No. 777,974. PATENTED DEC. 20, 1904.

D. PERRET.

# ELECTROMOTIVE DEVICE FOR CLOCKS.

APPLICATION FILED MAY 27, 1904.

NO MODEL.

*Fig. 1*

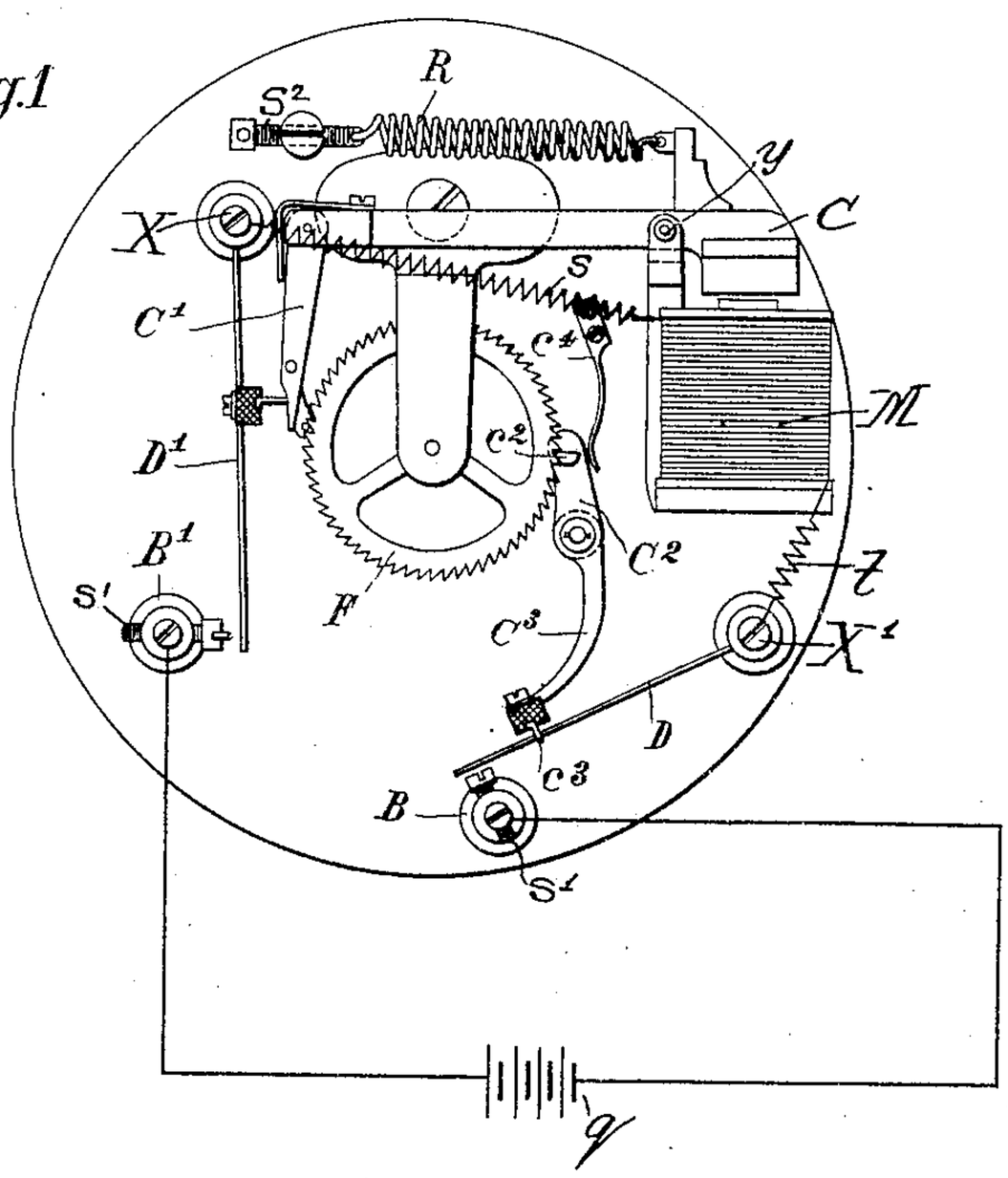
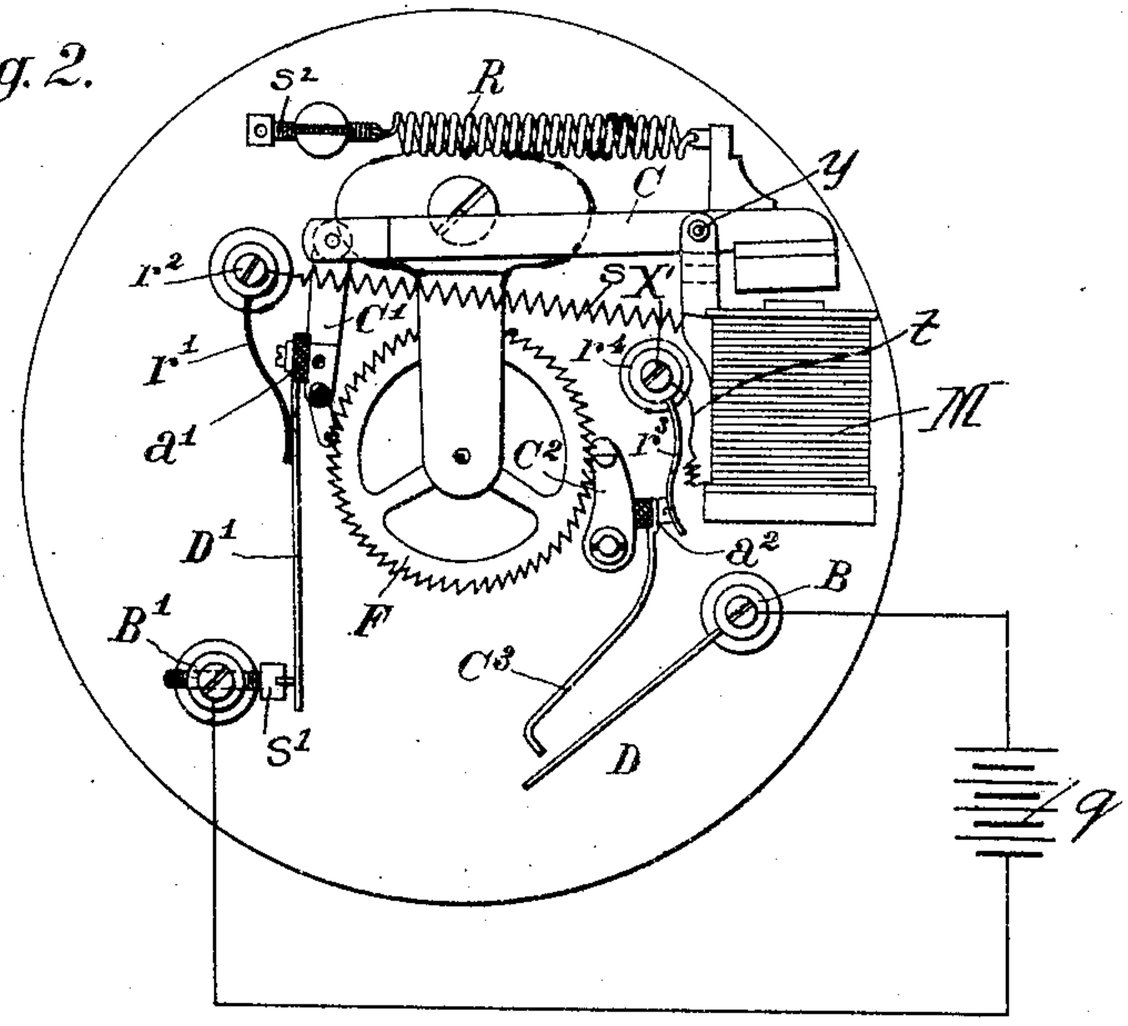



*Fig. 2.*

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No. 777,974. Patented December 20, 1904.

# UNITED STATES PATENT OFFICE.

DAVID PERRET, OF NEUCHÂTEL, SWITZERLAND.

## ELECTROMOTIVE DEVICE FOR CLOCKS.

SPECIFICATION forming part of Letters Patent No. 777,974, dated December 20, 1904.

Application filed May 27, 1904. Serial No. 210,068.

*To all whom it may concern:*

Be it known that I, DAVID PERRET, a citizen of the Republic of Switzerland, residing in Neuchâtel, Switzerland, have invented certain new and useful Improvements in Electric Motive Devices for Clocks, &c., of which the following is a specification.

The invention relates to an improved means for acting upon and winding up clockwork and similar mechanisms, being an improvement upon the motive device embodying a double-acting circuit-interrupter for which I was granted Letters Patent No. 658,997, dated October 21, 1900. It has been found that the device covered by said patent has the disadvantage that the lapse of time between the two interruptions is very short, thus necessitating the greatest accuracy and the accompanying loss of time in regulating the mechanism; and the present invention aims to provide a device of this class which may be regulated with much greater facility than my patented device and those at present in use.

With these and further objects in view the invention consists in the novel features and combinations of parts to be now described and claimed.

In the accompanying drawings, Figure 1 is a diagrammatic view of one embodiment of the invention, and Fig. 2 is a similar view showing a slightly-modified arrangement.

Similar characters of reference indicate corresponding parts in both views.

Referring to the drawings, F designates a ratchet-wheel fixed upon the axis of any wheel of the mechanism to be rotated—for instance, on the axis of the first wheel of a clockwork, &c.

C′ denotes a click which is pivoted to the armature C of an electromagnet M, said armature being likewise pivoted at $y$ and intended to rotate the wheel F tooth by tooth under the action of the helical spring R, which is fixed at one end to said armature and adjustably secured at its outer end by means of a screw $s^2$ to a fixed part of the mechanism. Wires $s$ and $t$ connect the magnet M to binding-posts X and X′, to which are fixed contact-springs D and D′, the ends of which are adapted to contact with set-screws $s'$ in binding-posts B and B′, these latter being in circuit with a battery $q$. These contact-springs D and D′ are adapted to actuate ratchet-wheel-engaging clicks $C^2$ C′, the arrangement of which will now be described.

In the arrangement shown in Fig. 1 a click $C^2$ is actuated by the contact-spring D, said click being provided with a lug or catch $c^2$ for successive engagement with the teeth of the wheel F and connected with an arm $C^3$ of greater length than said click, said arm being provided with a forked terminal $c^3$, embracing the contact-spring D. Furthermore, said click $C^2$ is controlled by a spring $c^4$, fixed to the base-plate or other suitable part of the mechanism and which normally retains said click in engagement with the ratchet-wheel F. As this spring aids the contact-spring D in its function of pressing the click against the wheel, said contact-spring may be made very delicately without involving any inaccuracy in the operation of the mechanism. The lever-arm $C^3$ being longer than the click $C^2$, the result is that the relatively short movement of the tooth $c^2$ of the click $C^2$ will correspond to a proportionately long trajectory described by fork $c^3$, which causes the shifting of the contact-spring D. At a given rotation and toothing of wheel F a greater lapse of time between the closing of the circuits in B and in B′ and a better pressure between the two contacts are therefore obtained. The operation of the device just described is as follows: At the moment the circuit is closed both in B and in B′ the armature is attracted by the electromagnet and the spiral spring R is suddenly stretched, in consequence of which the contact in B′ is interrupted by the backward motion of click C′ and spring D′, upon which the action of spring R again causes the rotation of wheel F, and consequently the raising of click $C^2$ and of spring D. After a very short action of the ratchet-wheel tooth upon the lug $c^2$, (for instance, five seconds,) the spring D will be out of contact with B, and supposing a time of twenty seconds to be left, for instance, between the operation of the two contacts there will remain of the whole minute to which corresponds the rotation of one tooth-wheel F a delay of thirty-

five seconds within which the closing of the contact in B′ and its securing by the pressure of click C′ against spring D′ may take place in quite an efficient and complete manner. By means of the spring $c^4$ the pressure of the contact-spring D upon the contact-piece B may be controlled independently of the power of spring D.

The arrangement shown in Fig. 2 is intended to be used in cases in which the contacts are required to be produced by friction as well as by pressure. In this construction the contact-spring D′ is connected, by means of an insulating-piece $a'$, to click C′ and moves with the latter, whereby the contact is produced by friction of its end against the terminal B′. A spring $r'$, fixed to an insulating-piece $r^2$ and connected at one of its ends to the winding of the electromagnet, causes said click to bear against the teeth of wheel F and at the same time establishes the electric connection between D′ and said winding. On the other hand, the lever-arm $C^3$ in this instance does not bear the fork $c^3$ of Fig. 1, but is secured to click $C^2$ by means of an insulating-piece $a^2$, and during the descent of click $C^2$ in the ratchet-tooth it simply bears against spring D. As the end of said lever $C^3$ describes a circle, a contact by friction with spring D will necessarily be produced. A spring $r^3$, fixed to an insulated terminal $r^4$, to which is connected the other end of the electric magnet-winding, serves to establish the electric connection between the latter and arm $C^3$. In certain cases the ends of the winding of the electromagnet might be connected directly one to contact-spring D′ and the other to the arm $C^3$, thus dispensing with the insulated terminals $r^2$ and $r^4$.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. In an electric motive device for clocks and similar mechanisms, a ratchet-wheel, an electrically-connected spring-contact, and a double-armed click, the shorter arm of which normally engages said ratchet-wheel, while the longer arm engages said spring-contact.

2. In an electric motive device for clocks and similar mechanisms, a ratchet-wheel, an electrically-connected spring-contact, a double-armed click having a longer arm for engagement with said spring-contact and a shorter arm for engagement with said ratchet-wheel, and a spring for independently controlling said shorter arm.

3. In an electric motive device, a ratchet-wheel, an electrically-connected spring-contact, and a double-armed click, one arm of which normally engages said ratchet-wheel, while the other arm is provided with a terminal fork engaging said spring-contact.

4. In an electric motive device, a ratchet-wheel, an electrically-connected spring-contact, a click mechanism embodying a longer and a shorter arm, said shorter arm normally engaging said ratchet-wheel and said longer arm engaging said spring-contact, means for controlling the action of the shorter arm of said lever, and an insulated connection between said arms.

In testimony that I claim the foregoing as my invention I have signed my name in presence of two subscribing witnesses.

DAVID PERRET

Witnesses:
ARMAND TERRELET,
JULIO CHAPUY.