Nov. 18, 1924. 1,516,068

C. E. WALTON

RADIO INDUCTANCE COIL MOUNTING

Filed Sept. 15, 1920

FIG 1

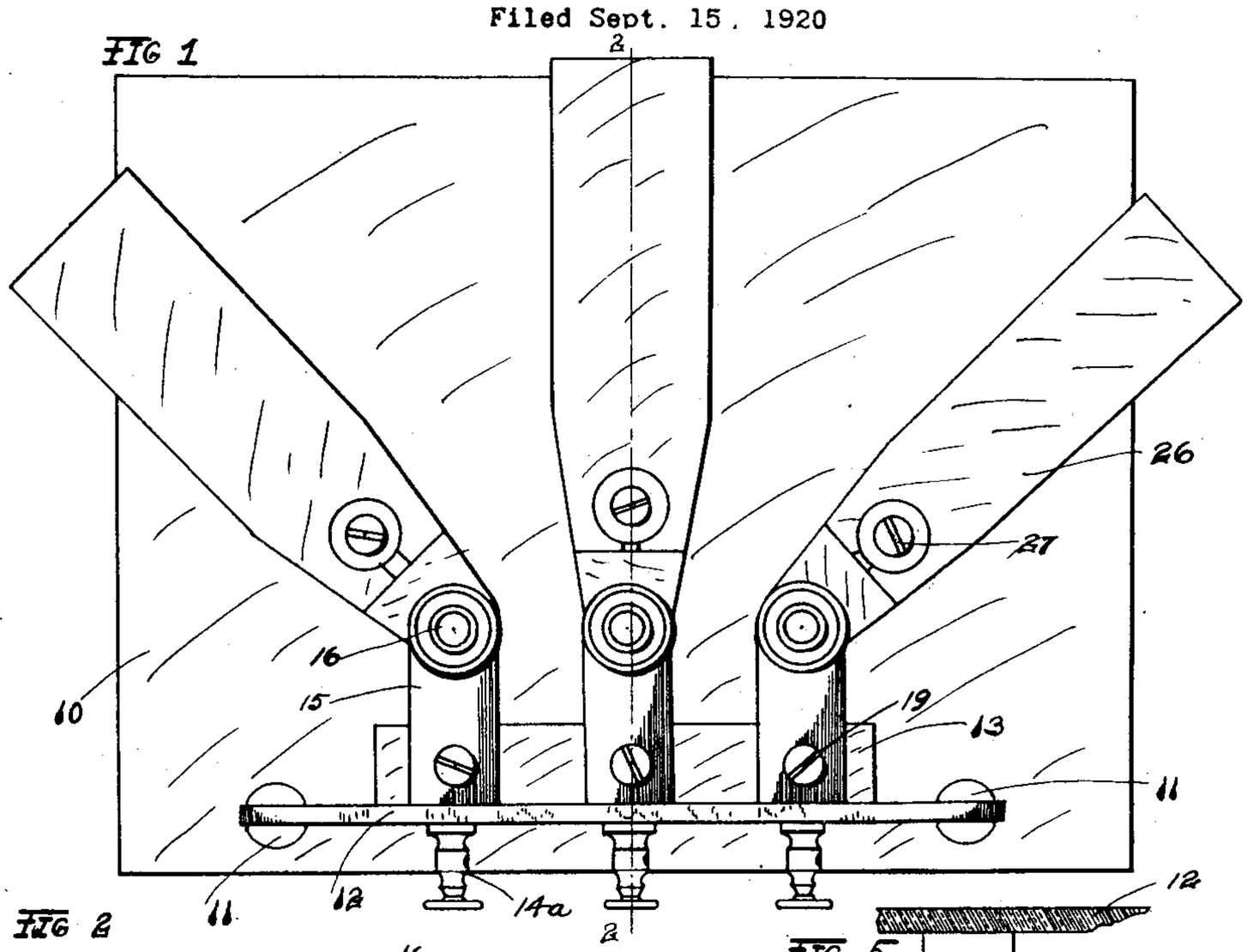

FIG 2

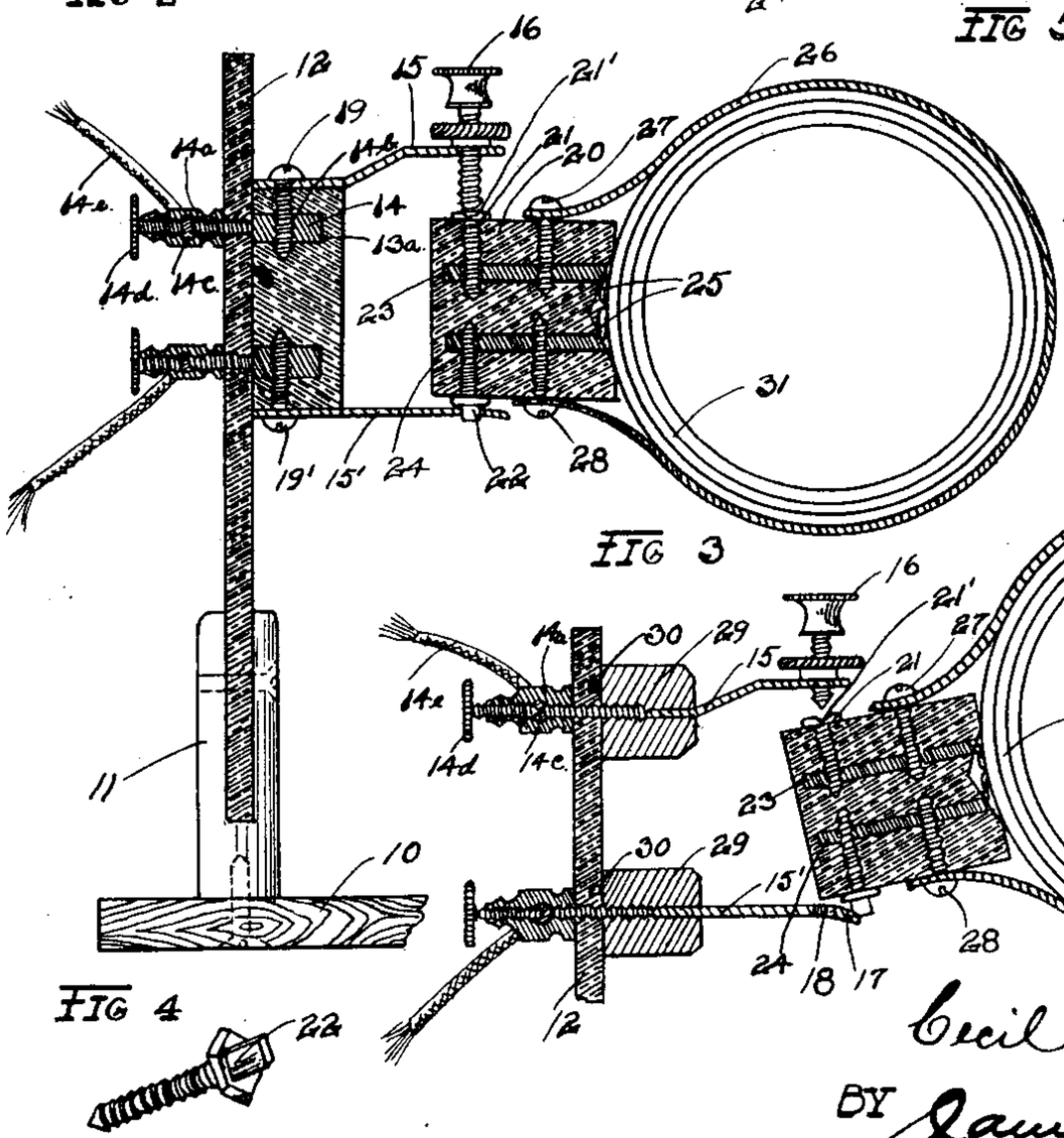

FIG 3

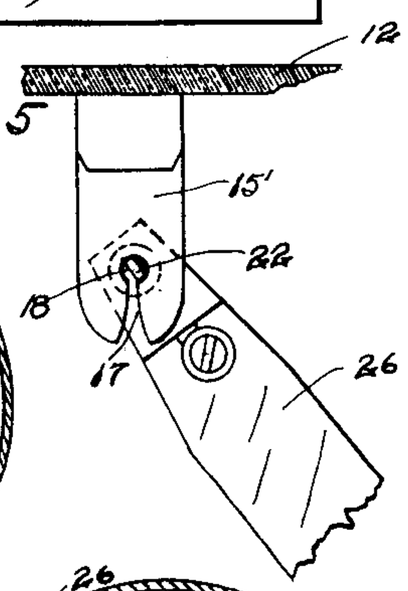

FIG 5

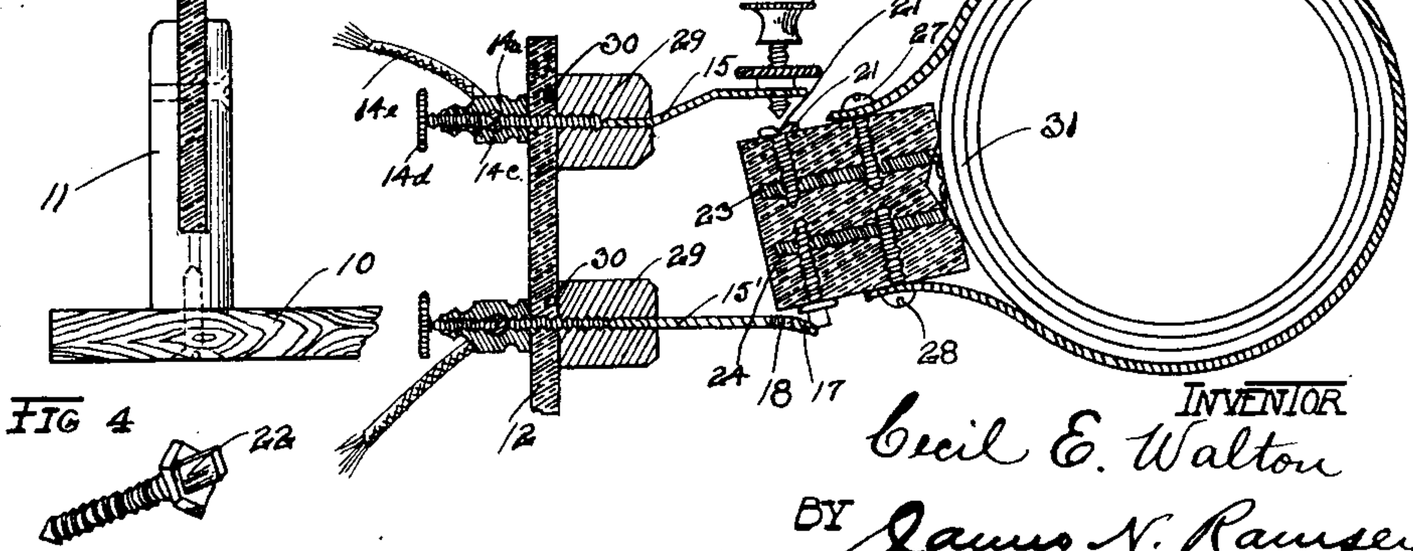

FIG 4

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UNITED STATES PATENT OFFICE.

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RADIO INDUCTANCE-COIL MOUNTING.

Application filed September 15, 1920. Serial No. 410,448.

To all whom it may concern:

Be it known that I, CECIL E. WALTON, a citizen of the United States, residing at Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Radio Inductance-Coil Mountings, of which the following is a specification.

My invention relates to mountings for honeycomb, universal, lattice or other concentrated or ring-wound inductances used in radio telegraphy and telephony.

It is standard practice, for certain purposes, to use three of these coils in inductive relation to one another in such a manner that the inductive coupling can be varied from maximum to minimum by swinging the two outside coils through an arc of 90°. Heretofore this has been accomplished by means of a plug on the coils plugging into another plug on the mounting, the latter being pivoted thereto and having flexible leads connected to binding posts on the base, which wires are subjected to frequent turning and bending, causing them to break.

The object of my invention is to produce a mounting for these coils which will eliminate the heretofore easily breaking wire leads, and will be of economical, convenient and compact construction, resulting in increased efficiency.

My invention consists in the combination and arrangement of parts and in the details of construction, as herein set forth and claimed.

In the drawing:

Fig. 1 is a plan view of a mounting showing the coils in position;

Fig. 2 is a vertical section on the line 2—2 of Fig. 1;

Fig. 3 is a vertical section showing a modification and the manner of inserting the stem of the coil to form the operative connection shown in Fig. 2;

Fig. 4 is a perspective view of threaded connecting pin having shoulder and rectangular end; and

Fig. 5 is a bottom view of supporting and connecting clip and pin having shoulder and rectangular end in coil-stem in position on said clip.

In the embodiment of my invention as illustrated, and which shows a preferred construction, I provide a suitable insulating base 10 of wood or other suitable material, on the rear of which I attach two upright slotted brass posts or standards 11 in which a flat upright insulating panel 12, of phenol condensation product or other insulating material is suitably secured therein by screws, or otherwise. A thick rectangular insulating block 13 of phenol condensation product or other suitable insulating material having a plurality of sockets 13ª on its rear side, is mounted upon the front of said panel near its top by rods 14 extending into said sockets and having reduced threaded ends extending through said panel on which lead-wire binding-nuts 14ª are screwed, and having transverse threaded openings 14ᵇ adapted to receive screws 19, thereby securely fastening said block to said panel. Each of said nuts is provided with a transverse lead-wire opening 14ᶜ therethrough and a thumb nut 14ᵈ is screwed into the end of each nut 14ª to engage and hold the lead-wire 14ᵉ. A plurality of brass clips 15, preferably bent upwardly, are mounted upon the tops of block 13, set in flush with the tops thereof and are secured thereto by said screws 19 extending therethrough into said block and through said threaded rods 14 to hold the latter from turning within their sockets. A plurality of brass clips 15′ are set in flush with the lower edge of block 13 directly below clips 15, respectively, and are secured thereon by screws 19′ extending into said block and through rods 14. The outer end of each top clip 15 is provided with a threaded opening adapted to receive adjusting conducting screws 16, while at the outer extremity of each of the three bottom clips 15′ an inwardly tapering slot 17 having a rounded enlargement 18 is provided. Clips 15′ are also preferably curved downwardly to permit of ready insertion of the stem. As a means of completing an electrical circuit and also of securing the clips 15 and 15′, the screws 19 and 19′ are threaded into insulating block 13 and through said rods 14. Stem or support 20, preferably of the same material as block 13, is provided with screw 21, the head of which is provided with recess 21′ so as to receive and pivotally engage the lower end of adjusting screw 16. The opposite side of said stem is provided with a rectangular shaped pin 22, (Fig. 4) which is adapted to engage slot 17 and swing into enlarged end 18. Set in from the back a short distance from both

top and bottom and running longitudinally are two brass rods 23 and 24, through which are threaded set screw 21 from the top and 22 from the bottom. Small lead wires 25 are soldered to ends of rods 23 and 24 and connect to inductance coil 31.

Thus a complete electrical circuit is formed. The electricity entering threaded rod 14 being conducted therethrough by screws 19 and 19′, through brass clips 15 and 15′, respectively, through adjusting screw 16 and screws 21 and 22, through rods 23 and 24 and thence by leads into coils 31.

As a means for securing coils 31 to the support or block 20, I provide each with an insulating strap 26, at both ends of which there is a slot through which screws 27 and 28 are placed and threaded into said insulating supporting stem and brass rod, thereby firmly holding the coil therein.

It will be apparent that my invention is capable of some modification without departure from its scope or spirit as above set forth, as for instance, instead of using the insulating block 13 I provide a plurality of cylindrical pegs 29 each having a small pin 30 thereon which, when attached to panel 12, is adapted to engage a recess therein. Brass clips 15 and 15′ which were before connected electrically by means of a screw threaded into blocks and threaded rod therein, are now slotted and connected directly to said cylindrical peg which reduces the cost of production and connects the parts together more directly, thereby eliminating several parts.

This mounting is intended primarily for table mounting but can be adapted for panel mounting without departing from the spirit of the invention.

In placing the inductance coil in the mounting, the head of screw 21 is placed under the lower end of adjusting screw 16 which enters recess 21′ in screw 21 and the coil is pressed downward allowing rectangular end of pin 22 to enter slot 17, the shoulder of said pin meanwhile springing clips 15 and 15′ slightly apart so that when the coil is in position good electrical contact is made. When the coil is swung to either side, the flat sided or rectangular end of pin 22 turns with the coil and the coil is locked in place in the enlarged end 18 of slot 17. It is, of course, necessary to have the coil swung to front parallel with the clips when placing or removing same. It is intended that when adjusting screws 16 are once adjusted, it will not be necessary to loosen them every time a coil is put in or taken out. This permits coils to be changed in the quickest possible manner and inasmuch as frequent changes of coils to vary the tuning and inductive capacities are desirable, this means of direct connection to conductors without the use of bending and breaking wires is very important.

Advantages of my mounting over other mountings are that in this type delicate wires are dispensed with entirely, electrical connection is made entirely through heavy brass parts; also this mounting is of a rugged construction and is comparatively low in cost of production due to its simplicity. Positive electrical contact is also secured by means of a binding post principle, furthered by wiping action when coils are swung, of the shoulder of pin 22 upon clip 15′, and of adjusting screw 16 in recess 21′.

In my construction, the coils are always "poled" right, thereby making it impossible to get them in wrong. A further advantage is its simplicity which in radio apparatus goes a long way toward efficiency and at the same time results in low cost of manufacture. The capacity effects are minimized due to no leads being used and the clips and binding posts being widely separated.

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

1. In an inductance coil mounting having a panel of insulating material and an insulating block mounted thereon, a pair of conducting rods extending through said panel into said block, means for forming electrical connection with said conducting rods, a pair of conducting clips secured to said block, conducting screws forming electrical connection between said conducting rods and conducting clips, respectively, and an adjustable conducting screw mounted in the upper clip, all for the purposes specified.

2. In an inductance coil mounting having a panel of insulating material suitably mounted, and an insulating block mounted thereon, a pair of conducting rods extending through said panel into said block, means for forming electrical connection with said conducting rods, a pair of conducting clips secured to said blocks, conducting screws forming electrical connection between said conducting rods and conducting clips, respectively, said upper clip having a threaded opening and said lower clip having a tapered slot provided with a rounded end, an adjusting connecting screw mounted in the upper clip, a recessed conducting screw connected to one of said conducting rods and pivotally connected in its recess to said adjusting connecting screw, a shouldered screw connected to one of said conducting rods and having a rectangular end adapted to enter said tapered slot into said rounded end and forming electrical connection with said slotted clip, whereby said stem is adapted to be detachably connected and whereby said stem when moved out of parallel line with said clips will not disconnect therefrom.

3. In an inductance coil mounting having an insulating panel and means for mounting said panel, conducting clips connected to said panel, means for forming electrical connection with said clips, and conducting means adapted to detachably engage with said clips, respectively, for the purposes specified.

4. In an inductance coil mounting having an insulating panel and means for mounting said panel, conducting clips, means for supporting said clips adjacent to said panel, means for forming electrical connection with said clips, means for holding an inductance coil, electrical connections from said holding means to said coil, and means for detachably supporting said holding means between said clips and forming electrical connection therewith.

5. In an inductance coil mounting having an insulating panel and means for supporting said panel, conducting rods mounted in said panel, means for forming electrical connection with said conducting rods, conducting clips, means for supporting said conducting clips and of forming electrical connection with said conducting rods, the upper clip having a threaded hole therein and the lower clip having a tapered slot with an enlarged rounded end, threaded screws in said stem adapted to form electrical connection with said clips, means for holding said stem in said clips when out of parallel therewith, and means for detaching said stem from said clips when parallel therewith.

6. In an inductance coil mounting, having a base, and slotted standards mounted thereon, with an insulating panel mounted in said standards, conducting clips, means for supporting said conducting clips in fixed relation to said insulating panel, means for forming electrical connections with said clips, means for pivotally supporting an inductance coil in said clips and of forming detachably electrical connection therewith.

7. In an inductance coil mounting, an insulating support, conducting clips spaced apart and mounted thereon, one of said clips having a slotted end, an insulating stem, a conducting screw extending therein having an integrally formed shoulder and a flattened end adapted to engage said slotted clip, for the purposes set forth and means for forming electrical connection from said stem to the other clip.

8. In an inductance coil mounting, an insulating support and a conducting clip secured thereto and having one end provided with a tapered slot having an enlarged rounded end and an insulating stem having a screw provided with a head adapted to engage said slot.

9. In an inductance coil mounting, an insulating support, spring conducting clips spaced apart from each other and mounted thereon, one of said clips having a slotted end and the other clip having a threaded hole, an insulating stem, a conducting screw extending therein having an integrally formed shoulder and a flattened end adapted to engage said slotted clip and having a recess in the other end, and a screw in said threaded hole adapted to engage said recess whereby said insulating stem may be detachably connected to said clips by yielding action of said clips.

10. In an inductance coil mounting, an insulating support having conducting clips in combination with a stem provided with a conducting screw having an integrally formed shoulder and flattened end, substantially as set forth and for the purposes specified.

11. In an inductance coil mounting, an insulating support, conducting clips thereon one of which clips has its end curved downwardly and provided with a tapered slot with an enlarged rounded end therein in combination with a stem having a conducting screw adapted to engage said tapered slot and enlarged rounded end.

12. The combination of a base; two terminals fixed to said base; and a coil holder pivotally supported by said base terminals, said coil holder having coil terminals in oscillatory engagement with said base terminals.

13. The combination of a base; two terminals fixed to said base; a coil holder; two terminals fixed to said coil holder, said coil terminals being detachably and oscillatorily connected to said base terminals whereby said coil holder is removably mounted for swinging movement on said base terminals.

14. The combination with a base; of a coil holder; terminals comprising spring metal socket forming members fixed to said base adapted to pivotally support said holder; and coil terminals fixed to said holder adapted to be sprung into position between said base terminal members in oscillatory engagement therewith.

15. The combination of a base; two terminals fixed to said base; and a swinging coil holder having two terminals oscillatorily mounted upon said base terminals.

CECIL E. WALTON.