(No Model.)

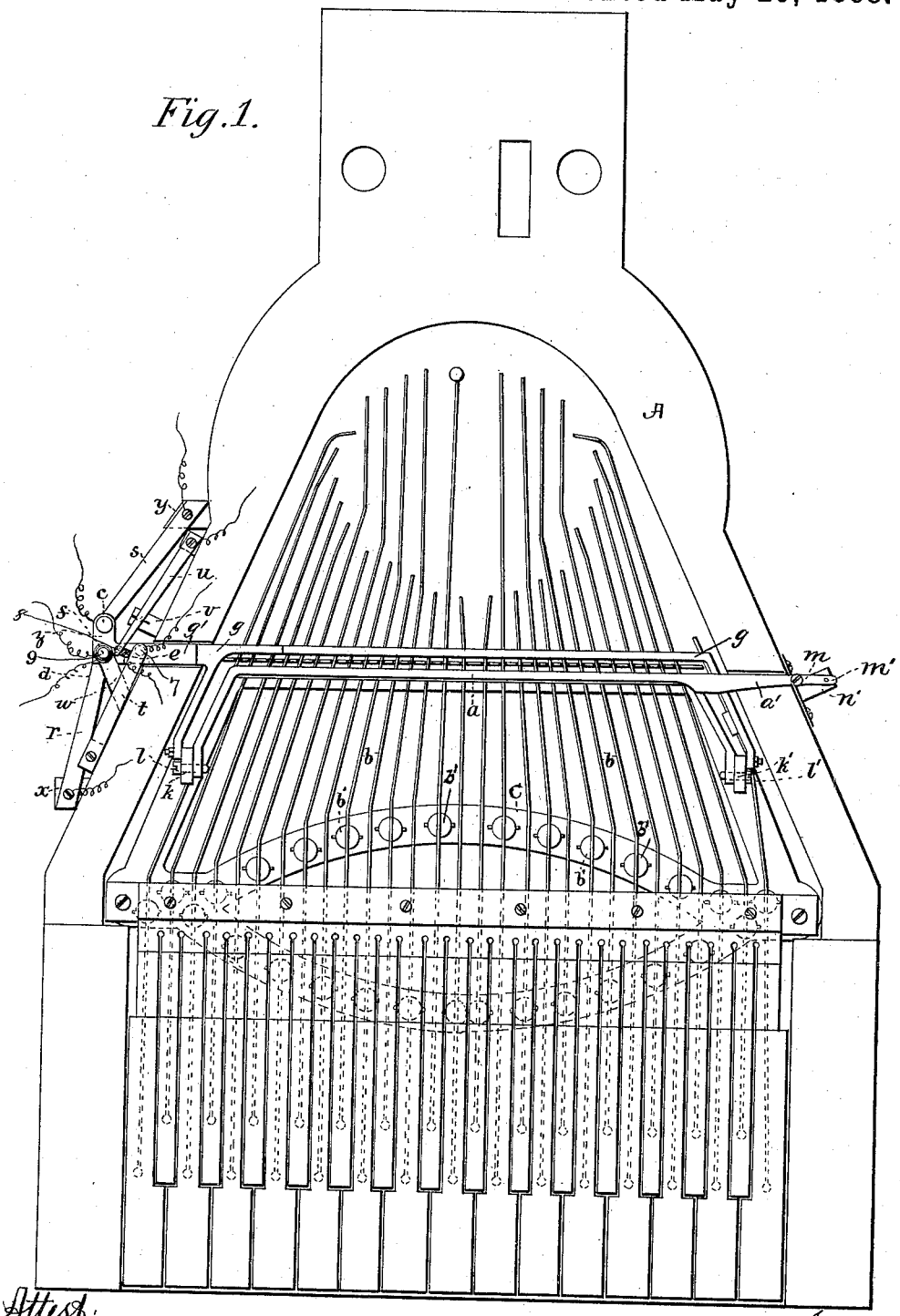
5 Sheets—Sheet 1.

S. V. ESSICK.

PRINTING TELEGRAPH.

No. 383,450. Patented May 29, 1888.

Fig. 1.



Attest:
Jas. F. McCathran,
Rex. Smith.

Inventor:
Saml V. Essick
By. Rex Smith
atty.

(No Model.)

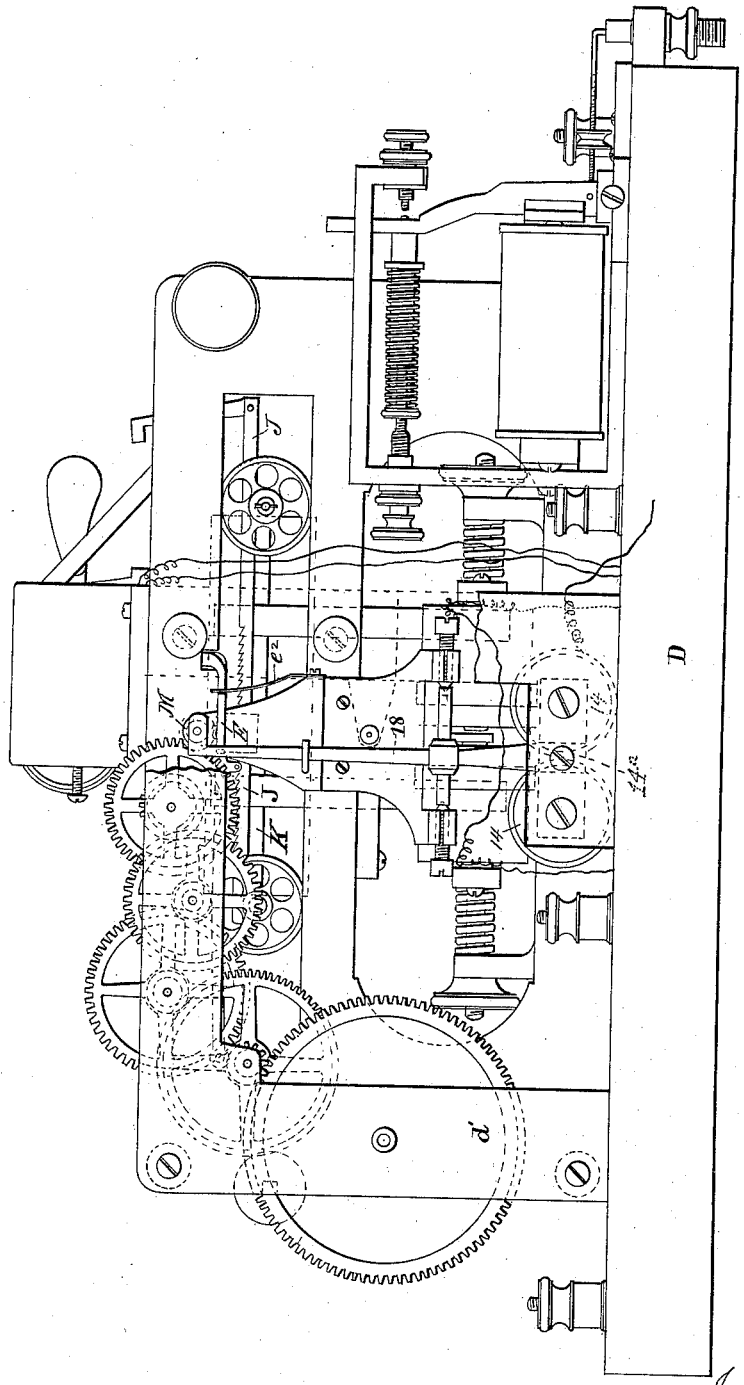
5 Sheets—Sheet 2.

S. V. ESSICK.

PRINTING TELEGRAPH.

No. 383,450. Patented May 29, 1888.

Fig. 2.



Attest:
Jas. K. McCathran,
Reg. Smith.

Inventor:
Saml V. Essick,
By A. M. Smith,
atty.

(No Model.) 5 Sheets—Sheet 3.

S. V. ESSICK.

PRINTING TELEGRAPH.

No. 383,450. Patented May 29, 1888.

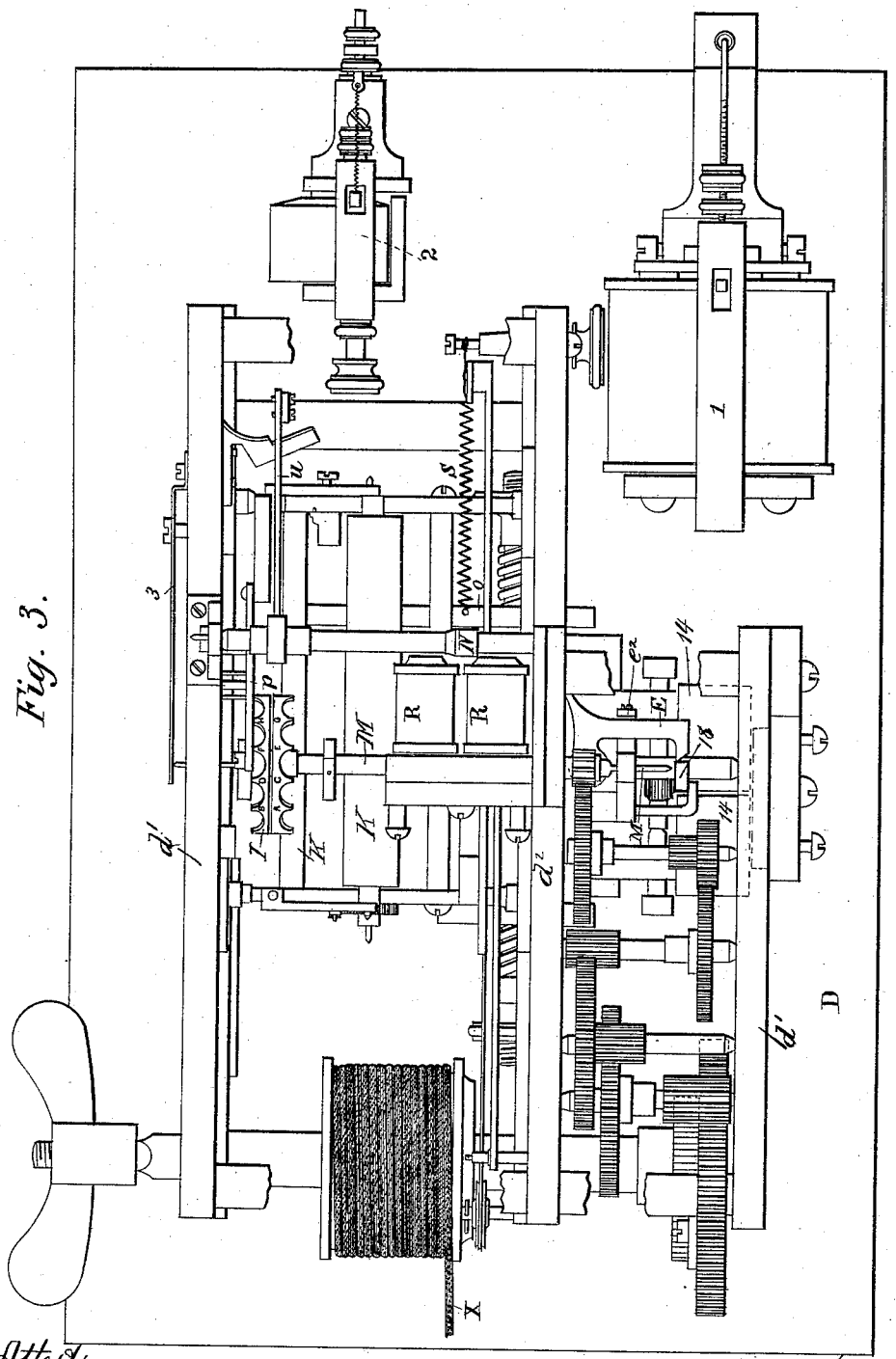


Fig. 3.

Attest:
Jas. K. McCathran,
Rex. Smith.

Inventor:
Samt. V. Essick,
By Hall Smith
atty.

(No Model.)

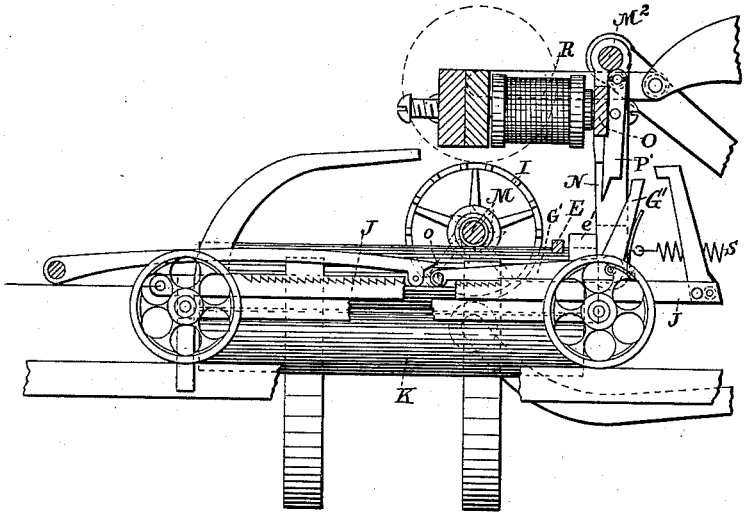
5 Sheets—Sheet 4.

S. V. ESSICK.

PRINTING TELEGRAPH.

No. 383,450. Patented May 29, 1888.

Fig. 4.



Attest:
Jas. K. McCathran,
Rest. Smith.

Inventor:
Samuel V. Essick.
By A. L. Smith,
atty.

(No Model.) 5 Sheets—Sheet 5.

S. V. ESSICK.

PRINTING TELEGRAPH.

No. 383,450. Patented May 29, 1888.

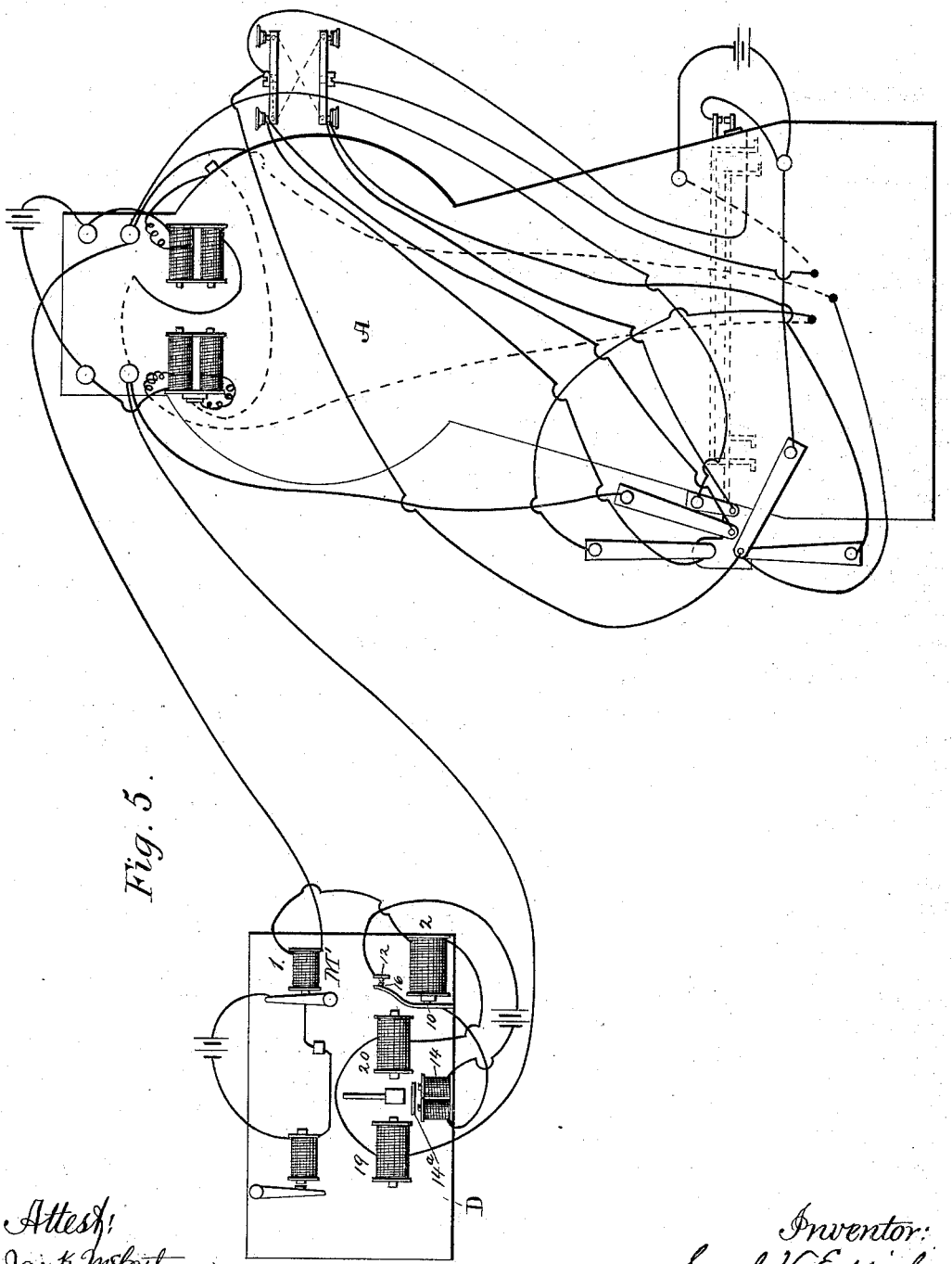


Fig. 5.

Attest:
Jas. K. McCathran,
Rex. Smith.

Inventor:
Saml. V. Essick.
By Hill, Smith & Hill
attys.

UNITED STATES PATENT OFFICE.

SAMUEL V. ESSICK, OF BROOKLYN, NEW YORK.

PRINTING-TELEGRAPH.

SPECIFICATION forming part of Letters Patent No. 383,450, dated May 29, 1888.

Application filed May 18, 1887. Serial No. 238,666. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL V. ESSICK, of Brooklyn, in the county of Kings and State of New York, have invented a new and useful Improvement in Printing-Telegraphs, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification.

My present invention relates to printing-telegraphs of the kind embraced in Letters Patent No. 365,059, granted to me June 21, 1887; and it consists, first, in the arrangement of a secondary angular bar or lever directly across the key-levers of the transmitter, said angular bar or lever serving to make and break the circuit to the receiver when any one of the secondary key-levers is depressed, as hereinafter described and claimed.

My invention further consists in the peculiar and novel devices for shifting and latching the type-wheel shaft and for operating the latch, as hereinafter described and claimed.

In order that my invention may be fully understood, I will proceed to describe it with reference to the accompanying drawings, which illustrate only so much of a transmitter and receiver as is necessary to a clear conception of the present invention.

In the accompanying drawings, Figure 1 is a plan view of the base of the transmitter, showing the arrangement of the key-levers and the angular levers or contact-bars and their relative positions and locations. Fig. 2 is a side elevation of the receiver, showing the electro-magnet, lever, latch, type-wheel shaft, &c., by means of which said type-wheel shaft is shifted and latched. Fig. 3 is a plan view of a portion of the receiving-instrument, showing the type-wheel shaft and the devices for shifting and latching the same. Fig. 4 is a side elevation, partly in section, of a portion only of the receiver, showing the paper-carriage and its actuating mechanism, and also the type-wheel, type-wheel shaft, the latch, and the mechanism for actuating the latter. Fig. 5 is a diagram illustrating the arrangement of the circuits in and between the transmitting and receiving instruments.

Referring to the drawings, A designates the base or stand to which the different parts of the transmitter are attached.

b b are the key-levers which extend horizontally upon base A, and are pivoted in posts *b'* *b'*, secured to or formed upon a divided cross-bar, C, as shown in Fig. 1.

a designates an angular lever, which is pivoted at the points *k k'* by pins *l l'*. Said lever *a* lies directly across the key-levers, and is provided with an arm, *a'*, which carries a platinum point, *m'*, which rests upon a similar point, *n'*, in the main circuit when said lever *a* is in its normal position, contact thus being made at the points *m' n'*. When lever *a* is raised by depressing one of the key-levers, the circuit is thereby broken until said key-lever is released and allowed to fall back to its normal position. The object of this arrangement has been described in my former patent referred to, and, as it does not directly concern the invention herein sought to be protected, further description is considered unnecessary.

g represents a second cross-lever similar to the angular lever *a*, also arranged to lie across the key-levers in such a way as to be operated by any one of the upper or secondary series of keys, the keys being arranged in two series, a lower or primary and an upper or secondary series. The lever *g* is only affected when one of the secondary key-levers is depressed, a depression of one of the primary keys having no effect on this lever but only on the other lever, *a*, as above described. The cross-lever *g* is provided with an arm, *g'*, carrying insulated contact-points *f* and *e*, which normally connect with points on the ends of the springs *r* and *s*. The arm *g'* also carries contact-points 7, 8, and 9, which are normally out of contact with corresponding points, *t*, *u*, and *w*.

When the lever *g* is operated by the depression of one of the secondary keys, the contact between *f* and *r* and between *e* and *s* is broken, and new contact is made between the points 7, 8, and 9, and springs *t*, *u*, and *w*, respectively. The object of thus changing the contacts is to make a new circuit, by which the high-resistance coils of the electro-magnet which operates the circuit-breaking lever of the transmitter are cut out. By this shunt-circuit a much more powerful current is sent through the line, where it is utilized to shift the type-wheel shaft, as hereinafter explained.

In the receiver (shown in Figs. 2, 3, and 4) the base-plate is designated by D, upon which is mounted a frame, *d' d'*, upon which the paper-carriage K moves in a horizontal track.

Connected with the upper part of the frame of the receiver in suitable bearings is a shaft, M, upon which the type-wheel I is mounted and rigidly fixed, said type-wheel having two circular series of printing characters or type formed thereon. Upon the shaft M^2 is firmly fixed a pendent lever, N, and upon this pendent lever is fixed the armature O and are also pivoted the cam-pointed lever P′ and the angular pawl G′. This pendent lever N is actuated by means of the electro-magnet R, which acts upon the armature O, and said lever is retracted by means of the spring S. When the said lever N is attracted by the magnet R, it carries with it the angular pawl G′ the distance occupied by one of the notches of the toothed rack J. When the V-shaped pin or stud *o* on lever G′ drops into one of the notches of said rack, and when the local current ceases and the magnet R is demagnetized, the spring S acts upon the lever N and retracts it, and with it pawl G′, thus moving the paper-carriage the distance of one tooth. In this manner the paper-carriage is moved along its track as the paper carried thereby receives impression of the types on the type-wheel I.

The pendent lever N carries a stud or projection, *e′*, and when the lever N is attracted by the magnet R this projection or lip *e′* comes in contact with and operates one end of an L-shaped pivoted latch, E, vibrating said end. The other end of said latch-lever, which is pivoted at its angle, is so arranged that it lies in contact with or bears against the edge of the upper arm of a vertical lever, 18, as shown.

Lever 18 is pivoted intermediately of its length, and upon its lower extremity it has an armature, 14^a, lying close to and adapted to be attracted by an electro-magnet, 14. The other or upper end of this lever 18 is adjacent to the end or extremity of the type-wheel shaft M above referred to. Now, when a current is sent through the magnet 14, the armature 14^a is attracted and the lever 18 is thus vibrated, its upper end coming in contact with the end of shaft M and moving said shaft and its type-wheel forward against spring 3, the tension of which is for the time being overcome. The shifting of the type-wheel shaft being thus accomplished by the inward movement of the upper end of lever 18, the point of the latch E is projected by means of a spring, e^2, (shown in Figs. 2 and 3,) behind said lever, thus preventing the return movement of the same when the current is switched from the magnet 14, and the type-wheel and its shaft are thus held by latch E in their shifted position. The release of the type-wheel shaft is accomplished by the vibration of the pendent arm N, carrying the lip *e′*, which latter acts upon the L-shaped latch E, rocking the same on its pivot, as above described, and withdrawing the point of said latch from behind the lever 18, whereby the spring 3 is enabled to exert its force upon shaft M, which is thus returned to its normal position.

As above stated, the type-wheel I has two circular series of printing-characters, as shown in Fig. 3. The object in shifting the shaft M and type-wheel I is to bring one or the other of the two rows or series of printing-characters into the plane into which the printing-pad moves, so that the new character may be impressed upon the sheet of paper in the carriage K in line with the last preceding character.

The two sets of keys in the transmitter correspond to the two rows or series of characters, letters, &c., of the type-wheel of the receiver.

The operation of my invention is as follows: When a primary key of the transmitter is depressed, a current passes from the battery, through a commutator of any suitable pattern, through the coils of the transmitter to the receiver and there acts upon the paper-carriage and printing-pad in the usual manner, and thence back to the battery. When one of the upper or secondary keys of the transmitter is depressed, a shunt-circuit is formed, as above described, and a more powerful current is sent through line to relay 2 of the receiver, thence through armature-lever 10 and contacts 16 and 12 to coils of magnet 14, and the armature 14^a of said magnet being thus acted upon the upper end of lever 18 is thereby brought forward, carrying with it shaft M and type-wheel I, and pressing outward spring 3, until the secondary row or series of characters on the type-wheel stands in the position, laterally, normally occupied by the other or primary row or series—that is, in a position immediately above the printing-pad.

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

1. The combination, with the keys of a printing-telegraph, the levers thereof, the contacts *m′ n′*, located within the line-circuit, and the angular lever *a*, lying across the keys or their levers, whereby contact is broken at the contact-points of said levers and remains broken until the release of the key, substantially as described.

2. In a printing telegraph, the longitudinally-movable rotating shaft, and means, substantially as described, for revolving and shifting the same, and the latch for holding said shaft in position when shifted, the lever for striking said latch and releasing said shaft, and the printing device, in combination with types and printing-characters disposed in parallel circular series around said shaft and rigidly connected thereto, so as to be shifted therewith.

In testimony whereof I have hereunto set my hand this 2d day of May, A. D. 1887.

SAMUEL V. ESSICK.

Witnesses:
P. F. JENNINGS,
DAVID F. HARBAUGH.