

*Herrings Improved Telegraphic
Recording Instrument*

3 Sheets--Sheet 1.

No. 121,102.

Patented Nov. 21, 1871.

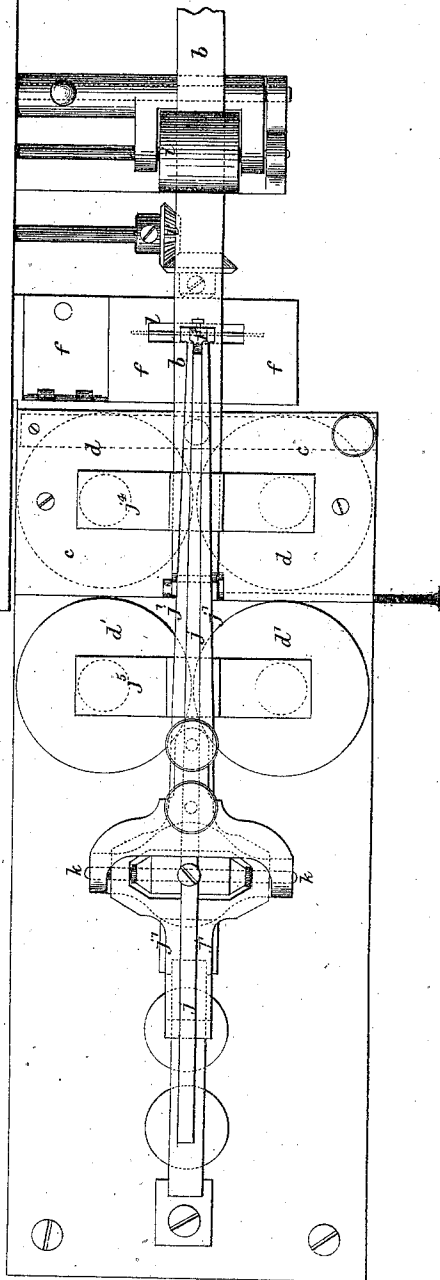
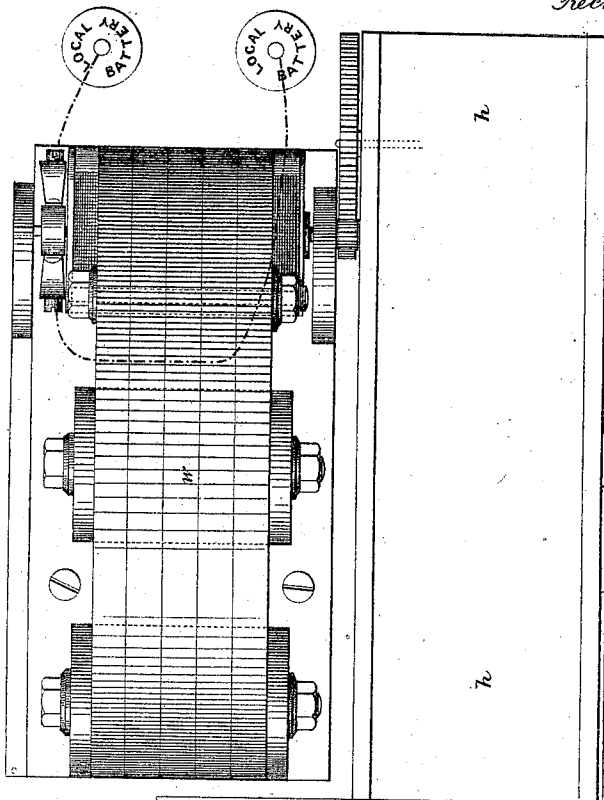
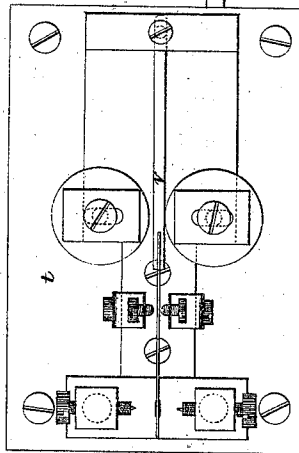


FIG. 4.



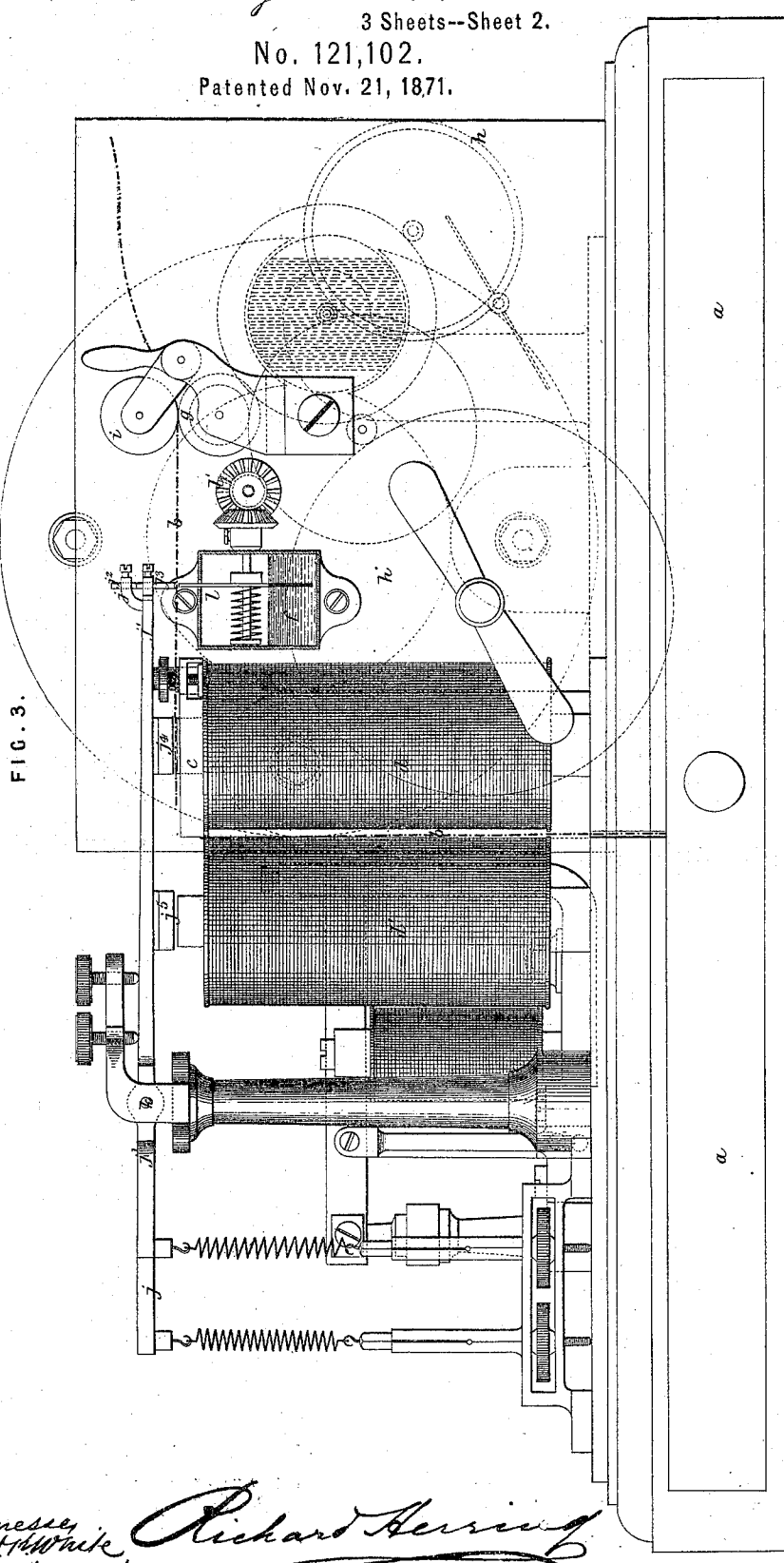
Witnesses
H. K. White
John H. Henshaw
Richard Herring

*Herring's Improved Telegraphic
Recording Instrument*

3 Sheets--Sheet 2.

No. 121,102.

Patented Nov. 21, 1871.



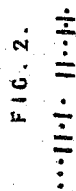
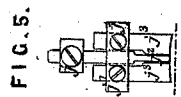
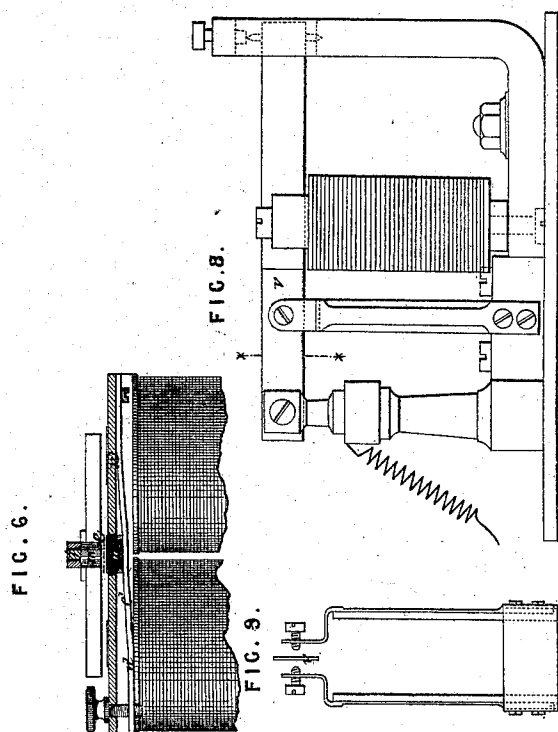
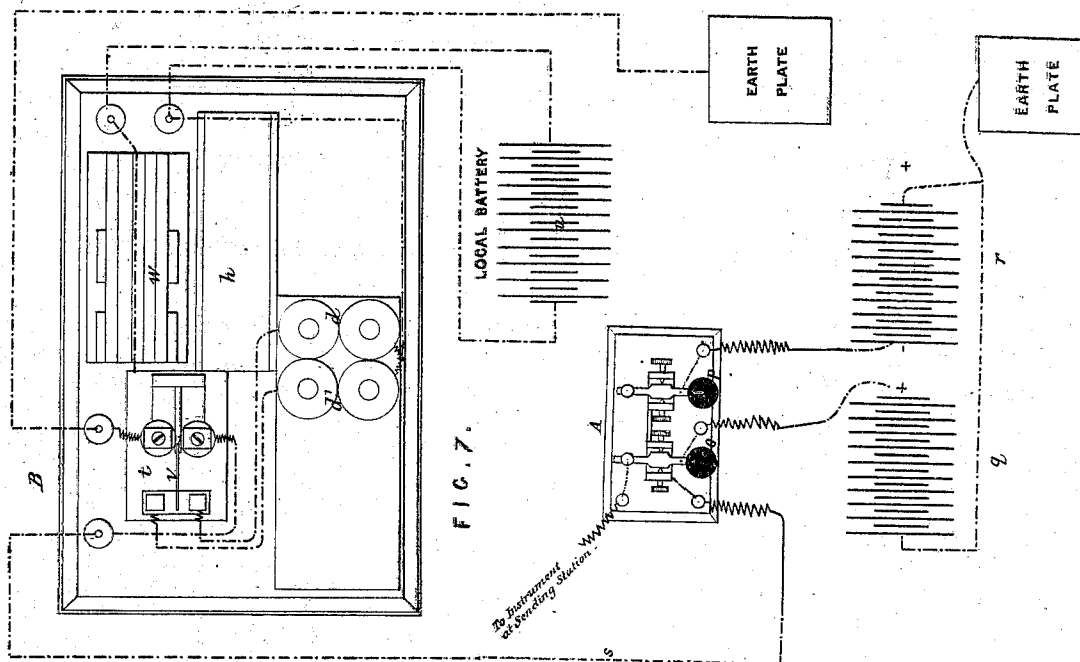
Witnesses
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John Hancock

Richard Herring

Hearings Improved Telegraphic Recording Instrument

No. 121,102.

3 Sheets--Sheet 3.
Patented Nov. 21, 1871.



Witnesses
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John K. Hamrick

Richard Herring

UNITED STATES PATENT OFFICE.

RICHARD HERRING, OF CANONBURY, ENGLAND.

IMPROVEMENT IN PRINTING-TELEGRAPHS.

Specification forming part of Letters Patent No. 121,102, dated November 21, 1871.

To all whom it may concern:

Be it known that I, RICHARD HERRING, of St. Mary's Road, Canonbury, in the county of Middlesex, wholesale stationer, England, have invented a new and useful Improvement in Telegraphic-Printing Apparatus; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing forming a part of this specification.

This invention relates to that class of telegraphic-printing apparatus in which the signals are effected by printing or marking dots and dashes or short strokes on a band or strip of paper as it travels through the apparatus. The object of the improvements is to increase the rapidity of transmission of the printed signals, and to simplify and facilitate the manipulation, and to render the signals easier to read and less liable to error. To this end, instead of making the dots and signals run in a line, as shown at Figure 1 in the accompanying drawing, all the dashes or strokes are arranged in a vertical position, as shown at Fig. 2. By this means the signal can be read with great facility. It takes up less space and can be transmitted with greater rapidity than the old kind of signal. To effect this object a style or instrument of peculiar construction is employed. As it is composed of separate parts or styles, it may be termed a compound style. One of these parts is made in the form of a blunt round point, so as to make or print a dot. The other part of the style is made with a long narrow edge, so as to form or print a dash or stroke; or, by means of any combination or construction of the style or styles, any other signs which may be deemed preferable to adopt may be made; or two separate styles may be used. In any case, the two parts are operated by separate currents of electricity, or by distinct magnets.

In the accompanying drawing, Fig. 3 is a side elevation of a telegraphic recording instrument constructed and arranged in such a manner as to make the signals, consisting of dots and dashes, arranged as shown at Fig. 2. Fig. 4 is a plan view of the same.

a a is a foundation-stand, on which all the working parts of the mechanism are mounted. This stand is provided with a drawer, in which is placed the roll of paper on which the signals are to be

printed. The band of paper *b* is fed up from the drawer in the usual manner, and over a horizontal plate, *c*, fixed on the top of one of the magnets *d*. It passes through a clamp, *e*, hereafter more particularly described, and over the inking apparatus *f* to the feeding-roller *g* which is actuated by the clock-work indicated by the dotted circles and inclosed within the box *h*. A pressing-roller, *i*, mounted in a fork, is caused, by means of a coiled spring, to press the band of paper down upon the feeding-roller *g*, and thereby cause it to travel through the machine. The compound style or instrument whereby the dots and dashes are made is composed of two levers, *j* and *j*¹, Fig. 4, mounted on a center-pin, *k k*, common to both. The lever *j* at its extremity is provided with a socket which carries a pin, *j*², whereby the dot of the signal is made. This lever *j* is inclosed between the two sides or arms *j*¹ *j*¹ which form the other lever, which, at its end, is also provided with a socket, in which the broad points *j*³ *j*³, to form the dash, are fixed. This construction will be more clearly understood by referring to the detached view, Fig. 5, which represents a front view on an enlarged scale of the ends of the levers *j*¹ *j*¹ with their styles *j*² and *j*³ fixed therein. The levers *j* and *j*¹ are provided with armatures *j*⁴ and *j*⁵, which are acted on by the electro-magnets *d* and *d*¹, the armature *j*⁵ being carried by the lever *j* and the armature *j*⁴ by the lever *j*¹. It will now be understood that on a current of electricity being sent through the magnet *d*¹, it will act on the armature *j*⁵ and draw down the lever *j*, and thus make a dot on the band of paper which is traveling through the machine. When, however, the electric current is passed through the magnet *d*, it will act on the other armature *j*⁴ and draw down the lever *j*¹, and as this lever lies across the armature *j*⁵ of the other lever, the latter will be drawn down with *j*¹, and thereby form the vertical dash. In order to render the marks (that is, the dots and dashes) visible and legible, the band of paper passes over an inking-disk roller, *l*, mounted in the inking-box *f*, and made to rotate at a suitable speed by means of the bevel-gear *l*¹, actuated by the clock-work. It is found preferable in practice to arrange the plane of the inking-disk *l* at right angles to the paper, and also to so connect it with its spindle that it may be momentarily stopped when the styles are brought down

onto the paper. This is effected by mounting the disk loosely on its spindle and connecting it thereto by means of a coiled spring, which will be wound up slightly by the continued rotation of the spindle, while the disk *l* is arrested. It is also found desirable, momentarily, to check the progress of the band of paper when the styles are brought down onto it to print the signal. This is effected by means of the clamp *e*, before referred to, and the construction of which will be better understood by reference to the detached sectional elevation, Fig. 6. The lever *j* of the compound style carries on its under side a small stamper, *m*, beneath which the paper passes. Under this stamper is a block or pad, *n*, of India rubber, fixed on a spring-lever, *n'*, secured in a groove formed on the under side of the plate *c*. The spring-lever *n'* is capable of adjustment by means of the thumb-screw at its outer end. The band of paper passes between the stamper *m* of the lever *j* and the pad *n*, so that when the lever *j* is brought down to print a signal the paper will be nipped or clamped between them and its progress will be momentarily arrested. It will be obvious that in order to print the desired signal on the paper it will be necessary to send the electric current through one or other of the magnets *d* or *d'*, according as a dot or dash may be required. The mode of effecting this object will be understood by referring to the diagram, Fig. 7, which represents the apparatus required at the sending and receiving-stations, together with the necessary wires for connecting them. A is the double-key instrument at the sending station, and B, the recording-instrument at the receiving station. The keys *o* and *p* of the instrument A at the sending-station serve to transmit a positive or negative current from the batteries *q* and *r*, along the line-wire *s*. Either of these currents (whichever may be sent) will enter the double-acting relay *t* at the receiving-station, and will cause it to close the circuit of the local battery *u* with one of the electro-magnets *d* or *d'*, as the case may be, and thus, by acting on one or other of the levers *j* or *j'*, Figs. 2 and 3, to print either a dot or a dash, as may be required. Thus the pressing down of the key *o* of the instrument A will close the circuit of the battery *q*, and will transmit a positive current along the line-wire *s*, and this current, on passing round the coils of the magnets of the relay *t*, will cause the movable armature *v* to swing over and complete the circuit of the local battery with the magnet *d'*, and thus, by acting on the lever *j*, will print a dot on the band of paper. On pressing down the key *p* a negative current will, in like manner, be

transmitted along the wire *s*, and will cause the armature *v* of the relay *t* to close the circuit of the local battery with the electro-magnet *d*, and, by thus acting on the lever *j'*, will print a dash instead of a dot, so that, by depressing the keys *o* or *p*, dots or dashes in any desired combination may be produced at pleasure. A plan view of the relay *t* is seen at Fig. 4, and a side elevation of the relay detached is shown at Fig. 8. Fig. 9 is a vertical cross-section, showing the movable armature *v* between the points of the light springs which serve to keep it in equilibrium when there is no current of electricity passing through the coils of the relay. Instead of the local battery *u*, a magneto-electrical machine may be used, the currents from which may be transmitted by the double relay *t* through the coils of the magnets *d* and *d'*. This arrangement is shown at *w*, and may be actuated by the clock-work *h*, as shown in the drawing.

Although I have shown my apparatus constructed and arranged to print signals with ink, it will be evident that a very similar arrangement of machinery may be used to emboss the signals on the paper. I therefore reserve to myself the right of embossing the signals by means of a compound style such as that above described, instead of printing them in ink, as above described.

Having now described my invention of improvements in telegraphic-printing apparatus, and having explained the manner of carrying the same into effect, I claim as my invention—

1. The combination of levers *j* *j'* and styles *j''* *j'''*, armatures *j''* *j'''*, and magnets *d* *d'*, substantially as specified.
2. The combination of clamp *e*, composed of stamp *m*, pad *n*, and spring-lever *n'*, with the lever of a telegraphic-printing apparatus, substantially as shown and described, for the purpose specified.
3. The combination of clamp *e*, levers *j* *j'*, styles *j''* *j'''*, and the disk *l*, connected with its shaft by a spring to allow of intermittent rotary motion, substantially as specified.
4. The combination of the keys *o* and *p* of the sending instrument with the armature *v* of the relay instrument, and levers *j* *j'*, and the connected magnets, as specified.

In witness whereof I, the said RICHARD HERRING, have hereunto set my hand and seal the 10th day of May, A. D. 1871.

RICHARD HERRING. [L. S.]

Witnesses:

H. K. WHITE,
JOHN HANCOCK.

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