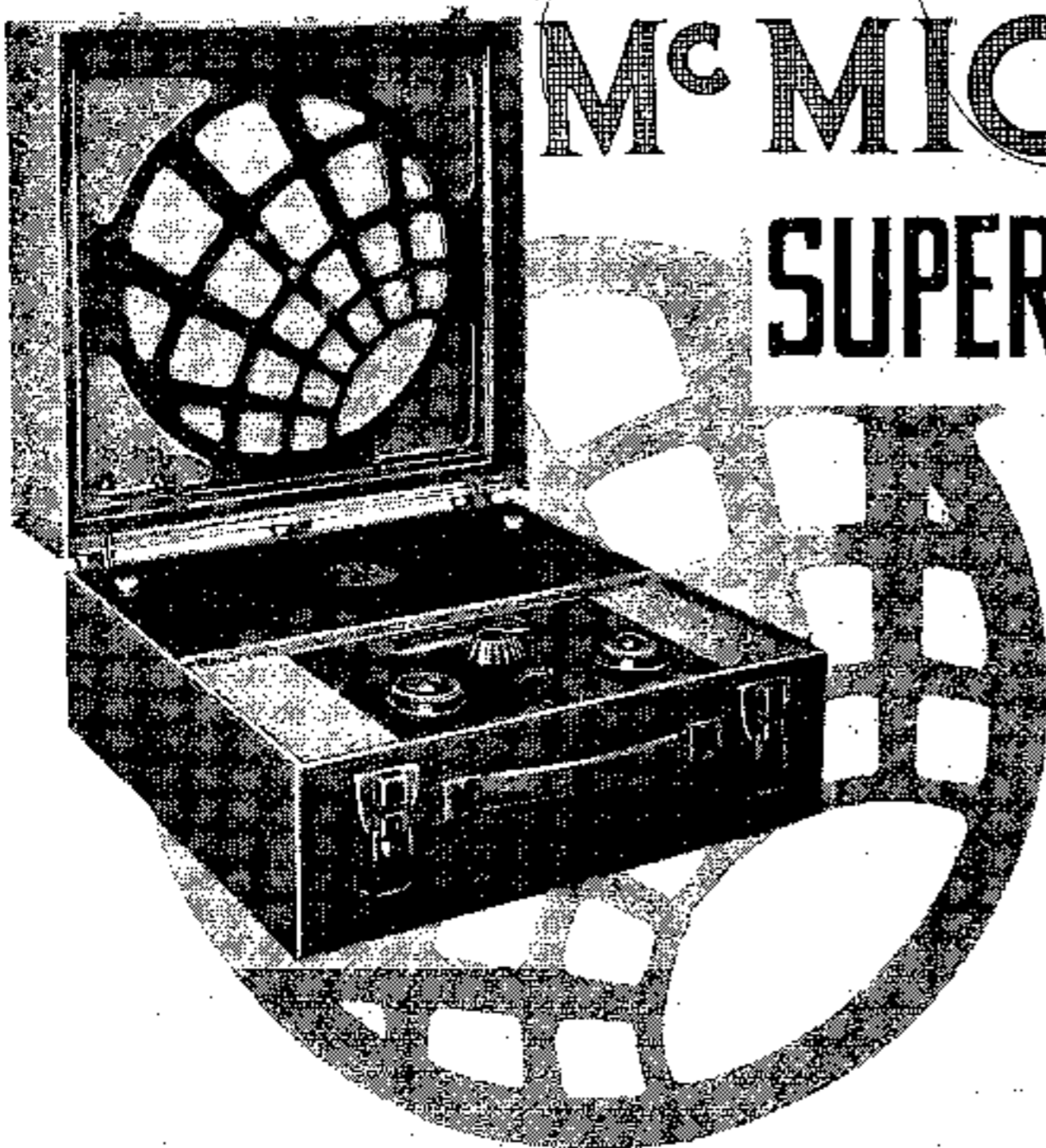


# McMICHAEL

## SUPER RANGE PORTABLE FOUR

A Well-known Portable in its  
Latest Form.



**S**INCE its introduction in 1928, the McMichael Super Range Portable Four has enjoyed a pre-eminent position among suitcase portables, or, for that matter, among battery portables of any type. When the performance of some new portable is under discussion it is not long before the question is asked: "How does it compare with the McMichael Super Range Four?"

In the matter of range the latest edition of this receiver worthily upholds the reputation of its predecessors. The finish and general workmanship are, if possible, even better, while the selectivity shows a definite advance. Under test in Central London the London National transmitter occupied a band of not more than five metres wide, while the Regional extended only from 335 to 370 metres. Even at five miles from Brookmans Park there was a clear band of forty metres (285 to 325 metres) between the two stations when making use of the directional properties of the frame.

Sensitivity on the medium broadcast band is exceptionally high for a receiver employing a frame aerial, and during a single evening's test twenty stations, in addition to those of the B.B.C., were received at good loud speaker strength. Of these, thirteen required some diminution of the volume control, or, alternatively, reaction in order to reduce the volume to a comfortable level for the average room.

The long waves provided seven stations in addition

to Daventry, and the volume control could be used with advantage when receiving Radio Paris.

The circuit consists of a screen-grid H.F. amplifier followed by a leaky-grid detector and two transformer-coupled L.F. stages. Undoubtedly the outstanding feature of the circuit is the provision of automatic grid bias for the H.F. and L.F. valves. This is a feature which we should like to see more extensively employed in portable sets and other battery-operated receivers. Not only is the possibility of failure of the grid-bias battery eliminated, but, what is even more important, the bias is automatically adjusted to the H.T. voltage as the battery runs down during the normal course of its life. It will be seen from the diagram that the bias is obtained by means of a resistance inserted between H.T.— and L.T.—, a potential difference being established between the ends of this resistance by virtue of the total anode current of the receiver. The full bias voltage is applied to the last valve, and a tapping near the L.T.— end provides a proportionally lower bias for the H.F. stage and the first L.F. amplifier. The bias connections to these valves are adequately decoupled.

Decoupling is also provided for the H.T. supply to the detector valve, which is generally the most prevalent source of instability in a multi-stage set. The

screen-grid potential is also taken from this point, the detector valve and its decoupling resistance functioning as a potentiometer.

Tuned-grid coupling is used between the H.F. and detector valve, the condensers in the grid and anode circuits of the screened-grid valves being ganged with an adjustable trimmer in parallel with the input circuit. Reaction is of the variable magnetic type, with a small rotating coupling coil mounted inside the tuned-grid inductances. In the detector stage an interesting refinement is to be found in

the use of a fixed-filament potentiometer for applying exactly the right positive grid bias to give the best compromise between detector efficiency and smoothness of reaction. There is little to note in the L.F. stage except that a series resistance in the grid circuit of the first L.F. amplifier and a by-pass condenser across

### FEATURES.

**CIRCUIT:** Four valves. Screen-grid H.F., (tuned grid coupling), leaky-grid detector (with reaction), two L.F. stages (transformer coupled).

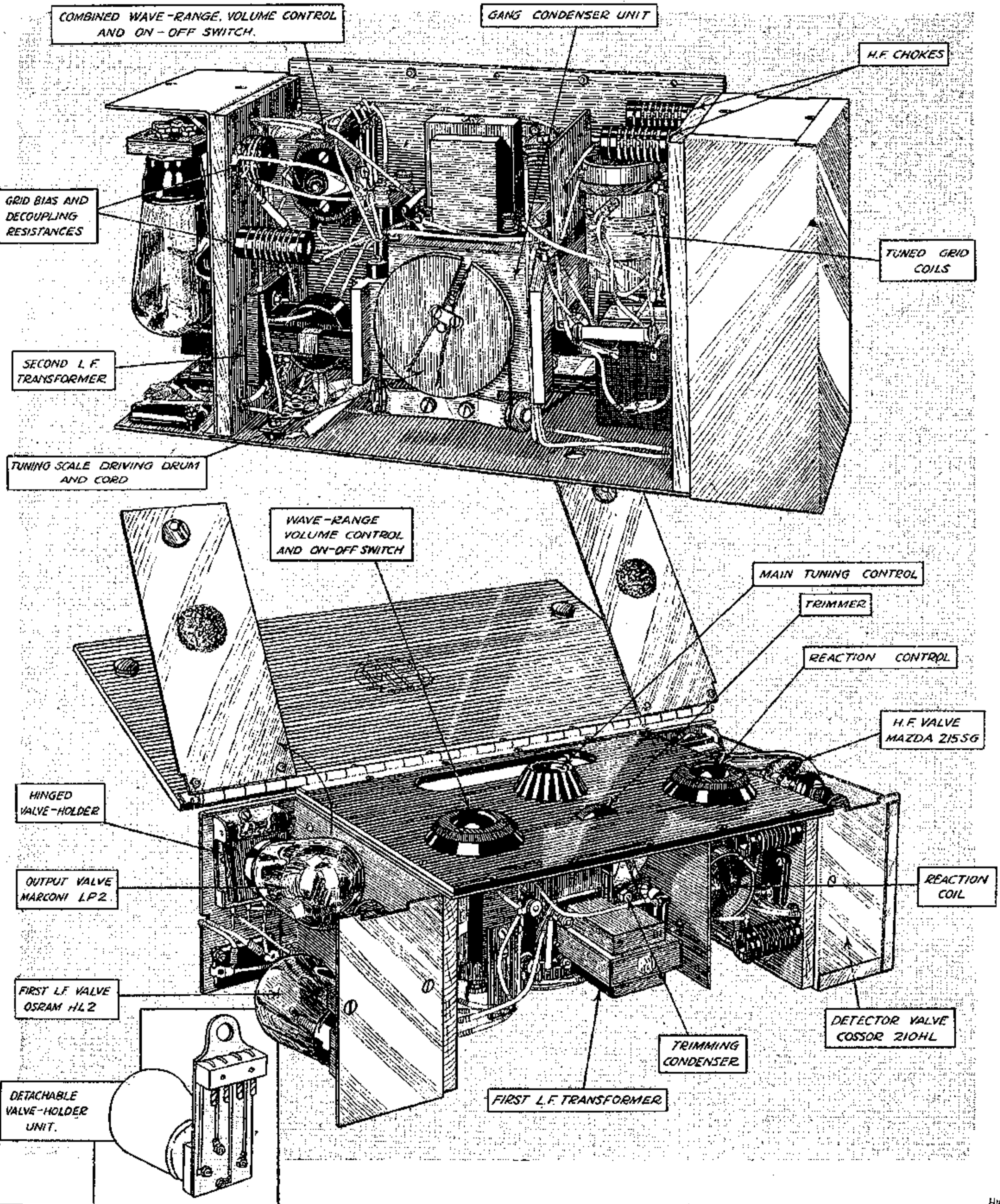
**CONTROLS:** (1) Main tuning control. (2) Trimming condenser. (3) Reaction. (4) Combined wave-range, volume control and on-off switch.

**GENERAL:** Provision for H.T. eliminator. Loud speaker tone control. Automatic grid bias.

**PRICE:** 22 guineas.

**MAKERS:** L. McMichael, Ltd., Slough, Bucks., and 179, Strand, W.C.2.

SUPER RANGE PORTABLE FOUR.



Constructional details of the chassis in the McMichael set.

**McMichael Super Range Portable Four.—**

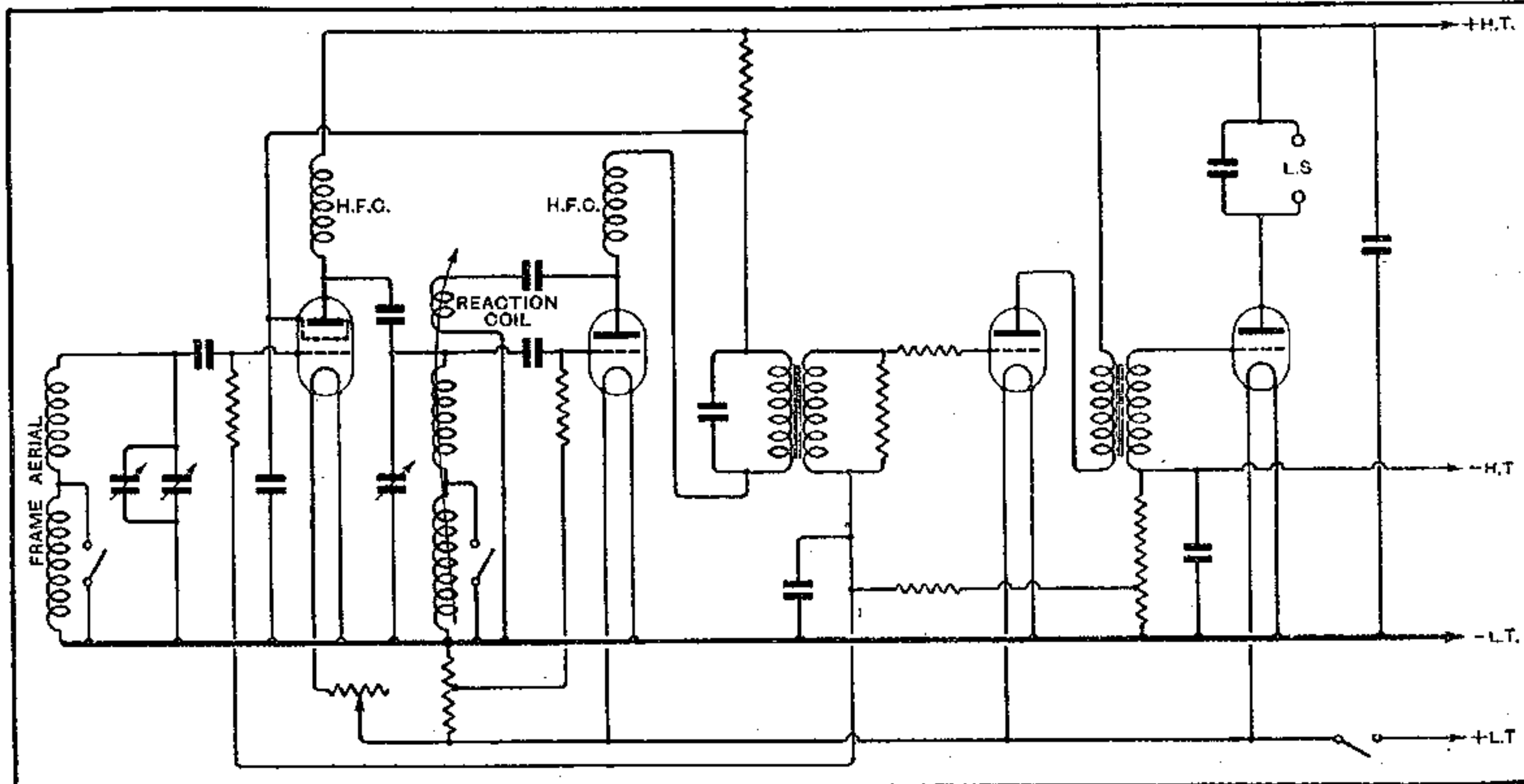
the loud speaker terminals are provided to keep stray H.F. current out of the loud speaker leads. This is essential as the frame aerial and loud speaker are mounted in close proximity inside the lid of the cabinet. Incidentally, the loud speaker winding is provided with two alternative tappings which give either brilliant or mellow quality by virtue of the alteration in the matching between the loud speaker and the output valve.

Structurally, the chassis is a model of neat design, and considerable ingenuity has been displayed in arranging the parts in the comparatively restricted space available. The valves are readily accessible in separate

rheostat, ganged to the wave-range switch. In the mid-position the cam of the wave-range switch completely disconnects the L.T. circuit, while movement to the right or left increases volume on the long or medium wavebands respectively, as the filament resistance is reduced.

**Economy of H.T. Current.**

The controls are smooth in operation, and reaction is free from overlap. The volume control, however, is inclined to be sluggish owing to the slight time lag in heating up the filament of the screen-grid valve. One soon becomes accustomed to the somewhat delayed



Schematic circuit diagram of the McMichael Super Range Portable Four.

compartments on either side of the chassis. The screen-grid and output valves are mounted in hinged valve-holders, which can be tilted upwards for the removal of the valves, while the detector and first L.F. amplifier valve-holders take the form of special carriers which can be removed from the set as a complete unit.

**Ingenious Ganged Controls.**

The tuning dial is of the horizontal type actuating a continuous cord attached to the drum of the dual tuning condenser. The latter is massively constructed with a die-cast frame and is provided with solid end vanes. The layout of controls is neat, and the main tuning control occupies the centre of the panel immediately below the horizontal scale. The trimmer is a single-vane solid dielectric condenser operated by a small knurled knob mounted edgewise and just protruding above the surface of the panel. The right-hand dial actuates the reaction-coil rotor, and the corresponding dial on the left is the combined wave-range, volume, and on-off control. The latter is a well-known McMichael feature, and consists of a divided filament

response, however, and it cannot be regarded as a serious drawback.

The set is quiet in operation and is free from the background noise often associated with the long-wave range in receivers of this type.

Quality of reproduction is well maintained up to a volume level which is more than sufficient for indoor use and which leaves a considerable margin for outdoor listening conditions where more volume will probably be required.

On the score of range and selectivity and in the matter of general finish and attention to detail the McMichael Super Range Four sets a very high standard. It only remains to add that the performance is not obtained at the expense of excessive H.F.-current consumption, for the total demand on the battery when new is less than eight milliamperes.