

(No Model.)

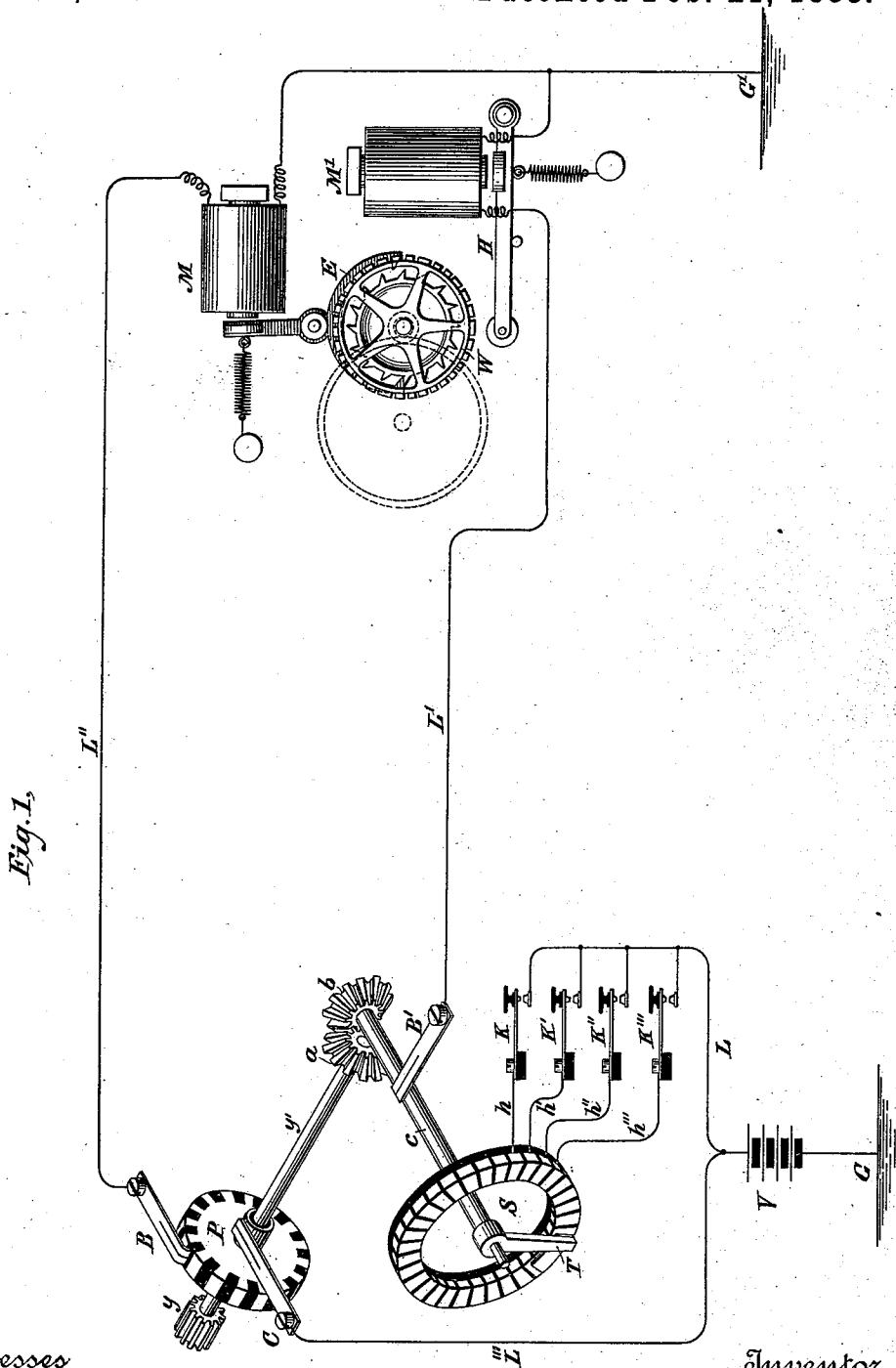
2 Sheets—Sheet 1.

D. E. PIKE.

PRINTING TELEGRAPH.

No. 378,107.

Patented Feb. 21, 1888.



Witnesses

Geo. W. Breck
Carrie E. Ashley

Inventor

Daniel E. Pike,

By his Attorney

C. L. Buckingham

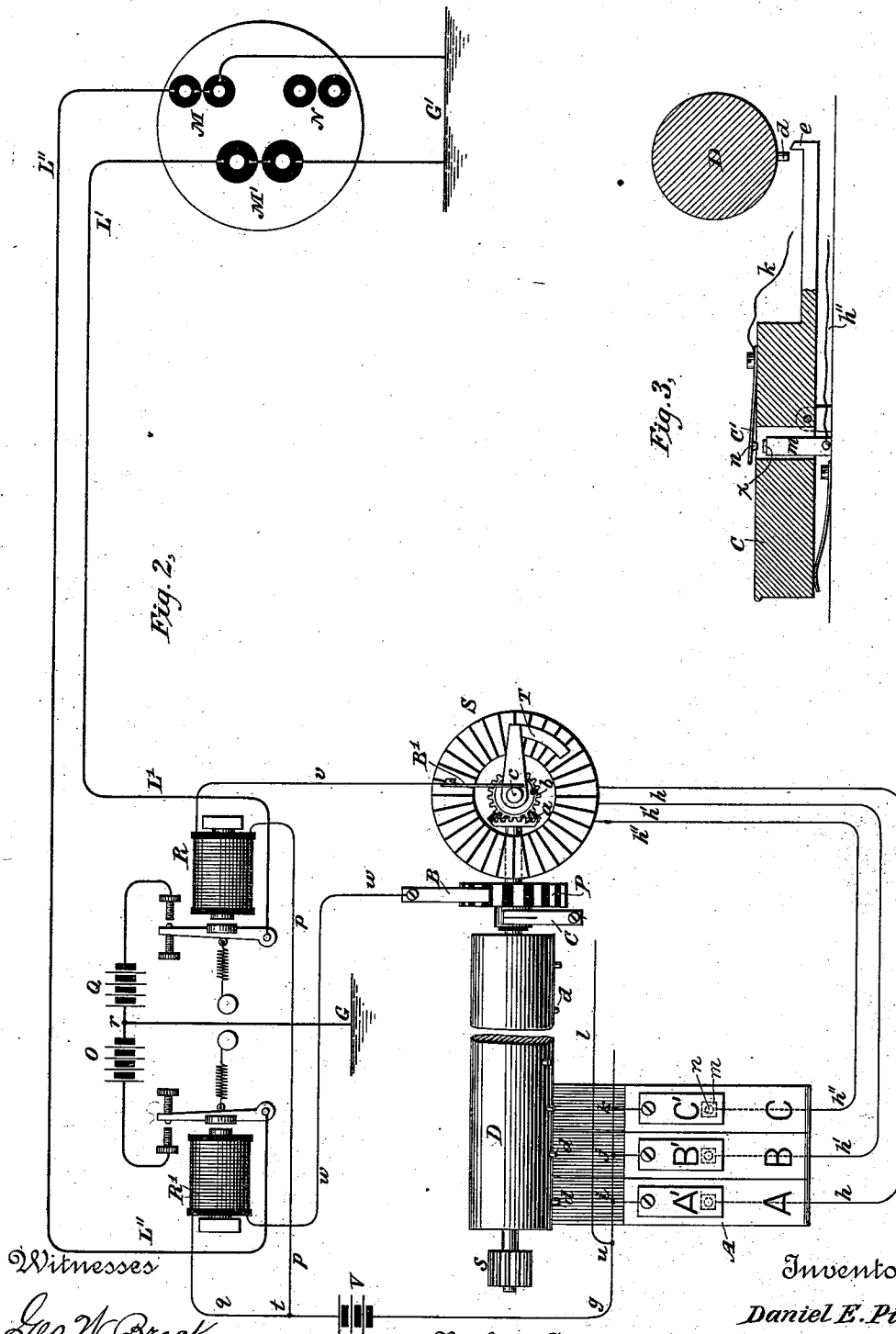
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Geo. W. Brock.
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By his Attorney

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UNITED STATES PATENT OFFICE.

DANIEL E. PIKE, OF NEW YORK, N. Y., ASSIGNOR TO THE WESTERN UNION
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PRINTING-TELEGRAPH.

SPECIFICATION forming part of Letters Patent No. 378,107, dated February 21, 1888.

Application filed July 8, 1886. Serial No. 207,486. (No model.)

To all whom it may concern:

Be it known that I, DANIEL E. PIKE, of the city, county, and State of New York, a citizen of the United States, have made a new and useful Improvement in Printing-Telegraph Transmitters, of which the following is a specification.

My invention relates to that class of printing-telegraphs in which the rotation of the type-wheels is effected or controlled by short electrical impulses transmitted over the main line by means of apparatus including as one of its features what is commonly known as a "rotating pulsator." Heretofore others have employed a rotating pulsator in connection with one main line for controlling the rotation of the type-wheels and a second main line for operating the printing mechanism. In such systems, however, the rotating pulsator was arrested at the printing of each character, and after arresting the pulsator and the type-wheels a current was transmitted over the press-circuit.

My invention has for its object an arrangement of apparatus whereby the press mechanism may in general be operated when the type-wheels are brought into position for printing any desired character without arresting the rotating pulsator or suspending the step-by-step rotation of the type-wheels.

Figure 1 is a diagrammatic view of my printing-telegraph system, in which the relays and local circuits are omitted for convenience of illustration. Fig. 2 is a drawing which shows the transmitter when provided with its local circuits as ordinarily used in practice. Fig. 3 is a sectional view through the key-lever and cylinder.

For convenience of illustration I will first refer to Fig. 1 of the drawings.

P is the rotating pulsator of a printing-telegraph transmitter whose periphery is provided with alternate conducting and insulating sections.

B is a spring whose free end rests upon the periphery of the pulsator, while its other end is connected to main line L', which includes the type-wheel electro-magnets M of the receiving-instruments.

C is a conducting brush or spring, one end of which rests upon a rotating sleeve connected with the conducting part of the pulsator P,

while its other end is connected by wire L'' with one pole of the battery V. The other pole of said battery V is connected to earth G. 55

y is a pinion gearing with any suitable motor, and is mounted upon a shaft, y', to which is affixed the rotating pulsator P and gear-wheel a, the latter meshing with wheel b, to which is connected shaft c and a sunflower-arm, 60 T, whose free end as it rotates sweeps over a circular series of sunflower-strips S.

B' is a spring whose free end rests upon the rotating shaft c, its other end being connected to main line L', which includes the press-magnet M' of the circuit. The two main lines L' 65 L'', after passing through the receiving-instruments, are connected together and to earth G'. To the same pole of the battery B to which the wire L'' is connected a wire, L, is joined, which 70 leads to the anvils or contact-stops, by branch wires, of the transmitting-keys k k' k'' k''', and the transmitting-keys are in turn respectively joined by wires h h' h'' h''' with corresponding sunflower-strips. 75

It will now be seen that if it is desired to print a character a transmitting-key representing such character must be depressed, thus closing the press-circuit L' at one of its two 80 disrupted points. After depressing a finger-key the circuit will only remain broken or disrupted at the sunflower, and will be closed when the sunflower-arm has rotated into contact with that one of the sunflower-strips to which the depressed key is connected. Thus 85 it will be seen that the press-circuit L', which is normally broken at two points, will first be closed at a transmitting-key and subsequently at the sunflower through the sunflower-strip connected with said key, the sunflower-arm, 90 shaft c, and spring B'. The sunflower-arm and rotating pulsator, being geared together, rotate in unison, while the sunflower-strips are equal in number to the sections of the rotating pulsator. Thus, while the pulsator T rotates the 95 distance of one of its peripheral spaces, the sunflower-arm passes through a distance equal to the width of one of the sunflower-strips. If, therefore, it were necessary for the pulsator to transmit two impulses to bring the type-wheel from its initial position into the desired 100 position for printing, it will be seen that the sunflower-arm would be rotated a corresponding distance—that is, over four sunflower-

strips and into contact with that one of the sunflower-strips which is connected with the transmitting-key representing the letter to be printed. In other words, upon depressing a transmitting-key the sunflower-arm will afterward complete the press-circuit at the instant a sufficient number of impulses have been transmitted over the type-wheel circuit to bring the desired character on the type-wheels to a position opposite the press-pad.

Fig. 2 represents an arrangement of apparatus whereby the pulsator may be arrested when it is desired to repeat the impression of a character in printing messages. With the arrangement shown in Fig. 1 an impression could only be repeated at each successive rotation of the pulsator—a method which is inferior from the fact that the speed of rotation is limited.

In Fig. 2, A B C represent the ordinary finger-keys of a printing-telegraph transmitter, provided with stops *e* (shown in Fig. 3) for arresting the rotation of the cylinder D by means of the spirally-arranged lugs or projections *d*. Each of the arresting-keys A B C is provided with a vertical slot or opening, within which is placed a stationary metallic pin, *m*, having an anvil, *x*, to which is connected a corresponding sunflower-strip by one of the wires *h h' h''*, &c.

A' B' C' are contact-keys provided with conducting-points *n*, which are normally out of contact with the upper end, *m*, of the anvil *x*. The key-contacts *n* are connected by a series of branch wires, *i j k*, and wire *g* with one pole of the battery V. Ordinarily in printing characters it is only necessary to depress one of the contact-keys A' B' C', thus closing the contact-points *n m*, and thereby placing the press-circuit in condition to be closed when the sunflower-arm T is brought into contact with the sunflower-strip corresponding with the key depressed. As shown in Fig. 2, this circuit is completed from one pole to the other of the battery V by way of point *t*, wire *p*, and thence by relay R, wire *v*, brush B', sunflower-arm T, a sunflower-strip and one of the branch wires *h h' h''*, contacts *n m*, one of the branch wires *i j k*, and wire *g*. At the same time battery V forms a part of a circuit, as follows: point *p*, wire *g*, relay R', wire *w*, pulsator-brush B, the rotating pulsator, brush C', wire *l*, point *u*, and wire *g*. When, however, it is desired to repeat the impression of a character, as C, the arresting key C is depressed, bringing the stop *e* into the path of rotation of arresting-pin *d* of the rotating cylinder. By thus arresting the rotating cylinder a continuous electrical condition will be maintained upon the main line and rotation of the type-wheels arrested in the required position for printing. When so arrested, the contact-key C' will be depressed, bringing the contacts *n m* together, thereby completing the press-circuit, the sunflower-arm T having already been brought in contact with the sunflower-strip which is connected with contact *m*. To repeat

an impression it is only necessary to then depress, release, and again depress the contact-key C'. In other words, when the type-wheels are held in the desired position, by arresting the drum of the transmitter the printing of the character may be repeated as often as the local circuit, including the relay R, is closed and opened, for when closed the armature of relay R connects battery Q with the main line L', thus causing an impression to be printed. Upon breaking the local circuit the armature of relay R removes battery Q from the line, and the press mechanism falls to its normal position, and in so doing feeds the paper strip upon which the message is printed the space of a letter. Thus it is apparent that characters may be repeated by simply repeating the operation of closing and opening the local circuits, including relay R. Paper-feeding mechanism is not here shown, for the reason that such apparatus is well known in the art and requires no explanation.

The relay R controls the main-line press-circuit L', including press-magnet M', while relay R' controls the main-line type-wheel circuit L'', which includes type-wheel magnets M M'. These two main-line circuits are shown with earth-terminals G G' and respective batteries O Q. At one end the lines are connected together at point *r*, and thence to earth G.

In Fig. 1 I have shown as means for effecting the rotation of the type-wheel W a clock-motor and escapement-pallets, E, for releasing and controlling its movement; but I do not wish to limit myself to such an arrangement, as my invention is equally applicable to printing-instruments in which the type-wheels are positively driven by the electro-magnetic escapement.

It is obviously necessary to employ the two shafts *y' c* and the gear-wheels *a b*, inasmuch as the sunflower-arm, instead of being mounted on shaft *c*, might equally well be affixed to the shaft of the pulsator-wheel P. To effect this modification it would only be necessary to insulate the sunflower-arm from the pulsator-wheel.

What I claim, and desire to secure by Letters Patent, is—

1. In a printing-telegraph system, two main lines, one for controlling the type-wheels and the other the press mechanism, a constantly-rotating pulsator in the type-wheel circuit, a sunflower arrangement whose arm rotates with the pulsator, and transmitting-keys in connection with the press-circuit, for the purpose described.

2. In a printing-telegraph system, a rotating pulsator and a sunflower-arm rotating in unison therewith, a type-wheel circuit connected with said pulsator, and a printing-circuit connecting with the sunflower devices, the arrangement being such that characters may be printed during rotation of the pulsator and type-wheels, substantially as described.

3. A rotating pulsator or its equivalent, a sunflower device having an arm which rotates

in unison with the pulsator, a series of transmitting-keys connected with said sunflower arrangement, a main line for controlling the press mechanism, and a second main line connected with pulsator for controlling the type-wheels, substantially as described.

4. In a printing-telegraph transmitter, a rotating pulsator and a sunflower arrangement, two sets of transmitting-keys, one for closing the press-circuit and the other for arresting the pulsator, and two circuits, one controlled

by the pulsator and the other by the sunflower device, substantially as described.

5. In a printing-telegraph transmitter, a rotating pulsator, a set of arresting-keys, a second set of keys provided with electrical contacts, and a press-circuit which is controlled by said second set of keys.

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Witnesses:

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