Aug. 11, 1953 T. C. APPLEMAN 2,648,305

ILLUMINATED INDICATING CONTROL

Filed Feb. 25, 1950 2 Sheets-Sheet 1

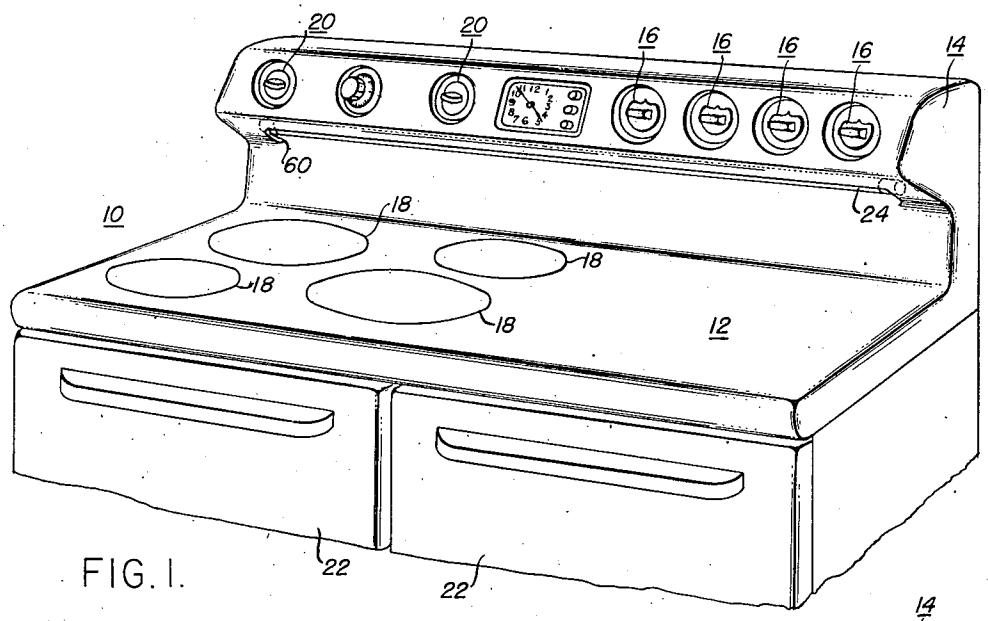


FIG. 1.

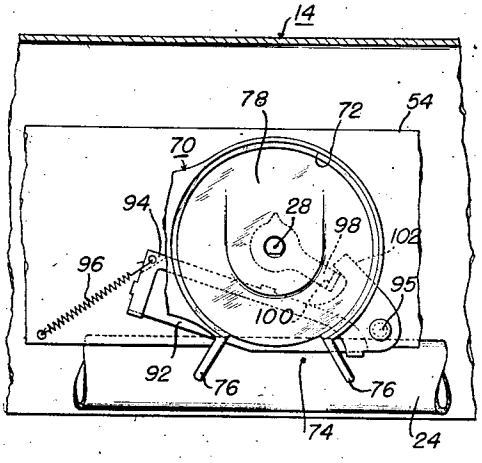


FIG. 7.

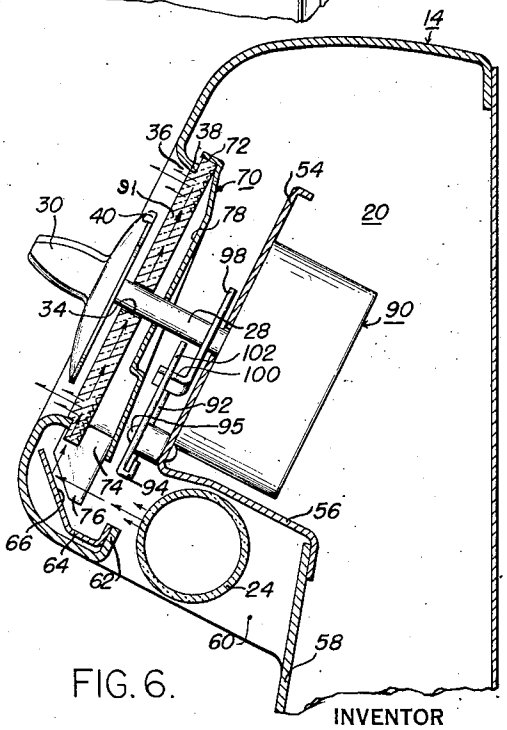


FIG. 6.

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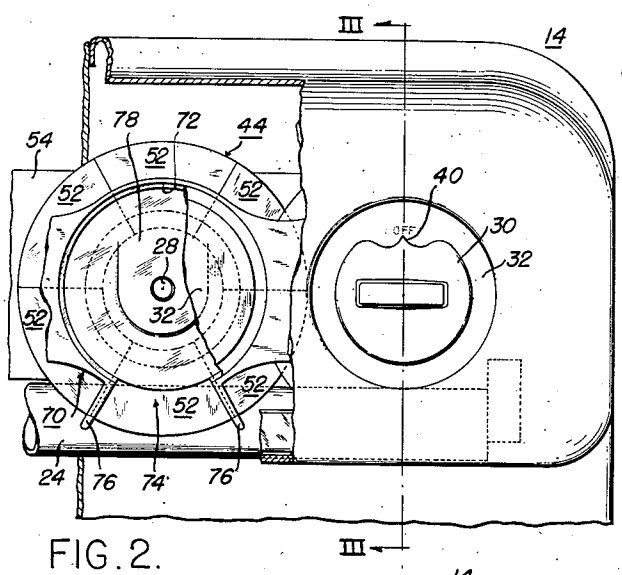


FIG. 2.

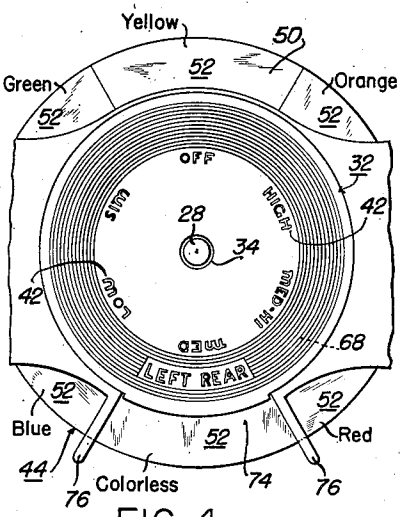


FIG. 4.

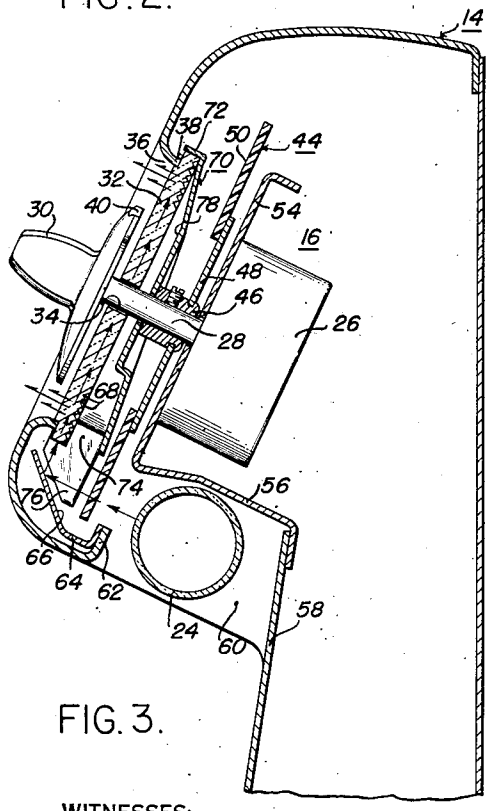


FIG. 3.

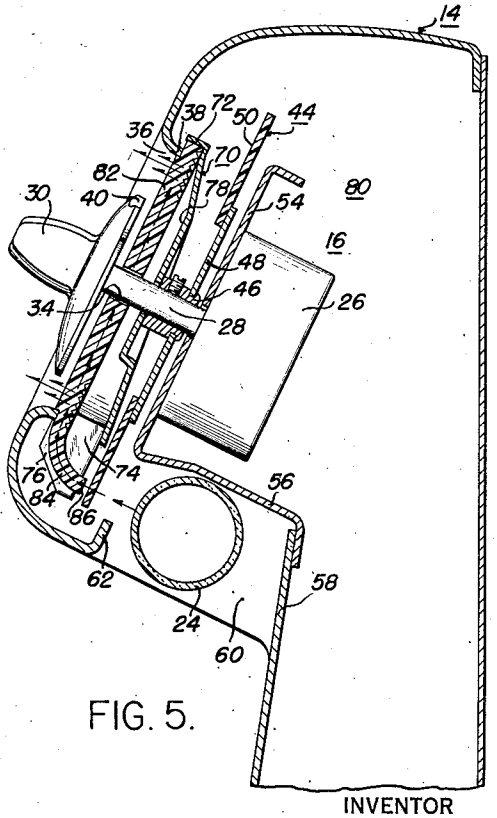


FIG. 5.

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ILLUMINATED INDICATING CONTROL

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10 Claims. (Cl. 116—133)

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This invention relates to an indicating switch in general and more particularly to an indicating switch for electric ranges.

An object of this invention is to provide an illuminated indicating switch in which the switch dial is illuminated in a different color for each position of the switch knob.

Another object of this invention is to provide an illuminated indicating switch in which the switch position may be determined at a distance by the color of its illumination.

A further object is to provide an arrangement whereby a plurality of panel mounted switches may be illuminated in different colors according to their individual settings by a single light source.

A still further object is to provide an arrangement whereby a range platform may be illuminated and a pluruality of switches mounted on the backsplasher may be illuminated in different colors according to their individual settings by a common light source.

These and other objects are effected by my invention as will be apparent from the following description and claims taken in connection with the accompanying drawings, forming a part of this application, in which:

Fig. 1 is a fragmentary front perspective view of an electric range in which my invention is embodied;

Fig. 2 is a front elevation of a portion of the backsplasher panel with parts cut away or omitted for clarity;

Fig. 3 is a section taken on line III—III of Fig. 2;

Fig. 4 is a front view of a dial plate;

Fig. 5 is a sectional view similar to Fig. 3 but showing a second embodiment;

Fig. 6 is a sectional view similar to Fig. 3 but showing a third embodiment; and

Fig. 7 is a front elevation of the embodiment shown in Fig. 6, with parts omitted or cut away for clarity.

Referring to the drawings in detail and particularly to Fig. 1, there is shown an electric cooking range generally designated 10, having a cooking platform 12 and a backsplasher panel 14. The backsplasher has a plurality of indicating selector switches 16, each of which controls one of a plurality of surface cooking units 18 mounted in the platform 12. A plurality of oven control switches 20 are also mounted in the backsplasher and serve to individually control baking ovens (not shown) disposed below the platform and closed by oven doors 22. A tubular lamp 24, preferably a fluorescent lamp, is disposed within the upper portion of the backsplasher 14 and serves to illuminate the cooking platform.

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Since the indicating switches 16 may be identical, only one will be described. As best shown in Figs. 2 and 3, the switch includes a housing 26 which encases the conventional circuit controlling contacts for one of the surface units 18. The contacts may be adjusted by means of a rotatable shaft 28 to permit any one of a plurality of heats to be attained. The shaft may be provided with a manually operable knob 30 to facilitate rotation. A transparent dial plate 32 of circular shape, made of glass or methyl methacrylate and having a central opening 34, is mounted centrally of the shaft 28 directly behind the adjusting knob 30 and is disposed behind a circular opening 36 provided in the backsplasher panel 14. The edge portions defining the opening 36 are curved rearwardly to provide a flange 38 against which the dial 32 is fixedly abutted. The knob may be provided with an index portion 40 which cooperates with a set of switch position markers 42 carried by the dial 32. As shown, the markers may be in legend form to designate "Off," "High," "Medium-High," "Medium," "Low" and "Simmer" heat positions. Thus, when the knob is rotated to the desired heat position, the index 40 will register with one of the markers 42 and the switch shaft 28 will be rotated to select the desired circuit through the corresponding surface unit 18. As thus far described, the switching arrangement is substantially conventional.

A circular "color" disc 44 having a central mounting hub 46 is mounted on the switch shaft 28 and is jointly rotatable therewith. The disc has a circular portion 48 on which is mounted an annular member 50 of translucent material which is divided into six equal segments 52 which correspond to the switch positions denoted by the markers 42. The segments 52 are of different colors and serve to illuminate the dial 32 in different colors in accordance with the switch setting as will be subsequently described. Any desired assortment of colors may be utilized to advantage, although I have shown the segments as being colored red, orange, yellow, green, blue and colorless.

The switch may be held within the backsplasher housing 14 by any suitable means, for example, by a bracket 54 which is substantially L-shaped in cross section and has a leg 56 which is fastened to a vertical portion 58 of the backsplasher. The vertical portion 58 may be horizontally coextensive with the lamp 24 and is

preferably punched and bent upwardly to provide an opening 60 which is also horizontally coextensive with the lamp 24 to permit light from the lamp to illuminate the range cooking platform 12. The material adjacent the upper edge of the opening 60 may be bent upwardly to impart a smooth edge to the opening and to provide a flange 62 for supporting a member 64 which has a reflecting portion 66 that may be made of highly polished chrome-plated metal or the like. It will be noted that the portion 66 is disposed directly below the dial 32 at such an angle that a substantial amount of light emitted by the lamp 24 will be reflected edgewise into the dial as indicated by the arrows to illuminate the dial.

To increase the illumination of the dial, a series of concentric grooves 68 of saw-tooth contour (as best shown in Figs. 3 and 4) are provided in the rear surface of the dial. The grooves provide in effect a series of circular facets which will intercept a portion of the light and deflect it forwardly. It will also be noted that the multicolored translucent member 50 is disposed between the lamp 24 and the reflecting portion 66; thus all light received by the reflecting portion is first modified or filtered by the particular colored segment 52 and colored accordingly. The dial will accordingly be illuminated in different colors as determined by the particular setting of the switch. For example, when the switch is in the "off" position, the colorless segment will be in a position to intercept the light rays of the lamp 24 and the dial will be illuminated by the unmodified light of the lamp, while if the switch is turned to the "high" position, the red segment will intercept the light rays of the lamp and the dial will be illuminated in red.

To prevent stray rays from the lamp being transmitted to the dial, there is provided a shielding plate 70 having a flange 72 within which the dial is nested. The plate 70 is provided with a window 74, in its bottom portion, which is partly defined by two fins 76 which are radially spaced to frame only one segment 52 at a time. It will thus be apparent that the light which passes through the window is the only light that will be effective to illuminate the dial. The plate 70 may also be provided with an inner reflecting surface 78 which will be effective to intercept and reflect, through the rear face of the dial, any light which is reflected to it by the reflecting portion 66.

The dial 32 is illuminated throughout its visible surface both by edge lighting and by external reflection, producing an effect of brilliance and richness of color that may be seen by the user at a distance from the range. By merely glancing at the illuminated dial, the user can instantly ascertain the switch setting and further easy recognition of the switch setting is insured by the position of the knob index 40 with respect to the selected marker 42 on the dial. The knob may also be of such a diameter as to cover the dial markers 42 and may be cut away adjacent the index 40 to permit viewing of the selected marker, thus preventing any possible confusion in the mind of a person who may be unfamiliar with the color combination or the switch positions.

Referring to Fig. 5, there is shown an indicating selector switch 80 which is a modified form of the switch 16 already described. Most of the component parts of switch 80 may be identical to the component parts of switch 16. In this embodiment, the switch has a dial plate 82 made of methyl methacrylate or other similar material having internal reflection properties, thus permitting bending of light rays without the need of an external reflector. The dial has an integral lower portion 84 bent rearwardly to present an edge surface 86 which is normal to the light rays emitted by the lamp 24. It will be seen that the surface 86 is disposed within the window 74 in close proximity to the multicolored member 50. Thus, the light rays emitted by the lamp 24 will be modified by the colored segment 52 in registry with the window 74 and transmitted through the edge surface 86 of the dial. The light rays are then transmitted through portion 84 where they are bent as shown by the arrows by internal reflection to illuminate the dial. The operation is substantially the same as that of switch 16. In this embodiment the reflecting member 64 is unnecessary, since the light rays are transmitted directly to the dial 82.

Referring to Figs. 6 and 7, there is shown another embodiment of my invention incorporated in the oven temperature control switch 20. A housing 90 encloses a contact structure (not shown) adapted to control a circuit through an oven heating means (not shown) as well understood in the art. Briefly explained, the switch opens the circuit through the oven heating means when the knob 30 is rotated counterclockwise to the "off" position. When the knob 30 is rotated clockwise from the "off" position, the oven heating circuit is completed and the temperature of the oven is controlled thermostatically, first at a low temperature and as the knob is rotated clockwise further, at a correspondingly higher temperature. A dial 91 is provided which is similar to the dial 32 shown in Fig. 4; however, appropriate temperature indicia may be substituted for the markers 42.

A colored transparent member 92 is mounted on a lever 94 which is pivotally mounted on the bracket 54 by a rivet 95. The lever 94 is biased downwardly as shown in Fig. 7 by a spring 96 which is anchored to the bracket 54 at one end and to the lever 94 at the other end. A lever member 98 is rigidly mounted on the switch shaft 28 for joint rotation therewith and has an upturned end portion 100 which is adapted to abut a finger 102 provided on the lever 94 and to move the lever 94 upwardly against the bias of the spring 96 when the knob is in the "off" position. When the lever 94 is in the upper position as shown in the drawings, the colored member 92 is out of registry with the window 74 and light rays from the lamp 24 will illuminate the dial without being modified by the colored member. However, when the knob is rotated clockwise to any "on" position, the end portion 100 will move clockwise, permitting the colored member to move downwardly into registry with the window 74. Light rays from the lamp 24 will be modified by the colored member and will illuminate the dial in color. Thus, when the oven switch 20 is in the "off" position, the dial is illuminated by light of one color (preferably white) and when switch is in any "on" position, the dial is illuminated by light of another color.

When the range is in operation, a striking color effect is thus attained. If the controls are in different operating positions the dials will be illuminated in different colors, imparting a rainbow-like effect to the backsplasher housing. Also, the rays of the lamp will be emitted through the opening 60 to illuminate the entire range

platform 12. The lamp is disposed within the opening 60; hence, it is hidden from normal view.

While I have shown my invention in several forms, it will be obvious to those skilled in the art that it is not so limited, but is susceptible of various other changes and modifications without departing from the spirit thereof.

What I claim is:

1. An indicating device comprising a fixed transparent dial, a rotatable shaft extending through said dial, a knob disposed in front of said dial and mounted on said shaft to effect rotation of the latter, a multicolored translucent disc disposed behind said dial and coaxially mounted on said shaft for joint rotation therewith, a light emitting element disposed rearwardly of said disc, and means operatively associated with said dial for receiving the light from said element after being modified by said disc and transmitting the same through the dial in edgewise direction.

2. The structure recited in claim 1 in which said dial is composed of material adapted to transmit light by internal reflection and said means includes a rearwardly disposed portion integral with said dial.

3. The structure recited in claim 1 in which said means comprises a reflecting surface disposed at an angle to the edge of the dial.

4. In an electric range having a backsplasher panel and a surface cooking platform, a plurality of control switches disposed behind said panel in horizontally spaced relation, a tubular lamp horizontally disposed behind said panel and arranged to illuminate said cooking platform, each of said switches being provided with an "off" position and comprising a transparent dial fixedly supported in registry with an opening in said panel, a rotatable shaft extending through said dial, a knob disposed in front of said dial and mounted on said shaft to effect rotation of the latter, and a multicolored translucent member disposed behind said dial and mounted on said shaft for joint rotation therewith, said member being interposed between said dial and a portion of said lamp and modifying the light transmitted to said dial, said member having an opaque portion corresponding to the "off" position of said switch and serving to intercept light from said lamp when said switch is in said "off" position.

5. In an electric range having a backsplasher panel and a surface cooking platform, a plurality of control switches disposed behind said panel on a substantially common horizontal centerline, a tubular lamp mounted within said panel and arranged to illuminate the cooking platform, said lamp being disposed substantially parallel to said centerline, each of said switches being provided with an "off" position and comprising a fixed transparent dial disposed in registry with an opening in said panel, a rotatable shaft extending through said dial, a knob disposed in front of said dial and mounted on said shaft to effect rotation of the latter, a multicolored translucent disc disposed behind said dial and coaxially mounted on said shaft for joint rotation therewith, said disc being disposed in front of a portion of said lamp, and means disposed adjacent the edge of said dial for receiving the light from said lamp after being modified by said disc and transmitting the same into the dial in edgewise direction, said disc having an opaque portion corresponding to the "off" position of said switch and serving to intercept light from said lamp when said switch is in said "off" position.

6. In an electric range having a surface cooking platform and a backsplasher panel, a plurality of control switches disposed behind said panel in side-by-side relation, a tubular lamp horizontally disposed behind said panel, said panel having an elongated opening substantially coextensive with said lamp thereby permitting said lamp to illuminate said platform, each of said switches comprising a translucent dial plate supported in registry with an opening in said panel, a rotatable shaft extending through said deal plate, and a movable member disposed behind said dial plate and operatively associated with said shaft, said member having at least one colored translucent portion and being movable to a position in which said portion is interposed between said dial plate and a portion of said lamp to modify light transmitted from said lamp to said dial plate, and movable to another position in which said portion is ineffective to modify light transmitted from said lamp to said dial plate.

7. An indicating device comprising a panel, a translucent dial plate fixedly mounted on said panel, a lamp disposed behind said panel, means for transmitting light from said lamp to edgelight said dial plate, a rotatable shaft extending through said dial plate and having a knob for facilitating rotation of the same, a member disposed behind said dial plate and rotatably mounted for arcuate movement, said member having at least one colored translucent portion adapted to be moved between said light transmitting means and said lamp and to modify the light transmitted to said dial plate when said knob is turned to one position and to be moved out of registry with said light transmitting means and said lamp when said knob is turned to another position.

8. The structure recited in claim 7 in which said member is biased toward said first position and in which said shaft has a member adapted to engage said first-mentioned member and to move the same to said second position against said bias.

9. An indicating device comprising a panel, a translucent dial plate fixedly mounted on said panel, an opaque shielding member disposed behind said dial plate, a lamp disposed behind said shielding member, said shielding member having a window disposed adjacent said lamp, means for transmitting light from said lamp passing through said window to edge light said dial plate, a rotatable shaft extending through said dial plate and having a knob for facilitating rotation of the same, a rotatable member disposed between said lamp and said shielding member, said rotatable member having at least one colored translucent portion adapted to be moved between said window and said lamp and to modify the light transmitted to said dial plate when said knob is turned to one position, and to be moved away from said window to permit unmodified light to be transmitted to said dial plate when said knob is turned to another position.

10. An indicating device comprising a fixed transparent dial having a central opening, a rotatable shaft extending through the opening in said dial, a multicolored translucent disc disposed behind said dial and coaxially mounted on said shaft for joint rotation therewith,

a knob disposed in front of said dial and mounted on said shaft to effect rotation of the latter, a light-emitting element disposed rearwardly of said disc, and means for receiving the light from said light-emitting element after being modified by said disc and transmitting the same through the dial in edgewise direction, said dial being larger than said knob and having a peripheral portion encompassing said knob, whereby said knob is surrounded by a continuous band of light when said light-emitting element is energized and a colored portion of said disc is in registry with said light transmitting means.

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