

[54] RANDOM CYCLE LOAD SWITCH

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[58] **Field of Search**..... 307/11, 17, 140,
307/149, 252 B

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[57] **ABSTRACT**

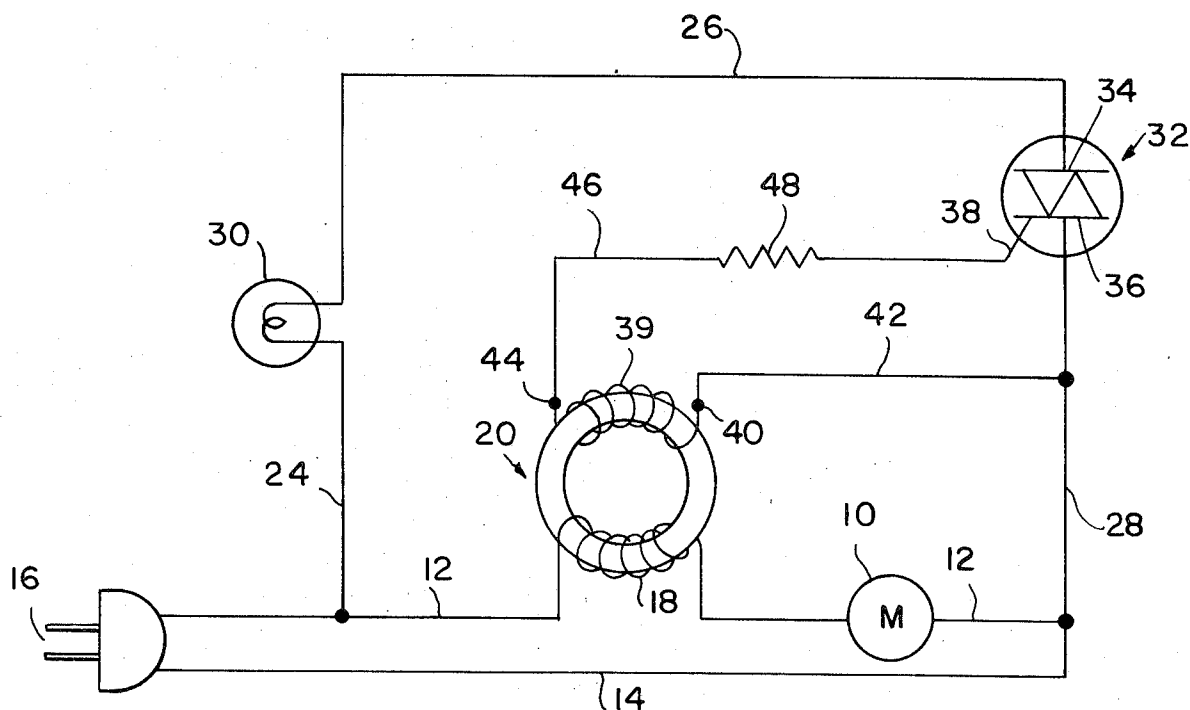
Current to a primary load is sensed and utilized in order to simultaneously complete a circuit which includes a secondary load and a triac. A current transformer has a primary winding in series with the primary load and a secondary winding coupled to the cathode and gate electrodes of the triac, so that a current to the primary load will cause a gate current sufficient to switch the triac from a non-conducting state to a conducting state.

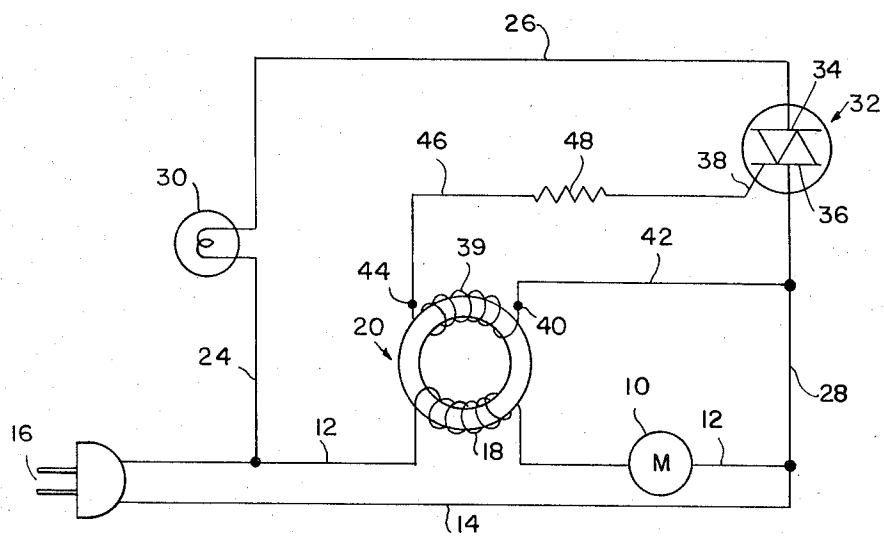
[56] **References Cited**

UNITED STATES PATENTS

3,527,957 9/1970 Eck..... 307/140

3 Claims, 1 Drawing Figure





RANDOM CYCLE LOAD SWITCH

BACKGROUND OF THE INVENTION

This invention relates to apparatus for supplying current to one load during such time as current is being supplied to some other load. More particularly, this invention relates to an electrical circuit wherein application of current to a primary load, such as a refrigerator motor or other appliance, will cause the simultaneous application of current to a secondary load, such as a light located externally of the refrigerator.

Using the example of a refrigerator motor and an external light, the light may be automatically turned on and off simultaneously with the random on and off conditions of the refrigerator motor. One practical application of such apparatus is to turn a light or lights on and off from time to time in unoccupied homes or buildings to create the impression of occupancy to would-be intruders.

Looting and vandalizing homes and other buildings while the occupants are away is an all too frequent occurrence. Locks and burglar alarms undoubtedly help in the prevention of such intrusions. At night, a lighted house may also deter a potential burglar. However, this ruse can become quite apparent, especially where the occupants are frequently absent and the house is periodically observed. While it is unlikely that any system is foolproof, the deterrent effect on intruders is believed to be increased by changes in lighting from time to time. This strengthens the impression that someone is present in the home, and random rather than periodic lighting changes are more realistic for this purpose.

SUMMARY OF THE INVENTION

The apparatus of this invention comprises electrical circuitry in which a secondary load, such as a lamp, will receive current when and only when a primary load, such as a refrigerator motor, receives current. This invention thus provides means whereby a light or lights in a home may be automatically turned on and off in a random fashion even though the home is unoccupied.

Motors in refrigerators and freezers operate automatically from time to time and for varying lengths of time in order to maintain the device at a preset temperature. Such operation, as by use of thermal switches, is a built-in feature of modern refrigerators and freezers. Other appliances or devices may also have such random on and off operating characteristics of course.

A light located externally of a refrigerator and the refrigerator motor are both connected to a voltage source. The main terminals of a triac are electrically connected in series with the light. A current transformer has its primary winding connected in series with the voltage source and the refrigerator motor. The secondary winding of the transformer has one end connected to the cathode of the triac and its other end connected through a resistor to the gate of the triac.

When current from the voltage source flows to the motor, as occurs when the thermal switch actuates the motor, a current in the secondary winding of the transformer will be applied to the gate of the triac. The values of the circuit elements are such that this gate current will cause the triac to switch from its non-conducting state to its conducting state. During such time as the triac conducts, the electrical circuit which includes the voltage source, the triac, and the lamp is

completed and the lamp is turned on. When current to the motor ceases, the current in the transformer secondary also ceases. The triac again reverts to its non-conducting state thus opening the circuit which includes the light.

BRIEF DESCRIPTION OF THE DRAWING

The invention is illustrated in the drawing which is a schematic diagram.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

For ease of discussion, the detailed description of this invention will utilize the example where a source of illumination, such as a lamp, is automatically turned on and off simultaneously with the random on and off operation of household refrigerator.

A refrigerator motor 10, or primary load, is connected by leads 12 and 14 to a source of voltage 16, such as an ordinary 110 volt A.C. household outlet. The lead 12 is connected to the primary winding 18 of a step-down current transformer 20 and to motor 10. Leads 24, 26, and 28 connect a lamp 30, or secondary load, and a triac 32 in series with the voltage source 16.

The triac 32 has an anode 34 and a cathode 36 which are its main terminals, and a gate electrode 38. The secondary winding 39 of the transformer 20 has its one end 40 connected by the lead 42 to the cathode 36 of the triac. The other end 44 of winding 39 is connected by a lead 46 through a resistor 48 to the gate 38.

The refrigerator is designed to be maintained at preset temperatures, and to that end it is constructed so that its motor will be automatically turned on and off as needed. Typically, random on and off conditions occur.

When the motor 10 is turned on, for example, by operation of a thermal switch, it receives current from the voltage source 16. The current to the motor passes through the primary winding 18, which results in a current in the secondary winding 39 of the transformer 20. Since the winding 39 is connected to the cathode 36 and the gate 38 of the triac, the current from the winding 39 is applied to the gate 38. The values of a circuit components are selected so that such a gate current will cause the triac to switch from its non-conducting state to its conducting state. When the triac 32 conducts, the electrical circuit which includes the voltage source 16, the triac 32, and the lamp 30 is completed or closed, causing the lamp 30 to be simultaneously lighted.

When the motor 10 is turned off, there is no current to sustain the triac in its conducting state and the lamp 30 is simultaneously turned off.

I claim:

1. Apparatus for supplying current to a secondary load simultaneously with current flow from a voltage source to a primary load, comprising a secondary load connected to the voltage source and a triac, a current transformer having a winding connected to the voltage source and the primary load and having a winding with one end connected to the cathode of said triac and its other end connected through a resistor to the gate of said triac, whereby current flow from the voltage source to the primary load will initiate a flow of current to said gate electrode and cause said triac to become conducting, thereby completing the circuit which includes the voltage source, the triac, and the secondary load.

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2. Apparatus for operating a source of illumination in conjunction with the operation of an electrical appliance which is connected to a voltage source, comprising a source of illumination electrically connected in a circuit with a voltage source and a triac having anode, cathode, and gate electrodes, a current transformer having a primary winding connected to the voltage source and the appliance, said transformer having a secondary winding having one end connected to said cathode and its other end connected through a resistor to said gate electrode, whereby current to the appliance causes a gate current sufficient to cause the triac to switch to a conducting state to complete the electrical circuit which includes said source of illumination.

3. Apparatus for turning a lamp on and off simulta-

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neously with the random on and off operation of a refrigerator motor which is connected to a voltage source, comprising a lamp located externally of the refrigerator, a triac having anode, cathode and gate electrodes, said lamp being connected to said voltage source and to said anode, a current transformer having a primary winding connected to the voltage source and the refrigerator motor, said transformer having a secondary winding having one end connected to said cathode and its other end connected through a resistor to said gate electrode, whereby said triac is in a non-conducting state when the refrigerator motor is off and is in a conducting state when the refrigerator motor is on.

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