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J. F. RODGERS

TUNING TRANSFORMER

Filed May 26, 1922

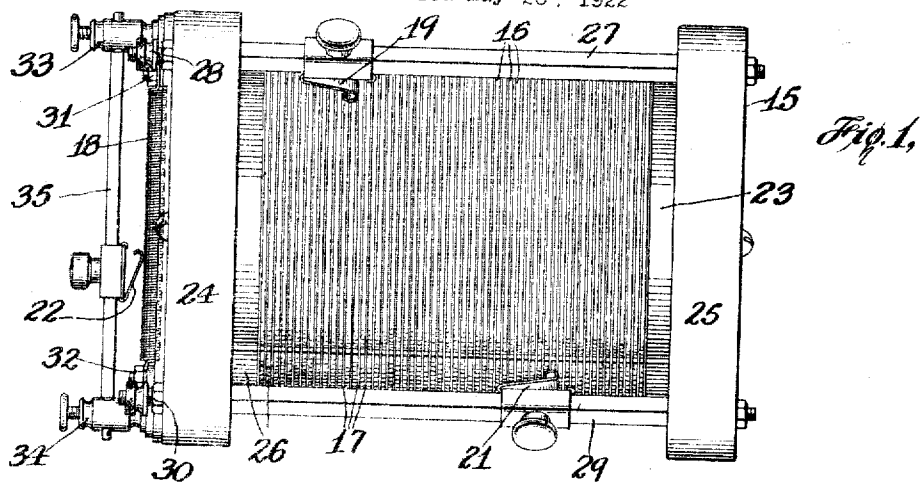
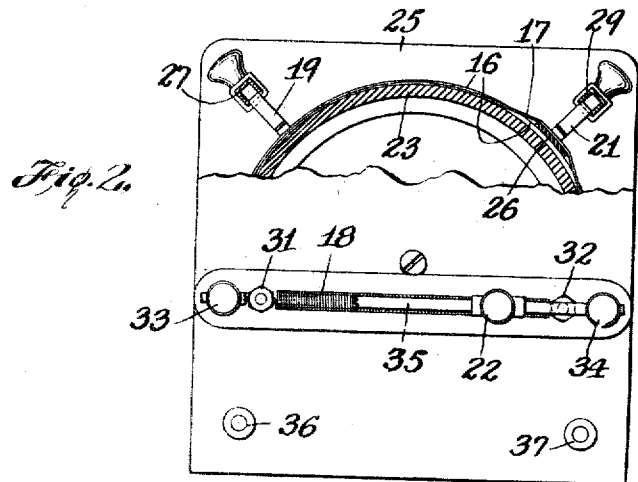
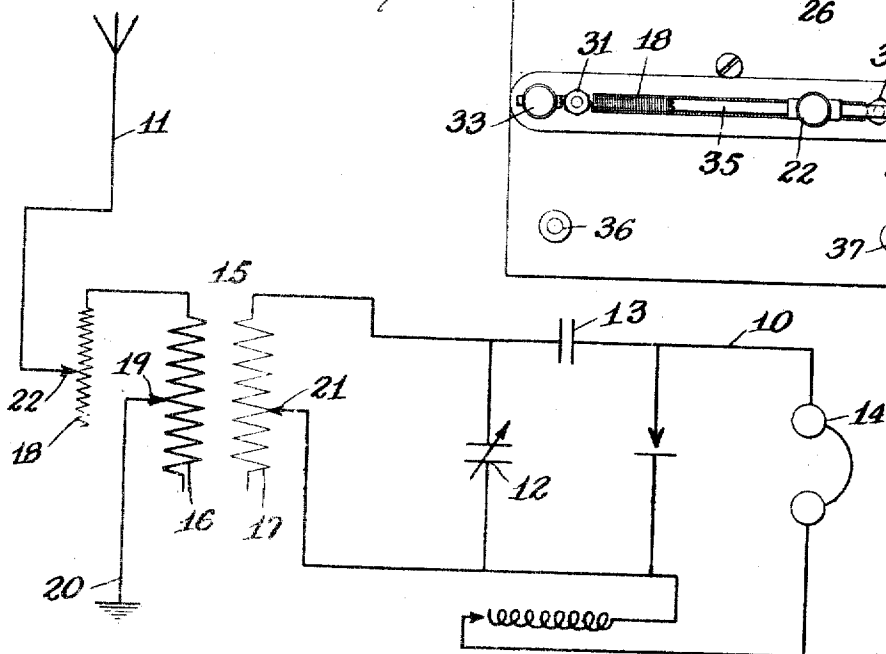


Fig. 3,

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By his Attorneys

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UNITED STATES PATENT OFFICE.

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TUNING TRANSFORMER.

Application filed May 26, 1922. Serial No. 563,822.

To all whom it may concern:

Be it known that I, JOHN F. RODGERS, a citizen of the United States, and residing at Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Tuning Transformers, of which the following is a specification, such as will enable those skilled in the art to which it appertains to make and use the same.

This invention relates to tuning transformers for wireless receiving and transmitting apparatus of various kinds and classes; and the object of the invention is to provide a transformer of the class described which is so constructed as to facilitate the tuning of a wireless apparatus to the finest degree in order to be able to pick up predetermined broadcasting stations that may be within close range of each other without interference between the separate stations as well as to facilitate the sending of messages to predetermined points or stations, or to predetermined receiving apparatus without interference or conflict with other receiving apparatus; and with this and other objects in view the invention consists in a device of the class and for the purpose specified which is so constructed as to carry out the above objects in the same efficient, practical and economical manner.

The invention is fully disclosed in the following specification, of which the accompanying drawing forms a part, in which the separate parts of my improvement are designated by suitable reference characters in each of the views, and in which:—

Fig. 1 is a plan view of my improved tuning transformer;

Fig. 2 a view looking at one end of the transformer with part of the construction broken away and in section; and,

Fig. 3 a diagrammatic view showing my improved transformer in circuit with a wireless receiver apparatus.

In Fig. 3 of the drawing I have diagrammatically shown at 10 a wireless receiving apparatus comprising an aerial 11, a variable condenser 12, a condenser 13, phones 14 and other devices commonly employed in apparatus of this class and at 15, I have diagrammatically illustrated my improved transformer comprising a primary coil 16, secondary coil 17 and supplemental primary coil 18 the coil 16 being provided with a

contact 19 movable thereover and which is connected with a ground wire 20 as shown, while the secondary coil 17 is provided with a contact 21 movable thereover and a supplemental primary coil with a similar contact 22 movable thereover, said last named coil being in communication with the aerial.

In Figs. 1 and 2 of the drawing, I have shown the transformer which is diagrammatically illustrated in Fig. 3 made up in one form of device or unit comprising a suitable core 23 having end plates 24 and 25, and the primary coil 16 is composed of comparatively heavy wire and is wound upon the core 23, as clearly shown in Figs. 1 and 2, and the secondary coil 17 is composed of comparatively fine wire and is wound upon the core 23 between the coils 16 and passes over a transverse insulated strip 26 mounted upon the core 23, after the coil 16 has been wound thereon, as clearly shown in Fig. 2 of the drawing.

The adjustable contact member 19 for the coil 16 is in the form of a spring member as shown in Figs. 1 and 2, and is mounted to slide upon a rod 27 extending between the end plates 24 and 25 and projects through the end plate 24 and is provided with a binding post 28 at this point.

The adjustable contact member 21 is similar in form and construction to the member 19 and is mounted to slide upon another rod 29 directly over the strip 26 on the core 23, and this rod also extends through the end plate 24 and is provided with a binding post 30.

The coil 18 mounted between two parts 31 and 32 on the outer face of the end plate 24, and mounted in two binding posts 33 and 34 is a rod 35 which is located outwardly of the coil 18, and the adjustable contact member 22 in the form of a spring is mounted to slide on said rod, as clearly shown in the drawing. Two other binding posts 36 and 37 are connected with the end plate 24 to permit of the attachment of the usual circuit wires.

It will be understood that the wires from the aerial 11 and to the ground wire 20 are connected with the primary circuit as diagrammatically illustrated in Fig. 3 of the drawing, while the wires of the receiver or other wireless apparatus are connected with the secondary coil and the adjustable contact thereof as diagrammatically illustrated

in Fig. 3, it being understood that the device or apparatus in the receiver or other wireless outfit are in circuit with the secondary coil of the transformer, while the aerial is in circuit with the primary coil and the supplemental primary coil.

It will also be understood that the wires of the coil 16 will be bare, or the insulation removed therefrom where the contact 19 moves thereover, and the wires of the coil 17 where the contact member 21 moves thereover and over the insulation strip 26 will also be bare, or the insulation of said wires removed at this point, but the separate coils 16 and 17 will be insulated from each other by the usual insulation on such wires.

It will be apparent that with the use of my improved transformer I eliminate tapping or plugging into the primary coil and the secondary coil at predetermined points when wound on a suitable core or suitable cores which gives a very limited range of use of the apparatus. With my construction I may tap onto each winding of the separate coils on the core 23, and by using the supplemental primary coil 18, I may attain a finer adjustment by being able to tap onto the coil 16 through the coil 18 at practically any point along the entire winding of said coil on the core, the coil 18 being preferably of greater length than any one winding of the wire of the coil 16 upon its core. With an apparatus of this class and by the use of my improved transformer, an operator may place his apparatus in communication with a predetermined transmitting or sending station from which he may receive or to which he may deliver without interruptions or interference the desired message, selection or the like that may be sent out from a broadcasting station, or which may be sent out by him, or other parties or individuals.

It will also be understood that I am not necessarily limited to the form of the device shown in Figs. 1 and 2 of the drawing nor to the details of construction of the device shown in said figures, nor to any specific use of my improved apparatus, and various changes in and modifications of the construction herein shown and described may be made, within the scope of the appended claims, without departing from the spirit of my invention or sacrificing its advantages.

Having fully described my invention, what I claim as new and desire to secure by Letters Patent, is:—

1. A transformer of the class described comprising a primary coil and a secondary coil, means adjustable over said coils and in circuit therewith for electrically placing said means in connection with the separate windings of said coils, said coils being wound on a common core with the turns of the separate coils located one between the

other, and means for insulating said coils from each other, said last named means involving an insulation strip mounted upon said core and upon the primary coil and over which the secondary coil is wound.

2. A transformer of the class described comprising a primary coil wound upon a suitable core piece, a secondary coil wound upon said core piece between the respective windings of the primary coil, means on said core piece for raising the windings of the secondary coil at a predetermined point and to insulate the secondary coil from the primary coil at this point, and contact devices adjustable longitudinally of the core piece and one of which is adapted to engage the separate windings on the primary coil.

3. A transformer of the class described comprising a primary coil wound upon a suitable core piece, a secondary coil wound upon said core piece between the respective windings of the primary coil, means on said core piece for raising the windings of the secondary coil at a predetermined point and to insulate the secondary coil from the primary coil at this point, and contact devices adjustable longitudinally of the core piece and one of which is adapted to engage the separate windings on the primary coil and the other of which is adapted to engage the separate windings of the secondary coil.

4. A transformer of the class described comprising a primary coil wound upon a suitable core piece, a secondary coil wound upon said core piece between the respective windings of the primary coil, means on said core piece for raising the windings of the secondary coil at a predetermined point and to insulate the secondary coil from the primary coil at this point, and contact devices adjustable longitudinally of the core piece and one of which is adapted to engage the separate windings on the primary coil and the other of which is adapted to engage the separate windings of the secondary coil, said contact devices being adapted to place the separate windings of said coils in electric circuit with predetermined apparatus.

5. A transformer of the class described comprising a primary coil, a secondary coil, and a supplemental primary coil, electrical contact devices adjustable longitudinally of said coils and adapted to be placed in electrical communication with the separate windings of said coils, said primary coils and secondary coil being wound on a common core, and means for raising that portion of the secondary coil over which the contact devices pass and for insulating said raised portion from the adjacent portion of the primary coil.

6. A transformer of the class described, comprising a suitable core, a primary coil mounted on said core, a strip of insulating material mounted on said core and primary

coil, a secondary coil wound on said core and said strip, with the windings thereof between the respective windings of said primary coil, and electric conducting members adjustable longitudinally of the coils and provided with spring contacts, one of which is adapted to engage the windings of the primary coil and the other of which is adapted to engage the windings of the secondary coil where said strip of insulating material is located on said core.

7. A transformer of the class described, comprising a suitable core, a primary coil mounted on said core, a strip of insulating material mounted on said core and primary coil, a secondary coil wound on said core and said strip, with the windings thereof between the respective windings of said primary coil, electric conducting members adjustable longitudinally of the coils and provided with spring contacts, one of which is adapted to engage the windings of the primary coil and the other of which is adapted to engage the windings of the secondary coil where said strip of insulating material is located on said core, said core being provided with end plates, and a supplemental primary coil mounted in connection with one of said end plates and in circuit with said primary coil.

8. A transformer of the class described, comprising a suitable core, a primary coil mounted on said core, a strip of insulating material mounted on said core and primary coil, a secondary coil wound on said core and said strip, with the windings thereof between the respective windings of said primary coil, electric conducting members adjustable longitudinally of the coils and provided with spring contacts, one of which is adapted to engage the windings of the primary coil and the other of which is adapted to engage the windings of the secondary coil where said strip of insulating material is located on said core, said core being provided with end plates, a supplemental primary coil mounted in connection with one of said end plates and in circuit with said primary coil, and an electric conducting member having a spring contact adapted to operate in connection with said supplemental primary coil.

9. A transformer of the class described, comprising a suitable core, a primary coil mounted on said core, a strip of insulating material mounted on said core and primary coil, a secondary coil wound on said core and said strip, with the windings thereof between the respective windings of said primary coil, electric conducting members adjustable longitudinally of the coils and provided with spring contacts, one of which is adapted to engage the windings of the primary coil and the other of which is adapted to engage the windings of the secondary coil

where said strip of insulating material is located on said core, said core being provided with end plates, a supplemental primary coil mounted in connection with one of said end plates and in circuit with said primary coil, an electric conducting member having a spring contact adapted to operate in connection with said supplemental primary coil, and means for placing said coils and electric conducting members in circuit with a predetermined apparatus.

10. A transformer of the class described comprising a primary coil, a secondary coil, and a supplemental primary coil, electric contact devices adjustable longitudinally of said coils and adapted to be placed in electrical communication with the separate windings of said coils, said primary coil and secondary coil being composed of wires of different gage and being wound on a common core with the turns thereof located one between the other.

11. A transformer of the class described comprising a primary coil, a secondary coil, and a supplemental primary coil, electric contact devices adjustable longitudinally of said coils and adapted to be placed in electrical communication with the separate windings of said coils, said primary coil and secondary coil being composed of wires of different gage and being wound on a common core with the turns thereof located one between the other, and a body of insulating material extending longitudinally of and adapted to separate predetermined portions of the primary and secondary coils.

12. A transformer of the class described comprising a primary coil and a secondary coil, means adjustable over said coils and in circuit therewith for electrically placing said means in connection with the separate windings of said coils, said coils being wound on a common core with the turns thereof located one between the other, and means on said core and primary coils for insulating that portion of the secondary coil, over which the first named means passes, from the primary coil.

13. A transformer of the class described comprising a core provided at its ends with plates, primary and secondary coils wound on said core with the turns thereof one between the other, means for raising a predetermined portion of the secondary coil for insulating the same from the primary coil, means joining said end plates and extending longitudinally of the core for supporting movable contact devices thereon, one of said contact devices being movable over the raised portion of the secondary coil and adapted to contact with the separate windings thereof, and the other of said contact devices being movable over and adapted to contact with the separate windings of the primary coil.

14. A transformer of the class described comprising a core provided at its ends with plates, primary and secondary coils wound on said core with the turns thereof one between the other, means for raising a predetermined portion of the secondary coil for insulating the same from the primary coil, means joining said end plates and extending longitudinally of the core for supporting movable contact devices thereon, one of said contact devices being movable over the raised portion of the secondary coil and adapted to contact with the separate windings thereof, the other of said contact devices being movable over and adapted to contact with the separate windings of the primary coil, and a supplemental primary coil mounted in connection with one of said end plates.

15. A transformer of the class described comprising a core provided at its ends with plates, primary and secondary coils wound on said core with the turns thereof one between the other, means for raising a predetermined portion of the secondary coil for insulating the same from the primary coil, means joining said end plates and extending longitudinally of the core for supporting movable contact devices thereon, one of said contact devices being movable over the raised portion of the secondary coil and adapted to contact with the separate windings thereof, the other of said contact devices being movable over and adapted to contact with the separate windings of the primary coil, a supplemental primary coil mounted in connection with one of said end plates, and a contact device movable relatively to said last named coil and adapted to contact with the separate windings thereof.

16. A transformer of the class described comprising a primary coil wound on a suitable core-piece, a secondary coil wound upon said core-piece between the windings of the primary coil, and means for raising a predetermined portion of the windings of the secondary coil.

17. A transformer of the class described comprising a primary coil wound on a suitable core-piece, a secondary coil wound upon said core-piece between the windings of the primary coil, and means for raising a predetermined portion of the windings of the secondary coil and to insulate the secondary coil from the primary coil.

18. A transformer of the class described comprising a primary coil wound on a suitable core-piece, a secondary coil wound upon said core-piece between the windings of the primary coil, means for raising a predetermined portion of the windings of the secondary coil and to insulate the secondary coil from the primary coil, and contact devices adjustable relatively to and adapted to contact with the separate coils.

19. A transformer of the class described comprising a primary coil wound on a suitable core-piece, a secondary coil wound upon said core-piece between the windings of the primary coil, means for raising a predetermined portion of the windings of the secondary coil and to insulate the secondary coil from the primary coil, contact devices adjustable relatively to and adapted to contact with the separate coils, and one of said contact devices cooperating with the raised and insulated area of the secondary coil.

In testimony that I claim the foregoing as my invention I have signed my name this 25th day of May, 1922.

JOHN F. RODGERS.