April 4, 1939. W. W. HAYS 2,152,844

ILLUMINATED DISPLAY DEVICE

Filed Dec. 10, 1937

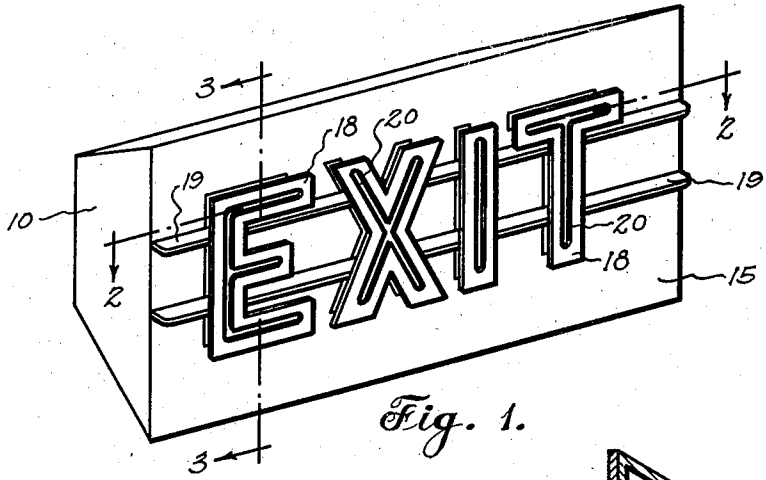


Fig. 1.

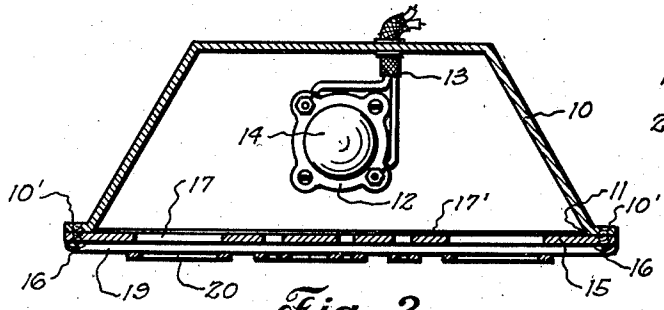


Fig. 2.

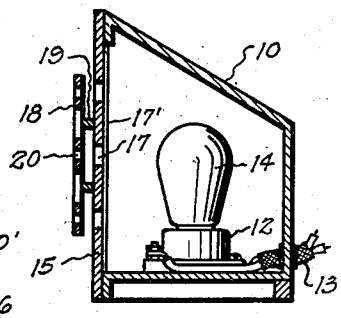


Fig. 3.

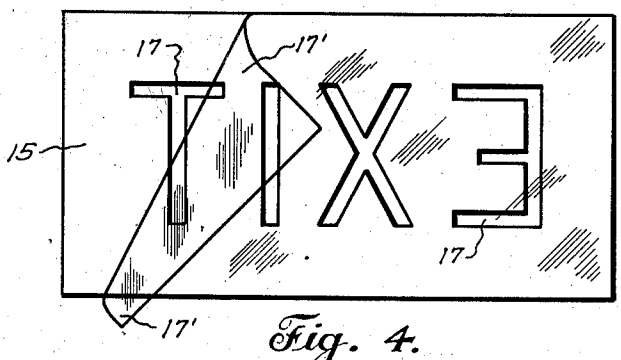


Fig. 4.

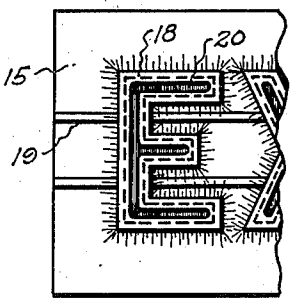


Fig. 5.

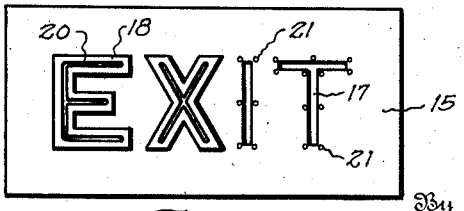


Fig. 6.

Inventor
William W. Hays

By

Attorney

Patented Apr. 4, 1939

2,152,844

UNITED STATES PATENT OFFICE

2,152,844

ILLUMINATED DISPLAY DEVICE

William W. Hays, Greenville, Tex., assignor of twenty per cent to Arthur W. Lilly, Greenville, Tex.

Application December 10, 1937, Serial No. 179,038

14 Claims. (Cl. 40—133)

This invention relates to new and useful improvements in illuminated display devices.

One object of the invention is to provide an improved illuminated display device which realistically simulates a neon tube display and which is especially economical when applied to signs of small and medium sizes.

An important object of the invention is to provide an improved display device having indicia, characters and the like, arranged to exhibit a simulation of an illuminated neon tube, together with means for deflecting the light rays, whereby an illumination, similar to that given off by a neon tube display is obtained.

Another object of the invention is to provide an improved display device, of the character described, wherein the display symbols or characters are provided with restricted openings following the general shape of the symbol or character and coacting with a reflecting surface and with light-ray emitting openings conforming generally to the restricted openings for directing light rays through said restricted openings and against said symbols to deflect the rays against said reflecting surface, whereby the light rays emitted through the restricted openings give the appearance of an illuminated tube, while the reflected rays produce an illumination around each symbol.

Still another object of the invention is to provide a background member or panel having an opening therein and a display character spaced from the panel and having a width greater than the width of the opening, the character overlying the opening and following the general shape thereof, said character having a slot therein which generally conforms to the shape of the opening in the panel and which is of less width than the width of said opening, whereby a portion of the light rays passing through the opening pass directly through the slot in the character, while the remaining light rays strike the rear face of the character and are deflected onto the panel around said character; the illuminated slot providing a brightly illuminated tube-like strip conforming to the character and the deflected rays producing a reflected glow around the character, whereby a clearly visible and most effective and attractive sign is had.

A construction designed to carry out the invention will be hereinafter described, together with other features of the invention.

The invention will be more readily understood from a reading of the following specification and by reference to the accompanying drawing, in which an example of the invention is shown, and wherein:

Figure 1 is an isometric view of a sign, constructed in accordance with the invention,

Figure 2 is a horizontal, cross-sectional view, taken on the line 2—2 of Figure 1,

Figure 3 is a transverse, vertical, sectional view, taken on the line 3—3 of Figure 1,

Figure 4 is a rear elevation of the panel,

Figure 5 is an enlarged front elevation of a portion of the sign, and

Figure 6 is a front elevation of a modified form of the invention.

In the drawing, the numeral 10 designates a light reflecting casing or housing which has its front side 11 open. A suitable electrical receptacle or socket 12 is mounted in the bottom of the housing and electrical current is conducted thereto by electrical lead wires 13 which pass through an opening in the rear wall of the casing. An electrical lamp or bulb 14 is screwed into the receptacle and illuminates the interior of the housing. It is noted that the particular construction of the casing is subject to variation, as any suitable light reflecting casing may be employed.

A peripheral, outwardly directed flange 10' surrounds the open front side 11 of the housing or casing and background member or panel 15 is suitably secured by screws 16, or otherwise, to said flange, whereby the panel closes the open front of said casing. The panel is shown as having a general rectangular shape and as being flat, but since the shape of the panel conforms to the shape of the open front of the casing, said panel may vary in size and shape, and may be curved if desired, in accordance with size and shape of the casing. Transverse openings 17 are formed in the panel 15 and these openings are shaped to form the display characters on the panel. Said openings have been shown as letters, but manifestly, they may form figures, pictorial illustrations, or other indicia. Since the openings 17 extend entirely through the panel, the light rays from the interior of the casing may pass therethrough, and the illuminated areas on the panel conform to the shape of the openings, as said light in the interior of the casing is not visible through the panel.

It is preferable to color the light rays prior to their passage through the openings 17 and for this purpose, a colored sheet 17' of transparent material, such as "Cellophane," or colored or coated glass, is secured to the rear face of the panel 15 and covers the openings. This sheet

may be of a desired color being suitably glued, or otherwise fastened, in place and thus light rays passing through the openings, are colored. The sheet 17' is not essential, as colored transparent strips (not shown) could be utilized to cover the individual openings or if desired, the interior walls of the casing, or the surface of the bulb 14, may be colored, to give color to the rays emitting or passing through the openings 17.

Each opening 17, which has been shown as forming a letter, has a display character 18 overlying the same so as to hide the opening. The display characters are secured to longitudinal bars 19 which are fastened to the outer or front face of the panel and which extend substantially throughout the length of the panel. The bars may, if desired, terminate in alinement with the end characters instead of at the ends of the panels as shown. The characters 18 are thus spaced from and overlie the openings 17, each character following the general shape of the opening which it overlies. The width of the characters is greater than the width of the openings 17, whereby said characters completely hide the same.

Each character is formed with a relatively narrow slot or opening 20 which slot extends entirely therethrough and generally conforms to the shape of the character and to the shape of the opening 17 behind said character. The slot is, preferably, located centrally of the character and in alinement with the opening 17, and has a width or area which is less than the width or area of said opening. With this arrangement, a portion of the light rays passing through the openings 17 are directly visible through the narrow slot 20 in the character. This narrow illuminated slot, which is visible to an observer, conforms to the shape of the character and simulates or gives the appearance of an illuminated tube, such as neon.

As is well known, neon tubes produce a reflected glow therearound and the spacing of the characters from the panel, as well as the width of the characters with relation to the openings 17, carries out the full effect of a neon tube. As above set forth, the narrow slots 20 in the characters are illuminated by a portion of the light rays passing through the openings 17. All of the light rays cannot pass through said slots as the slots are of a less area than the openings. The remaining light rays which pass through the openings 17 strike the rear face of the characters overlying said slots and these rays are deflected onto the background panel around the characters (Figure 5). These deflected rays are reflected from the panel and set up a brilliant glow around each character and this glow simulates the reflected glow of an illuminated neon tube.

Thus, the narrow slots 20 in the characters clearly bring out the character and give the appearance of illuminated tubes, which makes the sign distinguishable from a distance. The light rays striking the rear face of the character, are deflected onto the background panel 15, whereby the characters are surrounded by a reflected glow. This glow simulates the glow of the usual neon tube and, together with the tubular appearance of the illuminated slots 20, produces a sign which gives substantially the same effect, day or night, as a neon tube display.

The characters may be fastened in spaced relation to the panel and overlying the openings 17 in any suitable manner and the invention is not to be limited to the use of the bars 19. For example, as shown in Figures 6, each character may be secured in position by pins 21, which have their ends fastened in the panel and in the characters and serve to support the characters in a position overlying the openings and spaced from the panel.

From the foregoing, it will be seen that a most effective and attractive sign, which closely simulates a neon tube sign, is had. The sign is most economical in manufacture and upkeep and may be of any desired size, being ideal for window and counter display. The casing, panel and characters may be constructed of heavy pasteboard, cardboard, wood, metal or any other suitable material and any convenient means may be employed for supporting the characters in position. The size of the openings 17 and slots 20, as well as the size of the characters, is subject to variation and so long as the width of the slots is less than the width of the openings, the simulated tube effect is produced.

What I claim and desire to secure by Letters Patent is:

1. A display device including, a panel having light emitting openings therein to permit light to pass therethrough said openings being disposed in the panel in such manner as to form characters, means for directing light rays through said openings, and display characters overlying said openings and spaced therefrom, whereby light rays passing through said openings are intercepted by said characters and deflected onto the panel to illuminate the panel around the characters, said characters having slots therein which are in alinement with the openings in the panel, whereby a portion of the light rays passing through the openings are directly visible through said slots.

2. A display device including, a panel having openings therein which are shaped to simulate indicia to permit light rays to pass therethrough, means for directing light rays through said openings, and display characters spaced from and overlying said openings, said characters following the general shape of the openings and having slots therein, the slots being of less width than the width of the openings and being in alignment therewith, whereby a portion of the light rays passing through the openings also pass through the slots to illuminate the same, the remainder of said light rays striking the rear face of the display characters and being deflected onto the panel to produce a reflected glow around the characters.

3. A display device including, a panel having openings therein to permit light rays to pass therethrough, said openings being shaped to form display characters, means for directing light rays through said openings, and display characters spaced from and overlying the openings and conforming to the general shape of the openings, each character having a relatively narrow slot therein which slot is disposed in alinement with and follows the shape of the opening in the panel behind said character, whereby light rays passing through the openings also pass through the slots to illuminate the slots and thereby simulate neon tubes.

4. A display device including, a panel having openings therein to permit light rays to pass therethrough, said openings being shaped to form display characters, means for directing light rays through said openings, display characters overlying the openings and conforming to the general shape of the openings, each character hav-

ing a relatively narrow slot therein which slot is disposed in alinement with and follows the shape of the opening in the panel behind said character, whereby light rays passing through the openings also pass through the slots to illuminate the slots and thereby simulate neon tubes, and means for producing a reflected glow around each character, whereby said glow appears as a reflection from the simulated tubes.

5. A display device including, a panel having openings therein to permit light rays to pass therethrough, said openings being shaped to form display characters, means for directing light rays through said openings, display characters overlying the openings and conforming to the general shape of the openings, each character having a relatively narrow slot therein which slot is disposed in alinement with and follows the shape of the opening in the panel behind said character, whereby light rays passing through the openings also pass through the slots to illuminate the slots and thereby simulate neon tubes, and means for spacing the characters from the panel, whereby a portion of the light rays passing through the openings in the panel are deflected onto the panel to produce a glow around the characters.

6. A display device including, a panel having openings therein to permit light rays to pass therethrough, means for directing light rays through said openings, display characters spaced from and overlying said openings, said characters conforming to the general shape of the openings and having slots therein, the slots being of less width than the width of the openings and being in alinement therewith, whereby a portion of the light rays passing through the openings also pass through the slots to illuminate the same, the remainder of said light rays striking the rear face of the display characters and being deflected onto the panel so as to be reflected by the panel around the characters, and means for coloring the light rays passing through the openings in said panel.

7. A display device including, a panel having openings therein to permit light rays to pass therethrough, said openings being shaped to form display characters, means for directing light rays through said openings, display characters overlying the openings and conforming to the general shape of the openings, each character having a relatively narrow slot therein which slot is disposed in alinement with and follows the shape of the opening in the panel behind said character, whereby light rays passing through the openings also pass through the slots to illuminate the slots and thereby simulate neon tubes, and means for coloring the light rays passing through the openings in said panel.

8. A display device including, a panel having openings therein to permit light rays to pass therethrough, said openings being shaped to form display characters, means for directing light rays through said openings, display characters overlying the openings and conforming to the general shape of the openings, each character having a relatively narrow slot therein which slot is disposed in alinement with and follows the shape of the opening in the panel behind said character, whereby light rays passing through the openings also pass through the slots to illuminate the slots and thereby simulate neon tubes, means for producing a reflected glow around each character, whereby said glow appears as a reflection from the simulated tubes, and means for coloring the light rays passing through the openings in said panel, whereby the simulated tubes and reflected glow may be of a desired color.

9. A sign including, a panel having openings therein shaped to form display indicia, means for directing light rays through said openings, and display characters conforming to the shape of said openings and spaced from and overlying said openings, each character having a slot conforming to the shape of the character and to the shape of the opening in the panel behind said character and having a width less than said opening, each slot being in alinement with its respective opening, whereby portions of the light rays passing through the openings pass through said slots and are directly visible to an observer.

10. A sign including, a panel having openings therein shaped to form display indicia, means for directing light rays through said openings, and display characters conforming to the shape of said openings and spaced from and overlying said openings, each character having a slot conforming to the shape of the character and to the shape of the opening in the panel behind said character and having a width less than said opening, each slot being in alinement with its respective opening, whereby portions of the light rays passing through the openings pass through said slots and are directly visible to an observer, each character having a width greater than the width of the opening which said character overlies, whereby the light rays which do not pass through the slot in said character are intercepted by said character.

11. A sign including, a panel having openings therein shaped to form display indicia, means for directing light rays through said openings, display characters conforming to the shape of said openings and overlying said openings, each character having a slot conforming to the shape of the character and to the shape of the opening in the panel behind said character and having a width less than said opening, each slot being in alinement with its respective opening, whereby portions of the light rays passing through the openings pass through said slots and are directly visible to an observer, each character having a width greater than the width of the opening which said character overlies, whereby the light rays which do not pass through the slot in said character are intercepted by said character, and means for spacing each character from the panel whereby the rear face of said character provides a light reflecting surface and light rays intercepted thereby are reflected onto the panel around the character to produce a brilliant glow around said character.

12. A display device including, a background member having light emitting openings therein to permit light rays to pass therethrough, said openings being disposed so as to generally follow a shape representative of indicia, and indicia positioned in close proximity to said member and having openings located to directly emit light rays passing through the openings of the member and of less area, the rear surface of the indicia being light reflecting, whereby the remaining light rays emitting through the openings of said member strike the rear face of the member and are deflected onto the surface of said member surrounding the indicia.

13. A display device including, a panel having light emitting portions therein to permit light to pass therethrough, said portions being so dis-

posed in the panel so as to generally follow a shape representative of indicia, means for directing light rays through said portions, and display characters overlying said openings and spaced therefrom, whereby light rays passing through the light emitting portions are intercepted by the characters and deflected onto the panel to illuminate the panel around the characters, said characters having light emitting portions therein which are in alinement with the light emitting portions of the panel, whereby a portion of the light rays passing through the light emitting portions in the panel are directly visible through the light emitting portions in the characters.

14. A display device including, a panel having light emitting portions therein to permit light rays to pass therethrough, said portions being shaped to form indicia, means for directing light rays through said portions, and display characters spaced from and overlying said openings, each character following the general shape of the light emitting portion which it overlies and having a light emitting portion conforming to the general shape of the character therein, the light emitting portions in the characters being of less width than the width of the light emitting portions in the panel and being in alinement therewith, whereby part of the light rays passing through the light emitting portions in the panel also pass through the light emitting portions in the characters to illuminate the same, the remainder of said light rays striking the rear face of the characters and being deflected onto said panel to produce a reflected glow around the characters.

WILLIAM W. HAYS.