

Jan. 21, 1958

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2,820,892

WARNING ALARM SYSTEM

Filed Oct. 26, 1955

FIG. 1

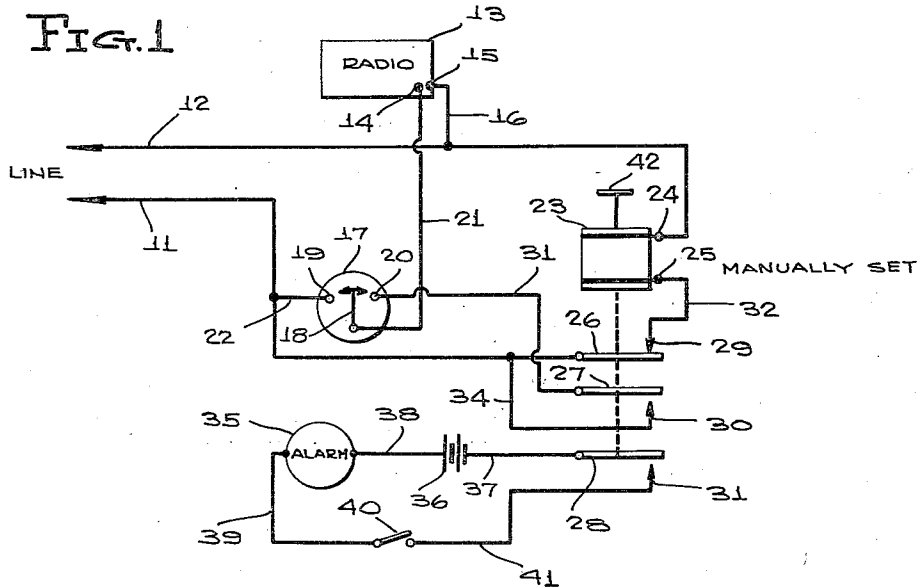
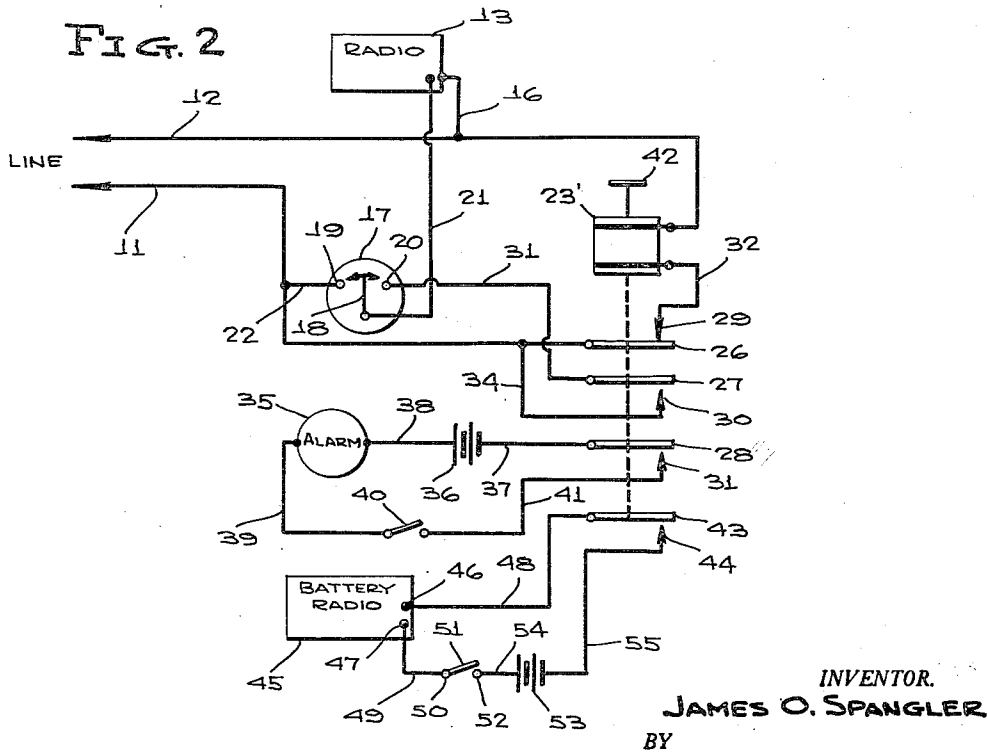


FIG. 2



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ATTORNEYS

1

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WARNING ALARM SYSTEM

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Application October 26, 1955, Serial No. 542,865

3 Claims. (Cl. 250—20)

This invention relates to electrical alarm systems, and more particularly to an electrical alarm system operating in conjunction with a radio receiver to provide an alarm responsive to power interruption and to automatically energize the radio receiver so that in the event of an emergency, public announcements and instructions may be furnished to the user of the alarm system.

A main object of the invention is to provide a novel and improved alarm system which is intended to be actuated by power interruption of the normal house lighting power circuit, the improved system involving simple components, being easy to set for operation, and providing a means of effectively warning the user of the system of an emergency condition and for conveying instructions or important information to the owner of said system.

A further object of the invention is to provide an improved electrical alarm system which is dependable in operation, which involves relatively inexpensive components, and which may be connected to a conventional radio receiver to allow normal use of the receiver but to enable the receiver to be employed as a part of the alarm system.

A still further object of the invention is to provide an improved alarm system which is connected to the household electrical supply lines and which may be actuated by interruption of power in said supply lines, said system being arranged to provide an alarm when the power is interrupted or fails, the system being further arranged to provide audible announcements or instructions by radio in the event of an emergency, and being further arranged to operate in the event of a total power failure.

Further objects and advantages of the invention will become apparent from the following description and claims, and from the accompanying drawings, wherein:

Figure 1 is a schematic wiring diagram of one form of improved electrical alarm system constructed in accordance with the present invention.

Figure 2 is a schematic wiring diagram of a modified form of the electric alarm system of the present invention, shown with means to provide battery operation of a radio receiver in the event of a sustained failure of power from the normal supply lines.

Referring to the drawings, and more particularly to Figure 1, 11 and 12 respectively designate a pair of electric power supply lines which may be connected in any suitable manner to the household power supply lines, as by means of a conventional plug engaged in a receptacle of the household supply system.

Designated at 13 is a conventional radio receiver having the respective power input terminals 14 and 15. As shown, the power input terminal 15 is connected to the supply line 12 by a wire 16.

Designated at 17 is a single pole, multiple-position switch, the switch 17 comprising the manually rotatable pole 18, a first stationary contact 19 and a second stationary contact 20. The pole 18 may be rotated to an open-circuit position between the contacts 19 and 20, as shown in Figure 1, and may be selectively moved from

2

said open-circuit position to engage either the stationary contact 19 or the stationary contact 20.

As shown in Figure 1, the pole 18 of switch 17 is connected by a wire 21 to the power input terminal 14 of the radio receiver 13. Switch contact 19 is connected by a wire 22 to line wire 11.

Designated at 23 is a relay having a pair of power input terminals, designated respectively at 24 and 25, the terminal 24 being connected to the supply wire 12.

Relay 23 has respective armatures 26, 27 and 28, said armatures being engageable with respective stationary contacts 29, 30 and 31. As shown, the armature 26 is engageable with the stationary contact 29 when the relay 23 is energized, and the armatures 27 and 28 are engageable with the respective stationary contacts 30 and 31 when the relay 23 is deenergized.

Stationary contact 29 is connected to the relay power input terminal 25 by a wire 32. The armature 26 is connected to the power line wire 11. The armature 27 is connected by a wire 31' to the stationary contact 20 of the manually operated switch 17. The stationary contact 30 associated with armature 27 is connected to power line wire 11 by a wire 34.

Designated at 35 is an electrical alarm device, such as a buzzer, a bell, or any other suitable alarm device of the audible or of any other type. The alarm device 35 is energized at times by a battery 36. As shown, the armature 28 is connected by a wire 37 to one terminal of the battery 36. The other terminal of the battery 36 is connected by a wire 38 to one terminal of the alarm device 35. The opposite terminal of the alarm device 35 is connected by a wire 39 to one terminal of a manually operated control switch 40. The other terminal of switch 40 is connected by a wire 41 to the stationary contact 31 associated with armature 28. As will be readily apparent, when switch 40 is closed, alarm device 35 will be energized when armature 28 engages the stationary contact 31, thus completing the battery connections to the respective terminals of device 35.

As will be readily apparent from Figure 1, the radio receiver 13 may be connected to the lines 11 and 12 for normal operation by rotating switch pole 18 into engagement with contact 19. This connects terminal 14 to line 11 through wire 21, pole 18, contact 19, and wire 22.

The relay 23 is of conventional construction and is of the type which must be manually set, as by elevating a handle 42 mechanically coupled to the armatures 26, 27 and 28. Thus, when the handle 42 is elevated, the armature 26 is brought into engagement with contact 29, establishing a holding circuit for relay 23 comprising contact 29, armature 26, and power line wire 11. When said holding circuit is interrupted, as by a momentary or complete power failure, the relay 23 is deenergized, allowing the armatures 26, 27 and 28 to descend. Thus, when relay 23 is deenergized, the armatures 27 and 28 drop to engage their respective stationary contacts 30 and 31.

To set the system for alarm operation, the handle 42 is first elevated to bring armature 26 into engagement with contact 29 and to disengage armatures 27 and 28 from their respective associated contacts 30 and 31. The alarm circuit control switch 40 is then closed and the pole 18 of the radio switch 17 is then rotated into engagement with the stationary contact 20. Thereafter when a momentary power failure occurs, the relay 23 is deenergized, allowing its armatures 26, 27 and 28 to drop, thereby energizing the alarm device 35, by the circuit above described. When the power is restored to the lines 11 and 12, the radio receiver 13 becomes energized, since the terminal 14 thereof is connected by wire 21, pole 18, contact 20, wire 31', armature 27, contact 30, and wire 34 to the line wire 11. Therefore, after

the user of the system has been notified by the operation of the alarm device 35 that there has been a momentary power failure, which may be of relatively short duration, the person thus notified may receive announcements or emergency instructions by means of the radio receiver 13, it being understood that the receiver is tuned to a predetermined frequency designated for transmitting this type of information.

It will be understood that after the person equipped with the alarm system has been notified of the emergency condition by the operation of the alarm device 35, he may then deenergize the alarm device by opening the control switch 40, and thereafter receive instructions or other emergency information by listening to the radio receiver 13.

It will be readily apparent that by the use of the alarm system above described, public authorities may readily communicate with a large portion of the population of a community by the cooperation of the power company serving the community, since it is merely necessary to operate the alarm systems in the community by causing a power stoppage of relatively short duration.

The alarm system above described will also operate in the event of a short circuit or other dangerous condition in the house power circuit causing failure of the electric power, thus providing a warning of impending fire or other emergency conditions associated with the short circuit.

In the form of the invention illustrated in Figure 2, the relay, shown at 23', is provided with the respective armatures 26, 27, and 28, as in the system illustrated in Figure 1, but is provided with an additional armature 43 engageable with a stationary contact 44 when the relay 23' is deenergized. Designated at 45 is a radio receiver of the battery-operated type having the respective power input terminals 46 and 47. Terminal 46 is connected to armature 43 by a wire 48. Terminal 47 is connected by a wire 49 to one terminal 50 of a manually controlled switch 51. The other terminal 52 of switch 51 is connected to one terminal of a battery 53 by a wire 54. The remaining terminal of battery 53 is connected by a wire 55 to the stationary contact 44 associated with armature 43.

In the system of Figure 2, when a total power failure occurs, causing the power lines 11 and 12 to be continuously deenergized, the alarm device 35 is operated in the same manner as described in connection with the embodiment of the invention illustrated in Figure 1, namely, by the deenergization of the relay 23', causing the holding circuit thereof to be opened by the disengagement of armature 26 from its associated stationary contact 29. Alarm device 35 is energized by the engagement of armature 28 with its associated contact 30. However, since the power lines 11 and 12 are deenergized, the normal power-operated radio receiver 13 cannot be energized. However, the battery-operated radio receiver 45 is energized, since its terminals are connected to the battery 53 by wire 48, armature 43, contact 44, wire 55, and by wire 49, switch 51, and wire 54. It will be understood that in setting the system, the switch 51 is closed after the relay handle 42 has been elevated to establish the holding circuit for said relay. As in the previously described form of the invention, when the system is set for operation, the radio switch pole 18 is moved into contact with its associated stationary contact 20 and the switch 40 is closed, along with the switch 51, after the relay handle 42 has been elevated.

While certain specific embodiments of an improved electrical alarm system have been disclosed in the foregoing description, it will be understood that various modifications within the spirit of the invention may occur to those skilled in the art. Therefore, it is intended that no limitations be placed on the invention except as defined by the scope of the appended claims.

What is claimed is:

1. In a power interruption alarm and radio receiver control circuit, a pair of electric power supply lines, a radio receiver having a pair of power input terminals, a relay having a pair of power input terminals, means electrically connecting one input terminal of the receiver and one input terminal of the relay to one power supply line, a first switch arm controlled by said relay, a stationary contact engageable by said switch arm when the relay is energized, means electrically connecting the other input terminal of said relay to said stationary contact, means electrically connecting said switch arm to the other power supply line, means for manually moving said switch arm into engagement with said stationary contact to establish a holding circuit for the relay, a second switch arm controlled by said relay, a second stationary contact engageable by said second switch arm only when the relay is deenergized, means electrically connecting said second stationary contact to said other power supply line, a manual switch having a pole, a first stationary contact connected to said other power supply line, and a second stationary contact connected to said second switch arm, said pole being movable selectively to engage either the first stationary contact or the second stationary contact, means electrically connecting said pole to the remaining power input terminal of the radio receiver, an alarm circuit, and means energizing said alarm circuit responsive to the deenergization of said relay subsequent to the establishment of said holding circuit.

2. In a power interruption alarm and radio receiver control circuit, a pair of electric power supply lines, a radio receiver having a pair of power input terminals, a relay having a pair of power input terminals, means electrically connecting one input terminal of the receiver and one input terminal of the relay to one power supply line, a first switch arm controlled by said relay, a stationary contact engageable by said switch arm when the relay is energized, means electrically connecting the other input terminal of said relay to said stationary contact, means electrically connecting said switch arm to the other power supply line, means for manually moving said switch arm into engagement with said stationary contact to establish a holding circuit for the relay, a second switch arm controlled by said relay, a second stationary contact engageable by said second switch arm only when the relay is deenergized, means electrically connecting said second stationary contact to said other power supply line, a manual switch having a pole, a first stationary contact connected to said other power supply line, and a second stationary contact connected to said second switch arm, said pole being movable selectively to engage either the first stationary contact or the second stationary contact, means electrically connecting said pole to the remaining power input terminal of the radio receiver, a battery-operated alarm circuit, means energizing said alarm circuit responsive to the deenergization of said relay subsequent to the establishment of said holding circuit, said last-named means comprising a third switch arm controlled by said relay, a third stationary contact engageable by said third switch arm when the relay is deenergized, and means connecting said third switch arm and the third stationary contact in series with said alarm circuit.

3. In a power interruption alarm and radio receiver control circuit, a pair of electric power supply lines, a radio receiver having a pair of power input terminals, a relay having a pair of power input terminals, means electrically connecting one input terminal of the receiver and one input terminal of the relay to one power supply line, a first switch arm controlled by said relay, a stationary contact engageable by said switch arm when the relay is energized, means electrically connecting the other input terminal of said relay to said stationary contact, means electrically connecting said switch arm to the other power supply line, means for manually moving said switch arm into engagement with said stationary contact to es-

5

establish a holding circuit for the relay, a second switch arm controlled by said relay, a second stationary contact engageable by said second switch arm only when the relay is deenergized, means electrically connecting said second stationary contact to said other power supply line, a manual switch having a pole, a first stationary contact connected to said other power supply line, and a second stationary contact connected to said second switch arm, said pole being movable selectively to engage either the first stationary contact or the second stationary contact, means electrically connecting said pole to the remaining power input terminal of the radio receiver, a battery operated alarm circuit, means energizing said alarm circuit responsive to the deenergization of said relay subsequent

6

to the establishment of said holding circuit, said last-named means comprising a third switch arm controlled by said relay, a third stationary contact engageable by said third switch arm when the relay is deenergized, and means connecting said third switch arm and third stationary contact in series with said alarm circuit, a battery operated radio receiver, a battery, switch means controlled by said relay and closed when the relay is deenergized, and means electrically connecting said battery-operated radio receiver, battery, and last-named switch means in circuit.

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