

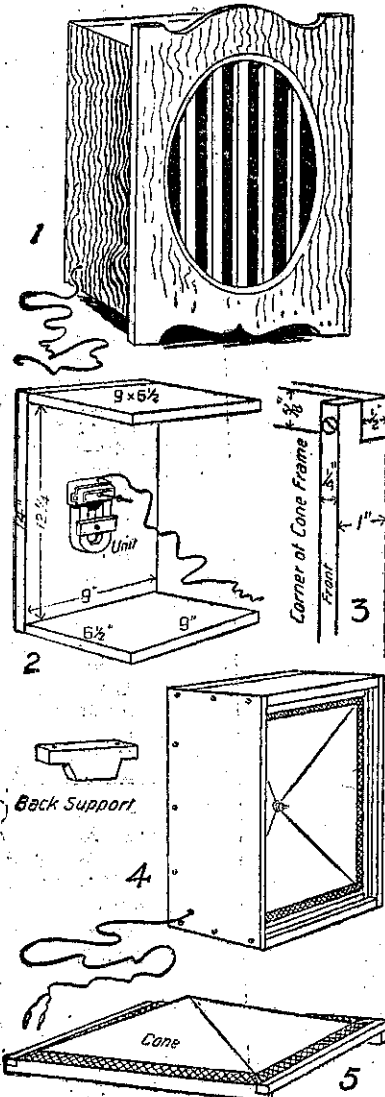
A Quality Loud-Speaker

A Novel Cone-Speaker Easily Constructed



THIS loudspeaker that has been specially designed to suit the "Blue Spot" 66A unit, which has a four-pole balanced armature, which makes it particularly suited for handling large volume with consequent emphasis of the bass. The speaker will be found to have a pleasing mellow tone, not always a feature of home-constructed speakers, and owing to its particular design, static and unwanted high frequencies are well subdued, whilst, provided the amplifier is reasonably efficient, the quality of music and speech will leave little to be desired.

Figure 1 shows the completed speaker, which may be finished in any particular way the constructor fancies,



but dark stain produces a very satisfactory finish. The front grille is not an essential portion of the speaker, but gives a pleasing and ornamental finish. The design of the front may be altered to suit the taste of the constructor, or it may be dispensed with altogether.

An essential feature of the woodwork is that it should be a good and

By "MEGOHM"

solid job. The main portion is constructed of three pieces of inch rimu as shown in Figure 2. The 1-in. timber will be actually 7-8 thick. The unit is attached to the back by a strip of wood through which a wood screw passes. This method of attachment makes it an easy matter to alter the position of the unit slightly when placing the cone. The unit is first to be secured with its driving spindle exactly over the centre of the back of the case.

Sides of 3-8 or $\frac{1}{2}$ in. timber are now to be fitted and screwed on, the joints to be filled with glue or seccotine.

A light frame to hold the cone is now made from two strips of rimu 1 by $\frac{1}{2}$ in. and two strips 5-8 by $\frac{1}{2}$ in. The length of the latter will be about 9 in., and the former about 12 $\frac{1}{2}$ in. The method of joining the corners is clearly shown in figure 3, a $\frac{1}{2}$ in. hole being drilled through the end of the $\frac{1}{2}$ in. strips to take a No. 5 $\frac{1}{2}$ in. screw. This frame should be close-fitting to the inside of the case, so that it will "stay put" whilst adjusting the cone.

The cord to the unit is led out at the most convenient place.

The front may be of $\frac{1}{2}$ in. rimu, and the bars a full $\frac{1}{2}$ in. wide and $\frac{1}{2}$ in. thick. These should be drilled at the ends and secured by thin screws in order to avoid splitting the front. The total height of the front is 17 inches, and width 10 $\frac{1}{2}$ inches, which allows it to project about $\frac{1}{2}$ in. each side. The method of marking out the oval opening is shown in figure 3. A vertical centre line is drawn, and at right angles to this at a height of 8 $\frac{1}{2}$ inches another line is drawn, the intersection being the centre of the oval. At a distance each side of centre on the vertical line, 3 $\frac{1}{2}$ in., a pin or small brad is inserted (B and C), and at A, 3 $\frac{1}{2}$ in. from the centre, a pin is also inserted.

Now tie a piece of thread round the outside of the three pins, forming a triangle. Next withdraw the pin A and in its place hold the point of a pencil, which can be moved around as if to form a circle, keeping the thread taut, and an oval of the required size, 10 $\frac{1}{2}$ in. by 7 $\frac{1}{2}$ in., will be drawn. This is then cut out with a keyhole saw and the front edge well rounded off with a spokeshave and glass-paper.

Two strips 1 in. by $\frac{1}{2}$ in. are screwed to the back as shown in figure 8. When attaching the front to the case for the first time, a few scraps of thick cardboard should be placed on the edges of the case so that a space of 1-16 in. or so will be left between case and front to prevent any chance of rattle.

When finished, the under side of the speaker is 1 5-16 in. above the table, and the back support is made the requisite height.

Making the Cone.

MATERIAL for the cone is made by pasting together two thicknesses of soft "cover-paper" obtained from a printer. The most suitable kinds are usually in good grey and brown shades. Paper with a hard, glossy finish is un-

suitable. Two pieces 15 in. square pasted together will be sufficient. Use cornflour paste, and dry for a few hours under flat pressure.

Fig. 6 shows how to mark out the cone. First describe a circle with a radius of 7 $\frac{1}{2}$ in. In lieu of compasses, use a strip of cardboard with a pin at one end, and a hole for the pencil point, just 7 $\frac{1}{2}$ in. from the pin. Now mark a point on the circle, and from this measure off a straight line 10 5-16 inches long, and from each end of this in the same manner mark off 7 7-8 in. and another 10 5-16 in. Now join these points to the centre, and at X draw a line $\frac{1}{2}$ in. outside the one running to the centre. This $\frac{1}{2}$ in. is for joining up.

Fold the cone along the four dotted lines, keeping the pencil marks outside, and join up with seccotine, keeping the $\frac{1}{2}$ in. piece on the outside, where it will not show. We now have a cone of pyramid shape.

A floating edge has now to be attached, and this may be of thin chamois leather preferably, but thin fabric such as serge or calico may be used if cut "on the bias." One strip is required for each of the four sides, width a little over one inch.

Now apply seccotine to a width of $\frac{1}{2}$ in. to the outside edges of the cone, and attach the leather or fabric strips, overlapping $\frac{1}{2}$ in. At the corners mitre the strips, but do not overlap them.

When the strips are firmly attached to the cone the frame is taken, and to the side on which the wood strips are all level the floating strips are carefully pinned down in position. When correctly centred, remove the pins one by one, and apply seccotine to hold the leather or fabric, which should not be

pulled too tight, though slackness must be removed.

Adjusting the Cone.

WHEN all is set, the speaker is placed on its back, and the cone, with hole at the apex, is gently lowered, keeping even with sides of the case. If it does not drop exactly over the end of the spindle, feel for its position to show how far the unit is to be moved, and finally get the spindle to its exact position.

The back nut should be about half an inch from the end of the spindle, and should be secured to it with seccotine at the back. Figure 7 shows the order in which washers are placed upon the spindle. The card washers may be thick paper, and the metal washers should not exceed 3-8 in. diameter. Screw up tightly, as any slackness means loss of volume. Finally, secure the front nut with seccotine to prevent it working loose and rattling.

Now, with the speaker connected to the receiver giving good volume, adjust the cone by moving backwards or forwards until the best position is found. The tendency should be to keep the cone forward as much as possible.

When the position has been settled, the cone may be held in place by a couple of small brads through the $\frac{1}{2}$ in. strips of the frame.

The 66a unit retails at 30s., and may be procured through any radio dealer, but in case of difficulty may be obtained from the Rodger Importing Co., 159 Manchester Street, Christchurch, for 31s. post free.

A Baffle-board Cone.

A cone with less work in construction can be made for a balanced-armature unit by pasting together three thicknesses of cover paper as already mentioned. Cut out a circle nine inches diameter, cutting out a wedge-shaped section of 50 degrees or 1-7th the circumference. Join with seccotine.

The baffle-board is three-ply 2ft. by 3ft., or larger, with a round hole in the centre half an inch larger in dia-

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