

say that it was not delivering the expected voltage, frankly confessed that he did not know how many turns were on the primary.

Many constructors have had success with the charger built as specified, and these latter remarks are for the assistance of the odd ones who from some cause or other have not obtained the expected results.

Shellac and Laminations.

DO not be tempted to dispense with shellac on the laminations, for a great deal of energy can be wasted if there is electrical connection from plate to plate across the section of the core. Incidentally, too, the shellac deadens any mechanical rattle that may be present through looseness of laminations.

Improving Small Cone Speakers.

THE following method of improving cone speakers of small size is taken from "Radio News," and will doubtless interest many owners of such speakers.

"In this day of high-quality broadcasting, the listener using a speaker

"The drawing will serve to show the constructional details of the small cone speakers referred to, all of them being constructed in this manner, or one similar. In all instances, the paper cone is as large as permissible, extending down to the base of the speaker. At first thought it would seem the cone could not be made larger, because of this fact. However, by using a cone of the eccentric type, this obstacle can be overcome. With the peculiar shape of the eccentric cone, it need not be as large as the usual circular cone to achieve the same result from a musical standpoint.

"In the table below the dimensions for any desired size of cone are given. As the "short" side of the cone can extend down only to the base of the speaker, the cone conforming to this limitation should be chosen. For best results, the cone should be constructed of the special paper made for this purpose. However, any paper heavy enough to be self-supporting will serve quite well.

"The paper should be spread out on a smooth surface, and secured by a tack in each corner. The circular outline 'D' is then drawn with a pencil, using a piece of string as the compass. The circle 'E' is scratched on the surface of the paper, using a large blunt-pointed nail as the scratching tool. This line must be scratched quite deep: care being taken to see that the paper is not cut through, however. The paper is glued together along lines 'A' and 'B,' and the outer edge of the resulting cone is then bent back to about a 45-degree angle along line 'E,' thereby making it self-supporting. Finally, the small cone 'F' is glued to the apex of the large cone, which will then be ready for use.

"The following dimensions will be found suitable for the respective sizes of speakers:—

Diam. Cone. Inches.	Line 'H' to 'G.' 'A-H' and 'B-H'. Inches.	Lines 'A-H' and 'B-H'. Inches.
20	8	2
22	8½	2½
24	9½	2½
26	10½	2½
28	11½	3

"The distance from 'E' to 'D' is half-inch regardless of the size of the cone; and the small apex cone 'F' is also of the same dimensions in all cases.

"The improved reproduction obtained by the use of the larger cone will repay the builder many times over for the time spent in remodelling the speaker."

Tips and Jottings

The Double-Roll Loud-Speaker.

"MEGOHM" will be pleased to hear from constructors of this speaker as to its performance. It is undoubtedly capable of very fine reproduction, giving more even amplification through the scale than is the case with many speakers.

A Coil-Driven Loud-Speaker.

A VERY fine example of the dynamic or coil-driven loud-speaker is now being demonstrated at the International Radio Company's premises, Wellington. The Kolster Power Speaker is enclosed in a handsome console cabinet with grille and gauze front. In addition to the speaker it-

self, there is included a B eliminator, which excites the field magnet and also supplies B. current for the receiver. A two-stage transformer-coupled amplifier is also included in the cabinet, a 7½ watt tube being employed in the last stage. The eliminator must supply a comparatively heavy current, and is therefore equipped with two UX281 half-wave rectifying tubes, and in addition there is a ballast tube to compensate for variations in line voltage. The whole outfit operates by connection with the A.C. mains. Needless to say, reproduction is very fine.

Radio Parts Direct From Factory.

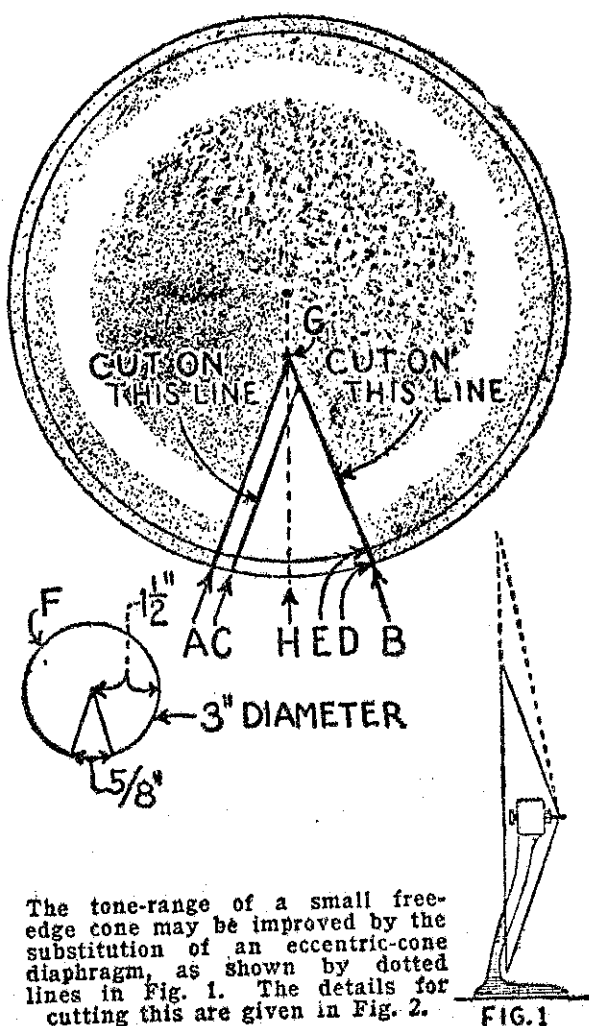
THE General Radio Company, Cambridge, Mass., U.S.A., recently instituted a system of dealing direct with the consumer, and as they manufacture many lines of interest exclusively to experimenters, an opportunity is presented to the latter of obtaining apparatus that would otherwise be very difficult to acquire.

Paint Earth Plate Contacts.

WHEN an earth wire is soldered to a metal plate to form a buried earth plate, the joint should be thickly painted or tarred in order to lengthen the life of the joint. This precaution is especially necessary when tins or thin iron plates are used.

Holes in Sheet Metal.

DIFFICULTY is sometimes experienced in drilling holes in sheet metal used for interstage screening, especially if the material is thin. As a rule it will be found easier to punch the hole; provided a soft metal such as copper or aluminium is used there is no need for any special tool, as a rod of steel or even brass with one end filed square will serve quite well. It is essential, however, that the sheet in which the hole is to be made should be rested on the end grain of a piece of hard wood or similar material.



The tone-range of a small free-edge cone may be improved by the substitution of an eccentric-cone diaphragm, as shown by dotted lines in Fig. 1. The details for cutting this are given in Fig. 2.

FIG. 1

that does not reproduce the entire musical scale, or nearly so, is missing a great part of the joys of radio. The broadcasting stations have improved the quality of their transmitters, and radio reproduction is excellent—providing the receiver and reproducer are of the proper design.

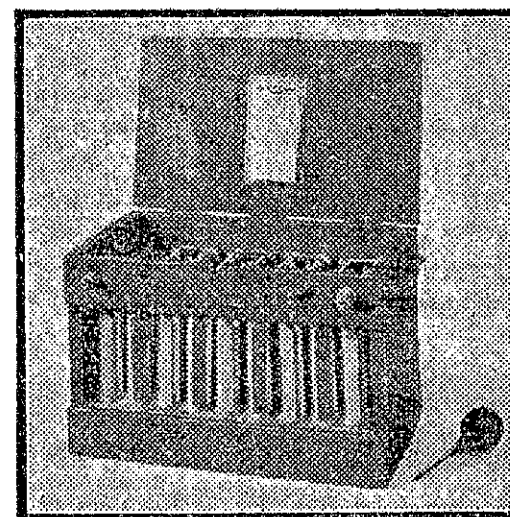
"The large cone speaker is capable of reproduction of the highest order, and when driven by a good radio receiver, will please the most critical. The users of the thousands of small, free-edge cone speakers sold during the past two years will be interested in learning of a simple, inexpensive way to transform these speakers into reproducing mediums that will compare very favourably with any of the speakers recently placed on the market.

C.A.V. Batteries

The World's Best

"B" Power

Type H.T.5—90 Volts.



2,500
M.A.

Price
£6/15/-

LAST TWO MONTHS BETWEEN
CHARGES ON 5 AND 6-VALVE SETS.

Guaranteed to lick all your eliminators
and dry batteries for efficiency and CLEAR
RECEPTION.

Take one home and try it.

Years of service.

Saves you pounds in dry batteries.

Recharged for 2/6 every two months.

Gruars Battery House

9 Majoribanks Street, 109 Albert Street, Ingestre Street,
WELLINGTON. AUCKLAND. WANGANUI.

Phone 20-937

Phone 45-696

Phone 4966