

V. HIMMER.
ELECTRIC CLOCK.

No. 98,594.

Patented Jan. 4, 1870.

Fig. 2.

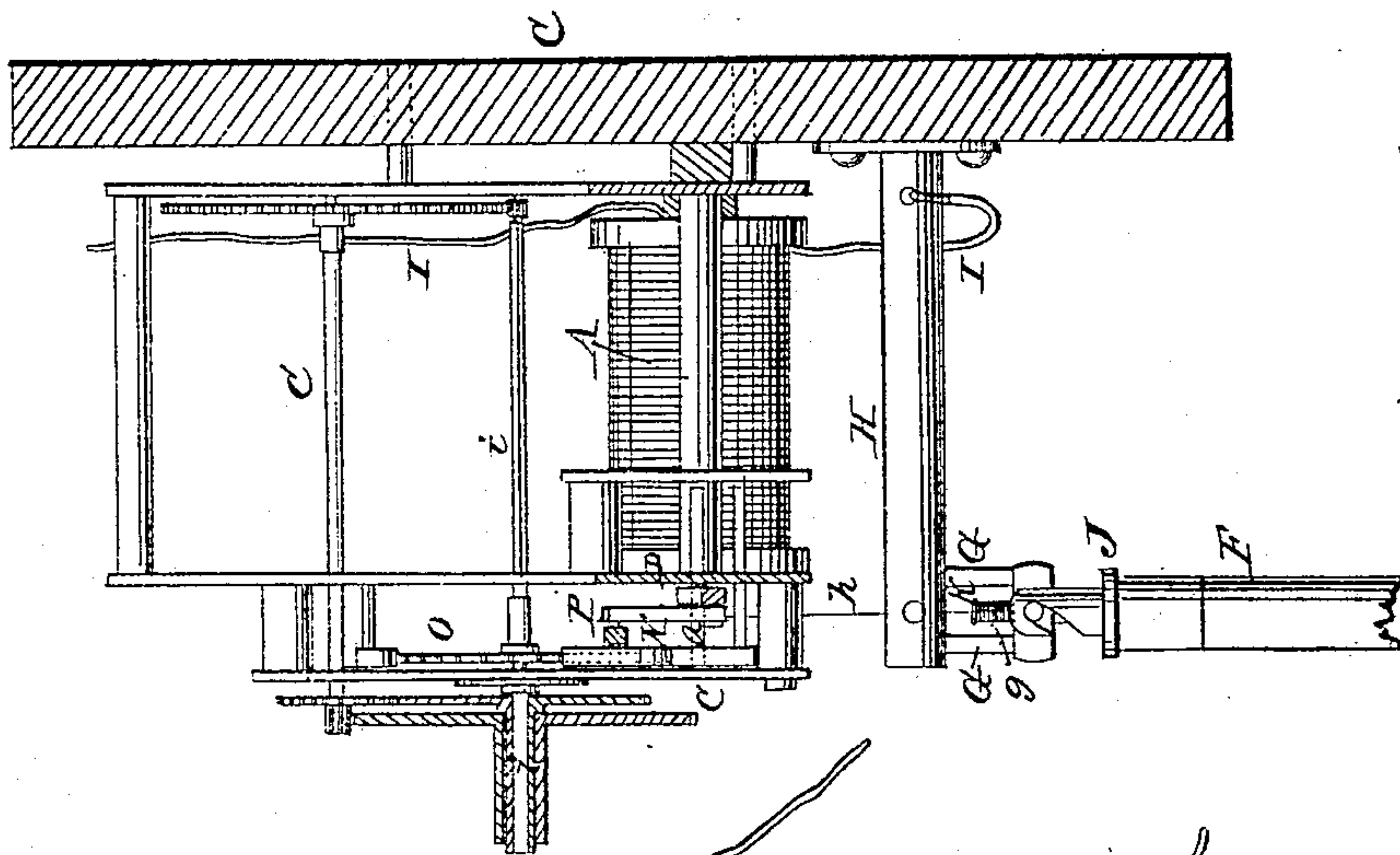
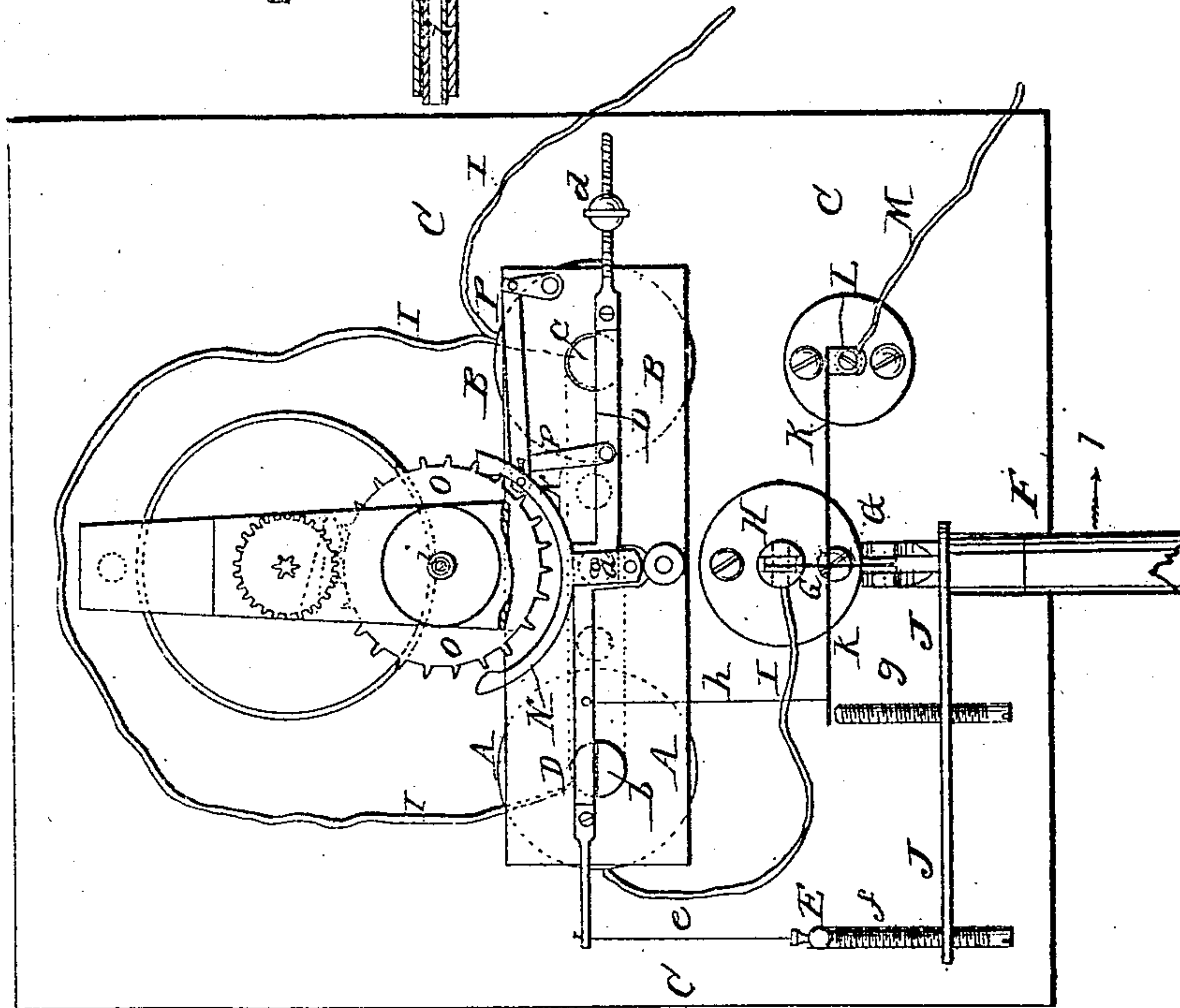


Fig. 1.



WITNESSES:

Arthur Dietrich
Frank R. Glockley

INVENTOR

V. Himmer

M. M. B.
Attorneys

United States Patent Office.

VITALIS HIMMER, OF NEW YORK, ASSIGNOR TO HIMSELF W. HEISSENBUT-
TLE, AND JAMES McMULLEN, OF BROOKLYN, NEW YORK.

Letters Patent No. 98,594, dated January 4, 1870.

IMPROVEMENT IN ELECTRIC CLOCKS.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, VITALIS HIMMER, of the city, county, and State of New York, have invented a new and improved Electric Pendulum-Clock; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawing, forming part of this specification.

Figure 1 represents a face view, partly in section, of my improved electric pendulum-clock.

Figure 2 is a side view, partly in section, of the same.

Similar letters of reference indicate corresponding parts.

This invention relates to a new pendulum-clock, which is operated by electricity, in such manner that a very accurate and reliable time-keeper is produced, which can readily be regulated, and which will not be affected by differences of temperature.

The invention consists, chiefly, in suspending a minute weight from an oscillating armature-lever, said weight being dropped upon an arm of the pendulum, at every other stroke of the same. The weight is just sufficiently heavy to impart to the pendulum the power lost by friction and gravity during every two swings, and serves, therefore, to retain it at a uniform rate of motion.

The invention also consists in the arrangement of devices for closing and breaking the electric connections, whereby the aforesaid weight is alternately raised and lowered.

A B, in the drawing, are two electro-magnets or coils, set into a frame, C, a suitable distance apart.

Between them is, on the frame, a pin, *a*, by which the armature-lever D is pivoted.

The said lever has its two ends, respectively, above and below the poles *b* and *c* of the magnets, said poles being preferably flattened on the sides on which the armature-lever is attracted.

That end of the lever D which is under the pole *c*, carries a weight, *d*, or is connected with a spring, or with a permanent magnet, which tends to draw it down. Such spring, magnet, or weight may, however, be applied to the other end, to move it up.

From that end of the armature-lever which is to be raised when the circuit is broken, is suspended, by a hair, *e*, or otherwise, a small weight or ball, E.

The pendulum F is, by a spring-plate, G, suspended from a standard, H, which receives one of the wires I, of the battery.

The upper portion of the pendulum is made of metal, and has a metallic arm, J, projecting sideways under the weight E.

On this arm are two vertical pins or tubes, *f* and *g*.

When the pendulum swings toward the weight E, the pin *f* comes in contact with and elevates the weight, while the pin *g* comes in contact with a metal spring-plate K, which is fastened above one end to a standard, L.

The free end of the spring K is suspended by a hair, *h*, or otherwise, from the armature-lever, as shown.

The other wire M, of the battery, terminates on the standard L.

The armature-lever is connected with a suitable anchor, N, which engages in the teeth of a wheel, O.

The axle *i* of the wheel O may carry the second-hand, and also, on tubular stems, the minute and hour-hands, if the same are connected therewith by a suitable system of gearing, indicated in fig. 2.

The operation is as follows:

When the pendulum swings toward the weight E, it will bring its arm J in contact with the spring K, and will thereby establish a metallic connection between the wires I and M. The electric circuit will thereby be completed, which will cause the electro-magnets to attract the ends of the armature-lever to its poles. The ball E is thereby thrown upon the arm J, the pin *f* not being absolutely necessary, but desirable, as a tubular guide for a pin that is made to project from the ball.

The weight of the ball, applied to one side of the pendulum, is sufficient to impart to the same such additional power as is necessary to balance the loss by friction and gravity.

At the return stroke (in the direction of the arrow 1) of the pendulum, the arm J is drawn away from the spring K. The electric current is thereby interrupted, and the magnets A B will cease to attract the armature.

The weight D, or its equivalent, will then swing the armature-lever, so as to raise the weight E.

The current remains broken until, at the next motion. The arm J is again brought in contact with the spring K; then the armature is again attracted.

Thus, oscillating motion is imparted to the armature-lever, and to the anchor connected therewith, and the anchor will impart intermittent rotary motion to the train of wheels and to the hands.

The power of the weight E may be regulated by lengthening or shortening the pin *f*, or by shifting the said weight nearer to or further from the pivot *a*.

The pendulum may be made of suitable length.

I am, by this arrangement, enabled to use a pendu-

lum of half the ordinary length of armature, to obtain motion of equal or less velocity.

The pendulum may have two arms, J, one on each side, and may be acted upon by a weight at each stroke, instead of having but one weight for every other stroke.

Having thus described my invention,

I claim as new, and desire to secure by Letters Patent—

The combination, with the magnet, of oscillating armature-lever D, and weights E d, as and for the purpose specified.

VITALIS HIMMER.

Witnesses:

ALEX. F. ROBERTS,
FRANK BLOCKLEY.