D. DRAWBAUGH.

Earth-Battery for Electric-Clocks.

No. 211,322. Patented Jan. 14, 1879.

Fig. 1.

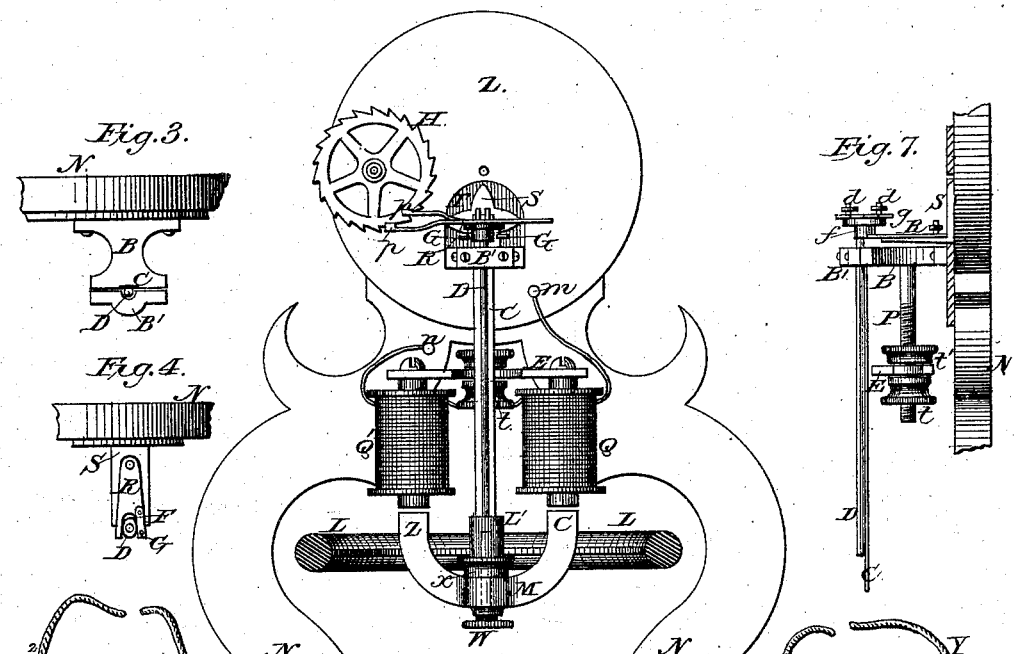
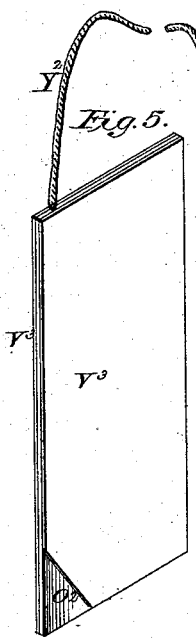


Fig. 3.

Fig. 4.

Fig. 7.

Fig. 5.



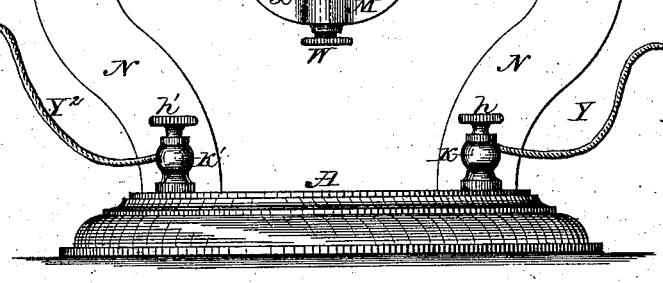


Fig. 6.

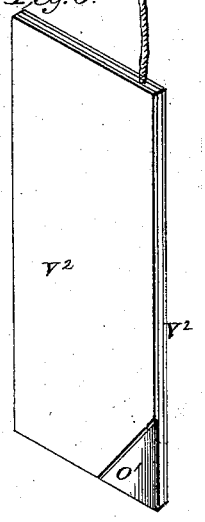
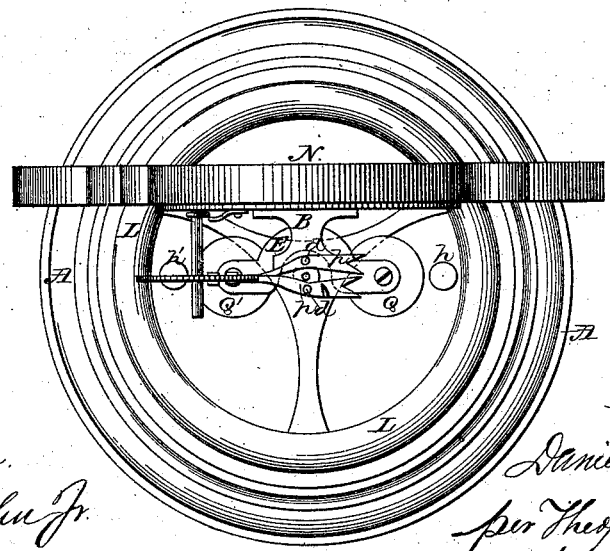


Fig. 2.



Witnesses:

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per Theophilus Weaver,

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UNITED STATES PATENT OFFICE.

DANIEL DRAWBAUGH, OF EBERLY'S MILLS, ASSIGNOR TO THEODORE GRISSINGER, OF MECHANICSBURG, AND JACOB H. GRISSINGER AND JACOB E. SHETTEL, OF SHEPHERDSTOWN, PENNSYLVANIA, ONE-FOURTH TO EACH.

IMPROVEMENT IN EARTH-BATTERIES FOR ELECTRIC CLOCKS.

Specification forming part of Letters Patent No. **211,322**, dated January 14, 1879; application filed September 20, 1878.

To all whom it may concern:

Be it known that I, DANIEL DRAWBAUGH, of Eberly's Mills, county of Cumberland, and State of Pennsylvania, have invented an Improvement in Earth-Batteries, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making a part of this specification.

The nature of my invention is briefly stated to be an earth-battery consisting of an electric couple of plates of opposite electric properties, peculiarly protected by certain other substances, and prepared as a new article of manufacture by having said protecting substances applied fixedly to said plates by any suitable adhesive.

The object of my invention is to provide a suitable means to procure and apply to use native electricity from the earth to replenish permanent magnets at intervals between times of their engagement—as parts of motor mechanism employed to run clocks, sewing-machines, or other machinery—said magnets being thus kept saturated with the electricity derived from the earth to a maximum degree, or to a degree above the power required to run any given motor.

In the accompanying drawings, O^1 represents a copper plate, coated by a layer of powdered coke, forming an enveloping-body, V^2, thereon, and fixed thereon by any suitable adhesive; and O^2 represents a zinc plate, coated or covered by a layer of felt, V^3, or any texture formed of hair, wool, or of other animal matter, stuck on said plate by any suitable adhesive. Said plates are provided with said coats V^2 and V^3, respectively, for two purposes—first, to form effectual connection between the plates and the earth in such manner that the plates may be protected against oxidation and consequent corrosion and change of constitution; second, that said plates may be a complete new article of manufacture, having their adherent substances fixedly attached to them, as stated, so that they need only be embedded in the earth to be ready for use when the battery-connections are made with any suitable train it is designed to move.

In the accompanying drawing, Figure 1 represents a front elevation of the skeleton of a vase-clock, the vase, train of wheels, dial, and hands being omitted. Fig. 2 represents a top view of the same. Fig. 3 represents a sectional view of a bracket, from which the actuating mechanism of the clock is suspended. Fig. 4 represents a bracket, on which the electric brake is located. Figs. 5 and 6 represent the zinc and the copper plates, respectively, shown protected by coatings, as in my improved earth-battery. Fig. 7 represents an edge view of the subjects of Figs. 3 and 4, and sections of clock-standard and suspenders of magnets.

The skeleton-clock above referred to is herein described only in part, as it is herewith connected merely as an illustration of the application and use of my improvement in earth-batteries, it being reserved for a more complete specification in a separate application for patent, hereafter to be made.

Said copper and zinc plates O^1 and O^2, respectively, are provided with insulated conductors Y Y^2, respectively, which are joined to said plates by soldering; and they are connected at their other extremities, by the binders K *h* K′ *h*′, with conductors on the under side of base A, and on the rear side of uprights N with the electro-magnet Q Q′ by conductors *m n*, said electro-magnet being a part of my earth-battery, and it is suspended by rod P from bracket B, to which it is adjustably connected by the thumb-nuts *t t*′ on opposite sides of the frame E.

M represents a permanent magnet, such as it is the object of my earth-battery to supply with magnetism at intervals of its engagement. Said permanent magnet has its poles *z c* arranged to vibrate horizontally by or past the poles of electro-magnet Q Q′, and it is mounted centrally in the balance-wheel L, to the hub of which it is adjustably clamped by screw W. Said balance-wheel L and magnet M are unitedly suspended by a thin strip of spring-steel, C, on bracket B, and therefore they are allowed limited vibration, actuated by the power of attraction and repulsion of the magnets M and Q Q′, said steel strip or ribbon of steel C acting as a torsion-spring to limit the vibration. A

rod, D, also connected with balance-wheel hub L′, loosely passes through bracket B, and has firmly fixed on its top the cross-head *g*, which is provided with the pins *d d* thereon, by which the pallets *p p* are held balanced on said cross-head, and are actuated thereby while it vibrates or rocks to move the ratchet-wheel H, which may move any suitable clock-train mounted on base-plate Z.

On bracket S a pivoted plate, R G, is applied dividedly to the eccentric part *f* on rod D, in such manner that the device acts as an electric-circuit opener and closer alternately at every forward and backward stroke of the balance-wheel L.

The object of the last-described device is to complete the circuit from the earth through the electro-magnet Q Q′ at every return stroke of said wheel L, and thus replenish the permanent magnet M at the intervals when repulsion of the poles of the magnets is occurring.

It is well known that when permanent magnets are being used in attracting and repelling while actuating parts of machinery in motors they gradually lose their maximum of magnetic power, being successively more and more depleted or robbed at every stroke or pass of the impelled mechanism, and therefore the motor becomes unreliable in all situations where uniformity of motion is required. To prevent such exhausted or impaired condition of such magnets I employ my improved earth-battery, coupled in suitable manner with an electro-magnet, arranged in proper proximity to such permanent magnet to supply it constantly to saturation with electricity or native magnetic influence from the earth. My improvement, therefore, insures the permanence of the natural magnet as a regular power in a motor, and it may be successfully applied to clocks, sewing-machine motors, and other machinery. The clock in the accompanying drawing suggests by its form how it may be used on vessels at sea, as the battery may also be employed in water.

Having thus fully and clearly described my invention, what I regard as new and useful, and what I desire to secure by Letters Patent of the United States, is embraced in the following claims:

1. As a new article of manufacture, an earth-battery or couple composed of a copper and a zinc plate, both protected fixedly by enveloping bodies of coke and felt, respectively, or of equivalent substances, applied by adhesives to said plates, ready made for use, in the manner and for the purpose substantially as set forth.

2. The earth-battery or electric couple composed of the copper plate O^1, fixedly protected by coating of coke V^2, and the zinc plate O^2, fixedly protected by coating of felt V^3, or said plates fixedly protected by equivalent substances, in combination, by conductors, with a permanent magnet in a motor-train, for replenishing said magnet with electricity from the earth through an electro-magnet, Q Q′, substantially as set forth.

In testimony that I claim the foregoing as my invention I have hereunto set my hand this 13th day of September, 1878.

DANIEL DRAWBAUGH.

Attest:

THEOPHILUS WEAVER,
PETER STUCKEY.