

(Model.)

2 Sheets—Sheet 1.

C. E. TRASK.
ELECTRIC CLOCK.

No. 249,699.

Patented Nov. 15, 1881.

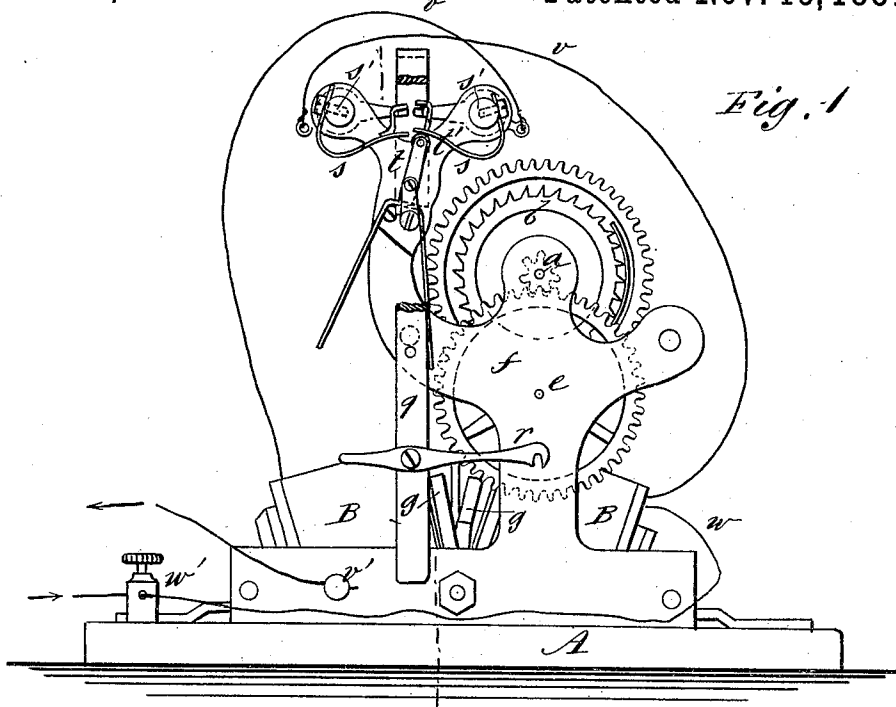


Fig. 1

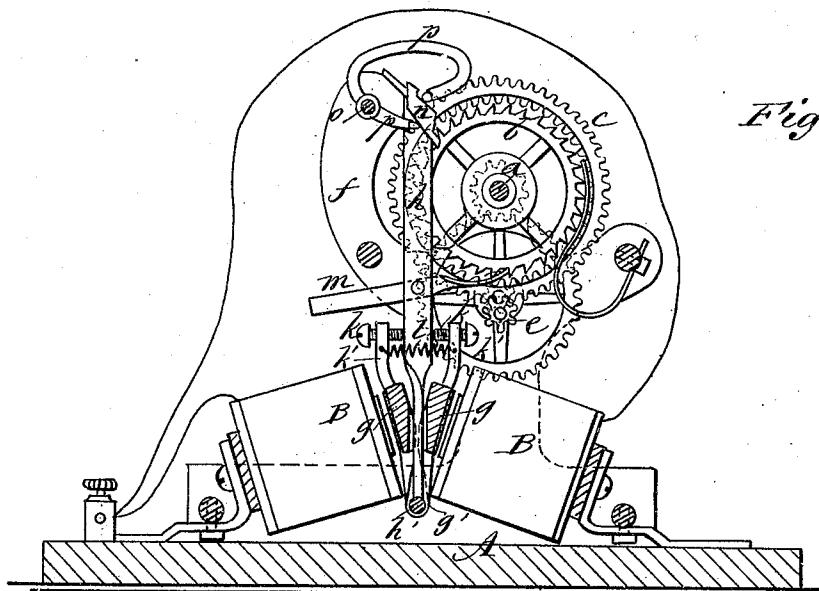


Fig. 2

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BY

Munn & Co

ATTORNEYS.

(Model.)

2 Sheets—Sheet 2.

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Fig. 3

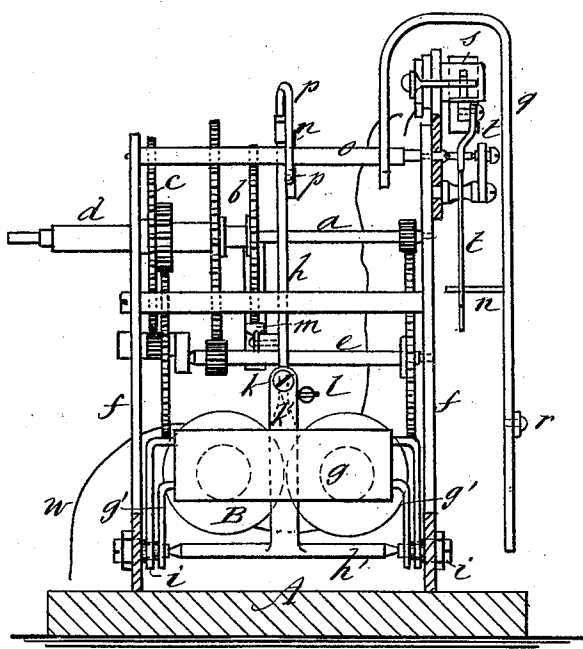
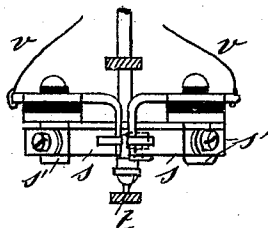


Fig. 4



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UNITED STATES PATENT OFFICE.

CHARLES E. TRASK, OF HASTINGS, MICHIGAN.

ELECTRIC CLOCK.

SPECIFICATION forming part of Letters Patent No. 249,699, dated November 15, 1881.

Application filed May 11, 1881. (Model.)

To all whom it may concern :

Be it known that I, CHARLES E. TRASK, of Hastings, in the county of Barry and State of Michigan, have invented a new and useful Improvement in Electric Clocks, of which the following is a specification.

My improvements relate to clock mechanism wherein the impulse is given alternately by two magnets and the movement controlled by a pendulum.

The objects of the invention are to provide for ready and accurate adjustment, to obtain equal tension on the vibrating armatures, to simplify the circuit-closing devices, and to obtain the required movement of the impulse-lever by a limited movement of the armatures.

The invention consists in a combination of independently-pivoted armatures and levers, as hereinafter described and claimed.

In the accompanying drawings, Figure 1 is a rear elevation of clock mechanism embodying my invention. Fig. 2 is a vertical section of the same. Fig. 3 is a side elevation, partially in section; and Fig. 4 is a plan view of the circuit-closing devices.

Similar letters of reference indicate corresponding parts.

In the clock-work shown, *a* is the central or second-hand arbor, fitted with a ratchet-wheel, *b*, and with a loose pinion, *c*, and barrel *d*, for the minute-hand, which pinion *c* is geared back to the arbor *a* by gearing on a secondary arbor, *e*. These parts are carried by frames *f* on a suitable base, *A*.

B B are the electro-magnets, fixed on base *A* at any suitable angle, and with their poles facing each other, separated only by the distance required for the armatures and primary lever.

g g are the armatures, and *h* is primary lever, hung on a rocking arbor, *h'*, at a point below and midway between the magnets *B*, and extending upward between the same. The arbor *h'* of lever *h* is shown as hung on pivot screws or pins *i*, upon which pins the armatures *g* are hung by arms *g'*, so that the armatures and lever are capable of independent movement. The pins *i* are shouldered, as shown in Fig. 3, so as to prevent any contact of the arms *g'*.

In lugs *k' k'*, that are fixed on the upper part

of armatures *g*, are screws *k k*, that bear on lever *h*, so that the lever is centered between the armatures. A spiral spring, *l*, connected with the lugs, retains the screws in contact, so that while the lever cannot move independently of the armatures, the armatures may move away from the lever when drawn to the magnets.

On the lever *h* is hung a pawl, *m*, engaging with the ratchet-wheel *b* of the clock-work and held thereto by weight or a spring. The upper end of the lever is formed or fitted with a double-inclined verge, *n*. A rocking arbor, *o*, fitted contiguous to the upper end of lever *h*, is fitted with pallet-fingers *p p*, the points of which are in contact, or nearly so, with the verge *n*, at opposite sides. On arbor *o* is also attached a lever, *q*, which, as shown, is bent to extend downward at the back of the mechanism. At the lower end is hung a link, *r*, formed with a hook at its outer end, for engagement with a pendulum (not shown) that will be hung on the center line of the clock-work.

The circuit-closing devices are fitted beneath the bent upper end of lever *q*, as follows:

s s are curved spring-arms attached to fixed studs *s'*, and having their moving ends contiguous, but not in contact.

t is a lever pivoted beneath springs *s*, and fitted with a contact-roller, *t'*. The lower end of lever *t* is forked, to pass at opposite sides of a pin, *n*, that projects from the lever *q*, so that by the vibration of the latter the lever *t* is moved first in one direction and then in the other, and the contact-roller *t'* thus moved in contact alternately with the spring-arms *s s*. The connecting-wires pass from the studs *s'* to the respective magnets, as shown at *v v*, and the magnets connect also, by wires *w w*, with a binding-post, *w'*, to which one battery-pole will be connected. A binding-post, *v'*, on the frame of the clock-work serves for connection of a wire to complete the circuit to the battery.

In operation, one magnet, being energized, attracts its armature, and the two armatures being connected together by the spring, they both move, and lever *h* is swung in that direction. This movement, acting through one of the pallet-fingers *p*, rocks shaft *o* and swings lever *q*, at the same time moving the pawl *m* back or forward, as the case may be. The current be-

ing then shifted to the other magnet by the movement of lever *t*, the armatures swing in the other direction and carry lever *h* to the other extreme. The armatures being separately hung, and having a spring-connection, the spring is stretched at the first movement, and the lever is moved by recoil of the spring. The tension will be nearly equal at all times, and not affected by variations in battery-power. The arrangement of lever *q* in connection with rocking arbor *o* and pallets *p* allows ready adjustment for bringing the lever *h* and pallets in the proper relative position. A slight twist or bend given to lever *q* will effect any required adjustment.

The angle at which the magnets are set may be varied as desired. The range of movement of the armatures may also be varied, and the distance between the magnets needs to be no more than required for the movement. It is preferable to separate the parts sufficiently to prevent the magnetic attraction between the armatures.

Having thus fully described my invention, I claim as new and desire to secure by Letters Patent—

1. The combination, in an electric clock, of the primary lever *h*, provided with verge *n*, and which is hung at a point below and midway between the magnets *B*, and fitted to actuate the clock mechanism, rocking arbor *o*, carrying pallet-fingers *p*, the pendulum-lever *q*, hav-

ing link *r*, and electro-magnets arranged to vibrate the primary lever, substantially as shown and described.

2. The combination, in an electric clock, of the vibrating lever *h*, which is hung at a point below and midway between the magnets *B*, pawl *m*, ratchet-wheel *b* of the clock mechanism, verge *n*, rocking arbor *o*, pallets *p*, and pendulum-lever *q*, having link *r*, substantially as shown and described, for operation as set forth.

3. The combination, in an electric clock, of magnets, independently-hung armatures *g*, connecting-spring *l*, and lever *h*, fitted to actuate the clock mechanism, substantially as shown and described.

4. The combination, in an electric clock, of magnets, separately-hung armatures *g*, spring *l*, lever *h*, provided with verge *n*, rocking arbor *o*, pallets *p*, and pendulum-lever *q*, substantially as shown and described, for operation as set forth.

5. In electric clocks, the springs *s*, attached to fixed studs *s'*, and having their moving ends contiguous, but not in contact, and forked lever *t*, provided with a contact-roller, *t'*, in combination with the pendulum-lever *q* and connecting-wires of the circuit, substantially as shown and described.

CHARLES EDWIN TRASK.

Witnesses:

SAMUEL WOOD,
WILLIAM M. WOOD.