D. ROUSSEAU.

Electric Circuit-Breaking Clock-Work.

No. 168,185. Patented Sept. 28, 1875.

Fig: 1

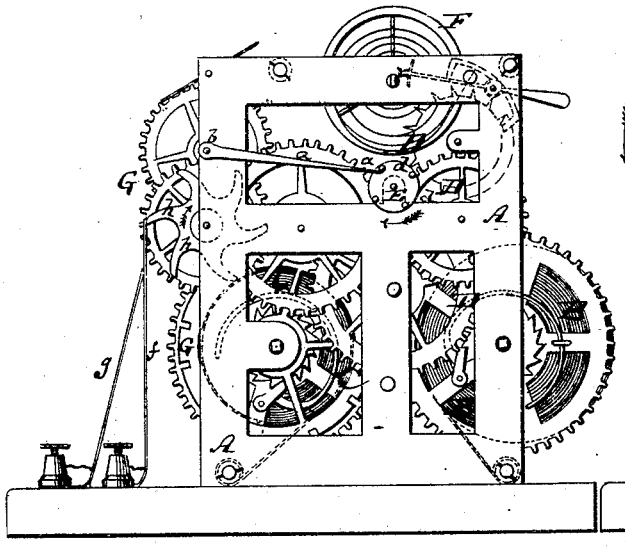
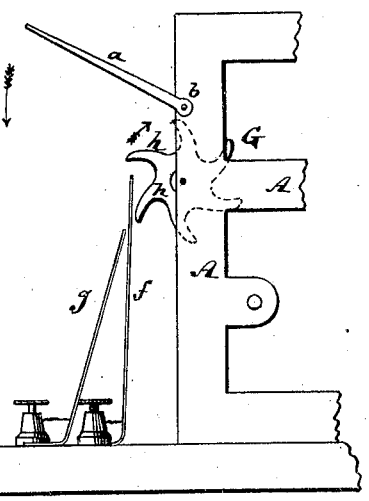


Fig: 2



Witnesses:

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UNITED STATES PATENT OFFICE.

DAVID ROUSSEAU, OF NEW YORK, N. Y., ASSIGNOR, BY MESNE ASSIGNMENTS, TO WILLIAM F. SMITH AND SAMUEL SAMUELS, OF SAME PLACE.

IMPROVEMENT IN ELECTRIC CIRCUIT-BREAKING CLOCK-WORK.

Specification forming part of Letters Patent No. **168,185**, dated September 28, 1875; application filed August 13, 1875.

To all whom it may concern:

Be it known that I, DAVID ROUSSEAU, of the city of New York, in the county of New York and in the State of New York, have invented a new and Improved Electric Circuit-Breaking Clock-Work, of which the following is a specification:

Figure 1 is a side elevation of my improved circuit-breaking clock-work. Fig. 2 is a detailed side view of parts of the same.

Similar letters of reference indicate corresponding parts in both figures.

The object of this invention is to produce a clock mechanism for automatically breaking electric circuits at short intervals, without producing an excessive strain on the main clock-work and injuring it as a time-keeper.

Circuit-breaking clocks can be used for various purposes—such as the regulation of a series of time-keepers, and also on electric signals. Indeed, the main purpose I had in view in making this invention was the production of a means for automatically unlocking railroad-signals which are locked unnecessarily in danger positions by the attractions of their armatures to their electro-magnets under the influence of a completely-closed circuit.

Electric railway-signals are usually operated by currents of short duration, created by the contact of moving trains with certain circuit-closers. When from one cause or other these circuit-closers should remain closed continuously, the signals can be locked in certain positions, which they should not occupy had the currents been properly interrupted. Now, I propose to place my improved clock mechanism in the conductor of such a signal, and cause it to break metallic contact between two ends of said conductor at given intervals, say every few seconds. Then, if the current is unnecessarily continued, the clock will break it; yet the clock will not interfere with the proper setting of the signals as long as, after each setting, the current is properly interrupted on the circuit-closer.

My invention consists in combining the clock-work which carries the circuit-breaking device with another clock-work, that regulates the motion of the first, substantially as hereinafter more fully described.

In the accompanying drawing, the letter A represents the frame of the clock. B and C are two mainsprings, weights, or equivalent motors hung therein; or said springs may be arranged in separate frames. The spring B serves to operate a train of wheels, D D, and by them a spindle, E, to which rotary motion is imparted. An escapement, F, or pendulum regulates the motion of the train D. This train may be used to move the hands of a clock for measuring time, or to move other suitable mechanism.

The spring C tends to impart rotary motion to a train of wheels, G; but this motion is rendered intermittent by means of an arm, *a*, which projects from one of the spindles *b* of the train G into contact with a toothed wheel, *d*, that is mounted upon the spindle E. This spindle, revolving in the direction of the arrow shown in Fig. 1, will, at certain intervals of time, carry the pin of the wheel *d*, that detains the arm *a*, clear of the same, and thereupon the arm *a* will at once, under the influence of the spring C, describe a circle, to be arrested by the next pin of the wheel *d*, &c.

Fig. 2 shows the arm *a* describing said circle.

f and *g* are the two ends of the electric conductor, which are to be alternately connected and separated. The end *f* is made in form of a metal spring, and is, by one of the arms of a star-wheel, *h*, of the train G, pressed against the end *g*, as in Fig. 1, whenever the arm *a* is arrested by the wheel *d*; but while the arm *a* revolves, the wheel *h* describes also a partial revolution, and releases the spring *f* for a while, so that it can spring away from the conductor *g*, as in Fig. 2, thus breaking the circuit during part of the time which is occupied by the rotation of the arm *a*.

It will be seen that the spring B, with its train of wheels, is not perceptibly affected by the circuit-breaking mechanism, and that it can therefore be utilized as a time-keeper or other reliable clock-work.

I claim as my invention—

1. The arm *a*, combined with the rotary wheel *d* and intermittently-rotating wheel *h*, to constitute a circuit-breaker, substantially as herein shown and described.

2. The combination of the mainspring B, which rotates the wheel *d*, with the mainspring C, arm *a*, and circuit-breaking wheel *h*, substantially as herein shown and described.

DAVID ROUSSEAU.

Witnesses:
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