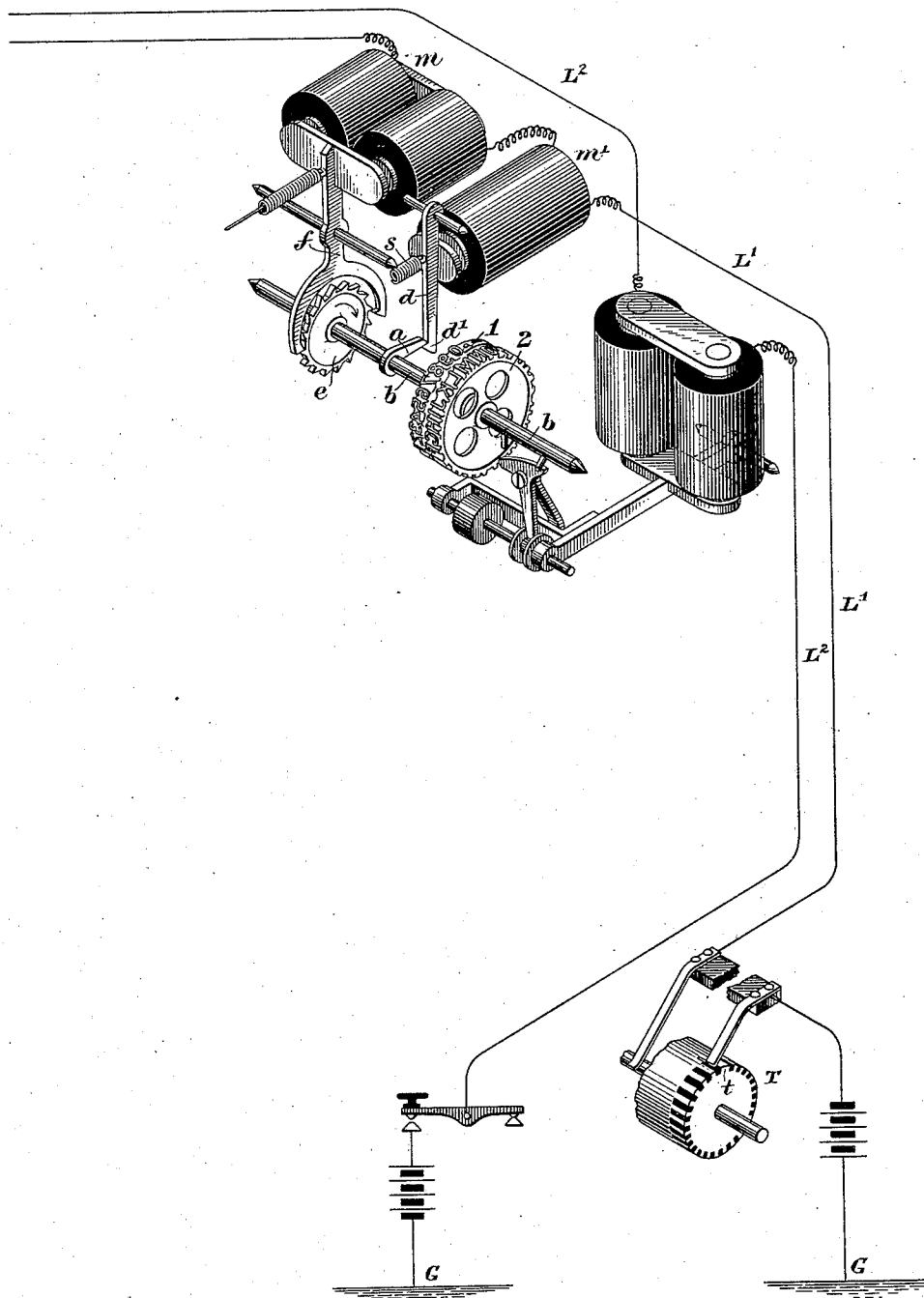


(No Model.)

W. B. VANSIZE & C. L. BUCKINGHAM.
PRINTING TELEGRAPH.

No. 290,613.

Patented Dec. 18, 1883.



WITNESSES

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PRINTING-TELEGRAPH.

SPECIFICATION forming part of Letters Patent No. 290,612, dated December 18, 1883.

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To all whom it may concern:

Be it known that we, WM. B. VANSIZE, of the city of Brooklyn, Kings county, State of New York, and CHARLES L. BUCKINGHAM, of the city, county, and State of New York, citizens of the United States, have jointly invented certain new and useful Improvements in Printing-Telegraphs, of which the following is a specification.

10 The object of our invention is to provide a new and improved means whereby a series of instruments in a circuit may be brought to unison.

15 The arrangement of a printing-telegraph instrument in connection with which we have shown our device consists of two type-wheels—one bearing letters and the other figures—firmly fixed to a shaft having a constant tendency to rotate imparted to it by any suitable motor—
20 such as a weight, cord, and train of gear-wheels—controlled by an electro-magnetic escapement located in an electrical circuit. In a second circuit is an electro-magnetic impression device. Means are provided where-
25 by either type-wheel may be printed from at pleasure, and means must also be provided whereby at the pleasure of the transmitting-operator all the instruments on a circuit or on several circuits operated by one transmitter
30 may be automatically brought to unison—that is, to simultaneously present the same character at a predetermined point.

To the end of affording means whereby the type-wheels may be brought to unison, we
35 provide an electro-magnetic type-wheel escapement operated by making and breaking the type-wheel circuit. In the same circuit is a slow magnet—that is, one which, by reason of its length of core and resistance or pecu-
40 liarity of construction, will magnetize and demagnetize more slowly than the type-wheel magnets, and which will not respond to makes and breaks which are of sufficient length only to influence the type-wheel magnets. Upon
45 the type-wheel shaft is firmly fixed a radial arm. The armature-bar of the slow magnet normally projects into the path of the said ra-

dial arm and locks with the radial arm when said arm has reached that point in its rotation where the type-wheels are at unison. This
50 armature-bar is, however, suddenly moved out of the path of the radial arm once every rotation of the type-wheels by a prolonged impulse of electricity of sufficient duration to magnetize the slow magnet, and this move-
55 ment of the armature-bar occurs at the moment when the type-wheels should be at unison, so that in case the wheels are in unison the radial arm will not be caught; but in case any type-wheel is out of unison it will be
60 caught and held until the recurrence of such sudden movement, when it will be released and may continue its rotation.

For the purpose of illustration we have shown in a second circuit the means for tak-
65 ing an impression from either type-wheel at pleasure, described in United States Letters Patent No. 126,535, May 7, 1872.

Referring to the accompanying drawing, *m* is an electro-magnet of ordinary construction, 70 preferably having short slotted cores and responsive to short pulsations of electricity.

1 and 2 are two type-wheels, upon the peripheries of which are figures and letters, respectively. They are fixed to a shaft or ar-
75 bor, *b*, to which a constant tendency to rotate is imparted by a weight and train of gear-wheels of well-known construction. (Not shown.) The shaft is allowed to escape step by step by making and breaking the circuit in the main line
80 *L*, containing electro-magnet *m*, which controls the escapement *ef*. In the main line *L* is also an electro-magnet, *m'*, having a soft-iron core wound with insulated wire, in the usual manner, to a higher resistance than mag-
85 net *m*; or the iron core may be covered with a tube of brass, which will cause it to magnetize much slower than an ordinary magnet of the same size and resistance. This magnet is provided with an armature and bar, *d*, hav-
90 ing a hooked termination, *d'*.

To the type-wheel shaft is firmly fixed a radially-projecting arm, *a*, in the plane of armature-bar *d*, and capable of locking with

hook d' , by which means the type-wheel shaft is held at rest. Normally hook d' is held in the path of rotation of arm a by a spiral retracting-spring, s . The position of arm a upon shaft b is such that when a is locked with d' the type-wheel will be at unison.

The transmitter may be of the well-known form modified as follows: We have shown at T a transmitter having as many insulated and metallic divisions upon its periphery as there are characters upon the type-wheel. One metallic division, t , is, however, lengthened to prolong the pulsation of electricity transmitted to line by it, and this division is the one corresponding to the unison-point of the type-wheel. It is of sufficient length to transmit a pulsation that will magnetize the slow magnet m' , and thus move the armature-bar d out of the path of arm a . The transmitter may be driven by any suitable motor, and a key-board may be provided with means for stopping the transmitter at any desired point. Instead, however, of widening the conducting-section, as shown at t , means may be provided for halting the transmitter for an interval sufficient to prolong the pulsation.

In a second main line, L^2 , we have shown means for printing from either type-wheel at pleasure, which consists of an impression-pad movable upon its bearings into the plane of rotation of either type-wheel, and an electro-magnet having an armature-bar carrying a pivoted T -lever, the long arm of which is placed between two disks on the arbor of the impression-pad. Two radial pins project from the type-wheel shaft in different radial planes, their outer ends respectively being capable of engaging the outer ends of the shorter arm of the T -lever.

To shift the pad from one wheel to the other, the type-wheel shaft is rotated into such a position that the proper radial arm will be immediately over the one end of the T -lever, and an impulse is sent through the printing-circuit, thus tilting the T -lever and moving the impression-pad as desired. The type-wheel is then rotated to present the desired character to the pad, and an impression is taken in the usual manner.

Means for feeding the paper after each impression, which are well known, may be provided.

We are aware that Bunnell employs a type-wheel magnet which is excited and operated by short impulses, and a neutral magnet which is operated by a stronger and increased impulse for effecting unison. Specifically, however, Bunnell, by a prolonged impulse, releases the escapement-pallets and permits an escapement-wheel, to which the type-wheel is rigidly attached, to move freely to the unison-point.

Our invention contemplates the use of a unison-stop which shall only release the type-wheel shaft when it has arrived at the unison position.

In our apparatus means for permitting a free rotation of the type-wheel shaft is entirely omitted.

Having described our invention, what we claim, and desire to secure by Letters Patent, 70 is—

1. In a printing-telegraph, the combination of a type-wheel magnet and a unison-magnet in the same circuit, the type-wheel magnet, but not the unison-magnet, being responsive to short impulses, and both being responsive to long impulses for the purpose of unlocking the unison-arm and causing the type-wheels to simultaneously have a progressive movement, means for transmitting short impulses to line to effect a step-by-step rotation of the type-wheels, means for sending prolonged impulses to unlock the unison-arm and simultaneously effect rotation of the type-wheels, and a printing-magnet in a second circuit, substantially as specified, and for the purpose set forth. 85

2. In a printing-telegraph, the combination of a type-wheel magnet and a unison-magnet in the same circuit, the type-wheel magnet, but not the unison-magnet, being responsive to short impulses, and both being responsive to long impulses for the purpose of unlocking the unison-arm and causing the type-wheels to simultaneously have a progressive movement, means for transmitting short impulses to line to effect a step-by-step rotation of the type-wheels, and means for sending prolonged impulses to unlock the unison-arm and simultaneously effect rotation of the type-wheels. 95

3. In a printing-telegraph, the combination of a type-wheel magnet and a unison-magnet in the same circuit, the type-wheel magnet, but not the unison-magnet, being responsive to short impulses, both magnets being responsive to long impulses, an armature-lever controlled by the unison-magnet, which lever, while short impulses are being sent to line, is in a retracted position in the path of a unison-arm mounted upon or connected with the type-wheel shaft, but which armature-lever is attracted by the unison-magnet from the path of the unison-arm upon the transmission of a prolonged impulse, and means for transmitting short and long impulses upon said circuit. 100

4. In a printing-telegraph instrument, a type-wheel shaft having a unison-arm, in combination with an electro-magnet for controlling the step-by-step rotation of the type-wheel and a unison-magnet in the same circuit with the type-wheel magnet, the type-wheel magnet, but not the unison-magnet, being responsive to short impulses, and both responsive to prolonged impulses, an armature-lever controlled by the unison-magnet, which lever is in position to arrest the rotation of the type-wheel shaft when normal impulses are sent to line, but which is moved out of position for arresting the unison-arm upon prolonging a normal impulse, and means for prolonging a short impulse at the unison-point. 115 120 125 130

5 In a printing-telegraph, a rotating transmitter for directing electrical pulsations to line, composed of a drum or cylinder having a series of alternately insulating and conducting sections in its periphery, one of which conducting-sections corresponding to the unison-point is lengthened to prolong the pulsation due to it, in combination with a receiving-in-

strument having a rotating unison-arm and a unison armature-lever which is operated by prolonged impulses from the transmitter.

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