

BURNAP & BRADSHAW.

Magneto-electric Machine.

No. 23,214.

Patented Mar. 8, 1859.

Fig: 1.

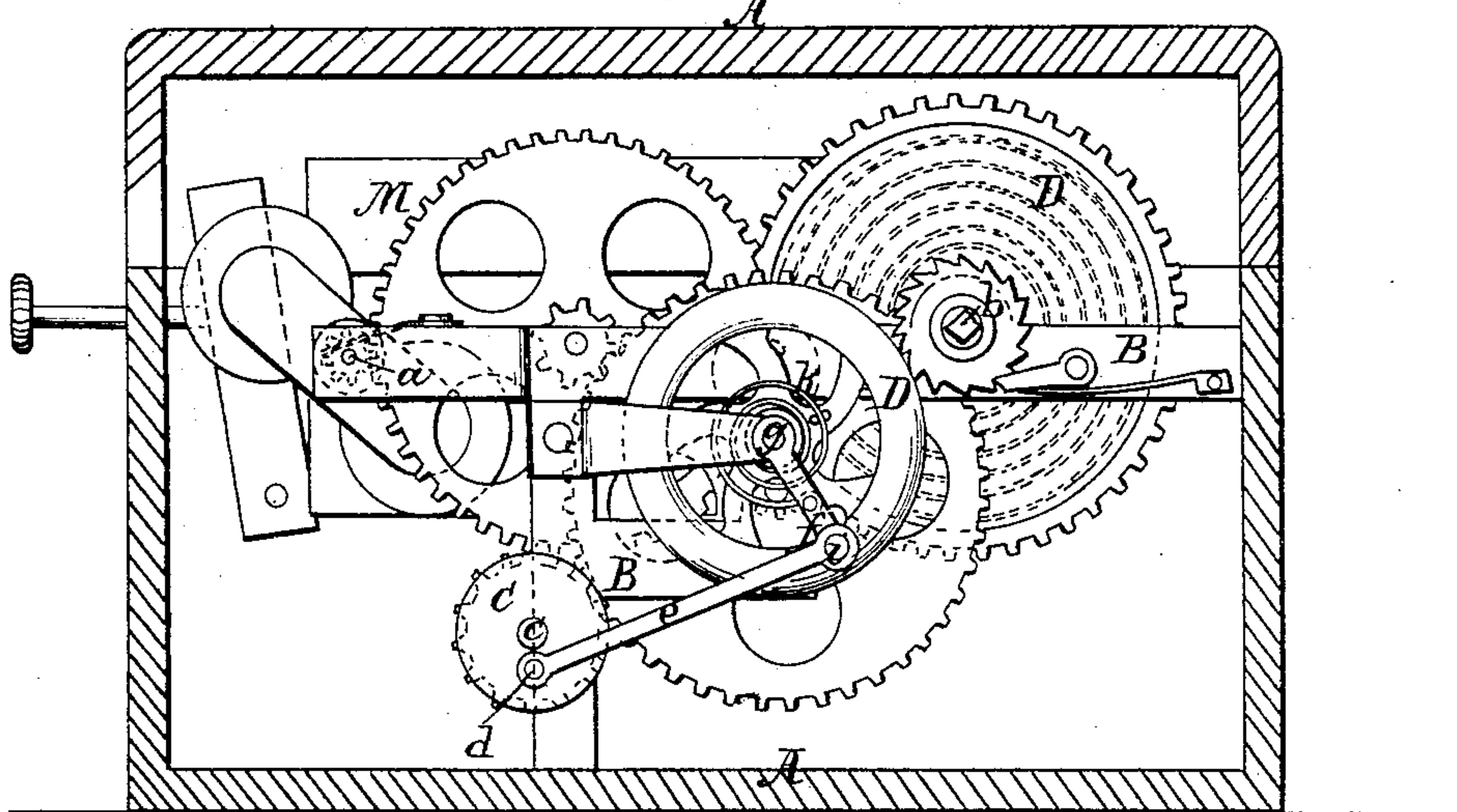
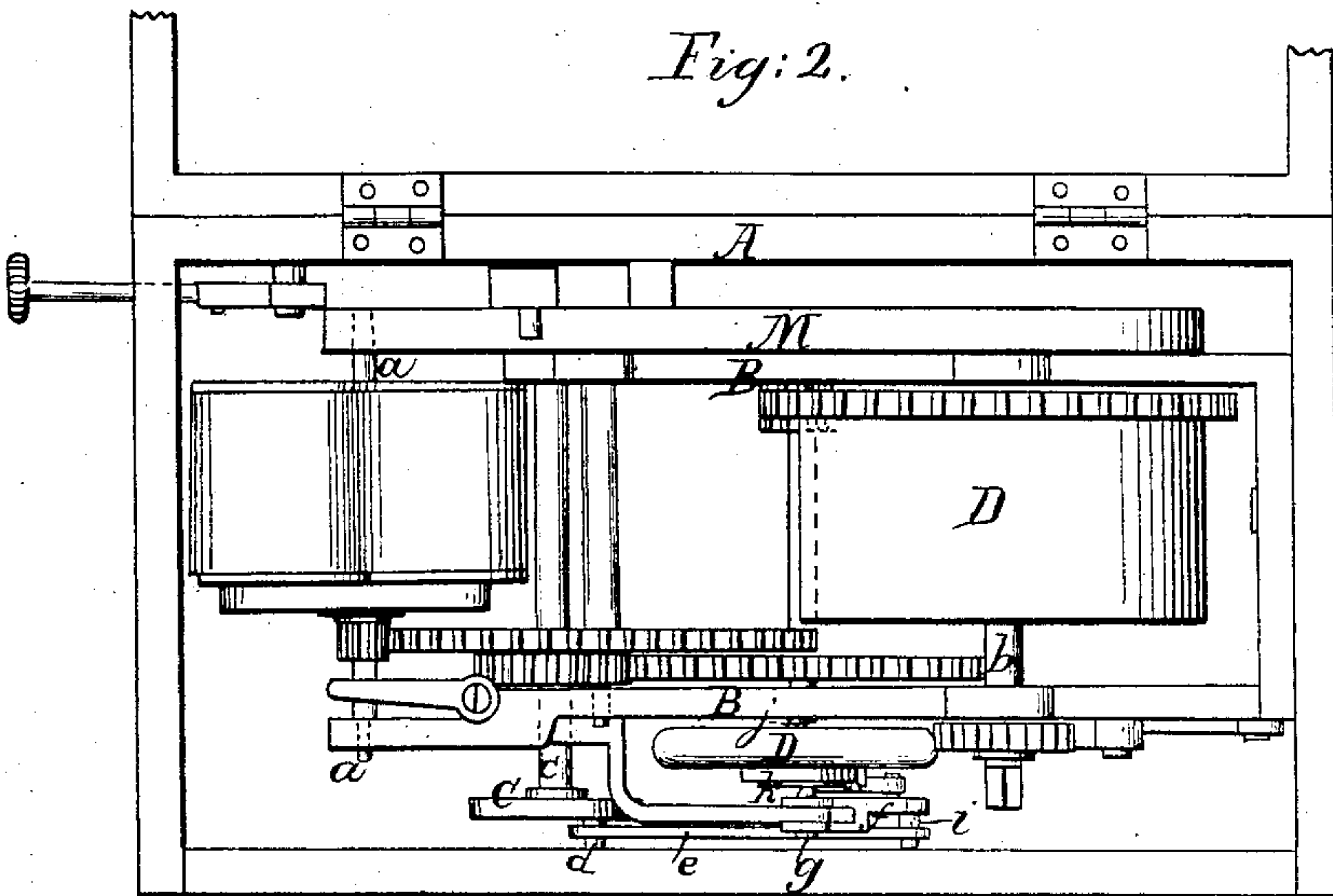


Fig: 2.



Witnesses;
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UNITED STATES PATENT OFFICE.

W. H. BURNAP AND JNO. A. BRADSHAW, OF LOWELL, MASSACHUSETTS,
ASSIGNORS TO W. H. BURNAP.

IMPROVEMENT IN ELECTRO-MAGNETIC MACHINES.

Specification forming part of Letters Patent No. 23,214, dated March 8, 1859.

To all whom it may concern:

Be it known that we, W. H. BURNAP and JOHN A. BRADSHAW, both of Lowell, in the county of Middlesex and State of Massachusetts, have invented a new and Improved Speed-Regulator for Magneto-Electric Machines; and we do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a front elevation of a magneto-electric machine with our regulator applied. Fig. 2 is a plan view of the same machine.

Similar letters of reference denote like parts in both figures.

This invention consists in a certain novel and very simple and effective mode of applying an oscillating balance-wheel, in combination with a train of gearing actuated by a spring, for driving a magneto-electric machine, whereby the velocity of the rotary motion of and the strength of the current produced by the machine are rendered uniform or nearly so throughout the whole of the time the spring is running out.

To enable others to make and use our invention, we will proceed to describe its construction and operation.

A is the box in which the magneto-electric machine is inclosed.

B B is the framing of the machine, containing the bearings of the helix-shaft *a*, and the shaft *b* of the spring box or barrel, and all the shafts of the train of gearing between the said shafts. The train of gearing requires no particular description, as it may be varied.

C is a disk secured to a shaft, *c*, which derives rotary motion from the train at a suitable speed. This disk carries a wrist-pin, *d*, which is connected by a rod, *e*, with a pin, *i*, secured in a forked arm, *f*, which is attached to a short rock-shaft, *g*, which works in a bearing in a plate, *h*, secured to the framing B B. The distance of the pin *i* from the center of the rock-shaft *g* is so much greater than the distance of the wrist-pin *d* from the center of the shaft *c* that the arm *f* derives from the revolu-

tion of the wrist-pin an oscillating motion of about one-tenth ($\frac{1}{10}$) or more or less of a circle in its sweep.

D is the balance-wheel, the shaft *j* of which is behind, but in line with, the rock-shaft *g*, and which is supported partly in a bearing in the frame B B, and partly by having a female center in one end fitted to a male center on the rear end of the rock-shaft *g*. This balance-wheel has its hub connected with the arm *f* by means of a convolute spring, *k*, of similar character to the hair-spring of a watch or balance-spring of a clock.

The operation of the regulator is as follows: The arm *f*, deriving a reciprocating motion from the train of gearing, as hereinbefore stated, imparts an oscillating motion to the balance-wheel through the agency of the spring *k*; but the moment of inertia of the balance-wheel, acting upon the arm *f* through the spring *k*, causes more or less back-pressure against the arm *f*, according as the tendency of the said arm is to move faster or slower, and hence acts with greater effect when the spring is strongest, and tends to move the train of gearing and the helix-shaft the fastest, thereby tending to equalize the velocity of revolution and the strength of the current produced by the rotation of the poles of the helix in proximity to the poles of the magnet M.

What we claim as our invention, and desire to secure by Letters Patent, is—

Applying the oscillating balance-wheel D, with its shaft *j*, in line with, but detached from, a rock-shaft, *g*, or its equivalent, carrying an arm, *f*, which derives a positive oscillating movement from the train of gearing which drives the magneto-electric machine, and connecting the spring *k*, which is attached to said balance-wheel, with the so arranged positively-moving arm, substantially as and for the purpose herein specified.

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Witnesses:

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