March 30, 1937. F. J. LOSS 2,075,447

TRAFFIC SIGNAL DEVICE

Filed May 24, 1930 2 Sheets-Sheet 1

Fig. 2

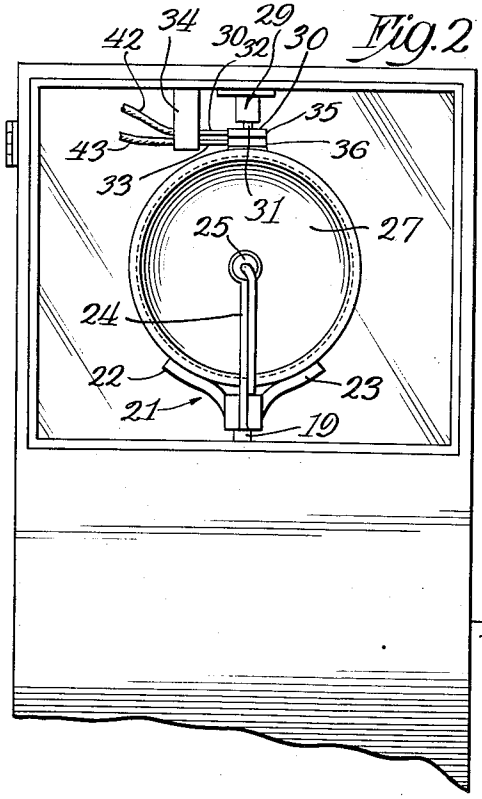


Fig. 3

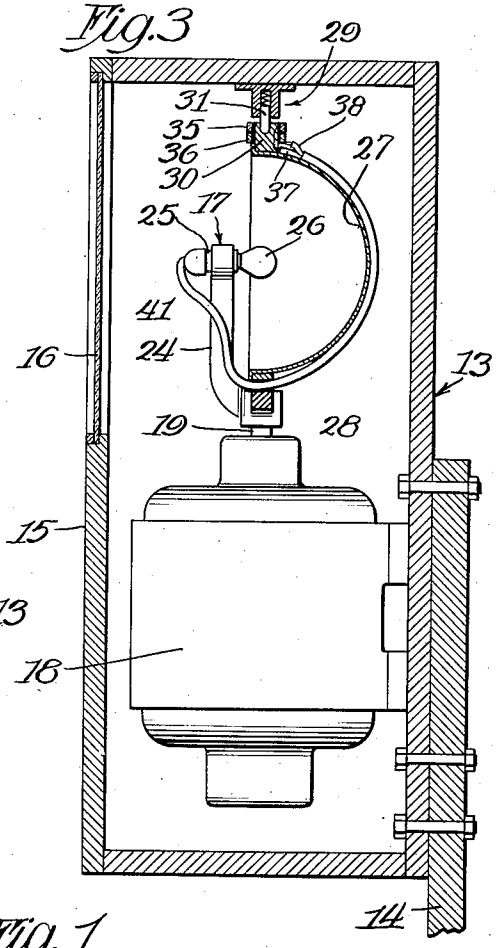


Fig. 4

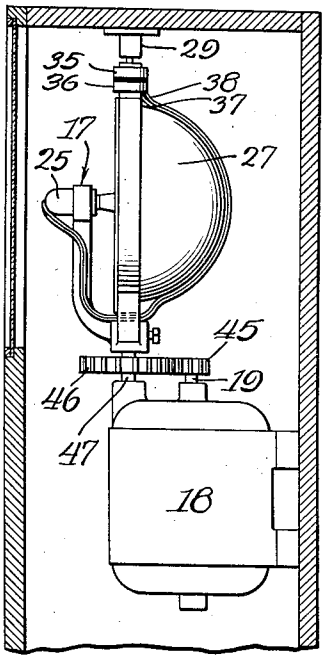
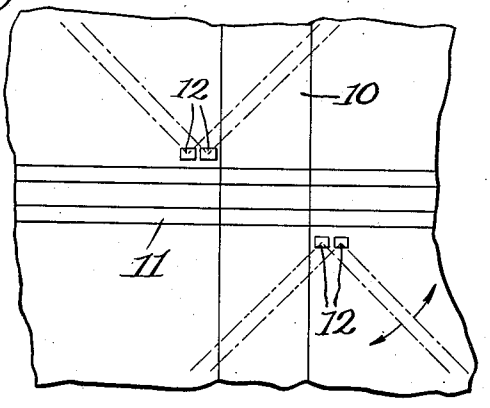


Fig. 1



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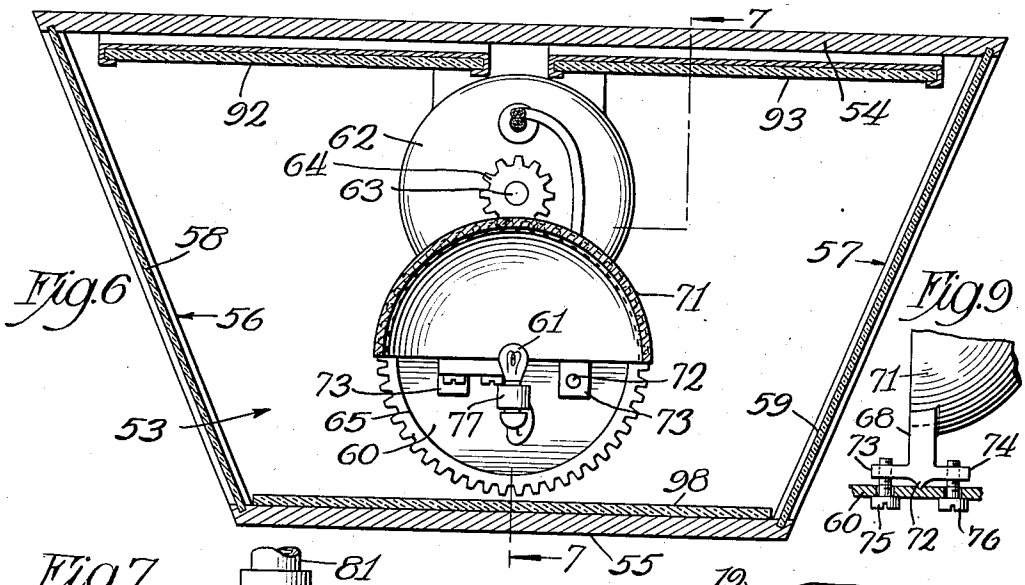
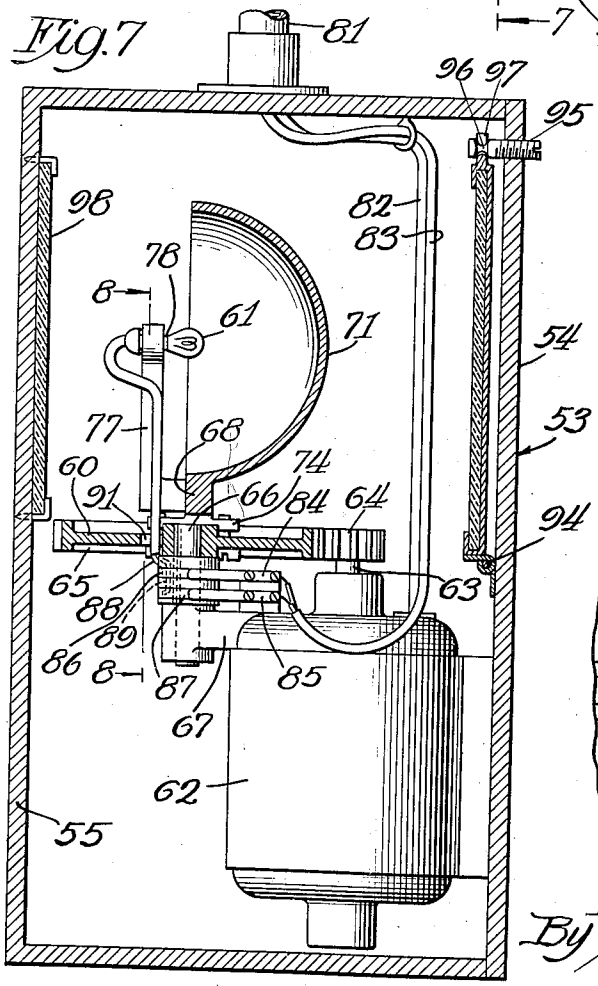


Fig.6

Fig.9

Fig.7



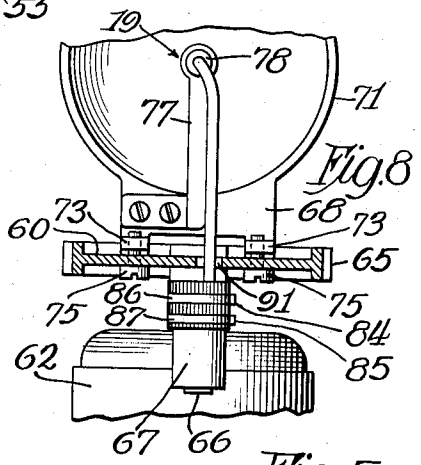
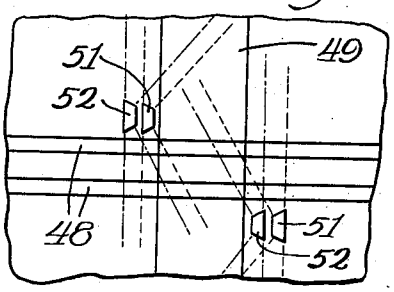


Fig.8

Fig.5



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UNITED STATES PATENT OFFICE

2,075,447

TRAFFIC SIGNAL DEVICE

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Application May 24, 1930, Serial No. 455,256

5 Claims. (Cl. 177—329)

This invention relates to traffic or signal lights, and more particularly to lights located along a highway to indicate railroad crossings.

The principal object of the invention is the provision of new and improved signal device having novel means for causing a movement of the rays of light across a predetermined field or zone, together with an intermittent illumination of said zone.

Another object of the invention is the provision of a source of light with new and improved means for moving the same, whereby a source of light will be caused to appear and disappear alternately for attracting the attention of motorists traveling the highway and warning them of their proximity to a railway crossing.

A still further object of the invention is the provision of a new and improved traffic or signal light that is inexpensive to manufacture, efficient in use, distinctive in appearance, that is composed of few moving parts, and that is not likely to become broken or get out of order.

Other and further objects and advantages of the invention will appear from the following description taken in connection with the accompanying drawings, in which—

Fig. 1 is a diagrammatic view showing a railway crossing with the devices in position alongside the highway at its intersection with the railway;

Fig. 2 is a front elevation of the device;

Fig. 3 is a vertical section thereof;

Fig. 4 is a vertical section showing a modified form of construction;

Fig. 5 is a diagrammatic view of a railway crossing with the invention in position therein;

Fig. 6 is a horizontal section of a different form of the device;

Fig. 7 is a vertical section along broken line 7—7 of Fig. 6;

Fig. 8 is a section on line 8—8 of Fig. 7; and

Fig. 9 is an elevation of the adjusting device for the lighting mechanism, with parts in section and parts broken away.

For convenience of description the simplest form of the device shown in Figs. 1 to 4 inclusive will first be described, after which the description of the preferred form will be given.

Referring now to the drawings, the reference character 10 designates a public highway which crosses one or more railways 11 at the same level. One or more traffic or signal lights 12, two being shown, are mounted alongside the highway at each side of the railway crossing. It is common practice to employ the lights in pairs so that if one fails there will still be one left to function as a signal. Preferably, though not necessarily, they are located at each side of the railway on the right side of the highway in order to efficiently warn the traffic of the proximity of the railway or railways.

Each signal light 12 comprises a casing or housing 13 which is adapted to be supported in any suitable manner, as by the post 14, see Fig. 3. The casing 13 may be and preferably is provided with a plurality of faces or side walls.

One of the faces or side walls, as the wall 15, is provided with a transparency as a window or pane of glass 16, through which rays from the signal light 17 may be projected as will presently appear.

In order to be efficient, a signal light should not shine with a steady light, but should be movable or at least intermittent. A movable or intermittent light will attract the attention, whereas a steady light may be passed unobserved. The present invention seeks to combine the movable and intermittent features.

Suitable means are provided for moving the source of light to cause an intermittent projection of the beams or rays of light through the transparency. In the form of construction selected to illustrate a simple embodiment of the invention, the light assembly 17 is so mounted that it is rotated and a shield is provided to intermittently intercept the rays of light passing through said transparency.

As shown, the means for moving the light comprises a motor 18 which is mounted in the casing 13 as by being attached to the back wall thereof. The motor may be operated in any suitable manner. The motor shown is an electric one and is so mounted that the armature shaft 19 extends vertically.

In the form of construction shown in Figs. 2 and 3 the light assembly 17 is mounted on and is rotatable with said armature shaft. Mounted on the armature shaft 19 but insulated therefrom is a bracket 21 having arms 22, 23 and 24 extending upwardly therefrom.

Slidably mounted within the upper end of the arm 24 is a lamp socket 25 within which is detachably secured the source of light, such as the electric light bulb 26, in the usual manner. The socket 25 is adapted to be frictionally held within a suitable opening in the upper end of said arm and may be slid back and forth for focusing the source of light as will presently appear. A reflector 27 is rigidly connected to the arms 22 and 23 and is so positioned that the bulb 26 will

be supported at its focus. The bracket 21 may be secured to the shaft 19 in any suitable manner.

Suitable means are provided for pivoting the light assembly 17 at its upper end to the casing 13 so as to prevent vibration of the same during its operation. As shown, a bracket 29 having a spring-pressed pivot member 31 therein is provided for this purpose. The pivot member 31 engages in a corresponding socket in the block 30 rigidly secured to the upper end of the reflector 27.

Appropriate means are provided for conducting the electric current to and from the source of light. Any suitable means may be employed for this purpose. As shown, a pair of brushes 32 and 33 mounted in a support 34 are adapted to contact a corresponding pair of collars 35 and 36 mounted on the block 30 and insulated from each other and from said block.

A pair of conductors 37 and 38 attached to said collars are adapted to convey the current to the bracket which supports the source of light 26. These conductors extend about the back of the reflector. If desired the arm 24 may be made hollow so that the wires 37 and 38 may extend therethrough. The current for operating the source of light may be considered as entering the device through the conductor 42, brush 32, collar 35, conductor 37, to the source of light and return by the conductor 38, collar 36, brush 33 and conductor 43.

In the operation of the device the motor 18 will rotate, causing the lighting assembly to rotate, and when the source of light is in the position shown in Fig. 3 the rays therefrom will pass through the transparency 16 and will be visible as a moving beam of light, to the driver on the highway approaching the crossing. As the light assembly continues to move the reflector 27 will be brought into position to intercept the rays of light at each rotation of the device. The two adjacent signal lamps are adapted to be so arranged that while the rays of light from one of the bulbs are being projected through the transparency the reflector acting as a shield will be intercepting the rays of light from the bulb of the companion device. In this manner the rays of light from each will be intermittently intercepted and the parts will be so constructed that there will be substantially a constant light visible from the highway. The transparency in the devices is arranged to face in the direction in which the highway extends, and at an angle to the railway. By arranging the companion lights so that one will be shielded while the other is visible, their operation will simulate the rapid swinging to and fro of a signal light. By also turning the companion lights in opposite directions as indicated by the arrows in Fig. 1, this illusion may be greatly heightened. The color of the transparencies will determine the color of the lights in the usual manner, or colored bulbs may be used with a clear transparency as may be desired.

Preferably the lights and motors are arranged in multiple so that if one fails to function it will not affect the operation of the remaining ones.

If it is desired that the period between flashes be lengthened, the light assembly may be mounted on a countershaft with a reducing gearing as shown in Fig. 4. In this figure, a small pinion 45 is mounted on the armature shaft 19 of the motor and meshes with a large gear 46 on a countershaft 47 on which the signal light is rigidly mounted. The relative number of teeth in the gear and pinion will determine the space of time between flashes. Since the remaining structure is substantially the same as that shown in Figs. 1 and 2 the description need not here be repeated.

In Figs. 5 to 9 is shown the preferred form of construction. In this form of the device each casing is so constructed that the light therein will be visible in approaching the device from either direction along the highway. Mirrors are also employed to multiply and accentuate the light effects. By means of this simple arrangement the rays of light appear to be moving in various directions with the result that there is such a maze of moving light rays that the attention of the driver is attracted even under the most unfavorable circumstances.

Referring now to Figs. 5 to 9, the reference character 48 designates a pair of railway tracks and the numeral 49 a highway crossing said tracks at the same level. A pair of signal lights 51 and 52 are mounted alongside the highway at each side of the railway tracks as clearly shown in Fig. 5 of the drawings.

Each signal device comprises a casing 53, see Fig. 6, having a back wall 54, a front wall 55 and inclined side walls 56 and 57. The side walls are provided with transparencies 58 and 59 which converge forwardly whereby rays from the source of light 61 will sweep the highway in both directions with a comparatively wide band of light.

A source of light 61 is mounted within the casing 53 and suitable means are provided for intercepting the rays from this source that are projected through said transparencies.

As shown, a motor 62 is mounted within the casing and means are provided for rotating the source of light by this motor as will now be described. The motor shaft 63 is provided with a pinion 64 which meshes with a gear 65 secured on a countershaft 66 journaled in an arm 67 carried by the motor 62, see Fig. 7. A bracket 68 is mounted on the web or spoke 60 of the gear 65. The light source and reflector 71 which constitute what may be called the light assembly are carried by this bracket.

Suitable means are provided for tilting the light assembly. As shown, the bracket is provided with a wedge-shaped fulcrum 72 and with lateral projections or feet 73 and 74, see Fig. 9. Screws 75 and 76 extend through enlarged openings in the web 60 and are threaded in the feet 73 and 74. By loosening one and tightening the other the bracket may be tilted as desired.

A bracket arm 77, see Fig. 8, is rigidly attached to the bracket 68 and the bulb holder or socket 78 is carried by the upper end of said arm. The parts are so arranged that the source of light 61, the electric bulb, will be supported in the focus of a reflector 71 rigidly mounted on the bracket 68.

The casing 53 is adapted to be supported in any suitable manner. As shown, it is supported by a hollow support or arm 81 as is usual in such constructions. The leads 82, 83 for conducting the electric current to the source of light 61 are adapted to enter the casing through the hollow arm 81. The leads 82 and 83 are connected to brushes 84 and 85 which engage collars 86 and 87 rigidly mounted on the shaft 66 and insulated therefrom and from each other.

Suitable conductors 88 and 89 in contact with the collars 86 and 87 respectively are adapted to extend upwardly through an opening 91 in the

web of the gear **65** and are connected to the socket **78** in the usual manner.

In order to magnify or accentuate the light effects, mirrors may be and preferably are mounted within the casing for reflecting rays of light through the transparencies. As shown, each of the casings **53** is provided adjacent the back wall **54** with a pair of mirrors **92** and **93**. Preferably these mirrors are adjustably mounted so that the light may be reflected at the proper angle relative to the highway.

Any suitable means may be provided for adjustably mounting the mirrors. As shown, each of the mirrors is hingedly connected at its lower end as at **94** to the back wall **54**, see Fig. 7, and means are provided at its upper end for adjusting the angle of the mirror. This means comprises a stud **95** threaded through the wall **54** and provided with a neck or reduced portion **96** which is adapted to engage a bifurcated bracket **97** on the upper end of the mirror. By turning the stud **95** the mirror may be tilted forwardly or moved rearwardly. If desired, a mirror **98** may also be mounted on the front wall.

It will be readily apparent that the reflected rays of light will appear to move in the opposite direction from that of the direct rays, as the source of light **61** and the intercepting member or reflector **71** are rotated. It is evident that by means of this arrangement the direct rays and the reflected rays will mix and intermingle, producing a maze of changing lights that is calculated to attract the attention of the motorist under any and all circumstances.

It often happens that where the traffic is heavy on the highway the vehicles adjacent the signal light will intercept the rays of light and prevent motorists farther back from observing the signal. By providing a transparency facing in both directions along the highway the driver at some distance from the signal, who is unable to see the light on the right side of the road may be able to see the signal on the left.

The signal lights are preferably arranged in pairs on the right side of the road as one approaches the railway crossing. The sources of light of each pair may be arranged to rotate synchronously in phases 180° apart, but this is not necessary. By the use of mirrors the direct and reflected rays of light from each source of light will be almost continuously directed across or along the highway. The lights are used in pairs for the purpose of safety. If one light fails the other will function until repairs can be made.

While in the diagrammatic showing the signal devices are disclosed as being located at the sides of the highway, it is understood that they may be located in the central portion of the highway or suspended above the highway, or otherwise arranged as desirable or as occasion may require.

It is thought from the foregoing taken in connection with the accompanying drawings that the construction and operation of my device will be apparent to those skilled in the art, and that various changes in size, shape, proportion and details of construction may be made without departing from the spirit and scope of the appended claims.

I claim as my invention:

1. A traffic signal light comprising an opaque housing having a transparency in one side thereof, a mirror within said housing for reflecting light from said source through said transparency, a source of light opposite said transparency, a shield on one side only of said source of light, means for rotating said shield for alternately moving the same between said source of light and said transparency and between said light and said mirror.

2. A signal device comprising a casing, a transparency in a wall of said casing, a source of light within said casing for projecting rays of light through said transparency, a reflector for said source of light, means for rotating said reflector and source of light as a unit about a vertical axis, a mirror for reflecting rays from said source of light through said transparency when said reflector is between said source of light and said transparency, said reflector when in one position intercepting the rays of light falling upon said mirror and reflecting same through said transparency.

3. In a traffic light, an opaque housing having a transparency in one wall thereof, a source of light within said housing opposite said transparency, a mirror on one wall of said housing in position for reflecting rays from said source of light through said transparency, means for supporting said light independently of said mirror, and means within said housing for moving said reflector between said transparency and source of light and between said mirror and source of light, whereby rays of light from said source will intermittently pass through said transparency and will be intermittently reflected by said mirror.

4. A signal device comprising a casing having opaque back and front walls and having converging side walls, a transparency in each side wall, a source of light within said casing for projecting rays through said transparency, a mirror adjustably mounted on said back wall for reflecting rays from said source of light through said transparency and movable means for intermittently intercepting the rays projected through said transparencies from said source of light and also for successively intermittently intercepting the rays projected onto said mirror from said source of light.

5. In a signal, a pair of beam projecting means, means mounting said beam projecting means for rotation on parallel axes whereby the beams are projected at substantially right angles to their respective axes, and means for rotating said beams simultaneously with the beams at 180 degrees displacement.

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