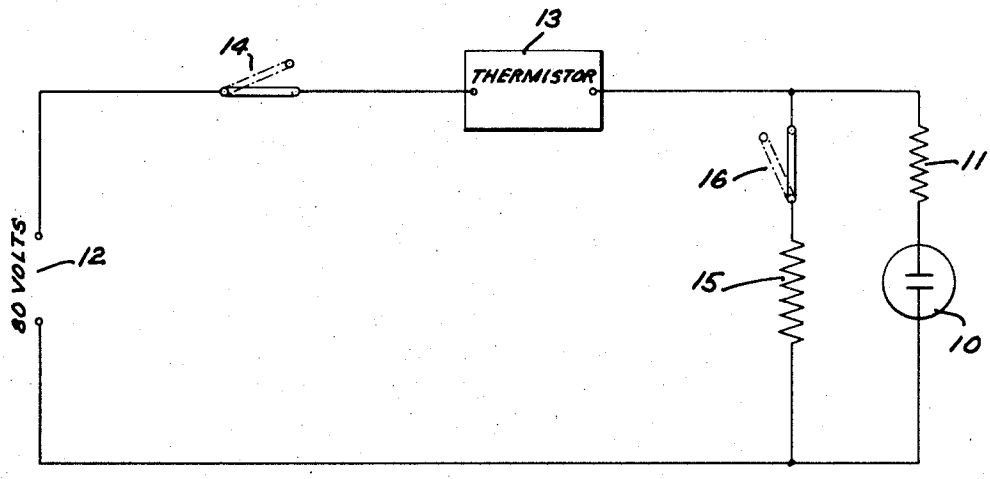
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ANNUNCIATOR CIRCUIT

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ANNUNCIATOR CIRCUIT

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This invention relates to annunciator circuits and more particularly to a thermistor controlled annunciator circuit.

An object of this invention is to provide a new and efficient electrical control circuit.

In one embodiment of this invention an annunciator circuit is controlled with the aid of a type of varistor known as a thermistor which is a semi-conductor having a relatively large negative coefficient of resistivity that provides a relatively large decrease in resistance for a small increase in temperature. The negative resistance characteristics of a thermistor are utilized in a normally high resistive circuit to maintain an operating voltage to an annunciating device by the lowering of the thermistor resistance due to the current increase after the momentary actuation of a switch to momentarily remove a shunt resistance connected across the annunciating device.

The circuit contemplated in a specific embodiment of the invention is employed to actuate and maintain in operation an annunciating device, for example a neon lamp, by the momentary opening of a normally closed switch until another switch is momentarily opened whereupon the annunciating device is deenergized.

A complete understanding of the invention will be had by reference to the following detailed description taken in conjunction with the single-figure drawing which is a circuit diagram of a preferred embodiment of the invention.

As shown in the drawing a neon lamp 10 and a series-connected resistor 11 are connected to a suitable voltage supply 12 through a thermistor 13 and a normally closed switch 14; and a resistor 15 is normally shunted across the lamp 10 and the resistor 11 through a normally closed switch 16. The values and characteristics of the various circuit elements should be such that with the switches in their normal or closed position the voltage across the annunciating device which may be the neon lamp 10 will be below the striking or firing voltage of the lamp. The thermistor 13 under these conditions may have a resistance of about 100,000 ohms, but in any event the resistance should be high enough to keep the voltage across the lamp below its striking or firing voltage when the circuit is quiescent; and the resistor 15 should have a resistance such that the voltage drop across it is below the voltage necessary to fire the neon lamp and sufficiently high so that the current through the thermistor will be below any value that would appreciably lower its resistance while the circuit is in the unoperated condition.

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It has been found that a resistance value of 300,000 ohms for the resistor 15 in the circuit shown will operate satisfactorily. The resistor 11 may be 14,000 ohms and serves to limit the current through the lamp 10 when it is fired.

In the operation of the circuit, momentary opening of switch 16 will apply sufficient voltage to the neon lamp 10 to cause it to fire and glow. This increases the current flow through the thermistor, and, because of its negative-resistance characteristic, the resistance of the thermistor will then change from 100,000 ohms to about 2,000 ohms, thus lowering the resistance of the supply circuit, which, together with the fact that a relatively low maintaining voltage is required by the neon lamp will maintain the glow of the lamp. The lamp 10 will continue to glow even though the resistor 15 is again shunted across both the lamp and the resistor 11 by the immediate closing of switch 16 after having been momentarily opened to fire the lamp. However, the lamp may be extinguished by disconnecting the supply circuit from the lamp by momentarily opening switch 14, the subsequent closure of which prepares the circuit for another cycle of operation when required. Obviously, either the switch 14 or the switch 16 may be remotely controlled in order to operate the lamp from a distance as an annunciating device.

Although the circuit described herein utilizes a thermistor any device having similar negative resistance characteristics may be substituted for the thermistor in the circuit.

The circuit described herein may be used to operate or control devices other than neon lamps especially devices having an initiating voltage higher than the maintaining voltage. Such a device would simply be substituted for the neon lamp in the circuit.

What is claimed is:

1. An electrical signalling system comprising, an ionizable gas filled tube operable in response to a predetermined voltage thereacross and, unless operated, presenting a substantially open circuit to voltages below said predetermined voltage, a resistor connected in parallel with said tube, a voltage source, a thermistor connected in series with said parallel connected resistor and tube across said source, the value of said resistor being such that the voltage thereacross is below said predetermined voltage value and the current therethrough is insufficient to appreciably lower the resistance of said thermistor before operation of said tube, and means to momentarily remove said resistor from the circuit and thereby increase the voltage across said tube to a value

equal to or above said predetermined voltage value, said increase being of such proportions that the current flow resulting therefrom reduces the resistance of said thermistor to a value such that reconnection of said resistor across said tube after operation thereof does not affect said operation.

2. An annunciator circuit comprising an ionizable gas filled tube operable in response to a predetermined voltage thereacross and, unless operated, presenting a substantially open circuit to voltages below said predetermined voltage, a resistance element connected in parallel with said tube, a voltage source, a negative coefficient resistor connected in series with said parallel connected resistance element and tube across said source, the value of said resistance element being such that the voltage thereacross is below said predetermined voltage value and the current therethrough is insufficient to appreciably lower the resistance of said negative coefficient resistor before operation of said tube, means to momentarily remove said resistance element from the circuit and thereby increase the voltage across said tube to a value equal to or above said predetermined voltage value, said increase being of such proportions that the current flow resulting therefrom reduces the resistance of said negative coefficient resistor to a value such that reconnection of said resistance element across said tube after operation thereof does not affect said operation, and means to disconnect said voltage source from the circuit.

3. An electrical signalling system comprising an ionizable gas filled tube operable in response to a predetermined voltage thereacross and, unless operated, presenting a substantially open circuit to voltages below said predetermined voltage, a resistor connected in parallel with said tube, a voltage source, a thermistor connected in series with said parallel connected resistor and tube across said source, the value of said resistor being such that the voltage thereacross is below said predetermined voltage value and the current therethrough is insufficient to appreciably lower the resistance of said thermistor before operation of said tube, means to momentarily remove said resistor from the circuit and thereby increase the voltage across said tube to a value equal to or above said predetermined voltage value, said increase being of such proportions that the current flow resulting therefrom reduces the resistance of said thermistor to a value such that reconnection of said resistor across said tube after operation thereof does not affect said operation, and means for disconnecting the voltage source from the system.

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