

The "Presto" Change-over Local Receiver

By "Megohm"

(Continued from last week.)

The Radio-Frequency Stage.

THE tuning-coils consist of an aerial primary of about 35 turns of 32 enamelled wire, and a secondary of 2in. diameter 2½in. high, of 75 turns of 24 d.s.c. wire. The primary is wound upon a former to slip inside the secondary, the winding being at the lower or earth end of the secondary. The lower end of each coil is earthed. The number of primary turns may be altered to suit conditions—more turns increases volume and decreases selectivity, and this applies to the detector primary also.

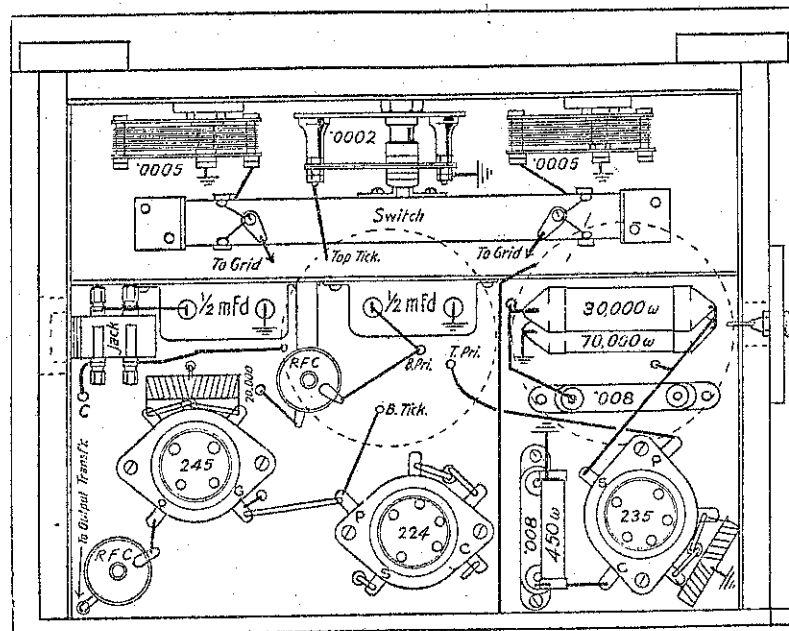
The screen for the coils may be a 3in tin canister reduced to 3½in in height. This may be secured to the side of the cabinet by a screw, near the top of the can, with a washer between can and aluminium to give clearance for the lid. The lead-in for the aerial is a piece of 18 s.w.g. bare wire secured to the inside of the aerial socket and projecting through a hole in the can, where the top of the primary is soldered to it.

The 2in secondary former is cemented to a piece of celluloid, and through a hole in the centre of this and the bottom of can, a bolt is passed to hold the coil in position.

The 235 valve assists selectivity, and can handle without distortion a signal of about 20 times the voltage permissible with the 224. The maximum plate voltage is 250, and the bias minus 3 volts. By employing a variable wire-wound resistance of 20,000 ohms in the cathode lead, the bias may be varied from 3 to 50 volts, at which latter figure practically no signal will be heard, so that a good method of volume control is thus provided. This idea could not be very conveniently used in this receiver, because of the change-over switching, which requires a separate control for each of the two stations.

In this stage are placed the screen voltage resistors and by-pass condenser, and alongside the valve is the bias resistor, with its by-pass condenser.

The screen between this and the detector stage may be of aluminium or copper—it butts close against the coil can, and at the lower front end is



Plan of Receiver

flanged to bolt to the upright flange on sub-base. At the back edge a similar 1in flange permits of bolting to the back plate. This partition should be cut 1/8in high, and when in position can be marked by means of a straight-edge, taken out, and cut to meet the top cover. The bottom edge is flanged on the detector side to bolt to the sub-base.

The Detector Stage.

THE coils for this stage are housed in a similar can to that used for the detector stage. An aluminium

bracket holds the can at its proper height, and close against the partition.

The secondary coil is wound on a 2in. former 2½in high, and comprises 75 turns of 24 d.s.c. The primary is wound upon a former 1½in diameter, the lower end commencing level with the lower end of the secondary. About 58 turns of 36-gauge enamelled close wound will suit for the primary, but a few more turns, say 10 or 12, may be added if selectivity is not highly important. Now we have an idea that is incorporated in some of the midget receivers. It consists in placing the primary winding at the filament end of the secondary, with the exception of one turn, which is placed at the grid end. This enables a slight gain in volume to be obtained without introducing instability.

The tickler is wound on a former 1½in. in diameter, its lower end level with the lower or filament end of the secondary. Probably 40 turns of 36-gauge

enamelled will be found sufficient. If oscillation occurs on low wave-lengths before the reaction condenser plates are half in, reduce the number of turns.

Odd sized formers to fit inside the secondaries may easily be made of "manilla" (folder) paper and seccotine. Wrap about four turns round a bottle of suitable size, take off, and shellac. Replace on the bottle when winding.

The tickler coil goes inside the primary. The bottom connects to the 224 plate, and the top to the reaction condenser stator.

Associated with this stage are the r.f. choke and .5 mfd. by-pass condenser, both bolted to the upright flange. The choke used is a commercial one, with metal bracket ready attached. Near the end of the flange another .5 mfd. condenser is placed. This is the condenser between filament end of the secondary coil and earth. If a pickup jack is required, it is placed just above this end of the flange, a suitable-sized hole, say, 1in. diameter, being bored in the wooden side. The jack, insulated type, is then secured in a hole through the aluminium lining.

A wire runs across from the detector plate to the 245 grid and to the lower end of tickler through bottom of can.

The Output Valve.

A FOUR-PRONG socket is provided for the 245 valve, and across its filament a 20-ohm balancer is placed. From the centre-top of this the high tension current is drawn to point A, the beginning of the wire-resistance chain. Alongside the valve socket is an r.f. choke to which comes the current from the primary of the output transformer in the base, continuing to the 245 plate. A lead from the grid connection runs to the .5 meg. resistor.

Gear Under Sub-base.

UNDER the sub-base is a 15,000 ohm voltage divider, of which part is used as a main resistor, the carrying capacity of the winding, 40 m.a., being very suitable. The two .25 meg and one .5 meg resistors, a 2-meg. two wire-wound resistors, and four by-pass condensers, complete the list.

A strip of tin 1½in. wide is bolted on to fill in the space at the front of the sub-base. The screws holding the .5 mfd condensers and partition will also hold this. Tin is used because it can be soldered to.

A diagram of connections is shown with the components in miniature, so that the leads are clearly shown, but actually there is little room to spare

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