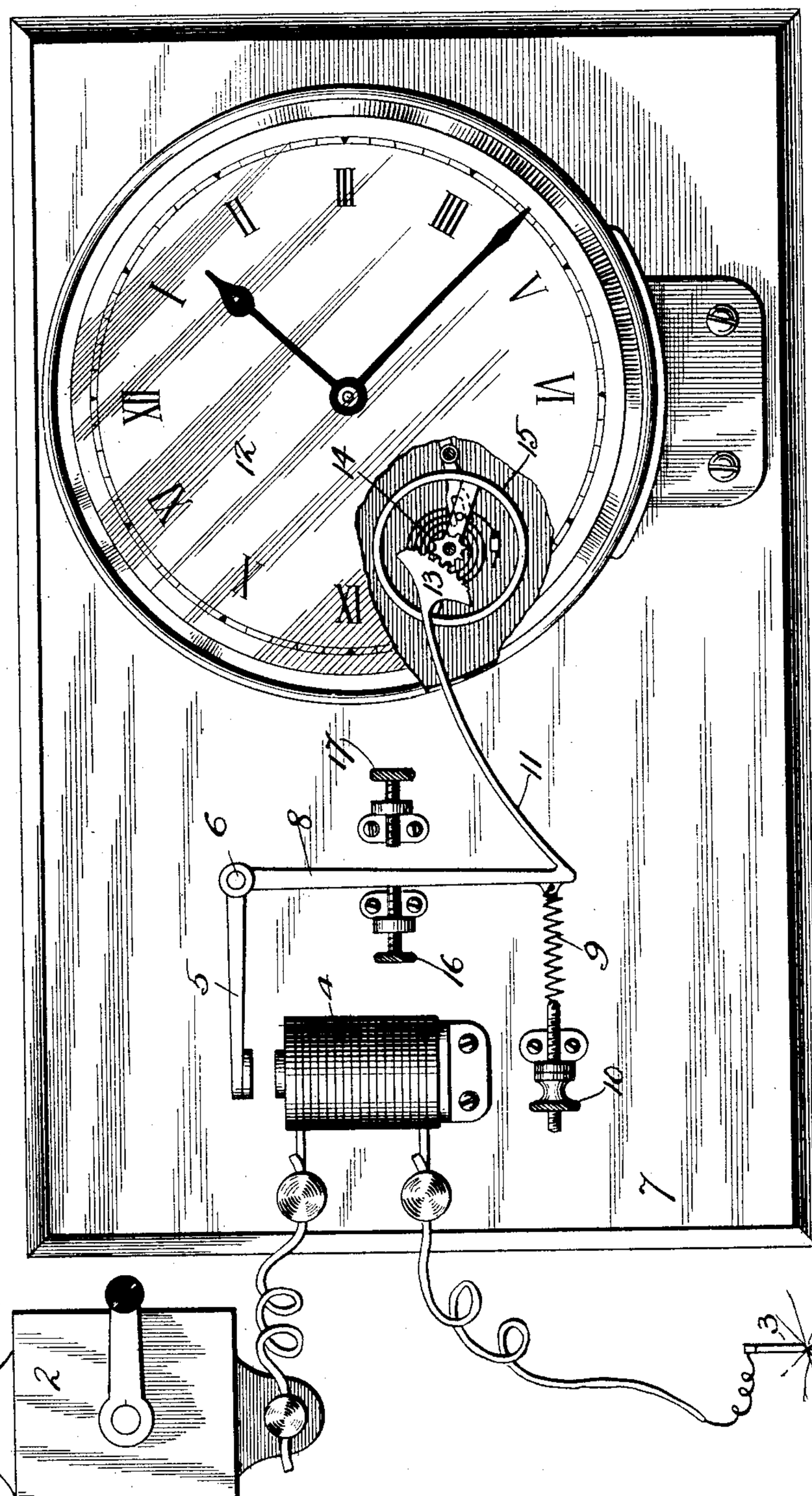
(No Model.)

C. C. SCHUMACHER & A. G. ZAMEL.

ELECTRIC METER.

No. 589,672. Patented Sept. 7, 1897.



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UNITED STATES PATENT OFFICE.

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ELECTRIC METER.

SPECIFICATION forming part of Letters Patent No. 589,672, dated September 7, 1897.

Application filed May 22, 1897. Serial No. 637,695. (No model.)

To all whom it may concern:

Be it known that we, CHARLES C. SCHUMACHER and ALBERT G. ZAMEL, citizens of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Devices for Recording the Duration of Use of Electric Currents, of which the following is a full, clear, and exact specification.

Our invention is designed more particularly for recording the duration of use of electric lights and more especially of arc-lights, it being the custom at present to rent arc-lights for use during certain hours and at the expiration of which time the current is either discontinued or the light switched off by a representative of the electric light company.

The object of our invention, therefore, is to provide improved and simple means whereby the length of time that the consumer burns the arc-light may be accurately recorded, thereby enabling small consumers to employ the arc-light without being compelled to pay for it for a certain length of time whether in use or not.

More specifically stated, the object of our invention is to interpose in the main circuit leading to the light, at a point between the light and the switch which controls it, an electrical device which, when the current flows therethrough to the lamp or light, will set in motion the mechanism of a clock or other time-recorder, and when the current is discontinued or shut off from the lamp will arrest the movement of said recording mechanism.

With these ends in view our invention consists in certain features of novelty in the construction, combination, and arrangement of parts by which the said objects and certain other objects hereinafter appearing are attained, all as fully described with reference to the accompanying drawing and more particularly pointed out in the claims.

The said drawing is a side elevation or face view of our improved recording device, showing a part of the clock or recorder dial broken away for disclosing some of the internal mechanism.

1 represents the line-wire, 2 an ordinary switch-box interposed therein between the source of supply and the light or lamp 3, and 4 is an electromagnet interposed in the circuit between the switch 2 and the lamp 3, such magnet being formed, if desired, by a section of the ordinary line conductor coiled the requisite number of times around a soft-iron core, so that when the light is turned on by means of the switch 2 the magnet 4 will be energized.

5 represents an armature pivoted at 6 to an ordinary base 7 or other suitable support and arranged to be attracted by the magnet 4. This armature 5 is provided with an arm 8, to which is attached a spring 9, made adjustable by set-screw 10 for holding the armature 5 normally aloof from the magnet 4. This arm 8 is provided with an extension 11, which passes through a suitable opening in the casing of a clock or other suitable recorder 12 and carries a toothed segment 13. This segment remains in mesh or engagement with a pinion 14 on the spindle of the balance-wheel 15 or other suitable part of the recording mechanism and holds the clock or recording mechanism at rest during the time that the current is turned off and the light is not in use; but as soon as the current is turned on and the magnet 4 becomes energized the downward movement of the armature 5 causes the segment 13 to ride past the pinion 14, and in doing so start the balance-wheel and put the recording mechanism in motion. The segment 13 remains in this elevated or advanced position out of contact with the pinion 14 as long as the current continues to pass and energize the magnet 4, and the instant the current is turned off the spring 9, or even the force of gravity acting upon the arm 11 and segment 13, returns the latter to its normal position, as shown in the drawing, in engagement with the pinion 14 on the balance-wheel spindle, and again stops the clock or recorder and holds it inactive until the current is again allowed to pass through the helix of the magnet.

The dial of the clock or recorder may be divided into any suitable number of graduations representing hours and fractions thereof, and it will be understood that in the use of the device the hands of the clock or recorder will be set at a predetermined hour and the length of time that the current has been used

will be determined by the difference between such hour and the point at which the hands are subsequently found.

16 and 17 represents set or adjusting screws arranged one on each side of the arm 8 and constituting adjustable stops for limiting the oscillation of such arm.

It will of course be understood that the described recording mechanism may be used with equal facility for recording the duration of time that electric currents are used for purposes other than electric lighting.

Having thus described our invention, what we claim as new therein, and desire to secure by Letters Patent, is—

1. A device for the purpose described having in combination a recorder provided with a balance-wheel, a pinion on said balance-wheel, a toothed segment engaging said pinion, an armature connected with said segment, and a magnet for attracting said armature, substantially as set forth.

2. A device for the purpose described having in combination an electric circuit or supply conductor, a switch interposed therein, an electromagnet interposed in said circuit between said switch and the point of consumption, an armature for said magnet, an arm projecting from said armature and carrying a toothed segment, a recorder having a pinion with which said segment engages and means for holding said segment in engagement with said pinion when the magnet is deënergized, substantially as set forth.

3. A device for the purpose described having in combination a recorder provided with a balance-wheel, a pinion on said balance-wheel, a pivoted armature having an arm, a segment carried by said arm and engaging said pinion and having its face struck on an arc concentric with the arc described by said arm whereby it will move into engagement with and also beyond and out of engagement with said pinion, and a magnet for attracting said armature, substantially as set forth.

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