

[54] **PHOTOELECTRIC CONTROLLED DISPENSER**

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[58] Field of Search 250/209, 208, 210; 222/52

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[57] **ABSTRACT**

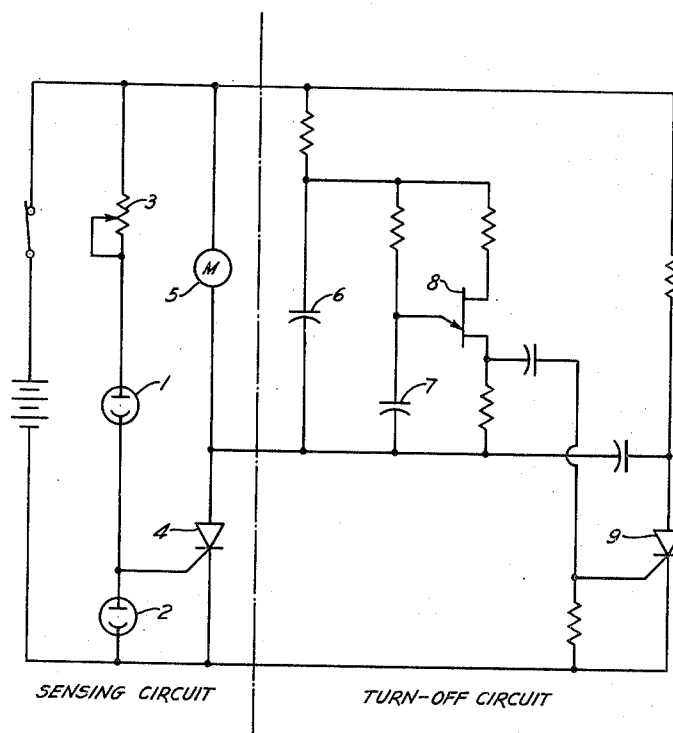
A device is disclosed for dispensing materials such as detergents without manual control. It is operated by blocking the passage of light to one of two photoelectric cells, as by a hand, which actuates an SCR circuit. The pump is turned off automatically preferably by a pulse generating circuit which interrupts the SCR. The two photocells are connected in series and together function as a voltage divider, comparing ambient light to proximate light.

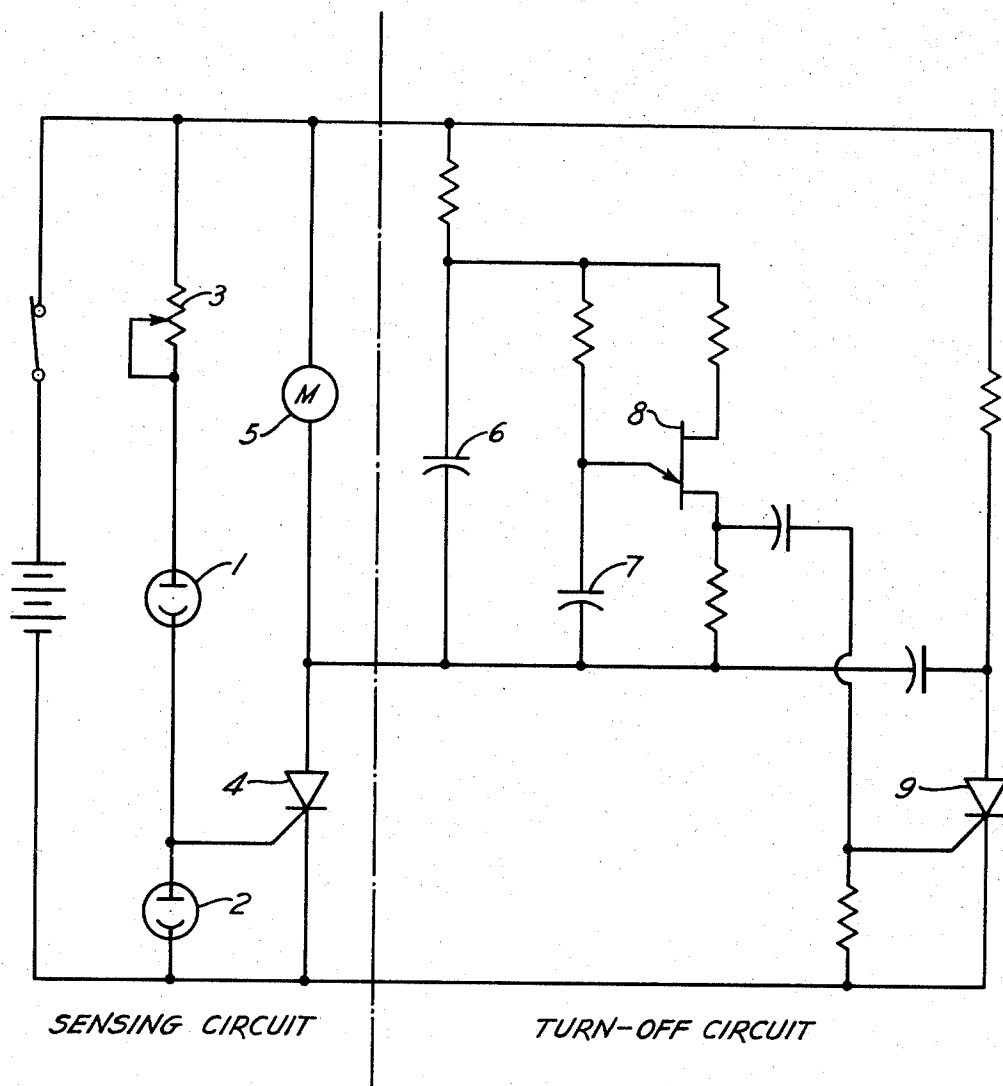
3 Claims, 1 Drawing Figure

[56] **References Cited**

UNITED STATES PATENTS

3,273,752 9/1966 Horeczky 222/52





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PHOTOELECTRIC CONTROLLED DISPENSER

BACKGROUND OF THE INVENTION

This invention relates to automatic dispensers. In particular, it is a device useful for dispensing detergents, actuated by the interruption of the passage of light to a photoelectric cell. This type of automatic operation of the dispenser insures that no harmful micro-organisms will be spread by contact with handles, buttons, or other devices for the operation of the dispenser. Detergent dispensers requiring no manual contact for their operation are desirable in hospitals and similar places where highly sanitary conditions must be maintained.

In U.S. Pat. No. 3,273,752, Horeczky disclosed a dispenser controlled by a photoelectric cell. The purpose of the dispenser is similar to applicant's but the circuitry differs in several major respects. As will be seen in the description to follow, applicant uses a silicon-controlled rectifier; Horeczky employs an amplifier-type circuit responding to voltage changes induced by the photocell.

SUMMARY OF THE INVENTION

Applicant's device applies current to a pump directly from the silicon-controlled rectifier, which is triggered by the photocell. Turnoff is accomplished by the interruption of the SCR anode current.

The invention will be more particularly described with reference to the attached diagrammatic drawing.

In the drawing, it will be seen that the DC power source is connected to two photocells in series.

Photocell 1 is employed to detect the strength of the ambient light, i.e., it is positioned so that it is exposed to the ordinary light of the room. It may be called the ambient photocell. Photocell 2 is positioned in such a way that the placement of hands under the dispenser nozzle in the normal manner to receive detergent therefrom will at least partially block the access of light to the photocell. No special light source is contemplated for this photocell, which may be called the proximity photocell. Optional resistor 3 may compensate for a difference in resistance characteristics between photocells 1 and 2.

The gate of silicon-controlled rectifier 4 is connected to a point between photocells 1 and 2, so that the photocells act as a voltage divider and current source for it. The pump motor 5, which operates the dispensing function of the device, is connected in series with the SCR 4.

The circuit described to this point may be viewed as the "sensing circuit," or a proximity switch. When the resistance in proximity photocell 2 increased due to a decrease in light reaching it, a voltage caused thereby at the gate of the SCR 4 fires the SCR, permitting the flow of current through the anode of the SCR to the motor 5. It thus may be seen that the

sensing circuit comprises ambient and proximity photocells forming a variable voltage divider as a current source for the gate of an SCR, and means for dispensing material responsive to current flowing through the SCR.

Once the SCR is fired, the motor may be turned off by conventional mechanical or other timing switches, such as a cam switch controlled by motor shaft rotation; however, we prefer to use a turnoff circuit which shunts the SCR circuit. Other types of turnoff circuits may occur to those skilled in the art. I intend to include within the scope of my invention the use of any device for halting the operation of the dispensing means once it has begun.

In the turnoff circuit, capacitor 6 is used for filtering. Capacitor 7, together with its associated resistor comprises a time constant network controlling the oscillation of unijunction transistor 8. The oscillator output of unijunction transistor 8 controls the gate of silicon-controlled rectifier 9. When the gate of SCR 9 is opened a new current flow begins, shunting out the current to the motor and closing the gate of SCR 4. The gate of SCR 9 is then closed for lack of power, and the device returns to its inactive state.

It will be seen that, so long as there is an insignificant difference in the two sides of the voltage divider formed by the photocells and the associated resistor 3, very little energy is consumed. My invention is thus especially adapted for use with batteries. It may be mounted on the wall near a sink in a hospital, for example, without the necessity of providing a power source by breaking into the wall. Relatively inexpensive, commercially available photocells in my circuit can detect the presence of a hand up to 2 feet away from the proximity photocell. The unit may operate on a 6 volt battery with average current requirements of less than 1 milliamperes. It should be observed that my device employs no moving parts ahead of the motor, which derives its power directly from the SCR and without amplification.

I do not intend to be bound by the above specific illustration. My invention may be otherwise variously practiced and embodied within the scope of the following claims.

I claim:

1. A material dispenser comprising two photocells adapted to be connected in series across a DC power source and forming a variable voltage divider, a silicon-controlled rectifier responsive to current coming directly from said variable voltage divider, means responsive to current from said silicon-controlled rectifier for dispensing material, and turnoff means for ceasing operation of the dispensing means.

2. Dispenser of claim 1 in which the turnoff means comprise a capacitor-actuated unijunction transistor and a silicon-controlled rectifier responsive thereto.

3. Dispenser of claim 1 in which the means responsive to current from the silicon-controlled rectifier is a pump.

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