(No Model.)

G. B. SCOTT.

PRINTING TELEGRAPH.

No. 431,784. Patented July 8, 1890.

Fig. 1.

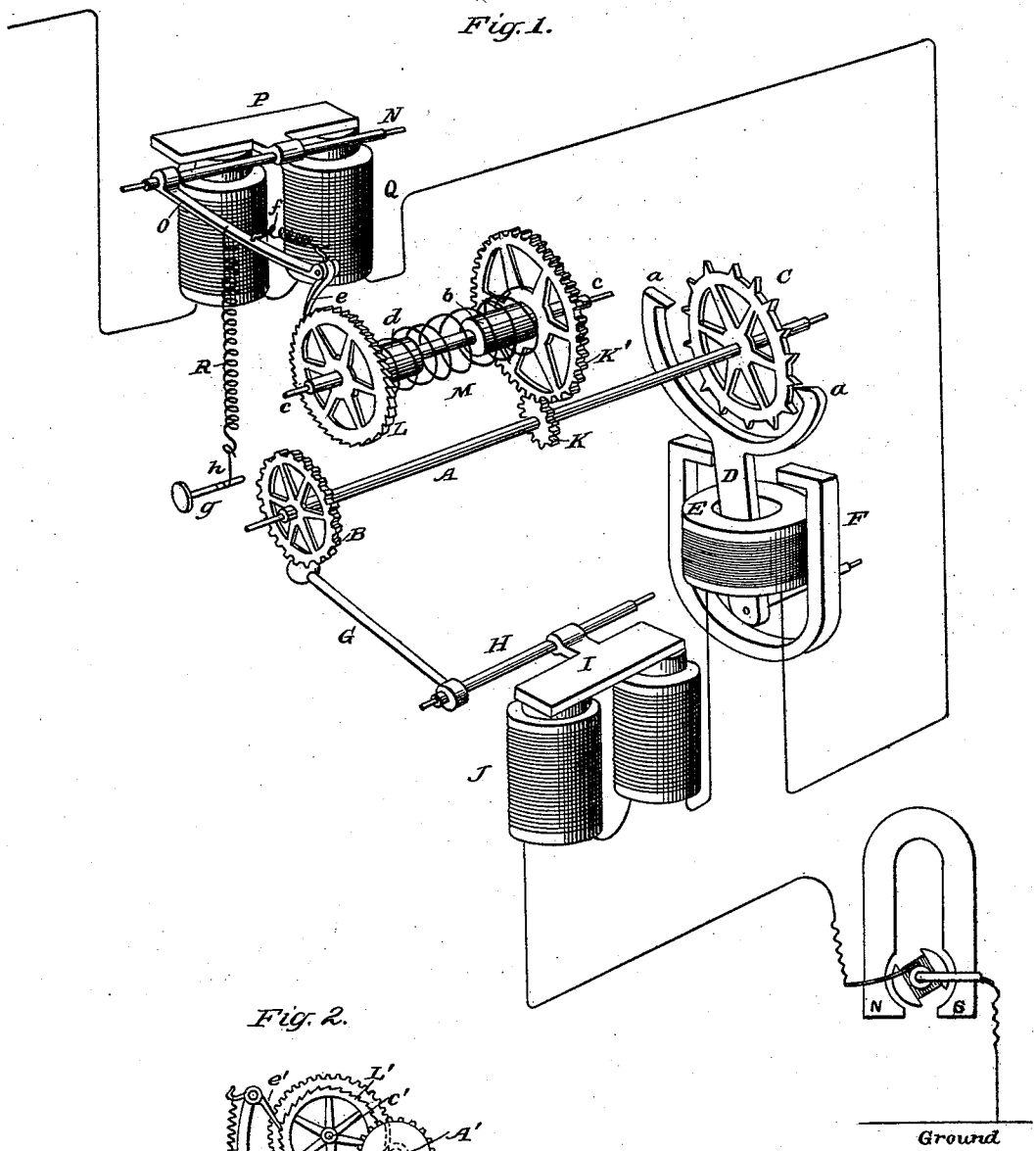
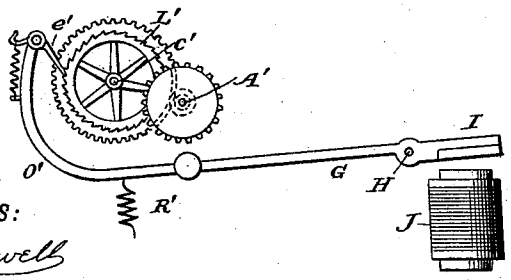


Fig. 2.



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PRINTING-TELEGRAPH.

SPECIFICATION forming part of Letters Patent No. 431,784, dated July 8, 1890.

Application filed May 18, 1889. Serial No. 311,292. (No model.)

To all whom it may concern:

Be it known that I, GEORGE B. SCOTT, of Lakewood, in the county of Ocean and State of New Jersey, have invented a new and Improved Printing-Telegraph, of which the following is a specification, reference being had to the annexed drawings, forming a part thereof, in which—

Figure 1 is a perspective view of the working parts of my improved printing-telegraph, the frame having been omitted to more clearly show the working parts; and Fig. 2 is a side elevation of a modified form of the type-wheel, actuating mechanism.

Similar letters of reference indicate corresponding parts in both views.

The object of my invention is to construct a printing-telegraph in which the type-wheel shaft will be propelled by power derived from the impulses sent over the line in the ordinary working of the instrument.

My invention consists in a printing-telegraph provided with a ratchet-wheel and pawl arranged to be actuated by a magnet placed in the main circuit or one of the magnets commonly used in printing-telegraphs, the said ratchet-wheel being connected through the medium of a spring with the type-wheel shaft, all as hereinafter more fully described.

The type-wheel shaft A is provided at one end with the type-wheel B and at the opposite end with the scape-wheel C, in the usual way. The scape-wheel C is engaged by pallets *a a*, carried by the oscillating armature D, which is supported by the shaft *a'*. The armature D is encircled by a helix E, outside of which is arranged a permanent magnet F, with inwardly-turned polar extremities, which attract the armature D. The printing-lever G, which presses the paper against the type-wheel B, is secured to a rock-shaft H, journaled in the frame of the machine and carrying the armature I. Below the said armature I is arranged the printing-magnet J, which is made to act upon the armature I in the manner presently to be described.

The type-wheel shaft A is provided with a pinion K, which is engaged by a spur-wheel K', carried by the sleeve *b*, mounted loosely on the shaft *c* near one end thereof. To the opposite end of the shaft *c* is attached the boss *d* of the ratchet-wheel L. To the ratchet-wheel is secured one end of a spiral spring M, the opposite end of which is attached to the spur-wheel K'.

In the frame of the machine (not shown) is journaled a rock-shaft N, which carries an arm O, to the free end of which is pivoted a pawl *e*, which is adapted to engage the ratchet-wheel L, the pawl being forced into engagement with the ratchet-wheel by a light spiral spring *f*, connected with the pawl and with the arm O. The rock-shaft N carries an armature P, which is within the field of a magnet Q, placed in the line-circuit. A spring R is connected with the arm O and arranged to oppose the pull of the magnet Q. The spring R is provided with a tension-adjusting key *g*, a thread *h* being wound on the key and connected with the spring.

The escapement-armature D is oscillated by rapid reversals of the current on the line. The same alternating current draws down the armature P in opposition to the pull of the spring R and releases the armature, allowing the spring to act. The downward pull of the said spring brings the pawl *e* into engagement with the ratchet-wheel L, thus causing the ratchet-wheel to turn, thereby winding the spring M with sufficient tension and frequency to impart to the wheel K' all the power required to operate the type-wheel shaft A, thus avoiding the necessity of winding the propelling mechanism of the printer at stated intervals.

I dispense with a retaining-pawl in connection with the ratchet-wheel L, as I have found by experiment that the inertia of the wheel prevents any retrograde movement in the intervals between the engagements of the pawl *e* with the ratchet-wheel.

Whenever the rapid alternations of the current cease and the current is allowed to flow continuously in one direction for an appreciable length of time, the printing-magnet J becomes energized and the printing takes place in the usual manner while the type-wheel is at rest.

In the modification shown in Fig. 2 an arm O' is connected with the printing-lever G, forming a prolongation thereof, and carries at its free extremity a spring-actuated pawl

e', which engages a ratchet-wheel L′ on the shaft c'. The arm O′ is drawn down by the retractile spring R′, thus operating the shaft c' through the medium of the pawl e' and ratchet-wheel L′. The impulses which accomplish the printing being less frequent than those which actuate the escapement, the gearing for operating the type-wheel shaft will have to be modified so as to multiply the revolutions of the shaft c' sufficiently to cause the scape-wheel upon the shaft A′ to keep up with the escapement.

In connection with my devices I use an alternating current generated by a battery and alternated or reversed by a pole-changer of any ordinary well-known construction, or I generate alternating currents by means of a magneto-electric machine known as the "Siemens H-armature machine." I have shown this form of alternating-current generator in my drawings; but I do not confine myself to this machine, as I may employ any known means of producing alternating currents.

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

1. In a printing-telegraph receiver, the combination, with the type-wheel shaft, of spring-actuating mechanism for driving the type-wheel shaft, an electro-magnetic spring-winder, a telegraph-line permanently including the magnet of the spring-winder and adapted to be operated by every pulsation passing over the line, an alternating-current generator connected with the line, a scape-wheel magnet inserted in the line-circuit, and escapement mechanism constructed to control the operation of the type-wheel, substantially as described.

2. In a printing-telegraph receiver, the combination, with the type-wheel shaft, of a propelling-spring for maintaining the rotation of the shaft, a ratchet-wheel connected with the spring, a pawl adapted to engage the ratchet, a retractile spring connected with the pawl and constructed and arranged in conjunction with the pawl to move the ratchet-wheel and wind the propelling-spring, a winding electro-magnet placed in the line-circuit, an armature held within the field of the electro-magnet and connected with the pawl-carrying arm, and an alternating-current generator connected with the line, substantially as described.

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