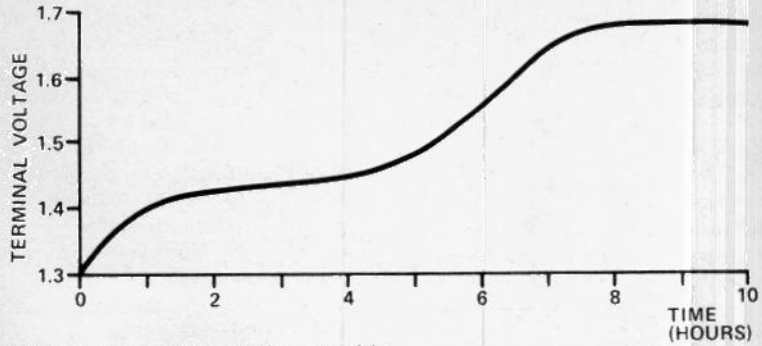
Fig. 11. Charging characteristics of Nickel-Cadmium cells.



eminently suitable for use in portable electronic equipment such as calculators, tape recorders, hand-held transceivers, camera flash units etc. They can withstand considerable vibration, are free from sulphating or similar problems, and can be left in any state of charge without ill effect.

Charging should be done with a constant-current charger. The charging rate for the quickest charge should be no more than 1.5 times the 10 hour discharge rate. Most manufacturers recommend a charge rate and a trickle or 'float' charge rate and this is best adhered to. Charging characteristics are shown in Fig. 11.

One method of producing a constant current charger is to place a resistor in series with a supply having a voltage three or four times the battery voltage.

A better method is shown in Fig. 12. Junction FETs are selected on test for similar Idss currents and a number are connected in parallel as shown to supply the rated charge current. The FETs are in series with the rectifier output and the drain-source characteristics provide a constant current output. The maximum output voltage should be limited by a zener diode to about 1.2 times the rated battery voltage.

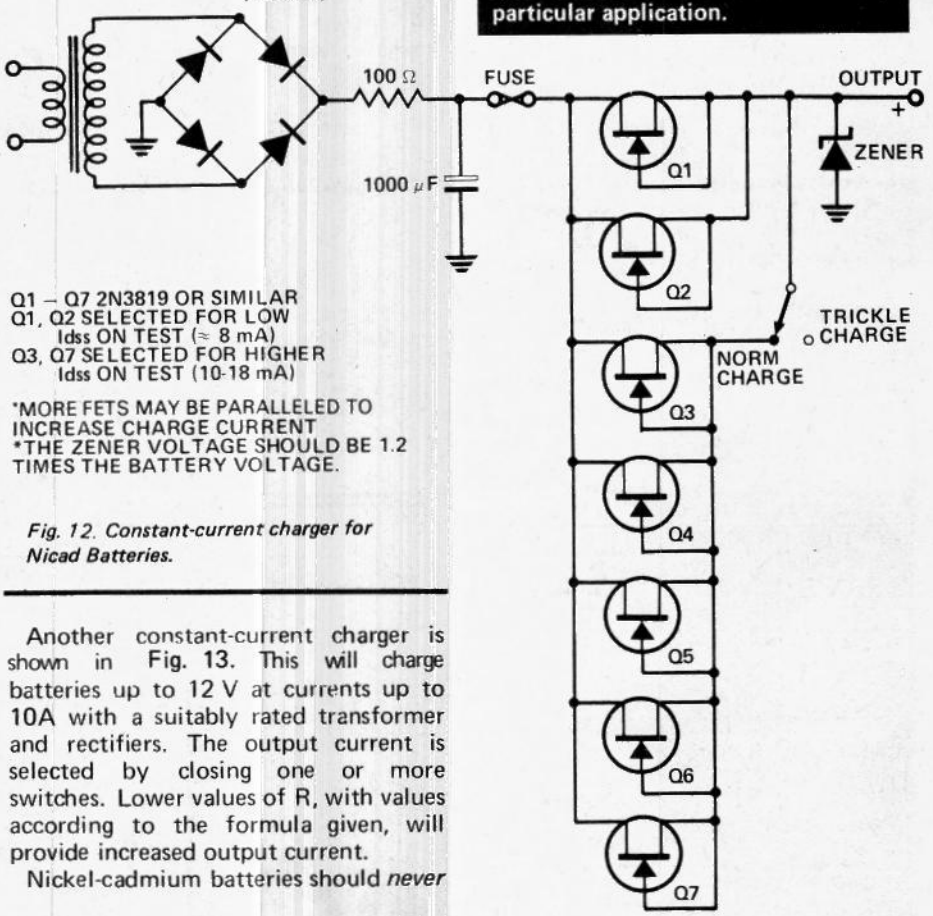


Fig. 12. Constant-current charger for Nicad Batteries.

Another constant-current charger is shown in Fig. 13. This will charge batteries up to 12 V at currents up to 10A with a suitably rated transformer and rectifiers. The output current is selected by closing one or more switches. Lower values of R, with values according to the formula given, will provide increased output current.

Nickel-cadmium batteries should *never* be short circuited. Thi… overheating and the … explode.

Never dispose of Nicad batteries in a fire or incinerator. This too will cause them to explode!

The nickel-iron battery is an earlier counterpart of the Nicad and has similar characteristics. ET

In this article we have tried to give enough information on the many different types of battery available. This, it is hoped, will allow the right type of battery to be selected for any particular application.

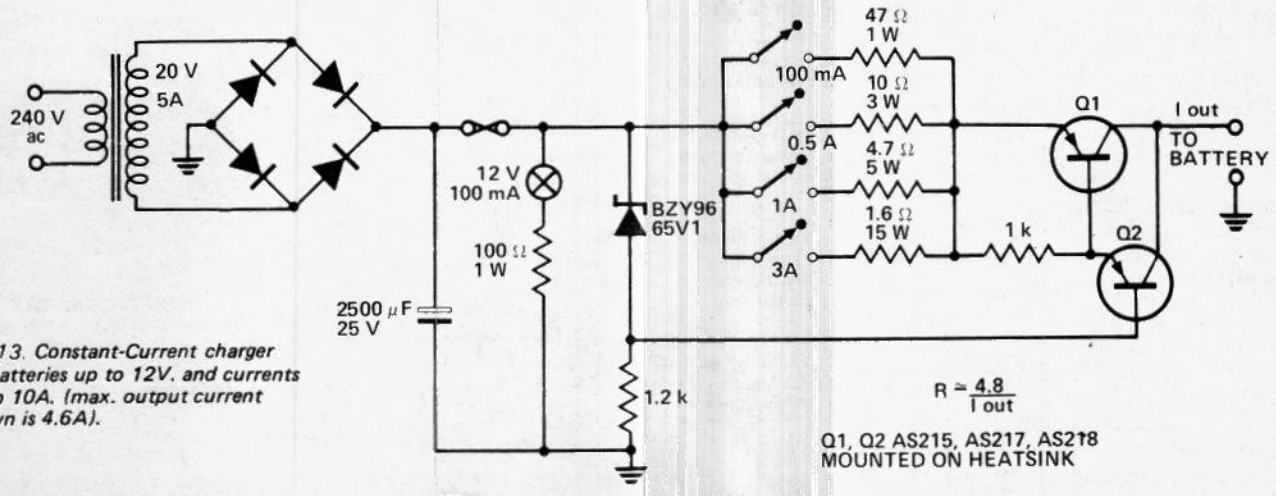


Fig. 13. Constant-Current charger for batteries up to 12V. and currents up to 10A. (max. output current shown is 4.6A).