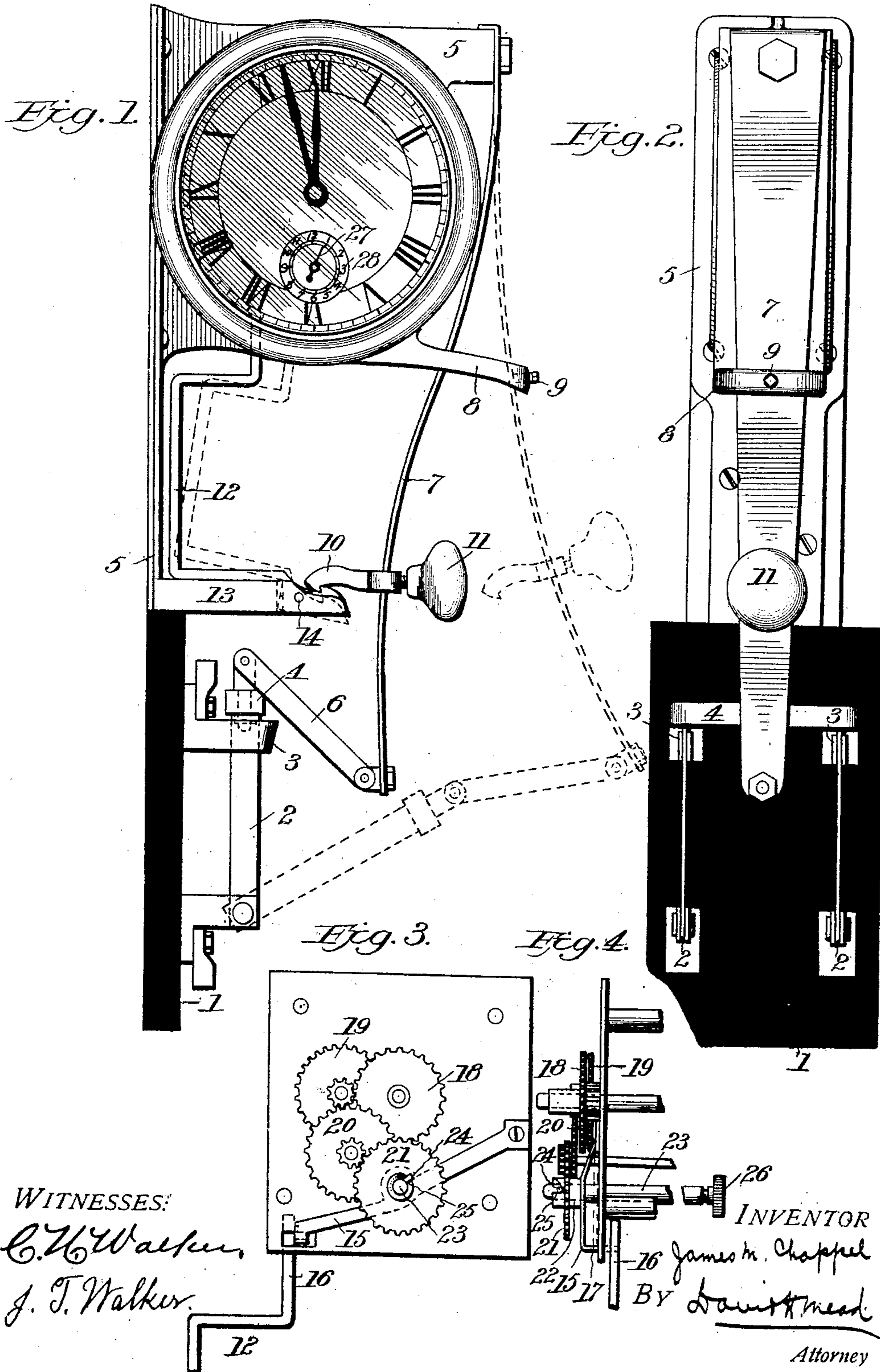


No. 841,226.

J. M. CHAPPEL.
ELECTRIC TIME SWITCH.
APPLICATION FILED APR. 25, 1905.

PATENTED JAN. 15, 1907.



UNITED STATES PATENT OFFICE.

JAMES M. CHAPPEL, OF DALLAS, TEXAS.

ELECTRIC TIME-SWITCH.

No. 841,226.

Specification of Letters Patent.

Patented Jan. 15, 1907.

Application filed April 25, 1905. Serial No. 257,341.

To all whom it may concern:

Be it known that I, JAMES M. CHAPPEL, a citizen of the United States, residing at Dallas, in the county of Dallas and State of Texas, have invented certain new and useful Improvements in Electric Time-Switches, of which the following is a specification.

This invention relates to electric switches; and it relates particularly to means whereby a switch may automatically be opened at a predetermined time.

The object of the invention is to provide means whereby the moving parts of a clock or means corresponding to a part thereof may be caused to release a spring or the like by which a moving part of an electric switch may be moved to break an electric current.

My device is capable of use in various positions—for instance, in automatically cutting out the lights in show-windows which it is desired to illuminate until a late hour and then be extinguished without manual manipulation.

The invention consists in the general and specific construction and arrangement of parts, substantially as hereinafter described and claimed.

In the accompanying drawings, Figure 1 is a side elevation of my improved switch-operating mechanism, showing by full lines the positions of the parts when the switch is in position to complete a circuit and by dotted lines the positions assumed when the current is broken. Fig. 2 is a face view of the device. Fig. 3 is a side elevation of the parts of a clock mechanism by which the switch-operating mechanism is set in motion, and Fig. 4 is an end view of the parts shown in Fig. 3.

In the present embodiment of my invention I have shown as part thereof a complete clock, to the moving parts of which are connected means for releasing a spring by which the switch is operated. It will be clear from an understanding of the invention that any equivalent means whereby a releasing device can be operated at a predetermined time may be substituted for the clock mechanism. I have shown a simple form of switch consisting, essentially, of two pivoted arms insulated from each other and adapted, respectively, to be forced between a pair of spring-fingers to complete a circuit and to be separated therefrom to break the same.

In the drawings, 1 represents the bed-plate

of the switch, on which are pivoted the conducting-arms 2 2 and to which are also attached the socket-fingers 3 3, the arms and socket-fingers being adapted for connection with conducting-wires in the usual way. The levers or arms are connected by a bar 4, of insulating material, and to this bar is connected the mechanism by which the levers are moved into or out of contact with the sockets.

The switch-operating mechanism is arranged on a frame 5, adapted to be attached to a wall or the like adjacent to the bed-plate of the switch.

Attached to the bar 4 of the switch by a pivoted connection is a rod 6, and the other end of the rod is connected pivotally to a spring 7. The leaf-spring 7 is attached at one end to the frame 5 and is of such form as constantly to exert a pressure away from the switch. The spring is guided and limited in its outward movement by a projection 8 from the frame 5, and on the projection is a set-screw 9, against which the spring abuts when the limit of its movement away from the switch is reached. By adjustment of the set-screw the movement of the spring may be regulated.

The spring 7 is provided with a hook-shaped detent 10, having a handle 11 for grasping, and the detent is adapted to engage a retaining-lever 12, pivotally mounted on an arm 13, forming part of the frame 5. The lower horizontal portion of the lever 12 has a notched end for engagement with the correspondingly-shaped end of the detent 10. The lever 12 is pivoted at a point 14 in the arm 13, and the vertical portion thereof extends upward and is retained by a lever operated by means capable of predetermined movement. A spring-lever 15 is mounted adjacent to the upper end 16 of the lever 12 and has a projection 17 normally confining the lever 12 and retaining it in the position shown by full lines in Fig. 1 of the drawings. The normal position of the spring-lever is shown by dotted lines in Fig. 4.

The lever 15 by its resiliency tends to move out of the path of movement of the end 16 of the lever 12, and any suitable means for confining and releasing the lever may be employed. In the present form of the invention I connect with the gear 18, by which the hands of a clock are driven, a train of

gears 19 20 21, so arranged and connected that the gear 21 will revolve once in twenty-four hours. The gear 21 is fixed on a sleeve 22, which has a limited movement on a shaft 23 on which the gear is carried. The spring-lever 15 bears against one end of the sleeve, while against the other end bears a pin 24, projecting from the shaft. The surface is formed with a notch 25, having an inclined or cam wall with which the pin 24 coacts, the arrangement of this inclined wall and pin being such that as the pin is rotated the sleeve 22 against which the lever 15 bears will be permitted to move a sufficient distance to effect the release of the lever 12 at the predetermined time.

The shaft 23, carrying the pin 24, is arranged to have an independent rotation and has at one end a head 26 for grasping and at the other end a hand 27. By this arrangement the shaft may be rotated to move the hand upon the dial 28 to set the mechanism for the release of the lever 12 at the desired time.

In the use of the device the handle 11 is grasped and forced inward, putting the spring 7 under tension until the catch engages the notched end of the lever 12. The parts are held in this position, and the shaft 23 is turned to bring the hand opposite the indication of the hour on the dial 28 when it is desired that the switch open. The setting of the hand causes the spring-lever to ride on the end of the sleeve and brings its end in the path of the lever 12. When in the movement of the parts of the clock the notch in the sleeve comes opposite the pin, the spring-lever is free to move out of the way of the lever 12, freeing it and allowing the spring 7 to move outward, bringing the parts into the positions shown by dotted lines in Fig. 1 of the drawings, opening the switch.

The lever 12 is of such a length from the point 14, at which it is pivoted, to the point of contact with the spring-lever that only a slight pressure is necessary to effect a locking, and very little friction is offered to the revolution of the gear, through which the spring-lever is retained and released.

The operation in opening the switch is instantaneous, thus preventing the formation of an arc between the parts of the switch as the latter is opened.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. An electric time-switch, comprising an electric switch, a spring-arm fixed at one end and having its opposite end pivotally connected with the movable part of the switch and provided with a detent intermediately of its ends, an intermediately-pivoted lever adapted at one end to be engaged by said detent to hold the spring-arm under tension, a clock mechanism, and means engaging one

end of said intermediately-pivoted lever and holding its opposite end in engagement with the detent actuated by the clock mechanism at a predetermined time for releasing said lever.

2. An electric time-switch comprising an electric switch, a spring-arm fixed at one end and having its opposite end pivotally connected with the movable part of the switch and provided with a detent intermediately of the ends, an intermediately-pivoted lever having a notched end to be engaged by the detent to hold the spring-arm under tension, a clock mechanism, and means engaging one end of said intermediately-pivoted lever and holding its notched end in engagement with the detent actuated by the clock mechanism at a predetermined time for releasing said lever.

3. An electric time-switch comprising an electric switch, a spring-arm fixed at one end and having its opposite end pivotally connected with the movable part of the switch and provided with a detent intermediately of the ends, an intermediately-pivoted lever adapted at one end to be engaged by said detent to hold the spring-arm under tension, a clock mechanism, means engaging one end of said intermediately-pivoted lever and holding its opposite end in engagement with the detent actuated by the clock mechanism at a predetermined time for releasing said lever, and adjustable means for limiting the movement of the spring-arm on its release.

4. An electric time-switch comprising an electric switch, a spring-arm fixed at one end having its opposite end pivotally connected with the movable part of the switch and provided with a detent intermediately of the ends, an intermediately-pivoted lever adapted at one end to be engaged by said detent to hold the spring-arm under tension, a clock mechanism, a retaining device for the opposite end of said intermediately-pivoted lever, and means actuated by the clock mechanism for effecting the movement of the retaining device to release said intermediately-pivoted lever at a predetermined time.

5. An electric time-switch comprising an electric switch, a spring-arm fixed at one end and having its opposite end pivotally connected with the movable part of the switch and provided with a detent intermediately of the ends, an intermediately-pivoted lever adapted at one end to be engaged by said detent to hold the spring-arm under tension, a clock mechanism, a spring-arm secured at one end and having its opposite end disposed in position to engage and retain the free end of the said intermediately-pivoted lever, and means actuated by the clock mechanism at a predetermined time for effecting the movement of said spring-arm to release the intermediately-pivoted lever.

6. An electric time-switch comprising an

electric switch, a spring-arm, fixed at one end,
a link pivotally connecting the opposite end
of said spring-arm with the movable part of
the switch, a detent carried by the spring-
5 arm intermediately of its ends, an intermedi-
ately-pivoted lever engaged by said detent to
hold the spring-arm under tension, a clock
mechanism, and means actuated by the
clock mechanism at a predetermined time to

effect the release of said detent from the in- 10
termediately-pivoted lever.

In testimony whereof I affix my signature
in presence of two witnesses.

JAMES M. CHAPPEL.

Witnesses:

C. W. FOWLER,

C. N. WALKER.