No. 777,216. PATENTED DEC. 13, 1904.

S. MUSITS.

APPARATUS FOR WIRELESS TELEPHONY.

APPLICATION FILED NOV. 24, 1902.

NO MODEL. 2 SHEETS—SHEET 1.

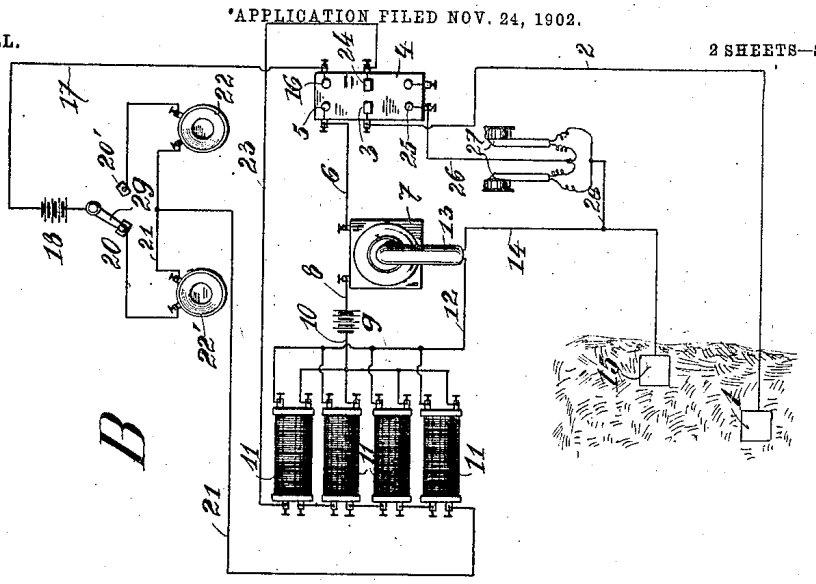
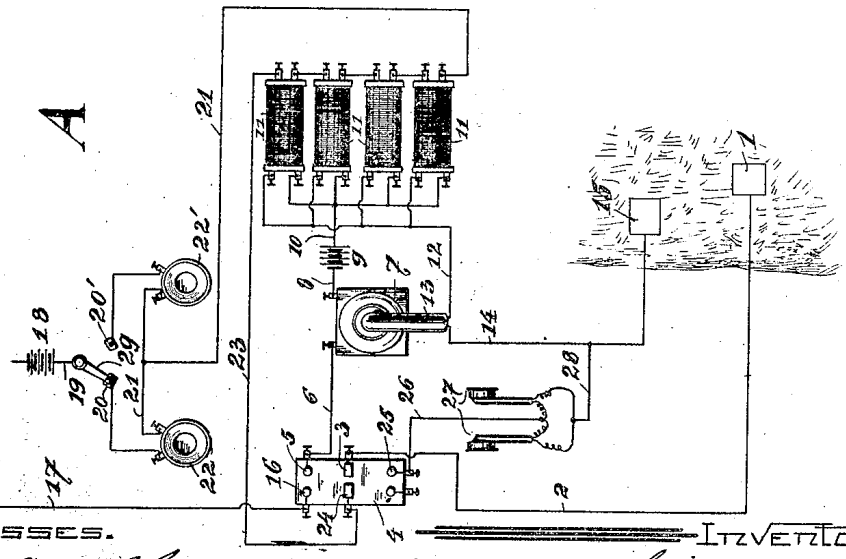


Fig. 1.



Witnesses.
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APPARATUS FOR WIRELESS TELEPHONY.

APPLICATION FILED NOV. 24, 1902.

NO MODEL. 2 SHEETS—SHEET 2.

Fig: 2.

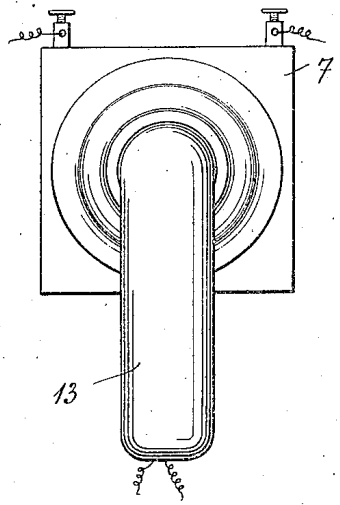


Fig: 3.

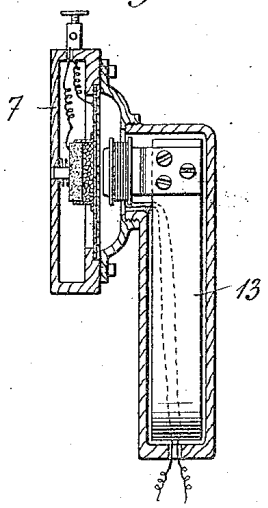


Fig: 4.

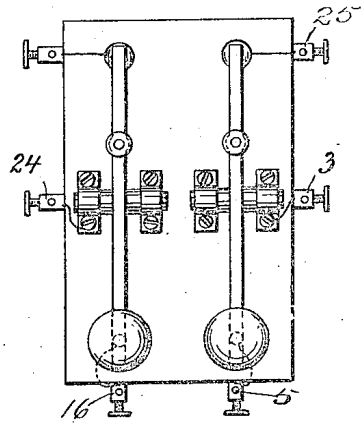
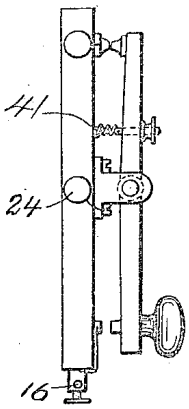


Fig: 5.



Witnesses.
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No. 777,216. Patented December 13, 1904.

UNITED STATES PATENT OFFICE.

SIGMUND MUSITS, OF STEINAMANGER, AUSTRIA-HUNGARY.

APPARATUS FOR WIRELESS TELEPHONY.

SPECIFICATION forming part of Letters Patent No. 777,216, dated December 13, 1904.

Application filed November 24, 1902. Serial No. 132,547. (No model.)

To all whom it may concern:

Be it known that I, SIGMUND MUSITS, official of the Royal Hungarian Postal and Telegraphic Administration, a subject of the Emperor of Austria-Hungary, residing in Steinamanger, Austria-Hungary, have invented a certain new and useful Improvement in Apparatus for Wireless Telephony; 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 characters of reference marked thereon, which form a part of this specification.

The present invention relates to improvements in devices or apparatus for electrically transmitting language, music, or signals over great distances without the use of connecting-wires.

In order to make the invention more readily understood, I will now describe it with reference to the accompanying drawings, wherein—

Figure 1 is a diagrammatical representation of two identical stations A and B, both of which may be used for sending and receiving messages. Fig. 2 is an enlarged front elevation of a telephone in connection with a microphone. Fig. 3 is a vertical sectional view through Fig. 2. Fig. 4 is a top plan view of a certain double Morse key 4, hereinafter referred to; and Fig. 5 is a side view of what is shown in Fig. 4.

Each station consists of two circuits, the microphone and the telephone circuits, and the microphone-circuit in turn has two circuits, the primary and the secondary circuits.

A hollow body 1, preferably cylindrical in shape and of copper or other suitable material, which may or may not be filled with a current-generating liquid or electrolyte, is embedded into the ground and is connected by the line-wire 2 with the contact 3 of a double key 4, whose handle end is normally held up by a contractile spring 4′.

In the specification and claims I shall refer to this hollow body 1 as "cylinder," although it may be of other shape or form. From the contact 5 of the double key 4 a wire 6 runs to the microphone 7. A wire 8 then connects to a powerful source of electricity 9 and a wire 10 to one or more secondary coils 11, within which the primary coils are arranged in the manner usual with induction-coils. From the secondary coils 11 a wire 12 is stretched to the telephone 13, interconnected with the microphone 7, and the wire 14 connects the telephone with the metal cylinder 15, sunk into the ground. The telephone 13 and microphone 7 assist each other when operating through the effects of the vibration of the telephone-diaphragm on the microphone-membrane, whereby the microphone produces current impulse, which in its turn increases the vibration of the telephone-membrane. The described connections I call the "secondary circuit." From the contact 16 of the double key 4 a wire 17 connects with a source of electricity 18, and thence a wire 19 to a switch 29 with contacts 20 and 20′. This switch has as many contacts as there are microphones 22 22′ cut into the circuit 21. (In the drawings only two such microphones are shown, and consequently only two contacts.) The wire 21 then is connected to the primary coils within the secondary coils 11. A wire 23 then connects the primary coils with the contact 24 of the double key 4. From contact 25 a wire 26 stretches to the telephone 27, and a wire 28 from the telephone to the grounded cylinder 15. These connections I call the "primary circuit."

The operation of the apparatus is the following: If station A desires to call up station B, the switch 29 is laid on contact 20 or 20′, according to whether the microphone 22 or 22′ is used. If microphone 22 is to be used, the contact is made at 20 and both keys of the double key 4 are depressed. The circuit is now closed as follows: The current flows from the source of electricity 18 over line-wire 19 to switch 29, contact 20, microphone 22, wire 21, to the primary induction-coils, thence by wire 23 to contact 24 of the double key 4 to contact 16 and over the wire 17 to the battery 18. The current impulses generated by actuating the microphone 22 will induce in turn secondary currents in the coils 11 corresponding to the primary currents, which

will then travel on the one hand over wire 12 to the telephone 13, wire 14, and to the grounded cylinder 15; on the other hand, over wire 10, battery 9, wire 8, microphone 7, wire 6, to contact 5 of the double key 4, thence to contact 3, wire 2, and to the embedded cylinder 1. The telephone 13, cut into this circuit, and the microphone 7 now serve as a translator to enhance the current impulses. From the cylinders 1 and 15 of station A the current impulses will then travel through the conducting medium (ground, water) to the corresponding cylinders 1 and 15 of station B. Since in this station the double key is not depressed, the current will flow from cylinder 1 over wire 2 to contact 3 of double key 4, to contact 25, wire 26, telephone 27, wires 28 and 14 to cylinder 15, thereby closing the circuit between the two stations. If, however, station B desires to talk to station A, the double key 4 of station B must be depressed, the switch 29 turned into the contact corresponding to the microphone to be used, and the devices operate as above described.

It is evident that changes may be made in the interconnection of the various parts without stepping beyond the scope of the invention.

What I claim is—

1. In apparatus for wireless telephony, a primary circuit, comprising a source of electricity and microphones cut into the said primary circuit, a secondary circuit, adapted to be influenced by the said primary circuit, a telephone cut into the said secondary circuit, a microphone adapted to be actuated by said telephone and metal cylinders in said secondary circuit, embedded in the ground, all substantially as and for the purpose set forth.

2. In apparatus for wireless telephony, a primary circuit comprising a source of electricity, microphones, primary induction-coils and a double key, a secondary circuit, comprising a source of electricity, secondary induction-coils, adapted to be influenced by said primary induction-coils, a telephone, a microphone adapted to be actuated by said telephone, a double key and metal cylinders embedded in the ground connected to the secondary line ends, substantially as and for the purpose set forth.

3. In apparatus for wireless telephony, a primary circuit, comprising a source of electricity, microphones, primary induction-coils and a double key, a secondary circuit, comprising a source of electricity, secondary induction-coils, adapted to be influenced by said primary induction-coils, a telephone, a microphone adapted to be actuated by said telephone, a double key and metal cylinders embedded in the ground and connected to the secondary line ends, and a telephone or telephones connected to the one grounded cylinder and to the said double key and through said key, in its position of rest, to the other grounded metal cylinder, all substantially as and for the purpose set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 4th day of November, 1902.

SIGMUND MUSITS.

Witnesses:

FRANZ REITER,

ALVESTO S. HOGUE.