(No Model.)

J. H. BUNNELL.

MECHANICAL TELEGRAPH INSTRUMENT.

No. 418,443. Patented Dec. 31, 1889.

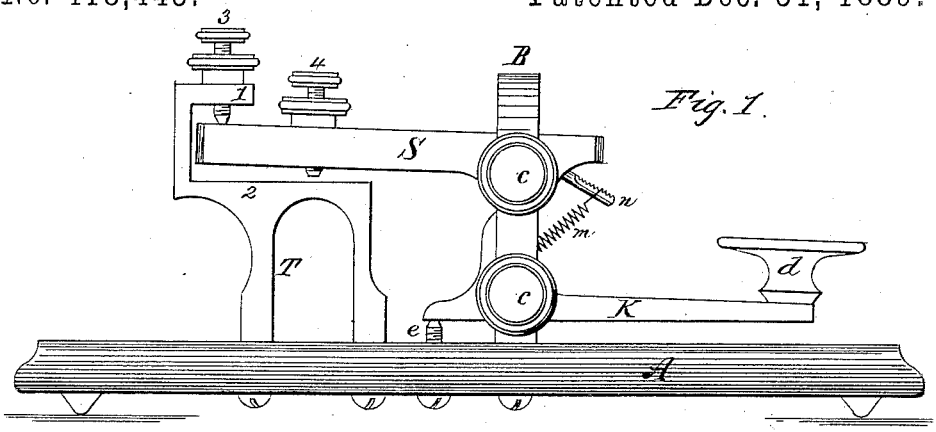


Fig. 1.

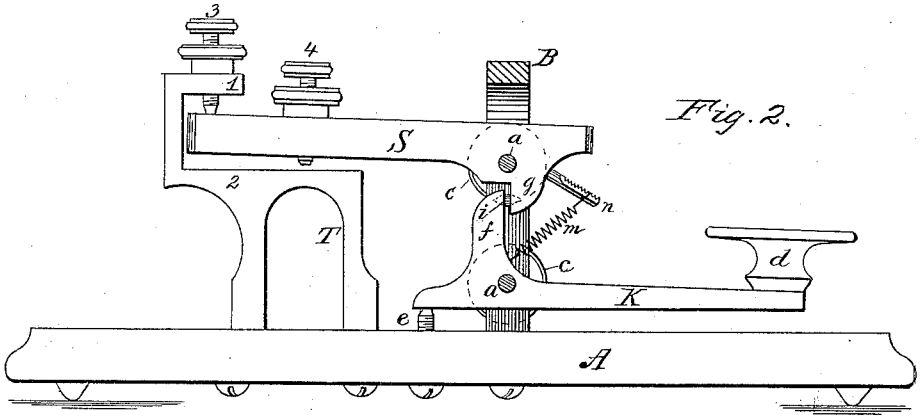
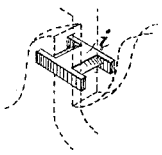


Fig. 2.

Fig. 4.



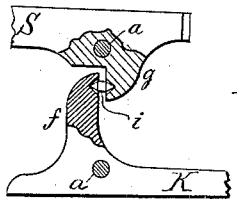


Fig. 3.

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UNITED STATES PATENT OFFICE.

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MECHANICAL TELEGRAPH-INSTRUMENT.

SPECIFICATION forming part of Letters Patent No. 418,443, dated December 31, 1889.

Application filed December 13, 1888. Renewed October 8, 1889. Serial No. 326,326. (No model.)

To all whom it may concern:

Be it known that I, JESSE H. BUNNELL, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Mechanical 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 make and use the same.

This invention relates to that class of devices generally known as "mechanical telegraph-instruments"—that is, an instrument for students' and learners' use—which combines the functions of a telegraph key and sounder, to enable the tyro to practice both sending and receiving by sound without the expense and inconvenience of a battery and the complete electro-magnetic equipment.

The object of my present invention is to so construct the instrument that in working the key the operator will have presented to his senses of touch and hearing precisely the same conditions as he will afterward meet with in sending and receiving on the regularly-organized standard electrical instruments.

My invention consists in the combination and arrangement of parts, substantially as hereinafter more particularly pointed out.

In the accompanying drawings, which form part of this specification, Figure 1 is a side elevation of my proposed instrument complete. Fig. 2 is a similar elevation with half the trunnion-bridge removed. Fig. 3 is a sectional detail showing my frictionless mode of connecting the levers, and Fig. 4 is a perspective of another form of connecting piece or toggle.

In constructing the device I prefer to mount the whole on a hard-wood base A, which rests on projections, to make the instrument resonant. To the base A, I fix the trunnion-bridge B, of the form most commonly used in sounders for the lever. In this I pivot the respective levers K and S by means of the trunnion *a* and trunnion-screws *c*. The key-lever K extends in both directions from its trunnion. At its front end it is fitted with the ordinary rubber finger-piece *d*, and its back end forms a limit-stop on the screw *e* in the base A. Lever K also has an upward extension *f*, which I prefer to have immediately above its trunnion. The sounder-lever S is pivoted at a point above the trunnion of key-lever K, and extends back between the jaws 1 and 2 of a regular sounder bridge or arch T, which is firmly secured to the base A. The jaw 1 is fitted with the adjustable back stop 3, and the lever S is fitted with the adjustable front stop 4, which strikes the arch T just as the ordinary electro-magnetic sounder is constructed at its corresponding portion. Lever S has a downward extension *g*, and the extensions *f* and *g* are so proportioned as to overlap, as shown, but with their adjacent faces in close proximity. Between the two I insert a short pointed toggle *i*, whose ends rest in depressions or recesses in the adjacent faces of the lever-extensions *f* and *g*. The levers are held in this relation by a spring *m*, which also acts to throw up the rear end of the lever S and to lift the key K into its upper position. The spring *m* is made to adjust the tension or stiffness of the key by being looped over a notched pin *n*, projecting from the lever S. I thus obtain an instrument which exactly imitates every one of the functions of the regular standard telegraphic key and sounder, and so perfect is this imitation that when the spring is properly adjusted the most experienced operator finds no difference whatever, so far as relates to the touch in sending or the sound in receiving.

The apparatus is cheap to construct, substantial, and durable, and is quite portable for pocket use, as it occupies but little more space than the standard telegraphic key.

The method of connecting the levers K and S is admirably suited to the object, and forms an important feature of my invention. Instead, however, of using a double-pointed toggle I can adopt the toggle shown in Fig. 4, consisting of a flat piece of steel *i*, having a knife-edge at each end, and this may be of advantage, having guard-lips at each side to hold it in position in the grooves formed for its reception in the lever-extensions *f* and *g*.

I claim as my invention—

1. In a mechanical telegraph-instrument, a key-lever and a sounding-lever, both inde-

pendently pivoted in a single bridge and having overlapping extensions held in operative connection by a single spring attached to both levers, substantially as described.

2. In a mechanical telegraph-instrument, a key-lever and a sounding-lever, both independently pivoted in a single bridge and having overlapping extensions operatively connected by an interposed toggle, in combination with a spring attached to both levers and adapted to force both said extensions against the toggle, substantially as described.

3. In a mechanical telegraph-instrument, the combination of the pivoted lever K, having finger-piece *d* and upward extension *f*, the pivoted lever S, having the downward extension *g*, the toggle *i*, interposed between said extensions, a spring *m*, connected to said levers, and suitable sounder stops or jaws embracing the extremity of the lever S, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

JESSE H. BUNNELL.

Witnesses:
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THOS. P. CROWNE.