

July 18, 1939.

R. E. CROSSLEY

2,166,393

LIGHTING UNIT

Filed April 8, 1937

2 Sheets-Sheet 1

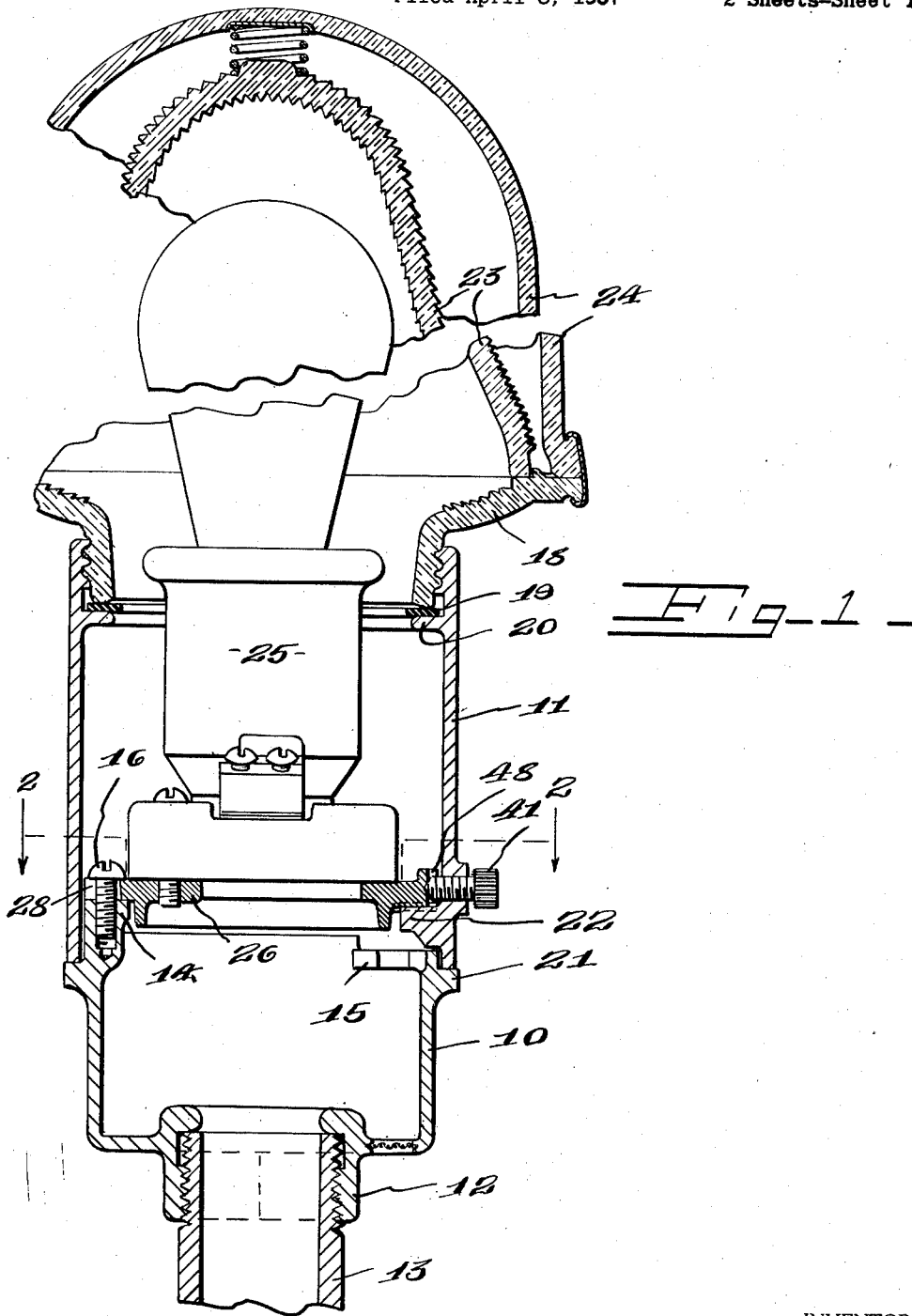


Fig. 1

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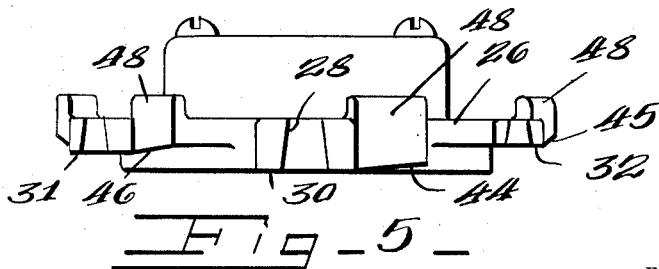
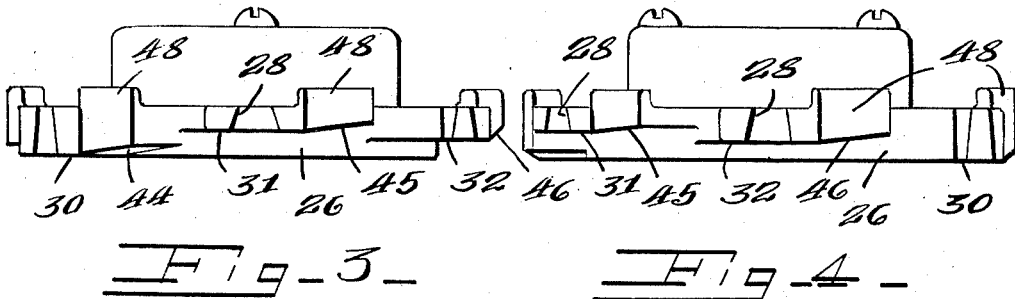
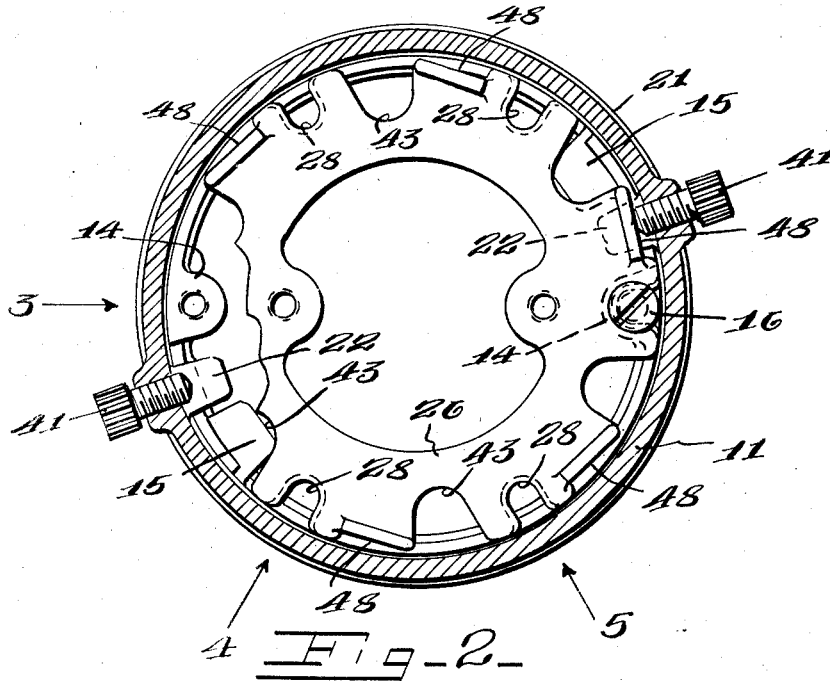
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2 Sheets-Sheet 2



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2,166,393

LIGHTING UNIT

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7 Claims. (Cl. 240—1.2)

This invention relates in general to lighting units, and more particularly to a lighting unit of the type requiring means for effecting relative adjustment between the light source and the light directing element of the unit, such as a reflector, or globe.

The embodiment of the invention here shown is intended as a boundary or marker light for airports and the like, and which is usually mounted upon a post, or other support, of appreciable height and being provided with a globe which directs the beam of light in a predetermined angle to the horizontal, the angle of the beam depending upon the position or location of the light source relative to the globe, and the required angle of the light beam depends upon the height at which the unit is mounted from the ground.

An object of the invention is a lighting unit of the type referred to embodying means for readily and conveniently effecting relative axial adjustment between the light source and the light directing element, and which means is rugged and durable in use.

The invention has as a further object a construction by which the globe may be readily detached from the base or body of the unit to permit relamping of the same without disturbing the predetermined location of the lamp to the light directing element.

The invention consists in the novel features and in the combinations and constructions hereinafter set forth and claimed.

In describing this invention, reference is had to the accompanying drawings in which like characters designate corresponding parts in all the views.

Figure 1 is a vertical, sectional view of the unit with the lamp receptacle in elevation.

Figure 2 is a view taken on lines 2—2, Figure 1, partly in cross section.

Figures 3, 4 and 5 are side elevational views of the receptacle supporting plate, said views being taken approximately as indicated by the arrows accompanying Figure 2 and designated 3, 4 and 5 respectively.

In its broader aspects, the invention comprises a lighting unit including a body portion provided at one end with means for attachment of a globe, and a receptacle supporting plate mounted in the body portion, and means for effecting relative axial adjustment between the receptacle supporting plate and said globe.

As here shown, the body portion comprises a base member 10 and a tubular globe supporting

member 11. The base 10 is preferably provided at one end with means for attachment to a conduit, such as an internally threaded hub 12, to receive the threaded end of a conduit 13. The base 10 as shown is of general cylindrical form, and is provided with opposed inwardly extending bosses 14, 15. The bosses 14 extend in the plane of the upper edge of the base 10, and are provided with internally threaded apertures to receive the screws 16.

The bosses 15 are arranged in circumferentially spaced apart relationship to the bosses 14 and a short distance below the plane of the bosses 14.

The globe supporting member 11 is provided at one end with means to detachably receive a globe 18. As here shown, the upper end of the member 11 is threaded internally to receive the threaded base of the globe, and which coacts with a gasket 19 arranged on an inwardly extending flange 20. The opposite or lower end of the globe support 11 seats upon a radial flange 21 formed on the base 10, and the globe support is formed with opposed inwardly extending bosses 22 arranged a slight distance from the lower edge of the tubular globe support.

The globe 18 is of the type which directs the light beam at a predetermined angle depending upon the relative position of the light source. This particular globe comprises a base portion on which is mounted an inner beam directing globe 23 and an outer plain surface protecting globe 24. The function of the outer globe 24 is merely to protect the inner globe 23 and particularly to prevent the accumulation of dust and dirt in the outer angular surfaces of the same.

The lamp receptacle designated generally 25 is mounted upon a supporting plate 26. The peripheral margin of the supporting plate 26 seats upon and is supported by the bosses 14 and is detachably secured thereto by screws 16 which extend through notches or recesses 28 formed in the periphery of the plate 26. The particular embodiment of the invention here shown is a lighting unit used as a marker or obstacle light in and about airports, and the rules of aerial navigation require that the beam emitted from this type of unit extend at a predetermined angle to the horizontal, which angle varies in accordance to the height at which the unit is mounted. For example, if the unit is mounted at a height of fifty feet or less, the angle of the beam is $7\frac{1}{2}^\circ$ upward from the horizontal. When mounted at a height between 50 and 100 feet, the angle is $2\frac{1}{2}^\circ$. As previously stated, the angle of

the beam depends upon relative axial adjustment of the light source with the beam directing globe 23. As here shown, the receptacle 25 and accordingly the lamp carrier thereby is adjustable axially of the body and globe. This adjustment is effected by mounting the receptacle supporting plate in different planes relative to the upper edge of the base 10, or bosses 14.

Referring to Figures 3, 4 and 5, the supporting plate 26 is formed or provided with a plurality of surfaces, or pairs of surfaces, coacting with the bosses 14, and each of these pairs of surfaces are arranged in a different axial plane. The surfaces 30 are arranged substantially in the plane of the lower surface of the plate 26, and the surfaces 31 are arranged in a plane adjacent the upper surface of the plate, and the surfaces 32 are arranged in a plane intermediate of the surfaces 30, 31. These surfaces, as previously stated, are arranged in diametrically opposed pairs to coact with the diametrically opposed bosses 14 on the base 10, and are also formed with apertures or slots 28 to receive the fastening screws 16. It will be observed by rotating the plate 26 to bring different pairs of the surfaces 30, 31, 32, into engagement with the bosses 14, axial adjustment of the plate 26 is effected.

The bosses 14, or equivalent supporting surfaces, may be arranged in a plurality of pairs with the surfaces of each pair arranged in different axial planes, and the receptacle supporting member 26 provided with a pair of opposed radially extending bosses coacting with such surfaces to obtain the adjustment previously described.

As units of the particular type herein referred to are usually mounted on tall poles, or the like, it is desirable to have a structure by which the unit may be readily taken apart, or partially disassembled, for the purpose of relamping the same. In the embodiment shown, the lower end of the tubular globe support 11 encircles the upper portion of the base resting upon the peripheral flange 21. Opposite sides of the upper portion of the base above the flange 21 are cut away to receive the opposed inwardly extending bosses 22, and the globe support 11 is provided with threaded apertures immediately above the bosses 22 to receive suitable set screws 41.

The receptacle supporting member 26 is provided with peripheral notches 43 arranged intermediate the surfaces 30, 31 and 32, and the plate 26 is also formed with angular surfaces 44, 45 and 46 adjacent the surfaces 30, 31, 32, respectively. The angular surfaces 44, 45, 46 extend upwardly from one side of the surfaces 30, 31, 32, the arrangement being such that when a pair of the surfaces 30, or 31, or 32, are located upon the bosses 14, the lower end of the globe support 11 may be telescoped over the upper end of the base with the bosses 22 passing through the notches 43 of the plate 26. Upon clockwise rotation of the globe support 11, Figure 2, the bosses 22 move into engagement with the adjacent angular surfaces of the plate 26, causing the globe support 11 to be moved axially toward the flange 21 and securely held thereagainst. The inwardly extending opposed bosses 15 formed in the base 10 are arranged or located beneath the notches 43. The purpose of this arrangement is to prevent the electrician from securing the receptacle plate 26 into position and then bringing the lead wires through the pair of notches 43 which are then positioned adjacent the bosses 14. This obviously would prevent sub-

sequent application of the globe support 11 inasmuch as the bosses 22 could not enter through the adjacent notches 43, if the same were already occupied by the lead wires for the receptacle.

In order to prevent counterclockwise rotation of the globe support 11, Figure 3, and permitting the same to become loosened from the base 10, the periphery of the plate 26 intermediate the notches 28, 43, and adjacent the angular surfaces 44, 45, 46, is formed with an angular surface 48, and these surfaces are accordingly arranged so as to be engaged by the inner ends of the set screws 41 when the same are tightened. The surfaces 48 are not arranged tangentially to the periphery of the plate 26, but extend in a slight angular relationship, as indicated in Figure 3, so as to prevent counterclockwise rotation of the globe support 11 even though the set screws 41 become slightly loosened due to expansion and contraction of the parts, or otherwise.

To relamp the unit, it is only necessary to loosen the set screw 41, turn the globe and globe support counterclockwise until the bosses 22 register with the adjacent notches 43 and lift the globe and globe support from the unit. This avoids the necessity of tampering with the connection between the globe and the globe support. Often in cold weather, moisture collects around the base of the globe and becomes frozen, with the result that if it is attempted to unscrew the globe from the globe support, the globe is often broken.

What I claim is:

1. A lighting unit of the class described comprising a cylindrical base formed with opposed inwardly extending bosses, a receptacle supporting plate formed with a plurality of surfaces arranged in different axial planes and coacting with said bosses to position said plate in different axial positions relative to the base, and means for detachably connecting said plate to the base in any selected position.

2. A lighting unit comprising a body, a globe detachably secured at one end of the body, said body being provided, intermediate its ends, with internal supporting surfaces, a receptacle supporting plate mounted in the body on said supporting surfaces, the peripheral margin of said plate being provided with a plurality of surfaces coacting with said supporting surfaces of the body, said surfaces on the receptacle plate being arranged in different axial planes to effect axial adjustment of the plate relative to the body and said globe.

3. A lighting unit comprising a body provided with means at one end to receive a globe and being formed intermediate its ends with inwardly extending supporting surfaces, a receptacle supporting plate, said plate being provided at its periphery with a plurality of surfaces coacting with the supporting surfaces of the body, and said surfaces on the receptacle supporting plate being arranged in different axial planes to effect axial adjustment of the plate relative to the body, and means for detachably securing the plate to the body in any of said adjusted positions.

4. A lighting unit of the class described comprising a cylindrical base member, a receptacle supporting plate detachably mounted on one end of said base member, a tubular globe support member mounted on said base and being provided with means cooperable with said plate for detachably securing said globe support to the base.

5 5. A lighting unit comprising a base member, a receptacle plate formed with a plurality of surfaces coacting with the base member to position said plate in different axial positions relative to said base, means for detachably connecting said plate to the base in any selected position, a globe support mounted on the base and means carried by the globe support and cooperable with said plate, when in any selected position, to detachably secure said globe support to the base.

10 6. A lighting unit of the class described comprising a cylindrical base member formed with opposed notches at one end and inwardly extending bosses adjacent said notches, a receptacle supporting plate mounted in the end of said base member and being formed adjacent its periphery with a plurality of surfaces arranged in different axial planes and coacting with said bosses to position said plate in different axial positions relative to the base, said plate being also formed with peripheral notches adjacent said surfaces, a tubular globe support provided at one end with opposed inwardly extending projections arranged to pass through the notches

formed on said plate and upon subsequent relative rotation between said globe support and base to engage the under side of said receptacle support and secure the same to the base member.

7. A lighting unit of the class described comprising a base member, a receptacle supporting plate member, a receptacle secured to said plate member, said base member being formed with inwardly extending surfaces, and said plate member being formed with surfaces adjacent the periphery thereof and coacting with the surfaces of the base member, whereby the plate member is supported by the base member, one of said members being formed with a pair of such surfaces, and the other member being formed with a plurality of pairs of such surfaces with each pair arranged in a different plane axially of said members, the pair of surfaces on said one member being arranged to engage any selected pair of said other member by relative rotation of said plate member with said base member, and means for detachably securing the plate member to said base member.

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