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1,683,606

H. D. CURRIER

RADIOCOIL

Filed Sept. 8, 1923

Fig. 2.

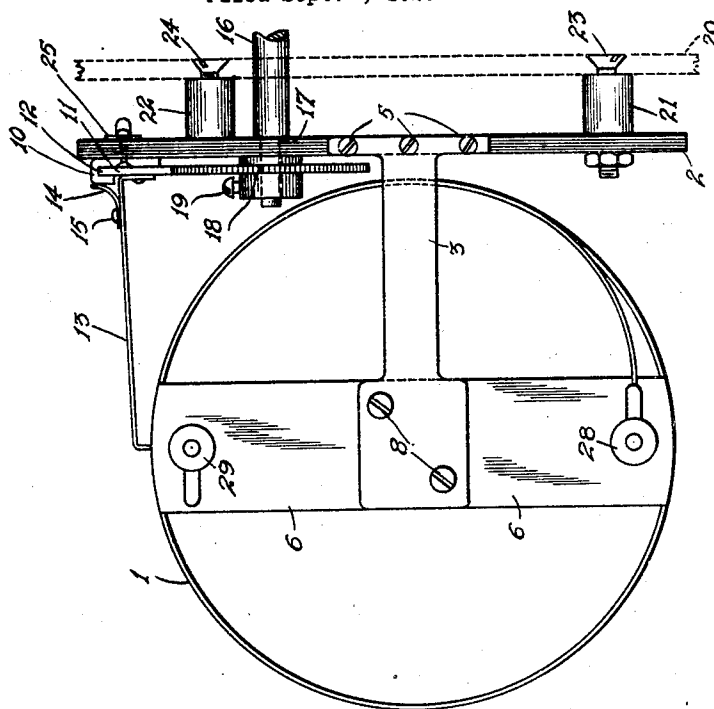
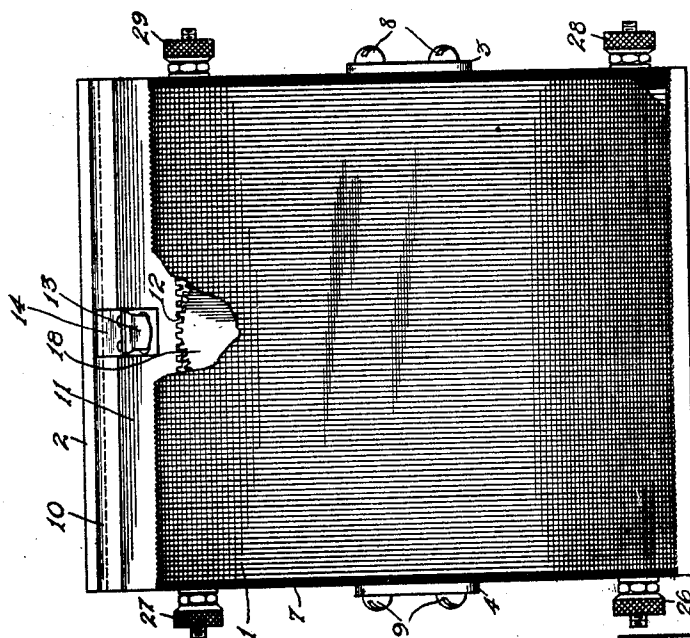


Fig. 1.



Inventor:
Hiram D. Currier
By *Curtis, Comp.*
Attorney.

UNITED STATES PATENT OFFICE.

HIRAM D. CURRIER, OF CHICAGO, ILLINOIS, ASSIGNOR TO KELLOGG SWITCHBOARD AND SUPPLY COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

RADIOCOIL.

Application filed September 8, 1923. Serial No. 661,551.

My invention relates to wireless telephony, and has to do more particularly with the circuits and apparatus for use in such systems.

In radio transmitting sets, as is well known, a very high frequency current is used for transmitting the radio signals, and the receiving set must be constructed, if it is to work efficiently, to function on these extremely high oscillations without much loss of strength of the incoming signal. When such high frequency current is used, it has been found that a large loss occurs due to the leakage and drainage of the coils and apparatus used. It is one of the objects of my invention to build a coil which is constructed so as to prevent a great deal of the leakage that exists in prior coils.

A feature of my invention resides in constructing my coil so that very little of the same contacts with the mounting supports.

A further feature of my invention resides in providing a self-supporting coil attached to a member which member supports means for contacting with the convolutions of the coil.

The above features, as well as others, relating to the details of construction, combination of parts, and arrangements, will be hereinafter more particularly pointed out in the ensuing specification and appended claims.

For a more complete understanding of my invention, reference may be had to the accompanying drawing in which like characters, in the different views, denote like parts, and in which:

Fig. 1 is a rear elevation of my combined antenna and feed back coil or coupler;

Fig. 2 is a side elevation of the same;

Referring now more particularly to Figures 1 and 2 it will be noted that my tuning coil or coupler is supported only at its two ends and that there are only four points of contact between the coil and the frame which holds the same. By this method of construction and mounting it will readily be noted that I have eliminated a great percentage of the contact between the prior coils and their mounting frames or tubes thereby greatly decreasing the amount of leakage found in prior coils when used to receive extremely high frequency oscillations. Coil 1 is composed of suitable insulated wire wound upon a form and cemented

together by any of the well known substances used for this purpose. The coil is then removed from the cylindrical form upon which it was wound and constitutes a self supporting unit.

The mounting frame for supporting the coil consists of a plate 2 of insulating material to which are attached rearwardly extending arms 3 and 4 of insulating material. The arms 3 and 4 are attached to the plate 2 by means of screws 5. Attached to and at right angles to arms 3 and 4 are insulating strips 6 and 7, the strips 6 and 7 being attached to the arms 3 and 4 by screws 8 and 9. The ends of the arms 6 and 7 are rounded off to fit the contour of the coil, and are provided with shoulder portions that abut against the ends of the coil while the rounded off portions of the arms fit within the coil for a short distance. The coil may then be cemented to these supporting arms.

Attached to the supporting plate 2 by any suitable means is a track member 10 which is adapted to receive a rack member 11 which slides in the groove 12 of the track 10. Attached to the rack 11 is a wiper 13 which is adapted to slide over the convolutions or turns of the coil 1, the insulation of the turns having been scraped off where the wiper 13 makes contact with the coil 1. A spring 14 is riveted to the wiper 13 by means of a rivet 15 and has its free end in contact with the track 10 to insure perfect contact between the wiper 13 and the track 10. A spindle 16 extends through an orifice 17 in the plate 2, and attached to the rear of the spindle 16 is a gear 18 which meshes with the teeth of the rack 11. Gear 18 may be secured to the spindle or shaft 16 by means of a screw 19. To the front of the shaft 16 is attached a dial or controlling member, which is not shown in Figures 1 and 2. To mount the device as a unit, on a panel 20, mounting studs 21 and 22 are provided, and for securing the unit in place screws 23 and 24 are provided. A connection terminal 25 is provided which is connected to the wiper 13 through the rack 11 and track 10. Other connection terminals 26 and 27 are provided which are attached to the arm 7 and other terminals 28 and 29 are provided and attached to the arm 6.

From this description it will readily be seen that by turning the dial attached to the shaft 16 the wiper 13 moves across the con-

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volutions or turns of the coil 1, and makes electrical engagement with the turns of the coil as it moves from one end thereof to the other, and that the coil itself is supported by two arms which are only in contact with the end convolutions of the coil.

From the foregoing it will be noted that my tuning coil is of very simple construction, being a continuous coil supported at only four points, and that the slidable wiper 13 makes contact with each convolution of the coil thereby permitting an accurate tuning of the antenna inductance.

While I have described a particular form of coil and arrangement, it is to be understood that changes and modifications will readily suggest themselves to those skilled in the art, and I, therefore, do not wish to be limited to the exact structure, as shown, but aim to cover all such changes and modifications as come within the spirit and scope of the appended claims.

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

1. A tuning device of the character described including convolutions of wire cemented together to form a self-supporting coil, a supporting plate for said coil, arms attached to said plate and extending rearwardly therefrom, and coil supporting members attached to the free ends of said arms extending at right angles to the axis of said coil, said coil supporting members having their free ends formed to conform to the inner peripheral surface of said coil and adapted to engage a small portion of only a few of the convolutions of the coil.

2. A tuning device of the character described including convolutions of wire cemented together to form a self-supporting coil, a supporting plate for said coil, arms attached to said plate and extending rearwardly therefrom, coil supporting members attached to the free ends of said arms extending at right angles to the axis of said coil, said coil supporting members having their free ends formed to conform to the inner peripheral surface of said coil and adapted to engage a small portion of only a few of the convolutions of the coil, a rack member slidably supported by said plate, and a contact wiper connected to the said rack

member having a contact portion adapted to be moved back and forth across the convolutions of said coil to make electrical engagement therewith.

3. A tuning device of the character described including convolutions of wire cemented together to form a self-supporting coil, a supporting plate for said coil, arms attached to said plate and extending rearwardly therefrom, coil supporting members attached to the free ends of said arms extending at right angles to the axis of said coil, said coil supporting members having their free ends formed to conform to the inner peripheral surface of said coil and adapted to engage a small portion of the inner peripheral surface of the coil, a rack member slidably supported by said plate, a contact wiper connected to the said rack member having a contact portion adapted to be moved back and forth across the convolutions of said coil to make electrical engagement therewith, and a member rotatably supported by said plate and adapted to engage said rack to move said wiper back and forth.

4. A tuning device of the character described including convolutions of wire cemented together to form a self-supporting coil, a supporting plate for said coil, arms attached to said plate and extending rearwardly therefrom, coil supporting members attached to the free ends of said arms extending at right angles to the axis of said coil, said coil supporting members having their free ends formed to conform to the inner peripheral surface of said coil and adapted to engage only a small portion thereof, terminals held by said coil supporting members, and connected to said coil, a grooved member attached to said plate, a rack member adapted to fit into the groove in said member, a contact wiper connected to said rack member and provided with a spring member adapted to contact with said grooved member, and means for moving said rack member in a longitudinal direction to cause the contact wiper to electrically engage the convolutions of said coil.

Signed by me at Chicago, in the county of Cook and State of Illinois, this 4 day of Sept., 1923.

HIRAM D. CURRIER.