

GEORGE LITTLE.

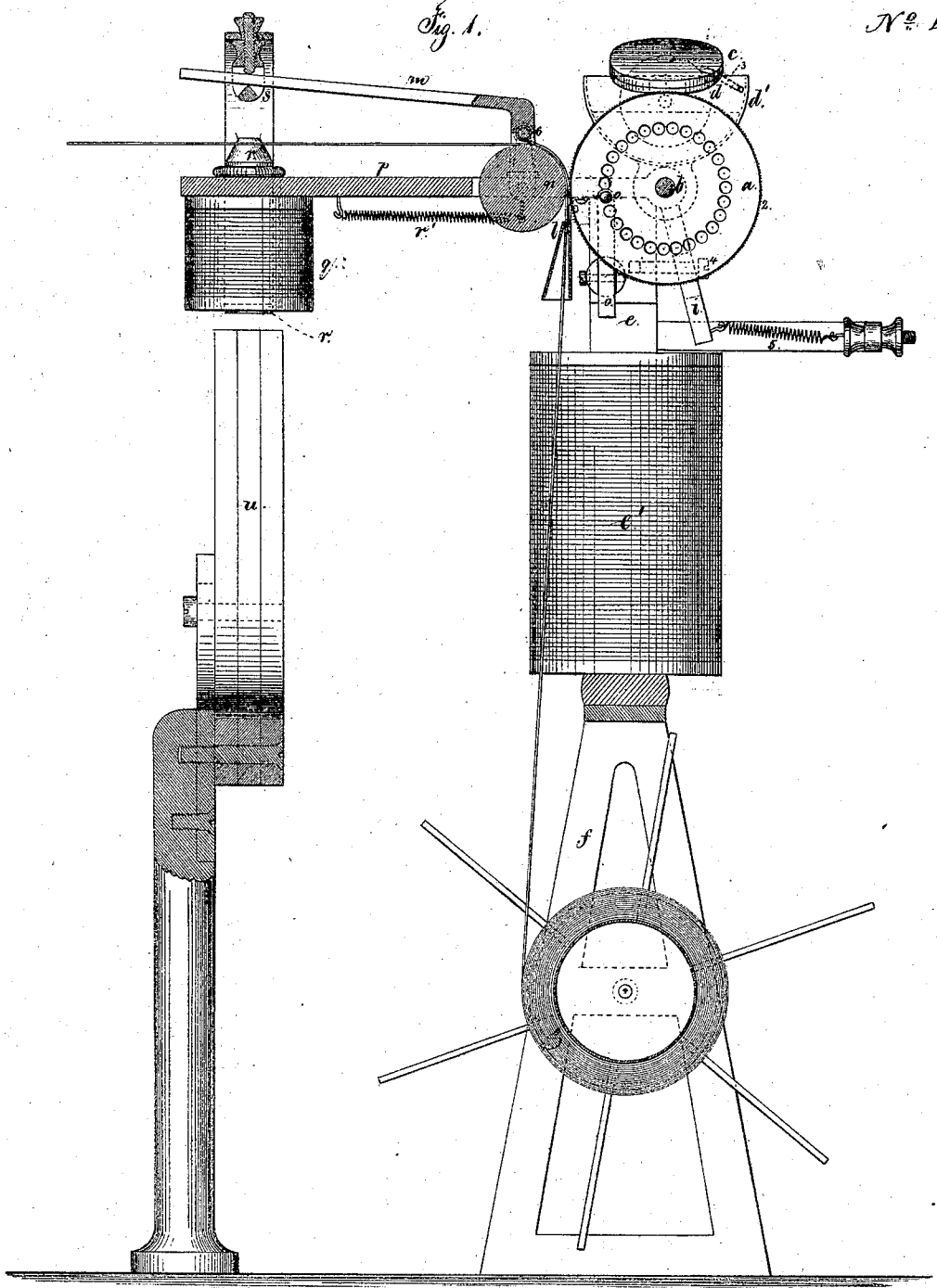
Improvement in Printing Telegraphs.

No. 125,584.

Patented April 9, 1872.

Fig. 1.

N^o 4.



Witnesses.

Chas H Smith
Harold Spruell

George Little,

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Fig. 3.

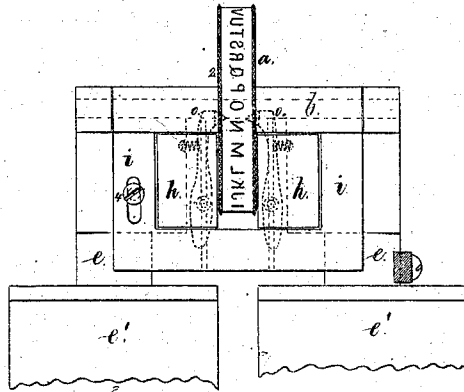


Fig. 4.

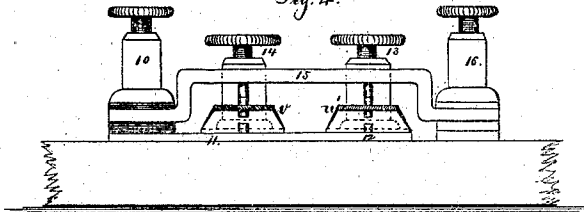
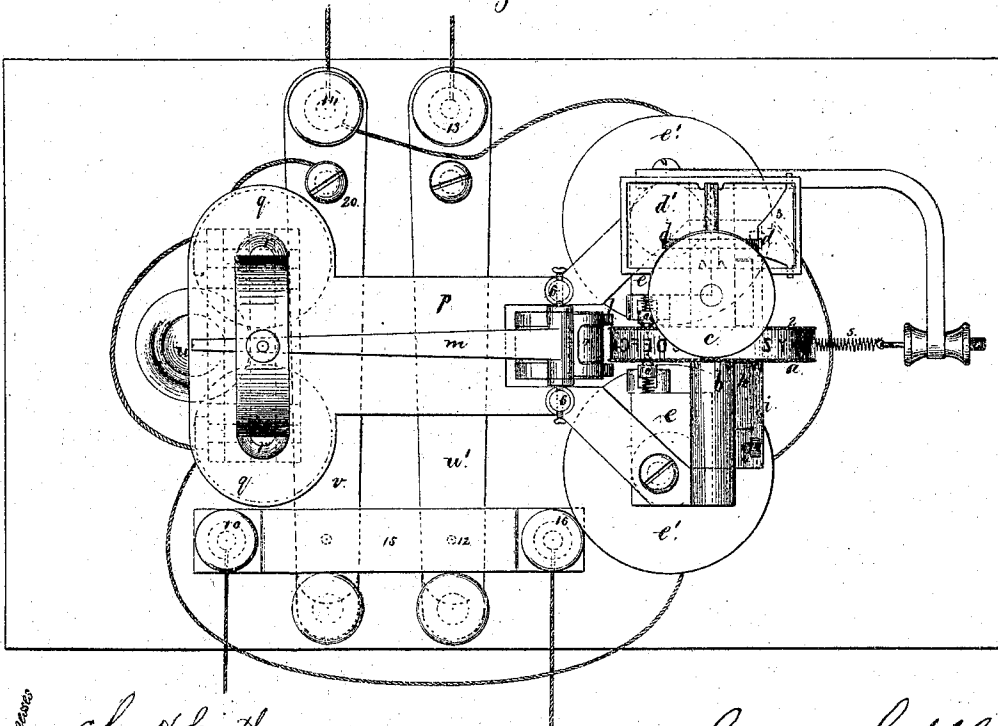


Fig. 5.



Witnesses

Charles Smith
Harold Ferrell

George Little.

UNITED STATES PATENT OFFICE.

GEORGE LITTLE, OF RUTHERFORD PARK, NEW JERSEY.

IMPROVEMENT IN PRINTING-TELEGRAPHS.

Specification forming part of Letters Patent No. 125,584, dated April 9, 1872.

To all whom it may concern:

Be it known that I, GEORGE LITTLE, of Rutherford Park, in the county of Bergen and State of New Jersey, have invented and made a new and useful Improvement in Printing-Telegraphs; and I do hereby declare the following to be a correct description of the same.

I make use of a type-wheel that is clamped and moved by the action of armature wings and an electro-magnet. The edge of the type-wheel is serrated, to move the paper. The press-roller is kept from contact with the type-wheel by a spring, and the electrical current weakens the poles of a small permanent magnet; and when the type-wheel has been moved around progressively to the proper position, the current is reversed, so that the polarity of the small permanent magnet is increased, and the two permanent magnets attract each other and press the paper against the type-wheel simultaneously with the movement of the type-wheel that prints the letter, by a rolling action, and at the same time feeds the paper along.

In the drawing, Figure 1 is a vertical section of the said telegraphic apparatus. Fig. 2 is a plan of the same. Fig. 3 is a front elevation of the type-wheel; and Fig. 4 is an elevation of the finger-keys, the knobs being removed to show the contact-points.

The type-wheel *a* is mounted upon an arbor, *b*, and contains around its periphery the letters or characters raised. It is also provided with serrated edges 2, as seen in Figs. 1, 2, and 3. The inking apparatus for the types is an inclined disk, *c*, with felt upon its under surface, rolling in contact with the types, and also in contact with a disk or roller, *d*, in an ink-trough, *d'*, in which is a scraper, 3, to keep surplus ink from the edge of said roller *d*. The type-wheel axis *b* is sustained upon the poles *e e* of the electro-magnet *e'* that is supported by a frame, *f*, of suitable character. I have shown said frame as in two parts, with the reel *g*, for the strip of paper between the frames. The type-wheel is moved by the wing-clamps *h*, set in a frame, *i*, that swings upon the arbor *b*. The frame *i* has a motion limited by the screw 4, and it is drawn back by the spring 5. Each wing is set to swing upon pivots at the top and bottom; hence, when the poles *e* are magnetized they attract the outer

edges of the wings *h*, so that the inner edges of those wings clamp the type-wheel *a* by the swinging movement aided by the induced magnetism, the wings and wheel *a* becoming an armature to the magnet *e*. This action is similar to that in Letters Patent No. 96,330, granted to me, wherein the paper is moved for a punching apparatus by a wheel, clamps, and magnet. It is now to be understood that, when the pulsation of electricity passes through the magnet *e'*, the type-wheel is moved one space, and by repeating the pulsations the type-wheel is brought around to any desired point. In order to hold the type-wheel each progressive movement, I make use of a pair of conical-ended pawls, *o*, kept toward each other by light springs. These pawls are shown in Fig. 3 by dotted lines. In the body of the type-wheel, equidistant holes are bored, into the ends of which the said pawls *o* enter and bring the type-wheel to a correct position each progressive movement. The strip of paper passes up between a guide, *l*, and the impression roller *n*. This roller *n* is hung in jaws in the lever *m* that is mounted upon the fulcrum 6 above the frame *p*. This frame *p* is sustained from the poles *e* of the magnet *e'*, and said frame supports the magnet-coils *q*. These coils, instead of being wound tightly around the soft-iron poles of the magnet, are formed tubular, so that the magnet *r* can slide freely through them. The lever *m* passes into a loop, *s*, upon the magnet *r*, so that when the magnet *r* is attracted by the permanent magnet *u*, the printing will be effected by striking the paper upon the type by the roller *n*. The face of the magnet *r* is provided with brass or non-magnetic material, to prevent injury to the magnetism, or the adhesion of the parts. During the movement of setting the type-wheel, the direction of the current through *q* is such that the force of the magnet *r* is lessened, and the spring *r'* draws the roller *n* and paper away from the type-wheel *a*; but when the current is reversed the magnets *r* and *u* attract each other powerfully and effect the printing, and the paper is fed along simultaneously by the turning of the type-wheel, with its serrated edges or projecting points acting upon said paper. The key *v* is employed to set the type-wheel by pulsations from the battery through the binding-screw 10, plate 11, key *v*, screw

20, magnets *q* and *e'*, insulated binding-screw 14, and line-wire running to the screw 13 of the distant instrument; thence through the key *u'*, bridge 15 *v* 20, and magnets *q* and *e'*, in the same direction as at the transmitting-station, to the screw 14 and ground, returning by 13, key *u'*, plate 15, and binder 16, to the battery at the transmitting-station.

When the key *u'* is depressed the direction of the current is reversed, and the pulsation passes from 10, through 11, 12, *u'*, 13, and the ground, to the binder 14 at distant station; thence, through *e' q*, 20, *v*, 15, *u'*, 13, and line-wire, to the receiving-station binder 14 *e' q* 20 *v* 15 and binder 16, to the negative-pole of the battery, thus reversing the current and causing the magnets *q* and *r* to attract each other and press the roller *n* and strip of paper against the type-wheel *a*, which type-wheel, being simultaneously moved by the same pulsation, feeds the paper along by its serrated edge or projections, and imprints the type that is in position. If the blank space of the type-wheel *a* is at the roller *n* the paper will be fed without an impression.

If desired, the type-wheel *a* may be removed from the electro-magnet and a disk substituted, the said disk being connected to the type-wheel by a shaft or gearing.

I claim as my invention—

1. The combination of clamping-wings, an electro-magnet, and a type wheel, substantially as set forth.

2. The inking-disk *c* applied above the type-wheel and between that and a disk or roller in the ink-trough, as set forth.

3. An electro-magnet for moving the type-wheel, in combination with a permanent magnet and electro-magnet for effecting the printing by reversing the electrical current, as and for the purposes specified.

4. The lever *m*, roller *n*, and paper-guide *l*, in combination with the type-wheel *a* and electro-magnet *e'*, substantially as and for the purposes set forth.

5. The arrangement of the keys *u' v* and circuit-breakers connected to the respective magnets *q* and *e'*, in the manner and for the purposes set forth.

6. The means for moving the paper along simultaneously with the printing operation, by combining with the type-wheel the serrated edges or projecting points, substantially as set forth.

Dated November 22, 1869.

GEORGE LITTLE.

Witnesses:

CHAS. H. SMITH,
GEO. T. PINCKNEY.