

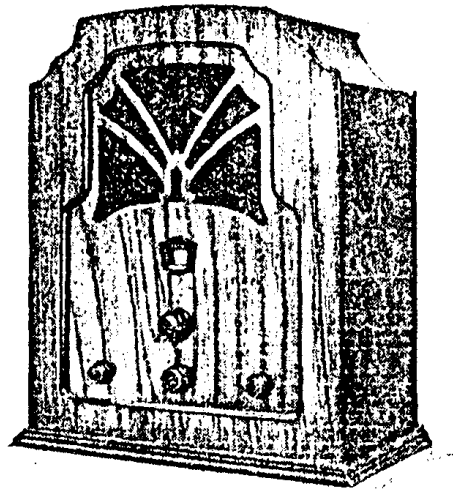
## REGENTONE A.C. 3-VALVE

IT is hardly an exaggeration to say that the general use of band-pass input filters was brought about by inherent failings of the ordinary type of screen-grid valve in the matter of cross modulation and H.F. rectification. Without the refinement of a two-circuit input tuner, the H.F. sets of a year or two ago were often definitely less selective than their early prototypes which employed neutralised triodes for H.F. amplification.

Thanks to the introduction of variable- $\mu$  valves, which are free from these troubles, it has become possible to simplify very considerably the design of a receiver without entailing any loss in selectivity; provided that the new valves are used in the H.F. stages, a set with a simple input circuit which will be adequate for present-day requirements can be devised. When operating the new Regentone set one does not notice the absence of a band pass filter; this applies even when using the most sensitive— and consequently the least selective— of the alternative methods of aerial connection that are provided by the makers. By changing over to the more selective method of coupling almost any type of interference may be avoided, and, thanks to the relatively high sensitivity of the set for its class, the inevitable loss in signal strength that must accompany this change passes almost unnoticed.

### Straightforward Circuit.

Without being in any way freakish or unconventional, the circuit arrangement includes several features of interest. Starting at the input end, an almost perfect form of volume control is afforded by regulation of the negative grid-bias applied to the variable- $\mu$  valve. This is arranged by varying the amount of resistance included in the cathode lead, a fixed resistor being interposed in the potentiometer slider lead in order that the valve may never be run with a zero grid, even when the volume control is set



### Self-contained A.C. Set with Variable- $\mu$ H.F. Valve.

at maximum. Matters are so arranged that the voltage feeds for both anode and screening grid of the first valve are maintained constant between wide limits of control grid voltage.

As has been pointed out by contributors to this journal, the tuned-anode system of H.F. coupling is entirely permissible when variable- $\mu$  valves are employed, and so we find that in the Regentone set advantage has been taken of this oppor-

#### FEATURES.

**General.**—Self-contained three-valve receiver with built-in loud speaker, for operation with external aerial or mains aerial. For A.C. supply voltages between 100 and 250, periodicity 25 or 50 cycles.

**Circuit.**—Variable- $\mu$  H.F. amplifying valve with single-tuned input circuit. Tuned anode coupling to regenerative grid detector. Parallel-fed transformer coupling to indirectly heated output pentode. High-tension supply through Westinghouse metal rectifier, smoothed by moving-coil loud speaker field. Provision for mains aerial, external loud speaker, and gramophone pick up.

**Controls.**—(1) Single knob tuning with concentric trimmer. (2) Combined on/off, wave-range and radio-gramophone switch. (3) Capacity-controlled reaction. (4) Input volume control by regulation of H.F. valve bias.

**Price.** 16 guineas.

**Makers.** Regentone, Ltd., Regentone House, Bartlett's Buildings, Holborn Circus, London, E.C.4.

## ALL-ELECTRIC RECEIVER.

tunity to simplify its design. A straightforward arrangement for the detector circuits has been adopted, and reaction control, by means of a condenser with earthed rotor, is normal. Anti-reaction feedback through the valve is minimised by the connection of a fixed anode by-pass condenser.

A parallel feed transformer coupling is used to link the detector to an indirectly heated pentode output valve, in the anode circuit of which is a coupling transformer for the moving-coil loud speaker, a resistance capacity tone corrector being shunted across the transformer primary.

### Electrolytic Condensers.

The D.C. output of a voltage-doubling Westinghouse rectifier is smoothed by a loud speaker field coil in conjunction with a pair of high-capacity electrolytic condensers. A considerable amount of power is dissipated in the H.T. circuits; total current amounts to about 50 milliamperes, while the smoothed and unsmoothed voltages are respectively over 220 and 320 volts. As the Westinghouse rectifier gives its full output as soon as the set is switched on, and as none of the valves consumes an appreciable anode current for many seconds after the application of heater voltage, it might be thought at first sight that there would be an abnormal rise in H.T. voltage, with consequent risk of condenser breakdown. But this rise does not occur in practice; in the first place, the S.G. potentiometer applies an appreciable load, and, more important, the electrolytic condensers have the valuable property of leaking when subjected to an abnormal voltage.

Tuning coils of rather greater efficiency and size than is fashionable nowadays are fitted; the aerial-grid winding is unscreened, but the anode coupling coil is covered by an aluminium "pot." Both coils are similar in diameter, but, as inductance values are matched, it follows

**Regentone All-Electric Receiver.**

that different numbers of turns are necessary on the screened and un-screened coils.

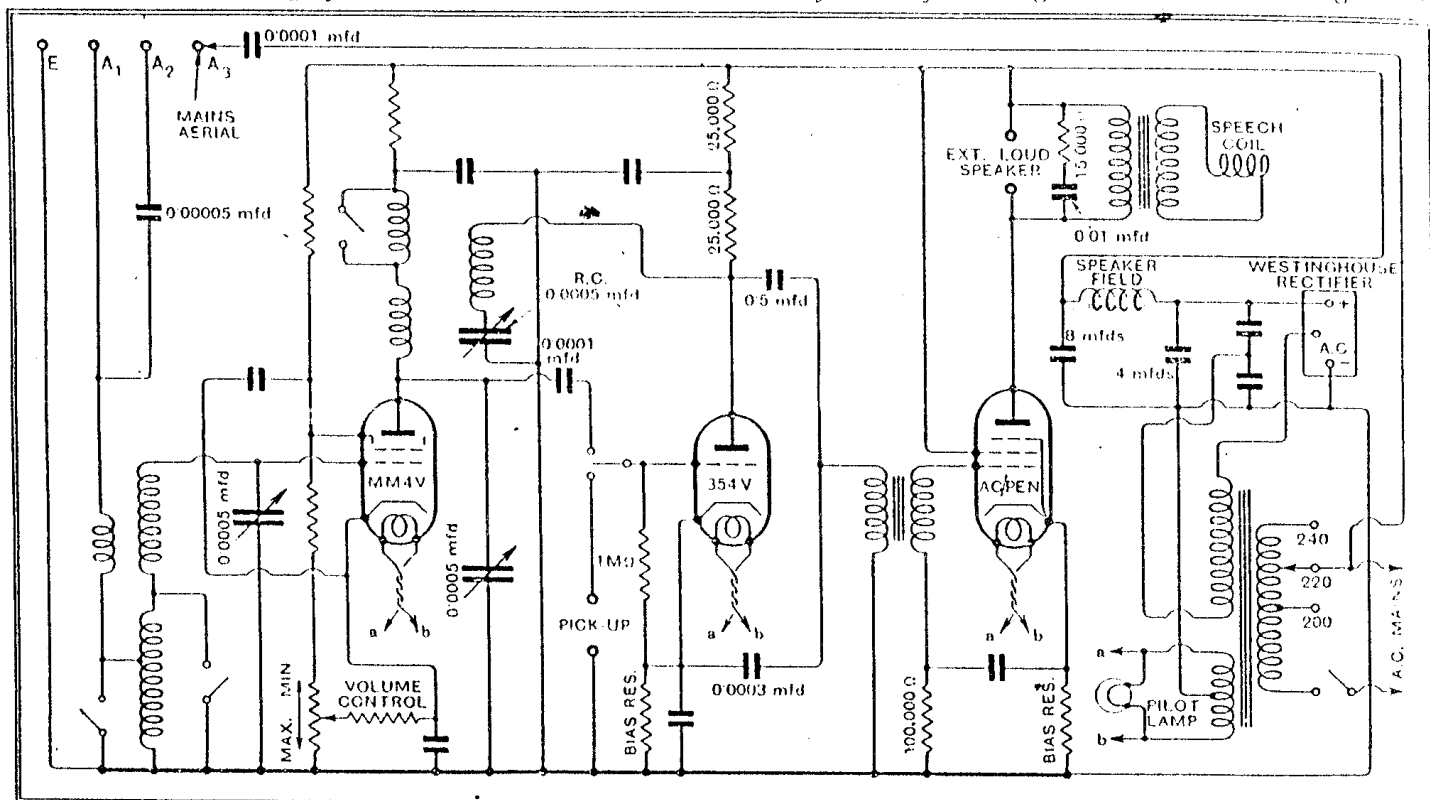
Both tuned circuits are controlled by a ganged condenser, but the single-knob tuning system is not of the "hard-and-fast" variety, as external provision for trimming is afforded by an auxiliary condenser, of which the control knob is concentric with the main tuning adjustment. For a two-circuit set, the conclusion is reached that this method of control is highly satisfac-

Regentone switch, with its positive action and heavy contacts, comes through a critical examination with full marks.

Good coils are mainly responsible for the undoubted sensitivity of the set, but a contributory cause is regeneration in the H.F. stage. Matters are so arranged that the valve may be made to oscillate when the volume-control slider is at the extreme end of its travel. For normal working, it is set well back from this point, but when extreme range is needed this control may usefully

and for the results expected by the average user it is as near as need be quite foolproof. But it responds handsomely to the touch of the user who has taken the trouble to master the niceties of control.

Reaction is exceptionally smooth on the medium band, but there is a distinct falling off on changing over to the long waves. Fortunately, this does not matter very much, as the natural sensitivity of the set is, as one would expect, even higher on this band. The general level of background noises, including hum,



Complete circuit diagram of the Regentone three-valve receiver. Decoupling resistances and condensers have normal values.

tory, especially as it is found in practice that frequent adjustment of the trimmer is called for. The substitution of, say, a different valve will not call for readjustment of built-in trimming condensers—an operation that may well be beyond the scope of the ordinary user.

Constructionally, the Regentone set follows the best accepted practice. Although reasonably compact, there is no undue crowding of components, and everything is accessible. Particular attention was paid to the combination can-operated switch; there is always the risk that these comparatively elaborate mechanisms may be responsible for trouble. The

be employed as a supplement to detector reaction. This method of operation is also to be recommended where interference is so bad that it becomes necessary to use the "A.2" aerial terminal; by doing so, the consequent loss of aerial input may be made good. Worked in this way, the set still has plenty of range, and, what is more important, it gives no grounds for complaint on the score of selectivity when compared with outfits of similar pretensions.

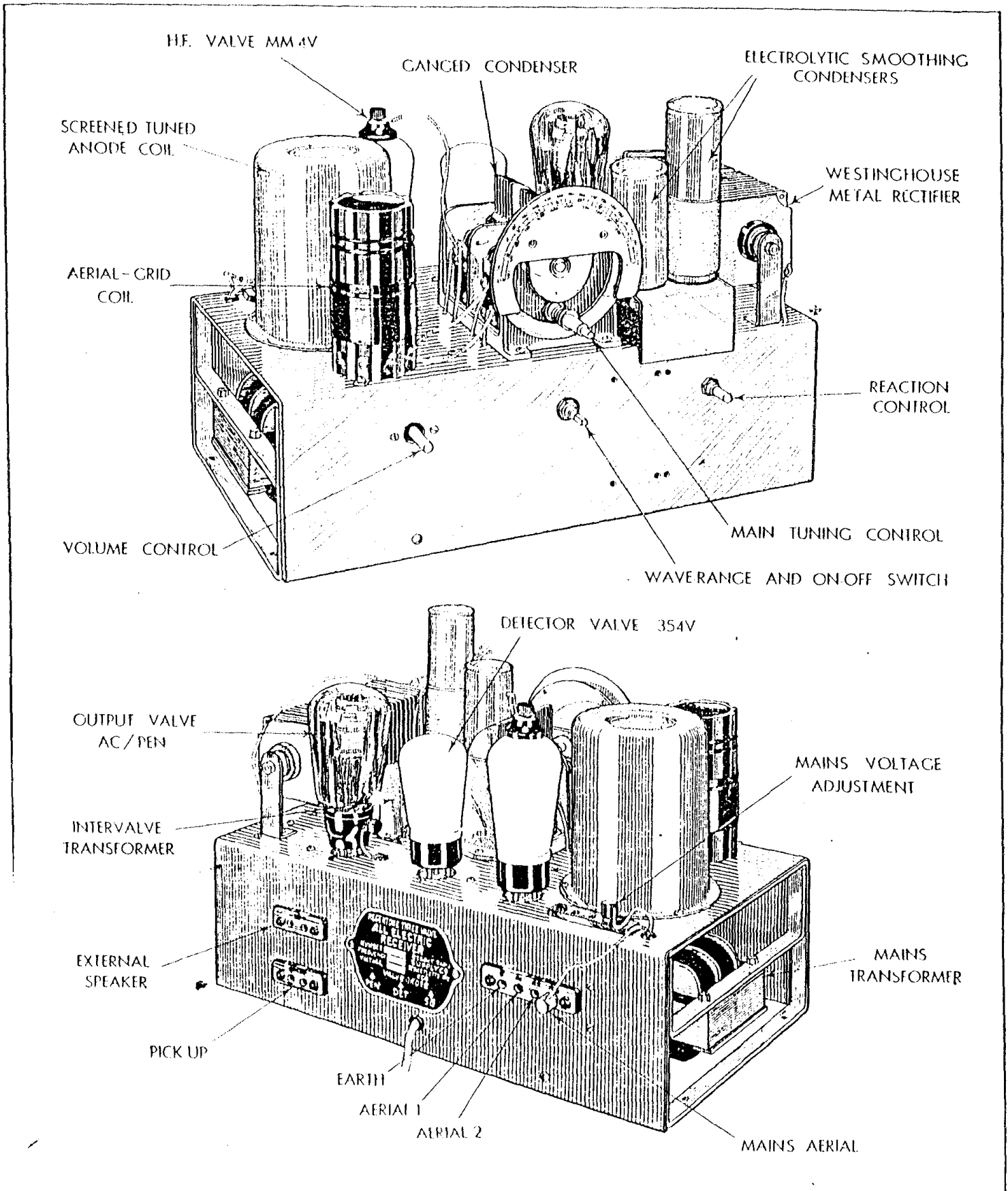
Perhaps the foregoing paragraph may suggest that the Regentone receiver calls for skill in operation; actually, it handles very well indeed,

is commendably low, and, thanks to the method of input volume control, the ratio of signal to noise does not become worse when volume is reduced, as is the case with some systems.

For a small loud speaker the bass output is exceptional. Some of this, we know, must inevitably be due to a resonance, but it is in no way objectionable when music is being reproduced. All pedal notes can be picked out, which proves that there is no heavy resonance which would tend to obscure a number of them.

The reproduction of speech leaves little to be desired, and is pleasant to listen to.

# NEW TENDENCIES IN GENERAL-PURPOSE RECEIVER DESIGN.



Chassis of the Regentone receiver, as seen from the front and rear. With the exception of the loud speaker, all components are included in this unit.