DIMMER SWITCH WITH ILLUMINATED KNOB

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ABSTRACT

In a decorative dimmer switch apparatus, a housing for the dimmer switch apparatus for an incandescent light; an on-off switch within the housing, a variable potentiometer spaced adjacent the front surface of the housing, and a neon bulb light source, connected in parallel with the dimmer switch control mechanism, and positioned at least in front of the potentiometer and a switch plate over the housing. A combined on-off switch and potentiometer operating shaft extends through a central opening through the switch plate for access by an operator; a manually graspable, rotatable knob is positioned on the shaft and is spaced away from the switch plate. The light source is positioned adjacent to the potentiometer operating shaft and an opening in the forward surface of the dimmer switch housing. The knob is at least in part translucent for dispersing illumination impinging upon the knob and for appearing luminescent. The neon bulb light source is positioned to shine through the conventional central opening of the switch plate and illuminate the rear surface of the translucent knob. In a second embodiment of the invention, light can shine onto the rear of the knob to be reflected back to the face plate to form a halo.

12 Claims, 4 Drawing Figures
DIMMER SWITCH WITH ILLUMINATED KNOB
This is a continuation of application Ser. No. 342,532, filed Mar. 19, 1973, now abandoned.

BACKGROUND OF THE INVENTION
The invention relates to illumination of the knob of a dimmer switch.
Illumination of the operating member of a switch, particularly a switch of the type used as a wall switch for an electric light, is well known in the art. Usually, such switches are toggle switches operated by a manually operable lever or switch arm that extends through the decorative, protective switch plate covering the front of the switch and its housing. It is a relatively simple matter to place a neon light or other means of illumination in the interior of the switch housing or switch box at a position such that the light will illuminate the interior end of the switch arm. The switch arm would be made of a material, e.g. translucent plastic, which transmits the light from the interior of the switch box to illuminate the switch arm.

A conventional dimmer switch mechanism includes a potentiometer, which controls the light intensity and which is operated by a rotatable shaft extending out of the dimmer switch. Axial movement of the same shaft is frequently used for operating the on-off switch in the dimmer switch. It has been found desirable to illuminate this knob so that it can be located in darkness and for decorative purposes. A preferred way to illuminate the knob is through illumination means enclosed within the dimmer switch box so that the entire dimmer switch can be sold as a unitary package.

Unlike a more conventional toggle switch, it is not practical to gain access to the interior of the dimmer potentiometer switch mechanism in order to position a neon or other source of illumination to illuminate the potentiometer operating shaft or the manually operable knob at the end of the shaft. Because the light source cannot be placed so as to shine through or along the operating shaft of the potentiometer and because the potentiometer occupies a large portion of the housing adjacent to its operating shaft, the light source within the switch housing must be offset from the potentiometer shaft. The potentiometer itself normally is of such large bulk in the switch box that a light source located in the switch box must be offset a substantial distance from the potentiometer shaft.

The switch box of the dimmer switch is normally covered over by a decorative, protective switch plate which seals the switch box in the well of the wall and becomes integrated with the wall or surface in which the switch is located. The conventional switch plate has a central opening, normally rectangular, through which the potentiometer shaft passes with clearance. A light source offset from the potentiometer operating shaft would shine onto the interior surface of the switch plate. If the switch plate were transparent or translucent, the light would show through and, if properly directed, could illuminate the knob at the end of the shaft. However, if the switch plate were metal and/or opaque, light from the light source displaced from the potentiometer operating shaft would be blocked and the knob would not be illuminated.

Placement of the light source near the potentiometer operating shaft and near the central opening through the switch plate is difficult because the potentiometer structure occupies this area. Also, even if the light source should be arranged to shine out the central hole, a normal dimmer switch knob would completely block the light.

SUMMARY OF THE INVENTION
A standard dimmer switch, including a potentiometer structure, is located in a housing of conventional switch box size. Adjacent to the potentiometer operating shaft on the forward or mounting plate side of the housing is positioned a light source, particularly a low power neon light, which shines forwardly out of the dimmer switch housing through an opening in the mounting plate.

A conventional exterior front switch plate is provided to cover the dimmer switch and its mounting plate when they are located in a wall well, or the like. The switch plate has an opening through which the potentiometer operating shaft passes. Conventionally, this opening is rectangular and wider than the shaft. The light source is positioned so that it can shine through the switch plate opening and illuminate the back surface of the knob at the end of the shaft. The knob is formed of either translucent or transparent material and has the capacity to disperse the light shining on its rear surface throughout its body to generate an even glow from its surface toward the viewer.

Instead of positioning the light source so near the shaft of the potentiometer that it can shine out through the central opening in the switch plate, a reflecting surface can be positioned adjacent the hole, and a remotely positioned source can shine on the reflecting surface and through the switch plate opening.

In a second embodiment of the invention, the knob has a reflecting rear surface such that light showing through the switch plate opening is reflected back onto the switch plate surface to form a halo around the knob.

Accordingly, it is the primary object of the present invention to illuminate the operating knob of a dimmer switch.

It is another object of the present invention to illuminate the external manual operating knob of an incandescent light dimmer switch.

It is a further object of the present invention to provide illumination of the knob, as stated in the previous object, by being able to use a conventional light switch switch plate.

DESCRIPTION OF THE DRAWINGS
The objects and advantages of the present invention will become apparent from the following description of the accompanying drawings, in which:
FIG. 1 is a front view of a switch plate on a switch in accordance with the invention;
FIG. 2 is a vertical cross-sectional view through the switch of FIG. 1 along the line and in the direction of arrows 2 in FIG. 1;
FIG. 3 is a front elevation view of the switch of FIG. 1, viewed along the line and in the direction of arrows 3 in FIG. 2; and
FIG. 4 is a schematic circuit diagram of the switch in accordance with the invention.

DESCRIPTION OF A PREFERRED EMBODIMENT
Referring to FIG. 2, a dimmer switch 10 in accordance with the present invention for controlling illumination of incandescent light 11 (or other suitable load in FIG. 4) includes a conventional switch box housing
Referring to FIGS. 1 and 2, the well (not shown) in the wall which receives switch box housing 12 is covered over and closed off by conventional, decorative switch plate 60, which is fastened to mounting plate 16 by securing means 62. Conventionally, the switch plate is provided with a centrally located rectangular opening 64, which is of a size to receive the handle of a conventional toggle operated light switch. The diameters of shaft 34 and bushing 35 are selected so that they easily pass through opening 64. Being rectangular, opening 64 extends wider than shaft 34, especially along its longer rectangular dimension. Light 50 is positioned so that its illumination shining through mounting plate opening 56 also shines out through switch plate opening 64.

Above described knob 40 has sufficient width or diameter that the light from light source 50 shining straight out through opening 64 will be intercepted by rear surface 42 of knob 40. Either the entire knob 40 or its annular peripheral portion 44 is comprised of a translucent material which disperses throughout itself the light impinging upon its surface 42. Hence, the illumination from light 50 causes the entire peripheral portion 44 of knob 40 to emit a constant glow. At the same time, the width of knob 40 is selected so as to block a direct view of light 50, thereby creating the pleasant esthetic impression that knob 40 is illuminated.

It has also been found that the interior surface 42 of knob 40 can be made to reflect light and the knob is of opaque material, so that a halo of light is reflected onto the surface of plate 60, which halo surrounds knob 40. Surface 42 can be aluminumized to enhance this effect. There has just been described a novel dimmer switch apparatus, including means for illuminating the operating knob of the switch apparatus. The invention comprises so positioning the enclosed housing of the dimmer switch operating potentiometer so as to provide space forward of the potentiometer for receiving and holding a small size light source, such as a neon light. The neon light is positioned sufficiently close to the dimmer switch operating shaft as to permit light to shine out the conventional opening of the switch plate and illuminate the dimmer switch operating knob.

Although the present invention has been described in connection with a preferred embodiment thereof, many variations and modifications will now become apparent to those skilled in the art. It is preferred, therefore, that the present invention be limited not by the specific disclosure herein, but only by the appended claims.

The embodiments of the invention in which an exclusive privilege or property is claimed are defined as follows.

1. An illuminated electric light dimmer switch which can be wall-mounted and which is interchangeable with conventional wall-mounted on-off switches; said dimmer switch comprising, in combination:
   an on-off switch and series-connected dimmer control means for controlling the flow of load current to an electric light load;
   a manually adjustable potentiometer connected to said dimmer control means for manually controlling said dimmer control means; said potentiometer including an enclosed housing having a rotatably operable operating shaft extending therefrom, and an operating knob on the end of said operating
shaft; said operating shaft being further operatively connected to said on-off switch to operate said on-off switch;

a fixed light source means for illuminating said operating knob; said light source means connected across said series-connected on-off switch and said dimmer control means, thereby to be energized at least when said on-off switch is in an off position;

da dimmer switch housing having said on-off switch, said dimmer control means, said light source means and said potentiometer enclosed housing mounted therein; said dimmer switch housing being mountable within the conventional well of the wall into which said dimmer switch is mounted;

a generally flat mounting plate secured across a side of said dimmer switch housing for mounting said dimmer switch; said mounting plate having a central opening therein; said potentiometer operating shaft extending through said opening, and said potentiometer enclosed housing having portions secured to the interior surface of said mounting plate and sealing said central opening;

said potentiometer enclosed housing having a second portion spaced away from the said interior surface of said mounting plate;

said mounting plate having a lamp opening therein which is removed from said central opening, but which is beneath said operating knob of said potentiometer, and which lamp opening is juxtaposed with said second portion of said potentiometer enclosed housing;

said light source means being fixedly mounted in the space between said interior surface of said generally flat mounting plate and said second portion of said potentiometer enclosed housing and adjacent said lamp opening whereby said light source means can illuminate the rear surface of said knob.

2. The electric light dimmer switch of claim 1, wherein said knob is of a translucent material which glows when its said rear surface is illuminated.

3. The dimmer switch of claim 1 wherein said light source means has a thickness about equal to the spacing between said second portion of said potentiometer housing and said interior surface of said mounting plate.

4. The electric light dimmer switch of claim 3, wherein said light source means is a neon light.

5. The dimmer switch of claim 3 which includes bushing means extending from said potentiometer enclosed housing; said bushing means engaging said interior surface of said mounting plate and having a thickness about equal to said thickness of said light source means.

6. The dimmer switch of claim 1 which further includes a switch plate mountable over said mounting plate; said switch plate having a centrally disposed elongated rectangular opening therethrough; said operating shaft extending through the center of said rectangular opening; said opening in said mounting plate being aligned with an outer end portion of said rectangular opening, whereby light from said light source means can reach the rear surface of said knob on said potentiometer; said rectangular opening being fully covered by said knob.

7. The electric light dimmer switch of claim 6 wherein said knob is of a material which glows when its said rear surface is illuminated.

8. The electric light dimmer switch of claim 6 wherein said rear surface is of reflecting material having a curvature to reflect light backwardly toward the front surface of said mounting plate and to define a halo of light surrounding the outer periphery of said knob.

9. An illuminated electric light dimmer switch which can be wall-mounted and which is interchangeable with conventional wall-mounted on-off switches; said dimmer switch comprising, in combination:

an on-off switch and series-connected dimmer control means for controlling the flow of load current to an electric light load;

a manually adjustable potentiometer connected to said dimmer control means for manually controlling said dimmer control means; said potentiometer including an enclosed housing having a rotatably operable operating shaft extending therefrom, and an operating knob on the end of said operating shaft; said operating shaft being further operatively connected to said on-off switch to operate said on-off switch;

a fixed light source means for illuminating said operating knob; said light source means connected across said series-connected on-off switch, thereby to be energized at least when said on-off switch is in an off position;

a dimmer switch housing having said on-off switch, said dimmer control means, said light source means and said potentiometer enclosed housing mounted within the conventional well of the wall into which said dimmer switch is mounted;

a generally flat mounting plate secured across a side of said dimmer switch housing for mounting said dimmer switch; said mounting plate having a central opening therein; said potentiometer operating shaft extending through said opening, and said potentiometer enclosed housing having portions secured to the interior surface of said mounting plate and sealing said central opening;

said mounting late having a lamp opening therein which is removed from said central opening, but which is beneath said operating knob of said potentiometer, and which lamp opening is juxtaposed with said second portion of said potentiometer enclosed housing;

said light source means being fixedly mounted in the space between said interior surface of said generally flat mounting plate and said second portion of said potentiometer enclosed housing and adjacent said lamp opening whereby said light source means can illuminate the rear surface of said knob.

9. The electric light dimmer switch of claim 9 wherein said rear surface is of reflecting material which glows when its said rear surface is illuminated.

11. The electric light dimmer switch of claim 9 wherein said light source means is a neon light.

12. The electric light dimmer switch of claim 9 wherein said rear surface is of reflecting material having a curvature to reflect light backwardly toward the front surface of said mounting plate and to define a halo of light surrounding the outer periphery of said knob.

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