(No Model.)

V. HIMMER.

CIRCUIT BREAKER FOR ELECTRIC CLOCKS.

No. 354,525. Patented Dec. 14, 1886.

Fig. 1.

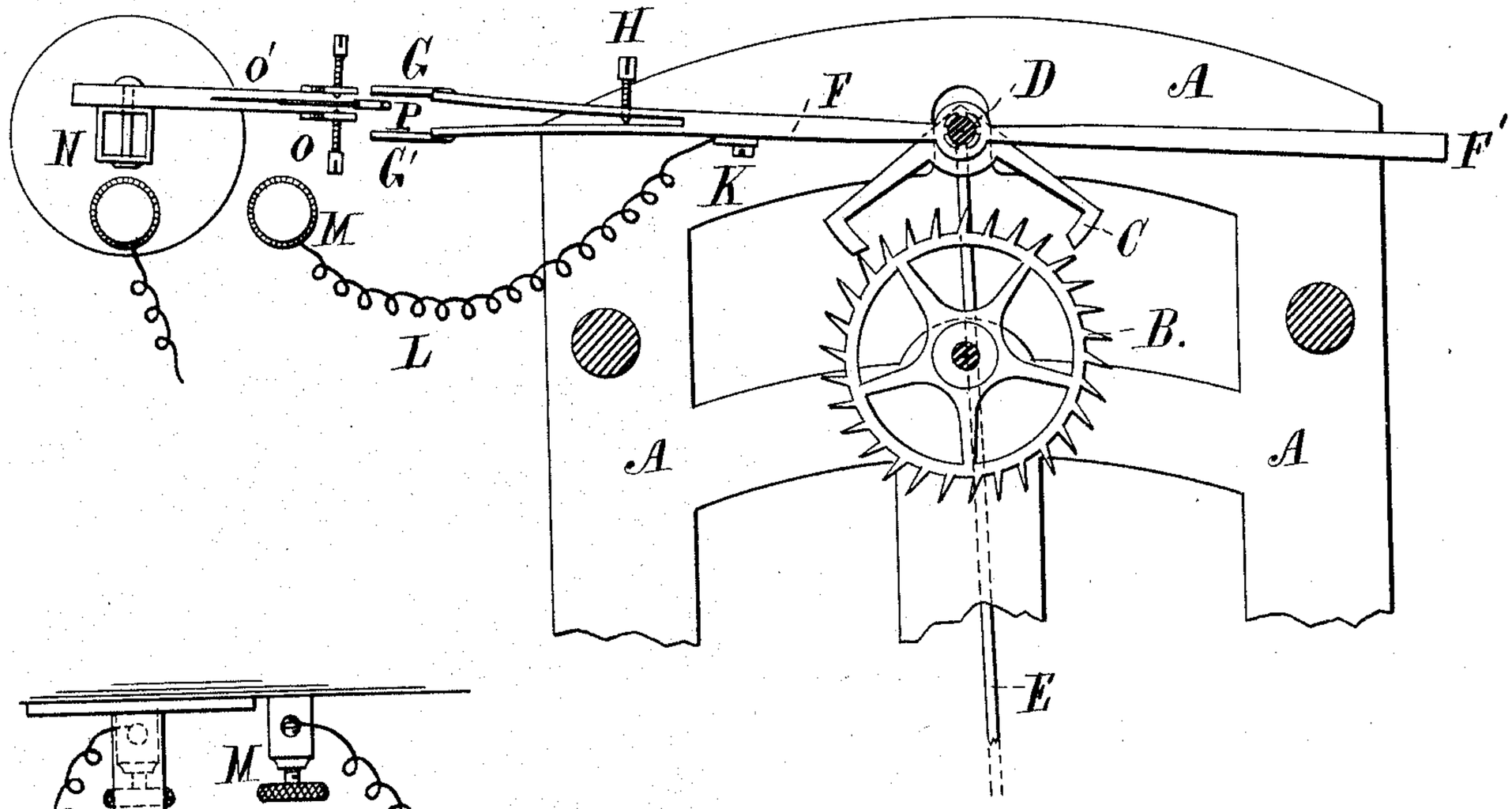

Fig. 2.

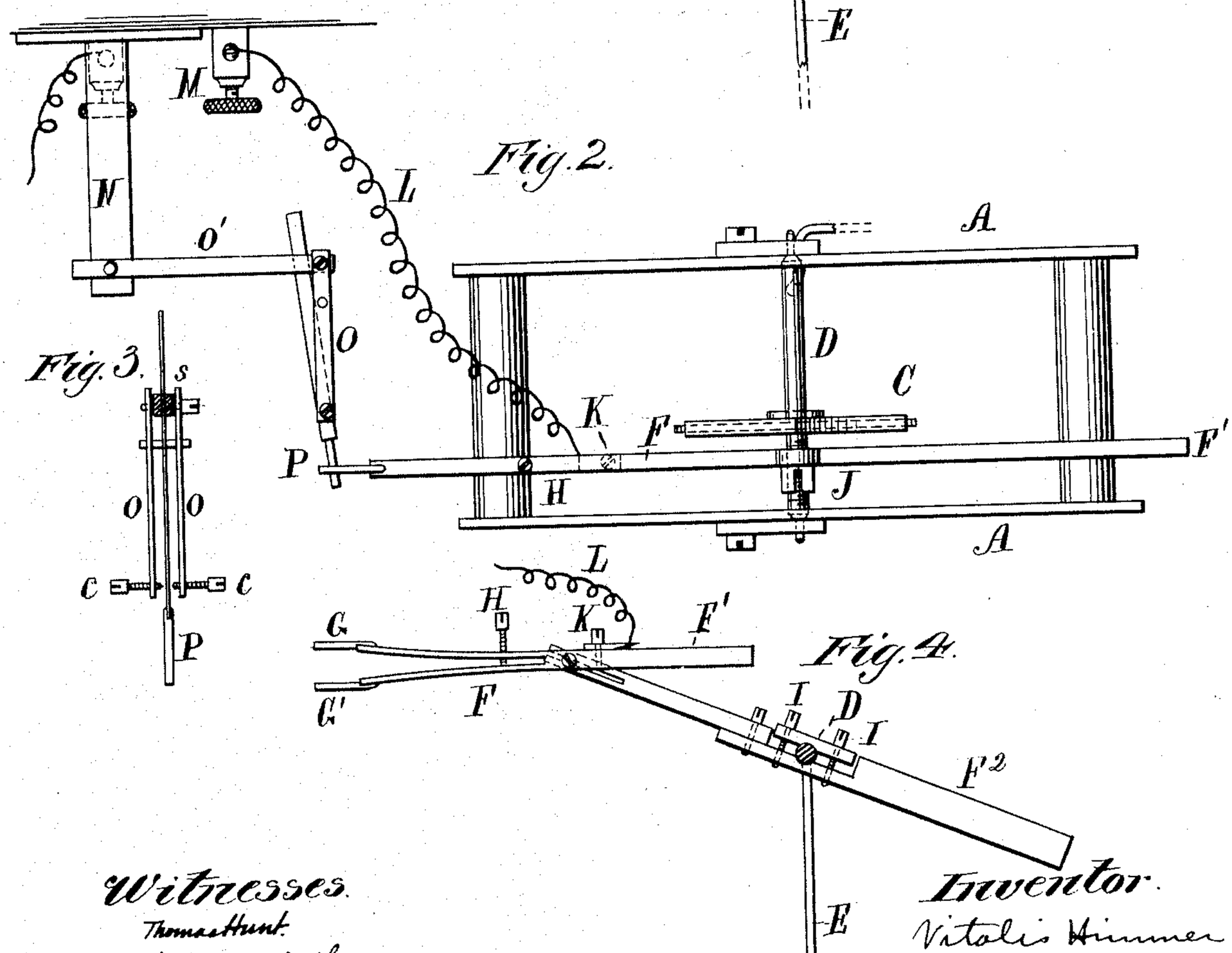

Fig. 3.

Fig. 4.

Witnesses.
Thomas Hunt.
J. Frank Walters.

Inventor.
Vitalis Himmer
by
J. Hindmarsh Hyde
atty

UNITED STATES PATENT OFFICE.

VITALIS HIMMER, OF NEW YORK, N. Y.

CIRCUIT-BREAKER FOR ELECTRIC CLOCKS.

SPECIFICATION forming part of Letters Patent No. 354,525, dated December 14, 1886.

Application filed January 14, 1886. Serial No. 188,533. (No model.)

To all whom it may concern:

Be it known that I, VITALIS HIMMER, a citizen of the United States, and a resident of the city of New York, county and State of New York, have invented certain new and useful Improvements in Circuit-Breakers for Electric Clocks, of which the following is a specification.

My invention has reference to that class of electric clocks in which the closing and breaking of an electric circuit by the movement of a central clock regulates the movement of one or more secondary clocks upon said circuit, and my invention is an improvement upon the system of performing this operation shown in the Letters Patent granted to me March 20, 1883, and numbered 274,323.

In my said Letters Patent the electric circuit was closed and opened by means of a contact-pin upon a lever actuated by but insulated from the pendulum, and moving between two other contact pins or plates mounted upon slender adjustable springs.

The objects of my invention are to provide a self-adjusting and cheaper, more durable, and more easily-managed circuit-breaker, having no connection with the pendulum, but which is actuated by the rock-shaft of the anchor-spindle; and it consists of a lever formed at one end in a fork with two stiff platinum contact-pins, and weighted at the other end so as to exactly balance said forked end, and attached at its center of gravity to the shaft of the anchor-spindle in such manner as to rock with it, but so lightly attached as to turn to a new position upon it with the slightest touch. From this forked lever passes a flexible metallic ribbon to a binding-post. Between the two stiff contact-pins upon the fork of the lever, and normally isolated therefrom, is a contact-pin upon a slender adjustable spring, with which pin the two stiff pins upon the fork alternately come in contact as the arbor of the clock swings, thus at each swing of the arbor closing and breaking an electric circuit, upon which may be placed any number of secondary clocks.

In the accompanying drawings, Figure 1 is a side view of the manner of constructing and applying my invention. Fig. 2 is a plan view of the same. Fig. 3 is a side view of the contact-pin marked P in Figs. 1 and 2. Fig. 4 is a side view of a modified form of the forked lever.

Similar letters refer to similar parts throughout the several views.

A is the frame of an ordinary clock. B is the escapement-wheel. C is the anchor. D is the shaft of the anchor-spindle. E is the pendulum-rod; F, the forked lever, having the two stiff platinum points G G′, and weighted at its opposite end, F′, so as to exactly balance. The distance of the points G G′ from each other may be regulated by the set-screw H, passing through one branch of the fork and bearing upon the other. The lever F is hung upon the shaft D by a friction-joint in such manner that the rocking of said shaft will cause said lever to oscillate to the same extent without turning upon said shaft, to enable the slightest touch upon either of the points G G′ to cause the lever F to turn to a new position, yet with sufficient tenacity to enable it to remain in any position and rock with the shaft. The degree of tension I prefer to regulate by threading the lever F upon the shaft D with a projecting slotted hub, J, of metal, giving an elastic bearing. From the clamp K upon the lever F a flexible metallic strip or ribbon, L, connects said lever with a binding-post, M, secured to the back board of the clock, forming an electrical connection.

A modified form of the lever F is shown in Fig. 4. Here the lever has its bearing upon the end of an arm, F^2, rigidly secured to the shaft D by clamps I I, instead of being hung upon the shaft itself. In this case the end F′ of the lever F must, as before, exactly balance the other forked end, and also the end of the lever F^2 farthest from the fork must be weighted so as to exactly balance the end holding the forked lever F, so that the action of the pendulum will not be interfered with. In this case I prefer to place the bearing of the lever F in a slit at the end of the metal lever F^2, so that the spring of the metal will give sufficient tension to keep the lever F in place during the oscillations of the shaft, but will allow it to be moved, as before, to any new position upon the slightest touch of either point G G.

Upon the back board of the clock is secured the standard N, for supporting the contact-piece P, which is mounted upon the double-

jointed arm O O'. The circuit-breaker itself consists of a metallic spring having a platinum point, which lies between the platinum points upon the fork of the lever F, as indicated in the drawings, Figs. 1 and 2, so that at each swing of the pendulum-rod E it will come in contact with each of said points G alternately.

Fig. 3 shows an enlarged view of the construction of the contact-piece P and its connections. The contact-piece P, of platinum, is suspended upon a slender spring mounted in the bearing *s*, and its extent of motion is limited by the two small screws C C.

The operation of my device is as follows: Referring to Fig. 1, each swing of the rod *e* allows the escapement-wheel to escape through one tooth by means of the anchor C, thus causing the second or minute motions of the clock. The anchor C, being mounted upon the same shaft D as that upon which the lever is mounted, oscillates at the same rate of time as the lever F, each oscillation of this lever F making contact between the fixed point P and the points G G', thus making and breaking the electrical connection and throwing the clock in and out of circuit as the contacts are made or broken, the local clocks answering to the movements of the central clock, A.

It is obvious that instead of having one end of the lever F forked and each branch of the fork having a contact-pin upon it, I may have only a single pin mounted upon said lever F, and substitute a fork having two contact-pins for the fixed contact-pin P; but such modification will be clearly within my present invention.

It will be observed that the clock mechanism is not insulated from the circuit-closing lever, because the current will have a short circuit through the contact-points G G' and wire L, and will not, therefore, pass through the clock.

It will be observed that by the above described arrangement the balanced circuit-breaker may be applied to any adjusted clock without liability of disturbing the balance of the pendulum.

What I claim is—

1. The combination, substantially as herein-before set forth, with a clock mechanism and a vibrating pendulum, of a balanced electric circuit-breaker mounted upon the rock-shaft of the anchor-spindle and operated to close and open the electric circuit by the working of said shaft.

2. The combination, substantially as herein-before set forth, with the pendulum of a regulating-clock, of a circuit-controlling device consisting of an arm mounted upon the rock-shaft of the anchor-spindle, two contact-points mounted upon said arm and electrically connected with one pole of an electric generator, and a fixed contact-pin lying between said contact-pins upon said arm and electrically connected with the opposite pole of said electric generator, said arm being operated to make and break contacts by the rocking of said rock-shaft.

3. The combination, with the pendulum of a regulating-clock, of a circuit-controlling device consisting of an arm mounted upon the rock-shaft of the anchor-spindle, a contact-pin mounted upon said arm and electrically connected with one pole of an electric generator, two fixed contact-points lying one on either side of the contact-pin upon said arm, and electrically connected with the opposite pole of the electric generator, said arm being operated to make and break contact of said pins by the rocking of said rock-shaft, all substantially as shown and described.

4. The combination, with the pendulum of a regulating-clock, of a circuit-controlling device consisting of a forked balanced arm electrically mounted upon the rock-shaft of the anchor-spindle, two contact-points mounted, respectively, upon the branches of the fork of said balanced arm and electrically connected with one pole of an electric generator, and a fixed adjustable contact-pin lying between said contact-pins upon said balanced arm and electrically connected with the opposite pole of said electric generator, said arm being operated to make and break contact between said contact-pins by the rocking of said rock-shaft, all substantially as shown and described.

5. The combination, with the pendulum of a regulating-clock, of a circuit controlling device consisting of the forked jointed balanced arm F F' F², electrically mounted upon the rock-shaft of the anchor-spindle, two contact-points mounted, respectively, upon the branches of the fork of said balanced arm and electrically connected with one pole of an electric generator, and a fixed adjustable contact-pin lying between said contact-pins upon said balanced arm and electrically connected with the opposite pole of said electric generator, said arm being operated to make and break contacts between said contact-pins by the rocking of said rock-shaft, all substantially as shown and described.

VITALIS HIMMER.

Witnesses:
THOMAS HUNT,
J. E. HINDON HYDE.