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P. B. FORD
LIGHTING DEVICE

2,524,657

Filed Dec. 20, 1945

2 Sheets-Sheet 1

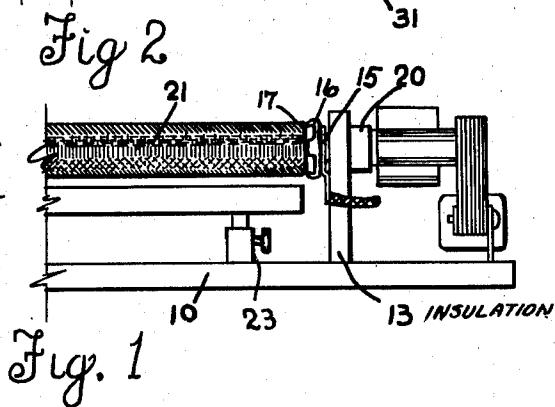
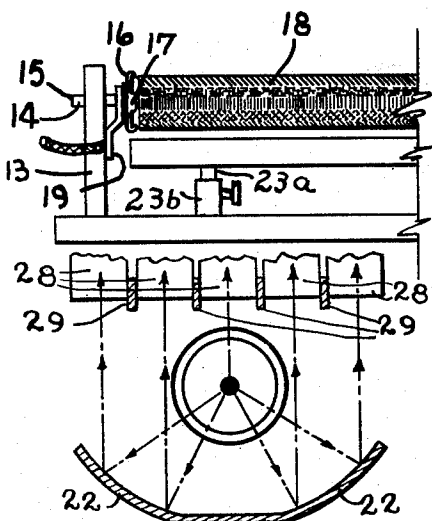
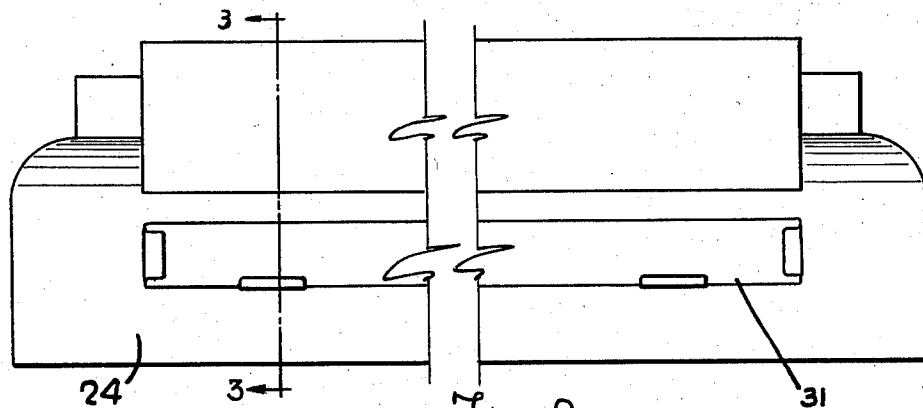
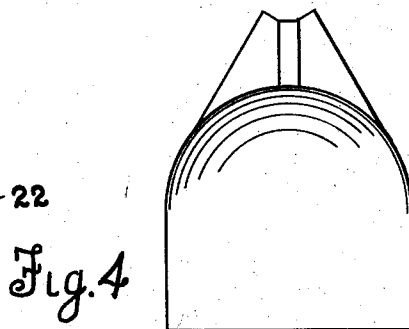
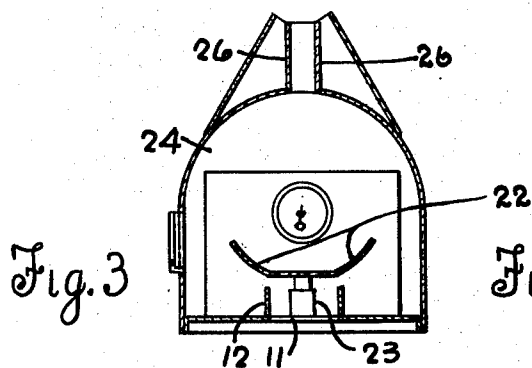


Fig. 6

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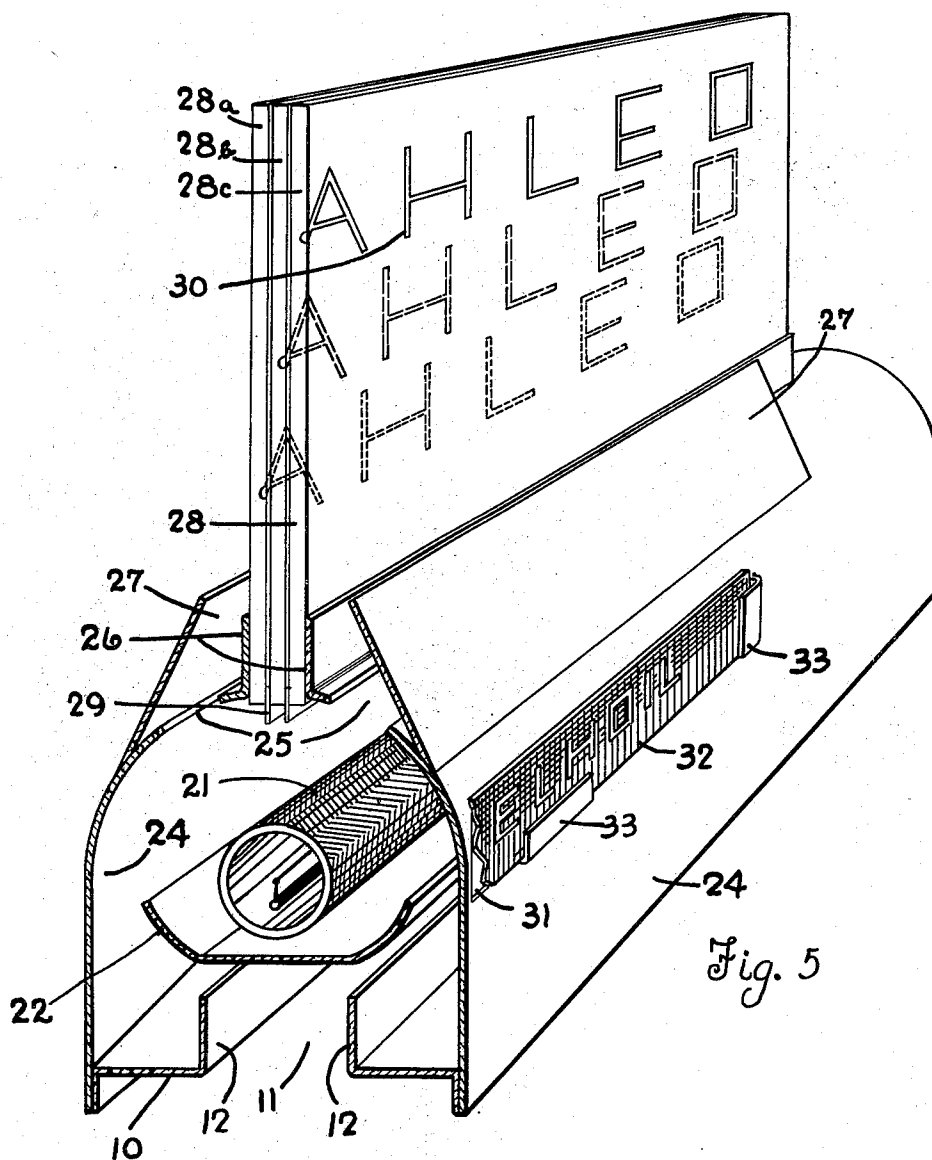
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2 Sheets-Sheet 2



UNITED STATES PATENT OFFICE

2,524,657

LIGHTING DEVICE

Paul B. Ford, Chicago, Ill.

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2 Claims. (Cl. 40-130)

1

This invention relates to improvements in lighting devices. More particularly, it relates to improvements in edge-lighting devices.

One of the improvements and advantages of my device over any heretofore known is the provision of a lighting device having colors or coloring material, by means of dye or other means, applied directly to it.

For example, according to the principle of my invention, I have provided a vastly improved edge-lighting device, having, for example, a source of illumination or a lamp with a plurality of different colors arranged in strips lengthwise on the envelope of the illuminating source or bulb, e. g., thus providing a highly simplified device.

Among other advantages, I have improved over various devices heretofore known, such, e. g. as those using the various multi-colored glass plates heretofore cumberously employed, in addition to the various connections and supporting elements for the glass plates.

Another advantage resides in the provision of a reflector, which may be of a parabolic character, for reflecting light of different colors edgewise into etching plates of glass, for example, in such a manner that the color of the lighting in each glass is different from the color of any other glass, if desired.

It will be understood that in the use of my invention, with two or more plates, that the same will be etched on each one at a different level from that of every other plate, so that, as shown in Fig. 5, the etched letters in plate 28a will appear in blue, and at the lowest level; and the etched letters in plate 28b will appear in the color red at an intermediate level; and that the etched letters on the plate 28c will appear in yellow at the highest level; thus, the effect will be that there will be a message in lines, with each line having a different color from every other line, although two or more may have similar colors, if desired.

It will also be understood that instead of etched letters, figures or pictures may be etched.

Another advantage resides in the provision of a shield for heat and light interception, for separating undesirable light rays.

In addition, I have provided an improved cover or housing for the same.

Among the advantages of the housing are improved ventilation combined with improved light reflection.

Another object has been to make such a device, simple in form, easy to assemble and low in cost.

Further objects and advantages will appear and be brought out more fully in the following specification, reference being had to the accompanying drawing, in which:

2

Fig. 1 is an elevation view of the device.

Fig. 2 is an elevation view of the cover.

Fig. 3 is a section on the line 3-3 showing the edge lighting means and the cover, etc.

Fig. 4 is an end view of the cover.

Fig. 5 is a general cross section in perspective.

Fig. 6 is a diagrammatic view showing how the rays coming from the lighting source through the colors may be reflected by a reflector of a parabolic character directly into various plates of glass, for example, with the color of the light going into each glass separated from the color of light going into any other plate of glass.

In the device which I have selected for illustrating the principle of my invention, I have shown a base 10, which may have a slot 11, and which may be formed by punching out upright flanges 12.

Upon the base, I have provided a pair of insulating supports 13, having apertures 14 for shafts 15.

Fixed upon each shaft 15 is a clip 16 containing a plurality of prongs 17. A bulb 18 engages these prongs and clips and is thereby supported in axial alignment with the shafts.

The bulb 18 may be any suitable source of illumination. Preferably, however, it is an incandescent lamp having a straight line filament aligned with the axis of the outer envelope or tube and extending from end to end of the tube. Terminals for the filament are located on the ends of the tube and are engaged by the prongs 17 on the clips to establish an electrical connection with the filament.

Supports 13 carry apertured springs 19 which encircle the shafts 15 and bear against the clips 16, thereby to extend the electrical connection from the stationary to the movable parts of the apparatus. Springs 19 are tensioned to urge the clips toward each other so that the tube will be firmly clamped and thereby securely held in place.

One of the shafts 15 is connected to a suitable source of power 20. In the embodiment shown by way of example, the source of power 20 is a synchronous motor of the clock type containing reduction gears so that the output shaft is revolved at the rate of one revolution per minute. While this particular type of motor is advantageous, other sources of power may be used; and so long as the shaft, and with it the tube 18, is rotated at a uniform rate of speed, the requirements of the invention are met. One revolution per minute is advantageous, although in certain instances higher or lower speeds may be used.

The bulb 18, which includes a transparent cylindrical casing, carries on its outer surface a plurality of bands 21 of colors, which bands extend from end to end of the tube and, in the example shown, are of approximately uniform width.

The colors may be in relatively narrow strips, and there may be any number of colors, as desired.

Suitable dye may be used to put these colors directly on the glass or other envelope.

I have provided, also, a heat and light guard or reflector, or baffle 22, to reduce the heat on the base, etc., and to prevent the light from seeping to the exterior of the device, so that the source of light may be undisclosed to the ordinary observer.

The wings of the guard shown may have a parabolic character, more or less for maintaining color separation, as produced by the color bands. For example, by the use of a reflector of a parabolic character, the plate 28a may be edge-lighted in a blue color, plate 28b in a red color, and plate 28c in a yellow color.

This will result from rays from the blue color being reflected directly to the edge of plate 28a, red to the edge of plate 28b, and yellow to the edge of plate 28c.

The reflector may be moved with respect to the source of illumination, to permit the rays to converge or diverge, permitting a desired number of glass plates to be edge lighted in various colors, with the result that the desired colors and their numbers may be varied at will.

Adjustment of the reflector may be made by means of post 23a telescoping in sleeve 23b, and secured as desired by a screw or other suitable means.

The guard 22 may be supported by suitable means such as guard supports 23, mounted on the base.

To cover the base, I have provided a rounded housing 24, adapted to fit nicely over the base.

The housing 24 may have slots 25, to provide for secondary lighting and ventilation, as will be readily understood by those skilled in the art.

I have also provided retaining plates 26, for retaining plates of glass or plastic, such as methylmethacrylate, or other suitable material.

I have also provided reflecting plates 27, mounted on the housing, for a purpose which will be more apparent hereinafter.

The retainers 26 are adapted to retain a light sign unit, which may be made up of one or more plates 28 of glass or plastic, or other suitable material.

The unit may have dividers 29 for dividing a color of one plate from the color of an adjacent plate.

The plates and the dividers may be made up into a unit in any desirable manner, and be supported in the retaining plates in any suitable manner, as by supporting lugs.

The glass may have etching 30, provided in the usual manner.

I have also provided in the side of the housing, an opening 31, in which may be located glass or plastic having a name thereon.

I have also provided holders 33, which may be punched out of the housing, or provided in any other suitable manner.

This glass 32 has been provided for giving the name of the establishment in which the device is employed, or for giving any other name or information desired, as will be readily understood.

It will be understood that the tube in Fig. 6 will have colors provided thereupon, as in the case of tube 21, and that the source of illumination, if located at the focal point of the reflector, will project rays through the colors on the tube to the reflector, whence they may be reflected in a parallel manner to edge-light the glass plates.

The apparatus in the instant invention affords

distinct advantages over the prior art of which I am aware. With the reflector adjusted so that its focal point coincides with the line filament of the lamp, which in turn coincides with the axis of rotation, the color bands on the tube or envelope are spaced uniformly from the axis of rotation and reflector, with the result that uniform intensity of light is directed on the edges of the display panels to illuminate uniformly the display indicia thereon. The uniform continuous rotation of the source of light and color bands at a slow rate of speed changes these colors smoothly and without abruptness. At no time in the cycle is any one of the plurality of display panels wholly dark.

While I have illustrated and described the preferred form of construction for carrying my invention into effect, this is capable of variation and modification without departing from the spirit of the invention. I, therefore, do not wish to be limited to the precise details of construction set forth, but desire to avail myself of such variations and modifications as come within the scope of the appended claims.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. In a display device, a tubular shell lamp, means mounting said lamp for rotation around the axis of said shell, a filament in said shell extending from end to end thereof and coinciding with said axis of rotation, bands of transparent colors on said shell and extending from end to end thereof, means engaging the ends of said lamp for extending an electrical circuit through said filament to light the same, means including a motor for rotating said lamp around said axis, at a uniform speed, a housing encasing said lamp and having a slot through which the light emitted by said lamp passes, and transparent display plate means disposed in said slot and edge-lighted by the light passing therethrough, the rotation of said lamp and color bands carried thereby varying the colors of the light falling on said plate means.

2. In a display device, a base, a pair of brackets projecting upwardly from said base, a pair of shafts one journaled in each of said brackets, a tubular lamp extending between said shafts, clips carried on said shafts and engaging said lamp to support the same, a motor mounted on said base, gear means connecting said motor to one of said shafts enabling the motor to rotate said shafts and lamp at a uniform speed, bands of vari-colored dyes on said lamp extending from end to end thereof, spring means engaging said clips to extend an electrical circuit through said lamp to light the same to emit bands of colored light, a reflector mounted on said base and between the base and lamp and adjustable therebetween, said reflector being shaped to reflect said bands of light upwardly, a cover engaging said base and extending over said lamp motor and reflector and having a slot positioned in the upwardly moving bands of light, and a plurality of transparent panels located in said slot and in the path of said bands of light and adapted to be edge-lighted thereby, display indicia on said panels rendered visible by said edge-lighting, said revolving of said lamp and color bands varying the colors of said indicia sequentially.

PAUL B. FORD.

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