

(No Model.)

2 Sheets—Sheet 1.

J. H. ROBERTSON.  
WRITING TELEGRAPH.

No. 543,426.

Patented July 23, 1895.

Fig. 1.

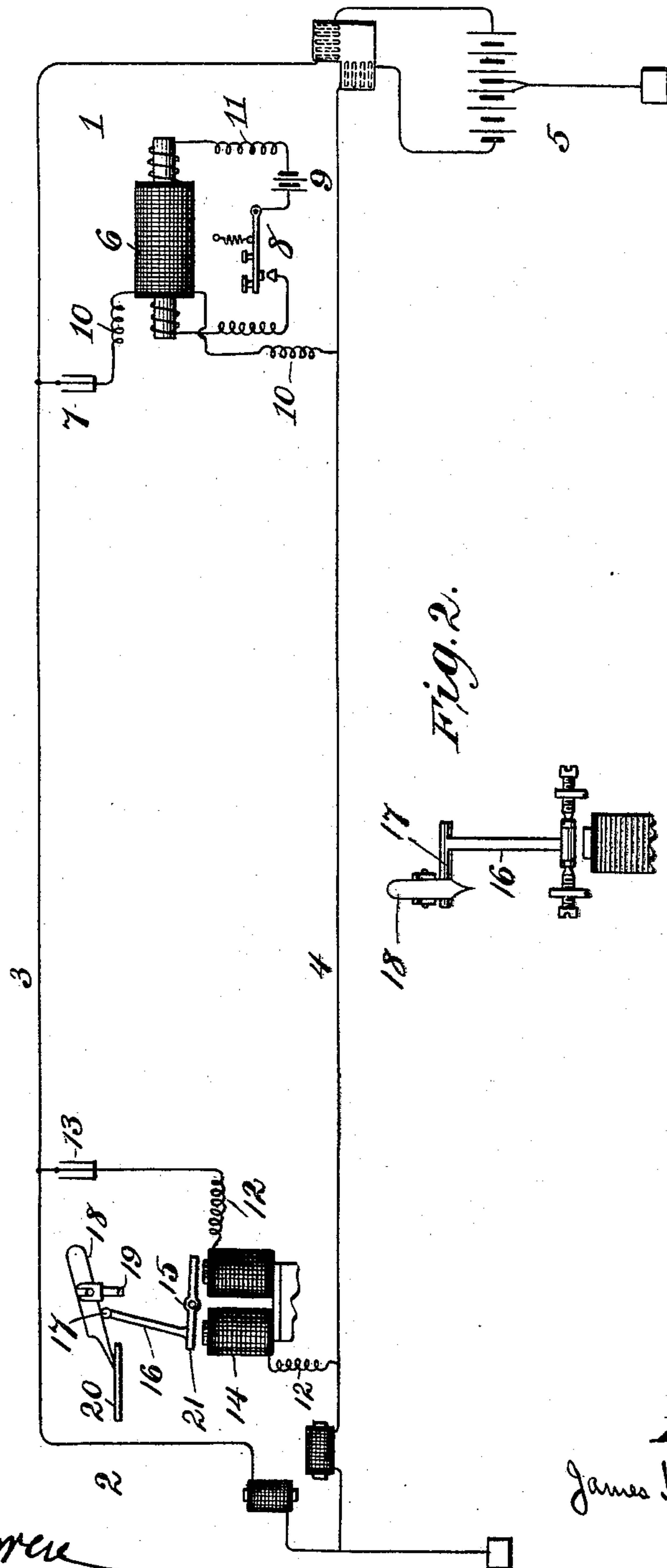
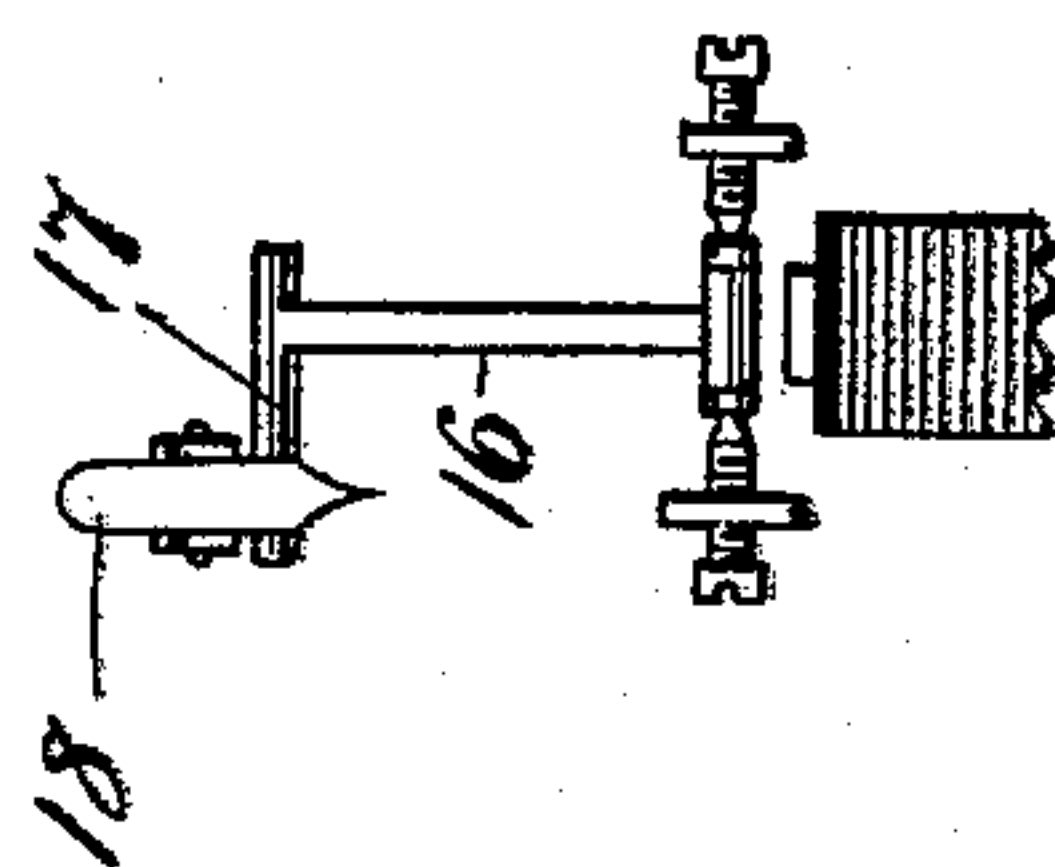


Fig. 2.



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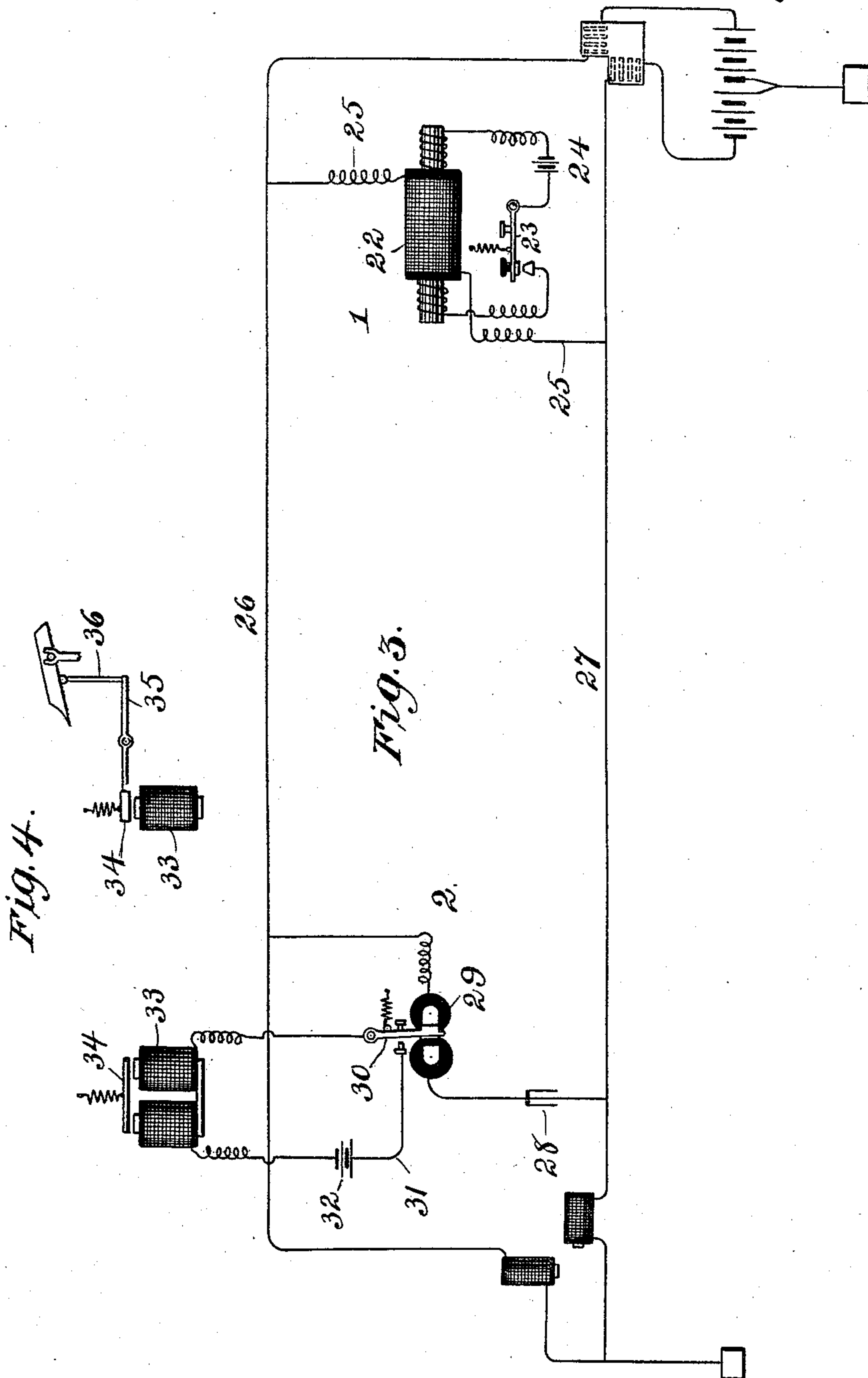
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2 Sheets—Sheet 2.

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No. 543,426.

Patented July 23, 1895.



Witnesses:

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# UNITED STATES PATENT OFFICE.

JAMES HART ROBERTSON, OF BROOKLYN, NEW YORK, ASSIGNOR TO  
WILLIAM E. GUMP, OF SAME PLACE.

## WRITING-TELEGRAPH.

SPECIFICATION forming part of Letters Patent No. 543,426, dated July 23, 1895.

Application filed December 19, 1894. Serial No. 532,376. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES HART ROBERTSON, a citizen of the United States, and a resident of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Writing-Telegraphs, of which the following is a specification.

My invention relates to writing-telegraphs.  
The object of my invention is to construct a receiving-pen elevating and lowering mechanism which will not require any additional line-wire for its operation, and which is operated by an induced current. I accomplish this object by the means hereinafter described and claimed.

In the accompanying drawings, forming part of this specification, Figure 1 is a diagrammatic view of a pen elevating and lowering mechanism embodying my invention. Fig. 2 is a detail view of the armature-lever for lifting the pen. Figs. 3 and 4 illustrate a modification of my invention.

Referring to the drawings, 1 and 2 indicate, respectively, the transmitter and receiver of a writing-telegraph, while 3 4 are the two line-wires connecting the same, and 5 the operating-battery. The receiver and transmitter may be such as shown in my Patent No. 353,593, dated November 30, 1886, and further illustration or description thereof is not, therefore, necessary in this specification.

The pen lifting and lowering mechanism consists of the following instrumentalities:  
At the transmitter I arrange an induction-coil 6, condenser 7, circuit-breaker 8, and local battery 9. The secondary wire 10 of the induction-coil is connected to the line-conductors 3 and 4, the condenser 7 being placed in the secondary wire connected with conductor 3. The primary wire 11 of the induction-coil is connected with the circuit-breaker and the local battery. At the receiver I bridge the main conductors with a conductor 12, and arrange in the latter a condenser 13 and polarized magnet 14. The pivoted armature 15 of this magnet is provided with an arm 16, carrying a lateral finger 17, on which the receiving-pen 18 rests, as shown in Figs. 1 and 2. The receiving-pen is mounted on the upper

end of the armature-rod 19, and rests normally on the paper on the table 20.

The operation of the mechanism is as follows: When the operator at the transmitter desires to lift the pen at the receiver he closes the circuit-breaker 8 and thus sends an induced current over the line, said current being induced in the secondary wire of the induction-coil. The current or impulse thus generated passes through condenser 7 to main-line conductor 3, through condenser 13, conductor 12, polarized magnet 14 and remainder of conductor 12 to main conductor 4, and from thence back to secondary wire 10 of induction-coil. The current thus passed through polarized magnet 14 draws the forward end 21 of the armature 15 downward, thus moving arm 16 forward at its upper end and lifting the receiving-pen 18 from the writing-table, the pen meanwhile having free movement on the surface of finger 17. When the operator desires to lower the pen, he releases the circuit-breaker, which breaks the primary circuit of the induction-coil, and thus an induced current of opposite polarity to the first one is sent over the line and the armature 15 is attracted at its right-hand end and brought back to the position shown in Fig. 1, thus allowing the receiving-pen to again rest on the writing-table. The condensers 7 and 13 prevent the main-battery currents from affecting or operating polarized magnet 14, and it is evident that such battery-currents may be either intermittent or undulatory. The resistance of magnet 14 is preferably higher as compared with the magnets of receiver 2. The induced current will of course divide according to ohms law, but enough will pass through the polarized magnet 14 to operate its armature, and the remainder that passes through the receiver-magnets will not be sufficient to affect the receiver-armature on account of the lower resistance of its magnets. The purpose of lifting the receiving-pen is to prevent it from marking the paper when that is not desired, and to permit the proper dotting of i's and crossing of t's in writing.

In the modification illustrated in Figs. 3 and 4, I use an induction-coil 22 with its secondary wire 25, connected to the main con-



ductors, a circuit-breaker 23 and local battery 24, the same as in the construction shown in Fig. 1, but I omit the condenser in the secondary wire and make the latter of sufficiently high resistance, relatively, to the resistance of the main conductors, to prevent the passage of enough battery-current to interfere with the proper working of the system.

It is evident, of course, if only one main-line conductor were used between receiver and transmitter, that the operation of the induced current would be the same as when two main conductors were used, for in the former case one terminal of the secondary wire of the induction-coil would be connected with the main line, while the other terminal would be connected to ground.

At the receiver I bridge the main conductors 26 and 27 with a condenser 28 and polarized relay 29 before said main conductors are connected to the receiver-magnets. Arranged in connection with the armature 30 of the polarized relay is a local circuit 31, in which is placed a local battery 32 and a pen-lifting magnet 33, the pivoted armature 34 of which is provided with an arm 35 and finger 36 for lifting the pen, substantially the same as shown in Figs. 1 and 2. By this mechanism the comparatively weak induced current closing the local circuit is thereby in effect reinforced. The main battery impulses or currents sent over the main lines will, to a certain extent, charge the condenser 28, but to such a small extent as not to influence the relay in circuit therewith. When an induced current is sent over the line by closing or opening the primary circuit of the induction-coil at the transmitter, the high electromotive force thereof will cause it to pass through the condenser and operate the relay, which in turn closes or opens the local circuit at the receiver, the mechanism of which directly effects the lifting of the paper.

In Fig. 3 the transmitter is designated as 1 and the receiver as 2, the same as in Fig. 1.

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

1. In a writing telegraph, the combination with the receiver and transmitter, and electrical connection between the same, of a pen lifting and lowering mechanism, and an in-

duced current generating-mechanism arranged to operate, through the said electrical connection, the said pen lifting and lowering mechanism, substantially as described.

2. In a writing telegraph, the combination with the receiver and transmitter, and the main line conductors connecting the same, of a pen lifting and lowering mechanism and an induced current-generating mechanism arranged to operate, through said main line conductors, the said lifting and lowering mechanism, substantially as described.

3. In a writing telegraph, the combination with the receiver and transmitter, and electrical connection between the same, of an induction coil, circuit closer, and local battery, arranged at the transmitter, and a condenser, and pen-lifting mechanism arranged at the receiver both mechanisms at transmitter and receiver being connected by conductors to the electrical connection between transmitter and receiver, substantially as described.

4. In a writing telegraph, the combination with the receiver and transmitter, and the main conductors connecting the same, of an induction coil circuit-breaker, and local battery, connected to said conductors at the transmitter, and a condenser, polarized relay, local battery circuit, pen lifting magnet, and pen lifting armature arranged in connection with the main conductors at the receiver, substantially as described.

5. In a writing telegraph, in combination, a condenser, polarized magnet and pen-lifting mechanism in a local circuit arranged between the two line wires at the receiver, substantially as described.

6. In a writing telegraph, the combination with the receiving pen, of an armature arranged to lift and lower said pen and an electro magnet operating said armature and connected with the main line conductors through a condenser, substantially as described.

Signed at New York, in the county of New York and State of New York, this 13th day of November, A. D. 1894.

JAMES HART ROBERTSON.

Witnesses:

J. E. M. BOWEN,  
M. C. PINCKNEY.