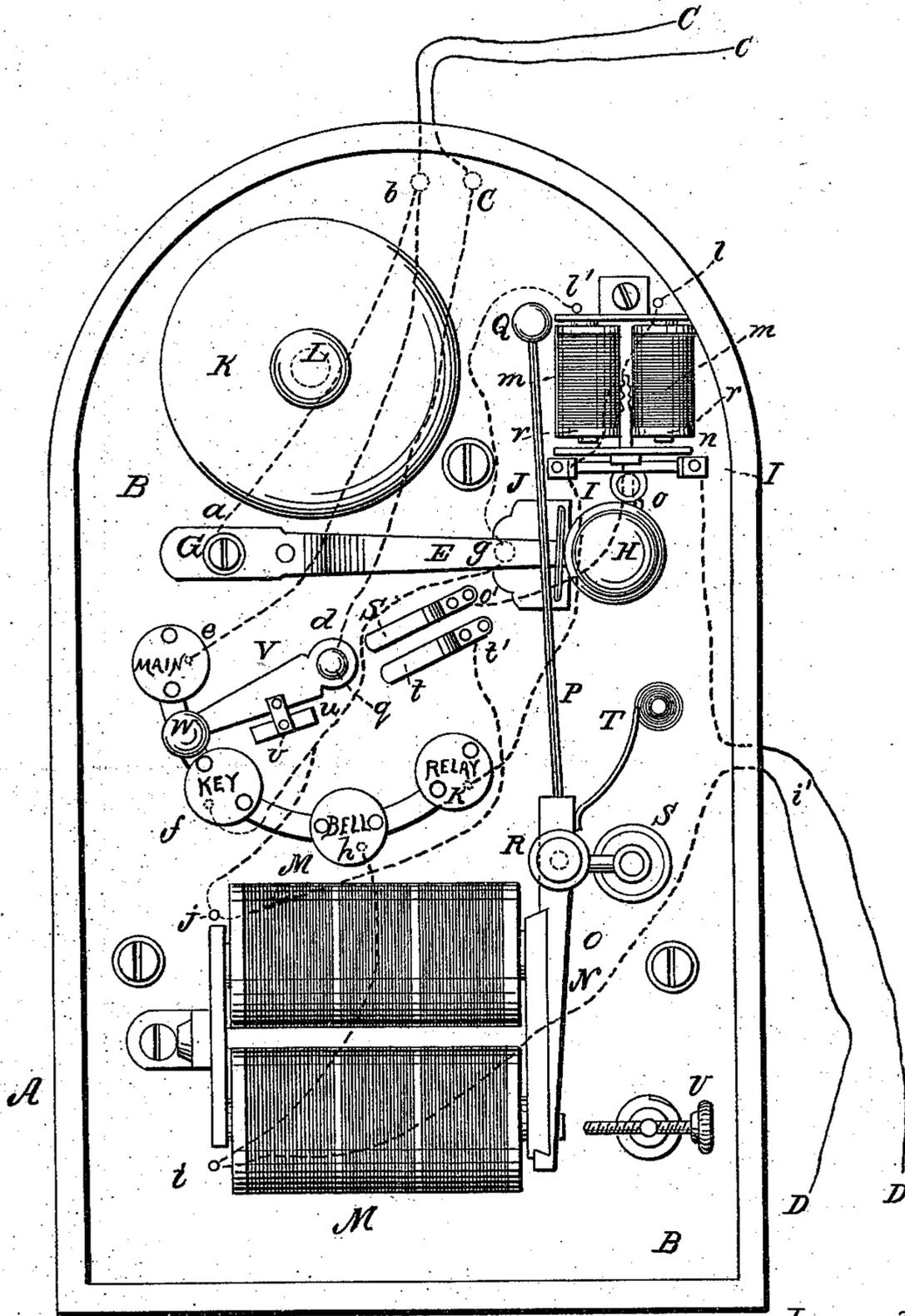


W. R. SMILEY.
Fire Telegraph.

No. 87,439.

Patented March 2, 1869.



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UNITED STATES PATENT OFFICE.

W. R. SMILEY, OF NEW LISBON, OHIO.

IMPROVEMENT IN FIRE-ALARM TELEGRAPH.

Specification forming part of Letters Patent No. 87,439, dated March 2, 1869.

To all whom it may concern:

Be it known that I, W. R. SMILEY, of New Lisbon, in the county of Columbiana and State of Ohio, have invented a new and useful Improvement in Electro-Magnetic Signal-Telegraphs; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawing, forming a part of this specification.

The drawing represents a front view of my invention.

The nature of this invention relates to an apparatus for making telegraph-signals by means of electro-magnets, and embodies improvements upon the analogous instruments heretofore in use; and it consists in the construction and arrangement of parts, as will be hereinafter more fully described.

Heretofore with such apparatus the clapper of the signal-bell was actuated to strike the bell or dial by magnetic force generated by passing a galvanic current through a helix or helices surrounding poles of soft iron, the clapper being withdrawn by a spring acting against the stem of the clapper in a contrary direction to the stroke. It will be seen that by this arrangement the magnetic force must not only be sufficient to overcome the force of the spring, but must, in addition thereto, have sufficient power to give an impetus to the clapper against the continuous tension of the said spring, thus necessitating an undue waste of power. Again, as galvanic currents are frequently weak or variable, the power of the electro-magnet will vary correspondingly, and the blow given by the clapper thus actuated is also weak or strong in like degree, thus causing the signals made by it to be sometimes weak and sometimes distinct, which variable character is liable to cause confusion and mistake on the part of the person receiving the signals, especially in the repetition of combinations; but by my invention, the blow being always given by the same spring, the tone is distinct and uniform. The employment of the auxiliary electro-magnet enables the local current to be passed through the main magnet in such a manner that the movement of the clapper will follow the movement of the telegraphic

key in exactly the same manner as when the main current is used with the main magnet.

In the drawing, A is a case or box containing a board, B, which bears the mechanism of the apparatus on its face, while the wire connections to the different parts are arranged on its back, and are indicated by the red dotted lines. C C are the main wires, or wires of the main battery, at any point of the line which would be short, as the apparatus is designed for use chiefly in schools, manufacturing establishments, large mercantile houses, prisons, asylums, and hotels. D D are the relay-battery wires, which battery may consist of two of Grove's cups. E is the signal or telegraphing key, and is of spring metal, affixed to the board by a screw-stud, G, from which a wire, *a b*, leads to one of the wires C of the main battery. H is the finger-plate of the key. I is an arched wire from a plate, J, the said wire bending down at the arched part, to afford a point of contact with the key to open or close the circuit, according as the key is in contact or separated from the said wire I. This plate J is connected by wires with other parts of the apparatus, as will be shown.

K is a bell or gong affixed to the board B by a central stem, L. M M is the main electro-magnet, and N is the armature of the same, affixed to one arm of the clapper lever or rod O P, as shown. Q is the clapper.

The clapper-lever is pivoted at R by means of pointed trunnion-arms on the lever, set into indented plates supported by arms from the upright stud-fixture S, or in any other suitable manner.

T is a spring affixed to and coiled around a vertical stud projecting from the board B, with the free end of the said spring bearing against the clapper-lever, as shown. This spring may be made and arranged in any convenient manner to actuate the clapper against the bell, as herein set forth.

U is a check-screw, to regulate the angle of vibration of the clapper-lever. *m m* is the auxiliary magnet, having its armature *n* arranged to vibrate between the poles *r* and the point of the check-screw *o*. *p* are the trunnion-plates, which afford bearings for the trunnion-arms of the armature *n*, one of which is connected with one of the wires D from the local

battery. The other wire of this battery leads to the helix of the main magnet. V is a switch-key revolving on a pivot, *g*, and having a handle, W. This key is arranged to rest on any one of four disks, marked respectively "main," "key," "bell," and "relay," as shown. *s* and *t* are metal plates or springs, for a purpose to be shown. *u* is a metal plate affixed to the key V by means of an insulating-plate, *v*.

The connection of the wires with the different parts of the apparatus will be better understood from a description of the manner of using the apparatus, which is as follows:

First. By turning the switch-key V to rest on the plate marked "main," the current from the main line passes through *c d*, through the key V, and out through *e b*, thus making the circuit complete without operating the apparatus.

Second. When it is desired to send signals without having them made also on the sender's own bell, the switch-key is turned to rest on the plate marked "key." The current then flows through *c d*, through the key, and through the wire *f g*, taking the signal-key E in the circuit, and passing to the main wire through *a b*.

Third. When it is desired that the sender's bell should also sound the signals sent, the switch-key is turned on the plate marked "bell." The current then flows through *c d*, through the switch-key, and through the wire *h i* to the helices of the magnet M M, through the wire *j g*, through the signal-key E, and through *a b* to the main wire D.

Fourth. When the current is too weak for

the main magnet M M, the switch-key is turned on the plate marked "relay." Then the current passes through *c d*, through the switch-key, through *k l*, through the helices of the relay-magnet *m m*, through *l' g*, through the signal-key, and through *a b* to the main wire D, thus closing or breaking the local circuit entering through D *p*, for, when the armature *n* is thrown back against the check-screw *o*, the current is continuous, passing through the wire *o o'* to the plate *s*, (which latter, when the key is turned on the relay-plate, is connected by the plate *u* with the plate *t*,) and through *s* to *t*, and through the wire *t' j* to the helices of the main magnet M M, and through *i i* to the local battery.

The wires are insulated in any suitable manner, and connected to operate as described.

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

The combination and arrangement, in the said signal apparatus, of the bell K, signal-key E, switch-key V, magnet M M, and its clapper-lever O P with the several plates for turning the switch-key on and the wires connecting the said plates with the accessory parts of the apparatus, all substantially as shown and described, and for the purpose set forth.

The above specification of my invention signed by me this 13th day of August, 1868.

W. R. SMILEY.

Witnesses:

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