Nov. 8, 1927. 1,648,388

G. A. JOY

INDUCTANCE COIL FOR HIGH FREQUENCY CIRCUITS

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Fig. 1.

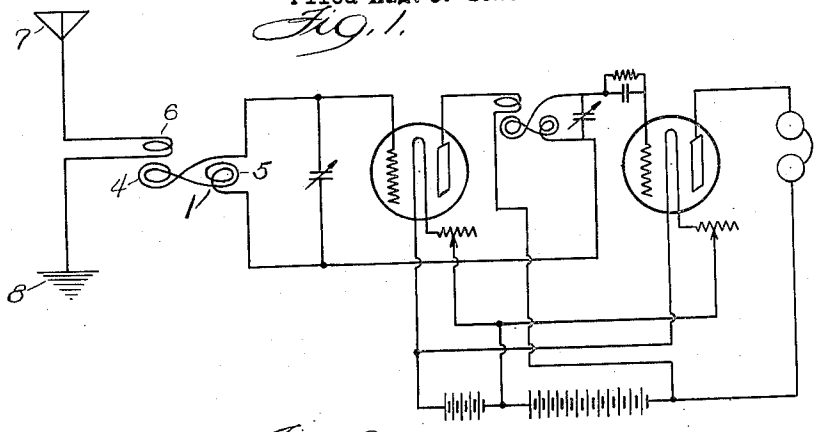


Fig. 2.

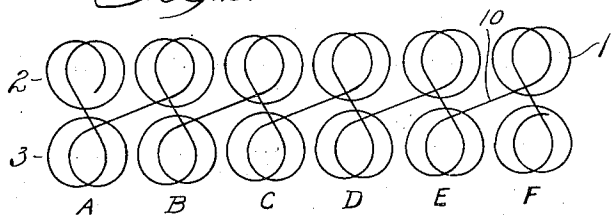


Fig. 3.

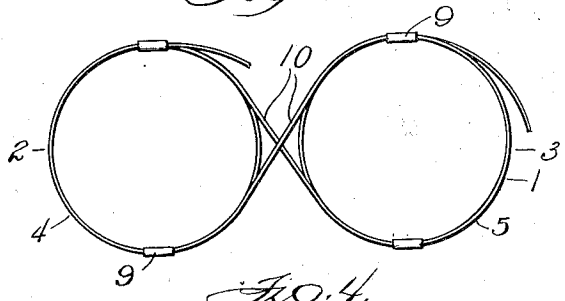
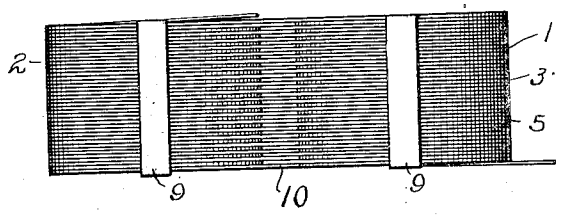


Fig. 4.



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UNITED STATES PATENT OFFICE.

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INDUCTANCE COIL FOR HIGH-FREQUENCY CIRCUITS.

Application filed August 3, 1925. Serial No. 47,815.

This invention relates to electrical coils or windings and to the method of forming the same, and especially to such coils adapted for use in radio receiving circuits, though not necessarily limited thereto.

The main objects of the invention are to provide an improved form of inductance member or coil, especially for use in radio sets; to provide such a coil having self-shielding, nonpickup properties, that is to say, being substantially proof against local interference; to provide such a coil having parts which are disposed laterally of the main effective portion, but all being disposed and arranged so as to maintain, throughout the entire winding, a sufficiently low potential difference between adjacent turns so as to avoid appreciable leakage; and to provide an improved form of biaxial winding.

An illustrative embodiment of this invention is shown by the accompanying drawings, in which:—

Fig. 1 is a conventional diagram of a radio receiving circuit including my improved form of coil.

Fig. 2 is a diagram of the coil elements or windings pulled out somewhat or elongated so as to show the relation of successive turns or coil elements.

Fig. 3 is an end view of the coil.

Fig. 4 is a side view of the coil.

In the construction shown in the drawings, the coil 1 as a whole comprises substantially a series of winding units A, B, C, etc., formed in coil pairs arranged in alinement respectively on parallel axes and all connected together in series. Each of the bihelical sections or units A, etc. includes a pair of flat coil members 2 and 3 arranged side by side in substantially the same plane, or coplanar, but wound in mutually opposite directions. The coil elements 2 constitute one compound helix 4 and the other elements 3 constitute another compound helix 5. That is, the coil 1 is wound substantially in the form of a figure eight, as shown in Fig. 3 and Fig. 4, with two or more complete turns made in each loop, or on each axis and the wire then passed diagonally across to the opposite loop.

Referring to Fig. 1, the coil 1 is shown with one compound helix 4 arranged in inductive relation to the primary coil 6, which is in series with the antenna 7 and ground 8, the other compound helix 5 serving merely as a balancing member or shield with respect to the inductively effective part 4.

In order that the coil parts may keep their due structural relation, supporting means or fasteners 9 are supplied, two for each loop of the winding as shown best in Fig. 3.

The method of winding this coil is to provide two temporary winding cores, not shown, but as will be understood, spaced a few inches apart in parallel relation, then starting at one core, wind on a certain number of turns, and then running across tangentially, as at 10, wind on the other core a like number of turns in the opposite direction, and so on back and forth until the coil is finished. I prefer to apply two turns at a time, that is to say, each coil part 2 and 3 consists of two complete turns, though more than two turns might be so applied. The successive coil parts 2 are disposed close together side by side, and the same is true of the parts 3.

The self inductance of the coil as a whole is thus minimized, the numerous small successive units being mutually neutralized, so that one part of the coil can have little or no disturbing effect on another part.

The strips 9 are laid against the core before the windings are applied, and when the coil is finished the strip ends are folded around and stuck together. A cement may well be used to protect the coil and help to keep its shape, as will be understood. The numerous tangential cross members 10 serve to render the coil most substantial and rigid.

It should be noted that with this construction each winding element 2 and 3 is substantially a small coil and that successive elements 2 and successive elements 3 respectively in the sections A, B, C, etc. are subject to only very slight differences in potential, as they are arranged side by side and all are connected in series.

The part 4 acts as a secondary for the primary 6 and any tendency for either part 4 or 5 to pick up noise or other interference is neutralized by the complementary part 5 or 4 respectively.

Tests have shown this coil to be more selective and more exclusive than any other coils with which I am acquainted.

Although but one embodiment of this invention is herein shown and described, it is to be understood that some of the details of

the construction shown may be altered or omitted without departing from the spirit of this invention as defined by the following claims.

I claim:

1. In a radio transformer, a primary coil, and a secondary coil wound on two parallel axes with the turns of the windings in series, said primary coil in close inductive relation with only the portion of the coil on one of the two axes.

2. In a radio transformer, a primary coil, and a secondary coil wound on two parallel axes with small groups of turns on one axis in series and wound oppositely to adjacent small groups of turns on the other axis, said primary coil arranged in inductive relation to only the portion of the secondary coil on one of the two axes.

3. In a radio transformer, a primary coil, and a secondary coil wound with the turns alternately from one to another of two parallel loops and wound in opposite directions with two or more complete turns made in each loop and then the wire passed back to the other loop, said primary coil arranged in inductive relation to only one of the loop portions of the secondary coil.

4. A radio coil having windings on two parallel axes with the wire wound in two or more complete turns on one axis and then passed diagonally across and wound oppositely on the other axis.

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