Dec. 7, 1926.

J. A. VINCENT

1,610,187

TIME CONTROLLED SWITCH

Filed April 5, 1926

2 Sheets-Sheet 1

Fig. 1.

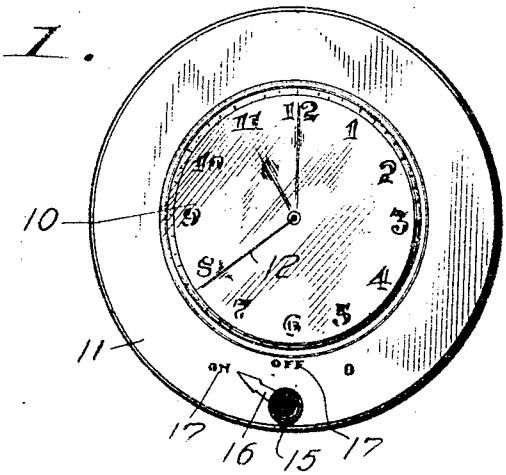


Fig. 2.

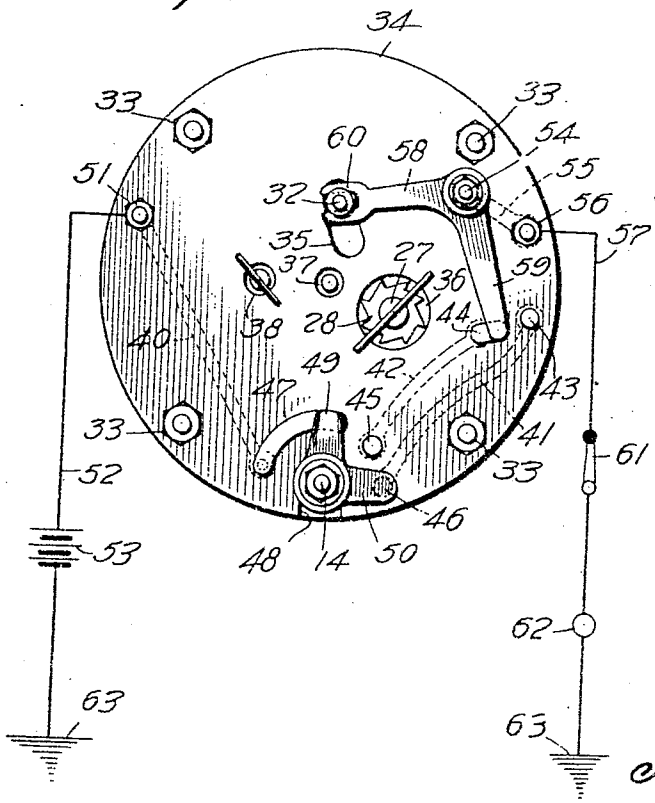
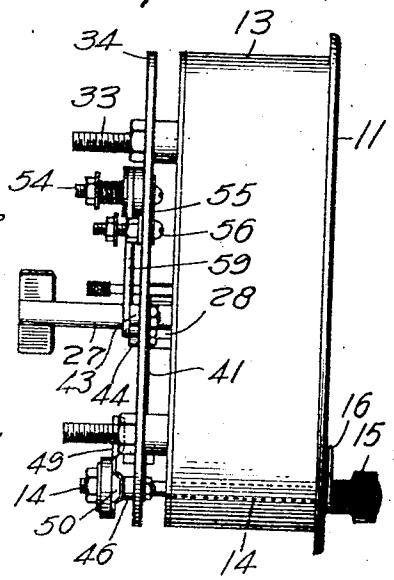


Fig. 3.



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1,610,187

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TIME CONTROLLED SWITCH

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2 Sheets-Sheet 2

Fig. 4.

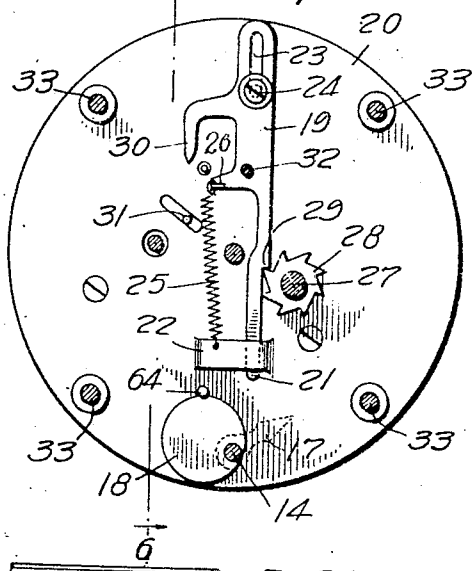


Fig. 5.

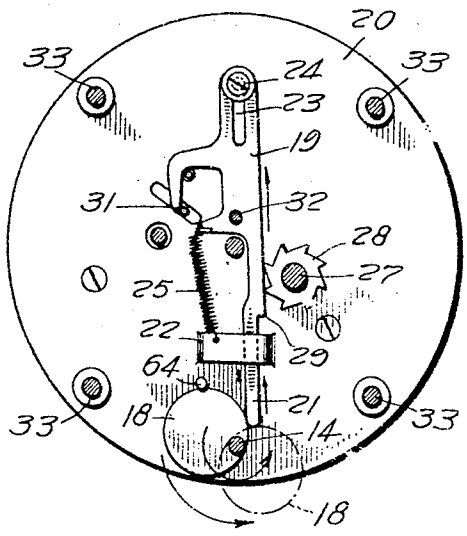


Fig. 6.

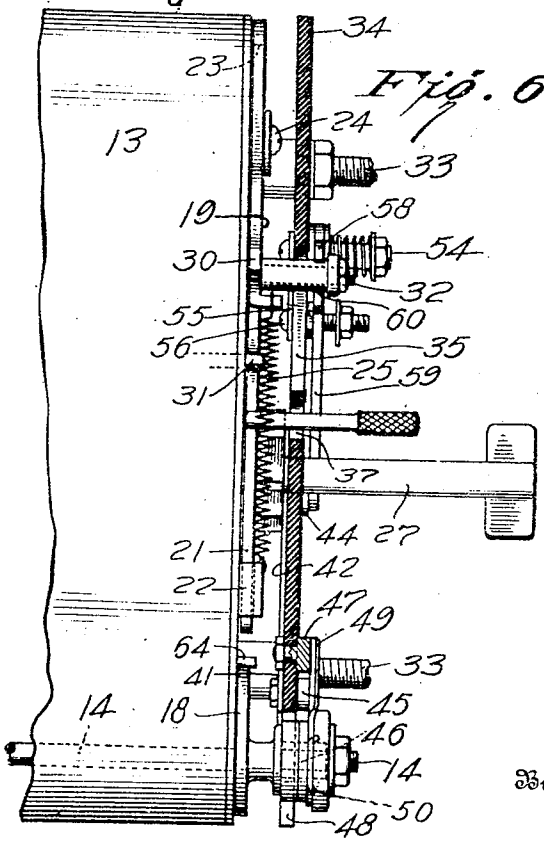
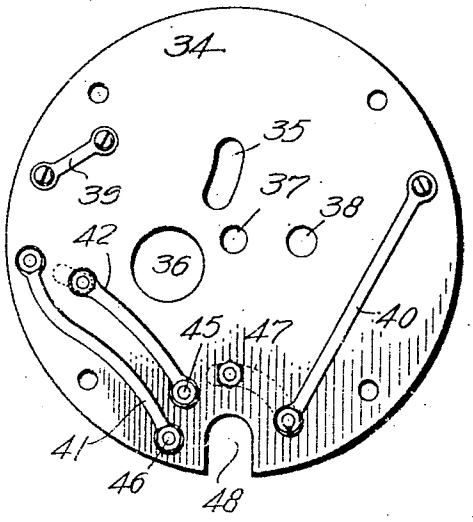


Fig. 7.



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Patented Dec. 7, 1926. 1,610,187

UNITED STATES PATENT OFFICE.

JAMES A. VINCENT, OF PROVIDENCE, RHODE ISLAND.

TIME-CONTROLLED SWITCH.

Application filed April 3, 1926. Serial No. 99,554.

My invention relates to time controlled electric switches and particularly to a time controlled switch adapted for use in connection with the lighting system of an automobile for turning the parking light on or off at a designated time.

The primary object of the invention is the provision of a time controlled electric switch for operating the parking light circuit of an automobile at a designated predetermined time.

Another object of the invention is the provision of a novel and improved combination clock and switch mechanism for use in connection with the lighting circuit of an automobile.

A further object of the invention is the provision of a novel clock operated switch mechanism for controlling an electrical lighting circuit.

A still further object of the invention is the provision in a device of this character of novel means for setting the time controlled switch mechanism.

With these objects in view and such others as will be apparent from the description, the invention resides in the novel combination, construction and arrangement of parts hereinafter described and claimed and illustrated in the accompanying drawings, showing one practical embodiment of the principles of the invention, and wherein—

Figure 1 is a front elevation of the clock as adapted for mounting on the dashboard of an automobile;

Figure 2 is a rear elevation thereof with the lighting circuit in schematic plan;

Figure 3 is a side elevation of the assembled clock and switch mechanism;

Figure 4 is a rear elevation of the switch mechanism beneath the insulating plate shown in Figures 2 and 3 and illustrating the parts in "cocked" position;

Figure 5 is a similar elevation illustrating the parts in sprung position;

Figure 6 is a section taken on the line 6—6 of Figure 4 with the clock casing shown in elevation;

Figure 7 is an elevation on the opposite side of the insulating plate as shown in Figure 2.

In detail, the invention comprises a clock 10 of the conventional alarm clock type having a face flange 11 by which it is adapted to be disposed upon the dashboard of an automobile, and which is provided with the alarm setting hand 12.

Extending through the clock casing 13 is a shaft 14 rotated through an operating handle 15 disposed at the front of the clock, as shown in Figures 1 and 2, and carrying an indicator arm 16 for registry with suitable indicia 17 disposed on the face of the flange 11. At the rear of the clock casing the shaft 14 extends outwardly having rigidly secured thereto an eccentric circular cam 18 adapted for movement through the medium of rotation of the shaft 14, into the positions as shown by dotted lines in Figure 5 for engaging beneath the end of a trigger 19 which is slidably disposed for movement in the direction of its length upon the back plate 20 of the clock casing. The cam engaging end 21 of the trigger is guided and retained in position beneath a strap 22 suitably formed on the back of the plate 20. At the opposite end of the trigger sliding connection is made through the medium of a longitudinal slot 23 in the body of the trigger whereby the trigger is slidably positioned over a securing bolt 24 carried by the plate 20.

A coiled retracting spring 25 has one end secured to the strap 22 and the opposite end secured to an extension 26 of the trigger 19 whereby the trigger is normally drawn into sprung position through the action of the spring. In this embodiment of the invention the arbor 27 of the alarm mechanism, with which the clock is provided, has fixedly secured thereto a ratchet wheel 28 the teeth of which are formed for engagement under a shoulder 29 formed on the trigger 19, the normal set position of the elements being illustrated in Figure 4. Extending laterally from the body of the trigger on the side opposite the shoulder 29 is a hook extension 30 forming an integral part of the trigger body and adapted for engagement over the alarm stop lever 31 with which the clock is provided as in the conventional construction.

At substantially its center the trigger 19 is provided with a pin 32 rigidly carried thereby and extending rearwardly relative to the back plate 20.

Suitably secured, preferably by means of the posts 33, in slightly spaced relation from the back plate 20, is a disk 34 which may be made of fiberboard or any suitable insulating material, being of a diameter corre-

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sponding to the diameter of the back plate 20. The body of the disk 34 is suitably apertured at the points 35, 36, 37 and 38 to permit extension therethrough of the various arbors and rearwardly projecting members of the mechanism. The inner face of the disk, as illustrated best in Figure 7, has disposed thereon a plurality of electrical conductor strips 39, 40, 41 and 42, for a purpose to be hereinafter explained.

The outer or rearmost face of the disk 34, as illustrated in Fig. 2, has mounted thereon a plurality of electrical contacts 43, 44, 45, 46, and 47, the last named being formed as a sector. Where the disk 34 engages over the setting mechanism shaft 14, it is provided with an edge recess 48 for receiving the shaft mounting therethrough and adjacent the shaft the contacts 47, 45 and 46 are disposed in spaced relation in an arc lying in the circumference of a circle having the axis of the shaft 14 as its center. Mounted on the rear extremity of the shaft 14 for rotation therewith is an L-shaped contact having right angular arms 49 and 50, the function of which is to bridge an electrical circuit between the sector contact 47 and either of the contacts 45 and 46, depending upon the position of the setting mechanism indicated by the pointer 16 at the front of the clock.

The circular contact 47 is in electrical connection with the conductor strip 40, which is, in turn, in electrical connection by means of the binding post 51 with a wire 52 leading from the current source 53 disposed in the lighting circuit of an automobile. The contact 45 is in electrical connection with the strip 42 which is, in turn, in connection with the contact 44 disposed adjacent the alarm arbor 27. The contact 46 is in electrical connection with the strip 41 which is, in turn, in connection with the contact 43 which, as disclosed in Figure 2, is spaced slightly from the contact 44 and in the same arc of a circle.

The disk 34 carries a binding post 54 which is in electrical contact through the medium of a strip 55 with a binding post 56 to which is connected a wire 57. Pivoted over the post 54 is a bell crank lever having the arms 58 and 59, the arm 59 being adapted for making electrical contact with either of the contacts 45 or 43, depending upon the position of the lever. The arm 58 is bifurcated at its end 60 for engagement over a pin 32 carried by the trigger 19, so that upon movement of the pin 32 the lever comprising the arms 58 and 59 will be rocked on the post 54 as indicated in the dotted lines shown in Figure 2.

In the operation of the mechanism embodying the principles of this invention, the alarm mechanism is first set at the desired time, and the trigger setting mechanism is then operated to place the clock in condition for operation at the appointed hour, either to open or close the circuit leading from the current source 53 through the mechanism, wire 57 and dash switch 61, parking light 62, through the ground 63, back to the battery 53.

For the purpose of explanation, it will be assumed that the parts are in the position shown in Figure 5 with the trigger sprung. If it is desired to set the parking light circuit so that the light will be extinguished at 8 a. m., the alarm hand is set substantially as indicated in Figure 1, after which the operating handle 15 is rotated so that the cam 18 engages under the end of the trigger elevating same against the action of the spring 25 and permitting the shoulder 29 to engage over one of the teeth of the ratchet wheel 28 carried by the alarm mechanism arbor 27. After this cocking operation is completed, the operating handle 15 is again moved to bring the indicator dial 16 into the off position and the dash switch 61 is closed. The circuit will then be completed from the battery 53 through the wire 52, binding post 51, conductor strip 40, contact 47, contact arms 49 and 50, contact 45, conductor strip 42, contact 44, bell crank lever arm 59, post 54, contacts 55, binding post 56, wire 57, switch 61, parking light 62, and back through the ground to the battery 53. When the alarm is sprung at the designated time, the rotation of the alarm mechanism arbor 27 will move the ratchet wheel 28 releasing the engagement of the trigger shoulder 29, permitting the tension of the spring 25 to spring the trigger into the position as shown in Figure 5. As the trigger plate 19 moves under the action of the spring 25, the engagement of the trigger pin 32 in the bifurcated end 60 of the bell crank lever comprising the arms 58 and 59 will cause the lever to rock upon its pivot post 54, moving the contact finger 59 from its engagement with the contact 44, thereby breaking the circuit at that point and extinguishing the parking light. The arm 59 moves over and establishes contact with the contact 43. At the same time, the downward travel of the trigger draws the hook 30 over the alarm stop lever 31, thereby cutting off the alarm mechanism and arresting further rotation of the arbor 27 and ratchet wheel 28.

From this explanation the operation of the mechanism for placing the parking light circuit in a condition to be closed at a designated hour will be readily understood. The trigger is first cocked by a preliminary movement of the operating handle 15, and the mechanism is then set in the "on" position as shown in Figure 1, whereby the arms 49 and 50 will assume the position illustrated in Figure 2. The setting of the trigger automatically carries the arm 59 into engagement with the contact 44. When the alarm is ac-

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tuated at the designated hour, the parking light circuit, which is normally open between the contact 43 and the contact arm 59, will be closed due to the movement of the arm 59 through the movement of the trigger, as hereinbefore explained. The circuit is then completed and the parking light will be lighted. A stud 64 is provided on the backplate 20 to limit the extent of movement of the cam 18 when the shaft 14 is operated.

While in this preferred embodiment of the invention I have illustrated and described certain details entering into the construction and operation thereof, I desire it to be understood that the invention is not to be limited thereby, but that any desired changes and modifications may be made in the structural details thereof as will fall within the scope of the invention as claimed.

I claim:

1. The combination with a clock having an alarm mechanism, of a spring actuated trigger on the clock, means controlled by the alarm mechanism for releasing said trigger, a circuit closer on said clock, and trigger actuated means on the clock for governing said circuit closer.

2. The combination with a clock having an alarm mechanism, of a spring actuated trigger carried by said clock, means controlled by the alarm mechanism for releasing said trigger, an electrical circuit selector on said clock, and means for operating said selector, said means acting to set said trigger.

3. The combination with a clock having an alarm mechanism, of a spring actuated trigger on the clock, means controlled by the alarm mechanism for releasing said trigger, an electrical circuit selector on said clock, and means manually operable on said clock to operate said selector, said means having operative connection with said trigger for setting said trigger.

4. The combination with a clock having an alarm mechanism, of a spring actuated trigger on the clock, means controlled by the alarm mechanism for releasing said trigger, an electrical circuit selector on said clock, manually controlled means for operating said selector, said means having operative connection with said trigger for setting said trigger, a circuit governing mechanism carried by said clock, and means carried by said trigger for operating said circuit governing mechanism.

5. The combination with a clock having an alarm mechanism, of a spring actuated trigger on the clock, means controlled by the alarm mechanism for releasing said trigger upon operation of the alarm mechanism, a circuit closer on said clock, trigger actuated mechanism on the clock for governing said circuit closer, and means carried by said trigger for checking the operation of said alarm mechanism during movement of the trigger.

6. The combination with a clock having an alarm mechanism, of a spring actuated trigger on the clock, manualy operable means for setting said trigger, means controlled by the alarm mechanism for releasing said trigger, and a circuit governing member operatively connected with said trigger setting means.

7. The combination with a clock having an alarm mechanism, of a spring actuated trigger on the clock, manually controlled means for setting said trigger, means controlled by the alarm mechanism for releasing said trigger upon operation of said alarm mechanism, means carried by the trigger for checking operation of the alarm mechanism during movement of the trigger, a circuit selector controlled by said trigger setting means and a trigger actuated circuit closer on the clock.

In testimony whereof I have affixed my signature.

JAMES A. VINCENT.