

J. E. OSTRANDER.
COMBINATION WIRELESS TELEGRAPHY INSTRUMENT.
APPLICATION FILED SEPT. 5, 1907.

916,483.

Patented Mar. 30, 1909.

2 SHEETS—SHEET 1.

Fig. 1.

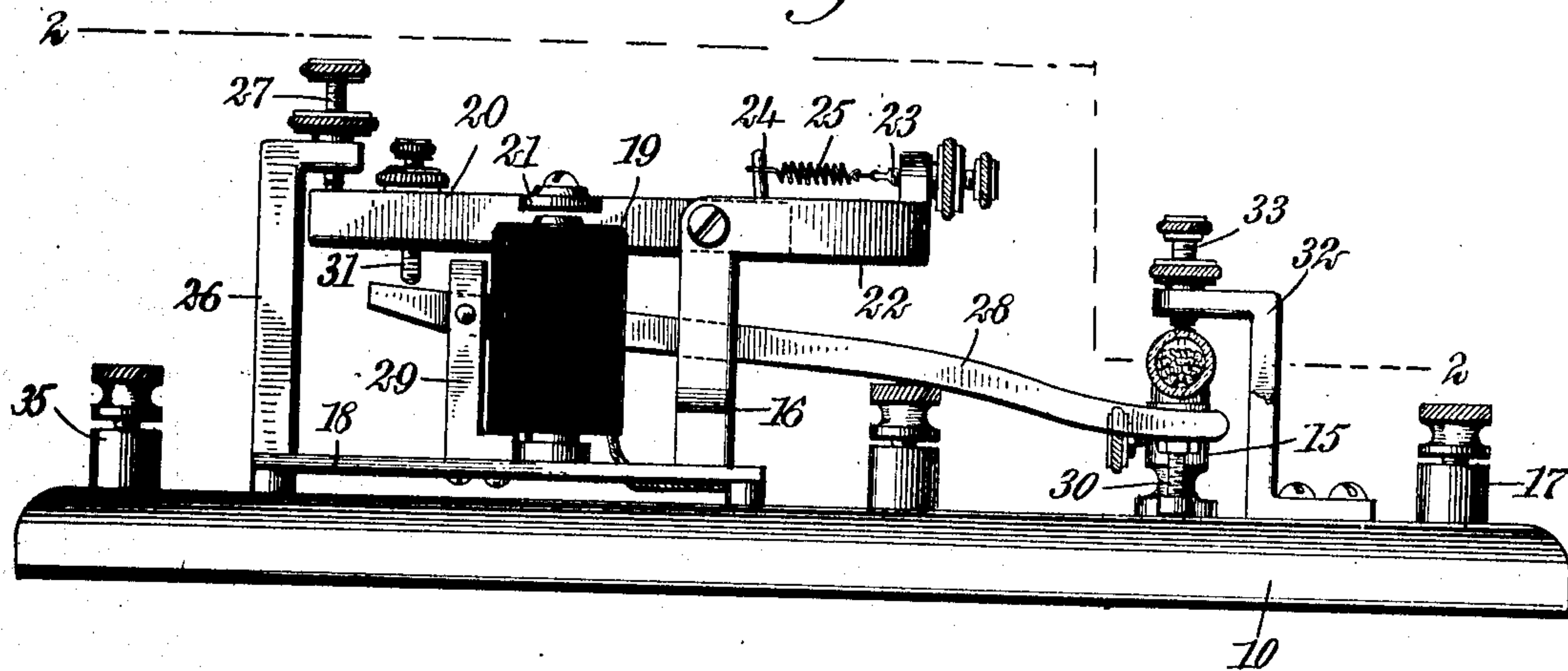
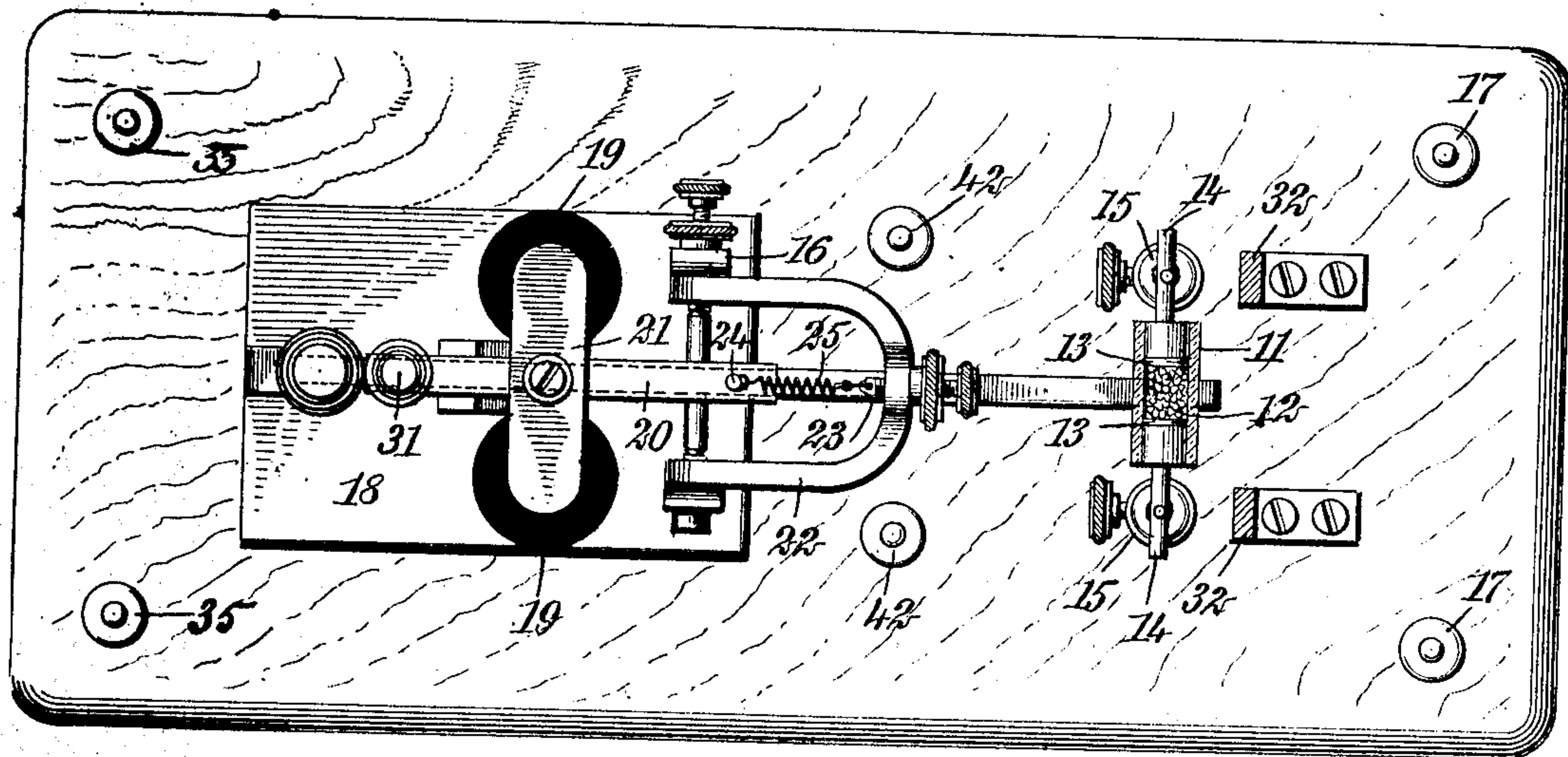


Fig. 2.



WITNESSES

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2 SHEETS—SHEET 2.

Fig. 3.

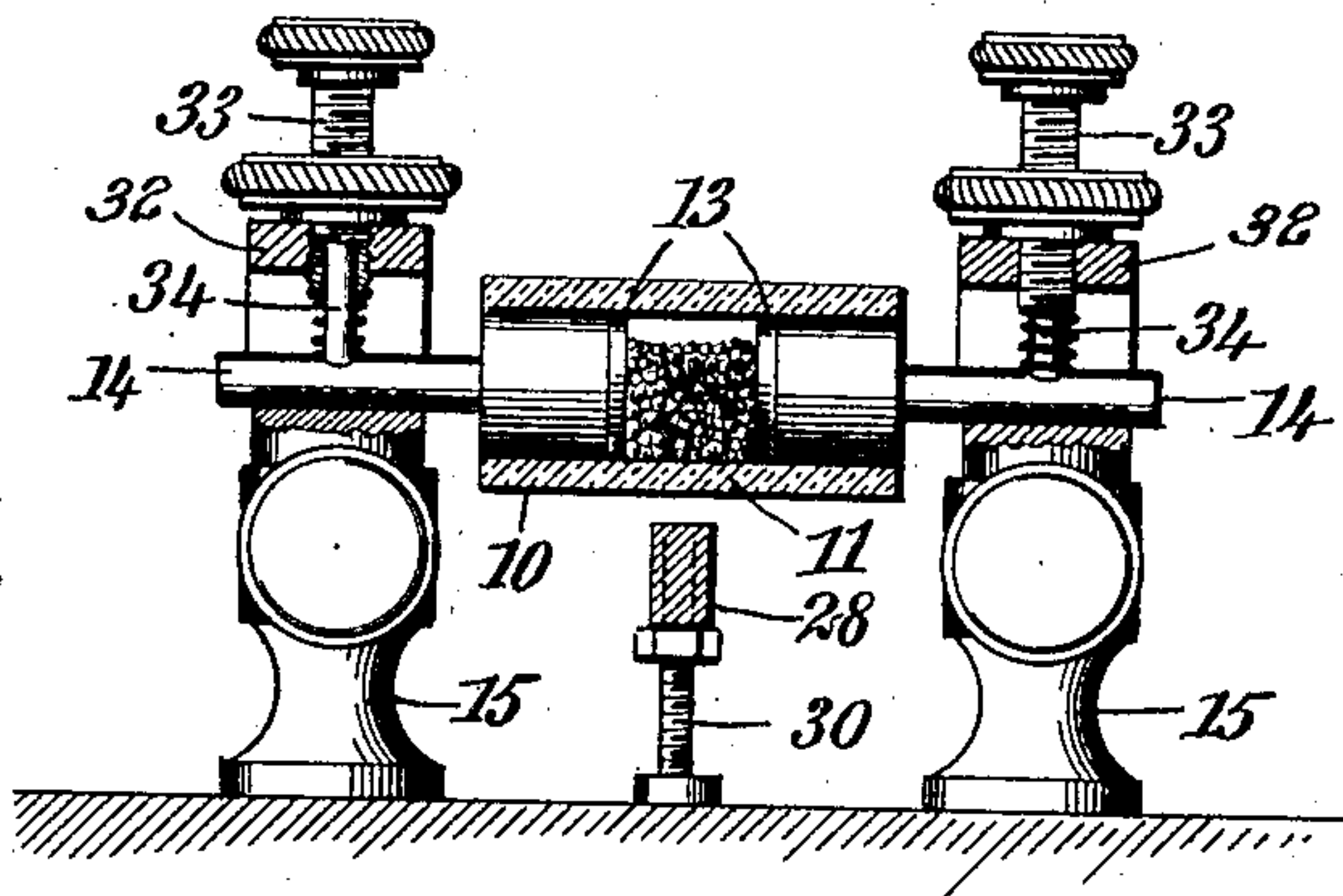
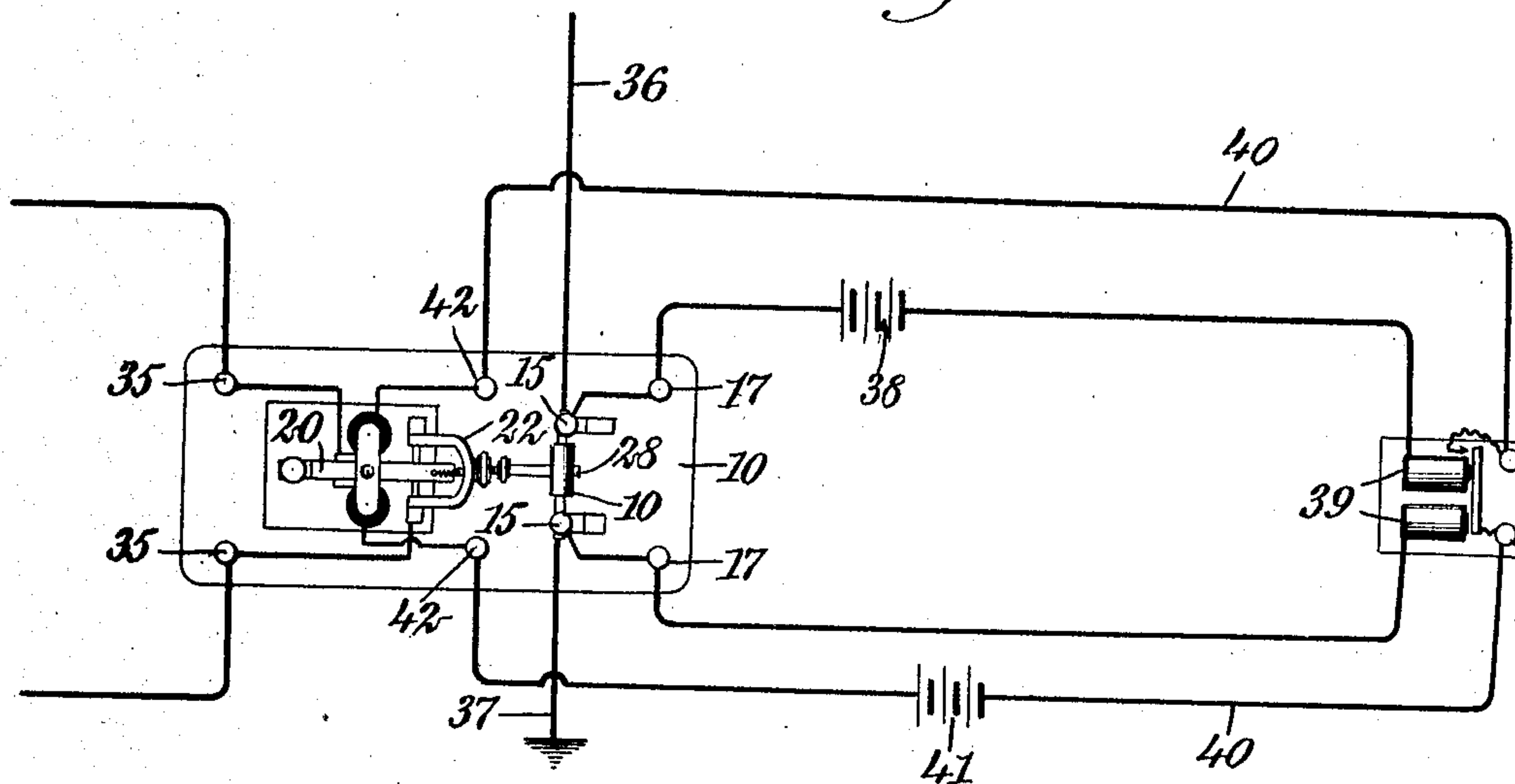


Fig. 4.



WITNESSES

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UNITED STATES PATENT OFFICE.

JOHN E. OSTRANDER, OF STAATSBURG, NEW YORK.

COMBINATION WIRELESS-TELEGRAPHY INSTRUMENT.

No. 916,483.

Specification of Letters Patent.

Patented March 30, 1909.

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To all whom it may concern:

Be it known that I, JOHN E. OSTRANDER, a citizen of the United States, and a resident of Staatsburg, in the county of Dutchess and State of New York, have invented a new and Improved Combination Wireless-Telegraphy Instrument, of which the following is a full, clear, and exact description.

This invention relates to certain improvements in instruments used in wireless telegraphy, and more particularly to an improved coherer and mechanism for breaking the circuit therethrough. In my improved instrument the passage of the current through the coherer not only operates the sounder but also controls mechanism operating to completely break all circuits passing through the coherer. By this mechanical breaking of the circuit through the coherer, the mechanism which serves to break the circuit is itself thrown out of operation and the circuit through the coherer is again closed as far as the mechanical part is concerned. If Hertzian waves are still passing through the coherer, the circuit will immediately become broken again, and this repeated making and breaking of the circuit causes a rapid succession of taps or a buzzing, the length of which depends upon the length of time the transmitter is operated. This circuit breaker is also so arranged that it taps or jars the coherer directly and thus decoheres the small particles or granules contained therein. In the preferred form of my instrument, the sounder is provided with an operating lever or member which upon the passage of a current through the coherer and the sounder, operates to tap the coherer and also to lift the same bodily and break the circuit there-
through.

In the employment of the instrument the length of time the instrument continues to buzz or operate in rapidly successive clicks depends upon the length of time the circuit is held closed at the transmitting station. For sending messages by the Morse code or any code containing dots and dashes, a momentary closing at the transmission station will cause a single tap and a single breaking of the circuit at the receiving station and constituting a dot, but if the transmitting key be held down for a very appreciable length of time, the circuit at the receiving station will be repeatedly opened and closed. Thus, dots and dashes may be readily differentiated and messages sent with great

rapidity, as the automatic making and breaking of the circuit through the coherer to represent a dash would be far more rapid than the operator at the transmitting station could open and close the transmitting key to give a series of dots. In reading the messages from the receiving station, a single tap of the sounder and the resulting breaking of the current through the coherer and the rapid tapping and rapid breaking of the circuit will constitute the dot and dash, respectively. The sudden tapping and moving of the coherer bodily serves to effect the disrupting or decohering action far more efficiently than is possible by a mere tapping of the coherer or its support.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures, and in which—

Figure 1 is a side elevation of a combined sounder and coherer constructed to incorporate my invention; Fig. 2 is a top plan view thereof, a portion being shown in section on the line 2—2 of Fig. 1; Fig. 3 is a vertical section through the coherer and its support; and Fig. 4 is a diagrammatic view illustrating the wiring of the several circuits.

In the specific form illustrated, I provide a base 10 having the coherer and the sounder mounted thereon, and the sounder provided with a movable member extending to a point adjacent the coherer and serving to positively and suddenly lift the latter and break the circuit therethrough upon the effect of the local circuit passing through the coils of the sounder. Any suitable electrically-operated device may be employed to effect the decohering action and adapted to be controlled by the passage of the current through the coherer, but preferably the sounder constitutes this electrically-operated device.

The coherer proper comprises a glass tube 11 having its ends closed in any suitable manner to retain the filings 12. In engagement with the mass of filings at the opposite ends thereof are two metallic plates 13 supported upon the inner ends of terminals 14 which extend beyond the ends of the tube and serve as rests or arms for the coherer and contacts with posts 15. These posts 15 are situated at each end of the coherer and are provided with recesses at their upper end for the reception of the terminals 14, and have binding screws connected thereto,

whereby the posts serve as binding posts to which the wires may be connected. The base may, if desired, be provided with a separate pair of binding posts 17 connected to the two posts 15, respectively, to facilitate the connecting of the local battery wires and the aerial and ground wires. The tube preferably has the air exhausted from its interior to prevent oxidation of the particles within.

Mounted upon the base 10 and adjacent the opposite end thereof, I provide a sounder having a base plate 18 supporting the coils 19 of an electromagnet and having a standard 16 for pivotally supporting the armature lever 20. The lever extends through between the coils and carries the armature 21 adjacent the ends of the coil magnets. For limiting the movements of the armature lever and normally holding the armature out of engagement with the magnets, there is provided an adjustment frame 22 supporting a screw 23. The end of the armature lever carries a lever pin 24, and the pin and screw are connected by a tension spring 25 tending to move the opposite end of the tension lever upward. For limiting the upward movement, there is provided a standard 26 having a screw stop 27 adapted to engage with the upper surface of the armature lever but insulated therefrom. Extending between the two coils and directly below the armature lever, I provide a second lever 28 adapted to be operated by the movement of the armature lever and extending to a point adjacent the under side of the coherer. This lever 28 is pivoted upon a suitable support 29 and its lower or free end is normally supported by an adjustable stop 30. The armature lever carries a contact screw 31, which upon the descent of the armature lever engages with the lever 28 to lower one end and raise the opposite end of the same to strike and lift the coherer. For limiting the upward movement of the coherer and for insuring its return into engagement with the seats on the upper ends of the posts 15, I provide two brackets or standards 32 secured to the support and having adjustable threaded stops 33 extending downwardly toward the seats of the post 15. Preferably, each of these threaded stops is provided with a recess extending up into its lower end, and each of the terminals 14 carries a guide pin 34 extending into these recesses. These guide pins prevent any movement of the coherer other than in the direction of the lengths of said pins, and the extent of this movement is limited by the distance between the posts and the threaded stops 33. Preferably a small spiral spring is slipped over each guide pin 34, one end of each spring coming in contact with the terminals 14 and the other end with the threaded stops 33, respectively. The tension of these springs is regulated by

adjustment of the threaded stops 33 which are adopted for the purpose of effecting equal contact of the terminals 14 with the recesses in the posts 15; also, to help regulate and increase the rapidity of action of the whole instrument. The sounder which thus operates not only as a sounder but as a decoherer and circuit breaker, is also preferably constructed to close the circuit for a repeater. For accomplishing this purpose, I provide binding posts 35 to which the wires from the repeater may be connected, and one of the binding posts is electrically-connected to the standard 16 and therefore to the armature lever 20, while the other post is electrically connected to the standard 29. The screw 31 is preferably provided with a contact point, and upon the descent of the armature lever the engagement of the screw with the lever 28 causes the repeater circuit to be closed.

In the operating of my improved instrument, I connect one of the binding posts 15 to an aerial wire 36 and the other binding post to a ground wire 37. These two binding posts or their equivalents, the binding posts 17 which are connected thereto, are connected to the opposite terminals from a local battery 38 and the coils 39 of a relay. The circuit closure of the relay is connected in circuit by wires 40 with a battery 41 and through the binding posts 42 of the coils 19 of the sounder.

In connection with the parts illustrated in Fig. 4, various other appurtenances and appliances, such as rheostats, inductance coils, resistances, and the like, may be employed, but as the operation of the parts comprising my invention is not directly dependent thereon, said appliances have been omitted from the drawings.

With the parts connected as illustrated in Fig. 4, the sending out of Hertzian waves from the transmitting station will cause a current through the wires 36 and 37 and the coherer, and this current will so adjust the particles within the coherer that a current from a local battery may flow through said coherer and the coils 39 of the relay. The closing of the circuit at the relay draws down the armature 21 of the sounder, and as a direct result thereof the lever 28 is raised and the coherer is lifted bodily off the contacts and the circuit therethrough is broken. The sounder and relay immediately become de-energized and the coherer returns to its position. If a dash is being sent from the transmitting station by the holding down of the transmission key, the current will again pass through the coherer and the operation will be repeated. The making and breaking of the circuit is, of course, very rapid, and the action of the lever 28 will become almost continuous in its decohering and circuit-breaking operation so long as the circuit is held closed at the transmitting station. The

number of times the circuit is broken both by the decohering action and by the lifting of the coherer will be determined by the length of time the transmitting key is held closed, that is, whether a dash or a dot is being transmitted.

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

1. In combination, a coherer, a support therefor and forming a contact, and means for intermittently moving said coherer out of engagement with said support to break the circuit at the contact.

2. In combination, a coherer, comprising a tube containing a mass of granules, terminals extending into said tube and in electrical contact with said mass, means for supporting said coherer by said terminals, and means for intermittently separating one of the terminals from its support to break the circuit.

3. In combination, a coherer, comprising a tube containing a mass of granules, terminals extending into said tube and in electrical contact with said mass, means for supporting said coherer by said terminals, and means for intermittently separating one of the terminals from its support to break the circuit.

4. In combination, an aerial wire, a coherer, comprising a tube containing a mass of granules, terminals extending into said tube and in electrical contact with said mass, means for supporting said coherer by said terminals, and an electrically-operated device provided with a movable member adapted to be operated upon the passage of a current through the coherer and serving to decohere the coherer and also serving to break the connections between said coherer and said aerial wire.

5. In combination, a coherer having terminals extending outwardly therefrom, means in engagement with said terminals for normally supporting said coherer, and a device operated upon the passage of a current through said coherer for lifting the terminals of said coherer out of engagement with their supports and breaking the circuit through said coherer independently of the decohering action.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOHN E. OSTRANDER.

Witnesses:

HARRY ARNOLD,
R. H. ARNOLD.