

P. B. DELANY.
TELEGRAPHY.

APPLICATION FILED MAY 1, 1907.

989,576.

Patented Apr. 18, 1911.

2 SHEETS—SHEET 1.

FIG. 2.

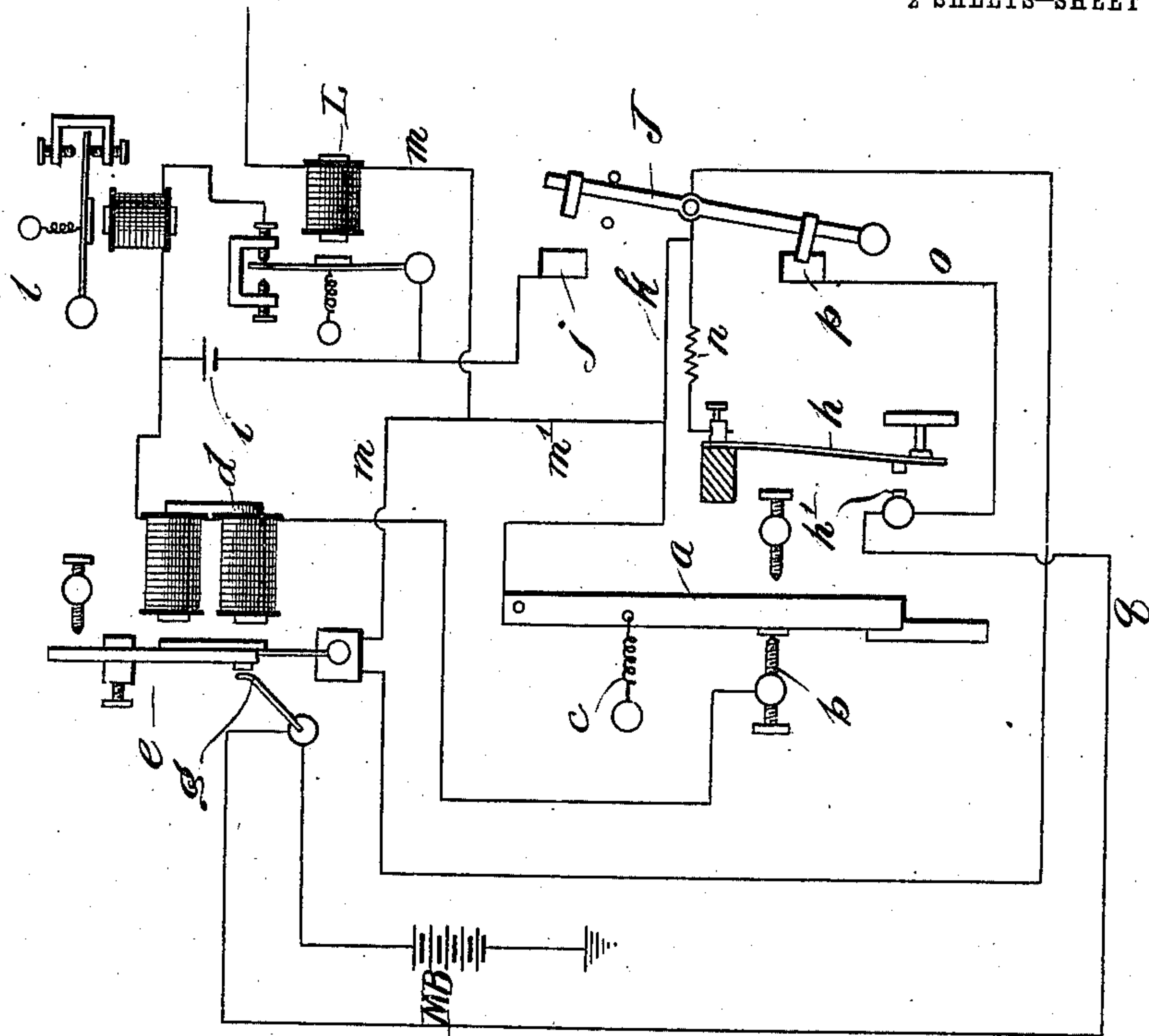
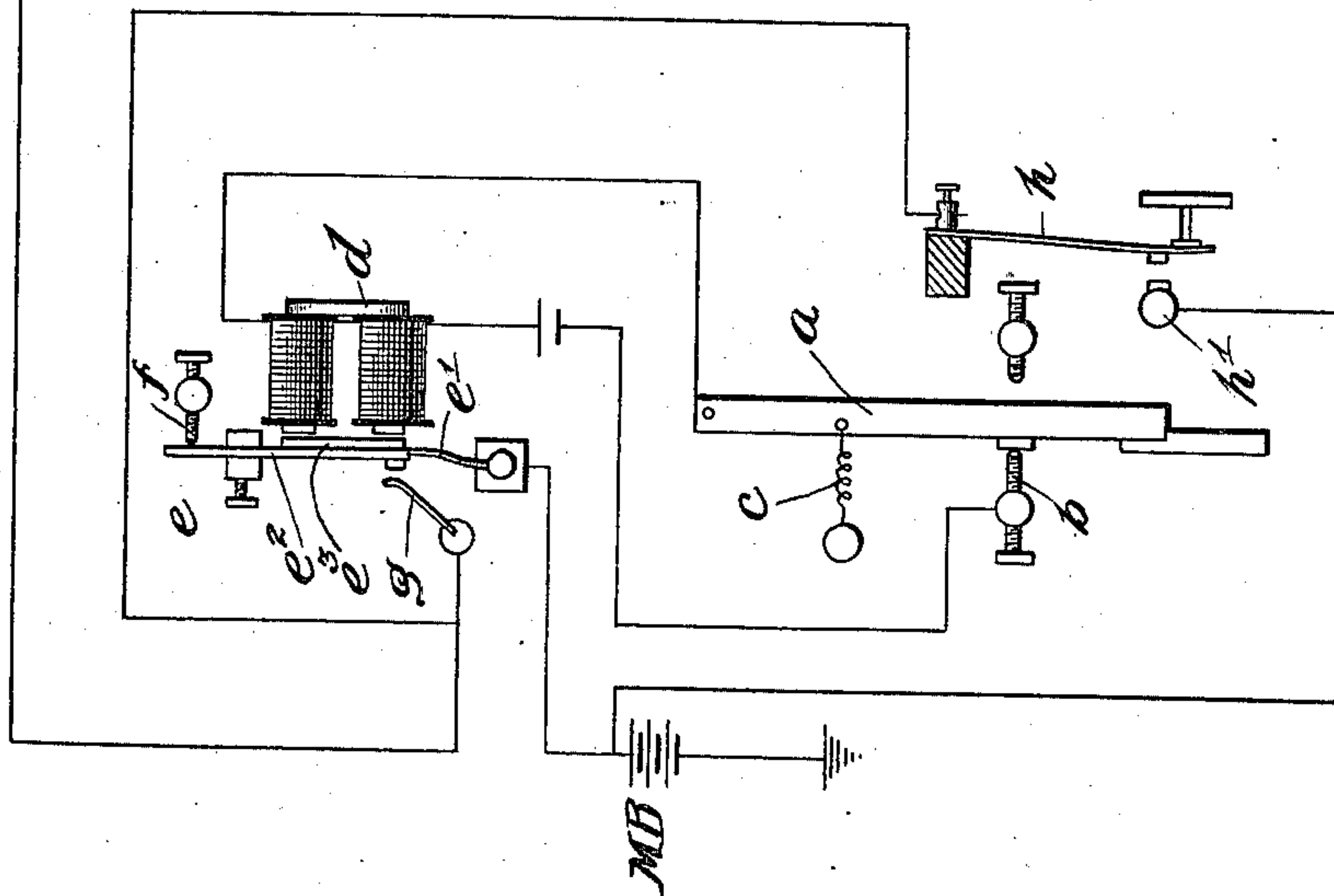


FIG. 1.



Attest:
L. F. Browning
L. F. Browning

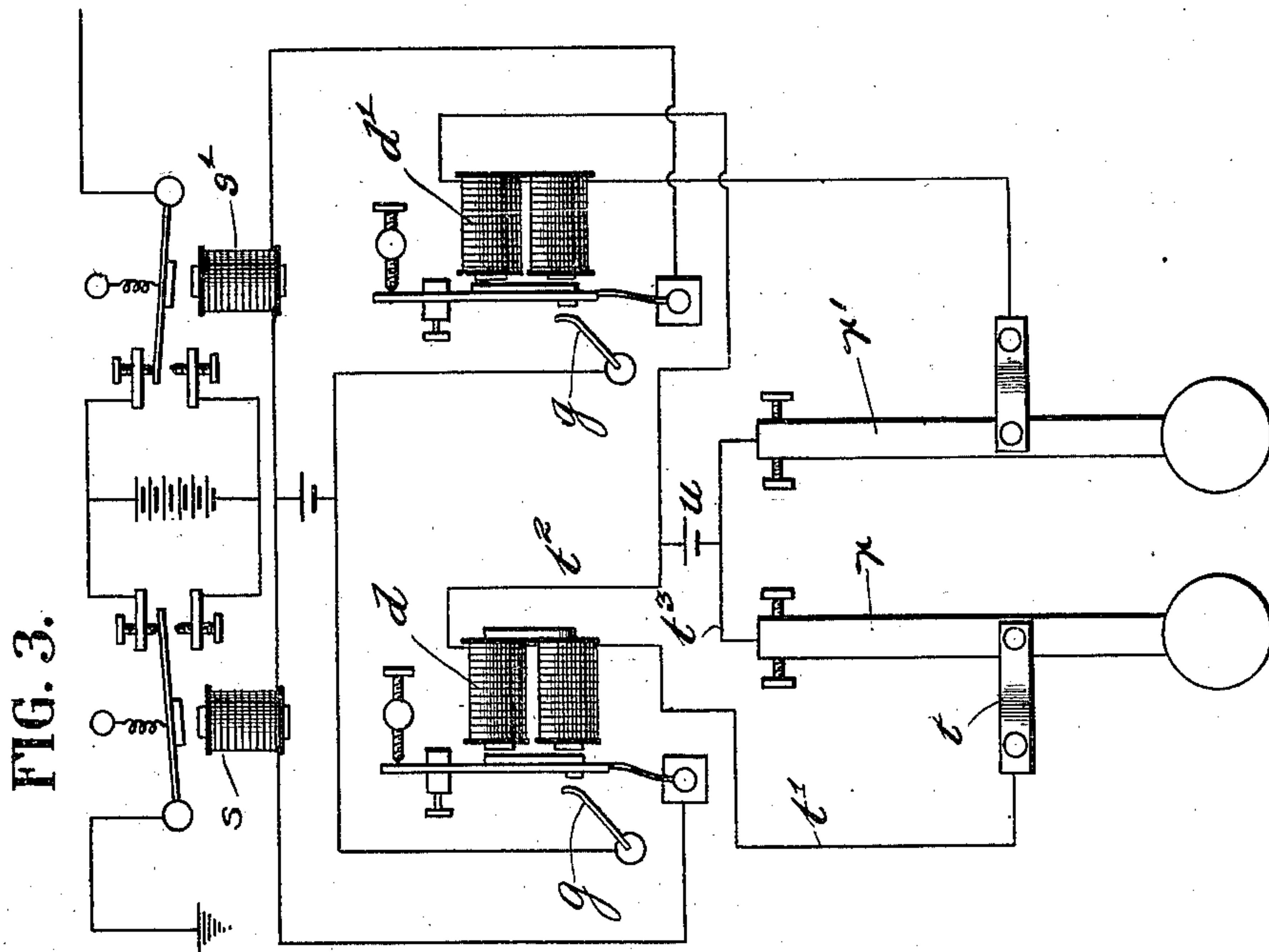
Inventor:
Patrick B. Delany
by *Edward C. Harrison*
Atty

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2 SHEETS—SHEET 2.



Attest:
L. F. Browning
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Inventor:
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UNITED STATES PATENT OFFICE.

PATRICK B. DELANY, OF SOUTH ORANGE, NEW JERSEY.

TELEGRAPHY.

989,576.

Specification of Letters Patent.

Patented Apr. 18, 1911.

Application filed May 1, 1907. Serial No. 371,230.

To all whom it may concern:

Be it known that I, PATRICK B. DELANY, a citizen of the United States, residing at South Orange, county of Essex, State of New Jersey, have invented certain Improvements in Telegraphy, of which the following is a specification.

The transmitter herein described is of the type that has become known as "Auto-dot" by which an operator, by movement of his key, may effect transmission of a plurality of dots.

This invention is based on a combination of mechanical and electrical devices producing superior results in many important respects.

Purely mechanical transmitters require that the impelling power for the vibrator must come from the operator's thumb thus imposing upon him some fatigue after hours of continuous use; and as the amplitude and rate of the vibrator's oscillation depend to a considerable degree upon the force or speed of the blow imparted to the lever the dots made by the vibrator are not always of the same quality or of the same rate successively.

The purely electric auto dot transmitters thus far brought out have the drawback of requiring batteries of from one to four cells of dry battery which are troublesome to carry about, require too much space on the operator's table and entail considerable expense. Furthermore, the electric transmitters are difficult of adjustment for speed and quality of impulses.

The present invention combining mechanical and electrical features overcomes all these objections. It requires no special battery, being operated by the ordinary local sounder current supplied to every Morse apparatus. The rate or amplitude of the vibrator's movement is entirely independent of the operator. There is practically no power or pressure required for operation of the lever—it being only necessary to break the circuit of the magnet which sets the vibrator free and holds it broken until the desired number of dots has been made. The movement of the key lever may be reduced to a minimum and the labor on the operator's hand be practically negligible.

The impulses made by this auto dot maker are always the same, and its promptness in responding to the movement of the key lever is an important factor for efficiency and re-

lief of the operator from the drag usually present in transmitters in which the vibration does not begin until the key lever has been moved and has driven the vibrator standard against its stop with considerable force of impact.

This electro-mechanical auto-dot maker may be used in connection with a key for transmission into a main line or in connection with a receiving relay for transmission into another main circuit, or into a local circuit.

In the drawings: Figures 1, 2 and 3 are diagram views showing different arrangements of the devices.

Fig. 1 shows the auto-dot arranged in connection with a key for transmission of Morse signals. The key lever *a* is held against contact stop *b* by spring *c* thus closing the circuit of auto-dot magnet *d* which holds the vibrating armature *e* against limit stop *f*. The vibrator is shown as composed of a flat spring *e'* fixed in a rigid block and having secured to its free end a rigid part *e''* carrying the armature *e'''* and an adjustable weight by which its action may be regulated. When attracted by magnet *d* the spring *e'* is put under stress and the end of the rigid part *e''* is drawn against its stop *f*. When key lever *a* is pressed to the right the circuit of *d* is broken and the vibrator being released is free to vibrate according to its own normal rate, as fixed by the adjustable weight. When the vibrator strikes contact *g* main battery MB is connected to the line and dots are sent into the line to any number desired. For a dash the key lever *h* is closed against its contact *h'* putting the main battery to the line direct.

Fig. 2 shows the electro-magnetic mechanical auto dot maker used to transmit into a main line circuit, but controlled by the local battery which operates the sounder of an ordinary Morse set, a switch being provided for disposing the main and local circuits for sending or receiving. Contact *b* is connected to magnet *d* thence to battery *i*, thence to contact *j* of switch *J* and assuming the switch to be in the sending position, through the switch *J* to wire *k*, key *a* and contact *b*. If now the key be pressed to the right the circuit of magnet *d* will be broken and vibrator *e* allowed to vibrate and send impulses into the line at contact *g*. These impulses going to line pass by wire *m* through main line relay *L* which operates the sounder *z*

in the ordinary way. When a dash is to be transmitted key lever h is closed and the main battery is connected to line through resistance n for the purpose of making the dashes somewhat weaker than the dots, a feature claimed in another application filed by me. The circuit is from lever of switch J by wires k m' m to relay L and line. It will be seen that with the switch J in the position shown the apparatus is arranged for reception of signals, the line passing through relay L wires m , m' and k to lever of switch J and by wire o from switch contact p to stop h' and wire q through main battery MB to ground. It will be seen that while a message is being received resistance n is not in the circuit and that during reception the circuit of vibrator magnet d is open at switch contact j . During transmission this magnet d and sounder l are connected to battery i in parallel but they do not draw current from the battery at the same time. When the key a is pressed to the right the circuit of magnet d is broken and the circuit of sounder l is closed by relay L. In the case of a single dot the circuit of sounder l would be immediately broken and the circuit of d closed. For a series of dots the circuit of d is held open until the series is finished.

Fig. 3 shows the electromagnetic mechanical auto dot maker applied to cable telegraphy. r , r' represent the dot and dash keys. To each key is connected an auto dot instrument such as shown in Fig. 1. These instruments in turn control and operate sounder transmitters s , s' . The dot key through contact t wires t' t^2 battery u and wire t^3 complete the circuit of magnet d ; while the circuit of magnet d' is completed by key r' and its contact through local battery u by connection similar to those described for magnet d . The circuits of both auto dot makers are normally closed. To send a dot, key r is pressed down thus breaking the circuit of auto dot maker magnet d whereupon its vibrating armature lever maker contacts with g closing the circuit of sounder transmitter s . In like manner a dash signal is made when key r' is pressed down, the circuit of d' being broken and the circuit of sounder transmitter s' completed. The armatures of s , s' being actuated transmit into the line or cable in the usual manner as is well understood, the dots transmitted by key r are all of one polarity and represent Morse dot sig-

nals while dots transmitted by key r' are all of the other polarity and represent Morse dashes. In this way the signals, dots and dashes, are made automatically and with unvarying precision.

Obviously this auto dot maker may be used in a variety of ways other than those shown and described here but it is not deemed necessary to further show its adaptability to transmission and reception of signals.

I claim:

1. A telegraphic transmitter comprising a weighted resilient vibrator, an electromagnet normally attracting it and so maintaining it under tension, means for controlling the circuit of the magnet at will to release the vibrator and permit it to vibrate at its normal rate, and a transmitting contact with which the vibrator successively makes contact as it vibrates.

2. In telegraphy, an automatic dot transmitting member, a contact therefor, an electromagnet controlling the member, a source of electrical energy for the electromagnet, a switch and means controlled thereby for disconnecting the source of electrical energy from the magnet and shunting the dot making member and its contact when the switch is moved in one direction, and means for connecting the source of electrical energy to the electromagnet, and breaking the shunt around the dot making member and its contact when the switch is moved in another direction.

3. The combination at a transmitting station of a receiving relay, a sounder, the normally open circuit of the sounder including a source of energy and controlled by the relay, a dot transmitter comprising a weighted resilient automatic vibrator and an electromagnet normally attracting the vibrator and maintaining it under tension, the normally closed local circuit of said magnet including the above named source of energy and a key controlling the dot transmitter to automatically transmit dot impulses through the winding of said relay.

In testimony whereof, I have hereunto subscribed my name.

PATRICK B. DELANY.

Witnesses:

J. A. SULLIVAN,
EDWARD C. DAVIDSON.