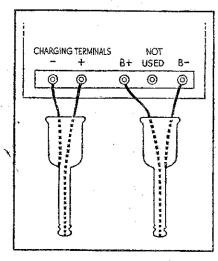
well as bobbins, are available commercially.

No terminal strip is mounted on the transformer, as it is more convenient simply to lead the ends of the wires to appropriate points through pieces of insulating sleeving. For this reason the ends of the wires should be left reasonably long to make the connection, or if it is found that they get in the way too much, then they may be cut fairly short and wires subsequently soldered to them for the purpose of making the connection. In the case of the fine wire windings, these wires should not be too heavy or they will place a strain on the fine wire which comes from the transformer itself.

The Smoothing Chokes.

THE smoothing chokes may also be constructed (if desired) from similar materials to those used for the power transformer. Full instructions for the construction of smoothing chokes are given in the "Guide," so that there is no need to give any further information on the subject here. The chokes should be constructed to specifications giving an inductance of



The arrangement for battery charging and for deriving "A" and "B" voltage,

30 henries or thereabouts when passing a current of 25 or 30 milliamps.

Choke D.

It is, as a matter of fact, somewhat questionable whether the saving ef-

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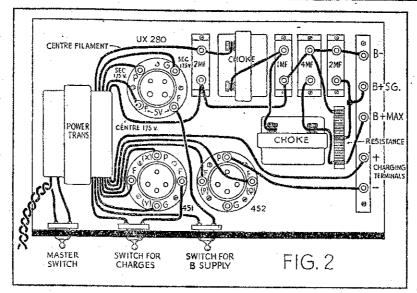
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Layout diagram of power-pack and battery charger.

chokes is sufficient recompense for the labour involved in their manufacture. They can be bought quite cheaply.

The Smoothing.

The slightly unusual arrangement of the smoothing condensers in the power pack is the outcome of a considerable amount of experiment with object of obtaining maximum smoothing from a minimum expenditure on condensers. From measurements made, it was found that the improvement affected by increasing the size of the first condenser above 2 mfd., or that of the second condenser above 1 mfd., was so inconsiderable that to provide bigger condensers at these points was clearly uneconomical,

The third condenser, however, shows a progressive improvement in smoothing, as its size is increased until a capacity of 5 or 6 mfd. is reached.

constructing smoothing ever, when the size of the condenser is increased above 4 mfd., so this value has been chosen in the present design, These three filter condensers should have a working voltage of at least 300 d.c., or a test voltage of at least 600 d.e. The remaining condenser connected between the tapping for the screen grid voltage and earth (for the "Differential" receiver) is not subjected to any very high voltages and the ordinary small-sized condenser will normally be quite safe in this position.

The precise arrangement shown in the diagrams is intended more particularly to fit the requirements of the "Differential Four." It is, however, eminently suited for other receivers, including the "Home and Country" portable, and may be used for any such receiver without any modification whatever. It is permissible, however, in the case of a receiver employcapacity of 5 or 6 mfd. is reached, ing but a single "B" voltage (such as The improvement is less marked, how-the "Home and Country" portable) to

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dispose of the tapped resistance across the output of the power unit and with the condenser from the tapping point

on this resistance to earth.

In the case of the "Home and Country" receiver, of course, the terminals are connected to two lengths of twin flex terminating in phone plugs to fit into the special jacks provided in the receiver.

Battery Charging.

PERHAPS the most unfamiliar part of the apparatus to most readers will be the battery charging valve and its associated equipment. The Philips Type 451 valve is a small mercury vapour rectifier having a hot cathode

Chamber Music from 2YA

MISNOMER, for which we alone are responsible, occurred in last week's "Radio Record," when the trio from the Wellington Chamber Music Players was referred to as "The Tanner Trio." This trio of brilliant artists— Leon de Mauny, violinist: Evelyn de Mauny, pianist; and Claude Tanner, 'cellist-although they have broadcast as a trio from 2YA, are not known under any particular title. Their broad-der any particular title. Next week a photograph of the trio with a corrected title will be reproduced.

and two plates to each of which an a.c. voltage of approximately 16 is ap-The filament of this valve plied. draws a current of 3.5 amps at a voltage of 1.75, so that the wire connecting the transformer winding to the valveholder must be fairly heavy.

The reader will be wise to follow the previous recommendation that the loose end of the transformer winding itself should be used to make the connection between transformer and valve-holder.

The output of the 451 rectifier is 1:3 amps, and this charging current is maintained constant for any battery up to 6 volts by the ballast resistance bulb (Philips No. 452), which serves the double purpose of protecting the rectifier and regulating the charge.

Usually, the ballast bulb does not glow with a 6-volt battery on charge, but may glow slightly for a 4-volt battery, and fairly brightly for a 2-volt battery. It may be noted that both the rectifier and the ballast bulb are supplied with the English type of valve hase. The rectifier bulb has the normal connections for the filament with the two plates connected to the grid and plate terminals. The resistance lamp has its two outside connections connected to the filament pins, while the centre tapping of the resistance is connected to the plate pin. This bulb has only three pins. No ammeter or charge indicator of any kind is required, as the output of the charger. if correctly made, is absolutely constant and reliable.

With these few notes it is not considered that the constructor will experionce any difficulty in completing the apparatus, as the theoretical and practical diagrams show clearly the connections and arrangement of the com-The connections from the ponents. eliminator and charger to the plates for the "Home and Country" receiver are shown separately in the small diagram, and this should render this little point quite simple and straightforward.

The only point is that the utmost care must be taken not to insert the plugs into the wrong jacks, as an error of this kind may lead to serious results.

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