No. 703,842. Patented July 1, 1902.

H. SHOEMAKER.

WIRELESS TELEGRAPHY.

(Application filed Feb. 1, 1901.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.

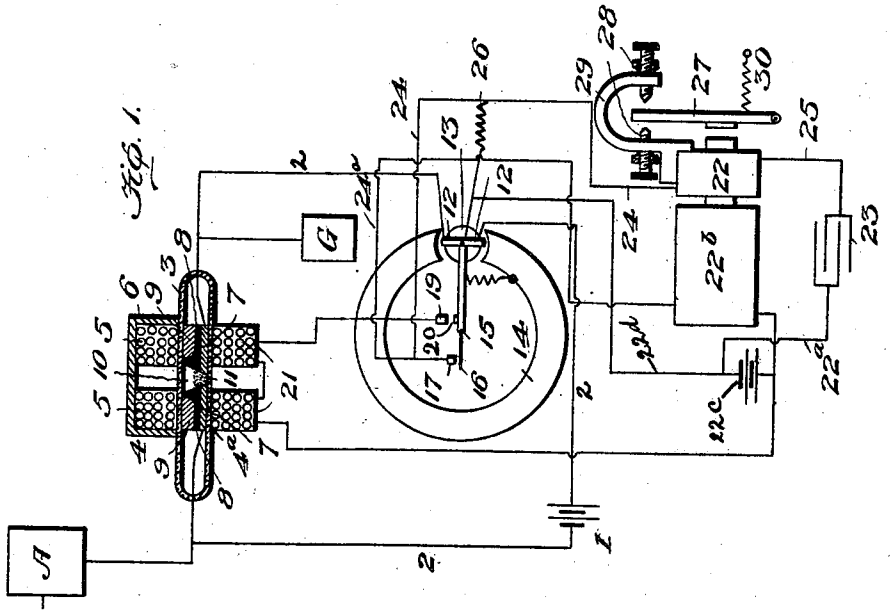
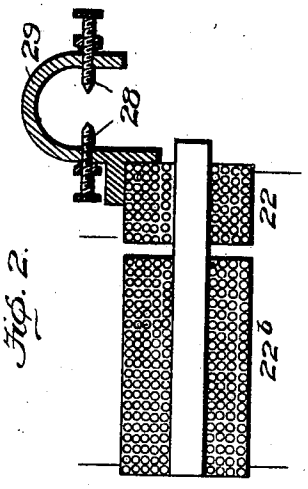


Fig. 2.



Witnesses

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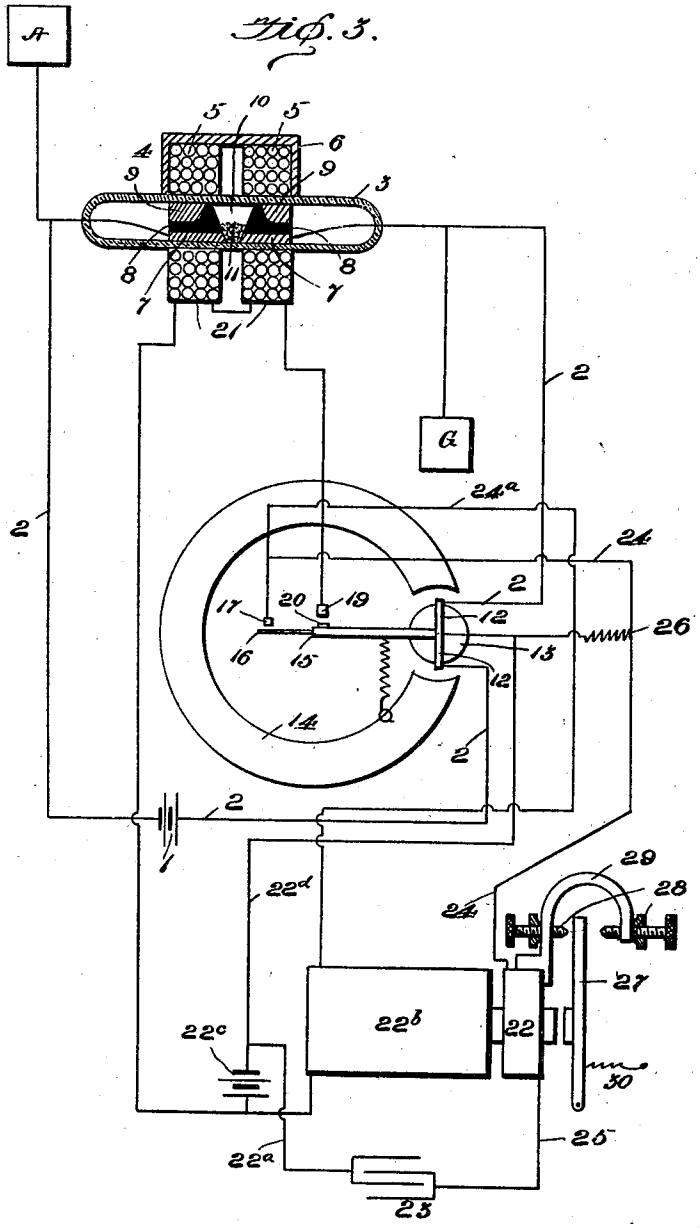
Fig. 3.



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UNITED STATES PATENT OFFICE.

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WIRELESS TELEGRAPHY.

SPECIFICATION forming part of Letters Patent No. 703,842, dated July 1, 1902.

Application filed February 1, 1901. Serial No. 45,587. (No model.)

To all whom it may concern:

Be it known that I, HARRY SHOEMAKER, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Wireless Telegraphy, of which the following is a specification.

This invention relates to improvements in wireless telegraphy; and the main object thereof is the provision or production of a sounder which is so constructed as to be operated to produce a decided "dash" of the Morse code.

Another object of the invention is the simplifying of the sounder, so that it produces the dots and dashes, and which may be used upon any receiving-station of a wireless-telegraph system.

To attain these objects, the invention consists of a sounder and a system of wireless telegraphy embodying novel features of construction and arrangement of parts, substantially as disclosed herein.

In the drawings, Figure 1 is a diagrammatical view of a wireless-telegraph system, and Fig. 2 is a sectional view of my improved sounder. Fig. 3 is an enlarged view of the receiver.

Referring by numerals to the drawings, the numeral 1 denotes the batteries having the wires 2, connecting them with the tube 3 of the coherer 4. This tube fits in the opening 4^a and is surrounded by the solenoids 5, which are connected by the yoke 6. In this tube are the silver plugs 7, separated by the strips of insulation 8 from the iron core 9 of the magnet, said insulation providing the V-shaped pocket 10 for the reception of the metallic particles or powder 11. Connected to the wires 2 are the air and ground plates A and G.

In shunt to the wave-responsive device 3 is the coil 12 of a D'Arsonval relay 14, in circuit with the conductors 2 and the source of energy 1. The decohering-solenoids 21 are in series with a source of energy 22^c, the conductor 22^d, and the tongue or lever 15 of the relay and contacts 19 and 20. The armature of the relay controls also the contact 16 and 17, which control a circuit comprising conductor 24^a, coil 22^b of the recording device or relay 32 and 22^b, and the source of energy 22^c. Said contacts 16 and 17 control also a circuit through the conductor 24, coil 22 of the recording device or relay, conductor 25, condenser 22, and conductor 22^a. The coil 22 forms a "hold-over" winding, which serves to prevent the dying out of the magnetism in the core of the coil 22^b between the several impulses which serve to make a dash. At 26 is shown a high-resistance non-inductive shunt, which is bridged across the break at contacts 16 and 17, the bridge being to limit the sparking or the effects of sparking to as great an extent as possible.

The electromagnet, which is composed of compound magnets, comprises the main portion of the sounder and attracts the sounder-lever 27, which is adapted to contact the adjustable points 28 of the anvil 29. A spring 30 is connected to the lever and is of sufficient strength to return the lever when released by the magnets.

In connection with my receiving apparatus I employ the transmitting apparatus which consists of the air and ground plates A′ and G′, the induction-coil or emitter 30′, having batteries 31 and the transmitting-key 32 in its circuit.

The method of operation is as follows: Upon the reception of radiant energy upon the aerial circuit comprising the conductor A, wave-responsive device 3, and ground G current is permitted to pass from the source of energy 1 through the coil 12 of the D'Arsonval relay. This causes first a closure of contacts 17 and 16, which permits the passage of current from the source 22^c through the winding 22^b and conductor 24^a back to the source through the conductor 22^d. A short interval after the contacts 16 and 17 have been closed contacts 19 and 20 close, resulting in the energization of the solenoids 21, which accomplish the decohering of the wave-responsive device. After decohering the coil 12 of the D'Arsonval relay, being robbed of its current, causes the contacts at 16 and 17 and 19 and 20 to open. This results, due to the opening of the circuit at 16 and 17, in the charging of the condenser 23 by the source of energy 22^c through the resistance of coil 22^b and 22. During this interval of charging there is a

current passing through the coil 22, which causes then the magnetism of the core 22^b to be retained, while the coil 22^b is deënergized, forming a hold-over arrangement.

The principal feature of this invention is the construction of the sounder, which is composed of a double-winding or compound magnet having a single core or pole, so that the sounder-lever is brought into contact to make a dot or dash—principally, however, the dash.

I claim—

1. A wireless-telegraph system, comprising a transmitting apparatus and a receiving apparatus, said receiving apparatus, consisting of air and ground plates, a coherer connected therewith, decohering means surrounding the coherer, a circuit connected with said decohering means, a sounder having two windings, another circuit operated before the decohering-circuit is made to energize both windings, and a condenser-circuit energized when said last-mentioned circuit is made and adapted to discharge when the decohering-circuit is made, to energize one winding of the sounder.

2. A receiving apparatus, comprising an imperfect electrical contact, decohering means surrounding the contact, a circuit connected with said decohering means, another circuit energized before the decohering-circuit, a condenser in said last-mentioned circuit, a sounder in said last-mentioned circuit, and a separate circuit, formed when the condenser discharges, to form a hold-over circuit for the sounder.

3. A receiving apparatus for wireless telegraphy comprising a coherer, solenoids surrounding said coherer, a circuit connected to said solenoids, a sounder having a main and an auxiliary winding, another circuit connected with the windings adapted to be made before the circuit with the solenoids is made, and a condenser-circuit adapted to hold the magnetism over in the auxiliary winding after the decohering operation.

4. A receiving apparatus for a wireless-telegraph system, comprising a coherer-tube having located therein plugs, a pocket formed between the plugs, solenoids surrounding said tube, a decohering-circuit connected with said solenoids, a sounder composed of a main and an auxiliary winding, two circuits formed simultaneously to energize said windings, means for making said circuits and for making the decohering-circuit shortly after, and a condenser in circuit with the auxiliary winding to energize the same after the main circuit is opened.

5. In combination with solenoids, of a coherer comprising a non-conductiug tube surrounded by said solenoids, a pair of silver plates, a pair of magnet-cores, and insulation between said cores and plates forming a pocket in said tube, and metallic particles located in said pocket.

6. In a wireless-telegraph system, a transmitting and a receiving station; said receiving-station consisting of a coherer and a decoherer, comprising a tube, solenoids surrounding the tube, and a pocket formed in said tube to receive magnetic particles; a circuit formed before the solenoids are energized, a sounder operated by said circuit, and a condenser in said circuit adapted to operate the sounder after the main circuit is open.

In testimony whereof I affix my signature in presence of two witnesses.

HARRY SHOEMAKER.

Witnesses:
G. P. GEHRING,
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