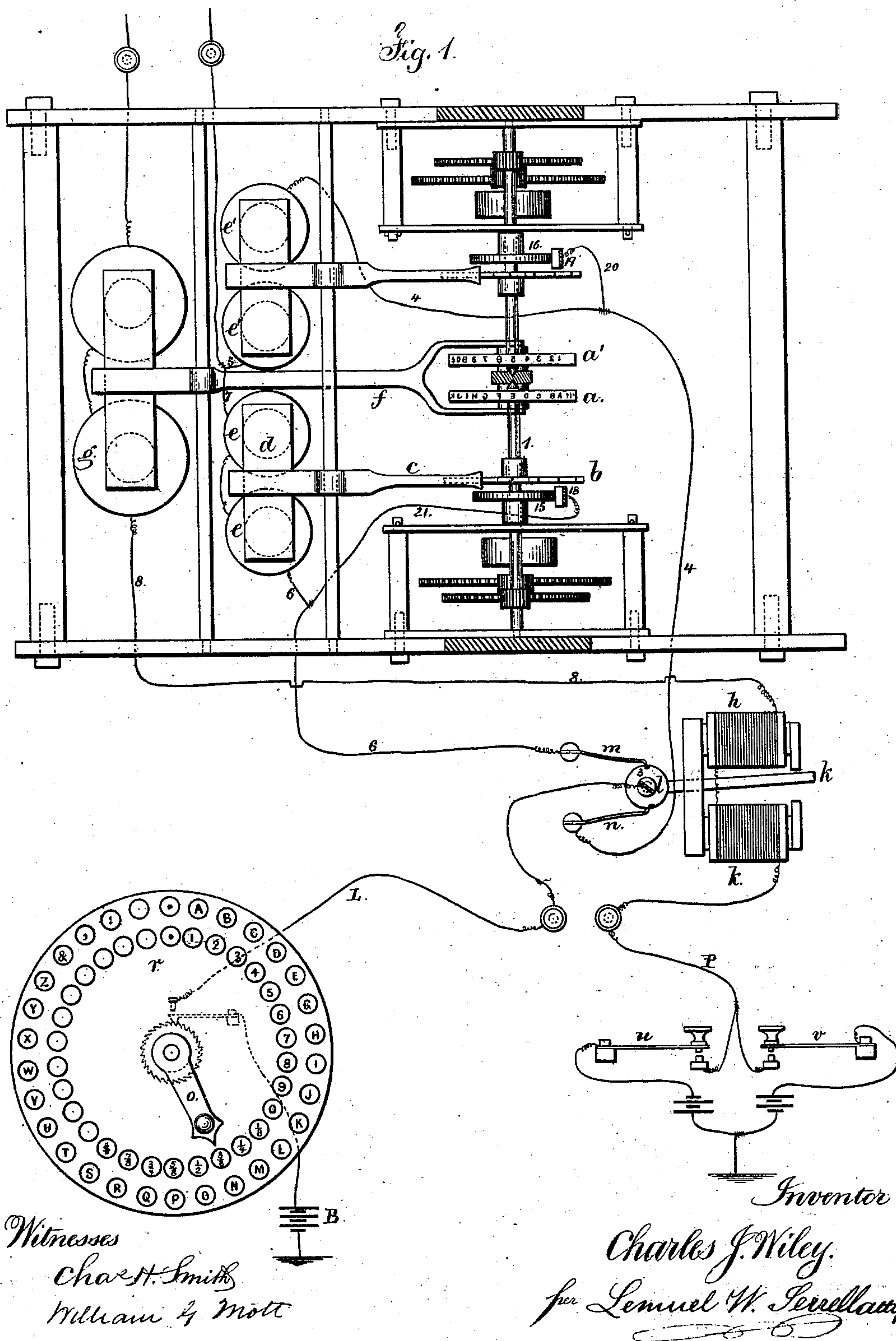


C. J. WILEY
Printing-Telegraphs.

2 Sheets—Sheet 1.

No. 227,868.

Patented May 18, 1880.



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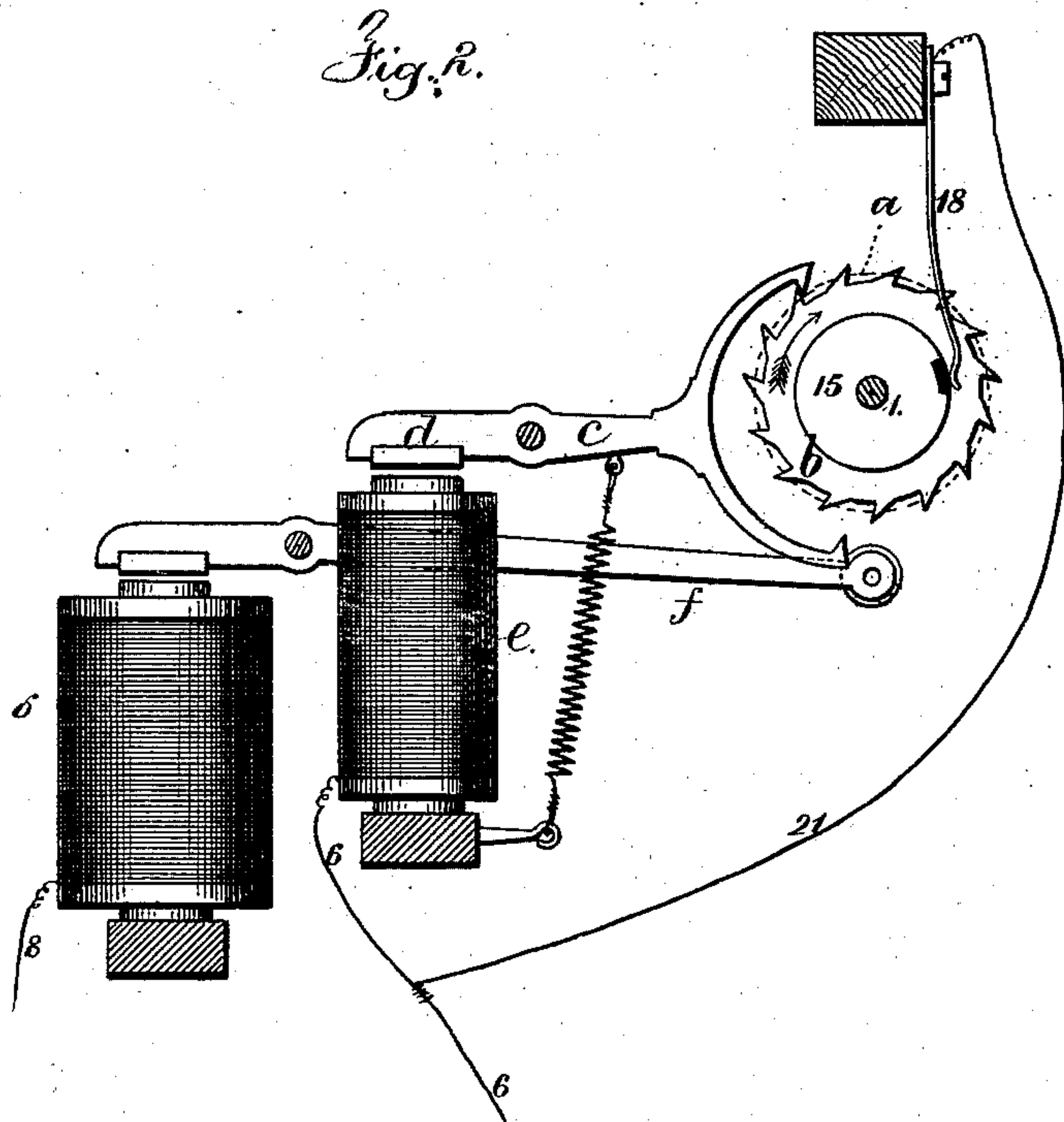
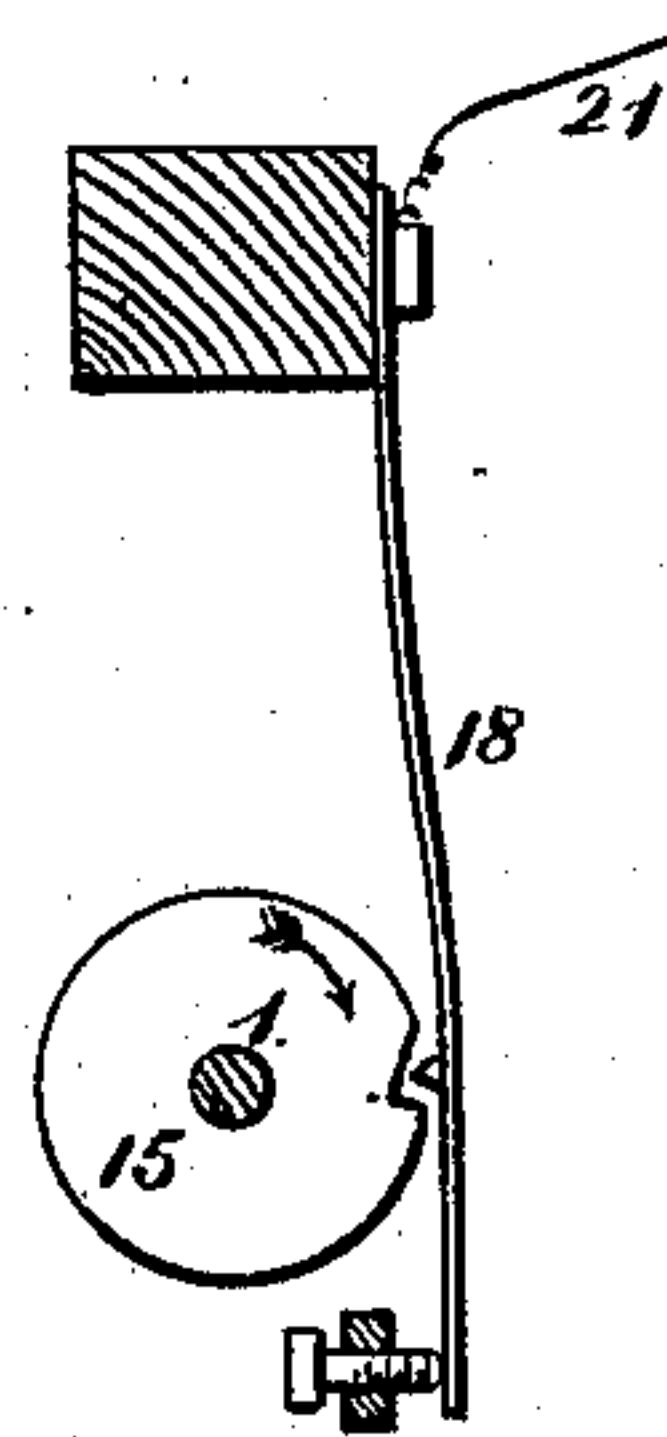


Fig. 3.



Witnesses.

Chas H. Smith
William G. Mott

Inventor.

Charles J. Wiley.
per Lemuel W. Serrell
attf

UNITED STATES PATENT OFFICE.

CHARLES J. WILEY, OF NEW YORK, N. Y.

PRINTING-TELEGRAPH.

SPECIFICATION forming part of Letters Patent No. 227,868, dated May 18, 1880.

Application filed December 11, 1879.

To all whom it may concern:

Be it known that I, CHARLES J. WILEY, of the city and State of New York, have invented an Improvement in Printing-Telegraphs, of which the following is a specification.

In this instrument there are two type-wheels, one of which has figures and fractions, the other has letters. These type-wheels are operated by separate electro-magnets. There are two line-wires, and the circuits are arranged in connection with a polarized switch in such a manner that the printing-circuit is used for directing the current through either one of the two type-wheel magnets. I make use of an electric branch-circuit unison, by means of which either type-wheel that has failed to come to unison is brought to unison by the operation of the other type-wheel magnet.

In the drawings, Figure 1 is a plan of the instrument, showing also the circuit-connections. Fig. 2 is an elevation of the unison-connections.

The type-wheel *a* is on the shaft of the escapement-wheel *b*, and *c* is the escapement-lever operated by the armature *d* of the electro-magnet *e*.

The shaft 1 of the type-wheel is turned by a spring or weight and gearing, as the movement of the escapement permits. This type-wheel *a* has letters upon it. The type-wheel *a'* has figures and fractions upon it, and it is similarly operated by the electro-magnet *e'*.

f is the printing-lever operated by the electro-magnet *g*. *h* is an electro-magnet, between the poles of which is the polarized switch *k*, having a hub, *l*, with insulation at two places on its periphery and circuit-closing springs *m n* bearing upon the same, and located so that when the current passing through the polarized magnet *h* is positive the switch is turned to one side to bring the insulation 3 under *m* and break contact therewith, and at the same time the metal portion of the hub comes into contact with *n*, closing the circuit. When the switch *k* is turned the other way, by changing polarity of the current passing through *h* the reverse-circuit connections are made and *m* is placed in metallic contact with *l* and *n* insulated.

The transmitting-instrument is to be of any desired character. I have represented, for con-

venience, a dial, *r*, and hand, with a circuit-closing spring operated by a ratchet-wheel moved by the hand *o*. The current from battery *B* passes through this transmitter to the line *L* and polarized switch *l*, and thence by *n* through the wire 4 to the magnet *e'* and wire 5 to the ground and return, and in so doing the figure-wheel *a'* will be moved, or else the current from the transmitter *r* goes by line *L* to polarized switch *l*, spring *m*, wire 6, to the electro-magnet of the letter-wheel *a*, and by the wire 7 to the ground and return.

It will now be apparent that according to the polarity of the current passed through *h*, so the transmitter will be made to act in setting the type-wheel *a* or figure-wheel *a'*.

I make use of the second line-wire, *P*, for the current to *h*, and the metallic circuit thereof is through *h*, wire 8, and printing-magnet *g* to the ground, or to the same parts of other instruments included in the circuit.

There is to be a battery in this printing-magnet circuit and a key or switch, by which the polarity of the current passing to the line can be determined. These may be of any desired character. I have shown the keys *u* and *v*. By depressing *u* the positive is placed to the line, and when *v* is depressed the negative is to the line.

The operations of the instruments as a whole are that when the sender desires to use a type-wheel *a* he depresses the negative key *v* and brings the polarized switch to the right, opening the circuit from the transmitter through *m* and 6 to *e*, and then he operates the transmitter and sets the type-wheel, and the printing is effected by depressing *v*, which throws a current through *g* without changing the polarized switch. If the figure-wheel is to be operated, the positive key *u* is depressed and the switch *k l* changed to the left, as shown, so that the circuit from the transmitter passes through *l n* 4 and *e'*, and then the transmitter is operated to turn the figure-wheel to the proper place, and then the printing is effected by depressing the key *u* again. This is repeated so long as the figure-wheel is in use.

I will now describe the unison device which is effected by an electric branch-circuit.

Upon each type-wheel is a disk, the disk 15

being on the shaft of *a* and the disk 16 on the shaft of *a'*. These disks or wheels are provided with insulated contact-springs 18 and 19, and electric contact between the parts is interrupted at the point of unison by a block of rubber, as seen in Fig. 2, or by a notch in the wheel or disk, as seen in Fig. 3.

If the type-wheel *a* has not been turned, as it should be, to unison before acting upon the type-wheel *a'*, there will be a branch circuit set up through both magnets *e* and *e'*, and both their armatures will be operated simultaneously, the magnets being of equal resistance. The current in that case passes by *l n* 4 through *e'*, and also branches off by the wire 20 to the spring 19, through that and the disk 16, shafts, and frame to the disk 15, and by 18 and 21, through the magnet *e* and wire 7, energizing *e* and causing the type-wheel *a* to be turned, and this continues until the point of unison is attained, when the circuit will be broken between 15 and 18.

The same thing takes place if the type-wheel *a* is operated before the wheel *a'* is moved around to unison. In that case the current passes through *l, m, 6, e,* and 7, and through the branch 21, insulated spring 18, disk 15, clock-work, disk 16, insulated spring 19, wire 20 4, magnet *e'*, and wire 5, operating *e'* and its armature-escapement until the unison breaks the branch circuit between 16 and 19.

This electric branch-circuit unison can be used in instruments in which the printing is effected by a local circuit and battery, and the polarized switch may be used in other cases where the circuit is to be changed at a distance by change of polarity in the current.

It will be seen that the polarized tongue *k* has a large leverage against the hub *l*; hence the springs *m n* can bear powerfully on the same to insure proper contact without interfering with the movement.

In cases where this improvement is to be used with a single-line circuit there will be no change in the parts; but the connection will pass through the polarized magnet to the switch, and thence to the type-wheel magnets and printing-magnet. By changing the polarity of the current the switch will be made to direct the same through the proper type-wheel magnet, and by increasing the strength

of current the printing can be effected. In this case the type-wheel escapement must be made so as to hold the type-wheel always on the closed circuit while the printing is effected by the increase of current.

I do not claim a lever operated by a magnet and having two or more circuit-changing points and springs, whereby the springs are brought into contact with different points by the movement of the lever.

I claim as my invention—

1. The combination, with a polarized magnet, of a hub upon the polarized tongue having conducting and non-conducting portions, and two circuit-closing springs bearing upon such hub, substantially as set forth.

2. The combination, with a printing-telegraph instrument, of an electric branch-circuit unison composed of a disk on the type-wheel shaft, a spring bearing upon the same, a circuit-breaking place in such disk, and a branch circuit connected to the spring, substantially as set forth.

3. The combination, in a printing-telegraph instrument, of two type-wheels, two electro-magnets operating the same, two electric branch-circuit unisons, and a printing magnet or apparatus, substantially as set forth.

4. The combination of a polarized switch with a printing-telegraph instrument having two type-wheels and two electric branch-circuit unisons and main-circuit connections, substantially as set forth.

5. The combination, in a printing-telegraph instrument, of two independent type-wheels, two electro-magnets, and mechanism for moving or controlling the motions of the type-wheels, a switch for directing the current through one or the other of the type-wheel magnets, and a polarized magnet in the circuit of the printing-magnet, which polarized magnet sets the said switch according to the polarity of the current in the printing-circuit, substantially as specified.

Signed by me this 6th day of December, A. D. 1879.

CHAS. J. WILEY.

Witnesses:

GEO. T. PINCKNEY,
WILLIAM G. MOTT.