

Feb. 8, 1966

F. J. SCHORDINE

3,234,535

COMBINED BURGLAR AND FIRE ALARM DEVICE

Filed June 17, 1963

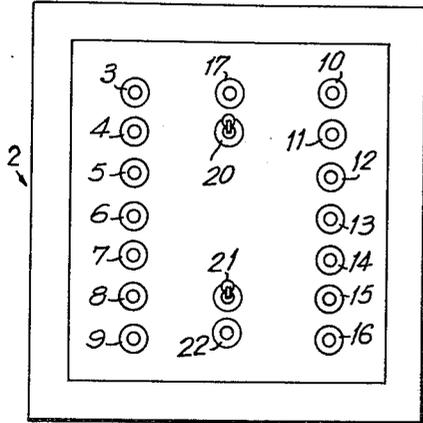


FIG. 1

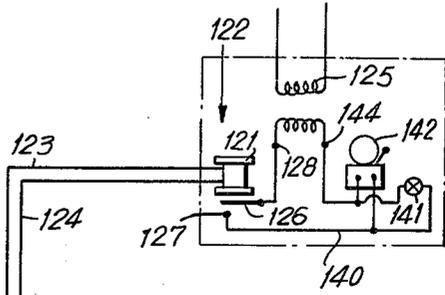
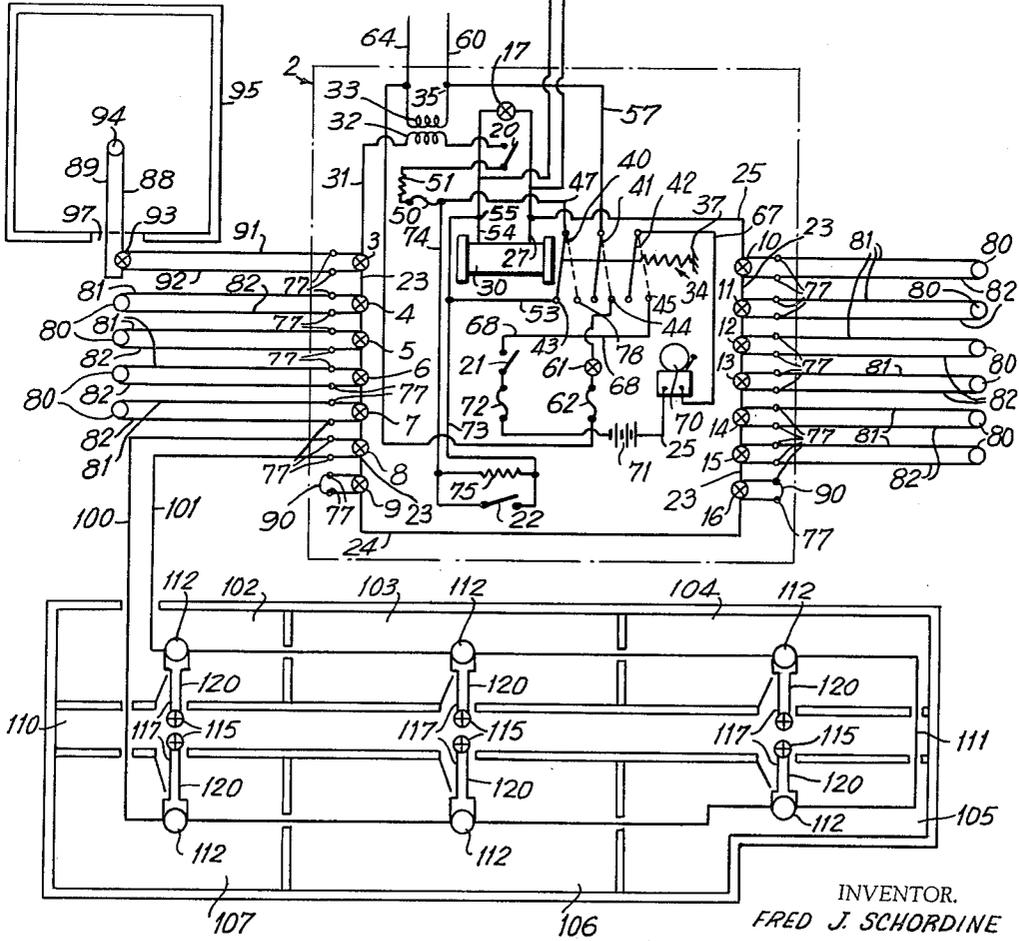


FIG. 2



INVENTOR.
FRED J. SCHORDINE

BY
Jacob L. Kollin
ATTORNEY

1

2

3,234,535

COMBINED BURGLAR AND FIRE ALARM DEVICE
Fred J. Schordine, 134 Waverly Ave., Patchogue, N.Y.
 Filed June 17, 1963, Ser. No. 288,108
 2 Claims. (Cl. 340-213)

This invention has special reference to burglar, fire and similar alarm systems wherein one or more optical and/or acoustical signal devices are released upon unauthorized or improper entrance into, or tampering with, a room or a compartment or the like that is to be guarded and protected, or wherein a signaling device and/or an alarm is released by unusual temperature changes. This temperature dependability makes it possible to use the device not only as a fire alarm but also for supervising freezing compartments in a food storage installation in a hotel, a food store, or the like.

One object of the present invention is the provision of a device of the character described which releases one or several alarm devices not only in or near a building protected by the device, but also in a distant police station or fire house, which is reliable in operation and extremely simple to use and to supervise, and which also is compact and inexpensive.

Another object of the present invention is the provision of a device of the character described which is adapted to indicate the exact location of a trouble spot on a central panel as well as in a hall or the like from which various rooms or compartments are accessible.

A further object of the present invention is the provision of a device of the character described which will be actuated when any wire of the wiring system of the device is cut or damaged, which will continue giving alarm signals even if a momentarily cut wire or the like is restored or repaired immediately.

Still another object of the present invention is the provision of a device of the character described which is simple in construction and easy to install, most of its wiring being of a low-voltage type, so that no licensed electrician has to be called for the installation, and which requires only two single wires for each room, or compartment, or the like to be protected.

With the foregoing and other objects which will appear as the description proceeds, the invention consists of certain novel details of construction and combinations of parts hereinafter more fully described and pointed out in the claims, it being understood that changes may be made in the construction and arrangements of parts of the embodiment disclosed without departing from the spirit of the invention as claimed.

In the accompanying drawing I have set forth an illustrative embodiment of my invention.

In said drawing:

FIGURE 1 is a plan view of a panel covering a housing for a preferred embodiment of my invention; and,

FIG. 2 is a wiring diagram.

Similar reference characters refer to similar parts throughout the several views.

In the drawing the numeral 1 denotes an indicator panel that may be placed above a housing or a container 2, in which are installed several elements of the alarm device. The panel 1 is provided with a plurality of signal lights 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15 and 16 (fourteen lights in the present instance) each of which bears a number or any other suitable indication of a room, a compartment, or another object to be protected. An additional signal light 17 indicates whether or not the alarm device is operating, and a pair of switches 20 and 21 as well as a push button 22 also installed on the panel 1 will be referred to hereinafter.

Referring first to the wiring diagram of FIG. 2, the light bulbs of the signal lights 3 to 16 inclusive are in series

conductively connected to each other by means of conduits 23 and 24, and one end of this series of signal lights is connected by a wire 25 to a terminal 27 of a coil 30 of a relay 34 contained in the housing 2. The other end of the series of said signal lights is connected by means of a wire 31 to a low-voltage coil 32 of a transformer 33 or to any other source of electrical current.

A special relay (not shown) for automatically substituting for the transformer 33 a battery or any other source of electrical current, when the power on the primary coil 35 of the transformer 33 should fail, can be provided for.

The relay 34 preferably is of the type which keeps interrupted one or more electric circuits as long as its coil 30 is energized, and which closes said circuits when the coil 30 is no longer energized or the voltage is lowered to such an extent as to be unable to overcome the power of one or more springs 37. In the instance shown the relay 34 is a three-pole, triple-throw out device, and the coil 30 as well as the spring 37 actuate movable contact elements 40, 41 and 42, which cooperate with stationary contact elements 43, 44 and 45 respectively. The movable contact element 40 is conductively connected, by means of a conductor 47, over a fuse 50, a ballast 51 and the switch 20, to the low-voltage coil 32 of the transformer 33. The stationary contact element 43 is connected by means of wires 53 and 54 to a second terminal 55 of the coil 30 of the relay 34.

The movable contact element 41 is connected by means of a wire 57 to a first terminal of any suitable source of electrical current, for instance to a high-voltage line 60 that leads to the coil 35 of the transformer 33. The stationary contact element 44 is connected over a flash-signal light 61, a fuse 62 and a wire 63 to a second terminal of any source of electrical current, which in the instance shown is a high-voltage line 64 that leads to the coil of the transformer 33. The wires 57 and 63 also could be connected, for instance, to the wires 47 and 31 respectively, or to a battery or the like.

The movable contact element 42 is connected by a wire 67 over a buzzer 70, a battery 71 or any other source of electrical current, to a fuse 72, the switch 21, and a wire 68, to the stationary element 45.

The terminals of the push button switch 22 are connected by wires 73 and 74 to the wires 54 and 47 respectively, and a resistor 75 has its terminals conductively connected to the wires 73 and 74.

Each terminal of each of the signal light bulbs 3 to 16 inclusive is conductively connected to a pair of connecting posts or screws 77. In the embodiment shown in FIG. 2 each one of the signal light bulbs 4, 5, 6, 7, 10, 11, 12, 13, 14 and 15 is parallel connected over the posts 77 to a closed-circuit detector element 80 by means of two wires 81 and 82. As stated above, the signal light bulbs 3 to 16 inclusive are connected in series to each other. The elements 80, which are installed in the locations to be protected, are of the type wherein rising temperatures cause electrical contacts therein to open. Burglar alarm closed circuit wires, conductive foil strips, smoke detectors (not shown), or the like may be added to, or substituted for, the elements 80.

In the instance shown the signal lights 9 and 16 are in reserve for future extra circuits and are not actually used; therefore, the connecting posts 77 which are conductively connected to the terminals of the light bulbs 9 and 16 are bridged by conductive jump wires 90.

A pair of wires 91 and 92 connect the connecting posts 77 that are conductively connected to the light bulb 3 parallel to a second signal light bulb 93, which in turn is parallel connected by a pair of wires 88 and 89 to a closed circuit detector element 94 that may be installed

in a room or compartment 95, on the door 97 of which the signal light 93 may be mounted.

An additional pair of wires 100 and 101 is conductively connected to the connecting posts 77 that are connected to the light bulb 8. The wires 100 and 101 are extended through a series of rooms or compartments 102 to 107 inclusive, as well as through a hall way 110 from which said rooms are accessible. Said rooms may be, for instance, a series of rooms on a floor or the like. The extremities of the wires 100 and 101 are conductively connected to each other at any convenient point, for instance at 111, and closed circuit detector elements 112 in the rooms or compartments 102 to 107 are connected in series to each other by the wires 100 and 101. An additional signal light bulb 115, installed at the door of each room or compartment 102 to 107 is conductively connected parallel to each element 112 by means of a pair of wires 117 and 120.

The terminal wires 27 and 55 of the coil 30 of the relay 34 are connected to terminals of a coil 121 of a relay 122 by means of wires 123 and 124. The relay 122 is a two-pole relay installed in a fire house or in a police station, that may be located a considerable distance away from the panel 1. The wires 123 and 124 may be connected to a pair of wires (not shown) leased from a telephone company or the like. The relay 122 controls a movable contact member 126, which is conductively connected to a terminal 128 of a source of electrical current such as a transformer 125 or the like. As long as the coil 121 is energized and a certain voltage is maintained thereon, the contact member 126 is in spaced relation to a stationary contact 127, which is connected by a wire 140 to a signal flash light 141 and/or to a buzzer 142, or to another alarm device, which by means of a wire 143 is connected to another terminal 144 of the source of current 125.

The light bulbs of the signal lights 3 to 16 inclusive as well as 93 and 115 are of a high electrical resistance, whereas the resistance of the closed circuit detector elements 80, 94 and 112 and of the wires 81, 82, 91, 92, 100 and 101 is very low. Thus, as long as the contacts of all elements 80, 94 and 112 are closed, an electrical current passes from a terminal of the source of current (coil 32) through the wire 31, the series of wires 81, 91 and 100, the elements 80, 94 and 112, the wires 25 and 27, the relay coil 30, and the wire 55 to the other terminal of the low-voltage coil 32 of the transformer 33, so that the coil 30 is fully energized and the contact elements 40, 41 and 42 are in the (open) position as shown in FIG. 2 in full lines, preventing an electrical current from passing through the alarm devices 61 and 70. The coil 121 of the relay 122 being parallel to the coil 30, has substantially the same voltage as the coil 30, so that the alarm devices 141 and 142 in the distant fire house or police station also are not energized as long as the full voltage is maintained on the coils 30 and 121. Thereby, none of the signal lights 3 to 16 inclusive as well as 93 and 115 is on. Only the shining of the control light 17 indicates that the device is in good working order.

However, as soon as one of the elements 80, 94 or 112 opens its normally closed contacts, or if one of the wires 81, 82, 91, 92, 88, 89, 100 or 101, or a burglar-protective conductor is cut, the electrical low-voltage current of 24 volts or the like, from the transformer coil 32, at one point cannot pass through an element 80, 94 or 112, but has to pass through one of the signal lights 3 to 16, 93 or 115. This causes one or more of said signal lights to light up, indicating where trouble is located, and simultaneously—due to the high resistance of the signal lights—the voltage in the coils 30 and 121 drops to such an extent that the spring 37 will pull the movable contact elements 40, 41 and 42 upon the stationary contact elements 78, 44 and 45, so that the high-voltage alarm circuit of the elements 61, 62, 63, 35, 57, 41 and 44 is closed, and that also the low-voltage alarm

circuit of the elements 70, 71, 72, 21, 68, 45, 42 and 67 will be closed, thus actuating the various alarm devices 61 and 70; simultaneously, the drop in the voltage on the coil 121 causes the contact element 126 to touch the contact 127, so that an electrical current will pass from the terminal 128 of the source of current 125 through the elements 124, 123, 127, 140, 141, 142 to the terminal 144, energizing the signal devices 141 and 142. The switches 20 and 21 are closed when the device is in operating condition.

In order to prevent an unwanted opening of the alarm circuits by re-energizing, at full voltage, the relay coils 30 and 121, which could be done, for instance, by a burglar re-connecting an interrupted alarm wire, I prefer to provide the panel 1 with any suitable re-setting means for the relays. Said re-setting means may consist, as in the instance shown, of the push button 22, the resistor 75 and the wires 73 and 74. If the elements 40, 41 and 42 are in the positions indicated by dash-and-dotted lines in FIG. 2, the element 40 touches a dead contact 78, so that a re-connecting of an interrupted wire or the like will not cause a re-energizing of the relay coil 30 because no electrical current can pass from the coil terminal wire 55 through the wires 54 and 53 to the wire 47. In order to re-set the relays 34 and 122, it is necessary momentarily to depress the push button 22, thus allowing an electric current to pass from the terminal 55 through the wires 54 and 73, the push button 22, the wire 74, the elements 50 and 51, the closed switch 20, the low-voltage coil 32 of the transformer 33, the wires 31, 81, 91, 88, 100, the elements 80, 94 and 115, the wires 82, 92, 89, 101, 23, 77, 90, 24 25, to the terminal 27 of the coil 30, which will energize the coil 30, so that the elements 40, 41 and 42 will be pulled back into their original positions shown in full lines in FIG. 2.

If some of the elements 94 or 112 are open due to abnormal temperature conditions, one of the signal lights 93 or 115 also will light up for facilitating the finding of the trouble spot. In order to accomplish a simultaneous lighting up or flickering of the signal lights 3 and 93, or of the signal light 8 and one of the signal lights 115, the electrical resistance of the lamp 3 must be the same as the aggregate resistance of the wires 92 and 91 plus that of the lamp 93; and the electrical resistance of the lamp 8 must be the same as the aggregate resistance of one of the lamps 115 plus the resistance of the wires 100 and 101 as well as of a pair of wires 117 and 120. This will cause a flickering or a lighting up of the indicator lamps 3 and 93 if the detector 94 is disconnected; or it will cause a flickering or a lighting up of the indicator lamp 8 and one of the lamps 115 if any one of the detectors 112 is interrupted.

Since certain changes may be made in the above article, and different embodiments of the invention could be made without departing from the scope thereof, it is intended that all matter contained in the above description or shown in the accompanying drawing shall be interpreted as illustrative and not in a limiting sense.

It is also to be understood that the following claims are intended to cover all of the generic and specific features of the invention herein described, and all statements of the scope of the invention which as a matter of language might be said to fall therebetween.

Having thus fully described my said invention, what I claim as new and desire to secure by Letters Patent in the United States is:

1. An electrical protective alarm comprising a panel, a plurality of first electrical indicators in series conductively connected to each other and mounted on said panel, a plurality of electrical detectors having normally closed contacts and being installed in various locations to be protected, a first pair of wires parallel conductively connecting each one of said indicators to each one of said detectors, a first closed-current relay mounted on said panel and having a coil, connecting means serially

5

connecting said coil to said indicators, a first alarm circuit controlled by a first set of contacts of said first relay and being interrupted as long as said relay is energized, said connecting means including a second set of contacts of said first relay, said second set of contacts adapted to open when said relay is deenergized at a predetermined voltage, a second relay having a coil parallel conductively connected to the coil of said first relay, and a second alarm circuit connected to said second relay being interrupted by the same as long as the relays are fully energized, each of said alarm circuits being conductively connected to a separate source of electrical current.

2. The alarm according to claim 1, further provided with a plurality of second electrical indicators conductively connected to said first indicators and mounted on said panel, third indicators mounted in the proximity of the objects to be protected, a plurality of second electrical

6

detectors parallel conductively connected to said third electrical indicators and the electrical resistance of each of said second electrical indicators being equal to the aggregate electrical resistance of one of said third electrical indicators and of the wires connecting the same to one of said second electrical indicators.

References Cited by the Examiner

UNITED STATES PATENTS

10	667123	1/1901	Freed	340—276
	2,599,623	6/1952	Forrester	340—227 X
	2,870,434	1/1959	Schulze	340—227
	2,971,186	2/1961	Ripepi	340—276

15 NEIL C. READ, *Primary Examiner*.

ROBERT M. ANGUS, *Assistant Examiner*.