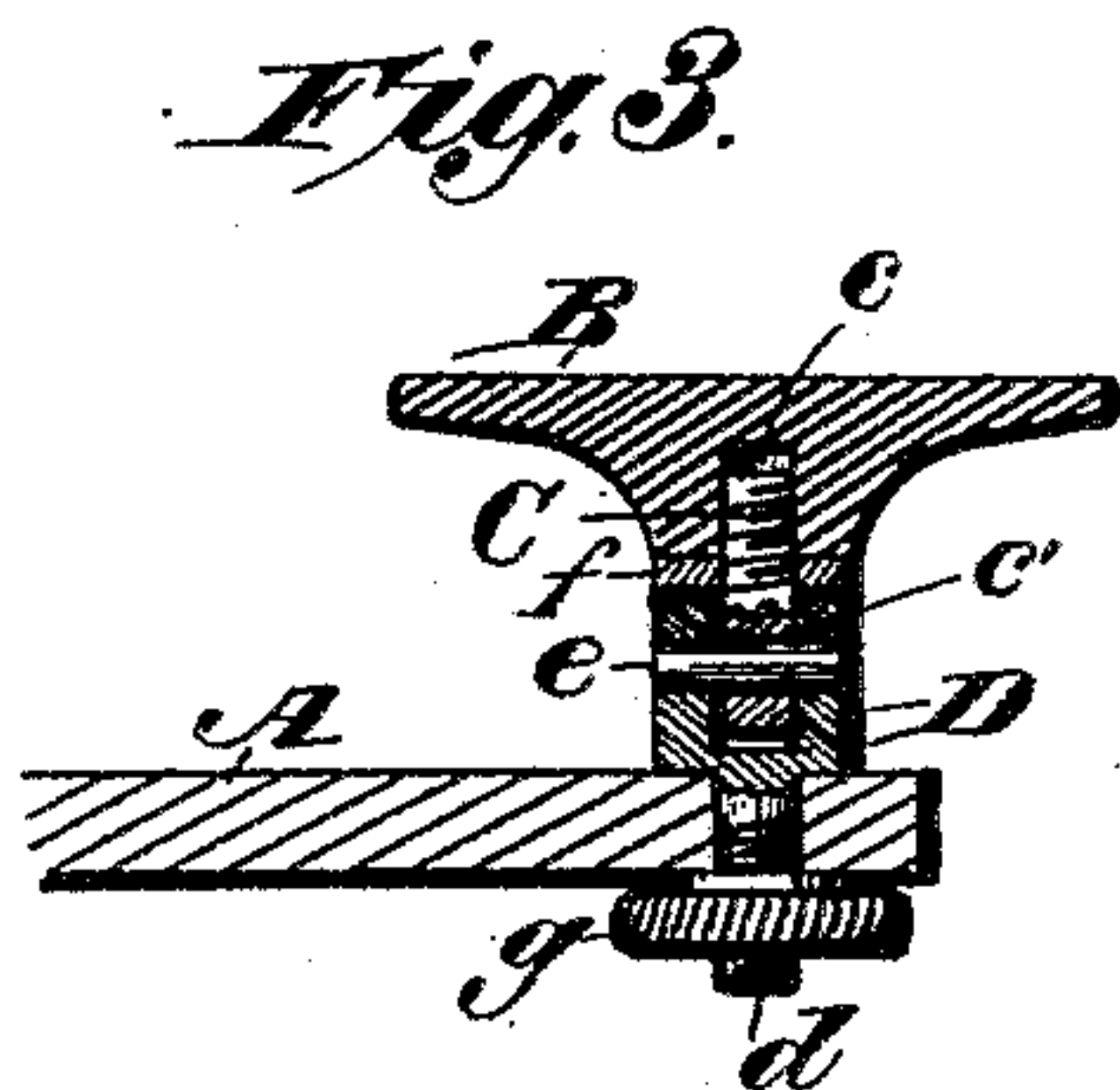
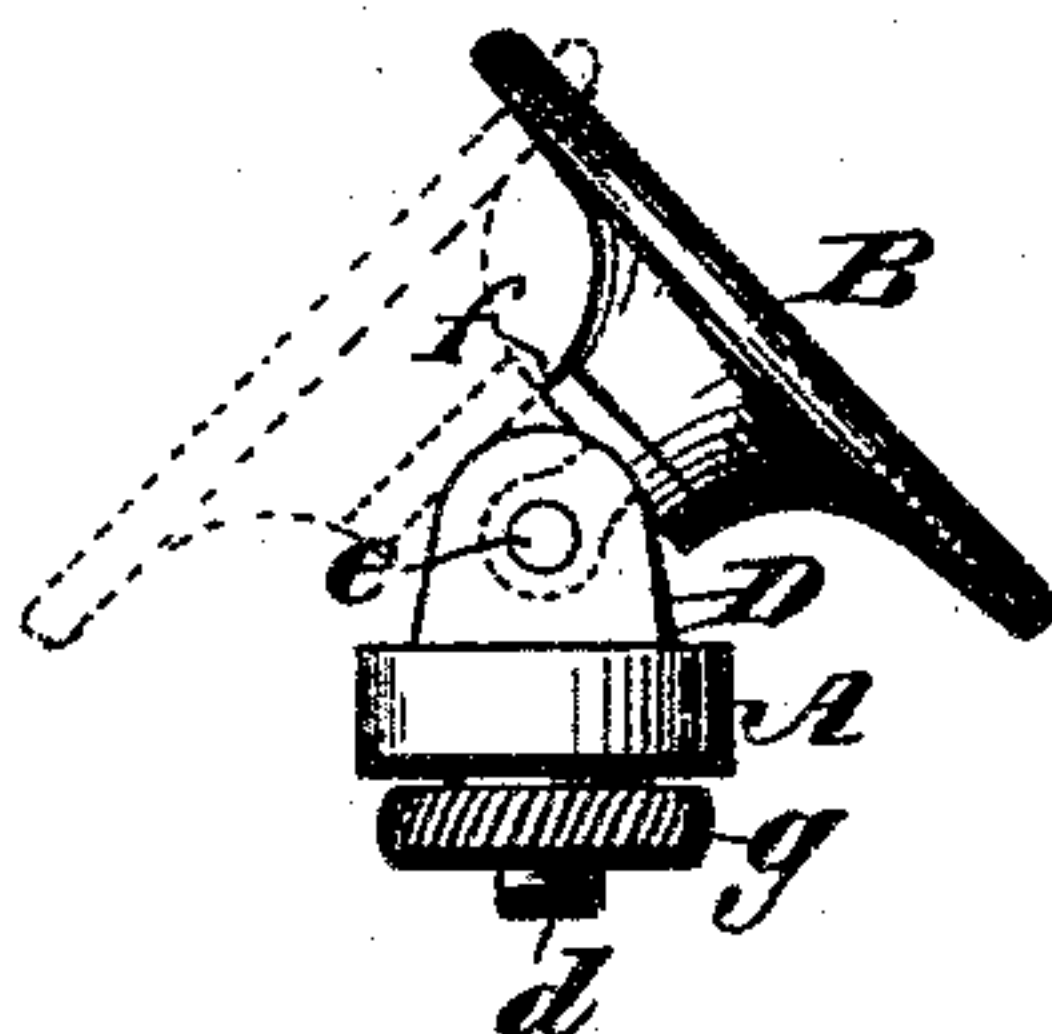
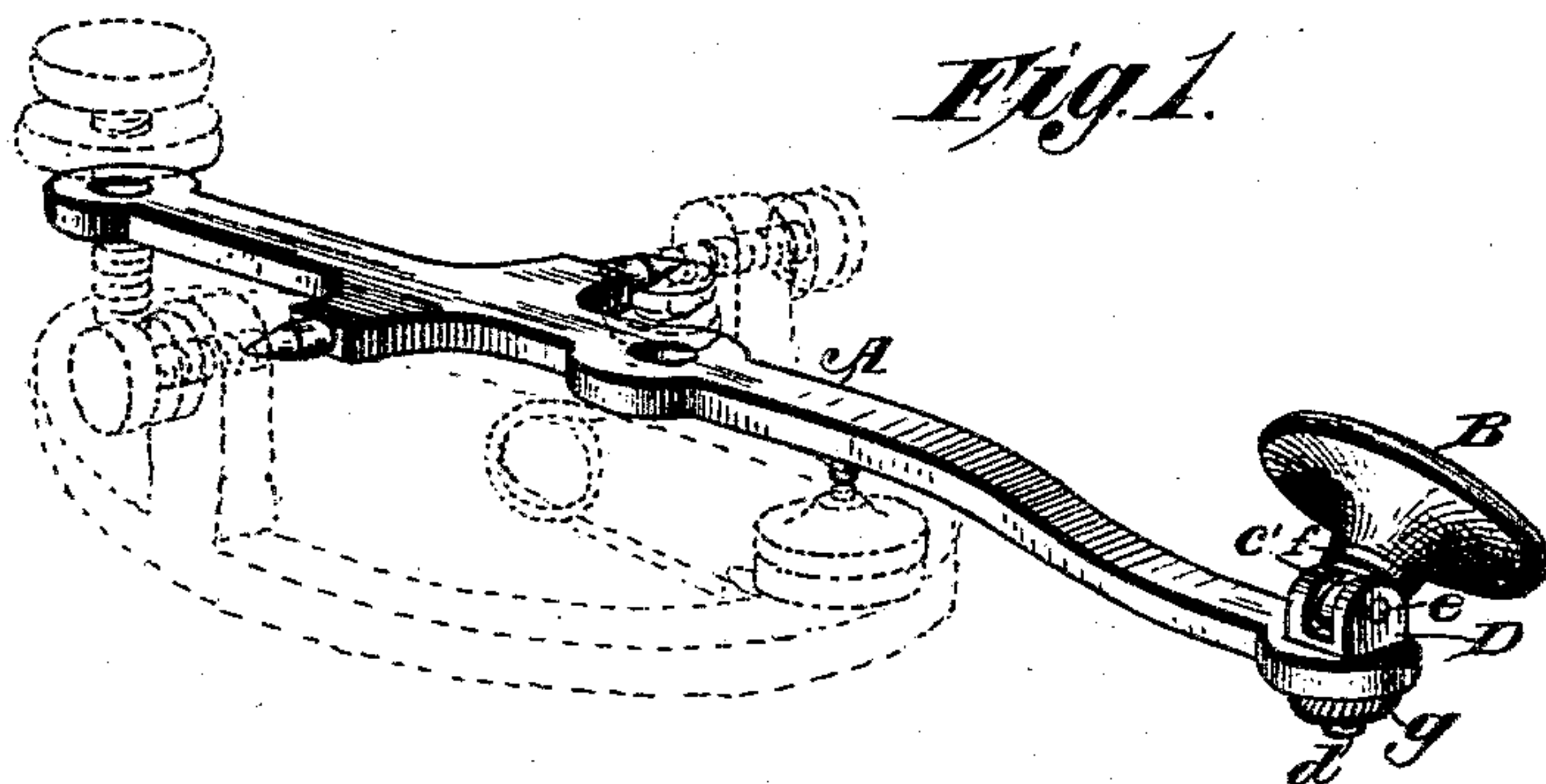


(No Model.)

H. S. TEBBS, N. C. LANE & V. COOMBS.
TELEGRAPH KEY.

No. 411,770.

Patented Sept. 24, 1889.



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UNITED STATES PATENT OFFICE.

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DISTRICT OF COLUMBIA.

TELEGRAPH-KEY.

SPECIFICATION forming part of Letters Patent No. 411,770, dated September 24, 1889.

Application filed December 18, 1886. Renewed March 11, 1889. Serial No. 302,938. (No model.)

To all whom it may concern:

Be it known that we, HARRY S. TEBBS, NATHAN C. LANE, and VINTON COOMBS, citizens of the United States, residing at Washington, in the District of Columbia, have invented new and useful Improvements in Telegraphic Keys, of which the following is a specification.

Our invention relates to telegraphic keys, and has for its object to provide a key which will avoid the objections heretofore existing in the keys ordinarily used—namely, that in operating said keys the hand of the operator is necessarily turned axially to bring the palm of the hand downward and the natural curve of the fingers into substantially a vertical plane, or a plane parallel with the vertical movements of the key. This position of the hand is not that normally assumed by the muscles when the arm is supported by the operator's table, and experience has shown that continued use of the key produces excessive fatigue of these muscles thus unnaturally exerted in retaining the required position.

It is well known to all operators who have been employed in the work of transmitting telegraphic messages that such operators suffer from what is known among them as "loss of grip." By this they mean that from the unnatural and strained position of the arm, wrist, and hand the muscles thereof become stiffened and cramped, and the parts named become partially paralyzed, resulting in many weeks' loss of work, and oftentimes totally incapacitating them from further employment as telegraph operators. This twisted and deformed condition of the arm, wrist, and fingers, resulting from the causes aforementioned, not only incapacitates the operator from permanent work, not only frequently deprives the telegraph companies of valuable employes, but in some cases, where the strained and unnatural position of the arm does not result in a real injury, it does cause the muscles to become so stiff as to greatly reduce the speed of the operator. The attempt has been made to overcome these objections by making the entire key-lever to revolve axially in a journal or bearing formed at that end which is pivotally connected with the table. This construc-

tion is manifestly possessed of many and great disadvantages. In the first place, it is absolutely necessary that an entirely new and radically-different instrument from that in ordinary use must be constructed, putting the companies or operators to a great and unnecessary expense and inconvenience, and, secondly, compelling the operator to alter the adjustments of the instrument every time he adjusts the angle of the key-lever.

By the use of our improved instrument we avoid this useless expense and unnecessary inconvenience occasioned by the key we have just described.

Referring to the drawings forming a part of this specification, Figure 1 is a perspective view of a telegraphic key embodying our improvements. Fig. 2 is an end view thereof, and Fig. 3 a section.

The letter A indicates the vibrating key-lever of any of the well-known telegraphic keys in common use.

B indicates a hard-rubber button, such as is ordinarily used on instruments of this nature. Said button, however, may be constructed of any suitable and well-known material. It has been the custom heretofore to attach a screw-threaded shank directly to the button and to attach said button to the key-lever by causing said screw-threaded shank to enter and engage a screw-threaded opening in the end of said key-lever.

As before described, we design to make our button angularly adjustable relatively to the key-lever, and to this end we employ the ordinary hard-rubber or other button having the usual screw-threaded socket *c*, and into this socket is screwed a screw-threaded shank *C*, the lower end of which is provided with a perforation *c'*.

D indicates a bifurcated lug provided with a screw-threaded shank *d*. Said lug D is provided with two perforations adapted to register with the perforation *c'* in the screw-threaded shank *C*, and a pivot-pin *e* is passed through said perforations, hinging the screw-threaded shank *C* to the bifurcated lug D. Interposed between the bottom of the button B and the top of the bifurcated lug D is a washer *f*, preferably slightly concaved on its

under side to more closely fit and embrace the semicircular conformation of the top of the bifurcated lug D, as shown in Fig. 2.

The button, as above described, can readily be attached to any of the ordinary instruments now in common use by simply screwing the screw-threaded shank *d* into the screw-threaded perforation found in the ends of all the well-known key-levers in present use. In order to permit of the adjustment of the button in any horizontal position, we provide a jam-nut *g*, adapted to engage the screw-threaded shank *d* underneath the key-lever, whereby the button can be adjusted to the desired horizontal position and the jam-nut then tightly screwed up against the under side of the key-lever, thus binding the parts in the desired position. By placing this jam-nut on the screw-threaded shank *d* under the key-lever we accomplish still another result—namely, should the screw-threaded shank *d* be smaller than the screw-threaded perforation in the end of the key-lever it is merely necessary to pass the shank loosely through said perforation and then screw the jam-nut up tightly against the under side of the key-lever, when it will be found that the parts are held as tightly and firmly in position as though the screw-threaded shank accurately fitted the screw-threaded perforation in the key-lever. In order that the button may be fitted to any of the ordinary keys now in common use, we design to make the screw-threaded shank *d* of a size that will approximately fit the smallest screw-threaded perforations employed in any of the well-known keys.

It will be seen from the above description that the button is secured to the key-lever by a universal-joint attachment, which may be varied as to construction as occasion or convenience may require; hence we do not limit our invention to the construction shown.

Having thus described the construction of our device, we will now proceed to describe its operation.

The operator wishing to adjust his button first partially unscrews the button from its screw-threaded shank C and then turns the button, together with said shank, to any angle relative to said key-lever that he may desire. He then screws said button down upon the said shank D, causing the bottom of the button to bind upon the washer and the

washer in turn to bind upon the curved surface of the bifurcated lug. Should this angular adjustment be not exactly suitable to the hand of the operator, the button can, in addition to this angular adjustment, be still further adjusted in any horizontal position by simply loosening the jam-nut and turning the inclined button and again tightening up said nut, thus combining in the one instrument a button adjustable both in a horizontal and in an inclined position.

What we claim, and desire to secure by Letters Patent, is—

1. In a telegraph-key, the combination, with the vibrating key-lever, of a button mounted thereon and adjustable to either side of said lever, substantially as and for the purpose specified.

2. In a telegraphic key, the combination, with the key-lever, of a button connected thereto by a universal joint and mechanism whereby the button may be held in any position to which it may be adjusted, substantially as specified.

3. The combination, with the vibratory key-lever of a telegraph-instrument, of a button adjustable upon said key-lever to bring the top or top surface of said button into planes of different inclinations upon all sides of a vertical line passing through the pivoted axis of said button, substantially as described, and for the purpose specified.

4. In combination, the button B, screwed upon a threaded shank C, pivoted to the lug D, carrying a jam-nut *g*, substantially as shown and described.

5. In combination, the button B, screwed upon the screw-threaded shank C, pivoted to the lug D, carrying a jam-nut *g* and a washer *f*, interposed between the top of the bifurcated lug D and the bottom of the button B, all constructed and arranged substantially as shown and described, and for the purpose specified.

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

HARRY S. TEBBS.
NATHAN C. LANE.
VINTON COOMBS.

Witnesses:

EWELL A. DICK,
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