A Home-Built Loud Speaker Unit for Cone

By "Megohm."

A recent number of "Radio News" contains the following description of a home-built speaker unit which will no doubt interest many prospective constructors of cone speakers. This description was awarded a fifty-dollar first prize in a competition.

THIS loudspeaker unit may be built almost without cost by the mechanically-inclined radio amateur. It will operate a 36-inch cone-type loudspeaker very satisfactorily, and most of the parts required may be found in an experimenter's junk box. All that is needed are a Ford spark coil, a magnet from a Ford magneto, a small bobbin from a buzzer, a piece of soft iron 10 x ¾ x 1-8 inches, a piece of thin flexible iron 2¼ x 1-32 inches, a brass driving rod, nuts and screws.

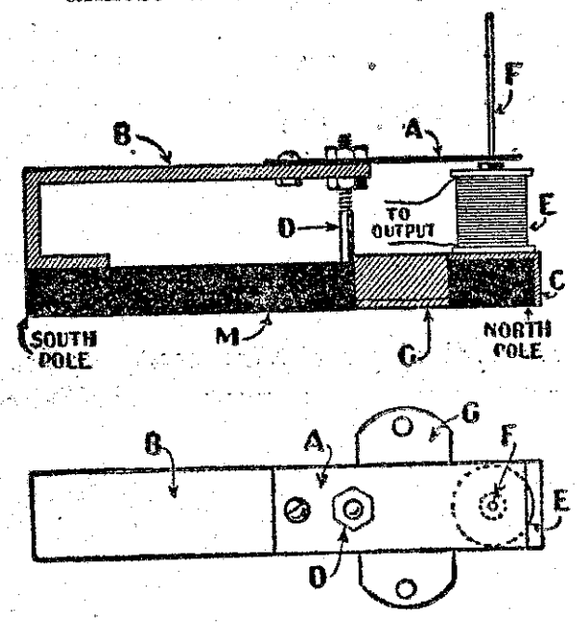

Fig. 1

Two drawings showing complete mechanical details of home-made speaker unit.

In the construction of the unit the first step is to break the magnet in two pieces and discard one half. Next, take the half which is to be used in building the speaker unit and determine the north and south poles with a pocket compass. This magnet is 4½ x ⅞ x 7-16 inches.

The 10-inch length of soft iron must be cut into three pieces with a hack saw. The first section is 4¾ inches in length and this is formed as illustrated at B (Fig. 2); the second section is 1½ inches long and is formed as shown at C; and the third section is used as a mounting bracket for the unit. The last section may be formed after the construction has been completed, and the design which should be followed is shown at G.

Winding the loudspeaker coil is the next problem to consider. Take a bobbin, similar to the one illustrated at E (Fig. 2), and wind it with wire removed from the secondary winding of a Ford spark coil. As much wire as possible should be placed on the bobbin.

After the directions given in the above paragraphs have been followed out, the various parts have been prepared and the unit may be assembled. In Fig. 1 the mechanical details of the completed unit are shown. As the magnet is hard and cannot be drilled, the various parts must be soldered in place. The 2¼-inch piece of flexible iron strip (A) serves as the armature and is fastened to section B as illustrated. Also holes must be drilled in A and B for the adjustment screw D. Now proceed by soldering the various parts to the magnet and the driving rod (F) to the armature.

After the speaker unit has been completed it may be connected to a cone in the usual manner; and the two wires from the coil connected to the output binding posts of the set. In order to adjust the speaker, the air gap between the armature and the pole-piece of the coil is changed until best results are obtained. This is accomplished by running the two nuts on the adjustment screw up and down.

IT should be understood that the above unit employing only a single electro-magnet, will require heavy volume to operate it successfully. Although the directions advise soldering to the magnet, most constructors would find this too difficult, and it would not improve the magnet. A better method would be to clamp on strips of 1-8th brass by bolts through holes in the projecting ends. Part B could be clamped to magnet in this way. Other parts could be soldered to the brass strips.

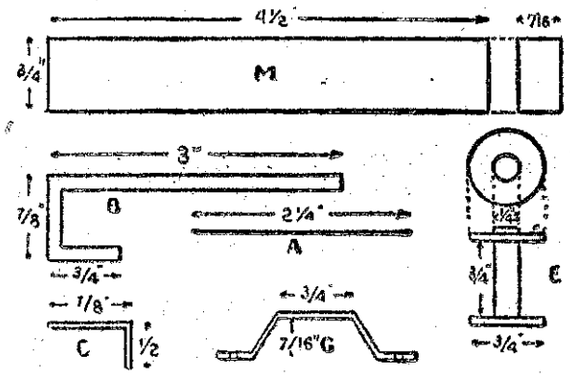

Fig. 2

Exact dimensions of parts used in building speaker unit are given above.

THIS article is given as an idea for any who may care to construct a driving unit for the linen-diaphragm speaker, but is not particularly recommended for that purpose.

It would be quite possible for an ingenious constructor to combine two small units with pair of coils opposing and armature between, and thus obtain the double action that is employed in some good types of cone speakers.

The balanced armature type of driving unit does not appear to be sold separately from the speaker in New Zealand at present. Inquiries at Harrington's Ltd., Wellington, elicited the fact that about the end of next month they will land a shipment of a unit very suitable for the purpose retailing at 35s.

A Medium-sized Unit.

A NUMBER of inquiries have come to hand regarding the suitability of the "Lessenola" unit, which is stocked by Messrs. L. M. Silver and Co., Manners Street, Wellington. This is a very satisfactory unit for the money where medium volume is to be dealt with by either horn or cone speaker, but is not sufficiently powerful to bring out the full capabilities of the linen-diaphragm speaker. This unit retails at 17s. 6d., complete with full-size patterns and instructions for making what is practically a three-foot semi-exponential horn of either heavy cardboard or three-ply. For 1s. 6d. extra a reed is supplied that will allow of the unit being used to drive a cone diaphragm.

Tuning Capacities for Frame Aerials

THE following figures may be of use to experimenters who are desirous of constructing loop aerials for their receivers. In order to cover the broadcast band of, say, 200 to 500 metres, the spacing between turns, being about ¼in., the following dimensions and tuning condenser capacities will be found useful. For a loop of about 2ft. square, and taking tuning capacities of 0.00025, 0.00035, and 0.0005, the number of turns will be respectively 20 turns, 14 turns, and 10 turns For a loop of about 3ft. square and using tuning condensers of the same three capacities, the turns will be respectively 16, 12, and 8. For a loop of about 4ft. square the turns for the condensers mentioned will be respectively 12, 8, and 6

These figures are given on the assumption that the loop is of the flat or the box type. In the latter the windings are all of the same area, whilst in the former type the area of the windings becomes smaller towards the centre. In using the foregoing figures with the flat type, take the area as being the average area of the loop.

It may be mentioned that the box type for a given area will be more sensitive as a pick-up of signal energy, but the flat or pancake type will be superior in directional properties. Again the flat loop is to be preferred with unshielded frame aerial receivers because of minimised coupling between the loop and the coils in the receiver.

QUERIES BY CORRESPONDENCE.

1. Every communication enclosing queries is to be addressed to "Megohm," Box 1032, Wellington, and must be accompanied by a stamped addressed envelope for reply by post, otherwise no reply.

2. Questions must be written so that a space is left in which the reply may be added.

3. Queries regarding articles that have appeared in this page will have first attention.

4. Owners of bought receivers and apparatus should communicate with the dealer or agent in case of trouble arising.

(End of "Construction.")

IN the advertisement for the Silver Marshall Screened Grid 6 in last week's issue, a misplacement of the address of the Master Agents for New Zealand, Bond and Bond, Ltd., occurred. The address of these principals is Commerce Street, Auckland.