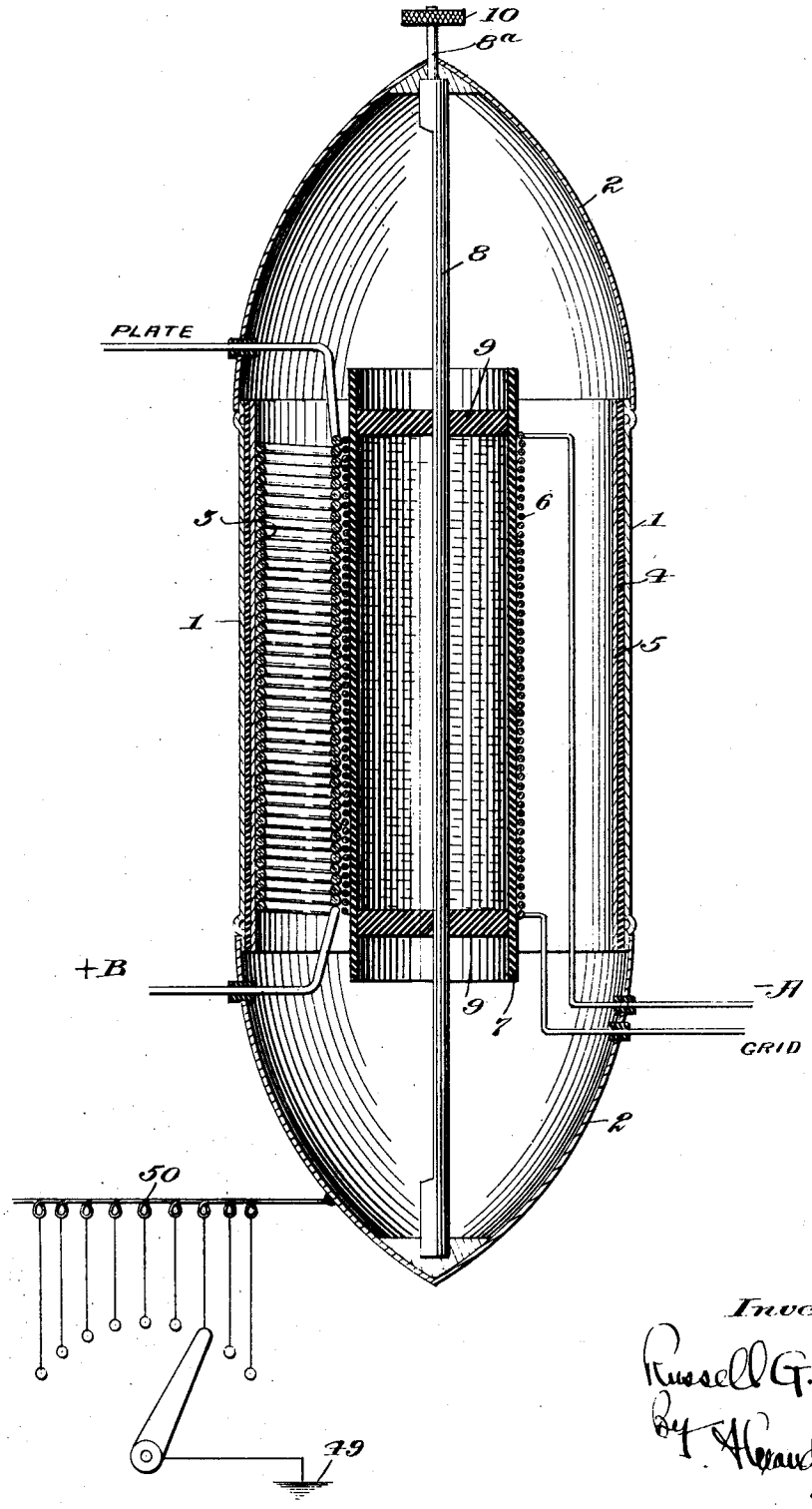
Jan. 9, 1934. R. G. EVANS 1,942,751

RADIO RECEIVING APPARATUS

Filed April 25, 1929



Inventor:
Russell G. Evans
By H. Grandle Powell
Att'ys.

Patented Jan. 9, 1934 1,942,751

UNITED STATES PATENT OFFICE

1,942,751

RADIO RECEIVING APPARATUS

Russell G. Evans, Detroit, Mich.

Application April 25, 1929. Serial No. 358,102

6 Claims. (Cl. 171—119)

This invention relates to radio receiving apparatus and the principal object of the invention is to provide a novel transformer unit for use in such circuit.

I will explain the invention with reference to the accompanying drawing which illustrates one practical embodiment thereof to enable others to adopt and use the same; and will summarize in the claims the essential features of the invention, and the novel combinations of parts, for which protection is desired.

The drawing shows an enlarged section through the transformer, showing also the ground connection through the variable radio frequency choke-coil.

As shown my novel radio frequency transformer comprises a copper cylindrical shell 1, adapted to enclose the primary and secondary coils 3 and 6, shell 1 forming part of a condenser and having fitted to each end thereof a substantially conical shaped copper cap 2 which cap acts as a shield for the transformer coils. Within the shell 1 is a second somewhat smaller copper cylindrical shell 5 which is secured to but insulated from the shell 1 by means of a dielectric 4; the members 1, 4, and 5 forming in effect a tubular condenser, for the purpose hereinafter set forth.

The primary coil 3 of the transformer, which is connected in the plate or output circuit of each amplifier tube, is comparatively long but of small diameter having a large number of turns, and is fastened against the inner periphery of the inner copper shell 5, but likewise insulated from the inner shell 5 by the insulation of cotton or silk winding around the primary coil 3 so that the shell 5 will not short circuit the primary coil 3 at the lower power frequencies.

Members 1, 4 and 5 together form a condenser adapted to have a shielding effect upon the transformer coils 3 and 6, protecting the coils from other parts of the circuit, and preventing the coils from picking up high frequency oscillations from other undesired or interfering broadcasting stations. Primary coil 3 is preferably formed of silk or cotton wound copper wire, and may be secured in place in any desired manner.

The secondary coil 6 which is connected to the grid or input circuit of each amplifier tube, is preferably wound on a relatively large tube 7 of insulating material such as bakelite or the like, eccentrically mounted on an axially disposed rod 8 of insulating material by means of two perforated eccentric disks 9 engaging the ends of the tube 7. The ends of rod 8 are secured in the apexes of the end caps 2 and preferably rod 8 is reduced in diameter at one end, as at 8a, and projects slightly through its related end cap 2, and is provided with a head 10 by which the rod 8 may be rotated to permit adjustment between the primary and secondary coils 3 and 6 while the radio set is in operation.

I claim:

1. In combination, a transformer, a condenser shield enveloping the transformer said condenser shield being cylindrical; and an axially disposed tube of insulating material journaled within the condenser; the secondary coil of the transformer being wrapped around the tube; and the primary coil of the transformer being interposed between the tube and the inner periphery of the condenser.

2. In combination, a transformer, a condenser shield enveloping the transformer, said shield being cylindrical; means for closing the ends of the cylinder; and an axially disposed tube of insulating material journaled within the condenser; the secondary coil of the transformer being wrapped around the tube; and the primary coil of the transformer being interposed between the tube and the inner periphery of the condenser.

3. In combination, a transformer, a condenser shield enveloping the transformer said condenser being cylindrical; caps closing the ends of the cylinder; a rod journaled in the end caps of the condenser; and a tube of insulating material mounted on said rod; the secondary coil of the transformer being wrapped around said tube; and the primary coil of the transformer being interposed between the tube and the inner periphery of the condenser.

4. In combination, a transformer, a condenser enveloping the transformer, said condenser being cylindrical; caps closing the ends of the cylinder; an axially disposed rod journaled in the end caps of the condenser, one end of the rod being extended through one cap; means on the extended end of the rod for rotating the same; and a tube of insulating material mounted on said rod; the secondary coil of the transformer being wrapped around said tube; and the primary coil of the transformer being interposed between the tube and the inner periphery of the condenser.

5. In combination, a transformer, a condenser enveloping the transformer, said condenser being cylindrical; caps closing the ends thereof; an axially disposed rod journaled in the end caps, said rod having a reduced portion extending through one end cap adapted to be manually rotated; and a tube of insulating material eccentrically car-

ried by said rod, the secondary coil of the transformer being wrapped around the tube, and the primary coil being interposed between the tube and inner periphery of the condenser, whereby as the rod is rotated the secondary coil will be adjusted with respect to the primary coil.

6. In combination, a transformer, a condenser enveloping the transformer, said condenser being cylindrical; caps closing the ends thereof; an axially disposed rod journaled in the end caps, said rod having a reduced portion extending through one end cap adapted to be manually rotated; a pair of discs eccentrically mounted on said rod; and a tube of insulating material carried by said rod, the disks fitting within and eccentrically supporting the ends of said tube; the secondary coil of the transformer being wrapped around the tube, and the primary coil being interposed between the tube and inner periphery of the condenser, whereby as the rod is rotated the secondary coil will be adjusted with respect to the primary coil.

RUSSELL G. EVANS.