

UNITED STATES PATENT OFFICE.

GEO. H. HORN, OF BOSTON, MASSACHUSETTS.

IMPROVEMENT IN ELECTRIC TELEGRAPHS.

Specification forming part of Letters Patent No. 7,455, dated June 25, 1850.

To all whom it may concern:

Be it known that I, GEORGE H. HORN, of Boston, in the county of Suffolk and State of Massachusetts, have invented a new or Improved Telegraph, which operates by means of a current of electricity, and which, for the sake of distinguishing it from various other telegraphs in use, I denominate the "Electro-Caustic Telegraph;" and I do hereby declare that the same is fully described and represented in the following specification and accompanying drawings, letters, figures, and references thereof.

Of the said drawings, Figure 1 denotes a top view of my new or improved telegraph apparatus, which is to be used in connection with suitable conductors and galvanic battery or contrivance for producing the necessary electric current. Fig. 2 is a side elevation of the same; Fig. 3, a central, vertical, and longitudinal section of it. Fig. 4 is a front-end view.

For many years it has been known that when a current of electricity is caused to pass through a metallic wire greater than it can readily transmit, such wire becomes more or less heated, and if a very small or attenuated wire of platina or other poor conductor be employed it may be heated to a scorching or burning heat. It is on the application of this well-known property, principle, or electrical phenomenon to the purposes of making signals or marks on or holes through paper, or some other proper material, that my invention depends; or, in other words, it may be said to be what constitutes the base of it.

One mode of carrying my invention into practice I have represented in the drawings above referred to.

In Fig. 3 of the said drawings, *a* denotes a fine or attenuated platinum or metallic wire, stretched over a thin bridge, *b*, made of glass or other proper non-conductor of electricity, the said bridge being upheld by a supporting column or post, *c*, which is raised upon a suitable base or board, *e*. The middle part of the wire *a* is placed on the bridge, the two halves of the wire being bent at a suitable angle to each other and held between and by two metallic forceps or nippers, *A B*, arranged on opposite sides of the post *c*, and respectively supported by posts or standards *O D*, which extend upward from the base-board and are re-

spectively connected to the two telegraphic wires *E F*, which proceed from the battery or generator of electricity, the connection being made in such manner that the electric current or fluid in its passage from one pole of the battery to the other may be transmitted through the wire *a* and cause the same to be heated. A transverse section of the wire *a*, its bridge *b*, and the apparatus, is represented by Fig. 5.

A long strip of paper, *f*, or other suitable combustible material, is caused to rest on and to pass over the top surface of the middle part of the platinum wire *a*. In order to properly sustain such strip *f*, I also cause it to rest upon a horizontal supporting-plate, *g*, through which the wire *a* and its bridge are made to extend, the said plate *g* being made of glass, horn, or some other proper material known to be a non-conductor of electricity. This plate *g* may be supported by an arm, *h*, extended horizontally from the top of a sustaining-post, *i*.

In order to keep the strip *f* down upon the top surface of the plate *g* and in contact with the wire *a*, I make use of a forked-spring or plate, *k*, the same being made with an opening or passage, *l*, cut through one end of it so that it may straddle the wire *a* and rest on the paper on each side of it. The other end of the spring *k* is fastened to a frame or standard, *m*, raised on the arm *h*, the said frame having a thumb-screw, *n*, applied to it in such manner as to be capable of being screwed down upon the spring, and so as to increase or diminish its pressure on the strip *f* or permit it to rise above the same, as occasion may require.

The strip of paper may first be wound upon a reel, *o*, from which it may be led or carried to and over the wire *a*, and thence to and between a set of drawing-rollers, *q r*, which, by means of suitable mechanism or clock-work apparatus, may be made to rotate with a regular velocity, such as may be sufficient to draw the strip of paper endwise, and with a regular or proper velocity, from off the reel *o* and over the wire *a*.

I do not confine my invention to any particular kind of mechanism for producing the motion of the strip *f*, but intend to make use of such as is generally employed in telegraphic machinery, or such as may be conveniently used. In fact such apparatus should not be considered as an essential part of my in-

vention, as the motion of the strip *f* may be produced by the hand of a person applied to it and so acting upon it as to draw or pull it lengthwise.

During the flow of an electric current through the wire *a*, and while the paper is resting on and passing in contact with the said wire, the heat produced in the wire will either burn through or into the paper, and if the current is stopped or interrupted the wire will instantly or immediately become cool or cease to burn the strip *f*, nor will it again burn until the electric current is again caused to pass through it. It is, therefore, by means of the heat generated in the wire, the interruptions of the electric current, together with the passage of the strip *f* over and on the wire *a*, that the telegraphic marks or signals are made, such marks or holes being longer or shorter in proportion to the lengths or periods of time the electric current is suffered to flow through the wire *a*, all of which is to be regulated by the operator at the battery end of the line of telegraph, and by means such as are generally used in various other telegraphs.

I do not confine my invention either to the precise form or arrangement or construction of any or all of the parts or mechanism as above detailed or described, as it will be evident that

the positions of the essential parts as well as their construction may be somewhat or considerably varied, and still they be made to embody my invention and operate substantially in the manner as above described.

What I claim as my invention is—

The above-described new or improved electro-caustic telegraph, or application to telegraphic purposes, and substantially as specified, of heat generated by electric apparatus or a current or currents of electricity passed through a fine platinum wire or other proper conductors or equivalents therefor, as explained, the marks produced in or through the paper or other material used in connection with the heated wire being regulated in their length and number so as to be characters or expressions of letters, figures, or words indicative of any message which it may be desirable to transmit from the battery end of the telegraph to the other end of the line, all essentially as set forth, or in the manner generally understood by telegraphic operators.

In testimony whereof I have hereto set my signature this 9th day of March, A. D. 1850.

G. H. HORN.

Witnesses:

R. H. EDDY,
FRANCIS GOULD.