

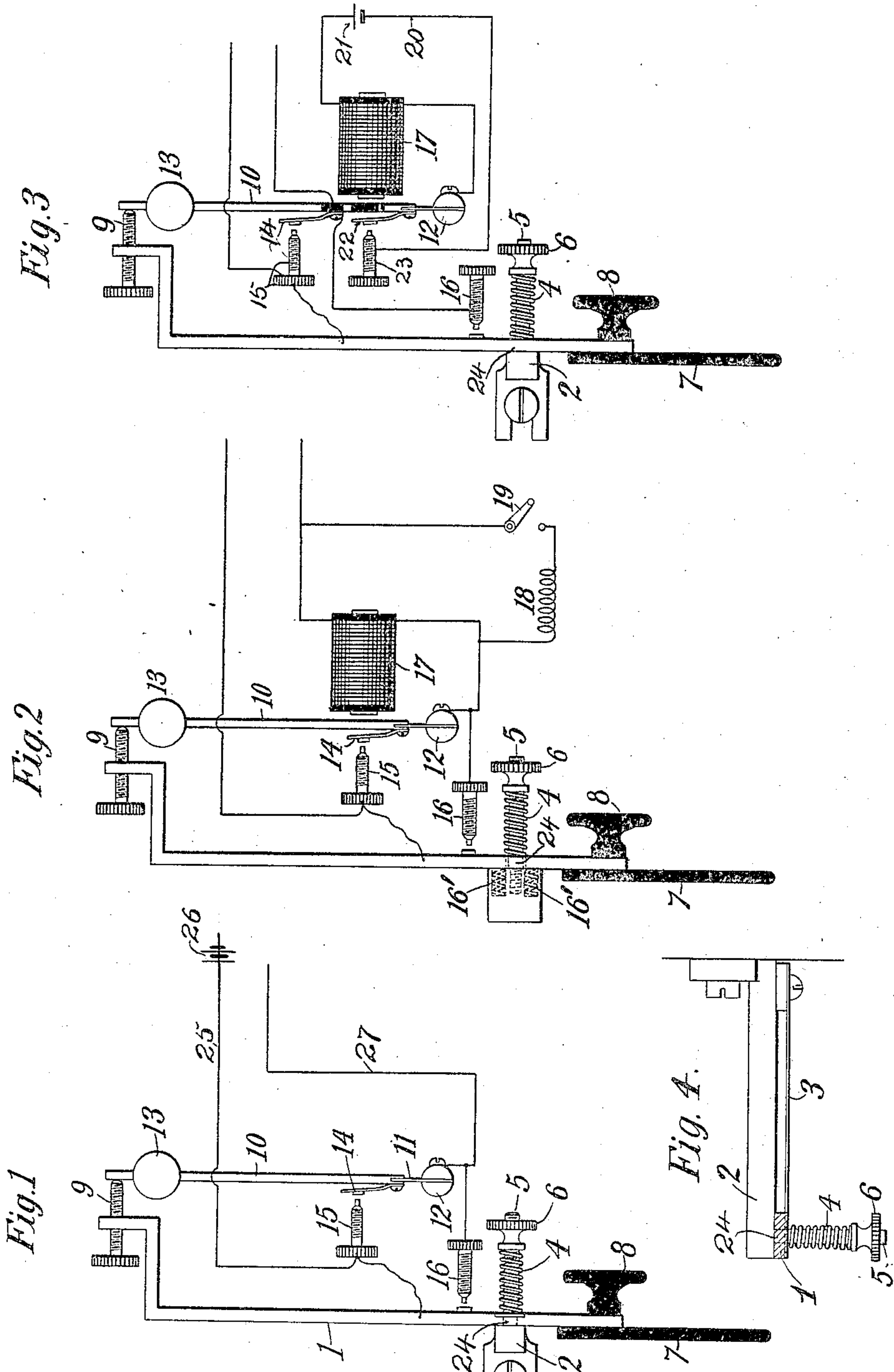
No. 767,303.

PATENTED AUG. 9, 1904.

H. G. MARTIN.  
TELEGRAPHIC TRANSMITTER.

APPLICATION FILED MAY 7, 1904.

NO MODEL.



Witnesses:

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# UNITED STATES PATENT OFFICE.

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## TELEGRAPHIC TRANSMITTER.

SPECIFICATION forming part of Letters Patent No. 767,303, dated August 9, 1904.

Application filed May 7, 1904. Serial No. 206,795. (No model.)

*To all whom it may concern:*

Be it known that I, HORACE G. MARTIN, a citizen of the United States, residing at Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Telegraphic Transmitters, of which the following is a specification, reference being had to the drawings accompanying and forming a part of the same.

10 In a patent granted to me on June 30, 1903, No. 732,648, I have shown and described a novel form of telegraphic transmitter the essential features of which are a key, a vibrator, and suitable electrical connections by  
15 means of which a movement of the key in one direction closes the circuit continuously to line, while a movement of the key in the opposite direction closes the line-circuit through the vibrator, which operates to send a suc-  
20 cession of impulses continuing as long as the key remains in such position.

Briefly stated, the object of the invention is to enable operators to send Morse signals by means of a key, but by a very greatly-reduced  
25 number of movements of the latter, and thus to provide a simple and effective method of sending that avoids the intense nervous strain involved in the operation of the ordinary Morse key in rapid work. Inasmuch as the  
30 nature, object, and advantages of this system are dwelt upon at length in my patent referred to, it is unnecessary to repeat them herein, it being sufficient now to point out that the first of the above-described move-  
35 ments of the key which effect prolonged closures of the line is used to send the dashes, while the movement in the opposite direction, which closes the line through a vibrator, sends the dots of the Morse code. The length of  
40 the spaces and dashes and the number of the dots are thus under the direct control of the operator, while the length of the dots and their rapidity of succession is determined by the adjustment of the period of vibration of  
45 the vibrator. In the several forms of instruments shown in my said patent in illustration of the principle of the invention the vibrator-magnet is in a circuit controlled by the key, is set in operation by the current  
50 which is caused to flow in its circuit by a given

movement of said key, and thrown out of operation by the interruption of such current. I have found that this plan is in many respects the most reliable and effective; but I have also devised another way of carrying out the  
55 invention in which a circuit-controller having a predetermined period of its own is directly controlled by the movement of the key—that is to say, is mechanically released or set in operation and restrained or pre-  
60 vented from its normal operation of sending successive short impulses over the line by the disengagement and engagement therewith of the key itself. Such a device may be made  
65 more cheaply and is more simple in construction; but for many purposes it is a very desirable instrument and secures the main advantages of my novel system. This form of transmitter, which I designate as “semi-auto-  
70 matic,” is exemplified in any combination of a key which by a movement in one direction sends an impulse to line proportional in length to the duration of the contact thus effected and an automatic circuit breaker or control-  
75 ler of the general nature of a vibrator or “buzzer” which operates to make and break the circuit at a substantially uniform but comparatively rapid rate and which is normally  
80 restrained from operation by the key, but released by the movement of the latter in a direction opposite to that utilized for sending  
85 dashes. Obviously many forms of vibrator, mechanical and electrical, may be utilized for this purpose; but in illustration of the general principle I have shown in the accompany-  
90 ing drawings a device in the nature of a pendulum which by the engagement of the key is normally held at such a point in its path of swing that when released by the withdrawal of the key it will be free to vibrate. This  
95 vibrator is utilized to make and break a circuit and send dots over the line, the number sent in succession being determined by the length of time the key is held out of engagement with the pendulum. In connection with  
100 the pendulum I may use an electromagnet the circuit of which is controlled by the oscillations of the pendulum itself; but this is not essential in any case in which, as with a pen-  
dulum released at some point to either side of



the center of oscillation, the device possesses in itself the capability of movement which may be utilized to periodically make and break a circuit.

5 Referring now to the drawings, Figure 1 is a plan view of the instrument, showing the circuit connections. Figs. 2 and 3 are similar views of modifications of the same, and Fig. 4 is a detail showing the key-lever in section.

10 As a convenient form of key I use a plate or bar 1, held against the flat surface of an arm or post 2 by means of a flat spring 3 and a spiral spring 4, which surrounds a stud 5. The key bar or lever 1 contains a slot through  
15 which the stud 5 passes, and the compression of the spring 4 is regulated by a screw-nut 6 on the end of the stud. By this means the key-lever is held in its central or normal position, but may be readily moved from side to  
20 side about the point 24 as a fulcrum. A hard-rubber plate 7 and a head 8 are secured to the key-lever and are of any form which makes it convenient for the operator to grasp them between the thumb and fingers. The key-  
25 lever 1 is bent at its free end at right angles and carries a set-screw 9. The end of this screw lies in the path of a vibrator which in this case consists of a rod or bar 10, supported by a flat spring-plate 11 on a stud 12. A  
30 weight or bob 13 is adjustably attached to the bar 10 to vary its period of vibration. In its normal position the key-lever holds the pendulum-bar to one side of its normal center of oscillation, with the spring 11 under light  
35 tension. If the key be shifted so as to suddenly withdraw the set-screw from engagement with the pendulum, the latter will at once start vibrating and will continue in motion for some time. This movement is taken ad-  
40 vantage of to make and break either of the line or a local circuit by attaching to the bar a light contact-spring 14, which touches a contact-stop 15 when the bar swings over sufficiently to that side. The circuit connections  
45 to the bar 10, stop 15, and key-lever 1 are made in any suitable and well-known way, so that when the key is shifted by the operator to the right the vibrator will send dots over the line, but when the key is turned to the left  
50 it will come in contact with a stop 16 and send a prolonged impulse to line. A convenient arrangement of circuits for this purpose is shown in Fig. 1, in which 25 is a wire leading from a battery 26, and 27 is the line-wire.  
55 The wire 25 is connected to the stop 15 and also to the key-lever, while the line-wire is connected to stop 16 and also to the pendulum-lever 10. By this means the battery-currents will be sent to the line from either the stop  
60 15 or the key-lever 1, according as contact is made between stop 15 and spring 14 or between the key-lever and stop 16. The screw-stop 9, carried by the lever 1, is of insulating material or insulated from the lever in case

the pendulum-lever is of conducting material 65 or the spring 14 not insulated from it.

In Fig. 2 substantially the elements are shown, and the operation is not materially affected by the modifications introduced. The key-lever in this figure is shown as seated on 70 two spiral springs 16', inserted in recesses in the post 2 on opposite sides of the fulcrum of the key. These springs take the place of the flatspring 3 of Fig. 1. I have shown in this figure also an electromagnet 17 in the circuit 75 of the pendulum and stop 15. When the pendulum has been released by the key and closes the circuit between the spring 14 and stop 15, the magnet 17 is energized and exerts an attraction for the pendulum, which ceases the 80 instant the circuit is broken by the separation of the contact-points. This imparts a more positive swing to the pendulum and maintains the amplitude of its vibrations. A short circuit around the magnet, maintaining 85 a resistance 18 and switch 19, may be used to cut the magnet out when so desired.

The arrangement shown in Fig. 3 differs from that of Fig. 2 only in having a local circuit 20 for energizing the magnet 17. This 90 circuit contains a local battery 21 and is made and broken by an additional spring 22 on the pendulum and a stop 23. This arrangement takes the magnet 17 out of the main or sending circuit. 95

From the above description of the construction and mode of operation of the form of transmitter to which my present application relates it will be obvious that the vibrator and the specific means for engaging 100 and releasing the same by the key may both be varied in many details without departure from the invention.

What I claim is—

1. In a telegraphic transmitter, the combination with a circuit-controller capable of making and breaking a circuit at a uniform rate, of a key normally engaging said controller and preventing it from operating, and a contact for said key, the key being capable 110 of two movements from its normal position, one of which withdraws it from engagement with the controller, while the other brings it into engagement with its contact, as set forth.

2. In a telegraphic transmitter, the combination with an automatic circuit-controller capable of making and breaking a circuit at a uniform rate, of a key normally engaging said controller and preventing it from operating, means for holding said key in its normal position of engagement with the controller, and a contact-stop for said key, the key being capable of movement in opposite directions from its normal position, by one of which it releases the controller and by the 120 other of which it engages the contact-stop, as set forth.

3. In a telegraphic transmitter, the combi-

nation with an automatic vibrating circuit-  
controller having a defined period of oscilla-  
tion, of a key normally engaging the control-  
ler, and preventing it from vibrating, and a  
5 contact-stop for said key, the key being capa-  
ble of movement in opposite directions from  
its normal position, by one of which it is with-  
drawn from engagement with the controller,

whereby the latter is permitted to intermit-  
tently make and break the circuit, and by the 10  
other of which it engages with the contact-  
stop, as and for the purposes set forth.

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Witnesses:

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