Dec. 22, 1959 C. A. LINDBERG 2,918,555

LIGHT INDICATOR SWITCH

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Fig. 1.

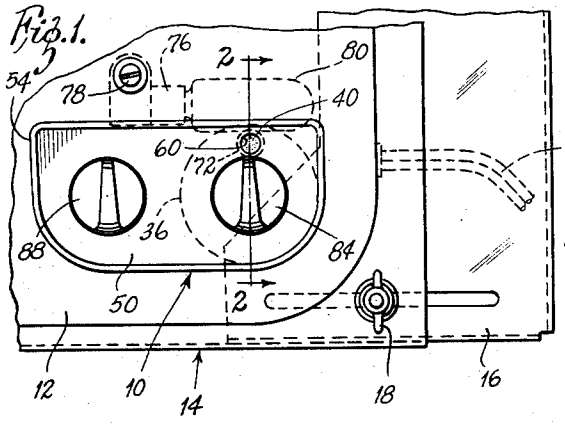


Fig. 4.

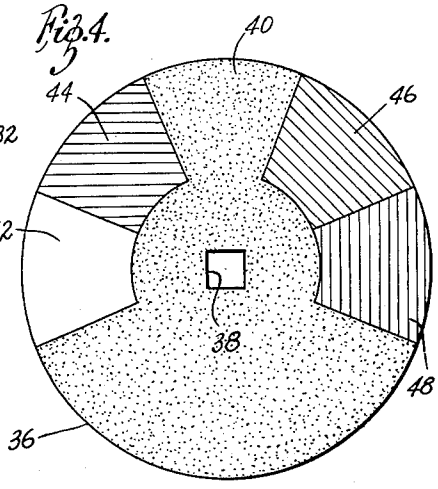


Fig. 2.

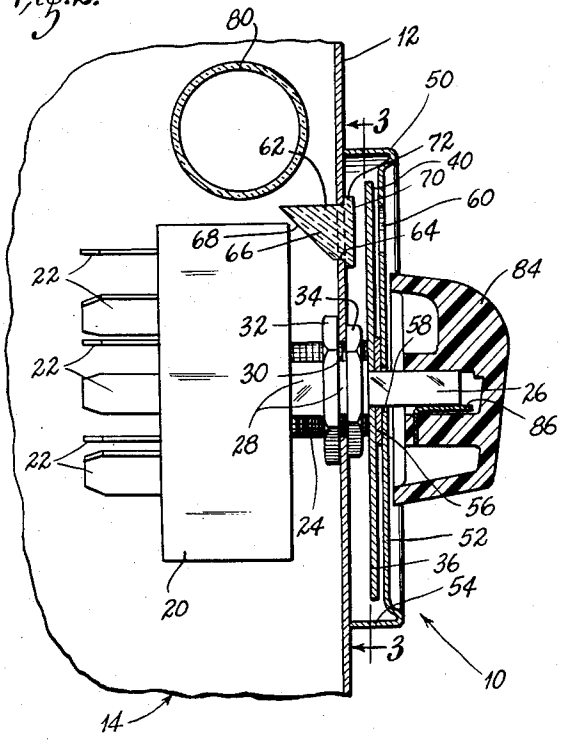
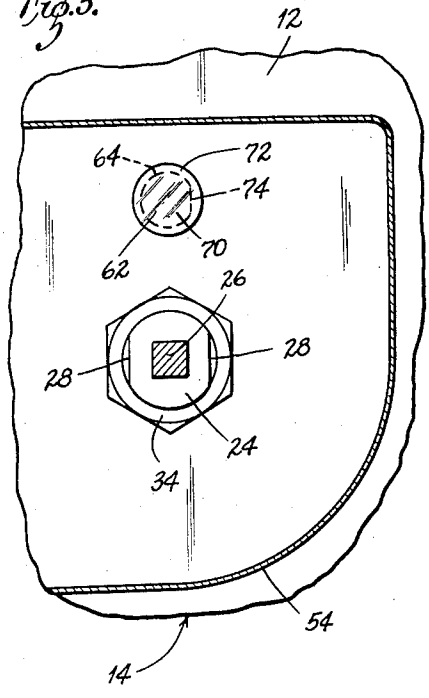


Fig. 3.



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LIGHT INDICATOR SWITCH

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7 Claims. (Cl. 200—167)

The present invention relates generally to electrical controls, and more particularly to a novel light indicator switch for use with multi-speed fans and the like.

Window fans employed for cooling and ventilation are frequently designed, not only for multi-speed operation, but also for reversible operation, the latter to enable either the discharge of air from the room or admission of air to the room. A switch or control for operating such a fan will, therefore, normally be adapted for the selection of any one of a plurality of settings for obtaining a desired direction and speed of operation. In addition, such a fan may be provided with thermostatic control so that the selected operation will be intermittent.

The location of a window fan is, of course, such that persons in the same or adjacent rooms will normally be at some distance from the fan itself, as well as from the controls. Hence, it is advantageous for the control to have indicating means by which a person can tell from some distance away the precise setting of the main control. The present invention contemplates an indicating device which makes use of a multi-colored disc and a light system in cooperation with a single light aperture for indicating the various settings of the associated switch.

It is an object of the present invention, therefore, to provide a novel light indicator switch the status of which can be readily observed from a distance.

It is another object of the present invention to provide a novel light indicator switch for controlling a reversible multi-speed fan and for indicating the control setting in a manner to be readily observed from a distance.

It is another object of the invention to provide a multiple position electrical switch for a reversible window fan, which switch incorporates a fixed aperture and which is adapted to produce a different illuminated color signal viewable through the aperture for each switch position.

It is another object of the invention to provide a novel switch for a multi-speed fan, which switch comprises a single rotatable switch knob and a stationary switch cover having a single viewing aperture for displaying different colored illuminated signals in accordance with different positions of the rotatable switch knob.

The foregoing, along with other objects and advantages, will be apparent from a description of a specific embodiment of the invention, as illustrated in the accompanying drawing, in which:

Figure 1 is a front elevation of a light indicator switch conforming to the present invention, the switch being shown in mounted position on a fan housing illustrated fragmentarily;

Figure 2 is an enlarged vertical section taken generally along the line 2—2 of Figure 1;

Figure 3 is a vertical section taken generally along the line 3—3 of Figure 2; and

Figure 4 is a front view of a removed color disc.

Directing more particular attention to the details of the drawing, the numeral 10 designates generally a light indicator switch assembly constructed in conformance with the teachings of the present invention. The assembly 10 is shown mounted on a front vertical panel 12 forming part of a housing 14 associated with a motor driven window fan (not shown). The housing 14 also includes a movable panel 16 which may be adjusted according to the size of a window opening and secured in adjusted position by a thumb nut 18.

The assembly 10 includes a multiple contact rotary switch 20 of generally conventional form having the usual lugs 22 for making electrical connections and having an externally threaded mounting bushing 24 through which extends a rotatable stem 26. As clearly shown in Figures 2 and 3, the portion of the stem 26 which extends beyond the mounting bushing 24 is square in cross section.

The sides of the otherwise round mounting bushing 24 are formed to flat parallel surfaces 28, and the switch 20 is mounted by extending the bushing portion 24 through a similarly shaped hole 30 in the panel 12 and securing it with jamb nuts 32 and 34 on opposite sides of the panel.

A color disc 36, shown removed in Figure 4, is made of clear plastic sheet material and has a square hole 38 by means of which it is mounted, as shown in Figure 2, to turn with the stem 26 of the switch 20. The portion of the disc 36 shown stippled in Figure 4, including an upper central panel 40, is colored, preferably with an opaque paint, to harmonize with the color scheme of the normally exposed parts of the assembly 10. Panels 42, 44, 46, and 48 are arranged as shown so that a different panel is rotated to the top center position of the illustrated panel 40 for each operative position of the switch stem 26. The panel 42 is shown without coloring and is therefore clear, whereas the panels 44, 46, and 48 are individually coated with different colored transparent paint. It should be understood, of course, that the order or arrangement of color in the transparent panels may be other than as illustrated in the drawing without departing from the spirit of the present invention.

A switch cover 50 comprising a main panel 52 provided with a peripheral flange 54 serves to retain the color disc 36 on the stem 26, a soft fiber washer 56 being interposed between the disc and the panel 52. The cover 50 may be secured to the panel 12 in any appropriate manner, as by tabs (not shown) on the flange 54 engaging appropriate slots (not shown) in the panel 12.

In addition to a hole 58 for accommodating the switch stem 26, the panel 52 of the cover 50 is provided with an aperture 60 located so as to be opposite the top central portion of the color disc 36. An optical prism 62 is mounted by press fit, or by cementing, in a correspondingly located hole 64 in the panel 12. The illustrated prism 62 has a generally cylindrical body portion 66 terminating at one end in an inclined planar reflecting face 68 and at the other end in a normal planar face 70. The body portion 66 has a flange 72 at the end adjacent the face 70 and is, itself, flattened on one side as indicated at 74 in Figure 3 for accurate orientation in the hole 64, which also has a flat side portion.

A lamp socket 76 is secured by a screw 78 to the back side of the panel 12, being located so as to position a lamp bulb 80 above the prism 62. This light source is electrically connected by well known means (not shown) through the main switch to an electric cord 82 as to be continuously energized when the switch is in any but its opened or "off" condition. It is also to be understood that connection of the cord 82 to the switch 20 is such as to enable control of the associated fan motor (not shown) by the switch.

A knob 84 frictionally retained on the switch shaft 26 by the usual spring clip 86 may be rotated manually to operate the switch 20 through its various positions. An additional knob 88 may be provided for selectively positioning a thermostat control or the like if desired.

In considering the operation of the illustrated embodiment of the present invention, it is assumed that the motor driven fan (not shown) with which the switch assembly **10** is associated can be operated at two different speeds in each direction of rotation. Hence, it will be understood that in the "off" position, the opaque panel **40** of the color disc **36** will be disposed opposite the aperture **60** in the switch cover **50** and that, from this position, the switch **20** can be operated by means of the knob **82** two steps in either direction for selection of the desired direction and speed of fan rotation. For each operative position of the switch **20**, a different colored transparent panel of the color disc **36** will be interposed between the aperture **60** in the switch cover **50** and the face **70** of the prism **62**. Since, as previously indicated, the lamp bulb **80** glows upon any movement of the switch **20** from its "off" position, light will shine into the prism **62** through the outer surface of the barrel portion **62** and will be reflected from the inclined face **68** so as to emerge at the face **70**. This light will then illuminate the particular colored panel disposed in the top center position aforementioned and will be clearly visible through the aperture **60**. Thus, it is only necessary to distinguish the particular color of an illuminated spot of light in order to ascertain from afar the setting of the fan control.

Clearly, there has been provided a light indicator switch which fulfills the objects and advantages sought therefor.

It is to be understood that the foregoing description and drawing have been given only by way of illustration and example. It is further to be understood that changes in the form of the elements, rearrangement of parts, and the substitution of equivalent elements, all of which will be apparent to those skilled in the art, are contemplated as being within the scope of the present invention, which is limited only by the claims which follow.

What is claimed is:

1. A light indicator switch comprising, in combination, an electric switch having a plurality of contacts for different settings, a rotatable shaft for setting the switch to different settings, an indicator disc mounted on the shaft so as to be rotatable therewith, said disc having different readily distinguishable transparent color panels, an apertured switch cover for enclosing said disc, and a light source for illuminating said color panels in accordance with the setting of the switch, said light source including a lamp bulb and a fixed prism.

2. A light indicator switch comprising, in combination, an electric switch having a plurality of contacts for different settings, a rotatable shaft for setting the switch to different settings, an indicator disc mounted on the shaft so as to be rotatable therewith, said disc having different readily distinguishable transparent color panels, an apertured switch cover for enclosing said disc, and a light source for illuminating said color panels in accordance with the setting of the switch, said light source including a lamp bulb and a fixed prism, said switch cover having a single aperture, said prism being disposed in axial alignment with said single aperture and the color disc being interposed between said single aperture and said prism.

3. An indicating switch for a multi-speed window fan comprising, in combination, multiple contact rotary switch means for conditioning a fan to operate at a selected one of a plurality of available speeds, said switch means including a rotatable shaft adapted to occupy a different position for each of said available speeds in addition to a normal "off" position, opaque sheet means for mounting said switch means in fixed position relative to an associated fan, said sheet means having a hole therein for extension of said rotatable shaft therethrough, a color disc having distinctive marginal coloration mounted on said shaft extension, and a switch cover of shallow box-like form secured against said sheet means so as to enclose said color disc, said switch cover having a hold for extension of said shaft therethrough and an aperture for viewing the marginal coloration of the color disc, a knob affixed to the free extended end of said shaft for selectively positioning the same, the color disc being mounted so as to rotate with the switch shaft, the marginal coloration comprising a panel of different color for each position of the shaft, said panels being arranged so as to be individually positioned opposite the aperture in the switch cover in accordance with the different positions of the shaft, at least those color disc panels corresponding to energizing positions of the switch means being transparent, light means for illuminating said transparent panels, said light means comprising a light source disposed on the side of the aforesaid opaque sheet means opposite the side engaged by the switch cover, said sheet means being provided with an aperture in axial alignment with the aperture in the switch cover, and a reflecting device for directing a beam of light axially through said apertures, said reflecting device comprising a solid prism mounted in the aperture in the opaque sheet means.

4. A device of the kind described comprising: a housing; a light source fixed to said housing; a prism fixed to said housing; said light source and said prism defining one line; said housing having a face with a window therein; a shaft projecting through said face; said prism and said window defining a second line; said shaft being parallel to said second line; said shaft having rotatably mounted thereon a disc; said disc including different colored transparent sections spaced about its border corresponding to various settings of said shaft; said disc having a radius greater than the distance between said shaft and said second line; said border of said disc intersecting said second line; the light from said source passing through said prism and said disc.

5. The device of claim 4 wherein said one line and said second line intersect at an angle greater than ninety degrees.

6. The combination of an electric fan and a switch therefor; said fan being capable of a plurality of speeds; said switch being in a circuit of said fan for selecting one of said speeds; said switch including a plurality of color indications, one for each of said speeds.

7. The combination of claim 6 wherein only one of said color indications is visible at a time.

References Cited in the file of this patent

UNITED STATES PATENTS

2,541,892	Schulze	Feb. 13, 1951
2,671,425	Schneider	Mar. 9, 1954
2,693,165	Appleman	Nov. 2, 1954
2,713,103	Slate	July 12, 1955
2,732,467	Slate	Jan. 24, 1956