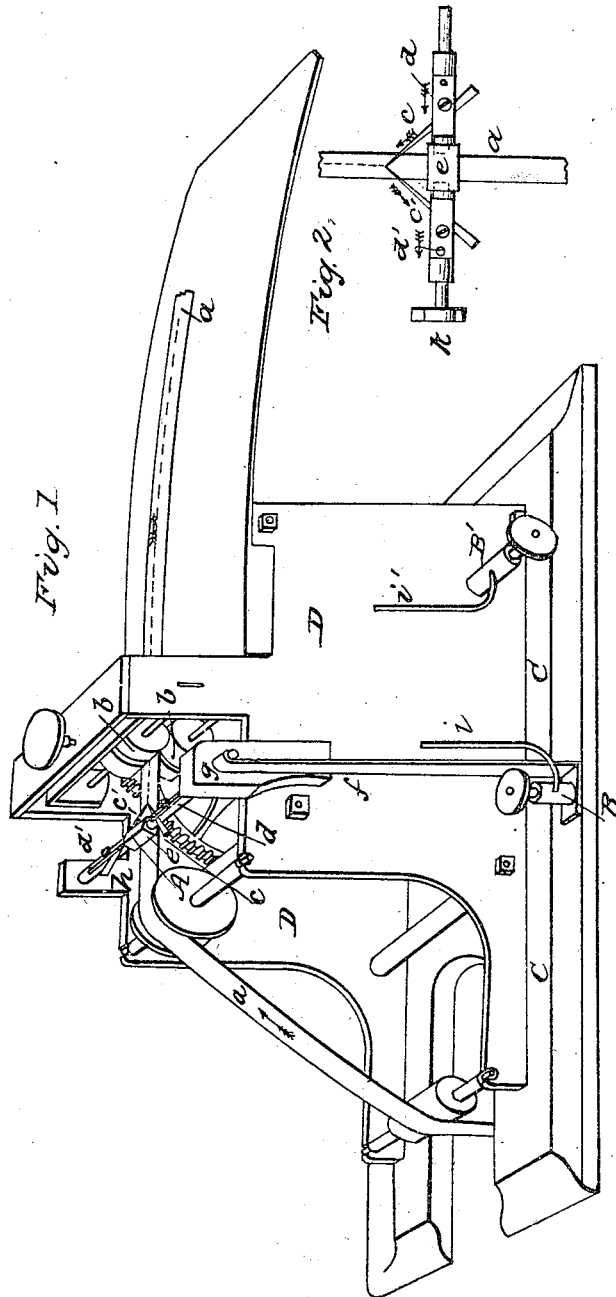


W. S. THOMAS.
Telegraphic Register.

No. 7,092.

Patented Feb. 12, 1850.



*The drawing on this sheet
is not to scale*

UNITED STATES PATENT OFFICE.

WILLIAM S. THOMAS, OF NORWICH, NEW YORK.

IMPROVEMENT IN ELECTRIC TELEGRAPHS.

Specification forming part of Letters Patent No. 7,092, dated February 12, 1850.

To all whom it may concern:

Be it known that I, WILLIAM S. THOMAS, of Norwich, in the county of Chenango and State of New York, have invented a new and useful Improvement in Electric Telegraphs, which I denominate the "Electro-Thermic System;" and I do hereby declare that the following is a full, clear, and exact description, reference being had to the accompanying drawings, which form part of this specification, and in which—

Figure 1 represents a view in perspective of an instrument constructed to record telegraphic messages in the manner invented by me; and Fig. 2 is a plan of the style by which the marks are made, detached from the machine, together with a fragment of the paper.

My invention is based on the fact that when a current of galvanic or other electricity is passed along attenuated conductors they are heated to a sufficient degree to burn or scorch any inflammable material with which they may be placed in contact, while at the same time the light emitted by the heated conductor is plainly sensible to the eye; and my invention consists in making marks or signals for telegraphic purposes by means of the heat generated, developed, or controlled by the passage of an electric current along attenuated conductors, wires, or points. For the accomplishment of this object it is necessary to employ apparatus for generating the electric or galvanic current, wire or other conductors to convey it to the station at which the record is to be made, and an instrument or machine to effect the marking.

The structure, arrangement, and manner of operating the apparatus by which the several varieties of electricity are generated or made sensible, and the construction of lines of wire or other conductors to convey the electricity from station to station, are so well understood that it is not necessary for me to describe them here, particularly as their structure and arrangement forms no part of my invention, which is confined to the making of marks or recording of the message transmitted on some suitable material.

The form, arrangement, and material of the instrument by which the marking is effected and regulated admit of endless variation; but as such variations do not affect the principle

of my invention it is obviously my privilege to use any one or all at my own discretion. Such modifications as circumstances may render necessary to adapt my invention to any particular purpose or line of telegraph will naturally suggest themselves to the constructors of the lines, and I shall therefore in this specification confine myself to the description of an instrument which I have had in use, and which exemplifies the manner in which my invention is carried into effect.

This instrument, as represented in the drawings, is mainly composed of a frame, D, to support and connect the several parts of the machine, mounted upon a non-conducting base, C, feed-rolls *b b* to draw forward the strip of paper on which the message is to be recorded, clock-work within the frame to give motion to the feed-rolls, a style, A, by means of which the marks are made, together with the necessary clamps B B', and conducting-wires *i i'* to connect the instrument with the lines of conductors and convey the electric current along the style, which is thus made a part of the circuit. The style (see Fig. 2) by means of which the marks are made is formed in this instance of two strips of platinum, *c c'*, terminating at one end in points which touch each other, and which, during the operation of recording, are placed in contact with the moving surface of the strip of paper *a*. The platinum strips are attached to the conducting extremities *d d'* of an arbor whose middle *e* is made of a non-conducting material, so that a current of electricity arriving at one extremity, *d*, of the arbors can only pass to the other, *d'*, by passing in the direction indicated by the arrows along the platinum strips *c c'*.

The arbor is supported by two standards, *g h*, attached to the frame of the instrument, that standard, *g*, which supports that extremity, *d*, of the arbor at which the current arrives being made of a non-conducting material. The arbor is free to turn in the standards, and is furnished at one extremity with a head, *k*, by which it can be turned to depress the point of the style in contact with the paper *a* beneath, which is equally drawn forward by the feed-rolls *b b*, or to raise it therefrom.

The end of the wire-conductor *i* by which the galvanic current is conveyed from the station from which the message is transmitted

to the station at which it is to be recorded is secured in a clamp, B, on the non-conducting base C of the instrument, and the clamp is connected with the extremity of the arbor by a strip of metal, *f*. The galvanic current is conveyed by this strip to the first conducting extremity, *d*, of the arbor, and along it to the first strip of platinum, *e*, down which it passes to its point. Thence passing to the point of the second strip of platinum, *e'*, it is conveyed by it to the second conducting extremity, *d'*, of the arbor, from which it passes down the standard *h* to the frame of the instrument, D, which, together with the standard *h*, is made of a conducting material. The galvanic current is conveyed from the frame of the instrument to the ground or other conductor, which completes the galvanic circuit by the wire *i*, secured in the clamp B' attached to the frame.

During the passage of the galvanic current along the platinum strips of the style their points are heated to a sufficient degree to scorch the paper in contact with them as it is drawn equally forward by the feed-rolls. If the current be unbroken, a continuous mark or line will be produced upon the moving surface of the paper, the length of which will depend upon the velocity with which the latter is drawn forward. If the current be intermittent, marks separated by intervals will be produced, the length of the marks varying with the length of time during which the current is kept passing without interruption, and the length of the intervals varying with the intervals of time during which the passage of the current is interrupted. Hence, if any particular combinations of marks and intervals be adopted to denote particular letters of the alphabet, an operator at one station can record a message written in these combinations on the paper in the instrument at another station by passing intermittent currents of galvanic electricity along the lines of conductors to the style by which the marks are made.

When the style ceases to make marks by reason of the stoppage of the current of electricity by the operator at the place of transmission, the operator of the instrument at the place of reception stops the feed-motion of the paper and turns up the point of the style from the paper by application of his hand to the head of the arbor, in order that the light emitted by the heated point of the style as soon as a current is passed along it may give notice that another message is to be transmitted.

If the points of the strips of platinum be found to wear fast by their friction on the moving paper, they may be tipped with some harder conducting material; and if it should be deemed expedient to form the style of a single piece of wire bent in the form of a V and attenuated

at its extreme angle, this point, which is placed in contact with the paper, may be tipped in the same manner.

In describing the operation of this instrument I have spoken of the galvanic as the kind of electrical current employed; but a current of any other kind of electricity might be used without essentially changing the result. I have not deemed it necessary to represent any particular characters or symbols for the purpose of telegraphic communication, as there are several well-known telegraphic alphabets or systems of marks and intervals, any one of which may be used, my invention being only a method of marking, and is entirely irrespective of the form or arrangement of the mark or character to be used. I have also spoken of paper as being the material on which the marks are made, believing it to be the one best suited to the purpose; but I wish it to be understood that I do not restrict myself to the use of paper for this purpose, but contemplate the use of cloth or any other material which it may be deemed expedient to adopt.

This method of recording possesses the advantage of producing a permanent record without the use of any chemical preparation of the paper, although, if it be deemed expedient, the paper may be rendered more sensitive to the action of the heat by preparing it with some sympathetic ink—such, for example, as a solution of the chloride of cobalt. It does away with the magnet usually employed to work a moving style. It is also noiseless in its operation, while the heat of the points manifests the working of the machine as plainly to the eye of the operator as the click of an ordinary magnetic recorder does to his ear; and it is simpler and cheaper in its construction than any machine hitherto used for the purpose.

Having thus described my invention and exemplified the manner in which it may be carried into effect, what I claim therein as new, and desire to secure by Letters Patent, is—

The making of signals or marks for telegraphic purposes by the agency of the heat generated, induced, or controlled by a current of electricity passed along attenuated conductors, wires, or points, substantially as herein set forth. (The signals, being the flashes of light emitted by the heated conductor or points are manifest to the eye of the operator. The marks being produced on the paper by the heated points or conductor are the record of the message.)

In testimony whereof I have hereunto signed my name.

WM. S. THOMAS.

Witnesses:

P. H. WATSON,
E. S. RENWICK.