

The Two R. F. Shielded Browning-Drake

Distance-Getting and Quality Reception Combined

By "Megohm"

HERE is the reliable Browning-Drake circuit with the addition of an extra radio-frequency valve, for which so many readers have been asking. The whole receiver has been re-designed for accommodation within the necessary shielding, and a fine quality receiver is the result. Not only is there a wonderful increase in distance-pulling, but alteration of details, including the cabling of battery leads, has produced a sharpness and clearness of tone that leaves little to be desired. As an instance of added range, it may be stated that with the new five-valver in Wellington, both 1YA and 4YA can be received at full loud-speaker volume in the daytime, and this could never be done with the four-valver. The main Australian stations come in with tremendous volume, with reaction at zero, and the lesser stations in due proportion.

For the R.F. stages, ordinary valves such as have previously been used in the R.F. stage, are used, but a method of utilising a shielded-grid and other low-capacity valves will be described at a later date. The three stages are fully shielded with copper.

The amplifier is not to be described, and it is recommended that constructors use a separate amplifier unit, which, in the case of those already running a Browning-Drake or similar circuit, will be made up from the components already in use. The separate amplifier is a good proposition, as it may quickly be hitched up to any circuit, permanent or experimental, or short-wave adapter.

THE BASE AND SHIELDING.

THE baseboard is made of 3-in. rimu, 19 by 11½ inches, with three battens underneath of the same thickness, one at each end and one in the centre, each measuring 1in. by 11½in. Shellac dissolved in methylated spirits makes a neat finish for the woodwork.

The shielding is constructed of sheet copper, 28's s.w.g. gauge, tinned one side or plain both sides. This is usually obtainable in sheets 4 feet by 2 feet. If tinned, let the tinned side be the inside, and finish the outside with black cycle enamel. The panel may conveniently be made of zinc or aluminium of 14's or 16's gauge, measuring 19 by 8½ inches. The side of the shielding boxes that comes against the back of the panel is omitted, and the end of the box butts close against the panel. Each copper box stands on its own shielding tray, which is screwed to the baseboard, a quarter of an inch being allowed between each tray. Half an

inch is turned up on three sides of the trays, and where a wire passes from one shield to the next, a V notch is cut in both the sides of the tray and the lower edge of the shielding box, and a short piece of spaghetti covers the wire to protect it from damage.

cutting, as shown, the three trays come out of the full sheet with two boxes, and the third box is made from the extra piece. All edges of the boxes are turned in half an inch to give strength and stability, and this extra must be allowed for in cutting as shown. Each box is cut

It is to be particularly noted that the right-hand condenser controlling the detector stage must not have either fixed or moving plates earthed. To accomplish this, a square of ebonite is to be bolted to the back of panel, and to this the condenser is to be fixed, all holes in the panel

being drilled well oversize to clear the spindle, etc. A piece of ebonite about 4 by 2 inches may be sufficiently large. No metal part of the condenser is to contact the panel.

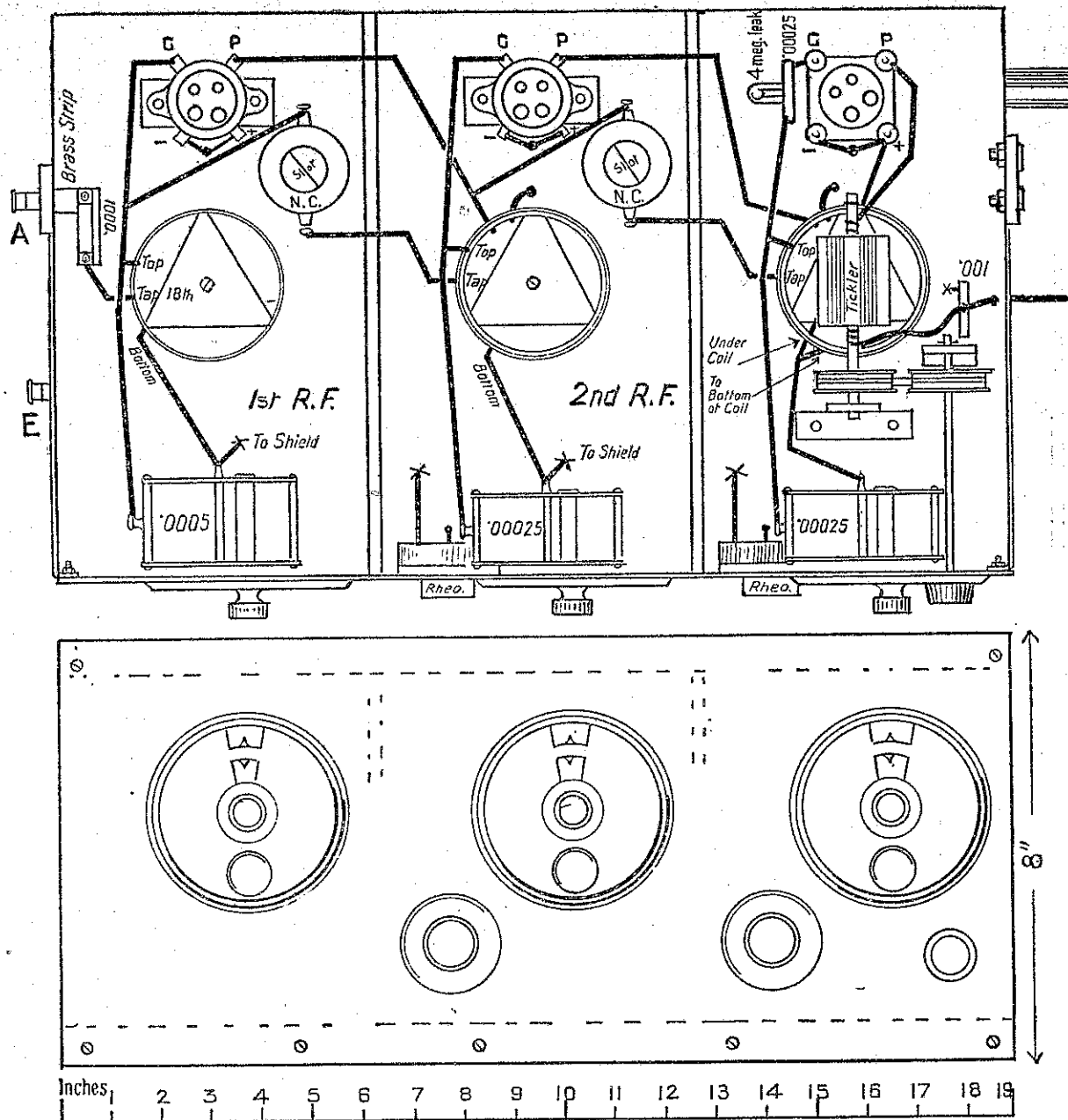
THE AERIAL TUNING COIL.

THIS is construction on the "low loss plan, of 20's s.w.g. tinned copper wire, spaced with 24's. Sixty-four turns are to be put on. The coil is made in the usual way for space-wound coils, on a 3-inch cardboard or other former which is afterwards removed, leaving the turns supported by three 3-in. strips of transparent celluloid inside the coil, and three other strips outside. The celluloid is cemented to the turns with liquid acetone in which chips of celluloid have been dissolved. A triangular piece of 3-in. rimu is cut as shown in the plan of set, the corners being sawn off to give a small flat, to which the lower end of the celluloid strips is screwed. The lower end of all coils is to be a full inch clear of the copper tray. At the 18th turn, counting upwards from the bottom, a tap is to be provided for connection to the small series condenser in the aerial circuit. This condenser may be placed in the most convenient way. It is shown mounted in clips on a strip of ebonite 1½ by 2-in., and the bolt at one end of this attaches to a small brass bracket which is in turn bolted to the back of the aerial terminal. This terminal is mounted upon a piece of ebonite 1½ by 1½ins. screwed to the edge of baseboard as shown.

A small piece is cut from the side of the copper screen to clear this. The earth terminal is bolted direct into the edge of the tray. The panel and all trays must be electrically connected. This is done by bending together the front end (at the panel) of adjacent turned-up sides and soldering them together. To connect the panel to the trays, solder the strut to the tray near aerial terminal. It is handy to have the fixed aerial condenser in clips so that it can be changed if necessary. A variable condenser in this position takes up too much room, and is practically no advantage.

THE NEUTRALISING CONDENSERS.

TWO are required, maximum capacity .00025 mfd. The make used by the writer is the Igranite (Continued on Page 13.)

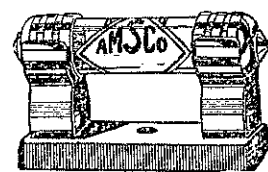


FOR the shields, a whole sheet of copper will be required, and in addition a piece 21 by 19½ inches. The full sheet must be cut up as shown in the diagram, otherwise more copper will be required. By

in one piece, the back having a half-inch, turned in at each side, which is turned in and soldered to the sides. This soldering cannot easily be done with an ordinary iron, as the copper conducts the heat away very rapidly. A blowpipe, even a jeweller's mouth blowpipe and methylated spirit flame, will answer quite well.

ALL bending should be done over the edge of a suitable piece of wood or metal, and care must be taken to have the boxes a shade under rather than over the dimensions. A coat of black cycle enamel completes the copper boxes. All bends are shown by dotted lines in the diagram.

THE panel is drilled along the bottom edge to screw to the front edge of baseboard. At the top corners a 1-8in. hole is drilled, through which a brass bolt is passed to secure the ½in. brass strut at each side, 18's gauge brass being used, the total length being 11ins. The panel comes below the baseboard and hides the space left by the battens. It will be noticed that the centres of the condenser dials are not central to the boxes, but this arrangement is necessary. Care must be taken to drill the central holes in a position to suit the particular make of condenser purchased, but the positions as shown will fit most makes.



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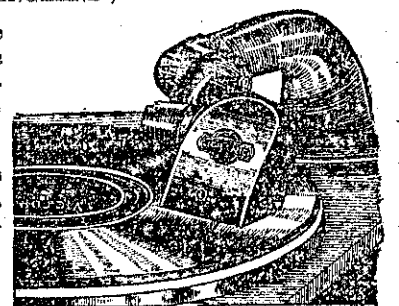
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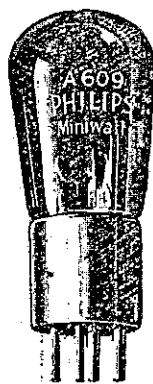
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