

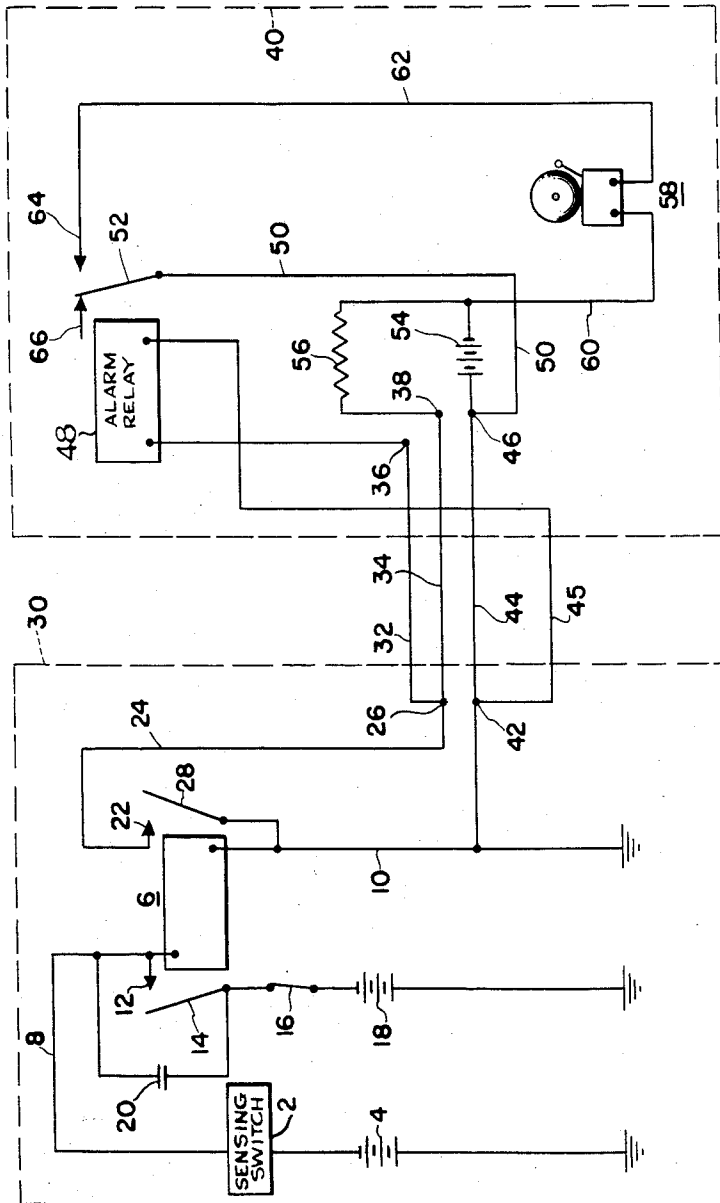
Feb. 17, 1959

LE ROY C. SPENARD

2,874,376

LOCAL ALARM CIRCUIT FOR BURGLAR ALARM SYSTEMS

Filed Oct. 21, 1954



INVENTOR.

LeRoy C. Spenard

BY

David D. McKenney

ATTORNEY

1

2,874,376

LOCAL ALARM CIRCUIT FOR BURGLAR ALARM SYSTEMS

Le Roy C. Spenard, Port Washington, N. Y., assignor to Holmes Electric Protective Company, New York, N. Y., a corporation of New York

Application October 21, 1954, Serial No. 463,733

1 Claim. (Cl. 340—276)

The present invention relates to a local alarm circuit for burglar alarm systems and in particular to a local alarm circuit which is arranged in such a way that the local alarm is sounded if an attempt is made to disable it.

In many local alarm circuits the alarm is actuated directly in response to the closing of a switch which is activated in response to the entrance of an intruder. In such an arrangement the local alarm can be rendered inoperative by simply cutting the lines which come from the switch into the alarm box.

It is an object of the present invention to provide a local alarm circuit for a burglar alarm system in which the alarm is permanently energized when the leads into the alarm box are cut.

It is another object of the present invention to provide a local alarm circuit for a burglar alarm system which may be readily added to systems which are already installed.

Yet another object of the present invention is to provide a local alarm circuit for a burglar alarm system in which it is extremely difficult to disable the local alarm circuit.

A further object of the present invention is to provide in an arrangement wherein the local alarm is housed separately from the circuit responding to the condition to be sensed and conductors interconnect the separately housed components improved circuit means whereby cutting of any of the interconnecting conductors causes actuation of the alarm.

A still further object of the present invention is to provide in an arrangement wherein the local alarm is housed separately from the circuit responding to the condition to be sensed and conductors interconnect the separately housed components, improved circuit means whereby cutting of any or all of the interconnecting conductors causes actuation of the alarm.

Various other objects and advantages will become apparent from the detailed description to follow.

Referring to the drawing one terminal of a condition responsive normally open sensing switch 2 is connected to the negative terminal of the battery 4 the positive terminal of which is grounded. The other terminal of the switch 2 is connected to the relay 6 over the line 8. The other side of the relay is connected to ground over line 10. The front contact 12 of the relay 6 is connected to line 8 and is positioned to be engaged by the armature 14. The armature 14 is connected through the switch 16 to the negative terminal of the battery 18, the positive terminal of which is grounded. The contact 12 and armature 14 are shunted by the capacitor 20. The front contact 22 of the relay 6 is connected over line 24 to the terminal 26. The armature 28 of the relay 6 is connected to ground by line 10. The components thus far described are enclosed or housed within a metal case which is designated by the dashed line 30. The metal box prevents tampering with any of the units

2

enclosed therein and if an attempt is made to open this box the overall system will cause the switch 2 to be closed.

The terminal 26 is connected over the lines 32 and 34 to the terminals 36 and 38 which are enclosed within the alarm box. The alarm box is indicated by the dashed lines 40. The line 10 is connected to the terminal 42 which in turn is connected over lines 44 and 45 to the terminal 46 and one line of alarm relay 48 also within the alarm box. The lines 32, 34, 44 and 45 are enclosed within a metal pipe for purposes of protection. The terminal 36 is connected to the other lines of the relay 48. The armature 52 of the relay 48 is connected to the line 50. The terminal 46 is connected to the battery 54, and the terminal 38 is connected through the resistor 56 to the other end of the battery 54. The bell 58 has one terminal connected over the line 60 to the battery 54 and the other terminal is connected over the line 62 to the contact 64 of the relay 48. The armature 52 engages the dead contact 66 of the relay 48 when the relay is energized.

The drawing shows the entire circuit in its standby or normal condition; this is when the switch 2 is in its normally open condition. The relay 48 is energized by the battery 54 and the armature 52 is engaging the dead contact 66. The current required to maintain the relay 48 energized is about 2 to 3 milliamperes which represents a very small drain on the battery.

When the condition responsive sensing switch 2 is actuated in response to the entrance of an intruder into the protected enclosure the relay 6 is energized by the battery 4. Energization of this relay causes the armature 14 to engage contact 12 thereby connecting the relay across the battery 18. Therefore, if the switch 2 is subsequently opened the relay 6 will remain energized. The switch 16 is included in the circuit so that the holding circuit may be opened by authorized personnel. If the armature 14 is caused to vibrate the capacitor 20 will supply energy to the relay during the brief intervals when the armature 14 is disengaged from the contact 12.

In addition to actuation of the armature 14, the relay 6 causes the armature 28 to engage the contact 22. This applies a short circuit across the alarm relay 48 causing it to be deenergized. This shorting circuit begins at the terminal 26 and is completed over line 24, contact 22, armature 28, line 10, terminal 42 and line 45. When this occurs the armature 52 is dropped and engages the contact 64 thereby completing the circuit of the bell 58 from the battery 54, line 60, the bell 58, line 62, contact 64, armature 52, line 50, and terminal 46. This causes the bell to ring.

The resistor 56 prevents a dead short from being thrown across the battery 54 when the armature 28 engages the contact 22.

It can be seen from the above description that the lines or conductors between the box 30 and the alarm box 40 are the lines 32, 34, 44 and 45. If any of these lines is cut in an attempt to silence the bell 58, the relay 48 is permanently cut off from the battery 54, which will maintain the relay deenergized. As previously pointed out when the relay 48 is deenergized the bell 50 will ring. Therefore, any attempt to render the bell inoperative by cutting the lines into the alarm box 40 will merely result in the actuation of the local alarm.

The lines 32 and 34 may be considered as an elongated open-sided loop on one side of the relay 48 and the lines 44 and 45 may be considered as an elongated open-sided loop on the other side of the relay 48. The open sides of the two elongated loops connect, respectively, one terminal of relay 48 with one terminal of battery 54 and the other terminal of relay 48 with the

3

other terminal of battery 54. Also, the connections at 26 and 42 may be considered as being made at the bight portions of the loops.

As this invention may be embodied in several forms without departing from the spirit or essential characteristics thereof, the present embodiment is therefore illustrative and not restrictive, since the scope of the invention is defined by the appended claims rather than by the description preceding them, and all changes that fall within the metes and bounds of the claims or that form their functional as well as conjointly cooperative equivalents, are therefore intended to be embraced by the claim.

What is claimed is:

An alarm circuit including: a first circuit located in a first housing and having in series an alarm relay and a battery which normally energizes said relay and holds the armature of said relay in a first position; means responsive to the movement of said armature to a second position to give an alarm signal; a normally open switch closing in response to a condition to be sensed; the said first circuit including a first elongated open-sided loop

4

in the line between one terminal of the relay and one terminal of the battery and a second elongated open-sided loop in the line between the other terminal of the relay and the other terminal of the battery, the terminals of the said normally open switch being connected, respectively, to the bight portions of each loop; the said normally open switch and its connection to the bight portions of the loops being located in a second housing, the loops thus extending from the first to the second housing, whereby the occurrence of a condition to be sensed results in the closure of the said normally open switch shorting the said relay and giving an alarm signal and whereby the opening of either of said loops deenergizes said relay and also gives an alarm signal.

References Cited in the file of this patent

UNITED STATES PATENTS

1,901,628	Brainard	Mar. 14, 1933
2,019,320	Runner	Oct. 29, 1935
2,101,049	Clingerman	Dec. 7, 1937
2,686,909	Poulson	Aug. 17, 1954