March 25, 1947. J. D. KENNELLY 2,417,934

OSCILLATING LIGHT SIGNAL DEVICE

Filed Jan. 1, 1945 3 Sheets-Sheet 1

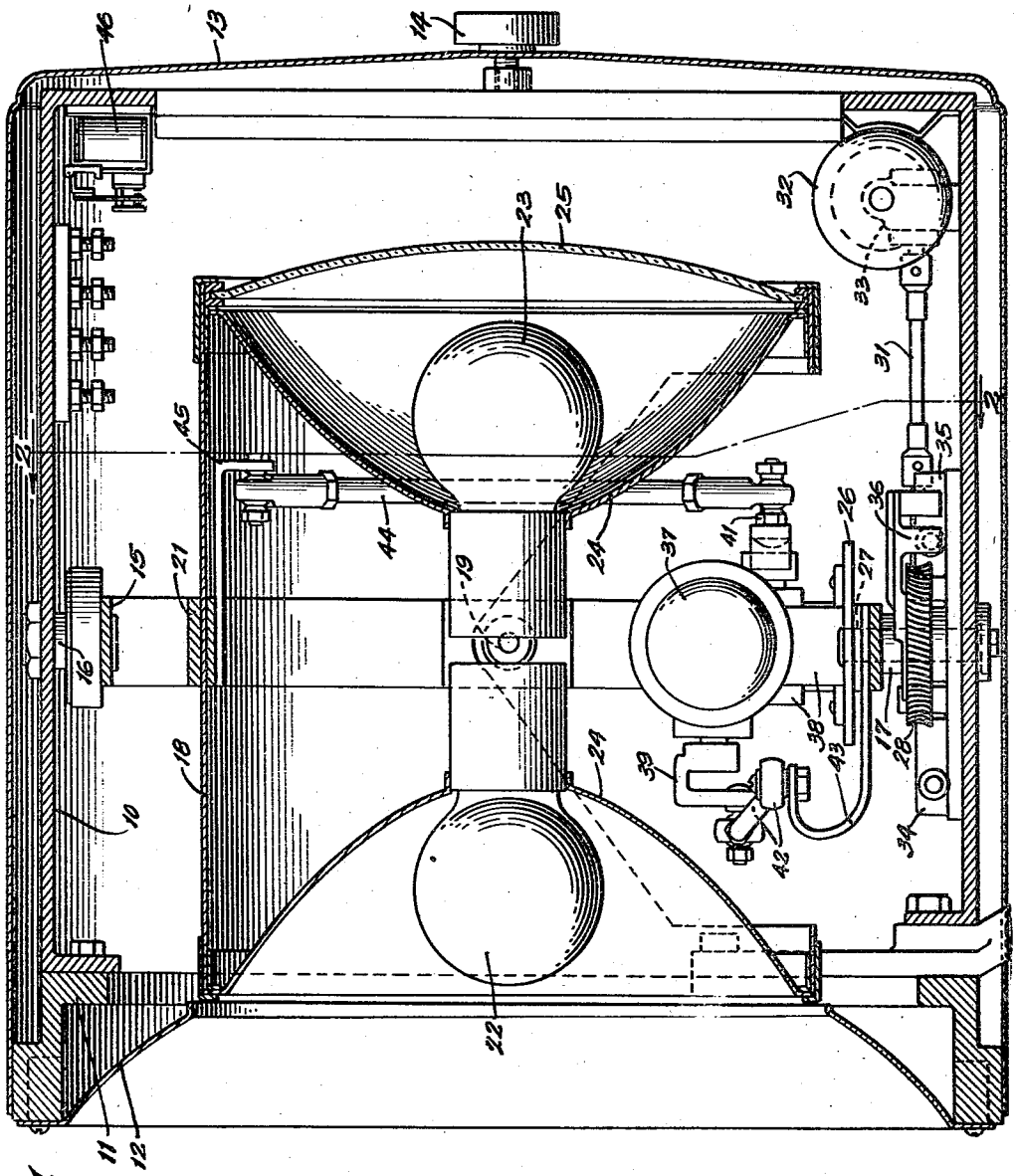


Fig. 1

Inventor:
Jeremiah D. Kennelly,
By Dawson, Orms and Booth.
Attorneys.

March 25, 1947. J. D. KENNELLY 2,417,934

OSCILLATING LIGHT SIGNAL DEVICE

Filed Jan. 1, 1945 3 Sheets-Sheet 2

Fig. 2

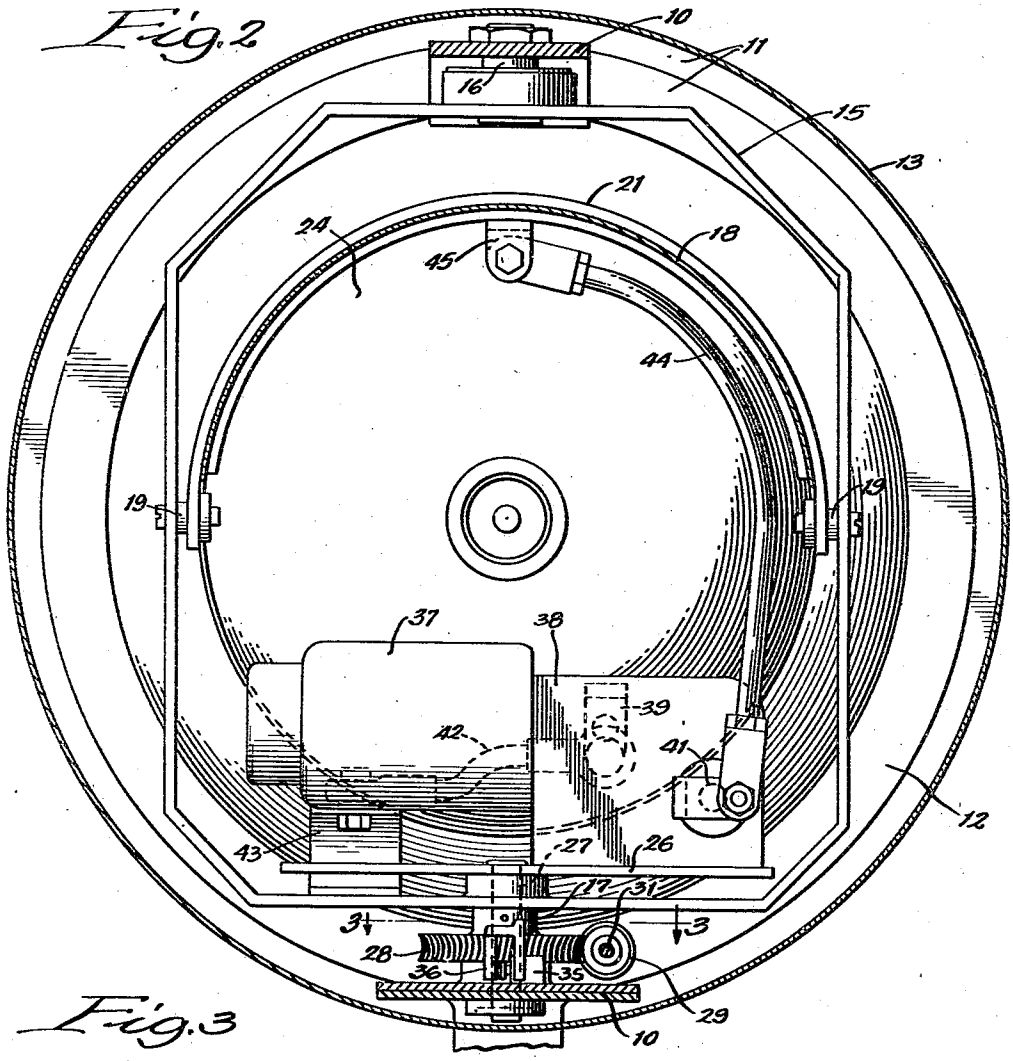
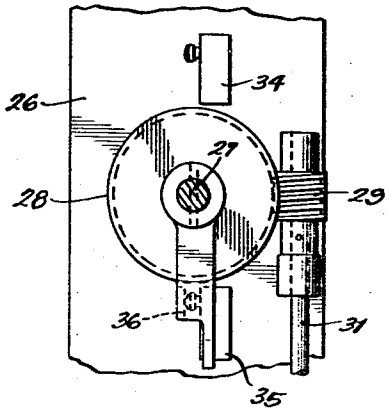


Fig. 3



Inventor:
Jeremiah D. Kennelly,
By Dawson, Orrick & Booth,
Attorneys.

March 25, 1947. J. D. KENNELLY 2,417,934

OSCILLATING LIGHT SIGNAL DEVICE

Filed Jan. 1, 1945 3 Sheets-Sheet 3

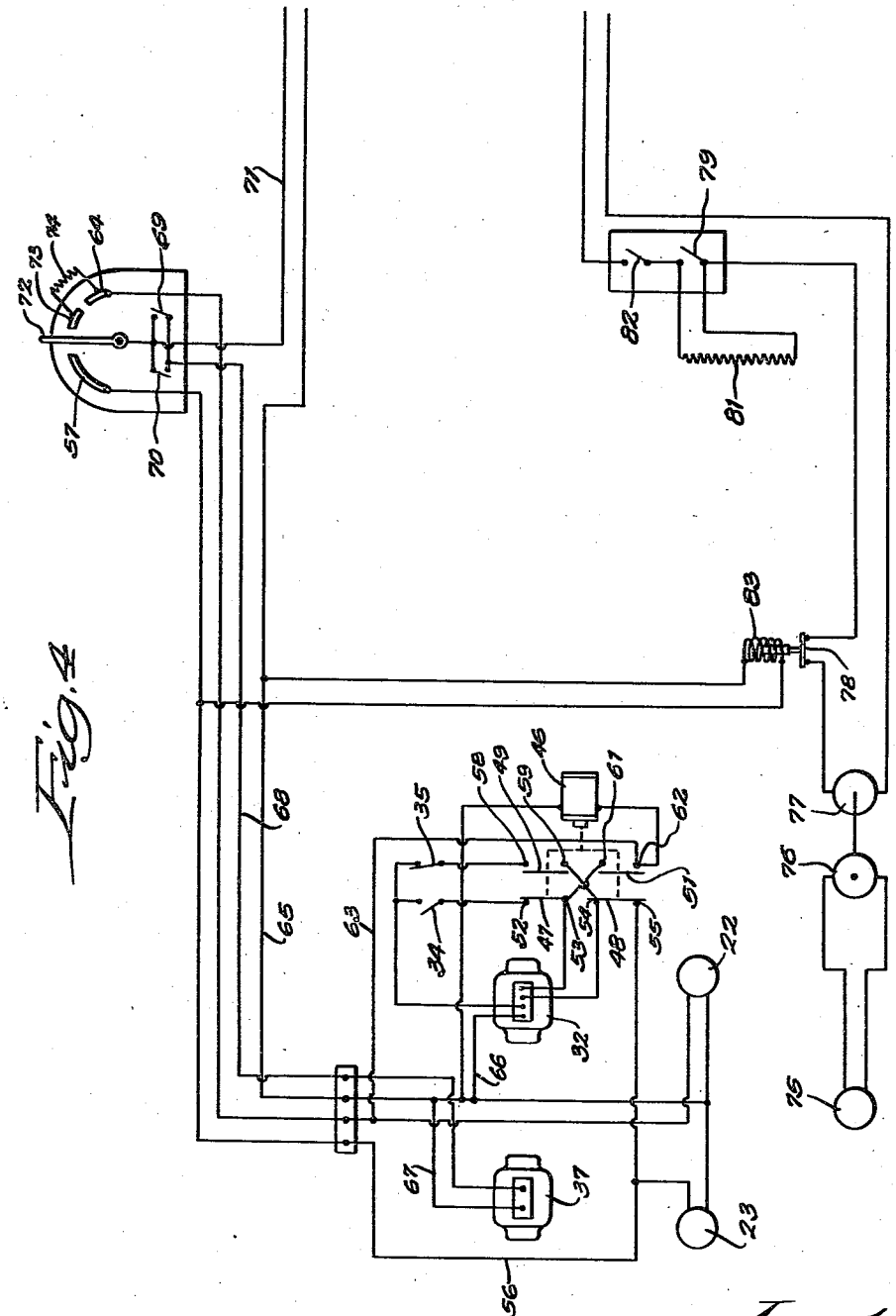


Fig. 4

Inventor:
Jeremiah D. Kennelly,
By Dawson, Cowles & Booth,
Attorneys.

Patented Mar. 25, 1947 2,417,934

UNITED STATES PATENT OFFICE

2,417,934

OSCILLATING LIGHT SIGNAL DEVICE

Jeremiah D. Kennelly, Oak Park, Ill.

Application January 1, 1945, Serial No. 570,946

5 Claims. (Cl. 177—329)

1

This invention relates to signal devices and more particularly to signal lights for use on railway cars.

It has heretofore been proposed to provide a signal device for a railway locomotive or other railway cars in which two selectively operable light sources are provided. Normally one of the light sources is a white light utilized during running while the other is a red colored light which may be utilized to signal approaching trains or for other signal purposes. Preferably the light sources are adapted to be moved to provide an oscillating beam which is more clearly visible than a stationary beam. One construction of this character is more particularly illustrated and described in my copending application, Serial No. 541,561 filed June 22, 1944.

It is one of the objects of the present invention to provide a signal device of the type referred to above which is relatively simple and inexpensive to manufacture and yet which will perform the desired signalling operations.

Another object is to provide a signal device in which the normal running light of the railway locomotive or car is interrupted when the colored beam of the signal device is operated.

The above and other objects and advantages of the invention will be more readily apparent from the following description when read in connection with the accompanying drawing, in which—

Figure 1 is an axial section thru a signal device embodying the invention with parts in elevation;

Figure 2 is a transverse section on the line 2—2 of Figure 1;

Figure 3 is a partial section on the line 3—3 of Figure 2; and

Figure 4 is a wiring diagram.

The control device as illustrated comprises a main frame 10 which is generally U-shaped and which is connected at one end to a ring 11 supporting an annular reflector 12 formed with a central opening thru which a beam of light may be projected. The main frame is preferably covered by a housing 13 fitting against the ring 11 as shown and secured by a screw 14 to the rearward end of the main frame. The frame and cover are adapted to be fixedly mounted in a railway car such as a locomotive. It will be understood that the reflector 12 may be covered by a suitable glazed cover or lens as desired.

A subframe 15 in the form of a strap bent around and with its ends connected together is pivotally mounted in the main frame on opposed

2

pivots 16 and 17 which define an axis transverse to the length of the main frame. Within the subframe 15 a lamp support 18 is mounted on pivots 19 lying on an axis transverse to the axis of the pivots 16 and 17. The subframe as shown, may be in the form of a cylindrical sheet metal member cut away at one side and having a reinforcing strap 21 thereon to which the pivots 19 are connected.

A pair of electric lamps 22 and 23 are supported in the support 18 facing toward the opposite ends thereof and lying within reflectors 24. The lamp 23 is adapted to project a beam having a distinctive color such as red and for this purpose a tinted transparent cover 25 may be secured over its reflector 24.

The position of the main frame and the support are controlled thru a mechanism which is carried by a plate 26 secured to a shaft 27 which is coaxial with the pivot 17. A worm gear 28 is connected to the shaft 27 and meshes with a worm 29 on a shaft 31 which is driven by a motor 32 thru a suitable gear box indicated at 33. The motor 32 is of the reversible direct current type to drive the gear 28 in either direction. The amount of motion of the gear 28 is limited by limit switches 34 and 35 which are normally closed and which are opened by engagement of an arm 36 therewith. The arm 36 is connected to the gear 28 and coacts with the switches to permit movement of the plate 26 thru substantially 180°.

The plate 26 carries a motor 37 which drives a gear box 38 from which two cranks 39 and 41 are operated. The crank 39 is connected thru a link 42 to a bracket 43 secured to subframe 15 so that as the crank 39 turns the subframe will be oscillated about the pivots 16 and 17. The crank 41 is similarly connected thru a link 44 to a bracket extension 45 on the support 18 so that as the crank 41 turns the support will be oscillated about the pivots 19. By properly adjusting the throws of the cranks 39 and 41 any desired motion of the support can be produced such as the figure eight movement normally employed in signal devices of this character.

As shown in Figure 4, the reversible motor 32 is controlled by a relay 46 which operates a plurality of switch blades 47, 48, 49 and 51. The relay may be spring biased or otherwise normally urged to the position shown in Figure 4 and when energized will move the several switch blades to the right.

The switch blade 47 is adapted to engage a contact 52 which is connected thru the limit switch 34 to the motor 32 and a contact 53 which

is connected to one side of either the armature or field winding of the motor. The other side of the winding to which contact 53 is connected connects to a contact 54 adapted to be engaged by the switch blade 48 which connects it to a contact 55. The contact 55 is connected to the lamp 23 and thru a wire 56 to a switch segment 57 on a master control switch.

The switch blade 49 engages a contact 58 which is connected thru the limit switch 35 to the motor and a contact 59 which is cross connected to the contact 54 as shown. The switch blade 51 engages a contact 61 which is cross connected to the contact 53 and a contact 62 which is connected thru a wire 63 to the lamp 22 and to a segment 64 on the main control switch. The relay 46 is connected to the wire 63 and to a common power lead 65 leading to any available source of direct current. The lead 65 is also connected thru a wire 66 to the motor 32 as shown and thru a wire 67 to the motor 37. The other side of motor 37 is connected thru a wire 68 and a pair of control switches 69 and 70 to the other power lead 71. One of the switches 69 or 70 may be of the type which will remain closed when closed to provide continuous operation of the motor 37 while the other may be a push-button type switch to provide for manual jogging operation of the motor to turn the support slowly to any desired position.

The power lead 71 is connected to a wiper arm 72 adapted to engage either the segment 57 or the segment 64. Preferably an additional segment 73 is provided connected thru a resistance 74 to the segment 64 to dim the lamp 22 when desired.

The normal running light for the railway cars such as the locomotive headlight is indicated at 75 supplied with current from a generator 76 driven by a motor 77. The motor 77 is supplied with current thru a switch 78 and thru a dimming switch 79 having a resistance 81 in shunt therewith and a manual control switch 82. With all of the switches closed the motor 77 will operate at relatively high speed to supply maximum voltage to the headlight 75 while with the dimming switch 79 opened the resistance 81 will be placed in circuit to cause the motor 77 to operate more slowly and deliver a smaller voltage to the headlight 75.

The switch 78 is normally closed and is adapted to be opened by a solenoid 83 connected across the wires 65 and 56. When the arm 72 engages the segment 67 to energize the lamp 23 the solenoid 83 will simultaneously be energized to interrupt the headlight 75 so that the colored danger signal will be more readily visible.

In operation for normal running the switch arm 72 is moved into engagement with one of the contacts 64 or 73 to energize the lamp 22 and to turn the motor 32 to bring the lamp 22 into register with the reflector 12. When the gear 28 reaches the proper position for registration of the lamp 22 with the reflector opening the limit switch 35 will be opened to interrupt operation of the motor 32. It will be understood that the motor 37 may be operated if desired to produce an oscillating light beam at this time.

In the event the train should become stopped on a track or it is desired to indicate a danger signal for some other reason, the arm 72 is moved into engagement with the contact 57. The lamp 23 is energized at this time and the motor 32 is operated in the opposite direction due to reversal of current thru the contacts 53 and 54 caused by operation of the switch contacts 47 and 48.

It will be noted that when the wiper 72 is moved out of contact with both contacts 64 and 73 the relay 46 will be de-energized to allow the switch blades to move to the left into the position shown. At this time the motor 32 will operate in the reverse direction to turn the plate 26 thru 180°. Thru the connecting links 42 and 44 this will turn the subframe 15 thru 180° to bring the lamp 23 into register with the opening in the reflector 12 to project a colored light beam therethru. When the gear 28 reaches a position in which the lamp 23 registers with the reflector opening the limit switch 34 will be opened to de-energize the motor 32. The motor 37 may be operated as desired, at this time by closing one or the other of the switches 69 or 70 to cause the light beam to oscillate. At the same time the main headlight will be interrupted to make the danger signal more readily visible.

While one embodiment of the invention has been shown and described in detail herein, it will be understood that this is illustrative only and is not intended as a definition of the scope of the invention, reference being had for this purpose to the appended claims.

What is claimed is:

1. A signal device comprising a casing adapted to be mounted on a car or the like and formed with an opening thru which a light beam may project, a subframe pivoted on the casing, an elongated support pivoted on the subframe on an axis transverse to the pivotal axis of the subframe, a pair of light sources for projecting visibly different rays of light carried by the support at opposite ends thereof respectively, a plate mounted for pivotal movement about an axis coincident with the axis of the subframe, means to turn the plate about its axis, a pair of cranks carried by the plate, means on the plate to turn the cranks, and means connecting the cranks respectively to the subframe and the support to oscillate them about their axes.

2. A signal device comprising a casing adapted to be mounted on a car or the like and formed with an opening thru which a light beam may project, a subframe pivoted on the casing, an elongated support pivoted on the subframe on an axis transverse to the pivotal axis of the subframe, a pair of light sources for projecting visibly different rays of light carried by the support at opposite ends thereof respectively, a plate mounted for pivotal movement about an axis coincident with the axis of the subframe, means to turn the plate about its axis, a motor carried by the plate, a pair of cranks driven by the motor, and links connecting the cranks respectively to the subframe and the support to rock them about their axes.

3. A signal device comprising a casing adapted to be mounted on a car or the like and formed with an opening thru which a light beam may project a subframe pivoted on the casing, an elongated support pivoted on the subframe on an axis transverse to the pivotal axis of the subframe, a pair of light sources for projecting visibly different rays of light carried by the support at opposite ends thereof respectively, a plate mounted for pivotal movement about an axis coincident with the axis of the subframe, means to turn the plate about its axis, a pair of cranks carried by the plate, means on the plate to turn the cranks, means connecting the cranks respectively to the subframe and the support to oscillate them about their axes, and control means simultaneously to operate the means to turn the

plate about its axis and to energize the light source which is in register with the opening in the casing.

4. A signal device comprising a casing adapted to be mounted on a car or the like and formed at one end with an opening thru which a light beam may project, a hollow subframe rotatably mounted on the casing on an axis transverse to the length of the main frame, a support pivoted on the subframe on an axis transverse to the subframe axis, a pair of light sources for projecting visibly different rays of light carried by the support at its opposite ends, a plate rotatably mounted on the main frame on an axis coincident with the subframe axis, a pair of cranks driven by the motor, means connecting the cranks respectively to the subframe and the support to rock them about their axes, and means to turn the plate about its axis to reverse the subframe and support whereby a selected one of the sources will register with the opening in the casing.

5. A signal device comprising a casing adapted to be mounted on a car or the like and formed at one end with an opening thru which a light beam may project, a hollow subframe rotatably mounted on the casing on an axis transverse to the length of the main frame, a support pivoted on the subframe on an axis transverse to the subframe axis, a pair of light sources for projecting visibly different rays of light carried by the support at its opposite ends, a plate rotatably mounted on the casing on an axis coincident with the subframe axis, a motor carried by the plate, a pair of cranks driven by the motor, means connecting the cranks respectively to the subframe and the support to rock them about their axes, a gear connected to the plate, a worm meshing with the gear, a reversible motor for driving the worm, limit switches connected to the motor to interrupt operation thereof, means movable with the gear to control the limit switches, and control means for controlling the motor to turn the plate in one direction or the other.

JEREMIAH D. KENNELLY.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,845,399	Cleninger	Feb. 16, 1932
2,123,435	Peill et al.	July 12, 1938
2,221,483	Kennelly	Nov. 12, 1940
2,262,239	Kennelly	Nov. 11, 1941
1,283,983	Udell	Nov. 5, 1918