

A SIMPLE CARBON MICROPHONE

BY P. H. P. HARRIS

THE unit to be described was made for home entertainment purposes, and has given much pleasure, although it is certainly not in the hi-fi class.

The carbon was obtained by crushing the rods from old dry batteries, and is sandwiched between two Meccano plates, each 2½ in. square, although they can easily be made up from sheet metal. Also required are two pieces of plywood, each 2½ in. square, and some ¼ in. x ¼ in. balsa strip. In the prototype, 3-ply only ⅛ in. thick was used, so that

and they must fill the space completely, or the microphone will make rattling noises as it is moved.

The two large paper washers and the upper plate are laid on top. This plate acts as the diaphragm; its lower surface and one upper corner is scraped clean. (This corner must be over the enlarged hole in the lower plate.)

The upper piece of plywood is used to cover the diaphragm, and present a neat appearance. A 1½ in. diameter hole is cut in its centre with a fretsaw (or a pattern of holes may be drilled), together with small holes in the corners for screws. Through one of these, a bolt 1 in. long is passed, and a nut screwed up tight.

A hole is drilled through the scraped diaphragm corner to the back. Washers are placed on the screws in the other corners to the same thickness as the nut, and the diaphragm cover is screwed down. The bolt from the top plate must not touch the lower plate. A further nut and terminal are placed on this bolt.

The corners can now be rounded off, and the microphone painted, if so desired.

The Circuit

The circuit is shown in Fig. 2. When the diaphragm vibrates, the resistance between the terminals varies. When a voltage is applied, the

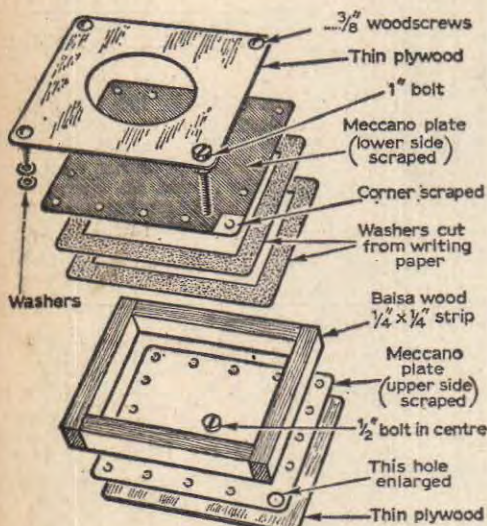


Fig. 1: Illustrating the simple construction of the microphone.

the finished microphone was both light and slim. The balsa wood can be obtained from any do-it-yourself shop.

Construction

Construction is shown in Fig. 1. The lower plate, with its upper surface scraped clean of paint, and one corner hole enlarged, is glued over one piece of plywood. (Evo-stik is a suitable adhesive agent.) A hole is drilled in the centre of the plate to take a small bolt, and a nut and a terminal are fitted to the bolt. The balsa sides are then glued in place.

The tray can now be filled with the crushed carbon. The particles must be as small as possible,

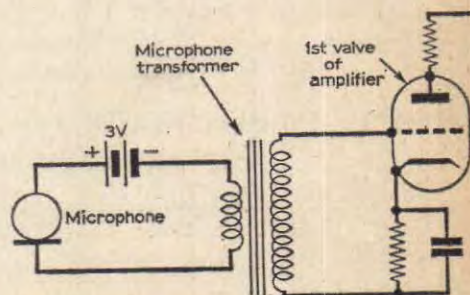


Fig. 2: The input circuit used with the microphone.

varying current induces a varying e.m.f. on the secondary of the transformer, which is amplified in the usual way.

A microphone transformer with a ratio of 50:1 will be suitable. The author used a small bell transformer, connecting the microphone to the 5V output, and the amplifier to the 230V input. ■