May 31, 1949. G. B. LUTZ 2,471,633

ELECTRIC CIRCUIT CONTROLLER

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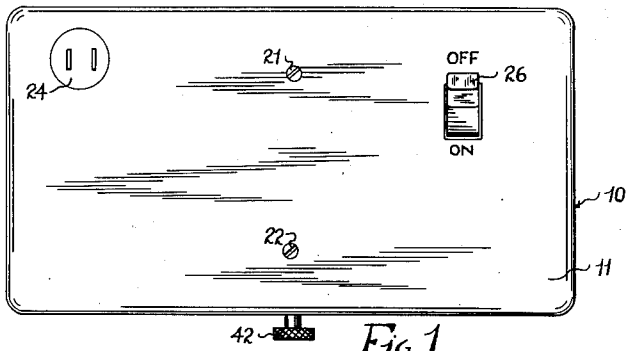


Fig. 1

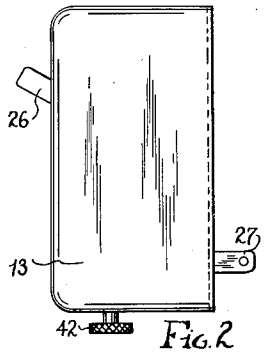


Fig. 2

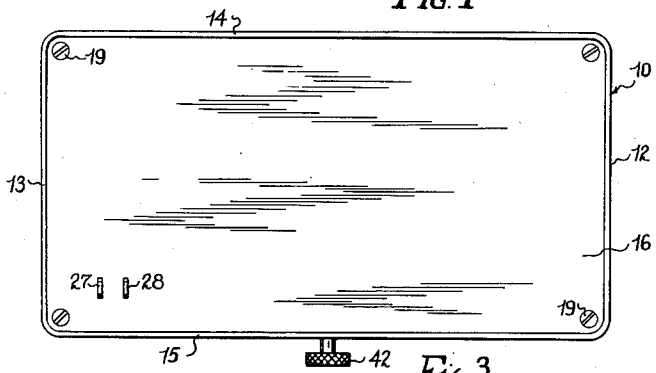


Fig. 3

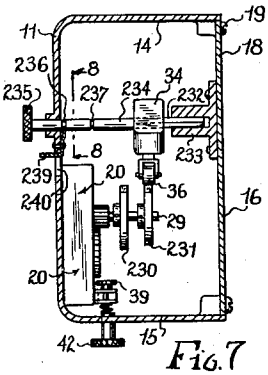


Fig. 7

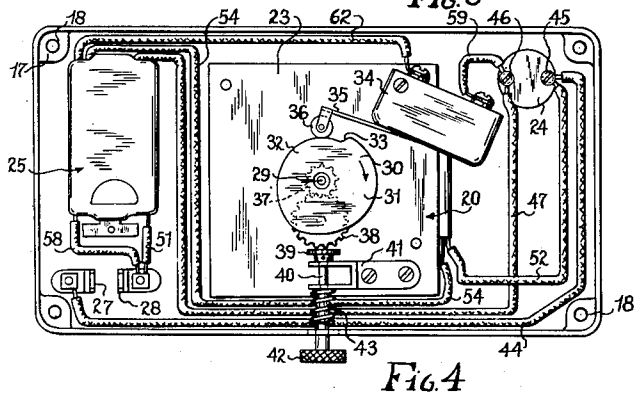


Fig. 4

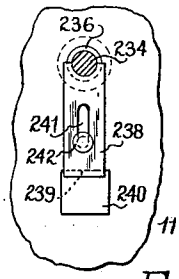


Fig. 8

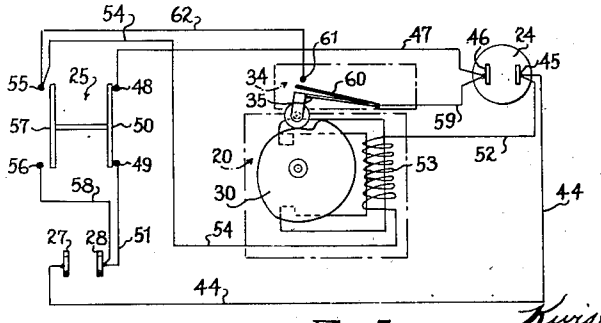


Fig. 5

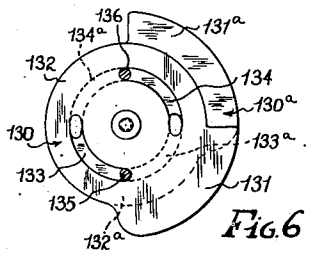


Fig. 6

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ELECTRIC CIRCUIT CONTROLLER

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19 Claims. (Cl. 171—97)

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This invention relates to an electric circuit controller and more particularly to a means for automatically opening and closing the circuit to an electric lamp or other appliance at periodic intervals.

It is a well-known fact that the presence of a light in a residence or place of business tends to discourage burglars. This is probably due to a number of factors but in the case of a store or other business place the primary deterring influence is the fact that the light renders unauthorized visitors visible to passers-by. In the case of a residence, however, the primary deterring factor is no doubt due to the belief that the light indicates that an occupant of the house may still be awake. Where, however, the same light is allowed to burn all night a burglar readily discerns this fact and is emboldened to attempt entry. If, however, the lamp be periodically switched on and off it is difficult to tell if the occupants of the residence be awake or asleep and this is especially true where different lights are turned on and off at different intervals.

It is, therefore, an object of the invention to provide a new and improved circuit controller comprising a unitary structure adapted to be connected with a conventional household outlet and which includes means for automatically periodically interrupting the circuit to a lamp or other appliance attached thereto.

In addition to its utility as a means of discouraging burglars, a light which is periodically turned on and off may be advantageously employed for advertising purposes or other uses, and a mechanism for effecting the opening and closing of the electrical circuit for a light is likewise useful for operating various other electrical appliances for predetermined time intervals.

Therefore, another object of the invention is to provide a novel and improved electric circuit controlling apparatus adapted to be connected with a source of electrical power and having means for automatically periodically opening and closing an electrical circuit for a lamp or other appliance, and also having a manually operated switch means to bypass the mechanism for periodically interrupting the circuit to the appliance and provide a continuous circuit for the appliance.

An additional object of the invention is to provide a novel and improved electrical circuit controller comprising a unitary structure adapted to be connected with an electrical outlet and having a rotatable cam means, driven by a timing mechanism, for automatically periodically

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opening and closing a circuit from the outlet to an appliance connected with said unit.

A more specific object of the invention is to provide a novel and improved electrical circuit controller of the type described in the preceeding object and in which said timing mechanism comprises a clockwork mechanism for rotating the cam means, and said unit further comprises manual switching means for rendering said clockwork mechanism inoperative and for simultaneously establishing a circuit for continuous energization of the lamp or other appliance.

A still more specific object of the invention is to provide a novel and improved electric circuit controller of the type described in the preceding objects and in which means are provided to adjust the said cam means whereby the duration of the intervals of circuit closing and circuit opening may be regulated.

It is also an object of the invention to provide an electric circuit controller of the type described in the preceding objects which is attractive in appearance, simple in operation and economical to manufacture.

The invention further resides in certain novel features, details of construction and combination and arrangements of parts, and further objects and advantages thereof will be apparent to those skilled in the art to which it pertains from the following description of the present preferred embodiment, and certain modifications thereof, described with reference to the accompanying drawing in which similar reference characters represent corresponding parts throughout several views, and in which:

Fig. 1 is a front elevational view of an electric circuit controller embodying the invention;

Fig. 2 is an end elevational view of the circuit controller illustrated in Fig. 1;

Fig. 3 is a rear elevational view of the circuit controller illustrated in Figs. 1 and 2;

Fig. 4 is a rear elevational view of the circuit controller illustrated in Figs. 1, 2 and 3 with the back cover thereof removed;

Fig. 5 is a diagrammatical view illustrating the electrical circuit of the controller;

Fig. 6 is a detached elevational view of an adjustable cam means for use in an electric circuit controller of the type illustrated in Figs. 1 to 5 to vary the duration of the intervals of circuit opening and closing;

Fig. 7 is a sectional view through a modified form of electric circuit controller in which different means are provided for varying the dura-

tion of the intervals of circuit opening and closing; and

Fig. 8 is a fragmentary sectional view taken substantially on the section line 8—8 of Fig. 7.

The present preferred embodiment of the electrical circuit controller of this invention, illustrated in Figs. 1 to 5, comprises a unitary housing or case, generally designated 10, which may be formed of plastic, plywood or other suitable material. This housing or case comprises a front panel 11, side panels or flanges 12 and 13, top panel or flange 14, bottom panel or flange 15, and a rear panel 16. Preferably, as illustrated in the drawings, the front panel 11, the side panels 12 and 13, and the top and bottom panels 14 and 15, are formed as a single unitary member and the rear corners of this member are provided with integral portions or bosses 17. Each of these bosses is provided with a threaded opening 18 for receiving a screw or other fastening means 19 for attaching the rear panel 16.

As shown in Fig. 4, the interior of the housing 10 is provided with a timing mechanism 20, which may comprise either an electrical or mechanical clockwork mechanism, the former being preferred. This timing mechanism is mounted substantially centrally of the housing, being connected to the rear face of the front panel 11 thereof by suitable means such as screws 21 and 22 which may either pass through the face of the housing, as shown, or be threaded into suitable bosses on the rear face of the panel 11 for cooperation with suitable lugs or projections upon the frame member 23 of the timing mechanism. At one side of the timing mechanism, and adjacent the top of the housing, there is mounted a conventional electrical outlet receptacle 24, the openings of which are accessible through the front panel 11 of the housing. Adjacent the other side of the timing mechanism 20 is mounted a two-way switch 25 which may be of a conventional double pole, snap-acting toggle switch provided with a toggle actuator 26 which extends through a suitable opening in the face 11 of the housing. Also connected with the rear face of the front panel 11 of the housing is a pair of terminal members 27 and 28 which are adapted to extend through suitable openings in the rear panel 16 of the housing and constitute a plug for insertion into a conventional electrical power outlet of the type normally employed in baseboards and the like.

The timing mechanism 20 is provided with an output shaft 29, which in the present instance comprises the shaft upon which the hands of the clockwork are normally mounted. The hands have, however, been removed and in their place there is attached a cam 30 which is connected for rotation by the mechanism which ordinarily moves the minute hand of the clockwork. Consequently, the cam 30 will make one complete revolution for each hour that the timing mechanism 20 is energized. As shown in Fig. 4, the cam 30 is provided with a substantially arcuate raised portion 31 extending substantially 180 degrees about its periphery, the remainder of the periphery of the cam comprising a curved portion 32, having progressively smaller radii each less than the radius of the portion 31, this portion 32 terminating in a relatively abrupt shoulder 33.

Mounted upon the frame 23 of the timing mechanism 20, adjacent the cam 30, is an electrical switch 34 which has a pair of normally open contacts. This witch, which may be of the type known as a "micro switch," is provided with a movable operating arm 35, the outer end of the arm carrying a roller 36 positioned to ride upon the periphery of the cam 30. The arm 35 is biased by means, not shown, to maintain the roller in contact with the cam and the construction is such that when the cam 30 is rotated, in the direction indicated by the arrow in Fig. 4, the roller 36 riding upon the cam moves the arm 35 to close the circuit through the switch when the roller has reached the raised portion 31 of the cam. The switch contacts are held in their closed position while the roller 36 rides upon the raised portion 31 of the cam, and are opened when the roller 36 drops down the shoulder 33 and rides upon the portion 32 of the cam.

The timing or clockwork mechanism 20 is provided with a setting means which is employed in the present apparatus for effecting adjustment of the angular position of the cam relative to the roller 36. As illustrated in Fig. 4, this setting means comprises a pinion 37 attached to the shaft 29 and meshing with an idler 38 mounted upon the outer face of the frame 23 of the clockwork mechanism. The idler 38 is adapter to be engaged by a pinion 39 which is connected with a shaft 40, and the latter is rotatably supported by a substantially U-shaped bracket 41 attached to the frame 23. The shaft 40 extends through an opening in the bottom 15 of the housing and is provided on its outer end with a knurled knob 42. Disposed between a shoulder or collar upon the shaft 40 and the lower leg of the bracket 41 is a coil spring 43 normally tending to disengage the pinion 39 from the idler 38. However, when the knob 42 is pushed inwardly against the force of the spring 43, the pinion 39 will mesh with the idler so that rotation of the knob 42 will enable the cam 30 to be angularly adjusted to a desired position.

The several elements of the circuit controller are electrically interconnected in the manner illustrated in Figs. 4 and 5. That is, the terminal or plug member 27 is connected by a wire 44 with one terminal 45 of the outlet receptacle 24 to which the lamp or other appliance is to be connected. The other terminal 46 of the receptacle 24 is connected by a wire 47 with one terminal 48 of the two-way switch 25. This terminal 48 is adapted to be connected with a terminal 49 of the switch by the movable switch blade 50 and the terminal 49 is connected by a wire 51 with the other terminal or plug member 28. Also connected with the terminal 45 is one end of a wire 52, the other end of which is connected with one end of the coil 53 of the timing or clockwork mechanism 20. The other end of the coil 53 is connected by a wire 54 with the terminal 55 of the switch 25, the terminal 55 being adapted to be connected with the terminal 56 of the switch by the second movable blade 57 thereof. The terminal 56 of the switch 25 is connected by a wire 58 to the terminal or plug member 28.

Connected with the terminal 46 of the outlet 24 is one end of a wire 59, the other end of which is connected to one end of a switch blade 60 in the switch 34. This switch blade 60 is operated by the previously mentioned arm 35 to and from engagement with a stationary contact 61. The contact 61 of the switch 34 is connected by wire 62 to the terminal 55 of the switch 25.

In operation of the circuit controller, the terminal or plug members 27 and 28 are inserted in a conventional electrical power outlet and the lamp or other appliance which is to be controlled is connected with the outlet receptacle 24 pro-

vided in the housing 10. With the two-way switch 25 positioned as shown, that is with the switch actuator 26 at the "off" position, the blade 50 of the switch is in contact with the terminals 43 and 48. Therefore a continuous circuit is provided from plug member 27 through wire 44, terminal 45, the lamp or other appliance connected to the terminals 45 and 46, the wire 47, terminal 48, switch blade 50, terminal 49 and wire 51 to the other plug member 28. Consequently, in this position of the switch 25, the lamp or other appliance is continuously energized in the same manner as though it were directly connected with the conventional outlet.

When the actuator 26 of the switch 25 is now moved to its "on" position, the switch blade 50 is moved from engagement with the terminals 48 and 49 and the switch blade 57 now engages the terminals 55 and 56. A circuit is therefore completed from the plug member 27 through the wires 44, 52, the coil 53 of the timing device 20, wire 54, terminal 55, switch blade 57, terminal 56, and wire 58 to the other plug member 28. Hence, the timing device 20 is energized causing rotation of the shaft 29 and the cam 30 carried thereby. In the position of the cam and the switch 34 illustrated in Figs. 4 and 5, the circuit to the lamp or other appliance connected to the outlet 24 is now open so that the lamp or other appliance is not energized. As the cam 30 rotates, however, the roller 36 will eventually right upon the raised portion 31 of the cam thus actuating the switch blade 60 into engagement with the contact 61 so that a circuit is completed through the appliance connected to the outlet 24, blade 60 and contact 61 of the switch 34, wire 62, terminal 55, switch blade 57, terminal 56 and wires 59 to the plug member 28. The lamp or other appliance will, therefore, remain energized until the cam has rotated sufficiently to allow the roller 36 to drop down the shoulder portion 33 of the cam thus opening the circuit by moving the blade 60 from engagement with the contact 61.

So long as the switch 25 is left in its "on" position, the lamp or other appliance will be periodically energized and de-energized by the operation of the cam 30 in moving the switch blade 60 as just described. Consequently, if a light be connected with a circuit controller, it will be illuminated for a predetermined period of time and then extinguished. By employing several such controllers for lights in different parts of the house and originally adjusting each controller, by means of the knobs 42, so that the several lights are energized at different times, the appearance is that of a person periodically moving about from room to room and turning the lights on and off.

The cam 30 may have any desired shape to provide intervals of circuit closing and opening of desired duration. Thus, a single cam may be employed to open and close a circuit several times during a single revolution, the durations of the opened and closed conditions of the circuit being either equal or unequal in length, in accordance with the shape of the cam. Moreover, while the cam has been shown as attached for rotation by the mechanism which normally moves the minute hand of the clockwork 20 so that the cam rotates once during each hour, it will be apparent that the cam could also be positioned upon the mechanism which normally moves the hour hand of the clockwork so that a complete revolution of the cam requires 12 hours.

In place of providing a single cam of fixed configuration in a circuit controller constructed

in accordance with this invention, adjustable cams of various types may be employed so that the interval of opening and closing of the circuit may be adjusted as desired. One suitable form of adjustable cam means is illustrated in Fig. 6 as comprising a pair of substantially identical cams 130 and 130*a*. Each of these cams has a raised portion 131, 131*a*, respectively, extending around substantially 90 degrees of the cam, the remaining 270 degrees of each cam being formed by an arcuate portion 132, 132*a*, respectively, of lesser radius. Each of the cams is also provided with arcuate slots 133, 134 and 133*a*, 134*a*, respectively, disposed in the quadrants adjacent to that in which the raised portions 131, 131*a* are provided. The construction is such that the two cams may be superimposed and connected together by suitable means such as bolts 135 and 136 extending through the slots 133, 133*a* and 134, 134*a*. Hence, the raised portions 131, 131*a* of the cams may be adjusted relative to each other to provide different intervals of opening and closing of the circuit when this adjustable cam means is employed in place of the cam 30 in the circuit controller illustrated in Figs. 1 to 5, the operation being otherwise the same as previously described.

Figs. 7 and 8 illustrate a modified form of circuit controller which is substantially the same as that disclosed in Figs. 1 to 5 except that the clockwork shaft 29 is here provided with two separate cams 230 and 231. In addition, the switch 34 is no longer fastened to the framework 23 of the timing or clockwork mechanism 20 but is supported by a rod 232 which has a polygonal cross section and is slidably received in a correspondingly shaped opening of a bracket or boss 233 attached to, or integral with, the rear cover or panel 16 of the housing 10. The switch 34 is therefore supported for cooperation with either of the cams 230 or 231, the switch being retained from rotation by the polygonally shaped rod 232. Alternatively, the switch may be supported by a pair of spaced rods slidably received within openings in suitable brackets or bosses. If more than one supporting rod be employed the rods and openings may be cylindrical.

The forward face of the switch 34 is provided with a rod 234 which extends through the front face 11 of the housing, the outer end of the rod being provided with a knob 235. The rod 234 is provided, intermediate its ends, with a pair of spaced grooves 236 and 237 which are spaced a distance equal to the spacing of the cams 230 and 231. Attached to the rear face of the front panel 11 of the housing is a slidable latch or detent member 238 which is here illustrated as having a thickness substantially equal to the thickness of the grooves 236 and 237, the upper end of the detent having a substantially semicircular opening adapted to surround the reduced portion of the shaft 234 formed by the grooves 236 and 237. The lower portion of the latch or detent 238 has a forwardly extending flange or projection 239 extending through an opening 240 in the front of the housing and the vertical portion of the detent 238 has an elongated slot 241 through which passes a fastening means 242 by which the detent is connected with the rear face of the front panel 11. This fastening means may include a spring washer or the like, if desired, to increase the friction between the detent 238 and the surface of the housing.

The construction of this form of the controller is such that, with the parts in the positions illus-

trated in Fig. 7, the roller 36 of the switch 34 is positioned to ride upon the surface of the cam 231, the switch being held in this position by the engagement of the detent 238 with the groove 236 of the shaft 234. When it is desired to have the switch 34 operated by the cam 230, the projection 239 of the latch 238 is moved downwardly within the opening 240 thus disengaging the latch from the groove 236. The knob 235 is then grasped and pulled forwardly with respect to the housing 10 until the groove 237 aligns with the latch 238 and the latter is then raised into engagement with the groove 237 by manipulation of the projection 239. The operation of this form of the controller is otherwise the same as that described for the embodiment illustrated in Figs. 1 to 5 and hence need not be repeated. In place of the slidable detent or latch 238 it will be apparent that a flexible spring detent or latch may be employed, the movement of the rod 234 then being effected by simply grasping the knob 235 and moving the rod 234 longitudinally, the detent flexing sufficiently to disengage it from one groove and to automatically re-enter the other groove when properly positioned as will be readily understood. Also, while two cams of fixed configuration have been disclosed in this embodiment, it will be apparent a greater number may be employed and/or the cams may be adjustable in the manner disclosed in Fig. 6.

While the invention has been described primarily with reference to its use in controlling the circuit for a light it will be readily apparent that it can be employed for controlling the circuit to other devices such as irons, heaters, and the like. Hence, the term appliance is used in the subjoined claims in a generic sense to include both lamps and other electrical devices.

Although a preferred embodiment and certain modifications of the invention have been described in considerable detail, it will be apparent that various other modifications, adaptations and utilizations of the device may be effected by those skilled in the art to which the invention pertains. Therefore the invention is not to be considered as limited to the specific details of construction or uses herein illustrated and described but only as required by the spirit and scope of the appended claims.

Having thus described the invention, I claim:

1. An electrical circuit controlling apparatus of the type described comprising a two-way electrical switch; a timing mechanism; an electrical switch operatively associated with said timing mechanism to be periodically opened and closed thereby; and electrically conductive means adapted to connect a source of electrical power in series with an electrical appliance through one-half of said two-way switch, and to connect said appliance in series with the source of electrical power through said second-mentioned switch and the other half of said two-way switch; whereby operation of said two-way switch to one position thereof provides a continuous energizing circuit for the appliance, and operation of said two-way switch to the other position thereof provides an energizing circuit for the appliance which is periodically opened and closed by said second-mentioned switch under control of said timing mechanism.

2. An electrical circuit controlling apparatus of the type defined in claim 1 and further comprising adjustable means for varying the periodical opening and closing of said second-mentioned switch by said timing mechanism.

3. An electrical circuit controlling apparatus of the type described comprising a two-way electrical switch; a clockwork mechanism; rotatable cam means driven by said clockwork mechanism; an electrical switch having an operating means adapted to be actuated by said cam means to periodically open and close a circuit; and electrically conductive means adapted to connect a source of electrical power in series with an electrical appliance through one-half of said two-way switch, and to connect said appliance in series with the source of electrical power through said second-mentioned switch and the other half of said two-way switch; whereby operation of said two-way switch to one position thereof provides a continuous energizing circuit for the appliance, and operation of said two-way switch to the other position thereof provides an energizing circuit for the appliance which is periodically opened and closed by said second-mentioned switch under control of said timing mechanism.

4. An electrical circuit controlling apparatus of the type defined in claim 3 and in which said cam means is adjustable whereby the actuation of said second-mentioned switch may be varied.

5. An electrical circuit controlling apparatus of the type defined in claim 3 and in which said clockwork mechanism is electrically operated and is connected in series with the source of electrical power through said other half of said two-way switch whereby the clockwork mechanism is operated only when the appliance is to be periodically energized.

6. An electrical circuit controlling apparatus of the type defined in claim 3 and in which said cam means includes a plurality of axially spaced cams and the apparatus further comprises means to selectively position the said operating means of said second-mentioned switch for actuation by a selected one of said cams.

7. An electric circuit controller of the type described comprising a unitary housing; a pair of electrically conductive members carried by said housing and adapted to be connected with a source of electrical power; an eletrical outlet in said housing; a two-way electrical switch in said housing; a timing mechenism in said housing; an electrical switch in said housing operatively associated with said timing mechanism to be periodically opened and closed thereby; a first electrical circuit connecting said members, said outlet and one-half of said two-way switch in series; and a second electrical circuit connecting said members, said outlet, said second-mentioned switch and the other half of said two-way switch in series; whereby connection of said members to a source of electrical power and operation of said two-way switch to one position thereof provides a continuous circuit for energizing an electrical appliance connected with said outlet, and operation of said two-way switch to the other position thereof provides an energizing circuit for the appliance which is periodically opened and closed by said second-mentioned switch under control of said timing mechanism.

8. An electric circuit controller of the type defined in claim 7 and further comprising adjustable means for varying the periodical opening and closing of said second-mentioned switch by said timing mechanism.

9. An electric circuit controller of the type described comprising a unitary housing; a pair of electrically conductive members carried by said housing and adapted to be connected with a source of electrical power; an electrical outlet

in said housing; a two-way electrical switch in said housing; a clockwork mechanism in said housing; rotatable cam means driven by said clockwork mechanism; an electrical switch in said housing having an operating means adapted to be actuated by said cam means to periodically open and close a circuit; a first electrical circuit connecting said members, said outlet and one-half of said two-way switch in series; and a second electrical circuit connecting said members, said outlet, said second-mentioned switch and the other half of said two-way switch in series; whereby connection of said members to a source of electrical power and operation of said two-way switch to one position thereof provides a continuous circuit for energizing an electrical appliance connected with said outlet, and operation of said two-way switch to the other position thereof provides an energizing circuit for the appliance which is periodically opened and closed by said second-mentioned switch under control of said clockwork mechanism.

10. An electric circuit controller of the type defined in claim 9 and in which said cam means is adjustable whereby the actuation of said second-mentioned switch may be varied.

11. An electrical circuit controller of the type defined in claim 9 and in which said clockwork mechanism is electrically operated and is connected in series with the said members through said other half of said two-way switch whereby the clockwork mechanism is operated only when the appliance is to be periodically energized.

12. An electrical circuit controller of the type defined in claim 9 in which said cam means include a plurality of axially spaced cams, the said controller further comprising means to selectively position the said operating means of said second-mentioned switch for actuation by a selected one of said cams.

13. An electric circuit controller of the type described comprising a unitary housing; an electrical plug carried by said housing and projecting therefrom for connection with an electrical power outlet; an electrical outlet mounted in said housing and accessible from the exterior thereof; a two-way electrical switch in said housing and having an operating member extending exteriorly of said housing; a timing mechanism in said housing; an electrical switch in said housing operatively associated with said timing mechanism to be periodically opened and closed thereby; a first electrical circuit connecting said plug, said outlet in said housing and one-half of said two-way switch in series; and a second electrical circuit connecting said plug, said outlet in the housing, said second-mentioned switch and the other half of said two-way switch in series; whereby insertion of said plug in an electrical power outlet and operation of said two-way switch to one position thereof provides a continuous circuit for energizing an electrical appliance connected with said outlet in the housing, and operation of said two-way switch to the other position thereof provides an energizing circuit for the appliance which is periodically opened and closed by said second-mentioned switch under control of said timing mechanism.

14. An electric circuit controller of the type described comprising a unitary housing; an electrical plug carried by said housing and projecting therefrom for connection with an electrical power outlet; an electrical outlet mounted in said housing and accessible from the exterior thereof; a two-way electrical switch in said housing and

having an actuating member extending exteriorly of said housing; a clockwork mechanism in said housing; rotatable cam means connected for rotation by said clockwork mechanism; an electrical switch in said housing having an operating means adapted to be actuated by said cam means to periodically open and close a circuit; a first electrical circuit connecting said plug, said outlet in the housing, said second-mentioned switch and the other half of said two-way switch in series; whereby insertion of said plug in an electrical power outlet and operation of said two-way switch to one position thereof provides a continuous circuit for energizing an electrical appliance connected with said outlet in the housing, and operation of said two-way switch to the other position thereof provides an energizing circuit for the appliance which is periodically opened and closed by said second-mentioned switch under control of said clockwork mechanism.

15. An electric circuit controller of the type defined in claim 14 and in which said cam means is adjustable whereby the actuation of said second-mentioned switch may be varied.

16. An electric circuit controller of the type defined in claim 14 and in which said clockwork mechanism is electrically operated and is connected in series with the said plug through said other half of said two-way switch whereby the clockwork mechanism is operated only when the appliance is to be periodically energized.

17. An electric circuit controller of the type defined in claim 14 and in which said cam means includes a plurality of axially spaced cams, the said controller further comprising means to selectively position the said operating means of said second-mentioned switch for actuation by a selected one of said cams.

18. An electrical circuit controller comprising a manually operable switching means including a movable conductive means and spaced stationary electrical contacts adapted to be selectively engaged by said movable means to provide two independent paths for electrical power through the said switching means, a first electrical circuit including electrical conductors adapted to connect an electrical appliance in series with a source of electrical power through one of said independent paths therefor of the switching means when the movable means is actuated to one position, and a second electrical circuit including a periodically operated switch and electrical conductors adapted to connect the said electrical appliance in series with said source of electrical power through the other of said independent paths therefor of the switching means when the movable means is actuated to another position, whereby the said appliance may be selectively continuously energized through said first circuit or periodically energized through said second circuit.

19. An electrical circuit controller comprising a manually operable switching means including a movable conductive means and spaced stationary electrical contacts adapted to be selectively engaged by said movable means to provide two independent paths for electrical power through said switching means, a first electrical circuit including electrical conductors adapted to connect an electrical appliance in series with a source of electrical power through one of said independent paths therefor of the switching means when the movable means is actuated to one position, an electrically operated timing device, an electrical switch periodically operated by said timing

device, a second electrical circuit including electrical conductors adapted to connect the said electrical appliance in series with said source of electrical power through the periodically operated switch and the other of said independent paths of the switching means, and other electrical conductors adapted to connect said electrical timing device to said source of electrical power through the said other path of said switching means and in parallel with said periodically operated switch and appliance, whereby the said appliance may be selectively continuously energized through said first circuit or periodically energized through said second circuit and the said timing device is operated only when the appliance is connected for periodic energization.

GEORGE B. LUTZ.

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