G. M. PHELPS.
Printing-Telegraphs.

No. 208,537. Patented Oct. 1, 1878.

Fig. 2.

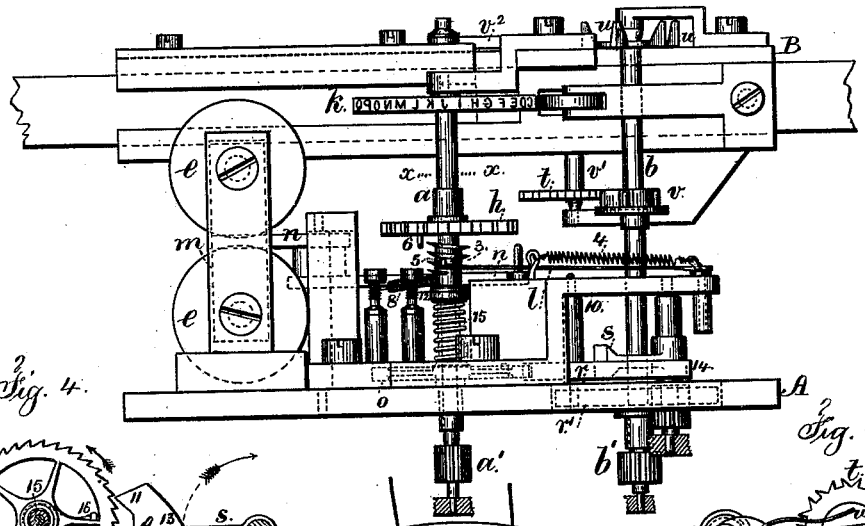


Fig. 4.

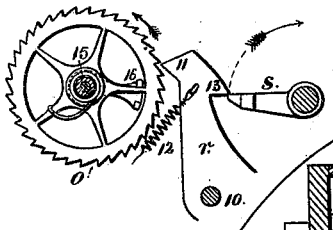


Fig. 3.

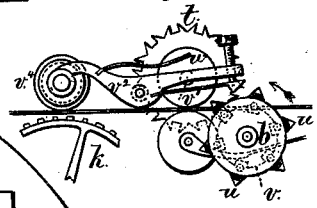
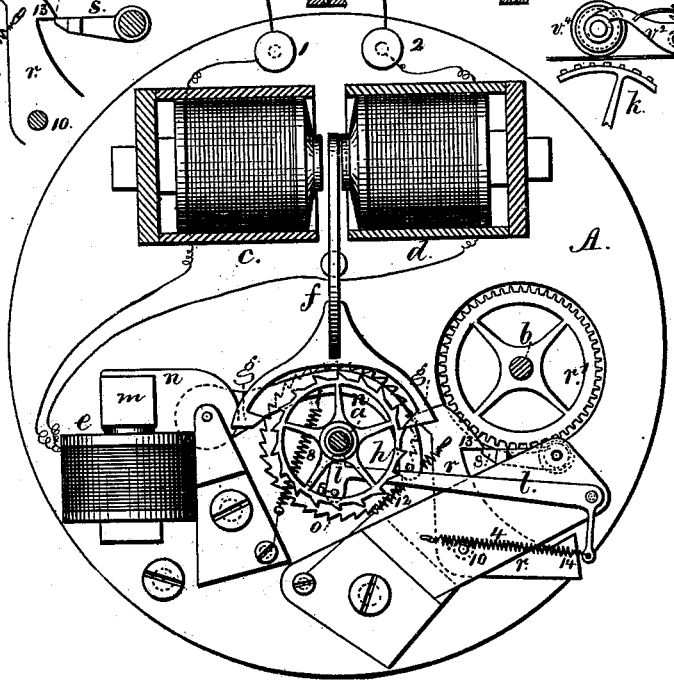


Fig. 1.



Witnesses

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UNITED STATES PATENT OFFICE.

GEORGE M. PHELPS, OF BROOKLYN, NEW YORK.

IMPROVEMENT IN PRINTING-TELEGRAPHS.

Specification forming part of Letters Patent No. **208,537**, dated October 1, 1878; application filed May 20, 1878.

To all whom it may concern:

Be it known that I, GEORGE M. PHELPS, of Brooklyn, in the county of Kings and State of New York, have invented an Improvement in Printing-Telegraph Instruments, of which the following is a specification:

In this telegraph-instrument the printing mechanism operates automatically when the type-wheel stops. The unison devices heretofore used have, in some instances, been unlocked by the operation of the impression mechanism. It will be evident that with my present instrument, if the unison mechanism was unlocked automatically by the printing mechanism when the type-wheel stopped, then the type-wheel would be liberated and not remain at unison while the other instruments in the line are being brought to unison. It hence becomes necessary to unlock the unison by the line-current. I therefore introduce an electro-magnet for the especial purpose of unlocking the unison when the line-pulsations cease.

In the drawing, Figure 1 is a plan of the type-wheel below the line *x x* of Fig. 2, which is an elevation of the mechanism employed with the type-wheel. Fig. 3 is a diagram of the printing and feeding devices separately from the frame-work, and Fig. 4 is a separate view of the impression-escapement.

The type-wheel shaft *a* and impression-shaft *b* are provided with pinions *a' b'*, upon each of which the wheels of a train of gearing act, to revolve the same by spring or weight power, and these wheels and the other parts of the instrument receive their support from the plates or frames A and B.

The electro-magnets *c d* are within a case, that is between the plates A and B, and through the helices of these magnets the current passes from the line by the binding-posts 1 and 2. The current, however, passes also through the helices of the electro-magnet *e*.

Between the cores of the electro-magnets *c* and *d* the polarized armature *f* vibrates by the alternations in the polarity of the current sent, the same as in several printing-telegraph instruments heretofore patented by me.

The lever and pallets *g*, moved by the armature *f*, allow the escapement-wheel *h* and type-wheel *k*, upon the shaft *a*, to turn by a step movement. Upon the shaft *a* there is a screw thread or worm, 3, against which is pressed the end of the lever *l* by the spring 4, and a tooth, 5, upon this lever *l*, engages the unison-stop 6 upon the escapement of the type-wheel when the screw 3 has moved the unison-lever *l* sufficiently for the tooth 5 to be in the path of the stop 6. This unison-lever *l* is preferably of thin metal, so as to spring laterally.

The armature *m* of the electro-magnet *e* is held toward the cores by the pulsations of the line-current so long as those pulsations continue, and the spring 8 of the armature-lever *n* is comparatively weak; but it is strong enough to overcome the spring 4 of the unison-lever. Hence whenever the pulsations of the electric current cease and the armature *m* falls back, the lever *n* is moved by the spring 8, and withdraws the unison-lever *l* from the worm 3 upon the type-wheel shaft *a*, and causes the unison to return to its normal position. This occurs when there is an entire cessation of the pulsations on the line, either when the pause occurs in setting the type-wheels for printing, or after the instruments have been turned to unison and the circuit broken.

The printing is performed mechanically as follows: There is a wheel, *o*, upon the type-wheel shaft, the periphery of which is made with teeth equal in number to the divisions of the type-wheel, and adjacent to this wheel *o* is the escapement which liberates the lever *r* of the printing mechanism, which lever *r* swings upon the pivot 10, and the tooth 11 thereof is kept toward the teeth of *o* by the spring 12, that acts on said lever *r*. There are two other teeth, 13 and 14, upon this lever *r*, that form an escapement to the revolving arm *s*, which derives its movement from the wheel-shaft *b*. When the type-wheel is moving, the tooth 11 cannot fall into the spaces between the teeth of *o* sufficiently to allow the arm *s* to escape from the tooth 13; but as soon as the type-wheel stops the tooth 11 passes fully into the space between the teeth and the arm *s*, escapes from 13, and makes about three-quarters of a revolution while the printing is being performed and the paper fed along. The arm *s* then stops against the tooth 14 until the type-wheel again commences to move and swings the impression-escapement lever, as before. A helical spring, 15, around the type-

wheel shaft, connected at one end to a sleeve on said shaft and at the other end to this ratchet-wheel *o*, serves to turn it forward against a stop, 16, on the shaft, and hence the spring 15 will yield slightly as the type-wheel shaft starts forward after being stopped, and lessen the risk of checking the type-wheel by the inertia in moving the printing-escapement.

The feeding mechanism consists of the wheel *r*, with pins, upon the shaft *b*, and the wheel *t*, with segmental sections and notches around its periphery upon the shaft v^1 of the feeding-roller *w*, so that the paper is allowed to stand still while the impression is being made, as set forth in my Patent No. 161,151; and at the upper end of the shaft *b* is a wheel, with cam-projections *u*, that serve to give motion to the lever v^2, carrying the impression pad or roller v^4.

The parts are so constructed and timed that the paper is first moved when the arm *s* is liberated from 13, and then the impression is made while the paper remains stationary, just before the arm *s* is arrested by the tooth 14 of the impression-escapement.

I claim as my invention—

1. The combination, in a printing-telegraph instrument, of magnets for setting the type-wheel, automatic mechanism for effecting the printing when the type-wheel is stopped, and an electro-magnet and armature to effect the liberation of the unison-stop when the pulsation of electricity ceases upon the line, substantially as set forth.

2. In a printing-telegraph in which the type-wheel is set or controlled by an electro-magnet in the main line, the unison is automatically brought into action, and the printing is effected mechanically, an electro-magnet, also in the main line, to liberate the unison, substantially as set forth.

Signed by me this 16th day of May, A. D. 1878.

GEO. M. PHELPS.

Witnesses:

GEO. T. PINCKNEY,

CHAS. H. SMITH.