

(No Model.)

J. H. BUNNELL.

MECHANICAL TELEGRAPH SOUNDER.

No. 255,932.

Patented Apr. 4, 1882.

Fig: 1.

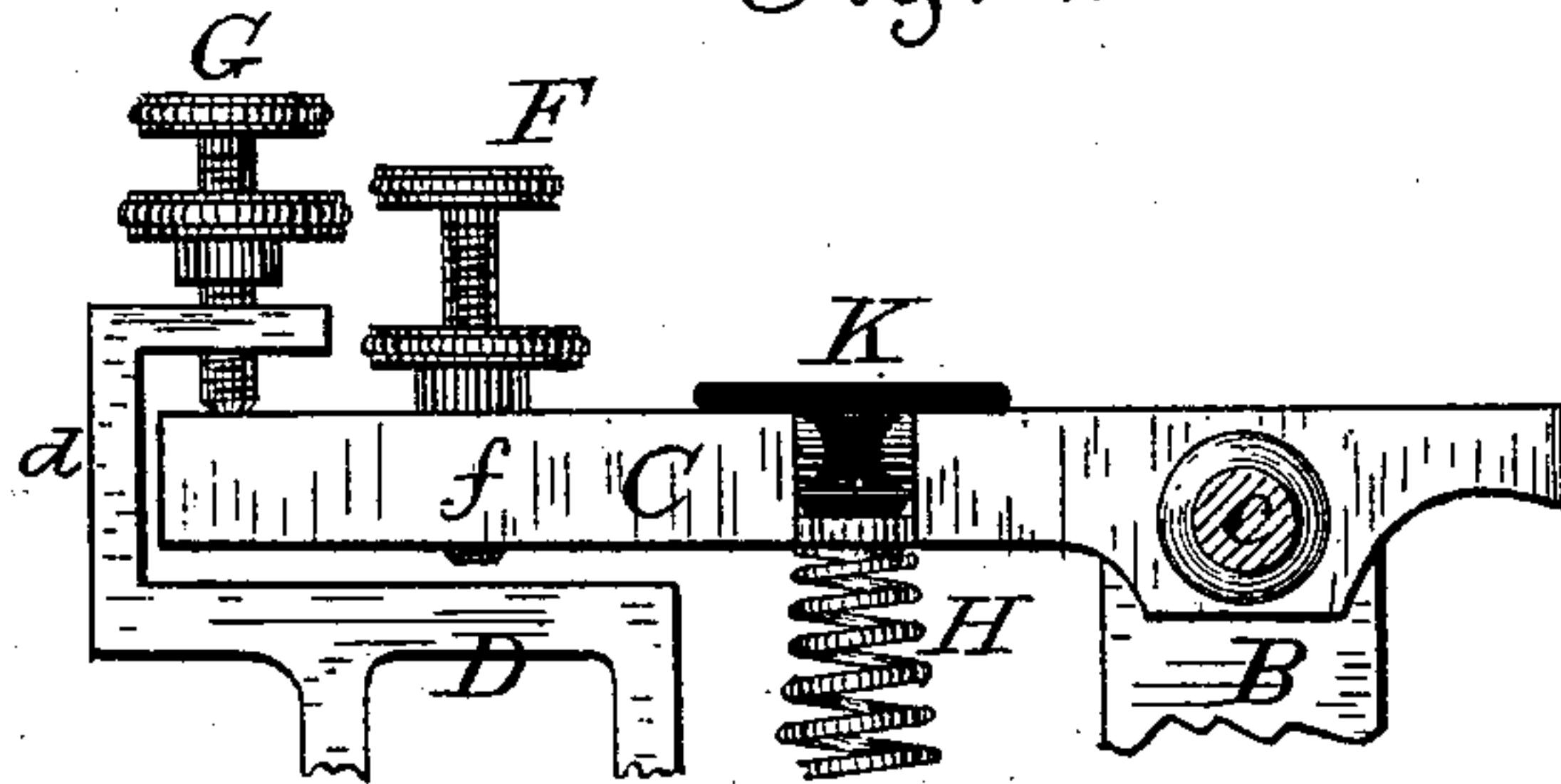
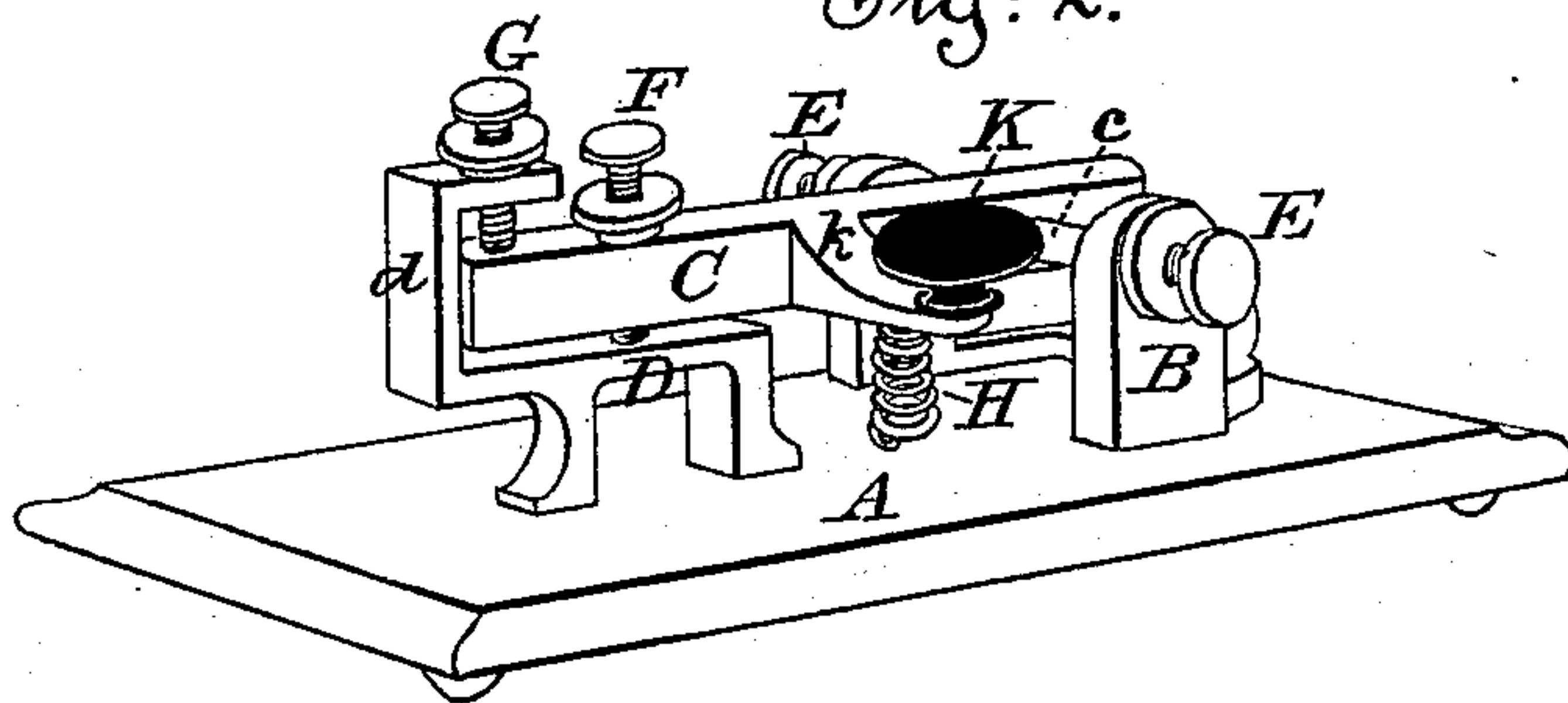


Fig: 2.



Witnesses:

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Muller C. Earl

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UNITED STATES PATENT OFFICE.

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MECHANICAL TELEGRAPH-SOUNDER.

SPECIFICATION forming part of Letters Patent No. 255,932, dated April 4, 1882.

Application filed January 4, 1882. (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 and State of New York, have invented certain new and useful Improvements in Mechanical Telegraph-Instruments, of which the following is a specification.

My invention relates to a certain class of instruments which are employed for the purpose of instructing students in the manipulation of telegraphic instruments, particularly for training the muscles of the hand in the formation of telegraphic signals by means of a key, and the ear in distinguishing the characteristic sounds made by telegraphic receiving-instruments.

The object of my invention is to provide a compact, efficient, and inexpensive apparatus for this purpose, which shall be capable of reproducing with accuracy the movements and sounds of the actual instruments employed for transmitting and receiving telegraphic signals by means of electricity.

In the accompanying drawings, Figure 1 is an elevation partly in section, showing the construction of the movable parts of my apparatus; and Fig. 2 is a perspective view of the complete instrument.

In the figures, A represents a base, upon which the various parts of the apparatus are mounted, and which is preferably constructed of mahogany or other hard and resonant wood. This may with advantage be supported upon feet placed underneath its corners.

To the base A is firmly secured a yoke or standard, B, in which are inserted set-screws E E.

The horizontal metallic lever C is rigidly fixed to and turns upon an arbor, *c*, near one of its extremities, which arbor is mounted between the set-screws E E, which form bearings in which it turns with slight friction. Beneath the opposite or free end of the lever C is a metallic arch or bridge, D, which is firmly secured to the base A by screws or otherwise. This bridge may conveniently be provided with a projecting standard, *d*, supporting an adjustable set-screw, G, the function of which is to limit the vertical movement of the lever C in an upward direction. The downward movement of the lever C is limited in

like manner by an adjustable set-screw, F, which passes vertically through the lever, so that its blunt point impinges upon the top of the bridge D. Thus by the vertical oscillation of the lever C between its two limiting-stops two sounds are produced differing from each other in character, so as to be readily distinguished, one being produced by the downward blow of the lever, which is communicated through the screw F to the bridge D, and which is re-enforced by the resonant action of the base A, and the other being produced by the upward blow of the lever against the point of the screw G. By means of these sounds the trained ear is readily enabled to distinguish each movement of the lever.

It is very important that the sound produced by the downward blow of the lever should be as loud and clear as possible. This result I effect by inserting the screw F in the lever C at a particular point, *f*, which point, with reference to its length, is the center of mechanical percussion of the lever when moving upon the axis *c*, which constitutes its center of motion. The center of percussion may be defined as that point in a body moving about a fixed axis at which it may strike an obstacle without communicating a shock to the axis. In a lever having a form and proportion like that shown in the drawings this point is situated a little less than three-fourths of the distance from the center of motion to the free end of the lever. The position of the lever C with reference to the bridge D is such that the screw F will impinge as nearly as possible upon the center of the bridge D, or midway between its supporting-abutments.

At a point about midway between the center of motion *c* and the center of percussion *f* of the lever C a lateral projection, *k*, is formed upon it, which supports a finger-knob, K, similar to that used upon telegraphic keys. A spring, H, is placed between the lever C and the base A, so that when the lever is depressed by the finger of the operator acting upon the knob K the spring will be compressed, but when the knob is released the elastic force of the spring will instantly raise the lever and cause it to strike against the upper screw-stop, G, and will normally maintain it in contact therewith. Thus the operator, by manipulating

the knob K, attached to the lever C, can precisely imitate the movements of a telegraphic key, while, on the other hand, the sounds produced by the movement of the lever C between its limiting stops F and G will correspond precisely with those produced by the lever of a telegraphic sounder actuated by an electro-magnet.

Thus my improved apparatus constitutes a combined key and sounder well adapted for the purpose of instruction and practice in telegraphic manipulation, which is at the same time compact and portable, and requires no battery or other inconvenient attachment.

I claim as my invention—

1. In a mechanical telegraph-instrument, the combination, substantially as hereinbefore set forth, of a lever pivoted at one extremity and vibrating between fixed stops at the other, a spring holding said lever normally against its upper fixed stop, and a finger-knob for depressing said lever permanently secured thereto at a point between the axis and the free end.

2. In a mechanical telegraph-instrument, the

combination, substantially as hereinbefore set forth, of a resonant base, a metallic bridge mounted upon said base, a lever pivoted at one extremity and free to vibrate at the other, a projection from said lever at its center of percussion which is adapted to impinge upon said bridge, and a finger-knob for actuating said lever affixed thereto at a point between its center of motion and center of percussion.

3. In a mechanical telegraph-instrument, the combination, substantially as hereinbefore set forth, of a lever pivoted at one extremity and vibrating between fixed stops at the other, a horizontal projection from said lever at a point between its center of motion and its free end, and a finger-knob mounted upon said horizontal projection.

In testimony whereof I have hereunto subscribed my name this 31st day of December, A. D. 1881.

JESSE H. BUNNELL.

Witnesses:

MILLER C. EARL,
CHARLES A. TERRY,