United States Patent [19]

Fecteau

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[54] **INTRUSION ALARM WITH INDICATION OF PRIOR ACTIVATION**

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[51] **Int. Cl.** **G08c 17/00**

[58] **Field of Search** ..... 340/152 T, 171 R, 171 PF, 340/276, 224, 408; 325/51, 57, 55; 343/6.5, 6.8

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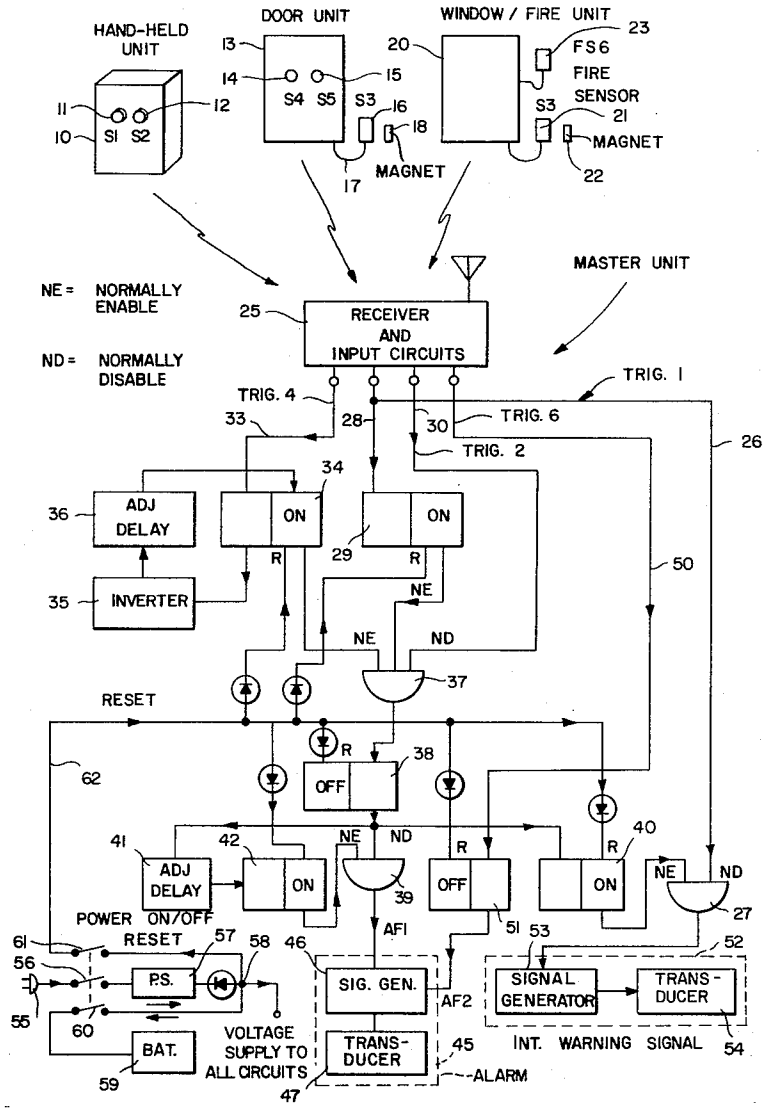
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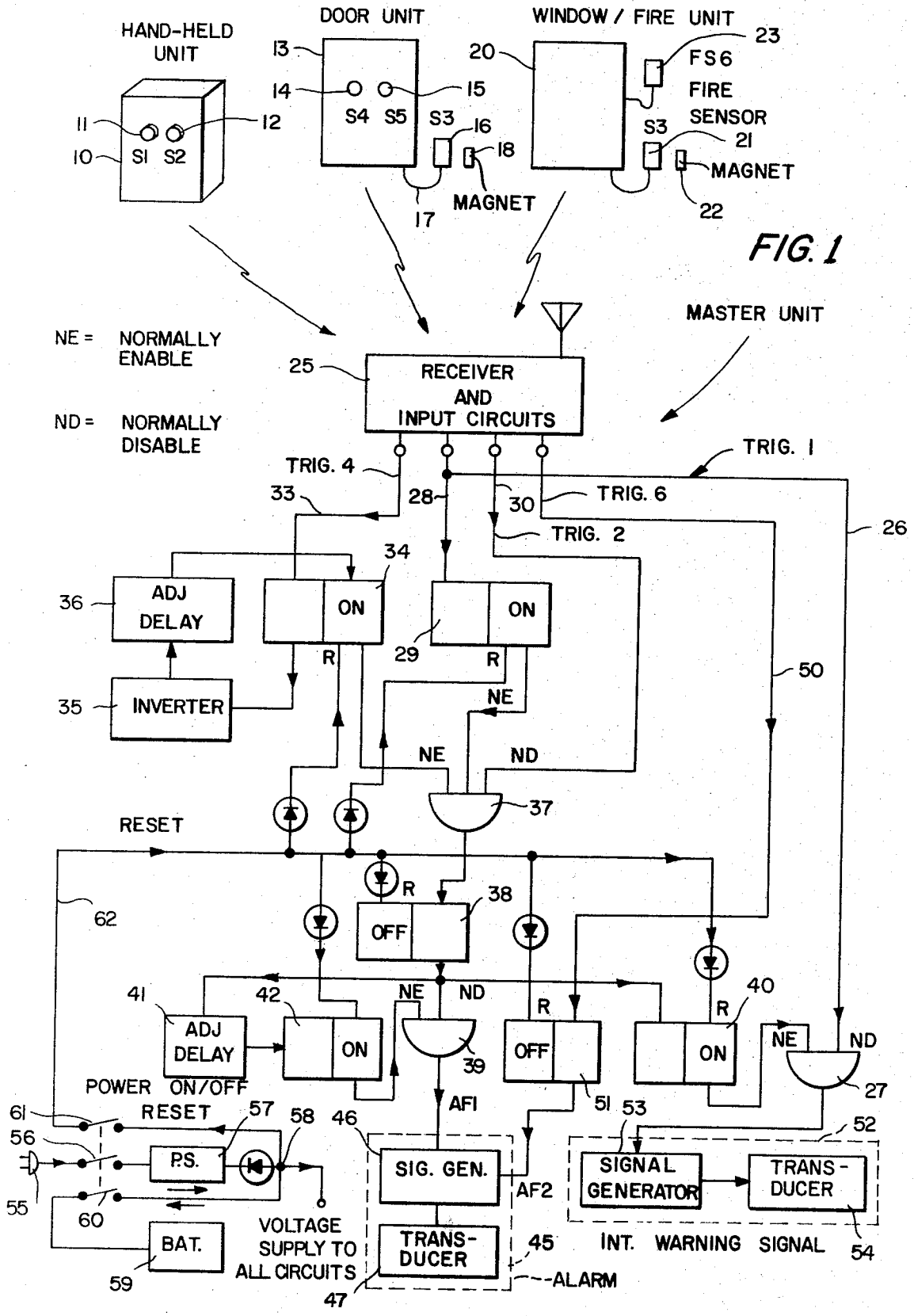
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[57] **ABSTRACT**

An alarm system including a sensing device for determining the status of a door and for transmitting a wireless signal to a receiver unit when the door is opened. The door unit can also be operated to initiate a delay mode by which the occupant can leave without activating an alarm. A portable unit can be carried by the occupant and used to either activate the alarm to summon help or to interrogate the system from without the protected space to determine its integrity during his absence. Window and fire sensing units can also be provided. The receiver is provided with means for distinguishing between the different signals transmitted by the hand-held and other units and also includes logic circuits responsive to trigger signals generated by receipt of various transmitted signals to perform different functions including sounding the alarm, sounding a different signal indicative of continued integrity, resetting, initiating delay modes to permit entrance and exit.

5 Claims, 3 Drawing Figures




HAND-HELD UNIT
DOOR UNIT
WINDOW / FIRE UNIT
FIRE SENSOR
MAGNET
MAGNET
FIG. 1
MASTER UNIT
NE = NORMALLY ENABLE
ND = NORMALLY DISABLE
RECEIVER AND INPUT CIRCUITS
TRIG. 1
TRIG. 2
TRIG. 4
TRIG. 6
ADJ DELAY
ON
INVERTER
OFF
RESET
POWER ON/OFF
P.S.
BAT.
SIG. GEN.
TRANS-DUCER
SIGNAL GENERATOR
TRANS-DUCER
VOLTAGE SUPPLY TO ALL CIRCUITS
INT. WARNING SIGNAL
ALARM

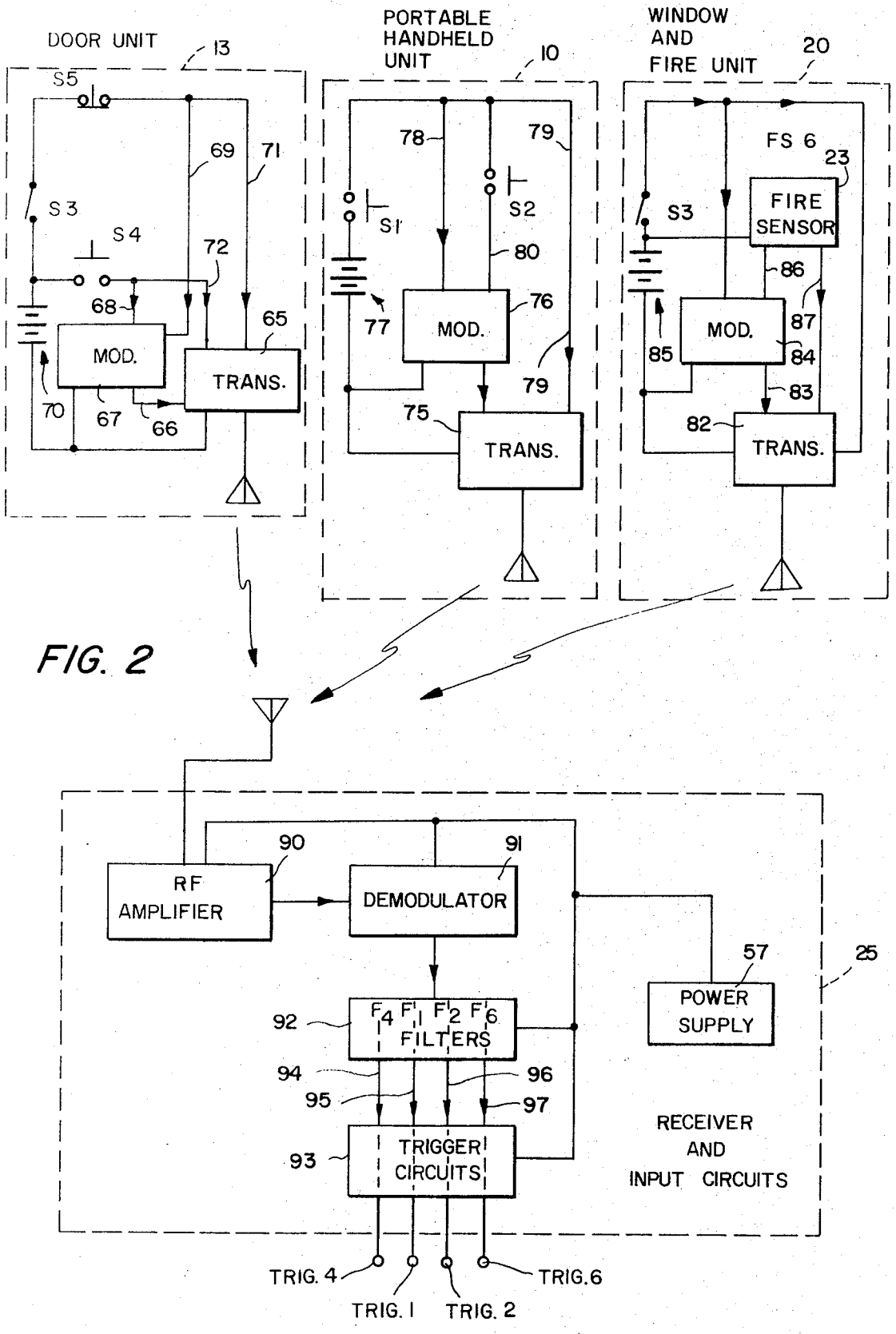

DOOR UNIT
13
S5
69
71
S3
S4
72
68
65
MOD.
TRANS.
70
67
66
PORTABLE HANDHELD UNIT
10
78
79
S1
S2
80
77
MOD.
76
79
75
TRANS.
WINDOW AND FIRE UNIT
20
FS 6
23
S3
FIRE SENSOR
86
87
MOD.
85
84
83
82
TRANS.
90
91
RF AMPLIFIER
DEMODULATOR
57
25
POWER SUPPLY
92
F4 F1 F2 F6 FILTERS
94
96
95
97
93
TRIGGER CIRCUITS
RECEIVER AND INPUT CIRCUITS
TRIG. 4
TRIG. 1
TRIG. 2
TRIG. 6

FIG. 2

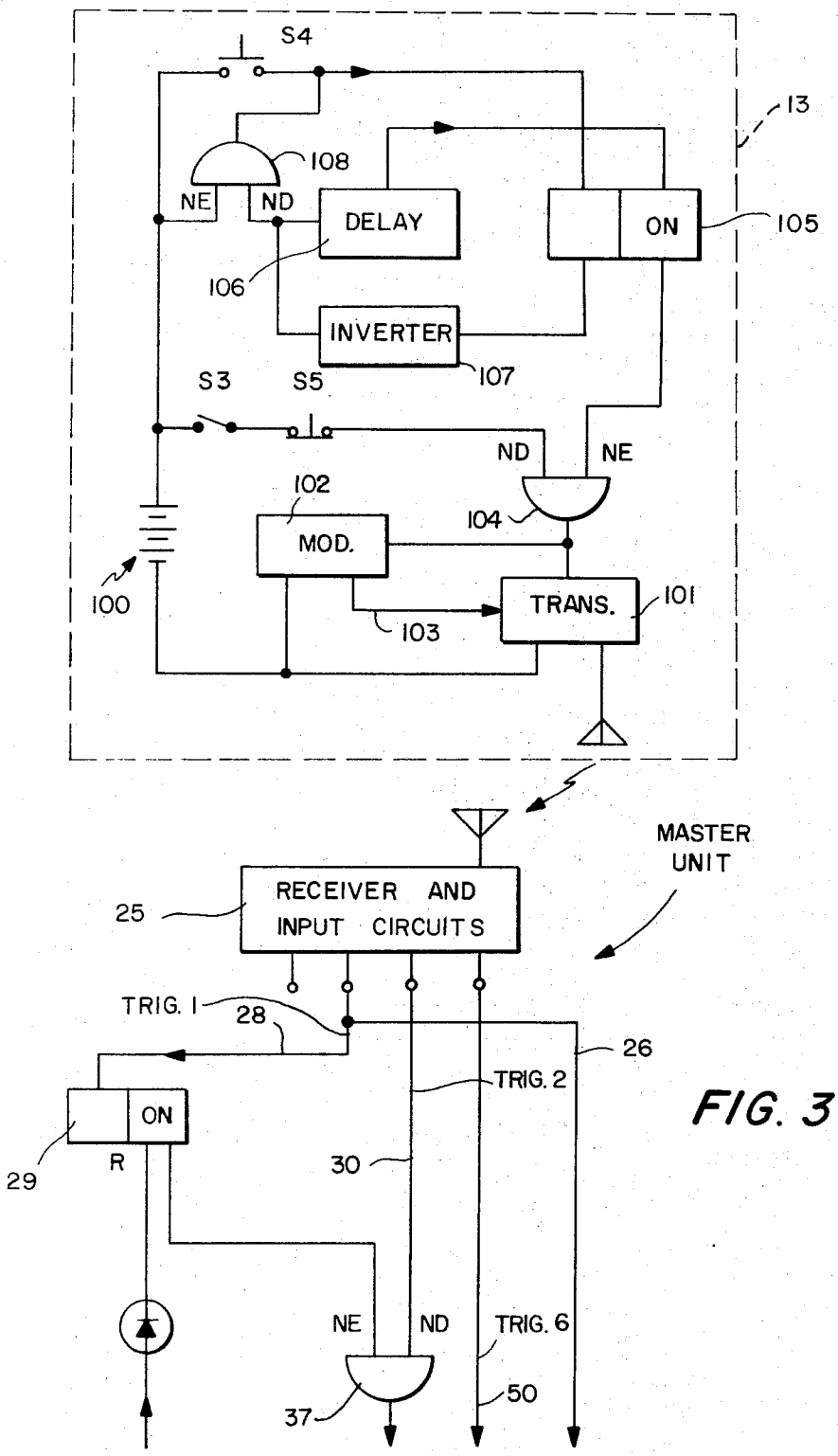

S4
13
108
NE
ND
DELAY
ON
105
106
INVERTER
107
S3
S5
ND
NE
102
104
MOD.
100
TRANS.
101
103
MASTER UNIT
RECEIVER AND INPUT CIRCUITS
25
TRIG. 1
28
26
TRIG. 2
ON
29
R
30
NE
ND
TRIG. 6
37
50

FIG. 3

INTRUSION ALARM WITH INDICATION OF PRIOR ACTIVATION

This invention relates to Alarm Systems and primarily to an alarm system for a protected space in which the integrity of the system can be verified.

With a general attitude that a need exists for increased security, particularly in one's home or apartment, there has appeared a large number of alarm systems with various efforts directed toward solving the fundamental problems of protecting a space which, it is known in advance, will be gone into and out of many times during a day in the normal course of the use of such a space. The system, to be effective and conveniently usable, must be capable of sounding an audible signal and, if desired, providing a remote or other signal, whenever there is an attempt at unauthorized entry into the space through any of the normally usable access openings, e.g., a door or an accessible window. Fire sensors can also be provided. There are, however, limitations on such a device. For example, it is not desirable to design the system so that the alarm, once activated, will continue to operate indefinitely because this creates a nuisance. Also, if the alarm is battery powered and is permitted to run for an uncontrolled interval of time the batteries will be exhausted and the system left useless. However, if the alarm does turn off after a brief interval, then the occupant, returning after an absence during which the alarm may have been activated, has no way of knowing whether such is the case. Thus, he might enter and startle a burglar still in the space, leading to a disastrous confrontation.

Prior art systems have not provided satisfactory means for checking such a system, nor have they provided a system which is sufficiently flexible and convenient and yet simple, to permit installation at reasonable cost by large numbers of people.

Accordingly, it is an object of the present invention to provide an alarm system which can be automatically activated by an undesired event to operate an alarm for a fixed interval after which the system can be interrogated to check for breach of the integrity of the space.

Another object is to provide a system which can, additionally, be manually actuated to sound an alarm to summon aid.

Another object is to provide a system which involves simple installation in a way which permits removal without leaving permanent damage to the protected space.

Briefly described, the invention includes alarm means, means for sensing an undesired event and for transmitting a radio signal in response to the event on a first frequency, a receiver responsive to the first frequency to actuate the alarm, a manually operable reset means for resetting the receiver, a portable device for generating a radio signal on a selected one of two frequencies, the portable device including a manually operable means for causing the portable device to transmit a signal at the first frequency and another manually operable means for causing the portable device to transmit a signal at a second frequency, the means for receiving additionally comprising means for receiving the radio signal at the second frequency and for generating an audible response different from the alarm, only if a radio signal at the first frequency has not been received since the last operation of the resetting means.

In order that the manner in which the foregoing and other objects are attained in accordance with the invention can be understood in detail, particularly advantageous embodiments thereof will be described with reference to the accompanying drawings, which form a part of this specification, and wherein:

FIG. 1 is a schematic diagram partly in block form, of a system according to the invention;

FIG. 2 is a schematic diagram showing portions of the apparatus of FIG. 1 in greater detail; and

FIG. 3 is a schematic diagram of an alternative embodiment of a door unit and the receiver unit in accordance with the invention.

Turning now to the drawings in detail, it will be seen that FIG. 1 illustrates a portable, hand-held unit **10** which is provided with manually operable push buttons **11** and **12** which can be actuated by the user to operate switches **S1** and **S2.** The system also includes a door unit **13** which is designed to be mounted on a wall adjacent a door providing access to the protected space. The door unit is provided with manually operable push buttons **14** and **15** which, when actuated, operate switches **S4** and **S5,** the functions of which will be described hereinafter. Associated with the door unit is a magnetically operated switch **16** which is separate from the door unit but connected thereto by conductors **17.** Switch **16** can be of a conventional type, such as a reed switch which is normally closed and is caused to open when it is brought into close proximity with a magnet **18.** Thus, the magnet can be mounted on the movable portion of a closure and switch **16** can be mounted on the fixed frame portion thereof so that the switch is maintained in its open position until the relative positions of the two components is changed.

The system can further include window and fire units, one of which is indicated at **20.** These can be separate units, individually responsive to the opening of a window or the existence of a fire in the space, or they can be incorporated in the same unit. It will also be recognized that these need not be involved in the system at all, especially when the protected space is an apartment having only one door and no windows accessible by normal means. The window-fire unit, if it exists, would also include a switch unit **21** incorporating a switch **S3** similar to that in unit **16** and a magnet **22** adjacent the switch. A fire sensor **23** can likewise be associated with unit **20** and connected thereto for transmitting a unique signal.

As will be described in greater detail hereinafter, each of units **10, 13** and **20** is designed to include a radio transmitter capable of transmitting a relatively short duration, low power modulated signal to be received by the receiver portion **25** of the master unit. The signals transmitted by the various functions of the various units thus far described are selected to perform different functions within the master unit, the receiver of the master unit being designed to separate these signals and produce one of four possible outputs which are identified as trigger signals and, specifically, as Trig. **1,** Trig. **2,** Trig. **4** and Trig. **6,** which signals appear at the four output terminals of the receiver and input circuit unit. The Trig. **1** signal is provided on a conductor **26** to one input of an AND gate **27,** and on a conductor **28** to one input of a bistable circuit **29.** The Trig. **2** signal is connected on a conductor **30** to

one input of an AND gate circuit **37.** The Trig. **4** signal is provided on a conductor **33** to one input of a bistable circuit **34,** the OFF output of which is coupled through a signal inverter circuit **35** to a delay circuit **36,** the output of which is coupled to the ON input of bistable circuit **34.** The ON outputs of each of bistable circuits **34** and **29** are also connected to the inputs of an AND gate circuit **37,** the output of which is connected to the ON input of a bistable circuit **38.** The output of bistable circuit **38** is connected to one input of an AND gate circuit **39,** and is also connected to the OFF input of a bistable circuit **40** and to a delay circuit **41,** the output of which is connected to the OFF input of a bistable circuit **42.**

The ON output of bistable circuit **42** is connected to the other input of AND gate **39,** the output of which is connected to an alarm unit **45.** Unit **45** is the main alarm generating device and includes a signal generator **46** which is capable of producing either one of two audio frequency signal patterns and providing a driving signal to a transducer **47** to produce an audible signal. The output signal from gate **39** stimulates the signal generator into producing a signal which will be identified as signal AF**1.**

The Trig. **6** signal is provided on a conductor **50** to the ON input of a bistable circuit **51,** the ON output from which is connected to another input of signal generator **46** and, when present, stimulates the signal generator into producing the audio response which will be identified as AF**2.**

In a similar fashion, the output from gate circuit **27** is connected to the input of a secondary alarm generating apparatus which can be a separate device or it can be the same as alarm device **45** with a modified signal generator. For simplicity of explanation, the interrogate warning signal generator **52** is shown as a separate audio signal device including a signal generator **53,** which responds to the output of gate **27,** and a transducer **54** which is driven by signal generator **53.**

The power for the master unit is derived from a conventional AC source to which the device can be plugged in as with a plug **55.** The AC energy is coupled through an ON/OFF switch **56** to power supply **57** which accepts the AC and produces an output at a junction **58** of a suitable voltage and power to supply the various circuits in the master unit. Voltage is also coupled from junction **58** to a battery **59** through a battery switch **60** to maintain the battery in charged condition so long as the device is plugged in and turned on. Then, in the event of power failure or an effort to deactivate the device by unplugging it the battery can supply the necessary voltage to continue the master unit circuits in operation.

A voltage from junction **58** is also available, through a reset switch **61,** to provide a reset signal on a conductor **62** to each of the various bistable circuits in the master unit. A diode is provided in each path from the reset conductor to each bistable circuit input to prevent any cross feed from one bistable circuit to another. It does not appear to be necessary to describe this circuit portion in any detail. However, it should be noted that switches **56, 60** and **61** are mechanically coupled together to be operated simultaneously and, further, that it is intended that these switches be key operated so that the system cannot be turned off or reset by one not having a key which fits the switch lock. Still further, in discussing the functions of the master unit there will be certain "normal" conditions discussed and in FIG. **1** there are certain normal signal conditions indicated. It will be understood that a "normal" condition is regarded as the condition of the circuit after it has just been reset and before any intrusion or fire signals are transmitted or received by the master unit. Thus, a signal conductor having the letters NE adjacent thereto indicates that a normally enabling signal, in the reset condition, appears on that conductor; while the letters ND indicate that the conductor adjacent those letters normally carries a disabling signal and a reversal of state is required for an enabling input to exist thereon.

It will now be possible to discuss the various functions performed by the system without being concerned about the specific circuitry within the units shown as boxes in FIG. **1.** The fundamental signal to be produced by the system is that which occurs when a window or door switch is closed, indicating an unauthorized intrusion into the protected space. This circumstance occurs when, for example, switch S**3** is closed, causing the door unit to radiate a signal at some selected carrier frequency F_c modulated (preferably, frequency modulated) by a frequency F**2.** This modulated signal is received by receiver **25** and recognized by filter circuits therein as indicating an intrusion. The receiver and input circuits respond by producing a Trig. **2** signal which is connected to an input of gate circuit **37.** That enabling signal, in conjunction with the normally enabling outputs from bistable circuits **29** and **34,** permits an output to be produced by gate circuit **37.** That output places bistable **38** in its ON state, producing an enabling output which, in conjunction with the normally enabling output from bistable circuit **42,** permits a signal to appear at the output of gate **39.** That output stimulates signal generator **46** to produce a signal which drives transducer **47,** sounding the main alarm.

The ON output from gate circuit **38** also places bistable circuit **40** in its OFF state, causing that bistable circuit to provide a disabling output to gate circuit **27.** Also, the output of bistable circuit **38** is coupled through delay circuit **41** which, after a predetermined interval, switches bistable circuit **42** to its OFF state, thereby providing a disabling output to deactivate gate circuit **39** and turn the alarm signal off. The delay provided by circuit **41** is therefore the determining factor in establishing the alarm activation interval and that circuit can be selected or adjusted as desired for the specific installation.

It will now be seen that the circuit is in a condition in which bistable circuits **42** and **40** are both in states opposite the "normal" states, preventing further activation of the alarm from either of the alarm circuits **45** or **52** by maintaining gates **39** and **27,** respectively, in deactivated conditions. The transmission of a radio signal from a door unit has disappeared, such signal lasting for a relatively short interval such as, for example, one second, so that no input appears at the receiver.

The technique for checking the system before opening the protected space will now be described.

Consider now the operation of the hand-held unit **10** which, upon closure of switch S**1,** is capable of generating a signal having the same carrier but a different modulation frequency F**1,** which signal is received by the receiver and causes production of the Trig. **1** signal on conductors **26** and **28.** This is the interrogate signal by which the operator can interrogate the system to deter-

mine whether an alarm has been given in his absence. The signal on conductor **26**, which is a normally disabling signal is changed to an enabling state for the purpose of testing the state of gate circuit **27**. However, when an alarm has been sounded since the last reset of the system, bistable circuit **40** performs a memory function in that it "remembers" that an intrusion occurred and indicates that memory by providing a disabling output to gate **27** and the Trig. **1** signal on conductor **26** is not capable of producing an output from gate circuit **27**. Thus, there is no signal produced by the interrogate warning signal device **52**. The absence of such a signal indicates to the operator that one of three conditions exists: (1) There has been an unauthorized entry by a burglar or the like during his absence and there is a possibility that the burglar is still within the protected space; (2) A janitor or other maintenance person has made an authorized, although unknown, entry into the space during the operator's absence, which fact can be determined by checking with the appropriate personnel; or (3) the device has failed for some reason and is inoperative. In any event, the operator now knows that further investigation must be undertaken and caution exercised until the correct circumstances are defined.

If the system is reset and remains in its reset state until interrogated the Trig. **1** signal on conductor **28** switches bistable circuit **29** to its OFF state, thereby providing a disabling signal to one input of AND circuit **37** to prevent the activation of the main alarm. Simultaneously, the Trig. **1** signal on conductor **26** would cause an output from gate **27**, bistable circuit **40** having been placed in its ON state, thereby inducing a different audible signal to be produced by generator **53** and transducer **54**, which audible signal is ascertained by the operator as being an indication of normal operation. The alarm is then kept in its deactivated state so that the individual can now open the door and enter the space without setting off the alarm. Thus, the interrogate signal transmitted by the hand-held unit provides the operator with a unique technique for deactivating the system for authorized entry and, simultaneously, checks the integrity of the system during his absence.

The hand held unit is capable of performing a further function, that of sounding the alarm manually to summon assistance or frighten off an attacker. The alarm can be sounded by pressing both of buttons **11** and **12**, thereby closing both switches **S1** and **S2**, to cause the hand held unit to transmit a signal modulated by the same frequency which would be transmitted by the door unit in the event of an intrusion into the space. This signal is received by the receiver and the Trig. **2** signal is generated, causing the main alarm to be actuated as previously described. It will be observed that the hand held unit can be employed to activate the alarm even though the user is not within the protected space, thereby permitting the user to summon aid in, for example, a laundry facility near one's apartment, or the like.

Provision is also made in the door unit for temporary deactivation of the apparatus to permit normal egress from the protected space. Depression of button **14**, closing switch **S4**, causes the door unit to transmit a signal modulated by a frequency F4 to which the receiver unit responds by producing a Trig. **4** signal on conductor **33**. That signal promptly places a bistable circuit **34** in its OFF state, producing a signal which is inverted and provided to the adjustable delay circuit **36** so that, after the selected delay of, for example 20 seconds, bistable circuit **34** is returned to its ON state by the output of the delay circuit. This twenty second interval gives the occupant adequate time to open the door, leave and close the door, restoring switch **S3** to its original condition during the interval. For as long as bistable circuit **34** remains in its OFF state a disabling signal is provided to gate **37**, preventing activation of the alarm.

Referring now to FIG. **2**, the manner in which the various units perform the functions described above can be seen from the more detailed diagrams of the units. As will be seen in FIG. **2**, the door unit **13** includes a conventional transmitter **65**, which transmitter can be of any convenient design, the transmitter including an oscillator which is modulated by a signal supplied on a conductor **66** from a modulator circuit **67**. Modulator **67** constitutes one or more oscillators or multivibrators arranged so that either one of two possible frequencies can be selected to be coupled to the transmitter. Thus, an input supplied on a conductor **68** will cause the modulator to modulate the transmitter at one frequency and an input on the conductor **69** will cause the transmitter to be modulated at a second frequency. The supply for all portions of the door unit is provided by a battery indicated generally at **70**, the connection of the battery to the various components being controlled by the positions of switches **S3**, **S4** and **S5**. As will be recalled from the discussion of FIG. **1**, **S3** is responsive to a magnet and closes if the door is opened. If switch **S5** is left in its closed position, the battery will be connected to the transmitter on a conductor **71** and to the modulator on conductor **69**, thereby causing the transmitter to generate and transmit any signal modulated by a first frequency, identified above as **F2**. If a person within a protected space wishes to open the door to admit someone else from outside he can manually depress button **15**, opening switch **S5** and preventing the closure of switch **S3** from having any effect. Upon reclosing the door, switch **S5** can be permitted to close again and the system will remain dormant.

If the occupant wishes to initiate the delay activity of the system so that egress can be accomplished without stimulating the alarm, switch **S4** can be depressed, providing a signal on conductor **68** to the modulator and on conductor **72** to the transmitter, causing the transmitter to radiate a signal modulated at frequency **F4**. This initiates the generation of the Trig. **4** signal and subsequent response thereto as described with reference to FIG. **1**. As previously mentioned, the specific circuitry within the modulator and transmitter units is of no particular consequence so long as the foregoing functions are fulfilled, and no detailed description thereof is deemed necessary.

The portable hand held unit **10** is similarly provided with a transmitter **75**, a modulator **76**, a battery indicated generally at **77**, normally open push button switches **S1** and **S2**, and suitable interconnections. If the portable unit is to be used to interrogate the master unit, as previously described, switch **S1** is depressed, providing a supply signal from the battery to the modulator on a conductor **78** and to the transmitter on a conductor **79**, stimulating the transmitter to radiate a signal modulated by one of two possible frequencies generated by the modulator. The modulator **76** can be sub-

stantially identical to modulator **67** except, of course, for the actual frequencies selected. If the portable unit is to be used to summon assistance or to activate the main alarm, both of switches **S1** and **S2** are depressed, providing a supply to the transmitter on conductor **79** and an input to the modulator on conductor **80,** thereby causing the transmitter to radiate a signal at the frequency **F2.**

The window unit and fire unit is also similar in that it includes a transmitter **82** which is modulated by a signal provided on a conductor **83** from a modulator circuit **84** which, as in the other two units, is capable of producing two modulation frequencies. The power for the unit is provided by a battery indicated generally at **85,** which battery is connected to a fire sensor **23** so that, in the event of a fire, the sensor can provide an activating signal to the modulator and to the transmitter through conductors **86** and **87.** Additionally, a switch **S3,** which is magnetically operated to close if a window is opened, connects the battery to the modulator and the transmitter to cause the transmitter to radiate a signal at a frequency **F2.** The fire sensor causes the transmitter to radiate a signal at **F6** which stimulates the receiver to produce the Trig. **6** signal which activates the unique fire indicating alarm signal.

The unit **25** which includes the receiver and input circuits will be seen to indicate the power supply **57** which is connected to supply power to an RF amplifier **90,** a modulator circuit **91,** a set of filters **92** and a plurality of trigger circuits **93.** The RF amplifier is connected to an antenna and is designed to receive the modulated signals produced by any of the associated units. The amplifier output is coupled to a demodulator, the nature of which is a function of the specific form of modulation and frequency of modulation used in the system. The demodulator output is connected to a set of four filters **92** which are responsive to the frequencies **F1, F2, F4** and **F6** and which provide, on one of four output conductors **94, 95, 96** and **97** an output signal to stimulate one of four trigger circuits in unit **93.** The specific trigger circuit activated is a function of the frequency detected by one of the filters and determines which trigger signal is provided to the logic circuitry described with reference to the master unit.

In order to provide a clearer understanding of the various functions performed, a table correlating switch activity, trigger signals, frequencies and functions is provided, as follows:

Switch	Modulation Frequency	Logic Trigger	Function Description
S1	F1	Trig. 1	Interrogate;immediately activates Interrogate Alarm—Disables Alarm AF1 until reset.
S1+S2	F2	Trig. 2	Immediate activation of Alarm AF1 with automatic shut off after predetermined interval, e.g., 2 minutes.
S3	F2	Trig. 2	
S4	F4	Trig. 4	Initiate exit delay—prevents activation of Alarm AF1 for 20 seconds. Note in second embodiment, Alarm AF1 is activated at termination of 20 second period if S3 is not open.
S5	—	—	Prevents S3 from activating alarm AF1 as long as S5 is depressed.
FS6	F6	Trig. 6	Immediate activation of Fire Alarm AF2 which operates until master unit is reset.

A modified embodiment of the door unit and of the master unit circuitry associated therewith is shown in FIG. **3,** wherein the door unit **13** will be seen to include a battery indicated generally at **100,** a transmitter **101** which is capable of producing a transmitted signal at the carrier frequency used for the system, the frequency being modulated by a signal generated in modulator **102,** the modulator output being connected to the transmitter on a conductor **103.** Modulator **102** differs from the modulators described with reference to FIGS. **1** and **2** in that the modulator produces only a single modulating frequency. The modulator is activated by the output of a gate circuit **104** which has two inputs, one being a normally enabling signal from the ON output from a bistable circuit **105** and the other being a normally disabling signal provided by a series circuit including a normally open switch **S3** and a normally closed switch **S4** connected between the gate circuit input and battery **100.**

The unit also includes a delay activation circuit for the bistable **105,** this circuitry including a delay circuit **106,** an inverter circuit **107** and a gate circuit **108.** Gate circuit **108** has a normally enabling input directly from the battery and a normally disabling input from the output of inverter **107,** the input of which comes from the OFF output of bistable circuit **105.** A normally open push button switch **S5** is connected between the battery and the OFF input of bistable circuit **105.** The output of gate circuit **108** is similarly connected to that OFF input. The output of delay circuit **106** is connected to the ON input of the bistable circuit.

In operation, if the door with which this unit is associated should be opened at an unauthorized time or by an unauthorized person, switch **S3** is closed causing the normally disabling input to gate circuit **104** to be enabled, producing an output circuit which stimulates the modulator and transmitter into activity, producing an output signal immediately. This output signal is received by the receiver and input circuit unit **25,** producing a Trig. **2** signal which turns on gate circuit **37** and activates the alarm, as previously described. In the event the occupant wishes to open the door without deactivating the system but also without setting off the alarm, switch **S4** can be pressed and held open, preventing the operation of **S3** from activating the alarm.

However, in the circuit of FIG. **3,** if the occupant wishes to initiate a delay to be able to depart without setting off the alarm, he does so by closing switch **S5** which operates a delay circuit which exists in the door unit rather than in the master unit as described with reference to FIG. **1.** Immediately upon closing switch **S5,** bistable circuit **105** is switched to its OFF state, removing the enabling signal from gate **104.** This immediately disables the transmission circuit so that closing switch **S3** does not cause the transmission of a radiated signal. When bistable circuit **105** goes to its OFF state, the OFF output therefrom is inverted in circuit **107** and

supplied to the input of delay circuit **106** and to the normally disabled input of gate circuit **108** which acts as a latching gate beyond the mometary depression of switch **S5**. **S5** can then be released and the circuit will remain as described until the end of that delay introduced by delay circuit **106**. At the end of that delay interval, an output from that circuit turns bistable circuit **105** back on, again enabling gate **104**. If at the conclusion of that delay, switch **S3** remains closed if, for example, the occupant has left without properly closing the door, a signal will be emitted by transmitter **101** and the alarm will be sounded. However, if he has left the apartment and properly closed the door, enabling of gate **104** will have no effect.

It should be noted that the circuit for gate **104** should be chosen so that it operates as described without having a signal available to it from the battery, and that the circuit for gate **108** should be chosen so that it does not draw current when switch **S5** is open, this being to preserve battery life.

While certain advantageous embodiments have been chosen to illustrate the invention, it will be understood by those skilled in the art that various changes and modifications can be made therein without departing from the scope of the invention as defined in the appended claims.

What is claimed is:

1. An alarm system comprising the combination of means for detecting an undesirable event and for transmitting a radio signal in response thereto on a first frequency; an alarm;

means for receiving a radio signal on said first frequency and for actuating said alarm;

first manually operable means for resetting said means for receiving; and

portable means for generating a radio signal on a selected one of two frequencies, said portable means including

second manually operable means for causing said portable means to transmit a signal at said first frequency, and

third manually operable means for causing said portable means to transmit a signal at a second frequency;

said means for receiving further comprising means for receiving a radio signal at said second frequency and for generating an audible response signal only if a radio signal at said first frequency has not been received since the last operation of said manually operable means for resetting.

2. An apparatus according to claim **1** wherein said radio signal is frequency modulated.

3. An apparatus according to claim **2** wherein said means for detecting includes

means for transmitting a radio signal at a third frequency and said means for receiving includes means responsive to a signal at said third frequency for delaying activation of said alarm for a predetermined interval.

4. An apparatus according to claim **1** wherein said audible response signal constitutes a signal of different audio characteristics from said alarm.

5. An alarm system comprising

a protected space;

means for sensing a breach of the integrity of said protected space;

means for remembering that said integrity was breached;

means for resetting the system and thereby erasing said means for remembering;

means for transmitting an interrogation signal to said means for remembering from outside said protected space; and means for responding to said means for transmitting if said integrity has not been breached.

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