

ent from the ordinary method of placing it in parallel with the grid condenser.

Note particularly how the detector and audio sockets are turned round, that is, with the plate and the grid terminals and the detector valve toward the left hand side in the case of the audio valve. Be quite sure, too, that the transformer is not turned round, but that the primary winding is facing the front of the set, the secondary toward the back.

Having fastened the components and the base board in position, raise the panel and screw it to the base board, passing one inch screws through it into the end of the base. There is no need to use angle brackets for such a small set.

Just one thing more and the set is ready to commence the wiring, that is, a short piece of ebonite about once inch wide and two inches long is plated at the rear of the set, as shown, and two terminals are mounted on this. These are the only two terminals used in the set, as it is much better to make all connections to the set with a cable.

Wiring.

THE wiring is best carried out with some insulated wire, such as glazite, although ordinary cotton-covered wire of about 18 gauge can be used. Buzbar is not altogether to be recommended, as it is difficult to work, and unless one has been very carefully soldered, the joints do not hold. If buzbar wire is used, or any other bare wire for that matter, spaghetti must be slipped over the wires in order to insulate them.

The "RANGER-TWO" PARTS

AT THE CHEAPEST PRICES

1.0005 Variable Condenser, 5/6, 8/6; 1.00025 Variable Condenser, 5/6; 2 Dials, 9d. each; Vernier, 8/6; 1 30 ohms. Rheostat, 2/9; 1 Battery Switch, 1/6; 1 Single-way Jack and Plug, 1/6 each; 1 H.F. Choke, 4/6; 2 UX Valve Sockets, 1/4 each; 2 Terminals, 3d.; 4d.; 8d.; 1.0005 or .0003 Condenser, 1/6; 1 2 megohms Grid Leak, 10d.; 1 A.F. Transformer, 8/6, 12/6, 15/6, 18/6; Coil Glazite, 7d.; 1 5-Wire Battery Cable, 9d. yd.; Panel 10 x 7, Baseboard 9 x 8, 2/-; Solder Lugs if required, 3d. and 4d. doz.; A small piece of Ebonite 2 1/2 in. wide by about 2 1/2 in. long 6d. piece; a small quantity of 28 d.s.c. Wire, 3d.; 1 lb. 28 d.s.c. Wire, 2/-; Redquick Former, 2 1/2 in. x 6 in., 9d. piece.

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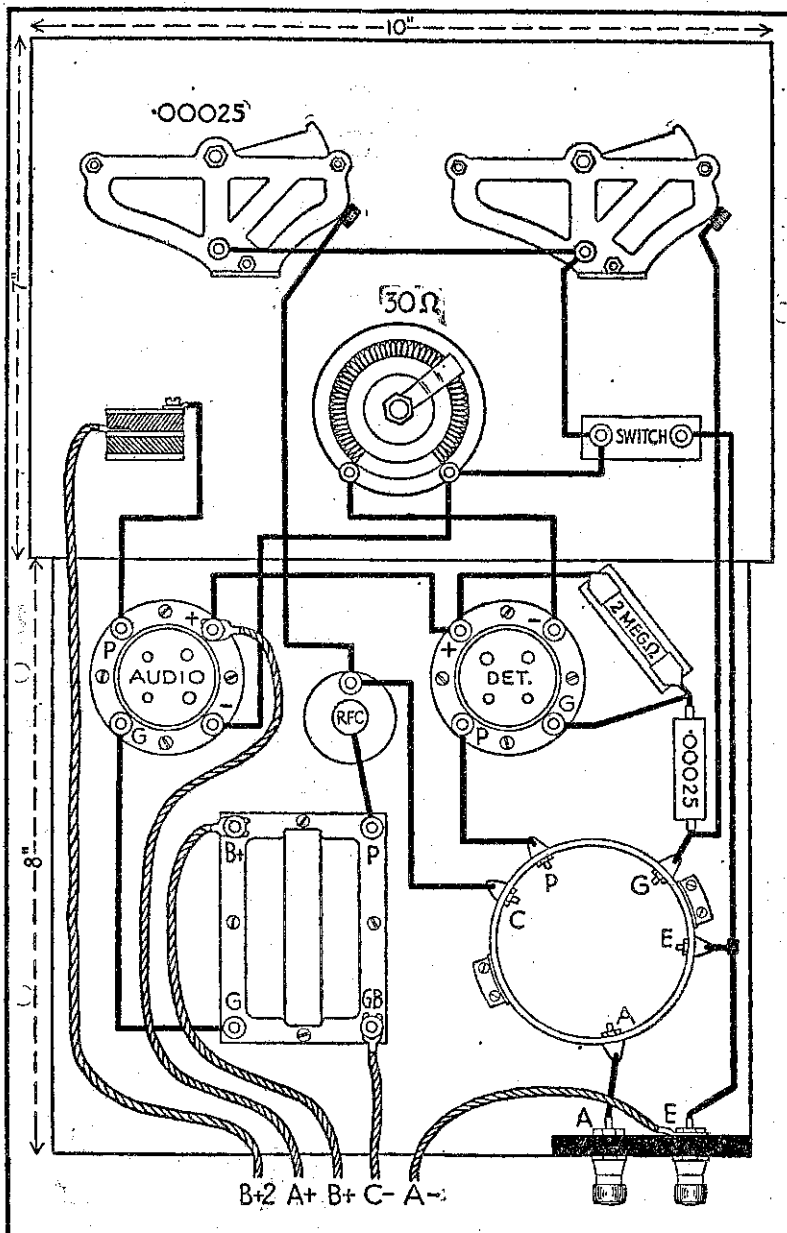
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The layout diagram of the "Ranger."

The constructor cannot go wrong in the wiring if he follows the sketch, where everything is plain and clear. Note in the sketch that all wires do not go direct, but that there are right-angled bends. Do not put these in when the set is made. They are shown right-angled and straightened in order to make things clear. Further, it will be found that when the panel is raised at right-angles to the base board, the wiring from the latter will be very much shortened and straightened. Grid and plate wire particularly should be kept short and clear of one another. Do not take them half-an-inch further than they should go. It will be found that the cable is best connected by stripping about a foot and stapling it to the centre of the back of the baseboard. The wires can then be taken out to their destinations and cut to the right size. They are shown in the diagram with tags attached. These are, of course, optional, for the wire can be twisted round the terminal to which they go.

Note in connecting up the batteries that "A-", "B-", and "C+" are all connected together outside the receiver.

For batteries, the following are recommended:—"A" battery depending upon

the valves. If 2-volt type is used, such as the new Radiotron 230, two number 6 cells (or an air cell) must be provided and the voltage controlled by the rheostat. Remember if this type is

used, two volts must under no circumstances be exceeded. For this reason the rheostat should never be turned on full. It is advisable to use a voltmeter with these valves. The other types of 2-volt valves are not quite so delicate, though in general the rheostat should not be turned on fully. A good rule is to start operating your set with the rheostat turned so that the maximum resistance is in and bring it up gradually, stopping when the station listened to is at its maximum. Do not turn past this point under any circumstances.

Possible Faults.

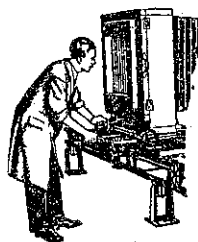
DETAILING possible faults is always a difficult plan because, if the instructions have been followed carefully, there will be no faults, and if they have not been followed, it will be impossible for us to say where the constructor might have gone wrong. Always try varying the detector voltage. Probably the best results will be obtained with 22½ to 45 volts on this valve.

HERE is the list of parts:—One

.0005 variable condenser; one .00025 variable condenser; two dials; one 30 ohms. rheostat; one battery switch; one single-way jack and plug; one h.f. choke; two UX valve sockets; two terminals; one .0005 or .0003 condenser; one 2 megohms grid-leak; one A.F. transformer; Coil Glazite; one 5-wire battery cable; panel, 10 x 7; baseboard, 9 x 8; solder lugs if required; a small piece of ebonite, 3 in. wide by about 2 1/2 in. long; a small quantity of 28 d.s.c. wire; 1 lb. 28 d.s.c. wire.

Rough and ploppy oscillation indicates that the voltage is too high. Reduce until oscillation is smooth and even. Ploppy oscillation is also due to a defective grid leak or wrong coupling between primary and secondary coils. However, if the instructions are followed and a space of 1-8 in. left between these coils, there will be no difficulty. It is usual to keep the number of tickler turns fairly high, and the detector voltage fairly low. When the set will not oscillate it is due, in nine cases out of ten, to the tickler connections being reversed. If the windings are put on the wrong way, or if the ends are connected "about face," then the set will not oscillate, but just reverse these and it will be found to be quite satisfactory.

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