J. H. IRWIN.

Acoustic Telegraphs.

No. 212,144. Patented Feb. 11, 1879.

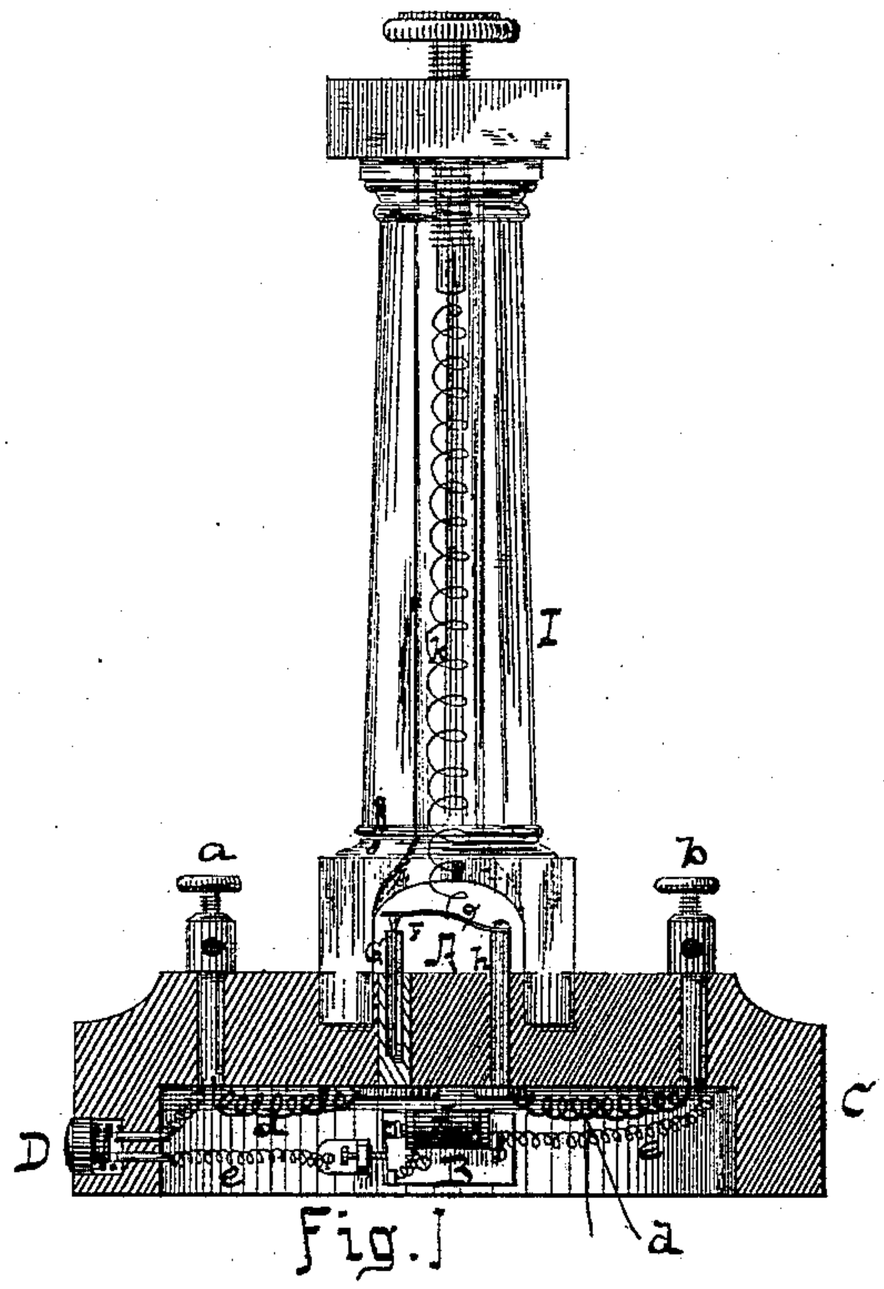

Fig. 1

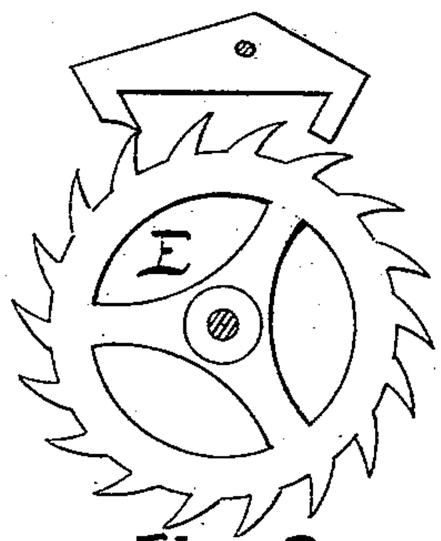

Fig. 3

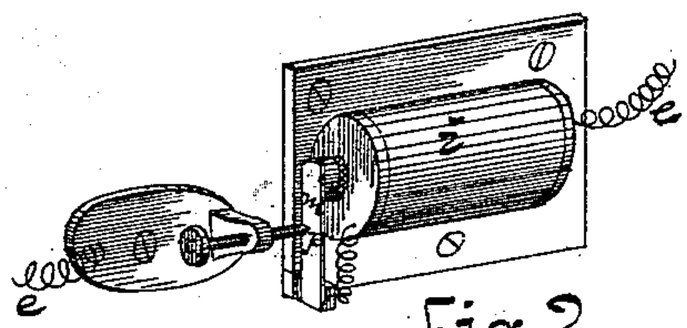

Fig. 2.

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UNITED STATES PATENT OFFICE.

JOHN H. IRWIN, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN ACOUSTIC TELEGRAPHS.

Specification forming part of Letters Patent No. **212,144**, dated February 11, 1879; application filed August 19, 1878.

To all whom it may concern:

Be it known that I, JOHN H. IRWIN, of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented a new and useful Improvement in Acoustic Telegraphs, which improvement is fully set forth in the following specification.

This invention relates to that class of acoustic telegraphs which operate with an electric current, and more particularly with instruments of the type invented by me and secured by Letters Patent, wherein a continuous electric current is converted into a series of electric undulations corresponding to the vibrations of sound-waves at a place of attenuation in the line-conductor, as fully set forth in my said patents, though I do not propose to limit myself to transmitters of that particular description.

In instruments of this class great delicacy of adjustment is required to produce accurate and clear transmission of articulated sounds. This adjustment is most readily effected by means of some definite sounds, which may be observed by means of any desired receiving-instrument. The ticking of a watch laid upon or in the immediate vicinity of the instrument has been found efficient for this purpose. It is desirable, however, that the instrument should be provided with a sounder, as indicated, permanently attached, so as to be always at hand.

My invention, therefore, consists in a light sound-producing device attached to the transmitter in some convenient way.

That others may fully understand my invention, I will particularly describe it, having reference to the accompanying drawings, wherein—

Figure 1 is an elevation of a transmitter, having the base in sections to show my device. Fig. 2 represents an electro-magnetic sounder, and Fig. 3 represents an escapement sounder.

There are many descriptions of mechanism capable of producing the required sounds, such as an escapement operated by a spring, as in time-pieces, &c., or an electrical circuit-breaker operated from the battery and controlled by a switch, &c. The variety of devices for this purpose is very great, and it would be useless to attempt to specify more than the general feature.

In the drawings, therefore, I simply show a transmitter, A, attached to the battery or line-wire by binding-screws *a b*, and provided with an electro-magnetic circuit-breaker or sounder, B, of any ordinary construction, permanently attached to its base C. When the current flows through the electro-magnet *i* its excited core attracts the armature *m* and breaks the circuit at the point *p*, with the usual effect of an alternately opened and closed circuit. D is a switch, whereby a portion of the battery or line electrical current may be switched off from the main wire *d* to the bridge-wire *e*, to form the circuit for the sounder. Said circuit may be opened or closed at will. The circuit of the circuit-breaker B may be completed by junction with the line-wire, as shown, or by a ground-connection, as may be preferred. E is an escapement sounder, which may be driven by clock-work or by a revolving armature, and substituted for sounder B; but at present it is not preferred thereto.

In the transmitter the sensitive point F is mounted upon delicate flat springs *g*, secured to the top of a metallic post, *h*. The point F rests upon the pencil G, which may be of carbon or other suitable refractory and non-oxidizable substance. The pressure-adjustment may be obtained by means of an adjusting device at the top of the insulating-column (glass) I and a metallic connecting-spring, *k*, whereby the tension of the spring *g* may be taken up and the pressure of point F upon the pencil G relieved to any desired degree.

I am aware that a signal apparatus has heretofore been attached to an acoustic-telegraph transmitter, and that said signal has been a sound-producer; but it is entirely different from my device, inasmuch as it responds only to electrical excitement coming from the other end of the line. It cannot be employed for the purpose nor in the manner of mine—*i. e.*, for the proper adjustment of the sensitive point.

Having described my invention, I claim as new, and desire to secure by Letters Patent, the following:

1. An acoustic-telegraph transmitter com-

bined with an electro-magnetic sound-producing apparatus, substantially as described, and so arranged and operated that it may be used at will as an aid in testing and adjusting the transmitter.

2. An acoustic-telegraph transmitter combined with an electro-magnetic sound-producing apparatus permanently attached thereto, and so arranged and operated that it may be used at will as an aid in testing and adjusting the transmitter, and provided with a switch, whereby it may be thrown in or out of action at will.

3. The point F, mounted at the end of the spring *g*, and bearing upon the pencil G, combined with an adjusting device and connecting-spring, *k*, substantially as set forth.

4. An acoustic-telegraph transmitter combined with a sound-producing apparatus, permanently attached, and so arranged and operated that it may be used at will as an aid in testing and adjusting the transmitter.

J. H. IRWIN.

Witnesses:

CHAS. F. R. HEUCKEROLL,

R. D. O. SMITH,