United States Patent

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[54] **PROGRAMMED TIMER**
8 Claims, 4 Drawing Figs.

[52] **U.S. Cl.** **307/141,** 307/41
[51] **Int. Cl.** **H01h 7/00**
[50] **Field of Search** 307/38, 40, 41, 141, 141.4, 141.8; 325/396; 340/309.1

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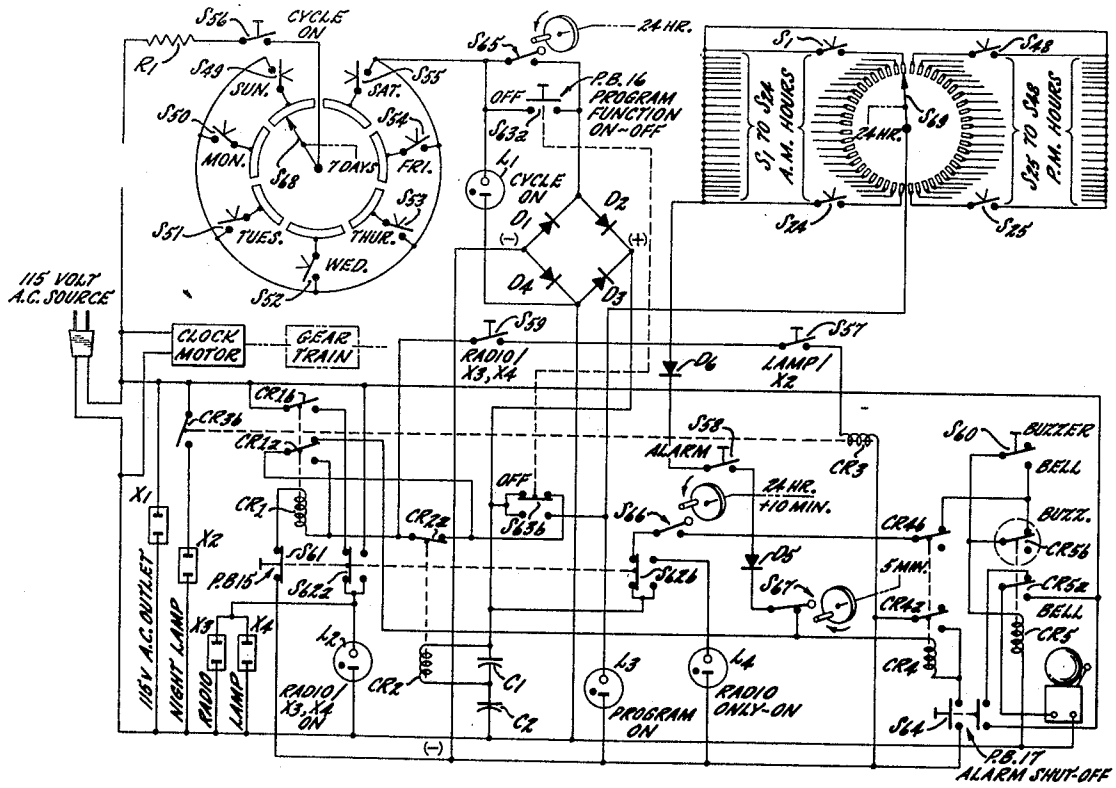
ABSTRACT: A programmed clock timer is described in which operation of an alarm and an appliance on an adjustable 24 hour sequence is supplemented with selectively programmed 24 hour and 7-day timing sequences whereby one or more appliances may be operated according to a predetermined program consisting of programmed time interval sequences. The program is visibly presented on a control panel with individual incremental time segments being programmed by an array of manually operated push-pull switches. A manual override feature separately controls a selected appliance.



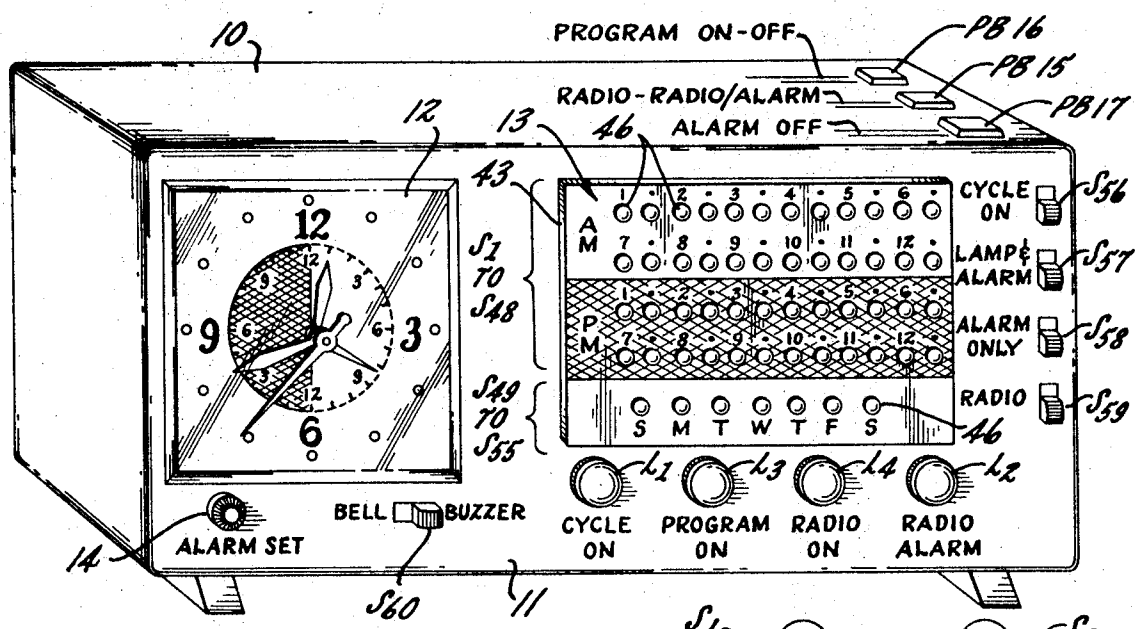


Fig. 1.

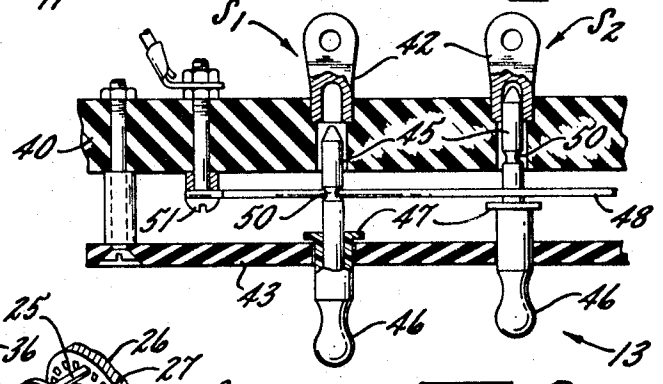


Fig. 2.

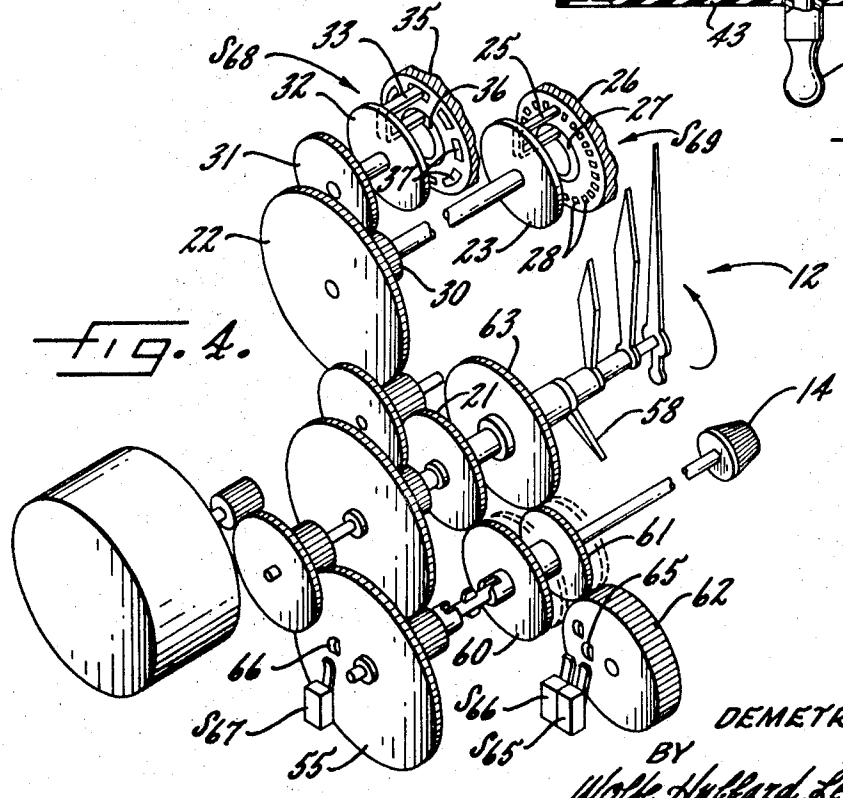


Fig. 4.

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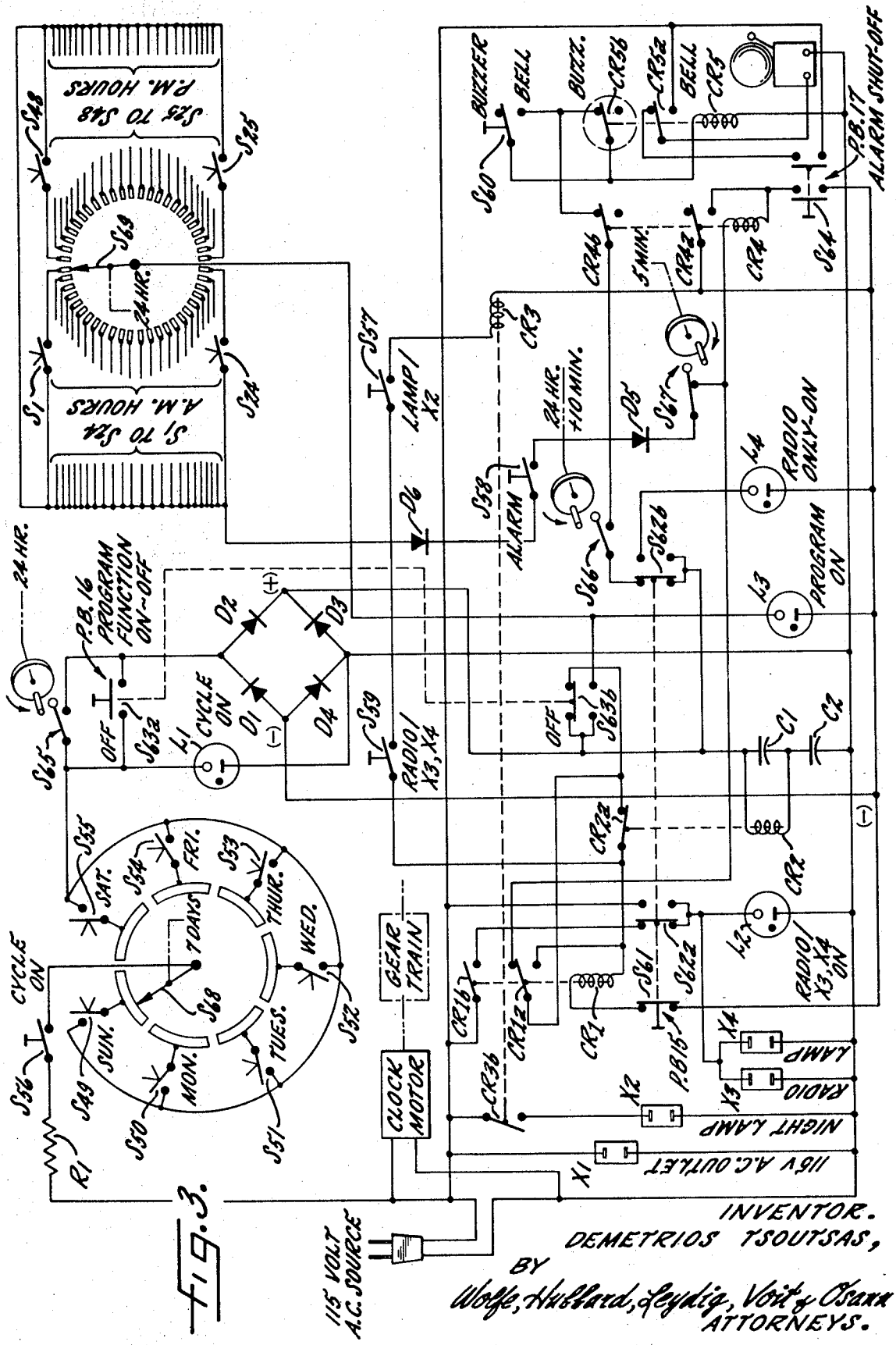

FIG. 3.

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PROGRAMMED TIMER

this invention relates generally to clock-controlled circuits, and its principal aspect concerns a selectively programmed control timer incorporating an alarm function and a manual override function for separate operation of the controlled appliance.

Clock-controlled radios have been in common household use for many years. In their usual embodiment, they combine the operation of a radio or another appliance such as a lamp with the conventional alarm function of a common alarm clock. The resulting device allows the user to select a given time of day at which the radio will be turned on, commonly followed by another, more harsh, audible alarm. Such clock-radios are commonly employed to wake the user in the morning.

Previous clock-controlled timers and clock-radios for household use have suffered deficiencies in several respects, they must be set anew each night for operation on the following morning, and if this ritual is not observed the user may find himself oversleeping more often than he would like. Since clock-radios commonly operate on a 12 hour cycle rather than a 24 hour cycle, the resetting of the device generally cannot be performed each time the alarm goes off, but must be delayed at least 12 hours instead. The radio or other appliance is often rendered unusable after the alarm has been set, thus preventing the user from enjoying his radio subsequent to having set the alarm for the night.

A further disadvantage is that existing alarm sequences provide only for the radio or other appliance to be energized once during each 12 hour cycle sequence, and then only for a relatively long period of time until the mechanism resets itself for the next cycle.

In view of the foregoing, it is a principal object of the present invention to provide an improved clock-controlled timer in which a conventional alarm sequence is combined with a variable operational program in which one or more appliances may be controlled during each of a large number of continuous sequential time increments. It is intended to provide such a programming function through a visible panel in which the time increments of a 24 hour day are presented in an easily readable array.

Another object is to provide a programmed timer of the above description having the further advantage of selectable 7 day sequence so that a particular program function may be selected for one or more days of the week, and cancelled for the remaining days. It is desired that this function be presented in a panel array similar to and having the same advantages as that of the 24 hour function.

Combined with the foregoing objects is a related object of providing such a program function in conjunction with the existing alarm function of a clock-radio unit, and having the additional feature of a delayed alarm which is energized after a given interval has passed from the energization of a radio. A more detailed object is the provision of a manual shutoff switch for the alarm which is effective to silence the alarm when it is ringing in response to the programmed sequence, and which after shutoff serves as a call switch to selectively ring the alarm when activated thereafter.

A further object is the provision of a manual override switch so that a given appliance, such as the radio portion of the unit, may be separately used regardless of the position of the other programming and timing functions in their operational sequence. It is further intended to provide selective operation of one or more individual appliances according to the program sequence in addition to the radio, and to further provide a visible indication on the panel of the unit that such appliances are functioning according to the predetermined program.

A related object is the provision of an improved switch means whereby a plurality of individual push-pull, on-off switches may be disposed in a panel array, with individual rows of switches being energized from a common terminal which serves the additional function of providing a latching or detent action for switch operation.

Other objects and advantages of the invention will become apparent upon reading the following detailed description and upon reference to the drawings, in which:

FIG. 1 is a perspective of an exemplary programmed timer constructed according to the present invention;

FIG. 2 is a detail of the push-pull switches of the program panel array;

FIG. 3 is a schematic circuit diagram of the unit of the preceding FIGS.; and

FIG. 4 is a partial perspective of the clock-driven gear and switch mechanism used in the unit.

While the invention will be described in connection with a particular exemplary embodiment, it will be understood that it is not intended to so limit the invention, but it is instead intended to cover all alternative and equivalent constructions as may be included within the spirit and scope of the invention as defined by the appended claims.

GENERAL ORGANIZATION

Referring first to FIG. 1, the timer unit there shown is enclosed in a case **10** having a front panel **11** on which a clock **12** and a number of controls are located. On the side of the panel **11** opposite the clock **12** is a program panel **13** containing an array of individual push-pull switches S1 through S55. The switches designated S2 through S24 control programming functions during the a.m. hours, and the switches S25 through S48 control functions during p.m. hours.

As illustrated in FIG. 1, the p.m. portion of the switch array on the program panel **13** is desirably shaded to furnish visual indication of the a.m.-p.m. division between the switches S1 through S48. An additional row of switches S49 through S55 is included with a suitable legend to indicate that this row of seven switches controls the program on each of the days of the week.

Below the program panel **13** are individual signal lamps L1 through L4. These lamps indicate the condition of the unit in regard to the functions which the unit is intended to perform. Adjacent the program panel **13** is another row of switches S56 through S59 which are used to select the functions to be performed, and which functions are then reflected in the illuminated condition of individual signal lamps L1 through L4. Finally, an additional switch S60 allows the user to select either a bell or a soft buzzer for the alarm function of the unit.

On the top of the case **10** in the exemplary embodiment shown in the FIGS. are three pushbuttons **15**, **16** and **17**. Pushbutton **15** operates three switches S61, S62*a* and S62*b* and performs the function of switching the unit between its clock-radio and alarm function on the one hand and its overriding radio operational function on the other. Pushbutton **16** operates switches S63*a* and S63*b* and serves to turn the programming function of the unit on-and-off. Both pushbuttons **15** and **16** are of the latching type, that is, initial actuation places the switch in one condition, and a second actuation will place the switch in its alternate condition. Pushbutton **17** controls switch S64, a momentary contact switch used for silencing the alarm for a predetermined interval when the user has been wakened, and to ring the alarm separately as a call.

A power cord (not shown) connects the unit to an ordinary household source of 115 volts AC current.

OPERATION

To use the clock-controlled programmer, it is first plugged into a household 115 volt AC outlet, thereby furnishing power to run the clock **12** and for performing the operational functions of the device. As can be seen from the FIGS. the clock **12** is visible on the front panel **11** of the unit. It thereby presents an attractive face, and can be placed on a table or shelf in plain view by the user.

The alarm function of the unit is set by means of the alarm set knob **14** protruding from the front panel **11** adjacent the clock **12**. Such a function is a common feature of many alarm clocks and does not require further description. It need only

be pointed out that the alarm function is thereby set to be actuated by the clock 12 at a predetermined hour in each 24 operational cycle by association with a 24 hour gear (FIG. 4).

At the rear of the unit are a series of plug sockets X1 through X4 (see FIG. 3). X1 is simply an additional 115 volt AC outlet connected in parallel with the line voltage. X2 is intended for a night lamp or other appliance for which independent operation, apart from the radio and alarm functions, is desired. X3 is intended for a radio or similar appliance, and X4 is connected in parallel with X3 so that an additional appliance, such as a lamp, may be added.

For normal operation, it will be assumed that a night lamp is plugged into socket X2, a radio is in socket X3, and a room lamp is plugged into socket X4.

For normal radio-alarm operation, the pushbutton 15 is placed in a condition which will cause the signal lamp L2 to be illuminated, indicating that it is in the radio-alarm condition. During such operation the unit will energize the radio socket X3 when the predetermined time selected through the alarm set knob 14 is reached. The clock 12 is constructed to do this in 24 hour cycles, rather than 12 hour cycles as is commonly the case. Approximately 10 minutes after the radio is energized, an audible alarm is energized in the performance of the radio-alarm function. The user may select which audible alarm he chooses by moving switch S60 between the "bell" and "buzzer" positions.

Should the user have ignored the radio when operating the unit in its radio-alarm function and the alarm should sound, the user simply depresses pushbutton 17 to silence the alarm. As will become clear, the alarm will be again energized after approximately 5 minutes if the unit is not switched to either its program or override functions.

Actuation of pushbutton 17 will cause the alarm to ring momentarily as a call for an invalid, for example, as long as the pushbutton is depressed.

If, prior to actuation of the programmer switch pushbutton 16, the radio or the alarm function were in operation, the indicator lamp L2 would be thereby extinguished. The lamp L2 is otherwise energized at all times when the radio, lamp or other appliances plugged into sockets X3 and X4 are in the on condition.

When it is desired to utilize the programming function of the unit, the switch S56 is moved to the on position. If the program selected through switches S49 through S55 is on a day of the week selected for program operation, the indicator lamps L1 and L3 will be illuminated, thus indicating that the selected program and the cycle for that day are on. Although L1 may also be on to indicate program power, the indicator lamp L3 will not be energized until the programmer switch pushbutton 16, is actually actuated.

The program panel 13 is preset by the operator to energize the desired appliances at preselected times. Each of the individual push-pull switches S1 through S48 controls a separate sequential time interval during the course of a 24 hour day. In the present example, there are 48 time segment intervals, each of one-half hour duration. By depressing a row of switch pins corresponding to the number of half hour segments desired, a selected appliance in plug X3 or plug X4 can be energized for that particular time interval. The appliance may be caused to turn on and off as many times as desired, so long as each operation is achieved in its own half hour time interval.

Switches S57, S58, and S59 are used to select the desired function to be performed by the programmer. S59 causes the radio or lamp in sockets X3 or X4 to be energized. Switch S57 causes an additional lamp or night light to be energized from socket X2. Switch S58 adds the alarm function to the night light of socket X2, causing them both to be energized together. It should be noted that the functions selected by switches S57 and S58 are independent from the radio function, and are not affected by the manual override feature described at greater length herein.

When it is desired to operate the radio or other appliance plugged into sockets X3 and X4, the operator simply depresses the override pushbutton 15, causing those selected appliances to become energized independently of the alarm or program features of the unit. When the user is finished, he simply depresses the pushbutton 15 again, causing the unit to revert to its former mode of operation.

When the programmer is activated through the operation of the cycle switch S56 and the programmer switch pushbutton 16, it will repeat the desired cycle continuously. Week by week, according to the daily routine set in the switches S1 through S48 and the weekly sequence chosen with switches S49 through S55. If only the radio-alarm feature is to be used, the program pushbutton 16 is turned off, extinguishing indicator lamp L3, and the weekly function selected through switches S49 through S55 is carried out by itself in the radio-alarm function.

If at any time the operator wishes to engage a portion of the daily program, he simply depresses program switch pushbutton 16 to cause this to occur. If the user wishes to listen to the radio, he merely presses the manual override pushbutton 15 without interrupting the program while the radio plays. When the pushbutton 15 is again depressed, the unit returns to program operation. If the unit were in radio-alarm condition prior to pressing the manual override pushbutton 15, it would return to its former condition in the same way.

MECHANICAL DESCRIPTION

The seven day program switch S68 and 24 hour program switch S69 are driven by the internal mechanism of the clock 12. As seen in FIG. 4, the clock 12 contains a gear 21 which drives the hour hand and makes a single revolution every 12 hours. Driven by the 12 hour gear 21 is a 24 hour gear 22 having a speed ratio of 1:2 with respect to the 12 hour gear 21. Driven from the shaft of the 24 hour gear 22 is a rotary wiper disc 23 having a U-shaped bar contact 25 which bears against a terminal plate 26. On the latter is a continuous central terminal 27 surrounded by 48 individual terminal segments 28. In operation, the contact 25 rotates once every 24 hours, bringing each individual terminal segment 28 into electrical contact with the central contact 27 every half hour interval. Each terminal segment 28 is then connected to one of the switches S1 through S48 in the daily program selector panel. The contact 25 overlaps adjacent pairs of segments 28 to provide an electrically continuous transition from one segment 28 to the next.

Driven by a pinion gear 30 on the shaft of the 24 hour gear 22 is a seven day gear 31. The latter gear drives its own wiper disc 32 containing a contact 33 similar to the contact 25 previously described. The 7 day gear 31 and its wiper disc 32 bear against a terminal plate 35 containing a central contact 36 and a total of seven individual terminal segments 37. The latter elements operate in the same manner as those associated with the 24 hour gear 22 in that contact is made with an individual segment 37 corresponding to a particular day of the week in sequence as the wiper disc 32 rotates once every 7 days. The terminal segments 37 are each associated with a switch S49 through S55 in the weekly program selector portion of the circuit.

The panel 13 on which the daily and weekly program is selected is shown in FIG. 3. A chassis plate 40 of insulating material contains a plurality of individual bores, each corresponding to one of the push-pull switches S1 through S48 and S49 through S55. Within each bore is a hollow lug 42 which may be pressed into place and which has a terminal at one end to facilitate wiring. Facing the frame panel 40 and spaced therefrom by a predetermined distance is a face panel 43 also made of insulating material. The face panel 43 has a plurality of individual holes corresponding to each of the holes in the chassis bore in which the terminal pins 42 are placed.

Each individual switch comprises a contact pin 45 which is slidable within the hole to make or break contact with the hollow lug 42. The contact pin 45 is retained within an insulating

handle 46 having a collar 47 to keep it from coming out of the panel board 43. By grasping the enlarged end of the handle 46 with fingers, the contact pin 45 may be pushed in and out of contact with the hollow lug 42.

To supply a detent or snap action to the switch, and to provide electrical contact to each of the individual contact pins 45 from a common portion of the circuit, a serpentine spring wire 48 is woven down each row of switches so that it makes alternate contact with the upper and lower sides of the individual contact pins 45 in that row. The woven serpentine effect thus achieved creates a constant amount of moderate spring pressure on each contact 45, thus providing electrical contact and eliminating looseness or rattling in the individual switches. A detent groove 50 is provided in each of the contact pins 45 to engage the spring contact wire 48 and provide pressure to hold the switch in the open position with the end of the contact pin 45 withdrawn from the lug 42.

At the end of each serpentine spring wire 48 is a terminal point 51, which in the illustrated embodiment comprises a screw. The resulting program panel is neat and attractive, and may be simply and inexpensively made. All exposed portions are of insulating material, and the voltage switched within the panel presents no shock hazard to the user.

The remainder of the clock drive mechanism (FIG. 4) is of conventional construction, with the exception of the 24 hour alarm function. Power for the 12 hour gear 21 is obtained from the clock motor 53 driving a 60 second gear 54 which in turn drives a 5 minute gear 55. The latter drives a 60 minute gear 56 which, through an idler 57, then drives the 12 hour gear 21.

The normal alarm which functions once in 24 hours is indicated by an alarm hand 58 set by pulling and turning the alarm set knob 14. The knob controls a pair of ganged gears 60,61 which normally transmit power from the 12 hour gear 21 to a second 24 hour gear used for actuating an alarm switch S65 and a second alarm switch S66 which is actuated approximately 10 minutes after switch S65. The gear 62 is made with a sufficiently wide meshing face so that it remains engaged when the knob 14 is pulled. By pulling, the gear 61 is engaged with an alarm indicator gear 63 and the indicator hand 58 is caused to rotate around a 24 hour dial (FIG. 1). On the gear 62 is a cam 65 which actuates the switches S65, S66, as it rotates. By pulling the knob 14 and turning the gears 60, 61, the relative position of the gear 62 and the indicator hand 58 are altered without changing the position of the 12 hour gear 21. When returned to its normal position, the knob 14 causes the normal power train from the 12 hour gear 21 to be reengaged, with the cam 65 of the gear 62 at a new relative position as indicated by the hand 58.

A similar cam 66 is carried by the 5 minute gear 55, and actuates a switch S67 described further herein.

CIRCUIT DESCRIPTION

Referring now to the schematic circuit diagram of FIG. 3, it may be seen that the circuit is broadly laid out according to its principal functions. The days of the week are each represented by one switch S49 through S55 carried on the program panel 13 of the unit, and associated with a rotary switch S68 associated with the internal clock mechanism. As shown schematically in FIG. 3, the switch S68 carries power from the 115 volt AC line sequentially through each of the contact terminals associated with the individual switches S49 through S55. The mechanism which operates switch S68 is geared to complete one revolution each 7 days, thus energizing an individual switch for one day.

The 7 day switch S68 is energized through a resistor R1 having a valve of 2500 ohms in the illustrative embodiment, causing the 115 volts AC to drop approximately 75 volts for operation of the other circuit elements of the unit. The cycle switch S56 is interposed between the 7 day switch S68 and the line voltage to allow the programmer and alarm to be entirely shut off for long periods such as when the user is on an extended trip.

From the 7 day switch S68, power transmitted through the individual switches S49 through S55 is directed to the programmer contacts S63*a* and a clock-operated switch S65 which is caused to close once in every 24 hour cycle. The switch S65 initiates the alarm sequence in which the radio is first turned on, and then the audible alarm is caused to come on a few minutes later. The indicator lamp L1 is also connected at this point to give a visual indication that the daily cycle controlled by switch S68 is on.

From the contacts S63*a* and S65 power is carried to a bridge rectifier consisting of diodes D1 through D4. The negative side of the rectifier bridge is carried to a common wire, while the positive side is directed to contacts S63*b*, ganged to contacts S63*a*. When power is directed to the rectifier bridge through the closing switch S65, it appears across the coil of contact relay CR1 through the momentarily closed contacts CR2*a* of contact relay CR2. CR1 is thus energized, closing its contacts CR1*a* and CR1*b*. The former set of contacts CR1*a* serve as holding contacts to keep CR1 energized as long as the switch S61 associated with the radio alarm switch pushbutton 15 is not opened. A short time after relay CR1 has pulled in, contacts CR2*a* are opened. Associated with CR2 are an antichatter delay capacitor C1 and a delay capacitor C2 which together furnish the desired relay action. By the time C1 is charged and relay C2 opens its contacts CR2*a* relay CR1 has pulled in and remains in this condition.

When relay CR1 is energized, it also closes its contacts CR1*b* thus completing the circuit through S62*a* to the radio and lamp sockets X3 and X4.

Approximately 10 minutes after switch S65 is closed by its associated 24 hour clock mechanism, mechanically driven switch S66 also closes. Because the circuit to the alarm portion of the unit is completed by contacts S62*b* (the programmer switch being in its off position) power is thereby directed through contacts CR4*b* of relay CR4 to another relay CR5 which acts as a buzzer. The noise-making contacts CR5*b* create a soft buzzing noise while a more penetrating alarm sound is obtainable from a conventional transformer-operated bell alarm 20. Depending upon the position of switch S60, either the buzzer or the bell alarm 20 is actuated. When S60 is in the closed condition, CR5 is pulled in and contacts CR5*a* complete the circuit through the bell alarm 20.

When the shut-off switch S64 is momentarily pressed, a circuit is completed through relay CR4 by way of diode D5. The holding contacts CR4*a* are pulled in, maintaining the alarm contacts CR4*b* in an open condition and silencing the alarm. However, the additional switch S67 is controlled by a portion of the clock mechanism (FIG. 4) which causes it to open for a few seconds at 5 minute intervals, breaking the holding circuit of relay CR4 and its contacts CR4*a*, and causing the alarm to come on again through the closing of contacts CR4*b*. This cycle is repeated until the user deliberately initiates the programmed operation of the unit rather than simply depressing the shutoff button S64.

Operation of the predetermined daily program sequence is initiated by depressing the programmer switch pushbutton 16 and actuating switch S63 and the contacts S63*a* and S63*b* associated therewith. This operation directs power through the clock-driven switch S69 which is associated with that portion of the clock mechanism which makes a complete revolution each 24 hours. Switch S69 is associated with 48 individual contact terminals which are encountered in sequence as switch S69 rotates. Each of the individual push-pull time increment selector switches S1 through S48 is associated with an individual one of the contact terminals of switch S69 according to the number and sequence of switches in the closed position, and any desired program may be thereby obtained.

From the 24 hour programmer circuit incorporating switches S1 through S48, and S69, power is carried either through switch S59 for radio operation, or through switch S57 for engaging the night lamp or the night lamp plus an alarm through switch S58. Radio operation is achieved by directing power through switch S59 to relay CR1 through switch S61. Relay CR1 thus pulls in, closing switch contacts CR1*b* and energizing the radio.

Alternately, operation of the night lamp on socket X2 is achieved through the switch S57 being in the closed position.

If it is desired to utilize the alarm in addition to the night lamp, switch S58 is closed, causing power to be directed through diode D6 to contact terminal CR4*b* and thus to the alarm elements.

It will be observed that whenever the radio is not on and the programmer is in the off condition, it will be impossible for the alarm to sound because relay CR4 is constantly energized. Current for this purpose is taken from the rectifier bridge through switch contacts S63*b* and terminals CR*a* of relay CR1 which is not energized if the radio is not playing. This prevents the alarm from being activated by the opening of switch S67 when use of an alarm is not desired and as long as S65 and S66 are closed.

As previously mentioned, the signal lamps L1 through L4 are used to indicate the operating condition of the unit. L1 indicates the presence of power from the seven day switch S68, L2 indicates power to the radio or lamp at sockets X3 and X4, L3 indicates power to the 24 hour program cycle switch S69, and L4 indicates that the override feature of switch S62 is in operation.

Override of the other elements of the control unit is performed with switch S61 in the following manner. Depressing pushbutton 15 causes switch contacts S62*a* to supply power directly to plug sockets X3 and X4 and thus to radio and lamp connected there. The switch contacts S62*b* also close, disconnecting the alarm portion of the circuit entirely, and supplying power to L4 to furnish a visual indication that the radio override feature is in operation.

When it is desired to return the radio to either the program or the radio-alarm function, pushbutton 15 is again depressed, causing the switch contacts S62*a* and S62*b* to return to their alternate positions and restoring the operational function previously existing.

The pushbutton 17 is also effective to energize the alarm momentarily as a call. This function is useful for an invalid, for example, in calling for assistance. In normal operation, when the alarm has been turned off by pressing the pushbutton 17 which controls the switch S64, the relay CR4 is pulled in and held by its holding contacts CR4*a*. Thus the contacts CR4*b* are opened, and no power is available to energize the alarm relay CR5. When the programming switch is engaged through actuation of pushbutton 16, or when the radio override function is engaged through actuation of pushbutton 15, DC power is not available at the contacts of relay CR4*b* because switches S63*b*, S62*b*, S58 and S57 are normally open unless the function controlled by that switch is in use. Thus, even though switch contacts CR4*b* are closed, there is no power to energize the alarm.

In this condition when the alarm shutoff pushbutton 17 is actuated, momentarily closing switch S64, the second set of contacts of this switch complete a circuit from one side of the AC line through the bell 20 to the other side. The bell 20 is thus caused to ring as a call. An internal transformer (not shown) is used with the bell to drop the 115 volt AC power to a lesser voltage. An auxiliary cap (not shown) could be taken from the transformer and used for energizing a remote bell if desired. Ringing of the bell 20 when shutting off the alarm after it has been triggered through program operation is not only momentary, lasting only as long as the pushbutton 17 is depressed.

It should be noted that various modifications can be made without departing from the spirit of the invention. For instance, the frame 40 of the control panel assembly may itself comprise a printed circuit board in which the wiring necessary to connect each lug 42 to its perspective terminal of switch S68 or S69 may be provided through the use of an etched copper pattern. The terminals of switches S68 and S69 may themselves be formed from the pattern on the rear of the printed circuit board which takes the place of frame member 40. The bar contact terminals 25 and 33 would then rotate in contact with that portion of the printed circuit board which comprised the switches S68 and S69. The resulting assembly would effect a considerable savings in wiring and labor costs by combining the switches S68 or S69 and the frame member 40 containing the terminal plugs into an integral unit. In another modification, the radio or other appliance plugged into socket X3 or X4 could be mounted within the same enclosure as the clock and switching mechanism to form a single integrated appliance unit.

The individual components used in constructing the exemplary embodiment of the present invention are commonly available items. The relays are simple DC relays. The lamps are all neon types, which are energized by the pulsating DC voltage. Capacitors C1 and C2 are 85 volt 3.3 microfarad types. Diodes D1 through D6 are standard IN540 diodes. Resistor R1 is a 2,500 ohm, two watt resistor.

Switch S65 remains closed for approximately 1 hour after being actuated, whereupon it again opens. S66, which closes 10 minutes after S65 closes, remains closed for approximately 40 minutes.

I claim:

1. A programmed timer comprising, in combination, a clock, a source of electrical power, an appliance connection point, a plurality of normally open time interval switches disposed in a circular pattern, continuously rotating switch closing means including an electrically energizable contact arm driven by the clock for sequentially engaging each of the interval switches in sequence and maintaining contact therewith to define a fractional time segment of an operational cycle corresponding to one revolution of the rotating means, a plurality of manually operable selector switches each being associated with an individual one of said time interval switches and capable of conduction only during the fractional time segment defined by said one switch and being disposed on a common panel, circuit means connecting said source through each of said associated time increment switches and selector switches to said appliance connection point, means for generating an audible alarm, time-setting means for triggering said alarm at a predetermined time in a 24 hour interval cycle, and shutoff means for silencing said alarm.

2. A programmed timer as defined in claim 1 having switch means for selectively energizing and deenergizing said appliance connection point independently of said time interval switches.

3. A programmed timer as defined in claim 1 in which the rotating switch closing means completes one revolution during a 24 hour interval cycle, and 48 individual time increment switches and associated manually operable selector switches are disposed on said panel to provide 48 individually selectable half-hour time segment intervals.

4. Apparatus as defined in claim 1 having a radio connected to said appliance connection point and having circuit selection means for alternately selecting operation of said radio and said alarm means in response to actuation of said 24 hour cycle switch.

5. A programmed timer comprising, in combination, a clock, a source of electrical power, an appliance connection point, 48 normally open time interval switches disposed in a circular pattern, first rotary switch closing means driven by the clock for sequentially closing each of the interval switches in sequence to define a fractional time segment of a 24 hour operational cycle corresponding to one revolution of said rotating means, 48 manually operable selector switches each being associated with an individual one of said time interval switches and disposed on a common panel to provide 48 individually selectable half-hour time segment intervals, a second rotary switch closing means driven by the clock in a 7 day operational cycle, seven normally open day interval switches disposed in a circular pattern for operation by the second rotary switch closing means each for a 1 day interval, seven additional manually operable selector switches each associated with an individual day interval switch and disposed on said panel, and circuit means connecting said source through said day interval switches each in series with its selector switch and through said half-hour time interval and selector switches to said appliance connection point.

6. A programmed timer comprising, in combination, a clock, a source of electrical power, an appliance connection point, a plurality of normally open time interval switches disposed in a circular pattern, rotary switch closing means driven by the clock for sequentially closing each of the interval switches in sequence to define a fractional time segment of an operational cycle corresponding to one revolution of the rotating means, a plurality of manually operable selector switches each being associated with an individual one of said time interval switches and being disposed on a common panel, circuit means connecting said source through each of said associated time increment switches and selector switches to said appliance connection point, means for generating an audible alarm, time-setting means for triggering said alarm at a predetermined time in a 24 hour interval cycle, alarm shutoff means including alarm relay means for deenergizing said alarm and associated with a holding circuit, and a normally open momentary contact pushbutton switch connected in series with said holding circuit and having a first and second set of contacts, said first set of contacts of said pushbutton switch being effective to energize said relay and holding circuit to open the circuit to said alarm means, and said second additional set of contacts being effective to energize said alarm means independently of said relay.

7. A programmed timer according to claim 1 wherein said common panel comprises a frame panel, a face panel spaced from the frame panel, said panels having a plurality of axially aligned holes therethrough disposed in linear array, each hole defining a station for one of said selector switches, and each selector switch including a hollow contact lug carried by said frame panel, a contact pin engageable with said lug and having an insulating handle protruding through the hole in the face panel, said pin having a detent groove, and a spring wire contact disposed in serpentine fashion alternately on one side and the other of each successive contact pin in the array, said spring wire contact being secured at one end in a terminal post, and being disposed in line with each of the detent grooves of said pins when said pins are in the engaged position within said hollow contact lugs.

8. A programmed timer according to claim 1 further including manually actuable means for generating said audible alarm independently of said clock and said selector switches, whereby said timer can at a given time be used as a signalling device.