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J. F. PRATT.

Electric Gravity Escapement for Pendulums.

No. 205,808. Patented July 9, 1878.

Fig. 2

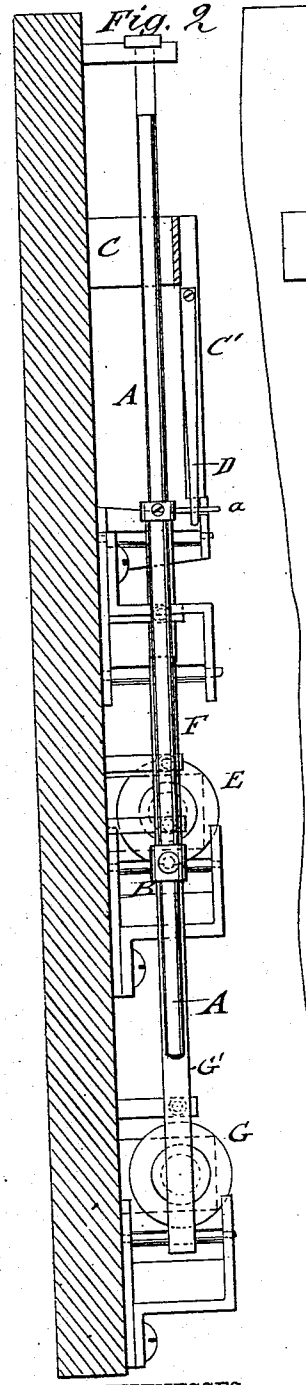
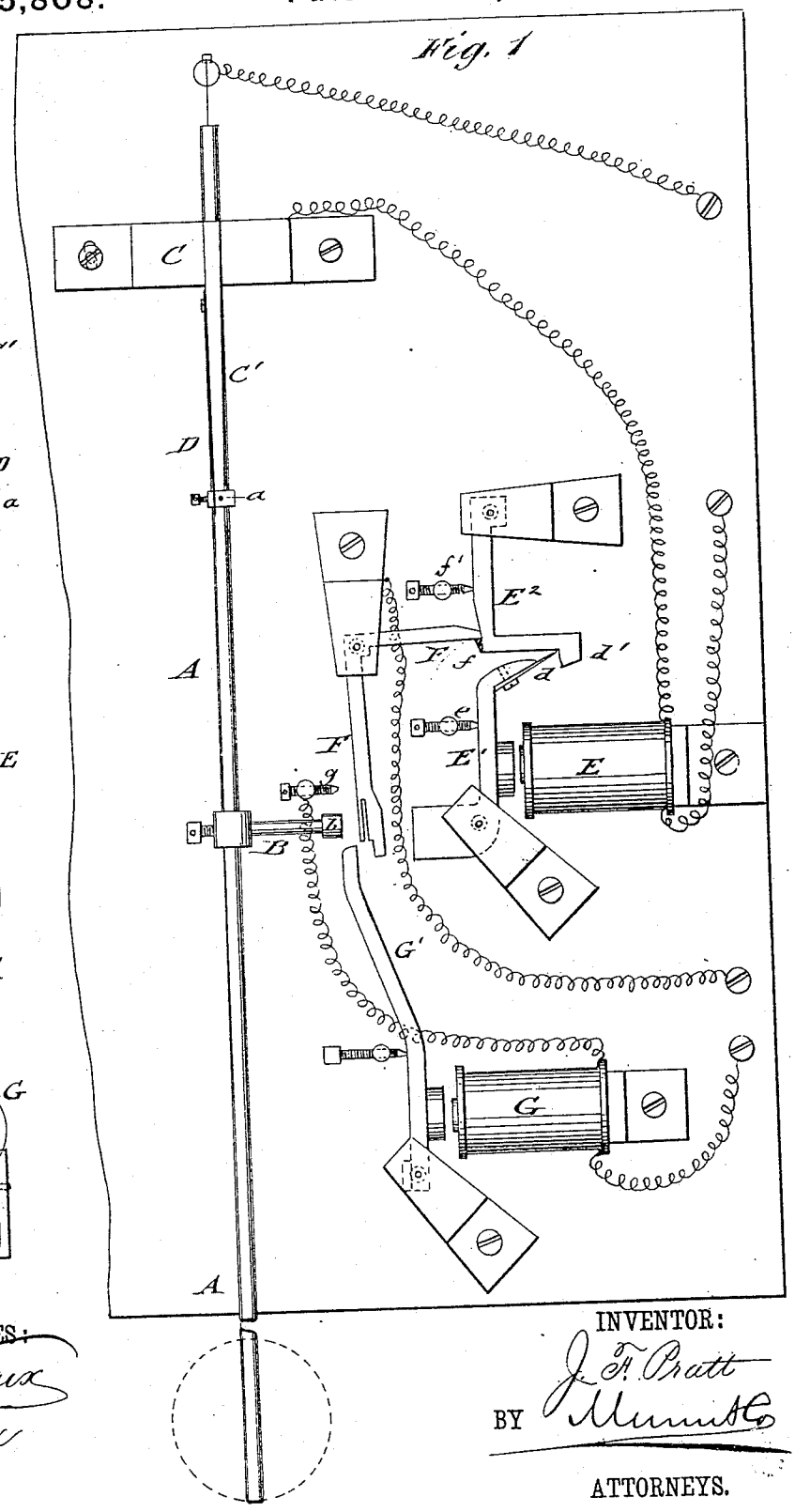


Fig. 1



WITNESSES:

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UNITED STATES PATENT OFFIC

JOHN F. PRATT, OF SAN FRANCISCO, CALIFORNIA.

IMPROVEMENT IN ELECTRIC GRAVITY-ESCAPEMENTS FOR PENDULUMS.

Specification forming part of Letters Patent No. **205,808**, dated July 9, 1878; application filed April 13, 1878.

To all whom it may concern:

Be it known that I, JOHN F. PRATT, of the city and county of San Francisco, and State of California, have invented a new and Improved Electric Gravity-Escapement for Pendulums, of which the following is a specification:

The object of this invention is to provide an improved gravity-escapement for pendulums of clocks, so as to impart an impulse when near the center of its arc by gravity alone, independent of the force of the electric current, while leaving the pendulum free from all resistance or interference during the remainder of its oscillation.

The invention consists of the combination, with the pendulum having a platinum pin and a sidewise-extending arm, with crowning end jewel, of a fulcrumed gravity-lever, that is released so as to impart an impulse to the pendulum by the contact of the platinum pin with a gold spring of the independent bridge, placed in an electric circuit with the pin, and with an electro-magnet armature-lever and releasing-lever. The gravity-lever is returned again to its seat on the releasing-lever when the circuit of the platinum pin and spring is interrupted by its contact with a banking-screw, being in circuit with a second electro-magnet, and by the action of a returning or latching armature-lever of the same.

In the accompanying drawing, Figure 1 represents a front view of my improved electric gravity-attachment for pendulums, and Fig. 2 is a side view of the same.

Similar letters of reference indicate corresponding parts.

A represents the pendulum, that is hung in the usual manner by a steel spring to a fixed support, and provided with a platinum pin, *a*, and below the same with an adjustable arm, B, extending at right angles therefrom, and being provided at the ends with a crowning jewel, *b*. A bridge, C, passes in front of the pendulum, and carries an adjustable bar, C′, that extends downward in a vertical direction, and has a gold spring, D, attached to its side, which extends beyond the end of the arm C′. The pendulum and platinum pin are connected to one pole of an electric battery and the bridge and contact-spring to the other, an electro-magnet, E, being placed in the circuit, that serves to release, by its weighted armature-lever E^1 and by a swinging intermediate lever, E^2, the gravity-lever, F.

The end of the armature-lever E^1 is provided with a spring, *d*, that passes readily over the shoulder *d′* at the outer end of the releasing-lever E^2 when the armature-lever is dropped back to its banking-screw pin *e*, but which engages the projection *d′* when the armature-lever is attracted by its electro-magnet E.

A jewel, *f*, at the angular portion of the swinging and releasing lever E^2, serves as a seat for the upper end of the gravity-lever F, that is fulcrumed at its angular portion, and provided either with a sliding weight at the upper arm or with a weighted portion at its lower split arm, as shown in Fig. 1.

The swinging lever E^2 returns to its position in contact with its banking-screw *f′* as soon as the gravity-lever is released from the seat *f* at the angle of the same. The lower split arm of the gravity-lever F forms contact with the face of the jewel *b* on the arm B of the pendulum as soon as the contact of the platinum pin and gold spring D is established, and thereby the gravity-lever released by the action of the armature-lever E^1 and releasing-lever E^2, so as to impart an impulse on the pendulum by gravity alone, independent of the force of the electric current.

As soon as the pendulum is passed beyond its vertical position the gravity-lever comes in contact with its banking-screw *g*, and closes a second circuit through an electro-magnet, G, the banking-screw *g*, and the gravity-lever F. The armature-lever G′ of the magnet G is thereby attracted, which, in its turn, engages the lower end of the gravity-lever F, so as to draw it back from its banking-screw *g* and latch it again by its upper arm to the seat *f* on the oscillating lever E^2, being thus ready to be dropped again for the next oscillation of the pendulum. The pendulum will then complete the remaining part of its oscillation free of any resistance or interference.

When the pendulum swings back slightly beyond the vertical line, the contact with the gold spring and platinum pin is interrupted, and the armature-lever E^1 released from its

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and the spring end of the same passed over the projection d' on the releasing-lever E^2, which has before dropped back against its banking-screw. The releasing-lever is thus again in position for the next oscillation of the pendulum, so as to drop the gravity-lever by the contact of the pin with the gold spring in closing the first electric circuit, returning the gravity-lever by the closing of the second circuit, as before described.

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

1. The combination, with a pendulum having laterally-extending contact-arm, of a gravity-lever that is dropped by closing one electric circuit, so as to impart an impulse to the pendulum by gravity, but returned to its position and relatched by the closing of a second electric circuit and the opening of the first circuit, substantially as and for the purpose set forth.

2. The combination, with a pendulum having contact-pin and lateral arm, and with an independent bridge having vertical arm and contact-spring, of a gravity-lever dropped by a releasing-lever and armature of an electro-magnet, placed in circuit with the contact pin and spring of pendulum and bridge, and relatched by the armature-lever of a second electro-magnet placed in circuit with the gravity-lever and its banking-screw, substantially as described.

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