

Feb. 11, 1930.

W. A. DOREY ET AL

1,746,342

LUMINAIR

Filed Dec. 27, 1928

2 Sheets-Sheet 1

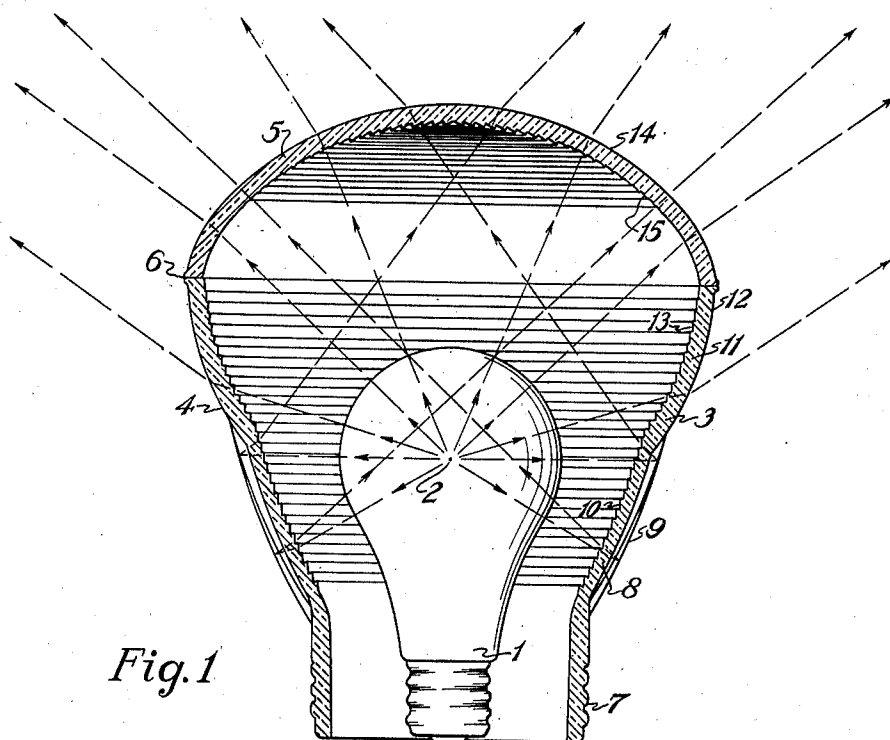


Fig. 1

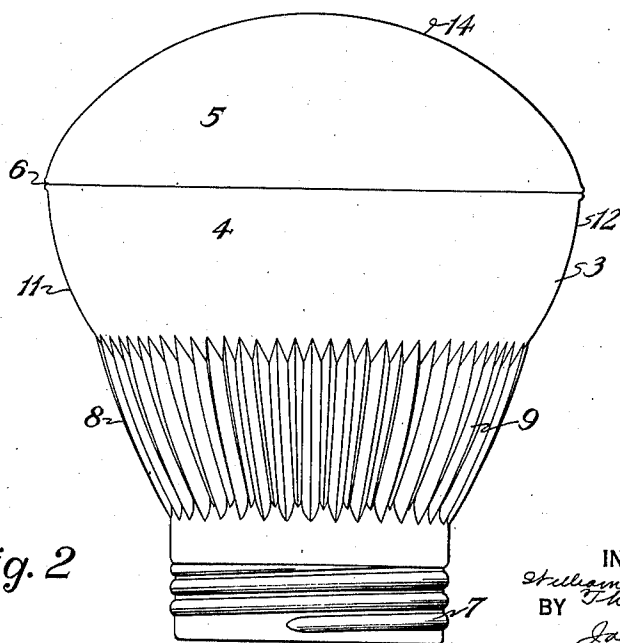


Fig. 2

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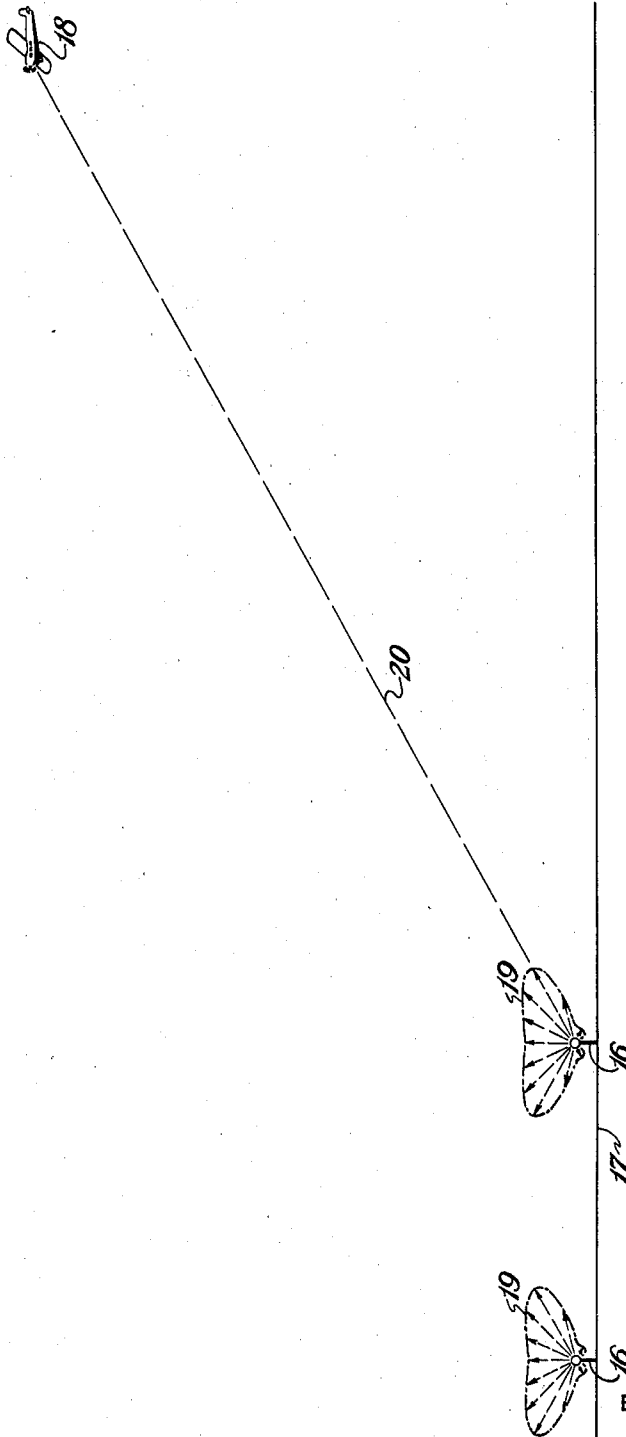


Fig. 3

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LUMINAIR

Application filed December 27, 1928. Serial No. 328,737.

The object of our invention is to produce a glass globe enclosure for artificial light used to define the location of aviation fields and also to mark obstacles in or about the fields. In order to make such boundary lights most useful it is desirable to obtain relatively high intensities through a wide range above the horizontal, and these requirements have here been met in a unit of practical size, having an opening which will admit a lamp of large size. The unit is here used in an inverted position, so that the beam is thrown upward and outward. It is substantially smooth on the outside having its prismatic construction mostly on the inside when used in such upright position and will give splendid results with practically no deterioration in spite of its use as an outdoor unit. It is designed not only for use in transparent crystal glass but in glass of any desired color, as the operation of the various parts is similar no matter what color is employed.

Fig. 1 is a vertical cross section of the device with the lamp shown in elevation and the course of typical light rays indicated. Fig. 2 is an elevation of the device. Fig. 3 is a diagram showing typical relationship between units placed on the field and an approaching airplane.

Referring to Figs. 1 and 2, 1 is an incandescent lamp bulb with source 2 indicated as a point. The glass enclosure 3 is made up of part 4 and part 5 which are welded together at 6. Part 4 has a plain threaded portion 7 at the base adapted to thread into a fixture. Above this is a zone 8 provided with reflecting prisms 9 on its outer surface and horizontal refracting faces 10 on its inner surface, the reflecting and refracting surfaces co-operating to redirect incident light from the source to the bowl part 5 as indicated by the direction lines. Immediately above zone 8, and integral therewith is zone 11 which is provided with convex smooth outer surface 12 and on the inside with horizontal refracting surface 13. Incident light striking this zone is refracted upward at a wide angle with the vertical as indicated by direction lines. The bowl 5 forms the uppermost zone of the enclosure and is provided with a convex smooth

outer surface 14 and has on its inner surface horizontal refracting ribs 15. This structure is designed and adapted to refract incident light direct from the source and reflected light from zone 8 in outward directions.

Referring to the diagram in Fig. 3, 16, 16 indicate boundary lights in position at either side of the field 17. 18 represents an airplane approaching the field. At 19 the distribution of intensity from the device is indicated diagrammatically and this distribution is such as to give substantially the same quantity of light to the eye at any position in a given horizontal plane within the cone. At wider angles than that indicated by the line 20, the intensity from the device falls off quite rapidly. While no definite law should be set for determining the angle of the cone through which the devices should be made especially effective, experience seems to indicate that it is good practice to make the cone element 20 at an angle of 50° to 65° with the zenith.

From the above it will be observed that a unit having substantially a smooth outer surface is obtained, yet having a wider distribution more adaptable to the service intended than has been heretofore known. Exposure will not cause appreciable deterioration as the rain will wash off dirt and dust from the smooth outside, the prismatic interior being substantially unaffected by such conditions. We have shown the device used in the inverted position, as used in aviation fields, so that the beam is thrown upward and outward, the aim being to get a maximum intensity at an angle of 55° with the zenith. The luminair can be used for other purposes, however, and in any desired position for other services.

As to color, it has been found just as effective in the conventional signal colors as in clear crystal glass.

We claim:

1. A boundary light for aviation fields comprising a light source and a prismatic globe, the globe having a lower section of reflecting prisms an intermediate section of refracting prisms refracting the light upward, and an upper section of prisms refracting the

light outwardly, all three sections cooperating to give a beam of high intensity at a predetermined angle above the horizontal.

2. A boundary light for aviation fields comprising a light source and an upwardly extending globe surrounding the source with a substantially smooth exterior, the globe having a lower section of reflecting prisms, an intermediate section of refracting prisms refracting the light upwardly, and an upper section of prisms refracting the light outwardly, all three sections cooperating to give a beam of high intensity at a predetermined angle above the horizontal.

3. A boundary light for aviation fields comprising a light source and an upwardly extending globe surrounding the source with a substantially smooth exterior, the globe having on its outermost lower section a band of vertical reflecting prisms and on its interior a series of refracting prismatic sections lying above and below a central plain section, all sections cooperating to give a beam of high intensity at a predetermined angle above the horizontal.

4. A boundary light for aviation fields comprising a light source and an upwardly extending globe surrounding the source, the globe having on its outermost lower section means for reflecting light rays to the inner upward parts of the globe and on its interior means for refracting direct and reflected rays in a beam of high intensity at a predetermined angle above the horizontal.

5. A boundary light for aviation fields comprising a light source and an upwardly extending globe surrounding the source with a substantially smooth exterior, the globe having on its outermost lower section means for reflecting light rays to the inner upward part of the globe and on its interior means for refracting direct and reflected rays in a beam of high intensity at a predetermined angle above the horizontal.

Signed at Newark, in the county of Licking and State of Ohio, this 24th day of December, 1928.

WILLIAM A. DOREY.
THOMAS W. ROLPH.

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