Dec. 14, 1937. A. WEISS 2,102,246

TIME CONTROLLED ELECTRIC SWITCH FOR ELECTRIC BULBS

Original Filed Aug. 12, 1935

Fig. 1

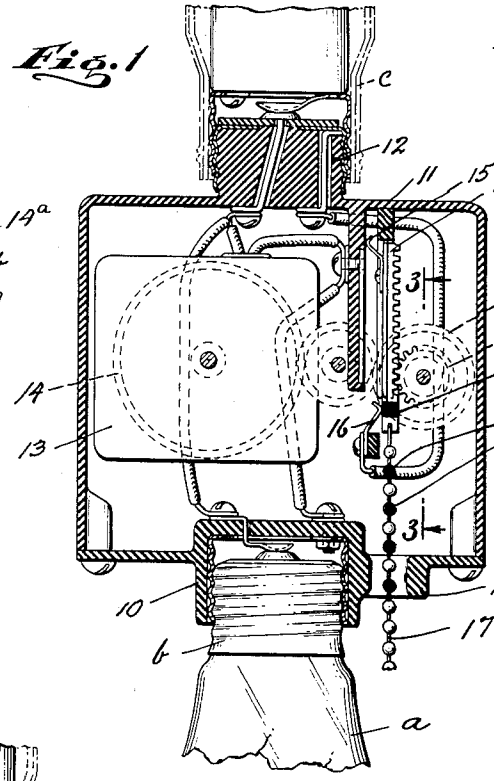


Fig. 6

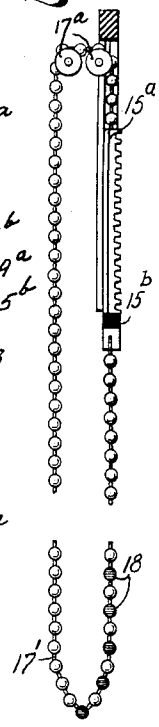


Fig. 3

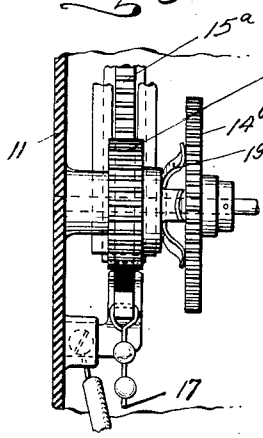


Fig. 4

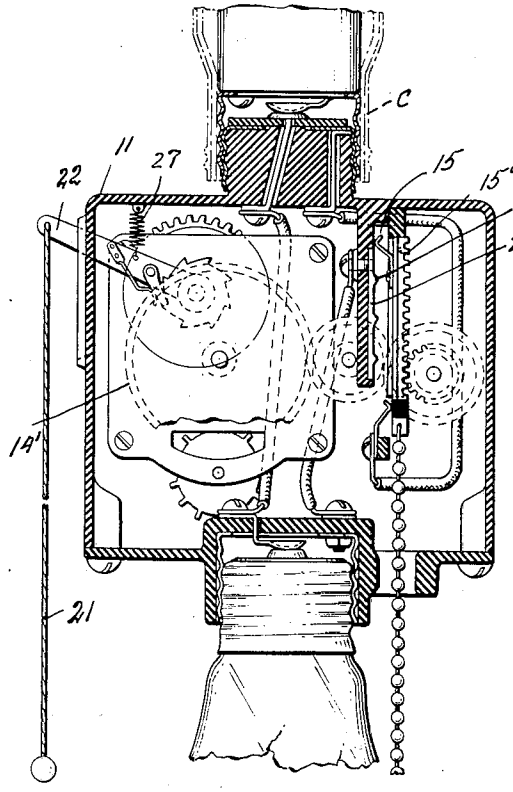


Fig. 5

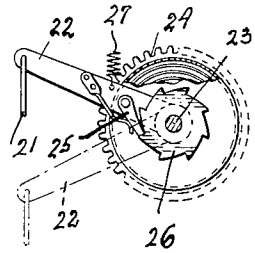
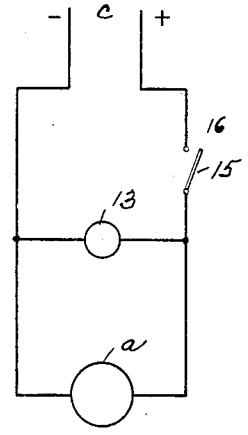


Fig. 2



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TIME CONTROLLED ELECTRIC SWITCH FOR ELECTRIC BULBS

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Renewed May 12, 1937

2 Claims. (Cl. 200—35)

This invention relates to time controlled electric switches for electric light, etc.

In household, small businesses or shops light is often consumed unnecessarily through negligence or forgetfulness to open the switch and to thereby extinguish the light when no more needed. This results in much waste of electric energy and heavy electric bills.

Time controlled switches are known to be used with electric signs and traffic signals. But the construction of such switches is unsuitable for the uses above referred to because of the more or less complex nature thereof and because of lack of suitable means whereby the time period during which the bulb is to burn can be readily, conveniently and easily adjusted.

The primary and principal object of my invention is, therefore, to provide a switch control for electric lights which will automatically extinguish the light after a predetermined period according to adjustment made simultaneously with and by the same operation of the closing of the switch.

Another object of this invention is to provide a construction which will be simple, durable and inexpensive.

With these and other objects in view my invention consists in the novel construction, combination and arrangement of parts as will be hereinafter more fully described and defined in the appended claims.

In the accompanying drawing which constitutes part of this specification and in which similar reference characters denote corresponding parts.

Fig. 1 is a sectional elevation of a clock controlled electric light equipped with my new switch mechanism;

Fig. 2 a diagram of the electric circuit thereof;

Fig. 3 a vertical section on line 3—3 of Fig. 1;

Fig. 4 a sectional elevation of another modification of said device;

Figs. 5 and 6 show details of construction.

In the drawing *a* denotes a conventional electric bulb having the usual threaded base *b* adapted when tightly screwed into its socket to make the necessary electric contacts. The socket 10, according to my invention, projects downwardly and centrally from the bottom of a housing 11 of porcelain, bakelite or other non-conductive material, to which it may be suitably attached or of which it is made an integral part, and which may be of rectangular or any other suitable shape. Projecting upwardly and centrally from the top of said housing is a plug 12 or the like adapted to fit in the socket C through which electrical power is supplied.

According to the modification shown in Figs. 1 to 3, the switch for the electric circuit is adapted to be operated through an electric clock. To this end I provide within the housing 11 a suitable electric motor 13, a clock mechanism 14, driven from said motor in well known manner and the electric switch 15, 16 of the pull switch type, i. e. a switch of which the movable contact piece 15 is adapted to be manipulated by pull action through a pull chain or cord 17. The said movable contact piece 15 is attached to or is integrally formed with a toothed bar or rack 15^a adapted to mesh with the time gear 14^a of the clock mechanism. This gear is connected to another gear 14^b of the clock mechanism 14 through a friction member 19 so that it can be rotated independently of gear 14^b. The stationary contact piece 16 of said switch suitably fixed inside the housing is adapted when the switch is open to bear on an insulated part 15^b of the rack 15^a but when the latter is moved downwardly through the manipulation of pull chain 17 to contact with an un-insulated portion of said rack and to thereby simultaneously close the electric circuits both of the motor and of the light. As a result thereof the clock is set in motion causing the time gear 14^a to move in clockwise direction thereby moving back or raising the displaced rack into initial position in which its insulated part 15^b will again contact with the stationary contact piece 16, thereby opening the electric circuits both through the motor and the light, stopping both motor and clock and extinguishing the light.

It is obvious that the time period during which the bulb may be allowed to burn can thus be readily and conveniently regulated at will by a longer or shorter pull of the chain 17, which will correspondingly displace the rack 15^a relative to the stationary contact piece 16.

The time gear 14^a may be so calculated that it will take 6 or any desired number of hours for its completion of a full revolution. Hence according to whether the time gear 14^a is turned all around or only given a fraction of rotation by the displacement of the rack 15^a through the pull chain 17, the time period during which the bulb is to burn will be adjusted and the light automatically extinguished after expiration of said time period. The stationary contact piece 16 remains in contact with the conductive portion of the rack 15^a during the entire period the latter is moving back from its displaced position into normal or initial position.

To enable the user to tell just how far down to pull the chain for the desired adjustment of the time period the pull chain or cord 17 may be provided with a number of colored beads 18, loops or other marks, which may be arranged in a vertical row at correspondingly fixed intervals, each interval corresponding to a certain time interval, say one hour, two hours, etc. These beads or marks, normally, that is, when the switch is open, may be concealed within the housing and made to appear outside said housing one by one through a mouth piece or tube 11a of the housing after pulling the chain 17 to the desired extent. Thus when one colored bead or mark appears outside the housing it will indicate that the bulb was set to burn say two hours, if two colored beads appear outside the housing it will indicate that the bulb was set to burn four hours and so on.

The electrical connection between motor 13, bulb *a* and switch 15, 16 is shown in the diagram of Fig. 2.

In the modification in Figs. 4 and 5 the housing 11 is equipped with a spring operated clock 14' instead of an electric clock. The construction and operation of the movable contact piece 15 of the electric switch through the medium of rack 15a and pull chain 17 are the same as in the first modification.

Instead of the colored beads 18 for indicating the time periods, or in addition thereto, I provide means which will facilitate the adjustments. In this modification the contact finger 15 is adapted to act as pawl in cooperation with ratchet teeth 20a provided on the terminal bar 20. These teeth are arranged in a vertical row at intervals corresponding to certain time intervals for which the lighting period is to be adjustable. Accordingly, when the rack 15a is moved downwardly a slight obstruction will be felt in the pulling of the chain each time the contact finger 15 strikes a tooth 20a and the user can tell how far to pull the chain.

Of course various other means may be employed to guard against errors in adjusting the extent of the displacement of the contact piece 15 or its rack.

The spring clock may be provided with convenient means for winding up the same. In this modification a cord or chain 21 is fastened to a lever 22 which is borne on the shaft 23 of the spring gear 24 of the clock mechanism, and carries a pawl 25 cooperating with a ratchet wheel 26 fixed on said shaft. The lever 22 is acted upon by a spring 27 which tends to normally return it into raised position.

Thus after pulling the chain 17 down to the desired extent to displace the rack 15a, the spring of the spring gear 24 is wound up through the manipulation of the lever 22 by pull chain 21, as a result of which the clock is set into motion, which then as with the first modification causes the rack 15a to move into the initial position during which time the contacts 15 and 16 remain in contact and the bulb circuit closed.

In order to be able to turn off the light at an earlier period than that for which it was first adjusted or to readjust the switch when the chain accidentally was pulled farther down than desired, I may provide the construction shown in Fig. 6.

The pull chain for setting the switch is also attached to the upper end of the rack 15a thus forming with the latter an endless chain 17'. The upper end of the chain is guided over suitably mounted pulleys 17a. By pulling down one side of said chain, as for instance the right side, the rack will turn the hour gear in anticlockwise direction, thereby setting the switch for the desired time period, as heretofore described. If the chain accidentally has been pulled beyond the desired extent, the other side of the chain, i. e. the left side, is pulled down, raising the rack back to the desired point. Likewise, if the switch is to be turned off at an earlier period than that for which it was initially set it is only necessary to pull the left side of the chain down until the rack is returned to its initial position at which the circuit is opened.

When using the endless chain arrangement it is not necessary to conceal the colored beads within the casing. Instead, said beads 18 may be arranged near the lower loop of the chain, so that the distance from the center of said loop to the lowermost bead is equal to the spacing between the individual colored beads conforming with the predetermined time period. In this way, by pulling the right side of the chain down until the lowermost bead 18 reaches the central part of the loop, the user can easily tell whether the adjustment was correct for the desired time period. If a longer period is desired the right side of the chain is pulled farther down until the next colored bead reaches the central part of the loop and so on.

Various changes may of course be made in the construction of my device without departing from the principle of my invention. I therefore, do not wish to restrict myself to the details described and shown.

What I claim is:

1. In an incandescent electric lamp a socket therefor, a clock mechanism in said socket including a driving gear and a time gear frictionally connected to said first named gear, an electric switch for the circuit of said lamp including a manually displaceable reciprocatory contact member cooperating with said time gear, so that when displaced in one direction, it will close the circuit and set said time gear for the desired period and when released will be caused to move in opposite direction by said time gear holding said circuit closed and on reaching its initial position open said circuit, said displaceable contact member forming a part of an endless manually operable pull means.

2. In an incandescent electric lamp according to claim 1 in which said pull means forms a part of an endless chain, whose links at intervals corresponding to certain time intervals are marked to serve as time indicators.

ABRAHAM WEISS.