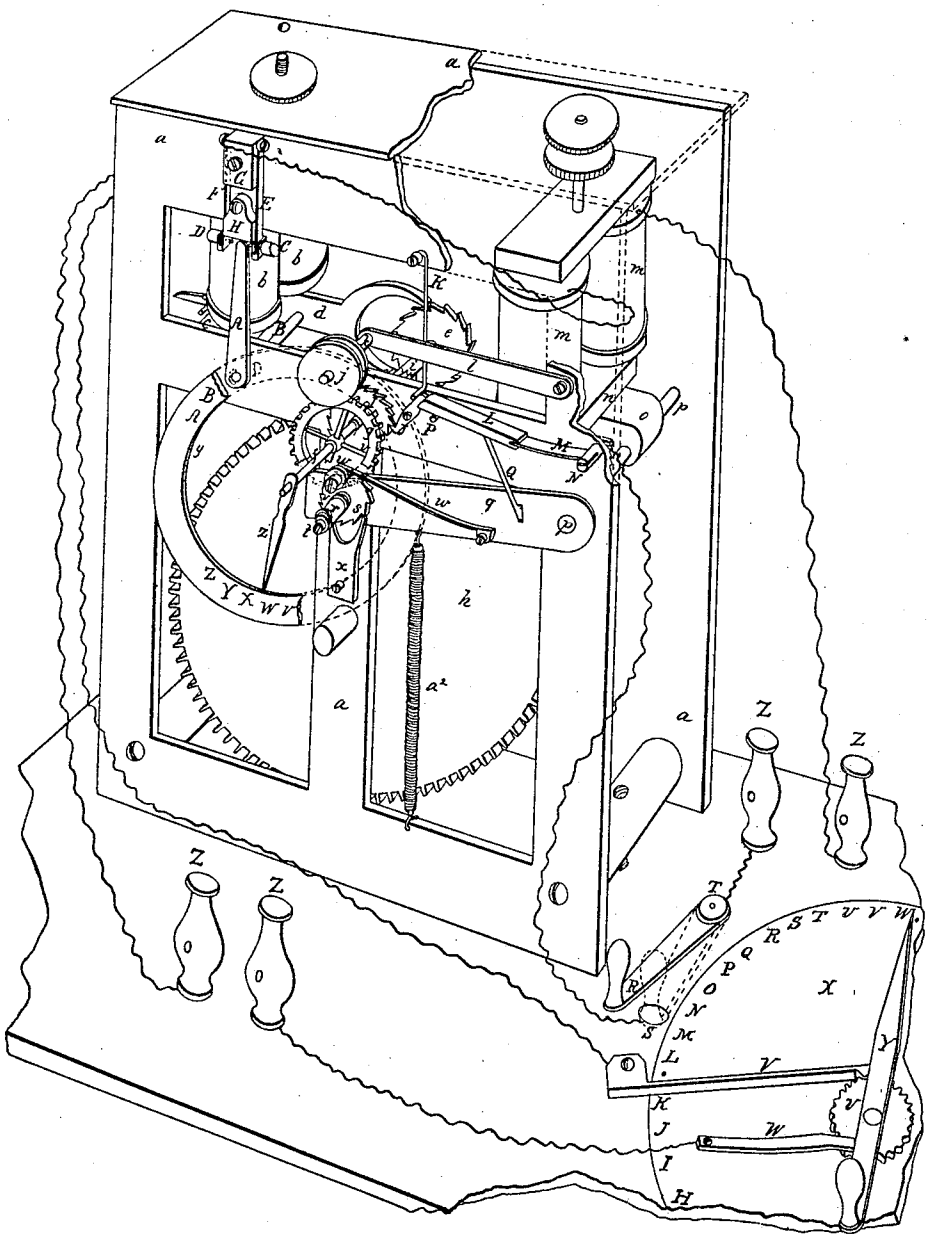
W. P. PHELPS & W. J. PHILIPS.

PRINTING TELEGRAPH INSTRUMENTS.

No. 103,496. Patented May 24, 1870.



Witnesses.

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Letters Patent No. 103,496, *dated May* 24, 1870.

IMPROVEMENT IN PRINTING-TELEGRAPH INSTRUMENTS.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that we, WILLIAM P. PHELPS, of Brooklyn, Kings county, New York, and WILLIAM J. PHILIPS, of Philadelphia, Pennsylvania, have invented certain Improvements in Printing-Telegraphs, of which the following is a specification.

The object of our invention is the production of an instrument so simple in its construction that persons unskilled in telegraphy shall be able to work it.

Our improvements consist of devices for breaking and closing the local or printing-circuit automatically.

The accompanying drawing is a perspective view of a telegraphic instrument including our self-printing improvements.

a represents the frame, a portion of which is broken away to expose parts otherwise hidden from view;

b, the main-line magnet.

c, its armature.

d, the armature-lever.

e, the escape-wheel, which is placed on the shaft *f* of the type-wheel *g*, which is driven by the wheel *h* and pinion *i*.

j is the inking-roller, which is of ordinary construction. It revolves on a stud, *k*, which is attached to a movable arm, *l*, which is screwed loosely to the frame *a*.

m is the local or printing-magnet, and *n* its armature, which is attached to a lever, *o*, which is rigidly attached to a shaft, *p*, which passes through the front and back plates of the frame, as shown.

q is the printing-lever, which is rigidly attached to the shaft *p*.

a^2 is a spring, attached at one end to the frame *a*, and at the other end to the lever *q*.

r is the printing-roller, having a ratchet-wheel, *s*, rigidly attached to it, both revolving on a stud, *t*, which projects from the lever *q*.

Above the lever *r*, and in close contact with it, is the paper-roller *u*, which revolves on a stud, *v*, which projects from the spring *w*, which is rigidly attached to the printing-lever *q*.

x is a double pawl, which works on a stud screwed into the frame *a*, as shown.

y is a disk containing the letters of the alphabet.

z is the index fastened on the type-wheel shaft *f*.

A is a vibrating bar rigidly attached to the shaft B of the armature lever *d*.

C and D are screws, each containing a platina point on its inner end. The screws or points C and D are suspended by the ribbon springs E and F respectively, which are insulated from the frame *a*, being attached to a block of hard rubber, G, or other suitable insulating substance.

The springs E and F are kept apart by a block of rubber or other insulator, H, which is screwed to the frame *a*.

I is a ratchet-wheel on the type-wheel shaft *f*.

J is a ratchet, which is pivoted to the frame *a*, and acted on by a spring, K, and the lower end of which is applied to the ratchet-wheel I.

L is a metallic bar attached to a spring, M, which proceeds from an insulated stud, N, attached to frame *a*.

P is a metallic stop or stud projecting from the frame *a*.

Q is a light rod, attached at one end to the printing-lever *q*, the other end of the rod being almost, but not quite, in contact with the under side of the bar L.

R is a switch turning on the post T.

S is a metallic point, onto which the switch R is turned to complete the local or printing-circuit.

U is a wheel, which breaks and closes the main-line circuit, as it is turned, by making and breaking contact with the point of spring V, which is one pawl of the main-line circuit.

W is a friction-spring pressing on the circuit-wheel U, which forms the other pawl of the main circuit.

X is a disk containing the letters of the alphabet.

Y, an index attached to the circuit-wheel U.

The parts marked Z represent screw-caps or binding-screws.

To prepare the instrument for the transmission of a message, the index Y is first brought into unison with the index *z*. The index Y is moved from left to right, pausing on the letter which it is desired to print.

Whenever the index Y is kept moving, the bar A continues in motion, vibrating between the two suspended points C and D, which receive alternate blows from the bar A, each being struck at or just before the end of the movement toward it of bar A. Each point, as it is struck, recoils, and, before it returns, the vibrating-bar A is moving toward the other point, and this action is kept up as long as the circuit is being closed and broken by the revolution of the index Y. The local or printing-circuit is thus kept broken, and, as soon as the index Y is stopped, this vibrating bar A rests against one or the other of the points C D, thereby closing the local or printing-circuit, charging the magnet *m*, which draws to it its armature *n*, and thus raises the end of the lever *q*, which brings the paper roller *r* into contact with the type-wheel *g*, printing on the strip of paper the letter desired.

The strip of paper is not shown. It is sufficient to say that it passes between the roller *r* and the wheel *g*, and is held in place by the small roller *v*. As soon as the lever *q* has reached the limit of its upward movement, and the type is in contact with the paper, the rod Q is brought into contact with the bar L, lifting it above and breaking its contact with the stop P, allowing the end of the ratchet J to be pressed under the bar L by the action of the spring K propping said bar up, thereby keeping the circuit broken between the stop P and the bar L, and thus allowing the lever *q* to be drawn down to its original position by the spring a^2.

At the same time the pawl *x* move the ratchet-wheel s one notch forward, and thereby advances the paper far enough to be ready for the next impression. As soon as the type-wheel G is set in motion, the ratchet-wheel I is advanced one notch, thereby unlocking the ratchet J and allowing the lever L to be drawn down into contact with stop P.

The same operation is repeated for each letter printed.

When it is not deemed necessary to print the message, the operator moves the switch R off of the point S, thereby breaking the local circuit, and stopping the printing. The message in such cases is read from the dial *y*, as indicated by the index *z*.

Instead of suspending the points C and D by springs, they may be attached to rigid bars, hinged, pivoted, or otherwise jointed to the insulator G, so as to swing freely when receiving impact from the vibrating bar A.

The bar L, stop P, rod Q, ratchet-wheel I, ratchet J, and spring K, constituting a device for breaking the local or printing-circuit, may be dispensed with, but the results obtained are not so good as when they are employed.

The bar L, instead of being attached through the spring M, may be attached by a loose joint directly to the stud N.

We claim as our invention—

1. The vibrating bar A, in combination with the suspended points C and D, substantially as set forth for the purpose specified.

2. The combination of the bar L, stop P, rod Q, ratchet-wheel I, ratchet J′, and spring K, substantially as set forth, for breaking the local or printing-circuit, after the printing of each letter, and keeping said circuit broken until it is closed again by the starting of the type-wheel.

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