

April 16, 1929.

G. H. GREEN

1,709,212

WARNING DEVICE

Filed Feb. 19, 1925

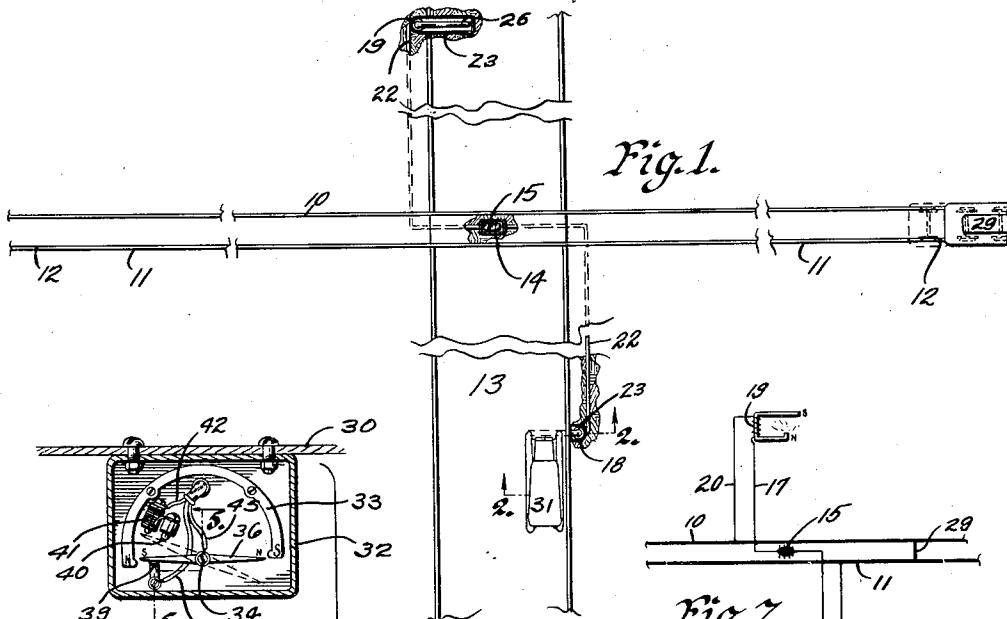


Fig. 1.

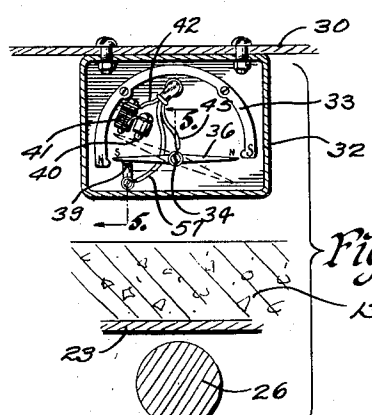


Fig. 4.

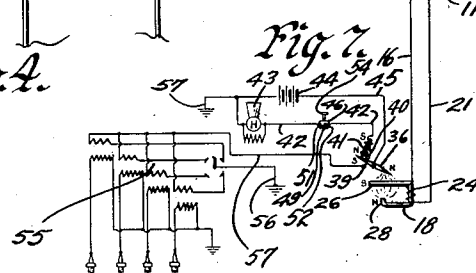


Fig. 7.

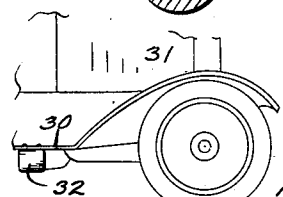


Fig. 3.

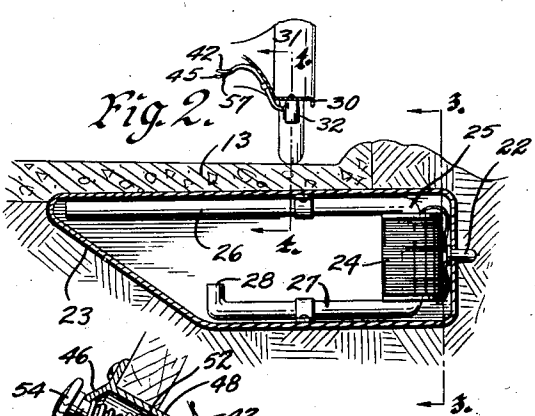


Fig. 2.

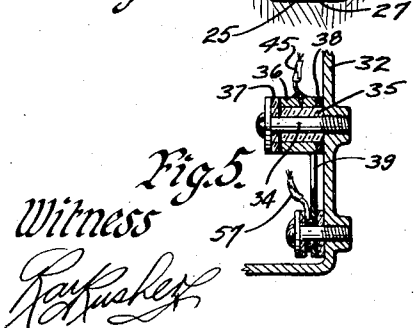


Fig. 5.

Witness
Ray Fisher

Fig. 6. Inventor
George H. Green
by *Paul & Freeman* Attorneys

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1,709,212

UNITED STATES PATENT OFFICE.

GEORGE H. GREEN, OF ROCK RAPIDS, IOWA.

WARNING DEVICE.

Application filed February 19, 1925. Serial No. 10,242.

The object of my invention is to provide an electrical warning device of simple, durable and inexpensive construction.

More particularly, it is the purpose of my invention to provide a device adapted for use at railroad and highway intersections, including an electrical circuit adapted to be closed by an approaching train or car through batteries or other source of electrical energy and magnets, the latter being located in the highway. The device includes a permanent magnet on the car and a needle. The needle may be included in the ignition system of the car. It is adapted to be actuated by the electromagnets in the highway for closing a circuit by a signal device on the car (motor vehicle).

With these and other objects in view, my invention consists in the construction, arrangement and combination of the various parts of my device, whereby the objects contemplated are attained, as hereinafter more fully set forth, pointed out in my claims, and illustrated in the accompanying drawings, in which:

Figure 1 shows a diagrammatic plan view of a railroad and highway intersection equipped with a warning device, embodying my invention, parts being shown in section and parts being broken away.

Figure 2 is a detail, sectional view taken on the line 2-2 of Figure 1.

Figure 3 is a detail, sectional view taken on the line 3-3 of Figure 2.

Figure 4 is a detail, sectional view taken on the line 4-4 of Figure 2.

Figure 5 is a sectional view taken on the line 5-5 of Figure 4.

Figure 6 is a sectional view of the switch on the instrument board of the motor vehicle.

Fig. 7 is a diagram of the electrical circuits.

In the accompanying drawings, I have used the reference numerals 10 and 11 to indicate generally the opposite rails of a railroad. Sections of the rails 11 are insulated as at 12 from the other rails in alignment therewith at certain desirable distances from the vehicle highway 13. Suitably located as in the casing 14 below the railroad are the batteries 15. The batteries 15 are connected by means of wires 16 and 17 with electromagnets 18 and 19 located under the highway in such positions as to be substantially below approaching motor cars. The

electromagnet 19 is connected by a wire 20 with the rail sections 10 and the electromagnet 18 is connected by a wire 21 with the rail sections 11.

It will be understood that the wires are received in suitable conduits 22 or the like. Each electromagnet is received in a suitable casing 23 and comprises a coil 24 having a rod 25 extended therethrough and projecting horizontally as at 26 for a considerable distance, across the road, and a portion 27 at its other end extending a shorter distance and up-turned as at 28 for distributing the lines of force along the portion 26.

It will be understood, of course, that proper insulation is provided.

It will be seen that normally the circuit through the batteries 15 is broken, but when a railroad car 29 or the like enters into the section of the track between the installation points 12, a circuit is closed through the batteries, the wire 17, the electromagnet 19, the wire 20, railroad sections 10, the railroad car 29, the rail sections 11, the wire 21, the electromagnet 18 and the wire 16.

On the running board 30 of the motor vehicle 31 is a casing 32 in which is a permanent magnet 33 shown in Figure 4. On the wall of the casing 32 is mounted a spindle or the like 34 on which is an insulating bushing 35. On the bushing 35 is mounted a needle 36 (see Figures 4 and 5). Washers 37 and 38 insulate the needle 36 from the casing 32 and the spindle 34.

A contact point 39 is arranged to engage one end of the needle 36 to prevent it from normally standing in the position it would otherwise assume with relation to the permanent magnet 33, so that there is a constant down pull on for instance the south pole of the needle 36.

A contact point 40 is arranged above the south pole of the needle 36 and is connected with an electromagnet 41, which is in turn connected by a wire 42 with the signal, such as the horn 43 (see Figure 7), the automobile battery and the wire 45 leading back to the needle 36.

When there is an approaching railroad car on the railroad track and the electromagnet 18 for instance is magnetized by the closed circuit through the batteries 15, then when the motor vehicle equipped with my parts shown in Figure 4, travels over the electromagnet 18, the needle will be deflected to cause it to contact with the point 40.

This is because the north pole of the needle is lower than the south pole, and is then closest to the extension 26, the end of which forms the north pole of the electromagnet 18. This closes the circuit through the point 40, the magnet 41, the switch 46 in the wire 42, the signal 43, such as the horn, the battery 44, the wire 45 and the needle, thus warning the approaching driver of the approach of the car 29.

The switch 46 is shown in detail in Figure 6 and comprises a casing 48, and a member 49 normally held by the spring 50 in contact with the points 51 and 52 in the wire 42. The contact 49 has a shank 53 and a head 54. The head 54 may be engaged by the driver of the motor vehicle for breaking the circuit through the wire 42, whereupon the permanent magnet 33 will cause the needle 36 to return to its normal position shown in Figure 4.

The contact 39 may be connected with the primaries 55 of the ignition system of the automobile, which are grounded for instance as at 56 on the motor vehicle frame in the well known way.

Thus it will be seen that when the construction last mentioned is employed, the circuit through the ignition system is normally closed through the wire 57 between the contact point 39 and the primaries 55, the car body 56, the contact 39, needle 36, wire 45 and the battery 44, which is also grounded as at 57 on the motor vehicle body.

It thus occurs that when the construction now being described is employed and the needle 36 is deflected from its position shown in Figure 4 to its position contacting with the member 40, the circuit through the ignition system is broken and the car is compelled to stop until the switch 54 is opened. The wire 57 connecting the point 39 with the primaries of the ignition system of a motor vehicle may be dispensed with whenever desired.

I claim as my invention:

1. A source of electrical energy, electromagnets designed to be placed under a vehicle highway near the intersection thereof with a railroad, means for electrically connecting the electromagnets with the source of electrical energy, said means including the rails of the railroad for closing a circuit through an approaching railroad car, said rails, the source of electrical energy and the electromagnets, whereby the approaching railroad car energizes the magnets, a signal device adapted to be mounted on a motor vehicle including a permanent magnet, an insulated needle arranged adjacent thereto, a stop, said permanent magnet tending to maintain said needle in engagement with

said stop, a contact point spaced from said needle, an electro-magnet adjacent said contact point, a switch and means for including said last electro-magnet, said needle, said contact point and said switch in the electrical circuit of the signal device whereby said electromagnet will maintain said needle against said contact point when the signal current flows therethrough.

2. In a warning signal device structure, a signal mechanism adapted to be mounted on a motor vehicle including a permanent magnet, a needle arranged to be held thereby in a predetermined position, a contact point spaced from the needle, a signal circuit including said needle and said contact point and means for deflecting said needle against said contact point, said means comprising an electromagnet designed to be placed in a highway and means for closing an electrical circuit through the electromagnet, upon the approach of a railroad car to the intersection of the railroad with the highway said electromagnet comprising a pole extending transversely of the highway and adapted to act upon said needle as the vehicle travels over the highway above said electro-magnet.

3. In a device of the class described, a source of electrical energy, electromagnets designed to be placed under a vehicle highway near the intersection thereof with a railroad, and comprising poles extending transversely of the highway and second poles spaced below the center of the first poles, means for electrically connecting the electromagnets with the source of electrical energy, said means including the rails of the railroad for closing a circuit through an approaching railroad car, said rails, the source of electrical energy and the electromagnets whereby the approaching railroad car energizes the magnets and a signal device adapted to be mounted on a motor vehicle and be actuated by said electromagnets when energized by the approaching railroad car.

4. A device of the character described comprising electromagnets placed under a vehicle highway near the intersection of a railroad therewith, a source of current supply for energizing said magnets upon a railroad car entering a section of the railroad adjacent the highway, signal means on a vehicle adapted to be moved to operative position upon said vehicle coming adjacent one of said electromagnets, said means remaining operative after the vehicle has passed beyond the range of the electromagnet and manually operated means associated with said signal means to render it again inoperative and in position to be actuated by another electromagnet.

Des Moines, Iowa, January 14, 1925.

GEORGE H. GREEN.