If the amplifier is to provide a second output voltage, an extra condenser of 2 mfds. may be required across this. The cases should be connected to earth. separate filament and secondary windings to be put on one transformer, employing separate rectifying valve and chokes for the bias and amplifier B supply. This would be a serviceable combination to run a fair-sized valve in the last stage.

Rectifying Valves.

ANY small power valve that has ceased to function as such owing to lost filament emission, may be used as the rectifier for bias purposes.

For amplifier work a "dud" power valve of not more than 5000 ohms impedance should be used, as with plate and grid connected together, such a valve will pass from 20 to 30 mills., and with a robust filament such as that in the quarter-ampere class, will function well for a year or two if the filament voltage is not overdone. A small portion of resistance wire may be included in one filament lead for regulation purposes.

General.

THE drawing shows a transformer as made from stalloy stampings, as mentioned in this column in connection with audio chokes. If stalloy strips are used, the transformer will stand with the coil upright in the same way as the choke.

Note that the bottom of the case projects at least ¼ inch on all sides, so that on three sides the tin cover may rest upon it.

The flexible cord connecting with the mains enters at the back of case, over condensers, up through baseboard, connecting to back end of fuses. A notch is cut in the corner to clear these leads, the edges being turned in to prevent cutting.

The unit will be found highly satisfactory in operation, and the precise regulation of voltage afforded will be readily appreciated by users.

The writer knows that some constructors have placed upon their "B" eliminator transformers a bias winding to give 100 volts. Where this is not being used, and it is desired to instal the above system, this can be done. In order not to drop more voltage than necessary in the rectifier, a valve of not more than 5000 ohms impedance should be used. It is understood that this unit should be capable of providing a full 40 volts for a 171 valve if required at any time, and a 100-volt winding should do this. The resistances should be 50,000 ms each.

Should any constructor wish to make up a transformer from Ballinger's stampings for other purposes, 8.15 turns per volt should be taken in reckoning secondary windings. This gives 2030 turns for 250 volts, 2440 for 300, and 2850 for 350 volts.

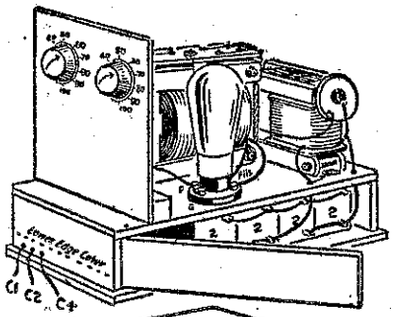
If hum is heard on putting the unit into use, reverse the mains connection by turning the adapter round in the socket.

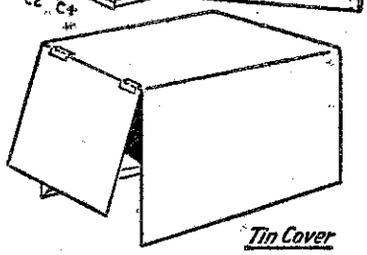
The Case.

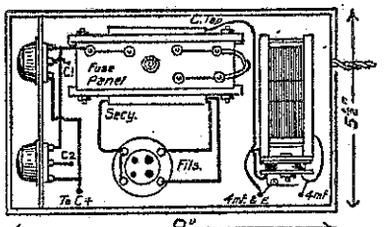
THE case is made of 3-8in. rimu, the dimensions being given in a diagram. The size of the case should be sufficient to contain the required condensers in the lower portion, which has a door hinged at one end by a brad driven in at top and bottom. The three leads C1, C2, C positive, are threaded before the condensers are put in place. Not less than ¼-inch space must be allowed above condensers, for running leads. The height of condenser space in the original is 2 1-8 inches.

The panel, which may be of any material, metal, ebonite, or 3-ply, is 5½ to 6 inches high. Black sapolin all over gives suitable finish.

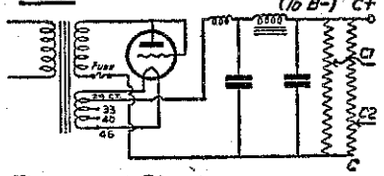
If desired, a tin cover may be provided, as shown, with hinged front shorter than sides, to clear output leads. A cover is good protection against dust, and should be connected to earth, and will also limit the magnetic field of the transformer.



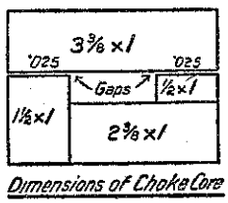




Plan



Theoretical Diagram



Dimensions of Choke Core

Bias Resistances.

THESE are variable resistances of 100,000 ohms each. If they are not purchased in potentiometer form, they should be altered so that the two ends of the resistance have each a terminal, and the arm a third terminal, for which many resistances have a hole provided, in which a bolt may be placed. One resistance is provided for each voltage required, one end of each being connected to "C" positive and the other end to "C" negative. The arm connects to the corresponding output cable. Each resistance gives the same range of bias voltages. The only current flowing through the resistances is the "waste" current of not more than 1 mill. through each, and this they will carry, though the rating of these resistances is very low. Smoothing condensers are not required across the outputs.

Connections for Grid-Bias.

THE usual half-wave eliminator connections are first made as shown on the diagram—one side of secondary to grid and plate of rectifying valve, suitable filament voltages on filament; centre-tap of filament to radio choke, then to main choke and 4 mfds., main choke to other 4 mfds. Then to one side of each resistance, cases of condensers, and "C" positive cable.

The output cables may conveniently be of the plain rubber-covered flexible wire, which is about equal to 20's, though much thinner wire may be used if convenient.

It should here be mentioned that the choke and transformer may stand on a few thicknesses of tinfoil, which should be connected by a screw and washer holding a wire connecting to the positive lead.

The negative lead from the fuse panel connects only to the remaining side of each resistance and to the remaining side of all condensers.

Connections for Amplifier Use.

THE connections as given in the preceding section apply to this up to the connection of the positive to the second 4 mfds. Then the positive lead is taken to a cable or terminal for B supply for all valves.

If a lower voltage is required for the first stage, a 200,000 ohm variable resistance may be connected to the "B" positive, and the arm will form the lower voltage output, and must also be connected to an extra 2 mfd. condenser, of which the other side is connected to "B" negative.

For detector voltage, a 100,000 variable resistance may be used as for grid-bias, as only a small current is drawn. One side of all condensers and the cases are connected together and to "B" negative cable output, which is connected to earth.

Grid-bias for the amplifier is then provided by a dry battery, but it would be quite feasible for the two

Topical Talk

WELLINGTON listeners have reason to congratulate themselves in the comparative absence of electrical leakages in such a big city as the capital. The radio inspectors deserve credit and thanks, for they have done their full share in cleaning up Wellington, which for weeks, some time ago, was a veritable tempest of electrical noises. On many nights it was quite impossible to listen to any stations outside Wellington. "Switch" remembers having met the radio inspectors pursuing and locating these sources of interferenee night after night.

"SWITCH" understands that the 2YA, Wellington, director, with his customary alertness, has been investigating the possibility of connecting a certain Wellington cabaret by land-line with 2YA, so that listeners may have some first-class dance music from an excellent orchestra. This should make a big appeal to many listeners who prefer the "real thing" to "canned music."