N° 16,902 A.D. 1898

Date of Application, 4th Aug., 1898
Complete Specification Left, 3rd May, 1899—Accepted, 17th June, 1899

PROVISIONAL SPECIFICATION.

[Communicated from abroad by Société Anonyme des Horloges Electriques Cauderay, of Place du Grand-Pont, Lausanne, in the Republic of Switzerland, Manufacturers.]

An Improved Electric Motive-mechanism for Clocks and the like.

I, Henry Harris Lake, of the Firm of Haseltine, Lake & Co., Patent Agents, 45, Southampton Buildings, in the County of Middlesex, do hereby declare the nature of this invention to be as follows:—

The invention consists in an electrical motive mechanism for clocks, and the like the automatic motion of which lasts until the battery is exhausted, the said mechanism necessitating no motive-spring nor motive-weight.

A pinion of any kind engages with the first wheel and is intended to be moved by the latter.

The shaft of the first wheel carries a ratchet-wheel in the teeth of which are engaged on the one hand, a click pivoted to the armature of an electro-magnet and, on the other hand, a counter-click secured to a lever pivoted to a fixed bridge.

The armature click is pressed from right to left by a spring fixed to the armature which is controlled by a spring fixed to a pillar and connected to the armature. A set screw limits the movement of the same. It will be understood that, by means of this device, every time the armature is attracted by the electro-magnet and then freed again, the click will rotate the ratchet-wheel one tooth.

The counter click is pressed against the teeth of the ratchet wheel by means of a spring and it is lifted by a tooth of the ratchet-wheel every time the armature click rotates the same one tooth, then the counter click drops into the next space.

The counter click is electrically separated from the lever by a plate composed of an insulating material. On the other hand the lever carries a contact-screw the pointed end of which is intended to connect it with a conducting plate fixed to the armature click. When the armature is attracted by the electro-magnet and the click, escapes the teeth of the ratchet wheel against which it was bearing to engage with the next tooth falling a little from right to left, the contact between the pointed end and the plate is temporarily interrupted until the spring has raised up the armature.

The interruption of contact between plate and pointed end takes place on a point of the plate different from the point where this contact had been established by the meeting of said plate with the pointed end, the plate sliding against the point during the downwards motion of the armature click. This has the double advantage of avoiding the production of sparks and to continually brighten the contact surface.

A battery of any kind acts upon the electro-magnet the circuit being as follows: from battery to bridge, lever, contact screw, plate, armature click, armature, pivot bridge, coils of the electro-magnet and return to battery.

[*Price* 8*d*.]

In this mechanism the duration of the electrical-contact is reduced to $^1/_{20}$ or $^1/_{30}$ of a second; so that the exhaustion of the battery is very slow.

Dated this 4th day of August 1898.

HASELTINE, LAKE & Co.,
45, Southampton Buildings, London, W.C.,
Agents for the Applicant.

COMPLETE SPECIFICATION.

An Improved Electric Motive-mechanism for Clocks and the like.

I, HENRY HARRIS LAKE, of the Firm of Haseltine, Lake & Co., Patent Agents, 45, Southampton Buildings, in the County of Middlesex, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

The invention consists in an electrical motive mechanism for clocks, and the like, the automatic motion of which lasts until the battery is exhausted, the said mechanism obviating the necessity of motive-springs or weights.

The invention is illustrated in the accompanying drawing.

H is the first wheel of a clock-movement of any construction, which is to be rotated. I is a pinion of any kind engaging with the wheel H and intended to be moved or operated by the latter.

The shaft of the wheel H carries a ratchet-wheel G with the teeth of which engages, on the one hand, a click or pawl B pivoted to the armature A of an electro-magnet E and on the other hand, a counter-click F secured to a lever C pivoted to a fixed bridge M.

The armature or pawl B is pressed from right to left by a spring K fixed to the armature A which is acted upon upwardly by a spring R having one end fixed to a pillar S and the other end connected to the armature A. An abutment or stop N limits the movement of the said armature. It will be understood that, by means of this device, every time the armature A is attracted by the electro-magnet E and then released again, the click or pawl B will rotate the ratchet-wheel G one tooth.

The counter click F is pressed against the teeth of the ratchet wheel G by means of a spring L; and it is lifted by a tooth of the ratchet-wheel G every time the armature click B rotates the same one tooth, then the said counter click F drops into the next space.

The counter click F is electrically separated from the lever C by a plate U composed of an insulating material. On the other hand the lever C carries a contact-screw D the pointed end *a* of which is intended to connect it with a conducting plate *b* fixed to the armature click B. When the armature A is attracted by the electro-magnet E and the click B escapes the teeth of the ratchet-wheel G against which it was bearing and engages with the next tooth falling a little from right to left, the contact between the pointed end *a* and the plate *b* is temporarily interrupted until the spring R has raised the armature A.

The interruption of contact between *b* and *a* takes place on a point of the plate *b* different from the point where this contact had been established by the meeting of *b* with *a*, the plate *b* sliding against the point *a* during the downwards motion of the armature click B. This has the double advantage of avoiding the production of sparks and continually brightening or cleaning the contact surface.

V is a battery of any kind which acts upon the electro-magnet E the circuit being as follows: from V* to bridge M, lever C, contact screw D *a*, plate *b*, armature

click B, armature A, pivot O, bridge P, coils of the electromagnet E and returning to the battery at V.

It may be seen that in the position of the parts illustrated in the drawing, this circuit is closed; the attraction of the armature A by the electro-magnet E and consequently the rupture between *a* and *b* will result. This interruption of current allows the spring R to lift up the armature A the click of which then produces the rotation of the ratchet-wheel G through one of its teeth to bring the pieces back to the position indicated in the drawing.

In this mechanism the duration of the electrical-contact is reduced to $^1/_{20}$ or $^1/_{30}$ of a second; so that the exhaustion of the battery is very slow.

Having now particularly described and ascertained the nature of this invention and in what manner the same is to be performed, as communicated to me by my foreign correspondents, I declare that what I claim is;—

1. Electrical motive mechanism for clocks and the like characterized by the combination of a ratchet-wheel with two clicks, one of which is carried by the armature of an electro-magnet and intended to produce the rotation, tooth by tooth, of the said ratchet-wheel, whilst the other click is provided with an electrical connecting-device included in the circuit of said electro-magnet, so that the circuit is automatically interrupted each time the armature is attracted by the electro-magnet, a spring being combined with said armature to lift it up and to produce the rotation of said ratchet-wheel.

2. The electrical motive mechanism constructed and arranged substantially as described and shown in the drawing.

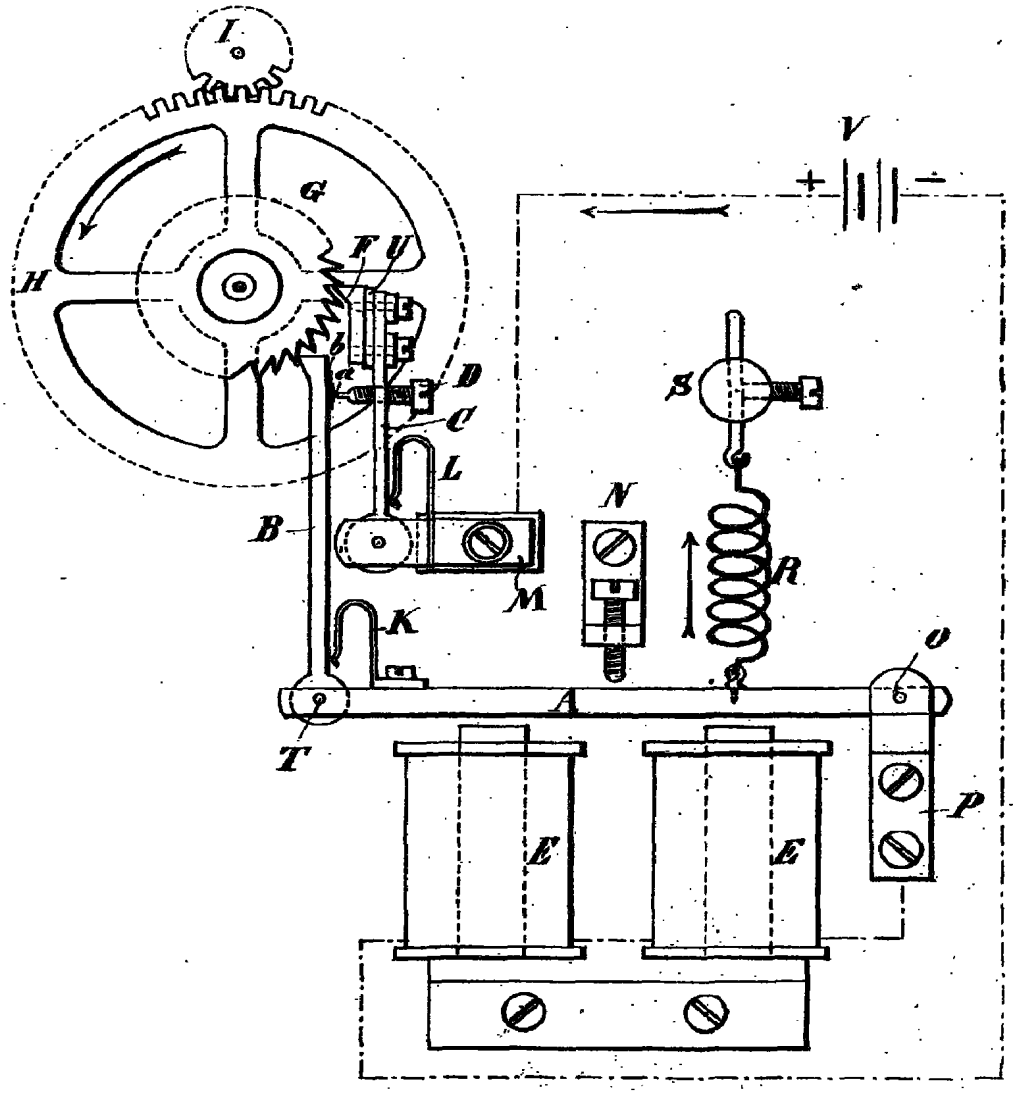
Dated this 3rd day of May 1899.

HASELTINE, LAKE & Co.,
45, Southampton Buildings, London, W.C.,
Agents for the Applicant.

Redhill: Printed for Her Majesty's Stationery Office, by Malcomson & Co., Ltd.—1899

A.D. 1898. Aug. 4. Nº. 16,902.

LAKE'S Complete Specification. *(1 SHEET)*



[This Drawing is a full-size reproduction of the Original.]

Malby & Sons, Photo-Litho.