(No Model.)

S. M. ENGLISH.

TELEGRAPHY.

No. 429,377. Patented June 3, 1890.

Fig. 1.

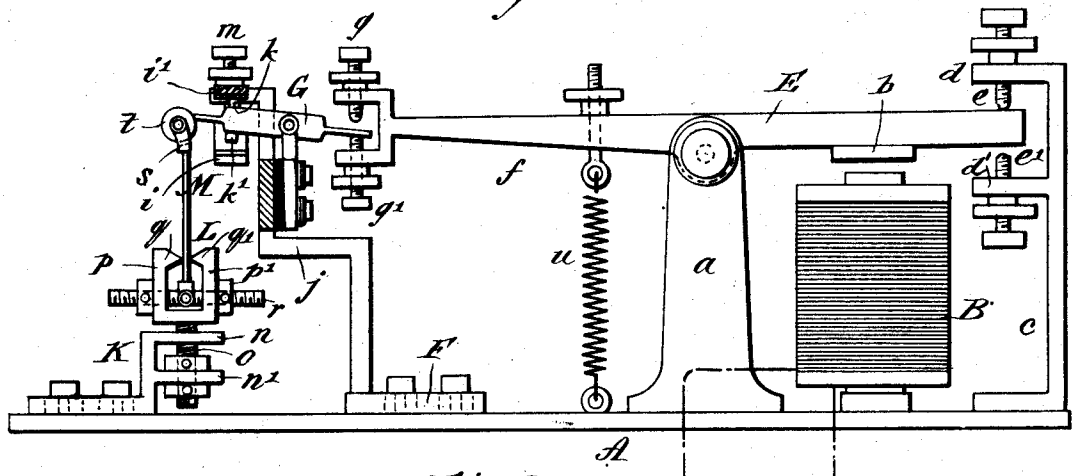
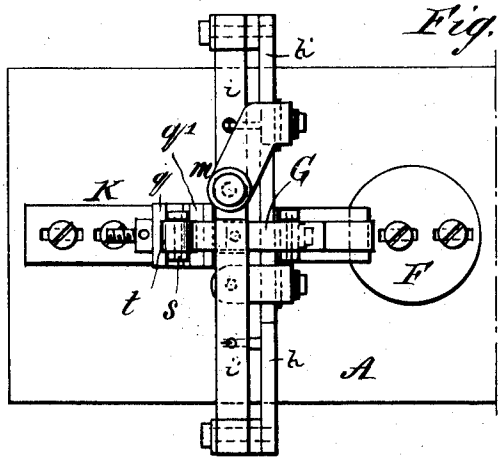
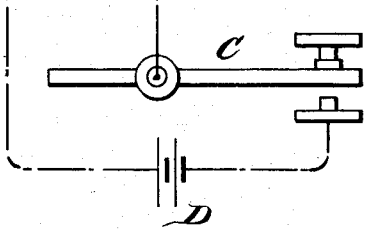


Fig. 2.





J

Fig. 3.

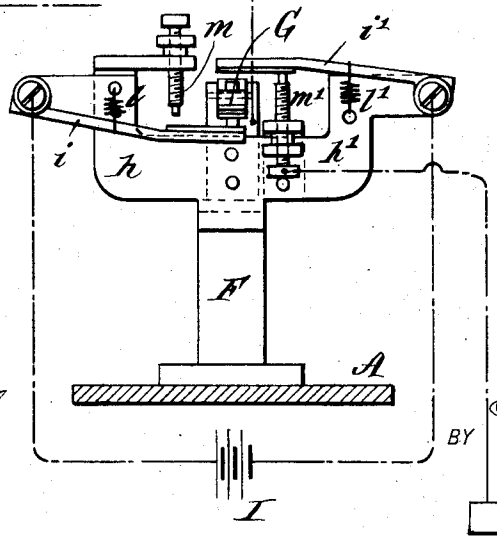


Fig. 4.

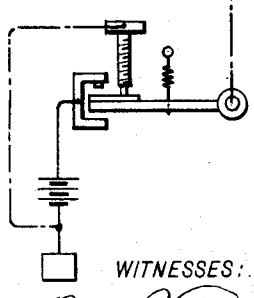
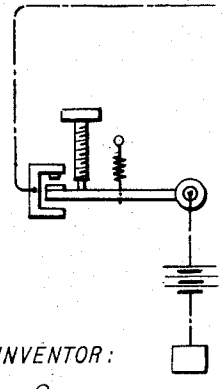


Fig. 5.



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SHIRLEY MIDDLETON ENGLISH, OF NEW ORLEANS, LOUISIANA, ASSIGNOR OF ONE-HALF TO ALEXANDER F. WARK, OF SAME PLACE.

TELEGRAPHY.

SPECIFICATION forming part of Letters Patent No. 429,377, dated June 3, 1890.

Application filed February 4, 1890. Serial No. 339,168. (No model.)

To all whom it may concern:

Be it known that I, SHIRLEY MIDDLETON ENGLISH, of New Orleans, in the parish of Orleans and State of Louisiana, have invented certain new and useful Improvements in Telegraphy, of which the following is a specification, reference being had to the annexed drawings, forming a part thereof, in which—

Figure 1 is a side elevation, partly in section, of a transmitter constructed according to my improvement. Fig. 2 is a partial plan view of the same. Fig. 3 is an end elevation of the same. Fig. 4 is a detail view of a modified form of pole-changer, and Fig. 5 is a detail view of a modification for adapting the instrument to single lines.

It is well known among telegraphers that considerable trouble is experienced with what is known as "light sending" if the average operator attempts to send very fast either on single or multiple circuits. While he makes sufficient contact at the points of the key to cause his own instrument to respond, the contact is not prolonged so as to allow the full strength of the battery-current to flow to the line, and there are others who are naturally light senders and are unable to overcome this fault.

The object of my invention is to overcome the effects of light sending, and to insure a good connection at the contact-points of the instrument.

My invention consists in the construction and combination of parts hereinafter described and claimed.

To the base-plate A is secured an electromagnet B, which is in the circuit with the transmitting-key C and the local battery D. To the base A are attached standards *a*, between which is pivoted the armature-lever E, carrying the armature *b*, which is located within the field of the magnet B. The standard *c*, attached to the base A, is provided with two arms *d d'*, which project horizontally above and below the end of the armature-lever E, which is prolonged beyond the armature *b*. The arms *d d'* are provided with limit-screws *e e'*, which serve to limit the motion of the armature-lever. The longer arm *f* of the said armature-lever E is forked at its free end and provided with adjusting-screws *g g'*.

To the base A, below the longer arm of the lever E, is secured an offset standard F, which is provided with two arms *h h'*, which project laterally and are offset. One arm supports the pivoted ends of the contact-arms *i i'*. To the standard F is secured the bar *j*, which is insulated from the said standard, and is forked at its upper end to receive the lever G, the said lever being pivoted in the bar *j*. The shorter arm of the lever G extends into the forked end of the armature-lever E in position to be acted upon by the screws *g g'*. The longer arm of the said lever G is provided with contact-points *k k'*. The said lever G extends between the free ends of the arms *i i'*, and the contact-points *k k'* are adapted to form an electrical connection with the said arms. A spring *l* is attached to the arm *i* and to the standard F, and tends to pull the said arm upward against the contact-screw *m*, supported by the standard F. In a similar manner a spring *l'* is attached to the arm *i'* and to the standard, and tends to pull the said arm *i'* downward into contact with the contact-screw *m'*, supported by the standard F. The pivots of the arms *i i'* are connected with opposite poles of the battery I. The contact-screw *m'* is connected with the ground, and the pivot of the lever G is connected with the line J.

To the base-plate A, outside of the standard F, is secured a support K, provided with arms *n n'*, which are apertured to receive the forked and threaded rod *o*. Upon the said rod are arranged nuts above and below the arm *n'*, for adjusting the height of the said forked rod. The fork L of this rod has arms *p p'*, the free ends of which are provided upon their inner surfaces with triangular projections *q q'*, which clamp the spring M. The lower end of the spring M is forked and pivoted to the screw *r*, which passes through holes in the arms *p p'* of the fork L, and is provided with nuts, by which it may be adjusted back and forth. The upper end of the spring M is provided with a fork *s*, in which is journaled a roller *t*, said roller being partly within the path of the outer end

of the lever G. By means of the screw *r* the spring M may be adjusted so as to increase or diminish the resistance of the roller *t* to the action of the lever G.

My improvement may be adapted to a simple form of pole-changer, as indicated in Fig. 4; or it may be arranged to operate a single line by the construction represented in Fig. 5.

The armature-lever E is provided with the usual retractile spring *u*. When the local circuit is opened by the key C, the armature *b* of the magnet B is released and the retractile spring *u* draws down the longer arm of the lever E, bringing the screw *g* into engagement with the lever G, moving the said lever in opposition to the pressure of the spring M as exerted through the roller *t;* but when the longer arm of the lever G passes the center of the roller *t* the spring M, by pressing the roller *t* toward the pivot of the lever G, causes the lever to complete its full stroke, thereby carrying upward its point *k* into full contact with the arm *i'*. When the circuit of the magnet B is closed by bringing the key C down upon its contact-point, the armature *b* is drawn downward in opposition to the spring *u*, the shorter arm of the lever G is moved upward, causing the longer arm to travel downward in opposition to the spring M until the longer arm is below the center of the roller *t*, when the spring M, acting through the roller *t*, causes the lever G to complete its stroke in the opposite direction and brings the contact-point *k'* into contact with the arm *i*. When the lever G engages the arm *i*, the contact between the said arm *i* and the contact-screw *m* is broken, causing a current to flow from the battery I through the arm *i* and lever G to the line, while the other pole of the battery is grounded through the arm *i'* and the contact-screw *m'*. When the lever G engages the arm *i'*, it breaks the contact with the screw *m'*, completes the circuit from the opposite side of the battery to the line J, and allows the arm *i* to again touch the contact-screw *m*, thus grounding the battery through the arm *i*, contact-screw *m*, standard F, and contact-screw *m'*.

It is obvious that with my improvement, whenever the armature-lever E completes a little more than one-half its stroke, the stroke will be finished by means of the roller and spring arrangement already described without regard to the period of contact of the key in the hand of the operator.

It is obvious that I may employ a lever like the lever E as a key, and that in such case the circuit making and breaking apparatus would be operated positively without the intervention of the electro-magnet B and the battery D.

The screw-rods *o* and *r* are squared or otherwise arranged to prevent their turning while nuts are being adjusted.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. In a telegraph system, the combination, with a vertically-swinging lever and a second lever actuated therefrom and in electrical connection with the main line, of two pivoted arms extending at opposite sides of said second lever in the path thereof and connected with opposite poles of a battery, and a spring for causing the said second lever to make firm contact with said two arms, substantially as set forth.

2. In a transmitter for a telegraph system, the combination of the magnet B, the armature-lever E, provided with the retractile spring *u*, and the limit-screws *g g'*, the lever G, the spring M, the roller *t*, carried by the spring M and adapted to be engaged by the lever G, and circuit closing and breaking mechanism adapted to be operated by the lever G, substantially as specified.

3. In a telegraph system, the combination, with the lever E, provided with a forked end and limit-screws *g g'*, of the lever G and the spring-pressed roller *t*, adapted to be engaged by the lever G, substantially as specified.

4. In a telegraph system, the combination, with the roller *t*, of the spring M, the adjustable fork L, and the adjusting-screws *r o*, substantially as specified.

5. In a telegraph system, the combination of the transmitting-key C, the electro-magnet B, the battery D, including in the circuit the key and magnet, the armature-lever E, the limit-screws *e e'*, the retractile spring *u*, the lever G, the spring-pressed roller *t*, and the circuit breaking and closing arm or arms, substantially as specified.

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Witnesses:
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