Dec. 27, 1938. J. MELICHAREK 2,141,613

COIL SELECTOR

Filed Feb. 13, 1930 2 Sheets-Sheet 1

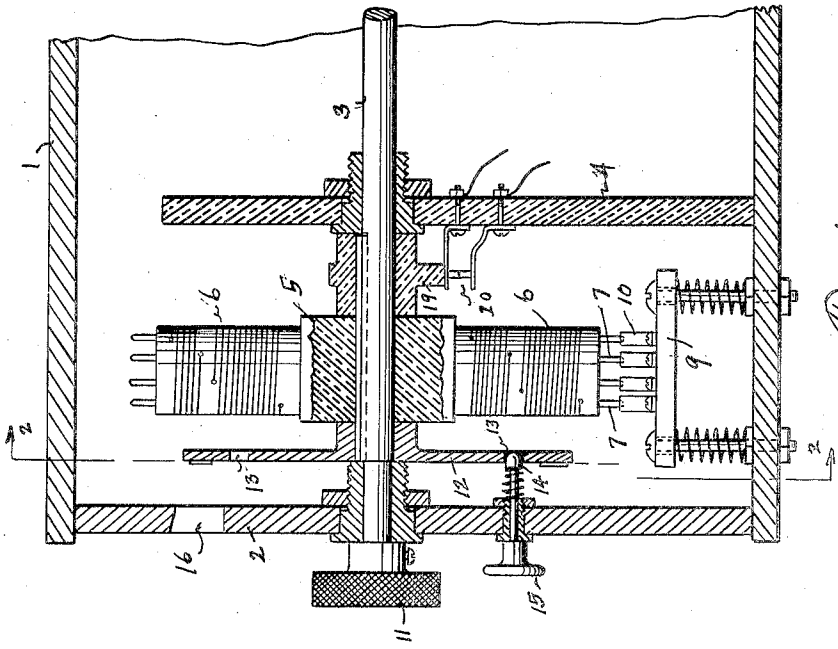


Fig. 1.

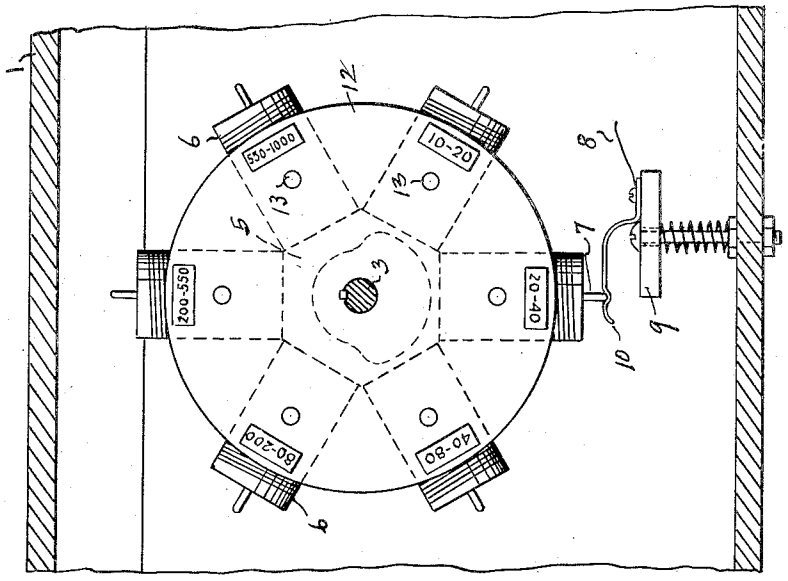



Fig. 2.

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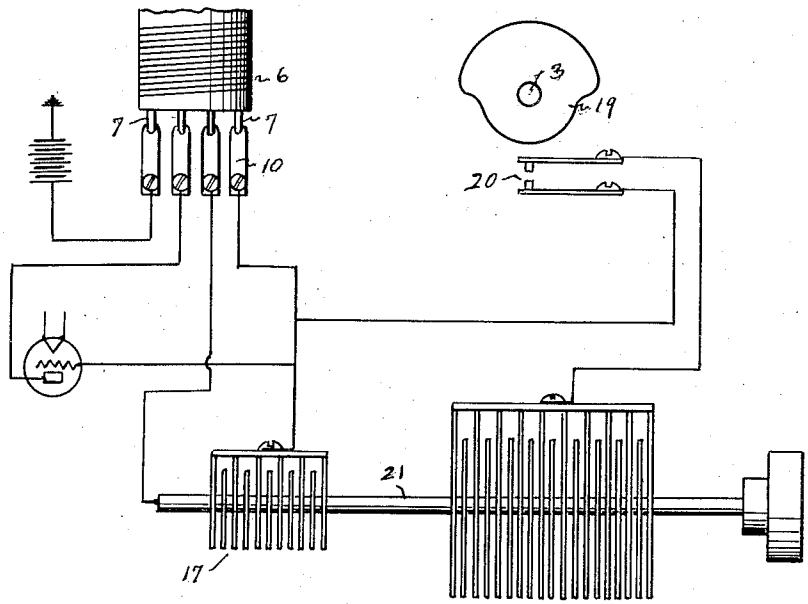



Fig. 3.

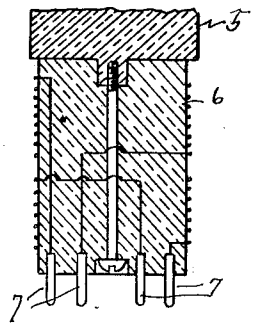



Fig. 4.

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2,141,613

# UNITED STATES PATENT OFFICE

2,141,613

## COIL SELECTOR

John Melicharek, Houston, Tex.

Application February 13, 1930, Serial No. 428,072

11 Claims. (Cl. 250—40)

This invention relates to new and useful improvements in a coil selector, and has particular relation to an improved method of mounting the coils whereby a selected coil may be readily connected into an electrical circuit.

One object of the invention is to provide apparatus of the character described wherein there is a plurality of coils so mounted that any selected coil may be easily connected into an associated electrical circuit.

Another object of the invention is to provide apparatus of the character referred to equipped with a plurality of condensers and having means for automatically connecting one or both of the condensers into the circuit as the circumstances of the case may require.

A single tube receiver is shown, in the drawings, for the purposes of illustration, but the invention may be applied to a receiver having any number of tubes, as well as to other similar appliances.

With the above and other objects in view, this invention has particular relation to certain novel features of construction, operation and arrangement of parts, an example of which is given in this specification and illustrated in the accompanying drawings, wherein:—

Figure 1 shows a fragmentary vertical sectional view of the radio receiver embodying the invention.

Figure 2 shows a vertical sectional view taken on the line 2—2 of Figure 1.

Figure 3 shows a diagrammatic view of the tube circuit showing the coil and condensers associated therewith, and

Figure 4 shows a sectional view of a coil.

Referring now more particularly to the drawings, wherein like numerals of reference designate similar parts in each of the figures the numeral 1 designates a conventional casing of any selected design and having the usual instrument board 2. In this casing there is a rotatable shaft 3 mounted in suitably aligned bearings in the instrument board and in the transverse support 4 behind said instrument board. Fixed on this shaft, within the casing, there is a coil support 5 on which a plurality of coils 6, of conventional construction, are mounted. These coils, preferably, radiate from the support and projecting from their outer ends are the contact fingers 7. The coils 6 are for different wave lengths and may be readily connected into, and disconnected from, the receiver tube circuit 8, in a manner to be described. There is a yieldably mounted support 9 on which are fixed the flexible contact tongues 10 to which the wires of the circuit 8 are connected. The outer end of the shaft 3 has a hand knob 11 through which said shaft may be turned and the fingers of any selected coil brought into contact with the tongues 10 and thus connected into the tube circuit of the receiver.

The various coils are for different wave lengths and as it becomes necessary to change from one wave length to another this may be easily accomplished, in an obvious manner. At the present time, with receivers now in common use, when it becomes necessary, or desirable, to shift from one range of wave lengths to another range of wave lengths it usually necessitates the removal of the coil in use in the receiver and the substitution of another one adapted to the wave length desired and in the respect above indicated the invention described herein constitutes a decided improvement over the present state of the art to which it pertains.

Fixed on the shaft 3, preferably in front of the support 5, is a disc 12 having spaced perforations 13, therearound, and there is a yieldably mounted dog 14 which works through a suitable bearing in the instrument board 2 and whose outer end carries a hand knob 15 by means of which it may be operated. The inner end of this dog is adapted to seat in a perforation 13 so as to hold the shaft 3 in a fixed position to the end that when the fingers of any coil are moved into contact with the tongues 10, said dog 14 will maintain said contact until it is released, and the shaft 3 again turned. The instrument board 2 has a window opening 16 and the face of the disc 12 carries data to indicate the wave length of the coils. This data is so arranged that when any particular coil is in contact with the tongues 10 its wave length will be shown through the window 16.

There are the condensers 17, 18 the former of which is at all times connected with the coil in contact with the tongues 10 and the latter of which may be also connected with such coil if desired.

When a coil for short wave length is connected into the receiver circuit the condenser 17 only should be used, but when coils for long wave length are connected to said circuit, both the condensers 17 and 18, should be connected into said circuit. For this purpose, a cam 19 is fixed on the shaft 3 behind the support 5 and there is an electric switch 20 arranged to be closed by said cam to connect the condenser 18 into the receiver circuit only when a coil for long wave length is in connection with the tongues 10. This cam is arranged in such relative position with respect

to the support 5 that when coils for short wave length are connected with the tongues 10 the switch 20 will remain open, but when coils for long wave lengths are connected with said tongues 10 the switch 20 will be closed for the purposes above stated.

The condensers 17, 18 are of conventional construction and may be controlled by the usual shaft 21.

The drawings and description disclose what is now considered a preferred form of the invention, by way of illustration only, while the broad principle of the invention will be defined by the appended claims.

What I claim is:

1. In apparatus of the character described having an electrical circuit provided with a switch and having a contact member, a plurality of condensers, a plurality of movably mounted coils, each having a contact member, means for moving said coils whereby, by means of said contact members, a selected coil may be connected into and disconnected from said circuit at will, said coil moving means also including a cam for operating said switch and thereby connecting one of said condensers with, and disconnecting it from, said circuit.

2. In apparatus of the character described having an electrical circuit and a plurality of condensers one of which is connected into said circuit, a switch and a contact member in said circuit, a plurality of electrical coils movably mounted in said apparatus, each coil having a contact member, means for moving said coils to carry their contact members into and out of cooperating relation with the said contact member of the circuit whereby said circuit may be completed or broken through a selected coil, said means including a cam effective to actuate said switch and thereby connect another of said condensers into said circuit when certain of said coils are so selected.

3. In apparatus of the class described, having an electrical circuit and a plurality of condensers one of which is permanently connected into said circuit, a plurality of contact members in said circuit, a plurality of electrical coils movably mounted in said apparatus, and each having contact members, means for moving said coils whereby said contact members of the coils may be brought into and out of cooperating relation with the corresponding contact members of the circuit, and said circuit may be thereby completed or broken through a selected coil at will, electrical conductors for connecting the other condenser into said circuit, and having a switch, said means having also a cam effective to close said switch and thereby connect said other of said condensers into said circuit simultaneously with the connection of certain only of said coils into said circuit.

4. A coil selector including a casing, a rotatable shaft therein, a coil support on said shaft, a plurality of coils mounted on said support and having contact fingers at their outer ends, a tube circuit, a yieldably mounted support having tongues to which the conductors of said circuit are connected, means for rotating said shaft to bring the fingers of a selected coil into contact with said tongues, a plurality of condensers one of which is connected permanently into said circuit, means for connecting the other condenser into said circuit, said last mentioned means including an electrical conductor having an electrical switch and a cam on said shaft arranged to close and to permit the opening of said switch.

5. In apparatus of the character described having an electrical circuit and a plurality of condensers, one of which is connected into the circuit, a switch and a contact member in said circuit, a plurality of electrical coils movably mounted in said apparatus, each coil having a contact member, means for moving said coils to carry the contact members selectively into and out of cooperating relation with said contact member of the circuit whereby said circuit may be completed or broken through a selected coil, said moving means also including an actuating member effective to actuate said switch and thereby connect another of said condensers into said circuit when certain of said coils are so selected.

6. In a high frequency electrical system, a rotatable carrier, a multiplicity of inductance units each having different frequency characteristics disposed on said rotatable carrier, a high frequency electrical circuit terminating in fixed contacts adjacent said rotatable carrier, a variable electrical capacity in said high frequency electrical circuit, contacts carried by said rotatable carrier and connected with the inductance units thereon and adapted to establish connection with the fixed contacts adjacent said rotatable carrier, and a circuit maker and breaker including a stationary contact and a movable contact, means carried by the rotatable carrier to effect movement of the movable contact into and out of engagement with the stationary contact as the carrier is rotated for modifying the effective capacity in said high frequency electrical circuit in accordance with the value of the inductance unit which is selectively connected with said high frequency electrical circuit.

7. A high frequency electrical system comprising a movable carrier, a plurality of impedance units of different values mounted upon said carrier, a high frequency electrical circuit, variable capacity means in said high frequency electrical circuit, said high frequency electrical circuit terminating in contacts adjacent said movable carrier, contacts on said movable carrier connected with said impedance units, and means automatically controllable by the movement of said carrier for modifying the effect of the electrical capacity in said high frequency electrical circuit according to the value of impedance which is connected therein.

8. In a high frequency electrical system, a rotatable carrier, a multiplicity of inductance units each having different values supported on said rotatable carrier, a high frequency electrical circuit, a variable capacity system having a pair of branch circuits, one of said branch circuits being permanently connected in said high frequency electrical circuit, and the other of said branch circuits being controlled by the movement of said rotatable carrier according to the electrical connection or disconnection of an inductance unit on said carrier with respect to said high frequency electrical circuit by means of fixed contacts adjacent to said rotatable carrier, and contacts carried by said carrier and forming terminals for the inductance units mounted thereon.

9. In a high frequency electrical system, a rotatable carrier, a multiplicity of independent transformer units mounted on said carrier, contact terminals disposed on said carrier and each connected with said transformer units, a high frequency electrical circuit terminating in fixed contacts projecting in the path of the aforesaid contacts and adapted to establish electrical con-

nection therewith for completing connections between the windings of a selected transformer unit and said high frequency electrical circuit, a variable electrical capacity, and means operatively associating a selected portion of said variable electrical capacity with said high frequency electrical circuit in conformity with the frequency characteristis of a selected transformer for neutralizing the inductive and capacitive reactance at a predetermined minimum and maximum value of frequency of the electromotive force induced in said high frequency electrical circuit.

10. Frequency changing apparatus comprising a rotatable carrier, inductance elements of different frequency characteristics mounted upon said carrier, a high frequency electrical circuit terminating in contacts adjacent said carrier, contacts connected with the inductance elements on said carrier and connectible with the aforesaid contacts when said carrier is rotated to selected positions for including a particular inductance in said high frequency electrical circuit, an electrical capacity divided into two separate portions, one portion of which is permanently connected with said high frequency electrical circuit, a cam operated by the movement of said carrier for effectively connecting the several portions of said capacity in parallel in said high frequency electrical circuit when a selected inductance element is connected in said high frequency electrical circuit.

11. In apparatus of the class described, having an electrical circuit and a plurality of condensers one of which is permanently connected into said circuit, a plurality of contact members in said circuit, a plurality of electrical coils movably mounted in said apparatus, and each having contact members, means for moving said coils to carry the contact members selectively into and out of cooperating relation with said contact members in said circuit, whereby said circuit may be thereby completed or broken through a selected coil at will, electrical conductors for connecting the other condenser into said circuit, and having a switch, said means having also a cam effective to close said switch and thereby connect said other of said condensers into said circuit simultaneously with the connection of certain only of said coils into said circuit.

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