United States Patent

Starr

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[54] LUMINAIRE ATTACHING MEANS

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[73] Assignee: American Electric Manufacturing Corporation, Southaven, Miss.

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[52] U.S. Cl. 248/230

[51] Int. Cl. F21v 21/10

[58] Field of Search ..... 248/226 B, 230, 316 B; 269/156, 218; 279/67, 112

[56] References Cited

UNITED STATES PATENTS

1,225,301	5/1917	Wolfe	248/230 X
2,422,773	6/1947	Colwill	269/156 X
2,908,469	10/1959	Mack et al.	248/230
3,184,199	5/1965	Clark et al.	248/230

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[57] ABSTRACT

Luminaire mounting or attaching structure adapted for cantilever attaching a street lighting luminaire to the support arm structure of the luminaire supporting mast or pole structure. The luminaire attaching structure includes means for trilaterally clamping the distal end portion of the luminaire support arm including the anvil jaw and a pair of wedge jaws. A single bolt-like shaft having left-hand and right-hand thread portions is adapted to be turnably manipulated for causing converging or diverging movement of the pair of wedge jaw members respectively for causing trilateral clamping or loosening action of the anvil and wedge jaw members on the distal end of the luminaire support arm.

1 Claim, 6 Drawing Figures

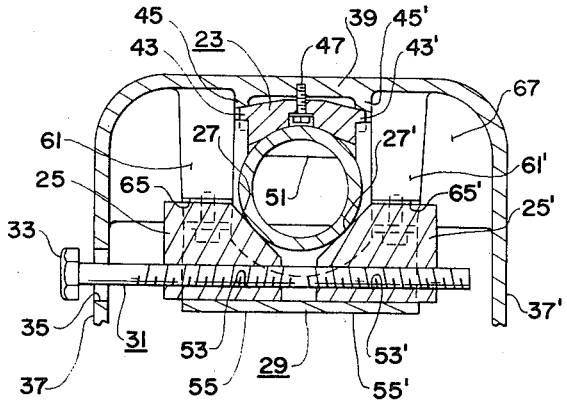


FIG. 1

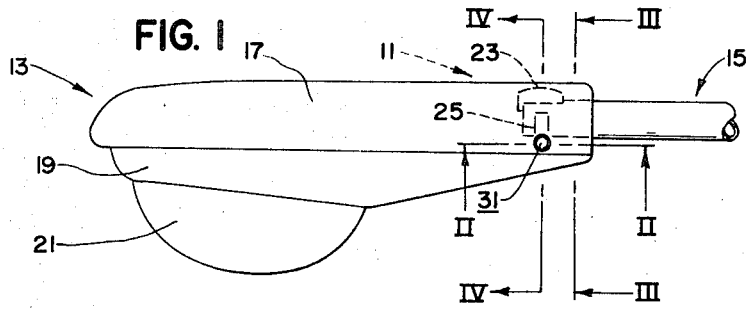


FIG. 3

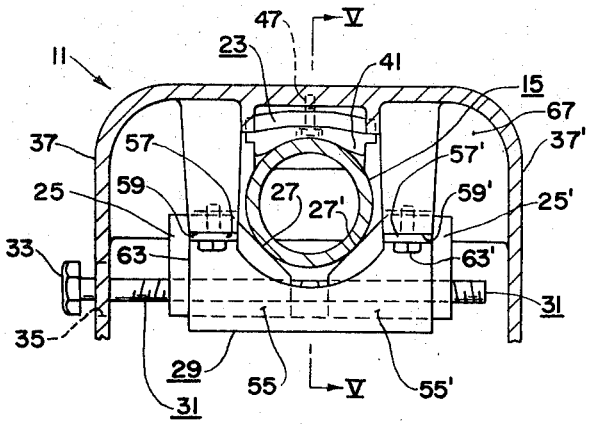


FIG. 2

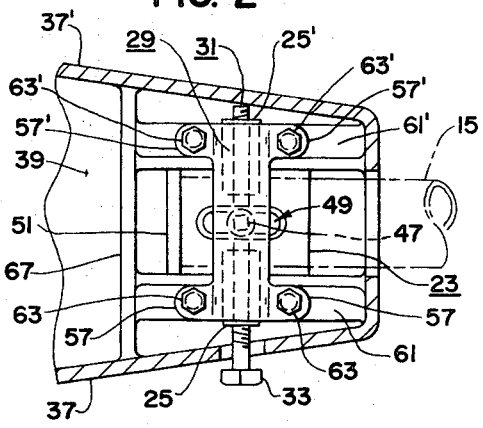


FIG. 4

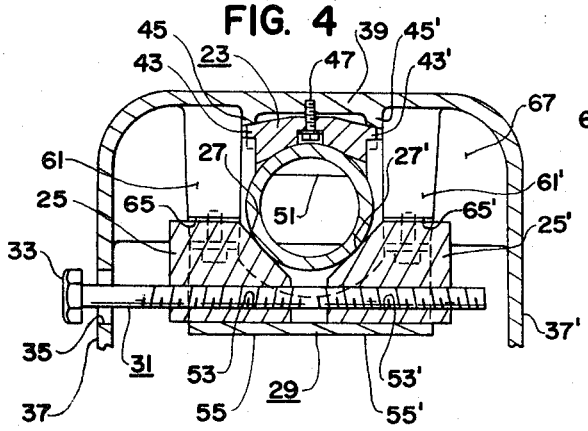


FIG. 5

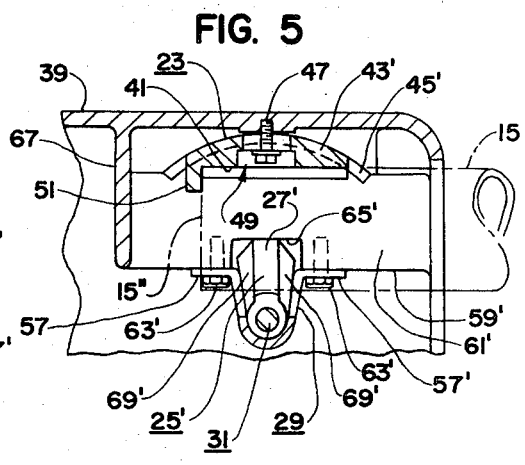
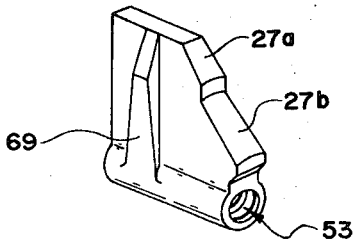


FIG. 6



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LUMINAIRE ATTACHING MEANS

BACKGROUND OF THE INVENTION

1. Field of the Invention

The invention relates to street lighting luminaire fixture attaching means for cantilever attaching and elevatingly supporting a luminaire fixture on luminaire support arm structure.

2. Description of the Prior Art

The conventional manner of attaching a luminaire on a luminaire support arm is by means of a pair of so-called fitter clamps supported by threaded fastener means from the luminaire housing structure. The pair of fitter clamps are adapted to bridgingly span the distal end portion of the luminaire support arm and to be threadedly clamped against the support arm. Each fitter clamp of the pair of fitter clamps is threadedly supported by two clamp bolts which are uniformly tightened or loosened in adjusting a fitter clamp to the luminaire support arm structure. An installer or lineman in installing a luminaire on the luminaire support arm structure typically tightens and loosens the bolts of each of the fitter clamps in obtaining horizontal linearity of the luminaire and in arranging the luminaire in correct horizontal alignment with the roadway surface. In aligning or obtaining horizontal linearity of a luminaire fixture, considerable skill and practice is necessary on the part of the lineman or installer of the luminaire. The conventional luminaire fixture mounting means includes means for angularly shifting the distal or nose portion of the luminaire fixture upwardly or downwardly substantially 5° in either upwardly or downwardly direction. Such angular adjustment of the cantilever supported luminaire is obtained by respectively loosening and tightening the fitter clamps on the distal end portion of the luminaire support arm. Typically, the wrench-engaging head portions of the fitter clamp adjustment screws project downwardly and access to the fitter clamp adjustment screws are gained by opening the hinged lower housing of the luminaire. In mounting or adjusting the angularity of a luminaire, the workman or installer must assume a rather awkward position in tightening and loosening the fitter clamps and in working overhead in tightening or loosening the respective fitter head clamp screws projecting downwardly in the bottom opening of the luminaire fixture.

SUMMARY OF THE INVENTION

The present invention includes luminaire mounting means having only one threaded bolt-like shaft for clampingly securing the luminaire housing on the distal end of the luminaire support arm. By turnably manipulating only a single threaded shaft, a luminaire may be installed on a luminaire support arm and the luminaire fixture readily adjusted to obtain a desired horizontal linearity of the luminaire fixture relative to the roadway surface. The single adjustment or bolt-like mounting shaft of the luminaire attaching means preferably includes a wrench-engaging head portion extending laterally horizontally through an aperture in the luminaire housing and externally of the housing. A workman or installer installing a luminaire having the attaching means of the invention has only to turnably manipulate the single adjustment shaft in installing or adjusting the luminaire and does not need to gain entry or access to the interior of the luminaire as in prior art luminaire structures. The luminaire attaching means of the invention requires negligible skill or practice to accurately or properly install a luminaire and provides sturdy and secure attachment means for the luminaire fixture.

BRIEF DESCRIPTION OF THE DRAWING

FIG. 1 is an environmental showing of the luminaire attaching means of the present invention (shown in hidden lines) illustrating the mounting of a luminaire on the luminaire support arm structure of a luminaire fixture installation.

FIG. 2 is an enlarged fragmentary horizontal plane sectional view of the luminaire attaching means as viewed upwardly on the line II—II of FIG. 1.

FIG. 3 is an enlarged fragmentary vertical plane transverse sectional view of the luminaire attaching structure taken as on the line III—III of FIG. 1.

FIG. 4 is an enlarged fragmentary vertical plane transverse sectional view taken as on the line IV—IV of FIG. 1.

FIG. 5 is a vertical plane longitudinal sectional view taken as on the line V—V of FIG. 3.

FIG. 6 is a perspective view of one of the jaw members of the attaching means of the present invention in a slightly modified form.

DESCRIPTION OF PREFERRED EMBODIMENT

The luminaire attaching means of the present invention is indicated by numeral **11** and is described in conjunction with a roadway or street lighting luminaire fixture **13** and luminaire support arm structure **15**. Luminaire fixture **13** typically includes an upper main housing **17** and a lower housing **19** supporting the refractor **21** of the luminaire.

Luminaire attaching means **11** includes an anvil jaw member **23** and a pair of wedge jaw members **25, 25'** adapted to trilaterally clampingly engage the distal end portion of luminaire support arm **15**. Wedge jaw members **25, 25'** include respectively obliquely extending surface structure **27, 27'** adapted to clampingly engage the cylindrical outer surface of the luminaire support arm. In FIGS. **1 – 5** the jaw members **25, 25'** are shown in their simplified form to fit a support arm structure generally of one size. However, the oblique surface structure of each of the jaw members is preferably stepped as shown in FIG. **6** to provide two surface structures, **27*a*** and **27*b*** in place of the one **(27)** so that it is adapted to fit support arm structures of two different sizes. In other words, surface structure **27*a*** is for a smaller support arm and **27*b*** is for a larger support arm. Also, the surface structures **27*a*** and **27*b*** preferably have a slight curvature as shown, to accommodate the different angular positions of the support arm relative to the jaw members. Guide structure including a U-sectioned guideway member **29** guidingly constrains left and right wedge jaw members **25, 25'** in converging-diverging movement transversely of the luminaire support arm. Selectively operative force means including a contradirectionally threaded shaft **31** is operative for causing converging or diverging movement of wedge jaw members **25, 25'**. Threaded shaft structure **31** preferably includes a wrench-engaging head portion **33** adapted to receive a hand wrench for turnably manipulating shaft **31** and for converging-diverging movement of wedge jaw members **25, 25'**. Head portion **33** of threaded shaft structure **31** preferably extends through an aperture **35** formed in lateral vertical wall **37** of luminaire housing **17**.

Anvil jaw member **23** preferably is adjustably supported subjacently on the underside of luminaire housing top wall **39**; anvil jaw member **23** preferably is tiltably supported on the underside of luminaire housing top wall **39** and is adapted to be self-adjusting to a certain angular adjustment of luminaire fixture **13**. Anvil jaw member **23** preferably is rectangular elongated in horizontal section and is adapted to be arranged in corresponding longitudinal extension relative to luminaire support arm **15**. The underside portion of anvil jaw member **23** is formed with longitudinally extending concave structure **41** adapted to correspondingly engage the upper cylindrical surface structure of luminaire support arm **15**. Anvil jaw member **23** is adapted to be longitudinally tiltably moved to corresponding parallel linearity with the luminaire support arm upon transverse clamping engagement of wedge jaw members **25, 25'** with the under cylindrical structure of the luminaire support arm.

The means tiltably supporting anvil jaw member **23** from luminaire housing **17** preferably includes corresponding raceway structure **43, 43'** and runner structure **45, 45'** formed respectively superjacently on anvil jaw member **23** and subjacently on luminaire housing top wall structure **39**. Raceway and runner structures **43, 43'** and **45, 45'** are arranged respectively symmetrically of a vertical plane lying coincident with

the longitudinal axis of the luminaire support arm and function for longitudinally tilting anvil jaw member **23** relative to luminaire main housing structure **17**.

A retainer bolt **47** extending upwardly through an elongated countersunk opening **49** in anvil jaw member **23** loosely retains race and runner structures **43**, **43'**; **45**, **45'** in corresponding arrangement while yet permitting longitudinal tilting movement of the anvil jaw member relative to the luminaire housing. Retainer bolt **47** extends upwardly through elongated countersunk opening **49** of jaw member **23** and is threadedly fixed in top wall **39** of luminaire housing **17**. A downwardly projecting abutment flange **51** extending transversely across the inward end portion of anvil jaw member **23** defines abutment structure for limiting the entry of the distal end of support arm **15**; when luminaire fixture **13** is fitted on support arm **15**, abutment flange **51** abuttingly engages distal edge **15''** of tubular support arm **15** and correctly longitudinally positions the luminaire housing relative to the support arm.

Turnably manipulating threaded shaft **31** clockwise or counterclockwise is effective for causing simultaneous equidistant converging or diverging movement of left and right wedge jaw members **25**, **25'**. Lefthand thread means **53** and righthand thread means **53'** interengaging respectively shaft **31** with left and right wedge jaw members **25**, **25'** function for causing converging or diverging movement of the wedge jaw members upon turning movement of shaft **31**. Clockwise turning of shaft **31** is operative for causing converging movement of wedge jaw members **25**, **25'** and wedging engagement of oblique surface structures **27**, **27'** of the wedge members with the under cylindrical surface of support arm **15**.

Guideway member **29** extends subjacently transversely of support arm **15** and preferably includes upwardly opening integrally formed channel structure **55**, **55** configured for snugly freely engaging respectively substructure portions of wedge jaw members **25**, **25'**. Guideway member **29** preferably includes coplanar horizontal oppositely projecting paired flange portions **57**, **57**; **57'**, **57** fixed respectively on the undersurfaces **59**, **59'** respectively of longitudinally extending depending boss structure **61**, **61'**. Capscrews **63**, **63**; **63'**, **63'** extending upwardly respectively through flange portions **57**, **57**; **57** , **57** and threadedly engaged respectively in boss structure **61**, **61'** fixedly dependingly secure guideway member **29** on luminaire housing structure **17** and transversely subjacently of luminaire support arm **15**. Downwardly opening slot structure **65**, **65'** formed respectively in boss structure **61**, **61** accommodates the upper structure respectively of wedge jaw members **25**, **25'** and prevents upward displacement of the jaw members when they are in inactive disposition. A transverse web portion **67** depending from housing top wall **39** and bridgingly interconnecting housing sidewalls **37**, **37'** preferably reinforces the luminaire housing structure and integrally intersects boss structures **61**, **61'**. Wedge jaw members **25**, **25'** each preferably include paired rib portions **69**, **69**; **69** , **69** projecting upwardly respectively on opposite sides of the jaw members (rib portions **69'**, **69'** only illustrated in FIG. **5**). Rib portions **69**, **69**; **69'** , **69'** provide means for reducing the horizontal extension or thickness of oblique surface structures **27**, **27'** of jaw members **25**, **25** . Horizontally narrow oblique surface structures **27**, **27'** provide respectively narrow wedge surfaces engaging the luminaire support arm and provide means for ready tilting and angular adjustment of the luminaire housing relative to the luminaire support arm structure.

In installing street lighting luminaire fixture **13** on support arm structure **15**, the following procedure may be carried out: With threaded shaft **31** turned counterclockwise and wedge members **25**, **25'** in a diverged disposition, the luminaire fixture is translationally longitudinally moved over the distal end of luminaire support arm **15**. While elevatingly supporting the forward nose end of the luminaire at a desired angularity, wrench means may be utilized for clockwise turning threaded shaft **31** thereby convergingly clamping wedge jaw members **25**, **25'** on the undersurface of the support arm; converging movement of wedge jaw members **25**, **25'** forces support arm **15** against concave structure **41** of anvil jaw member **23** thereby tiltably moving the anvil jaw member in parallel alignment with the support arm structure; the forward nose portion of the luminaire may be lifted or lowered to position the luminaire at a desired angularity; threaded shaft **31** is clockwise turned thereby with the luminaire arranged at a desired angularity, trilaterally clamping jaw members **23**, **25**, **25'** on the distal end of the luminaire support arm structure and cantilever supporting the luminaire structure on the support arm.

I claim:

1. The combination with a street lighting luminaire having a main housing and with luminaire support structure including support arm structure adapted for elevatingly supporting said luminaire, of luminaire attaching means adapted for attaching the luminaire main housing structure to the distal end portion of said support arm structure comprising coacting anvil jaw means and wedge jaw means supported from said luminaire housing and adapted to clampingly engage the distal end of said support arm and cantilever support said luminaire housing from said support arm, said wedge jaw means including a pair of wedge jaw members including a left and a right jaw member arranged respectively on opposite sides of a vertical plane lying coincident with the longitudinal axis of said support arm and with each wedge jaw member having surface structure adapted to clampingly engage said support arm, means guidingly constraining said left and right wedge jaw member in converging-diverging movement of each wedge jaw member respectively toward and away from said support arm, and including selectively operative force means for causing forcible converging movement of said pair of wedge jaws; said pair of wedge jaws and sail anvil jaw means being adapted to generally trilaterally clampingly engage the distal end portion of said luminaire support arm upon converging clamping movement of said pair of wedge jaw members; said means guidingly constraining said left and right wedge jaw members converging diverging movement including guideway structure defining left and right upwardly opening channel structure configured for snugly freely engaging respectively said left and right wedge jaw members and configured for translational bidirectional movement of each wedge jaw member in converging-diverging movement of said right and left wedge jaw members.

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