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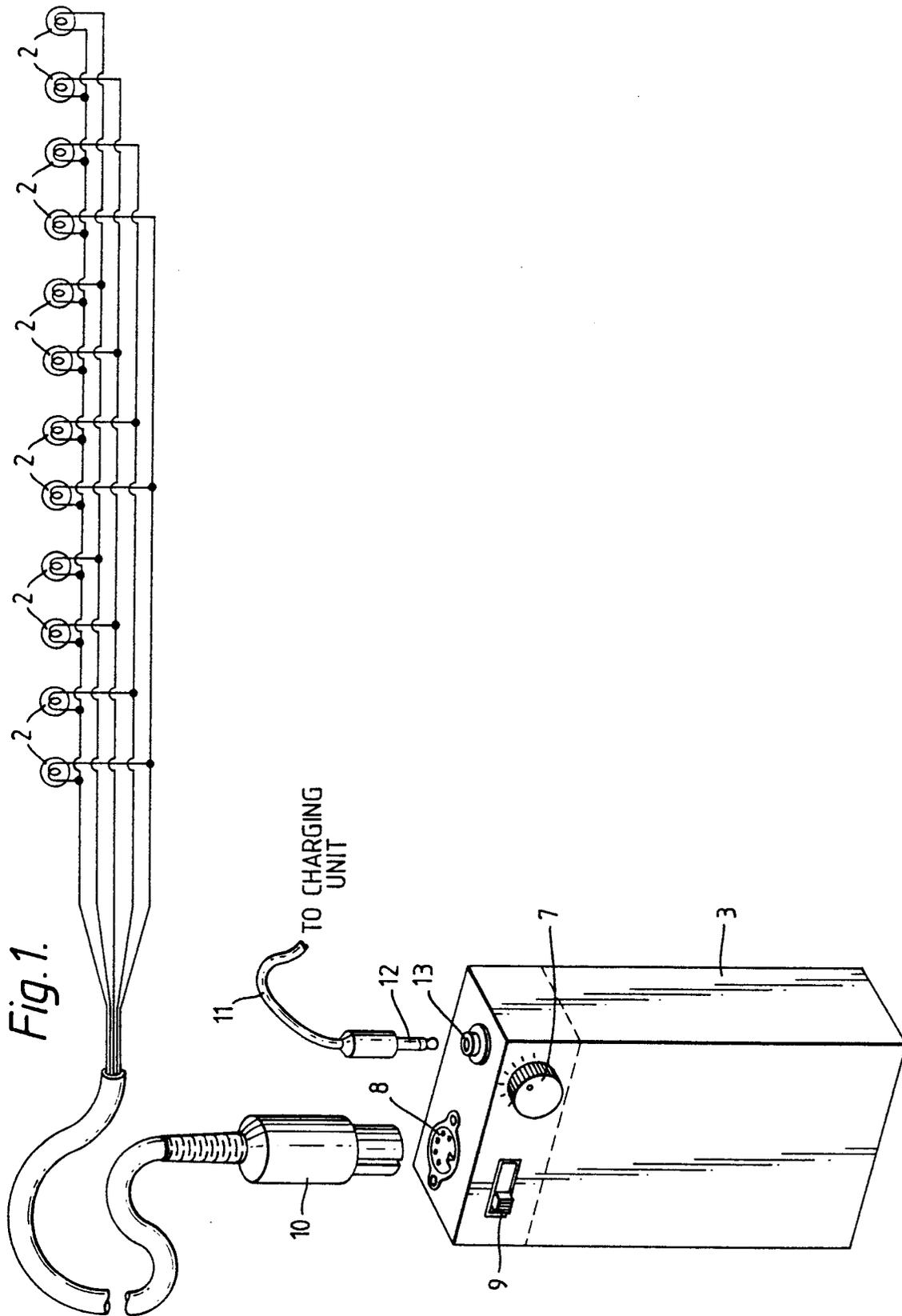
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54 A warning device.

57 A safety device for indicating the presence of a wearer thereof at night or in conditions of bad visibility is described. The device comprises a substrate, preferably in the form of an endless band (1) to be worn over one arm and the other shoulder of a user. The substrate (1) carries a plurality of lights - (2) and means in the form of a portable casing (3) which can, for example be placed in a pocket of the wearers clothing, are provided for illuminating the lights (2). Preferably, the lights are of two different colours the lights being arranged, so that, when the substrate is worn by a user, lights of one colour are provided adjacent the user's chest and lights of the other colour are provided adjacent the user's back.

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A Warning Device

THIS INVENTION relates to a warning device, in particular a warning device for indicating the presence of a wearer to motorists at night and in conditions of bad visibility.

Pedestrians and cyclists, particularly children, using the roads at night or in conditions of bad visibility may be very difficult for a motorist to see, particularly if they are wearing dark clothing. Although the public is advised to wear something light at night and fluorescent or reflective bands jackets etc are available, a motorist may still not spot a pedestrian or cyclist wearing such clothing until the headlamps of his car actually shine on the pedestrian or cyclist.

It is an object of the present invention to provide a warning device which may enable a wearer thereof to be seen clearly by motorists at night and in conditions of bad visibility.

According to the present invention, there is provided a warning device for indicating the presence of a wearer thereof to motorists at night and in conditions of bad visibility, the device comprising a substrate provided with a plurality of lights and adapted to be worn by a user of the device, and means for illuminating the lights.

In order that the invention may be more readily understood, an embodiment thereof will now be described, by way of example, with reference to the accompanying drawings, in which:

FIGURE 1 is a perspective view of a warning device embodying the invention with a substrate thereof omitted in the interests of clarity;

FIGURE 2 is a circuit diagram of control means of the device shown in Figure 1;

FIGURE 2A is a schematic front view illustrating a DIN connection of the device shown in Figure 1; and

FIGURES 3A and 3B show front and back views, respectively, of a person wearing a warning device in accordance with the invention.

Referring now to the drawings, there is shown a warning device embodying the invention for indicating the presence of a wearer thereof to motorists, particularly at night and in conditions of bad visibility.

As shown in Figures 1, 3A and 3B, the device comprises a substrate 1 in the form of an endless transparent tube adapted to be worn diagonally across the user's body as shown in Figures 3A and 3B. Of course, the substrate may alternatively take form of a jacket or belt or any other suitable form of clothing.

The substrate 1 which may be made of a plastics material and may advantageously be fluorescent or reflective has a plurality of lights 2 positioned spaced apart along the length thereof. The lights 2 thereof which are preferably 3 to 6 volt 60 milliamp bulbs are electrically connectable to an illuminating means in the form of a rechargeable battery (not shown) carried within a portable casing 3. Preferably, the portable casing 3 is formed of a plastics material and is sized so as to be received in a pocket of the user's clothing or is arranged to be hooked onto a user's belt.

As shown in Figure 2, the warning device also includes control means 4 for causing the lights to flash on and off in a predetermined manner. The control means 4 controls an oscillator circuit 5 for supplying a clock signal to the clock input pin 13 of a CMOS 74 nc 4017 10-stage Johnson counter integrated circuit 6. In the arrangement shown, the oscillator circuit 5 comprises four 2-input NAND gates G1 to G4 in the form of a 4093 Quad Schmitt NAND gate integrated circuit, each NAND gate having their two inputs coupled together. As shown in Figure 2, the four NAND gates are connected in series and the output of the second NAND gate G2 is fed back via a 0.47 uf capacitor C1 and a 2.2 megaohm resistor R2 to the coupled inputs of the first NAND gate G1. Similarly, the output of the third NAND gate G3 is fed back via a 220 kilo-ohm resistor R1, a variable resistor VR1 of nominal resistance 1 megaohm and the resistor R2 to the coupled inputs of the first NAND gate G1. The output of the fourth NAND gate G4 is supplied as the clock signal to the clock input pin 13 of the integrated circuit 6. The values of the resistors of R1 and R2 and the capacitor C1 are selected and the variable resistor is normally set so that a clock pulse is supplied once every 64 milliseconds to provide a 15.625 Hz clock pulse signal to the integrated circuit 6. The frequency of the clock pulse signal may be varied to vary the rate at which the lights flash by varying the resistance of the variable resistor VR1 via a control which may be internal or may include an external control knob 7 provided on the casing 3.

In response to the clock signal from the oscillator circuit 5, the integrated circuit 6 delivers four output signals Q1, Q0, Q2 and Q3 which are spaced apart by a predetermined time which may be determined by the clock pulse signal. The frequency of the output signals Q0 to Q3 is, of course, dependent upon the frequency of the clock pulse signal input to the integrated circuit 6. Each of the output signals Q1, Q0, Q2 and Q3 is supplied via a respective 1 kilo-ohm resistor R3, R4,

R5 and R6 to the base of a respective NPN transistor TR1, TR0, TR2 and TR3 of type BC 184, the emitters of which are connected to the 0 volt power supply line, that is the negative terminal of the rechargeable battery (not shown). The collector of each transistor TR1, TR0, TR2 and TR3 is connected to a respective pin Q1, Q0, Q2 and Q3 of a five pin DIN socket 8 mounted in the casing 3. The positive terminal V+ of the battery (not show) is connected to a centre pin of the DIN socket 8 via a switch 9 which may be manually operated by a user of the device to connect the battery in circuit.

The lights 2 are connected to a five-pin DIN plug 10 corresponding to the socket 8 so that when the plug 10 is received in the socket 8, each light 2 is connected to the V+ pin of the socket 8 and also to a respective one of the pins Q0 to Q3. In the arrangement shown, the lights are connected so that, starting from the plug 10, every fourth light is connected to the same pin of the plug. Thus, as shown in Figure 1, the first, fifth, ninth, etc. lights are connected to one pin, the second, sixth, tenth, etc. lights are connected to a second pin, the third, seventh, eleventh, etc. lights are connected to a third pin and the fourth, eighth, twelfth, etc. lights are connected to a fourth pin of the plug 10. Of course, and arrangement of connections for the lights to the DIN plug 10 may be provided. Preferably differently coloured lights 2 are used and are arranged so that when the band or substrate is worn by a user as shown in Figures 3A and 3B, lights of a first colour are adjacent the user's chest and lights of a second colour are adjacent the user's back. Preferably, the lights adjacent the user's chest are white lights and the lights adjacent the user's back are red lights.

As indicated above, the battery (not shown) is rechargeable and a charging lead 11 for connection via a transformer to a mains power supply or to a specially adapted charging unit is provided, the charging lead 11 having a jack plug 12 for reception in a corresponding socket 13 provided in the casing 3. As indicated above, the casing 3 is preferably sized so as to be able to be hooked on a belt of a user or received within a pocket of the user's clothing. Preferably, the casing 3 is rectangular and is 6 inches (15cm) long, 3 inches (7.5cm) wide and 1½ inch (3 cm) deep.

As will be appreciated from the above, when the plug 10 is connected into socket 8 and the switch 9 is moved to the ON position, assuming the battery is charged, the light 2 will flash at a frequency determined by the clock signal in series so that the Xth and (X + Y x 4)th, where Y=1,2,3.....n, flash simultaneously and the Xth, (X+1)th, (X+2)th and (X+3)th lights flash in series or consecutively.

A waist belt may be provided to secure the tube 1 in position on a wearer's body.

Although the warning device is particularly suited for earning motorists of the present or cyclist wearing the device, the warning device may also be used in daylight by the front and back markers of a large group of people walking along a road. Workers in hazardous situations such as road and railway workers may also find such a device useful.

The features disclosed in the foregoing description, in the following claims and/or in the accompanying drawings may, both separately and in any combination thereof, be material for realising the invention in diverse forms thereof.

Claims

1. A warning device for indicating the presence of a wearer thereof to motorists at night and in conditions of bad visibility, the device comprising a substrate provided with a plurality of lights and adapted to be worn by a user of the device, and means for illuminating the lights.

2. A device according to Claim 1, wherein the substrate is an endless tube.

3. A device according to Claim 1 or 2, wherein the substrate and lights are arranged so as to enable both the front and the back of a wearer to be illuminated.

4. A device according to Claim 3, wherein the substrate is provided with lights of two different colours, the lights being arranged, so that, when the substrate is worn by a user, lights of one colour are provided adjacent the user's chest and lights of the other colour are provided adjacent the user's back.

5. A device according to any preceding claim, further comprising means for controlling the illuminating means so that the lights flash on and off.

6. A device according to Claim 5, wherein the controlling means is adjustable to adjust the length of time for which the lights are illuminated.

7. A device according to claim 5 or 6, wherein the controlling means is arranged to cause the lights to flash on and off in a predetermined sequence.

8. A device according to claim 5 or 6 wherein the controlling means comprises an oscillator for producing clock pulse signals and means for connecting the illuminating means to the lights to illuminate the lights in accordance with the clock pulse signals.

9. A device according to Claim 8, wherein the controlling means comprises an oscillator for producing clock pulse signals, means for deriving a plurality of clock pulse signals and a plurality of switching means for each connecting a respective

light or lights to the illuminating means, each control signal being arranged to control a respective switching means.

10. A device according to claim 9, wherein each connecting means comprises a respective transistor having a base for receiving the respective

control signals so that, when a transistor is rendered conducting in response to the respective control signal, the associated light or lights are connected to the illuminating means.

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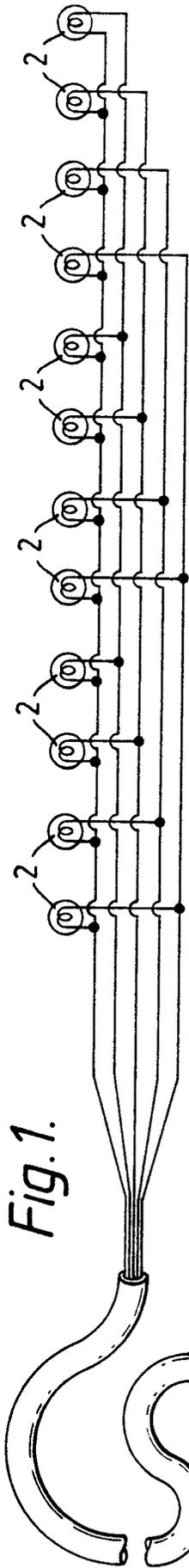
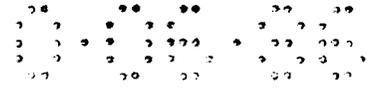


Fig. 1.

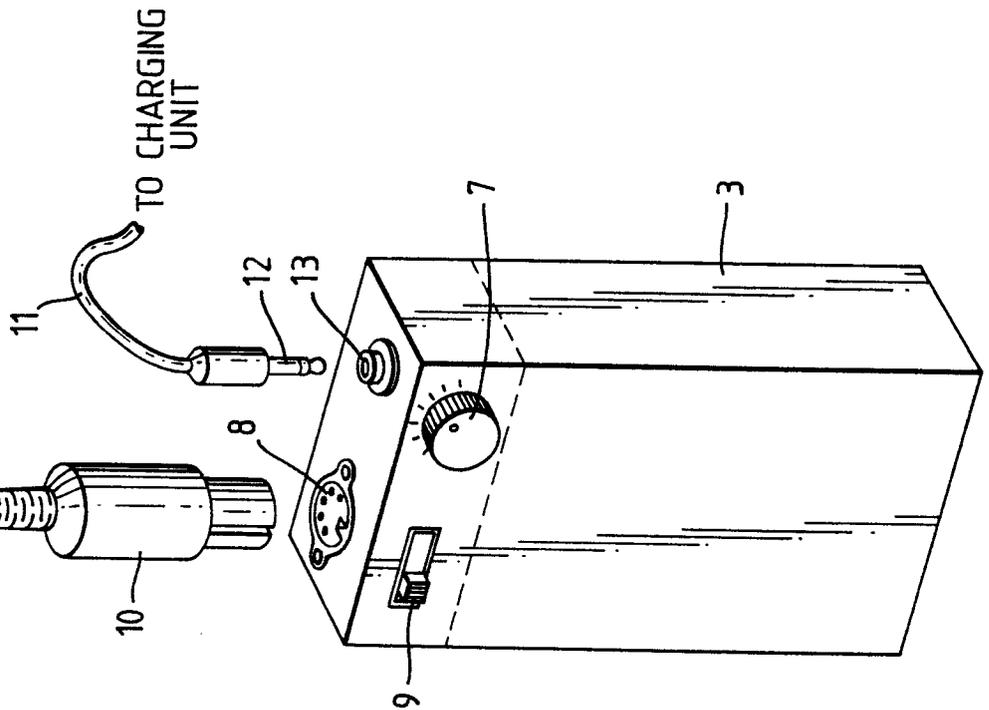


Fig. 3A.

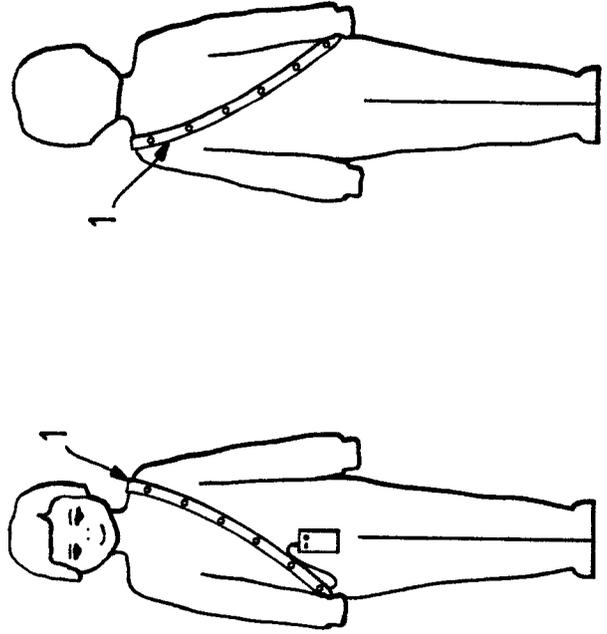


Fig. 3B.

