

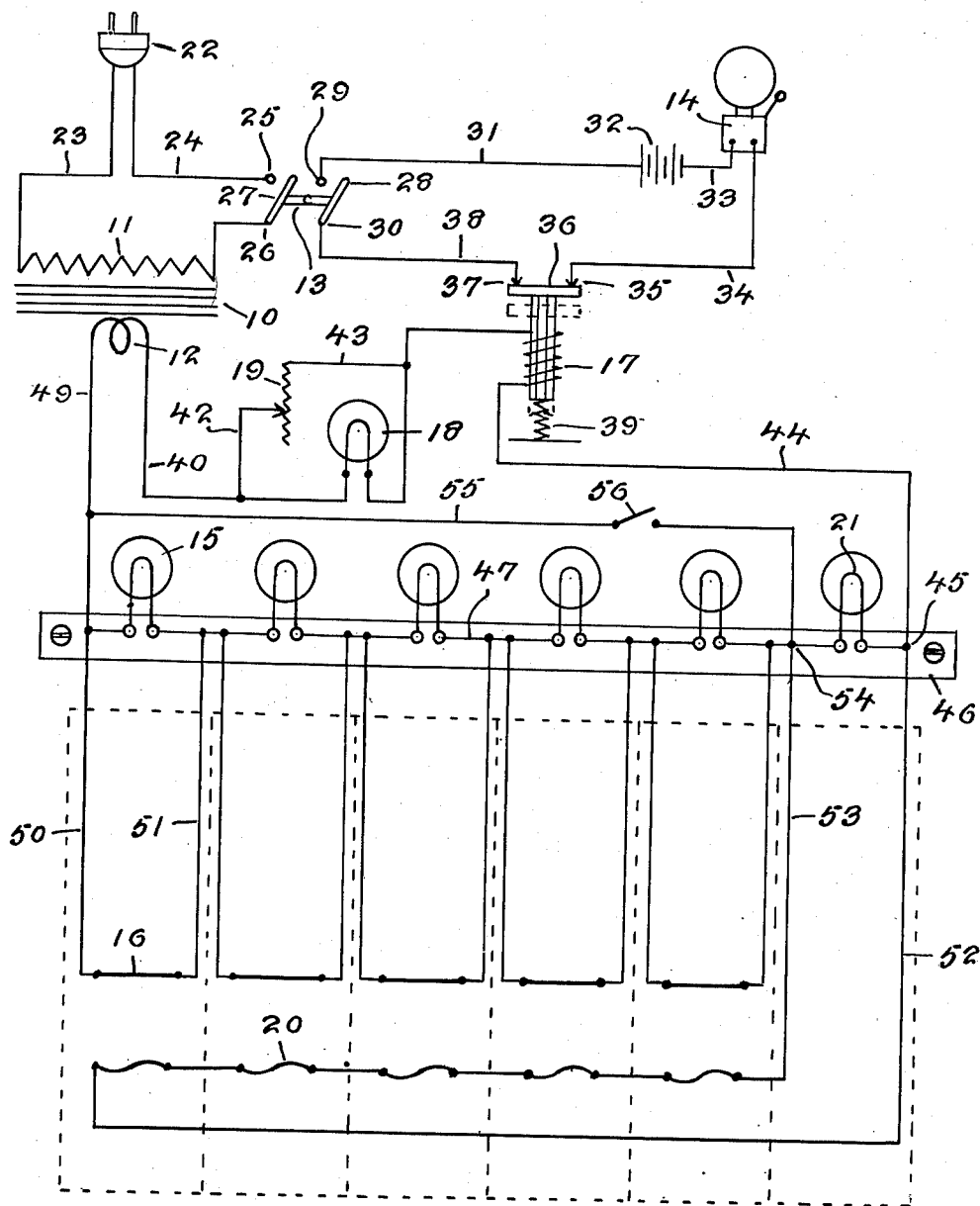
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CLOSED CIRCUIT FIRE AND BURGLAR ALARM

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CLOSED CIRCUIT FIRE AND BURGLAR ALARM

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This invention relates to alarm devices of the closed circuit type and in particular includes an auxiliary battery alarm circuit and a main circuit fed through a step-down transformer with a relay in the main circuit for closing the auxiliary circuit and also with control board lights connected in parallel with fusible and breakable elements of lower resistance than the lights whereby upon breakage of an element the current passes through and lights the light associated therewith, also actuating the relay to close the auxiliary circuit whereby an indicating light is provided and an audible signal device is also actuated.

The purpose of this invention is to provide a closed circuit alarm device that includes a signal light indicating that the circuit is operating satisfactorily and which, when trouble develops provides a light indicating where the trouble is and also sounds an alarm.

Numerous types of burglar alarm circuits have been provided of both the open and closed types but it is difficult to provide a positive actuated circuit that is dependable under all conditions that may be installed in the average household at a reasonable cost. With this thought in mind this invention contemplates a circuit containing fusible and breakable elements connected through signal lights that are not lighted until the elements are broken and an audible alarm with a battery circuit and actuated by the main circuit upon breaking of an element therein and the entire device may be installed in a residence by the average layman and plugged into the conventional lighting circuit at a suitable point.

The object of this invention is, therefore, to provide means for connecting fusible and breakable elements in combination with signal lights with a pilot light connected across a resistance in the circuit and with an audible alarm in a battery circuit adapted to be closed upon breaking of one of the elements.

Another object of the invention is to provide a closed circuit for fire and burglar alarms that operates with a minimum amount of current.

A further object of the invention is to provide a closed circuit fire and burglar alarm that is suitable for the average household which is of a simple and economical construction.

Other features and advantages of the invention will appear from the following description taken in connection with the drawings wherein the drawing shows a typical wiring diagram with the elements connected therein.

Referring now to the drawings wherein like reference characters denote corresponding parts the improved closed circuit alarm of this invention includes a transformer 10 having a primary winding 11 and a low voltage secondary winding 12, a main circuit closing switch 13, a bell 14 for providing an audible signal, a plurality of lights

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15, a plurality of breakable elements 16, a relay 17 for closing the circuit to the bell 14, a pilot light 18 connected across a variable resistor 19, and a fire alarm circuit having a plurality of fuses 20 with an indicating light 21 therein.

With the parts arranged in this manner the primary winding 11 of the transformer is fed by the usual lighting circuit of a residence through a plug 22 connected to opposite terminals of the winding 11 by wires 23 and 24 and the wire 24 is provided with terminals 25 and 26 that are positioned to be closed by a contact bar 27 of the switch 13.

The switch 13 is also provided with a contact bar 28 which, when closed, closes a circuit to terminals 29 and 30 of an auxiliary circuit, the terminal 29 being connected by a wire 31 to a battery 32 and to the terminal of an audible signal 14 by a wire 33. The opposite terminal of the alarm 14 is connected by a wire 34 to a contact 35 which is positioned to be engaged by a contact arm 36 of a solenoid of the relay 17. The bar 36 is also positioned to engage a contact 37 of a wire 38 that extends to the terminal 30 whereby upon deenergization of the relay 17 the core of the relay is actuated by a spring 39 to move the bar 36 against contact points 35 and 37 so that the current is closed through the bell or audible signal 14.

One end of the secondary winding 12 of the transformer 10 is connected to one side of the relay 17 by wires 40 and 41 and the light 18 is connected between the wires 40 and 41 whereby the light will show continuously when the switch 13 is closed indicating that the alarm circuit is operating satisfactorily. The variable resistor 19 is connected across the wires 40 and 41 by wires 42 and 43 for regulating the current passing through the system whereby the resistance of the light 18 in proportion to that of the elements 16 is such that the lights will not light until the element associated with the light is broken.

From the opposite terminal of the relay 17 a wire 44 extends to a point 45 on a terminal board 46 and from this terminal a wire 47, in which the lights 15 and 21 are positioned extends across to a point 48 that is connected to the opposite side of the low voltage secondary 12 by a wire 49.

The elements 16, which may be formed of wire, wire loops, foil on panes of glass, or micro-switches are connected across the terminals of lights 15 by wires 50 and 51 and as long as these elements are intact, the resistance thereof shorts out the lights 15 and the lights 15 will not light. Upon breakage of one of the elements 16 the circuit instantly passes through the light 15 associated therewith so that the light will light, and as the resistance of the light is too high to impose sufficient load to hold the relay 17 open, the relay becomes deenergized and the spring 39 snaps the contact bar 36 against the points 35 and

37, closing the auxiliary battery circuit and sounding the alarm.

It will be understood that as many of the lights 15 may be used as may be desired and the corresponding elements 16 may be placed on doors, windows and the like, and these may also be located in a kitchen, bedroom, or garage. Similar elements may also be installed at different points throughout the residence or building.

The system is also provided with a plurality of fusible elements 20, that may be positioned at various points throughout a building, which when fused by heat, break a circuit, lighting the light 21, similar to one of the lights 15 and also de-energizing the relay 17 whereby the auxiliary circuit is completed and the alarm sounded.

The fire alarm circuit includes a wire 52 extended from the terminal 45 and a return wire 53 which is connected to a terminal 54 and from this terminal the circuit is connected to a wire 49 of the secondary 12 by a wire 55 which is provided with a switch 56. With the switch 56 open the fire alarm circuit operates similar to one of the circuits through one of the elements 16 and when it is desired to cut out the circuits through the elements 16 and light 15, such as during the day, the switch 56 is closed whereby only the fire alarm circuit is in operation.

By this means it is possible to provide fusible and also breakable elements at different points through a building and with a closed circuit through these elements the pilot light will be lighted to show that the circuit is in operation and should one of the breakable or fusible elements be destroyed, a light will be provided indicating the location of the destroyed element and at the same time an audible alarm, such as the bell 14 will be sounded.

This alarm circuit therefore provides positive protection at comparatively low cost.

It will be understood that modifications may be made in the design and arrangement of the parts without departing from the spirit of the invention.

What is claimed is:

1. An alarm circuit comprising a step down transformer, a plug extended from the high voltage side of the transformer for connecting the transformer to a source of current supply, a double knife switch positioned with one of said knives in the connection from the transformer to the plug, an auxiliary circuit having a battery therein connected to the other knife of the switch and adapted to be closed by switch, an audible signal in said auxiliary circuit, a pair of open contacts in said auxiliary circuit, a relay positioned to close the said open contacts of the auxiliary circuit, a breakable element, a low voltage circuit extended from the secondary of the transformer to the said breakable element, a signal light connected across the low voltage circuit of the breakable element, the resistance of said signal light being such that upon rupture of the breakable element the signal light will light, a variable resistance in the said low voltage circuit, and a pilot light in the said low voltage circuit connected across the said variable resistance, said low voltage circuit being connected to the terminals of the said relay whereby with current in the low voltage circuit the relay holds the said auxiliary circuit open.

2. An alarm circuit comprising a step down transformer, a plug extended from the high voltage side of the transformer for connecting the transformer to a source of current supply, a

a double knife switch positioned with one of said knives in the connection from the transformer to the plug, an auxiliary circuit having a battery therein connected to the other knife of the switch and adapted to be closed by said switch, an audible signal in said auxiliary circuit, a pair of open contacts in said auxiliary circuit, a relay positioned to close the said open contacts of the auxiliary circuit, a breakable element, a low voltage circuit extended from the secondary of the transformer to the said breakable element, a signal light connected across the low voltage circuit of the breakable element, the resistance of said signal light being such that upon rupture of the breakable element the signal light will light, a variable resistance in the said low voltage circuit, a pilot light in the said low voltage circuit connected across the said variable resistance, said low voltage circuit being connected to the terminals of the said relay whereby with current in the low voltage circuit the relay holds the said auxiliary circuit open, a fusible element in said low voltage circuit, and a signal light connected across the said fusible element.

3. An alarm circuit comprising a step down transformer, a plug extended from the high voltage side of the transformer for connecting the transformer to a source of current supply, a double knife switch positioned with one of said knives in the connection from the transformer to the plug, an auxiliary circuit having a battery therein connected to the other knife of the switch and adapted to be closed by said switch, an audible signal in said auxiliary circuit, a pair of open contacts in said auxiliary circuit, a relay positioned to close the said open contacts of the auxiliary circuit, a breakable element, a low voltage circuit extended from the secondary of the transformer to the said breakable element, a plurality of signal lights, a signal light connected across the low voltage circuit of the breakable element, the resistance of said signal lights being such that upon rupture of one of the breakable elements the signal light will light, a variable resistance in the said low voltage circuit, a pilot light in the said low voltage circuit connected across the said variable resistance, said low voltage circuit being connected to the terminals of the said relay whereby with current in the low voltage circuit the relay holds the said auxiliary circuit the relay holds the said auxiliary circuit open, fusible elements in said low voltage circuit, signal lights connected across the said fusible elements, and a circuit with a switch therein connected across the said low voltage circuit for cutting out the circuit to the breakable elements and signal lights associated therewith.

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