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3,336,456

ILLUMINATED PUSH-BUTTON SWITCH

Filed Sept. 14, 1966

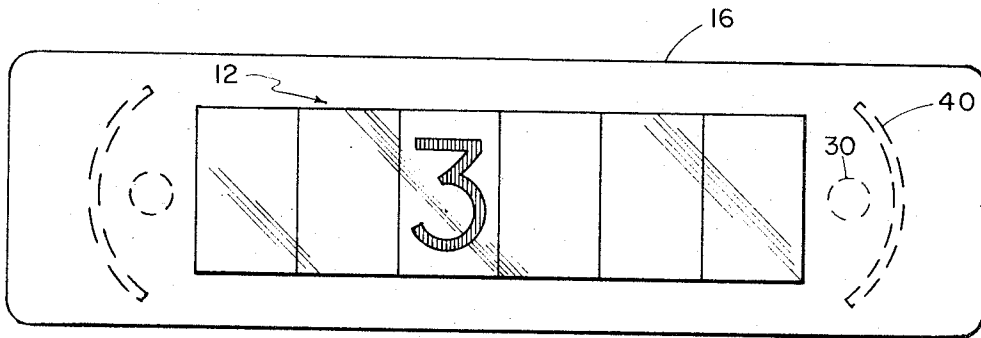


FIG. 1.

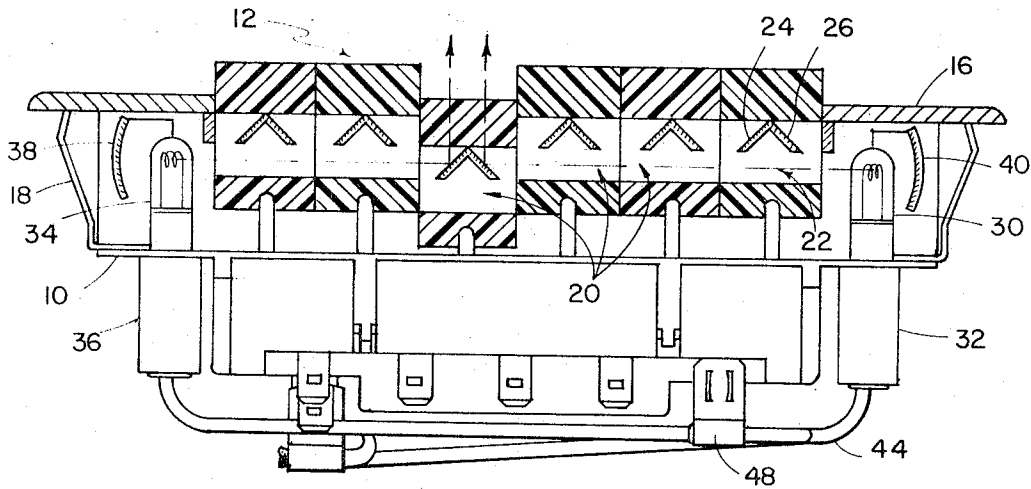


FIG. 2.

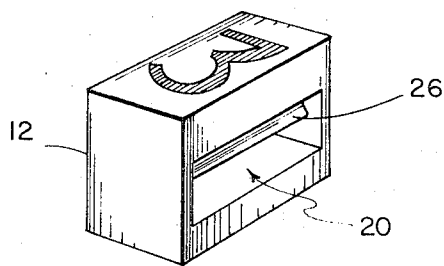


FIG. 3.

1

3,336,456

ILLUMINATED PUSH BUTTON SWITCH

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4 Claims. (Cl. 200-167)

The present invention relates to push button switches having a plurality of push buttons for selectively closing any one of a plurality of electric circuits.

More specifically my invention relates to switches with push buttons made of transparent or translucent material and including a light source for illuminating each push button in its "on" position.

It is a principal object of my invention to provide an improved construction and arrangement of push button switches of the type above specified whereby clear visual indication of the various push buttons in their actuated position is assured.

The improved switch button which forms specifically the subject matter of the invention is particularly, but by no means exclusively, adapted for use in a switch of the general type which comprises a series of push buttons and a series of sliders underlying the push buttons by means of which the push buttons are rendered selectively operative, but only one at a time, to close associated switch contacts. A switch of this general type illustrated in a United States Patent No. 2,652,470, dated Sept. 15, 1953, to H. W. Batcheller for Push Button.

Further objects, features and advantages of the invention will appear from the following detailed description of the embodiments shown taken in connection with the accompanying drawing in which:

FIG. 1 is a plan view of my improved illuminated push button switch of which one push button has been pressed and illuminated causing the numeral 3 formed thereon to be highlighted;

FIG. 2 is a view in side elevation of the push button switch as shown in FIG. 1, the push buttons and housing therefor being shown in section; and

FIG. 3 is a perspective view of the push button plaque having the numeral "3" formed therein.

In the illustrated switch construction the switch assembly includes an elongated rectangular housing 10 of molded plastic which provides support for the several push buttons 12 together with an operating unit comprising the housing 10 within which are mounted the usual sliders (not shown) operative to effect a selective operation of the switch buttons one at a time, and the closing or disconnecting of the selected electrical circuit, together with the illumination of the actuated push button in a manner hereinafter to be more specifically brought out.

A cover 16 apertured to receive the heads of the push buttons therethrough is fitted over the housing 10, being held in position by means of depending spring clips 18 which are bent inwardly to underlie adjacent end portions of the housing 10.

In the illustrated construction each push button 12 is formed from a rectangularly shaped plaque of transparent or translucent material. Each push button is further formed with an aperture 20 passing from one side of the push button to the other. The lower half of each aperture is open so that for a normally extended position of the push buttons an open channel or tunnel 22 is formed

2

extending the length of the row of push buttons. In the upper half of each said aperture there are provided two mirrors 24, 26 which extend transversely of the row of push buttons, the two mirrors 24, 26 constituting each pair being disposed at 90° angles to one another and at 45° from the horizontal in order that beams of light passing along the length of the tunnel from the ends thereof against the mirrors associated with a depressed push button, as for example, that carrying the numeral "3" will be diverted perpendicularly upwardly through the translucent or transparent push button thus illuminating the upper end thereof.

A source of light in the form of an electric light bulb 30 is provided at one end of the tunnel 22 mounted in an electric light socket 32 secured to the base housing 10. A similar light source 34 is provided at the opposite end of the tunnel mounted in a socket 36. Arcuately shaped mirrors 38 and 40 disposed in back of the respective light bulbs act to concentrate and to direct the beam of light along the length of the tunnel 22 from each end thereof, the two beams being diverted by the sloping mirrors upwardly through the translucent or transparent face of a depressed push button. The two electric light sockets 32, 36 are connected in series by wiring 44 to a plug 48.

The arrangement is such that the light transmitted to each of the push buttons will be of substantially the same intensity at the location of each push button. The intensity of light transmitted from each source varies inversely as the square of the distance. As the intensity of the light transmitted from one light source decreases for push buttons more removed from said light source; the intensity of light from the other closer source will correspondingly be increased, thus providing a total illumination of substantially uniform intensity from the two sources to each push button.

What is claimed is:

1. An illuminated push button switch having, in combination, a series of push buttons, arranged to be selectively pressed, so that only one of said push buttons is depressed at a time, of said push buttons being similarly formed, each with a finger engaging end portion of light transmitting material, and a base portion having an aperture extending through the push button providing, in the raised position, a light tunnel extending longitudinally through the series of push buttons, a light source mounted at one end of the tunnel, each of said push buttons having interposed between said finger engaging end portion of light transmitting material and said aperture, a light deflecting element shiftable with said push button between a normally raised inoperative position out of alignment with said tunnel and a depressed position in alignment with said tunnel in which light from said light source at the end of the tunnel is deflected vertically upwardly by said light reflecting element to illuminate said push button.

2. An illuminated switch button as claimed in claim 1 in which a light source is located at each end of the tunnel, and in which light deflecting elements are provided with each said push button shiftable with said push button between a normally raised inoperative position out of alignment with said tunnel and a depressed position in alignment with said tunnel in which light from the light sources at both ends of the tunnel is deflected vertically upwardly by said light deflecting elements to illuminate the push button.

3

3. An illuminated switch button as claimed in claim 1, in which said light deflecting elements associated with each push button comprise a pair of mirrors extending transversely of the tunnel in back-to-back relation and with their adjacent edges raised at a 45 degree angle with relation to the tunnel length.

4. An illuminated switch button as claimed in claim 1, in which a light reflecting element is associated with each light source disposed to direct light from said source along the length of the tunnel.

4

References Cited

UNITED STATES PATENTS

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2,440,063	4/1948	Andrews	-----	200—167
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