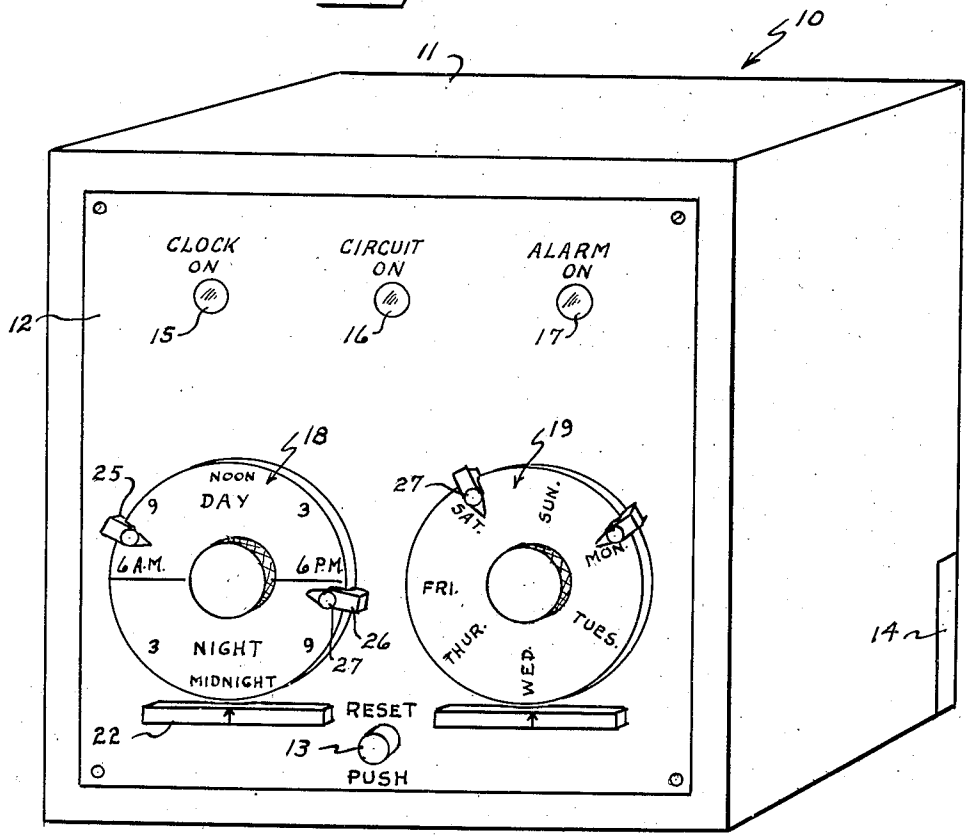
Jan. 3, 1950 F. A. FOSS 2,493,576

BURGLAR ALARM

Filed May 4, 1948 2 Sheets-Sheet 1

FIG. 1.



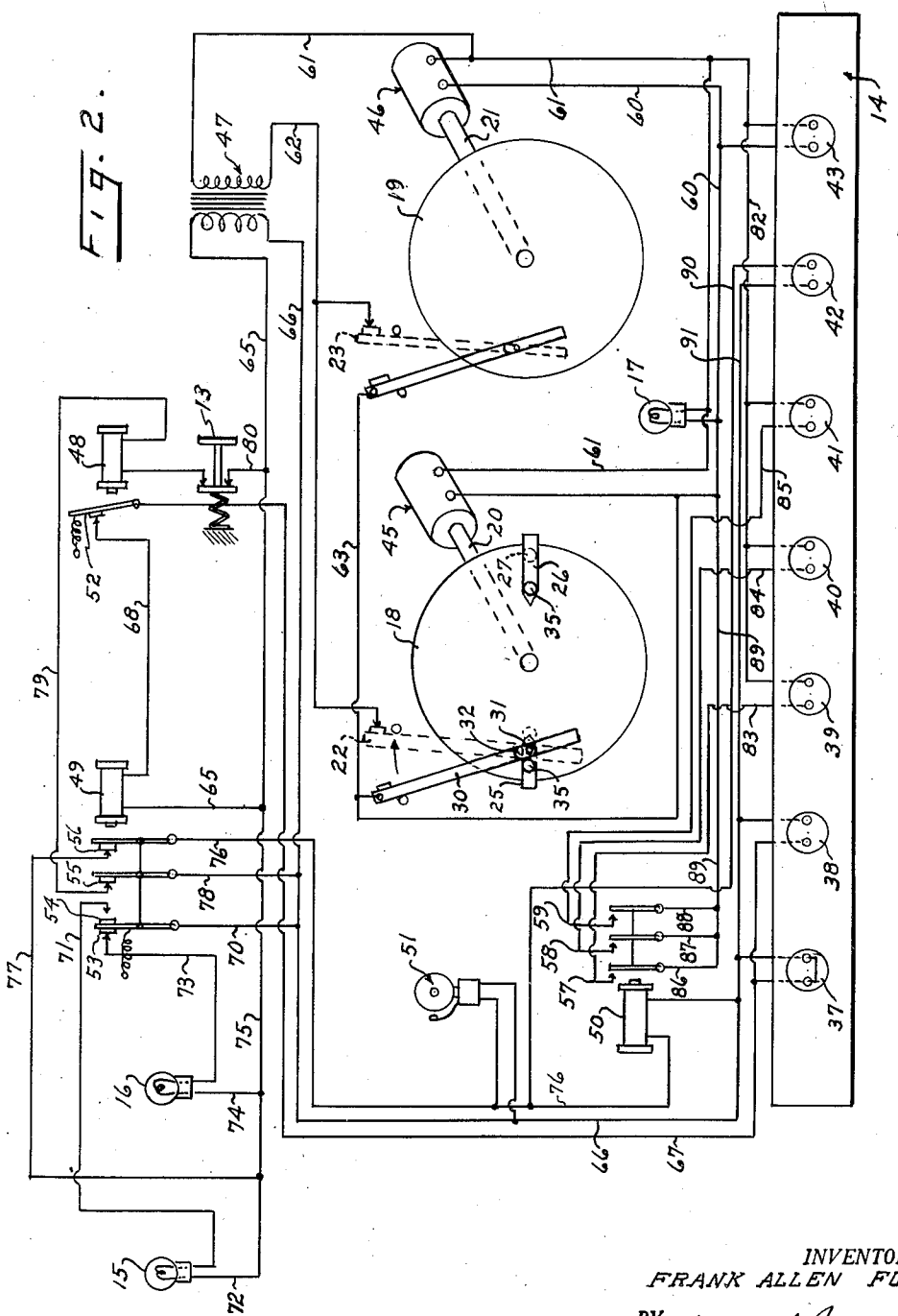
INVENTOR.
FRANK ALLEN FOSS
BY Howard T. Jeandron
ATTORNEY

Jan. 3, 1950 F. A. FOSS 2,493,576

BURGLAR ALARM

Filed May 4, 1948 2 Sheets-Sheet 2

FIG. 2.



INVENTOR.
FRANK ALLEN FOSS
BY Howard J. Jeandron
ATTORNEY

Patented Jan. 3, 1950 2,493,576

UNITED STATES PATENT OFFICE

2,493,576

BURGLAR ALARM

Frank A. Foss, Keyport, N. J., assignor of one-half to Howard T. Jeandron, Keyport, N. J.

Application May 4, 1948, Serial No. 25,032

5 Claims. (Cl. 177—314)

1

This invention relates to an automatically operated burglar alarm system and more particularly to a completely packaged automatic unit.

Burglar alarm units are old in the art. They comprise an activated circuit in which a plurality of switches are incorporated and are generally provided with an alarm bell that becomes energized when the alarm circuit is broken. Most of the alarm circuits utilized are manually turned on at the time of closing or locking the premises, whereas this invention provides a time clock operated unit in which the same parallel circuit connected to a plurality of switches becomes energized at a predetermined time by the operation of the time clock and becomes de-energized at a predetermined time by the same time clock. In addition, this invention includes a holding circuit so that in the event any switch protecting an opening is opened, the alarm circuit becomes energized and due to a holding circuit it cannot be de-energized by the closing of the same switch but is provided with a reset switch to return the circuit to its normal condition. Also, in addition, this invention provides two time clock circuits connected in parallel relationship. The one time clock provides normal operation over a 24-hour period, whereas the other time clock operates on a weekly period, that is, in the operation of these time clocks a dial is utilized on which an on and off switch is provided. The 24-hour dial turns the alarm circuit on with its on switch and turns the circuit off with its off switch and, likewise, the weekly time clock causing the weekly dial to make one revolution in one week and thus being provided with an on switch which when operated cuts out the 24-hour dial taking over the energizing of the circuit until its off switch releases or de-energizes the circuit when the 24-hour dial again takes over control.

An object of this invention is to provide a completely packaged unit that can be readily plugged into a 110 volt circuit to supply the necessary potential for operation and in addition provides a 24 volt circuit that may likewise be plugged into the unit to provide the low potential protecting circuit.

A further feature of this invention is the automatic time clock operation of the unit providing means to automatically energize the alarm circuit and de-energize the circuit according to predetermined time settings.

A still further object of this invention is the provision of two time clock units within the circuit providing means to automatically turn the circuit on and off for the usual 24-hour daily period, as well as means to turn the alarm circuit on for a weekend period or a holiday and subsequently turn the circuit off.

A further feature of this invention is the provision of a holding circuit within the unit so that

2

once the alarm circuit has been tripped, the alarm will continue to operate until the packaged unit has been unlocked and reset.

Further objects of this invention may be apparent by reference to the following detailed description and drawings in which

Fig. 1 illustrates an isometric view of the packaged burglar alarm unit,

Fig. 2 illustrates a diagrammatic wiring diagram of the burglar alarm circuit.

Referring to Fig. 1, there is illustrated a burglar alarm unit 10 comprised of a strong metal enclosure or boxlike structure 11. The front face of the box 11 comprises a panel 12, and the other side of the unit is provided with a back panel 14. The panel 12 is provided with a plurality of apertures for mounting various components. A plurality of signal lights 15, 16 and 17 are mounted on the panel 12 through these apertures. Also a pair of rotatable dials 18 and 19 are mounted on shafts 20 and 21, the shafts in turn projecting through apertures on the panel 12 to retain the dials 18 and 19 in juxtaposition to the panel 12. A reset button 13 is also mounted in the panel 12. A pair of switches 22 and 23 are mounted between the under side of the dials 18—19 and the face of the panel 12. Referring to Fig. 2, we may see the general scheme of the switches 22—23 and the manner in which the dial face with its on and off switch buttons affects the operation of the switch mounted thereunder. Fig. 2 illustrates the under side of dial 18, showing shaft 20 which supports and drives the dial 18 in its single revolution in 24 hours. A pair of switch buttons 25—26 are provided, and the under side of same are shown in Fig. 2. The buttons are affixed to the periphery of the dial 18 in any suitable manner to retain them in the position as illustrated. In this particular instance, the button has a U-shaped end, fitting over both sides of the dial and a set screw 27 is provided in the upper face so that by turning the set screw 27 the member 25 can be secured at any particular point on the dial 18. The buttons 25—26 are also provided with circular extending pins 35 which are utilized as the means of operating the switch 22. Since the face of the dial 18 is provided with hourly and minute markings, it is readily apparent that a definite time may be selected and the buttons 25—26 may be mounted at predetermined time positions. In Fig. 2, the under side of the face of dial 18 also illustrates the pivotal arm 30 of the switch 22. The arm 30 is pivoted at 31 which is mounted to the panel 12. The arm 30 is provided with a cam 32 at its center thereof, and the arm 30 is so positioned that as the dial 18 rotates, the pin 35 of the off switch 26 will abut against the cam 32 to move the pivotal arm 30 to its "stop" position as illustrated in full lines in Fig. 2. Likewise, when the switch button 25 reaches the position illustrated

in Fig. 2 with its extending pin 25 adjacent to the arm 30 as the dial 18 continues to rotate, the pin 35 will come in contact with the cam 32 and move the pivotal arm 30 to the "on" position as indicated in dotted lines in Fig. 2. Thus, it is apparent how the switches 22—23 are operated by the dials 18 and 19, respectively.

Referring to Fig. 2, the various components of the mechanism are illustrated in the wiring diagram. The rear panel 14 has a plurality of female plugs 37 through 43, inclusive. A pair of time clock motors 45 and 46 are provided as the means of driving the dials 18 and 19. The plurality of signal lamps 15, 16 and 17 are also connected to this wiring diagram. There is also provided a transformer 47 that may be connected on the primary side to a 110 volt circuit and on the secondary side is connected to the 24 volt circuit. There are three relays 48, 49 and 50. Also connected in the circuit is a signal bell 51 and the reset switch 13. The relay 48 is provided with a single normally closed contact switch 52. The relay 49 is provided with four contact switches 53, 54, 55 and 56, in which switches 53, 55 and 56 are normally closed and 54 remains open until the relay is energized, when switches 53, 55 and 56 will be opened and 54 closed. Relay 50 is provided with three contact switches 57, 58 and 59, all normally open until the relay becomes energized. Also included in the circuit are the two time clock operated switches 22 and 23.

Th various components are connected in the following manner:

The time clock motors 45—46 are connected to the female plug 43 by means of connecting wires 60—61 so that when a 110 volt connecting plug is connected to the socket 43, potential is supplied to the motors 45—46 for continuous operation. Lead 61 is also connected to one side of the primary coil of the transformer 47. The opposite side of the primary is connected by a lead 62 to one side of both of the switches 22 and 23. The opposite side of the switches 22 and 23 is connected by a lead 63 to the connecting lead 60, which is the opposite side of the 110 volt circuit. Thus, when 110 volt potential is connected to the plug 43 the transformer 47 is energized and a 24 volt potential is provided on the opposite side of the transformer. Thus, through leads 65 and 66 the alarm circuit may be connected. Lead 66 goes directly to the female plug 37 and the alarm circuit comprised of a plurality of switches (not shown) will in turn be connected, and when all switches are closed the circuit may be completed from lead 66 through the switches in parallel relationship back to a lead 67, the lead 67 in turn being connected to the normally closed contact 52 of relay 48, the circuit in turn passing through a lead 68 to one side of the relay 49, the opposite side of relay 49 being in turn connected to the lead 65, thus completing the 24 volt circuit to the transformer 47. Thus relay 49 becomes energized and the normally open contact 54 is is closed and the remaining contacts are opened. With the closing of contact 54, potential from lead 66 will pass through a lead 70, through the contact 54, through a lead 71 to the "on" pilot lamp 15, the opposite side of the pilot lamp being connected by a lead 72 to the lead 65 and back to the opposite side of the transformer 47, thus providing potential to the lamp 15. This circuit is energized by the transformer 47 only when either switch 22 or switch 23 is in its closed position to effect energization of the transformer 47. Of course, it is understood that when the off position of the time motor trips these switches to an open position, transformer 47 will be de-energized and the alarm circuit is without potential.

It is understood that if the user intends to provide photo cell switches, they may be readily plugged into socket 38 to similarly affect the circuit already described, the photo cells acting on the principle of being energized and remaining so until their beam is interrupted, at which time the circuit already described would be interrupted. Assuming the alarm circuit has been interrupted by either a photo cell or a switch connected to said circuit, the interruption of the potential flow will deenergize relay 49. Thus, switches 53, 55 and 56 are again closed and switch 54 will be opened. The lamp 15 will be extinguished and the potential flow from lead 66 through lead 70 will pass through the contact 53 and a lead 73 to the red alarm lamp 16 through the opposite lead 74 of this lamp to a lead 75, which is connected to the lead 65 of the opposite side of the transformer secondary. Thus potential is supplied to the lamp 16 to illuminate same. With this circuit energized, potential will also be supplied through a lead 77 through the closed switch 56, through a lead 76 to the alarm bell 51 and to the one side of the relay 50. The opposite side of the alarm bell 51 and the opposite side of the relay 50 are in turn connected to the lead 66, which is in turn connected to the opposite side of the transformer 47 to thus supply potential to the alarm bell and the relay to retain them energized. The potential from the transformer 47 through lead 66 will also flow through lead 78 to the closed contact 55, passing therethrough to a lead 79 which is in turn connected to one side of the relay 48, the opposite side of relay 48 being in turn connected through a normally closed reset switch 13 by means of a lead 80 to the lead 65, which is in turn connected to the opposite side of the secondary of the transformer 47. Thus relay 48 is energized and it will in turn open its associated contact switch 52. It is apparent that with switch 52 retained open that after alarm circuit switches or photo cells (not shown) are restored to a closed position, this will not restore the circuits to their original condition. The alarm bell will continue to ring. This is due to the fact that the normally closed or restored circuit connected to plugs 37 or 38 following lead 67 must pass through the contact switch 52, which is now retained in an open position. Therefore, relay 49 cannot be again energized until an authorized person opens the reset switch 13, at which time the energy is removed from relay 48, restoring contact switch 52 to its closed position and thus re-energizing relay 49 and restoring the contacts and the alarm circuit to its original condition for operation. With the energization of relay 50, it is apparent that the associated switches 57, 58 and 59 will be closed. Thus while the alarm circuit to the bell 51 continues, there will be a closing of the auxiliary circuits connected to female plugs 39, 40 and 41. This circuit may be followed by referring to the 110 volt connecting lead 82 that is connected to one side of the 110 volt source from plug 43. The lead 82 is connected to plugs 39, 40 and 41. The opposite side of these plugs are each connected respectively to one side of the switches

57, 58 and 59 by leads 83, 84 and 85 respectively. The opposite sides of the switches 57, 58 and 59 are connected by means of leads 86, 87 and 88 to a common lead 89, which is in turn connected to the lead 60 which is the opposite side of the 110 volt circuit. Thus a plurality of floodlights (not shown) may be connected to plug 39 and will be illuminated when the alarm circuit is energized. Likewise, a siren (not shown) may be connected to plug 40 to be energized, or an external bell (not shown) may be connected to plug 41 to be similarly energized. For convenience with the installation of this unit, the unit includes the internal alarm bell 51, but an external bell operated on the same 24 volt circuit may be installed at some remote point. This bell may be connected to the plug 42 and by means of its connecting leads 90 and 91, the external bell will be therefore connected to the alarm circuit by connecting leads 90 and 91 to leads 76 and 66 through which the potential is obtained when the alarm circuit is energized.

An additional feature of this unit is the provision of lamp 17 connected across the leads 60—61. Thus whenever the unit is plugged into 110 volt circuit, lamp 17 being illuminated will indicate the time motors 45 and 46 are operating and will likewise indicate whenever there is an interruption in the main potential feed to thus stop the operation and necessary potential to operate this device. Referring to the time motors 45—46 which are similar in construction except that dial 18 is rotated one revolution for every 24 hours while dial 19 will be rotated one revolution for every 7 days. Since the means of changing the speed of operation of the two dials is only a matter of the gear ratio drive to these dials, it is not a part of this invention and they have been shown schematically, omitting the driving means.

It is apparent that normally the circuit is controlled through switch 22, as it will be closed every part of the rotation of dial 18. Therefore, it will be open and closed depending upon the position of the off and on switches 25 and 26 mounted on dial 18. Since the 7-day operated dial 19 is generally positioned to operate for a weekend period the only time that switch 23 will take over will be upon the closing of switch 23 at the beginning of a weekend period by the on switch on dial 19. Thus the opening and closing of switch 22 will have no effect on the circuit already closed, but when switch 23 is again opened, dial 18 again takes over control to open and close switch 22 and control the circuit as already described.

What is claimed is:

1. In a burglar alarm device, a source of potential, a transformer connected on one side to said source of potential, an electric motor driven chronometer, a switch interposed between the opposite side of said transformer and the opposite side of said source of potential, means to open and close said switch with said chronometer, a secondary circuit connected to the secondary coil of said transformer, one side of said secondary coil being connected to a pair of connector plugs, the opposite side of said secondary coil being connected through a relay and the normally closed switch of a second relay to the opposite side of said pair of connector plugs, a connector link inserted in one of said connector plugs to complete said secondary circuit, said first relay being energized by said secondary circuit and retaining a plurality of normally closed switches associated therewith in an open position, a lamp connected across said secondary circuit to be illuminated when said secondary circuit is energized, means to momentarily de-energize said secondary circuit by removing said connector link, and in turn de-energizing said first relay, which restores said relay switches to their normally closed position, means to energize said second relay when the said first relay is de-energized and reestablish said secondary circuit, means to break the normally closed switch of said second relay, and means to establish said alarm circuit through a third relay, said third relay when energized closing three normally open switches, said normally open switches being connected on one side to the main source of potential and on their opposite sides to individual connector plugs, said connector plugs in turn being connected to the opposite side of the source of potential, a reset switch providing means to deenergize said second relay and re-establish energization of said first relay to in turn retain said secondary circuit energized through the connector link mounted in said connector plug.

2. A device according to claim 1 in which a lamp is connected across the motor circuit to indicate when the chronometer is operating.

3. A device according to claim 1 in which a lamp is connected across the alarm circuit to be illuminated when the first relay is momentarily de-energized and the alarm circuit completed.

4. In a device according to claim 1 a second electric motor driven chronometer and a second switch operated by said chronometer, said first and second switches pivotally mounted in a predetermined position with relation to said disks, a cam connected to said switch at its pivotal point, said motor connected to said source of potential, said second switch connected in parallel with the first switch, one side of each switch connected to one side of the primary coil of said transformer and on their opposite sides to the opposite side of the source of potential, means to energize said secondary circuit with the closing of the first switch, and means to energize said secondary circuit with the closing of the second switch.

5. In a device according to claim 4 a pair of chronometer disks, each disk driven by its associated motor, said first disk rotated one revolution for 24 hours, and said second disk rotated one revolution for seven days, two pair of lugs attachable to the periphery of said disks, one of each pair of lugs provided with an on pin and the other lugs of each pair provided with an off pin, means to position said lugs at any pre-determined time position on the periphery of said disks, means to close said associated switch when said on pin contacts the cam of said switch during the rotation of said disks, means to open said switch when the off pin contacts the cam of said switch during the rotation of said disks.

FRANK A. FOSS.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,772,422	Hopkins et al.	Aug. 5, 1930
2,224,548	McFerron	Dec. 10, 1940