

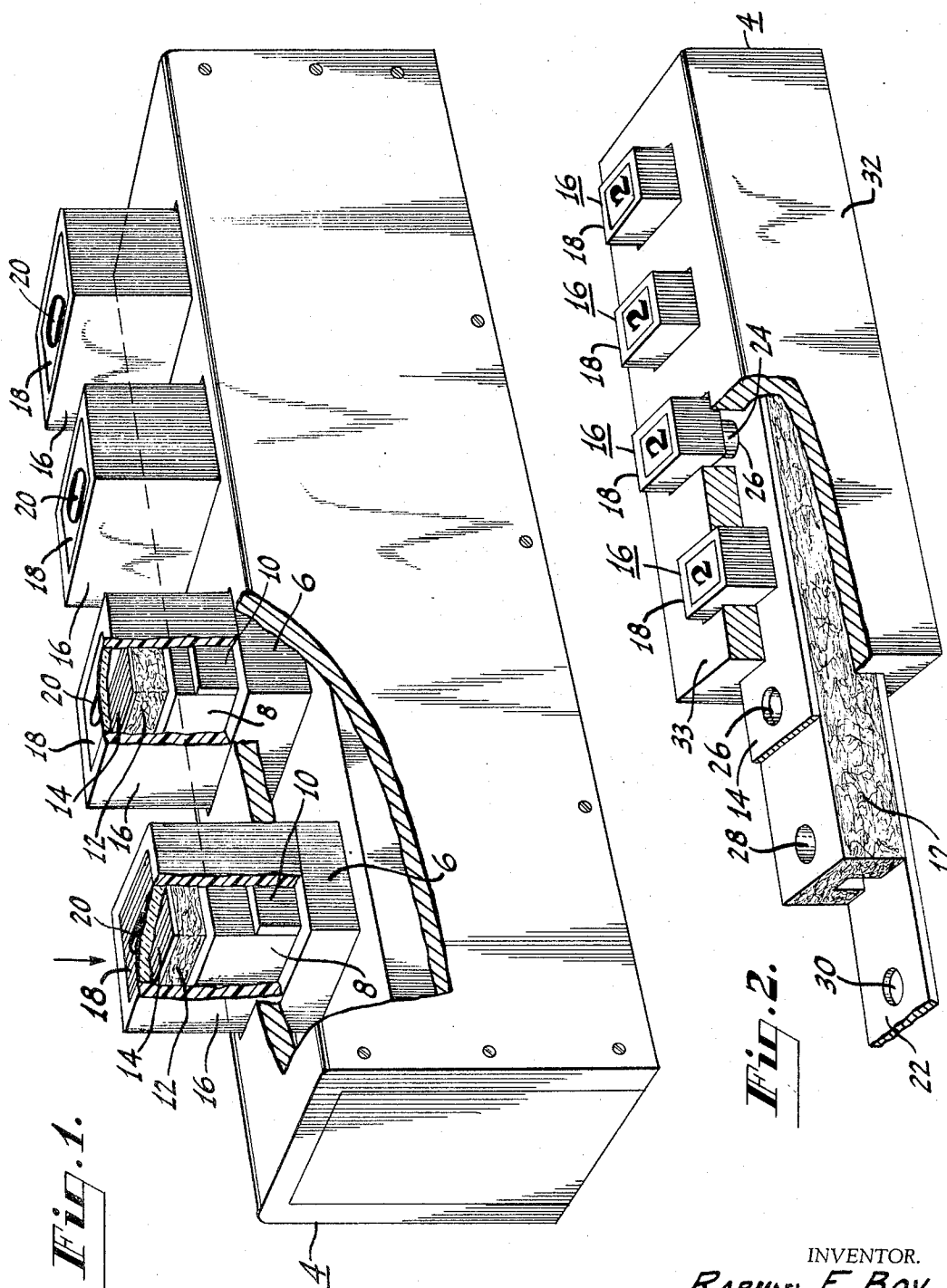
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LIGHTED PUSH-BUTTON

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LIGHTED PUSH-BUTTON

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1 Claim. (Cl. 240—2)

This invention relates to push-button switches and particularly to improved means for indicating the operative condition of push-button switches.

Illumination at appropriate intervals by means of an electric lamp is one common method of indicating the operative condition of a push-button switch. However, additional electronic circuitry is required to light a lamp. A lamp can burn out and give a false indication of the operating state of a switch. In addition, the replacement cost of a lamp adds to the over-all cost of a switch. When such a switch and means of illumination are used in great numbers as, for example, in computers, these difficulties increase accordingly.

An object of this invention is to provide an improved low-cost means for illuminating a push-button switch.

Still another object of this invention is to provide a means for illuminating a push-button switch without the use of electric circuits.

A further object of this invention is to provide an improved means that will consistently give a true indication of the operating state of a push-button switch.

In accordance with the present invention the improved means for illuminating a push-button switch comprises in combination a fluorescent or luminescent substance and the lens of the push-button switch. The lens is a translucent substance. The fluorescent or luminescent substance is preferably in the form of a brightly colored tape spaced beneath the lower surface of the lens. The tape is so spaced beneath the lens as to be, in a first state, obscured when viewed from the upper surface of the lens. Upon placing the push-button switch in a second state, the tape is brought into proximity of the lower surface of the lens, thereby illuminating the lens as viewed from the upper surface.

The novel features of the present invention both as to its method and organization, as well as additional objects and advantages thereof, will be understood more fully from the following detailed description when read in connection with the accompanying drawing in which similar reference characters designate similar parts throughout and in which:

FIG. 1 is a perspective, partially sectioned view of a push-button switch assembly in accordance with one embodiment of the invention; and

FIG. 2 is a perspective, partially sectioned view of a further embodiment of a push-button switch in accordance with the invention.

Referring to FIG. 1, a push-button switch assembly 4 is shown. The push-button switch is preferably of the release-locking type wherein a push-button locks in a depressed condition and can be released by depress locking another push-button in the assembly. In a switch of this type, depressing a push-button base 6 engages it with a locking mechanism (not shown) of the switch. The base 6 is rectangular and is held in position by a fixed rectangular guide 8 which extends through and a given distance above the upper surface of the base 6. The base 6 has two fingers 10 (only one, in each of the two partially sectioned push-buttons, is shown) placed on opposite sides of the guide 8.

Affixed to the guide 8 is a piece of resilient material 12, preferably of sponge rubber or foam plastic. Attached to the resilient material 12 is a fluorescent or luminescent substance 14 preferably in the form of a

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brightly colored tape. The tape 14, which is shown as being lined, is preferably bright red or of another readily observable color.

Push-buttons 16 in the form of rectangular, hollow members having a translucent lens 18 at one end are placed on the push-button base 6 over the guides 8 and frictionally held in place by the fingers 10 on the base 6. The push-button lens 18 is preferably of a "milky Teflon," "translucent acrylic" or other plastic. Residing within the hollow of the push-buttons 16 are in combination: the guide 8, the resilient material 12 and the luminescent substance 14. With the push-buttons 16 in an elevated condition, the luminescent substance 14 is spaced sufficiently below the interior surface of the lens 18 as to be obscured from sight when viewed from the lens' exterior surface. In a depressed push-button 16, the lens 18 of the button 16 comes into contact with the luminescent substance 14, thereby illuminating the lens 18. The piece of resilient material 12 insures that there will be a firm contact between the luminescent substance 14 and the lens 18. If the substance 14 is in the form of a fluorescent tape, there will not be a need for firm contact with the lens 18.

Numbers 20, in a contrasting color, for example black, may be imprinted on one of the surfaces of the lens 18 (shown in FIG. 1 as the number "0"). Bringing the luminescent substance 14 into contact with the lens 18 will illuminate the lens 18 and highlight the numbers 20.

In FIG. 2, another embodiment of a push-button assembly constructed in accordance with the invention is illustrated. Elements similar to those in FIG. 1 have been given the same reference numerals. A push-button assembly 4 is shown in which release-locking push-button switches are employed. The switch-locking mechanism (not shown) resides beneath a support plate 22. A piece of resilient material 12, such as sponge rubber or foam plastic, is affixed to the plate 22. Adhered to the piece of material 12 is a luminescent or fluorescent, continuous tape 14. Push-buttons 16 comprising a translucent push-button head 18 and a centrally affixed stem 24 are registered with apertures 26, 28 and 30 in the luminescent substance 14, the resilient material 12 and the support plate 22, respectively, so as to engage the locking mechanism (not shown). Each element has been partially sectioned to show construction. With push-buttons 16 in an elevated condition, the lower surface of the lens 18 is so spaced above the luminescent substance 14 as to be obscured when viewed from the upper surface of the lens. Upon depressing the push-button 16, the lens 18 is illuminated by the luminescent substance 14. The resilient material 12 insures that there will be firm contact between the lens 18 and the substance 14. A metallic housing 32 of aluminum or similar metal acts to hold the switch assembly together and can include cross pieces 33 which serve as dividers between the push-buttons. This arrangement holds the push-buttons in place and prevents undesirable reflections from adjacent push-buttons.

What is claimed is:

A push-button assembly of the type wherein the individual push buttons are releasably lockable in either a depressed or elevated condition comprising:

- a plurality of push buttons each having a translucent top and a stem affixed thereto, said top having an upper and lower surface;
- a duct-like housing formed with a plurality of apertures designed to receive said push buttons;
- a fixed support located within the housing, said support having a like plurality of apertures for receiving the stems of the push buttons;
- a first strip of resilient material mounted upon the support, said strip having a like plurality of

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apertures for receiving said stems, the apertures of said first strip registering with the apertures of said support; and

- (e) a second strip formed of a luminous material mounted upon the first strip of resilient material, said second strip having a like plurality of apertures for receiving the stems, the apertures of said second strip registering with the apertures of said first strip, the apertures of the support, and the apertures of the housing, said second strip being disposed beneath the lower surface of the translucent top of each of said buttons so that it is obscured when

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viewed from the upper surface of said top when a push button is in an elevated condition, and becomes visible upon said push button being in a depressed condition.

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