

[54] HIGHWAY LIGHTING SYSTEM

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[57] **ABSTRACT**

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A highway lighting system is provided having groups of lights successively located along the highway with each group being activatable by the passage of a vehicle in front of a predetermined point along the highway. Each group remains activated for a predetermined time enabling the vehicle to proceed along the highway in what appears to be a continuously illuminated highway. The system additionally includes manually operable means whereby certain of the lights may be selectively activated together with a warning signal in the event that a vehicle must stop for repairs or otherwise.

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[58] Field of Search **315/149, 152, 155, 159, 315/313, 317; 340/258 B**

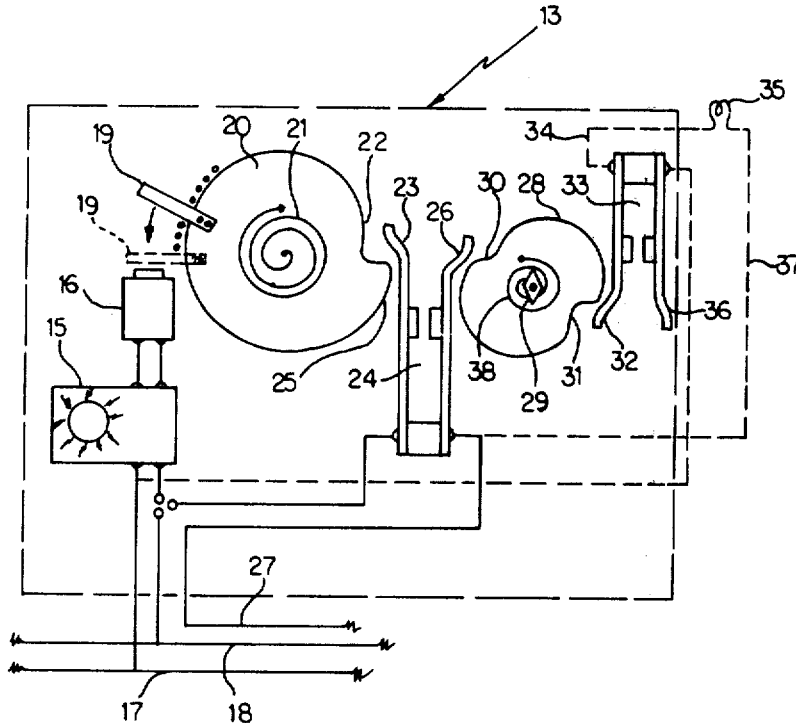
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References Cited

UNITED STATES PATENTS

| | | | |
|-----------|--------|--------------------|-----------|
| 1,963,508 | 6/1934 | Stilwell, Jr. | 315/159 |
| 2,124,807 | 7/1938 | Wells | 315/159 |
| 3,530,432 | 9/1970 | Pope | 340/258 B |
| 3,790,848 | 2/1974 | Lai | 315/155 |

2 Claims, 2 Drawing Figures



HIGHWAY LIGHTING SYSTEM

BACKGROUND OF THE INVENTION

The present invention relates to highway lighting systems and more particularly to a highway lighting system which normally maintains the lights of the highway off but is responsive to the flow of traffic along the highway to successively illuminate stretches of the highway whereby a vehicle traveling the highway is presented with a continuously illuminated road.

Highway systems across the country extend millions of miles. Many of the highways are very heavily traveled at all hours of the day and night and thus require continuous lighting during the dark hours. Others, however, are less frequently travelled and do not require such continuous lighting. In fact, continuous lighting over most highways is extremely wasteful of power which is becoming a very dear commodity. To eliminate such lighting, however, would present very serious safety hazards to those who may use such a highway. It is, thus, of advantage to be able to provide such highways with lighting as needed when the highway is being used.

It is therefore an object of the invention to provide a highway lighting system which is normally off but which is responsive to efficiently and safely light the highway in response to usage of the highway.

SUMMARY OF THE INVENTION

The highway lighting system in accordance with the present invention is provided with groups of lights successively located along the highway. Each of the groups of lights has a control means associated therewith which is actuatable by a vehicle passing in front of a predetermined point along the highway to activate the lights of the particular group for a predetermined time sufficient to permit the vehicle traveling at a normal rate of speed to pass the group of lights which it has activated. The predetermined point is situated along the highway before the group of lights so that the lights are turned on sufficiently before the vehicle reaches the group to prevent disturbance to the driver of the vehicle. In this manner, the successive groups of lights are successively activated to give the driver the impression of a continuously illuminated highway. Manually operable means are also provided for activating respective groups of lights and warning means in the event that a vehicle must stop for repairs or otherwise. The manually operable means overrides the vehicle activated control means to maintain the lights on for a longer predetermined time.

BRIEF DESCRIPTION OF THE DRAWING

FIG. 1 is a partial perspective view of the highway lighting system.

FIG. 2 is a schematic diagram of the control mechanism.

DETAILED DESCRIPTION OF THE INVENTION

A detailed description of the invention will now be given in connection with the drawing. The highway lighting system of the instant invention is shown in FIG. 1 and consists of successive groups of lights such as 10a, b, c, d, e; 11a, b, c, d, e, and 12a, b, c, d, e. While each of the groups has been shown containing five lights, it should be understood that this is merely for il-

lustrative purposes and in practice the number of lights in each group may be varied in accordance with such factors as speed limit, general visibility conditions and other road conditions.

Each group of lights is controlled by a control means such as 13 shown schematically in FIG. 2 of the drawing for controlling group 11 and 14 shown in block form for controlling group 12. The control means for each respective group is situated along the highway one or more light poles before the group which it controls to activate the group before the vehicle reaches that group and while the vehicle is still in a section of the highway illuminated by the group immediately preceding the next controlled group so that the highway appears to be continuously illuminated to the driver of the vehicle.

The control means consists of an electric eye 15 shown in block form connected to an electromagnet 15. The electric eye 15 which is connected across power source lines 17 and 18 may be of a commercially available type and is activable by the passage of a vehicle past a predetermined point along the highway to activate the electromagnet 16. Armature 19 of the electromagnet 16 is connected to a cam 20 and is attracted to the electromagnet 16 upon its activation.

Cam 20 which is rotatable about a central axis has a spring clock or timer associated therewith (only the spring 21 of which is shown in the drawing). The cam 20 includes a recessed portion 22 which normally is situated to receive armature 23 of switch 24 when the control means is in an inactive condition. Also on cam 20 is portion 25 of greater distance from the central axis of the cam for engaging armature 23 upon the activation of the control means and the rotation of cam 20 by the attraction of armature 19 to the electromagnet 16.

Engagement of portion 25 of cam 20 with armature 23 causes the latter to move into engagement with armature 26 of switch 24. Engagement of armatures 23 and 26 of switch 24 causes electrical connection of main power line 18 to conductor 27 electrically connected to each of the lights of group 11. Additionally, each of the lights of group 11 is permanently connected to main power line 17. Thus, activation of switch 24 causes activation of each of the lights of group 11 for a predetermined time determined by the spring clock associated with cam 20.

It is additionally noted that while cam 20 is initially rotated in response to the passage of a vehicle in front of electric eye 15, if a second vehicle should pass in front of the electric eye 15, it would again activate electromagnet 16 to reset cam 20 to a full time cycle giving the second vehicle sufficient time to pass the lights of group 11.

Also associated with said control means 13 is a manually operable cam 28 rotatable by a knob 29. Manually operable cam 28 has recessed portions 30 and 31 along the periphery thereof. Recessed portion 30 normally receives armature 26 of switch 24 while recessed portion 31 normally receives armature 32 of switch 33. Armature 32 is electrically connected to a first terminal 34 of warning signal lamp 35. A second armature 36 of switch 33 is electrically connected to main power line 17 while second terminal 37 of warning signal lamp 35 is electrically connected to armature 26 of switch 24.

Rotation of manually operable cam 28 clockwise results in movement of armature 26 of switch 24 into en-

gagement with armature 23 resulting in the lighting of the lights of group 11. Additionally, rotation of cam 28 clockwise results in movement of armature 32 into engagement with armature 36 of switch 33 to complete an electrical circuit for warning signal lamp 35 with power lines 17 and through switch 33, terminal 34, terminal 37 and switch 24 thus resulting in activation of the warning signal lamp 35. This lamp may be situated on one of the light poles in the vicinity of the control means 13 so as to provide adequate warning to oncoming vehicles that a vehicle is stopped in that vicinity.

Cam 28, as mentioned above, is operative on switch 24 to manually operate group 11. During the operation of cam 28, which is associated with a spring clock having a longer time cycle than that associated with cam 20, spring 38 of which is shown, it thus becomes unnecessary for cam 20 to operate switch 24 in response to the passage of a vehicle in front of electric eye 15. At such times, rotation of cam 20 is prevented by armature 23 of switch 24 which has armature 26 biased against it by cam 28.

It should be clear from the foregoing that a new and novel highway lighting system has been provided whereby successive stretches of highway are illuminated by said system in response to the passage of traffic along the highway. Furthermore, this system presents the appearance of a continuously illuminated highway to the vehicles travelling it thus preventing the disturbance of the driver by the appearance of lights flashing on and off. In addition, the system provides manually operable means for providing a warning signal in the event of a stopped vehicle and means for lighting the stretch of the highway along which such vehicle is stopped to provide adequate light for repairs if necessary.

While the present invention has been described with respect to a preferred embodiment thereof, many modifications of this invention will now become apparent to those of ordinary skill in the art such as the utilization of electronic switches and electric timing means to accomplish the functions of the mechanical means described herein. It is thus desired that the scope of the invention not be limited by the specific illustrative embodiment described herein but rather be determined by the claims appended hereto.

What is claimed is:

1. A highway lighting system for lighting a predetermined length of a highway for a predetermined time in

response to the flow of traffic on said highway comprising:

a plurality of highway lights spaced sequentially apart from each other by a predetermined distance along said highway,

circuit means connecting each of said highway lights in parallel electrical circuits,

power supply means including a first conductor electrically connected in said circuit means to each of said highway lights and a second conductor,

switch means connected between said circuit means and said second conductor and normally in an inactivated condition whereby said highway lights are normally off,

trip means operatively associated with said switch means and responsive to the passage of a vehicle past a predetermined point on said highway to activate said switch means to electrically connect said circuit means and said second conductor to turn on said highway lights, said trip means including an electric eye electrically connected to an electromagnet and being responsive to passage of a vehicle in front of said predetermined point to activate said electromagnet, cam means having an armature thereon attractable by said electromagnet when said electromagnet is activated and said switch means being operatively associated with said cam means and being activatable thereby when said armature is attracted to said electromagnet, and

timing means operatively associated with said trip means and said switch means for maintaining said switch means activated for a predetermined time after the passage of said vehicle beyond said predetermined point, said timing means including spring clock means connected to said cam means for maintaining said switch means activated a predetermined time after said armature is attracted to said electromagnet.

2. A highway lighting system according to claim 1 including second cam means operatively associated with said switch means and manually operable to activate said switch means,

second switch means operable by said second cam means and warning signal means connected to said second switch means and operable thereby in response to operation of said manually operable means.

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