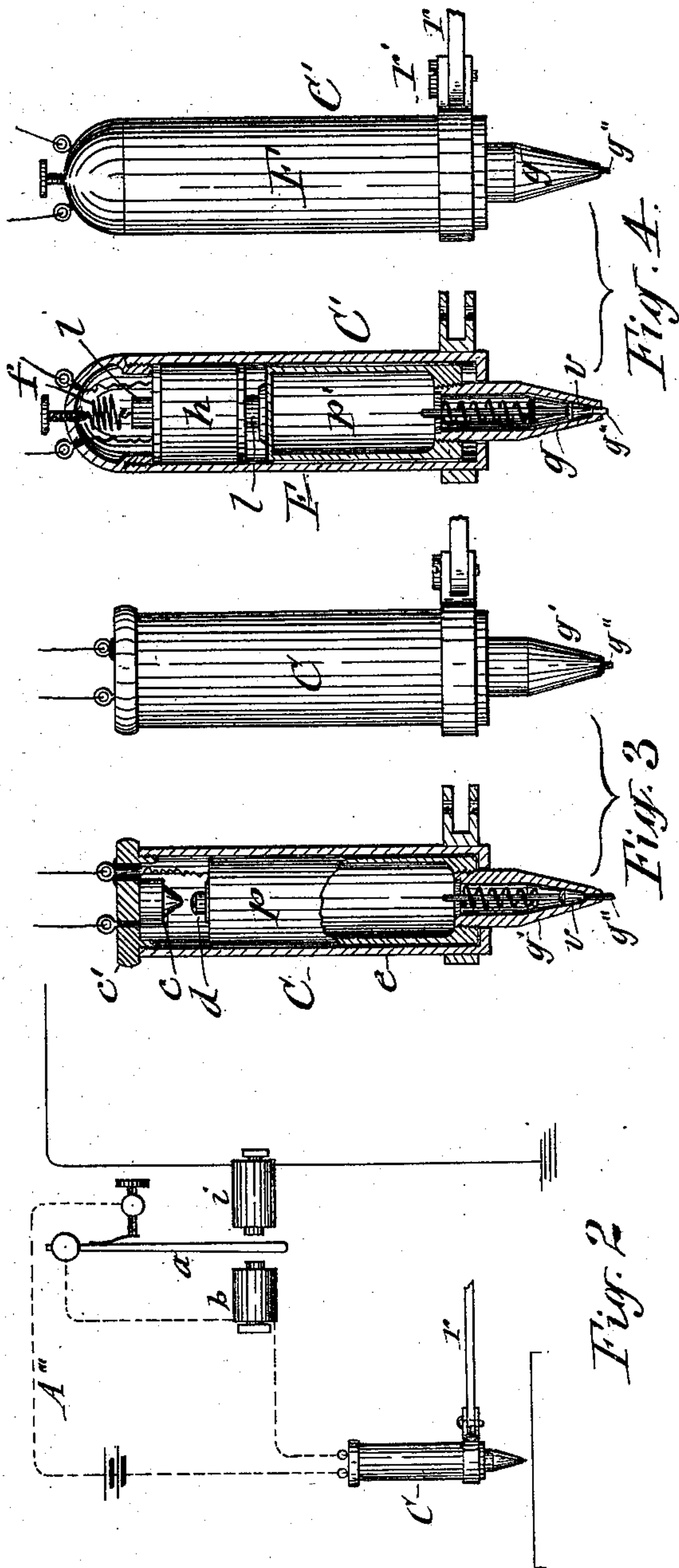
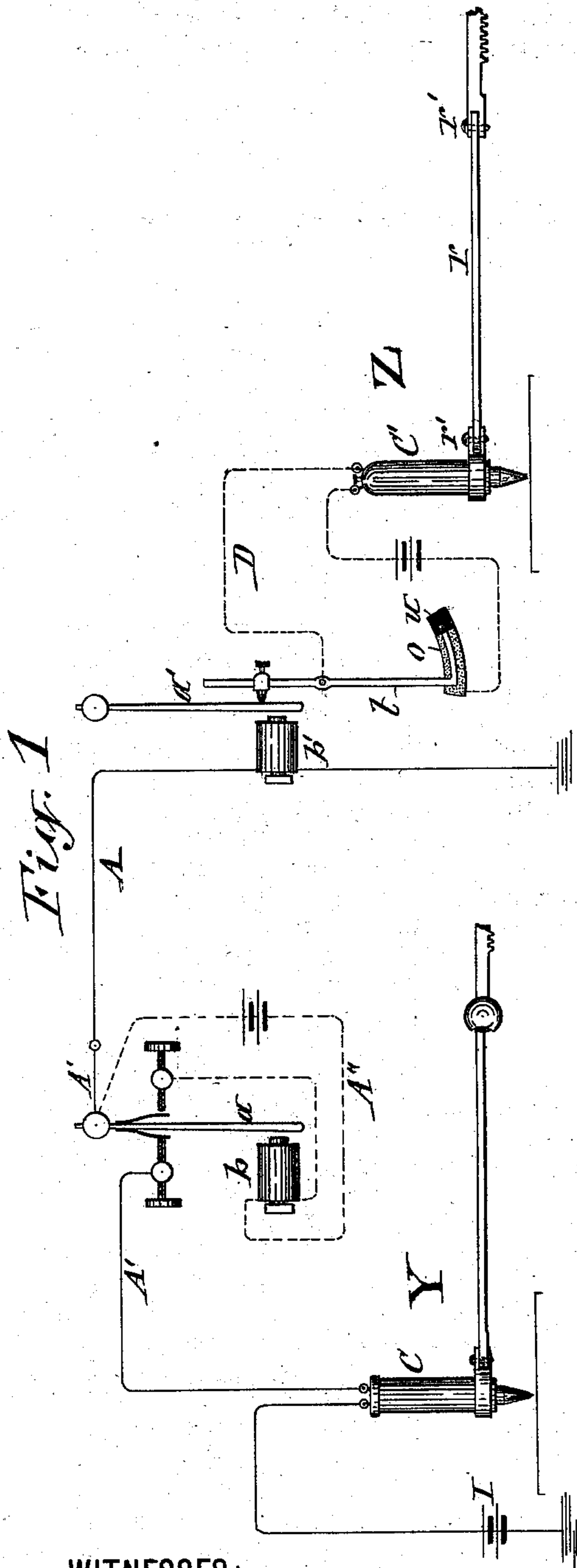


(No Model.)

M. W. DEWEY.  
TELEGRAPHY.

No. 402,415.

Patented Apr. 30, 1889.



WITNESSES:

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*A. F. Walz*

INVENTOR,

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BY

*Smith, Laessle & Smith*  
ATTORNEYS



# UNITED STATES PATENT OFFICE.

MARK W. DEWEY, OF SYRACUSE, NEW YORK, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO THE DEWEY CORPORATION, OF SAME PLACE.

## TELEGRAPHY.

**SPECIFICATION** forming part of Letters Patent No. 402,415, dated April 30, 1889.

Application filed October 3, 1888. Serial No. 287,040. (No model.)

*To all whom it may concern:*

Be it known that I, MARK W. DEWEY, of Syracuse, in the county of Onondaga, in the State of New York, have invented new and useful Improvements in the Art of Telegraphy, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

My invention relates to the class of telegraphy wherein a stylus or pen at the receiving-station is caused to trace or write letters or characters corresponding to letters or characters traced or written by a stylus or pen at the transmitting-station.

The purpose of my invention is to provide means to enable a person to produce letters or characters which are required to be shaded or formed of lines of different strengths or widths to distinguish one character from another or to produce the style of phonographic writing or phonetic short-hand in which about half of the signs used are required to be formed with heavier lines than the other half—for instance, the letters T and D are written phonographically thus, | and |. In order to distinguish T from D in phonetic short-hand D must be made heavier than T. It is the same with the vowels. To distinguish ū from ō, ō is made heavier than ū. The said vowels when written phonographically and placed after the consonant T appear thus, |-(ū), |-(ō.) Some of the signs compose parts of circles. F is written (, (a light line). V is written (, (a heavy line.) It will be also noticed that the curved line forming V tapers at its ends. Now, while this may not be absolutely necessary, yet it is always so written by hand, and so are also all the other heavy curved signs, for the reasons that it is more convenient to so write them and greater speed is derived thereby.

It is needless to describe the numerous benefits derived by making it possible to form stenographic characters by the receiving-pen of a writing-telegraph. The great increase in speed of transmission will be appreciated by those conversant with the art to which my invention pertains. Of course it will be useful for many other purposes besides steno-

graphic writing—in fact, wherever it is necessary to make dots or lines of varying size or width.

Now the object of this invention is to accomplish the aforesaid effect telegraphically; and to that end the invention consists in novel means for controlling the movements of the receiving stylus or pen, as hereinafter described, and specifically pointed out in the claims.

Autographic telegraphs have been invented having means for raising the receiving-pen from the paper automatically with the raising of the transmitting stylus or pen, and lowering the said receiving-pen onto the paper by lowering the transmitting stylus or pen; but, as already stated, such prior devices have been incapable of varying the pressure of the receiving-pen resting upon the paper to make a heavy, light, or tapered line. This variation of pressure of the receiving-pen to form light, heavy, or tapered lines I obtain automatically by varying the pressure upon the transmitting stylus or pen. The means by which I obtain this result will be presently explained, and while the plan may be employed on other autographic telegraphs it is more especially adapted to be used in connection with the form described and shown in my applications for Letters Patent for autographic telegraphs, Serial Nos. 276,354, 285,577, and 286,098, filed, respectively, June 7, 1888, September 17, 1888, and September 22, 1888.

A new and improved plan for raising the pen from or lowering it onto the paper is also shown in the annexed drawings, in which—

Figure 1 is a diagrammatic view of the transmitting and receiving apparatus connected with the line-wire in the manner similar to that shown in my prior applications for Letters Patent before referred to. Fig. 2 is a modification of the transmitting part shown in Fig. 1. Fig. 3 shows a longitudinal section and side elevation of the transmitting-pen. Fig. 4 shows the same views of the receiving-pen.

In Fig. 1, Y represents the transmitting-station, and Z the receiving-station, connected by the line-wire A. A reed or electrotome, a,



vibrated continuously by a magnet, *b*, in a local circuit, *A''*, is placed in a branch, *A'*, of the main-line circuit *A*, so as to make and break the circuit in the branch by the vibrations of the reed in the same manner as described and shown in my prior applications for patents, hereinbefore referred to. Of course, when used with other reeds in the circuit, each should have a different rate of vibration. The branch between the reed and battery *I* is connected with the stylus or pen *C*, which is specially constructed for the purpose, but admits of many modifications of its details, one of the essential features of said stylus or pen consisting in its being sustained yieldingly in contact with the table upon which to trace the message. The preferred form here illustrated consists of a non-metallic sleeve or tubular holder, *e*, having its lower end open and its upper end provided with a metallic cap, *c'*. In said sleeve slides the guide *p* for the stylus or pen *g'*. When it is desired to write with ink, I form the guide *p* in the shape of a cylindrical receptacle for the ink, and connect to the lower end thereof a smaller tube or duct, *g'*, which protrudes from the lower end of the holder *e*, and is preferably tapered, and inside of this duct is arranged movably longitudinally the pen proper, *g''*, consisting of a small stem to which is attached a valve, *v*, which closes the outlet of the ink when the said pen is relieved from pressure against its outer end and protrudes to its maximum extent, as shown in Fig. 3 of the drawings.

To the under side of the cap *c'* is attached a button, *c*, of carbon or other substance, offering more or less resistance to the electric current, according to the degree of pressure applied thereto, and to the upper end of the guide or ink-receptacle *p* is secured an electric contact-point, *d*, which is separated from the button *c* when the stylus or pen is relieved from upward pressure.

One of the wires of the branch *A'* is connected to the cap *c'*, and consequently also with the button *c*, and the other wire of said branch is connected with the electric contact-point *d*. Said carbon button and movable contact *d* constitute the current-controller, as hereinafter explained. When the pen is raised above the paper, the plunger falls by gravity, and then the contact *d* does not touch the carbon *c*, and thus the circuit is broken. This serves to raise the receiving-pen from the paper, as hereinafter described, and when the transmitting-pen is lowered and made to press upon the paper with sufficient force to cause the point *d* to come in contact with the carbon *c* with a slight pressure—enough to close the break in the branch—the receiving-pen *C'* will be lowered onto the paper with a correspondingly-slight pressure, which effects I will now proceed to explain.

The receiving-instrument *C'* consists of a sleeve or tubular holder, *F*, in which is ar-

ranged movably longitudinally the guide or ink-receptacle *p'*, which has attached to its lower end the pen or stylus proper, *g''*, of the same form as that of the transmitting-pen hereinbefore described. To the upper end of the receptacle *p'* is attached the core *l* of a solenoid, *h*, firmly secured to the interior of the sleeve *F*, as shown in Fig. 4 of the drawings.

The sleeve or holder *F* is sustained a uniform distance above the surface to receive the markings or inscriptions, and the stylus or pen *g''* is also supported above said surface by a spring, *f*, connecting the upper end of the core *l* with the upper end of the sleeve *F*. The solenoid *h* is connected in the local circuit *D*.

The reed *a*, although vibrated continuously, cannot produce impulses in the line except when the branch is closed in the transmitting-pen. Therefore no impulses go from the said reed to line when said pen is in its raised position, and the corresponding reed, *a'*, at the receiving-station *Z*, is therefore at rest, and when in this state the local circuit *D*, which it controls by its amplitude of vibration, is broken by the end of the lever *t* resting on the insulating material *u*, allowing the spring *f*, within the receiving-holder *F*, to raise the pen *g''* from the paper. When the transmitting-pen is lowered onto the paper with a slight pressure—enough to close the break in the branch—weak impulses go to line—weak, because of the greater resistance to the current by the carbon when the pressure upon same is slight. The impulses created in the line and magnet *b'* at the receiving-station vibrate slightly the receiving-reed *a'*, enough to close the local circuit *D*, including the solenoid *h* within the holder of the receiving-pen, thereby causing the pen to protrude farther and come in contact with the paper with slight pressure to produce a light line.

Now, in order to produce heavier lines or tapered lines, it is only necessary to increase the pressure of the transmitting-pen upon the substance written upon, as when writing ordinarily. This increased pressure decreases the resistance of the carbon and thereby strengthens the impulses in the line and magnet *b'* at the receiving-station and increases the amplitude of the reed *a'*, which, by a variable resistance, *o*, preferably similar to those described in my prior applications for Letters Patent above referred to, decreases the resistance in the said local circuit *D*, containing the solenoid *h*, and causes the same to force the pen with greater pressure upon the paper, so as to trace heavier lines thereon.

Fig. 2 shows the transmitting-pen *C*, connected in the local circuit *A'''*, operating the reed *a*. In this case, however, the reed is only vibrated when the local circuit is closed by pressure with the pen on the paper, and it is vibrated with greater or less amplitude, ac-



according to the degree of pressure of the said transmitting-pen. A magnet, *i*, in the main line is placed opposite the reed, the movement of which produces impulses in the magnet and line, as is well known, operating at the receiving-station in the same manner as described in relation to Fig. 1. It will be noticed that the rod *r*, supporting the receiving-pen, is in this case only adapted to lateral movement on account of the form of joints *r'*.

I do not wish to be limited to this particular plan for accomplishing the result—viz., producing light and heavy lines with the receiving-pen automatically by varying the pressure with the transmitting-pen, for many ways will suggest themselves to those versed in the art without departing from the spirit of my invention.

It will be noticed that the increase of pressure of the receiving-pen upon the paper does not materially increase the friction when moved, as the construction is such that slight pressure will open the valve *v*, which allows a greater flow of ink.

The different degrees of pressure of the transmitting-pen may be arranged to cause a greater flow of ink from the receiving-pen without increasing the pressure of the latter.

I do not claim in this application the method of producing marks of varying size telegraphically with the receiving-instrument, as said method constitutes the subject-matter of another application for Letters Patent of even date herewith.

What I claim in this present application is—

1. An electric telegraph comprising a main-line circuit, a table upon which to trace the message, a transmitting-instrument arranged yieldingly in contact with the table, a current-controller operated by the pressure of the transmitting-instrument upon the table and varying the strength of the current, and a receiving-instrument yieldingly in contact with the sheet to be inscribed and controlled in its degree of pressure upon the sheet by the aforesaid current.

2. In a writing-telegraph, the combination, with the stylus or pen, of a variable resistance attached directly to said stylus or pen and moving with the same over the surface receiving the inscription.

3. In a writing-telegraph, the combination of a table upon which to trace the message, a stylus or pen yieldingly in contact with said table, and a variable resistance carried directly on said stylus or pen and controlled by the pressure of the latter upon the aforesaid table, as set forth.

4. In combination with the table upon which to trace the message, a transmitting stylus or pen consisting of a holder arranged movable laterally over said table and toward and from the same, a marker carried movably on said holder, and a variable resist-

ance operated by the movement of the marker on its said holder.

5. In combination with the table upon which to trace the message, a transmitting stylus or pen consisting of a holder arranged movably laterally over said table and vertically toward and from the same, a marker arranged movably longitudinally on said holder, a carbon on the holder, an electric contact-point on the marker and pressed against the carbon by the inward movement of the marker in the holder, and electric conductors connected with said carbon and contact-point, substantially as described and shown.

6. In a writing-telegraph, the combination, with a main-line circuit, of a branch of said circuit, a reed in the said branch, a transmitting stylus or pen consisting of a holder arranged movable laterally over the writing-table and vertically toward and from the same, a marker arranged movably longitudinally in said holder, a carbon on the holder, an electric contact-point on the marker, and electric conductors connected with said carbon and contact-point, substantially as described and shown.

7. In a writing-telegraph having a receiving stylus or pen adapted to conform its movements to the movements of the transmitting stylus or pen in different directions, the main line having a branch including a reed, the transmitting stylus or pen yieldingly in contact with the writing-table, and a combined circuit maker and breaker and variable resistance controlled by the pressure of said stylus or pen upon the surface over which it moves, as set forth.

8. In a receiving-instrument of a writing-telegraph, a reed vibrated with different degrees of amplitude by impulses in a magnet in the main line, a maker and breaker and variable resistance in a local circuit controlled by the difference of amplitude of the said reed, and the receiving stylus or pen having a solenoid included in said local circuit and adapted to raise and lower said receiving stylus or pen by the varied strength in the said local circuit, substantially as set forth.

9. In a receiving-instrument of a writing-telegraph, a reed vibrated with varying degrees of amplitude by impulses in a magnet in the main line, a circuit maker and breaker, and a variable resistance in a local circuit controlled by the difference of amplitude of said reed, the receiving-pen having a solenoid also included in said local circuit and adapted to raise and lower said receiving-pen, and a valve controlling the flow of ink operated by lowering and raising said pen when in contact with the paper, substantially as described and shown.

10. In a telegraphic receiving-instrument, the combination of a bar having an operative end capable of universal movement within



one uniform plane, a stylus or pen carried on said operative end of the bar and movable at right angles to the aforesaid plane, an armature connected to the stylus or pen, and an electro magnet or solenoid for moving said armature, as set forth.

In testimony whereof I have hereunto signed my name, in the presence of two witnesses, at

Syracuse, in the county of Onondaga, in the State of New York, this 29th day of September, 1888.

MARK W. DEWEY. [L. s.]

Witnesses:

J. J. LAASS,

C. H. DUELL.