

No. 746,557.

PATENTED DEC. 8, 1903.

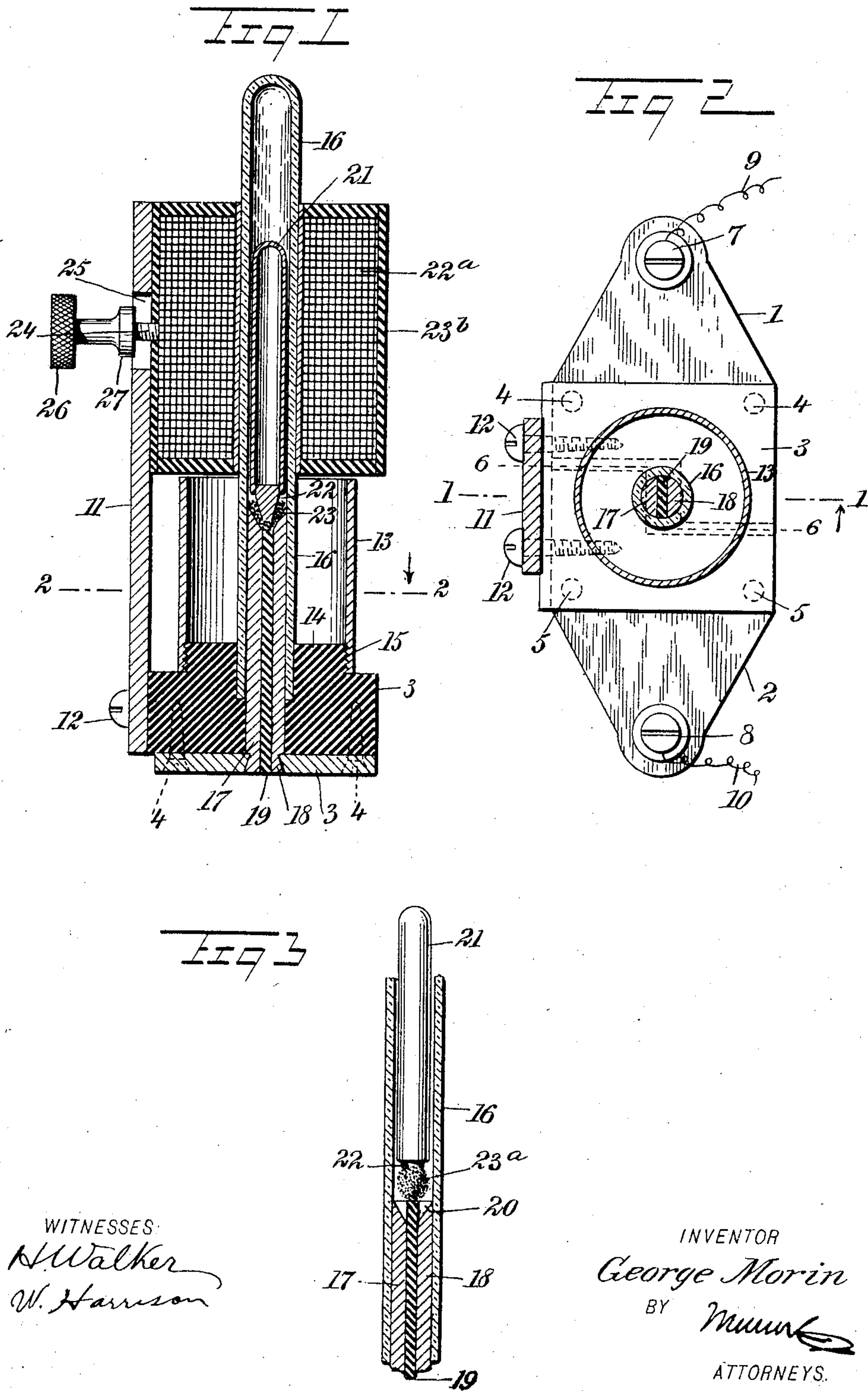
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RECEIVER FOR WIRELESS COMMUNICATION.

APPLICATION FILED JAN. 20, 1903.

NO MODEL.

2 SHEETS—SHEET 1.



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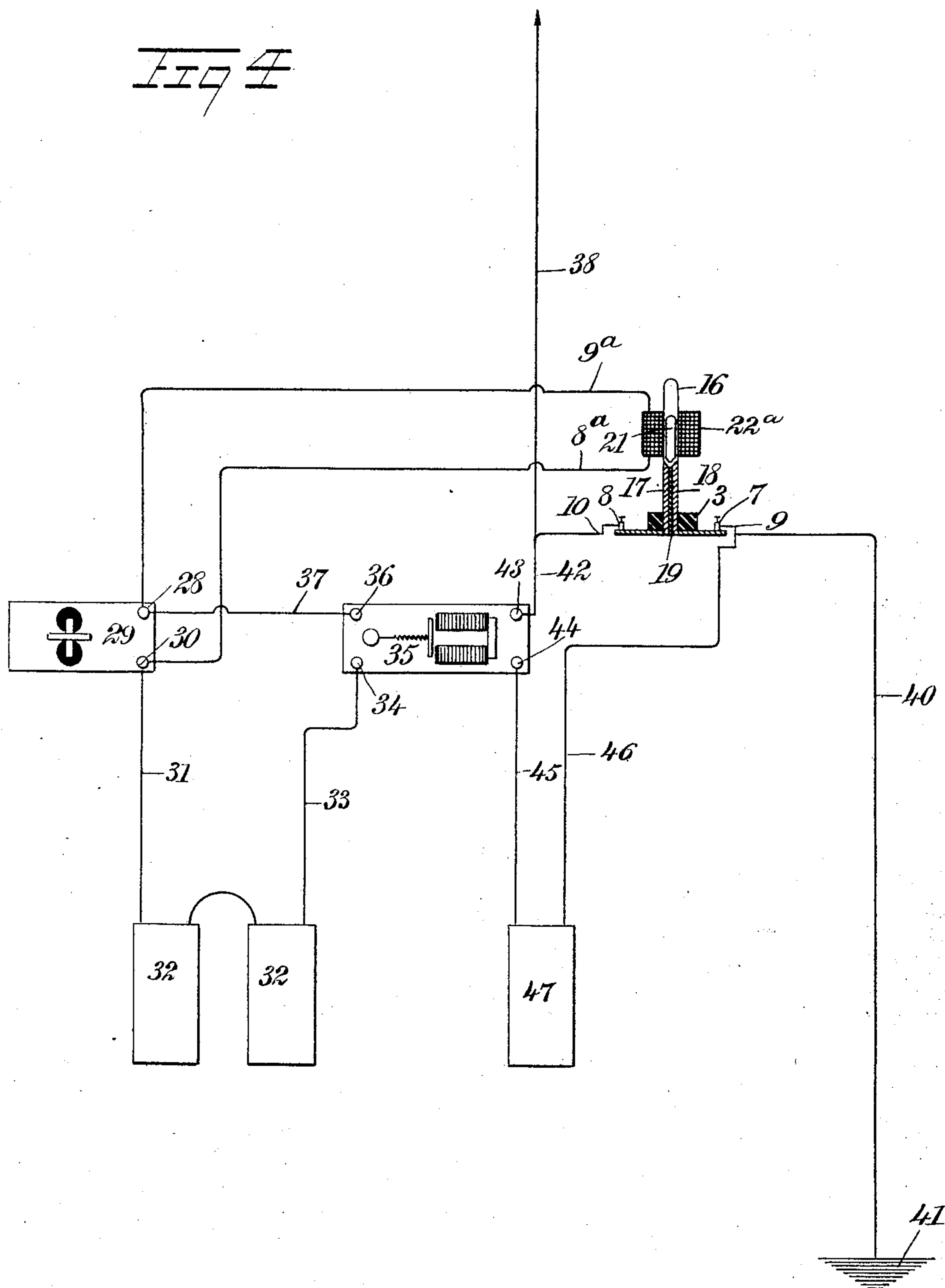
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RECEIVER FOR WIRELESS COMMUNICATION.

SPECIFICATION forming part of Letters Patent No. 746,557, dated December 8, 1903.

Application filed January 20, 1903. Serial No. 139,818. (No model.)

To all whom it may concern:

Be it known that I, GEORGE MORIN, a citizen of the United States, and a resident of Havana, Cuba, have invented a new and Improved Receiver for Wireless Communication, of which the following is a full, clear, and exact description.

My invention relates to wireless communication, my more particular object being to produce a coherer in which the filings are restored magnetically. My invention further relates to certain improvements in the coherer-circuit.

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.

Figure 1 is a central vertical section through the coherer upon the line 1 1 of Fig. 2 looking in the direction of the arrow. Fig. 2 is a horizontal section upon the line 2 2 of Fig. 1 looking in the direction of the arrow. Fig. 3 is a fragmentary vertical section through the coherer-tube, and Fig. 4 is a diagram of the wiring.

Two metallic plates 1 2 are connected with a base-plate 3, of insulating material, being secured thereto by means of screws 4 5. These plates are separated by an air-space 6, and thereby insulated each from the other. The binding-posts 7 8 are connected with the wires 9 10. A vertical plate 11 is secured upon the base 3 by means of the screws 12. A cylindrical casing 13, of metal, is mounted upon a threaded boss and is provided with threads 15 for this purpose. The coherer-tube is shown at 16 and is preferably closed at its upper end, as shown, and the air within it extracted. Two conducting-plates 17 18 are separated by an insulating-plate 19, the upper portion of the three plates being so shaped as to form a substantially conical basin 20.

Disposed loosely within the tube 16 is a tubular armature 21, of iron, provided with an iron pole-piece 22, which is normally free to enter the basin 20. The filings 23, of iron or other material sensitive to magnetic influence, are disposed within the basin 20 and are free to cluster upon the pole-piece 22, as shown at 23^a in Fig. 3. The solenoid 22^a is provided with an insulating-casing 23^b, and

into this casing is fitted a revoluble screw 24, which passes through a slot 25 in the plate 11 and is provided with a milled head 26 and shoulder 27, as indicated more particularly in Fig. 1. By means of the milled head 26 the screw 24 may be tightened or loosened, and when loose may be used as a handle for elevating and lowering the solenoid 22^a relatively to the coherer-tube 16. By this means the solenoid may be adjusted relatively to the coherer 22 and also to the armature 21.

The wires 8^a 9^a, connected with the solenoid 22^a, lead to the binding-posts 28 30 of the sounder 29. A wire 31 connects the binding-post 30 with the battery 32, this battery being also connected by a wire 33 with a binding-post 34 in the so-called "local" circuit of a relay 35. The other local binding-post 36 of this relay is connected by a wire 37 with the binding-post 28 of the sounder.

The aerial antenna is shown at 38 and is connected by the wire 10 with the binding-post 8, which forms one of the terminals of the coherer, the binding-post 9, forming the other terminal of the coherer, being connected directly with the other antenna 40, which is grounded at 41. A wire 42 connects the wire 10 and the aerial antenna 38 with the binding-post 43, which forms one of the main terminals of the relay 35. The binding-post 44, constituting the other main terminal of this relay, is connected by means of a wire 45 with a battery 47. A wire 46 is connected with the battery 47 and also with the binding-post 9 and the ground antenna 40.

The operation of my invention is as follows: The several circuits being connected, as indicated in Fig. 4, and the armature and filings being disposed in their normal positions, (indicated in Fig. 1,) we will suppose that a wireless call or a wireless message arrives in the usual manner through the medium of Hertzian waves. The waves strike the antennæ and set up oscillations therein, which cause the filings 23 to cohere in the manner well known in the art and exemplified, for instance, in the Branly tube or in the Marconi coherer. The normal resistance of the filings is diminished in consequence of the well-known effect of the Hertzian waves, and the current from the battery 47 pursues

the following course, to wit: wire 46, terminal 9, horizontal plate 1, vertical plate 18, within the coherer-tube, filings 23, vertical plate 17, within the coherer-tube, horizontal plate 2, wire 10, wire 42, main relay-terminals 43 44, wire 45 back to the terminal 47. This energizes the main circuit of the relay 35 in the manner well known in the art and establishes the following local circuit: battery 32, wire 33, local terminals 34 36, wire 37, sounder-terminals 28 30, wire 31 back to the battery 32; also, the following divided or shunt circuit: battery 32, wire 33, local terminals 34 36, wire 37, binding-post 28, wire 9^a, solenoid 22^a, wire 8^a, binding-post 30, wire 31 back to the battery 32. It will be observed, therefore, that the battery 32 energizes the sounder 29 and the solenoid 22^a simultaneously, the sounder and solenoid being connected in parallel with each other. The sounder 29 thus energized gives its usual clicking sound, which is audible to the operator and may have its usual signification in the Morse alphabet. The solenoid 22^a being energized simultaneously with the sounder excites the armature 21, rendering the same magnetic, and as the pole-piece 22 is resting upon the filings 23 the filings are immediately caused to cluster, as indicated in Fig. 3, the armature 21 being lifted bodily to a greater or less extent, according to the adjustment of the screw 24. If desired, the armature 21 may be lifted to such a distance as to completely break the circuit through the coherer. Generally speaking, however, the adjustment of the screw need not be such that the filings will completely open the circuit.

The instrument works well where the contact is rendered continuous, but variable, the filings 23^a being caused to cluster, but not totally disconnected from the conducting-plates 17 18. The current through the coherer being either broken or diminished in power, the armature 21 is of course lowered into its normal position of rest upon the loose filings, as indicated in Fig. 1.

It will be seen that the substantially conical form of the basin 20 causes the filings to be forced slightly together by their own gravity and that the form of the pole-piece 22 enables it to mate the basin 20, so that the magnetic lines of force emanating from the pole-piece 22 may have a favorable chance to act upon the filings.

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

1. In a coherer, the combination of a member provided with a basin and with filings disposed within said basin, a member of magnetic material disposed adjacent to said basin and movable relatively thereto, said magnetic member being normally free to attract said filings, and means for magnetically changing the position of said member of magnetic material and at the same time vary-

ing the magnetism of said member of magnetic material.

2. In a coherer, the combination of a member provided with a substantially conical basin and with filings disposed therein, a member of magnetic material provided with a substantially conical pole-piece disposed partially within said basin and movable relatively thereto, and means for magnetically exciting said member of magnetic material.

3. In a coherer, the combination of a vertically-disposed tube, a solenoid encircling said tube, means controllable at will for adjusting said solenoid relatively to said tube, mechanism located within said tube for supporting filings, and terminal connections for said filings.

4. In a coherer, the combination of a hollow member, conducting members mounted therein and provided with terminal connections, insulating material sandwiched between said conducting members, said insulating material and said conducting members being fashioned so as to present the form of a basin, filings disposed within said basin, an armature loosely mounted within said hollow member and provided with a surface of a conformity analogous to that of said basin, and magnetic mechanism for moving said armature relatively to said basin.

5. In a coherer, the combination of a hollow member, conducting members mounted therein and provided with terminal connections, means for insulating said conducting members from each other, iron filings loosely disposed within said hollow member and normally free to make contact with said conducting members, an armature loosely mounted within said hollow member and free to move relatively to said conducting members and also free, when magnetically excited, to attract said filings, and a magnetic member for lifting said armature and exciting the same.

6. In a coherer, the combination of a hollow tube provided with filings sensitive to magnetic influence and also provided with terminals, an iron armature disposed within said tube and provided with a pole disposed adjacent to said filings, a cylindrical solenoid encircling said tube, and means, controllable at will, for adjusting said solenoid lengthwise of said tube.

7. A coherer, comprising a hollow member provided with filings sensitive to magnetic influence and connected with terminals, an iron armature disposed within said hollow member and free to move relatively thereto so as to affect the conductivity of said filings, said armature being provided with a pole-piece of substantially conical form, and magnetic mechanism for lifting and exciting said armature.

8. In a coherer, the combination of a substantially cylindrical tube provided with filings sensitive to magnetic influence and

connected with terminals, an iron armature
disposed within said tube and free to move
relatively thereto, said iron armature being
provided with a substantially conical pole-
5 piece disposed adjacent to said filings, and a
magnetic member for exciting said armature
and for moving the same bodily in relation
to said tube.

In testimony whereof I have signed my
name to this specification in the presence of 10
two subscribing witnesses.

GEORGE MORIN.

Witnesses:

HENRY D. HINMAN,
JAMES H. SPRINGER.