

No. 692,509.

Patented Feb. 4, 1902.

M. FISCHER.
ELECTRIC CLOCK.

(Application filed Sept. 8, 1901.)

(No Model.)

Fig. 1.

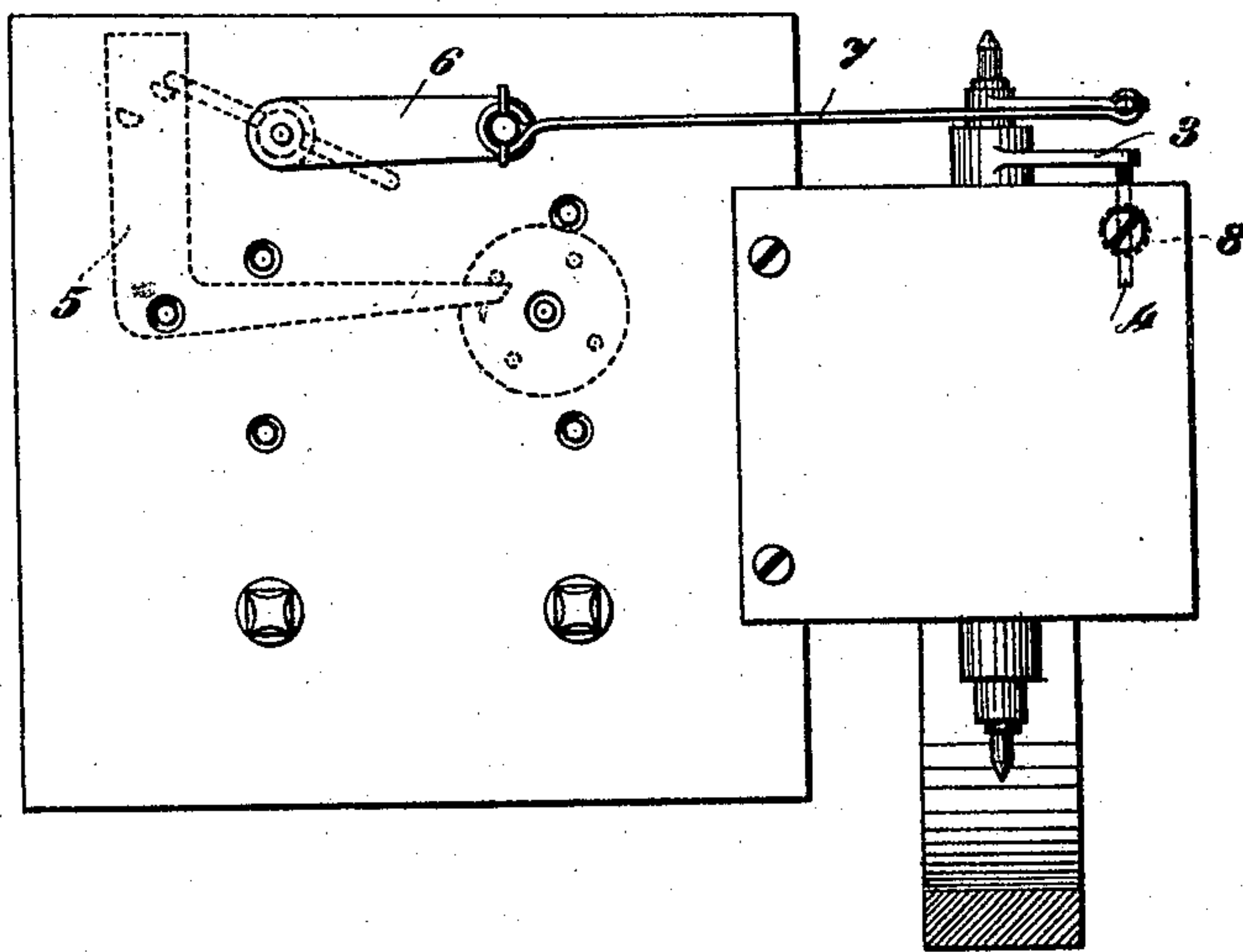
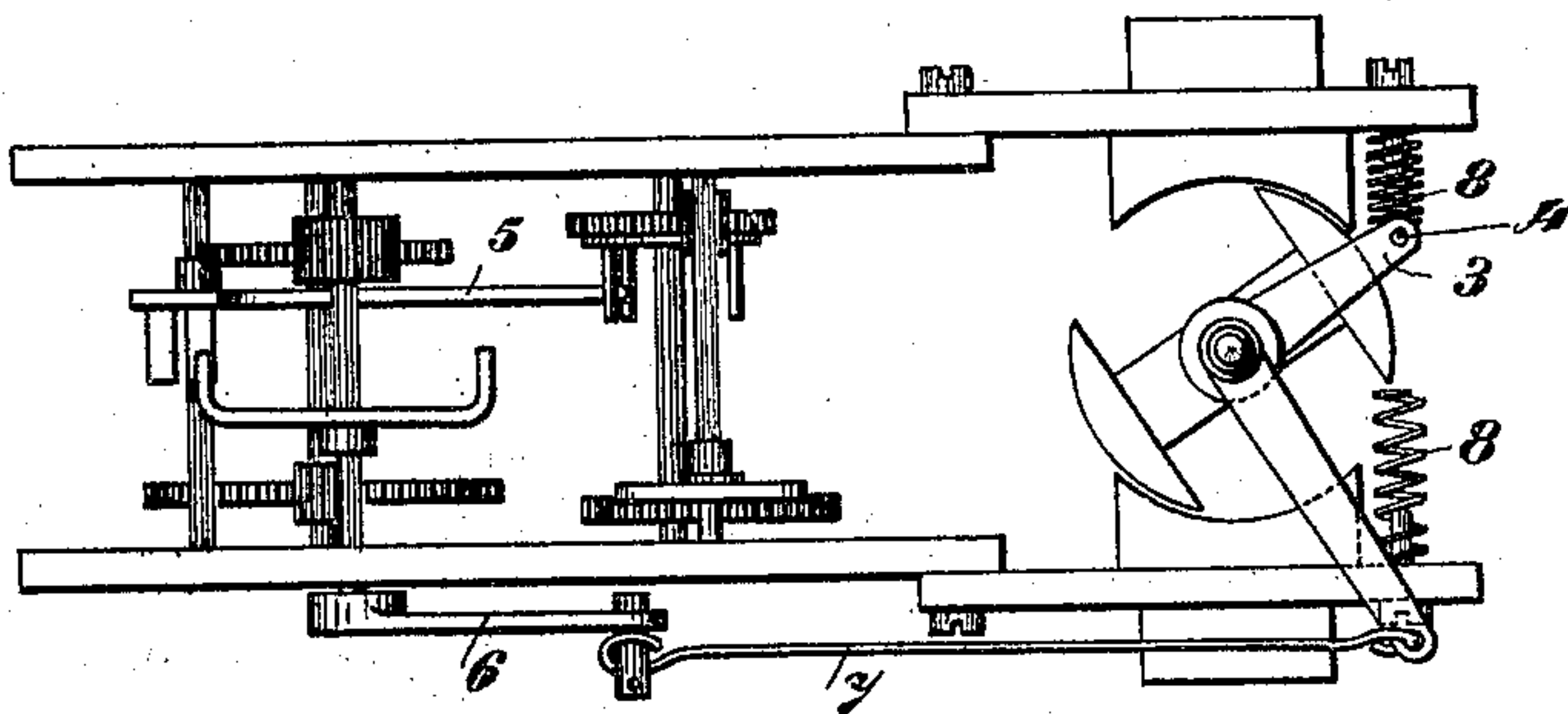


Fig. 2.



Witnesses:

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Inventor:

Martin Fischer.
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UNITED STATES PATENT OFFICE.

MARTIN FISCHER, OF ZURICH, SWITZERLAND, ASSIGNOR TO ACTIENGESellschaft "MAGNETA," (ELECTRISCHE UHREN OHNE BATTERIE & OHNE CONTACTE,) OF ZURICH, SWITZERLAND, A FIRM.

ELECTRIC CLOCK.

SPECIFICATION forming part of Letters Patent No. 692,509, dated February 4, 1902

Application filed September 3, 1901. Serial No. 74,162. (No model.)

To all whom it may concern:

Be it known that I, MARTIN FISCHER, a citizen of the Republic of Switzerland, residing at Zurich, Switzerland, have invented new and useful Improvements in Electric Clocks, of which the following is a specification.

This invention relates to a current-producing magneto-electric clock with an armature caused to oscillate by means of the going-train, and according thereto the armature or armatures is or are stopped in its or their movements after each change of polarity, and the momentum of the armature acts against the oscillation-angles on one or more springs for the purpose, on the one hand, of obviating shocks to the mechanism and, on the other hand, of utilizing the inertia of the armature.

An example of a clock according to this invention is shown in the accompanying drawings.

Figure 1 is an elevation, and Fig. 2 a plan. 5 denotes a releasing-lever which is operated at certain intervals—for example, every minute—in a known manner by the going-train of an ordinary clock, and thus causes the crank 6, which is driven by a spring or by weights through a train of wheels, to rotate each time through a half-revolution. The crank is connected, by means of the link 7, to one arm of an armature, so that each time the crank 6 is operated the armature is suddenly moved to and fro. On the armature-shaft there is mounted an arm 3, which at each oscillation of the armature acts against the oscillatory movement by means of a pin 4, which compresses one or the other of the two springs 8.

By stopping the armature in its movements by means of the springs shocks which might damage the mechanism are avoided, while, on the other hand, by compressing the springs the inertia of the armature is stored and is utilized when the lever 5 is again released to start the oscillation of the armature. By this means the energy of the weights or springs, which acts on the crank 6 and serves for moving the armature, can be reduced to a minimum and very light armatures can be used. Previous master-clocks in which an armature

is moved by weight or spring power act in such a way that the armature is forced each time to make a half-revolution; but the greater portion of this revolution is valueless, since there is an effective current impulse only when the polarity of the armature is suddenly reversed, while the remainder of the movement represents lost energy. In such master-clocks the armature is stopped suddenly at each half-revolution, thereby causing a hard noisy blow and a rebound of the armature and transmitting shocks to the mechanism. These disadvantages (shocks and wasted energy) are obviated by means of the mechanism hereinbefore described, since the armature does not make a half-revolution, but only a slight to-and-fro movement, and the movement of the armature is stopped by means of springs.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is—

1. The combination with a current-generator, its armature, an abutment rigidly connected to the latter and a spring on either side and in the path of said abutment; of means for oscillating the armature, for the purpose set forth.

2. The combination with a current-generator, its armature, an abutment rigidly connected thereto and a spring on either side and in the path of said abutment; of mechanism for oscillating the armature and means for timing the operation of said mechanism to periodically impart to the armature a partial rotation first in one direction and then in another, for the purpose set forth.

3. The combination with a current-generator, its armature, an abutment rigidly connected thereto, a spring on either side and in the path of said abutment, and a revoluble crank connected with the armature to impart to it a partial rotation first in one direction and then in another at each revolution of said crank; of mechanism for rotating the crank and means for timing the operation of said mechanism, for the purposes set forth.

4. The combination with a current-generator, its armature, an abutment rigidly con-

- nected thereto, a spring on either side and in the path of said abutment, a revoluble crank connected to the armature to impart to it a partial rotation first in one direction and then
5 in another at each revolution of the crank; of mechanism for revolving said crank, a clock time-train and appliances controlled thereby and timing the operation of said mechanism, for the purpose set forth.
- 10 5. The combination with a current-generator, its armature, an abutment rigidly secured thereto, a spring on either side and in the path of said abutment, a revoluble crank connected to the armature to impart to it a
15 partial rotation first in one direction and then in another at each revolution of said crank,

and a spring or weight driven train of gearing connected with the shaft of said crank for revolving the same; of a stop device adapted to lock said train of gearing against operation 20 a clock time-train, and a let-off device controlled by the minute-arbor of said time-train and operating on the stop device to periodically release the same, for the purpose set forth.

25 In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

MARTIN FISCHER.

Witnesses:

A. LIEBERKNECHT,
E. J. WESTERMANN.