

The fact that the receiver proper is "sunk" a trifle behind the extreme front of the carrying case permits the attractive and strong-hinged cover shown in the diagrams. The back of the cabinet may also be hinged if desired, but in the original receiver the inner framework was permitted to slide three-eighths of an inch inside the cabinet (by narrowing the shelf in front of the receiver panel), the back then taking up this space and being secured by miniature turnbuckles.

It will be noted that the inner framework (which should be very lightly constructed) has a number of thin laths screwed or glued round its outer edges so as to leave a channel within which the frame aerial is later to be wound. The dimensions of this inner framework must be such that, with the laths in position, it will just slide within the carrying case. Thus, if the

the constructor to beg, borrow or steal one of these useful tools, or else have the fret cut by a tradesman or friend. The designs shown need not be slavishly copied, and an opportunity presents itself for quite artistic treatment by those so inclined. It should be remembered that the fret should neither be so "solid" as to impede the radiation of sound, nor yet so delicate as not to be sufficiently robust to stand an occasional knock. The speaker unit specified is supplied with very full instructions as to the mounting and making of a suitable free-edge cone, so that there is no need to spend space unnecessarily on a description of these operations.

As regards finish, the timber may either be stained and suitably polished or varnished, or it may be covered with imitation leather glued on. The imitation leather is not very satisfactory

going to use the receiver on an outdoor aerial or not. It will be seen that provision for use on an outdoor aerial has been made (dotted) in both theoretical and practical wiring diagrams. Where the frame only is to be used, best results will be secured by having the reaction winding on the frame, but if this arrangement were to be used with an outdoor aerial, it would be capable of causing interference to other listeners if improperly handled, and moreover, would contravene the regulations governing receiving sets. For use with an outdoor aerial, the reaction winding should be transferred to the second high-frequency transformer, the use of an aerial more than compensating for the change. If it is desired to use only the frame aerial and have the reaction winding coupled thereto, this latter should consist of 9 turns of about gauge 26 D.C.C., spaced a little distance (an inch or less) away from the main wiring. The direction of winding is immaterial, since the leads to the reaction winding can readily be reversed if it is found on test that increasing the reaction condenser reduces signal strength.

THE next step is the construction of the high-frequency transformers L2 and L3. The formers for these are built up of three discs or hard rubber, bolted together with a small brass bolt through their centre, the inner disc being 2½ inches in diameter, and the two outer ones 3 inches. In the case of the second, or tuned transformer, a "wing" may be left on one of the larger discs, this subsequently being used for mounting by means of an angle bracket, but the first or fixed tune transformer must be supported in a horizontal position at such a height as to clear the bulb of the first valve which, as will be seen, is mounted in a horizontal position. Thus this fixed tune transformer must be screwed to a short piece of wooden dowelling which is in turn secured to the baseboard by a screw passed up from underneath.

At this point, the writer considers it will be convenient to stop this instal-

Screen-Grid Radio

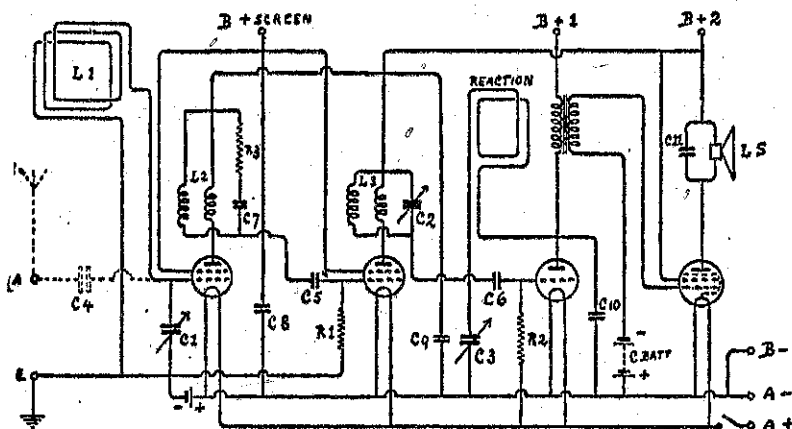
THE following paragraph from an American magazine, relative to the application of the screen grid to the "Majestic" radio receiver, will be of interest. "Approached on the matter of applying the screen-grid valve to 'Majestic' receivers, the directors have stated that their firm will not use this valve until they are satisfied that both circuit and valves are of higher quality than those they are using. The trouble screen grid manufacturers have had, and the fact that there are more 'Majestics' sold than the nearest two competitors, prove they claim, the wisdom of their statement. Majestic, it is stated, will use screen grid only when convinced that these have been perfected, and better results than those at present obtaining may be secured."

A Unique Broadcast

Talkies on the Air

WHEN station 2ZM, Gisborne, broadcast the talkies from a local theatre on Friday last they claimed that this was the first time in New Zealand's radio history that such a broadcast had taken place. It was certainly something entirely novel. We listened to this station, and were surprised at the clarity and general excellence of the broadcast. The "talkie," "The Singing Fool," could be followed throughout, and even the plot could be visualised. Technically, the broadcast was well-nigh perfect, and this station is to be congratulated on its efforts.

In next week's special issue the remaining constructional details will be given.



THEORETICAL CIRCUIT DIAGRAM.

C1, C2, 0.0005 mfd.; C3, 0.0001 mfd.; C4, 0.0002 mfd.; C5, 0.0005 mfd.; C6, 0.0003 mfd.; C7, 0.0001 mfd.; C8, 0.003 mfd. or larger; C9, 2mfd.; C10, C11, 0.002 mfd.; R1, 2 megs.; R2, 2 megs.; R3, 600 ohms. The 600 ohm resistance R3 should be readily procurable, as resistances of about this value are in common use as series grid resistances. A suitable resistance can, however, be made by winding a few yards of very fine Eureka or other resistance wire round a small flat piece of insulating material.

Dimensions given are adhered to, the inner framework will be 15½ inches by 16½ inches over all; the dimensions minus the laths will, of course, be 15½ inches by 16½ inches, since the laths are one-eighth inch thick. Quarter-inch stock may be used for building up the

for covering the speaker fret, and it is perhaps best to leave a circle uncovered, and stain and polish the timber within this area.

With the sketches given and the foregoing notes, the constructor should not have much difficulty in completing the

List of Parts for "Tongariro" Portable

- 1 Panel, 15½ x 7 1-8 x 3-16 in.
- 1 Portable Cabinet with baseboard and loud speaker panel.
- 1 Loud speaker unit (e.g., Blue Spot 66k.).
- 2 Variable Condensers, 0.0005 mfd.
- 1 Reaction Condenser, 0.0001 mfd (midgirt type).
- 1 "On and Off" Switch.
- 4 Valve holders.
- 2 Grid leaks, 2 megohms and holders.
- 1 Resistance, 600 ohms.
- 1 L.F. transformer.
- 1 Dry Cell (Ever Ready "0" type).
- 1 Fixed Condenser, 2 mfd.
- 1 Fixed Condenser, 0.0001 mfd.

- 1 Fixed Condenser, 0.0002 mfd.
- 1 Fixed Condenser, 0.0003 mfd.
- 1 Fixed Condenser, 0.0005 mfd.
- 2 Fixed Condensers, 0.002 mfd.
- 1 Fixed Condenser, 0.003 mfd.
- 1 2-volt Accumulator.
- 1 "B" battery, 120 volts.
- 2 Valves, 2-volt screen-grid.
- 1 Valve, 2-volt detector.
- 1 Valve, 2-volt pentode.
- 5 Wander Plugs.
- 2 Spade Ends.

Wire for coils as specified, Systoflaw or Glazite screws, etc.

inner framework, which, as has been mentioned, is 5-8 inches wide. It is not really necessary to dovetail the corners, which may instead be firmly screwed; even the outer carrying case may be securely screwed together if the constructor is not sufficiently adept with woodworking tools to tackle dovetailing.

The fret for the speaker is centrally located in the panel provided for its accommodation. It is practically impossible to cut this fret without a fret saw, so that it will be necessary for

carrying case and inner framework, and making and mounting the speaker. It is suggested that the winding of the frame aerial should be the next operation.

THE main winding of the frame is a simple, straightforward winding of 13 turns of gauge 20 or 22 D.C.C. the turns being spaced by about the diameter of the wire. Before winding any reaction winding on the frame, however, the constructor must decide once and for all whether he is ever

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