A timer assembly is designed to operate an outside light normally operated by a toggle switch inside a residence. The assembly includes a plug casing having first and second sets of plug blades, the second set of plug blades being designed to receive normal power for the timer within the casing and one side of the first set of plug blades being connected to an outlet side of the timer. The arrangement is such that a double receptacle wall plate incorporating the outside light toggle switch can have one of its electrical outlets rewired so that when the first set of blades of the plug casing are received therein, the toggle switch will be bypassed by the timer for the time interval of its operation to thereby automatically energize the outside light.
TIMER ASSEMBLY FOR OUTSIDE LIGHT

This invention relates generally to timer circuits and more particularly to a timer assembly for operating an outside light, such as a porch light from within a residence.

BACKGROUND OF THE INVENTION

Timer circuits for operating lights or other appliances are well known in the art. Such timer circuits include a timer unit within a plug casing having an inlet connected to a set of plug blades arranged to be inserted in a conventional live electrical socket. The outlet of the timer in turn connects to a timer socket in the plug casing for receiving the plug of an appliance or a table lamp or the like. The timer is arranged to effect a connection between the plug blades and the timer socket for a given time interval depending upon its setting.

While timers of the foregoing type operate well for turning on and off inside lights and appliances, they cannot be easily used for operating an outside light since normally such outside lights do not have a plug which can be conveniently plugged into the timer socket of the timer assembly as is the case with a table lamp. Rather, such outside lights such as a porch light are normally operated by a toggle switch within the house or residence.

While timers have been specifically designed for outside lights, the problem is that exterior rewiring is necessary and further the timer itself is normally outside and thus subject to weather conditions and the like unless an elaborate weatherproof housing is provided. Moreover, it is often inconvenient for a home owner to go outside each time he wants to turn the timer.

Inside timers for outside lights have also been provided but they are normally bulky and constitute permanent installations.

BRIEF DESCRIPTION OF THE PRESENT INVENTION

Bearing the foregoing in mind, the present invention contemplates an improved timer assembly construction particularly designed for operating outside lights from within the residence and wherein the device is compact and portable and wherein only minor inside wire connections relating to the conventional toggle switch used to operate the outside light are necessary.

More particularly, the assembly comprises a plug casing having first and second sets of plug blades extending therefrom and spaced from each other at a given distance. A timer is provided in the casing having an inlet and outlet, the inlet connecting to the second set of plug blades. Also included in the plug casing is an electrical timer socket exposed on the casing and connected to the outlet of the timer such that energy from the second set of plug blades is supplied to the timer socket during a predetermined time interval as set by the timer when the second set of plug blades is plugged into a live electrical outlet.

Interconnecting means are provided in the plug casing connecting one side of the first set of plug blades to the positive side of the timer outlet and the other side of the first set of plug blades to the negative input to the timer whereby the first set of blades can be connected to bypass an outside light switch and thereby turn on an outside light during the time interval.

With respect to the foregoing, the outside light switch normally takes the form of a toggle switch incorporated in a wall plate including first and second electrical outlets, the first and second outlets connecting across positive and negative electrical power lines. The wiring in this wall plate can very easily be rearranged by removing the negative connection to the negative power line from one side of the first electrical outlet and connecting it to that side of the toggle switch passing to the outside light and connecting the former positive connection of the other side of the first electrical outlet to the negative power line so that the first electrical outlet is in parallel with the outside light.

By making the given distance between the first and second sets of plug blades in the timer plug casing equal to the distance between the first and second electrical outlets in the wall plates, the first and second sets of blades may be simultaneously received in the first and second electrical outlets. It will then be appreciated that during the time interval that the timer passes energy from the second set of blades to the timer socket, the first set of blades effectively bypasses the toggle switch so that the outside light is turned on during the time interval.

Since the toggle switch itself is not rewired in any way, it can be operated in the usual manner to override the timer.

BRIEF DESCRIPTION OF THE DRAWINGS

A better understanding of the invention will be had by now referring to a preferred embodiment thereof as illustrated in the accompanying drawings in which:

FIG. 1 is a front elevational view partly schematic in form to show electrical wiring of a conventional prior art wall plate incorporating a toggle switch for an outside light and first and second electrical outlets;

FIG. 2 illustrates a wall plate with a toggle switch and first and second electrical outlets all identical to that of FIG. 1 with the exception of a minor rewiring of the components therein in accord with a feature of the invention;

FIG. 3 is a rear perspective view of a plug casing incorporating a timer in accord with the present invention;

FIG. 4 is a rear elevational view partly schematic in form to show the internal wiring of the plug casing and timer of FIG. 3;

FIG. 5 is a side view partly in cross section illustrating the plug casing positioned in the wall plate of FIG. 2 for operation; and

FIG. 6 is a side view of the plug casing of FIG. 3 and a cooperating receptacle casing useful for converting the timer assembly into a condition for use as a conventional timer.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring first to FIG. 1, there is shown a conventional prior art wall plate 10 found in most residential homes. This plate usually includes a toggle switch 11 and first and second electrical outlets 12 and 13. The electrical connections to the available 115-volt A.C. 60-cycle power line are rendered visible in FIG. 1 although it will be understood that they are within the wall plate structure. Thus, the positive and negative power lines 14 and 15 supply power to the electrical outlets 12 and 13. The toggle switch 11 in turn is ar-
ranged to connect the positive power line 14 to lead 16 passing to one side of an outside light such as a porch light 17, the other side connecting to the negative power line 15 as shown.

With the foregoing arrangement, the outside light is readily operated by the toggle switch 11 while the electrical outlets 12 and 13 are available for any desired purpose.

In accord with the present invention and with reference to FIG. 2, the timer assembly for an outside light includes the wall plate 10, toggle switch 11 and first and second electrical outlets 12 and 13 all identical to that described in FIG. 1 except for the following: The electrical connections are changed by providing a first interconnecting means 18a in the plate 10 removing the connection to the negative power line 15 from one side of the first electrical outlet 12 and connecting it to the side of the toggle switch 11 connecting to the outside light 17. A second interconnecting means 18b removes the other side of the first electrical outlet 12 from the positive power line 14 and connects it to the negative power line 15. The wall plate 10 itself is provided with a guide hole or cavity 19 illustrated in the particular embodiment disclosed as triangular in shape. Other than these modifications, the structure is the same as in FIG. 1 as described. In this respect, the first and second electrical outlets 12 and 13 are indicated as spaced at a given distance d, and this distance is the same in the wall plates of FIGS. 1 and 2.

It will be appreciated from the foregoing that a homeowner can readily modify his presently available wall plate structure 10 by simply reworking the first electrical outlet as described with the inner connecting means 18a and 18b and then punching a small guide opening as shown at 19. Alternatively, if only a toggle switch is present, a wall plate structure as shown in FIG. 2 may simply be substituted.

Referring now to FIG. 3, the timer assembly cooperating with the wall plate described in FIG. 2, comprises a plug casing 20 having first and second sets of plug blades 21 and 22 extending therefrom and spaced from each other by the given spacing d. The front face of the plug casing 20 includes a timer dial 23 and the bottom includes a timer socket 24. Also included at the upper front portion of the casing is a pilot light 25.

Extending from the rear is a guide probe 26 of triangular cross section between the first and second sets of plug blades 21 and 22. The arrangement is such that the guide probe 26 is closer to the first set of blades than to the second set as indicated by the distances d1 and d2. By similarly spacing the guide hole 19 of FIG. 2 as indicated, it will be evident that the plug casing 20 can only have its first and second sets of blades 21 and 22 received in the first and second electrical outlets 12 and 13 respectively. In other words, the guide is 26 block insertion of the second set of plug blades 22 in the first electrical outlet 12 of FIG. 2 and the insertion of the first set of plug blades 21 in the second electrical outlet 13 of FIG. 2. The lower rear corners of the plug casing 20 may include small rubber feet 27 to aid in supporting the structure when the blades are received in the electrical outlets.

Referring now to FIG. 4, the wiring of the various elements described in FIG. 3 is illustrated. The timer itself is shown at 28 connected to be set by time setting means in the form of circumferentially rotatable pointers P1 and P2 on the front dial 23. This timer further includes inlet leads 29 connected to the second set of plug blades 22 and outlet leads 30 connected to the timer socket 24. The inlet and outlet leads 29 and 30 connect to a switch means in the form of a double pole switch s1, s2 connected to be closed by pointer P1 and opened by pointer P2 when the timer clock drive in the timer successively engages the pointers to define the set time interval. With these connections, it will be evident that when the plug casing is inserted in the wall plate 10 of FIG. 2, electrical power will be provided from the electrical outlet 13 to the second set of plug blades 22 thereby energizing the timer so that the timer socket 24 will be energized through the switch s1, s2 for the given time interval, depending upon the setting of the timer.

Further wiring within the plug casing 20 includes leads 31 and 32 connecting the pilot light 25 in parallel with the timer socket 24 so that whenever the timer socket is energized, by closure of switch s1, s2 the pilot light 25 will be energized.

A third interconnecting means 33a in the plug casing connects the positive side of the first set of plug blades 21 by way of the line 31 to the positive side of the outlet of the timer connecting to the timer socket 24. A fourth interconnecting means 33b connects the negative side of the first set of plug blades 21 to the negative plug blade of the second set of plug blades 22.

It will now be appreciated from the foregoing that when the plug casing 20 of FIG. 4 is turned over and the first set of plug blades 21 inserted into the first electrical outlet 12 of the wall plate 10 of FIG. 2 and the second set of plug blades 22 inserted in the second electrical outlet 13 the negative of the blades 21 connects to the negative line 15 via 18b and the positive of the blades 21 connects to the outside light lead 16 via 18a. It will further be appreciated that when the timer socket 24 is energized during a given time interval set into the timer, power on the lead 14 of FIG. 2 will pass via the now closed timer switch s2 and lead 31 to the plus side of the first set of blades 21 to connect to the plus side of the first electrical socket 12 thereby connecting to the outside light via lead 16 so that the outside light is energized by the timer.

Essentially, the timer completes a circuit across the first set of plug blades 21 of FIG. 4 via lead 18b in FIG. 2 when the plugs 21 and 22 are turned over and received in outlets 12 and 13 which in turn bypasses the toggle switch 11 by way of the first electrical outlet 12. It will be noted that the toggle switch 11 may be operated in a conventional manner to energize the outside light whether or not the timer is operating. Further it will be noted that in the absence of the plug casing, the outlet 12 is energized whenever the toggle switch is turned on so that a pilot light could be inserted in this outlet to indicate when the outside light is on.

FIG. 5 illustrates in side view and in partial cross section the plug casing 20 inserted into the modified wall plate 10 wherein it will be noted that the small rubber feet 27 stabilize the unit in the position shown. The same numerals in FIG. 5 designate correspondingly identified components in FIGS. 3 and 4.

Referring now to FIG. 6 there is shown the plug casing 20 as described in FIGS. 3, 4 and 5 together with a cooperating plug receptacle casing 34. The casing 34 includes first and second electrical sockets 35 and 36 spaced by the heretofore referred-to given distance d. The first electrical socket 35 constitutes a dummy socket while the second electrical socket 36 connects...
directly to a set of extending plug blades 37. A guide hole 38 is positioned to receive the guide probe 26 and small cavities 39 are provided to receive the feet 27 so that when the first and second sets of plug blades 21 and 22 are received in the first and second electrical sockets 35 and 36, a compact engagement is assured. Additional feet 40 are provided on the plug receptacle casing as shown.

The purpose for the plug receptacle casing 34 is to enable the timer in the plug casing 20 to be used as a conventional timer. Thus, by plugging in the first and second set of plug blades 21 and 22 into the respective electrical sockets 35 and 36 in the plug receptacle casing 34, the extending set of plug blades 37 may be connected into any conventional live electrical outlet to thereby energize the second set of plug blades 22 in the plug casing 20 and enable operation of the timer in a conventional manner, any suitable appliance to be operated during a given time interval being plugged into the timer socket 24. Without the provision of the plug receptacle 34, the first set of plug blades 21 and guide probe 26 would interfere with insertion of the second set of plug blades 22 of the plug casing 20 in a single live electrical outlet conventional socket.

From the foregoing description, it will thus be evident that the present invention has provided a very simple and convenient timer assembly particularly well adapted for cooperation with normally available wall plates incorporating a toggle switch and first and second electrical outlets or with such a specially designed wall plate which can be substituted for a toggle switch alone. As described, a minimum modification of the presently available wall plate wiring and wall plate itself is necessary. Moreover, by the provision of the plug receptacle 34 as described in FIG. 6, the timer assembly itself retains all the versatility of a conventional timer. Outside lights can now be timed by a portable mechanism operable from within the residence and thus the inconvenience of permanent inside installations or the rewiring outside circuits and having to go outside to operate an outside timer is eliminated.

What is claimed is:
1. A timer assembly for an outside light comprising, in combination:
   a. a wall plate including a toggle switch for turning said outside light on and off and first and second electrical outlets spaced a given distance from each other, said first and second electrical outlets normally connecting to positive and negative electrical power lines;
   b. first interconnecting means in said wall plate removing the connection to the negative power line from one side of the first electrical outlet and connecting it to the side of the toggle switch connecting to the outside light, and second interconnecting means removing the other side of the first electrical outlet from the positive power line and connecting it to the negative power line so that said first electrical outlet is in parallel with the outside light;
   c. a plug casing having first and second sets of plug blades extending therefrom and spaced from each other by said given distance, a timer in said casing having inlet and outlet leads, the inlet leads connecting to the second set of plug blades, and an electrical timer socket exposed on said casing connected to the outlet leads said timer including switch means for connecting the inlet leads to the outlet leads and time setting means connected to the switch means to close the switch means such that energy from said second set of plug blades is supplied to said timer socket during a predetermined time interval as set by said time setting means when said second set of plug blades is plugged into said second electrical outlet in said wall plate to energize the timer; and
   d. third interconnecting means in said plug casing connecting to the positive side of the outlet leads of the timer connecting to the timer socket, and a fourth interconnecting means connecting the negative side of said first set of plug blades to the negative plug blade of the second set of plug blades; said first set of plug blades being received in said first electrical outlet in said wall plate and said second set of plug blades being received in said second electrical outlet in said wall plate, whereby said outside light is automatically turned on for said predetermined time interval by said timer.

2. A timer assembly according to claim 1, in which said plug casing includes a pilot light connected in parallel with said timer socket to provide a visual indication when said outside light is on.

3. A timer assembly according to claim 1, in which said wall plate includes a guide hole between said first and second electrical outlets positioned closer to one than the other, said plug casing including a guide probe extending from between said first and second sets of plug blades positioned closer to one than the other in a manner corresponding to the positioning of said guide hole such that said guide probe can only be received in said guide hole when said first set of blades is received in said first electrical outlet and said second set of blades is received in said second electrical outlet, said guide probe blocking insertion of said second set of plug blades into said first electrical outlet and blocking insertion of said first set of plug blades into said second electrical outlet.

4. A timer assembly comprising, in combination:
   a. a plug casing having first and second sets of plug blades extending therefrom and spaced from each other at a given distance;
   b. a timer in said casing having inlet leads and outlet leads, the inlet leads connecting to the second set of plug blades;
   c. an electrical timer socket exposed on said casing connected to said outlet leads, said timer having switch means connected between said inlet and outlet leads and time setting means connected to the switch means to close the switch means such that energy from said second set of plug blades is supplied to said timer socket during a predetermined time interval as set by said time setting means when said second set of plug blades is plugged into a live electrical outlet; and
   d. interconnecting means connecting one side of said first set of plug blades to one of said timer outlet leads whereby said first set of blades can be connected in parallel with an outside light switch and thereby turn on an outside light during said time interval.

5. A timer assembly according to claim 4, including a plug receptacle casing, having first and second electrical sockets spaced from each other by said given distance for receiving respectively said first and second sets of blades on said plug casing, the first electrical
socket constituting an open circuited dummy socket; and a set of plug blades extending from said receptacle casing and electrically connected to said second electrical socket whereby said assembly may be plugged into a conventional electrical outlet and said timer operated in a conventional manner.

6. A timer assembly according to claim 4, in which said plug casing includes a pilot light connected in parallel with said output leads to said timer socket to provide a visual indication when said outside light is on.

7. A timer assembly according to claim 5 in which said receptacle casing includes a guide hole between said first and second electrical sockets positioned closer to one than the other, said plug casing including a guide probe extending from between said first and second sets of plug blades positioned closer to one of them than the other in a manner corresponding to the positioning of said guide hole such that said guide probe can only be received in said guide hole when said first set of blades is received in said first electrical socket and said second set of blades is received in said second electrical socket, said guide probe blocking insertion of said second set of plug blades into said first electrical socket and blocking insertion of said first set of plug blades into said second electrical socket.

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