

The "Rotorua" Portable Receiver

By "Pentode"

(Concluded from last week)



FOLLOWING on with the description of the portable set, the cabinet of which was described in the special issue of the "Radio Record" last week, we have the receiver itself to construct.

Some readers appear to be having a little difficulty in obtaining the parts as mentioned in the list of components. This list is given as representing the parts used by the writer, but there is not the slightest necessity to keep exactly to the list. Any good makes of components are quite suitable, and the reader is advised to consult his dealer. The point to watch is, that each part must be small and light in weight.

quency transformer, with reaction," and the numbers will either be found on the base or the coil itself.

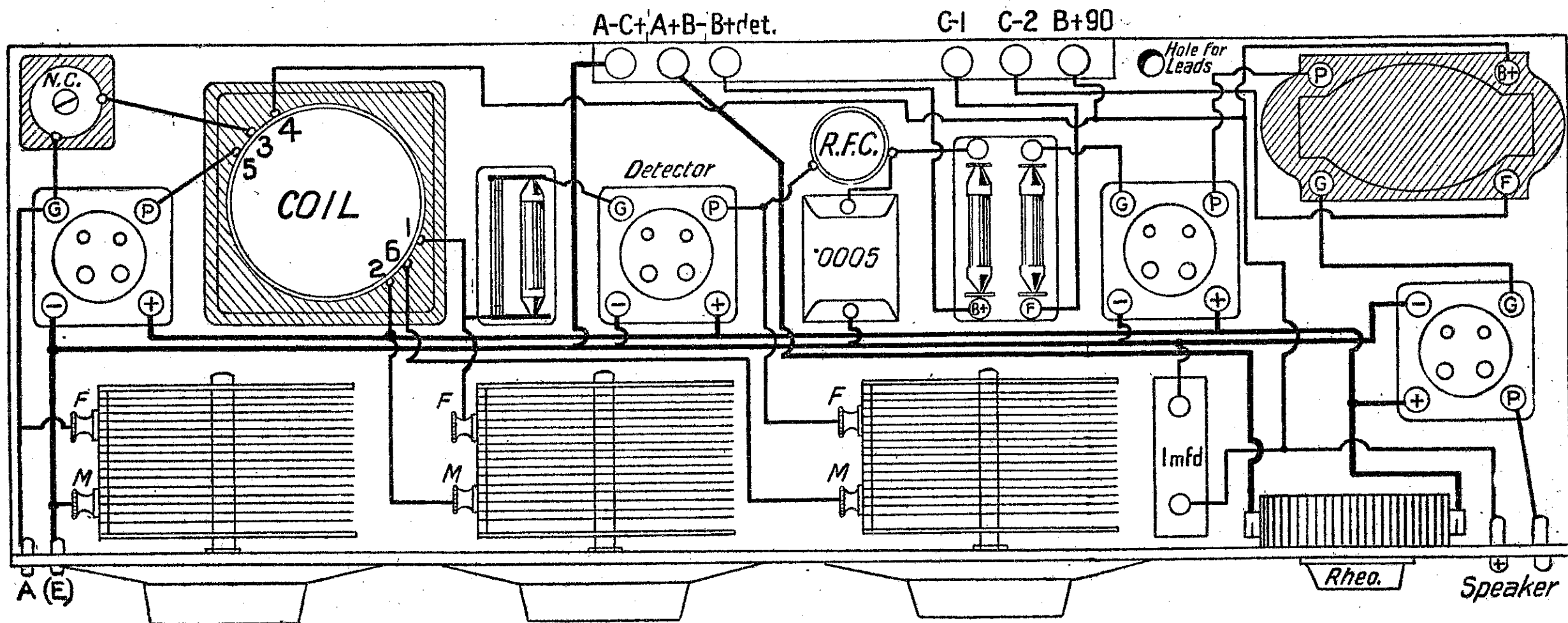
Out of a piece of sheet copper or aluminium mark and cut the shape as shown in the diagram. The length over all is 12 3/8 in. and 8 3/8 in. wide. The dotted lines should be marked, and show where to bend. By clamping the sheet between two pieces of wood with sharp, square edges, the lines shown dotted can be bent down at a right angle by tapping with a flat piece of wood. Before bending, drill 1/8 in.

the ebonite former. This constitutes a coil of 90 turns, tapped on the twenty-fifth.

ON the smaller piece of former wind on twenty-eight turns of the 30 DCC wire, tapped in the centre. Allow about 6 inches of wire on the two ends and centre tap for connecting. This coil can then be slid inside the larger coil and fastened by wedges so that it is under the middle of the 65 turn secondary coil. Reference to the diagram will help the constructor to understand the arrangement. These three leads from

which may be obtained from a chemist. The cement should be of a creamy consistency, and is best made in a small bottle, the bulk of small chips being about half that of the acetone liquid. The cement is applied to joints with a small sharp stick and dries solid in two or three hours if not too thickly applied.

Two strips of celluloid are cut 1/2 in. wide by 4 in. long, and one strip 1 in. wide by 4 in. long is cut the shape shown, 1 in. wide and 1 1/2 in. from point to point. The diagram of parts is given full size so that the celluloid may be placed over it and the lines scratched in with a sharp point. The corners of the notches should be rounded as shown so that



Carefully lay out the components on the baseboard before screwing down, and make quite sure that the moving plates of the variable condensers clear all wiring, etc., when moved.

Before anything can be done the coil and coil screen must be made. This coil has to be totally enclosed in a metal case for one reason. The grid coil of the high-frequency valve is wound to constitute the frame aerial, which is hinged with the lid. The position of this coil therefore varies with relation to the grid coil of the detector valve, and a strong coupling would exist between the two coils, unless one is shielded. The result would be instability and difficulty to neutralise.

As reaction is employed, the size of this coil and screen can be considerably reduced without sacrificing any efficiency, and any damping introduced by close proximity to an earthed screen is compensated by the application of reaction. Details are given for the construction of coil and screen, but if the reader prefers to incorporate any of the well-known makes of English screened coils, the numbers given here apply to the numbers found on the six-pin coil base. This English component is known as the "split primary high-fre-

holes where shown. This sheet is bent to form a box measuring 4 1/2 in. high and 3 in. square, with a flange at the bottom, so that when inverted over the coil, the screen can be screwed down permanently. If aluminium is used the seams will have to be either riveted or bolted with small nuts and bolts. If made of copper, then all the seams can be soldered and no holes will be necessary except in the flange. This screen is screwed to a metal base 3 1/2 in. square, which can be provided with three drilled projectors to screw to the wooden baseboard.

The Coil.

NOW the coil itself. This consists of a centre tapped primary, coupled to a secondary with a coil for the Reinartz method of reaction. Details are given for winding a 2 1/2 in. and a 2 in. diameter coil. A few more turns are necessary on the smaller former. Two small brass or aluminium brackets are best and drilled to hold the coil upright. Starting about 3/8 in. from the end on which the brackets are screwed, wind on twenty-five turns of the 24 DCC wire. Make a loop and carry on winding in the same direction, another 65 turns. Fasten the end by passing in and out of two holes drilled in

the primary coil can be brought out to three soldering lugs arranged on the end of the ebonite former. The number of turns given here are for a coil of 2 1/2 in. diameter.

IF a two-inch former is used, then wind on thirty turns, make a twist for a tapping and follow by seventy-two turns. This makes a coil of 102 turns tapped at the thirtieth primary winding 32 turns centre tapped. After wedging in the primary, this can be fixed into place by sticking with seccotine or celluloid cement. This finishes the coil, and a note can be made of the leads for connecting up. These are numbered, so chances of mistakes are very remote.

R.F. Choke.

The radio frequency choke can now be given attention. If the constructor wishes to buy one already assembled he should choose one with a small enough diameter to go in the space provided and should cover the broadcast range.

A good R.F. choke can be made on a celluloid frame constructed from strong motor-hood celluloid joined with cement made by dissolving chips of the celluloid in liquid acetone,

the wire will not catch on the edge when winding.

Two holes are shown in the base through which 1/2 in. screws can be placed to hold the choke in position. The position of the upright strips is shown by dotted lines.

The two 1/2 in. strips are to be cemented to the centre of the inch strip, one on each side, cement being placed along each side of the joint. To do this the 1/2 in. strip can be supported on edge by a strip of wood each side, the top edge cemented and the inch strip put in place, supported level by strips of cardboard packed underneath. The other 1/2 in. piece is then cemented on and similarly propped up. When the cement is partly set, the supports may be taken away and the upright cemented to the base and left to dry.

A useful choke for broadcast wavelengths is made by winding 200 turns in each set of notches, making 1000 turns in all. Thicker wire may be soldered on at the ends for connecting up. A useful gauge of wire is 34's or 36's.

The Assembly.

PROCURA a baseboard 18 x 5 1/2 x 1/2, and after drilling the panel for the condensers, rheostat, and terminals, screw on the baseboard with fine