

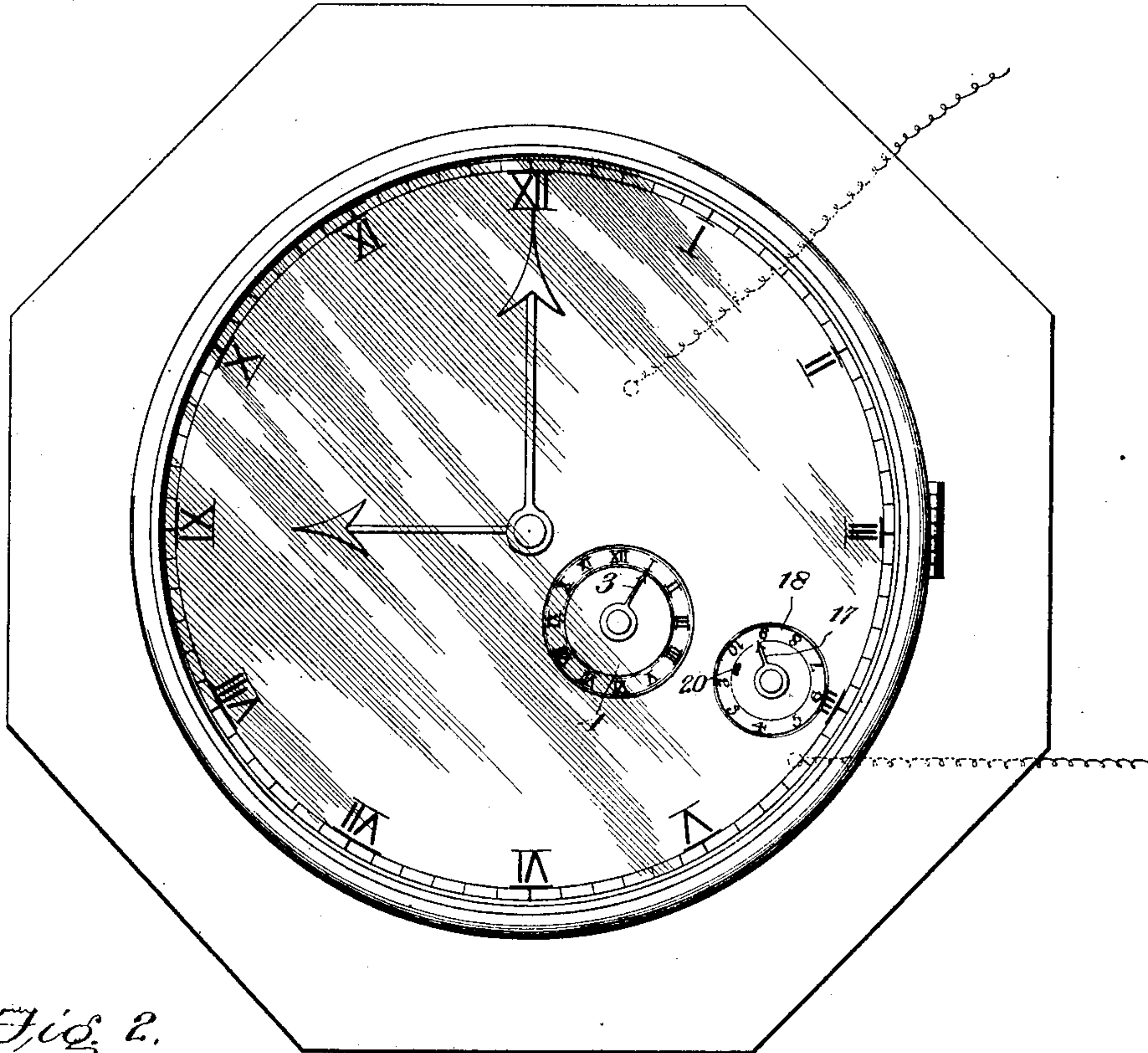
No. 754,410.

PATENTED MAR. 15, 1904.

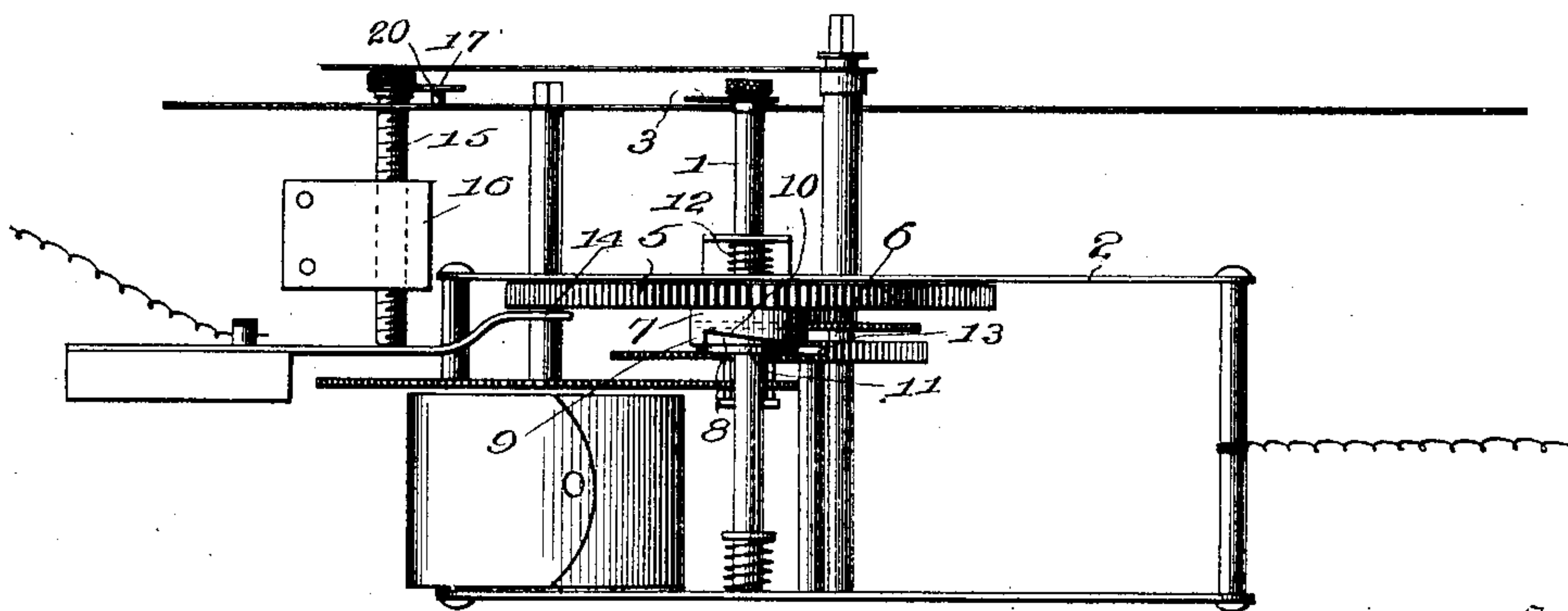
E. M. BENESCH.  
ELECTRIC TIME ALARM.  
APPLICATION FILED MAR. 7, 1903.

NO MODEL.

*Fig. 1.*



*Fig. 2.*



Inventor

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Witnesses

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# UNITED STATES PATENT OFFICE.

EMIL M. BENESCH, OF DENVER, COLORADO.

## ELECTRIC TIME-ALARM.

SPECIFICATION forming part of Letters Patent No. 754,410, dated March 15, 1904.

Application filed March 7, 1903. Serial No. 146,748. (No model.)

*To all whom it may concern:*

Be it known that I, EMIL M. BENESCH, a citizen of the United States, and a resident of Denver, in the county of Arapahoe and State of Colorado, have invented a new and useful Improvement in Circuit-Controllers, of which the following is a specification.

My invention relates to circuit-controllers, it being the object to provide means for the automatic control of a current either to turn it on or shut it off at a predetermined time, and in the present exemplification of the invention I have illustrated it in connection with a clock, it being my purpose to set certain mechanism in connection with the clock for causing the current to be turned on when desired or when a certain time arrives and to continue for a period to be indicated and which is provided for in the apparatus illustrated and described hereinafter.

With the foregoing objects in view my invention consists in certain novel features of construction and combinations of parts, which will be hereinafter described, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a view showing the face of a clock with the two dials and hands thereon for setting the current-controlling mechanism, and Fig. 2 is a sectional view.

It is my purpose to apply my improved mechanism in connection with any form of clockwork, and hence it is unnecessary to describe the clock mechanism in detail, as that forms no part of my invention.

In the construction illustrated I provide a spindle 1, which is capable of being turned, it being supported, preferably, in the frame 2 of the clockworks. This spindle 1 has an indicating-hand 3 on its outer end, which is adapted to be turned to the number on the dial 4 which indicates the hour at which the current is to be turned on. A large gear-wheel 5 is loosely mounted on this spindle 1, and its teeth mesh with the spur-teeth 6 of the clock mechanism, so that large gear-wheel 5 is revolved by the clock mechanism, its movement being relatively slow and continuous. The large gear-wheel 5 is provided with a hub 7, either secured thereon or as an integral part

thereof. This hub has a notch 8 in its periphery, which notch is formed with an abrupt shoulder 9 at one end and a gradual incline 10 from the inner end of the shoulder to the edge of the hub, where it merges into the latter after extending spirally around the spindle. A disk 11, which might be a straight pin, if desired, is secured to the spindle and has a projection 13, which forms an abutment for the outer edge of the hub 7, which bears thereon and is held yieldingly in contact therewith by the spiral spring 12, interposed between large gear-wheel 5 and a bracket  $\alpha$  on the clock-frame 2. This projection 13 controls the position of the large gear-wheel 5 and is adapted to be set in position by turning the indicator-hand 3, as it is rigidly attached to the spindle 1, to which the indicator-hand is likewise attached. The operation of this part is very simple. Having set the indicator-hand at the hour on the dial 4 at which the current is to be turned on, the projection 13 will be correspondingly set, so that when the hour arrives indicated by the hand 3 on the dial 4 and the main hands A and B of the clock correspond therewith the wheel 5 will have been turned so that the shoulder 9 of the hub 7 will have reached the projection 13, whereupon the wheel 5, with its hub, will instantly spring inward, due to the action of spiral spring 12, until stopped by the inner surface of the notch 8 striking the projection 13. This causes a contact with the brush 14, which rests in position normally to be engaged by the wheel, thus closing the circuit and turning the current on at the predetermined period of time, which has previously been indicated by the hand 3 on the dial 4. As the wheel 5 continues to revolve the cam action of the spirally-arranged inclining edge 10 causes it to recede gradually to its normal position until the wheel becomes disconnected from the brush 14 and the current is thereby shut off. As the wheel 5 is constructed with a prearranged number of teeth, it is intended to make one revolution a day, although, of course, this is not absolutely necessary if some other arrangement were desirable for any special purpose.

Means is also provided for determining the



duration of contact between the wheel 5 and brush 14—as, for instance, it may be desirable that the current remain on for a greater or less length of time. This is provided for in a very simple way. A screw 15 is arranged to turn in a bracket 16 and bear at its lower end on the brush 14, which is formed, preferably, of a spring-plate. By turning the screw inward, or to the right, the brush is forced inward farther away from the normal position of the wheel 5, and by reversing the screw the brush resumes a position closer to the wheel. Thus when the contact-brush 14 is forced inward by the screw 15 the duration of contact between the brush 14 and the wheel 5 will be less, and when screw 15 is turned outward and the brush extends outward the duration of contact will be correspondingly increased. In order to indicate the length of contact from the exterior, an indicator-hand 17 is provided on the outer end of the screw 15 and a dial 18 is numbered in reverse direction from “2” to “10,” or any other arbitrary arrangement might be provided. By turning the indicator-hand 17 to the right it will be seen that the contact will be decreased in period of duration, and consequently the numbers on the dial diminish accordingly. For example, on the dial indicated ten would be the maximum number of hours that the current would remain on, at the termination of which the contact between wheel 5 and brush 14 would be broken and the current shut off. In the dial indicated two is the minimum number of hours of duration, a stop 20 being provided between “2” and “10” to prevent the indicator-hand from being turned in either direction beyond that point.

It is obvious that by slight modification some other set means might be provided in lieu of the screw 15, although I find that most simple and successful for the purpose. It is equally true that other slight changes might be made in various parts of the mechanism. Any form of wiring may be adopted, and, if desired, a fuse-box could be of course employed.

From the foregoing it will be seen that I have provided a very simple mechanical arrangement to be used in connection with any ordinary clock for automatically switching electrical currents at any predetermined interval of time, and it may be applied to the purpose of turning on or off electric lights or electrical currents for motive power, heating, or other power.

Having fully described my invention, what

I claim as new, and desire to secure by Letters Patent, is—

1. The combination with a clock-face having a pair of dials thereon, and indicator-hands operating in connection with said dials, one to indicate the hour when a current is to be turned on and the other the number of hours for its duration, and automatic mechanism controlled by these hands for making and breaking an electrical circuit.

2. The combination with a movable contact, an adjustable contact, a dial, and a hand on the adjustment of the contact for indicating the position of the contact on the dial, of means for determining the time when the movable contact will engage the adjustable contact.

3. The combination with a suitable support, and a contact-wheel suitably actuated and loosely mounted on the support whereby to turn or slide thereon, of a projection on the support, an indicating-hand on said support, a dial upon which is indicated the hour when the current is to be turned on, a notched hub on the wheel, a contact-brush, means for adjusting said brush, a dial for indicating the duration of the current and a hand on said means to be turned on said dial.

4. The combination with a clock-face having a pair of dials thereon, one of which is numbered from “1” to “12,” and the other from “2” to “10,” and indicator-hands operating in connection with said dials, one to indicate the hour when a current is to be turned on and the other the number of hours for its duration, and automatic mechanism controlled by these hands for making and breaking an electrical circuit.

5. The combination with a spindle adapted to be turned and having a projection thereon, of a contact-wheel loosely mounted on the spindle and adapted to be rotated by a clock mechanism, said wheel having a hub, the periphery of which is notched, the notch having an abrupt shoulder at one end and spirally inclined from the inner end of the shoulder to the edge of the hub, and an adjustable contact-brush in position to be engaged by the wheel while the notch is opposite the projection on the spindle.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

EMIL M. BENESCH.

Witnesses:

GUSTAV OPITZ,  
JAMES R. KILLIAM.