R. M. ALLEN.

TELEGRAPH KEY.

APPLICATION FILED MAY 29, 1914.

1,190,259. Patented July 11, 1916.

Fig. 1.

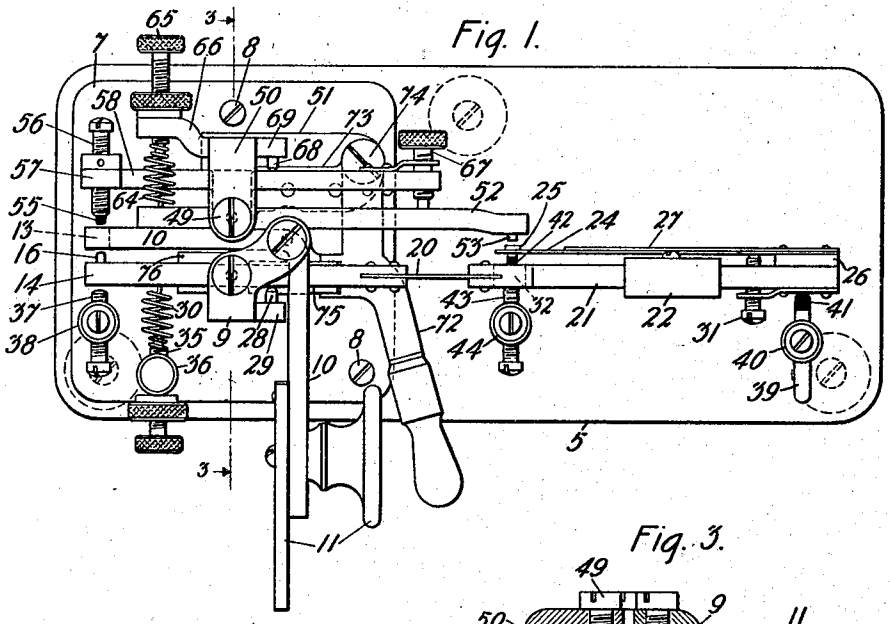


Fig. 3.

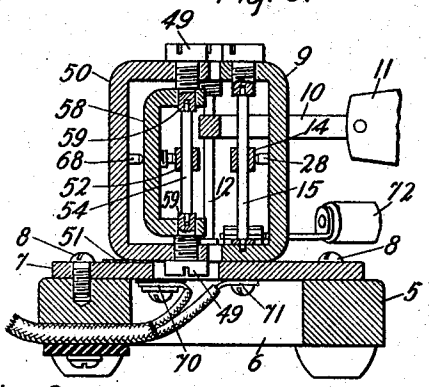
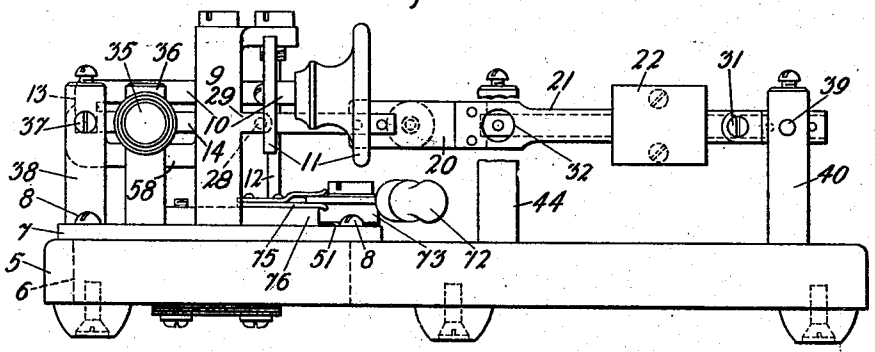


Fig. 2.



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UNITED STATES PATENT OFFICE.

ROY M. ALLEN, OF EAST ORANGE, NEW JERSEY, ASSIGNOR, BY MESNE ASSIGNMENTS, TO WESTERN ELECTRIC COMPANY, INCORPORATED, A CORPORATION OF NEW YORK.

TELEGRAPH-KEY.

1,190,259. Specification of Letters Patent. Patented July 11, 1916.

Application filed May 29, 1914. Serial No. 841,872.

To all whom it may concern:

Be it known that I, ROY M. ALLEN, a citizen of the United States, residing at East Orange, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Telegraph-Keys, of which the following is a full, clear, concise, and exact description.

This invention relates to telegraph keys, and more particularly to semi-automatic mechanical telegraph keys. In telegraph keys of this type, which have been heretofore produced, considerable trouble is experienced on account of the production of what is termed "split" dots. Generally, when a dot is split into two or more sections by the key at the sending end, there results a distortion of the signal received at the distant end, which, as is generally known, means the reception of a letter different from that sent. Depending upon the speed of sending, the distortion may result in the reception of either more or less dots than were sent. If the speed of sending is slow, and a dot is split into two or more sections, the time that current is on the line is generally of sufficient duration to permit the operation of the receiving apparatus, thereby causing the reception of more dots than were sent, while if the speed of sending is fast, the time current is on the line is generally not of sufficient duration to permit the operation of the receiving apparatus, thereby causing the reception of less dots than were sent.

It is the object of this invention, therefore, to produce a telegraph key in the operation of which it is impossible to make "split" dots.

This invention will be more fully understood by reference to the drawings showing one embodiment thereof and wherein—

Figure 1 is a plan view of a telegraph key; Fig. 2 is a side elevation of the telegraph key shown in Fig. 1; and Fig. 3 is a sectional view on line 3—3 of Fig. 1.

As shown in the drawings, the telegraph key comprises a base 5 having an opening 6 therein over which there is placed a plate 7 secured to the base 5 by means of screws 8, 8. A trunnion bracket 9 is mounted upon the plate 7. An operator's L-shaped key lever 10, having insulating finger pieces 11, moves from left to right and from right to left on a vertical shaft 12 suitably mounted in upper and lower bearings in the bracket 9. An end of the key lever 10 is provided with a downwardly extending portion 13, which, when the key lever 10 is moved from left to right, engages a pin 16 carried by one end of a lever 14 mounted on a shaft 15 suitably mounted in upper and lower bearings in the bracket 9. A flat vertical spring 20 is secured to the other end of lever 14 and has attached to its opposite end a vibrating rod or bar 21 carrying a weight 22, which may be slid back and forth thereon and held at any desired point. A spring member 24, carrying at one end a contact 25, is secured to the free end of and operates with the vibrating bar 21, a spacer 26 being interposed between the spring member 24 and the bar 21. A comparatively rigid backing leaf 27 is provided for the spring member 24. The spring member 24 is mounted parallel to and alongside the vibrating bar 21, and the contact 25 is carried in the plane of vibration of the vibrating bar 21. The spring member 24 is tensioned normally in the direction of the vibrating bar 21. In order that the contact 25 may be adjusted and that the spring member 24 may normally rest just against the backing leaf 27, a screw 31 is adjustably mounted in the vibrating bar 21, the forward end of the screw 31 being in engagement with said spring member. Normally, the lever 14 is held in a biased position against a stop pin 28 carried by an arm 29 of the bracket 9 by means of the expansion of a coiled spring 30, one end of which is in engagement with the lever 14 and the other end with an adjustment screw 35 mounted in a suitable support 36. A screw 37 and a support 38 therefor form a suitable stop for the lever 14 when it is actuated by the key lever 10. A deadener or damper for the vibrating bar 21 consists of a pin 39 adjustably mounted in a

support 40 and carries in one end a piece of leather 41 or other suitable damping material. The free end of the spring 24 is normally held at rest against a piece of rubber 42 or other suitable insulating material carried in one end of a screw 43 adjustably mounted in a support 44, the screw 43 passing through an opening 32 in the vibrating bar 21.

A second trunnion bracket 50 is mounted on the plate 7 but insulated therefrom by means of a strip 51 of mica or other suitable insulating material. A lever 52, carrying at one end a contact 53, is mounted on a vertical shaft 54 suitably mounted in upper and lower bearings or trunnion screws 49 held in the bracket 50. The downwardly extending portion 13 of the key lever 10, when said key lever is moved from right to left, engages the insulating tip 55 of a screw 56 adjustably mounted in an upwardly extending portion 57 of an intermediate lever 58 mounted on shoulders 59 formed on the trunnion screws 49.

The expansion of a coiled spring 64, one end of which is in engagement with an end of the contact-carrying lever 52 and the other end with an adjustment screw 65 mounted in an arm 66 of the bracket 50, holds the contact-carrying lever 52 in a normally biased position against the end of an adjustment screw 67 carried in one end of the intermediate lever 58. The expansion of the spring 64, through the medium of the contact-carrying lever 52 and the screw 67, also holds the intermediate lever 58 in a normally biased position against a stop pin 68 carried by an arm 69 of the bracket 50.

70 and 71 represent terminals to which the conductors of the telegraph circuit may be attached. In order that the line circuit, to which the telegraph key is connected, may be closed when the key is not in use, a circuit-closing lever 72 is pivoted at 74 on an extension 73 of the bracket 50 and is adapted to engage the contact jaws 75 mounted on an extension 76 of the bracket 9.

When the key lever 10 is moved to the right from normal position, lever 14 is moved away from the stop pin 28 and against the adjustably mounted stop screw 37, the vibrating bar 21 from the stop 41 and the spring 24 from the stop 42, whereby the bar 21 is permitted to vibrate, causing the contact 25 to rapidly engage and disengage contact 53 making a series of "dots."

When the key lever 10 is moved to the left from normal position, the intermediate lever 58 is moved away from the stop pin 68, and through the screw 67 moves the contact-carrying lever 52, whereby the contact 53 is brought into engagement with contact 25 making a "dash."

The tensioning of the spring member 24 in the manner described is such that when 25 is brought into engagement with 53, there is the least possible impact between contacts 25 and 53 when the making of the "dot" is commenced. The pressure between the contacts 25 and 53 is then gradually built up until a maximum is obtained, when the "dot" is only half completed, and then decreases gradually until these contacts disengage. The mounting of the contact 25 in the plane of vibration of the vibrating bar 21 insures the movement of this contact in this plane only and without any torsional effect upon the vibrating bar 21, and prevents any secondary vibrations being set up in the mechanism. Since the contact 25 is subject to primary vibration only, and furthermore since the pressure between contacts 25 and 53 is greatest at the middle of the "dot," there is no tendency for the key to produce so-called split dots.

What is claimed is:

1. A telegraph key comprising a contact-carrying lever, a vibrator, a spring member mounted upon the free end of said vibrator and parallel thereto, a contact carried on the free end of said spring member and in the plane of vibration of said vibrator, and a device for actuating said contact-carrying lever to produce dashes and said vibrator to produce dots.

2. A telegraph key comprising a contact-carrying lever, a vibrator having an opening therein, a spring member mounted upon the free end of said vibrator and parallel thereto, a contact carried on the free end of said spring member and in the plane of vibration of said vibrator, an adjustable stop pin for said contact passing through said opening, and means for actuating said contact-carrying lever to produce dashes and said vibrator to produce dots.

3. A telegraph key comprising a pivoted lever, a contact carried thereby, a vibrator, a leaf spring mounted on the free end of said vibrator and parallel thereto, a contact carried on the free end of said leaf spring and in the plane of vibration of said vibrator, a floating key lever adapted to be moved in one direction to actuate said vibrator to cause engagement of said contacts to produce dots, and in the other direction to actuate said lever to move the contact carried thereby into engagement with said other contact to produce dashes.

4. A telegraph key comprising a pivoted lever, a contact carried thereby, a vibrator having an opening therein, a leaf spring mounted upon the free end of said vibrator and parallel thereto, a contact carried on the free end of said leaf spring and in the plane of vibration of said vibrator, a floating key lever adapted to be moved in one direction

to actuate said vibrator to cause engagement of said contacts to produce dots and in the other direction to actuate said lever to move the contact carried thereby into engagement with said other contact to produce dashes, and an adjustable stop pin passing through the opening in said vibrator and into engagement with the vibrator contact to maintain said contact stationary when producing dashes.

In witness whereof, I hereunto subscribe my name this 28 day of May, A. D. 1914.

ROY M. ALLEN.

Witnesses:
K. L. STAHL,
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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."