

The "Beginner" Three-Valve Set

A Small, Powerful Receiver

Simple and Compact.

THE "Beginner's Three" contains one stage of radio-frequency amplification, a regenerative detector and one stage of audio-frequency amplification. The first thing to do when building any receiver is to collect all the necessary parts. The apparatus used in the original set is appended:—

List of Parts.

One Coil former, 2in. in diameter, 6½ in. (L1, L2).

Two variable condensers, .0005-mf. (C1, C2).

Three UX valve sockets, baseboard type.

One audio-frequency transformer, 6:1 ratio (T1).

One "Phasatrol" (PH).

One variable rheostat, 0-500,000-ohm (R3).

Two vernier dials.

One radio-frequency choke (L3).

One by-pass condenser, 0.5-mf. (C4).

Fixed resistance (if necessary).

One .002-mfd. fixed condenser (C3).

One filament switch, GSW.

One Bakelite panel, 7 x 10.

Four terminals.

One roll of connecting wire.

Baseboard, 10 x 8½ x ½ in.

Screws, angles, washers, several strips of bakelite for coil, mounting for binding posts.

The coils may be constructed on the general lines described by "Megohm" in Volume II., No. 51. The secondary

of each coil contains 86 turns of No. 28 S.S.C. or S.C.C. wire. The turns should be space-wound, unless D.C.C. by placing a piece of thread beside the wire. The primary of each coil contains 15 turns and the tickler on the detector coil 20 turns.

Some constructors may have on hand smaller condensers, such as .00035 mfd., and in this case the outlay for the set will be reduced by using them. In this case the secondaries should be arranged so that 115 turns are left for each of these coils. For further details regarding the use of other wire see Listener's Guide, "Table of Relative Inductances."

Mounting the Coils.

AFTER the coils have been arranged, the next point is to mount them. The strips for mounting the coils are cut from bakelite, hard-rubber or fibre

gests itself to the reader may be used. In the original set, two old binding-posts of the metal type used several years ago (those with a screw in the top and a hole in the side for the wire to pass through) were drilled out so that the wood-screw would pass through.

The detector coupling coil (the one with the three windings) is mounted by a small angle-piece which is screwed to the coil strip and is secured to the baseboard with a small wood-screw. A 6-32 machine-screw and nut are used to fasten the coil strip to the angle, which is one of the small brass brackets found in the local 5-an-10-cent store.

Other Assembly.

AFTER the coils have been prepared, the next point is to drill the panel for the tuning condensers, oscillation-control resistor R3, and the filament switch. The templates supplied with the condensers will provide the most convenient way of laying out the holes for these instruments. The resistor

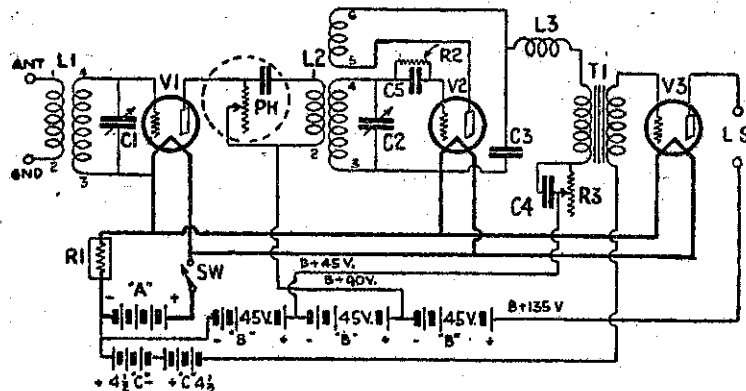


Fig. 1.—The "Beginner's Three" is shown here with all the connections to the batteries, for the convenience of the beginner.

panels. They are each 3½ inches long, ½-inch wide and ½-inch thick. That for the aerial coupler (the one with two coils) has a hole drilled in each end to hold the mounting screws. The other is drilled at one end only. While the strips for the coils are being made, it may be well to make the binding-post strip also. This strip is also cut from ½-inch panel material, and is 3½ inches long by ½-inch wide; in this, however, six holes are drilled. The two at the ends are for the mounting screws; four others are then evenly spaced over the remaining space, for the aerial, ground and two 'phone binding posts.

After the strips have been prepared, they should be cemented to the coils. Collodion (or liquid court plaster, as it is sometimes called) is a very convenient material for this purpose. When the cement has dried, the coils are ready for mounting on the baseboard. It may be well to explain how this is done, even though we are not quite ready for assembling all the parts. The antenna coil is secured to the wooden base by two long wood-screws, passed through the holes in the coil mounting strips, and through a suitable washer which raises the coil above the base. The washer may be made from a piece of metal tubing; or any other suitable method which suggests itself to the reader may be used. In the original set, two old binding-posts of the metal type used several years ago (those with a screw in the top and a hole in the side for the wire to pass through) were drilled out so that the wood-screw would pass through.

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The "Phasatrol" stabilises the radio-frequency amplifier, and the resistor R3 is used to control the detector as mentioned before. The latter resistor is shunted by an 0.5-mf. by-pass condenser which serves to carry the audio-frequency currents in the primary circuit of the transformer, so that they will not have to pass through the high resistance. In order to make the set as low in cost as possible, a cable has been improvised from the hook-up wire. This reduces the cost of the cable and still permits the convenience of the

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