

Short circuit the B plus and B minus terminals with a piece of wire and turn on the current. The lamp will be found to light up brightly at first, and gradually it will grow duller until it is just half brilliancy. In this condition the charger is rectifying properly and can be connected to the battery. When in use always remember to disconnect the battery unless the power is switched on. As a rectifier, the chemical type is not 100 per cent. efficient. It relies on its properties of being able to pass more current in one direction than in the other. A little current will, however, pass in the opposite direction and unless the power is turned on to more than counter-balance the flow in the charging direction, the accumulator will gradually discharge through the jar and the transformer windings. Another point worth noticing is the fact that both the A and B charger terminals are connected to the mains, and therefore both A and B batteries must be disconnected from the receiver, which is earthed, before they are connected up for charging. The operator must also stand on some insulating material, otherwise he is liable to get a shock when the terminals are touched. In connecting a battery up to be charged, remember the positive terminal of charger joins to positive of the accumulator—plus to plus, and negative to negative.

As a means to show whether the charger is functioning properly when in use, the following polarity tester will be a great help. Full constructional details appeared in the "Radio Record" of June 8: A small glass pot is fitted with two copper electrodes similar to the rectifying jar already described. These electrodes are brought out at the top and short lengths of wire fastened on. This pot is then filled about half-full of a saturated solution of common salt, with a pinch of phenolphthalein added. As much as will be on a threepenny piece is enough. It is only slightly soluble in water, so there is no point in using too much. This compound is used in chemistry to detect the presence of an alkali, and if a current is passed through a solution of common salt, caustic soda is formed on one of the electrodes, which immediately turns the phenolphthalein a deep, red colour. This property underlies the principle of this polarity indicator. On passing a current through this piece of apparatus, a deep red colouration will be formed on the negative electrode. To use it with this charger, break the negative lead from the battery to charger, and insert this indicator. If the accumulator is being charged, a bright red colouration will be seen on the electrode that is connected to the charger A terminal. If red is noticed on both the electrodes, no charging is taking place, and the rectifying cell must be formed again.

Tips and Jottings

Aerial Wire and Oxidisation.

MANY people are under the impression that a brand-new aerial wire is more efficient than one which has been in use for some time. This impression is the result of the popular belief that the coating of oxide which forms on copper or brass wires when exposed to the air increases the resistance of such tarnished wire to high-frequency currents. Exhaustive tests, however, have proved that the theory is to all intents and purposes a fallacy. It is perfectly true that aerials do sometimes lose their pristine efficiency, but this falling-off in energy can generally be traced to an accumulation of dirt on the insulators, corrosion of the connections between aerial and lead-in, dirty or loose connection at the

lead-in terminal. It is a good idea to overhaul the aerial at least once a year, but it is not at all necessary to emery paper the wire!

Grid Bias from the Mains.

ACCUMULATOR cells are sometimes thought to be a good solution of the grid biasing problem, but a small thermionic rectifier will be found cheaper and give less trouble. It is inadvisable to attempt to obtain grid biasing potentials by a potential divider associated with the H.T. battery eliminator, or to use the "free grid bias" system by causing the anode current to create a voltage drop across the grid biasing resistance. Use a small independent rectifier if a high grid biasing potential is required for the output stage. After smoothing, a shunt resistance should be floated across the leads. This need only pass a milli-ampere yet it will keep the voltage constant as well as protect the smoothing condensers.

List of Components

1 Bell-ringing Transformer 10-12 volt secondary.
Lead Strip, 1in. x 6in.
Aluminium Strip, or rod, 6in. long.
1 Tumbler Switch.
1 Lamp Adapter.
Glass Jar.
Half lb. Ammonium Phosphate.
Distilled Water.
Six Terminals.
Length of Insulated Connecting Wire.
Box Container (as specified).

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