

valve is connected as shown, a negative bias of nearly 1 volt is applied to the first valve, as this rheostat need never be turned full on. For wiring-up, tinned copper wire, No. 18 or 20, is to be recommended, with lengths of insulated sleeving slipped over.

Wire the filament circuit up first. A negative solder direct to the metal screen. When wiring the components where the wires run through the holes in the screen, care must be exercised to see that the sharp edge of

The total current consumption when the three valves are in use is therefore .31 amperes at 4 volts pressure. As we have a six-volt battery we have to find the resistance required to drop two volts with a current of .31 amperes.

Divide two by .31 and we have the answer. Approximately seven ohms are required. This can be obtained by arranging that about seven-tenths of the total resistance of a 10-ohm

inside the valve. Screen grid is connected to the usual grid terminal on the base.

The English and the valve manufactured by Messrs. Philips, Ltd., arrange the plate connection to the cap on the top screen grid in the place of the usual plate connection on the base. Before attempting to build this side of the receiver, check over the connection by referring to the data supplied by the maker.

until the felt lies over the pulley and applying tension so as to squeeze the oil out of the felt against the pulley and leaving it to run into the bearing.

Humming Noise.

If you are troubled with a regular humming noise, and your set employs a low-frequency transformer, try changing over the leads to the primary, or those to the secondary.

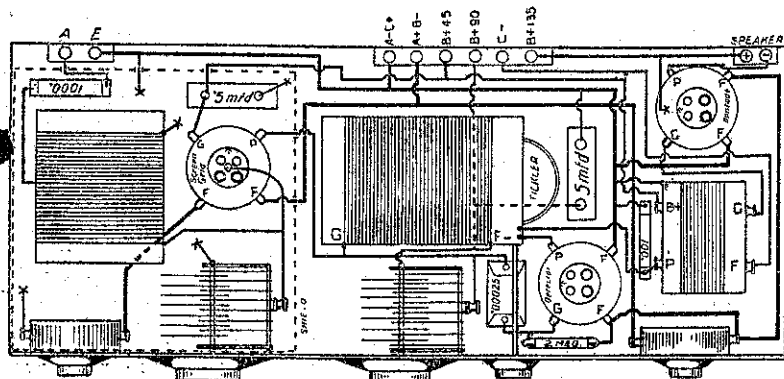
An Unusual Trouble.

MICE which find convenient nesting quarters in radio receivers are in danger of their lives. This was demonstrated after a set owner became much chagrined when his speaker quit work. Aid of a service man was sought, and investigation revealed a nest in the receiver containing three dead mice. The mother had built the nest between two B battery wires carrying 135 volts. A short circuit developed with fatal results to the mice.

Tips and Jottings

Oiling the Pulley.

HERE is an ingenious way of doing an awkward little job, that is, oiling the aerial pulley at the top of a mast. This is done simply by tying a length of three or four inches of cotton wool or felt to the rope and soaking this cotton wool thoroughly with oil, then letting the aerial down



The Lay-Out of "Pentode Three."

the aluminium does not cut into the insulation.

The lead running to the small cap on the top of the screened grid valve can be of flexible wire as short as possible, and taken in a direct line to the component to which it is wired. The small terminal found on the side of the cap of the pentode runs direct to B + 135. If this voltage is used then the grid bias will have to be 12 volts negative.

Trying Out.

HAVING finished the wiring all that remains is to try out the receiver. In operation it is controlled in exactly the same way as the Browning Drake. The two condensers are used to tune in the station while the tickler coil increases volume until a point of oscillation is reached.

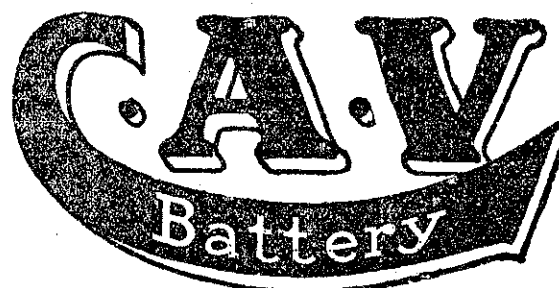
rheostat is in series with either the negative or positive lead direct from the six-volt battery.

Resistance of S.G. Valves.

A WORD on the amount of resistance required by different types of screened grid valves. One make of valve uses 3.3 volts and .132 amperes. With a four-volt accumulator six ohms will always have to be in series with the valve and the first rheostat will never have to be turned more than two-thirds on.

"B" Battery.

REGARDING the B battery. The full voltage of 135 is strongly recommended by the writer. If lower voltages are used then the receiver will be very little better than a three-



British

Built

Batteries

Are a Guarantee of Long Service

We carry large stocks of Batteries. All shapes and sizes, to suit all purposes.

—MOTOR CAR
—RADIO
—LIGHTING

Our advice is freely given on any of your Battery troubles.

WRITE FOR CATALOGUES.

All makes of batteries repaired, recharged, rented. Service Vans cover City and all Suburbs Daily.

GRUARS BATTERY HOUSE

THE BATTERY PEOPLE

WELLINGTON
9 Majoribanks St.
'Phone 20-937

WANGANUI
Ingestre St.
'Phone 4966

AUCKLAND
109 Albert St.
'Phone 45-696

Components Required for "Pentode" Three

In the list of components the reader will see that he has a wide range to choose from, and no difficulty may be expected regarding inability to obtain the specified parts.

- 1 Browning-Drake kit.
- 1 Screen grid valve.
- 1 Pentode valve.
- 1 General purpose valve.
- 3 Valve sockets.
- 1 Intervale transformer.

- 2 x .5 m.f.d. condensers.
- 1 Grid condenser and leak with series clips.
- 1 x .0001 fixed condenser.
- 1 x .001 fixed condenser.
- 2 Rheostats, 20ohms.
- 2 Variable condensers, .0005 m.f.d.
- 1 Ebonite panel, 8in. x 7in. x 3-16in.
- 10 Terminals.
- Sheet Aluminium (24 gauge.)
- Insulated Sleeving, etc.

Both the screened grid and the pentode are four-volt valves, so that the detector valve will have to be the same. If a six-volt battery only is available, a resistance will have to be inserted in either of the two main supply leads from the accumulator. The amount of resistance will vary according to the make of valves used. To calculate this resistance refer to the data of the valves used supplied by the makers. Add together the total amount of current used by the three valves. As an example:—

Screen grid06 amp.
Detector1 amp.
Pentode15 amp.

valve set using ordinary valves and less expensive to build. Also, 4½ volts C battery is not enough. Use the correct bias recommended by the valve makers. It is false economy to use small B and C voltages, and if the reader is determined to use no more than 90 volts B with 4½ volts C, then use an ordinary valve in place of the pentode.

An important point worth noting is to make sure of the construction of the screen grid valve before attempting to build the radio frequency side. The American valve has the cap at the top attached to the control grid