Oct. 18, 1955 N. C. DUHON 2,721,256

DISPLAY DEVICE

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FIG 1

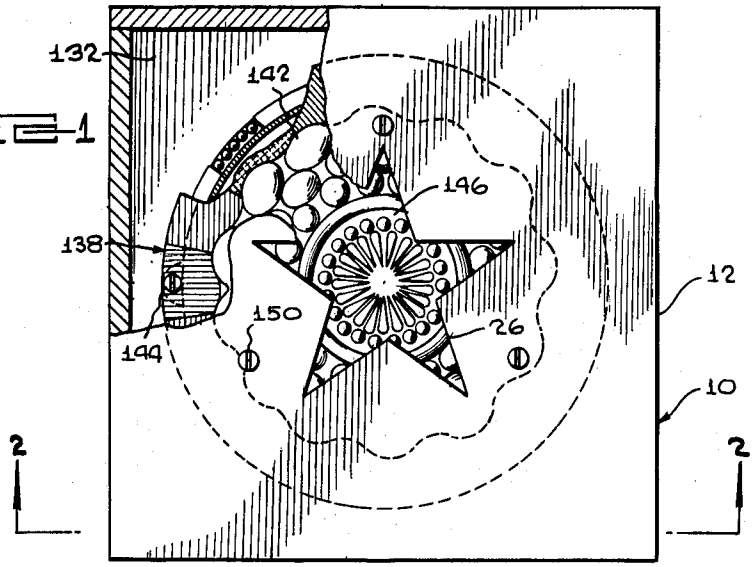
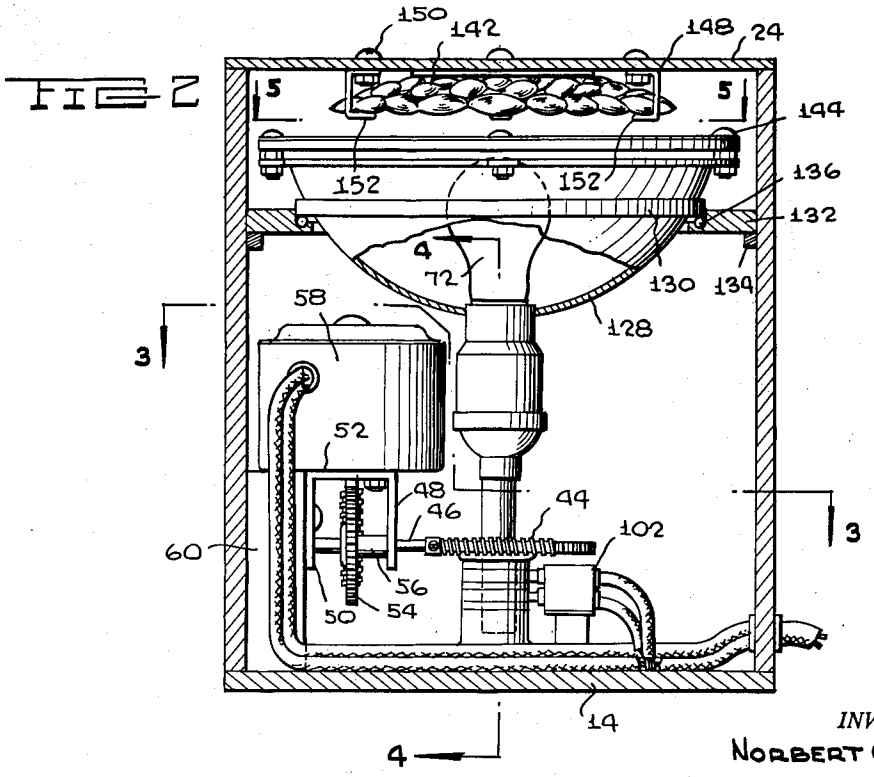


FIG 2



INVENTOR.
NORBERT C. DUHON

BY

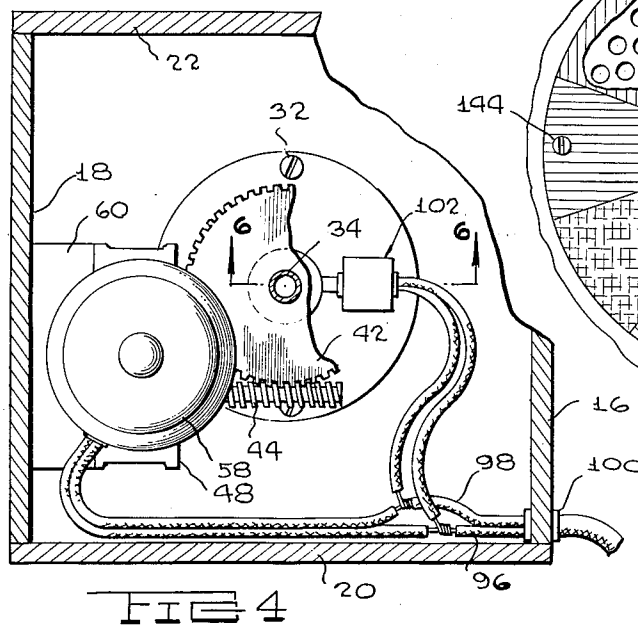
McMorrow, Berman + Davidson
ATTORNEYS

Oct. 18, 1955 N. C. DUHON 2,721,256

DISPLAY DEVICE

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FIG 3



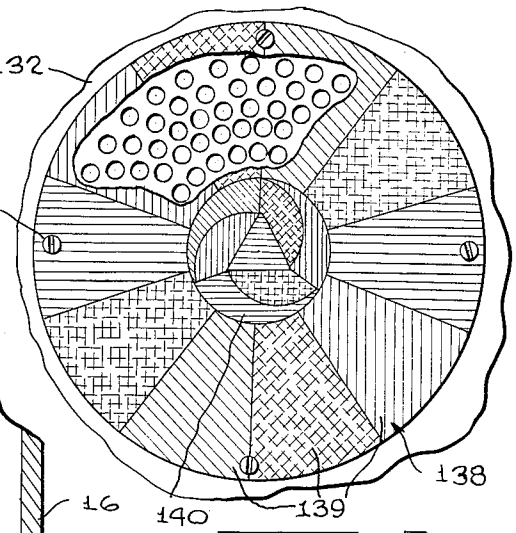


FIG 5

FIG 4

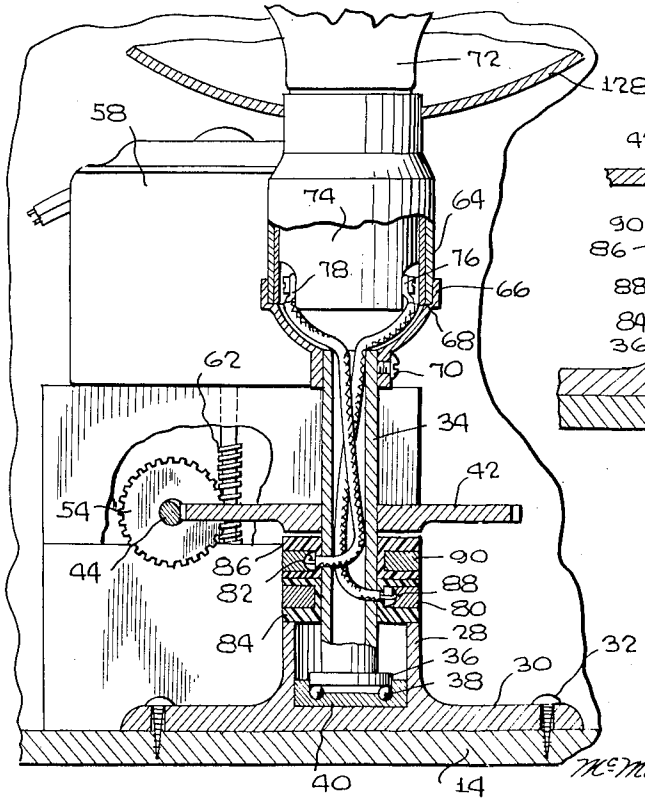
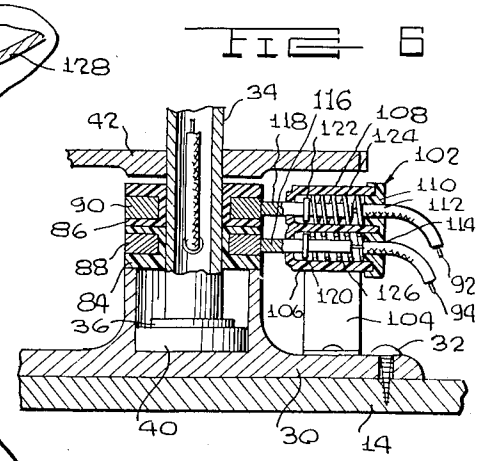


FIG 6



INVENTOR.
NORBERT C. DUHON

BY

McMorrow, Berman & Davidson
ATTORNEYS

United States Patent Office 2,721,256 Patented Oct. 18, 1955

2,721,256

DISPLAY DEVICE

Norbert C. Duhon, Lafayette, La., assignor to Alcide Dominique, Lafayette, La.

Application November 6, 1951, Serial No. 255,106

1 Claim. (Cl. 240—10.1)

This invention appertains to improvements in electrical display devices and particularly relates to improvements in devices for creating novel lighting effects for advertising and display purposes.

A primary object of this invention is to provide a simple and effective device, which will constantly project changing colored light rays through a suitably designed aperture in a casing, so that a novel and distinctive lighting effect is obtained.

A further object of this invention is to provide a casing, having one wall formed with a suitably designed aperture, such as a star, Christmas tree or the like, in combination with a reflecting background and a revolvable color screen, which is interposed between the reflecting background and the aperture for directing moving beams of colored light rays through the aperture and through a lens, which is interposed between the color screen and the aperture.

And yet another object of this invention is to provide an inexpensively constructed and maintained display device, which can be used, during holiday seasons, in private homes for decorative purposes to create a vivid and animated effect.

These and ancillary objects and structural features of merit are attained by this invention, the preferred embodiment of which is set forth in the following description and illustrated in the accompanying drawings, wherein:

Figure 1 is a top plan view of a substantially square box or casing, which forms a part of this invention and in which the operating and illuminating structure is mounted, a portion of the top wall of the casing being broken away to illustrate the same;

Figure 2 is a vertical sectional view taken on line 2—2 of Figure 1;

Figure 3 is a cross sectional view taken on line 3—3 of Figure 2;

Figure 4 is a fragmentary vertical sectional view taken on line 4—4 of Figure 2;

Figure 5 is a transverse sectional view taken on line 5—5 of Figure 2 and illustrating the color screen in plan view;

Figure 6 is a fragmentary detailed sectional view taken on line 6—6 of Figure 3 and illustrating in detail the conductor means for illuminating the lamp in the casing.

The display device **10** may be formed of any desired design, shape or size but, as illustrated, it includes a substantially square box or casing **12**, which consists of a base **14**, upstanding opposed side walls **16** and **18** and opposed upstanding side walls **20** and **22**. A top wall **24** is suitably affixed to the upper coplanar edges of the upstanding side walls and is formed with a center opening **26**, which may be, as illustrated, in a star design or can be in any desired design, appropriate for any holiday or other occasion.

An upstanding sleeve **28** is formed with a mounting flange **30**, which is fixedly superimposed by lag screws **32** on the base, interiorly of the casing. A tubular member

or post **34** is rotatably mounted within the sleeve, the lower flanged end **36** of the tubular post being rotatably mounted on ball bearings **38**, which are held within a bearing member **40**. The bearing member **40** is seated in the lower end of the sleeve and the post **34** is mounted for rotation within the sleeve.

A gear **42** is fixedly circumposed on the post **34** and is enmeshed with a worm **44**, which is formed on a shaft **46**. The shaft **46** is journaled between the depending legs **48** and **50** of a U-shaped bracket **52** and a gear **54** is fixedly circumposed thereon and spaced by bearings **56** from the legs. A prime mover, such as the electric motor **58**, is mounted on the web portion of the bracket and seated on a block **60** and a worm gear **62** is formed on the armature shaft of the motor and is engaged with the vertically arranged gear **54**.

Thus, the tubular post **34** is rotated about a vertical axis by the electric motor **58** through the worm **62**, the vertically arranged gear **54**, the worm **44** and the gear **42**, which is fixedly circumposed on the post.

A bulb socket **64** is disposed within a flange **66** formed on the upper end of a collar **68**, which is fixed by a set screw **70** on the upper end of the post **34**. A conventional low voltage bulb **72** is conventionally disposed within the socket and the conducting base portion **74** of the socket, which receives the base of the bulb, is provided with contacts for receiving insulated conductors **76** and **78**.

The conductors **76** and **78** are disposed within the tubular post **34** and terminate in contacts **80** and **82**, which extend through lateral openings in the lower end of the post.

A U-shaped annular sleeve **84** is circumposed on the post **34** and an upper U-shaped or flanged sleeve **86** is disposed on the sleeve **84**, with their adjoining legs in abutting engagement, the web portions of the sleeves bearing on the post **34** and having suitable openings therein for receiving the contacts **80** and **82**. A commutator ring **80** is seated in the sleeve **84** and a similar commutator ring **90** is fixedly disposed in the sleeve **86**, between the parallel legs thereof.

Conductors **92** and **94** are provided and are suitably connected to insulated conductors **96** and **98** which stem from a suitable source of electrical energy and are disposed through a sleeve **100**, which is mounted in the side wall **16**. The conductors **96** and **98** are connected to the motor **58** and supply the electrical power therefor, the conductors **92** and **94** stemming from the conductors **96** and **98** and leading into a housing **102**, which is mounted on an upstanding bracket **104**. The bracket **104** is secured to the upper surface of the flange **30**, adjacent to the upstanding sleeve **28**.

Cylindrical sleeves **106** and **108** formed of rubber or other insulative material are formed in the housing **102** and one end of the housing is open, the open end being closed by a cap **110**, which is formed with openings **112** and **114**, the openings being alignable with the bores in the casings. The opposing ends of the casings are apertured and contacts **116** and **118** are slidably disposed therethrough. The contacts are connected with the conductors **92** and **94** and are formed with annular shoulders **120** and **122**, with springs **124** and **126** being concentrically disposed on the contacts and bearing against the cap and the shoulders to urge the contacts **116** and **118** into engagement with the rings **88** and **90**. The springs are provided to compensate for the wear of the contacts **116** and **118** and to maintain the contacts in constant engagement of the rings, so that a constant electrical circuit is maintained between the source of electrical energy and the bulb **72**.

A semi-spherical reflector **128** is provided at its closed end with an opening for receiving the socket of the bulb

72 and is formed, adjacent its open end, with an annular bearing ring or flange **130**. A bearing member **132** is mounted on shoulders **134**, which project laterally from the inner surface of the side walls. The bearing member **132** is formed with an opening for the reception of the reflector **128** and the outer edge thereof is formed with a groove for receiving ball bearings **136**, which seat the undersurface of the ring **130**. Thus, the reflector is mounted on the bearing member **132** and the socket and reflector are supported by the bearings **38** and the bearings **136**.

The open end of the reflector **128** is enclosed by a color wheel or circular screen **138**, which includes a plurality of variously colored segments **139** and a center or core section **140**, which is multi-colored in various geometrical formations. The color wheel or screen **138** overlaps the reflector and apertured ears extend laterally from the reflector and the peripheral edges of the reflector are apertured at circumferentially spaced points for registering with the ears and receiving fasteners **144**.

A concavo-convex or dish-shaped lens or diffusing element **142** is provided and is formed with a plurality of individual beads. The center of the lens is flat and is formed with a ring of beads and a plurality of tear shaped segments.

U-shaped brackets **148** have one of their legs affixed by fasteners **150** to the underside of the top wall **24** and depend therefrom, the opposing legs **152** of the brackets seating the peripheral edges of the lens **142** and mounting the lens in a detachable manner in a position to underlie the opening **26** in the top wall and to be dependably interposed between the opening **26** and the color wheel or screen **138**.

In use, the motor **58** is operative to rotate the bulb **72**, which is a low wattage bulb and, consequently, does not generate very much heat. Obviously, there is sufficient spacing between the color wheel **138** and the reflector, so that air is circulated in the reflector and in the casing to prevent any possibility of damage to the transparent patterned colored wheel or disc from the heat generated by the light source.

As the lamp bulb **72** and its supporting post **34** is rotated, within the sleeve **28**, the color wheel or disk **138** is rotated therewith and, consequently, the multi-colored design of the color wheel will effect a definite

variation in color projection and design. The light rays, emanating from the bulb **72**, will pass through the color screen or disc **138** and through the lens or diffuser **142** and through the opening **26**. The result will be extremely interesting, pleasing and novel design, since the primary light emanating from the light source will have a multi-color effect and a continually sparkling color variation, thus producing a multi-colored star design **26** or other design in the top wall.

Having thus described this invention, what is claimed is:

An illuminating device comprising a casing, a support mounted in the casing, said casing having an opaque wall opposed to said support and formed with a predetermined designed opening, a tubular post rotatably mounted in said support, means for rotating said post, a light source mounted on the post, a reflector surrounding said light source and fixed to said post for rotation coaxially therewith, a colored disc interposed in the path of the light rays emanating from the light source and fixed to the reflector, said disc comprising a plurality of adjacent colored segments, each of the segments differing in color from the adjacent segment and a multi-colored central section, a disc shaped diffusing element having a plurality of bead-like design portions, said element being mounted in the casing and underlying the opening in the said wall, said opening being substantially smaller than and being coaxially arranged with respect to said disc, said rotating means for the post including an electric motor, a gear fixedly circumposed on the post, said motor having a drive shaft disposed parallel to the post, a worm on said shaft, a gear enmeshed with said worm, a shaft for said gear, and a worm on said shaft enmeshed with said gear on the post.

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