

Nov. 10, 1959

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2,912,685

DOOR BELL ACTUATED LIGHT

Filed Jan. 3, 1957

Fig. 1

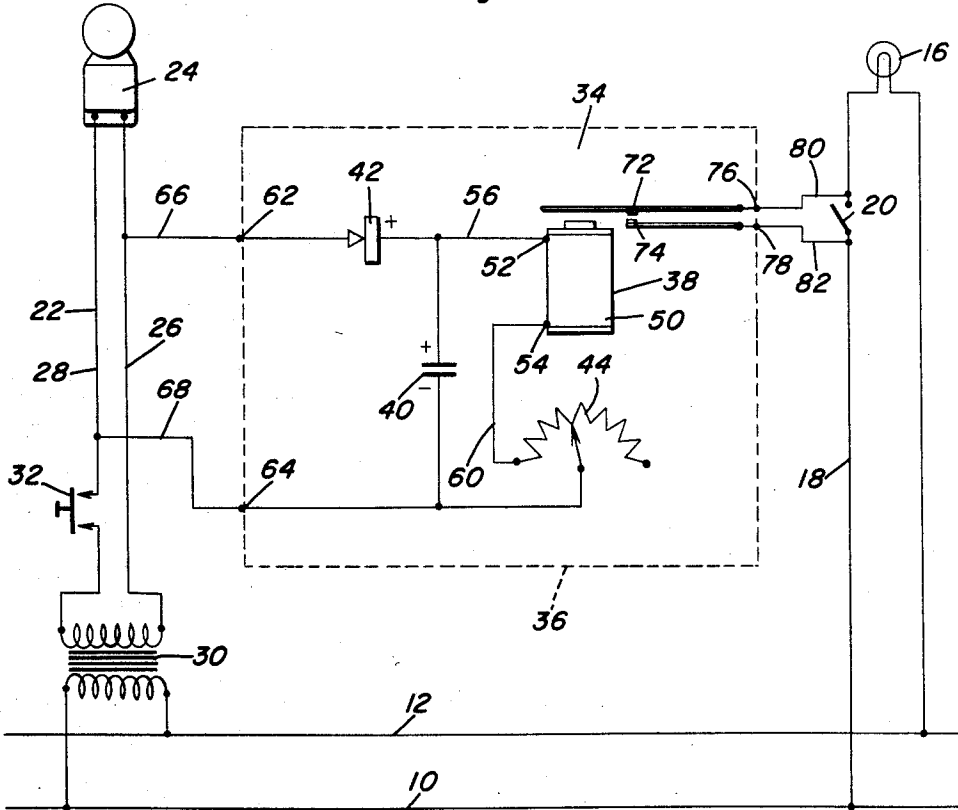
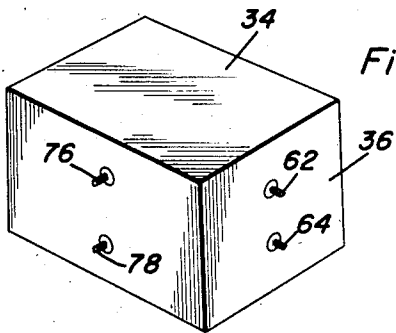


Fig. 2



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DOOR BELL ACTUATED LIGHT

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Application January 3, 1957, Serial No. 632,301

2 Claims. (Cl. 340—377)

This invention relates to a device to automatically switch on a porch or entrance light when the door bell or door chimes switch is closed, with the light remaining on for a period of time and then automatically turning off.

An object of the invention is to provide means which are preferably in the nature of an attachment, for controlling a light circuit, for example by shunting across a manual switch in the light circuit, in response to energization of a door bell circuit. The attachment will be constructed so that the low voltage A.C. bell circuit will trigger the attachment whereby the comparatively high voltage light circuit will be closed but for a short period of time. There is a delay in deenergizing the electric lamp from the time that the door bell circuit is deenergized.

With the invention applied to a dwelling, upon depression of the door bell (or chime) button the outside porch or entrance lamp is automatically energized providing adequate light to secure a door key, unlock the door, gain entrance to the home without having to fumble in the dark, or be bothered with a flashlight. The lamp would remain energized for approximately one minute in accordance with present thoughts as to the proper time delay, this allowing sufficient time to enter, after which the lamp would automatically be deenergized. Accordingly, no afterthought and no manual switch operation is necessary to energize or deenergize the lamp. I am aware of prior attempts to provide light in response to energization of a separate circuit. Usually, the prior devices have been constructed to aid people who do not hear very well and do not have provision for automatically keeping the lamp energized even after the door bell button is released but only for a short while which would be sufficient to enter the home. Therefore it is a further object of the invention to provide an attachment for two circuits whereby the energization of one will exercise a control function over the other circuit with the closing of the first circuit even instantaneously causing a definite cycle of operation to occur in the second circuit and then return to the original condition which is such that a new cycle of operation may be commenced. Prior inventions which cause a signal lamp to be energized in response to energization of another circuit which I have experienced are quite complex in comparison to my invention. Therefore, it is another object of my invention to provide a simple circuit having only three or four components and four terminals whereby the circuit and circuit components being susceptible to be received in a box, may be easily attached in existing dwellings or may with equal facility be installed as original equipment.

Another specific object of the invention is to provide an attachment that is to be operatively connected with the low voltage A.C. bell circuit and the higher voltage lighting circuit for energizing a lamp in the light circuit and retaining that lamp energized for a preselected period of time and automatically deenergizing that lamp in the

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higher voltage circuit in response to energization of the low voltage A.C. circuit regardless of the duration of the energization of the low voltage circuit. Further, an object of the invention is to accomplish these functions by exceedingly simple circuitry and components capable of being supported in a small box, the circuitry and components involving merely a D.C. relay from one terminal of which there extends a conductor having a rectifier of one type or another therein and from the other terminal of which there extends a conductor within which a variable resistor is applied so as to provide for manual adjustment of the time period that the relay will remain energized, and finally, a capacitor which extends across the two conductors, one terminal of the capacitor being connected between the rectifier and the relay while the other lead of the capacitor is connected between the low voltage A.C. circuit and the variable resistor. Accordingly, as soon as the A.C. circuit is energized the capacitor is charged with a D.C. voltage. After the low voltage A.C. circuit is deenergized the capacitor is bled through the resistor (when one is used) keeping the relay closed until the electrical energy of the capacitor has been dissipated.

These together with other objects and advantages which will become subsequently apparent reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawing forming a part hereof, wherein like numerals refer to like parts throughout, and in which:

Figure 1 is a schematic wiring diagram which shows a fragment of a low voltage door bell or chime circuit together with a comparatively high voltage circuit and an attachment which energizes a lamp in the higher voltage circuit in response to a triggering impulse or continued energization of the low voltage circuit, and after a predetermined period automatically deenergizes the lamp; and

Figure 2 is a perspective view of the attachment of Figure 1 showing the neatness with which the invention may be produced as a commercial product.

In the accompanying drawing there are wires 10 and 12 which represent two sides of a typical dwelling electrical service. Electric lamp 16 is in a circuit 18 which has circuit connections with wires 10 and 12. The electric lamp 16 schematically represents a porch light or entrance light or some other light which is ordinarily found in a building, principally a dwelling. Switch 20 is an ordinary light controlling switch in circuit 18 and is arranged to turn the light "on" and "off" by energizing or deenergizing circuit 18. The circuit 18 is a comparatively high (approximately 117 volts) A.C. circuit although other voltages may be used depending on the particular service in the area within which the invention is practiced. The invention in no way alters the complete independence and use of circuit 18.

A comparatively low voltage A.C. circuit 22 is operatively connected to the electrical service in the building represented by wires 10 and 12. Low voltage circuit 22 is a door bell or door chime circuit, the audible signal device 24 being shown as connected by conductors 26 and 28 to the step down transformer 30. Transformer 30 has its terminals connected to the wires 10 and 12 while the secondary terminals have conductors 26 and 28 secured thereto. A switch 32 is interposed in conductor 28 and is preferably of the push button type since this is most common in a bell circuit in a dwelling.

The invention is embodied in an attachment 34 which involves an electrical circuit and a plurality of circuit components. A casing 36 (Figure 2) shows that all of the circuit components and circuitry may be contained within a small box for ease of installation and handling.

The function of attachment 34 is to energize circuit 18 for a short period of time, the duration of which may be selected, in response to closing switch 32, even instantaneously, regardless of the duration of closing switch 32. An instantaneous closing of switch 32 in low voltage circuit 22 is all that is necessary to cause lamp 16 to be lit and remain lit for a short period of time, say one minute, after which the lamp 16 automatically becomes deenergized. Since this lamp is preferably a porch or entrance lamp, a person making entry into a house or a visitor will be in the light long enough to enter the house or be seen.

The components of attachment 34 contained in the casing 36, are a sensitive D.C. relay 38, a capacitor 40, a rectifying device 42 and a variable resistor 44. For one embodiment of the invention where A.C. circuit 22 is an 18 volt bell circuit, rectifier 42 will be a 100 milliamperes selenium rectifier, the capacitor a 1000 microfarad foil condenser, relay 38 will have a pull in current of approximately 0.98 milliamperes and a fall out current of approximately 0.38 milliamperes, while the variable resistor 44 will have a range from zero ohms to 1000 ohms. However, component values may be altered.

Relay 38 has a coil 50 with which two terminals 52 and 54 are connected. An electrical conductor 56 extends from the first terminal 52 to rectifier 42 and from rectifier 42 to the conductor 26 of low voltage A.C. circuit 22. The other terminal 54 of the coil of the relay is operatively connected with the resistor 44 by conductor 60, and from the resistor 44 the conductor 60 extends to the conductor 28 of the low voltage circuit 22.

In construction, casing 36 will be fitted with terminals, as binding posts 62 and 64 that will be clearly marked for the low voltage connection with the bell circuit 22. In the schematic representation (Figure 1) wires 66 and 68 make the actual connection between binding posts 62 and 64 and the low voltage circuit 22.

A pair of contacts 72 and 74 constitute part of the relay 38 and they are normally open as shown in Figure 1. The contacts are electrically connected to the terminals, for example binding posts 76 and 78 which are carried by the casing 36 and which will be marked clearly as being the high voltage connection. Wires 80 and 82 are attached to the binding posts 76 and 78 and are secured in the high voltage circuit 18 in shunt with the manually operated switch 20.

In operation, after installation as described, the door bell button 32 is closed in order to sound the signal, that is, either ring the bell or chime or whatever signal may be connected with the bell circuit 22. This automatically energizes the circuit of the attachment 34 in the following manner: Rectifier 42 applies D.C. voltage to the coil of relay 38 with the ground path being established through resistor 44. At the same time the capacitor 40 is charged and with the energization of the relay 38 contacts 72 and 74 are closed. Inasmuch as they are connected in shunt with the switch 20, light 16 becomes energized by the potential in its circuit 18.

Ordinarily a person will push the door bell button for a moment and then release the same. The initial closing of switch 32 causes practically instantaneous closing of contacts 72 and 74 and lighting of lamp 16. However, upon removal of the finger from the door bell button switch 32 opens but the contacts 72 and 74 remain closed because relay 38 continues to be energized until the energy in capacitor 40 leaks to the relay 38 and becomes dissipated. The selenium rectifier 42 during this time prevents backflow of current to the signal device

24. When the period of time required to dissipate the energy from capacitor has passed, and this time may be controlled by the setting of variable resistor 44 through a shaft which projects through casing 36, the normally open contacts 72 and 74 are spread apart. This again opens the circuit 18 whereby the lamp 16 is deenergized.

The foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly, all suitable modifications and equivalents may be resorted to, falling within the scope of the invention as claimed.

What is claimed as new is as follows:

1. For use with a low voltage A.C. signal circuit and a comparatively high voltage lamp circuit that has a manual switch, means responsive to instantaneous energization of said A.C. circuit for controlling for a period the energization of said lamp circuit by shunting said manual switch, said means comprising a pair of normally open contacts connected in shunt across said manual switch, means sensitive to energization of said A.C. circuit and including a D.C. circuit and connected in parallel with said A.C. signal circuit for closing said contacts and for holding said contacts closed for a period of time after said A.C. circuit is deenergized, said D.C. circuit having a first and a second electrical conductor, a rectifier in one of said conductors, a capacitor connected across said conductors, an electromagnetic coil terminally connected with said first and second conductors, a resistor in said second conductor to vary said period of time, and said capacitor being connected to said second conductor between said A.C. circuit and said coil and connected to said first conductor between said rectifier and said coil.

2. Apparatus for automatically energizing a light for a predetermined time in response to actuation of a door bell or such comprising a high voltage alternating current source, said light connected across said high voltage alternating current source, a manual switch electrically serially interposed between said source and said light, a pair of normally open contacts connected in shunt across said switch, a stepdown transformer having a primary and a secondary winding, said primary winding electrically connected across said high voltage alternating current source, said door bell electrically connected across said secondary winding, a direct current time delay relay circuit, including a relay coil, electrically connected in shunt across said door bell, said relay coil positioned so as to close said normally open contacts upon energization thereof, said direct current time delay relay circuit further including a rectifier, a capacitor, and a resistor, said rectifier serially connected to first and second parallel arms, said first parallel arm comprising said capacitor, said second parallel arm comprising said relay coil and said variable resistor, said relay coil and said variable resistor being serially connected.

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