

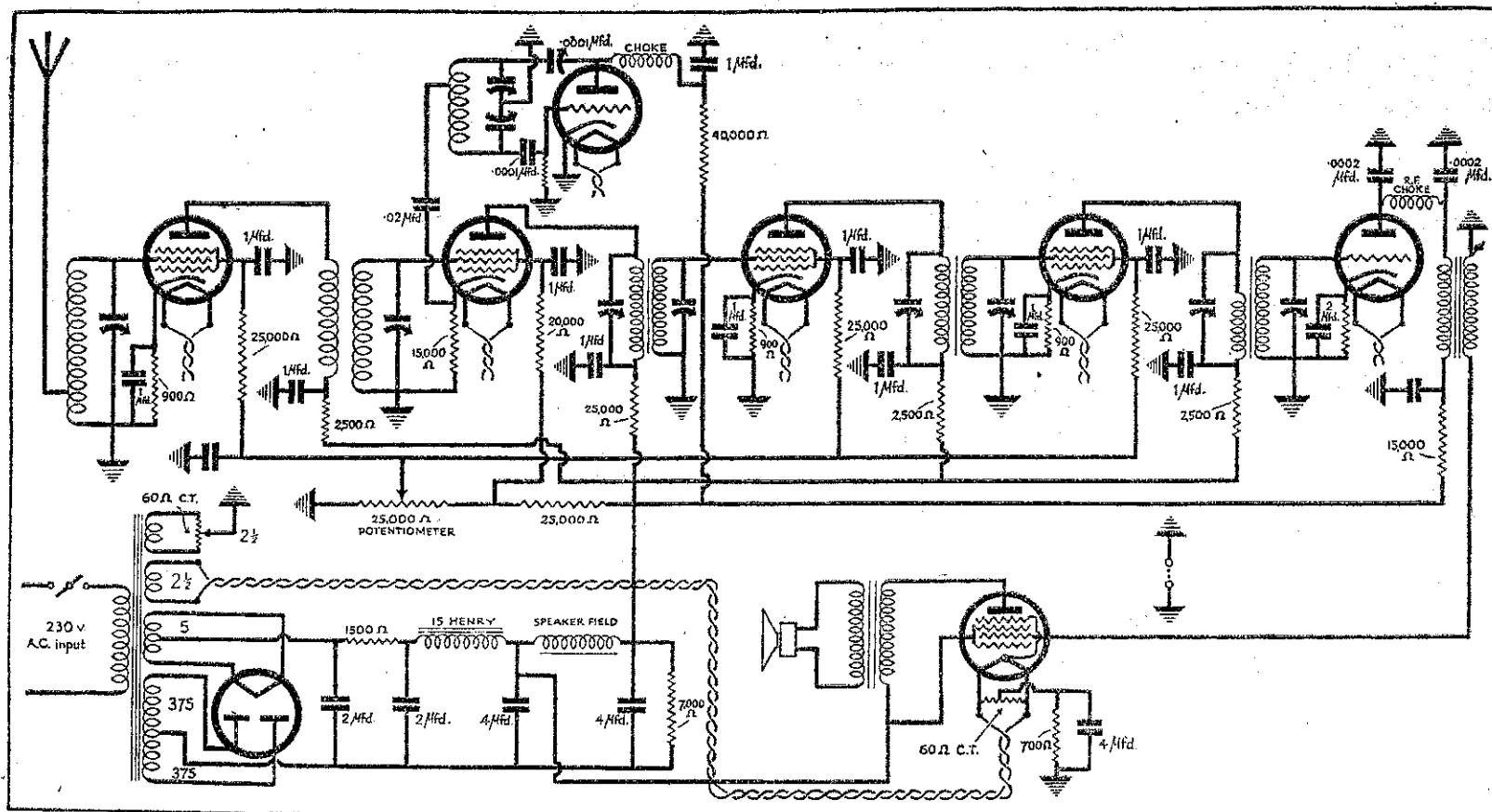


Fig. 1.—Theoretical circuit of the "Cathode" superheterodyne.

superheterodyne principle, of course, and the reader who has read the earlier articles in this series will have no difficulty in following the operation of the set. The first valve amplifies at radio frequency in order to provide a certain amount of selectivity ahead of the frequency changer.

Without some provision of this kind, trouble might be encountered with powerful local stations in the vicinity, as superheterodynes are rather given to

receiving stations at more than one point on the tuning dials.

The radio-frequency amplifier is transformer-coupled to the first detector. A screen grid valve is employed in this position, and for a very good reason. It has been shown that the efficiency of a valve operating as a cumulative grid first detector in a super is but a small fraction of that which it shows in its more normal sphere of rectifying r.f. modulated at audio frequencies. On the other hand, a three electrode valve operating as a plate-band detector is notoriously insensitive to small inputs. The screen-grid valve, however, may be employed as a plate-band rectifier, and in this service will show an efficiency which compares favourably with the efficiency factor of a grid leak detector in normal service.

The oscillator valve functions as a modified Colpitts oscillator, the regeneration being supplied by the coupling between the two condensers which, in series, tune the oscillator coil. It has been found that this type of oscillator functions smoothly and reliably on short as well as broadcast waves, while being noticeably free from "dead spots" which might necessitate having an unnecessary amount of feed-back at some points to ensure its being adequate at others.

The oscillator is a type 227 valve, and is coupled to the first detector via the biasing resistor of the latter. Although the operation may be a little difficult to grasp at first sight, this coupling is effective in varying the grid potential of the detector in sympathy with the applied oscillations, yet without introducing undesirable coupling coils into the grid circuit directly. In case any conscientious constructor should chance to observe that the biasing resistor of the first detector is the

only one in the set without a by-pass condenser and hasten to rectify the omission, it should be mentioned here that the insertion of a condenser at this point will render the receiver completely inoperative.

The output of the first detector feeds into the intermediate amplifier, which is tuned throughout with band pass couplings. That is to say, there are in all six coils and six semi-variable condensers to tune them. The actual coupling is effected by the mutual inductance existing between primary and secondary of the band pass units. There is not space here to go into the merits of the band-pass system of tuning, and we must content ourselves with saying that, in addition to the enhanced selectivity which it lends, it seems to be the most practical method of realising the "flat top" resonance curve which is generally considered desirable.

There are two screen-grid intermediates, the second feeding into a plate bend or "power" detector, for which a 227 type valve is employed. From

this point, the constructor may be permitted some latitude in making a choice of an audio amplifier. The description refers to a straightforward transformer coupling to a UY 247 pentode, but to suit individual requirements this could be altered to provide push-pull coupling to a pair of power

(Concluded on page 24.)

A money back guarantee covers every purchase

Crosley Merola Pick-up
with Volume Control. 47/6 each
22½-volt B Batteries—
—Portable size 4/6 each
Philips B443 Valves. 18/6 each
Philips A442 Valves. 18/6 each
25ft. Speaker Cords. 2/3 each
50ft. Speaker Cords. 5/- each
Igranie Broadcast H.F.
Chokes 4/6 each
Battery Cables—5-wire. 2/3 each
Battery Cables—5-wire
with Fuses 5/6 each
Electric Combs 4/9 each

BOB HORROBIN
"Flashlight Corner" 2 Courtenay Place
WELLINGTON
Quick Repairs Phone 22357

T.C.C. Radio Condensers for Accuracy and Quality

N.Z. Representatives:
TURNBULL & JONES, LTD.
Auckland, Wellington, Christchurch, Dunedin.

British-Made Accumulator Tester

—Accurate. 1 - each. Reliable—

Like a Fountain Pen Filler with Rubber Bulb, it has three Coloured Beads which float when the cell is charged and the acid density is correct. You can keep your "A" or "B" Accumulator in good order.

Transmitting Keys 13/-, Special 17/6. Transmitting Condensers—Dubilier.

A. E. STRANGE

404 WORCESTER STREET

:: ::

CHRISTCHURCH.