Nov. 18, 1924.

1,515,990

R. D. BANGAY

WIRELESS TELEGRAPHY

Filed July 9, 1921

Fig. 1

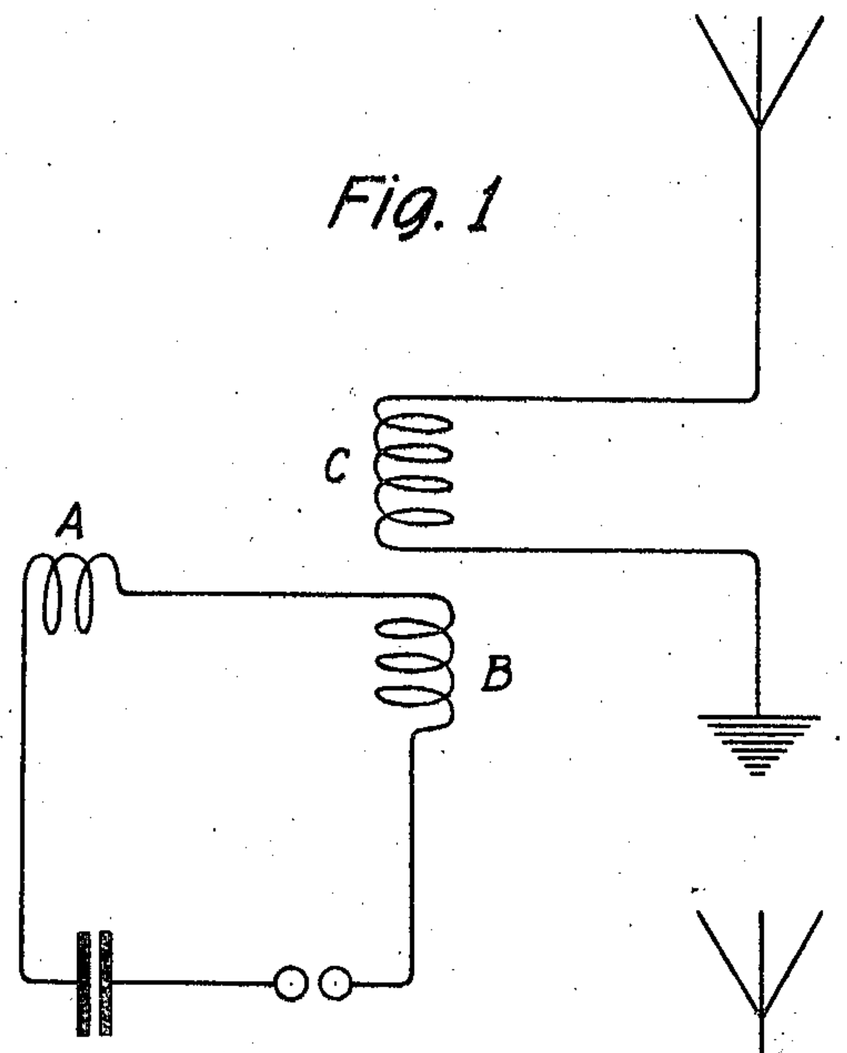
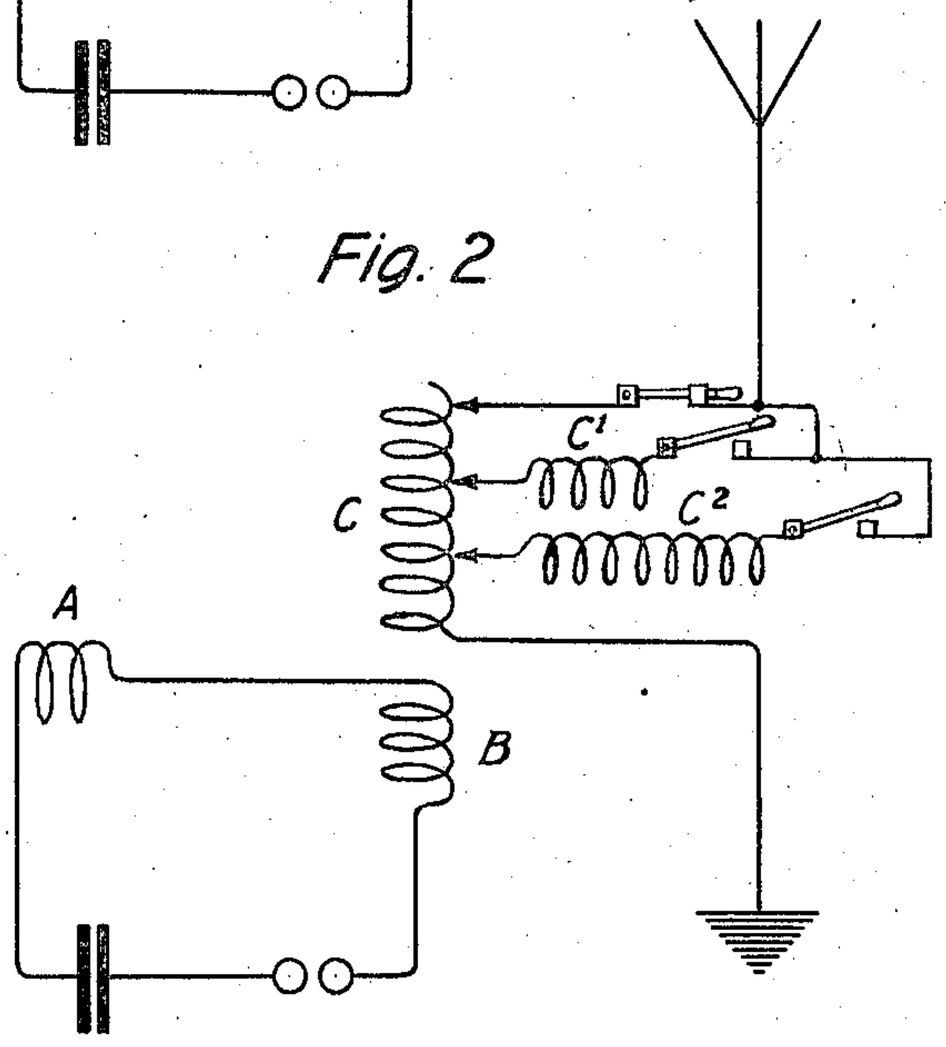


Fig. 2



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By his Attorney Ira F. Adams

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UNITED STATES PATENT OFFICE.

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WIRELESS TELEGRAPHY.

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(GRANTED UNDER THE PROVISIONS OF THE ACT OF MARCH 3, 1921, 41 STAT. L., 1313.)

To all whom it may concern:

Be it known that I, RAYMOND DORRINGTON BANGAY, a British subject, of Marconi House, Strand, London, W. C., England, have made certain new and useful Improvements in Wireless Telegraphy (for which I have filed an application in Great Britain November 16, 1915, Patent No. 16151 of 1915), of which the following is a specification.

In wireless telegraph transmitters it may be advantageous or necessary, particularly with portable and aeroplane sets, to vary the length of aerial used. In such cases devices have to be provided for tuning the primary and secondary circuits together and it is very desirable that these devices should occupy the minimum of space, give the maximum range of wave lengths and be easily and quickly operated. If, as is usual, the adjustment be made by varying part of the inductance in either circuit, the range of wave lengths is limited owing to the fact that part of the inductance is invariable; moreover, unless some further adjustment is made, the coupling varies enormously with the wave length.

According to the present invention I employ in the primary circuit a variometer which constitutes as nearly as possible the whole inductance of that circuit and at the same time forms the coupling with the secondary circuit. Thus, if the aerial be lengthened causing an increase of its wave length and a reduction of the coupling, the primary circuit is brought into tune by turning the movable coil of the variometer so as to increase the inductance of the circuit which also increases the coupling again. Therefore, with this single compact apparatus all the necessary adjustments for a wide range of wave lengths may be rapidly made by simply turning a handle.

The invention is illustrated by the accompanying diagrams.

In Figure 1, A is the moving coil and B is the fixed coil of a variometer included in the primary circuit; C is an inductance in the aerial circuit coupled to the coil A and B. If the length of the aerial is increased, the coil A is moved relatively to the coil B so as to increase the total inductance of the primary circuit and this also increases the coupling which was reduced by the lengthening of the aerial. If it be desired to vary the coupling without affecting the tuning, this may be done by moving the coil C relatively to the coils A and B.

Figure 2 shows another method by which the coupling may be varied independently of the primary circuit and without affecting the tuning. In this arrangement the aerial may be connected to various points of the inductance C, additional inductances C^1, C^2, which are not coupled to A and B and which are equal respectively to the portions of C which are cut out, being interposed between the aerial and the part of the inductance C which remains in the aerial circuit, so that the total amount of the inductance (that is, C or part of C and C^1, or a smaller part of C and C^2) remains constant though the part which is coupled to the primary circuit varies.

Having described my invention, what I claim is:

1. A wireless telegraph transmitter adapted to operate with varying lengths of aerial comprising a primary circuit having its inductance in the form of a variometer, a coil in said aerial coupled to said variometer and means for varying the coupling between the coil and variometer while maintaining the inductance constant.

2. A wireless telegraph transmitter adapted to operate with varying lengths of aerial comprising a primary circuit having its inductance in the form of a variometer having two relatively rotatable coils, a third coil in the aerial inductively related to said variometer and means for disconnecting turns of the aerial coil and substituting inductances of substantially equal value non-inductively disposed to said variometer.

RAYMOND DORRINGTON BANGAY.