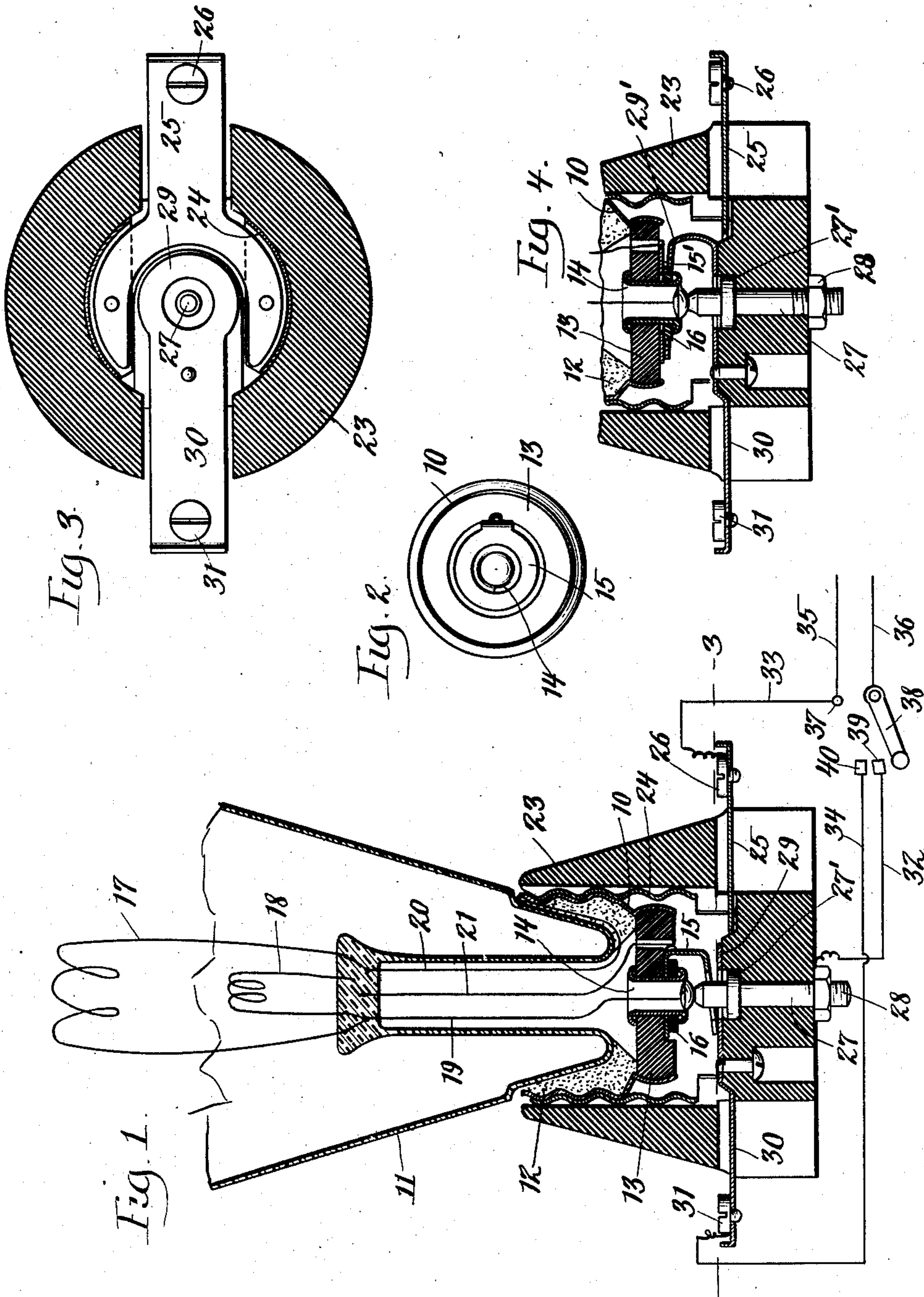


No. 859,515.

PATENTED JULY 9, 1907.

W. J. PHELPS.  
ELECTRIC LIGHTING.  
APPLICATION FILED JULY 15, 1903.



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# UNITED STATES PATENT OFFICE.

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## ELECTRIC LIGHTING.

No. 859,515.

Specification of Letters Patent.

Patented July 9, 1907.

Application filed July 15, 1903. Serial No. 165,556.

*To all whom it may concern:*

Be it known that I, WILLIAM J. PHELPS, a citizen of the United States, and a resident of Detroit, county of Wayne, and State of Michigan, have invented certain new and useful Improvements in Electric Lighting, of which the following is declared to be a full, clear, and exact description.

The improvement relates to electric incandescent lighting in which the lamps are provided with two or more filaments or sections and are designed to emit light of varying intensity.

The invention consists in the features of construction, combinations and arrangement of parts hereinafter set forth, illustrated in the accompanying drawings and more particularly pointed out in the appended claims.

In the drawing: Figure 1 is a section through one of the lamps and its holder and a diagram of the circuit and switch employed. Fig. 2 is an end view of the lamp. Fig. 3 is a cross-section of the lamp holder on line 3-3 of Fig. 1. Fig. 4 is a section of a modified form of lamp and holder.

As shown in the drawing, the base or cap of the lamp preferably comprises a screw shell 10, which forms one of the lamp terminals for the reception of current from the lamp holder and which supports within its outer end a glass globe or vacuum bulb 11, held therein by suitable composition filling 12. An insulating disk 13 of porcelain or like material is mounted within the end of the screw shell 10 and carries a second and a third terminal for the reception of current from the lamp holder. One of these terminals comprises a metallic tubular rivet 14, extending through a central hole in the disk 13 and flanged outwardly at each end to hold the same in place. The third terminal is mounted upon the disk intermediate the central terminal and the edge thereof, and preferably comprises a bent piece 15 of spring-metal which is held upon the face of the disk by the outer flanged end of the tubular rivet or terminal 14, but, as shown, the terminal 15 is insulated from the terminal 14 by a washer 16 of suitable material. The outer end of the resilient or axially yielding terminal is formed in the shape of an annulus or loop concentrically arranged about the central terminal 14.

Lamp filament or filament sections 17 and 18 are employed, which are of different candle power, and low power filament 18 is of greater resistance per unit of length than high power filament 17. Three leading-in wires 19, 20 and 21 are connected respectively with the central terminal 14, the screw-shell terminal 10 and the resilient terminal 15 of the lamp. The leading-in wires extend within the neck of the lamp and wire 19 is connected to the joined ends of the filaments, and the wires 20 and 21 are connected respectively to the free ends of the high and low power filaments 17 and 18.

The lamps are designed for use with a current of con-

stant or fairly constant potential, and when current flows from terminal 15 to terminal 10 through the filaments in series, low power filament 18 will alone glow with small candle power, while high power filament 17 acts as a dark and dead resistance because of the different relative resistance of the filaments. By short circuiting the low power filament, by connecting terminal 14 to one of main current supply wires, low power filament 18 will be short circuited and the high power filament 17 will alone glow with full candle power.

The holder for the lamp comprises a recessed block or receptacle 23 of porcelain or like material, having within its recess a metal screw-shell 24, which constitutes one of the holder terminals and within which the screw-shell terminal 10 of the lamp is threaded. A metal strip 25 extends laterally through an opening in the receptacle 23, is connected to the screw-shell 24 and is provided on its outer end with a binding screw 26. Another holder terminal comprises a central stud 27, extending axially through the base of the receptacle 23 and adapted to engage the central terminal 14 of the lamp. The inner end of the stud or terminal 27 is provided with a shoulder 27', fitting within a recess in the bottom of receptacle 23 and provided on its outer end with a binding nut 28. The third lamp terminal comprises a metal annulus or ring 29 concentrically mounted upon the bottom of the receptacle 23 about the terminal 27. A metal strip 30 connected to or formed in piece with the annular terminal 29 extends laterally through an opening in the side of receptacle 23 and is provided on its outer end with a binding screw 31. The annular holder terminal 29 is adapted to be snugly engaged by the annular resilient lamp terminal 15. By this arrangement the lamp and holder are provided with three pairs of co-operating terminals for the transmission of current to the lamp filaments, and by making one of such terminals resilient or axially yielding; each terminal of the three pairs may make good contact with its corresponding terminal.

In Fig. 4 is illustrated a slightly modified form in which lamp terminal 15' is a flat annulus fixed to the end disk 13, and the corresponding holder terminals 29' is resilient or axially yielding and is formed of a bent strip of spring metal.

Three conductors 32, 33 and 34 are connected respectively by binding nut 28 and binding screws 26 and 31 to the three terminals 27, 24 and 29 of the lamp holder and extend therefrom to a distant conveniently located switch.

Main current supply wires 35 and 36 are connected respectively to a binding post 37 and to a switch 38. The latter is adapted to successively engage a pair of contacts 39 and 40 to which conductors 32 and 34 are respectively connected. Conductor 33 is connected to the binding post 37.

When switch 38 is in the position shown, the current



is turned off from the lamp or lamps. When shifted into engagement with contact 40, the current passes the filaments of the lamp in series and the lower power filament 18 alone glows as above described. When switch 38 is shifted into engagement with contact 39, the low power filament is short circuited and the high power filament 17 will alone glow.

While the above described arrangement of filaments, conductors and switch contacts is the one preferred, it is obvious that modifications may be readily made. It is also obvious that other modifications may be made without departure from the scope of the invention.

Having thus described my invention what I claim as new and desire to secure by Letters Patent is:—

1. An electric incandescent lamp having two filaments and provided with three terminals, a base therefor comprising a screw-shell for engaging the lamp holder and forming one of the lamp terminals, an end insulating disk, a central terminal mounted on said disk and a third terminal mounted on said disk between the center and periphery thereof, one of said last mentioned terminals being resilient or yielding in axial direction, said terminals being arranged out of line so that each may directly receive current from the lamp holder independently of the other terminals.
2. An electric incandescent lamp having two filaments and provided with three terminals, a base therefor comprising a screw-shell for engaging the lamp holder and forming one of the lamp terminals, an end insulating disk, a central terminal and a third annular, concentric terminal mounted on said disk, one of said last mentioned terminals being resilient or yielding in axial direction said three terminals being arranged out of line so that each may directly engage its corresponding terminal of the lamp socket.
3. An electric incandescent lamp having two filaments and provided with three terminals, a base therefor comprising a screw-shell for engaging the lamp holder and forming one of the lamp terminals, an end insulating disk, a central terminal mounted on said disk and a third annular, axially yielding terminal concentrically mounted on said disk and surrounding said central terminal said three terminals being arranged out of line so that each may be directly engaged by corresponding terminals of the lamp socket.
4. In electric lighting, the combination with an electric incandescent lamp having two filaments and with a holder therefor, said lamp and holder having three pairs of co-operating terminals, each pair arranged to transmit current from the holder to the lamp independently of the other pairs of terminals one at least of said terminals being re-

silient or yielding in axial direction, three conductors connected to the terminals of said lamp holder and extending therefrom to a distant point and a switch arranged to connect and disconnect said conductors and the main supply wires and to modify the flow of current through said conductors and filaments.

5. In electric lighting, the combination with an electric incandescent lamp having two filaments and with a holder therefor, said lamp and holder having three pairs of co-operating terminals, each pair arranged to transmit current from the holder to the lamp independently of the other pairs of terminals inter-engaging screw-shells on said lamp and holder forming one pair of terminals, insulating portions connected to said screw-shells, a pair of co-operating central terminals mounted on said insulating portions and a third pair of terminals mounted on said insulating portions between said central and said screw-shell terminals, one of said pair of intermediate terminals being resilient or yielding in axial direction, three conductors connected to the terminals of said lamp holder and extending therefrom to a distant point and a switch arranged to connect and disconnect said conductors and the main supply wires and to modify the flow of current through said conductors and filaments.

6. In electric lighting, the combination with an electric incandescent lamp having two filaments and with a holder therefor, said lamp and holder having three pairs of co-operating terminals, each pair arranged to transmit current from the holder to the lamp independently of the other pairs of terminals inter-engaging screw-shells on said lamp and holder forming one pair of terminals, insulating portions connected to said screw-shells, a pair of co-operating central terminals mounted on said insulating portions and a third pair of annular terminals concentrically mounted upon said insulating portions, one of said annular terminals being resilient or yielding in axial direction.

7. In constant potential electric lighting, the combination with an incandescent lamp having filaments differing in candle power and in resistance per unit of length, of a lamp holder therefor, said lamp and holder having three pairs of co-operating terminals each pair arranged to transmit current from the holder to the lamp independently of the other pairs of terminals, one of which is resilient, three conductors connected respectively to the terminals of said lamp holder and extending therefrom to a distant point and a switch arranged to connect and disconnect said conductors and the main current supply wires and to modify the flow of current through said conductors and filaments.

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