

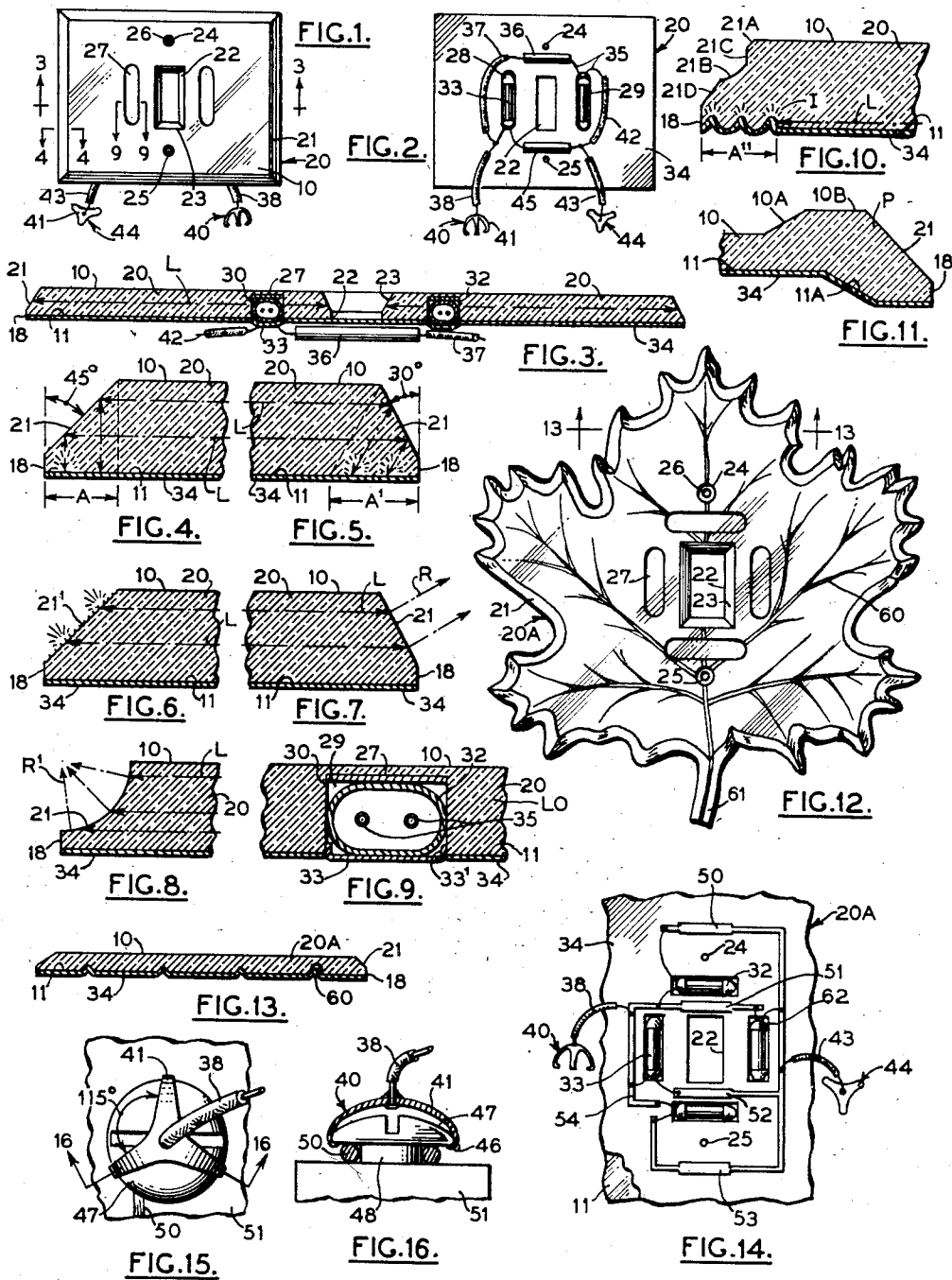
June 17, 1958

L. GLADSTONE

2,839,670

ILLUMINATED COVER PLATE FOR ELECTRICAL OUTLETS

Filed Jan. 18, 1957



INVENTOR.

LEWIS GLADSTONE

BY

J. B. Burke

ATTORNEY

1

2,839,670

ILLUMINATED COVER PLATE FOR ELECTRICAL OUTLETS

Lewis Gladstone, Springfield Gardens, N. Y.

Application January 18, 1957, Serial No. 635,047

3 Claims. (Cl. 240—2)

This invention relates to cover plates for switch boxes. The invention particularly concerns a plate adapted to provide a more decorative effect and serve to make the location and position of the switch more readily visible than is possible with conventional cover plates employed with house lighting switches.

The present invention serves to outline the perimeter of the cover plate so that the wall area surrounding the plate is not touched and soiled when the switch is manually operated in the dark. In a darkened room sufficient illumination is provided by the edge lit plate to serve as a night light.

It is therefore a principal object to provide a cover plate for a wall switch provided with means for edge lighting the plate.

It is a further object to provide a transparent switch plate having such a structure that edge lighting effects are produced therein and luminous decorative patterns, textures, and designs are visible through the transparent body of the plate.

It is a further object to provide a switch cover plate of the character described with portions formed as optical elements such as lenses, prisms, and the like to increase light reflection, refraction, and dispersion effects at the edges thereof while leaving internal portions of the plate substantially non-luminous.

It is a further object to provide a cover plate with a quick attaching clip means for electrical terminals so that a lamp carried by the plate may be connected to a switch in a house lighting circuit without disturbing the existing wiring to the switch.

It is a further object to provide a cover plate adapted to produce a decorative lighting effect during times when an electric illumination circuit is switched off.

Other and further objects and advantages of the invention will become readily apparent from the following description taken together with drawing, wherein:

Fig. 1 is a front elevational view of a cover plate embodying the invention.

Fig. 2 is a rear elevational view of the cover plate.

Fig. 3 is a cross sectional view on an enlarged scale taken on lines 3—3 of Fig. 1.

Fig. 4 is a sectional view taken on lines 4—4 of Fig. 1 showing on an enlarged scale an edge construction arranged to produce optimum reflection effects thereat.

Fig. 5 is a view similar to Fig. 4 showing another angle of cut for the plate edge.

Figs. 6, 7, 8, 10 and 11 show further forms of plate edges adapted to produce different optical effects.

Fig. 9 is a sectional view taken on lines 9—9 of Fig. 1 showing on an enlarged scale a luminous tube disposed in a recess in the plate.

Fig. 12 is a front elevational view of a further form of switch cover plate.

Fig. 13 is a sectional view taken on lines 13—13 showing details of internal prisms formed in the plate.

2

Fig. 14 is a fragmentary rear elevational view of the cover plate of Fig. 12.

Fig. 15 is a top plan view on an enlarged scale of a clip adapted to attach the plate to a housing lighting switch.

Fig. 16 is a sectional view taken on lines 16—16 of Fig. 15 showing further details of the clip construction.

In Figs. 1 and 2, there is shown a generally rectangular transparent plastic plate 20 having the edges 21 of the entire perimeter of the plate inclined or beveled with respect to the plane of the top and bottom surfaces of the plate. In the plate 20 is a centrally disposed aperture 22 which is also rectangular and which has beveled edges 23 around its entire periphery. Holes 24 and 25 are disposed in alignment with a longitudinal medial line of the plate. These holes serve to receive screws for securing the plate to a switch box. The edges 26 of these holes are also beveled. A pair of spaced parallel recesses 28, 29 are formed in the body of the plate 20. Each of these recesses is coated or covered at its inner side or bottom with an opaque film 27 as best shown in Figs. 3, 9. The sides 30 of the recesses extending perpendicular to top surface 10 and bottom surfaces 11 of the plate are clear and free of any coating or film. Within the recesses are disposed small gas discharge lamps or tubes 32 which contain neon or other gas having the property of glowing when an electrical current is discharged therethrough. A spring clip 33 having outwardly flaring sides 33' as best shown in Fig. 9, serves to retain each tube 32 in its recess.

The entire bottom surface 11 of the plate is covered with an opaque colored coating or film 34 of paint, ink, or other material. Connected to one of the wire leads 35 of one tube 32 is a resistor 36. The resistor is connected via an insulated lead 37 to a power supply lead 38. This insulated lead 38 terminates in a three-pronged spring clip 40. The other wire lead of the tube is connected via an insulated wire 42 to insulated wire 43 which terminates in another three-pronged spring clip 44. Another resistor 45 is connected in series with the other tube across the power supply leads 38, 43. The tubes are thus respectively connected in series with load-resistors 36, 45, and the several tube-resistor circuits are connected in parallel across the power supply leads 38, 43.

The structure of the clips 40 and 44 are best shown in Figs. 15 and 16. These clips each have three curved prongs 41 disposed at angles of about 115° to each other. Each prong terminates in an inwardly turned hook 46 adapted to engage under the rim of a screw head 47. This screw head is at the end of a screw 48 conventionally used to secure a power supply wire 50 of a house lighting circuit to a switch body 51. The clips 40, 44 are so formed that the prongs snap over the rounded screw head to attach the terminals of wires 38, 43 to the switch and lighting circuit without the necessity of unscrewing the house lighting circuit or otherwise disturbing the screws 48. Thus the tubes 32 are always in parallel with the switch contained in switch body 51 and remain lit when the switch is open but are extinguished when the switch is closed.

In Fig. 4 the plate 20 is shown formed with beveled edge 21 inclined at an angle of forty-five degrees to the faces 10 and 11 of the plate. A short pedestal 18 is provided in the perimeter of the plate to strengthen the edge and avoid the chipping which would occur if the edge 21 formed a sharp knife edge with the rear surface 11. The inclined edge 21 produces reflection effects as indicated by the dotted line paths of the light beams L emanating from tubes 32. Area A designates the zone of maximum illumination so that the plate always has

a front illuminated rectangular frame. The opening 22 through which normally extends the switch handle (not shown) is similarly framed by a brightly illuminated rectangular frame. The edge 21 in Fig. 5 is disposed at an angle of thirty degrees to faces 10, 11. This produces a larger zone of illumination A' as the light beams which travel parallel to faces 10, 11 through windows 30 strike surface 21, then are reflected to the opaque film 34 and finally are reflected out of the plate at the perimeter thereof.

In Fig. 6 the inclined edge 21' is roughened to provide light dispersion effects combined with reflection effects produced by the inclined edge. Fig. 8 shows the edge 21 inclined so that internal reflecting of the parallel beams L does not take place and the edge of the plate is then illuminated by the refracted beams R. In Fig. 8 the edge 21 has an internal or concave curvature so that the edge forms a portion of a cylindrical lens. The refracted light beams R' converge to provide a very brightly illuminated rectangular ring at the perimeter of the plate. In Figs. 10 and 11 various compound forms are shown for the edges of the plate. In Fig. 10 the edge has inclined portions 21A and 21D, a vertical section 21C and a curved section 21B. In addition the base of the plate in the zone of maximum illumination is roughened, curved, patterned, textured or otherwise shaped to provide attractive and interesting optical effects as the light rays L graze over the irregularly shaped patterns, textures and designs. The parallel beams L impinging on the textured portions of the zone A'' will exhibit grazing reflection effects I which are very attractive. In Fig. 11 the perimeter of the plate is formed with a thickened portion P. In addition to the inclined side 21 there is provided an oppositely inclined internal edge or facet 10A and an additional inclined bottom edge or facet 11A. A flat facet 10B is disposed between inclined portions 10A and 21. These various flats and facets all coact to increase the reflection and refraction effects to enhance the edge lit appearance of the plate.

It is important to note that the plate 20 is formed of non-luminous, uncolored, transparent material. In this type of plate the body of the plate outside of the edge lit zones in all the forms shown in Figs. 1-11 remains substantially dark. Only the edge lighting effects at the outside perimeter 21 and the internal perimeter of aperture 22 are obtained. Since the tubes 32 contain neon or other gas such as mercury, argon, krypton or mixtures of these and other gases, the edge lighting effects are quite brilliant and remain so even in the presence of the high intensity ambient illumination which is present in daylight when the lights in the room where the plate is located are off. In prior known types of switch plates the plate illumination means only served to illuminate the switch handle. At best, the prior known illuminated plates had luminous zones in the immediate vicinity of the illuminating lamp. There was no edge lighting effect. The prior known plates were not transparent, but instead were made of colored or translucent material. In the present invention by contrast the plate is wholly transparent so that it is substantially non-luminous. The edge lighting effects are produced wholly by reflection and refraction at the inclined facets and flats.

In Figs. 12 and 13 there is shown a switch plate embodying the invention in which the plate 20A is formed like a leaf having a stem 61 with the inclined edge 21, and aperture 22 for the switch handle. Veins 60 are formed by grooves having V-shaped cross sections extending into the bottom or rear face 11. Localized reflection effects are produced at these veins 60 when the parallel light beams impinge on them. Portions of the plate which are free of these veins or other inclined surfaces remain

dark, so that a very attractive sparkling appearance is presented by the plate.

In Fig. 14 is shown the arrangement of the electrical circuitry of the plate. Four lamps 32 are provided in four recesses 62 disposed at right angles to each other. The four resistors 50, 51, 52, and 53 are printed on the opaque coating 34 and printed conductive leads 54 are connected to the lead wires of the tubes, printed resistors, and the common power supply leads 38, 43. Clips 40 and 44 terminate the leads 38, 43. The printed form of circuitry is especially adapted to high speed, low cost mass production manufacturing methods. Clips 40, 44 are soldered to leads 38, 43 and these leads are in turn soldered to the parallel arrangement of the lamp-resistor series circuits. If desired, the four recesses 62 may be formed as a circular groove, and the four lamps 32 may be replaced by a single circular tubular gas discharge lamp arranged in series circuit with a single resistor. Clips 40 and 44 will then be connected to one terminal of the lamp and one terminal of the resistor respectively. Instead of forming veins in the plate such as shown by grooves 60, other textures, patterns and designs may be used to obtain interesting optical effects as the lateral light rays L graze over designs such as wood grains, cloth textures, plaids, flowers, symbols, etc. These designs may be formed in the body of the plate such as shown in Fig. 10. If desired the designs may be coated at the rear of the plate with differently colored opaque inks or paints. These colors may be different from each other in the several parts of the design, and the remainder of the opaque background coating 34 may be of still a different color. The transparency of the plate will permit a clear view of these grazing lit designs and textures.

What is claimed and sought to be protected by Letters Patent of the United States is:

1. An ornamental illuminated cover for an electrical outlet, comprising a flat plate formed of transparent material and having wholly flat front and rear sides, an opaque light reflective coating on said rear side, said plate having a pair of spaced parallel recesses formed in the rear side thereof, the bottom of each recess being covered with an opaque material, said plate having a rectangular opening formed therein between said recesses for passage of a handle of a switch therethrough, said opening having walls beveled with respect to said front and rear sides, a gas discharge lamp wholly contained within each of the recesses between the planes of the front and rear sides, the lamps transmitting light rays through the plate to the perimeter thereof, said light rays passing parallel to said sides and being wholly confined therebetween, said perimeter having a wall portion disposed at an acute angle to the flat rear side, said rays being internally reflected from said walls, said wall portion and said flat rear side adjacent to said perimeter and said opening so that only said wall portion of the perimeter and the beveled walls of the opening are illuminated while said flat front side is otherwise free of illumination by said rays.

2. An ornamental illuminated cover according to claim 1, wherein said perimeter is serrated so that the plate simulates a leaf, said rear side of the plate being formed with grooves having V-shaped cross sections for reflection of said rays therefrom to simulate illuminated veins.

3. An ornamental illuminated cover according to claim 1, wherein said wall portion of the perimeter is cylindrically curved to intensify illumination thereof.

References Cited in the file of this patent

UNITED STATES PATENTS

2,575,820 Linton ----- Nov. 20, 1951