E. J. THURBER.

ILLUMINATING DEVICE.

APPLICATION FILED MAR. 29, 1917.

1,238,220.

Patented Aug. 28, 1917.

2 SHEETS—SHEET 1.

Fig. 1.

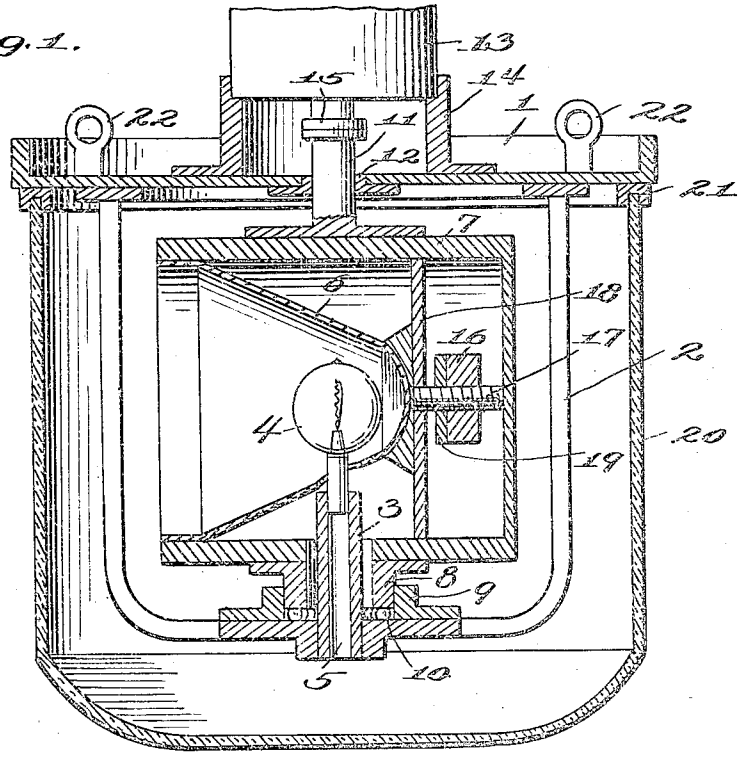
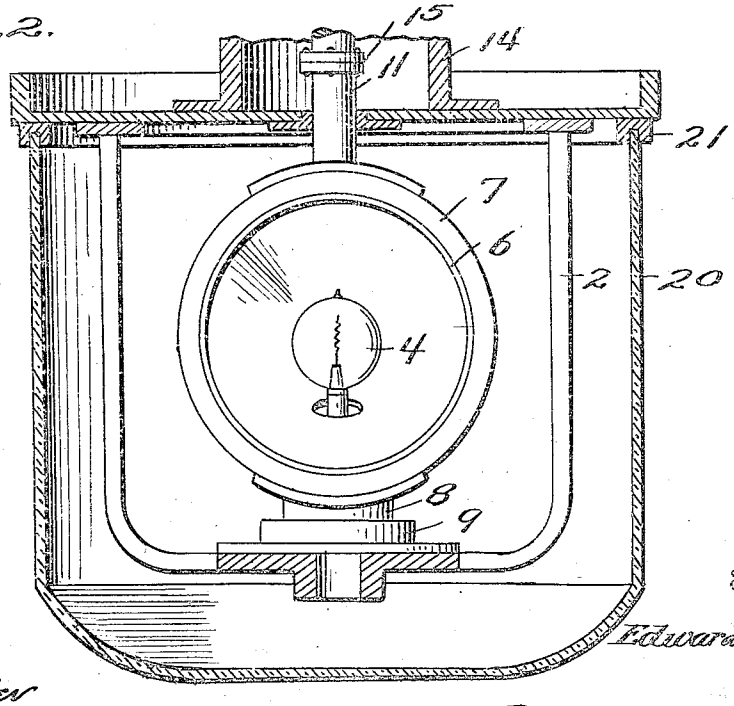


Fig. 2.



Witnesses

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2 SHEETS—SHEET 2.

Fig. 3.

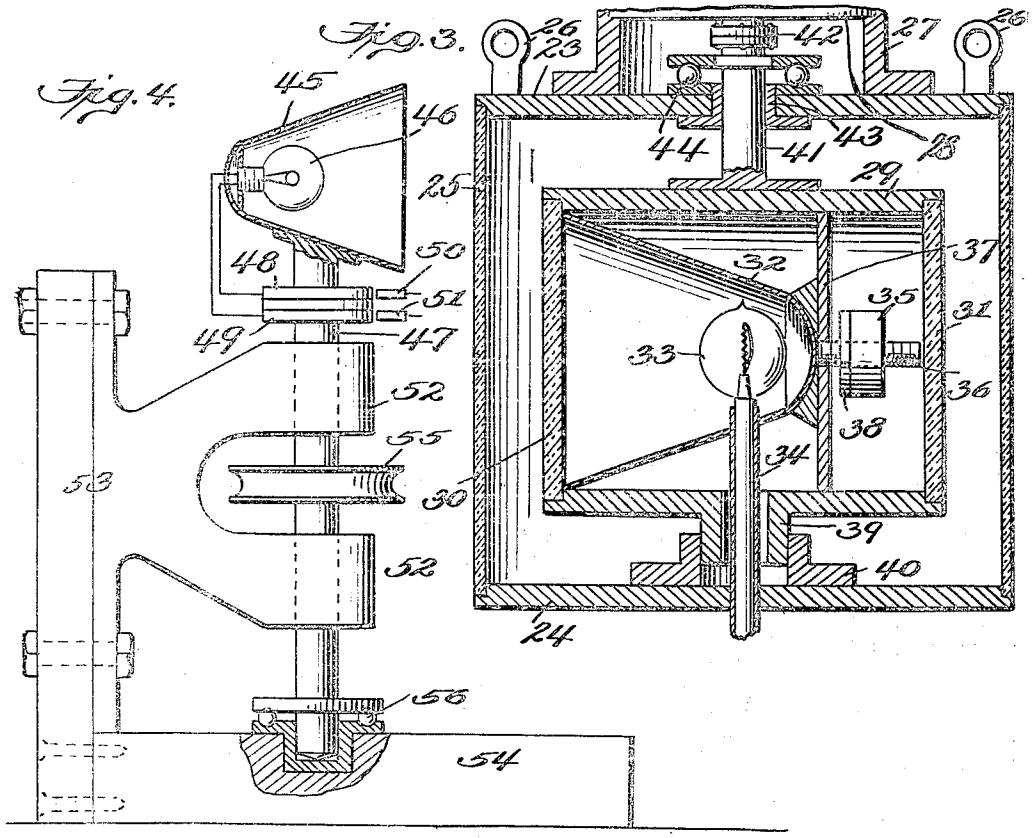
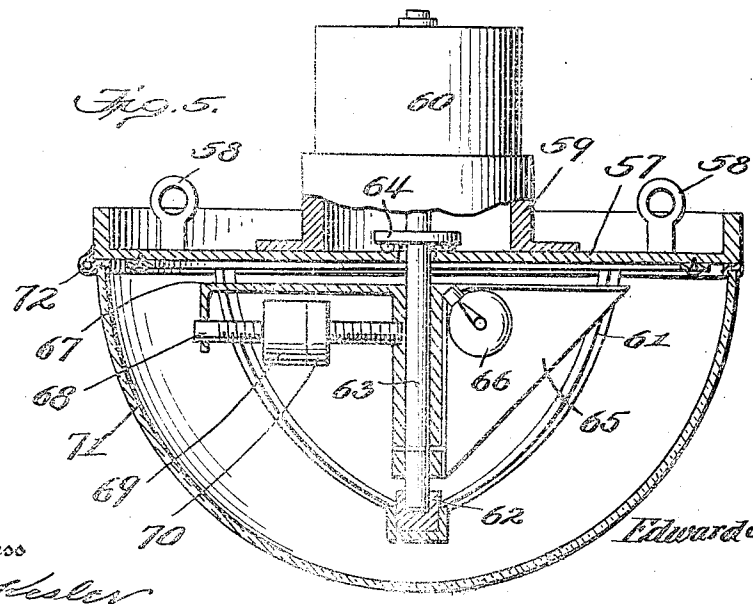


Fig. 4.

Fig. 5.



Witness

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UNITED STATES PATENT OFFICE.

EDWARD J. THURBER, OF NEW ORLEANS, LOUISIANA, ASSIGNOR OF TWENTY-SEVEN AND ONE-HALF ONE-HUNDREDTHS TO JOSEPH GUSTAVE OLIVIER, TWENTY-SEVEN AND ONE-HALF ONE-HUNDREDTHS TO WALTER H. COOK, AND FIVE ONE-HUNDREDTHS TO WILLIAM P. PARKHOUSE, ALL OF NEW ORLEANS, LOUISIANA.

ILLUMINATING DEVICE.

1,238,220. Specification of Letters Patent. Patented Aug. 28, 1917.

Application filed March 29, 1917. Serial No. 158,243.

To all whom it may concern:

Be it known that I, EDWARD J. THURBER, a citizen of the United States, residing at New Orleans, in the parish of Orleans and State of Louisiana, have invented certain new and useful Improvements in Illuminating Devices, of which the following is a specification.

My present invention relates to improvements in illuminating devices, and the primary object of the invention is to provide means whereby light may be spread or distributed in the form of a revolving field, or light may be radiated in any desired direction from the illuminating device as a point or axis.

According to the present invention, the light is concentrated or intensified and the concentrated or intensified beam of light is caused to revolve, the speed of revolution being relatively high in those cases where it is desired to distribute the light uniformly over a given area, and the speed of revolution being relatively low where it is desired to produce a flashing effect such, for example, as may be employed for advertising purposes. By setting the illuminating device at an appropriate angle in its rotation, the light may be projected in any predetermined direction.

In each instance, the desired amount of illumination can be obtained by the use of a source of light of relatively low power; hence economy in the consumption of electric current or other light-producing agent is attained.

To these and other ends, the invention consists in certain improvements, and combinations and arrangements of parts, all as will be hereinafter more fully described, the novel features being pointed out particularly in the claims at the end of the specification.

In the accompanying drawings:—

Figure 1 represents a central vertical section through an illuminating device constructed in accordance with the present invention.

Fig. 2 is a view similar to Fig. 1, but showing the reflector or light-concentrating and intensifying means rotated to a different angle.

Fig. 3 is a central vertical section of another embodiment of the illuminating device.

Fig. 4 is a side elevation, partly in section, showing another embodiment of the invention wherein the lamp and the reflector revolve.

Fig. 5 is a central vertical section of another embodiment of the invention wherein the lamp and reflector revolve.

Similar parts are designated by the same reference characters in the several views.

The perferred embodiments of the invention are shown in the accompanying drawings and will be hereinafter described in detail. It is to be understood, however, that the invention is not restricted to the particular constructions shown, as equivalent constructions are contemplated and will be included within the scope of the claims.

In the embodiment of the invention shown in Figs. 1 and 2, the illuminating device comprises a supporting plate 1 having the lamp and the light concentrating and intensifying means located at the under side thereof and having a motor or equivalent means for revolving the beam of concentrated or intensified light arranged at its upper side. As shown, a frame 2 is arranged at the under side of the plate 1 and is attached to this plate, the frame having a socket 3 for supporting a lamp, the lamp in the present instance being an incandescent electric lamp 4. The wires for conducting current to the lamp may extend through the hollow bore 5 of the socket. The means shown for concentrating and intensifying the light from the lamp comprises a high-power reflector 6 which is mounted in a substantially cylindrical shell 7, and this shell is mounted to revolve on an axis transverse to the axis of the reflector. For this purpose it is provided at its lower side with a bearing member 8 which coöperates with a bearing member 9, the latter being supported on the frame 2, the bearing member 8 resting preferably on a ball-bearing 10, and a shaft 11 is attached to the diametrically opposite or upper side of the shell 7 and coöperates with a bearing 12 in the plate 1. Any suitable means may be provided for imparting rotation to the shaft 11. As shown, an electric

motor 13 is mounted in a bracket 14 arranged on the upper side of the plate 1, and the shaft of the motor is connected to the shaft 11 by a suitable coupling 15. In order to balance the revolving unit comprising the shell 7 and the reflector 6, a weight or counterbalance 16 is provided, this counterbalance being adjustable in a direction radially of the axis of rotation of the revolving unit. As shown, a threaded stud 17 is attached to a wall 18 of the shell, the weight 16 is threaded on the stud, and a jam-nut 19 is also threaded on the stud and serves to lock the weight in any given adjusted position.

A glass or transparent globe 20 is provided to inclose and protect the revolving unit, this globe being removably fitted to the under side of the plate 1 by an attaching ring 21, and the illuminating device may be bodily suspended from a ceiling or other support by attaching wires, cables, or other suitable suspending means to the eye-bolts 22 attached to the plate 1.

In the embodiment of the invention shown in Fig. 3, a housing is provided which comprises top and bottom plates 23 and 24 connected by a cylindrical transparent or translucent glass 25, the plate 23 having eye-bolts 26 for suspending or supporting it and having a bracket 27 thereon for an electric motor 28. The revoluble unit in this embodiment of the invention comprises a shell 29 which is preferably cylindrical in form, the ends thereof being closed by transparent or translucent glass plates 30 and 31, and the shell 29 contains a reflector 32 for the incandescent electric lamp 33. This lamp, as shown, is fitted into and supported by a stationary or nonrotatable socket 34, which latter extends through and is supported by the bottom plate 24. The revoluble unit is balanced by a counterweight 35 which is adjustable on a threaded stud 36 supported by the wall 37 of the shell, and a jam-nut 38 is also threaded on the stud and coöperates with the counterweight to lock the latter in adjusted position. The shell 29 is mounted to revolve on an axis transverse to that of the reflector. To this end, it is provided at its lower side with a bearing member 39 which coöperates with a bearing member 40 supported by the bottom plate 24, and a shaft 41 is fixed to its diametrically opposite or upper side and is connected by the coupling 42 to the motor shaft. A bearing 43 in the plate 22 serves to center the shaft 41, and an anti-friction bearing 44 serves to support the weight of the revoluble unit.

In the embodiment shown in Fig. 4, the lamp and the reflector revolve as a unit. As shown, the device comprises a reflector 45 containing an incandescent electric lamp 46, the lamp and reflector being mounted in balanced relation on a shaft 47. Current is supplied to the lamp through a pair of collector rings 48 and 49 on the shaft, and these collector rings receive current from an appropriate supply through the brushes 50 and 51. The shaft 47 is mounted in bearings 52 forming part of a bracket 53, the latter being mounted on an appropriate base or support 54, and revolving motion is imparted to the shaft by a pulley 55 which is adapted to receive a driving belt or the like. An anti-friction bearing 56 is provided to sustain the weight of the shaft and the parts mounted thereon.

In the construction shown in Fig. 5, the illuminating device comprises a plate 57 having eye-bolts 58 which provide means for supporting or suspending the illuminating device from an appropriate support, and a bracket 59 is mounted on the plate 57 and serves to support an electric motor 60. A frame 61 is attached to the under side of the plate 57, and this frame has a bearing 62 for steadying a shaft 63, the latter being connected to the motor shaft and provided with an anti-friction bearing 64 which serves to sustain the weight of the shaft and the parts carried thereby. The shaft carries a reflector 65 and the reflector contains an incandescent electric lamp 66. Mounted on the shaft opposite to the reflector and lamp is an arm 67 and a threaded stud 68, the latter being provided with a counterweight 69 and a locking nut 70, whereby the weight of the reflector and lamp may be balanced. A transparent or translucent globe 71 is provided to inclose and protect the revolving unit. As shown, it is hinged to the plate 57, at 72, and its opposite side may be fastened to said plate.

In the arrangements shown in Figs. 1, 2 and 3, the electric lamp or source of light is stationary or non-revoluble, and the reflector is revoluble about the lamp or source of light as an axis. The reflector serves to concentrate or intensify the light of the lamp and its revolving motion distributes the concentrated or intensified light throughout a complete circle in those cases where the reflector is revolved continuously. By revolving the reflector at high speed, the frequency with which objects within the zone of light are illuminated results in a practically continuous illumination of such objects and high-speed rotation of the reflector can be obtained without vibration or noise, by virtue of the mechanical balance of the revolving unit. By revolving the reflector slowly, objects within the zone of the illuminating device are illuminated by a flashing effect. Instead of revolving the reflector continuously, it may be turned to any angle for the purpose of projecting the light in any given direction. In the embodiments of the invention shown in Figs. 4 and 5, the

lamp revolves in unison with the reflector, but the mode of operation and the effects obtained are the same.

Also, in the constructions shown in Figs. 1–4 inclusive, the source of light is not disturbed or interfered with by the revolving motion of the reflector, especially where incandescent electric lamps are used, as the lamp in the embodiments shown in Figs. 1, 2 and 3 is not revoluble and, hence, not subject to centrifugal force and, in the embodiment shown in Fig. 4, the lamp is in substantial alinement with its axis of revolution, thus minimizing centrifugal force tending to break the lamp bulb or its filament, or tending to detach the bulb from its base or discharge the lamp from its socket.

By employing a single source of light, concentrating or intensifying such light into a single beam, and revolving the beam to project the light in the directions of the various radii of a circle, the maximum efficiency is obtained, the efficiency in such case being much greater than would be obtained by using a plurality of sources of light reflectors for, in the latter case, the difference in phase of the light in the different light beams would reduce the projected light.

I claim as my invention:—

1. An illuminating device comprising a source of light, and means rotatable about the source of light as an axis and operative to concentrate and intensify the light into a single beam and to project the concentrated and intensified light beam radially with respect to the source of light.

2. An illuminating device comprising a single source of light, and a single reflector revoluble about the source of light as an axis and operative to concentrate and intensify the light and to project it in a radial direction.

3. An illuminating device comprising a source of light, a reflector revoluble about the source of light as an axis and operative to concentrate and intensify the light and to project it in a radial direction, and means for balancing the reflector with respect to its axis of revolution.

4. An illuminating device comprising a source of light, and a mechanically balanced reflector revoluble about said source of light as an axis and operative to concentrate or intensify the light and to project it radially of the axis of revolution of the reflector.

5. An illuminating device comprising a source of light and a reflector revoluble about the source of light as an axis and cooperative therewith to concentrate the light into a single beam, and means for projecting the beam of light radially.

6. An illuminating device comprising a non-revoluble source of light, and mechanically balanced revoluble means for concentrating such light into a beam and projecting such beam radially, and a motor for revolving said concentrating and projecting means.

7. An illuminating device comprising a source of light, mechanically balanced revoluble means for concentrating such light into a beam and projecting said beam radially, and means for revolving said concentrating and projecting means.

8. An illuminating device comprising a non-revoluble source of light, a mechanically balanced revoluble reflector operative to concentrate such light into a beam and to project such beam radially, the source of light being located substantially in alinement with the axis of revolution of the reflector, and means for revolving said reflector.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

EDWARD J. THURBER.

Witnesses:

FERNAND A. ROQUES,

LANAN J. RORESHIDE.