

G. J. CARNEY & J. V. MEIGS.

ELECTRICAL TRANSMITTER.

No. 265,576.

Patented Oct. 10, 1882.

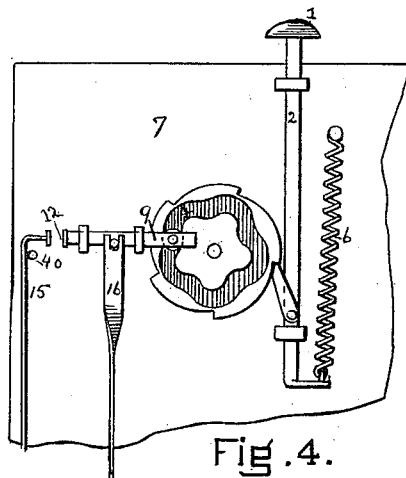


Fig. 4.

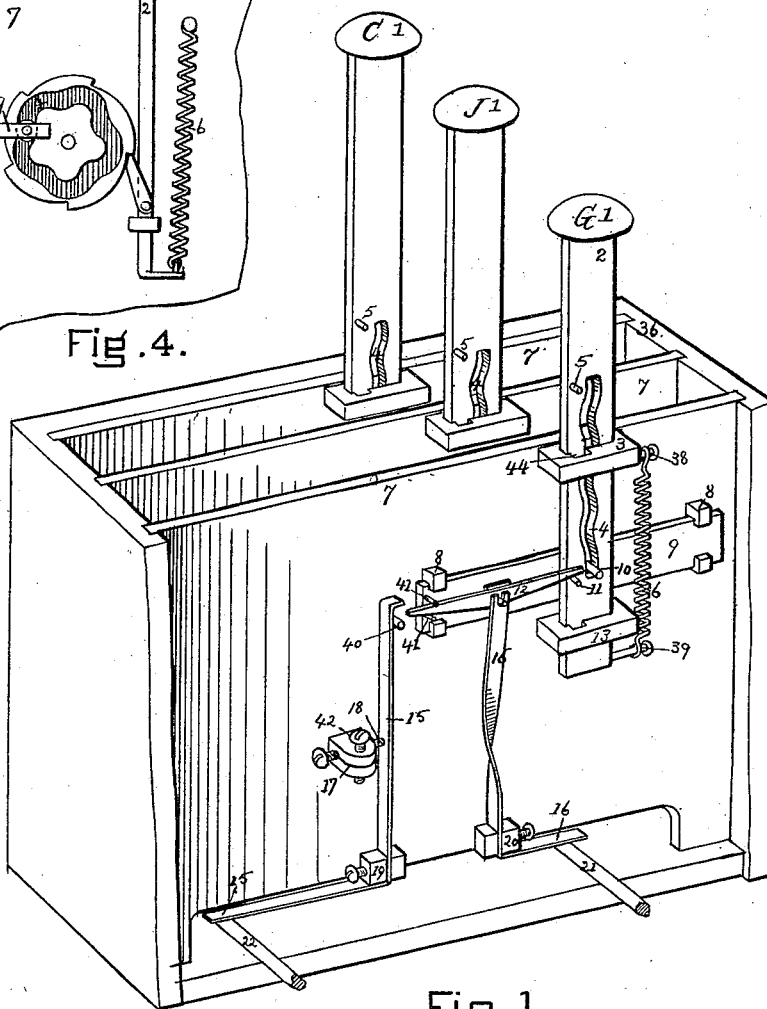


Fig. 1.

WITNESSES.
Austin Channing.
Albert P. Guild

INVENTORS.
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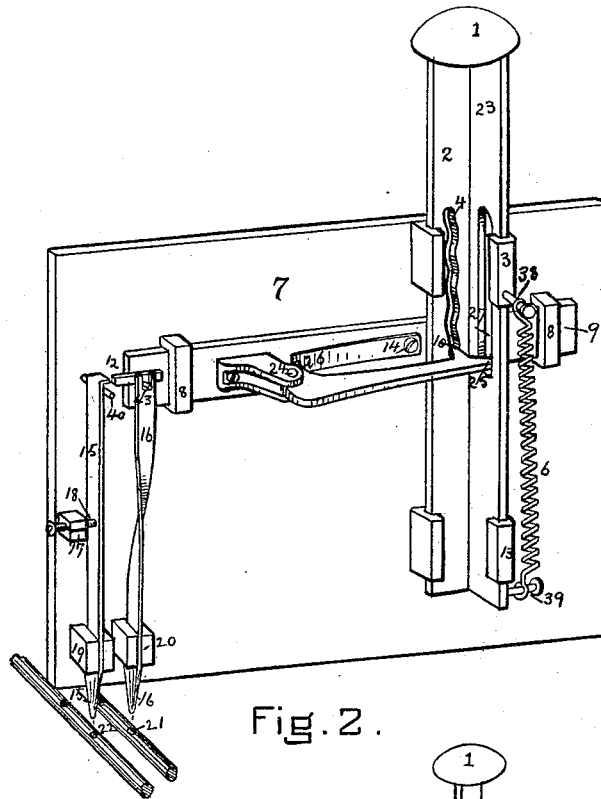


Fig. 2.

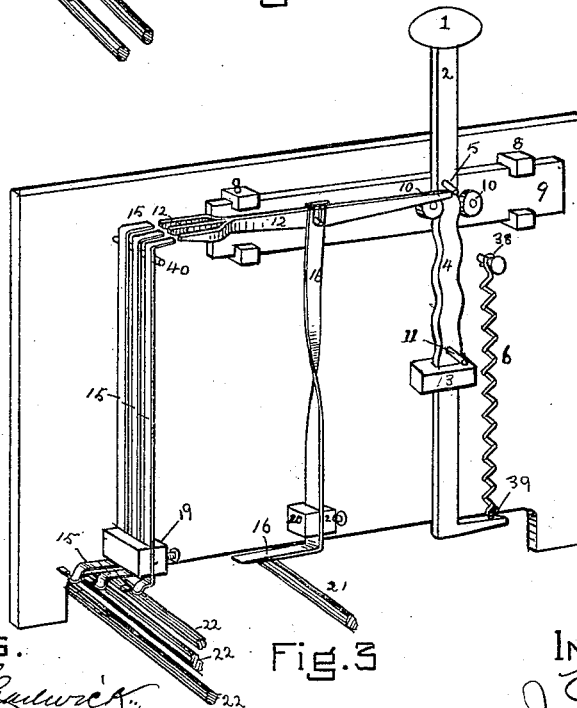


Fig. 3

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UNITED STATES PATENT OFFICE.

GEORGE J. CARNEY AND JOE V. MEIGS, OF LOWELL, MASSACHUSETTS.

ELECTRICAL TRANSMITTER.

SPECIFICATION forming part of Letters Patent No. 265,576, dated October 10, 1882.

Application filed October 20, 1881. (No model.)

To all whom it may concern:

Be it known that we, GEORGE J. CARNEY and JOE V. MEIGS, citizens of the United States of America, residing at Lowell, in the county of Middlesex and State of Massachusetts, have invented a certain new and useful Improvement in Automatic Electric Transmitters; and we do hereby declare the following to be a full, clear, and exact description of the invention, sufficient to enable others skilled in the art to make and use the said invention, reference being had to the accompanying drawings, forming a part of this specification.

Electrical signals have been and are transmitted by interruptions of an electric current, and the interruption is produced by the operation of a circuit-breaker. The simple circuit-breaker operated directly by the hands or the automatic circuit-breakers hitherto in use are not thoroughly satisfactory, circuit-breaking by hand-key being liable to error, and when a metallic tongue is employed as part of the mechanism a sliding contact is often made, resulting in fusing or burning the contact-points, thus destroying its usefulness. When a metallic spring is used, fastened at one end and making contact with the other end, the device is apt to chatter, and thus cause accidental or unintentional breaks in the circuit, and thereby vitiate the intended signals. Our mechanism is intended to open and close the circuit positively, and, if desired, so rapidly as to render sound-reading impracticable, and to make the signaling by an interrupted current easy, simple, and mechanical, avoiding the defects before mentioned, and the current manipulated by this mechanism may of course be a current to produce marks, visual signals, or sounds. The means by which this result is produced consists essentially in a key provided with a slot of any linear shape desired, and of intermediate mechanism, whereby the reciprocation or revolution of the key containing this slot in the general direction of the length of the slot throws a pin or stud placed in the slot to and fro, thus communicating motion to a slide which closes or breaks the circuit. Any desired number of contact circuit-breakers may be actuated with one key, and thus the same signal may be sent simultaneously over as many lines.

In the accompanying drawings, Figure 1 is a view in section of one form of our automatic transmitter. Fig. 2 is a view of another form of our automatic transmitter, in which the contact-points are always in line. Fig. 3 is a view of our automatic transmitter in which a cam-bar is used in place of a cam-slot. Fig. 4 represents a view of our automatic transmitter in which a rotary cam-slot is used in place of a linear and reciprocating cam slot or bar.

Fig. 1: 1 is the top of the key. 2 is the body of the key. 3 is a guide for the key. 4 is a cam-slot in the body of the key. 5 is a pin in the body of the key 2, its downward action bringing the end of lever 12 into line with the end of spring 15. 6 is a spring to return the key 2 to its normal position after depression. 7 is a slide supporting the mechanism. 8 are guides for slide 9, which bears the pin 10 and the contact-lever 12. 9 is a slide receiving its motion from the movement of slot 4 through the medium of pin 10. 10 is a pin fastened to slide 9 and placed in slot 4, and from the form of which slot 4 the desired character and amount of motion are communicated to slide 9. 11 is a pin which, when in contact with the end of lever 12, moves its end from the line of contact with the spring 15. 12 is a lever borne on slide 9, pivoted at its center and moved into and out of line of contact by pins 5 and 11. 13 is a guide for key 2. 15 and 16 are springs, one end of each of which presses against the wires 21 and 22 to maintain the continuity of the circuit when the point of lever 12 is brought in contact with the other end of spring 15 by the movement of lever 12, whose to-and-fro action is controlled by the form of the cam-slot 4. 17 is a vise, by means of which screw 18, which limits the tension of spring 15, is held in any desired position by the action of screw 42. 18 is a screw to increase or decrease the power of action of spring 15. 19 and 20 are vises for retaining springs 15 and 16 in position. 21 and 22 are the circuit-wires of the transmitter. 36 is the inclosing box or case, into grooves in which the slides supporting the mechanism are inserted, and each slide is independent of all others and may be removed at will. 38 and 39 are pins to which spring 6 is attached. 40 is a pin which limits the action of spring 15

in one direction only. 41 and 41 are pins which limit the vertical movement of lever 12. 42 is a screw for closing the jaws of vise 17.

Fig. 2: 1 is the top of the key. 2 is the body of the key. 3 is a guide for the key. 4 is a slot in the body of the key. 6 is a spring to return key 2 to its normal position after depression. 7 is a slide supporting the mechanism. 8 are guides for slide 9. 9 is a slide receiving its motion from the movement of slot 4 through the medium of point 10 of the lever 25, which is pivoted at 24. 10 is one point of lever 25, which engages and disengages with slot 4 as controlled by the upper and lower inclined cam-faces of slot 27. 12 is a metallic point for making contact with the end of spring 15, and is always in line of contact. 13 is a guide for key 2. 14 is a screw fastening spring 26 to the face of slide 9. 15 and 16 are springs, one end of which is pressed against the wires 21 and 22 to maintain the continuity of the circuit when the point 12 is brought in contact with the end of spring 15 by the movement of slide 9. 17 is a block by means of which screw 18 limits the tension of spring 15. 18 is a screw which limits the tension of spring 15. 19 and 20 are blocks which support springs 15 and 16. 21 and 22 are the main wires of the transmitter, connected with the earth and the battery. 23 is a rib on the body of key 2 and at a right angle with it. 24 is a fork fastened to the body of slide 9, and in which lever 25 is fastened by a pivot. 25 is a lever pivoted at one end, 24, with a double point at the other end, one point engaging in slot 27 in rib 23, and by the action of the cam-shaped ends of slot 27 being raised or depressed, thus causing the other point to engage or disengage with slot 4 in key 2. 26 is a spring which holds lever 25 in position. 27 is a cam-slot in rib 23 of body of key 2, which controls the movement horizontally of lever 25. 38 and 39 are pins to which spring 6 is attached. 40 is a pin which limits the action of spring 15 in one direction only.

Fig. 3: 1 is the top of the key shown as depressed. 2 is the body of the key. 4 is a portion of the body of the key arranged with cam-faces. 5 is a pin in the body of the key to bring the ends of lever 12 into line with the ends of springs 15. 6 is a spring to return key 2 to its normal position after depression. 8 are guides for slide 9, which carries the guide-wheels 10 and the lever 12. 9 is a slide receiving its motion from the action of the cam-faces 4 of key 2 through the medium of the guide-wheels 10. 10 and 10 are guide-wheels for the purpose of engaging with the cam-faces 4 of key 2, and thus moving slide 9 to and from contact of points of lever 12 with points of springs 15. 11 is a pin which, when in contact with the end of lever 12, moves its ends from the line of contacts with springs 15. 12 is a lever, with one point at one end and three points at the other end, pivoted at its center on slide 9, and moved into and out of line of

contact by pins 5 and 11. 13 is a guide for key 2. 15 15 15 and 16 are springs, one end of each of which presses against the wires 22 22 22 and 21 to maintain the continuity of the circuit when the points of lever 12 are brought in contact with the other ends of springs 15 by the movement of lever 12, whose action is controlled by the form of the cam-slot 4. 19 and 20 are blocks for supporting springs 15 15 15 and 16. 21 and 22 22 22 are the main wires of the transmitter, suitably connected with the earth and the batteries. 38 and 39 are the attachments of spring 6. 40 is a pin which limits the action of spring 15 in one direction only.

Fig. 4 represents a view of our transmitter with the slot 4 placed on the face of a wheel, and the movement of the slot is rotary and not reciprocal, as shown in Figs. 1, 2, and 3. 1 is the top of a reciprocating lever, 2, bearing a pawl which engages to turn in one direction the rotary cam-wheel 4. 4 is a wheel bearing on its face a cam-slot and on its circumference teeth which engage with the pawl of lever 2. 9 is a lever moved to and fro by the action of the cam-slot of wheel 4, and the point 12 is thus brought in contact with the point of spring 15. 15 and 16 are springs which connect with the circuit-wires. 40 is a pin which limits the action of spring 15 in one direction only.

The action of these several devices is similar. Depressing the key in Figs. 1 and 3 presses the pin 5 against the end of lever 12, raising the other end to a point opposite the ends of springs 15. The pressure being removed, spring 6 returns the key 1 to original position. In doing so pin 10 and guide-wheels 10 follow the conformation of the cam-slot 4 and cam-bar 4, and thus communicate a reciprocal motion to lever 12, whose end is thus brought into longer or shorter contacts with the end of spring 15, thus completing and closing the circuit for a longer or shorter period of time. Pin 11 then comes in contact with lever 12 and moves its end from the line of contact with spring 15, and the transmitter is ready for another signal to be sent. Depressing the key 1 in Fig. 2 does not vibrate the slide 9 until a complete depression has been made. When the face of slot 27 reaches lever 25 it presses point 10 into the cam-slot 4, and the key on its return causes the slide 9 to move to and fro. Depressing the key in Fig. 4 produces also the same result, a rotary cam-slot being here substituted for a reciprocating cam slot or bar, the rotary motion of the cam-slot being at once changed into a reciprocating motion, thus making and breaking contact, and all these separate devices may have multiple points of contact.

We are aware of Letters Patent granted to Unger and Towle, November 18, 1873; but in their apparatus the contacts made are sliding contacts and not point-contacts, as in the present specification, and, in addition to that, spring-blades are used, which are more or less liable

to chatter. We are also aware of the Edison and Batchelder patent, November 16, 1875, in which the contacts are sliding contacts. We are also aware of the Edison patent of January 23, 1877, in which the circuit-closing spring is operated by a toothed segment, which is liable to chatter. We are also aware of the Bradley patent of June 11, 1878, in which there is a contrivance for making a sliding contact, and a spring-contact is described, which is also liable to chatter. We are also aware of the Phinney patent, March 22, 1881, in which the apparatus makes a sliding contact. It will be observed that our mechanism differs from all these in this: that the slide or bar is moved to and fro by the cams of the key positively, and makes or breaks a touching contact and not a sliding contact, and, notwithstanding that one of the points is a spring, it is prevented from chattering by being confined as to its forward movement by a stop-pin, which prevents it from moving toward the retreating reciprocating point connected with the slide or bar, though it may be moved away from the stop-pin by the direct pressure of the point con-

nected with the slide or bar, and wear and tear are compensated by it, the adjusting-screw making the contacts more or less firm, as may be desired.

What we claim, and desire to secure by Letters Patent of the United States, is—

In a transmitter of electricity, the combination of a key-lever having a cam-shaped slot and pins 5 and 11, a reciprocating bar carrying a pin engaging with said cam-slot, a lever pivoted to the said bar and electrically connected with one end of the line, thereby forming one contact-point, with a spring-bar connected to the other end of the line and forming the other contact-point, and a stop, as 40, for the same, whereby positive and rapid makes and breaks of the circuit may be produced without chattering, substantially as set forth.

In testimony whereof we affix our signatures in presence of two witnesses.

GEORGE J. CARNEY.
JOE V. MEIGS.

Witnesses:

AUSTIN K. CHADWICK,
ALBERT S. GUILD.