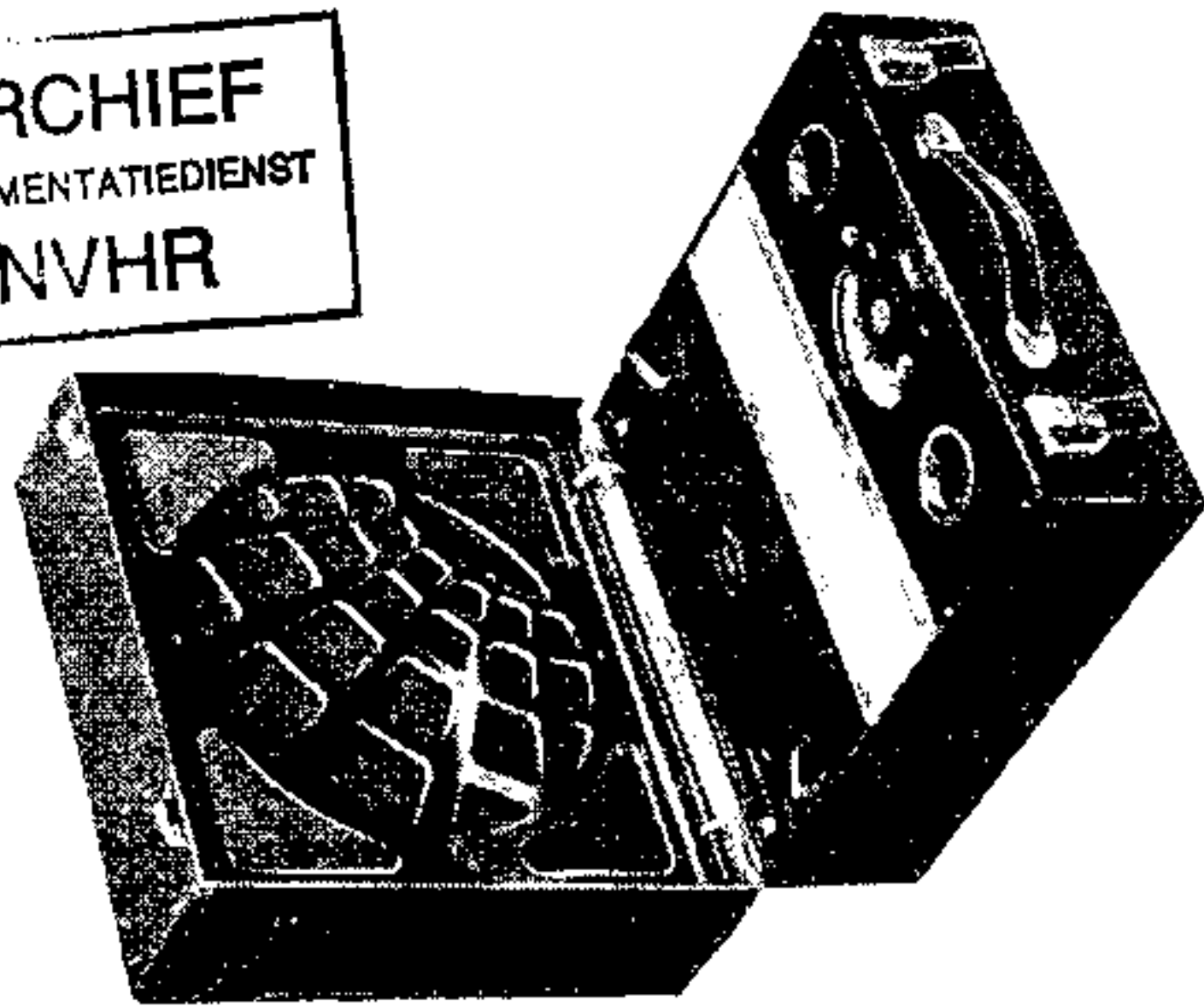


Fig. 11A.—THEORETICAL CIRCUIT DIAGRAM OF DUPLIX FOUR ('S') TYPE

v. Historie v/d Radio Met dank aan John Koster

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The S.M.C. Duplex portable introduced by McMichael Radio, Ltd., for the 1933-34 season is very similar to earlier models. Differences are mentioned under "Special Notes."

**Circuit.**—The H.F. valve, 215 S.G. (V1), is preceded by the frame aerial, of which the L.W. section is short circuited for use on M.W. Bias is obtained from a potentiometer in the negative H.T. lead (R11), and the grid circuit is decoupled. Coupling to the next valve is by H.F. choke and capacity feeding the tuned grid coil. Volume is controlled by a filament rheostat.

The detector valve, HL210 (V2), works as a leaky grid detector with reaction applied to the grid coil by a rotating coil inside the tuned grid coil former. This is fed through a condenser C7 from the detector anode.

Optimum operating conditions are obtained by taking the grid return lead to the centre tapping of a potentiometer across the filaments.

L.F. coupling consists of a parallel fed transformer with the low (AC) potential end

# McMICHAEL S.M.C. DUPLEx FOUR PORTABLE

of the primary returned to the H.T. + line at the decoupling resistance.

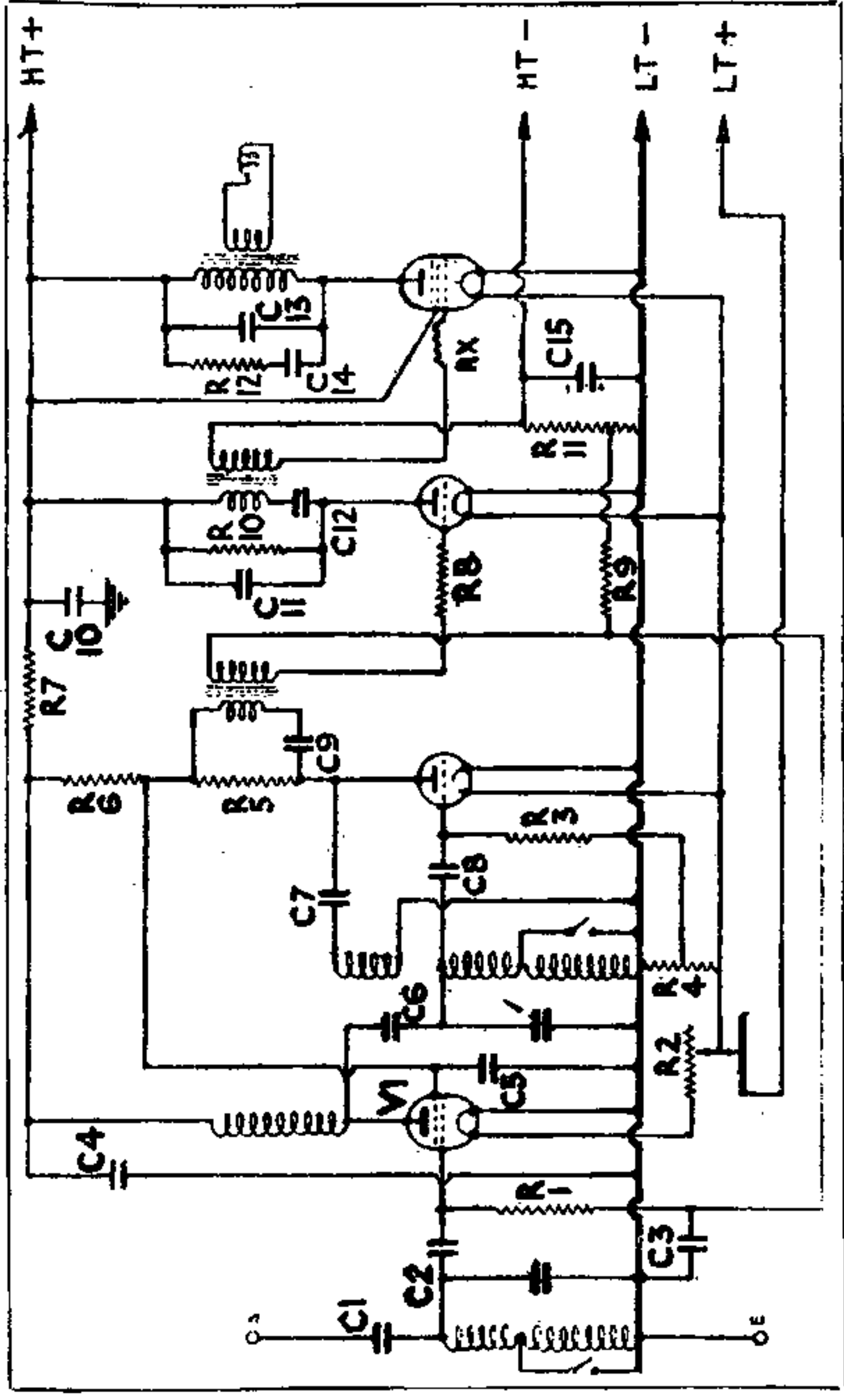
The L.F. valve, HL210 (V3), has an H.F. stopper in the grid circuit. Grid bias is obtained from the same tapping in the H.T. potentiometer as V1. The L.F. coupling is another parallel fed transformer, but in this case a condenser C11 is connected across the coupling resistance (see special notes on previous models).

The output valve, Pen.220 (V4), is biased from the H.T. negative tapping and is tone

compensated by a condenser across the primary of the output transformer and by a condenser in series with a resistance (C14, R12).

**Special Notes.**—The screen potential for V1 is obtained from the low H.T. potential end of the detector anode decoupling resistance.

In previous M.C. models the second L.F. transformer was used with "straight" coupling (Continued on next page.)



H.F., detector, L.F. and pentode valves, constitute the basis of the straightforward circuit of the McMichael Four portable. Rx the grid stabiliser of V4 is 100,000 ohms.

## McMICHAEL DUPLEX PORTABLE (Cont.)

ling and with a condenser across the primary, and the anode circuit of the pentode had an H.F. choke between the anode and the transformer. Also the grid circuit of the pentode had a grid stabilising resistance and the anode circuit had an H.F.C. between the anode and the transformer.

In still earlier models the speaker was of the moving-iron type and was used with a triode output valve.

**Removing Chassis.**—Undo the eight screws round the edge of the panel and, easing the panel slightly towards the back of the set, raise it up and stand the assembly on top of the valve compartment. This reveals most of the components.

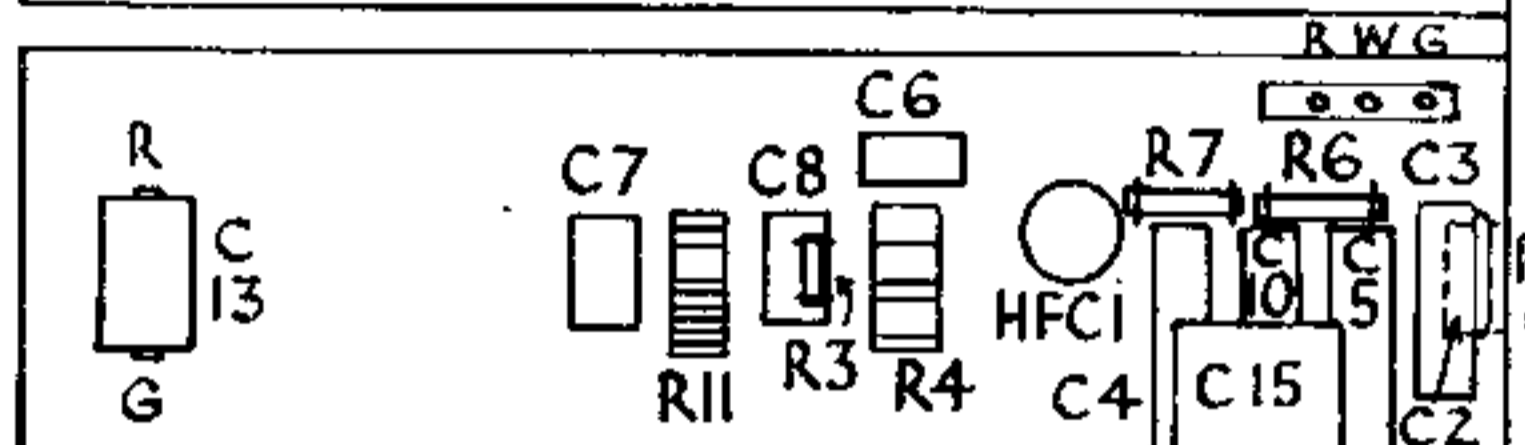
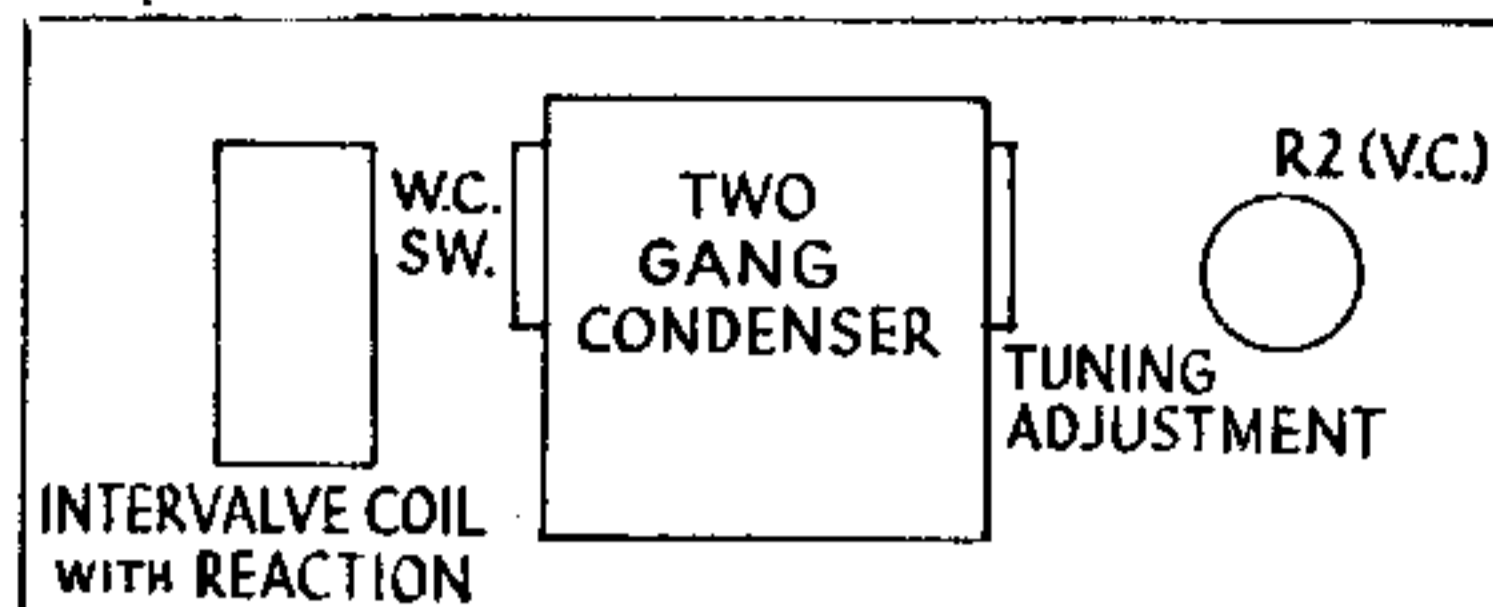
To reach the underside of the valve compartment, remove two screws at each end and unsolder the three leads to the terminal strip on the right-hand side, the two leads to the condenser C13 on the left-hand side, and the

### RESISTANCES

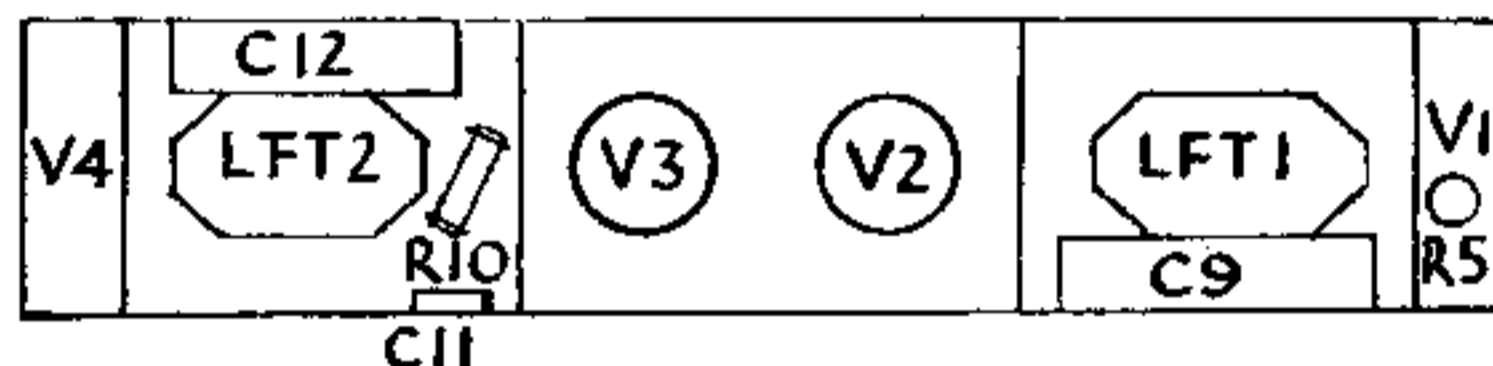
R.	Purpose.	Ohms.
1	V1 grid leak ... ..	.5 or .44 meg.
2	Volume control rheostat ... ..	26.5
3	V2 grid leak ... ..	2 meg.
4	V2 grid return ptr. ... ..	250 + 250
5	V2 anode coupling ... ..	30,000
6	V2 anode decoupling ... ..	50,000
7	V1 and V2, H.T. decoupling ... ..	10,000
8	V3 grid stopper ... ..	.5 meg.
9	V3 grid decoupling ... ..	.5 meg.
10	V3 anode coupling ... ..	30,000
11	Bias ptr. in H.T.—lead ... ..	180 + 380
12	Part of tone compensating circuit.	5,000

### CONDENSERS

C.	Purpose.	Mfa.
1	Aerial series condenser ... ..	.00003
2	V1 grid ... ..	.001
3	V1 grid bias decoupling ... ..	.25
4	H.T. decoupling to V1 and V2 ... ..	1
5	V1 screen and V2 anode decoupling ... ..	1
6	H.F. feed to tuned grid coil ... ..	.001
7	Reaction feed ... ..	.001
8	Detector grid condenser ... ..	.0002
9	L.F. feed to first L.F. transformer ... ..	.5
10	Between H.T. + and chassis ... ..	1
11	H.F. by-pass anode V3 ... ..	.001
12	L.F. feed to second L.F. transformer ... ..	.5
13	Tone compensating circuit, anode V4 ... ..	.005
14	Tone compensating circuit, anode V4 ... ..	.003
15	Across bias ptr. ... ..	10 el.



How the components are arranged in the chassis of the McMichael S.M.C. portable.



Some components are actually mounted under the valve compartment as shown here.

earthing lead from the front screen. These leads are coloured underneath the systoflex and the connections as given in the diagram are R., red; W., white; and G., green.

The valve compartment can then be eased upwards.

**Removing Frame Aerial and Speaker.**—Remove the six screws round the outside of the lid and ease the assembly out from the top first.

**General Notes.**—The volume control and

### VALVE READINGS

Valve.	Type.	Electrode.	Volts.	M.A.
1	215 S.G. ...	anode ...	103	.85
		screen ...	60	
2	HL210* ...	anode ...	98	.7
3	HL210 ...	anode ...	88	.9
4	Pen. 220 ...	anode ...	116	.4
		aux. grid	120	.8

\* Short or screened leads should be used as otherwise valve will oscillate and register between .2 and .4 m.a.

the switch are in one unit, the switch being operated by the rheostat arm by means of pressing the contact spring outwards when in the minimum position. Owing to the comparatively long period taken for V1 filament to cool, there is a slight delay in the action of the control.

The tuned grid H.F. coil with the reaction coil are mounted on the panel as a one-hole fixing unit.

The sections of R11 (wire-wound) are 180 and 380 ohms respectively. The total current for the set flows through this resistance and the 180-ohm section is connected to chassis.

The tone compensating resistance and condenser R12 and C14 are inside the lid.

**Replacing Chassis.**—Lay valve compartment in position with panel on top. Resolder the three leads on the right (order—red, white, green, from the inside), and resolder the L.S. leads to C13 and the earthing lead for the screen, on the left-hand side. Replace the holding screws.