

W. HUMANS.

Magnetic-Telegraph Apparatus for Students' Use.

No. 148,956.

Patented March 24, 1874.

Fig. 1.

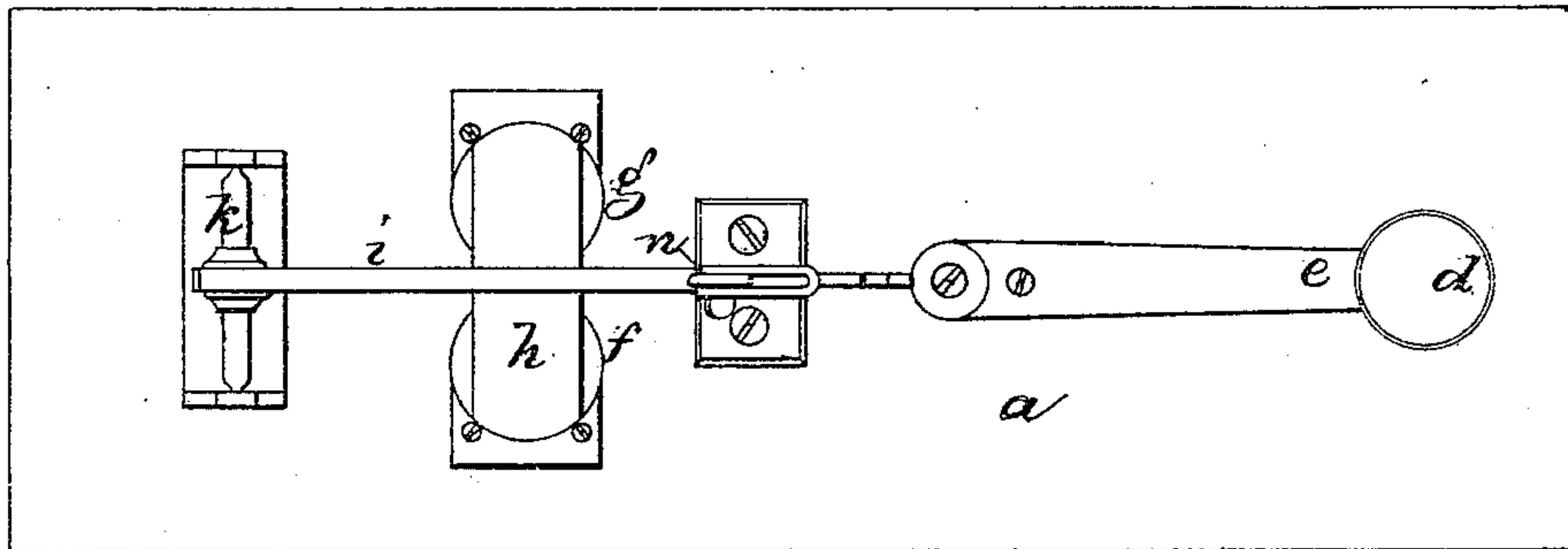


Fig. 2.

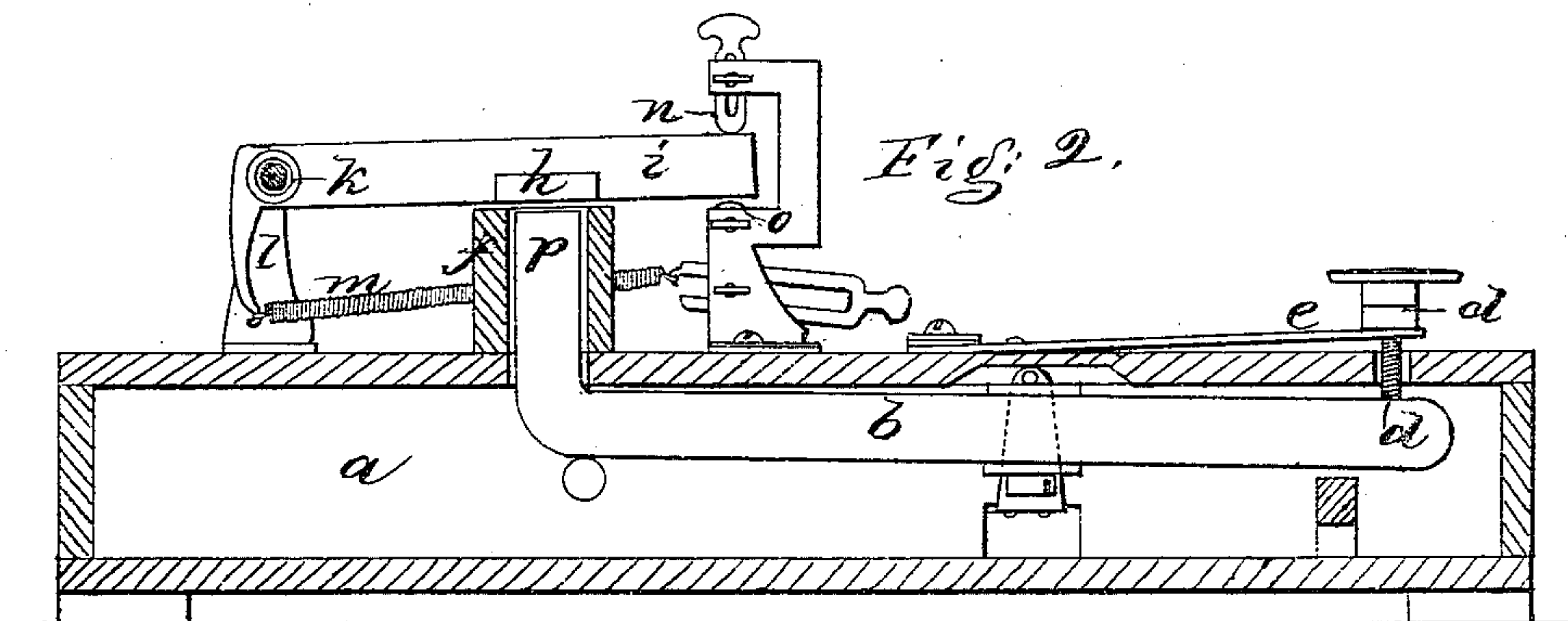
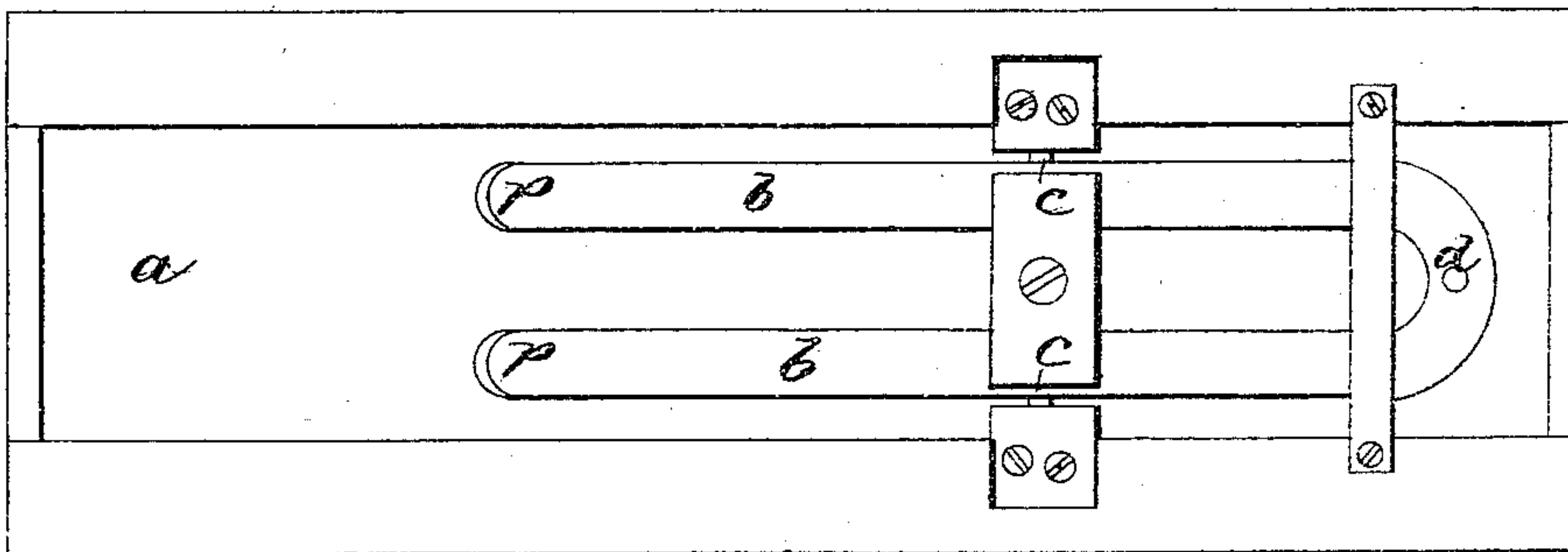


Fig. 3.



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UNITED STATES PATENT OFFICE.

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IMPROVEMENT IN MAGNETIC-TELEGRAPH APPARATUS FOR STUDENTS' USE.

Specification forming part of Letters Patent No. 148,956, dated March 24, 1874; application filed February 7, 1874.

To all whom it may concern:

Be it known that I, WILLIAM HUMANS, of Cambridge, in the county of Middlesex and State of Massachusetts, have invented an Improved Magnetic Sounder; and I do hereby declare that the following, taken in connection with the drawings which accompany and form part of this specification, is a description of my invention sufficient to enable those skilled in the art to practice it.

In teaching or acquiring a knowledge of the art of telegraphy, so far as relates to sending and receiving messages, and as practiced by sound, it is customary to use what are called mechanical sounders, a key similar to the key of a telegraph-instrument being employed, but the movements of the clicking mechanism being effected entirely by an arrangement of levers and springs, the mechanism being placed upon a hollow box to increase the sound.

In my instrument I employ an electric current by means of an armature and a steel magnet, the arrangement of mechanism being such that I obtain a very simple and inexpensive instrument, and one which, in its action, is very similar to the action of an ordinary telegraph-instrument worked by a battery-circuit.

My invention consists, primarily, in combining a lever worked mechanically, intermittently, and alternately by a key and spring, and an armature worked alternately and intermittently by an electric current and a spring, (the current being produced by a steel magnet,) and suitable stops, preferably adjustable, being employed to determine the movement of the armature-lever. In such an organization the lever worked by the key may be the magnet, or the armature may be the magnet, or both may be magnets, it being only essential that there shall be a magnetic current, by which, when the lever and armature are brought sufficiently near, the armature shall fly toward the lever, to be in turn thrown in the opposite direction by the stress of the spring connected with the armature-lever when the key-lever moves away from the armature, the click being produced by the alternate movements of the armature-lever from stop to stop, and being

preferably enhanced in sound by the box upon and in which the mechanism is placed.

The drawing represents an instrument embodying my invention.

Figure 1 shows the mechanism in plan. Fig. 2 is a sectional elevation of it. Fig. 3 is a reverse plan of it.

a denotes the sounding-box, in which box I place a lever-bar or magnet, *b*, pivoted at *c*, and having extending up from its outer end a pin or screw, *d*, by which it is connected to a spring-key, *e*, the pin extending loosely through the top board of the box, and the stress of the spring being sufficient to hold up the end of the lever connected to it. The opposite end of the lever turns up and passes through the top of the box into and nearly through two spools or tubes, *f g*, (if the lever or magnet is made U-shaped,) and over these tubes is a transverse bar or armature, *h*, fixed to a lever, *i*, which lever is hung at *k*, and has an arm, *l*, connected to a spring, *m*, the stress of which spring tends to raise the lever *i* and its armature *h*, holding the lever against a stop, *n*, this being the normal position of these parts. When the key-spring is depressed by the finger, the vertical ends of the magnet-bar or lever *b* are raised, and as they approach the tops of tubes *f g*, the armature is attracted by the magnetic fluid, which, overcoming the stress of the spring, causes the armature to fly toward the spools, carrying the armature-lever *h* from the upper stop *n* to a lower stop, *o*, where it is held so long as the key-spring is kept depressed by the finger. As soon as the key-spring is released, its stress causes it to draw up the end of the lever-bar connected to it, which, correspondingly depressing the ends *p p*, carries them down, so that the stress of the spring *m* overcomes the magnetic attraction, and the lever *i* is thrown up to the upper stop *n*. Thus, by the alternate depression and release of the key-spring, the alternate movements of the sounding or clicking lever are produced through the alternate actions of the magnet and the springs.

To regulate the intervals of sound for a more or less rapid action of the key, and to

position the parts for the magnetic attraction, the stops *n o* are preferably made adjustable, and the stress of the spring *m* adjustable by suitable screws and slots, as will be readily understood.

I claim—

In a magnetic sounder, the combination of spring-key *e*, a lever, *b*, a lever, *i*, with its bar

h and spring *m*, and lever-stops *n o*, the bar *h* or lever *b* being a steel magnet, (or both being steel magnets,) and the construction and operation being substantially as described.

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Witnesses:

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