

(No Model.)

J. W. & C. F. DU LANEY.
ELECTRIC CLOCK WINDER.

No. 461,423.

Patented Oct. 20, 1891.

Fig. 1.

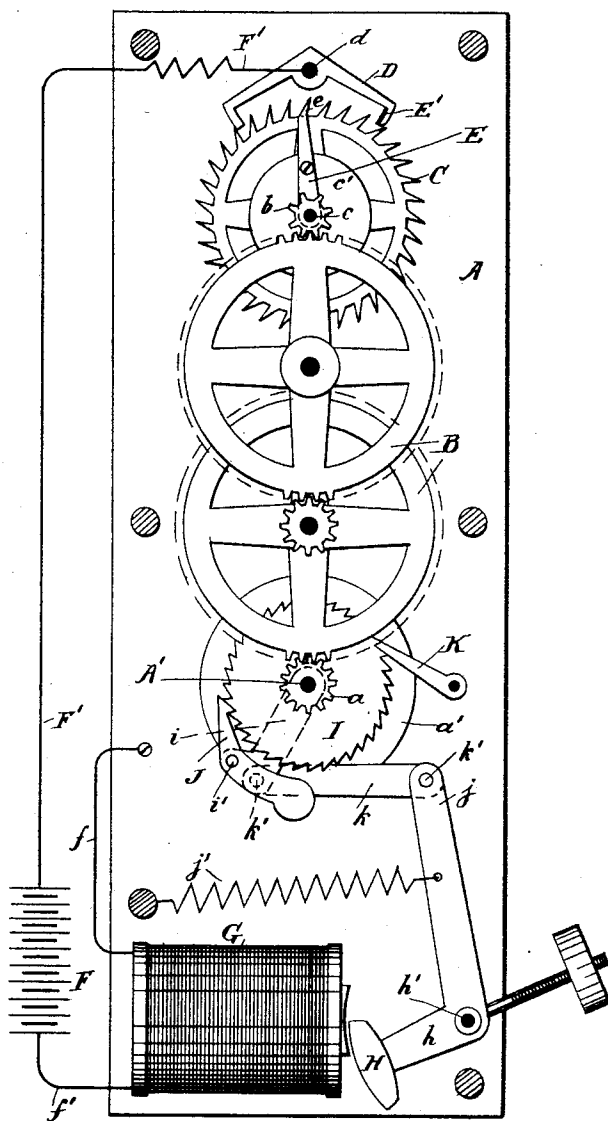
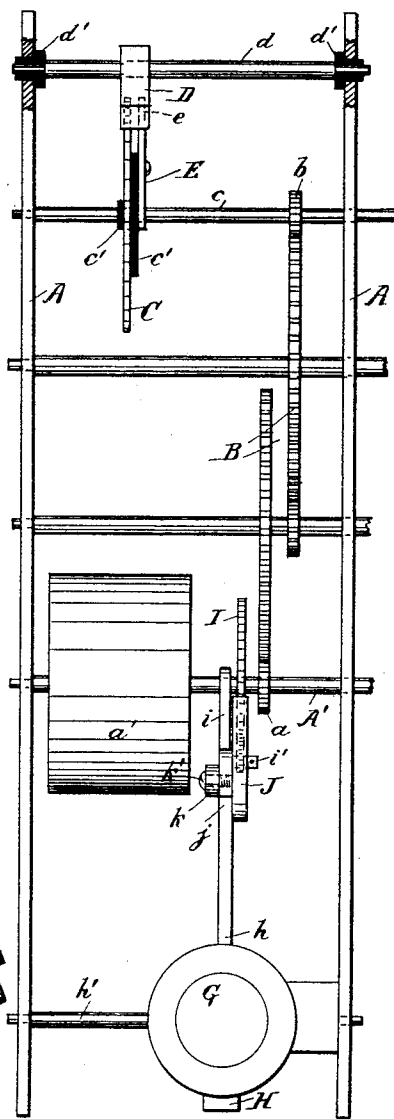


Fig. 2.



WITNESSES.

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UNITED STATES PATENT OFFICE.

JAMES W. DU LANEY AND CHARLES F. DU LANEY, OF CANTON, OHIO.

ELECTRIC CLOCK-WINDER.

SPECIFICATION forming part of Letters Patent No. 461,423, dated October 20, 1891.

Application filed February 12, 1891. Serial No. 381,142. (No model.)

To all whom it may concern:

Be it known that we, JAMES W. DU LANEY and CHARLES F. DU LANEY, citizens of the United States, residing at Canton, in the county of Stark and State of Ohio, have invented certain new and useful Improvements in Electric Clock-Winders; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to devices for automatically winding up clocks by means of electricity; and it consists in the novel construction and combination of the parts hereinafter fully described and claimed.

In the drawings, Figure 1 is a front view of a clock with the front part of the case removed. Fig. 2 is a side view of the clock.

A is the frame of the clock, which may be of any ordinary approved construction.

A' is the barrel-shaft journaled in the clock-frame and provided with a barrel *a'* for the driving-spring in the usual way. A pinion *a* is secured upon the shaft A' and forms a part of the ordinary train of driving-wheels B.

C is the escapement-wheel secured upon the shaft *c* and insulated from the said shaft by the flanged bush *c'*.

D is the pallet, which engages with the escapement-wheel C in the usual way, and *d* is the pallet-shaft. The pallet-shaft *d* is journaled in the insulating-bushes *d'*, supported in the frame A. A toothed pinion *b* is secured upon the escapement-wheel shaft and gears into the upper toothed wheel of the train of wheels B. The parts of the clock which are not shown in the drawings and which are not herein described do not differ from those ordinarily used in clocks.

E is a contact-arm, which is secured upon the escapement-wheel shaft and has the escapement-wheel insulated from it by the flange of the said bush *c'*. The arm E terminates in a contact-tooth *e*, which corresponds in form with the teeth of the escapement-wheel and takes the place of a tooth with which the wheel would be provided at that part of its periphery if the tooth *e* were not used.

E' is a plate of insulating material on one end of the pallet D, which plate comes in contact with the teeth of the wheel and the tooth

e, so that electrical connection can only be had with the other end of the pallet.

F is a battery, and G is an electro-magnet secured to the frame A.

F' is a wire which connects the battery with the insulated pallet-shaft *d*, and *f'* is a wire which connects the battery with the electro-magnet. A wire *f* connects the electro-magnet with the clock-frame, so that the escapement-wheel shaft and the contact-tooth *e* are always included in the circuit with the pallet.

H is the armature of the electro-magnet, secured to one end of the bell-crank lever *h*, which is pivoted on the shaft *h'*, supported by the frame A.

I is a ratchet-wheel secured on the barrel-shaft A', and *i* is a radius-link pivoted on the said shaft.

J is a gravity-pawl pivoted on the pin *i'*, projecting from the radius-link.

K is a check-pawl for preventing the back movement of the ratchet-wheel. A link *k* is pivoted to the radius-link at one end and at the other end to the end *j* of the bell-crank lever by the pins *k'*, and the said pawl J engages with the teeth of the ratchet-wheel.

The armature is normally held off from the magnet by gravity, but a spring *j'* may be used, if desired. Whenever the contact-tooth *e* touches the uninsulated end of the pallet it completes the circuit. The battery excites the magnet and causes the armature to be attracted. The motion of the armature turns the radius-link and pawl and partially revolves the ratchet-wheel, which is secured upon the barrel-shaft of the clock. This motion of the barrel-shaft winds up the spring for the amount it had run down since the electric circuit was last completed by the tooth *e*, and thereby keeps the said spring at a substantially uniform tension.

The contact-arm may be duplicated, and more than one contact-tooth *e* may be arranged on the circumference of the escapement-wheel, if it is desired to wind up the clock oftener than once for each revolution of the escapement-wheel.

It is obvious that the escapement provided with the contact-tooth *e* upon one clock may be made to actuate the above-described electric winding devices upon another clock or any number of clocks provided with such de-

vices, if all the clocks are included in the electric circuit.

A modification of the contact mechanism, in which the escapement-wheel is not insulated and in which the pallet is provided with insulating-plates at each end, is fully described and claimed in a concurrent application filed May 13, 1891, Serial No. 392,557.

What we claim is—

10 1. The combination, with the insulated escapement-wheel provided with a space for a tooth, of an arm mounted on the escapement-wheel shaft and provided with a contact-tooth opposite the said space, and an insulated escapement-pallet included in the circuit with the said contact-tooth and provided with an insulating-plate at one end, substantially as
15 and for the purpose set forth.

2. The combination, with the escapement-wheel shaft, of the insulating flanged bush secured on the said shaft, the escapement-wheel secured on the said bush and provided with a space for a tooth, the arm secured to the shaft against the flange of the said bush

and provided with a contact-tooth opposite the said space, the insulated pallet-shaft included in the circuit with the said escapement-wheel shaft, and the escapement-pallet provided with an insulating-plate at one end and secured on the said pallet-shaft, substantially as and for the purpose set forth.

3. The combination, with the winding-barrel shaft and the ratchet-wheel secured thereon, of the radius-link, the pawl pivoted to the radius-link, the check-pawl, the electro-magnet, the armature carried by a pivoted lever, the link pivoted to the said lever and to the said radius-link, a battery, and a circuit making and breaking device attached to the escapement and operating periodically, substantially as and for the purpose set forth.

In testimony whereof we affix our signatures in presence of two witnesses.

JAMES W. DU LANEY.

CHARLES F. DU LANEY.

Witnesses:

H. H. HILTON,

JOHN G. PRICE.