

(No Model.)

S. V. ESSICK.
TELEGRAPHY.

No. 563,149.

Patented June 30, 1896.

Fig. 1.

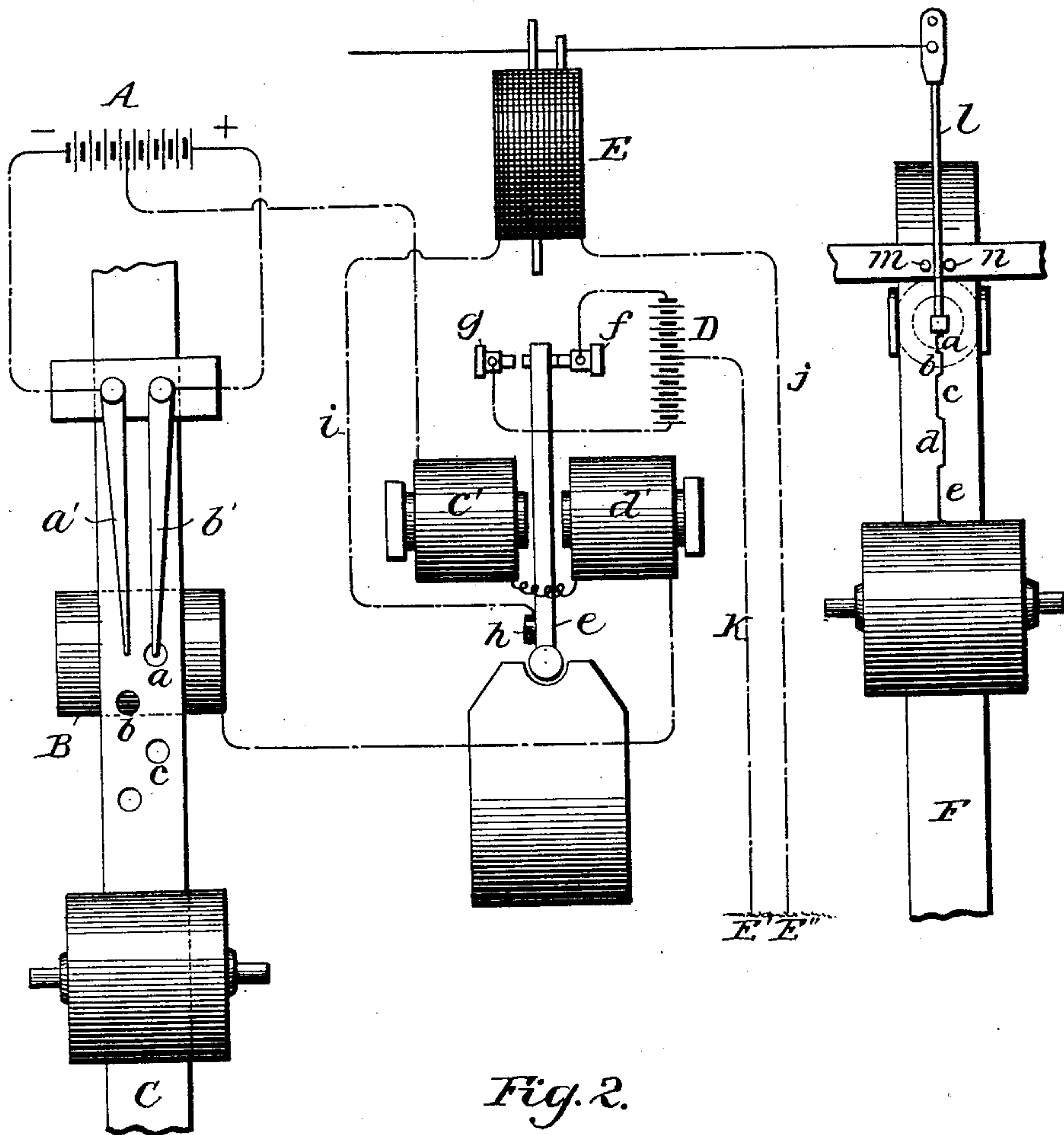
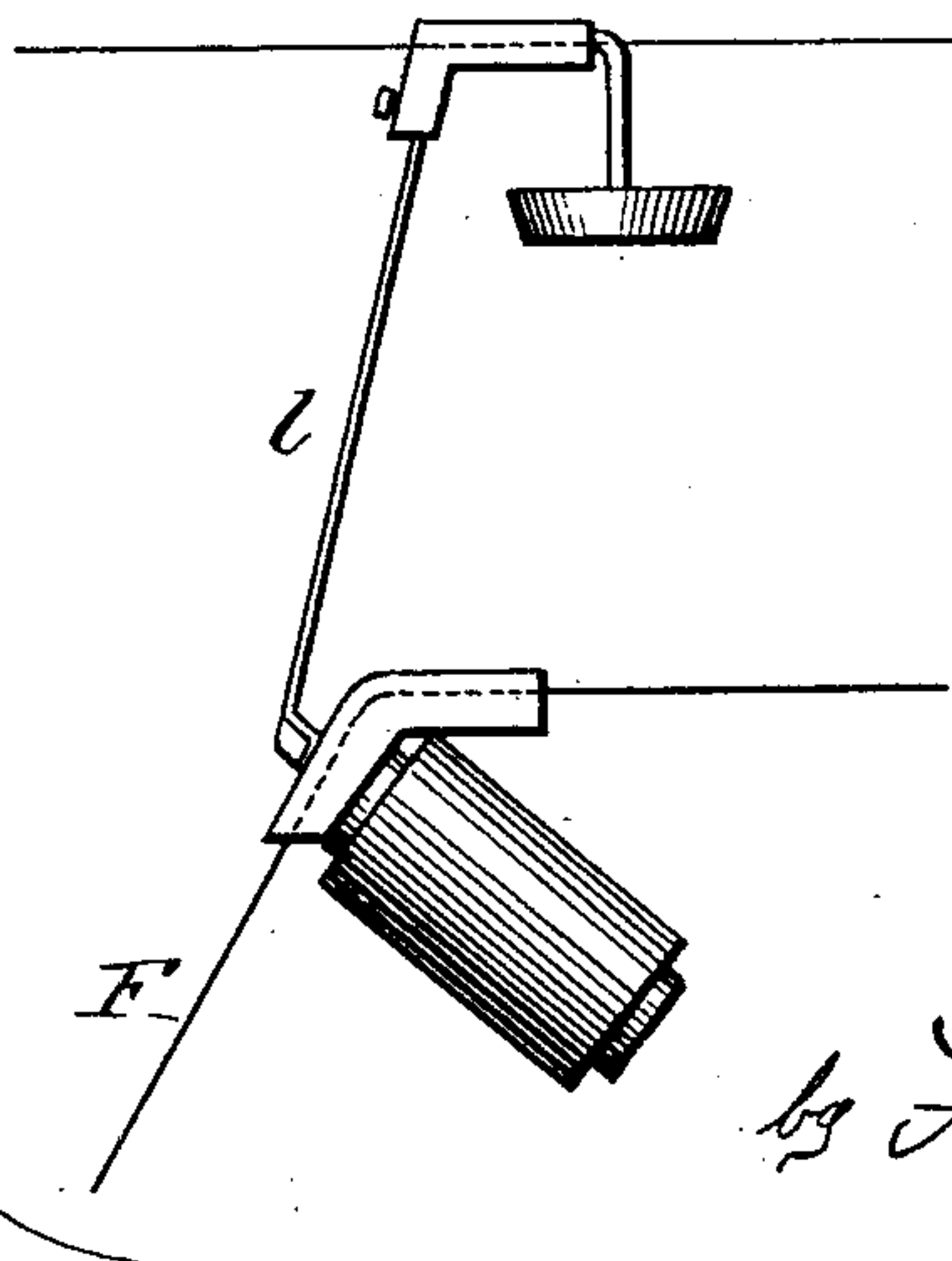


Fig. 2.



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SPECIFICATION forming part of Letters Patent No. 563,149, dated June 30, 1896.

Application filed September 27, 1895. Serial No. 563,875. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL V. ESSICK, a citizen of the United States, and a resident of Yonkers, in the county of Westchester and State of New York, have invented a new and useful Improvement in Telegraphs, of which the following is a specification.

My invention relates to an improvement in telegraphy, and while it is applicable to the transmission of various forms of characters it has reference more particularly to the transmission of telegraphic characters by the use of a single electrical impulse for each character transmitted.

My said device is particularly applicable to ocean-cable telegraphy, as by its use I am enabled to transmit the alphabet set forth in my application, Serial No. 562,631, by the transmission of which in the use of the device herein set forth I employ only one electrical impulse for each character.

My invention will be understood by reference to the accompanying drawings, of which—

Figure 1 is a diagrammatic view of the system, showing all its working parts. Fig. 2 is a side view of a siphon-recorder.

Referring to my said drawings, A is a local battery which is utilized by the use of the springs *a* and *b*, which contact with the cylinder B through the perforations in the paper ribbon C. When any one of said perforations is reached by said contact-springs, a local current is sent through the coils *c d* of a polarized relay. If contact is made through one of the right-hand perforations, an impulse of a predetermined polarity—*e. g.*, a positive impulse—is sent through the coils *c d*, which causes the armature *e* to move to the right, and thus make contact with the point *f*, whereby a current starts from the negative end of the battery D, which current traverses the said armature *e* to the screw *h*, thence it proceeds by the cable *i* to the coil or solenoid E at the distant station, thence by the wire *j* to the earth at E', thence through earth to the wire K, thence through said wire K to the battery. By the said operation the solenoid E is actuated, thereby moving the siphon *l*

from the limit-pin *m* to the limit-pin *n*, or vice versa. When the said action takes place, a diagonal lateral line is traced on a paper ribbon, as shown where the letters "a b c d e" occur. The said ribbon being fed forward at a predetermined rate of speed, and the current being held in one direction by means of the said armature *e* and its contact-pin, which remain at rest until the next perforation is reached by the spring *a*, the said siphon traces a straight line on said ribbon until the perforation connecting the spring *a* with the cylinder B is reached, when a reverse current traverses the coils *c d*, thereby moving the said armature from contact *f* to contact *g*, which operation sends a reverse current through the cable *i* and solenoid E, whereby the action of said solenoid is reversed and the siphon *l* drawn to the other side or against limit-pin *m*, thus indicating on said paper ribbon the beginning of a new letter.

The mechanism which moves the perforated strip C and that which moves the strip or ribbon F should be actuated in synchronism, or each should at least have a uniform rate of speed. By this means the characters transmitted are given their distinction, each character being distinguished from all others by the distance between the said lateral strokes.

If it be determined that the distance between the strokes which designate the letter "a" shall be the shortest, the distance between the two perforations which form the said letter "a" shall be correspondingly short. Thus throughout the alphabet the distance between the said perforations shall determine the character by means of said circuits and mechanism.

It will be seen that my invention embodies, generally stated, means for causing impulses successively alternating in polarity in the line, each alternation of which represents a complete letter, which letter is determined by the time between the successive alternations, combined with a receiver controlled by such successive impulses and adapted to record a letter for each alternating impulse, which letter is determined by characteristics inde-

pendent of the polarity of the impulses, that is to say, by their lengths, so that at each reversal or with each successive impulse a complete letter is transmitted and recorded, which letter is determined solely by the time between the reversals or impulses. In the preferred embodiment illustrated in the accompanying drawings, a perforated strip of paper is used, each perforation alternating in position with the one which immediately preceded it, and the distance between the successive alternating perforations varying in accordance with the letter to be transmitted, a transmitter adapted to send to line the successive impulses alternating in polarity, and a receiver having a single arm or recorder adapted to move laterally to one side or the other with each impulse, and to record the relative time between successive impulses to determine the letter, thus forming each telegraphic letter by a single stroke or record to one side or the other of a given or imaginary line.

I have devised a means for rapidly perforating the paper used for transmission by my said improvement, which I will disclose in a later application.

I do not confine myself to the use of perforated paper as a means of transmission, as it is obvious that embossed paper or other means of forming contact may be used. Nor do I confine myself to an exact means of recording the characters, as this might be done by any suitable form of pen as a substitute for a siphon or by projecting and photographing a ray of light. Nor do I restrict myself to the use of a relay, as the impulses may be sent directly from the spring-contacts *a* and *b*.

I claim as my invention and desire to secure by Letters Patent—

1. In telegraphy the means substantially as herein described of transmitting and recording characters, which consists in means for causing impulses successively alternating in polarity in the line, each alternation of which represents a complete letter; the letter being determined by the time between the successive alternations, combined with a receiver controlled by such successive impulses and adapted to record a letter for each alternate impulse, which letters are determined by their relative lengths.

2. In telegraphy the means substantially as herein described of transmitting and recording characters, which consists in a perforated strip of paper in which each perforation alternates in position with the one immediately preceding it, a pair only of perforations being employed for a letter and the distance between each pair of succeeding alternating perforations determining the letter to be transmitted, a transmitter adapted to send to line the successive alternating impulses, and a receiver comprising a recorder adapted to move to one side or the other with each impulse and to re-

cord the relative time between the successive impulses, whereby each alternating impulse produces a complete telegraphic letter.

3. In a telegraphic transmitter, the combination with a perforated strip of paper, each perforation alternating in position with the one which immediately preceded it, a pair only of perforations being employed for a letter and the distance between each pair of succeeding alternating perforations determining the letter to be transmitted, of means for feeding said paper, springs which make contact with a conducting-surface through said perforations, a local battery connected to said springs, a relay having necessary contact-points, and a line-battery and conductors connected to said points and controlled thereby, so that the current is sent to line in impulses successively alternating in polarity and of a length to correspond with the desired letter to be transmitted, substantially as described.

4. In a telegraphic apparatus, the combination with a perforated strip of paper, each perforation of which is adapted to send to line an impulse alternating in polarity to the impulse preceding it, a pair only of perforations being employed for a letter and the distance between each pair of succeeding alternating perforations determining the letter to be transmitted, of means for feeding the paper, conducting-springs making contact by means of said perforations, a line, a battery, conductors, and a receiving instrument adapted to record the relative time between each successive impulse to determine the letter, whereby a complete letter is sent and received by the action of a single electric impulse or reversal, substantially as described.

5. In telegraphy the combination of a perforated strip of paper a means of feeding the same, springs which make contact with a conducting-surface through said perforations, a local battery one end of which is connected with one of said contact-springs and the other end with the other contact-spring, a conductor leading from said conducting-surface through the coils of a polarized relay to the center of said local battery, a line-battery grounded in the middle, one end of said line-battery connecting with one of the contact-screws of said relay and the other end with the other contact-screw, and the armature which makes contact with said contact-screws being connected with the line.

6. In a telegraphic apparatus, the combination of a perforated strip of paper, each perforation alternating in position with the one which immediately preceded it a pair only of perforations being employed for a letter and the distance between each pair of succeeding alternating perforations determining the letter to be transmitted, contact devices controlled by said perforations and connected to the line to send impulses successively alternating in polarity in accordance with said per-

forations, and a recording device controlled
by said alternating impulses and forming at
each impulse a single lateral and single lon-
gitudinal line, each succeeding lateral and
5 longitudinal line being on opposite sides of a
central line, and each representing a complete
letter, substantially as described.

In testimony that I claim the foregoing as

my invention I have signed my name, in pres-
ence of two witnesses, this 27th day of Sep- 10
tember, 1895.

SAMUEL V. ESSICK.

Witnesses:

WM. C. KELLOGG,
I. A. DUNDAS.