May 8, 1962 H. A. VAN DUSEN, JR 3,033,978

CATENARY LIGHTING APPARATUS

Filed May 4, 1959 2 Sheets-Sheet 1

Fig. 1.

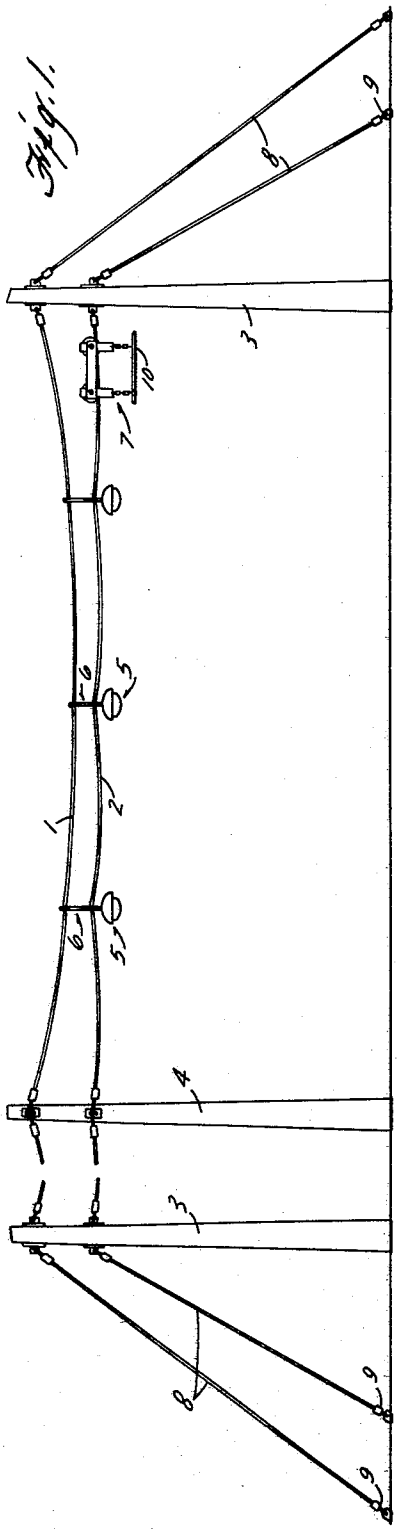
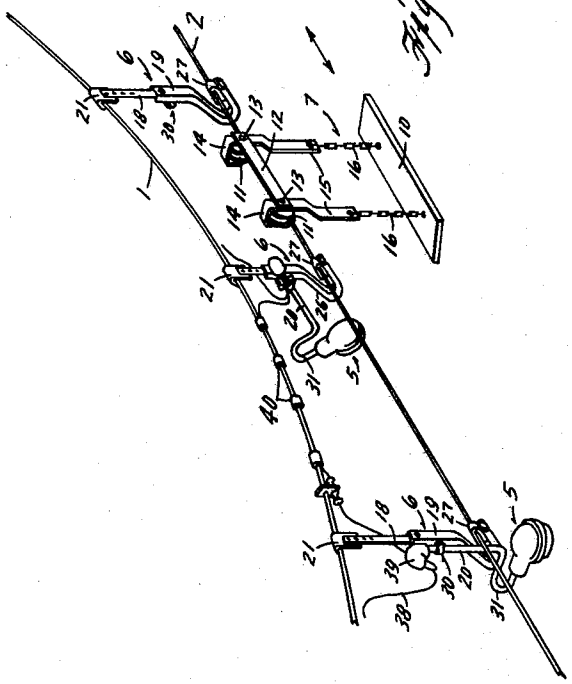


Fig. 2.



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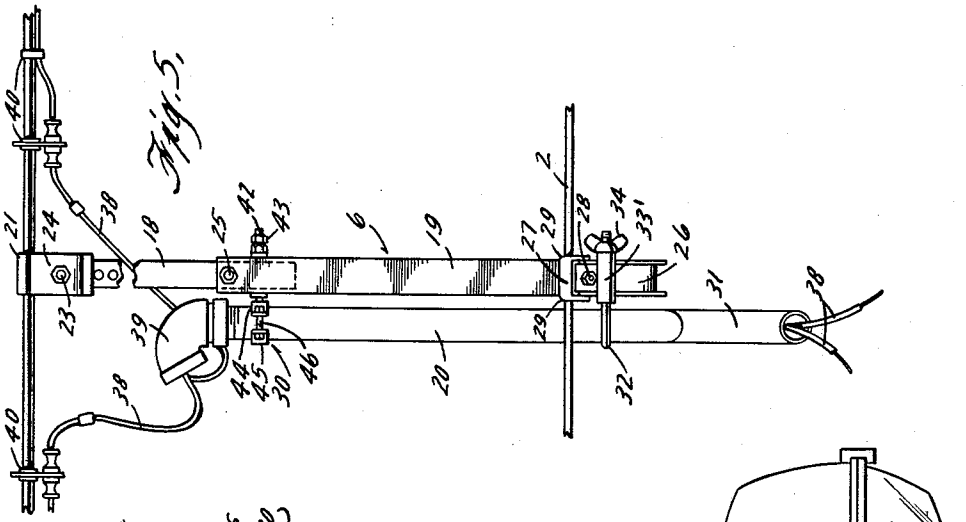


Fig. 5.

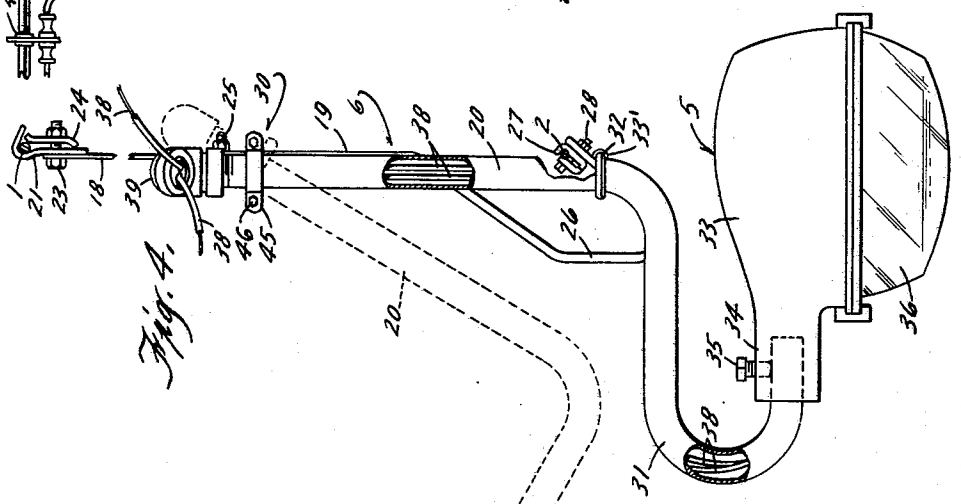


Fig. 4.

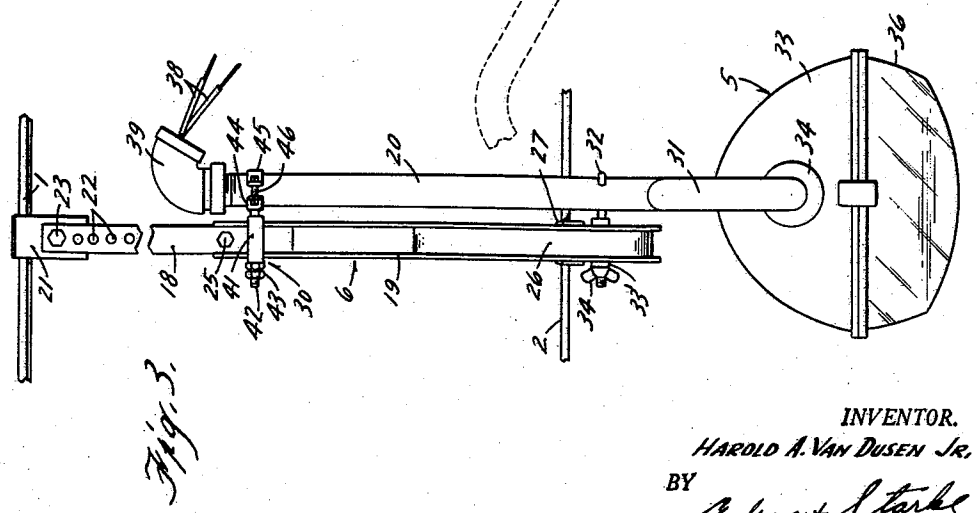


Fig. 3.

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CATENARY LIGHTING APPARATUS

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11 Claims. (Cl. 240—3)

This invention relates to catenary lighting apparatus and is particularly directed to a hanger unit including a pivotally mounted light support for mounting a lighting unit on supporting cables spanning the area to be illuminated.

Railroad yards and similar large areas which are to be lighted normally employ a catenary system including overhead supporting cables spanning the area to be illuminated. An upper messenger cable and a lower messenger cable are supported in vertical spaced alignment by suitable supporting poles. The upper messenger cable constitutes a relatively heavy support which is attached to the lower messenger cable at laterally spaced points corresponding to positioning of the lighting units to support the lower cable and the lighting units at a predetermined vertical position, normally a common horizontal plane. The lower messenger cable stabilizes the lighting units suspended over the area to be lighted and also constitutes a track for a service car to permit access to the several lighting units for servicing and maintenance.

The service car normally is suspended from the lower messenger cable by suitable wheels and is adapted to be manually propelled along the cable by the operator or service man who grasps the lower cable and pulls or pushes himself along. In order to provide for movement of a serivice cart past a lighting unit, presently known catenary systems support the lighting units laterally offset from the vertical plane of the upper and lower catenary cables to establish a clearance adjacent the lower cable which permits passing of the service car. The offset of the lighting units twists the catenary cables about a horizontal axis and the lighting units do not maintain the predesigned position.

Because of the relatively heavy weight of the lighting unit assemblies, the amount of offset of the lighting units is severely limited and consequently only very limited clearance is permissible. This makes it extremely difficult and dangerous to the maintenance personnel riding the service car whenever they must pass a lighting unit. Consequently, such catenary lighting systems have not been commercially accepted.

To avoid the above difficulty, a separate catenary cable mounted adjacent or beneath the lower lamp supporting cable has been suggested. The maintenance man is to walk out on this additional cable employing the upper cable as a balancing support. Such a procedure is extremely hazardous and requires specialized personnel with an extremely fine sense of balance.

In the alternative, ladders having cable engaging hooks on one end have been employed to service the several lighting units. However, the lower catenary cables, not being rigid members, do not provide a sturdy and rigid support for the ladders.

Consequently, in prior catenary lighting systems the problem of lighting unit maintenance was exceedingly hazardous and difficult.

The present invention provides an improved lighting support for catenary lighting systems which allow ready mounting and movement of a serivice car on the supporting cable.

The lighting units are readily supported with the center of gravity of the assembly generally passing through a vertical plane including the upper and lower messenger cables to prevent any twisting of the cables.

Generally, in accordance with the present invention; the light support units include suitable spacer means which are connected respectively to the upper and lower cables to tie them together at each lighting location. The spacers include an offset portion adjacent the cable which is adapted to carry the service car to allow ready passage of the service car. The light unit is secured in place by a supporting member which is pivotally connected to the spacing means in spaced relation to the light supporting cable. The pivotally connected supporting member is normally arranged to maintain the center of gravity of the light support unit in the vertical plane of the cable and thus in the path of the service car. The pivotal suspension member may, however, be deflected or swung out of the way by the service man to provide ready passage of the cable car.

In accordance with another aspect of the present invention, the light supporting member of the suspension system is formed with a bearing portion extending vertically of the cables and constituting a part of the pivotal mounting means. Consequently, the supporting member and attached light unit may be rotated on the vertical axis during the original installation of the assembly to provide the most advantageous orientation of the light unit with respect to the area to be illuminated.

Thus, the present invention provides an improved catenary lighting system incorporating supporting means which permit ready maintenance and servicing of the several lighting units. Further, the supporting means in the catenary system avoid any tendency to twist the catenary cables and therefore maintain correct orientation of the lighting units.

The drawings furnished herewith illustrate the best mode presently contemplated for carrying out the invention.

In the drawings:

FIG. 1 is an elevational view of a catenary lighting system with parts broken away and incorporating standard lighting units which are supported in accordance with the present invention;

FIG. 2 is a fragmentary perspective view of a portion of the catenary lighting system shown in FIG. 1;

FIG. 3 is an enlarged fragmentary rear view illustrating a preferred construction of the lighting support units shown in FIGS. 1 and 2;

FIG. 4 is an enlarged side view of the support unit shown in FIG. 3; and

FIG. 5 is an enlarged front view of the support unit shown in FIGS. 3 and 4 with the lighting unit removed.

Referring to the drawings and particularly to FIGS. 1 and 2, a catenary lighting system is shown generally including an upper messenger cable **1** and a lower messenger cable **2** which are secured at opposite ends to suitable vertical dead end poles **3** and centrally to a vertical mid-span pole **4**. The portion of the lighting system between the dead end pole **3**, shown to the left in FIG. 1, and the mid-span pole **4** corresponds to the detail showing to the right of mid-span pole **4** in FIG. 1 and is broken away to permit clearer illustration of the several different components of the system. The messenger cables **1** and **2** are supported in vertically spaced relation and in a common vertical plane to cover a relatively large ground area to be illuminated. A series of luminaires **5** are mounted at horizontally spaced locations on the upper and lower messenger cables **1** and **2** by suitable catenary hangers **6** which tie the upper and lower messenger cables together and establish the proper spacing between the cables **1** and **2** for supporting luminaires **5**. A cable car **7** is movably suspended upon the lower messenger cable **2** and is employed by personnel for servicing and maintenance of the several luminaires **5**. As more fully described hereafter, the catenary hangers **6** include an offset

portion and a pivotal lighting support assembly which allow ready movement of the cable car 7 past each of the several luminaires 5.

The cables 1 and 2 are employed where very substantial distances, typically of the order of 300 feet, are to be illuminated without employing a substantial number of individual lighting supports or poles. Normally the individual luminaires 5 should be provided approximately every 50 feet or so.

The upper messenger cable 1 is a relatively heavy supporting cable which may have a substantial sag, as shown in FIG. 1. The lower messenger cable 2 is a relatively light messenger cable and is adapted to support the several luminaires 5 at a corresponding horizontal position. The upper messenger cable 1 is tied to the lower messenger cable at each lighting unit location by the catenary hangers 6 and constitutes a support for the lower messenger cable 2 to maintain the preselected corresponding vertical spacing of each luminaire 5 with respect to ground level. A cable car 7 is suspended from the lower cable 2 and is adapted to be moved along the cable 2 for maintenance of the luminaires 5 and hangars 6.

Suitable guy wires 8 are secured to the upper ends of each of the dead end poles 3 and are securely anchored at their opposite ends to the ground by conventional anchors 9. The guy wires 8 transmit to the anchors 9 the bending forces on the dead end poles 3 due to the weight of the several luminaires 5 and messenger cables 1 and 2 and the cable car 7.

Referring particularly to FIGS. 1 and 2, the illustrated cable car 7 is of a conventional construction and includes a platform 10 which is movably suspended on the lower messenger cable 2. A pair of longitudinally spaced wheels 11 are tied together by a rigid spacer member 12 and are suitably grooved to ride on the lower cable 2 and transport the platform 10. The wheels 11 are journaled on shafts 13 which are secured within generally inverted U-shaped suspension brackets 14 for each wheel 11. Each bracket 14 includes a first side leg 15 which extends downwardly adjacent the side of the rollers 11 and then inwardly into alignment with the vertical plane through the upper and lower messenger cables 1 and 2. A chain 16 secured the terminal end of leg 15 to the platform 10 to movably support the platform upon the cable 2. The opposite leg 17 of bracket 14 flares outwardly and depends slightly downwardly to counterbalance the offset weight of the leg 15 on the opposite side of the corresponding wheel 11 to establish a stable car mounting.

Maintenance personnel ride upon the platform 10 of the cable car 7 and positively propel themselves along the lower messenger cable 2 by grasping the cable 2 and pulling or pushing to move the car 7 to the several luminaires 5.

Each of the catenary hangers 6 and the luminaires 5 illustrated in FIGS. 1 and 2 correspond and therefore only one is described in detail and shown in FIGS. 3–5.

Referring particularly to FIGS. 2–5, the illustrated catenary hanger 6 generally includes an upper suspension strap 18 which is releasably fixed to a lower spacer member 19. Strap 18 and member 19 are respectively releasably secured to the upper cable 1 and the lower cable 2 to establish a preselected spacing between the cables 1 and 2 and vertical positioning of the corresponding luminaire 5. A suspension pipe bracket 20 is pivotally secured at its upper end to the spacer member 19 and depends vertically downwardly to support the attached luminaire 5 immediately below the lower cable 2.

The suspension strap 18 of hanger 6 is releasably secured to the upper messenger cable 1 by an upper hook 21 which extends upwardly and over the cable. The suspension strap 18 is provided with a series of openings 22 for selective attachment of the hook 21 by a nut and bolt assembly 23. A clamp plate 24, shown in FIG. 4, is also attached to the strap 18 by assembly 23 and when the latter is tightened, the clamp plate 24 bears against the underside of the cable 1 and forces the cable 1 upwardly into the hook 21 to releasably lock the suspension strap 18 to a preselected position on the upper messenger cable 1.

The spacer member 19 is formed of a suitable U-shaped channel and includes an upper vertical portion slidably receiving the lower end of suspension strap 18. A nut and bolt assembly 25 passes through aligned openings in adjacent portions of strap 18 and the vertical portion of member 19 to releasably and rigidly secure them together. As shown most clearly in FIGS. 2 and 4, the member 19 extends vertically downwardly from the nut and bolt assembly 25 toward the lower messenger cable 2 and includes a continuing offset portion 26 beginning above the cable 2 to allow ready passage of the car 7. The offset portion 26 extends laterally downwardly from the vertical portion to approximately the level of cable 2 and then vertically downwardly in laterally spaced relation to below the lower messenger cable 2 and terminates in a portion which extends upwardly to the lower messenger cable 2. A clamp 27, generally similar to the clamp defined by the upper strap hook 21 and clamp plate 24, is secured to the terminal end of the offset portion 26 of member 19 by a nut and bolt assembly 28. The clamp 27 extends slightly over the top of the cable 2 and thus into the path of the grooved wheels 11 of cable car 7. However, as shown particularly in FIGS. 2 and 5, the side edges of the clamp 27 are chamfered as at 29 and the wheels 11 of cable car 7 are sufficiently large to easily ride over the clamp portion without any problem.

The telescoped suspension strap 18 and member 19 are interconnected to tie the upper and lower messenger cables 1 and 2 together and establish a proper location of the luminaires 5 which are correspondingly supported with respect to ground.

The apertures 22 in the suspension strap 18 allow adjustment of the spacing between the upper and lower clamps of the catenary hangers 6. Consequently, selective adjustment of the vertical spacing between the catenary messenger cables 1 and 2 at the location of the several luminaires 5 is readily accomplished.

The pipe bracket 20 is secured by a pivotal mounting unit 30 adjacent the upper end of the member 19 to support the luminaires 5, in the illustrated embodiment of the invention. Referring particularly to FIGS. 3–5, the pipe bracket 20 includes a vertical portion extending downwardly adjacent the side of spacer member 19 and terminates in a horizontally arranged U-shaped supporting portion 31 extending transversely of the cables 1 and 2 immediately below the cable 2.

An L-shaped clamping bolt 32 is journaled within a tubular bearing lug 33' which is welded to the end of offset portion 26 of the spacer member 19 as shown most clearly in FIG. 5. The L-shaped bolt 32 is adapted to hook around the vertical portion of the pipe bracket 20 to interlock the bracket 20 in position. A wing nut 34 is threadedly received on the free end of the clamp bolt 32 to draw the clamp bolt through the lug 33' and rigidly clamp the bracket 20 to the spacer member 19. The clamping bolt 32 in the locked position prevents independent swinging movement of the supporting pipe bracket 20 and the attached luminaire 5 with the wind and yet maintains an easily and readily released attachment to allow independent swinging of the pipe bracket 20 and the luminaire 5, as subsequently described.

The illustrated luminaire 5 is a side mount construction of conventional design. Generally the illustrated luminaire 5 includes a one piece upper cup-shaped housing 33 and an integral slip fitting clamp portion 34 extending horizontally from the housing to receive the end of the pipe portion 31. A lock nut 35 is threadably received in the upper portion of the clamp portion 34 and is adapted to bear against the terminal end of the pipe bracket 20, as shown in FIG. 4, to interlock the luminaire 5 to the terminal end of bracket 20. A suit-

able refractor 36 is releasably secured to the bottom portion of the cup-shaped housing 33 to provide distribution of the light and to enclose the lamp, not shown, against dust, moisture and the like.

The illustrated luminaire 5 and pipe bracket 20 are arranged such that the center of gravity of the pipe support 20 and the luminaire 5 are vertically aligned with the catenary messenger cables 1 and 2. Consequently, there is essentially no bending moment transmitted to the messenger cables 1 and 2 and the luminaire 5 is maintained in the horizontal position. The construction thus eliminates tilting of the plane of the assembly as occurs in the conventional catenary hanging systems having an offset luminaire support to allow ready passage of the cable car 7.

Suitable conductors 38 for energizing the luminaire 5 pass through the pipe bracket 20 and outwardly through a service head 39 which is threadably secured to the upper end of the pipe support 20. The conductors 38 extend upwardly to the upper messenger cable 1 and then along the cable 1 to a suitable power source, not shown. Suitable messenger clips 40 releasably secure the conductors to the upper messenger cable 1 to support the conductors 38 in spaced relation to the lower cable 2. When the luminaire 5 is pivoted outwardly for passage of the cable car, the conductors 38 are simultaneously moved to prevent interference with car movement.

To move along the lower messenger cable 2 and past a luminaire 5, the personnel merely releases the clamping bolt 32 by loosening of the wing nut 34 and then pushes on the luminaire 5 to pivot the luminaire about the pivotal mount 30 and out of the path of the wheels 11, as shown in FIGS. 2 and 4. After the car 7 moves past the particular luminaire 5, the luminaire 5 is swung to the normal depending position and again secured in position by the clamping bolt 32.

In the illustrated embodiment of the invention, the pivotal mount 30 for the pipe bracket 20 includes a tubular bearing 41 which is welded or otherwise rigidly secured to the backside of the spacer member 19. The bearing 41 extends laterally of the spacer member 19 and thus generally parallel to the cables 1 and 2. A bolt shaft 42 is journaled in the bracket 41 and releasably secured therein by a pair of lock nuts 43. The opposite end of the bolt 32 terminates in a clamp strap 44 having a central arcuate portion that generally corresponds to the peripheral surface of the pipe bracket 20. A similar clamp strap 45 is adapted to be releasably connected to the clamp strap 43 by a pair of nut and bolt assemblies 46 with the pipe bracket 20 disposed therebetween to rigidly and releasably attach the support 20 to the bolt shaft 42. The encircling clamp provided by straps 43 and 44 allow angular orientation of the luminaire 5 about the vertical axis of pipe 20, to establish the most advantageous distribution of the light from the luminaire 5.

The operation of the illustrated embodiment of the invention is summarized as follows.

The suspension straps 18 and spacer members 19 are secured to each other and to the cables 1 and 2 in accordance with the span of the cables 1 and 2 and the span between the several luminaires 5. The pipe brackets 20 are pivotally secured to the spacer members 19 by the pivotal mounts 30 and are locked in position by the L-shaped clamping bolts 32. Cable car 7 is mounted on the cable 2 to move along the cable incident to manual grasping of the cable 2 by the operator who pushes or pulls to propel the cable car.

When the operator approaches a luminaire 5, the clamping bolt 32 is released by turning of the wing nut 34 and the luminaire 5 pivoted outwardly and laterally of the cable 2 about the pivotal mount 30. The cable car 7 may then be readily moved past the corresponding luminaire 5.

The offset portion 26 of the spacer member 19 allows ready passage of the cable car 7. As previously noted, the releasable clamp 27 for the spacer member 19 does not noticeably interfere with the movement of the cable car 7.

Once the car 7 has been moved past a particular luminaire 5, the pipe bracket 20 is allowed to return to the normal depending position and the clamp bolt hooked about the bracket 20 to rigidly and positively lock the luminaire 5 in position.

The illustrated terminating hook shape of the pipe bracket 20 provides accurate location of the center of gravity of the hanger 6 and luminaire 5 for a side mount luminarie as shown. Where a pendant mounted luminaire is employed, the necessity for the terminating hook shape is eliminated.

Thus, the present invention provides an improved mounting for catenary lighting systems allowing ready movement of a service car along the catenary supporting members. The lighting unit is rigidly and most advantageously supported during normal operation with easily released means for servicing. The lighting unit may be grasped to move the luminaire and the power lines out of the way without any hazard of shock due to contact with the energizing conductors to the luminaire.

Various modes of carrying out the invention are contemplated as being within the scope of the following claims particularly pointing out and distinctly claiming the subject matter which is regarded as the invention.

I claim:

1. A light support for catenary lighting systems having a pair of vertically spaced elongated supporting members spanning the area to be illuminated and adapted to support one or more lighting units and a cable car movably mounted on one of said members, which comprises vertical spacing means connected to said members to interconnect the lower member to the upper member and including an offset portion adjacent the car mounted member to allow movement of the car past the spacing means, and a support member pivotally attached to the spacing means upon a pivot axis generally parallel to the members and adapted to support a lighting unit in the path of said cable car and adapted to be temporarily pivoted generally laterally of the path of the car to remove the lighting unit from the path of the cable car.

2. A light support for catenary lighting systems having a pair of vertically spaced supporting cables spanning the area to be illuminated and adapted to support one or more lighting units and a cable car movably mounted on one of said cables for movement to mounted lighting units, which comprises an adjustable spacing means connected to said cables to selectively interconnect the lower cable to the upper cable and including a laterally offset portion adjacent the car mounted cable to allow movement of the car past the spacing means, support member for a lighting unit, and a pivotal mount attached to the spacing means and the support member upon a pivot axis generally parallel to the cables to support a lighting unit in the path of said cable car whereby said lighting unit can be temperarily pivoted laterally out of the path of the cable car.

3. A lighting support for catenary lighting systems having a plurality of spaced lighting units supported on a pair of vertically spaced and aligned supporting cables, said lower cable being supported substantially rectilinearly to maintain the lighting units substantially coplanar and constituting a track for a service car, which comprises a rigid vertical spacing means secured to the supporting cables to establish a preselected vertical cable spacing at each lighting unit location, said spacing means including a laterally offset portion adjacent the lower cable to allow free movement of the car past the spacing means, and a support member for a lighting unit pivotally attached to the spacing means above the lower cable upon a pivot axis generally parallel to the cables and supporting the lighting unit with the center of gravity of the lighting unit and the support member in substantial vertical

alignment with the supporting cables to maintain the plane through the cables in a vertical position.

4. A lighting support for catenary lighting systems having a plurality of spaced lighting units supported on a pair of vertically spaced and aligned supporting cables, said lower cable being supported substantially rectilinearly to maintain the lighting units substantially coplanar and constituting a track for a service car, which comprises a pair of telescoped upper and lower rigid members adjustably attached and extending vertically between said cables, said upper member being releasably attached to the upper supporting cable, said lower member being releasably attached to the lower cable and having an offset portion immediately adjacent said releasable attachment to allow free movement of the service car along the lower cable, a lighting unit support member pivotally connected to the upper end of the lower member upon an axis generally parallel to the cables and adapted to depend vertically therefrom to support a lighting unit immediately beneath the lower cable, and means to releasably lock the support member to said pair of telescoped members to normally prevent independent movement of the support member and the attached lighting unit.

5. A lighting support for caternary lighting systems having a plurality of spaced side-mounted lighting units supported on a pair of vertically spaced and aligned supporting cables, said lower cable being supported substantially rectilinearly to maintain the lighting units substantially coplanar and constituting a track for a hanging service car, which comprises a pair of adjustable attached telescoped upper and lower members extending vertically between said cables, said upper member being releasably attached to the upper supporting cable, said lower member being releasably attached to the lower cable and having an offset portion immediately adjacent said releasable attachment to allow free movement of the service car, a tubular support having a side mounted lighting unit secured to one end of the support and depending downwardly past the lower cable to dispose the lighting unit immediately beneath the cable, a pivotal mount having a pivot axis generally parallel to the cables connecting the opposite end of the tubular support to the telescoped members for pivotal movement laterally of the cables, said pivotal mount including an encircling clamp releasably engaging the tubular support to hold the tubular support for angular adjustment about the axis of the tubular support and corresponding positioning of the lighting unit.

6. A light support for catenary lighting systems having a pair of vertically spaced supporting cables spanning the area to be illuminated and adapted to support one or more side mounted lighting units and a cable car movably mounted on the lower cable, which comprises a spacing means connected to said cables to interconnect the lower cable to the upper cables including an offset portion adjacent the lower cable to allow movement of the car past the spacing means, a support member carrying a lighting unit, and a pivotal mount attached to the spacing means and including a vertically disposed clamp encircling a portion of the support member to support the lighting unit in the path of said cable car, said pivotal mount including a pivot axis generally parallel to the cables permitting said lighting unit to be temporarily pivoted out of the path of the cable car and said clamp permitting angular adjustment for different orientations of said lighting unit.

7. A lighting support for catenary lighting systems having a plurality of spaced lighting units supported on a pair of vertically spaced and aligned supporting cables, said lower cable constituting a track for a service car, which comprises spacing means including an upper suspension strap adjustably telescoped into a lower channel member, clamp means releasably securing the upper end of the strap to the upper cable, clamp means releasably securing the lower end of the channel member to the lower cable, said channel member having an offset portion immediately adjacent the lower cable, a lighting unit support member pivotally secured to the channel member generally centrally between the upper and lower cables and upon a pivot axis generally parallel to the supporting cables, said support member depending downwardly in alignment with said cables and terminating in an offset portion adapted to support the lighting unit generally in vertical alignment with the cables to dispose the center of gravity of the support and the light in vertical alignment with the cables, and means secured to the channel member and adapted to releasably engage the support member to rigidly support the lighting unit in position.

8. A lighting support for catenary lighting systems having a plurality of spaced lighting units supported on a pair of vertically spaced and aligned supporting cables, said lower cable constituting a track for a service car, which comprises spacing means including an upper suspension strap adjustably telescoped into a lower channel member, clamp means releasably securing the upper end of the strap to the upper cable with the strap and cables being coplanar, said channel member having a vertical portion depending from said strap and an integral offset hook establishing an offset portion immediately adjacent the lower cable, said hook portion terminating immediately adjacent the lower cable means, clamp means releasably securing the lower end of the channel member to the lower cable, a lighting unit support member pivotally secured to the channel member generally centrally between the upper and lower cables upon a pivot axis generally parallel to the cables, said support member depending vertically downwardly below said lower cable to support the lighting unit generally in vertical alignment with the cables to dispose the center of gravity of the support and the lighting unit in vertical alignment with the cables, and a hook adjustably attached to the channel member immediately adjacent the lower cable and adapted to releasably encircle the adjacent portion of the support member to rigidly interlock the lighting unit to the channel member.

9. A lighting support for catenary lighting systems having a plurality of spaced lighting units supported on a pair of vertically spaced and aligned supporting cables, said lower cable constituting a track for the wheels of a service car suspended on the lower cable, which comprises a rigid vertical spacing means secured to the supporting cables to establish a preselected vertical cable spacing at each lighting unit location, said spacing means including a laterally offset portion adjacent the lower cable to establish clearance above the lower cable allowing free movement of the car past the spacing means, a hanger support for a lighting unit pivotally attached to the spacing means intermediate the upper and lower cables upon a pivot axis generally parallel to the cables and supporting a lighting unit with the center of gravity of the lighting unit and the lighting support in substantial vertical alignment with said cables to prevent twisting of the plane through the cables from a vertical position, said hanger support including a locking portion disposed immediately adjacent the lower cable and the offset portion of the spacing means, a horizontally projecting bearing sleeve secured to the spacing means adjacent said locking portion, a bolt being slidably projecting through said sleeve and having a hook end and a threaded end, said hook end of said bolt being adapted to engage the locking portion of the hanger support, and a threaded member threadedly disposed on the threaded end of the bolt to releasably lock the hanger support to the spacing means.

10. A lighting support for catenary lighting systems having a plurality of spaced lighting units supported on a pair of vertically spaced and aligned supporting cables, said lower cable constituting a track for the wheels of a service car suspended on said lower cable, which com-

prises a rigid vertical spacing means secured to the supporting cables to establish a preselected vertical cable spacing at each lighting unit location, said spacing means including a laterally offset portion adjacent the lower cable to allow free movement of the car past the spacing means, a tubular hanger support for a lighting unit pivotally attached to the spacing means intermediate the supporting cables on a pivot axis generally parallel to the cables and supporting the lighting unit with the center of gravity of the lighting unit and the lighting support in substantial vertical alignment with the cables to prevent twisting of the plane through the cables from a vertical position, and power lines from the lighting unit extending through the tubular hanger and being secured to the upper cable for simultaneous movement with the tubular hanger support.

11. A lighting support for catenary lighting systems having a plurality of spaced lighting units supported on a pair of vertically spaced and aligned supporting cables spanning the area to be illuminated, said lower cable constituting a track for a service car suspended on the lower cable by spaced wheels, which comprises spacing means including an upper suspension strap adjustably telescoped into a lower channel member, clamp means releasably securing the upper end of the strap to the upper cable, clamp means releasably securing the lower end of the channel member to the lower cable, said channel member having a vertical portion terminating above the lower cable and a hook portion extending laterally from the vertical portion and terminating immediately adjacent the lower cable to establish a clearance for said wheels, a releasable clamp means releasably securing the terminal end of the offset portion to the lower cable, a tubular pipe member, a releasable clamp means encircling the upper end of the pipe member and being pivotally secured to the upper end of the channel member upon a pivot axis generally parallel to the cables to establish pivotal movement of the pipe member about an axis normal to the plane of the cables, said pipe member depending vertically downwardly immediately adjacent the plane of said cables and terminating immediately below the lower cable to support the lighting unit below the lower cable and substantially in vertical alignment with the cables to dispose the center of gravity of the pipe member and the lighting unit in vertical alignment with the cables, power lines for said lighting unit being housed within the pipe member and extending from the upper end of the pipe member to the upper cable to simultaneously pivot the lighting unit and the power lines from the path of the service car, and means secured to the channel member below said lower cable and adapted to releasably engage the support member to rigidly and releasably support the lighting unit in position.

References Cited in the file of this patent

UNITED STATES PATENTS

683,455	Fergusson	Oct. 1, 1901
1,112,017	Martin	Sept. 29, 1914
1,397,453	Rekar	Nov. 15, 1921
2,185,164	Weinreb	Dec. 26, 1939
2,905,806	Tunney	Sept. 22, 1959

FOREIGN PATENTS

584,104	France	Nov. 13, 1924
1,047,134	France	July 15, 1953