

(No Model.)

R. A. MACREADY.
ELECTRIC TELEGRAPH KEY.

No. 340,134.

Patented Apr. 20, 1886.

Fig. 1.

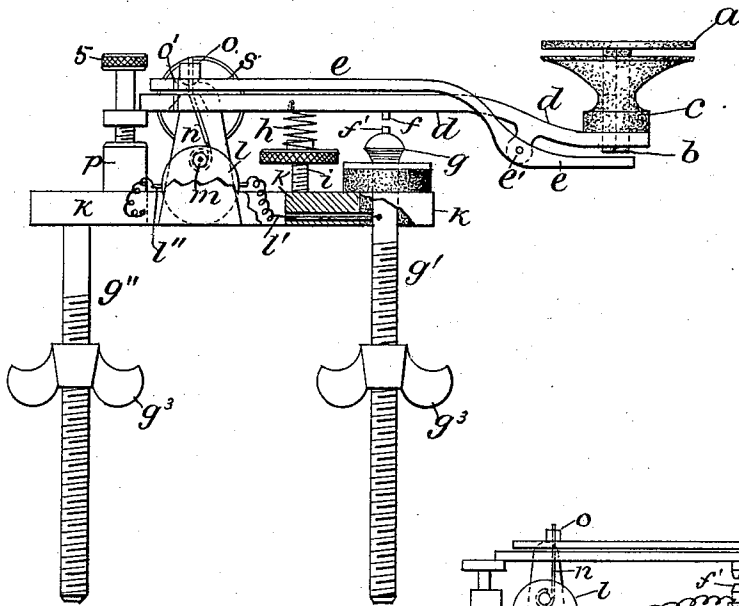


Fig. 2.

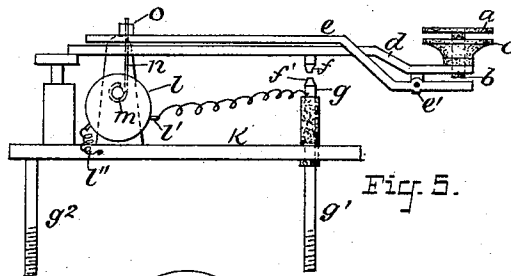
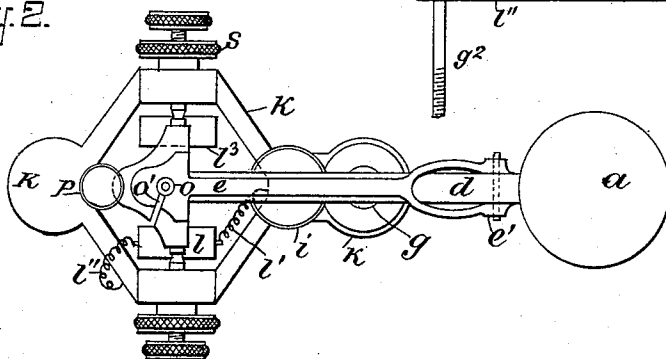


Fig. 3.

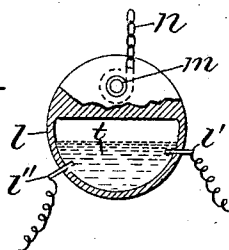
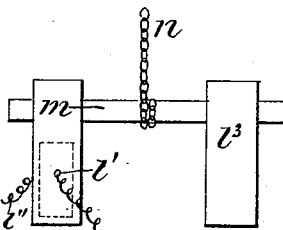


Fig. 4.



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ELECTRIC-TELEGRAPH KEY.

SPECIFICATION forming part of Letters Patent No. 340,134, dated April 20, 1886.

Application filed June 1, 1885. Serial No. 167,332. (No model.)

To all whom it may concern:

Be it known that I, ROBERT ASHTON MACREADY, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented a new and useful Electric-Telegraph Key, of which the following is a specification.

My invention relates to improvements in electric-telegraph keys, in which the opening and closing of same is done automatically, and the objects of my improvements are, first, to provide a key that will open and close automatically, and at the same time offer the least resistance possible to the electric current and make a perfect connection; second, to regulate the play of the key and adjustment of the spring and general design of the key. I attain these objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a part section and elevation by which is shown the principal features of my invention. Fig. 2 is a plan view of Fig. 1; Figs. 3 and 4, detached detailed views of the mercury-disk. Fig. 5 is a diagram in which the circuit through the mercury-disk is clearly illustrated.

Similar letters refer to similar parts throughout the several views.

Fig. 1 shows the principal features of the invention. *a* is the upper part of the rubber knob *c*, through which it is moved up or down, supported by its square shank *b*, which fits in a square hole in the knob *c*. The knob *c* is secured to the tongue *d*, which is held in position by and plays in screws on either side of the base *k*. The tongue *d* is regulated by the screw *5*, which screws up or down at the end of the base through the nut *p*, which is a solid part of the base. The screw has a rim on it, as shown in the figure, and the end of the tongue *d* rests on this. When the screw is twisted into nut *p*, it allows the spring *h* to press up the other end of the tongue *d*, and the two platinum points *f f'* are pressed further apart, giving the tongue *d* more play. When the screw is twisted farther out of the nut *p*, it brings the two points *f f'* closer together, giving less play. The points *f f'* represent the poles of the circuit, the point *f'* being part of the pin *g'*, which pin is insulated from the rest of the key by the circular wooden

disk through which it runs, as shown in Fig. 1. The pin *g'*, and pin *g''*, which is fixed stationary in the base, are used to fasten the key to the table by means of the finger-nuts *g³ g³*. The two pins *g'* and *g''* represent, respectively, the two poles of the circuit. The spring *h* rests its base on the circular nut, which moves up and down on a thread on the small pin *i*, which is made stationary in the base *k*. The point of the spring rests in the tongue *d*, in a small indenture, as shown in drawings, Fig. 1. By running the nut up toward the tongue *d* the spring is made to press more on the tongue, and vice versa. *o* is the nut which holds the end of the chain *n* to the lever *e*; *o'*, the slot through which the chain is detached from the tongue *d*. (Further explained in Fig. 2.) This lever *e* plays freely on a small pin, *e'*, as an axle, which holds it firmly to the tongue *d*. The chain *n* runs through a hole in the lever *e* and tongue *d*, and winding once around the axle *m* is fastened to it. On this axle is swung the tilting chamber *l*, containing a suitable quantity of mercury, the axle *m* running through the tilting chamber *l* above the center, so that by its own weight it always swings back to position shown in drawings. When the fingers or finger is placed on the knob *a*, the pressure brings it down until it is in contact with *c*, when the shank *b*, striking the lever *e*, presses it down, turning up the other end, which draws on the chain and turns the tilting chamber *l*, so that the end of the spirally-wound conductor *l'*, which ends in the tilting chamber of mercury with a platinum point, the other end connecting with the pin *g'* and insulated from the base *k*, is lifted clear of the mercury and the circuit through the tilting chamber of mercury is broken. The spirally-wound conductor *l''* is connected with the base *k*, tilting chamber *l*, and represents the opposite pole. Further pressure on the knob *a* brings the tongue *d* down until the points *f f'* are in contact, when the circuit is again completed, as in telegraphing. On the pressure of the fingers being removed from the knob *a* the lever *e* and tilting chamber of mercury *l* are so balanced that they drop back to first position, as in the drawings, and the circuit through the tilting chamber *l* is complete. (Further explained in Fig. 5.)

Fig. 2 is a plan view of Fig. 1. *a* is the top

of the knob on which the fingers are placed for telegraphing; *d*, the tongue to which the knob is attached; *e*, the lever to which the chain *n*, connecting with the tilting chamber of mercury *l*, is attached, and which is detachable from the lever *e* by pressing out through the slot *o'*.

Fig. 3 is a detached view of the tilting chamber *l*. It is a small hollow chamber of insulated material, partially filled with mercury, *t*, into which are let two platinum points connecting with the spirally-wound conductors *l' l''*, representing, respectively, the two poles of the circuit when the said tilting chamber *l* is in position shown in the drawings, Fig. 3, which position it always takes when no pressure is on the knob *a*, being so balanced. The two points of the spirally-wound conductors *l' l''* are always covered by the mercury, and the circuit is completed through the said tilting chamber *l*.

Fig. 4 is a detached view of the tilting chamber *l* and the disk *l'*, which is of a similar size, made of solid brass, and fastened above its center to the axle *m*, for the purpose of giving aid by its weight in bringing the tilting chamber *l* back to its first position, the chain wound once around the axle *m*, and which chain connects with lever *e*.

Fig. 5 is a diagram view showing plainly the circuit through the mercury of the tilting chamber *l*, as shown in the drawings. Both points of the spirally-wound conductors *l' l''* are submerged in the mercury, and the circuit through the key from the pin *g''* through the base and wall of the tilting chamber and by the spirally-wound conductors *l' l''* to the pin *g'* is complete when the pressure of the fingers

is on the knob *a*. The lever *e* is pushed up, and the chain *n* turning the axle *m* the tilting chamber *l* is turned, and the point of the spirally-wound conductor *l'* is lifted clear of the mercury and the circuit is broken, when the key is ready for telegraphing, the circuit passing through the points *f' f* when they are brought together.

I am aware that telegraphic keys have heretofore been made with a tongue pivoted to uprights secured to the base of the instrument, and the electrical circuit through the same opened and closed by operating the tongue; but when the operator is through with the instrument it becomes necessary to switch the instrument out and close the main line. My invention does away with this second operation, for when the operator is through the device does the switching off automatically.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a telegraphic key, the combination of a tilting chamber containing mercury and electrical conductors connected with the mercury, with levers forming the operating-key.

2. In a telegraphic key, the combination, substantially as shown and described, consisting of the knob *a*, squared shank *b*, hollow knob *c*, tongue *d*, screw *5*, base *k*, nut *p*, spring *h*, platinum points *f f'*, pins *g' g''*, finger-nuts *g³ g³*, pin *i*, nut *o*, slot *o'*, chain *n*, lever *e*, pin *e'*, tilting chamber *l*, disk *l'*, axle *m*, mercury *t*, and spirally-wound conductors *l' l''*, the whole forming a complete device.

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Witnesses:

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