

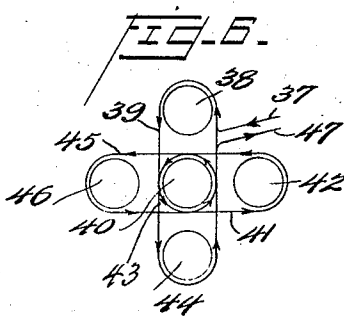
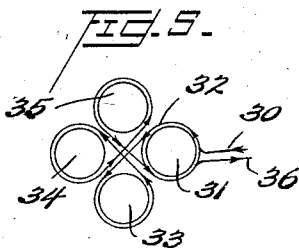
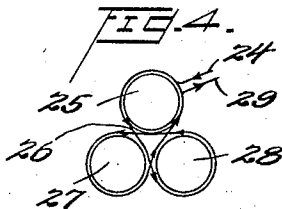
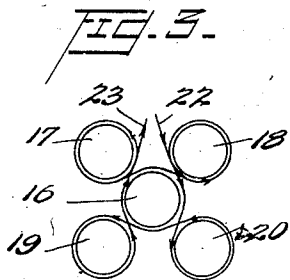
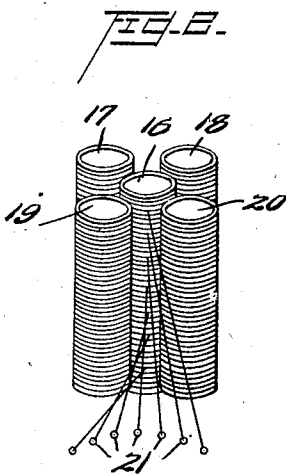
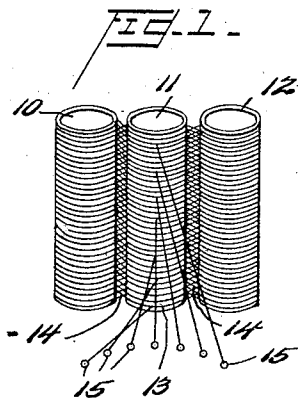
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CLUSTER INDUCTANCE COIL FOR RADIO SETS

Filed August 18, 1925



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UNITED STATES PATENT OFFICE.

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CLUSTER INDUCTANCE COIL FOR RADIO SETS.

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This invention relates to inductance coils for radio sets and more particularly to a cluster inductance coil for use in tuning radio receiving sets.

It is a general object of the present invention to provide a novel and improved inductance coil for radio receiving sets.

More particularly it is an object of this invention to provide an inductance coil composed of a plurality of coils arranged with their cores parallel and wound with a single wire.

A further object of the present invention consists in the provision of a cluster inductance coil having a greatly increased magnetic field.

A still further object of the present invention consists in the provision of an inductance coil having increased selectivity and improved ease of tuning.

Still another object of the present invention consists in the provision of a cluster inductance coil so wound as to produce a greatly increased magnetic field about one of the coils which is tapped for tuning.

In the construction of radio receiving sets of various types use is made of some form of inductance coil for regulating the wave length adapted to be received by the set at any particular time. The present invention contemplates a material improvement in such coils whereby the size may be reduced, the magnetic intensity of field increased, the selectivity increased and the wave length range extended without adding to the difficulty of construction or increasing the expense for materials.

For a better understanding of the present invention reference should be had to the accompanying drawings wherein is disclosed several exemplary embodiments of the present invention with the understanding, however, that various changes may be made therein without departing from the spirit of the invention or the scope of the appended claims.

In said drawings:

Figure 1 is a perspective view of one form of this invention;

Figure 2 is a similar view of another form;

Figure 3 is a diagrammatic view showing the method of winding the coils of Figure 2;

Figures 4, 5 and 6 are views similar to

Figure 3, showing various other methods of winding cluster coils.

In Figure 1 is disclosed a cluster inductance coil composed of three independent cores 10, 11 and 12 all wound with a single conductor. The cores may be of any desired non-conducting material such as rods or tubes of bakelite, fiber, pasteboard or the like. A single conducting wire of any desired size and insulation is wound on all three of the cores, each convolution excluding at least a partial turn on each core in the manner shown, commencing for instance, at 13, passing to the right in front of the core 11, then between cores 11 and 12 as at 14, around core 12, then between cores 11 and 12, making a half turn around the back of core 11, then passing to the front between cores 10 and 11 and making a turn around core 10, then between cores 10 and 11 and making a half turn around the front of core 11, then again to core 12 as previously explained, continuing the winding until the cores are filled.

Taps may be taken from the center coil if desired and connected to switch points 15 for use in selecting the wave length to which the coil will respond. This construction results in materially reducing the over all dimensions of the coil, for a larger amount of wire can be thus wound than upon a single coil of larger diameter, thus effecting a coil of large wave length range in small dimensions. At the same time the inductance of the coil is materially increasing owing to the larger number of turns while the distributed capacity is reduced. This latter results in a coil of increased sharpness of tuning as is well known. By thus grouping the coils in close proximity the magnetic field in the center coil which is tapped for tuning is increased three-fold, and therefore the signal strength is increased and the sharpness of tuning augmented as previously explained.

In Figures 2 and 3 is shown a method of winding a single conductor about five grouped cores 16, 17, 18, 19 and 20, the center core 16 of which is provided with taps 21 as in the case of Figure 1. Referring to Figure 3, it will be seen that the winding is started at 22, passes counter-clockwise around core 18 for a full revolution, then crosses over to core 16, makes a substantially quarter turn thereabout and then passes

counter-clockwise about core 20 for a full revolution. Leaving this core, it passes for a quarter turn about core 16 and then makes a full counter-clockwise turn about core 19 from which it again passes to core 16 for a quarter turn, leaving to make a full counter-clockwise turn about core 17. This operation will be repeated for the desired number of convolutions and the final end brought out at 23 for connection to the circuit. A coil of this type increases the magnetism in the center coil much more than that of the type shown in Figure 1 and one which has been in actual use and which responds to the full broadcasting wave length band is but one and one-half inches in over-all diameter and one and one-half inches in length. It will thus be seen that the construction materially reduces the size of the tuning inductance and allows for most compactly constructed receiving sets.

Figure 4 shows a method of winding three coils spaced on the apices of an equilateral triangle. The winding may start at 24, pass counter-clockwise around the core 25 to the point 26 where it leaves the core 25, passes a short distance over the face of the core 27 and makes almost a complete counter-clockwise turn about the core 28, then crossing over makes almost a complete counter-clockwise turn about the core 27. It then crosses over the face of coil 28 and completes its revolution about coil 25. As in the previous forms, the number of convolutions can be increased as desired to effect a suitable wave length range for the inductance.

Figure 5 shows a method of winding a single wire about four cores spaced on the corners of a square. In this case the winding starts at 30, passes in a counter-clockwise direction around the core 31 which it leaves at the point 32 and crosses diagonally over the central space included between the cores and makes a three-quarter counter-clockwise turn about the core 33. Then passing at right angles across the span between the cores 31 and 33, it makes a three-quarter counter-clockwise turn about the core 34, leaving which it parallels the span between the cores 32 and 33 and makes a three-quarter counter-clockwise turn about the core 35. Leaving this core, it parallels the span between the cores 33 and 34 and returns again to core 31. This completes a single convolution about the four cores and any desired number may be made as previously described.

In Figure 6 is shown a method of winding a single wire about five cores, four of which are equi-distantly spaced from a center one. The winding is started at 37 and makes a half revolution in a counter-clockwise direction about the core 38 from which it passes at 39 to the central core 40, making a quarter revolution in a counter-clockwise direc-

tion about this core and leaving it at 41 to make a half revolution in a counter-clockwise direction about the core 42, whence it passes again to the core 40, makes a quarter revolution and leaves at 43 to make a half counter-clockwise revolution about the core 44, returning again to the central core 40, making a quarter revolution and leaving at 45 to make a half counter-clockwise revolution about the last core 46 from whence it returns to the core 40, makes a quarter revolution and passes again to the core 38 to repeat the process for any suitable number of convolutions, the final end of the wire being taken off as at 47.

It will be seen that in all of the above described modifications there are a plurality of coils wound in the same direction grouped together, thereby materially increasing the magnetic field of the group. It is well known in the radio art that the sharpness of tuning is dependent upon the intensity of the magnetic field and that the selectivity can be materially increased by increasing this field. The present invention therefore effects these two most desired results in a coil which is both compact and easy to form.

Having thus described the invention, what is claimed as new and desired to be secured by Letters Patent is:

1. A cluster inductance coil for radio receiving sets including a unit coil comprising a plurality of cores grouped together and a single conductor wound successively and intermittently around each core in the same direction to produce a plurality of parallel coils having the same polarity.

2. A cluster inductance coil for radio receiving sets including a unit coil comprising a plurality of grouped cores, a single conductor wound on said cores in a plurality of convolutions, each convolution comprising partial turns about each core in the same direction to produce a plurality of parallel coils of the same polarity.

3. A cluster inductance coil including a unit coil comprising a plurality of parallel grouped coils of the same polarity formed by winding a single conductor in a number of convolutions each including partial turns in the same direction on each coil.

4. A cluster inductance coil for radio receiving sets including a unit coil comprising a plurality of cores having their axes parallel, said cores being symmetrically arranged, a single conductor wound in a plurality of convolutions about said cores, each core in sequence having a part turn of each convolution of said conductor wound thereon in such a direction that a plurality of coils at least two having the same polarity is formed.

5. A cluster inductance coil for radio receiving sets including a unit coil comprising a central core, a plurality of cores grouped

thereabout and parallel thereto, a single conductor wound in convolutions about said cores, each convolution including partial turns about each of said plurality of cores and a complete turn about said central core.

5 6. A cluster inductance coil for radio receiving sets including a unit coil comprising a central core, a plurality of cores grouped thereabout and parallel thereto, a single con-

ductor wound in convolutions about said 10 cores, each convolution being formed by winding said conductor partially about each outer core and alternating with said central core.

In testimony whereof I hereunto affix my 15 signature.

OPORIA L. ORTON.