G. HILLEN & J. CROCKETT.

Electro-Magnetic Printing-Apparatus.

No. 202,650. **Patented April 23, 1878.**

Fig: 1

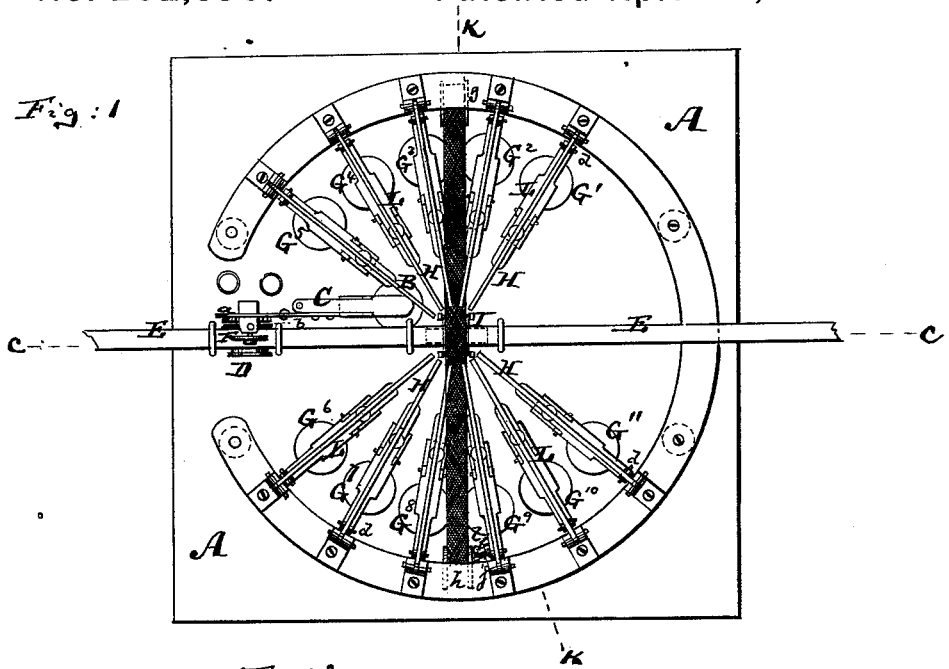


Fig: 2

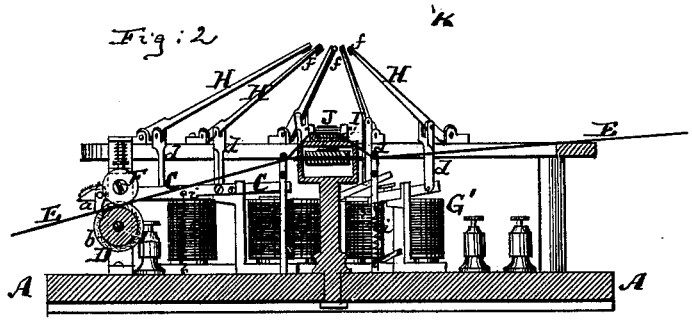


Fig: 3

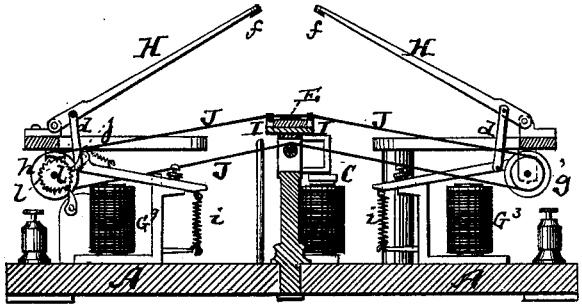


Fig: 4

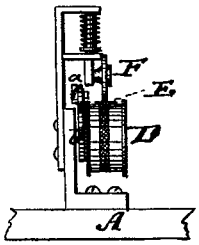
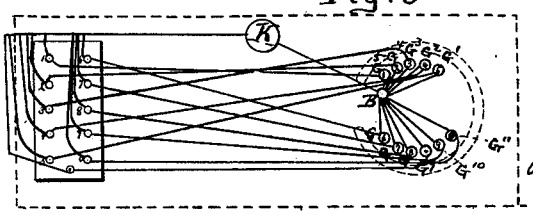


Fig: 5



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UNITED STATES PATENT OFFICE.

GEORGE HILLEN AND JOHN CROCKETT, OF NEW YORK, N. Y.

IMPROVEMENT IN ELECTRO-MAGNETIC PRINTING APPARATUS.

Specification forming part of Letters Patent No. **202,650**, dated April 23, 1878; application filed February 26, 1878.

To all whom it may concern:

Be it known that we, GEORGE HILLEN and JOHN CROCKETT, both of the city, county, and State of New York, have invented a new and Improved Electro-Magnetic Printing Apparatus, of which the following is a specification:

Figure 1 is a plan or top view of our improved electro-magnetic printing apparatus. Fig. 2 is a vertical longitudinal section of the same, taken on the plane of the line *c c*, Fig. 1. Fig. 3 is a vertical transverse section of the same, taken on the plane of the line *k k*, Fig. 1. Fig. 4 is a detail edge view of the paper-feed mechanism; and Fig. 5, a diagram showing the arrangement of the conductors.

Similar letters of reference indicate corresponding parts in all the figures.

The object of this invention is to produce a simple apparatus for printing messages by means of electricity, the apparatus being more particularly intended for use in large sales-rooms to announce money received by the subordinates, who are expected to telegraph from their proper desks or counters to a central bureau or office the amounts received by them as soon as such amounts are handed in.

The invention consists principally in a new arrangement of mechanism for feeding the inking-strip, and also in the new relative arrangement of the paper and inking-strip.

In the accompanying drawing, the letter A represents the bed-plate or platform of the apparatus. B is an electro-magnet, placed upon this platform; and C its armature, which, by a suitable pawl, *a*, and ratchet-wheel *b*, serves to impart intermittent rotary motion to a drum, D, over which the strip of paper E to be printed upon is placed. A spring-roller, F, presses the paper E against the periphery of the roller or drum D.

The operation of the armature C is such that whenever the electro-magnet B is charged or placed in circuit, and the armature attached, it will not affect the feed of the wheel; but as soon as the armature is released by the interruption of the current it will cause the pawl to move the feed-drum D, and with it the paper, a sufficient distance to make room for a new impression or imprint.

Upon the platform A are also placed a series of electro-magnets, G^1 G^2 G^3 G^4 G^5 G^6 G^7 G^8 G^9 G^{10} G^{11}, &c. The armature L of each of these electro-magnets connects, by a link, *d*, with a separate lever, H, which is a printing-lever, and which, in its normal position, is, by a spring, *i*, held elevated, as indicated in Figs. 2 and 3; but whenever the armature L, connecting with such lever H, is attracted to its electro-magnet, the lever connected is swung down to carry its free end toward the strip of paper E. The free end of every such lever H carries a type-block, *f*, which, when the lever is swung down, as stated, is brought into position for making an imprint on the paper E. The paper, at the place where it is to be printed by these levers H, passes over a block or cushion, I, which is secured in the frame or platform A, being supported by a suitable standard or column. Over the same cushion passes, above the strip of paper E, and at right angles thereto, the inking-strip J, which is an endless band of inked fabric, passing over rollers *g* and *h*, as indicated in Fig. 3.

The levers H are so placed, and of such lengths, that when depressed or swung down they will press the inking-strip J upon the paper E directly above the cushion I. When a message is to be sent it is only necessary to strike the key, which throws one of the armatures L into circuit, and thereby causes the corresponding lever H to imprint its type onto the strip of the paper E; but it is also necessary that, immediately after the act of printing, the strip E be properly fed. To this end we place the electro-magnet B into circuit with all the several electro-magnets G^1 G^2 G^3, &c., and also with the battery K, as clearly indicated in Fig. 5, so that whenever one of the keys of the key-board is depressed to connect the battery-wire with the conductor leading to such key, the corresponding electro-magnet—say, G^3—will be thrown into circuit, but also the electro-magnet B, as the same is placed in the same circuit, which clearly appears from Fig. 5. The same remarks apply to each of the electro-magnets G^1 G^2, &c., the effect being simply that, by depressing a key, the corresponding type is caused to print, and the paper immediately afterward is fed to bring a clean surface under the next type.

The important difference in the effect of the

electro-magnets B and G^1 is this: That each of the electro-magnets G^1, &c., by attracting its armature, moves the corresponding lever H and causes the same to print; but that the armature C, when attracted to the electro-magnet B, does not feed the paper, for it is so constructed and combined with the drum D that it feeds the paper only when released from the electro-magnet B, thus giving the requisite time for the paper to receive its imprint before it is fed. And here we beg to remark, that although we have shown, as one means of feeding the paper E, the rotary drum D, yet other means for performing the same service may be used instead; that one of the armatures, L, which pertains to the electro-magnet G^9, and which connects with the lever H, that prints the period (.), has also a pawl, *j*, which engages a ratchet-wheel, *l*, that is rigidly attached to the drum *h*, over which the inking-strip J is laid, as indicated in Fig. 3.

Whenever a sentence or a message is completed, whether the same be in figures or in words, the application of the final period through the attraction of the armature to the magnet G^9 will always cause the displacement of the inking-strip, so that a fresh inking-surface may be in position over the paper for every new message or report. By having the strips E and J at right angles, the paper E is kept clean, and the strip J used economically.

We claim—

1. The combination of the electro-magnet G^9 and its armature L and printing-lever H, which marks the period, with the pawl *j*, ratchet-wheel *l*, and with the drum *h* and inking-strip J, all arranged so that the inking-strip is moved whenever the period is printed, substantially as and for the purpose specified.

2. The combination of the printing-levers H H and paper E with the inking-strip J and cushion I, and with independent and separate feeding devices for the paper E and strip J, the strip J being placed at right angles to the paper, substantially as specified.

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