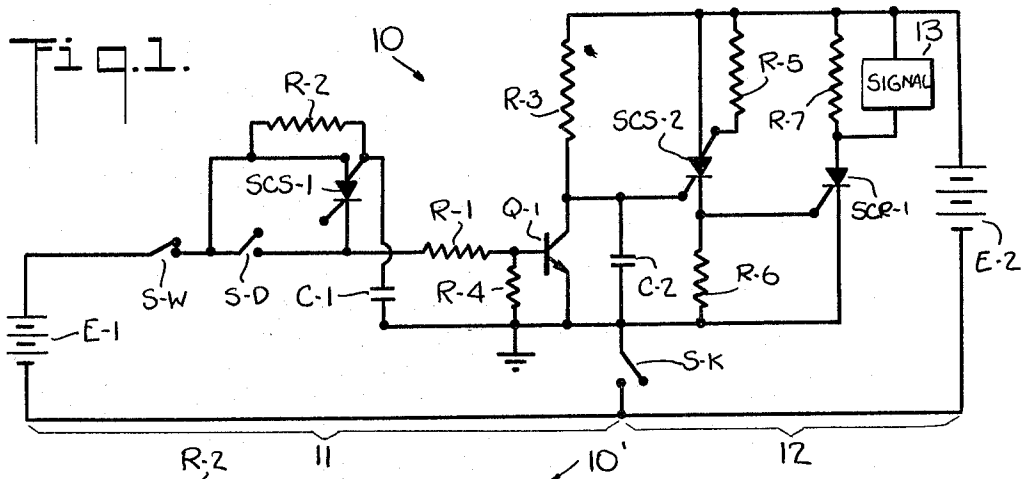
Nov. 15, 1966 M. TEITELBAUM 3,286,250

BURGLAR ALARM UTILIZING BI-STABLE ELECTRONIC SWITCHES

Filed Oct. 16, 1964

Fig. 1.



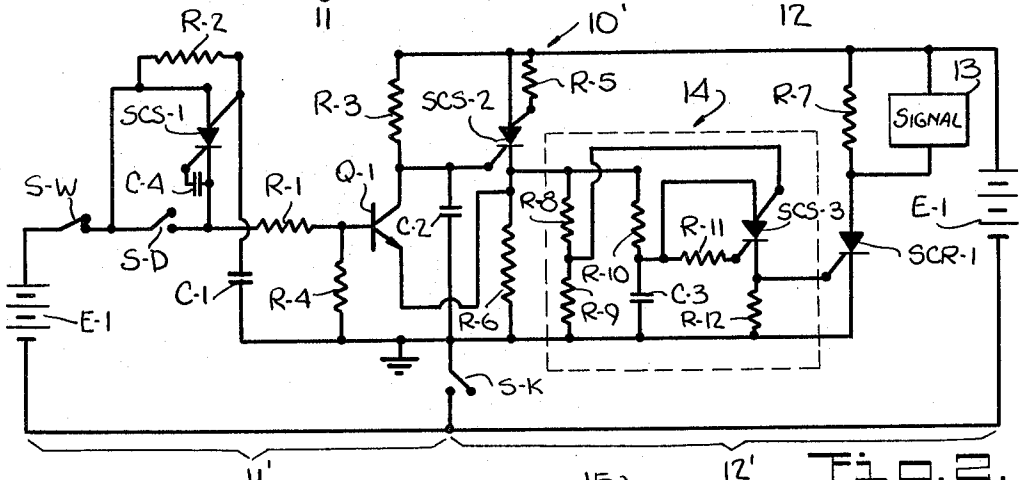


Fig. 2.

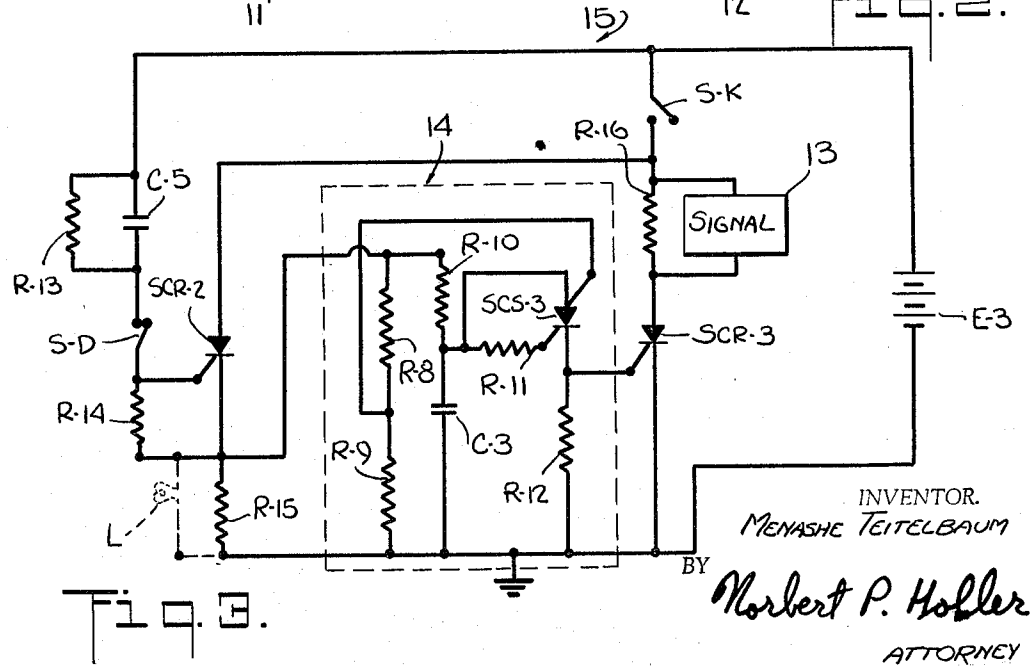


Fig. 3.

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3,286,250

BURGLAR ALARM UTILIZING BI-STABLE ELECTRONIC SWITCHES

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This invention relates to signaling systems arranged to generate and/or emit audible and/or visual and/or electrical signals in response to the occurrence of a predetermined condition.

Although the invention is of broad and general utility in a wide variety of fields and applications, it will herein be described specifically as embodied in burglar alarm systems or the like.

As is well known, in conventional burglar alarm systems, the various door and window switches are connected to the alarm or signal circuit in such a manner that once the circuit has been armed by the closing of a key-operated master switch, a signal is emitted immediately upon any of the aforesaid door or window switches being opened. One disadvantageous consequence of this type of arrangement occurs when the proprietor of premises guarded by such a system is about to leave the same. Preparatory thereto, he first opens the door and then arms the system by closing the key switch. The door being open, however, the door switch is actuated correspondingly, which automatically causes the alarm to go off. It will be readily appreciated that this may be a source of considerable annoyance, inasmuch as, in any premises so guarded, the activation of the signal gives a false alarm and also may otherwise disturb people in or adjacent such premises. By the same token, when somebody legitimately enters such guarded premises, the alarm necessarily is set off and cannot be deactivated until the entering person reaches the alarm box and returns the key switch to its open position. This again may create a disturbance for persons in or near the guarded premises, or give a false alarm.

It is an important object of the present invention, therefore to provide novel and greatly improved burglar alarm systems equipped with means to prevent the alarm from being activated, after the master or key switch has been closed, while the access door is still open to permit the proprietor of the guarded premises to leave the same.

It is another important object of the present invention to provide novel and greatly improved burglar alarm systems equipped with means for delaying the activation of the alarm when the access door of the guarded premises is opened upon entry of the proprietor into such premises so as to enable him to open the master or key switch prior to, and so as to prevent, the activation of the alarm.

Still another object of the present invention is the provision of such burglar alarm systems which are substantially completely electronically controlled.

A more specific object of the present invention is the provision of such burglar alarm systems in which novel configurations of suitable solid state or semiconductor devices are employed to implement the various alarm activation-controlling functions.

It is also an important object of the present invention to provide burglar alarm control systems which are of greatly simplified construction and relatively inexpensive to produce, and the control circuitry of which can be easily incorporated in existing burglar alarm installations.

In its broadest sense, of course, the present invention contemplates the provision of a signaling system designed to emit a predetermined audible and/or visual and/or electrical signal in response to the occurrence of a prescribed condition, which system comprises a control circuit capable of preventing the emission of the signal when the said condition occurs while the system is being readied for use, and/or for a preset time interval when the said condition occurs while the system is in an activated operational state.

The foregoing and other objects, characteristics and advantages of the present invention will be more clearly understood from the following detailed description thereof when read in conjunction with the accompanying drawing, in which:

FIG. 1 is a schematic circuit diagram of the control circuitry for a condition-responsive signaling system according to one embodiment of the present invention, here illustrated as a burglar alarm system;

FIG. 2 is a schematic circuit diagram of a signaling system circuit similar to that shown in FIG. 1 and having incorporated therein a time delay arrangement in accordance with another embodiment of the present invention; and

FIG. 3 is a schematic circuit diagram of a signaling system circuit having the same operational characteristics as the circuit of FIG. 2 but arranged in a configuration modified somewhat in accordance with another embodiment of the present invention.

Referring now more particularly to FIG. 1, the burglar alarm or like signaling system **10** there shown comprises a control circuit which is in essence divided into two portions **11** and **12** generally termed a supervisory or protective circuit and an alarm circuit, respectively, since the former includes an access door switch S–D and a plurality of window switches S–W (only one of these is shown), while the latter includes a signal-emitting device **13**. In the system **10**, the door switch S–D is shown to be of the type which is open when the access door is open and closed when the access door is closed. The entire circuit is controlled by a key-operated master switch S–K connected between ground and the negative terminals of a pair of D.C. voltage sources E–**1** and E–**2** connected, respectively, into the two parts **11** and **12** of the circuit. The switch S–K must be manually closed by a special key when the alarm system is to be armed i.e. to be readied for the emission of a signal by the device **13** in response to the opening of any of the switches S–D and S–W associated with the various parts of the premises being guarded, and must be manually opened by the key when the system is to be disarmed.

In the protective circuit **11**, the door and window switches S–D and S–W are shown as being connected in series with each other and a resistor R–**1** between the positive terminal of the power source E–**1** and the base of a NPN transistor Q–**1**. Shunting the door switch S–D is the anode to cathode circuit of a silicon controlled switch SCS–**1** the anode of which is also connected to the anode gate thereof through a resistor R–**2**. The anode gate of the controlled switch SCS–**1** is further connected to one terminal of a capacitor C–**1** the other terminal of which is connected to a common ground with the master or key switch S–K. The emitter of the transistor Q–**1** is connected to ground, while the collector is connected to the positive terminal of the power source E–**2** through a resistor R–**3**. If desired, a resistor R–**4** may be connected between the base of the transistor Q–**1** and ground. A capacitor C–**2** is connected across the emitter and collector circuit of the transistor Q–**1**.

In the alarm circuit **12** of the system, the anode to cathode circuit of a controlled switch SCS–**2** is connected in series with a resistor R–**6** between the positive terminal of the voltage source E–**2** and ground. The cathode gate of the controlled switch SCS–**2** is connected to the collector of the transistor Q–**1**, and the anode gate of the controlled switch SCS–**2** is connected to the anode thereof through a resistor R–**5**. The junction terminal of the cathode of the controlled switch SCS–**2** and resistor R–**6** is connected to the cathode gate of a controlled

rectifier SCR–1 the cathode of which is grounded and the anode of which is connected through a resistor R–7 to the positive terminal of the voltage source E–2. A signal-emitting device 13 is connected across the resistor R–7. The circuit arrangement is such that the device 13 will emit a signal, e.g. an audible signal and/or a visual signal and/or an electrical signal, whenever the controlled rectifier SCR–1 is caused to conduct, and that this conducting state of the controlled rectifier is achieved only when the transistor Q–1 is not conducting.

In use, when the guarded premises are occupied and operation of the burglar alarm system is not required, the master switch S–K is open, while at the same time the window switches S–W may be open or closed. The access door switch S–D will, of course, be opened and closed as the door is opened and closed, but with the master switch S–K open, no signal can be emitted by the device 13.

When the proprietor of the premises desires to leave the same in a guarded condition, he prepares the system by closing all window switches S–W (these switches may, of course, be associated with other parts of the premises and are termed "window" switches herein only for the sake of convenience) and thereafter, having opened the access door, arms the circuit by closing the master switch S–K with the key provided therefor. The door switch S–D at this time thus is open, which would, but for the provision of the controlled switch SCS–1 across the door switch S–D, prevent the transistor Q–1 from conducting and thereby cause the signal device 13 to be activated.

The manner in which this potential drawback is avoided in accordance with the present invention will be readily understood from the following. As soon as the master switch S–K is closed, a voltage pulse is applied to the anode gate of the controlled switch SCS–1 through the capacitor C–1, which pulse is sufficient to cause the controlled switch to conduct. Current thus flows in the base-emitter circuit of the transistor Q–1, whereby an output current flows in the emitter-collector circuit of the transistor Q–1. This causes the controlled switch SCS–2 to be biased to cut-off, which in turn maintains the controlled rectifier SCR–1 in its nonconducting state. No signal will be emitted by the device 13, therefore, despite the fact that the access door of the guarded premises is open.

When the proprietor now leaves the premises and closes the access door, the door switch S–D is closed. This shorts out the controlled switch SCS–1 and causes it to stop conducting, but the transistor Q–1 is maintained in its conducting state by virtue of the fact that the input current circuit therefor remains completed through the closed door switch.

The circuit thus being fully armed, as soon as the door switch S–D is opened, the current input to the transistor Q–1 is interrupted, since the opening of the door switch does not cause the controlled switch SCS–1 to start conducting again. As soon as the transistor output current is interrupted, the controlled switch SCS–2 is triggered into its conducting state. The resulting potential developed across the resistor R–6 is then applied to the cathode gate of the controlled rectifier R–1 and triggers the same into its conducting state, whereupon the signal device 13 is activated to provide the desired alarm. It will be understood that the device 13 may be a bell or siren, or may be a light source, or may be an electrical transmitter connected in any suitable manner to a central office of a protective agency servicing the guarded premises, or may be any combination thereof. The system is entirely foolproof, since once the alarm has been set off, even reclosing of the door switch S–D cannot turn off the alarm inasmuch as the controlled rectifier SCR–1 will continue to conduct regardless of changes in the remainder of the circuit as long as the master switch S–K remains closed.

It should be noted that the capacitor C–2 is provided for the purpose of slowing down the response characteristics of the circuit slightly. This is found advisable to compensate for the natural tendency of the mechanical door switch to bounce somewhat upon being closed. As will be readily appreciated, the normal response period of an electronic circuit of this type will ordinarily be in the microsecond range. Thus, the arming of the circuit would be completed substantially instantaneously at the first closing of the switch S–D, and the immediately subsequent opening of the same, due to its "bounce," even though of short duration, would then automatically turn the transistor Q–1 "off" and thereby trigger the controlled switch SCS–2 and controlled rectifier SCR–1 into conduction so as to activate the signal-emitting device 13. This problem is avoided by virtue of the fact that the capacitor C–2 acts to inhibit extremely rapid variations of the potential applied to the cathode gate of the controlled switch SCS–2 and, consequently, prevents a premature turn-on of the same.

Referring now to FIG. 2, the signaling system 10' there shown is basically the same as that illustrated in FIG. 1, including a protective circuit 11' and an alarm circuit 12', and to that extent identical parts in the two figures are designated by identical reference characters. The circuit 10' differs principally from the circuit 10 in the provision of a time delay circuit 14 between the controlled switch SCS–2 and the controlled rectifier SCR–1 in the alarm circuit 12'. In the embodiment of the invention illustrated in FIG. 2, the time delay circuit comprises a voltage divider composed of two series-connected resistors R–8 and R–9 connected in parallel with the output resistor R–6 in the cathode circuit of the controlled switch SCS–2. The junction terminal of the cathode of the controlled switch SCS–2 and the resistors R–6 and R–8 is connected to one terminal of a resistor R–10 the other terminal of which is connected to ground. The junction terminal of the resistor R–10 and capacitor C–3 is connected through a resistor R–11 to the cathode gate of a controlled switch SCS–3 the anode of which is likewise connected to said junction terminal, and the anode gate of which is connected to the junction terminal of the voltage divider resistors R–8 and 9–9. The cathode of the controlled switch SCS–3 is connected to ground through a resistor R–12, and the junction terminal between the latter and said cathode is connected to the cathode gate of the controlled rectifier SCR–1. A capacitor C–4 is shown as connected between the cathode and cathode gate of the controlled switch SCS–1 to provide a slightly different mode for the circuit, but this capacitor may be omitted, as in the case of the circuit 10 in FIG. 1, and the cathode gate of the controlled switch SCS–1 left open.

In use, the operation of the system 10' during the arming of the circuit is substantially identical with that of the system 10. Thus, when the master switch S–K is closed, a pulse is applied to the controlled switch SCS–1 to trigger the same into its conducting state and thereby to maintain the transistor Q–1 in its conducting state, which in turn maintains the controlled switch SCS–2 and the controlled rectifier at cut-off even if the door switch S–D is open.

When the door switch, after having been closed to shunt out the controlled switch SCS–1, is reopened, the transistor Q–1 is rendered nonconducting which triggers the control switch SCS–2 into its conducting state. The output potential developed across the resistor R–6 is now applied to the charging circuit defined by the resistor R–10 and the capacitor C–3, whereupon the latter begins to charge at a rate determined by the constants of the charging circuit. After a predetermined time interval, which preferably will be about 10 to 20 seconds, the potential across the capacitor C–3 will be sufficient to trigger the controlled switch SCS–3 into its conducting state, which in turn triggers the controlled rectifier SCR–1 into its conducting state so as to cause the device 13 to emit the alarm signal. As before, once the device 13

has been activated, it cannot be turned off except by opening the master switch S–K, since the controlled rectifier SCR–1 will continue to conduct regardless of changes in current flow conditions in the remainder of the circuit.

The time delay provided by the portion **14** of the circuit thus is sufficient to permit the person legally entering the guarded premises to go over to the master switch and open the same with the proper key before the signal device **13** is activated. The giving of a false alarm is, consequently, avoided, as is the possibility of setting off an alarm which might disturb other people in or adjacent the guarded premises. The advantage of such a feature in connection with residential premises will be readily recognized, for example in the case of a member of a household coming in late at night when others are already asleep.

It will be understood, therefore, that in the operation of both of these circuits, a "closed door" condition is first simulated while the door is initially open (prior to the final egress of the person from the protected premises) by means of the solid state bistable device SCS–1 shunted across the door switch S–D, as long as said device remains in its conducting state. Thus, it is the flow of current through SCS–1 which permits the egress door to be and remain open without setting off the alarm, and this condition is completely independent of the passage of time since SCS–1 will continue to conduct until the door switch S–D is closed which occurs when the door is closed. Stated in other words, with the alarm of the present invention, the proprietor of the guarded premises can set the alarm whenever he chooses to and yet he does not have to leave the premises and close the door within a preset time interval thereafter. This aspect of the present invention, which may be termed the "exit feature" of the alarm system, accordingly requires neither a time delay arrangement nor a mechanical door switch-latching arrangement such as must be employed in those presently known burglar alarm systems which aim toward the same goal of letting the proprietor go out without previously setting off the alarm.

In accordance with yet another aspect of the present invention, there is provided a somewhat modified burglar alarm system **15** (FIG. 3) which, like the system **10'** of FIG. 2, operates to permit exiting from the guarded premises without activating the signal device and to provide a time delay for such activation when the premises are thereafter entered. The system **15**, in addition to the time delay circuit **14**, comprises a source of electrical power E–3 the positive terminal of which is connected to one terminal of a capacitor C–5 and of the master switch S–K. The other terminal of the capacitor C–5 is connected to the access door switch S–D which in this case is shown as a switch that is closed when the door is open and vice versa. A resistor R–13 is shunted across the capacitor C–5 for a purpose to be more fully described presently. The second terminal of the door switch S–D is connected to ground through a pair of resistors R–14 and R–15. The junction terminal of the door switch and the resistor R–14 is connected to the cathode gate of a controlled rectifier SCR–2, the cathode of which is connected to the junction terminal of the resistors R–14 and R–15 and the anode of which is connected to the second terminal of the master switch S–K. The junction terminal of the resistors R–14 and R–15 is also connected to the voltage divider resistor R–8 constituting the input to the time delay circuit **14**, at the output of which the junction terminal of the cathode of the controlled switch SCS–3 and the resistor R–12 is connected to the cathode gate of a controlled rectifier SCR–3. The cathode of the latter is grounded, and its anode is connected to the master switch S–K through a resistor R–16. The signal-emitting device **13** is connected across the resistor R–16.

In use, when the proprietor of the guarded premises is about to leave the same, after making sure that the various window switches (not shown in FIG. 3) are closed, he opens the access door and thereby causes the door switch S–D to close. As the door switch is closed, the capacitor C–5 starts to charge. With the master switch S–K still open, of course, the controlled rectifier SCR–2 remains in its non-conducting state. The proprietor now closes the master switch S–K with his key and then leaves the guarded premises, closing the access door behind him. The closing of the master switch S–K does not cause the controlled rectifier SCR–2 to conduct, since no voltage pulse is then being applied to the cathode gate of the controlled rectifier. As the door closes, the door switch S–D is opened, whereupon the capacitor C–5 begins to discharge through the resistor R–13.

Whenever thereafter the access door is opened, the door switch S–D is closed, whereby a voltage pulse is applied to the cathode gate of the controlled rectifier SCR–2. Inasmuch as the master switch S–K is now also closed, however, the said pulse triggers the controlled rectifier into its conducting state. The consequent output potential developed across the resistor R–15 is applied to the input of the time delay circuit **14** and, as in the previously described embodiment of FIG. 2, causes the capacitor C–3 to begin charging. When the charge on the capacitor C–3 reaches the preset level, the controlled switch SCS–3 is triggered into its conducting state, which in turn causes the controlled rectifier SCR–3 to be triggered into its conducting state. The resultant current flow then activates the signal device **13** so as to cause the latter to emit the desired alarm signal. The device **13**, as before, can be deactivated only by opening the master switch S–K, since the controlled rectifier will continue to conduct regardless of changes in the remainder of the circuit.

Thus, in the circuit **15** the "exit feature" is again provided and does not require the provision of any time delay arrangement or door switch-latching arrangement. The manner of achieving the "exit feature" is, however, somewhat different in the circuit **15**. In this case the operational mode is such that the initial opening of the egress door (which causes the closing of the door switch S–D) cannot kick the solid state bistable device SCR–2 into conduction, whereby setting off of the alarm is inhibited, and that it is the subsequent closing of the door after the closing of the master switch S–K which sets the alarm circuit in readiness for the next opening of the door. Apart from this distinction, of course, it will be noted that the circuits **10'** and **15**, both of which exhibit not only the "exit feature" but also the "entry feature" of the present invention (i.e., the provision of a time delay in the firing of the alarm when the door is first reopened), additionally differ in that the circuit **15** employs only a single voltage source E–3 and only three semi-conductor devices, as contrasted to the two voltage sources and five semiconductor devices employed in the circuit **10'**. The circuit **15** will thus be somewhat more economical to produce, and may generally be constructed more compactly than the circuit **10'** so as to enable it to be used in some applications or locations where the use of the more expanded circuit **10'** is found inadvisable.

It will be understood, of course, that a circuit such as the circuit **15** may frequently be employed in dark places where it might be difficult for the person legally entering the guarded premises to locate the master switch-operating keyhole in the limited period of time available to him before the signal device **13** is activated. To this end, if desired, a small pilot light or lamp L (indicated in phantom outline in FIG. 3) may be connected in parallel with the resistor R–15. This lamp will then be energized and lit whenever the door switch S–D is closed, i.e. when the door is open, and will ordinarily be physically positioned in close proximity to the master switch keyhole so as to illuminate the same.

From the foregoing it can be seen, therefore, that the basic operational advantages of the circuits according to the present invention stem from the provision of an electronic, preferably solid-state, bistable device connected

across the door switch S–D. In the embodiments of FIGS. 1 and 2, as shown, the said device is connected directly across the switch, whereas in the embodiment of FIG. 3 the said device is connected across the door switch through the intermediary of the master switch S–K. As will be clear to those skilled in the art, the said device may be either a controlled switch (such as SCS–1) or a controlled rectifier (such as SCR–2) as shown, but it may also be a different type of element such as a Shockley diode, a tunnel diode, a flip-flop, or the like. The signaling systems according to the various embodiments of the present invention are further greatly simplified and thus economically more advantageous with respect to known systems of the same character by virtue of the fact that in each of them the single master switch S–K controls the power application for both the supervisory and the alarm circuits.

It will be apparent that the principles of the present invention are applicable to condition-responsive systems other than burglar alarm systems, and that the circuit arrangements and relationships herein described and illustrated are susceptible to a number of variations and modifications none of which constitutes a departure from the spirit and scope of the present invention as defined in the hereto appended claims.

Having thus described my invention, what I claim and desire to secure by Letters Patent is:

1. In an electronic burglar alarm system equipped with at least a signal-emitting device, a door switch having terminals arranged to be in open and closed positions in response to the door being opened and closed, respectively, an electric circuit interconnecting said door switch and said signal-emitting device and arranged to permit the latter to be activated only upon opening of said terminals of said door switch, and a master "on-off" switch for arming and disarming the circuit; the improvement comprising solid state bistable electronic switching means shunted across said terminals of said door switch and having its trigger input connected with said master switch so as to be triggered into its conducting stable state, upon closing of said master switch, when said door switch terminals are in said open position thereof upon the door being open to permit the initial egress from the guarded premises, thereby simulating the closing of said door switch terminals for inhibiting activation of said signal-emitting device as long as the door remains open even though said master switch is closed, said electronic bistable switching means being arranged to be triggered into its nonconducting stable state when short-circuited by a subsequent closing of said door switch terminals upon closing of the door and being further arranged to be prevented from returning to said conducting stable state when said door switch terminals thereafter return to said open position thereof upon a reopening of the door, thereby ensuring the activation of said signal-emitting device.

2. In a burglar alarm system according to claim 1; the electrical connection between said master switch and said trigger input of said electronic bistable switching means comprising electrical pulsing means for effecting the triggering of said electronic bistable switching means into said conducting stable state thereof.

3. In a burglar alarm system according to claim 1; said electronic bistable switching means comprising a controlled switch.

4. In a burglar alarm system according to claim 1; said electronic bistable switching means comprising a controlled rectifier.

5. In an electronic burglar alarm system equipped with at least a signal-emitting device, a door switch having terminals arranged to be in open and closed positions in response to the door being opened and closed, respectively, an electric circuit interconnecting said door switch and said signal-emitting device and arranged to permit the latter to be activated only upon opening of said terminals of said door switch, and a master "on-off" switch for arming and disarming the circuit; the improvement comprising solid state bistable electronic switching means shunted across said terminals of said door switch and having its trigger input connected with said master switch so as to be triggered into its conducting stable state, upon closing of said master switch, when said door switch terminals are in said open position thereof upon the door being open to permit the initial egress from the guarded premises, thereby simulating the closing of said door switch terminals for inhibiting activation of said signal-emitting device as long as the door remains open even though said master switch is closed, said electronic bistable switching means being arranged to be triggered into its nonconducting stable state when short-circuited by a subsequent closing of said door switch terminals upon closing of the door and being further arranged to be prevented from returning to said conducting stabe state when said door switch terminals thereafter return to said open position thereof upon a reopening of the door, thereby to condition the circuit for activation of said signal-emitting device, and electronic time delay means constituting a part of said circuit for inhibiting the activation of said signal-emitting device for a predetermined short time interval after the return of said door switch terminals to said open position with said electronic bistable switching means in said nonconducting stable state thereof, thereby to permit a reentry into the guarded premises without an immediate setting off of the alarm.

6. In a burglar alarm system according to claim 5; the electrical connection between said master switch and said trigger input of said electronic bistable switching means comprising electrical pulsing means for effecting the triggering of said electronic bistable switching means into said conducting stable state thereof.

7. In a burglar alarm system according to claim 5; said electronic bistable switching means comprising a controlled switch.

8. In a burglar alarm system according to claim 5; said electronic bistable switching means comprising a controlled rectifier.

9. An electronic burglar alarm system, comprising first and second voltage supply means, a master "on-off" switch, a signal-emitting device connected in a first loop with said master switch and said first voltage supply means, a controlled rectifier connected in said first loop so as to prevent activation of said signal-emitting device whenever said controlled rectifier is in the nonconducting state thereof, a door switch having terminals arranged to be in open and closed positions in response to the door being opened and closed, respectively, said door switch terminals being connected in a second loop with said master switch and said second voltage supply means, circuit means inter-connected with said loops and arranged to permit said controlled rectifier to be conducting only upon opening of said terminals of said door switch, and solid state bistable electronic switching means shunted across said terminals of said door switch and having its trigger input connected with said master switch so as to be triggered into its conducting stable state, upon closing of said master switch, when said door switch terminals are in said open position thereof upon the door being open to permit the initial egress from the guarded premises, thereby simulating the closing of said door switch terminals for rendering said controlled rectifier nonconducting and thereby inhibiting activation of said signal-emitting device as long as the door remains open even though said master switch is closed, said electronic bistable switching means being arranged to be triggered into its nonconducting stable state when short-circuited by a subsequent closing of said door switch terminals upon closing of the door and being further arranged to be prevented from returning to said conducting stable state when said door switch terminals thereafter return to said open position thereof upon a reopening of the door, thereby ensuring the activation of said signal-emitting device.

10. A burglar alarm system according to claim 9, further comprising electronic time delay means constituting a part of said circuit means and operable to inhibit said controlled rectifier from conducting for a predetermined short time interval after the opening of said terminals with said electronic bistable switching means in said nonconducting stable state thereof, thereby to permit a reentry into the guarded premises without an immediate activation of said signal-emitting device.

11. A burglar alarm circuit, comprising a door switch having terminals arranged to be in open and closed positions in response to the door being opened and closed, respectively, a transistor having its base coupled to one of the terminals of said door switch, a first voltage source having one terminal connected to the other terminal of said door switch, a manually operable master "on-off" switch connected at one side to another terminal of said first voltage source, a first controlled switch having its anode to cathode circuit shunted across said terminals of said door switch and having its anode gate coupled to the other side of said master switch, a second controlled switch having its cathode gate connected to the collector of said transistor and further having its cathode coupled to both the emitter of said transistor and said other side of said master switch, a second voltage source having one terminal connected to said one side of said master switch and another terminal to the anode of said second controlled switch, a controlled rectifier having its cathode connected to said other side of said master switch and its cathode gate to said cathode of said second controlled switch, and a signal-emitting device operatively connected between the anode of said controlled rectifier and said other terminal of said second voltage source.

12. A burglar alarm circuit, comprising a door switch having terminals arranged to be in open and closed positions in response to the door being opened and closed, respectively, a transistor having its base coupled to one of said terminals of said door switch, a first voltage source having one terminal connected to the other terminal of said door switch, a manually operable master "on–off" switch connected at one side to another terminal of said first voltage source, a first controlled switch having its anode to cathode circuit shunted across said terminals of said door switch and having its anode gate coupled to the other side of said master switch, a second controlled switch having its cathode gate connected to the collector of said transistor and further having its cathode coupled to both the emitter of said transistor and said other side of said master switch, a second voltage source having one terminal connected to said one side of said master switch and another terminal to the anode of said second controlled switch, a controlled rectifier having its cathode connected to said other side of said master switch, a time delay circuit having its output connected to the cathode gate of said controlled rectifier and its input to said cathode of said second controlled switch, and a signal-emittting device operatively connected between the anode of said controlled rectifier and said other terminal of said second voltage source.

13. A burglar alarm circuit, comprising voltage supply means; a master switch, a signal-emitting device and a controlled rectifier connected in series with one another across said voltage supply means, said controlled rectifier preventing activation of said signal-emitting device whenever said controlled rectifier is in the nonconducting state thereof; a door switch having terminals arranged to be in open and closed positions in response to the door being closed and opened, respectively; a resistance-capacitance charging circuit connected in series with said door switch terminals across said voltage supply means; solid state electronic bistable switching means connected across said voltage supply means through said master switch; said electronic bistable switching means having its trigger input connected to one of said terminals of said door switch, thereby to ensure that a trigger pulse sufficient to render said electronic bistable switching means conducting is applied to the latter only when said door switch terminals are shifted to the closed position thereof while said master switch is closed; and circuit means interconnecting the output of said electronic bistable switching means to the cathode gate of said controlled rectifier; whereby with said door switch terminals in said closed position thereof upon opening of said door to permit the initial egress from the guarded premises, the subsequent closing of said master switch leaves said electronic bistable switching means in the non-conducting state thereof so as to maintain said controlled rectifier likewise in the nonconducting state thereof, while upon the next closing of said door switch terminals with said master switch still closed upon the door being reopened during a reentry into the guarded premises, a trigger pulse is applied to said input of said electronic bistable switching means to render the same conducting and thereby to permit said controlled rectifier to be rendered conducting for activating said signal-emitting device.

14. A burglar alarm circuit, comprising voltage supply means; a master switch, a signal-emitting device and a controlled rectifier connected in series with one another across said voltage supply means, said controlled rectifier preventing activation of said signal-emitting device whenever said controlled rectifier is in the nonconducting state thereof; a door switch having terminals arranged to be in open and closed positions in response to the door being closed and opened, respectively; a resistance-capacitance charging circuit connected in series with said door switch terminals across said voltage supply means; solid state electronic bistable switching means connected across said voltage supply means through said master switch; said electronic bistable switching means having its trigger input connected to one of said terminals of said door switch, thereby to ensure that a trigger pulse sufficient to render said electronic bistable switching means conducting is applied to the latter only upon said door switch terminals being shifted to the closed position thereof while said master switch is closed; and an electronic time delay circuit interconnecting the output of said electronic bistable switching means to the cathode gate of said controlled rectifier; whereby with said door switch terminals in said closed position thereof upon opening of said door to permit the initial egress from the guarded premises, the subsequent closing of said master switch leaves said electronic bistable switching means in the nonconducting state thereof so as to maintain said controlled rectifier likewise in the nonconducting state thereof, while upon the next closing of said door switch terminals with said master switch still closed upon the door being reopened during a reentry into the guarded premises, a trigger pulse is applied to the input of said electronic bistable switching means render the same conducting and thereby to permit said controlled rectifier to be rendered conducting after a predetermined short time delay, thereby to permit the reentry into the guarded premises without an immediate activation of said signal-emitting device.

15. A burglar alarm circuit according to claim 14, further comprising illumination means operatively connected with said door switch and said voltage supply means and located in physical proximity to said master switch to illuminate the latter upon the door being opened.

16. A burglar alarm circuit, comprising voltage supply means, a master "on-off" switch connected in series with a signal-emitting device and the anode to cathode circuit of a controlled rectifier across said voltage supply means, said controlled rectifier preventing activation of said signal-emitting device whenever said controlled rectifier is in the nonconducting state thereof, a door switch having terminals arranged to be in open and closed positions in response to the door being closed and opened, respectively, a resistance-capacitance charging circuit connected in series with said door switch terminals across said

voltage supply means, a solid state electronic bistable device having its anode to cathode circuit connected across said voltage supply means through said master switch, the cathode gate of said electronic bistable device being connected to one of said terminals of said door switch, thereby to ensure that a trigger pulse sufficient to render said electronic bistable device conducting is applied to said cathode gate of the latter when said door switch terminals are shifted to the closed position thereof while said master switch is closed, and an electronic time delay circuit having its input connected to said cathode of said electronic bistable device and its output to the cathode gate of said controlled rectifier.

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