

[54] **LIGHT ASSEMBLY RAISING AND LOWERING MECHANISM WITH PIN AND DOG DEVICE**

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[58] Field of Search 240/25, 84, 64, 65, 67, 68, 240/70; 248/328, 336

[56] **References Cited**

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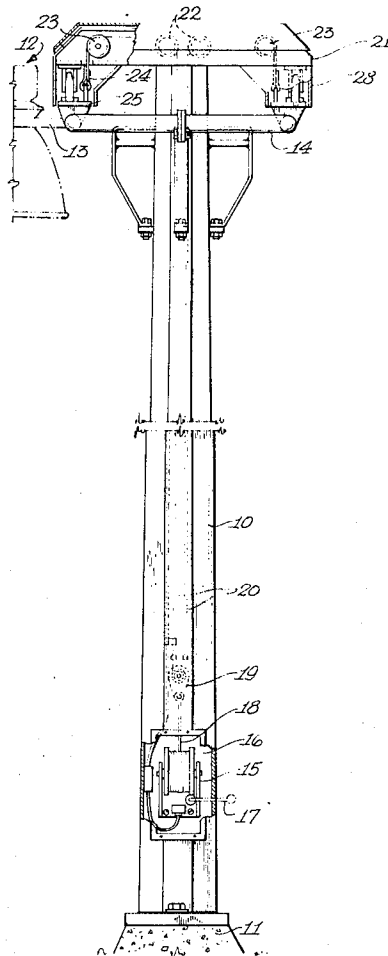
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[57] **ABSTRACT**

A raising and lowering mechanism for a light assembly in a high mast lighting structure includes a light assembly supporting ring encircling a hollow pole on which the light assembly is mounted. The ring has a fixed operating position at the top of the pole. A winch with flexible line means is employed to impart travelling movement to the ring and light assembly up and down the pole. Flexible line branches are connected to the ring at diametrically opposite points. A pair of upright pins are fixedly mounted on the ring and each pin cooperates with a pair of pivoting dogs mounted in the housing to define the fixed operating position and to release the ring and light assembly from such position by suitable operation of the winch.

4 Claims, 3 Drawing Figures



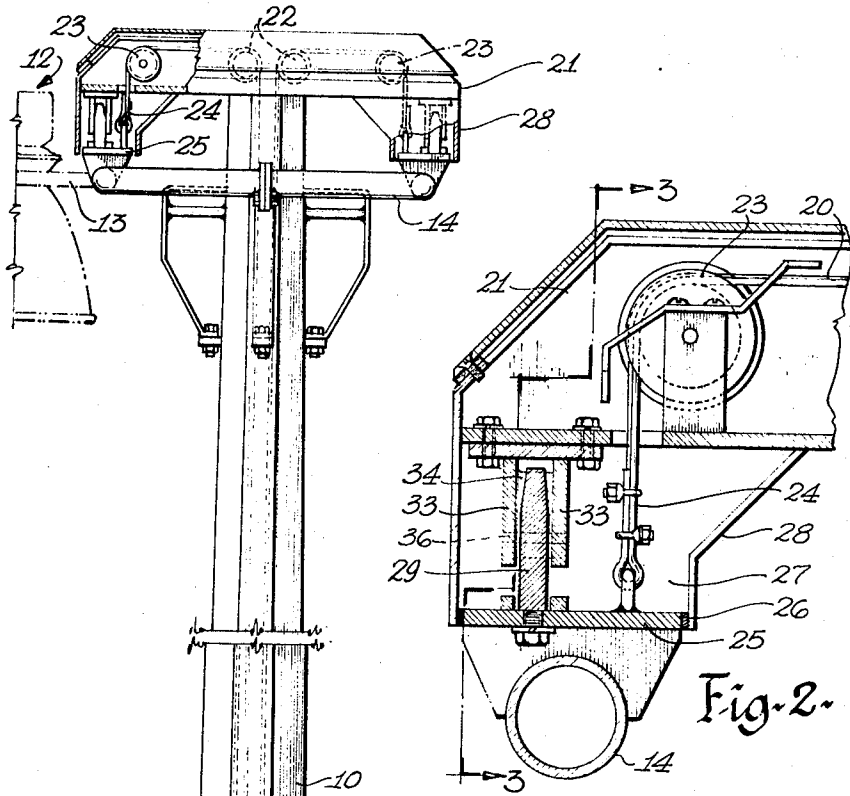
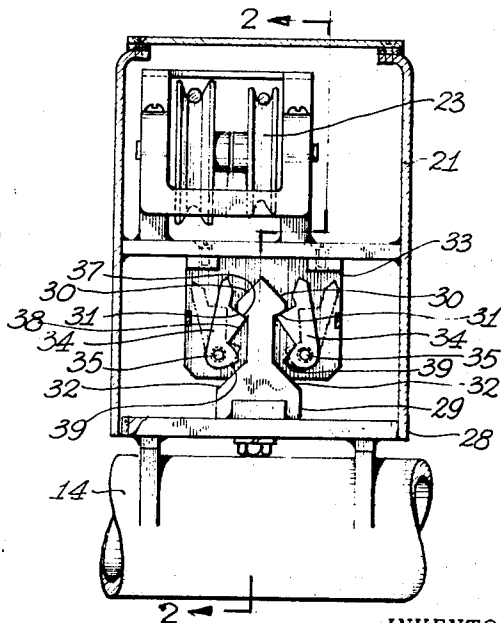


Fig. 1.



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LIGHT ASSEMBLY RAISING AND LOWERING MECHANISM WITH PIN AND DOG DEVICE

This invention relates to raising and lowering mechanism for a light assembly in high mast lighting structures.

In such structures, it is, of course, highly desirable to provide convenient means for servicing the light assembly as required. In many high mast structures, the light assembly is permanently mounted on the top of the pole and a service man must service the assembly in that location, such operation requiring a platform lift vehicle.

The present invention seeks to provide convenient means for lowering the light assembly to ground level for servicing purposes and for thereafter raising the light assembly to its operating position. The invention contemplates the provision of mechanism adapted to achieve this purpose in an economically feasible manner.

The invention utilizes a hollow pole having a base section, a top section, and a capping housing mounted on the top section. A light assembly supporting ring encircles the pole and has a fixed operating position adjacent the housing. Means for imparting travelling movement to the ring along the pole comprises a winch in the base section and flexible line means extending through the pole and housing and having a pair of opposed branches connecting the winch and ring. Two pairs of opposed dogs are pivotally mounted in the housing and a pair of pins are fixedly mounted on the ring. Each pin has a pair of opposed shoulders engageable by one of the pairs of dogs to define the fixed operating position of the ring.

The invention will be described with reference to the accompanying drawings, in which

FIG. 1 is an elevation of a high mast structure incorporating the present invention,

FIG. 2 is an enlarged sectional elevation of the pin and dog mechanism on line 2—2 of FIG. 3, and

FIG. 3 is an enlarged sectional elevation of the pin and dog mechanism on line 3—3 of FIG. 2.

Referring to the drawings, the high mast lighting structure shown includes a hollow pole 10 mounted on a suitable foundation 11.

A light assembly 12 is shown as carried by an arm 13 fixed to a ring 14 through which the pole extends in coaxial relation thereto.

Means for raising and lowering supporting ring 14 and light assembly 12 to and from a fixed operating position at the top of the pole comprises a hand-operated winch 15 mounted inside the pole adjacent the lower end thereof and accessible through an opening 16 provided with a door (not shown).

The winch is operated by a handle 17 and is provided with a flexible lifting line such as a rope or cable 18 connected to a pulley block having an equalizing pulley 19 over which is trained a flexible line such as a rope or cable 20. Parallel lengths of cable 20 extend upwardly through the pole and into a capping housing 21 mounted on top of the pole. Each length extends over a pulley 22 mounted in housing 21, such pulleys 22 directing the lengths in laterally opposite directions. Each length is then led over a second pulley 23 mounted in housing 21 and extends downwardly where its terminal end is fastened at 24 to a plate 25 surmounting and fixed to the ring 14. Each plate 25 is preferably provided with edge weatherstripping 26 and is arranged to enter an opening 27 in a housing member 28 depending from housing 21 and to substantially close such opening.

Also mounted on each plate 25 for entry into housing member 28 is a fixed upright pin 29 having an arrow-shaped head comprising side faces 30 upwardly converging to an apex and recessed shoulders 31. Pin 29 also has adjacent its base downwardly diverging side faces 32.

Mounted in each housing member 28 by means of a pair of hanger brackets 33 suspended from housing 21 are a pair of opposed dogs 34 supported adjacent their lower ends on pivots 35. The dogs have an over center mounting on their pivots whereby, when swung inwardly towards each other over the pivot centers, they will fall towards each other and, when swung outwardly away from each other over their pivot cen-

ters, they will fall away from each other. Thus, in the absence of any interposed object, the dogs when swung towards each other will come to rest in engagement with each other. Stops 36 on brackets 33 are provided for engagement by the dogs when swung away from each other to define a spaced rest position for the dogs.

Each dog has a shoulder 37 for mating engagement with a shoulder 31 on the pin 29 and a contiguous inwardly inclined surface 38 for engagement by a side face 30 of the pin. Each dog also has an inwardly directed projection 39 adjacent its lower end.

Assuming therefore that dogs 34 are in engagement with each other and that the ring and light assembly are being raised to operating position, as the pin 29 enters housing member 28, pin faces 30 will engage dog faces 38 moving them apart but not over center (see FIG. 3) so that when the head of the pin passes through the dogs the latter will drop towards each other again so that the pin may be lowered to place its shoulders 31 in engagement with dog shoulders 37 to lock the ring and light assembly in raised position.

In order to lower the light assembly, the winch is operated to raise the pins 29, the faces 32 of which engage dog projections 39 to swing the dogs apart to the dotted line position of FIG. 3. The winch is then operated to lower the assembly and since the heads of pins 29 are now free from engagement with dog shoulders 37, they pass downwardly but, just before leaving the dogs, shoulders 31 of the pins engage projections 39 and swing the dogs into engagement with each other and in position to perform their locking function during the following raising movement.

The electrical cable connection for the lighting assembly is indicated at 40. It is guided over a pulley 40 mounted in the housing 21.

I claim

1. Raising and lowering mechanism for a light assembly in a high mast lighting structure which comprises a hollow pole having a base section, a top section, and a capping housing mounted on said top section, a light assembly supporting ring encircling said pole and having a fixed operating position adjacent said housing, means for imparting travelling movement to said ring along said pole comprising a winch in said base section, flexible line means extending through said pole and housing and having a pair of opposed branches connecting said winch and ring, and means for locating and supporting said ring in said fixed position comprising two pairs of opposed dogs pivotally mounted in said housing, and a pair of pins fixedly mounted on said ring, each said pin having a pair of opposed shoulders engageable by one of said pairs of dogs to define said fixed position.

2. Raising and lowering mechanism for a light assembly in a high mast lighting structure as defined in claim 1, each said dog having an over center position with respect to its pivotal axis, a shoulder engageable with one of said pin shoulders to define said fixed position, an inclined surface contiguous with said dog shoulder, and a projection extending laterally of said pivotal axis thereof, each said pair of dogs having a first path of movement wherein said dogs fall towards each other and a second path of movement wherein said dogs fall away from each other, each said pin during upward travel thereof having leading surfaces engageable with said inclined dog surfaces to separate said dogs within said first path of movement and permit subsequent engagement of said pin shoulders with said dog shoulders, each said pin also having surfaces engageable with said projections to move said dogs into said second path of movement, said pin shoulders during downward travel of said pin being engageable with said projections to return said dogs into said first path of movement.

3. Raising and lowering mechanism for a light assembly in a high mast lighting structure as defined in claim 1, including a housing member surrounding each said pair of dogs, each said housing member having an opening for reception of said pin, and a plate fixed to said ring and on which said pin is mounted, said plate being arranged to close said opening following disposition of said pin in said housing member.

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4. Raising and lowering mechanism for a light assembly in a high mast lighting structure as defined in claim 1, said flexible line means comprising a first line connected to said winch, a pulley block connected to said first line, a pulley in said block, a second line extending around said pulley and comprising

said pair of branch lines, and a pair of guide pulleys for each said branch line mounted in said housing, said branch lines being connected to said ring at diametrically opposed locations thereon.

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