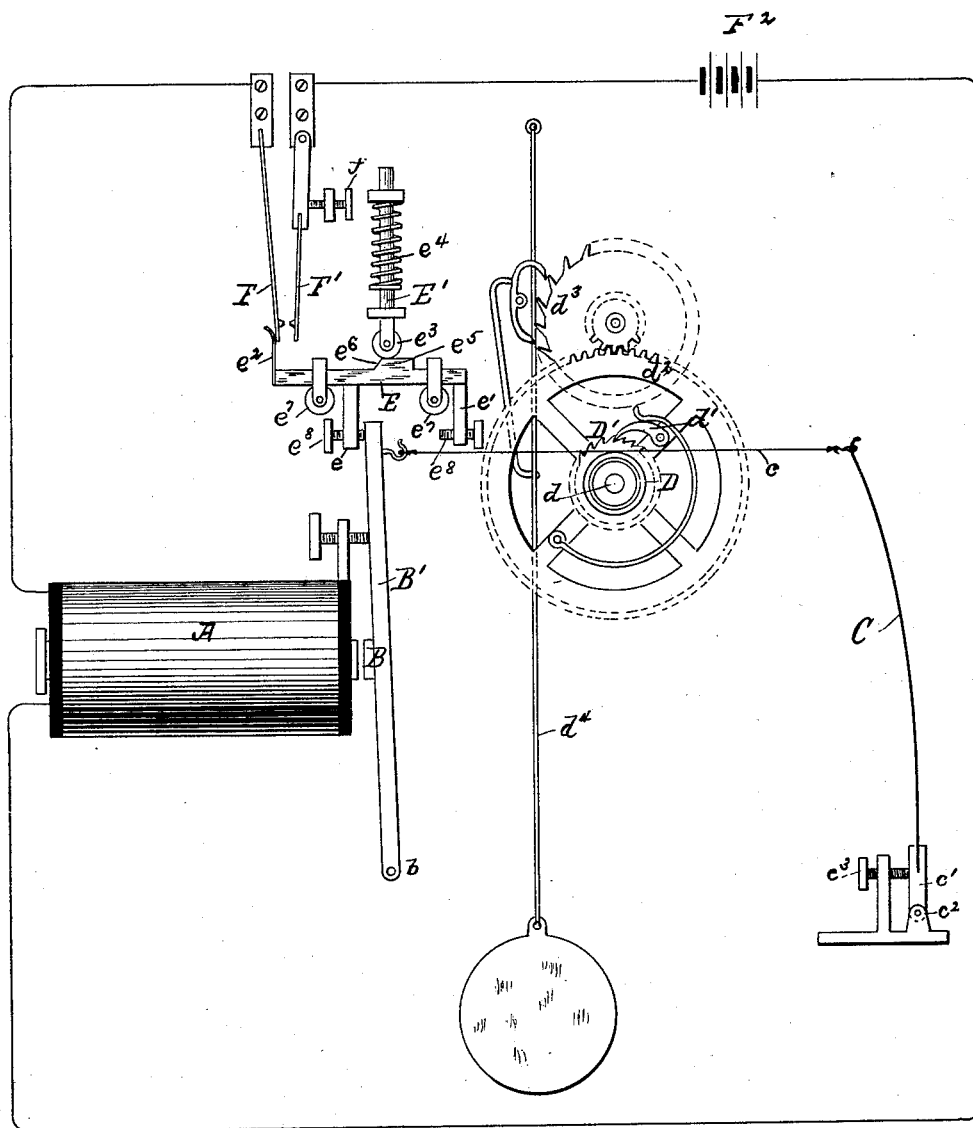


(No Model.)

S. C. DICKINSON.
ELECTRIC CLOCK MOVEMENT.

No. 346,094.

Patented July 27, 1886.



WITNESSES:

Henry Locking
A. S. Fitch

INVENTOR

Silas C. Dickinson

BY

A. S. Fitch
ATTORNEY

UNITED STATES PATENT OFFICE.

SILAS C. DICKINSON, OF WILTON, IOWA.

ELECTRIC-CLOCK MOVEMENT.

SPECIFICATION forming part of Letters Patent No. 346,094, dated July 27, 1886.

Application filed February 27, 1886. Serial No. 193,542. (No model.)

To all whom it may concern:

Be it known that I, SILAS C. DICKINSON, of Wilton, county of Muscatine, State of Iowa, have invented certain Improvements in Electric-Clock Movements, of which the following is a full, clear, and exact description, reference being had to the accompanying drawing, forming part of this specification.

My invention relates to an electric-clock movement; and it consists in certain improvements, hereinafter particularly described, upon the mechanism for this purpose for which Letters Patent No. 334,517 were granted to me January 19, 1886.

In the drawing there is shown in elevation an electric-clock movement containing my invention.

A is an electro-magnet. B is an armature carried by an armature-lever, B', which is pivoted at *b*. C is a spring, the free end of which is connected by a cord, *c*, to the free end of the lever B', the cord being looped or given a turn or turns around a drum, D, placed intermediate to the spring and lever, as shown, and which is mounted to revolve on a shaft, *d*. The drum is provided with a ratchet, D', with which engages a pawl, *d'*, carried by the spur-wheel *d''* on said shaft. The cord *c* is of such a length that when the armature is in contact with the magnet the spring will be flexed, as shown. The operation of these devices, as fully set forth in my issued Letters Patent above referred to, is obvious. The drawing of the armature-lever from and out of contact with the magnet by the recoil of the spring C through cord *c* operates to rotate the shaft *d* through the drum D and its ratchet and pawl, and the drawing of the lever B' toward the magnet reversely rotates the drum D when the magnet is excited. The wheel *d''* being thus intermittently rotated in one direction, it may be combined with an escapement, *e'*, and pendulum *d'*, and thus the devices serve to actuate a clock-movement.

E is a bar, which slides in suitable guides, and is placed above the end of the lever B', and has the downwardly-reaching arms *e e'*, adapted to engage the end of the said lever.

F F' are two spring bars or tongues, mounted in clamps and placed in the circuit of the battery F². These tongues are parallel to each other, and located relatively to the bar E so

that the arm *e'* thereof is adapted to engage one of the tongues. The movement of the bar in its ways in one direction causes the arm *e'* to engage the tongue F and carry it to contact with the tongue F', and thus close the circuit and excite the magnet, and the movement of the bar in the reverse direction causes the tongue F to be released, and thus to break the circuit. The swinging of the lever B' to the right by the recoil of the spring C throws the lever into engagement with the arm *e'* of the bar E, and thus slides the bar to the right, and the tongue F is brought into contact with the tongue F' and the circuit is closed. The magnet being thus excited, the armature-lever B' is drawn or swung to the left, or toward the magnet, and the lever engages the arm *e* of the bar E, and the bar is thus slid to the left and the tongue F released, when the circuit is broken and the magnet ceases to act, and the spring again draws the lever B' to the right. This operation, as set forth in my aforesaid Letters Patent, is continuous, the circuit being thus alternately opened and closed. My present improvement consists in the combination, with the said bar E, of a rod, E', arranged to slide in ways and at right angles to said bar, and carrying a friction-roller, *e''*, which engages the surface of the bar, and provided with a spring, *e'''*, which operates to hold said roller into engagement with said bar. Upon the face of the bar which the said roller engages is formed the projection *e''*, with an incline, *e'''*, leading from the face of the bar to the top of the projection. I furthermore find it desirable to provide the friction-rollers *e''* for the bar to travel upon in the ways or guides thereof, as shown. These devices are arranged relatively to each other, so that when the circuit is broken and the spring draws the armature-lever B' to the right to engagement with the arm *e'* of the bar E, and the bar is thus shifted to the right, the roller *e''*, at or near the limit of the movement of the lever in this direction, will engage the incline *e'''*, passing thereto from the top of the projection *e''*, and thus operate to carry the bar somewhat farther to the right, and thus insure the perfect contact of the tongues F F' through the arm *e'* and the closing of the circuit. When the armature-lever B' is then drawn toward the

magnet and its end engages the arm *e* of the bar and throws the bar to the left, the roller *e*³ will ascend the incline *e*⁶ to the top of the projection and assume position to be ready to again descend to assist in causing the closing of the circuit at the succeeding reverse swing of the lever.

I find it desirable to seat the spring *C* in a block, *e*¹, which is hinged or pivoted at *e*², and which has a set-screw, *e*³, bearing against it, as shown, so that the tension of the spring *C* may be adjusted. I also prefer to similarly seat the spring-tongue *F*¹, and to provide a set-screw, *f*, so that the distance apart of the tongues may be regulated at pleasure. It is furthermore desirable to provide the adjustable set screws *e*³ in the arms *e e*¹ of the bar *E*, for an obvious purpose.

I find that by means of my described improvements the described devices operate with

greater ease and precision, and that there is less liability to wear upon the various parts.

What I claim as my invention, and desire to secure by Letters Patent, is—

In an electric-clock movement having an electro-magnet and its armature-lever, as a spring, *C*, and shaft *d*, and devices, substantially as described, whereby the tension of said spring operates to rotate the shaft, the combination therewith of the bar *E*, carrying arms *e, e*¹, and *e*², and having projection *e*³ and its incline *e*⁶, and movable, as described, together with the rod *E*¹, provided with spring *e*⁴, and carrying roller *e*⁵ in engagement with said bar, and the tongues *F F*¹ in the battery-circuit, as and for the purpose set forth.

SILAS C. DICKINSON,

Witnesses:

J. D. WALKER,

W. F. HAYFORD.