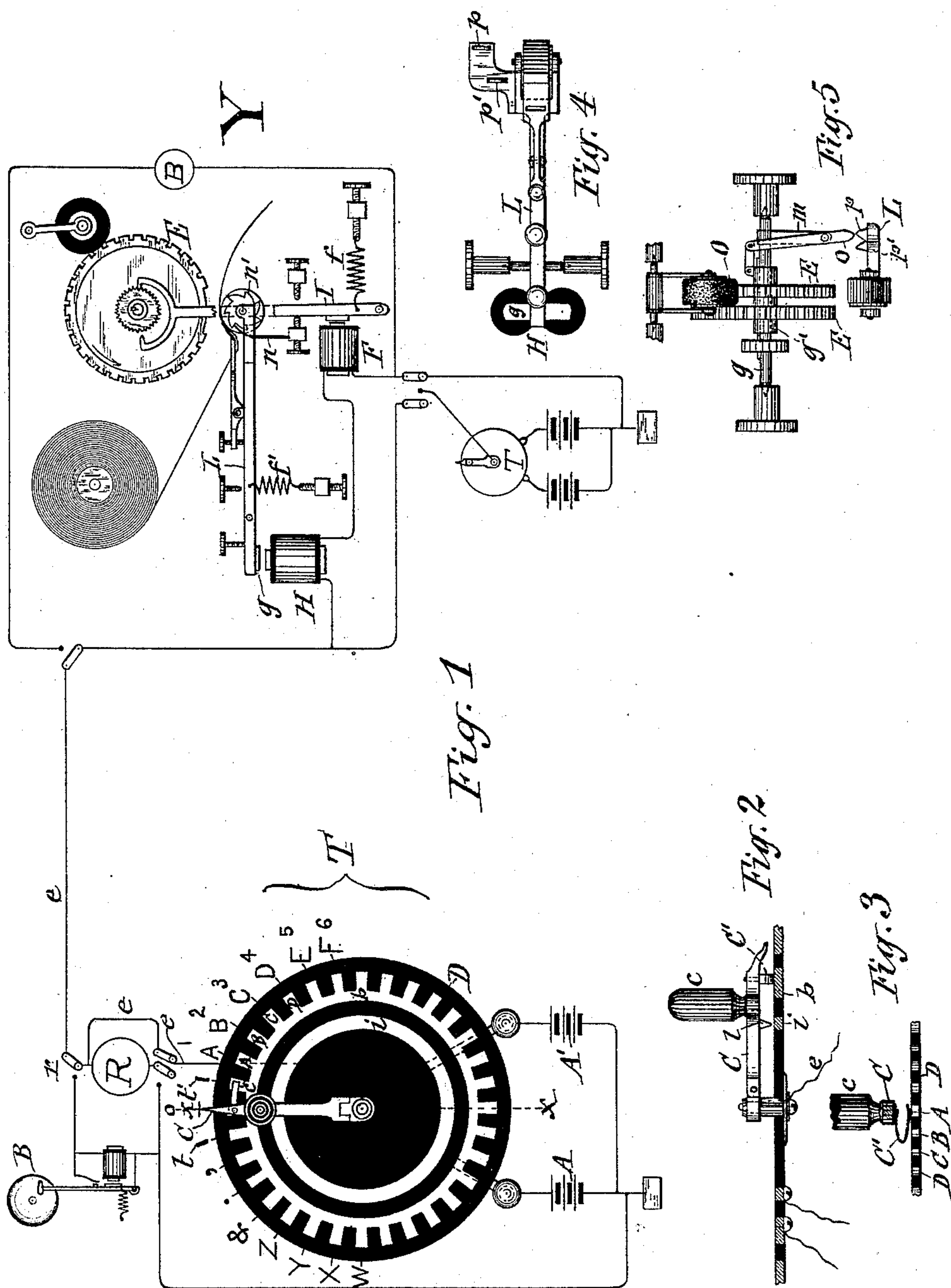


(No Model.)

M. W. DEWEY.  
PRINTING TELEGRAPH.

No. 395,614.

Patented Jan. 1, 1889.



**WITNESSES :**

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# UNITED STATES PATENT OFFICE.

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## PRINTING-TELEGRAPH.

SPECIFICATION forming part of Letters Patent No. 395,614, dated January 1, 1889.

Application filed January 30, 1888. Serial No. 262,367. (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  
5 useful Improvements in Printing-Telegraphs, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

The object of this invention is to provide  
10 a printing-telegraph apparatus which shall be simple and comparatively inexpensive in construction and capable of being operated expeditiously and without requiring long practice to enable a person to transmit messages  
15 quickly and intelligently on one line-wire.

The invention is fully illustrated in the annexed drawings, in which—

Figure 1 is a diagram view of two connecting-stations, each having my improved apparatus, consisting of a transmitter, a receiver  
20 or printer, call-bell, and batteries and connections. The call-bell and transmitting-instrument, which are fully illustrated at the station designated by the letter X, are only indicated at the station designated by the letter Y, and the receiving-instrument or printer, which is fully shown at the latter station, is only indicated at the station X, but the connections are alike at both stations. This is  
25 done to simplify the drawings and to avoid confusion, as it will be readily understood that the apparatuses at the two stations are alike, so that messages may be sent in opposite directions. Fig. 2 is a transverse section on  
30 line  $\alpha \alpha$ , Fig. 1. Fig. 3 is also a vertical transverse section of the same, showing more clearly the electrode connected to the combined key and indicator. The view of the receiver shown in Fig. 1 is taken from the rear thereof to better illustrate the mechanism. Fig. 4 is a top  
35 plan view of the printing-lever and its appurtenances; and Fig. 5 is an edge view of the type-wheels, showing the mechanism for shifting the same.

45 The transmitter is composed of the following parts, viz: a series of conducting-plates, A B C, &c., arranged, preferably, equidistantly apart, in the form of an annulus, and preferably countersunk in the bed D, of non-con-  
50 ducting material, so as to form one uniform

plane therewith. These conducting-plates are all connected to one and the same metallic strip,  $b$ , which is connected with the battery A and ground. A metallic key, C, which also serves as an indicator, is pivoted in the center of the aforesaid annulus of plates A B C, &c., and is provided with a suitable insulated handle,  $c$ , by which to rotate it on its axis. The free end of said key carries a suitable electrode, C', which is in the path of the aforesaid plates A B C, &c., and bears on said path, said electrode being preferably of the form of the metallic spring, as shown in Fig. 3 of the drawings. The axis of this combined key and indicator is connected with the line-wire  $e$ ,  
55 and by revolving the key C on its axis the electrode C' is drawn successively across the plates A B C, &c., and intervening insulating material, and thereby a corresponding number of impulses are sent over the line to the receiving-station, where they pass through the armature F, which turns the type-wheels with a step-by-step movement, aided by the spring  $f$  on the opposite side of the lever.

When the key C of the transmitter is rotated the distance from one contact-plate to the next, the circuit is broken intermediately by the intervening insulating material, and the breaking of the circuit causes the armature to recede from the magnet F, and thus  
60 causes the lever I to turn the type-wheels one-half of the distance from tooth to tooth; and when the armature is again attracted by the magnet the ratchet-wheel is again turned to complete its movement from tooth to tooth,  
65 and as the type-wheels turn synchronously with the ratchet-wheel, and the number of characters and spaces on the type-wheel correspond to the number of teeth on the ratchet-wheel, the type-wheels are moved the distance  
70 of two adjacent letters or characters, and with a complete revolution of the transmitting-key the type-wheels make a complete revolution. By making the plates A B C, &c., to correspond to the characters on the  
75 type-wheels, the key C, pointing to said markings, serves as an indicator for guiding the operator in operating the key.

L designates the printing-lever, which is pivoted intermediate its length, and carries  
80 100



the platen N on one end and has fixed to the opposite end the armature *g* of the magnet H. Both magnets F and H are in the single main line.

5 The peculiar feature of my invention, so far as it relates to the receiver, consists in the fact that both the type-wheel magnet F and printing-magnet H are energized by currents of the same polarity sent through one line-  
10 wire, the armature of the former responding to the intermittent current and the armature of the latter responding only to currents of greater strength. The intermittent current which energizes the type-wheel magnet F  
15 flows through the printing-magnet H, but is not of sufficient strength to overcome the resistance of the spring *f'* and attract the armature. The means by which this increase of strength for operating the armature of the  
20 printing-magnet is sent to line is as follows:

Concentric with the annulus of plates A B C, &c., and insulated therefrom, is a metallic ring, *i*, connected with a battery, A', and ground, and to the key C is attached the contact-point *l*, which is in the path of the ring  
25 *i*, and normally out of contact therewith. When the key C of the transmitter is rotated so that the electrode C' bears on the plate marked corresponding to the letter or  
30 character to be printed, the type-wheels are also in requisite position over the platen to print the corresponding letter or character. When the key C is in the position aforesaid, the depression of said key by the operator  
35 brings the point *l* in contact with the ring *i*, and thereby allows the current of the battery A' to pass through the ring *i*, thence through the key C, and thence to line.

The strength of the two batteries A and A' causes the printing-magnet H to overcome the resistance of the spring *f'* and attract the armature *g*, attached to the printing-lever. By the movement of said printing-lever the platen, over which runs the paper ribbon from  
45 a continuous roll, is brought into contact with the character to be printed, and when the key C of the transmitter is released the point *l* automatically draws out of contact with the ring *i*, and thus deprives the line of the  
50 strength of the battery A' and causes the printing-lever L to carry the platen away from the type-wheels, and in this movement of the lever the small ratchet-wheel *n'* on the end of platen is turned for another character by  
55 means of the spring-pawl *n*, as shown in Fig. 1.

The movements of the levers I and L are limited by means of stops in the usual manner. I prefer to employ two type-wheels arranged side by side and movable laterally  
60 on their shaft *g'*, as hereinbefore described, one of said wheels having letters and the other figures. The shifting of the type-wheels is effected by the following mechanism: To an arm, *m*, rigidly attached to the shaft *g'*, is pivoted a lever, *o*, one end of which is connected with the sleeve *g'*. To the printing-lever L are attached two upward-projecting cams, *p*

and *p'*, as shown in Figs. 4 and 5 of the drawings. Said cams stand in such relative positions that the pressure of one cam on the free  
70 end of the lever *o* shifts the type-wheels E E in one direction, and the pressure of the other cam on the lever *o*, as aforesaid, shifts the type-wheels in the opposite direction. By  
75 turning the type-wheels E E so as to bring the free end of the lever *o* directly over one of the cams, and then moving the printing-lever L toward the type-wheels, the said cam crowds the lever *o* to one side, and thus shifts the type-wheels laterally on their shaft. In  
80 order to enable the transmitter to control the aforesaid movement, I place the two cams *p* *p'* one back of the other in the direction of the length of the printing-lever, so that one cam can engage the lever sooner than the  
85 other cam during the rotation of the type-wheels, and the annulus *b* of the transmitter T, I mark at proper points, as shown at *t* and *t'*, at which to depress the key C, so as to cause the printing-lever to be actuated by the  
90 re-enforced current over the line, as hereinbefore described.

O designates the inking-roller, which may be composed of disks of felt or other suitable and well-known material.

The mode of operation is as follows: The apparatuses at both stations standing at zero, the lines connected with ground at said stations through the call-bell branch, the sending-operator breaks the ground-connection  
100 and connects with the transmitter T by means of a switch, *r*, and thereby also causes a current to flow to line, operating call-bell at the receiving-station. As the movement of this switch cuts out the bell of the transmitting-  
105 station, the operator may move back said switch for an answer, if he desires. This may not be really necessary, as a message may be received in the absence of the receiving-operator if the receiving-instrument is properly in  
110 circuit, and he may immediately proceed to transmit the message by turning the key C to the right, or in the direction of the hands of a clock, and depressing for a moment when the key is opposite the desired letter, then turn-  
115 ing, as before, to the next, and so on.

As will be noticed, it is not necessary to make a complete revolution for each letter in a word, for in many words the letters follow each other in such a manner that several let-  
120 ters may be printed consecutively during a single revolution of the key. For instance, the word "hotel" would require two revolutions—in the first H O T and in the second E L. If the key is accidentally turned past the letter  
125 to be printed, the key must make an entire revolution and be brought to the proper position over the letter to be printed, as the key should not be turned backward.

What I claim is—

1. In a printing-telegraph, the combination, with the recording or receiving instrument, of the transmitting-instrument, consisting of two concentric insulated annuli, one having a se-



ries of equidistant contact-points and the other being continuous, and a rotating key having contact-points adapted to be brought into contact with the respective annuli to transmit currents of different strength to the type-wheel-operating mechanism and the printing-lever, respectively, through suitable electrical connections and batteries, substantially as specified.

2. The transmitting-instrument consisting of two concentric insulated annuli, one having a series of interrupted contact-points and the other being continuous, in combination with a rotating and vibrating lever and proper electrical connections, whereby intermittent pulsations of different strength may be sent to the receiving-instrument when the transmitting and receiving instrument are electrically connected, substantially as specified.

3. The combination, with the printing-lever

L and pivoted shaft *g*, of the laterally-movable type-wheels E E, connected to the said shaft by groove and feather, the arm *m*, projecting from said shaft, the lever *o*, pivoted to said arm and connected at one end with the type-wheels, and the cams *pp'*, projecting from the printing-lever, one back of the other in the direction of the length of said lever and adapted to engage the free end of the lever *o* at opposite sides thereof, substantially as described and shown.

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 28th day of January, 1888.

MARK W. DEWEY. [L. S.]

Witnesses:

JOHN J. LAASS,  
C. L. BENDIXON.