July 18, 1950 C. L. HOWARD 2,515,406

CLEAR AND RED WARNING HEADLIGHT

Filed Nov. 25, 1949

Fig. 1

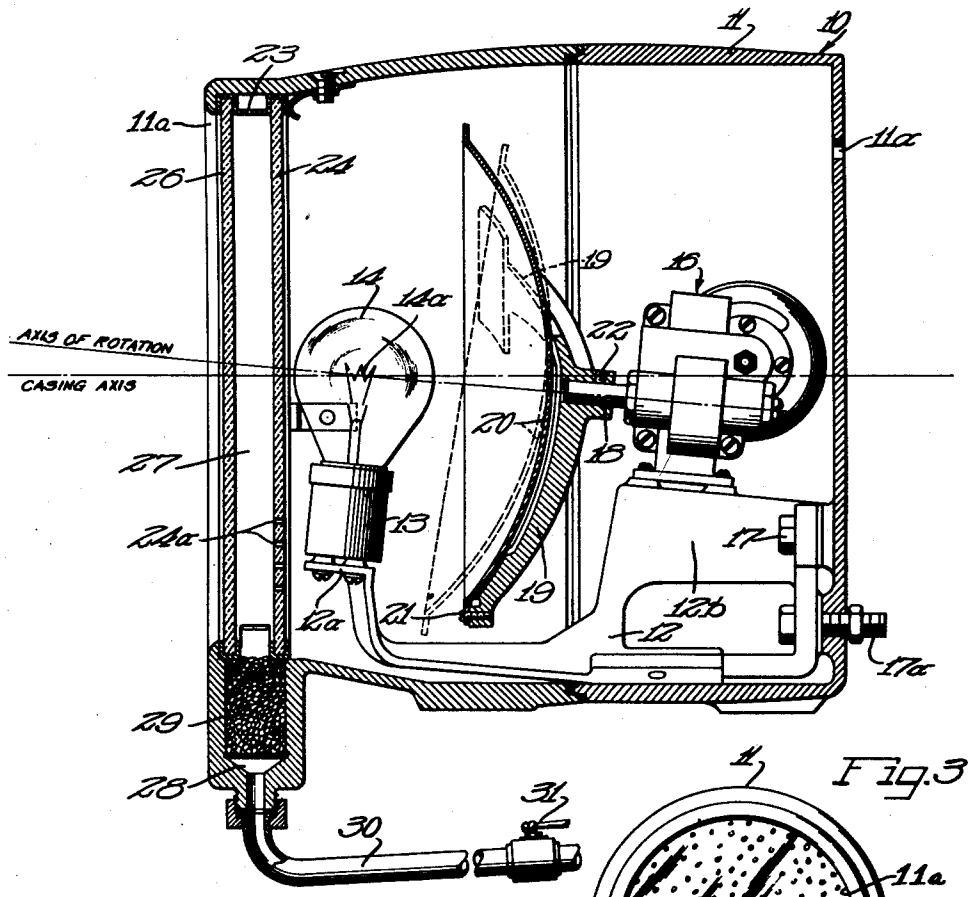


Fig. 2

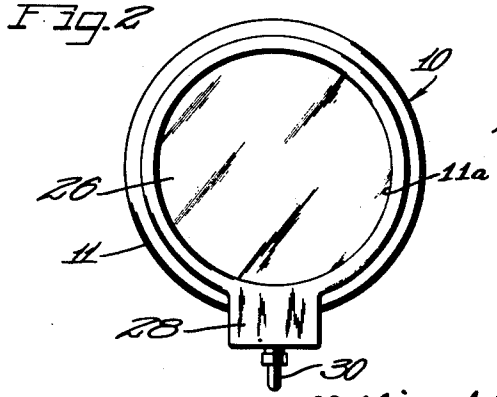
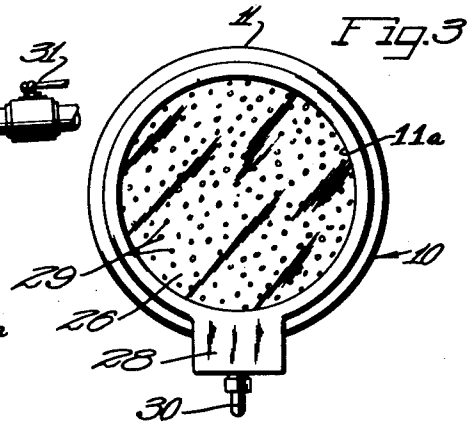


Fig. 3



Inventor
Charles L. Howard

By The Firm of Charles W. Hill Attys

Patented July 18, 1950 2,515,406

UNITED STATES PATENT OFFICE

2,515,406

CLEAR AND RED WARNING HEADLIGHT

Charles L. Howard, Claremont, Calif., assignor to The Pyle-National Company, Chicago, Ill., a corporation of New Jersey

Application November 25, 1949, Serial No. 129,324

5 Claims. (Cl. 177—327)

1

This invention relates generally to illumination apparatus used for warning and signalling purposes and more particularly relates to a warning light in which vari-colored beams of light may be produced.

According to the general features of the present invention, an open ended casing structure is provided having a translucent enclosure formed by spaced lens affixed in the open end of the casing. A source of light may be spaced from the enclosure within the casing and reflector means may also be provided to project a beam of light past the light source and through the enclosure. A plurality of colored movable particles, preferably heavier than air and either shaped to reflect their own light or being translucent to pass light therethrough, are contained within the enclosure so as to normally fall into an unobstructed pocket portion of the enclosure. Conduit means are provided to introduce an air stream into the enclosure so as to selectively propel the colored particles in all directions within the enclosure, thereby placing the colored particles within the beam of light and coloring the beam of light in accordance with the color of the particles.

It is then, an object of the present invention to provide a warning light constructed to produce vari-colored beams of light without necessitating the employment of mechanical parts to effect color changes.

Another object of the present invention is to provide a warning light structure wherein the beam of light projected may be selectively colored with movable particles each shaped to reflect its own light or constructed to pass light therethrough.

Yet another object of the present invention is to provide an unusually simplified vari-colored warning light readily adapted for use with existing facilities, for example, as a warning headlight upon vehicles such as railroad trains or the like.

Many other objects, advantages and features of the present invention will become manifest to those versed in the art upon making reference to the detailed description which follows and the annexed sheet of drawings in which:

Figure 1 is a cross-sectional view with parts in elevation showing a warning light constructed in accordance with the present invention;

Figure 2 is a reduced size end elevational view of the warning light shown in Figure 1; and

Figure 3 is a reduced size end elevational view similar to the view of Figure 2 but showing the colored particles of the present invention positioned as for changing the color of the beam of light.

2

As shown on the drawings:

The warning light of the present invention is indicated generally by the reference numeral 10 and may include a substantially cylindrical casing 11 having an open end as at 11*a*.

Along the bottom interior wall of the casing 11 is mounted a bracket 12 which includes a pedestal portion 12*a* adapted to support a socket 13 for a lamp bulb 14, the filament of which being indicated at 14*a*. The rear half of the bracket 12 is provided with an enlarged body portion 12*b* and is adapted to mount on a predetermined angular inclination a motor and gear housing indicated generally by the reference numeral 16, the purpose of which will become manifest presently.

The bracket 12 is preferably secured to the casing 11 by means of fasteners 17, one of which may include an enlarged stud 17*a* to permit the warning light to be permanently or temporarily mounted in a desired position upon a vehicle, for example, the engine or car of a train.

The electric motor and the reduction gear furnish power to an output shaft indicated at 18 which may be connected to a reflector spider 19 comprising an integral casting having a hub portion and a plurality of angularly spaced, radially extending arm portions, the bore of the hub portion being angularly eccentrically disposed relative to the periphery of the arm portions so that when the outward shaft 18 is rotated, the peripheries of the arm portion will move in a conically eccentric path with respect to the central axis of the casing 11.

The bracket 12 is constructed to support the motor and gear housing 16 in a predetermined angular disposition so that the output shaft 18 will be located in the vertical central plane of the casing 11 and the axis of the output shaft will preferably substantially intersect the theoretical point-source of rays emitted by the bulb 14 assumed to be at the locale of the bulb filament 14*a*.

It should be particularly noted that through the utilization of the common support bracket 12, the alignment of the output shaft axis with respect to the filament 14*a* is fixed, thereby permitting the unit to be repeatedly disassembled and assembled for maintenance or repair purposes without incurring any alignment problems.

A light reflecting disk 20 of generally circular peripheral configuration and which may be

parabolical or formed in other desirable curved configurations depending upon the specific beam characteristics to be attained is secured to the peripheries of the arms of the spider 19 by suitable fasteners 21.

It will be apparent that the reflecting axis of the reflector 20 will be angularly disposed relative to the axis of rotation provided by the output shaft 18. As a result, the reflector will cyclically shift in position relative to the light source and a wobbled beam will be projected outwardly through the open end 12 of the casing 11, such beam being wobbled over a generally conical path.

To facilitate the initial adjustment of the location of the filament 14*a* of the light bulb 14 with respect to the focal point of the reflector 20, the reflector supporting spider 19 is axially adjustably connected to the output shaft 18 and may be secured in any desired position by a set screw 22.

A lens retaining support 23 is provided in the open end 12 of the casing 11 and is adapted to support a pair of clear lens 24 and 26 in spaced assembly so as to define an enclosure 27 which is translucent and generally unobstructed. A pocket 28 is defined subjacent the enclosure 27 and contains a plurality of colored movable particles 29. The particles 29 are preferably heavier than air and may be colored in accordance with the hue desired in the beam of light.

The particles 29, by way of example, could comprise a plurality of hollow plastic balls about the size of small marbles and somewhat heavier than air or else could take the form of small particles having a plurality of facets on the peripheral surface thereof for reflecting light rays.

The pocket 28 is placed in communication with an air line 30 controlled by a valve 31. By opening the valve 31, a stream of air can be introduced into the pocket 28 and projected upwardly into the enclosure 27. The inner lens 24 may be provided with a plurality of apertures 24*a* so as to permit the air to escape from the enclosure 27 into the casing 11. One or more apertures 11*a* may also be provided in the casing 11 to permit the exit of the air from the casing 11.

In operation, the particles 29 are blown in all directions within the enclosure 27 upon introduction of a stream of air into the enclosure 27 from the air line 30 whenever it is desired to produce a colored beam of light. Because a movable beam of light is visible for a greater distance than a stationary beam of light, the present invention not only gains the advantages inherent in the production of a rotating or gyrating beam of light but, in addition, gains the advantages inherent in the production of a beam of light in which the colored movable particles each reflect their own light, as distinguished from the usual stationary color filters of the light structures heretofore provided in other well-known apparatus.

If a clear beam of light is required, it is only necessary to stop the stream of air flowing through the air line 30 into the enclosure 27 whereupon all of the colored moving particles 29 will fall into the unobstructed pocket 28 and out of the path of the beam of reflected light.

It will be apparent to those versed in the art that I have described a novel and improved warning light which requires no complicated mechanism to move colored filters into the path of a beam of reflected light and which is highly efficient for its intended purpose even though constructed of a highly simplified design and from a reduced number of elements.

It is contemplated that a person skilled in the art might suggest various minor modifications to the preferred embodiment herein described by way of illustrative example only, however, it should be understood that I do not propose to be limited to the precise details of structure herein set out for the sake of clarity but wish to embrace within the scope of this patent all such modifications as reasonably and properly come within the scope of my contribution to the art.

I claim as my invention:

1. A warning light comprising an open ended casing, light source means therein to project a beam of light outwardly through the open end of the casing, translucent enclosure means in the open end of the casing, a plurality of colored movable particles in the enclosure adapted to be selectively moved into and out of the beam of light, to color the beam of light in accordance with the color of the particles, each of said colored movable particles being heavier than air and shaped to reflect its own light, and means to selectively flow an air stream through the enclosure to selectively propel the colored particles into the beam of light.

2. A warning light comprising an open ended casing, movable light source means therein to project a gyrating beam of light outwardly from the open end of the casing, vented translucent enclosure means in the open end of the casing, a plurality of colored movable particles in the enclosure, an air line connected to the bottom of the enclosure and means to control the flow of air through the air line, whereby air may be flowed through the enclosure to propel the movable particles into the beam of light to color the beam of light in accordance with the color of particles.

3. A warning light comprising a casing, a source of light therein, reflector means spaced from the light source, motor means for rotating the reflector means, the axis of said reflector means being angularly displaced relative to the axis of the casing so that a gyrating beam of light may be projected outwardly through one end of the casing, a pair of spaced lenses in the open end of the casing, said spaced lenses defining a translucent enclosure, a plurality of colored particles in the enclosure, one of said lenses defining a plurality of apertures, and means to selectively flow an air stream into the enclosure means and out through said apertures to selectively propel the colored particles into the beam of light, to color the beam of light in accordance with the color of the particles.

4. A warning light comprising an open ended casing, movable light emanating means in said casing to project a beam of light outwardly from the open end of the casing, vented translucent enclosure means in the open end of the casing, a plurality of colored movable particles in the enclosure, an air line connected to the bottom of the enclosure and means to control the flow of air through the air line, whereby air may be flowed through the enclosure to propel the movable particles into the beam of light for coloring the beam of light in accordance with the color of particles.

5. A warning light comprising casing means, a source of light contained therein to project a beam of light outwardly through one end of the casing means, translucent enclosure means in the path of the beam of light and a plurality of colored movable particles in the enclosure adapted to

be selectively moved into and out of the beam of light to color the beam of light in accordance with the color of the particles, each of said colored movable particles being heavier than air and means to selectively flow an air stream through the enclosure means to selectively propel the colored particles into the beam of light.

CHARLES L. HOWARD.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
2,257,168	Hammond	Sept. 30, 1941
2,334,552	Hammond	Nov. 16, 1943
2,446,333	Kennelly	Aug. 3, 1948
2,464,318	Kennelly	Mar. 15, 1949
2,487,591	Ricci	Nov. 8, 1949