

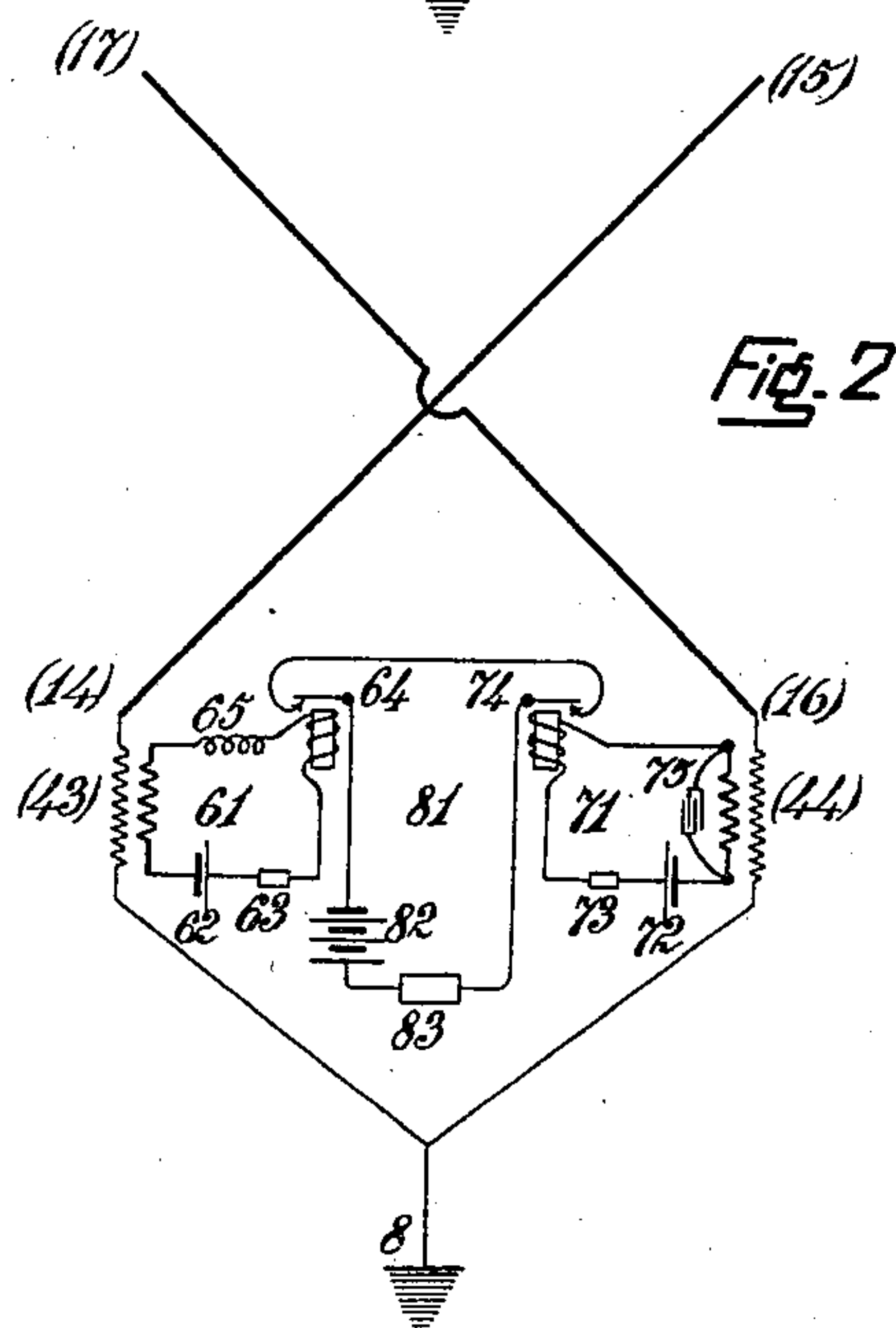
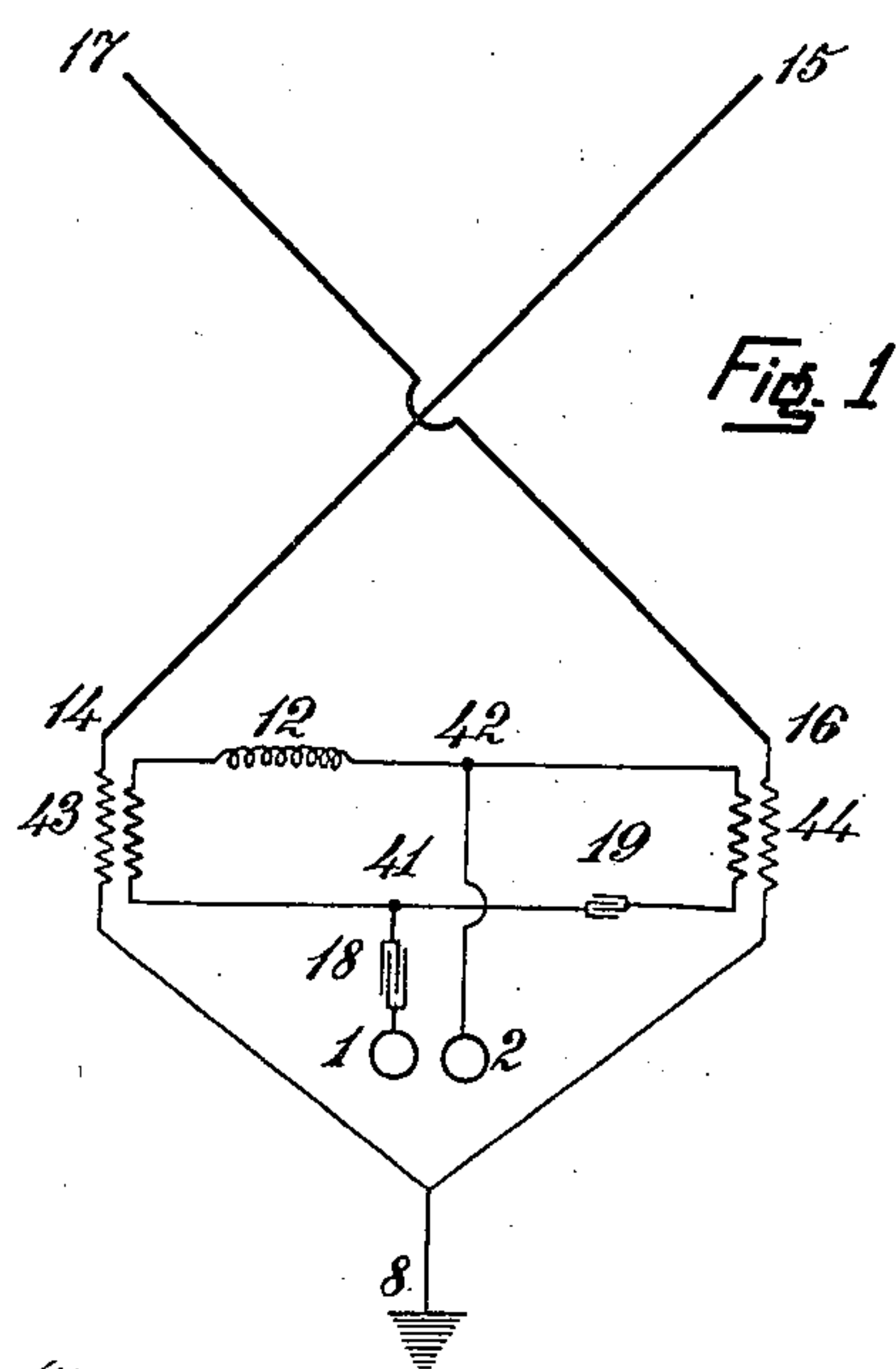
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A. ARTOM.

APPARATUS FOR WIRELESS TELEGRAPHY AND TRANSMISSIONS
ACROSS SPACE.

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Witnesses.

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APPARATUS FOR WIRELESS TELEGRAPHY AND TRANSMISSIONS ACROSS SPACE.

No. 798,153.

Specification of Letters Patent.

Patented Aug. 29, 1905.

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To all whom it may concern:

Be it known that I, ALESSANDRO ARTOM, industrial and electrical engineer, professor at the Galileo Ferraris School of the Royal Industrial Museum of Turin, a subject of the King of Italy, residing at Turin, in the Kingdom of Italy, (whose post-office address is 3 Via Venti Settembre,) have invented certain new and useful Improvements in and Relating to Apparatus for Wireless Telegraphy and Transmissions Across Space; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to figures of reference marked thereon, which form a part of this specification.

This invention relates to apparatus for the transmission of electrical energy across space and more particularly to that class of apparatus for wireless telegraphy.

The apparatus which forms the subject of the present invention is designed to be employed with circularly or elliptically polarized electromagnetic waves for transmitting and receiving telegraphic signals.

The system for electric signaling is represented in the accompanying drawings, in which—

Figure 1 is a diagram of the transmitting apparatus, the source of high-potential electric current not being indicated, and Fig. 2 is a diagram of the receiving apparatus.

In the transmitting apparatus I employ the two discharge-conductors 1 and 2, or any other suitable oscillator. The discharge-conductor 1 is connected to a condenser 18 that in turn is connected at 41 to a closed loop containing primary coils of transformers 43 and 44, the self-induction 12 and condenser 19. The other discharge-conductor 2 is electrically connected to the closed loop at 42 at a point opposite to and symmetrical to the point 41. There are a pair of masts or aerial conductors 14, 15 and 16, 17 making an angle of ninety degrees with one another, preferably, but not necessarily, crossing one another and suitably insulated. Each mast is connected to one of the grounded secondaries of the transformers 43 and 44. The secondaries are united by suitable wires and grounded at 8, as shown.

The receiving mechanism comprises two masts or aerials 14 15 and 16 17 in the same relative angular relation to one another as

the masts at the sending-station and likewise insulated from one another. Each mast is connected to one element of a transformer 43 and 44 respectively and these elements are connected by wires and grounded at 8. There are two closed circuits 61 and 71, one for each transformer and containing the other element of the transformer. The circuit 61, which contains the other element of the transformer 43 contains besides the battery 62, the coherer 63, relay 64 and the self-induction coil 65, all in series. The circuit 71 which is similar and symmetrical to the circuit 61 and contains the other element of the transformer 44 also contains battery 72, coherer 73, relay 74 in series, and condenser 75, in a derived circuit. The only difference between the two circuits 61 and 71 is that the former contains a self-induction coil 65 in series, in place of the condenser 75 of circuit 71 in derivation. Between the two circuits 61 and 71 is arranged the local-battery circuit or main circuit 81 containing a local battery 82 and a Morse machine or other telegraphic appliance 83 adapted for recording the signals received. This main circuit is closed by the relays 64 and 74, and the self-induction 65 and capacity 75 should be so regulated that the two relays operate simultaneously.

In the transmitting apparatus, the oscillatory discharge takes place between the two discharge-conductors 1 and 2, said conductors being connected with a source of high-potential electricity, said source not being represented in the drawings, for the sake of clearness, as both the necessity for the same and the mechanism are well known in electro-technics.

The parts of the main circuit are traversed by oscillatory currents and the condenser 18 serves to increase the quantity of current supplied to the circuit. At the points 41 and 42 branch off two derived circuits, 41, 12, 42 and 41, 19, 42. The oscillatory currents passing through these derived circuits induce similar high-potential currents in the secondaries of their respective transformers 43 and 44, which in turn transmit such currents to the aerials from which the corresponding polarized electromagnetic waves emanate and are received by the corresponding aerials at the receiving-station, where the transformers 43 and 44 cause a simultaneous variation in the closed circuits 61 and 71, thereby simultaneously increasing the current in these circuits sufficiently to attract the armatures of the relays

64 and 74 to temporarily close the main circuit 81 and send the local-battery current through the Morse apparatus to record the signal.

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

1. In a system for signaling by electromagnetic waves, a sending mechanism comprising
10 a closed loop, discharge-terminals symmetrically connected to said loop and also connected to a high-potential source of oscillatory electric current aerial conductors, means included in said loop to induce oscillatory currents in said aerial conductors, said aeri-
15 als being placed at an angle to each other corresponding to the time displacement of the oscillations therein to produce polarized electric waves, and a suitable receiving mechanism,
20 substantially as described.

2. In a system for signaling by electromagnetic waves, a sending mechanism comprising a closed loop containing one element of a pair of transformers, means to electrically balance
25 the loop, two discharge-conductors, each connected to the loop between the transformer elements and at opposite symmetrical points thereof, said discharge-conductors also connected to a high-potential source of oscillatory
30 electric current, a pair of aerial conductors placed at an angle to each other, a second element of a transformer connected to each aerial said aerial conductors placed at an angle to each other corresponding to the time displacement existing between the oscillatory currents at the sending-station and a suitable receiving
35 mechanism, substantially as described.

3. In a system for signaling by electromagnetic waves, a sending mechanism comprising
40 a closed loop containing one element of a pair of transformers, a self-induction in one part of the loop between the transformers and a capacity in the opposite part of the loop between the transformers, two discharge-conductors, connected to the loop at opposite
45 symmetrical points, a condenser between one of the terminals and the loop, insulated aerial

conductors crossing each other at right angles, each aerial connected to the second element of a transformer and grounded, and a
50 suitable receiving mechanism, substantially as described.

4. In a system for signaling by electromagnetic waves, a sending mechanism comprising an electrically-balanced closed loop, discharge-
55 conductors connected to the loop and aeri- als at an angle to each other corresponding to the time displacement existing between the oscillatory currents in the sending-circuit and said aeri- als in inductive relation to the loop, a re-
60 ceiving mechanism comprising similarly-disposed aeri- als, a pair of symmetrical closed circuits, each in inductive relation to an aerial, a circuit-closer and a receiver of electrical vibrations in each circuit, a local-battery circuit containing a telegraphic receiver, said local-battery circuit simultaneously closed by
65 the two circuit-closers, substantially as described.

5. In a system for signaling by electromagnetic waves, a sending mechanism comprising an electrically-balanced closed loop, discharge-
70 conductors connected to the loop, and aeri- als at an angle to each other corresponding to the time displacement existing between the oscillatory currents set up and said aeri- als in inductive relation to the loop, a receiving mechanism comprising similarly-disposed aeri-
75 als, a pair of symmetrical closed circuits, each in inductive relation to an aerial, a battery, coherer, relay and self-induction in one of said circuits and a battery, coherer, relay and condenser in the other closed circuit, a local-battery circuit containing a telegraphic receiver and simultaneously closed by the two
80 relays, substantially as described.

In testimony that I claim the foregoing as my invention I have signed my name in presence of two subscribing witnesses.

ALESSANDRO ARTOM.

Witnesses:

EUGENIO G. B. CASSETTA,
MELCHIORRE POLLONE.