

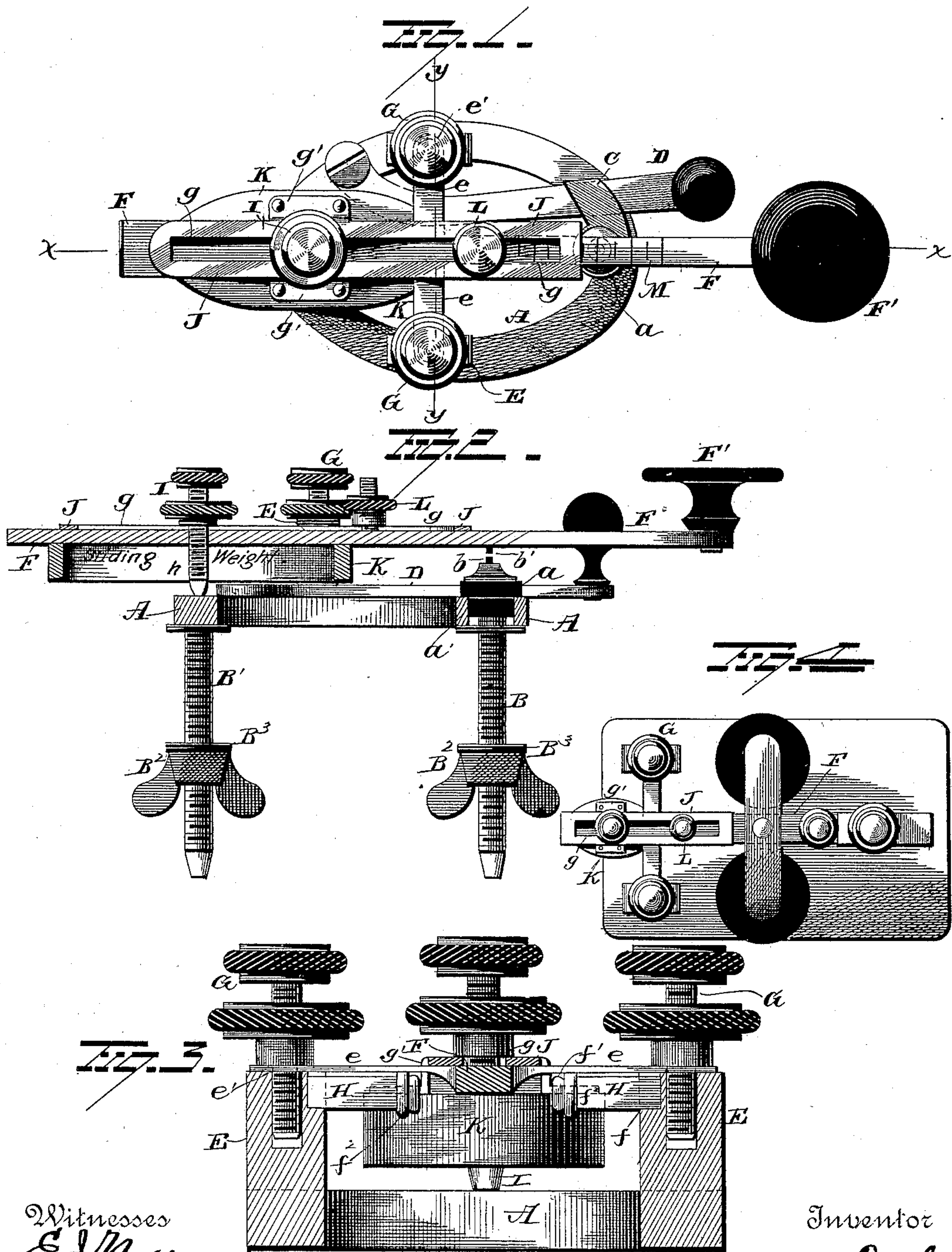
(No Model.)

C. W. TAYLOR.

KEY.

No. 405,621.

Patented June 18, 1889.



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KEY.

SPECIFICATION forming part of Letters Patent No. 405,621, dated June 18, 1889.

Application filed September 27, 1888. Serial No. 286,488. (No model.)

To all whom it may concern:

Be it known that I, CLARENCE WALLACE TAYLOR, of Janesville, in the county of Rock and State of Wisconsin, have invented certain
5 new and useful Improvements in Telegraph-Instruments; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to
10 make and use the same.

My invention relates to an improvement in telegraph-instruments, applicable particularly to telegraph-keys as well as relays and sounders.

15 In the operation of a telegraph-key it is essential that the key be allowed a free and easy movement and that a firm contact be had between the platinum contact-points. It is especially necessary that such contact be had
20 in damp weather and on long lines. Firmness of contact between the points is so essential that in operating an ordinary Morse key in damp weather and on long lines much muscular effort is required on the part of the
25 operator, resulting, in many instances, in "writer's cramp," or paralysis of the forearm and hand. With the ordinary spring, as at present employed to maintain the contact-points normally separated, in depressing the
30 lever the nearer the contact-points approach each other the greater will be the resistance offered to the further depression of the lever. It will be perceived that by dispensing with the spring heretofore employed to maintain
35 the fore part of the key-lever normally elevated, and in lieu thereof balancing an adjustable weight on said lever, a quick, certain, and firm closing of the contact-points will be permitted, and that the momentum of
40 such weight will assist in "closing" the key rather than retard such closing, as is the case with the use of a spring. It has been found by practical experience that no more force should be used to depress the key than is
45 suited to the muscular activity, physical condition, and weight of hand of the operator, and that with the spring as heretofore used the key cannot be adapted to such conditions, as the resistance of the spring increases with
50 the approach of the contact-points.

It is the object of my present invention to obviate the objections above set forth and to

so construct telegraph-instruments as to insure uniform and certain tension to the vibrating levers of such instruments and to provide means whereby such tension may be ad-
55 justed at will.

A further object is to provide the vibrating lever of telegraph-instruments with tension devices, whereby certain and uniform tension
60 is insured and by means of which the amount of tension may be ascertained.

A further object is to secure certain and uniform lever resistance offered to the depression of the key-lever by the operator.
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A further object is to provide an arrangement of parts of a telegraph-key that will permit great rapidity in the transmission of a message, insure certainty of contact of the points of the key, and firmness of such contact by momentum of the unimpeded upward
70 movement of the rear end of the lever, such firmness of contact or closing of the key requiring little effort on the part of the operator.

With these objects in view my invention
75 consists in certain novel features of construction and peculiar combinations and arrangements of parts, as will be hereinafter set forth, and pointed out in the claims.

In the accompanying drawings, Figure 1 is
80 a plan view of my improved telegraph-key. Fig. 2 is a view on the line *xx* of Fig. 1. Fig. 3 is a view on the line *yy* of Fig. 1. Fig. 4 is a view showing my improvements applied to a telegraph-sounder.
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A indicates the frame of a telegraph-key made of brass or other suitable material and provided with downwardly-extending screw-threaded legs *B B'*, having thumb-screws *B²* and washers *B³* thereon for the attachment
90 of conducting-wires and to afford means for securing the key to a table. The leg *B* passes through an insulated collar *a* inserted in an opening *a'* made in the front end of the frame *A*, said leg *B* being provided at its upper extremity with a platinum point *b*. A
95 plate *C* is also secured in contact with the leg *B* and adapted to be engaged by a lever *D*, pivoted to the frame *A*, as usual.

Two integral or rigidly-secured posts or uprights *E* project upwardly from opposite sides of the frame *A*, and are adapted to receive and support the trunnions *e* of the key-lever *F*, which lever carries a platinum point
100

b' , adapted to make contact with the point b when the lever is operated.

The lever F and its trunnions e are preferably made of a single piece of steel, the trunnions extending on opposite sides of the lever, being made sufficiently thin to permit torsion when secured, as hereinafter explained. The trunnions e are provided at points near their extremities with perforations e' , adapted to align with vertical screw-threaded sockets in the posts E . Retaining-screws G are passed through the perforations e' of the trunnions e into the screw-threaded sockets in the posts E , and thus secure the trunnions to the posts E . To prevent vertical movement of the lever independent of its vibratory movement on its trunnions, the squared rear end of a bar H is fitted in a socket f made in each post E at right angles to its vertical axis and near its top, the free ends of said bars H extending inwardly a short distance from the post E , at which point the bars are preferably rounded and formed with heads f' . The free inner ends of these bars H are encircled immediately in rear of their heads f' by loops f^2 , secured to the trunnions e of lever F . Thus it will be seen that any vertical movement of the lever F independently of its vibration on its trunnions will be prevented by the bars H .

The tendency of the lever F to move vertically is enhanced by the momentum of the suitable weight vibrated through an arc of the circle described by the outer end of the lever, and this tendency is checked by the means above described.

The lever F is provided at its inner end with the usual finger-button F' for manipulating said lever, while the outer end is preferably extended somewhat beyond the frame A and provided at a point in line with the rear end of the frame with a perforation for the reception of a set-screw I for regulating the play of the lever.

Mounted upon the lever F is a sliding plate J , having a longitudinal slot g and integral lateral arms or wings g' . The arms g' are bent downwardly and outwardly and secured to a weight K , thus suspending said weight from the plate J and under the backward arm of the lever F . The weight K is provided with a central longitudinal slot h to permit the passage of the set-screw I .

A perforation is made in the lever F , preferably inwardly from its fulcrum, for the reception of a set-screw L , which passes through the lever and slot in plate J and affords means whereby the weight K may be adjusted at any desired distance from the fulcrum of the lever. The inner end of the plate J is adapted to register with one of a series of graduations M on the face of the lever F , said graduations representing the fractional parts of an ounce from one to four or eight ounces. In this manner the exact amount of tension on the lever F may be obtained. When this im-

proved tension device is used in connection with a sounder or relay, the weight will be placed upon the lever which carries the armature, in the same manner as above described in connection with a telegraph-key, and by means of the graduated scale the varying strengths of the battery may be readily ascertained.

The adjustable sliding weight on the lever insures a firm and reliable engagement of the contacts because of its momentum, which operates to carry the contacts in firm contact with each other. The momentum of the weight is increased in its effect by locating the weight wholly beneath the lever, because the lever, when depressed, operates to raise the weight and move it upwardly through an arc of a circle to a point where the leverage is greatest, and thus insures the maximum effect of the momentum of the weight in effecting a firm and reliable engagement of the contacts. The torsional trunnion operates to prevent any undue pounding and wearing away of the contacts due to the momentum of the weight, because the torsional resistance exerted on the lever when vibrated constantly increases and exerts its maximum effect when the contacts are brought together. Thus the two forces are at all times acting in opposition to each other, and together insure very desirable results.

By means of a telegraph-key constructed as above described, easy manipulation, durability, and more intelligent use of the key and its tension will be secured, and a more firm and certain contact and closing and opening of the key will be provided, avoiding paralysis of the arm and bad effects in the working of wires caused by imperfect adjustment of the trunnions by operators of no mechanical skill and no distinct recollection of how strong or weak the key-spring was when it worked well before, or whether the physical conditions are the same.

Slight changes might be made in the constructive details of my invention without departing from the spirit thereof. Hence I do not wish to limit myself to the precise details of construction herein set forth; but,

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

1. The combination, with a telegraph-instrument, of a vibrating lever mounted therein, a sliding plate having a longitudinal slot carried on the lever, a weight suspended from the sliding plate and provided with a longitudinal slot, and a set-screw adapted to pass through the slot in the sliding plate and into the lever to retain said plate at any desired adjustment, substantially as set forth.

2. The combination, with a telegraph-instrument, of a vibrating lever mounted therein, a sliding plate carried on said lever; a scale on the lever with which the plate is adapted to register, a weight suspended from

the sliding plate, and a set-screw for retaining said sliding plate at any desired adjustment, substantially as set forth.

5 3. The combination, with a telegraph-instrument, of a vibrating lever having torsional trunnions mounted on the posts of said instrument, a bar fixed to each of said posts and extending inwardly beneath the trunnions, and loops carried by the trunnions and

encircling the fixed bars, substantially as set forth.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

CLARENCE WALLACE TAYLOR.

Witnesses:

GEO. S. PARKER,
JOHN MENZIES.