

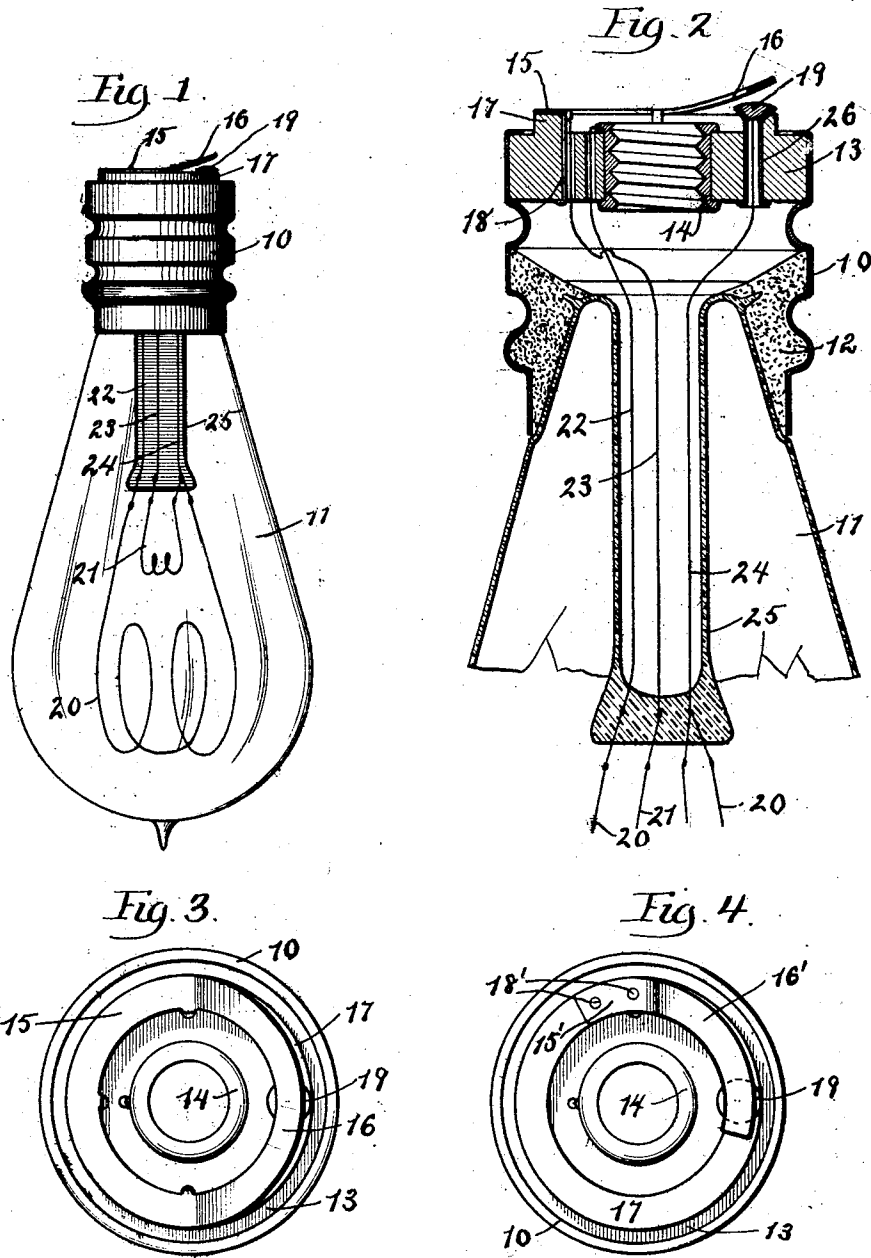
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PATENTED AUG. 8, 1905.

W. J. PHELPS.

ELECTRIC INCANDESCENT LAMP.

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# UNITED STATES PATENT OFFICE.

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## ELECTRIC INCANDESCENT LAMP

No. 796,757.

Specification of Letters Patent.

Patented Aug. 8, 1905.

Application filed April 25, 1902. Renewed June 5, 1905. Serial No. 263,868.

*To all whom it may concern:*

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

The invention relates more particularly to electric incandescent lamps having two or more incandescing filaments or filament-sections to emit light of varying intensities, such as disclosed in prior Letters Patent of the United States issued to me, No. 603,705, May 10, 1898.

The object of the present invention is to provide a construction for such a lamp that may be used with the so-called "Thomson-Houston" lamp base or socket, so that the improved lamp may be readily applied to such sockets or lamp-holders which are now in use.

A further object of the invention is to provide a lamp having two terminals only for the direct reception of current from the terminals of a Thomson-Houston socket, so arranged that the lamp may be partially unscrewed in the socket without breaking contact.

The invention consists in the features of construction and arrangement of parts set forth in the following description, illustrated in the accompanying drawings, and more particularly set forth in the appended claims.

In the drawings, Figure 1 is a view in elevation of the improved lamp. Fig. 2 is a view in longitudinal section of the upper part of the lamp. Fig. 3 is a plan view of the base. Fig. 4 is a plan view of the base of a modified form.

The base or cap of the lamp comprises a metal sleeve 10, within the outer end of which the lamp-globe or vacuum-bulb 11 is held by a composition filling 12. Within the outer end of the lamp-base is fixed a disk of insulating material 13, (preferably of porcelain.) The porcelain disk 13 of the lamp-base is provided with two terminals only for the direct reception of current from terminals of the socket or receptacle. These lamp-terminals comprise an axial internally-threaded metal nut 14, fixed centrally in the porcelain disk 13, which is arranged to engage with the centrally-threaded terminal of the ordinary Thomson-Houston socket. The other lamp-

terminal consists of an axially-movable piece mounted upon the lamp-base in position to engage with the annular concentric terminal of the ordinary Thomson-Houston socket. This second lamp-terminal may be constructed in different ways, but preferably comprises an annular metal ring 15, having an upwardly-extending resilient segment 16 and held in place upon an annular boss 17 of the insulating-disk by prongs 18, which extend through openings in the disk 13, and are bent at their lower ends to engage the lower face thereof. The resilient terminal is thus arranged on one side of the axis of the lamp and as it engages the annular terminal of the socket is arranged to be axially moved by the end thrust of the lamp as it is screwed into the socket, and the lamp may be partially unscrewed without breaking contact with the socket-terminals.

A contact 19 is arranged upon the insulating-disk 13 of the lamp-base in position to be engaged by the resilient terminal 16 when the lamp is screwed completely into its socket; but, as is obvious, contact therewith will be broken when the lamp is partially unscrewed. The contact 19 receives current only from the lamp-terminal 16 and not from one of the socket-terminals.

The lamp-filaments may vary in number and be arranged and connected in different ways; but preferably two filaments or filament-sections (preferably of different candle-power) 20 and 21 are arranged within the vacuum-bulb 11. Three leading-in wires 22, 23, and 24 extend within the stem 25 of the lamp-globe. Wire 24 is connected to the joined ends of the filaments 20 and 21, and wires 22 and 23 are connected, respectively, to the opposite ends of the filaments 20 and 21. Wires 22 and 23 extend through openings in the insulating disk 13 and connect, respectively, with the terminal piece 15 16 and with the terminal nut 14. The wire 24 extends through an eyelet 26, mounted in the insulating-disk 13, and is connected to the contact 19, which is preferably supported upon the upper end of the eyelet 26.

The lamp is designed for use with an electric-lighting current of constant or fairly constant potential, and preferably filament 20 is of high candle-power and adapted to the full voltage of the electrical supply, while filament 21 is of low candle-power and higher resistance per unit of length than the filament

20; but it may be of too low total resistance to be independently subjected to the full voltage for which the lamp is designed.

When the lamp is screwed completely into its socket, with the resilient terminal 16 in engagement with contact 19, the current will pass from the central socket-terminal by lamp-terminal 14 through leading-in wire 22, through filament 20, and then through the path of least resistance by leading-in wire 24, contact 19, and terminal 16 to the other socket-terminal. In this position filament 20 will glow with the full candle-power of the lamp. Now if the lamp be partially unscrewed axially-movable terminal 16 will still remain in contact with the annular terminal of the socket and the current will pass from terminal 14 by wire 22 through the filaments 20 and 21 in series and by leading-in wire 23 to the terminal 15 16. In this position filament 21 alone will glow, while the filament 20 will act as a relatively dark and dead resistance or glow with much diminished power—for example, dull red.

In the modified form shown in Fig. 2 the axially-movable terminal comprises a segmental plate having a portion 15' held in position on one side of the center of the lamp-base upon the annular boss 17 of the insulating-disk by pins 18' and an upwardly-extending resilient portion 16', arranged above the contact 19. Other forms of axially-movable terminals may be readily designed which would fall within the scope of the invention.

It is obvious that the arrangement of the filaments and their connection with the lamp terminals and contact may be varied and that a single length of incandescing material separated into two or more sections by means of anchors or conducting-wires could be used without departure from the essentials of the invention. Obviously, also, the details of construction could be varied according to the skill of the mechanic and that the invention is not limited to the precise details.

While I have described in the preferred form a lamp in which two filaments differing materially in resistance per unit of length are arranged to burn in series, one acting as a relatively dead and dark resistance, it is obvious that the power and arrangement of the filaments and their connections with the terminals and contact may be varied without departure from the essentials of the invention.

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

1. An incandescent lamp comprising two or more filaments or sections, a base therefor, an axial internally-threaded nut and an axially-movable piece mounted on the lamp-base constituting the two lamp-terminals and arranged to engage with a central and an annular concentric terminal of a lamp-socket for the reception of current, and a contact coacting with said movable terminal and arranged to receive

current therefrom for modifying the flow of current to the separate filaments or sections.

2. An incandescent lamp comprising two or more filaments or sections, a suitable base therefor, an axial internally-threaded nut and a resilient piece mounted upon the lamp-base to one side of the center, constituting the two lamp-terminals and arranged to engage with a central and an annular concentric terminal of a lamp-socket for the reception of current, said resilient terminal arranged to be moved by the end thrust of the lamp in the socket, and a contact mounted on the lamp-base and arranged to be engaged by said resilient terminal to receive current therefrom for modifying the flow of current to the separate filaments or sections.

3. An incandescent lamp comprising two or more filaments or sections, a lamp-base therefor comprising a metal sleeve within which the lamp-globe is held and an end insulating-disk, an axial, internally-threaded nut mounted on the insulating-disk and constituting one terminal for the reception of current when the lamp is in position in a socket or lamp-holder, a resilient piece mounted upon the insulating-disk to one side of the center constituting the other lamp-terminal and arranged to be axially moved by the end thrust of the lamp within its socket and a contact mounted upon the insulating-disk and arranged to be engaged by said resilient piece to receive current therefrom for modifying the flow of current to the separate filaments or sections.

4. An incandescent lamp comprising two or more filaments or sections, a suitable base therefor, an axial internally-threaded nut and an axially-movable piece mounted on the lamp-base constituting the two lamp-terminals and connected independently to the ends of the lamp filaments or sections and a contact mounted on the lamp-base, connected to the joined end of the filaments or sections and arranged to be engaged by said movable terminal to receive current therefrom for modifying the flow of current to the separate filaments or sections.

5. A base or cap for incandescent lamps having two terminals only for the direct reception of current from the socket-terminals, one of said terminals comprising an axial, internally-threaded nut and the other of said terminals comprising an axially-movable piece mounted upon the lamp-base to one side of the center, and a contact upon the lamp-base arranged to engage said movable piece to receive current therefrom.

6. A cap or base for incandescent lamps comprising a metallic sleeve, a disk of insulating material carried in the end of said sleeve, an axial, internally-threaded nut fixed in said insulating-disk constituting one of the lamp-terminals, a resilient axially-movable spring-piece mounted upon the insulating-disk to one side of the center and constituting the other lamp-terminal, and a fixed con-

tact mounted on the lamp-disk in position to be engaged by said resilient terminal.

7. A base or cap for incandescent lamps having two terminals only for the direct reception of current from the terminals of the lamp-socket, one of said terminals comprising an axial internally-threaded nut and the other of said terminals comprising an axially-movable piece mounted upon the lamp-base on one side of the center, whereby the lamp may be partially unscrewed from its socket without breaking contact therewith and leading-in wires permanently connected to said terminals.

8. An incandescent lamp having two filaments or sections, an axial internally-threaded nut constituting one of the lamp-terminals, a spring-terminal mounted to one side of said nut and a contact adapted to receive current from said spring-terminal and to make and break engagement therewith, said filaments being connected to said terminals and contact, whereby the flow of current through said filaments can be varied by the end thrust of the lamp in screwing the same into its socket or lamp-holder.

9. In constant-potential electric lighting, the combination of a lamp-base having two terminals only for the reception of current from the socket or lamp-holder, one of said terminals comprising an axial, internally-threaded nut and the other of said terminals comprising an axially-movable piece and a

contact with which said movable terminal engages, with two incandescing filaments or sections connected at their free ends to said terminals and at their joined ends to said contact, the resistance of said filaments or sections being so proportioned that one glows and one acts as a relatively dark resistance to modify the current when it flows through the filaments or sections in series.

10. In constant-potential electric lighting, the combination of a lamp-base having two terminals only for the reception of current from a socket or lamp-holder, one of said terminals comprising an axial, internally-threaded nut centrally mounted upon the end of the lamp-base and the other of said terminals comprising a resilient spring-piece mounted upon the end of the lamp-base and arranged to be moved by the end thrust of the lamp within its socket and a contact with which said resilient piece engages, with two incandescing filaments or sections connected at their free ends to said terminals and at their joined ends to said contact, the resistance of said filaments or sections being so proportioned that one at least glows and one at least acts as a relatively dark resistance to modify the current when it flows through two or more filaments or sections in series.

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