Dec. 19, 1933. H. W. LAWRENCE 1,940,500

DISPLAY DEVICE

Filed March 23, 1933

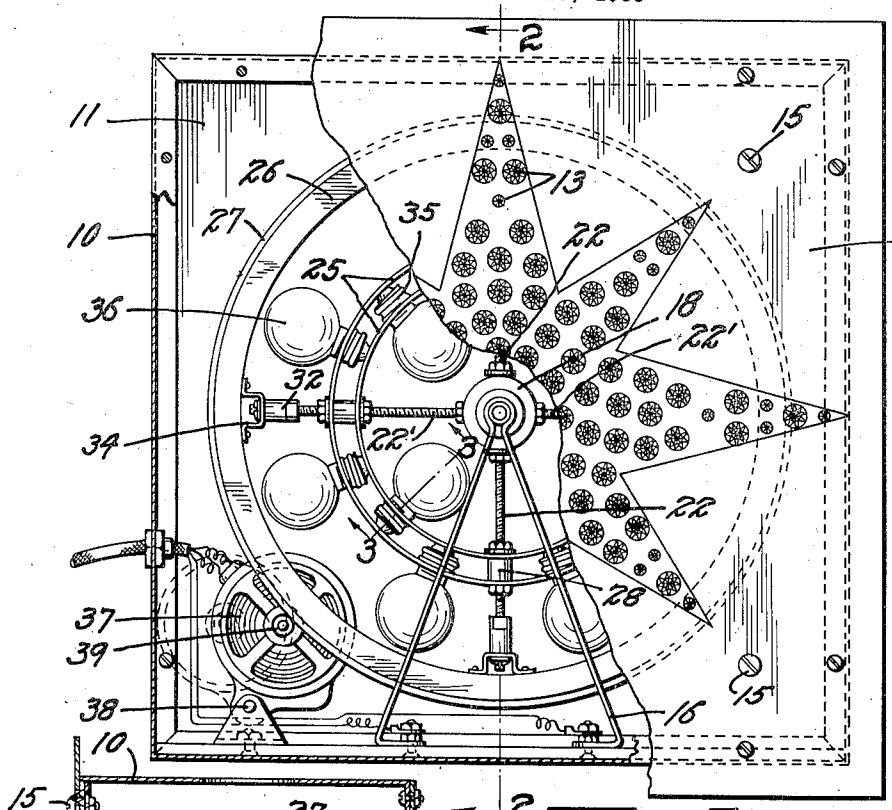


Fig. 1

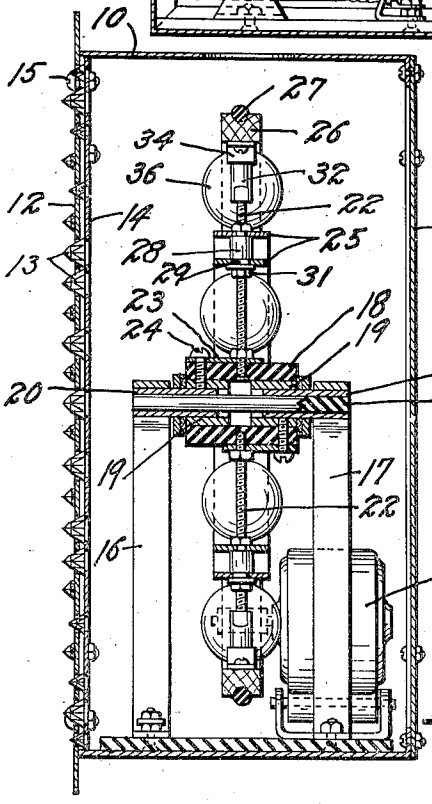


Fig. 2

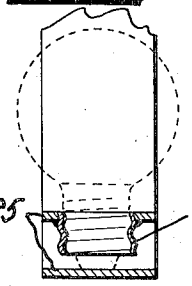


Fig. 3

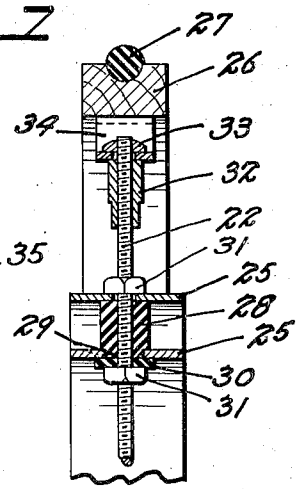


Fig. 4

Inventor

HARRY W. LAWRENCE

By

Attorney

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DISPLAY DEVICE

Harry W. Lawrence, Denver, Colo.

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10 Claims. (Cl. 40—133)

This invention relates to an electric display device and while it is more particularly adaptable to electric sign use, it will be found valuable wherever ornamental displays of animated brilliancy are desired.

In prior Patent No. 1,838,415 a disc carrying electric light globes was arranged for rotation on the rear of a jeweled sign face. This arrangement was not satisfactory for double face signs owing to the fact that an equal number of lamps were required upon both sides of the disc which doubled the current consumption. In addition to this the factory cost of a double face disc and its drive mechanism was prohibitive. An important object of the present invention is to provide a lamp wheel construction which will effectively illuminate a double faced sign without increasing the number of lamps formerly required for a single face sign.

The principal object of the invention is to provide a highly efficient means for moving electrical light sources in the rear of a series of faceted jewels so as to cause the facets of the jewels to reflect the moving light in constantly scintillating rays to create a vivid, dazzling, animated effect.

Another object of the invention is to provide an electric lamp wheel by means of which a series of electric lamps may be rotatably mounted and furnished with current without the use of wires, collecting rings, brushes, etc.

Another object of the invention is to provide means for quietly driving the lamp wheel which will eliminate the necessity for gears or belts and which will remove all driving elements from the face of the wheel so as to not obstruct the light from either face thereof.

Other objects and advantages reside in the detail construction of the invention, which is designed for simplicity, economy, and efficiency. These will become more apparent from the following description.

In the following detailed description of the invention reference is had to the accompanying drawing which forms a part hereof. Like numerals refer to like parts in all views of the drawing and throughout the description.

In the drawing:

Fig. 1 is a face view of an animated display device partially broken away to show the interior construction thereof.

Fig. 2 is a vertical section therethrough taken on the line 2—2, Fig. 1.

Fig. 3 is a detail section through the conductor rings of the lamp wheel, taken on the line 2—2, Fig. 1.

Fig. 4 is an enlarged section along one of the wheel spokes.

The particular display may be formed in any desired design, shape or size. As illustrated, it comprises a substantially square, open faced box 10. Both faces of the box 10 may carry displays if the device is to be positioned where both faces are visible. As illustrated, one face of the box is closed by means of a back plate 11. The other face is closed by means of a perforated front plate 12. The perforations in the plate 12 may outline any desired design, letter or character. As illustrated, they outline a star.

A faceted jewel 13 is placed in each of the perforations in the plate 12 and locked therein by means of a perforated clamping plate 14 which clamps the peripheral edges of the jewels. The perforations in the two plates 12 and 14 align with each other so that light may pass from the box 10 freely through the jewels 13. The two plates 12 and 14 are clamped together by means of suitable clamp screws 15.

If lights are moved within the box 10 they will project their rays through the jewels 13 at constantly changing angles so that the facets of the jewels will illuminate and scintillate. The lights are arranged for movement by mounting them in an especially constructed lamp wheel supported from two metallic brackets 16 and 17.

The lamp wheel comprises: a hub 18, formed of fiber, bakelite, or similar electrical insulating material. Two spaced apart bearing sleeves 19 project into opposite extremities of the hub 18. Short tubular shafts 20 project from the brackets 16 and 17 into the bearing sleeves 19. The tubular shafts 20 are supported in alignment with each other by an insulating shaft 21 formed of fiber, bakelite, or similar insulating material.

A series of radial spokes 22 project outwardly from and are supported by the hub 18. Certain of these spokes, such as the ones indicated at 22', are simply supporting spokes and carry no current. Two of the remaining spokes 22 are each connected in electric circuit with one of the bearing sleeves 19 by means of a conducting plate 23 and conducting screw 24. The spokes 22 and 22' support two concentric conducting rings 25 and an outer rim 26 which is preferably provided with a rubber tire 27. The conducting rings 25 are separated on the spokes by means of an insulating spacer 28 provided with a reduced extremity 29 which surround the spoke where it passes through the rings so as to completely insulate them there-

from. One of the spokes 22, however, is allowed to contact with one of the conductor rings 25, as shown in Fig. 4. The other spoke 22 is allowed to contact with the other conductor ring. The spokes may be placed in contact with either ring or insulated therefrom by either placing or omitting insulating washers 30 from under clamp nuts 31 which position and clamp the rings to the spokes. The outer extremities of each spoke is provided with a swivel nut 32 and a set nut 33 which act against a rim bracket member 34 to properly position the rim 26 in a concentric position.

Each of the conductor rings 25 is provided with a series of socket shells 25 to receive the bases of electric lamps 26. When a lamp is in position, its tip contact will contact with the opposite conductor ring so as to close the circuit to the lamp. The shells carried by the inner ring project the lamps inwardly and the shells carried by the outer ring project the lamps outwardly.

It can now be seen that we have a complete closed circuit through the lamps from the bracket 16, the bearing sleeve 19, one of the spokes 22, one of the conductor rings 25, through the lamps to the other conductor ring, thence through the other spoke 22 to the other bracket 17. This furnishes a constant supply of electricity to the lamps without the use of wires, collecting rings, brushes, etc.

The lamp wheel may be rotated in any desired manner. A preferred method of rotating it is illustrated in the drawing, in which an electric motor 37 is pivotally mounted as shown at 38 so as to be in an unbalanced position. This unbalanced position causes gravity to pull the motor pulley, indicated at 39, against the rubber tire 27 so that the rotation of the motor will be imparted to rotate the lamp wheel at reduced speed. The above mounting eliminates the necessity for gears, belts, or chains and eliminates all transmission noises. Another important result accomplished, however, is that there is no transmission mechanism between the lamp wheel and either face of the box 10 so that no shadows are thrown upon the jeweled faces even though both faces of the housing may carry jewelled characters.

The most important result accomplished by the present invention, however, is the illuminating of two sign faces (one on each face of the box) with same light globes that would be required for a single face. This cuts the current consumption in half for double faced displays. In addition to this, the lamps all lie parallel to the discs and in a common plane so that the box can be made much thinner than a box enclosing a disc with oppositely projecting lamps. The space required for the wheel and lamps in the present invention is but little more than the space required for the discs alone in the disc type carriers.

If used on a single face sign the backing plate 11 may be made with a reflecting inner face so that the light rays from both faces of the wheel will be thrown to the jewelled face.

While a specific form of the improvement has been described and illustrated herein, it is desired to be understood that the same may be varied, within the scope of the appended claims, without departing from the spirit of the invention.

Having thus described the invention, what is claimed and desired secured by Letters Patent is:—

1. A wheel for carrying electric lamps comprising: a first flat annular conductor ring; a second flat annular conductor ring; spokes maintaining said rings in spaced concentric relation; socket shells carried by one of said rings so that a lamp base screwed therein will make contact with the other of said rings.

2. A wheel for carrying electric lamps comprising: a first flat annular conductor ring; a second flat annular conductor ring; spokes maintaining said rings in spaced concentric relation; socket shells carried by one of said rings so that a lamp base screwed therein will make contact with the other of said rings; one of said rings being in electrical circuit with one of said spokes, the other of said rings being in electric circuit with another of said spokes; and means for supplying electric current to said latter spokes.

3. In an electric display device: means for moving an electric light source consisting of a wheel for carrying electric lamps, said wheel comprising: two spaced apart cylindrical bands, one of said bands being perforated, socket shells surrounding the perforations and secured to said one ring to receive a lamp base which, when in place, will make contact with the other of said bands; and means for rotatably supporting said bands in spaced relation.

4. In an electric display device: means for moving an electric light source consisting of a wheel for carrying electric lamps, said wheel comprising: two spaced apart cylindrical bands, one of said bands being perforated, socket shells surrounding the perforations and secured to said one ring to receive a lamp base which, when in place, will make contact with the other of said bands; means for rotatably supporting said bands in spaced relation; a rim spaced from and concentrically surrounding said bands and a power member contacting said rim to rotate said wheel.

5. Means for moving electric lamps within a display housing comprising: a pair of supporting brackets; journal members extending oppositely inward from said supporting brackets; a hub of insulating material; spaced apart bearing sleeves in said hub arranged to ride upon said journal members; a pair of spaced apart conductor bands concentrically surrounding said hub; a first spoke extending outwardly from said hub to support said bands, said spoke being an electrical circuit between one of said bearing sleeves and one of said bands; a second spoke extending outwardly from said hub and supporting said bands, said second spoke being an electric circuit within other of said bearing sleeves and the other of said bands; and means for conducting electric current to said journal members.

6. In an electric display device: means for moving an electric light source consisting of a wheel for carrying electric lamps, said wheel comprising: two spaced apart cylindrical bands, one of said bands being perforated, socket shells surrounding the perforations and secured to one of said bands to receive a lamp base which, when in place, will make contact with the other of said bands; means for rotatably supporting said bands in spaced relation; and a rim spaced from and concentrically surrounding said bands; and a power member contacting said rim to rotate said wheel, said bracket members being in electric circuit with said journal members so as to act as electric conductors thereto.

7. In an electric display device; means for moving an electric light source consisting of a wheel for carrying electric lamps, said wheel compris-

ing: two spaced apart cylindrical bands, one of said bands being perforated, socket shells surrounding the perforations and secured to one of said bands to receive a lamp base which, when in place, will make contact with the other of said bands; means for rotatably supporting said bands in spaced relation; a concentric rim supported by said spokes around said conductor bands; and a motor arranged to transmit power to said rim and rotate said wheel.

8. An electric display device comprising: a housing; a perforated face in said housing; faceted jawels mounted in the perforations of said face; a wheel rotatably mounted in said housing; electric lamps carried by said wheel; means for conducting current to said lamps; means for rotating said wheel, said wheel comprising: a hub of insulating material; spokes extending radially outward from said hub; a first conductor band concentrically supported by said spokes; a second conductor band spaced and insulated from and concentrically surrounding said first band; socket shells extending from each band toward the other band so that lamp bases screwed therein will close a circuit with said other band; and means for conducting electrical current to said bands.

9. In an electric light display device having oppositely positioned, light transmitting faces: an open wheel mounted between said faces; spokes in said wheel; two annular, spaced apart bands carried by said spokes; lamp receiving openings in one of said bands; socket shells projecting from said latter band about said openings and toward the other band so that lamp bases screwed therein will make contact with the other band; means for carrying current to said bands and means for driving said wheel.

10. In an electric light display device having oppositely positioned, light transmitting faces: an open wheel mounted between said faces; spokes in said wheel; two annular, spaced apart bands carried by said spokes; lamp receiving openings formed in both said bands; socket shells secured about the openings in each band and projecting toward the other band; lamps screwed into said socket shells and projecting radially inward from the innermost band and radially outward from the outermost band; means for supplying current to said bands; and means for rotating said wheel.

HARRY W. LAWRENCE.