(No Model.)

R. J. SHEEHY.

RECORDER AND REGISTER FOR ELECTRIC LIGHTING SYSTEMS.

No. 289,862. Patented Dec. 11, 1883

Fig. 1.

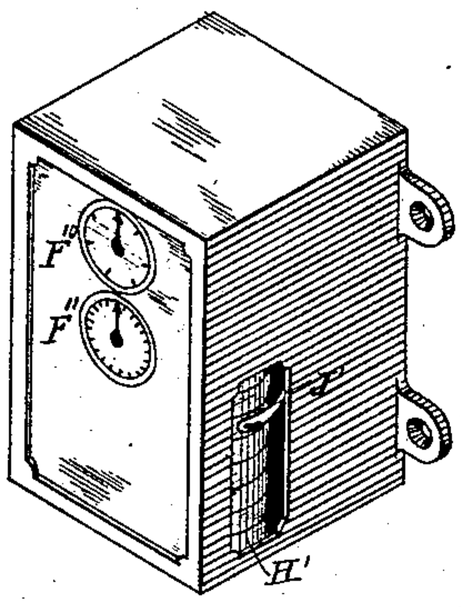


Fig. 3.

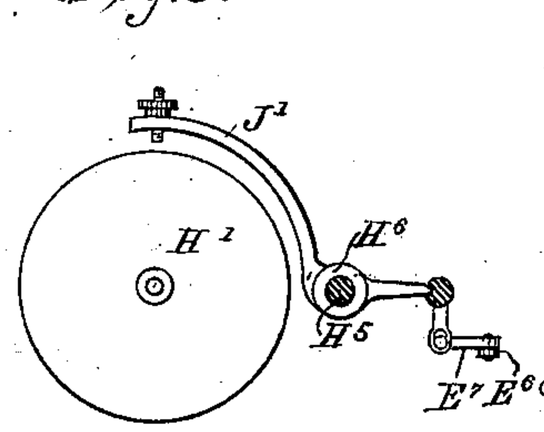
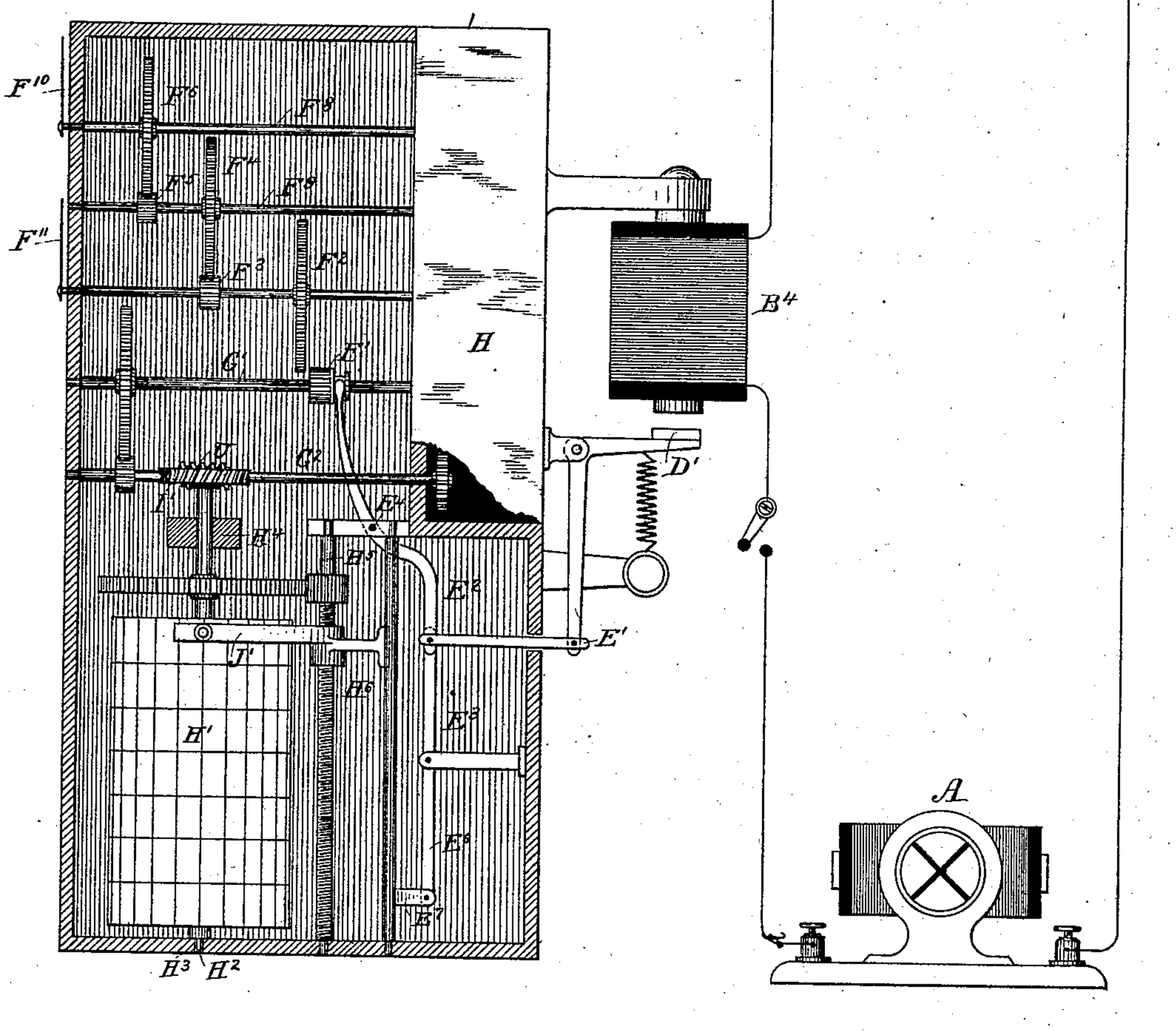


Fig. 2.



WITNESSES

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RECORDER AND REGISTER FOR ELECTRIC LIGHTING SYSTEMS.

SPECIFICATION forming part of Letters Patent No. 289,862, dated December 11, 1883.

Application filed October 12, 1882. (No model.)

To all whom it may concern:

Be it known that I, ROBERT J. SHEEHY, a citizen of the United States, residing in the city, county, and State of New York, have invented certain new and useful Improvements in a Recorder and Register for Electric Lighting Systems, of which the following is a specification.

My invention relates, in general, to the economical and practical management of electric lighting systems, and more particularly to appliances used for indicating and recording at required points along the line of the electric circuit the quantity of electricity which has been supplied to consumers at different points, as determined by the period of time during which service has been rendered.

The object of my invention is to present to the eye a visual indication or record of the aggregate period of time during which the service has been rendered at any given point, which will also show the several fractional periods which constitute said aggregate period, as well as the exact times at which they have occurred.

Under the present conditions of the art of electric lighting, it is usual to furnish the service during certain hours of each day, and to charge therefor a price determined by the number of days during which the customer has been supplied therewith. No means are provided by which the customer may be supplied with the service at such times only as he may desire it, nor by which the actual service thus rendered to said customer can be ascertained.

In the hitherto existing crude state of the art, these imperfect and approximate systems have been deemed admissible; but they are nevertheless open to serious commercial objections, inasmuch as the price is seldom in actual proportion to the service rendered, and no means are available by which disputes as to the proper value can be equitably settled, as in the case of gas systems, in which meters are provided for registering the consumption of gas.

The specific results accomplished and the mechanism which constitutes the subject-matter of this invention are, first, the ascertainment of the aggregate period during which the service has been rendered; and, secondly, the automatic production of a record exhibiting the exact periods during the day or week during which said service was rendered, which record may be considered as an itemized statement of the full service, and which therefore serves to corroborate the record of the aggregate service.

My invention may be applied to many of the electric lighting systems in use.

The various elements of apparatus which are employed in my invention I have combined in a single instrument, so as to furnish a practicable and serviceable article of manufacture, which may be used to supplement and complete the electric lighting system to which it may be applied.

My invention is set forth in the accompanying drawings, in which Figure 1 is a perspective view of my indicating and recording apparatus. Fig. 2 shows the same in vertical transverse section, with a diagram of the circuits employed. Fig. 3 is a detached elevation of parts of the recording device.

Parts appearing in more than one figure are designated in each by similar reference-letters.

Referring to Fig. 2, I have shown a circuit of conductors supplied with electrical currents by a generator, A, (which may be either a dynamo-electric machine or any other suitable generator,) which currents are conveyed by said conductors to various translating devices—as, for example, the electric-arc lamps B' B^2 B^3. The electro-magnet B^4 is included in the circuit of said conductors. It may be an independent magnet, as shown; or one of the regulating-magnets of the lamps B' B^2 B^3 may be made use of for this purpose. The armature D' is carried by the bent lever E', and is mechanically united with the levers E^2 and E^3, through which it performs, in addition to its office of separating the carbon electrodes, certain other functions, as follows: first, that of operating mechanism for giving a visual exhibition of the aggregate period during which the service has been rendered; and, second, that of operating a recording mechanism which prepares a record of the exact individual periods during each day or week in which the service was rendered. The first of these may be described in detail as follows: The forward movement of the armature D' acts to turn the lever E^2 upon its fulcrum E^4,

thus moving the shifting pinion F′ into engagement with the wheel F^2, thereby connecting the shaft G′ (which revolves continuously under the action of any suitable time-train mechanism contained in case H, and is actuated in any convenient manner by springs or weights) with an ordinary clock mechanism, comprising the wheels and pinions F^2 to F^6. The arbors F^8 and F^9 and the hands F^{10} and F^{11} revolve in the usual manner, the latter in front of dial-plates, as best seen in Figs. 1 at F^{10} and F^{11}. The upper dial may indicate days, and the lower dial hours, and as this mechanism will be in motion during the time that the lamp is in operation, and at no other time, the position of the hand upon the said dials at any given moment will denote the aggregate period of operation since they were originally set at the initial or zero point.

I will next describe that part of my invention which has for its object the production of an itemized diagram of the service. I have shown a drum, H′, turning upon an axis, H^2, journaled at H^3 and H^4. The said axis is continuously caused to rotate in one direction through the medium of the pinion I′ and worm U, which latter receives its motion from the arbor G^2 of the minute-hand of the time-train mechanism. The rotary motion of said axis is communicated by appropriate intermediate wheel-work to the shaft H^5, which is provided with a threaded exterior, upon which the nut H^6 travels. A stylus, J′, is carried by said nut, and under the influence of the time-train mechanism makes a traverse from one end of the threaded shaft to the other during a predetermined period of time—as, for example, one week. When such is the case, the drum is enveloped with a sheet of paper, upon which the days are indicated by seven equal divisions or spaces, as defined by the circumferential rulings shown in the drawings, which may be intersected at right angles by twenty-four lines, indicating the hour subdivisions.

When the circuits are not in operation, the stylus J′ is maintained in an elevated position above the surface of the drum; but when the magnet D is vitalized in the manner hereinbefore described, and the lever E^3 is actuated, the said stylus is drawn down upon the surface of the drum through the action of levers E^6 and E^7, which serve to depress the stylus by giving to the arm which carries the same a slight oscillation upon the threaded shaft. The manner in which this is effected will be understood by reference to Fig. 3. When thus depressed, a continuous record is produced upon the paper until the stylus is again elevated. Such a graphic record may be at any time interpreted in a manner well understood to show the exact times during the week in which the service has been rendered.

It is evident that when both these devices are employed in conjunction with each other, and simultaneously actuated by the same electro-magnet, the aggregate period presented by the dials must necessarily be always the same as that which would result by adding together the several periods indicated by the graphic record upon the surface of the drum. The object of using both devices in conjunction is, first, to provide a simple means for computing the value of light furnished, (and in this respect the indicating part of the mechanism takes the place of the ordinary gas-meter in gas systems;) and, second, to determine, in case of dispute, exactly the times and hours during which the service was furnished, so that the indicated period may be checked or corroborated and the question in controversy settled.

It is evident also that the device shown is equally well adapted to register and record the value of service other than electric lighting, which may be rendered through the medium of an electric current. Thus it is applicable for registering the amount of motive power furnished by electricity, and it may also be applied to electrical switch systems.

It is also apparent that an independent electro-magnet and armature may be used, if desired, to actuate the device, instead of employing the regulating electro-mangnet and armature of the electric lamp.

I claim as my invention—

1. The combination, substantially as hereinbefore set forth, of a movable armature actuated by the service-producing current, and a double system of levers connected with said armature, one of which controls mechanism for denoting the aggregate period of time during which said armature is so actuated, while the other produces an itemized record of said times or periods.

2. The combination, substantially as hereinbefore set forth, with an electric light circuit and an electro-magnet included therein, of devices for respectively indicating the aggregate period and graphically recording the successive fractional periods during which said magnet has been vitalized or the electric lights have been in action.

In testimony whereof I have hereunto subscribed my name this 5th day of October, A. D. 1882.

ROBERT J. SHEEHY.

Witnesses:
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