

Feb. 24, 1970

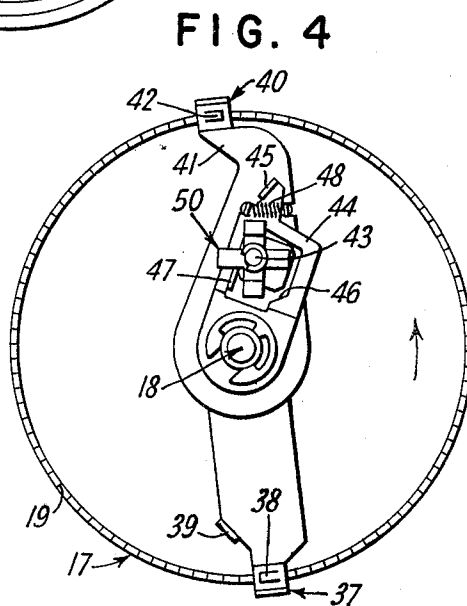
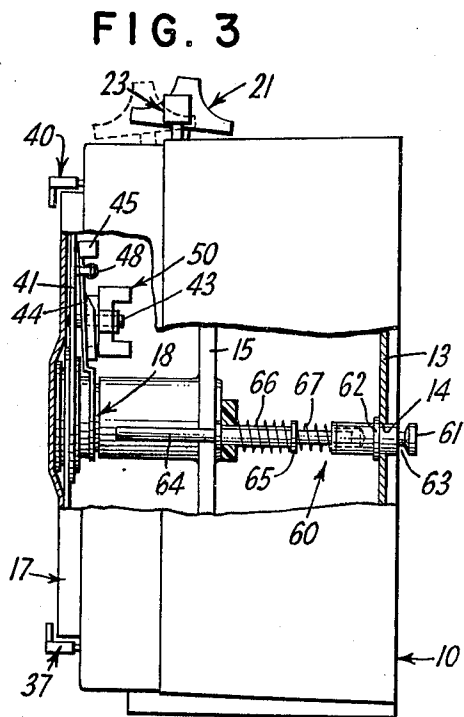
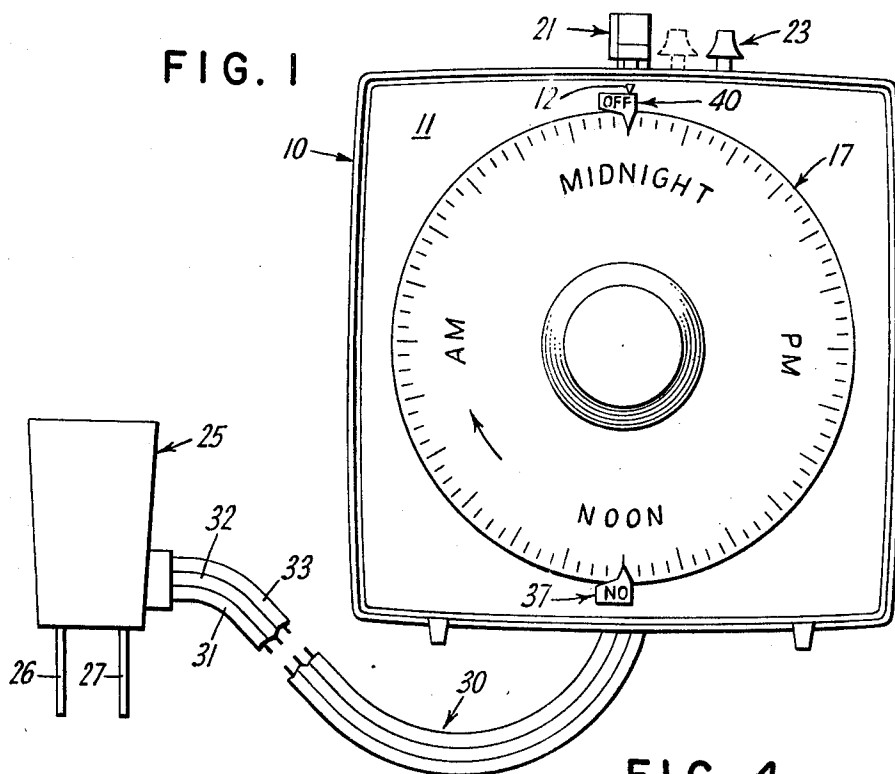
R. D. RULSEH ET AL

3,497,645

OPTIONAL AUTOMATICALLY VARIABLE SWITCH OPERATING MEANS

Filed March 21, 1968

3 Sheets-Sheet 1



INVENTORS
 ROGER D. RULSEH
 CLAUDE V. KOCH
 BY *Charles J. Worth*
 AGENT

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R. D. RULSEH ET AL

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OPTIONAL AUTOMATICALLY VARIABLE SWITCH OPERATING MEANS

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FIG. 2

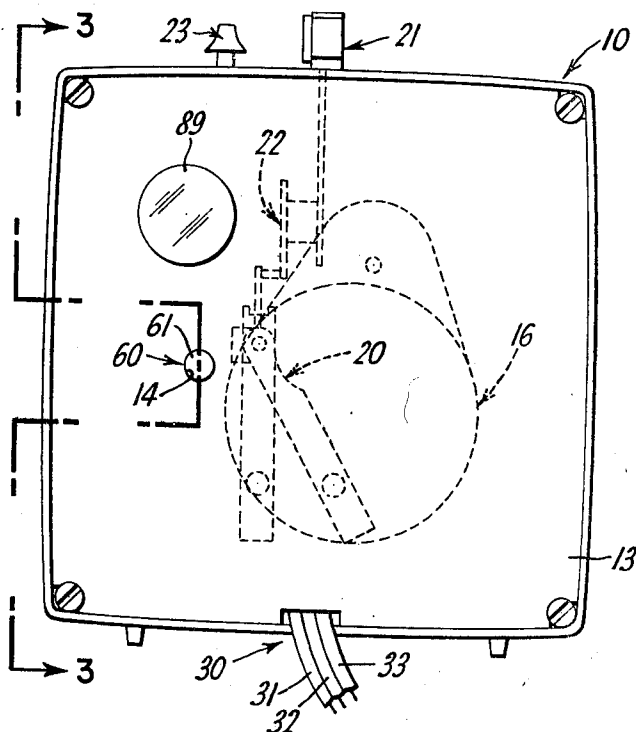


FIG. 6

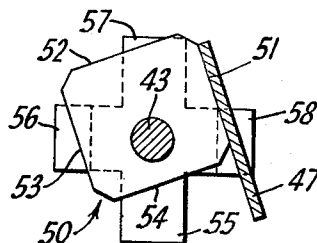


FIG. 5

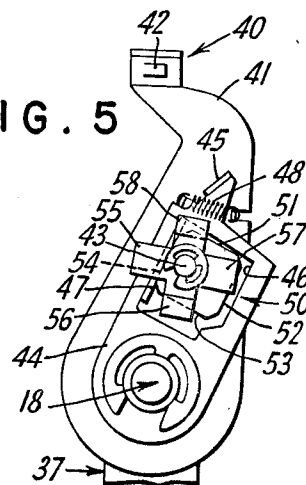


FIG. 5A

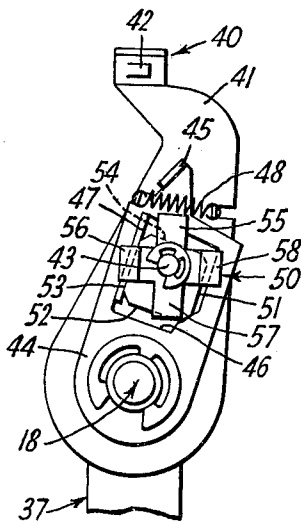


FIG. 5B

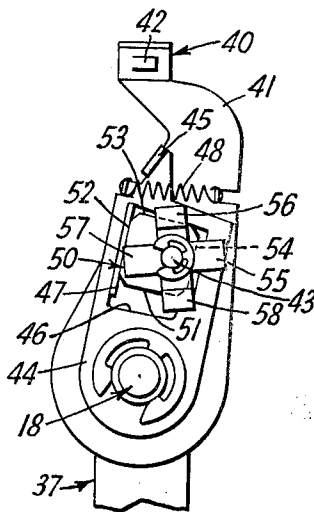
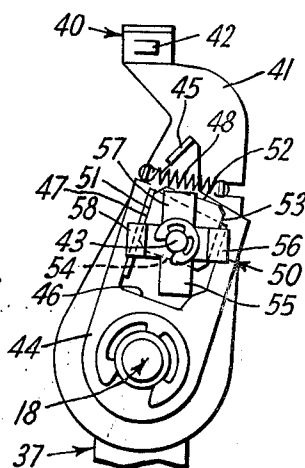


FIG. 5C



INVENTORS
ROGER D. RULSEH
CLAUDE V. KOCH

BY

Charles J. Smith

AGENT

Feb. 24, 1970

R. D. RULSEH ET AL

3,497,645

OPTIONAL AUTOMATICALLY VARIABLE SWITCH OPERATING MEANS

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FIG. 7

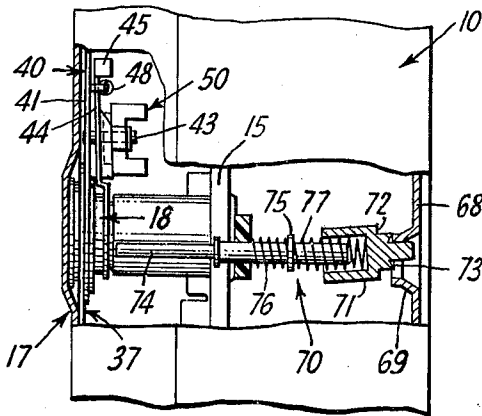


FIG. 9

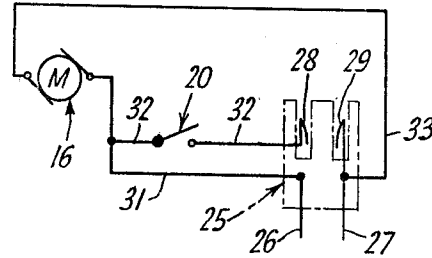


FIG. 9A

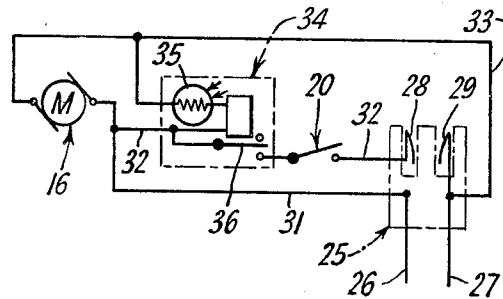
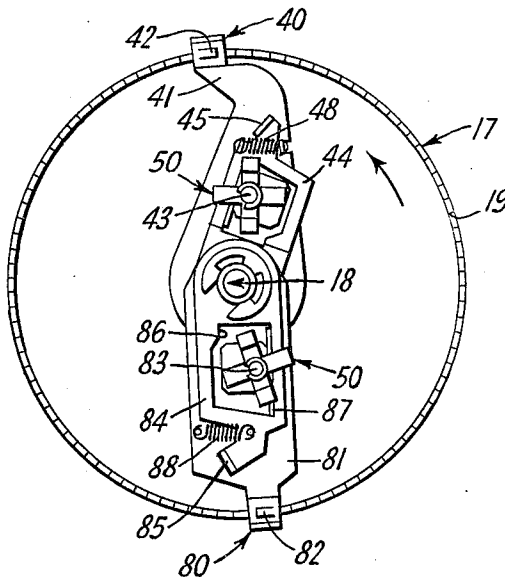


FIG. 8



INVENTORS
ROGER D. RULSEH
CLAUDE V. KOCH
BY *Charles J. Swartz*
AGENT

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3,497,645

OPTIONAL AUTOMATICALLY VARIABLE SWITCH OPERATING MEANS

Roger D. Rulseh and Claude V. Koch, Two Rivers, Wis.,
assignors to American Machine & Foundry Company, a
corporation of New Jersey

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Int. Cl. H01h 7/05, 43/10

U.S. Cl. 200—38

14 Claims

ABSTRACT OF THE DISCLOSURE

A repetitively operable time switch control having means for presetting the ON and OFF operating times defining the operating period thereof, and selectively operated means for causing at least one operation time to change relative to its preset time between sequential operating periods to provide repetitive operating periods which are programmed to vary from one another.

This invention relates generally to time oriented devices and more particularly to improvements in time oriented switch controls which are manually and automatically operable.

Time oriented switch controls of this general type are shown, described and claimed in U.S. Patent 3,260,807 granted July 12, 1966 to Rulseh et al. and assigned to the same assignee as is the present application. Such switches in accordance with the foregoing patent are particularly adapted for controlled operation, both manually and automatically, of devices found in the home.

One such use is to provide home lighting in the absence of occupants for intrusion deterrence. However, it has been found that such lighting has only a limited effect when it is programmed to turn ON and OFF, repetitively, at the same time day after day.

Accordingly, an object of this invention is to provide a manually and automatically operable time controlled switch or time oriented switch control with means for varying the time period of operation during automatic repetitive operation thereof.

Another object of the present invention is to provide a manually and automatically operable switch or switch control in which ON actuation and OFF actuation are each preset to occur at a specific time of a twenty four hour day, and has means optionally effective during automatic operation to cause one such actuation time to change with each succeeding period of repetitive operation.

And another object of the present invention is to provide the foregoing switch or switch control in which the OFF actuation time varies.

Still another object of the present invention is to provide the foregoing switch or switch control in which the ON actuation time also varies during repetitive operation.

The present invention contemplates a time switch control including an electrical switch, switch actuator means being operable to a first position opening said switch and to a second position closing said switch, a time controlled means automatically operating said actuator means from said first position to said second position, another time controlled means automatically operating said actuator means from said second position to said first position, said time controlled means each being manually adjustable to preset the time when it operates said actuator means, at least one of said time controlled means including positionable means engaging said actuator means for operation thereof, said positionable means having an on time position and being disposed thereat to engage said actuator means at the preset time of said one

of said time controlled means, and means for moving said positionable means to one of a plurality of other preselected positions between two sequential operations of said actuator means by said one of said time controlled means to vary the preset time thereof according to a preselected program during repetitive operation of said time switch control.

The foregoing and other objects and advantages will appear more fully hereinafter from a consideration of the detailed description which follows, taken together with the accompanying drawings wherein several embodiments of the invention are illustrated by way of example. It is to be expressly understood, however, that the drawings are for illustration purposes only and are not to be construed as defining the limits of the invention.

FIGURES 1 and 2 are front and rear elevational views, respectively, of a timer made in accordance with the present invention,

FIGURE 3 is a side elevational view, partly in section, taken on line 3—3 to show means for automatically actuating the trip positioning means,

FIGURE 4 is a rear elevational view of the dial and switch trip arm assemblies,

FIGURES 5, 5A, 5B and 5C are enlarged elevational views of the automatically adjustable trip arm assembly initially as shown in FIGURE 4 and the trip adjusting means progressively repositioned,

FIGURE 6 is a further enlarged front view of the cam of the trip positioning means of FIGURES 5 to 5C,

FIGURE 7 is a view similar to FIGURE 3 to show a modified actuating means,

FIGURE 8 is a view similar to FIGURE 4 illustrating the embodiment of two automatically adjustable trip arm assemblies, and

FIGURES 9 and 9A are circuit diagrams of the time without and with light responsive means, respectively.

Inasmuch as the basic time switch construction and operation is fully disclosed in the aforementioned Patent 3,260,807, the parts thereof are shown and discussed herein only to the extent necessary for a complete understanding of the present invention.

Referring now to the drawings, and particularly to FIGURES 1 and 2, a time switch or time switch control in accordance with the present invention is provided with a casing 10 which is open at its back and has a front wall 11 with a time indicator 12, as shown. A plate or wall member 13 is connected to the casing 10 to close the open back thereof.

The usual motor or driving means 16 is provided in the casing 10 which has means 18 therein for mounting for rotation a dial 17 with a time of day indicia on its face. To set the time switch, the dial 17 is manually advanced or rotated until the proper instantaneous time is aligned opposite to the time indicator 12 and the motor means 16 rotatably drives the dial so the time switch provides a continuous time indication.

A switch means 20 and actuating means 22 therefore are provided in the case 10, as indicated in FIGURE 2. The actuating means 22 includes a lever 21 extending through the top of the casing 10 for manual operation of the switch means 20 while a lever 23 has an exposed portion adjacent the exposed portion of lever 21 and is provided to manually operate a lockout/release means (not shown) for the actuating means 22. Although not fully shown in the drawings, the switch means 20, the actuating means 22, the lockout/release means and the associated levers 21 and 23 are the same as the parts corresponding thereto which are fully disclosed in the aforementioned Patent 3,260,807.

Referring now also to FIGURES 3 and 4, a switch ON tripper assembly or time controlled means 37 with its trip trip lug 39 and a switch OFF tripper assembly

or time controlled means 40 with its trip lug 45 correspond to trippers 23 and 24, respectively, with their respective lugs 31 and 32 of the aforementioned patent. The dial 17 is provided with a rearwardly extending annular wall or flange 19 with an edge which is serrated, has ratchet teeth or is otherwise formed to provide an annular series of indents, as shown. The tripper assemblies 37 and 40 also are rotatably mounted by means 18 and have detent means 38 and 42 which engage the indents of flange 19 to provide a releasable interconnection between the dial 17 and each of the tripper assemblies 37 and 40 each having a time pointer or pointer portion which extends over the edge of the dial face, as best shown in FIGURES 1 and 3. The indents of flange 19 and the detents 38 and 42, of course, may be reversed.

To establish or preset when the switch means 20 is to be actuated, the tripper assemblies 37 and 40 are individually and manually moved to release their respective detents 38 and 42 from engagement with the indents of the peripheral wall 19, and then rotated until their respective pointers or pointer portions each indicate the desired preset actuating time. Upon release of the tripper assemblies 37 and 40, their respective detents 38 and 42 re-engage the indents of the annular wall or flange 19 and recouple the tripper assemblies to the dial 17 to be rotatably driven in unison by the motor means 16.

When the motor means 16 rotates the pointer portion of the tripper assembly 37 into alignment with the time indicator 12 on the face or front wall 11 of the case 10, the tripper lug 39 moves into engagement with the actuating means 22 causing the switch means 20 to close and provide a switch ON condition and start the operation period of the time switch control. At the end of the time switch operation period, the motor means 16 similarly has rotated the pointer portion of the tripper assembly 40 into alignment with the indicator 12. At that time, the tripper lug 45 moves into engagement with the actuating means 22 causing the switch means 20 to open and provide a switch OFF condition. Subsequently, rotation of the dial 17 and the tripper assemblies 37 and 40, as a unit, will cause repetitive time operation of the novel time switch control.

Referring now specifically to FIGURES 1 and 9, circuitry including means 30 is provided for electrically connecting the present time switch between a source of electricity (not shown) and a light source (not shown) to be timed controlled thereby. The connecting means 30 has a combination plug and socket 25 with prong contacts 26 and 27 and female contacts 28 and 29, and insulated conductors 31, 32 and 33. The conductors 31 and 33 connect the prong contacts 26 and 27, respectively, to opposite sides of the motor means 16. The female contact 28 is connected to conductor 31 across the switch means 20 by the conductor 32 while female contact 29 may be unitary with contact 27, as shown, or otherwise conductively connected thereto.

Thus current from a source (not shown) is provided to both sides of the motor means 16 by contacts 26 and 27 and their respective conductor connections 31 and 33. Simultaneously, one side of the current source is connected to the controlled light source (both not shown) while the other side of the current source is connected to the switch means 20, which is considered to be open as shown, by the contact 26 and the respective conductors 31 and 32. The other side of the switch means 20 is connected to the light source by contact 28. It should be understood that the connecting means can alternatively comprise a plug at the end of a two conductor lead with a separate socket mounted in the case 10.

With the time switch circuit as described above, the light source is OFF and the motor means 16 is rotatably driving the dial 17 and tripper assemblies 37 and 40. At a preset time, commencing the operation period of the time switch, the tripper lug 39 engages the actuating means 22 causing the switch means 20 to close and con-

nect the other side of the current source to the light source which is now ON. The motor means 16 continues to drive the dial 17 and tripper assemblies 37 and 40 and at another preset time, terminating the operation period, the tripper lug 45 engages the actuating means 22 causing the switch means 20 to re-open.

The time switch control may also include light responsive means which, in the present example for controlling a light source, would prevent a switch ON condition until daylight wanes and would insure a switch OFF condition at daybreak regardless of time controlled actuation of the switch means. As shown in FIGURE 9A, a photo control 34 has a light responsive means or photocell portion 35, and a switching means 36 which is connected in series with the switch means 20 and controlled by the photocell means. The photocell 34 may be any device having a conduction state and a non-conduction state, and assuming one such state in the absence of light and the other state in the presence of light. The photocontrol 34 is retained in the case 10 and an opening or window 89 is provided in the back plate or wall 13 for passage of light to the photocell portion 35.

Referring again to FIGURE 4, the switch ON or tripper assembly 37, like that of the aforementioned patent, is merely an arm with its time pointer portion, a detent 38 and a trip or tripper lug 39, all previously discussed herein. As set forth, the present invention is directed to varying the actuation time of the switch means 20 during repetitive operation of the time switch to provide a programmed variable switch actuating time which gives an illusion of random operation, as requirements may demand, during repetitive operation of the time switch control. It should be understood that in accordance with the environment of the novel time switch or time switch control being used herein to facilitate description, home lighting would normally be turned ON about dusk and thereafter turned OFF before dawn. Therefore, lights being turned OFF would be much more discernable than being turned ON, and varying the OFF actuation time of switch means 20 would be of greater importance.

As shown, the OFF tripper assembly 40 includes a main or primary arm 41 with its pointer portion to indicate the preset OFF actuation time and the detent 42, as previously discussed, and the OFF tripper lug 45 is provided on a follower secondary or auxiliary arm 44. To engage the switch actuating means 22 at the indicated preset time, the tripper lug 45 has a normal on time or neutral position relative to the arm 41 with its pointer portion and must be retained in this relative position to provide a constant unchanging termination of the operation period of the time switch control during repetitive operation. However, the position of the tripper lug 45 also must be changed during each revolution of the dial 17 and tripper assembly 40 to provide the desired programmed changing operation period of the time switch control. Thus, arms 41 and 44 must be capable of both remaining immovable relative to one another while rotating in unison with the dial 17, and being shifted from one relative position to another during each revolution of the dial with the assembly 40 and remaining in the shifted position until the next revolution when another position shift occurs.

To accomplish the foregoing, the main arm 41 is provided with a shaft 43 rotatably mounting a cam means 50 which extends through an opening 46 in the follower arm 44. A follower face 47 is provided at the side of the opening 46 in the direction of rotation of the assembly 40 and a spring 48, connected to the arms 41 and 44, is provided to bias the follower face 47 into engagement with the adjacent face of the cam means 50. For purposes of discussion, the cam means 50 is provided with four faces which are positioned sequentially each to engage the follower face 47 when properly positioned and shift the tripper lug 45 to a position, for only one revolution of the assembly 40, causing actuation of the

switch means 20 one half hour before or after the indicated time. The lug 45 is returned to its on time or neutral position during the next revolution of the assembly 40 and then shifted in the opposite direction during the following revolution. It should be understood, however, the number, size and time change sequence of the cam faces can be varied within the broad concepts of the present invention to provide any desired program of time variation.

Referring now to FIGURES 3 to 6, the cam means 50 has a rectangular cam portion which extends through the opening 46 and is defined by four cam faces 51 to 54, and a drive or rotor portion which is disposed rearwardly of the follower arm 44 and is defined by four abutment engaging or contacting arms 55 to 58.

As best shown in FIGURE 6, the rectangular portion of the cam means 50 defined by the faces 51 to 54 is, in this instance, substantially a square. Faces 51 and 53 are substantially parallel surfaces which are disposed on opposite sides of and are equally spaced from the shaft 43. Similarly, faces 52 and 54 are substantially parallel surfaces which are disposed on opposite sides of the shaft 43. However, face 52 is further from and face 54 is closer to the shaft 43 than are the faces 51 and 53.

The abutment contact arms of the drive or rotor portion of cam means 50 extend radially outwardly from the shaft 43 with arms 55 and 57 extending in opposite directions from each other, and being arcuately and equally spaced from the arms 56 and 58 which also extend in opposite directions from one another. The arms 55 and 57 are of substantially equal thickness throughout while arms 56 and 58 are each L-shaped with their terminal or outer end portions extending rearwardly further into the time switch control, as best shown in FIGURE 3. Alternatively, but not shown, arms 56 and 58 could be of constant thickness which is greater than the thickness of arms 55 and 57.

A positionable abutment for engaging each of the arms 55 to 58 when properly positioned is provided by a cam operating pin or plunger means or assembly 60 is shown in its disengaged or non-operative position in FIGURE 3. The assembly 60 is comprised of a pushbutton operator 61 which extends through an opening 14 in the back plate 13 and is retained from moving out of the time switch control by an annular flange 62. A pin or plunger member 64 is supported in the inner end of the pushbutton 61 and extends forwardly therefrom, toward the dial 17, through internal casing supporting structure 15. The pin or plunger 64 has an annular flange member 65 and extends through a pair of coil springs 66 and 67. Spring 66 is disposed between the structure 15 and flange 65, and biases the plunger 64 toward the pushbutton 61 or rearwardly to its non-operative position. Spring 67 is disposed between the flange 65 and pushbutton 61, and biases the flange 62 into engagement with the back plate 13.

As shown, the front end of the plunger 64, when in the disengaged or non-operative position, extends forwardly toward the dial 17 only far enough to engage the rearwardly extending end portion of leg 56 or 58 of the cam means 50 if one of said legs is in proper position as the tripper assembly 40 rotates past the plunger assembly 60. To set or position the plunger assembly 60 for operation, pushbutton 61 is pushed inwardly and offset axially until an annular groove or indent 63 engages the back plate 13 adjacent the opening 14 and retains the assembly until released. The forward movement of pushbutton 61 urges the plunger 64 to move forwardly sufficiently to engage each of the arms 55 to 58 which is properly positioned as it passes by.

A modified plunger assembly 70, as shown in FIGURE 7, illustrates the set or operative position of such plunger assemblies. The assembly 70 is provided with a pushbutton 71, a plunger 74 and springs 76 and 77 which correspond to the pushbutton 61, plunger 64 and springs

66 and 67 of the assembly 60. The plunger 74 has an annular flange 75 corresponding to the flange 65 while pushbutton 71 has annular shoulders 72 and 73 corresponding to the flange 62 and groove 63, respectively. The shoulders 72 and 73 cooperate with the edge of a dimpled opening 69 in a modified back plate 68 corresponding to the opening 13 and back plate 14, respectively, in the same manner previously discussed relative to the plunger assembly 60.

It should be understood that the plunger 64 or 74 is disposed on an axis which extends through or intersects the path of rotation of one of the arms 55 to 58 of the cam means 50 whichever is furthestmost from the supporting means 18 of the dial 17 and tripper assemblies 37 and 40. Considering now the operation of the automatic position adjusting means, the plunger 64 or 74 is held in its forward operating or engaging position by the pushbutton 61 or 71, respectively, and the cam means 50 is as shown in FIGURE 5C so the tripper lug 45 is in its neutral or normal on time position and has just engaged the actuating means 22 causing the switch means 20 to open. The present time switch control is now in its OFF condition or state.

As the tripper assembly 40 continues to advance (rotating counterclockwise as viewed in FIGURES 4, 5, 5A, 5B and 5C) and passes the plunger 64 or 74 which is engaged by the arm 57, the cam means 50 is rotated on the shaft 43 to its position as in FIGURES 4 and 5 in which the spring 48 biases the follower face 47 into contact with the cam face 54. This rotation of the cam means 50 caused the follower arm 44 and the tripper lug 45 to move relative to the arm 41 and away from the direction of rotation of the tripper assembly 40.

During this revolution of the tripper assembly 40, the arm 41 with its pointer portion will move past the time indicator 12 before the tripper lug 45 engages the actuating means 22 causing the switch means 20 to open later than during the previous revolution of the tripper assembly.

Starting the third revolution, the arm 58 is positioned to be engaged by the plunger 64 or 74 as the assembly 40 passes, causing the cam means 50 to rotate to its position as in FIGURE 5A with the cam face 53 engaged by the follower face 47. Accordingly, the follower arm 44 is moved relative to arm 41 against the bias of the spring 48 and in the direction of rotation of the tripper assembly 40 to return the tripper lug to its on time or neutral position. At the beginning of the next or fourth revolution, the arm 55 is positioned to engage the plunger 64 or 74 causing the cam means 50 to rotate to its position as shown in FIGURE 5B with the cam face 52 now engaged by the follower face 47. The follower arm 44 and lug 45 have now been further advanced relative to arm 41 and its pointer position.

The tripper lug 45 now will engage the actuating means 22 before the arm 41 with its indicating portion move into alignment with the time indicator 12 causing the switch means 20 to open earlier than the indicated preset switch actuating time. To start the following or fifth revolution, the arm 56 is positioned to be engaged by the plunger 64 or 74 as the tripper assembly 40 passes by causing the cam means 50 to rotate and reassume its position as shown in FIGURE 5C.

Assume the cam means 50 is in its position as shown in FIGURE 5A or 5C when the pushbutton 61 or 71 is released permitting the plunger 64 or 74 to move rearwardly out of its operative position to its non-operative position. As the tripper assembly 40 passes, the plunger 64 or 74 will fail to engage the arm 55 or 57, whichever is furthestmost from the support means. Therefore, the cam means 50 will not be rotated and the tripper lug 45 will remain in its on time or neutral position.

If, however, cam means 50 is in its position as shown in FIGURE 5 or 5C with tripper lug 45 in its position lagging or leading the arm 41 with its pointer portion

when the pushbutton 61 or 71 is released, the plunger 64 or 74 will engage the enlarged end of the arm 58 or 56, whichever is furthestmost from the supporting means 18. Accordingly, the cam means 50 will be rotated to its position as shown in FIGURE 5A or 5C and the tripper lug 45 will return to its on time or neutral position. It should be readily understood that regardless of its position, the tripper lug 45 will always be returned to its on time or neutral position when the novel time switch control is reset for a constant and unchanging switch OFF operation.

A changing switch ON operation can be provided by incorporating the photocontrol 34, as shown in FIGURE 9A. The switch ON time will then change with the changing time of dusk as the days become either longer or shorter.

Alternatively, the novel time control may be provided with both a programmed variable switch OFF time, as heretofore discussed, and a programmed variable switch ON time. This can be accomplished by providing, in addition to the OFF tripper assembly or time controlled means 40, an ON tripper assembly or time controlled means 80 of similar construction. As shown in FIGURE 8, the tripper assembly 80 comprises a main arm 81 with its pointer portion, a follower arm 84, a spring 88 and a cam means 50 which correspond to the arms 41 and 44, spring 48 and cam means 50, respectively, of the assembly 40. The main arm 81 is provided with a detent 82 and a cam means mounting shaft 83 while the follower arm 84 is provided with an opening 86, a follower face 87 and a tripper lug 85. Programmed operation of the tripper assembly 80 is the same as was heretofore described with respect to the tripper assembly 40.

It also should be readily understood that the novel time switch control can be further modified by retaining the ON tripper assembly 80 and by replacing the OFF tripper assembly 40 by a tripper assembly (not shown) corresponding in construction to the tripper assembly 37, or the trip arm 24 with its detent 29, trip lug 32 and pointer 30 shown in FIGURE 3 of the aforementioned Patent 3,260,807.

Although several embodiments of the invention have been illustrated and described in detail, it is to be expressly understood that the invention is not limited thereto. Various changes may be made in the design and arrangement of the parts without departing from the spirit and scope of the invention as the same will now be understood by those skilled in the art.

We claim:

1. In a time switch control, the combination comprising:
 - an electrical switch means;
 - switch actuator means operable to a first position opening said switch means and to a second position closing said switch means;
 - time controlled means automatically operating said actuator means to said first position at a selected preset time and to said second position at another selected preset time, and being manually adjustable independently to each preset time as selected;
 - said time controlled means including at least one positionable means engaging and operating thereby said actuator means to one of said positions at one of said preset times;
 - said positionable means having a plurality of preselected positions, and being disposed to engage said actuator means at said one of said preset times when in a selected one of said positions and at a different preselected time relative to said one of said preset times when in each of the other of said positions; and
 - positioning means causing said positionable means to move in a predetermined sequence from one of said positions to another when said actuator means is

repeatedly engaged by said positionable means during repetitive operation of said time switch control.

2. The time switch control in accordance with claim 1, wherein:

said positioning means is manually adjustable between an operating condition in which said positionable means is caused to move in said predetermined sequence, and a non-operating condition in which said positionable means is caused to assume and remain in said selected one of said positions during repetitive operation of said time control means.

3. The time switch control in accordance with claim 2, and:

photocontrol means having a conducting state in the absence of a predetermined amount of light and a non-conducting state in the presence of a predetermined amount of light;

said photocontrol and switch means being electrically connected in series; and

said one of said positions which said actuator means is operated to by said positionable means is first position opening said switch means.

4. The time switch control in accordance with claim 2, and:

said time controlled means including two tripper means each having a pointer portion indicating on a time indicia a different one of said preset times;

one of said tripper means having a tripper portion movable relative to said pointer portion thereof and providing said positionable means;

the other of said tripper means having a tripper portion positioned relative to said pointer portion thereof and engaging said actuator means for operation thereby at said preset time as indicated by said pointer portion; and

said tripper portions engaging said actuator means each to a different one of said first and second positions.

5. The time switch control in accordance with claim 4, and:

said one of said tripper means including two members movable relative to one another; and

said pointer and tripper portions each being provided by a different one of said two members.

6. The time switch control in accordance with claim 5, and said positioning means including:

a follower face provided by one of said two members; cam means movably on the other of said two members, having a plurality of cam faces for engaging said follower face and a plurality of arm portions each corresponding to a different one of said cam faces; spring means connected to said members and biasing said follow and the adjacent one of said faces into engagement;

at least one of said cam faces being provided to engage said follower face and move said positionable tripper portions to each of its positions and each of said arm portions being positioned for engagement when its corresponding cam face engages said follower face;

abutment means for engaging each of said arm portions when positioned for engagement; and

said abutment and cam means being movable relative to one another causing engagement between said abutment means and said arm portion positioned therefor to move another of said cam faces into engagement with said follower face.

7. The time switch control in accordance with claim 6, and:

said abutment means includes an abutment member manually movable between an operating position for such engagement of all of said arm portions, and a non-operating position whereby said abutment member is in a non-engaging position relative only to each arm portion corresponding to a cam

face for moving said positionable tripper member to said selected one of said positions.

8. The time switch control in accordance with claim 2, and:

a casing having means for mounting and rotatably driving said time controlled means;
said switch means and said switch actuator means being disposed in said casing;
a dial means and two tripper means providing said time controlled means;
means for coupling said dial and two tripper means together for rotation and being releasable for manually positioning each of said tripper means relative to said dial for providing a different one of said preset times;

one of said tripper means having a pointer portion indicating one of said preset times therefor on said dial means, and a tripper portion positioned relative to said pointer portion and engaging said actuating means for operation thereof at the indicated preset time during each revolution of said time controlled means;

the other of said tripper means having a pointer portion indicating the other of said preset times therefor, and a movable tripper portion providing said positionable means and engaging said actuator means at a time relative said other of said preset time during each revolution of said time controlled means in accordance with the position of said movable tripper portion.

9. The time switch control in accordance with claim 8, and:

said other tripper means having cam means positioning said movable tripper portion relative to said pointer portion thereof and changing the relative position during each revolution of said time controlled means that said cam is operated; and positionable abutment means disposed in said casing for operating said cam means;

said cam and abutment means providing said positioning means.

10. The time switch control in accordance with claim 9, and:

said tripper means having an arm providing said movable tripper portion, and another arm providing said pointer portion and being releasably coupled to said dial means;

a cam rotatably mounted on one of said arms, having a plurality of cam faces and an arm portion corresponding to each of said faces;

a follower face being provided by the other of said arms and with said cam forming said cam means;

spring means connected to said arms biasing said follower and the adjacent one of said cam faces into engagement;

at least one of said cam faces being provided to cause said movable tripper portion to assume a different one of said positions therefor when engaging said follower face; and

each of said arm portions being positioned for engagement by said abutment means when said corresponding cam face engages said follower face.

11. The time switch control in accordance with claim 10, and said abutment means comprising:

an abutment member mounted for movement to a first position when said positioning means is in an operating condition and in a second position when said positioning means is in a non-operating condition;

said abutment member in said first position extending into the path of movement of all of said arm portions each when positioned for engagement thereby, and in said second position being out of the path of movement of each of said arm portions positioned for engagement thereby and corresponding only to one of said cam faces causing said positionable tripper portion to assume said selected one of said positions for operation of said actuator means thereby at said other of said preset times.

12. The time switch control in accordance with claim 11, and further comprising:

a photocontrol means disposed in said casing and electrically connected in series with said switch means; said photocontrol having a conducting state in the absence of a predetermined amount of light and a non-conducting state in the presence of a predetermined amount of light; and

said casing providing means for passage of available light to said photocontrol means.

13. The time switch control in accordance with claim 1, and:

said time controlled means including another positionable means engaging and operating thereby said actuator means to the other of said positions at the other of said preset times;

said other positionable means having a plurality of preselected positions, and being disposed to engage said actuator means at said other of said preset times when in a selected one of said positions and at a different preselected time relative to said other of said preset times when in each of the other of said positions; and

said positioning means causing said other positionable means to move in a predetermined sequence from one of said positions to when said actuator means is repeatedly engaged by said other positionable means during repetitive operation of said time switch control.

14. The time switch control in accordance with claim 13, wherein:

said positioning means is manually adjustable between an operating condition in which each of said positionable means is caused to move in its predetermined sequence, and a non-operating condition in which each of said positionable means is caused to assume and remain in its said selected one of said positions during repetitive operation of said time switch control.

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