

A Useful B Accumulator Charger

Half Wave Valve Rectifier

(By "Megohm")

SHORT-WAVE enthusiasts, as well as owners of other battery-operated sets, are still in many cases in need of a reliable "B" battery charger. The one here described will deliver a variable current of 60 to 180 m.a. at about 160 volts. Allowing 2½ volts per cell in order to fully charge the battery, it is seen that up to 60 cells may be charged in series. A larger number would have to be divided into two groups and charged in series-parallel, because 160 volts is the maximum plate voltage for the Philips 1010 rectifying valve to be used.

A very good battery for short-wave or, in fact, any receiver, is one of 56 cells, giving 112 volts, and this will charge up well in series.

The rectifier is one that may be used for either charging six-volt "A" batteries with full-wave rectification, or "B" batteries with half-wave rectification. By connecting both plates together for "B" charging, the output current is doubled, giving 180 m.a. A 400-ohm wire-wound potentiometer included in the output and connected as

A pile two inches high is required of each size. The primary winding consists of 1850 turns of 28's s.w.g. enamelled wire, in 15 layers, and the secondary, 1800 turns of the same 28's wire. Outside these is a filament winding of 18 turns of 18's s.w.g. d.c.c. wire, tapped at 14 and 16 turns. Fourteen turns should give the 1.8 volts (3.5 amps.) required by the filament.

The transformer window will be 2½ in. long by 13-16 in.

The winding may be carried out without constructing a spool, if strips of thin brown paper are cut barely 2½ in. wide, and placed between each layer. The former is first to be covered with a layer of thin card of good quality, followed by two layers of adhesive tape, and a similar division between primary and secondary, and secondary and filament winding.

Laminations should all be shellaced after cutting. A strip of fibre or ebonite should be drilled to slip over projections of clamping screws as shown, and upon this are placed the fuses for each lead from the mains. Clean up a short length of 40's copper wire to act as fuses. The fuses are essential to protect the windings from being accidentally burnt out, which would necessitate rewinding.

The ends of the windings are filled up with the composition off the tops of old dry batteries, which may be warmed in a tin lid and poured on when sufficiently thin.

Bring the primary leads out at one end and the secondary at the opposite side of the other end, and filament leads also from this (lower) end.

The two primary leads go to the upper end of respective fuses. One secondary lead goes to positive output terminal, and the other connects to one of the filament leaders to take the return current passing from plate to filament. The plate terminal of valve socket connects to one side of resistance, and other side of latter to negative output terminal. The grid connection is the second plate, and if both are to be used, this terminal is connected to P, either permanently or by a switching arrangement.

General Construction.

THE baseboard may be 7 by 4½ inches, and should be covered with copper, aluminium, or other non-magnetic metal, and upon this the transformer is secured, and also the English type valve-socket, which may require a small piece of insulating material underneath. If a regulating resistance is used, it is attached to the front panel, which is of thin sheet-iron, the cover being of the same material, finished with black sapolin or enamel. The transformer is then wholly enclosed in a metal case, as stipulated.

Output terminals are provided on the front panel by drilling two holes larger than the base of the terminals. A

square of ebonite or fibre is then bolted behind these, and drilled to take the terminals.

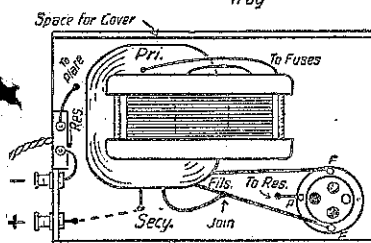
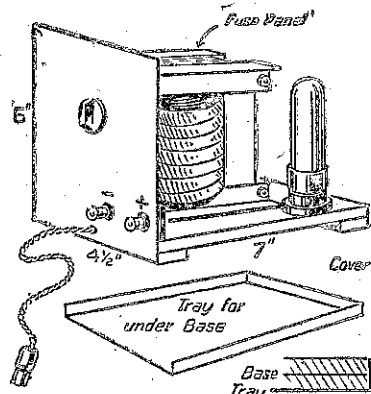
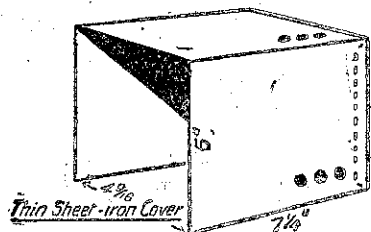
A sheet-iron tray turned up ¼ in. on three sides, leaving room for sides of cover, and secured under the baseboard completes the container. The flex is brought under the baseboard and out through the lower edge of panel. The holes in panel should be larger than the holes in the wood so that the flex will not be cut by the metal.

A few ¼ in. holes should be pierced in the cover above the position of the valve, and a few at the lower edge of the back.

The total cost of materials, excluding the valve, but including the variable resistance, is about twenty shillings.

A charger such as this makes a very good source of supply for a 100-volt dynamic speaker field winding, supplemented by a small amount of smoothing capacity. Not less than 1200

B Battery Charger



Plan of Wiring

a variable resistance, allows of a variation of current from 60 to 180 m.a. with a certain amount of variation in the voltage also. On the other hand, by using one plate only, a current of 90 m.a. is obtained without the decrease of voltage caused by a resistance. Sixty m.a. through 400 ohms drops 24 volts.

The Transformer.

ONE-INCH stalloy strips are used for the transformer, the long piece, 2½ x 1, and the short piece 1 13-16 x 1.

Useful Hints

WHEN condensers are placed in series with one another, remember that the total capacity of any number will always be less than that of the smallest single capacity.

AN excellent covering for slipping over the ends of wires when the insulation gets frayed and untidy is the valve tubing supplied for ordinary bicycles.

OWING to its high self-capacity, twisted flexible wire is not generally suitable for long loud-speaker leads, as it has the same effect upon quality as a condenser connected across the loudspeaker terminals.

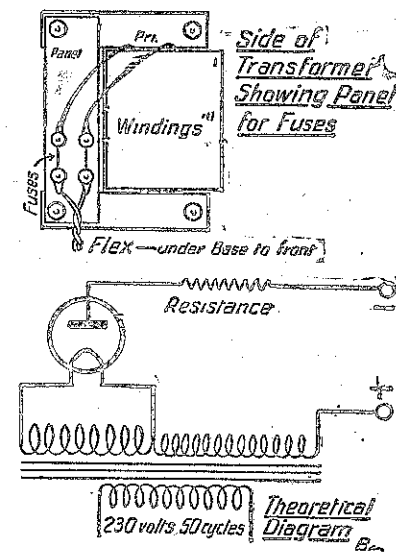
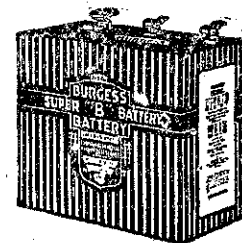


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turns should be put on the secondary for this purpose.

Materials Required.

2 dozen 3ft. lengths 1 in. Stalloy; 1 British valve socket; 400-ohm variable resistance (wire); 1½ lb. 28's s.w.g. enamelled wire; 1½ lb. 18's s.w.g. d.c.c. wire (or 8 yards); 1 foot 3/16 threaded brass rod and 8 nuts; baseboard, 2 terminals, small nuts and bolts, fibre strip, screws, sheet-iron, etc; rectifying valve.

NOTE.—In the 1930-31 edition of the "Radio Listeners' Guide," "Megohm" will describe a somewhat similar charger designed to charge either A or B batteries by merely flicking over a switch.

DO not put up with whiskers in the B battery or accumulator leads, as good spade terminals can be bought for a few pence.