

A. L. WOOD.  
ELECTRIC LIGHT CONTROLLING DEVICE.  
APPLICATION FILED JULY 8, 1908.

929,069.

Patented July 27, 1909.

Fig. 1.

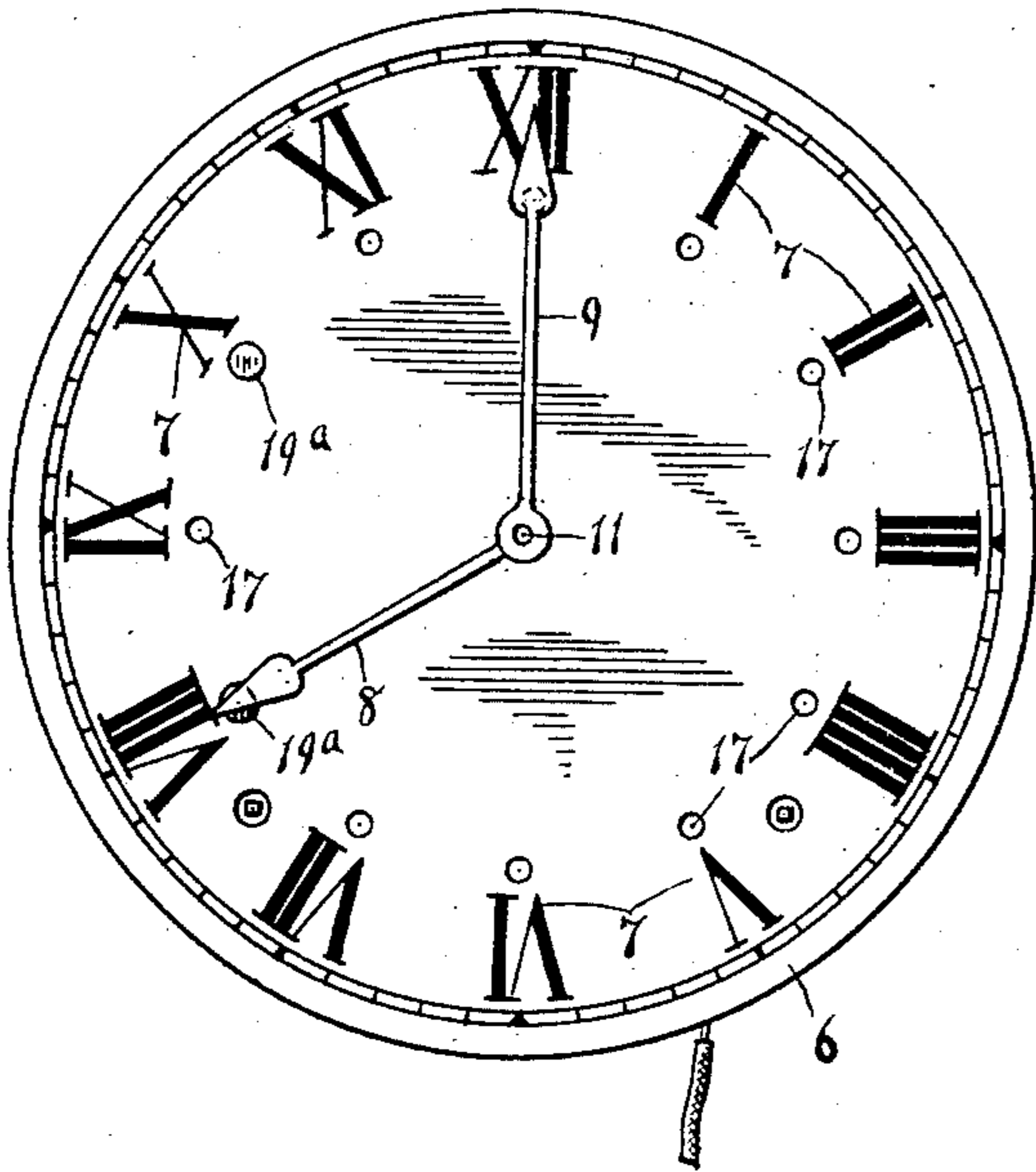


Fig. 2.

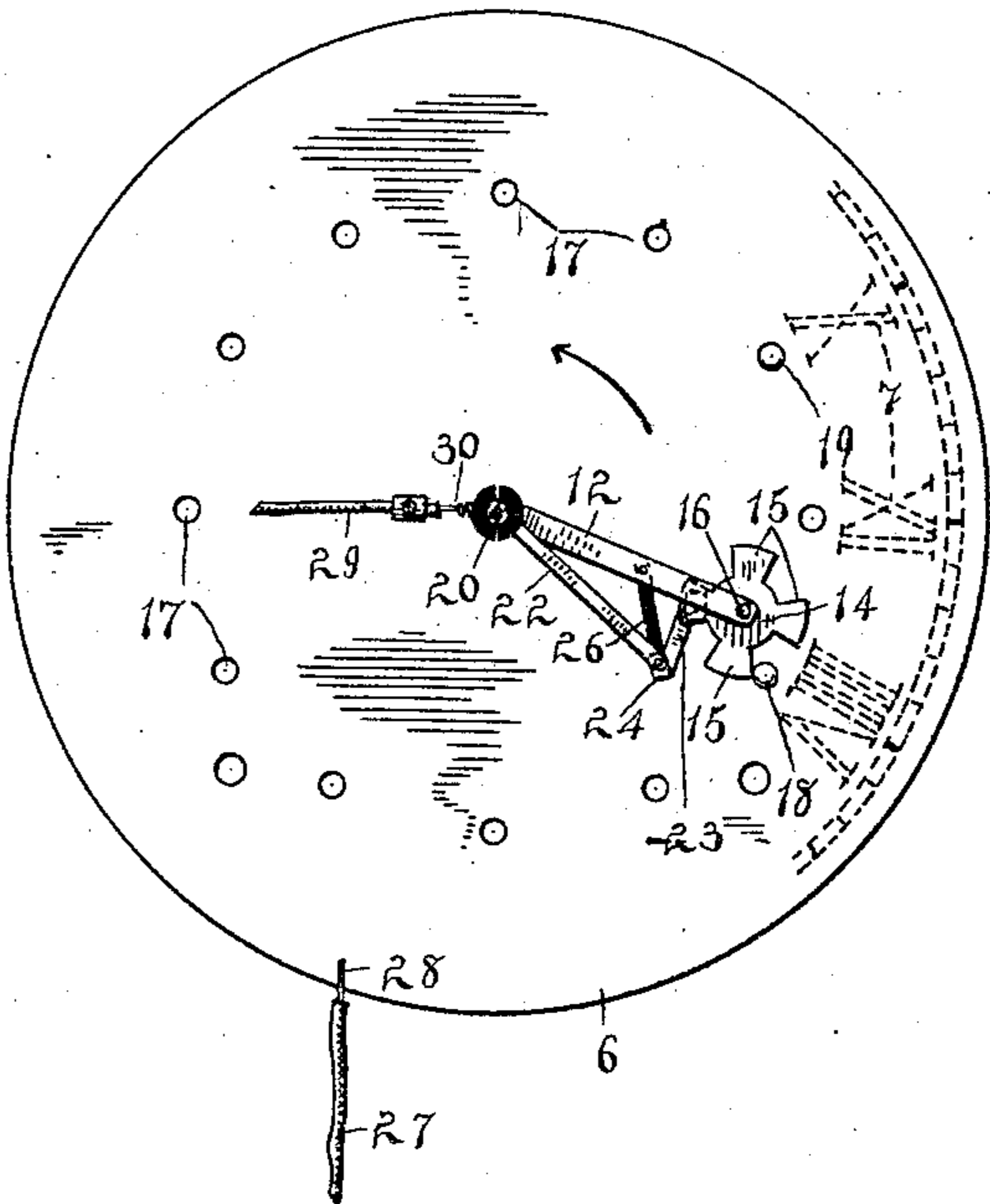


Fig. 3.

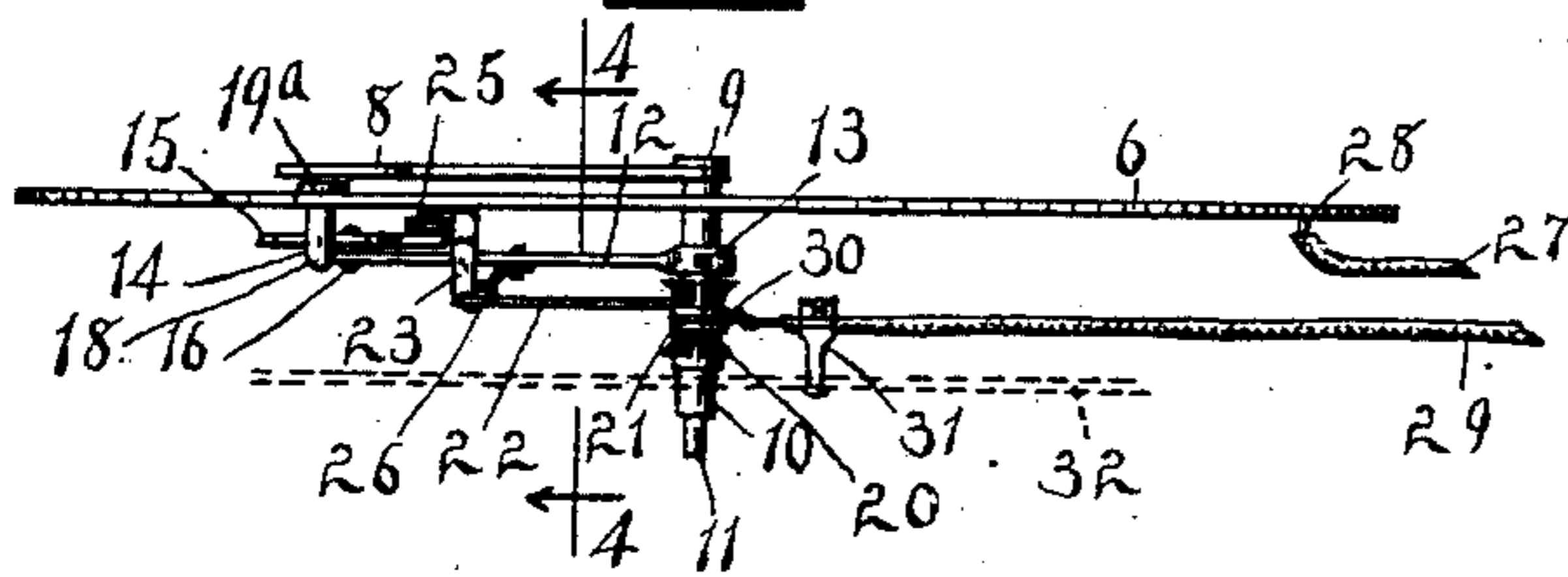


Fig. 4.

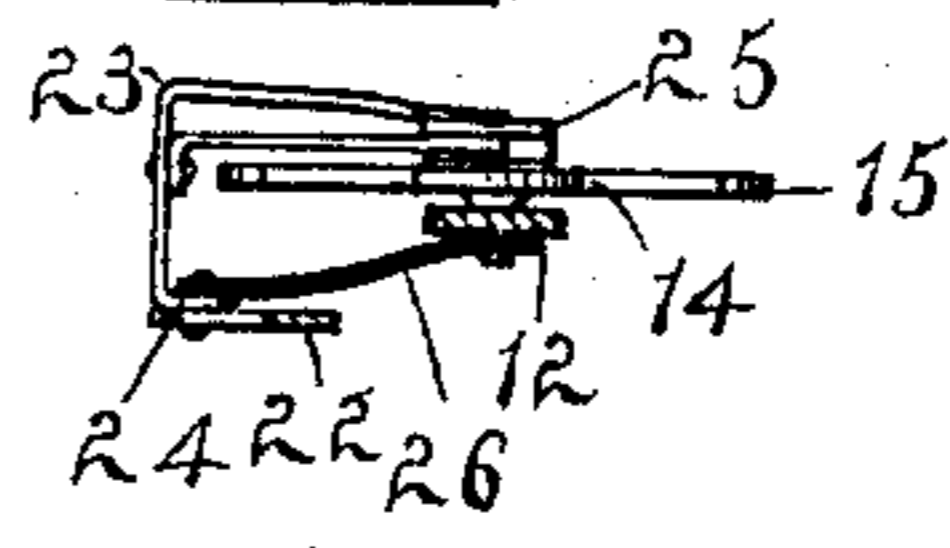


Fig. 5.

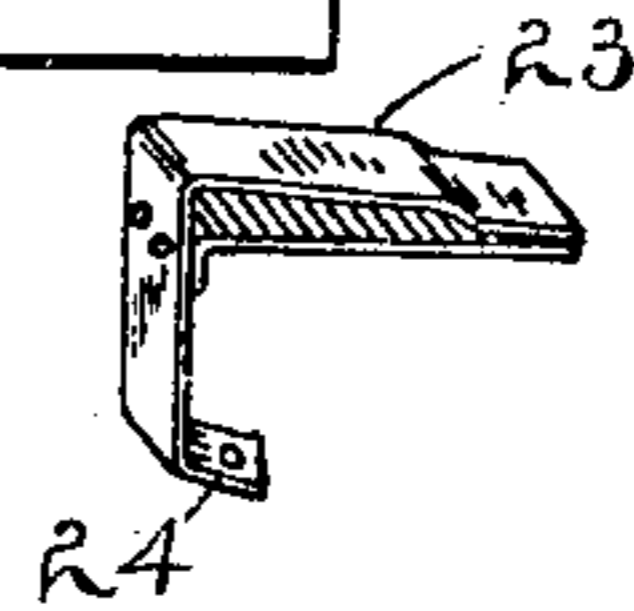
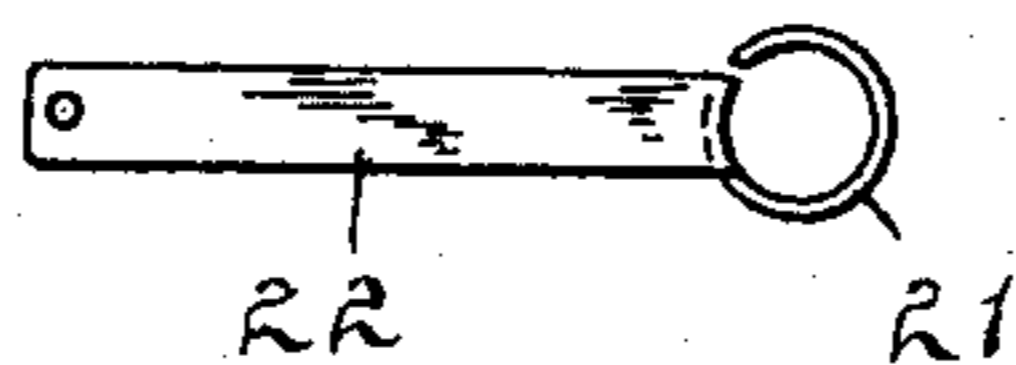


Fig. 6.



WITNESSES:

Matthew J. Marty

C. F. Bassett

INVENTOR

Arthur L. Wood

By Frederick Seymour  
ATTY.

# UNITED STATES PATENT OFFICE.

ARTHUR L. WOOD, OF JACKSONVILLE, ILLINOIS.

## ELECTRIC-LIGHT-CONTROLLING DEVICE.

No. 929,069.

Specification of Letters Patent.

Patented July 27, 1909.

Application filed July 8, 1908. Serial No. 442,463.

*To all whom it may concern:*

Be it known that I, ARTHUR L. WOOD, citizen of the United States, residing at Jacksonville, in the county of Morgan and State of Illinois, have invented certain new and useful Improvements in Electric-Light-Controlling Devices, of which the following is a specification.

My invention relates to electric time switches and refers particularly to devices adapted to automatically control the opening and closing of electric light circuits, said devices belonging to that type operated by, and attachable to an ordinary clock.

It is usually desirable to turn off the lights used for special purposes at some predetermined point of time; and especially is this true where such lights are employed to illuminate stores and show windows. Since it is the custom for various reasons to keep the lamps lighted after the occupants have left the premises, some means for turning them out automatically at a certain hour is very convenient, saving the trouble and expense of personal supervision. It will sometimes be necessary to light the lamps as well as to extinguish them while the premises are unoccupied. Where a system of electric lighting is installed the automatic making and breaking of the circuit may be accomplished in a practical manner, and time pieces, such as ordinary clocks have been employed for that purpose.

In the improvements which form the subject matter of this application the objects sought are:—to provide an automatic circuit controlling device in connection with a clock that will be simple in its mechanism, and consequently economical to manufacture, sure in its operation and durable.

A marked advantage to be derived from the employment of the appliance which I have devised will be found in its purely automatic action no further attention being required after the apparatus has been installed unless a change is desired in the time of turning on or off the lights, and any changes of this character may be made in a few seconds.

I accomplish the desired objects by the use of the mechanism illustrated in the accompanying drawing, forming a part of this application and in which the construction of the various parts is disclosed in the following views:—

Figure 1 is a front elevation of a clock dial

equipped with my improved electric time switch; Fig. 2 is an elevation showing the rear face of the dial illustrated in Fig. 1; Fig. 3 is a transverse sectional view; Fig. 4 is a sectional view on the line 4—4 of Fig. 3; Fig. 5 is an enlarged view of the contact spring, and Fig. 6 is a view of the arm.

Referring to the details of the drawing, the numeral 6 indicates an ordinary metallic clock-dial bearing the usual figures 7 and supplied with an hour hand 8 and a minute hand 9, mounted upon their respective spindles 10 and 11. Upon the spindle 10 of the hour hand I mount a suitable arm 12, and secure it thereto by a set screw 13. The said arm 12 is arranged opposite to the hour hand 8, and being both carried by the same spindle will be moved in unison by the clock-work which operates the hands. Only so much of the clock movements have been shown as will illustrate the application of my improvements thereto. The free extremity of the arm 12 carries a star wheel 14, lying parallel with the face of the dial and furnished with four arms or spokes 15. This wheel is pivoted to said arm and the adjustment is such that the wheel will be held by friction at any position to which it may be turned on its pivot 16.

The dial 6 is pierced by a series of spaced holes 17 arranged in a circle concentric with the dial, and corresponding in number and location with the figures 7, which designate the hours. Two contact pins 18, 19, are fitted to frictionally engage the said holes each pin being furnished with a thin head 19<sup>a</sup> to permit the clock hands 8, 9, to pass thereover without danger of interference. The body of each pin projects beyond the rear face of the dial sufficiently to bring it within the path of one of the spokes of the wheel 14, as the latter is carried around the dial center. Whenever one of these spokes strikes one of the pins, the wheel 14 will be given a quarter turn bringing another arm or spoke into position to strike the next pin in sequence, with the result that four such impulses will complete a single revolution of the wheel, the mechanical movement being one well understood in the art.

Upon the spindle 10, behind the arm 12, is mounted a fixed spool 20, formed of suitable insulating material, preferably rubber. Surrounding this spool is a collar 21, and projecting therefrom is an integral bracket arm 22, parallel with the dial and bearing upon

its outer end a contact member in the form of a spring fork 23, attached to the said arm by a stem 24. This fork projects in front of the arms or spokes 15 of the star wheel 14, but does not come in contact directly with the said arms. One of the star wheel arms, however, bears a contact piece or clip 25 one end of which is raised from the surface of the arm to which it is attached, and is arranged to pass between the members of the fork and as the ends of the fork are in apposition they will be sure to make a good electrical contact with said clip 25. Extending from the arm 12 and the bracket arm 22 is a brace 26, formed of insulating material, to give rigidity to the structure and act as a spacer to insure the proper relation of the arm 12 to the star wheel.

The mechanism thus described is introduced into the circuit of an electric light system by attaching one of the conductors 27 to some point 28 of the dial and connecting the other conductor 29 in the following manner: The end 30 of the wire, denuded of its insulating covering is wound loosely about the collar 21, surrounding the insulating spool 20, in such a manner as to insure a good electrical contact, but without interfering with the movement of the spindle 10. The conductor 29 is supported adjacent to this sliding contact by a suitable post 31, attached to any convenient support, such as the clock frame 32, a portion of which is shown in Fig. 3.

Having thus set forth in detail the construction of my improved circuit closing and opening apparatus I will describe the method of its operation. The attachments of the wires having been made to a dial prepared in the manner hereinbefore disclosed and the clock mechanism put in motion the arm 12 will begin to revolve in unison with the hour hand 8, as previously described. We will suppose that it is desired to close the lamp circuit at 8 o'clock and shut off the lamps at 10 o'clock, two hours later. In that case one pin 18 will be inserted in the hole 17 corresponding with the figure VIII of the dial and the other pin inserted at the figure X. Or, in other words, the pins are to be inserted, one at the hour at which it is desired to light the lamps and the other at the time they are to be extinguished. The cruciform or star wheel 14 is then set so that when it reaches the first pin 18 inserted at VIII one of the arms 15 will engage said pin and carry the contact clip 25 into contact with the spring fork 23, thus closing the circuit and lighting the lamps connected therewith. As the arm 12 moves onward the clip will remain in contact with the spring fork until the pin 18 is reached, when the next arm of the wheel will be engaged by the pin, giving the wheel another quarter turn and breaking the contact between the clip and spring fork, thereby

extinguishing the lamps. When the wheel 14 again passes the pins 18, 19, it will be turned as before by the engagement in sequence of the remaining arms, bringing the device into position so that when the pin 17 is again reached it will carry the wheel to the initial position, bringing the contact clip 25 again into engagement with the spring fork and closing the lamp circuit.

It will be understood that the position of the pins may be varied in many ways, the intervals between them determining the length of the time the circuit is on or off. While I have shown two pins effecting the closure of the circuit at intervals of 24 hours, a different number may be employed; thus four pins would cause the circuit to be closed and opened at 12 hour intervals, and if it were found desirable one pin could be removed so that the intervals between the closures of the circuit would be 48 hours, in which case the lamps would burn for 12 hours before being extinguished. Variations of this nature may also be brought about by the substitution of wheels having a different number of teeth.

Having thus described my invention, what I claim is:—

1. The combination with a clock dial and mechanism, and a spindle operated by said mechanism, of an arm mounted on said spindle, a wheel carried on said arm and having spokes, a series of pins arranged in the path of the spokes of said wheel, an insulated electric terminal supported by said spindle, and means carried by said wheel for making contact with said terminal.

2. The combination with a clock dial and mechanism an index hand for the dial, and a spindle for the hand driven by said mechanism, of an arm mounted on said spindle, a wheel carried on said arm and having spokes, a series of pins removably arranged in the path of said spokes, an insulated electric terminal supported on the spindle, and means carried by said wheel for making connection between the terminal and said arm.

3. The combination with a clock-dial and mechanism, a hand for the dial and a spindle for the hand, of an arm adjustably mounted on said spindle, a wheel carried on said arm and having spokes, a series of adjustable abutments arranged in the path of said spokes, an insulated electrical terminal supported on the spindle, means carried by said wheel for making electrical connection between the terminal and said arm, and an electrical circuit including the dial and said terminal.

4. The combination with a clock dial provided with a series of apertures, a spindle and mechanism for driving said spindle, of contact pins removably arranged in said apertures, an arm mounted on said spindle, a wheel carried on said arm, and having

spokes arranged to engage said pins, an insulated terminal supported by the spindle, means carried by said wheel for making electric connection between the terminal and  
5 said arm and an electrical circuit including said dial and terminal.

10 5. In an electrical time switch, in combination, a clock-dial, and mechanism, movable contacts arranged on the said dial, a spindle driven by said mechanism, an arm on the spindle, an insulated electrical ter-

minal, an electrical circuit including the dial and said terminal, and rotary means carried by said arm for completing the circuit between the said dial and the terminal.

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

ARTHUR L. WOOD.

Witnesses:

M. M. FINNEY,

J. M. BREEN.