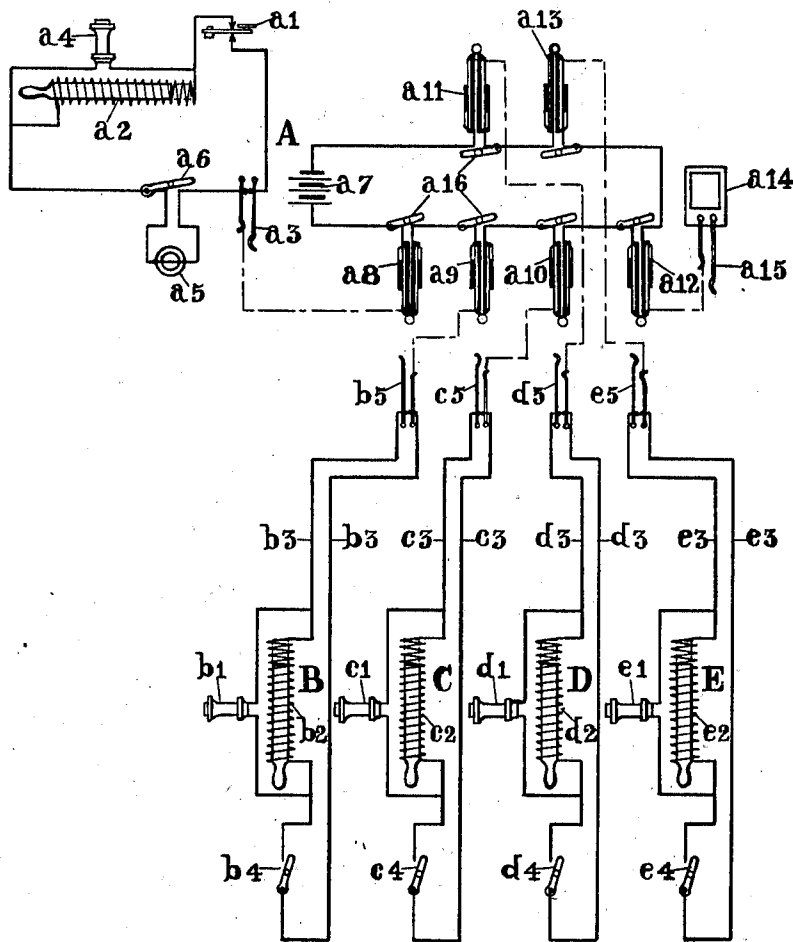


F. E. BUTLER.  
 APPARATUS FOR TEACHING WIRELESS TELEGRAPHY.  
 APPLICATION FILED JUNE 26, 1909.

956,936.

Patented May 3, 1910.



WITNESSES:

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# UNITED STATES PATENT OFFICE.

FRANK E. BUTLER, OF DETROIT, MICHIGAN, ASSIGNOR TO AMERICAN WIRELESS INSTITUTE, A CORPORATION OF ARIZONA TERRITORY.

APPARATUS FOR TEACHING WIRELESS TELEGRAPHY.

956,936.

Specification of Letters Patent.

Patented May 3, 1910.

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To all whom it may concern:

Be it known that I, FRANK E. BUTLER, a citizen of the United States of America, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Apparatus for Teaching Wireless Telegraphy, of which the following is a specification, reference being had therein to the accompanying drawings.

In teaching wireless telegraphy, it is very necessary, to give the student a clear and exact idea of the character of the sound which is heard in a telephone receiver under the influence of a wave.

This invention relates to an instructor's set of apparatus adapted to imitate the sounds produced under actual working conditions in wireless telegraphy, and to a disposition thereof whereby a class may be taught, with means for varying the conditions for each student separately, and for affording direct telephone communication between the instructor and each pupil.

The invention consists in the matters hereinafter set forth, and more particularly pointed out in the appended claims.

The drawing is a diagrammatic view of an apparatus embodying features of the invention.

As indicated in the drawings, a sending key  $a^1$  is placed in series with an adjustable core resistance coil  $a^2$  with the ends of the circuit wire terminating in any two-pole switch-board connection  $a^3$ , such as a spring-jack or plug. A telephone receiver  $a^4$  is in shunt around the coil  $a^2$ , and a telephone transmitter  $a^5$  may be put in the series by opening a cut-out switch  $a^6$ . A battery  $a^7$  or other suitable generator has its terminals in series with connections  $a^8, a^9, a^{10}, a^{11}, a^{12}$  and  $a^{13}$  which are adapted to severally couple with the sending key connection  $a^3$ , and are herein shown as plugs to engage the spring jack  $a^3$ . A buzzer  $a^{14}$  with terminal connection  $a^{15}$  to couple with any one of the battery connections, and hence herein shown as a spring-jack completes what is herein-after styled the "sending circuit" A.

A receiver  $b^1$  in shunt around an adjustable core resistance coil  $b^2$  with conductors  $b^3$  and, for convenience, a cut-out switch  $b^4$ , constitute one "receiving circuit" B which has a terminal connection  $b^5$  adapted to couple with any of the battery connections

$a^8, a^9, a^{10}, a^{11}, a^{12}$  or  $a^{13}$ . A number of these "receiving circuits" C, D, E, are provided.

When in use, the connection  $a^3$  is coupled with one convenient battery connection as  $a^8$  (the dotted lines indicate the arrangement) and the buzzer jack  $a^{15}$  with another plug  $a^{12}$ . The receiving circuits B, C, D and E, all or any of them are likewise cut in, the circuit being bridged across the unused plugs by suitable means, as, switches  $a^{16}$ , and it being understood that the jacks, plugs, switches and their connections are arranged conveniently on a convenient switch board. When thus connected, with the switches closed, the sending key, buzzer, generator and resistance coils with their shunted receivers are in series.

In operation, closing the sending key sets the buzzer in action, the vibrator so interrupting the current through the resistance coils that the induced current overcomes the resistance in the receivers and thereby produces the requisite sound in the receivers. By moving the cores in or out, the inductive effect may be lessened or increased, so that each student may, according to the skill acquired, have the sound signals made more or less distinct, and may also, by doing his own adjusting, learn the first rudiments of "tuning". By cutting the transmitter into the circuit, the instructor may telephone directly to any one of the students or all of them at the same time.

The very simple and inexpensive apparatus described enables an instructor to reproduce or imitate exactly the sound-signals of a regular wireless telegraph system, without the aid of the costly instruments in commercial use.

Obviously, changes in the details of construction may be made without departing from the spirit of the invention and I do not care to limit myself to any particular form or arrangement of parts.

Having thus fully described my invention what I claim is:

1. Wireless telegraphy instruction apparatus comprising a sending circuit consisting of a sending key, an adjustable core resistance coil, a buzzer and a generator in series, receiving circuits each consisting of an adjustable core resistance coil and a telephone receiver in shunt around the coil, and means for connecting the sending circuit in series with one or more receiving circuits.

2. Wireless telegraphy instruction apparatus comprising a sending circuit consisting of a sending key, an adjustable core resistance coil, a buzzer and a generator in series, 5 receiving circuits each consisting of an adjustable core resistance coil and a telephone receiver in shunt around the coil, jacks in series in the sending circuit, and a plug terminating each receiving circuit.
- 10 3. Wireless telegraphy instruction apparatus comprising a sending circuit consisting of a sending key, an adjustable core resistance coil, a telephone receiver in shunt around the coil, a buzzer and a generator in series, a telephone transmitter adapted to be momentarily cut into the circuit, receiving circuits each consisting of an adjustable core resistance coil and a telephone receiver 15 in shunt around the coil, and means for connecting the sending circuit in series with one or more receiving circuits. 20
4. Wireless telegraphy apparatus comprising a sending circuit, including means adapted to imitate in a receiver the sounds of a wireless telegraph transmitting set, and 25 receiving circuits adapted to be thrown into series with the sending circuits and provided with receivers in which the imitation sounds are received and with means for intensifying or decreasing the sounds. 30
- In testimony whereof I affix my signature in presence of two witnesses.
- FRANK E. BUTLER.
- Witnesses:  
C. R. STICKNEY,  
A. M. SHANNON.