Oct. 6, 1959 D. W. HARLING 2,907,544

FLUORESCENT LUMINAIRE AND MOUNTING ARRANGEMENT THEREFOR

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Fig. 1

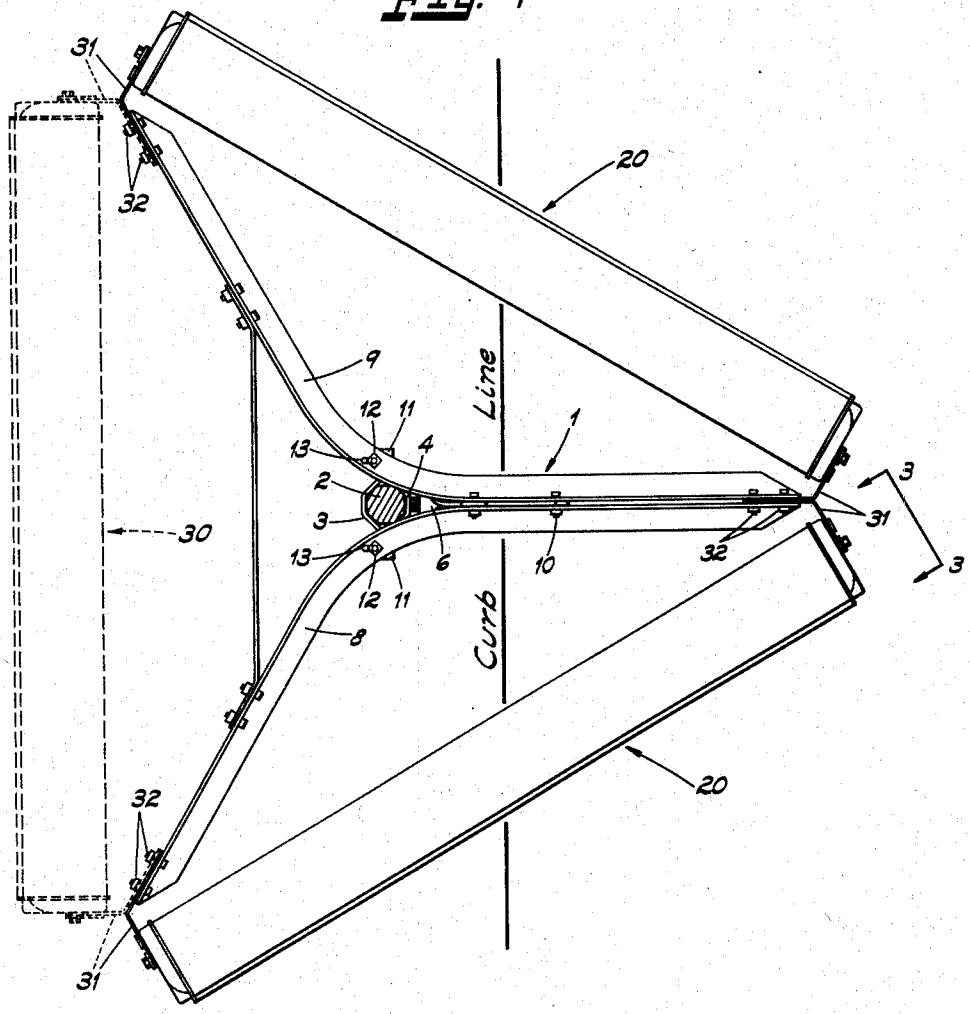
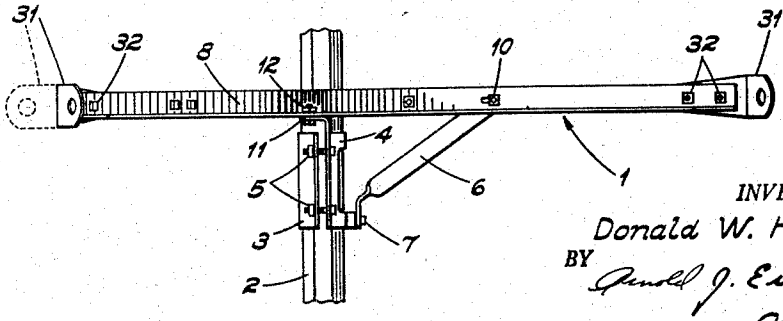



Fig. 2



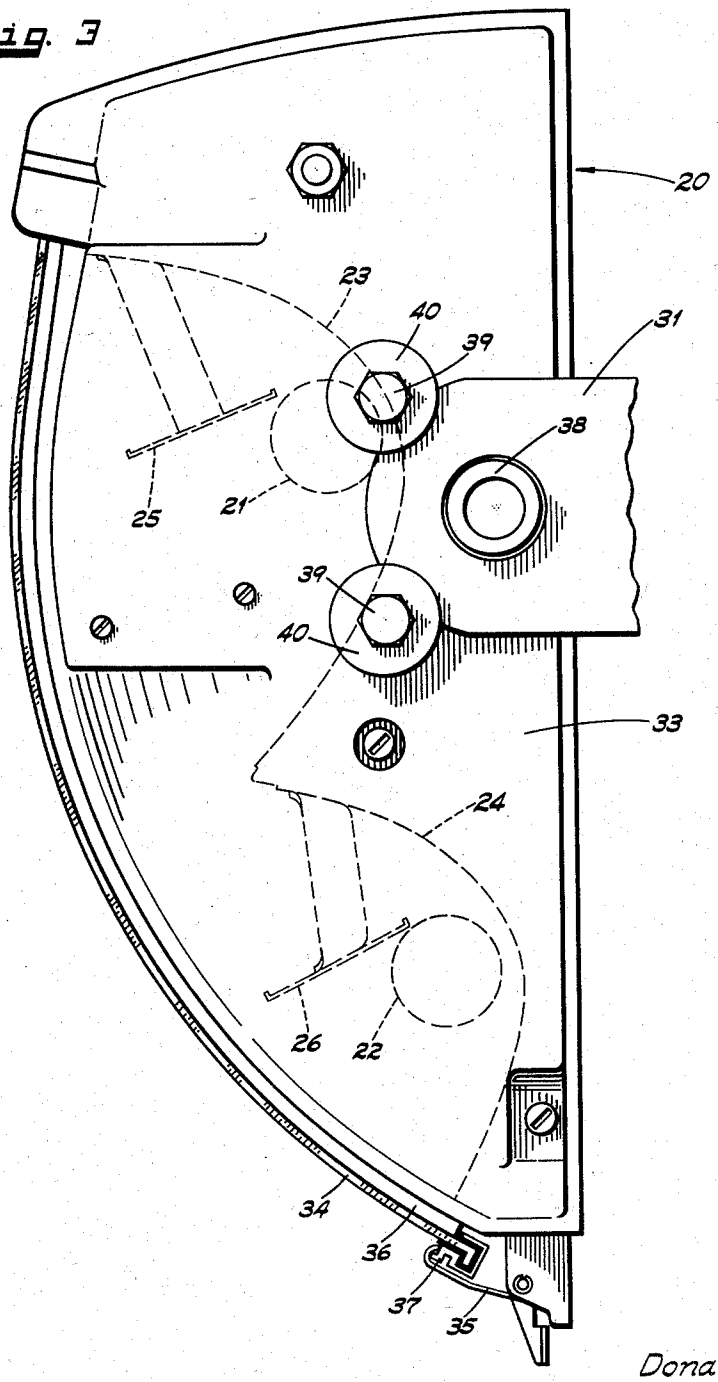

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Fig. 3




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FLUORESCENT LUMINAIRE AND MOUNTING ARRANGEMENT THEREFOR

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Fig. 4a

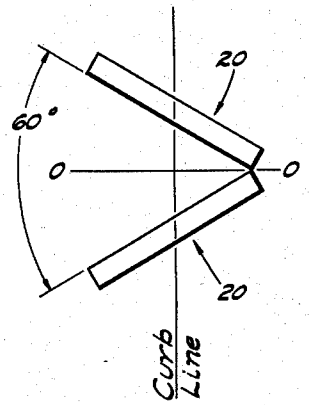



Fig. 4b

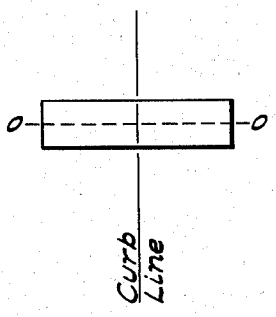



Fig. 4c

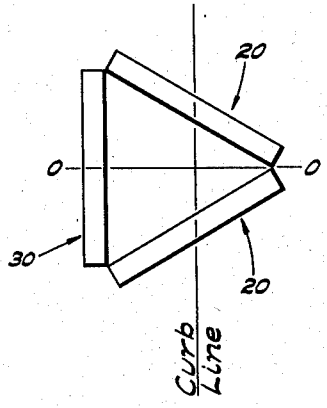
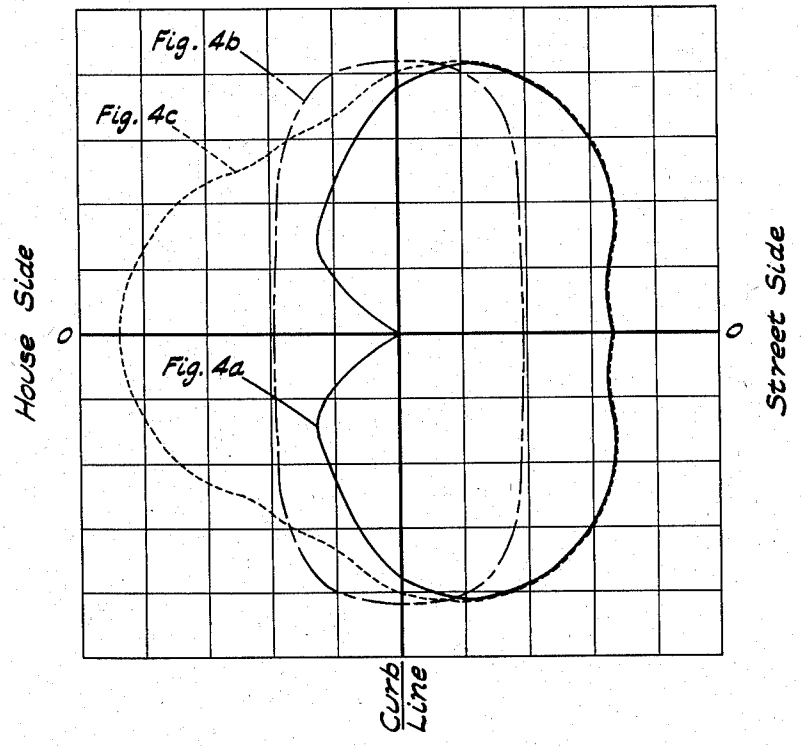



Fig. 4




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# FLUORESCENT LUMINAIRE AND MOUNTING ARRANGEMENT THEREFOR

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Application January 28, 1955, Serial No. 484,805

2 Claims. (Cl. 248—230)

The present invention relates to a fluorescent street lighting luminaire, and more particularly to a mounting arrangement and support therefor.

In recent years, fluorescent street lighting has become increasingly popular for the reason that fluorescent luminaries provide a relatively large light source with a minimum of brightness or glare. In addition, the power consumption of the fluorescent luminaire is comparatively low. For example, in most installations, each lamp only draws approximately 100 watts at a current rating of 1 ampere, with the ballasts only consuming approximately 50 watts. In addition, the cool white color of fluorescent lamps will appear to more nearly reproduce actual daylight color characteristics than incandescent lamps or even mercury vapor high pressure lamps.

Fluorescent luminaires, in general, do not have a great deal of lateral control of their light pattern, which has been considered to be somewhat of a disadvantage. However, it is generally agreed that surrounding areas adjacent to the curb should be illuminated in order to gradually fade out those areas and to make the background contrast as little as possible for easy accommodation of the human eye. The spreading light pattern materially reduces the so-called "tunnel effect" permitting a motorist driving down the street to see objects, such as cars coming in off the side streets or pedestrians approaching the curb line preparatory to crossing the street. Lighting of the surrounding areas gives the driver a chance to anticipate actions by those people not actually in his lane of traffic, but who may drift out into his lane.

It is the principal object of the present invention to provide a fluorescent street lighting luminaire mounting arrangement that will give the maximum light distribution on the street itself, permitting a certain amount of the light pattern to be transferred from the house side of the curb line to the street without departing from the beneficial aspects of background lighting as heretofore described.

It is another object of the present invention to provide a fluorescent street lighting luminaire mounting arrangement that is adaptable for use in both street lighting and lighting of general areas such as shopping-center parking areas and playgrounds and the like where a nearly circular distribution is desired at the ground level, and with little or no modifications of the mounting structure being required.

Specifically, the present invention provides a means for supporting fluorescent street lighting luminaires in a manner that will permit light emanating therefrom to provide lateral candlepower distribution closely approximating accepted standards and specifications. More particularly, these standards are established by the Illuminating Engineering Society and American Standards Association as recorded in their joint publication entitled "American Standard Practice for Street and Highway Lighting," approved February 27, 1953. The standards, in section 2 thereof, set forth five recommended lateral distribution



curves prepared from readings taken in the cone of maximum candlepower. Type IV lateral distributions, as set forth, have a preferred lateral width of 60 degrees with an acceptable range of 50 degrees or wider, and is intended for side-of-road mounting and is generally used for relatively wide roads and in business districts. Heretofore, fluorescent lighting has been very limited in its lateral distribution because of the elongated nature of the light source as compared to an incandescent lamp which is substantially circular light source controllable by means of refracting prisms in a relatively small outer bowl. It will also be apparent that an incandescent light source is readily adaptable for ust in type V lateral distribution, which has a circular symmetry of candlepower at all lateral angles, and which is intended for luminaire mounting at or near the center of a roadway, in the center islands of parkways, at intersections, and the ever increasing use for parking areas adjacent suburban shopping centers.

The present invention provides a convenient mounting means adapted to support a pair of angularly disposed fluorescent street lighting luminaires to provide desired lateral and vertical light distribution including a relatively wide lateral distribution, such as IES type IV distribution; the invention also includes the provision of a mounting structure for supporting a third luminaire to provide a nearly circular lateral light distribution such as the IES type V distribution, necessitating little or no modification of the mounting bracket.

Referring now to the drawings:

Fig. 1 is a top plan view, partly in section, of an installation of a fluorescent street lighting structure, with the luminaires illustrated in full lines being arranged for elongated lateral light distribution and an auxiliary luminaire being shown in dotted lines for installations requiring a nearly circular lateral light distribution.

Fig. 2 is a fragmentary side elevational view of the installation with the various fluorescent luminaires removed from the mounting supports.

Fig. 3 is an end elevational view taken on lines 3—3 of Fig. 1, illustrating a preferred fluorescent luminaire to be used with the mounting bracket.

Fig. 4 is an isolux diagram of the comparative light distribution taken at the same candlepower of three different mounting installations, each being diagrammatically illustrated in the respective Figs. 4*a*, 4*b*, and 4*c*.

Referring now to Figs. 1 and 2, the preferred mounting bracket is generally denoted by the reference numeral **1** and is arranged to be mounted on and fastened to a conventional ornamental street lighting standard **2**. In the case of most conventional street lighting standards, it is preferable to mount the bracket by means of embracing half-bands **3** and **4**, respectively, which bands are drawn towards embracing relationship by a plurality of mounting bolt and nut assemblies **5**. An angle brace **6** is fastened to the lower portion of the half-band **4** by means of a bolt **7** and to both angular support members **8** and **9**, respectively. The angular support members for strength reasons are preferably provided of angle iron or similar material, and are placed in back-to back relationship along one side thereof with the angle brace **6** being disposed therebetween by means of a thru bolt assembly **10**.

The half-band **4** is preferably provided with extensions **11** projecting from its outwardly extending flange portions for horizontal support of the respective angular support members **8** and **9**, which are mounted thereon by means of bolt and nut assemblies **12** received by the elongated slots **13** in each of the support members. The slots **13** are elongated to provide for maneuvering the supports into mounting position in case of variations in the various cooperating pieces and/or the standard **2**.

An important aspect of the present invention is the configuration of the bracket assembly, which permits the luminaires, denoted generally by the reference numeral **20**, to be disposed relative to one another preferably at an angle of 60° as shown in the diagrammatic view of Fig. *4a*. Thus, the angular support members 8 and 9 are each individually formed at an angle of approximately 120° to provide an equilateral triangle defined by the free ends of the support members when fastened in mounting position on the pole or standard tube. As shown in Fig. 1, it is preferable to position the entire luminaire assembly with the curb line passing approximately centrally of each of the luminaires **20** (shown here in full lines). This position is also indicated diagrammatically in Fig. *4a* and by the full lines in the isolux drawing of Fig. 4. The luminaires are each provided with two fluorescent lamps indicated in the dotted lines by the reference numerals **21** and **22** of Fig. 3, although more or less of the lamps may be positioned in the luminaire if such is desired for lesser or greater intensity. Appropriate reflectors **23** and **24** and deflectors **25** and **26**, nearly coextensive with the longitudinal axis of the elongated luminaire, all being illustrated in cross section by the dotted lines in Fig. 3.

The reflector and deflector configuration is more fully described and claimed in the copending application Serial No. 484,703, filed on January 28, 1955, by Donald W. Harling and assigned to the same assignee as is the present invention.

It is also to be noted that the present mounting arrangement permits the pole or standard **2** to be positioned substantially at the center of gravity of the mounting bracket **1**, to provide a balanced arrangement for the luminaires. This is especially beneficial for outdoor mounting where the relatively long luminaires are subjected to wind and the weight of snow, in addition to the fact that a relatively wider lateral light distribution is obtained, approximating the IES type IV distribution which includes the 60° angle at the main candlepower beam.

The angular arrangement of the luminaires **20**, and especially the 60° angle, provides excellent light distribution, approximating the IES type IV lateral distribution, as may be seen with reference to Figs. 4 and *4a*. A standard two-way luminaire as shown in the diagram of Fig. *4b* provides an approximately equal light pattern on the street level with opposed halves providing approximately a type I lateral light distribution with the added advantage of a relatively greater width. The arrangement of the present invention provides a light distribution pattern at the street level as shown in the full lines of Fig. 4, and which offers the desired background lighting at the house side of the curb line along with an even greater light distribution on the street where it is most desired. This is done by taking the theoretical 2 halves of a two-way luminaire, such as the one illustrated in Fig. *4b*, and angularly disposing the "halves" relative to one another to physically move the light pattern outwardly towards the street.

The angle of 60° very nearly approximates the accepted angle at half maximum candlepower for the type IV lateral distribution. Another important feature of the 60° mounting, and especially relating to the equilateral triangular configuration illustrated in Figs. 1 and *4c* is the provision for receiving a third luminaire for purposes of obtaining a light distribution, such as IES type V as indicated approximately in the dotted lines of Fig. 4. This distribution is especially desirable for commercial and parking lot lighting, which is becoming more important as suburban shopping centers are being established throughout the country. Little or no modification of the mounting bracket **1** is needed to support the third luminaire, which is shown dotted in Fig. 1 and designated generally by the reference numeral **30**.

All of the luminaires are preferably supported from



the extremities of the angular support members **8** and **9** by means of the end brackets **31** which are formed substantially identical with one another. The brackets **31** are merely a length of strap iron bent angularly at approximately the center thereof. Each bracket is preferably fastened in place by means of nut and bolt assemblies **32** and are positioned in opposed relationship with respect to one another for engaging the end castings of the luminaires **20**.

Referring now to Fig. 3, the end bracket **31** is shown fastened to the end casting **33** of the luminaire **20**. The luminaire **20**, as previously described, contains the lamps **21** and **22** and appropriate reflectors and deflectors, and is preferably hermetically sealed by means of a plastic transparent cover **34**. The cover **34** is preferably hinged at the top (not shown) with reference to Fig. 3 and is secured in place by means of the clamping member **35**. An extruded resilient gasket **36** is preferably provided to complete the seal and is held in place by the extruded edge member **37**, which is coextensive therewith.

It is also to be noted that the preferred luminaire of Fig. 3 includes means for rotating the unit about its longitudinal axis where so desired. Although, the luminaire has been particularly designed for projecting light within the accepted range of vertical angles, as described in the aforementioned copending application, Serial No. 484,703, the unit may be rotated on its axis to provide variations in vertical light distribution. A convenient end-supporting means is provided for this purpose and includes a pintle pin member **38** rotatively and pivotally received by the end brackets **31**. Fastening machining bolts **39** engage threaded apertures in the end casting **33** and are arranged to receive clamping members, such as the washers **40**, for frictionally engaging the brackets **31** after the luminaire **20** is adjusted into the desired mounting position.

It will also be apparent that the luminaire **20** is readily adaptable for mounting on a vertical building surface, when light distribution is desired directly outwardly and downwardly from the luminaire. This type of lighting is becoming increasingly popular for airport ramp lighting, whereby the luminaires are mounted directly on the walls of terminal buildings and hangars (not shown).

It will be apparent that a convenient mounting fixture for fluorescent street lighting luminaires has been provided by the present invention, which fixture retains the luminaires in position for wide lateral light distribution and also permits mounting of a third luminaire for approximately circular distribution which is becoming increasingly popular for commercial outdoor lighting.

I claim:

1. In a fluorescent street lighting assembly including first and second elongated luminaires arranged for elevated mounting on a vertical support member, a mounting bracket including fastening means comprising clamping half-bands releasably embraceably engageable with said support member, and first and second wish-boned configured angularly disposed luminaire support arms secured to and supported by said fastening means, each of the free ends of each of said support arms extending radially outwardly relative to said support member and respectively defining three included angles of substantially 120°, the extremities of said arms including mounting elements for endwise supporting engagement of said first and second luminaires.

2. In a fluorescent street lighting assembly including first and second elongated luminaires arranged for elevated mounting on a vertical support member, a mounting bracket including fastening means comprising clamping half-bands releasably embraceably engageable with said support member, and a pair of angularly formed luminaire support arms, each secured to and supported by said fastening means and each of a configuration when mounted intermediate its ends to extend radially outwardly relative to said support member, and each arm

further being of a configuration defining an included angle of substantially 120°, said support arms each being further disposed relative to one another in back-to-back relationship to provide a common arm support, the extremities of each of said arms including mounting elements for endwise supporting engagement of said first and second luminaires to afford an angularly disposed relationship therebetween at either side of said common arm support.

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