

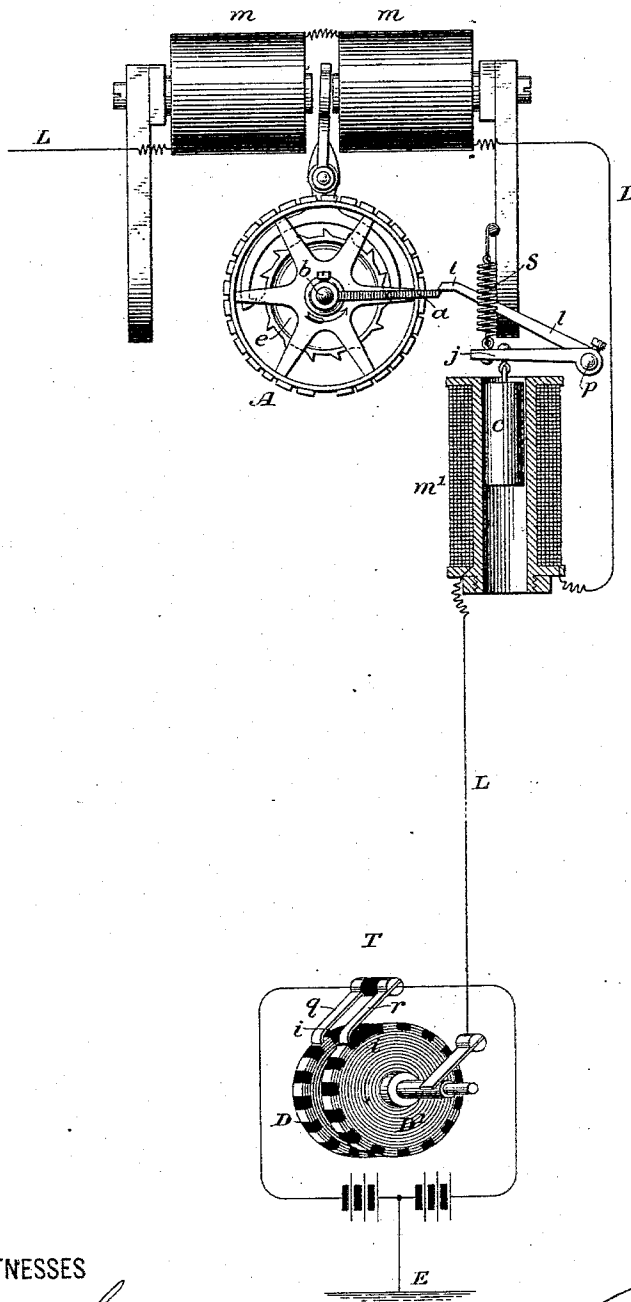
(No Model.)

W. B. VANSIZE.

UNISON APPARATUS FOR PRINTING TELEGRAPHS.

No. 304,051.

Patented Aug. 26, 1884.



WITNESSES

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# UNITED STATES PATENT OFFICE.

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## UNISON APPARATUS FOR PRINTING-TELEGRAPHS.

SPECIFICATION forming part of Letters Patent No. 304,051, dated August 26, 1884.

Application filed January 25, 1884. (No model.)

*To all whom it may concern:*

Be it known that I, WM. B. VANSIZE, a citizen of the United States, residing in the city of Brooklyn, county of Kings, State of New York, have invented a new and useful Improvement in Printing-Telegraphs, of which the following is a specification.

The object of my invention is to furnish an automatic unison device for printing-telegraphs.

My invention comprises a type-wheel mounted upon a motor-driven shaft having a step-by-step rotary movement controlled by a polarized electric magnetic escapement. Firmly fixed to the type-wheel shaft is a radial arm moving in the plane of an armature-bar, which bar is controlled by a neutral electro-magnet located in the same main line with the escapement-magnet. This neutral magnet, while impulses of opposite polarity are being transmitted to rotate the type-wheel, attracts its armature and holds it in position to engage the said radial arm when the type-wheel is at the unison-point of its rotation. If, however, the circuit is opened for an interval the neutral magnet releases its armature, which is then moved out of the path of the said radial arm by a retracting-spring. If the circuit be thus opened at the termination of the last reversal before the unison-point is reached, and the type-wheel be in unison, the armature-bar will be moved out of position to engage the radial arm, and as the escapement-magnet acts quicker than the neutral magnet, the impulse following the interval of open circuit will carry the radial arm past the armature-bar; but if the type-wheel is out of unison the radial arm will be caught and held until the recurrence of the open-circuit interval when it will be released and may proceed in unison. To the end that this unison may be entirely automatic, I provide a transmitter for directing to line a series of reversals having means for periodically opening the circuit at a predetermined point.

The accompanying drawing illustrates my invention.

A is a type-wheel fixed to the shaft *b*, having a constant tendency to rotation imparted to it by any suitable motor.

*m* is a polarized electro-magnet responsive

to short and rapid impulses of alternately-opposite polarity for operating the escapement *e*.

To the shaft *b* is firmly fixed a radially-projecting arm, *a*.

*m'* is a neutral electro-magnet which is arranged to magnetize and demagnetize more slowly than an ordinary electro-magnet. It may be constructed, as shown, with a hollow core. A tubular armature, *c*, located therein is jointed to an armature-bar at *j*, which bar is pivoted at *p*, and has an arm, *l*, located in the plane of rotation of radial arm *a*. Magnets *m* and *m'* are in the same circuit L.

This is a transmitter which may be of well-known construction. The drawing shows two rotating cylinders, *D D'*, the peripheries of which are composed of alternately conducting and insulating spaces. The total number of conducting-spaces on both cylinders equals the total number of characters on the type-wheel. Two spring-fingers, *q r*, connected to two main batteries of respectively opposite polarity make contact with the peripheries of *D D'*, and are so adjusted that when one finger is in contact with a conducting-space the other finger will rest upon an insulating-space. That insulating-space *i* in the periphery of each cylinder immediately succeeding the last conducting-space before the unison-point, is prolonged sufficiently to permit a considerable cessation of current and the retraction of the armature of magnet *m'*. When spring *q* is upon a conducting-space of wheel *D*, spring *r* must be upon an insulating-space of wheel *D'*. If brush-springs *q* and *r* are set abreast, so that their points of contact with *D D'* are in the same axial plane, an insulating-space on one wheel must be opposite a conducting-space on the other, and the long insulating-space *i i* of equal length on the two wheels must be set one a little in advance of the other. Thus, while spring *q* is yet upon a conducting-space of *D*, *r* will rest upon the insulating-space *i* of *D'*. Contact between *r* and *i* must continue for some time after *q* comes in contact with *i*, in order that the unison-arm may have time to operate on the cessation of current. It is obvious that *i* of wheel *D* must be prolonged, in order that the circuit may be broken at *q* for operating the unison, and also while an impulse is sent from spring *r*—that is, after *r* has passed *i* on

$D'$ ,  $q$  must remain in contact with  $i$  on  $D$  until a normal impulse has been transmitted over  $r$ .

The operation of the arrangement is as follows: Transmitter  $T$ , being rotated by any suitable motor in the direction of the arrow, connects and disconnects each main battery alternately with the line. A series of short reversed impulses are thereby directed to line. The last impulse before the unison-point brings the radial arm  $a$  into the relative position shown in the drawing, if said instrument is in unison with the transmitter. A further rotation of the transmitting-cylinders brings insulating-spaces  $i$  under the fingers  $qr$ ; the line-current is broken, magnet  $m'$  demagnetizes sufficiently to release its armature, bar  $l$  is retracted from the path of arm  $a$ , and the next impulse of current from the transmitter carries the arm  $a$  past the engaging-point of bar  $l$ . If arm  $a$  is not in unison it will be caught and held till the insulating-spaces  $i$  again come under fingers  $qr$ , as described.

Means should be provided for arresting the transmitter at any point in its rotation, also means for taking an impression from the type-wheel and for feeding the paper after an impression. These may be any of the well-known devices.

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

1. In a printing-telegraph, the combination, in one main line, of a polarized electro-magnet for rotating the type-wheel step by step, and a sluggish neutral electro-magnet having an armature-lever normally held in position by short impulses to arrest the type-wheel at unison, and which is retracted from such position during a prolonged interval of no current, and a retractor for said armature-lever, whereby when said armature-lever has been retracted an impulse transmitted to line will actuate the escapement electro-magnet before the unison-magnet, thus causing the unison-arm to be rotated past said armature-lever.

2. In a printing-telegraph, the combination of a sensitive escapement electro-magnet and a type-wheel, a transmitter for directing reverse currents to line, a sluggish unison-mag-

net, a unison-stop for arresting the type-wheel at the unison-point during the transmission of normal electrical impulses, whereby, upon a cessation of current upon the main line, the unison-arm will be released and the type-wheel rotated upon the further transmission of an electrical impulse.

3. In a printing-telegraph, the combination of a transmitter for directing to line a series of impulses for rotating the type-wheel step by step, an automatic circuit-breaker for effecting a cessation of current upon the line, an electro-magnet having an armature vibrating in response to said impulses for rotating the type-wheel, a neutral electro-magnet in the same line having an armature-bar which is held in an attracted position to arrest the type-wheel at unison during the passage of currents upon the line, and a retractor for withdrawing said armature to release the type-wheel upon the cessation of line-current, the whole being so arranged that upon the further transmission of a current the type-wheel will be rotated beyond the unison-stop before the unison-stop is attracted.

4. In a printing-telegraph, the combination of a type-wheel and a unison mechanism, consisting of a radial arm upon the type-wheel shaft, a sluggish electro-magnet, and an armature-lever, which, during the passage of a current to line to arrest said type-wheel, is held in position to arrest said radial arm, a retractor for said armature-lever, the whole arranged, as described, whereby, upon a cessation of current upon the line, said armature-lever is retracted from the path of said radial arm, and whereby, upon the further transmission of a current upon the line, the radial arm will be actuated in advance of the armature-lever and will be rotated beyond a position where it can be arrested by said armature-lever before the same can resume its attracted position.

Signed by me this 16th day of January, 1884.  
WM. B. VANSIZE.

Witnesses:

JOHN D. VAN HORNE,  
WM. ARNOUX.