

April 25, 1961

HSUE C. TSIEN ET AL

2,981,866

COOL DIMMER DEVICE FOR INCANDESCENT LAMPS

Filed March 6, 1959

FIG. 1.

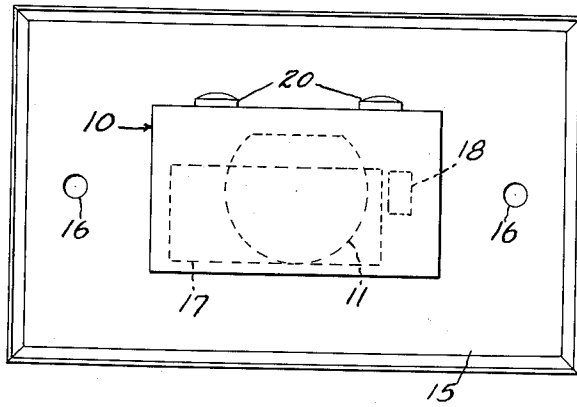


FIG. 2.

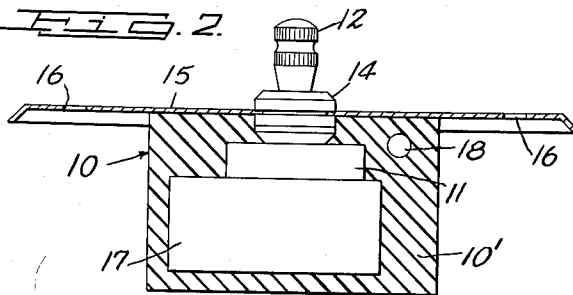


FIG. 3.

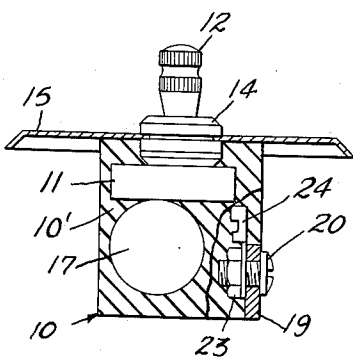
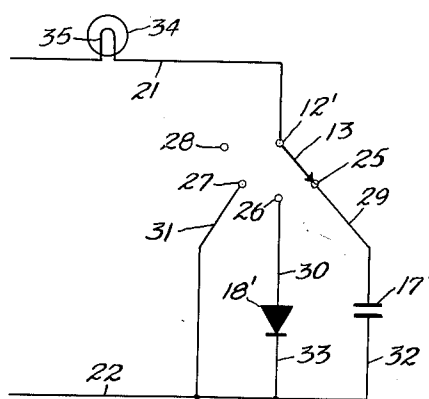


FIG. 4.



INVENTORS
HSUE C. TSIEN
PAO H. CHIN

BY

Howard L. Thompson

ATTORNEY

1

2,981,866

COOL DIMMER DEVICE FOR INCANDESCENT LAMPS

Hsue C. Tsien, Elmsford, N.Y. (11 Browning Drive, Livingston, N.Y.), and Pao H. Chin, 1271 Bedford Road, Pleasantville, N.Y.

Filed Mar. 6, 1959, Ser. No. 797,612

2 Claims. (Cl. 315-240)

This invention relates to a switch device including a control circuit, whereby an ordinary incandescent lamp can be actuated at low, medium and high intensities in providing the desired lighting effect and, further, in increasing the life use of the lamp or bulb.

More particularly, the invention deals with a circuit of the character described, wherein means is provided to control the temperature to provide what we term the cool dimmer.

The novel features of the invention will be best understood from the following description, when taken together with the accompanying drawing, in which certain embodiments of the invention are disclosed and, in which, the separate parts are designated by suitable reference characters in each of the views and, in which:

Fig. 1 is a diagrammatic inner plan view of a wall switch including the facing plate and outlining one of our improved devices, but omitting the circuit wires leading to the switch.

Fig. 2 is a longitudinal sectional view through the structure shown in Fig. 1, diagrammatically illustrating the several parts of the switch and omitting all wiring of the switch device.

Fig. 3 is a transverse section through the device shown in Figs. 1 and 2, with part of the construction broken away to illustrate one of the circuit wire attaching screws and, again, omitting all of the wiring of the device; and

Fig. 4 is a diagrammatic view of the circuit of the device shown in Figs. 1, 2 and 3 and also diagrammatically illustrating an electric light bulb controlled by the switch device.

In illustrating one adaptation and use of our invention, we have diagrammatically shown in Figs. 1, 2 and 3 of the drawing a wall-type of switch device 10, preferably formed from a cast or molded body or casing 10' of suitable insulating material, in which the various component parts of the switch and control means of the device are embedded. In order to simplify the showing, all of the wiring of the switch 10 is omitted and the component parts are simply diagrammatically illustrated. 11 illustrates a four-contact switch, actuated by a manually rotatable element or button 12, the axis of which is indicated at 12' in the wiring diagram of Fig. 4 and, in said figure, 13 represents the switch arm actuated by the button 12. Suitable means, as at 14, is employed around the button for attachment to the usual wall facing plate 15, the latter having apertures, as at 16, for reception of suitable fastener devices in mounting the plate 15 on the wall, as is common with other wall switches.

At 17 we have diagrammatically shown condenser or capacitor means which may be single or double, depending entirely upon the intended use of the device or the lamp or bulb circuit controlled thereby, the condenser or capacitor being diagrammatically illustrated at 17' in the wiring diagram of Fig. 4 of the drawing. At 18 we have diagrammatically illustrated the location of a silicon diode, the latter being illustrated also at 18' diagrammatically in Fig. 4.

2

Embedded in the switch body 10 are two terminal posts, one of which is indicated in section at 19 in Fig. 3 of the drawing, and coupled with these posts are screws 20 for attachment of the circuit wires 21, 22 therewith, the latter being diagrammatically shown in Fig. 4 of the drawing. The screws 20 have embedded and keyed in the body 10 nuts 23 which also support lugs 24, with which extensions of the circuit wires 21, 22 are coupled for attachment to the various components 11, 17', 18' in accordance with the wiring diagram of Fig. 4. The component or switch 11 comprises, in addition to the arm 13, four posts 25, 26, 27 and 28. Extending from the post 25 to the condenser or capacitor 17' is a circuit wire 29. From the post 26 extends another wire 30 which is coupled with the diode 18' and extending from the post 27 is a circuit wire 31 which extends to the wire 22. Other wires 32 and 33 extend from the components 17', 18', respectively to the wire 22 and, thus, complete the circuit, it being understood that the wire 21 contacts the axis 12', upon which the switch arm 13 rotates. When the arm 13 is registering with the post 28, it will be understood that the circuit through the wires 21 and 22 will be broken.

Arranged in the wire 21 is the lamp or light bulb 34 to be controlled by the device 10, the filament being diagrammatically illustrated at 35.

In the illustration of Fig. 4 of the drawing, the switch arm 13 is shown contacting the post 25, so that the current is passing through the condenser or capacitor 17' and, in this instance, the characteristics of the condenser or capacitor will be such as to operate the filament 35 to approximately one-quarter of its full intensity, this being accomplished by minimizing the heat dissipation to approximately ten percent of the energy consumed by the lamp. It will also be understood that, when the contact arm 13 registers with the post 26 and the circuit passes through the diode, the lamp or light bulb will be actuated at about fifty percent of its full intensity and very little heat will be dissipated, due to the extremely high resistance offered by the diode.

With the arm 13 registering with the post 27, the lamp of the light bulb will be illustrated in its normal or one hundred percent intensity, as with any other straight circuit operation of a lamp or bulb of this type and kind.

In practice, the condenser or capacitor employed is of the electrolytic-type and, from the foregoing, it will be apparent that what we term the cool dimming action can be provided in a two-wire circuit to the filament of an incandescent lamp or light bulb, so as to provide the required intensity of light from time to time and, thereby, effect a longer life in the use of the bulb. By way of illustration, let us assume that the bulb 34 is of the 200 watt-type. Then, in the first stage, through the condenser or capacitor 17', the bulb will actuate at about 50 watts; in the second stage, through the diode 18', the bulb will actuate at about 100 watts and, in the final stage, at the full stage, at the full intensity or 200 watts.

It will be apparent that the control devices employing the wiring circuit diagrammatically illustrated can be utilized in conjunction with any type or kind of bulb used directly in electric lighting mediums of any type or kind, or in what might be termed a remote control.

Having fully described our invention, what we claim as new and desire to secure by Letters Patent is:

1. A dimmer control switch device for a single filament light bulb of the character described, said device comprising a body of insulating material, in which is arranged a multiple post switch in one wire of a circuit to said bulb, a condenser and diode in circuit with the other wire of said bulb circuit, two circuit wire terminals, with which the circuit wires to said bulb are attached, said terminals being embedded in said body, a manually actuated switch

3

actuating element externally of said body, said element including a contact operatively engaging the posts of the switch, one post being in circuit with the condenser, a second post being in circuit with the diode and a third post being in circuit with the second named circuit wire to said bulb, and means whereby, in manual operation of said element, the circuit to the bulb can be completed to the first, second and third named posts in providing three intensity stages of actuation of the filament of said bulb.

2. A dimmer control switch device for a single filament light bulb of the character described, said device comprising a casing of insulating material, a multiple post switch, condenser and diode embedded in said casing, circuit wires of a light bulb extending to said casing and said switch, condenser and diode, means placing the condenser in circuit with one post of said switch, means placing said diode in circuit with another post of said switch,

4

said switch having a manually actuated element projecting from said casing and controlling the bulb circuit to illuminate the filament of the bulb one-quarter intensity through said condenser, one-half intensity through said diode and full intensity through a third post of said switch, and means for mounting the casing in connection with a support.

References Cited in the file of this patent

UNITED STATES PATENTS

10	1,749,520	Voorhoeve	Mar. 4, 1930
	1,830,531	Dubilier	Nov. 3, 1931
	2,431,080	Ritter et al.	Nov. 18, 1947
	2,511,558	Baker	June 13, 1950
15	2,896,125	Morton	July 21, 1959

FOREIGN PATENTS

	515,184	France	Nov. 22, 1920
--	---------	--------	---------------