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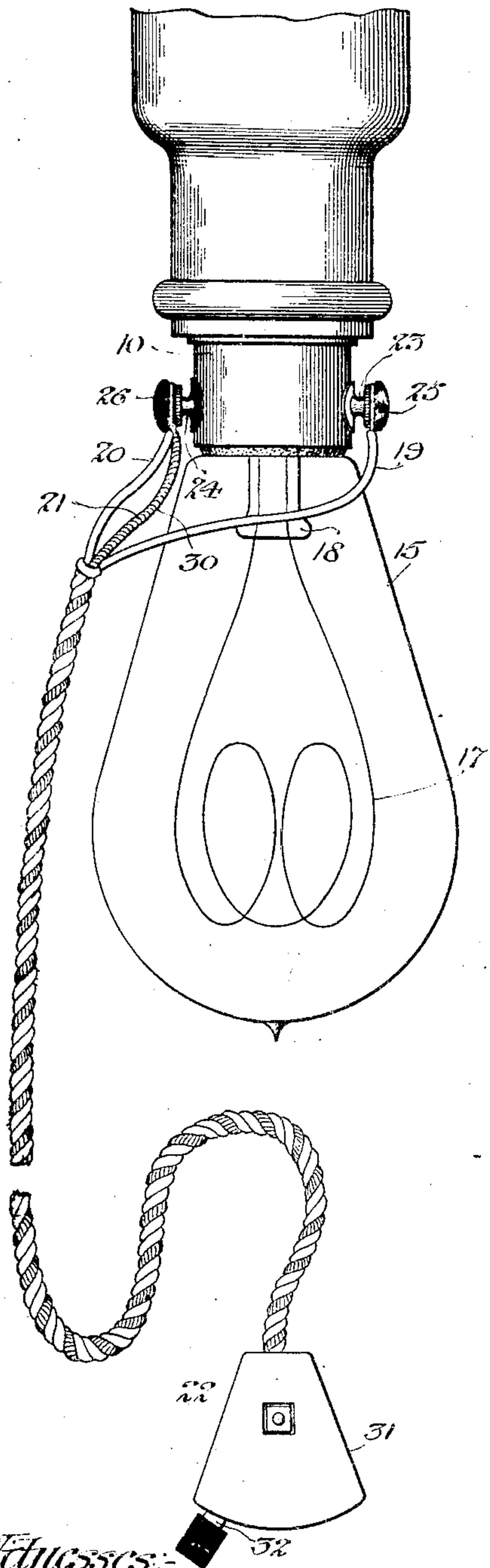
ELECTRIC INCANDESCENT LAMP AND CONNECTIONS THEREFOR.

APPLICATION FILED JULY 15, 1907.

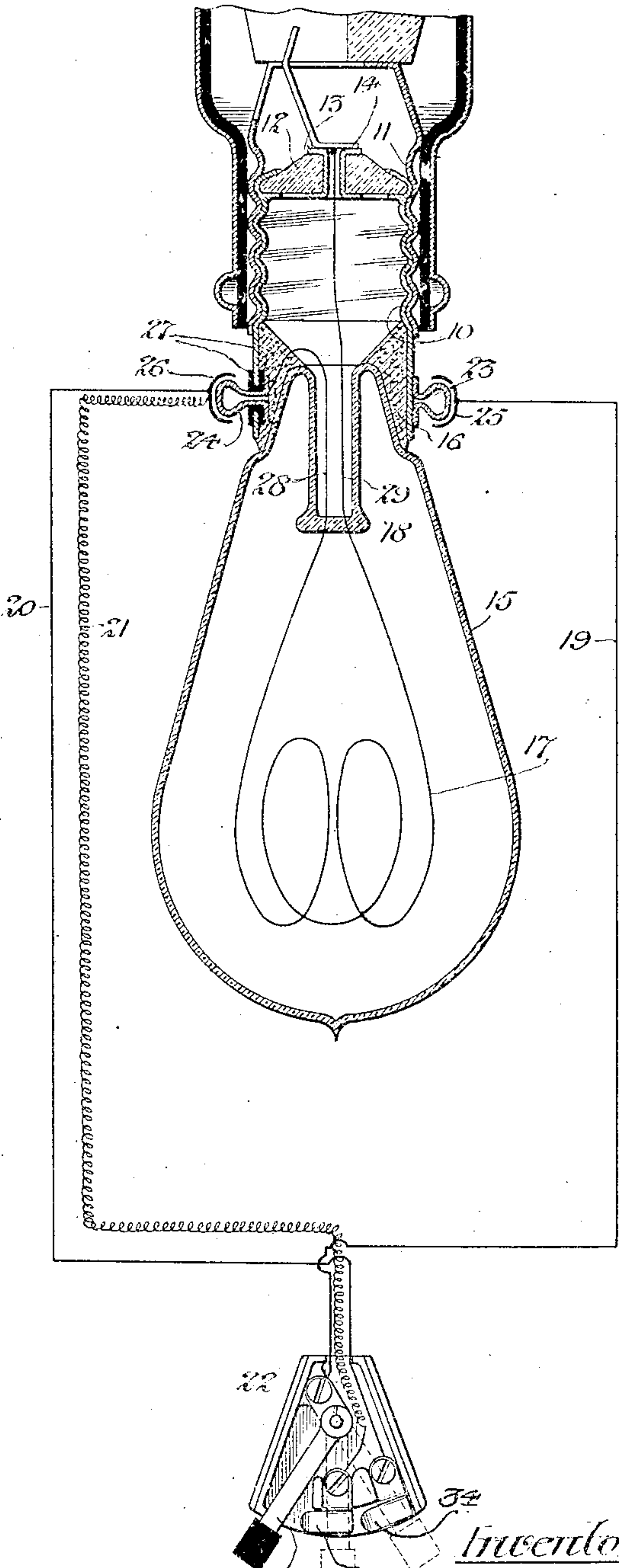
967,233.

Patented Aug. 16, 1910.

*Fig. 1.*



*Fig. 2.*



Witnesses:-

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# UNITED STATES PATENT OFFICE.

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## ELECTRIC INCANDESCENT LAMP AND CONNECTIONS THEREFOR.

967,233.

Specification of Letters Patent. Patented Aug. 16, 1910.

Application filed July 15, 1907. Serial No. 383,919.

*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 Incandescent Lamps and Connections Therefor, of which the following is declared to be a full, clear, and exact description.

The invention relates to electric incandescent lamps and more particularly to lamps having suitable connections and controlling switches whereby they may be caused to glow with different candle power.

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

In the drawings, Figure 1 is a view in elevation of the improved lamp and connections showing the lamp in position within a holder or socket. Fig. 2 is a view in section of the lamp and switch with the connections illustrated diagrammatically.

The improved lamp is provided with an ordinary base which may be designed to fit any one of the lamp-holders or sockets now in use. That shown is designed for use with the ordinary Edison socket or lamp-holder and comprises a metal screw shell 10 which is arranged to detachably engage the screw shell 11 of the lamp-holder and forms one of the terminals for the reception of current from the lamp-holder. Shell 10 is provided in its end with an insulating disk 12 of porcelain or the like and which carries a central terminal 13 arranged to engage the central terminal 14 of the lamp-holder. The exhausted globe or vacuum bulb 15 is set within the outer end of the shell 10 and is held in place by the composition filling 16. The filament 17 is mounted within the bulb upon the stem 18.

A pair of conductors 19 and 20 and resistance coil 21 are connected to the outer end of the lamp base which, when the lamp is in position, normally projects beyond the lamp-holder or socket. These conductors and the resistance coil are connected to the lamp terminals and filament and are provided with a suitable switch mechanism 22 so that the coil may be placed in series with

the lamp filament to cut down the amount of current flowing therethrough and thus cause the lamp to glow with small candle power.

The conductors and coil are preferably detachably connected to the outer end of the lamp base so that they may be readily applied to new lamps when the old one is broken or worn out. For this purpose, a pair of coupling studs 23 and 24 are mounted upon the outer normally projecting end of the lamp base or shell 10 and the conductors 19 and 20 are provided with socket members 25 and 26 arranged to detachably engage the coupling studs. Other forms of coupling devices may be employed but those shown are convenient since they are similar in construction to the ordinary ball and socket fastener, and the socket members 25 and 26 may be readily snapped on or detached from the ball members or coupling studs, and when in position on the studs will be in good electrical contact therewith. The coupling studs and socket members are of course formed of metal and the latter are preferably provided with an insulating covering so that they may be safely placed in position or detached from the coupling studs.

The coupling stud 23 is soldered to and is in direct electrical connection with the screw shell or lamp terminal 10. The coupling stud 24 is mounted upon but is insulated from the screw shell 10 by fiber strips 27 and is connected to one end of the filament 17 by a leading-in wire 28. The other end of the filament is connected by a leading-in wire 29 to the lamp terminal 13 on the insulating disk 12.

The resistance 21 preferably comprises a single coil of fine insulated wire which is electrically connected to the socket member 26 and wound upon a flexible cord 30. The conductors 19 and 20 are preferably in the form of flexible, insulated cord conductors and are twisted together with the flexible cord 30 whereon the resistance coil 21 is wound. The switch 22 connecting the conductors and resistance coil may thus be located at any suitable point distant from the lamp itself. By forming the resistance of a single coil wound upon a flexible cord, the requisite extreme length of coil is provided and at the same time the coil is exposed so



that the heat developed, when it is in circuit, is readily disseminated.

The switch mechanism 22 may be of any desired or suitable construction but should be capable of occupying at least three positions, and arranged to connect conductor 19 either to the resistance coil 21 or to the conductor 20 or to entirely disconnect it from either. The switch, in the form shown, comprises a sectional casing 31 of porcelain or like insulating material, triangular in shape and provided with a swinging switch lever 32 and a pair of contacts 33 and 34. The switch lever is connected to conductor 19 and the contacts 33 and 34 are connected respectively to the resistance 21 and to the conductor 20. When the switch is in the position shown in the drawings, no current will pass to the lamp. When it is shifted into engagement with the contact 33 current will pass from lamp terminal 10, conductor 19, switch contacts 32 and 33 through the resistance coil 21 to the interlock coupling members 26 and 24 and by leading-in wire 28 to the lamp filament 17 and back through the leading-in wire 29 to the other lamp terminal 13. The filament and resistance coil 21 are thus connected in series in the circuit and only a small amount of current will flow so that the lamp will glow with low candle power. When the switch lever 32 is shifted into engagement with the contact 34 the resistance coil is cut out of the circuit and the lamp will glow with full candle power. The contacts 33 and 34 are preferably so arranged that the switch lever 32 makes and breaks engagement with the contact 34 while it is still in engagement with the contact 33, so that in effect a shunt is opened and closed around the resistance 21 and there is no sparking at the contact 34. There is little or no sparking at the contact 33 since when the switch makes and breaks engagement therewith, it opens and closes the circuit in series through the resistance and filament and only a small amount of current can flow through the circuit.

It is obvious that numerous changes may be made in the details of structure and arrangement of parts without departure from the essentials of the invention defined in the claims.

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

1. The combination with an electric incandescent lamp having a base comprising means for detachably engaging a suitable lamp holder and terminals for the reception of current therefrom, of a resistance coil secured independently of the lamp-holder to the outer projecting end of the lamp base and electrically connected to the lamp filament, a flexible cord whereon said coil is

wound, a conductor leading to said lamp and a switch for connecting said resistance coil and said conductor at a point distant from the lamp, substantially as described.

2. The combination with an electric incandescent lamp having a base comprising means for detachably engaging a suitable lamp-holder and terminals for the reception of current therefrom, of a resistance coil secured to the outer end of the lamp and electrically connected to the lamp filament, a flexible cord whereon said coil is wound, a pair of conductors leading to the lamp, and a three-position switch for connecting said conductors and said resistance coil at a point distant from the lamp, substantially as described.

3. The combination with an electric incandescent lamp having a base comprising means for detachably engaging a suitable lamp-holder and terminals for the reception of current therefrom, of a coupling member secured independently of the lamp-holder to the outer projecting end of the lamp base and electrically connected to the lamp filament, a resistance coil detachably connected to said coupling member, a flexible cord whereon said resistance coil is wound, a conductor leading to said lamp and a switch for connecting said resistance coil and said conductor at a point distant from the lamp, substantially as described.

4. The combination with an electric incandescent lamp having a base comprising means for detachably engaging a suitable lamp-holder and terminals for the reception of current therefrom, of a resistance coil and a conductor secured independently of the lamp-holder to the outer, normally projecting end of the lamp base and electrically connected, one to the lamp filament and the other to one of the lamp terminals and a switch connected to said conductor and said coil, substantially as described.

5. The combination with an electric incandescent lamp having a base comprising means for detachably engaging a suitable lamp-holder and terminals for the reception of current therefrom, of a flexible resistance coil and a flexible cord conductor secured independently of the lamp-holder to the outer projecting end of said lamp base and electrically connected, one to the lamp filament and the other to one of the lamp terminals, and a switch connected to said resistance coil and said conductor at a point distant from the lamp, substantially as described.

6. The combination with an electric incandescent lamp having a base comprising means for detachably engaging a suitable lamp-holder and terminals for the reception of current therefrom and coupling members secured independently of the lamp-holder to the outer projecting end of the lamp base



and electrically connected respectively to the lamp filament and to one of the lamp terminals, of a flexible resistance coil and a flexible cord conductor wound together and detachably engaging said coupling members, and a switch supported by and connected to said coil and said conductor, substantially as described.

7. The combination with an electric incandescent lamp having a base comprising means for detachably engaging a suitable lamp-holder and terminals for the reception of current therefrom; of a pair of conductors and a resistance coil secured to the outer, normally projecting end of the lamp base and electrically connected to the lamp filament and terminals and switch mechanism connected to said coil and said conductors, substantially as described.

8. The combination with an electric incandescent lamp having a base comprising means for detachably engaging a suitable lamp-holder and terminals for the reception of current therefrom, of a pair of flexible cord conductors and a flexible resistance coil secured to the outer end of the lamp base and electrically connected to the lamp filament and terminals, said conductor and said resistance coil being wound together and a three-position switch mechanism supported by and connected to said coil and said conductors, substantially as described.

9. The combination with an electric incandescent lamp having a base comprising means for detachably engaging a suitable lamp-holder and terminals for the reception of current therefrom and a pair of coupling members secured to the outer end of said lamp base and electrically connected respectively to the lamp filament and to one of the lamp terminals, of a conductor detachably connected to one of said coupling members, a conductor and a resistance coil detachably connected to the other coupling member and switch mechanism connected to said coil and said conductors, substantially as described.

10. The combination with an electric incandescent lamp having a base comprising means for detachably engaging a suitable lamp-holder and terminals for the reception of current therefrom and a pair of coupling members secured to the outer end of said lamp base and electrically connected respectively to the lamp filament and to one of the lamp terminals, of flexible cord conductors detachably connected to one of said coupling members, a flexible cord conductor and flexible resistance coil connected to the other of

said coupling members, and a three-position switch connected to said coil and said conductors, substantially as described.

11. The combination with an electric incandescent lamp having a base comprising means for detachably engaging a suitable lamp-holder and terminals for the reception of current therefrom and a pair of coupling studs secured to the outer end of said lamp base and electrically connected respectively to the lamp filament and to one of said lamp terminals, of a pair of flexible cord conductors having socket members for detachably engaging said studs, a flexible resistance coil connected to one of said socket members, and a three-position switch connected to said coil and said conductors at a point distant from the lamp, substantially as described.

12. The combination with an electric incandescent lamp having a base comprising a screw shell for detachably engaging a lamp-holder and forming one terminal for the reception of current therefrom, an insulating disk in the end of said shell carrying a second lamp terminal and a pair of coupling members secured to the outer end of said lamp base and electrically connected respectively with the lamp filament and one of said lamp terminals, of a pair of conductors detachably secured to said coupling members, a resistance coil detachably secured to one of said coupling members and switch mechanism connected to said conductors and said coil, substantially as described.

13. The combination with an electric incandescent lamp having a base comprising a screw shell for detachably engaging a lamp-holder and forming one terminal for the reception of current therefrom, an insulating disk in the end of said shell carrying a second lamp terminal and a pair of coupling members mounted on the outer end of said shell, one member being insulated therefrom and connected to the lamp filament, of a pair of flexible cord conductors detachably connected to said coupling members, a flexible resistance coil detachably connected to one of said coupling members, said flexible conductor and said coil being wound together and a three-position switch supported by and connected to said conductors and said coil, substantially as described.

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Witnesses:

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