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Kamb

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[54] **ACCIDENT WARNING AND TRAFFIC GUIDE SYSTEM**

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[52] **U.S. Cl.** ..... **340/81 R**, 340/22, 340/300

[51] **Int. Cl.** **G08g 1/00**

[58] **Field of Search** ..... 340/22, 74, 81 R, 340/114 R, 300, 331, 332

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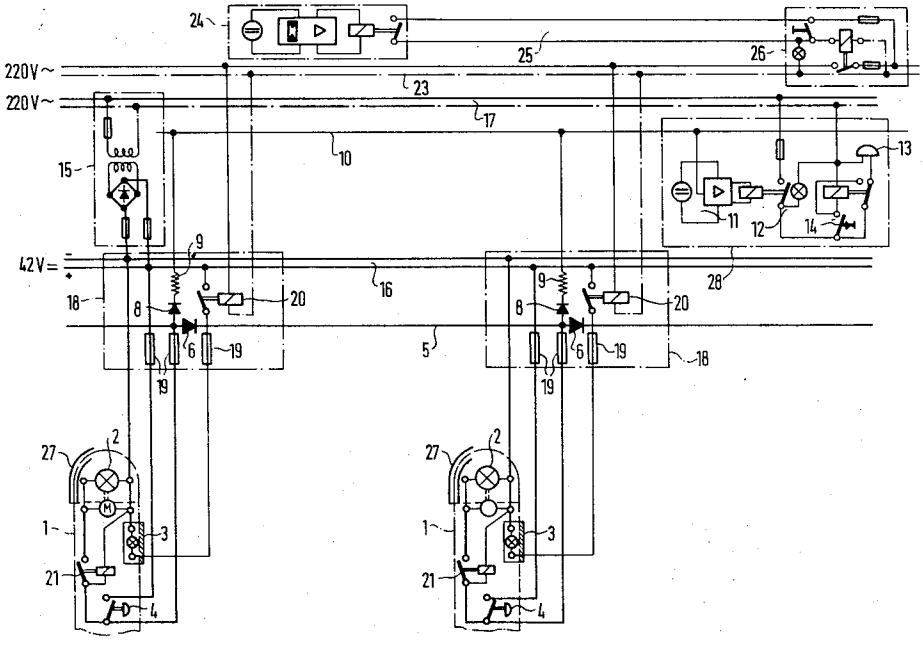
[57] **ABSTRACT**

An accident warning and traffic guide system particularly useful during fog is installed along an edge of the road. It comprises guide posts spaced along the road edge and carrying a blinking warning light and a warning switch. A safety or cutout fuse is connected in the current supply circuit for each warning light, and the fuses are mechanically protected.

12 Claims, 3 Drawing Figures



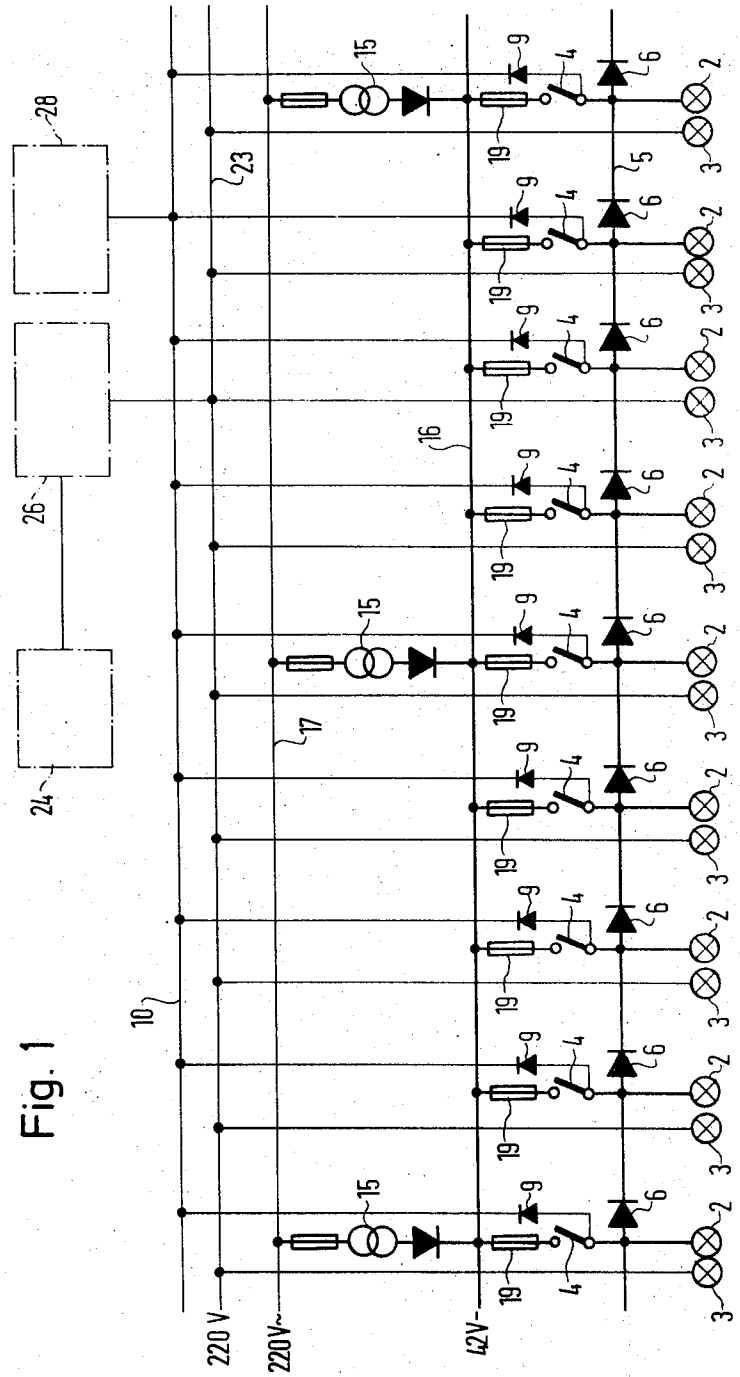


Fig. 1

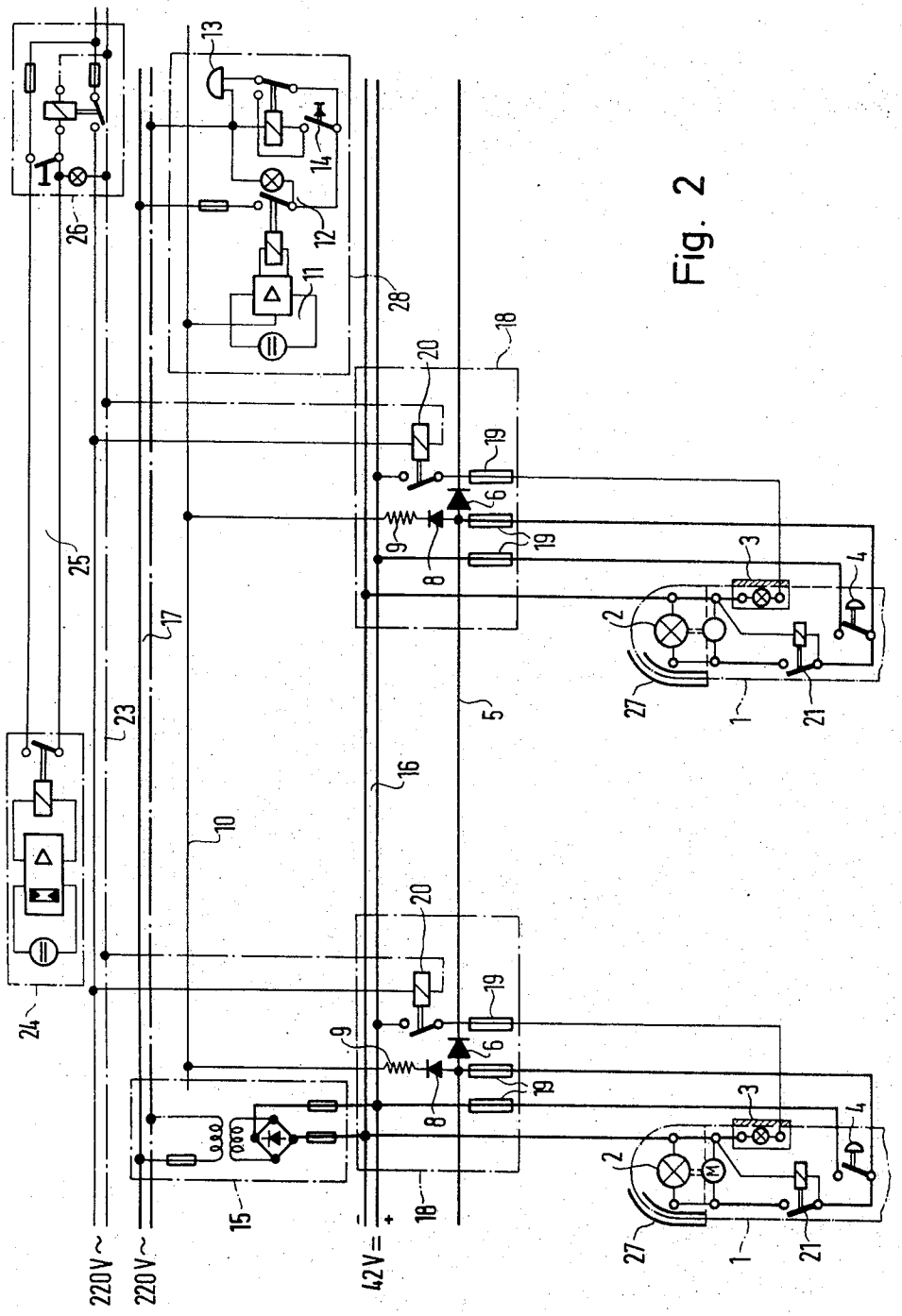


Fig. 2

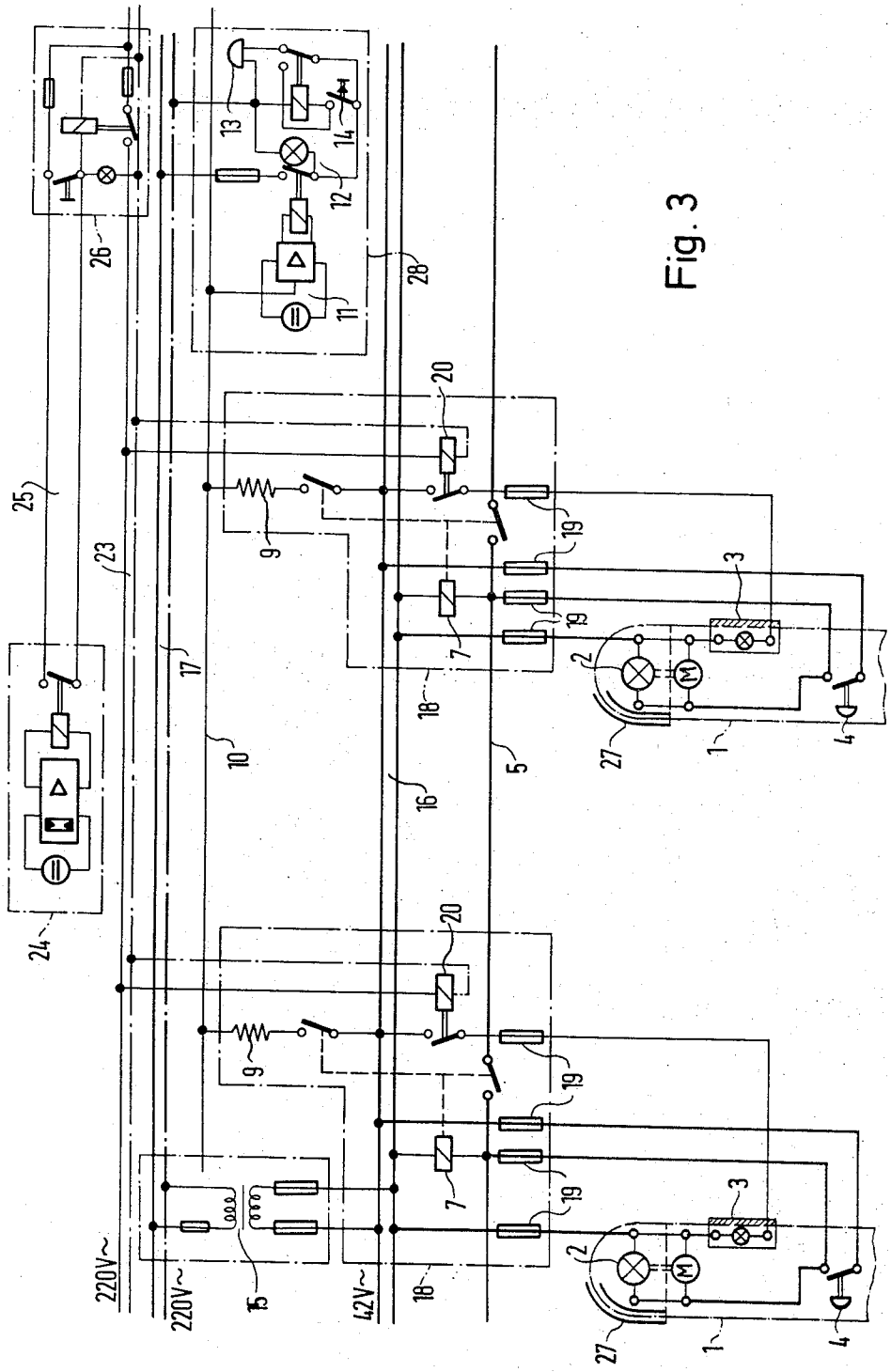

220V~
220V~
42V~
1
2
3
4
5
7
9
10
11
12
13
14
15
16
17
18
19
20
23
24
25
26
27
28

Fig. 3

ACCIDENT WARNING AND TRAFFIC GUIDE SYSTEM

The present invention relates to improvements in an accident warning and traffic guide system installed along an edge of a road, and is particularly useful on express highways to guide car traffic during a fog and/or to warn motorists of accidents.

When a car accident occurs on heavily travelled highways, particularly in foggy weather, it frequently happens that succeeding cars pile onto preceding cars in pile-ups often causing considerable damage and personal injuries. It is also many times impossible to report the accident promptly to police and/or ambulance services.

It is the primary object of this invention to overcome these difficulties and to provide a system which will prevent such pile-ups, particularly during conditions of reduced visibility, and also makes it possible to report the accident location without delay.

The above and other objects are accomplished in accordance with the invention with a system along an edge of a road extending in a road section in a direction contrary to the direction of traffic. The system comprises a plurality of guide posts spaced along the edge of the road in this section, a warning light on each guide post, and a current supply circuit connecting a source of current to each warning light. A warning switch is mounted on each guide post, and a cutout or safety fuse is arranged in the supply circuit for each warning light. The fuse is mechanically protected, for instance in a secured box.

The above and other objects, advantages and features of the present invention will become more apparent from the following detailed description of some now preferred embodiments thereof, taken in conjunction with the accompanying drawing wherein

FIG. 1 is a circuit diagram of a warning and traffic guide system according to this invention;

FIG. 2 some details in a circuit diagram of a system working with direct current; and

FIG. 3 is a circuit diagram similar to that of FIG. 2 but using alternating current.

Referring now to the drawing, the circuit diagram of FIG. 1 shows a **220** V source of current to which is connected a current supply circuit comprising a main conductor **17** which is connected to a first conductor **16** by means of transformers **15** to reduce the voltage in conductor **16** to **42** V. A second conductor **5** runs parallel to the first conductor along the edge of the road section for which the system is designed. In this section, guide posts (see FIG. **2**) are spaced along the road edge, for instance about 50 meters apart. Each guide post carries a warning light **2** and a fog lamp **3** with a reflector. It will be useful for each warning light to have an anti-glare screen.

The transformers **15** may be spaced apart about 500 to 1,000 meters, and they may be designed to transform a high voltage of 220 or 380 Volts to 42 Volts in the current supply conductor **16** which feeds current to the warning lights on the guide posts.

Each guide post carries a warning switch **4** which is connected in parallel to the low-voltage conductor **16.** One pole of each switch **4** is connected to conductor **16** and its other pole is connected to second conductor **5** to which the warning lights **2** are connected and from which they receive current as the switches are closed in a direction contrary to the direction of traffic.

Successive warning lights **2** and fog lamps **3** are connected in parallel along the road section protected by the system, the fog lamps receiving current from a supply circuit **23** and the warning switches **4** being connected to an accident report line **10** strung along the road. The accident report line **10** is connected to an accident report station **28** which is activated to report an accident when a respective switch **4** is closed. The fog lamps may be operated from switching station **26** which is connected to supply circuit **23** and which may be actuated by a photoelectric switch **24.** If desired, the accident report station and the switching station may be located at a police station. Thus, the closing of a switch **4** will indicate to the police where the accident occurred and the police will also be able to control the fog lamps, if desired.

The various parts of the system are shown in more detail in FIGS. **2** and **3**, FIG. **2** working with direct current while the installation of FIG. **3** operates with alternating current.

The high voltage in conductor **17** of FIG. **2** is transformed to a low voltage in conductor **16** by transformer **15** and a direct current switching means interconnecting the two conductors so that a low-voltage direct current is supplied to warning lights **2,** the current supply to the warning lights being switched or off by the warning switches **4** which are connected between the current supply circuit and the warning lights. A fixed pole or contact of each warning switch **4** is connected with conductor **5** and a switching contact of switching relay **21** is connected between the switch **4** and the associated warning light **2.** The coil of the switching relay is connected in parallel with the warning light, and the relays are also mounted on the guide posts.

In the illustrated embodiment, the warning lights **2** are rotatably mounted spot lights, and drive motor M is connected in parallel with an associated spot light to rotate the same. Anti-glare screens **27** protect the motorist from glare.

Also, the fog lamps **3** each have reflectors and are also mounted on guide posts **1.**

Diodes **6** are mounted in the low-current conductor **5** in the conductor sections between adjacent connections to the switches **4** to pass the current to the respective switches and warning lights in a direction contrary to the direction of the traffic.

Branching off the connection of the switches **4** to conductor **5** is another line which carries report diode **8** and a current limiting resistance **9** leading to report line **10.**

A relay **20** is mounted in the connection between switching station **26** and the fog lamps **3** to enable the lamps to be switched on and off.

It is important that the warning and traffic guide system remain operative even if any of the guide posts are damaged or otherwise inoperative. This is accomplished by mounting safety or cutout fuses **19** in all conductors leading from the distributing box **18,** which is positioned at a distance from the edge of the road. The distributing box serves as a housing for the various electrical elements indicated as being mounted within the broken lines, and the box is protected against damage by mounting it a few yards away from the road, preferably in a cement socket.

The installation of FIG. **2** operates as follows:

Assuming an accident occurs near the guide post **1** at the left of FIG. **2,** a nearby motorist or other by-stander

operates the warning switch 4 on this post. Closing of the switch supplies current from the current supply circuit, including conductor 16, to the switching relay 21 so as to close the circuit to warning light 2. Motor M receives the full supply of voltage at the same time, thus operating at full force and causing a high blinking frequency as the light is rotated by the motor.

Simultaneously, the voltage is transmitted from the fixed contact of switch 4 in the left guide post to conductor 5, where it is unidirectionally transmitted by diode 6 to the warning light 2 in the adjacent guide post down the road in a direction contrary to the direction of traffic. The diode 6 causes a voltage drop in the transmission line so that the next warning light will blink at a lower frequency and glow with reduced brilliance. This is repeated down the road from guide post to guide post, causing a steadily decreasing blinking frequency and brilliance of the succeeding warning lights until no further light will be activated because the voltage will be too small to operate the relay 21 which may be adjusted to a predetermined voltage value.

When the warning switch 4 at the location of the accident is closed, current is simultaneously supplied to accident report line 10, via diode 8 and resistance 9. An electronic switching relay 11 receives the current from line 10 to operate a report lamp 12 and an acoustical signal 13, a manually operable switch 14 being provided to disconnect the signal 13, when desired. If desired, a report lamp is associated with each guide post 1 so that the accident report station 28 immediately indicates the location of the accident, i.e., where the switch 4 was operated.

The road section along which the system is installed may have any desired length and depends on the dimensioning of unidirectional diodes 6 and the corresponding adjustment of the switching relays 21 determining the spatial extent of the current transmission from guide post to guide post. It has been found most practical to install systems having a length up to about a mile, the system being actuatable to its full length in a direction contrary to the direction of traffic from any guide post within the system.

When the system has been actuated, a motorist approaching the accident will first notice a relatively low light blinking at a low frequency so that he will know that he is not too close to the accident but must begin to slow down. If he finds himself stopped by stalled traffic ahead of him, he closes the warning switch on a guide post nearest him to start a new line of warning lights beginning from his location. This process may be repeated indefinitely along the road, as the need arises and the line of stalled cars becomes longer.

To avoid interfering with oncoming traffic on the other side of the road, the warning lights may carry anti-glare screens in the direction of the counter-traffic. Preferably, however, the screens do not cover the top of the warning lights so that rescue helicopters may see the blinking lights.

The fog lamps may be activated from a switching station 26 in case of fog or smog along the road so that the system works to guide the traffic in the fog. The fog lamps 3 are supplied by conductor 23 via relays 20, photoelectric control stations 24 being preferably arranged along the road and being connected by control line 25 to the switching station to switch the fog lamps on and off automatically.

The alternating current installation of FIG. 3 is similar to, and operates in the same manner as, that of FIG. 2, like reference numerals indicating like parts functioning in a like manner, except that an alternating low-voltage current is supplied to conductor 16. Unidirectional switching relays 7 are connected in the transmission line 5 between successive warning lights and, when a warning switch 4 is closed, current is supplied to the associated switching relay 7 to close a switch in line 5 and thus to transmit current to the next adjacent warning light in a direction contrary to the direction of traffic. A successive voltage drop is obtained from light to light by mounting resistances in each section of line 5 between the lights or by suitably dimensioning the line. The operative length of the system again depends on the operating voltage to which the relays 7 are adjusted. The relay 7 is shown simultaneously to actuate the switching contact for connecting the respective guide post whose warning switch has been operated to the accident report station 28. No unidirectional diodes are needed in transmission line 5.

On express highways, it will be useful to install warning switches connected in parallel to warning switches 4 on guide posts or the like of the median divider so that the system may be operated at both sides of the highway.

The warning system of this invention has the considerable advantage that it warns oncoming motorists of an accident well in advance but in a graduated fashion so that they may drive accordingly. It is also possible to operate the system by remote control from a police station, for example, in case of fog, icy road conditions, etc.

I claim:

1. An accident warning and traffic guide system along an edge of a road extending in a road section in a direction contrary to the direction of traffic, comprising

1. a plurality of guide posts spaced along the edge of the road in said road section,
2. a blinking warning light on each of the guide posts, the brilliance and frequency of blinking of the lights decreasing in the direction contrary to the traffic direction,
e. a source of current and supply circuit connecting the current source to each of the warning lights,
4. a warning switch on each of the guide posts between the supply circuit and the warning light,
5. a safety or cutout fuse in the supply circuit for each warning light; and
6. mechanically secured boxes holding the fuses.

2. The accident warning and traffic guide system of claim 1, wherein the current source is a low-voltage source comprising a first conductor and a second conductor of opposite polarity, each of the warning lights being connected to the first conductor of the low-voltage current source in parallel, the current supply circuit includes a third conductor, with the switches having one pole connected to the second conductor of the low-voltage current source and the other pole connected to the third conductor, and further comprising means arranged in the third conductor between the switch connections for producing a voltage drop, and a switching relay for each of the warning lights, each relay having a coil connected in parallel to the first and third conductors.

3. The accident warning and traffic guide system of claim 2 wherein the low-voltage current source is a source of direct current, and further comprising diodes in the third conductor for passing the current in a direction contrary to the direction of traffic, the switching relays being mounted in the respective guide posts.

4. The accident warning and traffic guide system of claim 2, wherein the low-voltage current source is a source of alternating current, and the switching relays are arranged in the third conductor.

5. The accident warning and traffic guide system of claim 2, wherein the operating voltage of the switching relays is adjustable to a predetermined value.

6. The accident warning and traffic guide system of claim 1, wherein the warning lights are rotatably mounted spot lights, and further comprising drive motors for rotating the warning lights.

7. The accident warning and traffic guide system of claim 1, further comprising a fog lamp with a reflector mounted on each of the guide posts for guiding the traffic in fog.

8. The accident warning and traffic guide system of claim 1, further comprising an anti-glare screen on each warning light.

9. The accident warning and traffic guide system of claim 1, further comprising an accident report station, a circuit connecting each of the warning switches with the accident report station, and a current limiting resistance in the circuit connecting each switch with the accident report station.

10. The accident warning and traffic guide system of claim 1, further comprising a fog lamp with a reflector mounted on each of the guide posts for guiding the traffic in fog, and a switching station connected to said fog lamps for switching on the fog lamps.

11. The accident warning and traffic guide system of claim 10, further comprising a photoelectric switching means for controlling the switching station.

12. The accident warning and traffic guide system of claim 1, wherein each box is positioned at a distance from the edge of the road.

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