

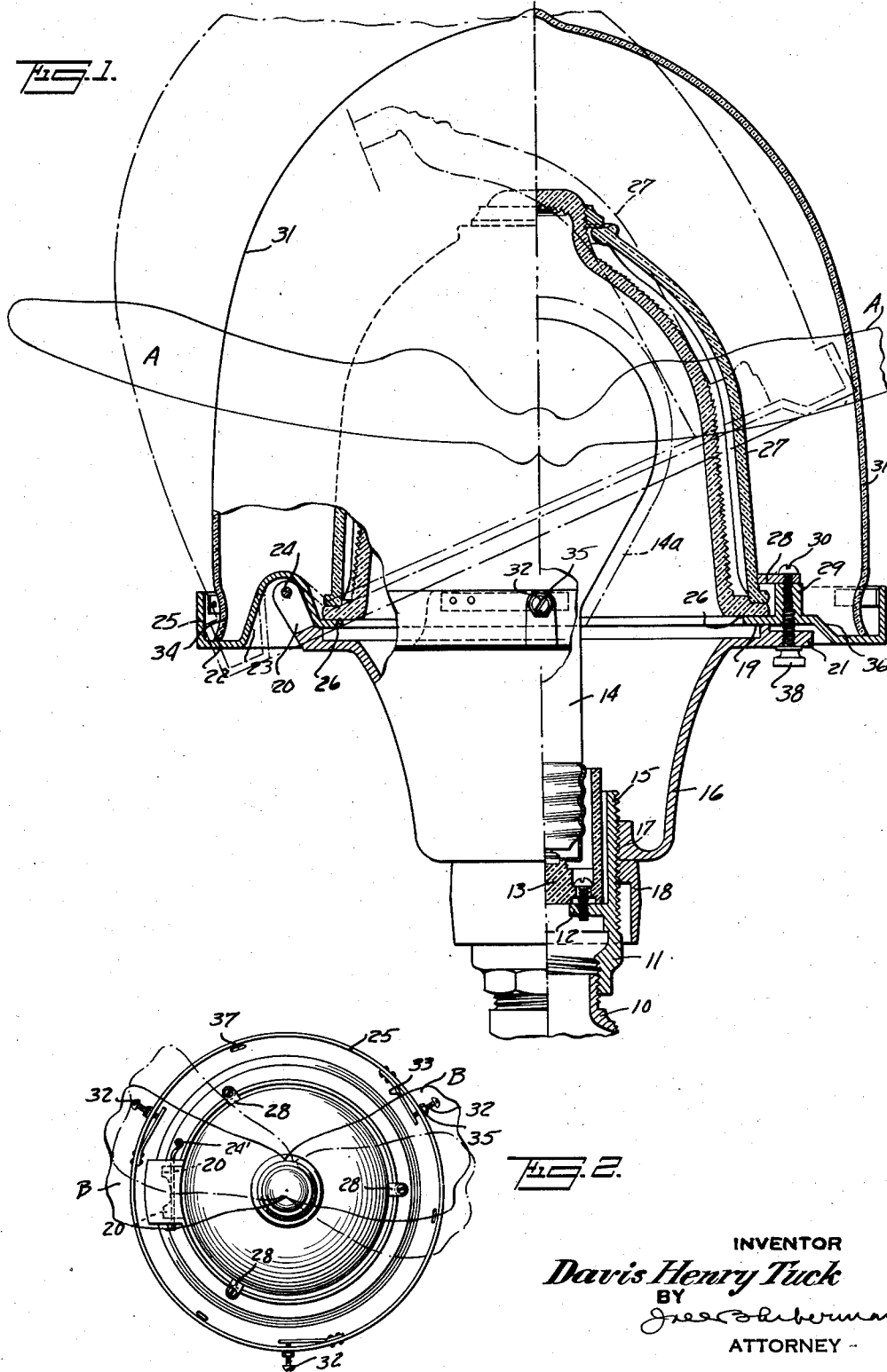
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LIGHTING UNIT

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UNITED STATES PATENT OFFICE

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LIGHTING UNIT

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4 Claims. (Cl. 240—1)

The present invention relates to lighting units and is more particularly directed toward lighting units designed for outdoor use and for illuminating objects above the level of the lighting unit.

5 Outdoor lighting such as street and yard lighting is generally designed to effect a desired light distribution on levels below the level of the lighting units employed. They are intended to light the entire area as evenly as possible consistent
10 with the mounting height of the units, the spacing employed, and characteristics of the units used. The lighting source and light controlling means, such as a refractor or reflector may in this type of construction be individually supported
15 so that the proper adjustments of light source and refractor may be made to accurately focus the lamp and secure the maximum efficiency of the refractor.

The present invention contemplates a lighting
20 unit more especially designed for outdoor use such as in lighting transmission line substations where it is desired to illuminate wires, lightning arresters, disconnecting switches, and the like which occupy regions of substantial area above
25 the ground. For more efficient use of the light and its accurate direction, a refracting unit is preferably employed about the light source. The present invention provides an arrangement of refractor and protecting envelope and supporting
30 parts so that the parts are protected against the weather and the light may be directed upwardly into extended areas.

The present invention also provides a form of apparatus suitable for this purpose wherein the
35 refracting unit may be orientated so as to distribute the light beams in the desired direction. The invention also contemplates a lighting unit for these and analogous purposes wherein the center of the light source may be adjusted so as
40 to bring its center at the focal point of the refractor employed, or to displace it to adjust the light beams for special purposes.

According to the preferred form of construction, the same parts are employed in adjusting
45 the light source that are employed in orientating the refractor.

The present invention also contemplates a lighting unit of this nature wherein the refractor and
50 outer envelope are secured to a supporting ring hingedly supported to the lower body of the unit so that these parts may be swung clear of the lamp bulb to permit relamping the unit.

The invention also contemplates an arrangement whereby the lamp socket is housed inside
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the focusing means so that the unit is made exceedingly compact.

Other and further objects will appear as the description proceeds.

The accompanying drawing shows, for purposes
60 of illustrating the present invention, one of the embodiments in which the invention may take form, it being understood that the drawing is illustrative of the invention rather than limiting the same.
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In the drawing:

Figure 1 is a vertical sectional view through a lighting unit embodying the present invention with parts in elevation and showing in dot and
70 dash lines the unit partially opened; and

Figure 2 is a top plan view of the lighting unit and the refractor with the other envelope omitted.

The present form of lighting unit is adapted to be supported on top of a post, bracket, or
75 other suitable support fragmentarily indicated at 10. The upper end of this support is threaded to receive a tubular member 11. This member is tightly secured in place on the post or support and is internally flanged as indicated at 12 to
80 support a lamp socket 13. This lamp socket is adapted to carry a lamp bulb 14 with its axis vertical. The outside of the tubular member 11 is threaded as indicated at 15 to receive a bell-shaped housing 16 threaded as indicated at
85 17. A lock nut 18 is also threaded onto the tubular member 11 underneath the housing 16. The housing 16 is generally round and is provided with a flat upper flange 19, upwardly extending lugs 20, 20 for a hinge, and an outwardly
90 extending lug 21 for a clamping screw. This housing may be conveniently made of an aluminum casting. A ring 22 somewhat larger in diameter than the housing 16 is carried above
95 the housing. This ring is recessed from underneath as indicated at 23 to accommodate the lugs 20 and hinge pin 24 and secures the plate or ring 22 to the housing 16. This hinge pin may consist of a length of brass wire secured to a
100 screw as indicated at 24.

The hinge axis 24 is placed so that the refractor will clear the larger sized lamp bulbs indicated in dotted lines 14a when the parts are adjusted for the lowest position of the refractor corresponding with the wider spread of the light
105 beams.

According to the preferred construction, the plate or ring 22 has an external flange 25 and an inwardly extending shelf 26 which slightly overlies the upper face of the housing. This
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shelf 26 is utilized to support a refracting bowl indicated generally at 27. This refracting bowl is held in place by clips 28 carried on bosses 29 extending upwardly from the plate 22 and held in place by screws 30 as indicated. One may employ a symmetrical refractor or an asymmetric refractor, such, for example, as shown in Dorey Patent 1,596,006. These refractors are designed to spread the light out uniformly in large circular areas, or long narrow radial areas. Where an asymmetric refractor is used, a vertical distribution curve of light may be somewhat as indicated at A, A in Figure 1. The horizontal light distribution of this light ray may be somewhat as indicated by the curves B, B of Figure 2.

A protecting envelope 31 may if desired be carried outside the refractor. This protecting envelope is secured inside the flange 25 by any convenient means, such, for example, as screws 32 and springs 33. The springs 33 are secured to the rim 25 and the screws 32 are adapted to press the springs inwardly against the recessed portion 34 of the protecting envelope. These screws may be locked in place by lock nuts 35.

To prevent the passage of water into the refractor where it might drain into the socket, the cast plate or ring 22 is preferably provided with a sloping surface indicated at 36 which drains the water outwardly so that it can pass out through drain holes indicated at 37. If desired, a gasket may be placed underneath the refractor. The plate and housing are secured together by a clamping screw 38 passing through the lug 21 and threaded into a tapped hole on the under side of the plate 22.

The unit may be readily installed on the support and to place the lamp in the lamp socket, it is merely necessary to remove the screw 38 and swing the plate 22 with envelope and refractor carried thereby upwardly as indicated in the drawing. When these parts have been swung back far enough, a lamp bulb may be inserted in the socket. The parts are preferably proportioned so that the hinged parts cannot be moved far enough to shift the center of gravity beyond the hinge center, so as to minimize the possibility of breakage.

In order to make adjustments of the glass relative to the lamp, the housing 16 is turned about on the stationary tubular support 11. It is apparent that this will effect a raising or lowering of the refractor relative to the center of the light source, thereby changing the angle of maximum distribution of the light in vertical directions. That is to say, the angle between the distribution curves A, A may be varied through a considerable range thereby varying the diameter or length of the zone to be illuminated. When the adjustment has been accomplished, the most intense light beams are directed into the desired vertical angle, and where the asymmetric refractor having the light curve as indicated is employed, one can orient the refractor so as to direct the light beam in the desired horizontal direction. The shifting of this is indicated by the dotted and full line light curves of Figure 2.

It will be noted that in effecting the orientation of the light source it will never be necessary to turn the unit through more than one-half of a revolution (where a two-way asymmetric refractor is used). This adjustment to effect desired horizontal distribution of light will have no material effect on changing the vertical angle of the most intense beams.

It is obvious that the invention may be embodied in many forms and constructions within the scope of the claims, and I wish it to be understood that the particular form shown is but one of the many forms. Various modifications and changes being possible, I do not otherwise limit myself in any way with respect thereto.

I claim:

1. An outdoor lighting unit adapted for illuminating objects above the level of the unit, said unit comprising a fixed support, an upwardly opening housing revolvably supported thereon, a ring carried by the housing, an incandescent lamp disposed inside the housing and extending above the ring, a refractor carried by the ring and surrounding the lamp, said refractor acting on the light rays to concentrate them into asymmetric beams above the plane of the light source, an outer protective envelope carried by the ring outside and above the refractor, a fixedly supported socket for the lamp, and cooperative screw threads between the housing and support for adjusting the height of the refractor relative to the socket and lamp, the threading being such that adjustment of the refractor to direct the asymmetric beams in desired horizontal directions is accomplished without substantially disturbing the adjustment along the axis of the unit.

2. In a lighting unit, a stationary lamp socket and lamp, an externally threaded socket support coaxial with the lamp socket, a light controlling device outside the lamp for concentrating light into asymmetric beams projected obliquely to the axis of the socket support, and a threaded support for the said device, said light controlling device and its support being revolvable on the threads of the socket support to effect the axial adjustment of the light controlling device relative to the lamp to vary the angle of the maximum beams relative to the axis and the orientation of the asymmetric beams about the axis.

3. A lighting unit comprising an externally threaded tubular supporting member, an upwardly opening lamp socket mounted within the member, an upwardly opening housing threaded onto the supporting member, a lamp bulb in the socket extending above the housing, a hinged ring carried by the housing, a refractor secured to the ring and disposed coaxial with the lamp socket, and a protective envelope carried by the ring covering the refractor, the housing refractor and envelope being rotatable as a unit about the threaded supporting member to variably locate the focus of the refractor relative to the center of the light source.

4. An outdoor lighting unit comprising a stationary upwardly opening lamp socket, a housing adjustably supported for movement along the axis of the lamp socket, a lamp in the socket extending above the housing, a plate hinged to the upper part of the housing with the axis of the hinge spaced substantially above the upper face of the housing, and a plate supported refractor having substantially vertical prismatic side walls close to the lamp bulb, adapted to upwardly and obliquely direct the light with the maximum beam at angles above the horizontal, the plate, refractor, and housing being movable along the axis of the lamp socket to effect adjustment of the refractor to vary the angle of said beams above the horizontal, the plate and refractor being movable about the hinge to allow access to the interior of the unit.

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CERTIFICATE OF CORRECTION.

Patent No. 1,978,236.

October 23, 1934.

DAVIS HENRY TUCK.

It is hereby certified that the name of assignee in the above numbered patent was erroneously written and printed as "Holoplane Company, Inc." whereas said name should have been written and printed as Holophane Company, Inc., as shown by the records of assignment in this office; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 12th day of February, A. D. 1935.

(Seal)

Leslie Frazer
Acting Commissioner of Patents.