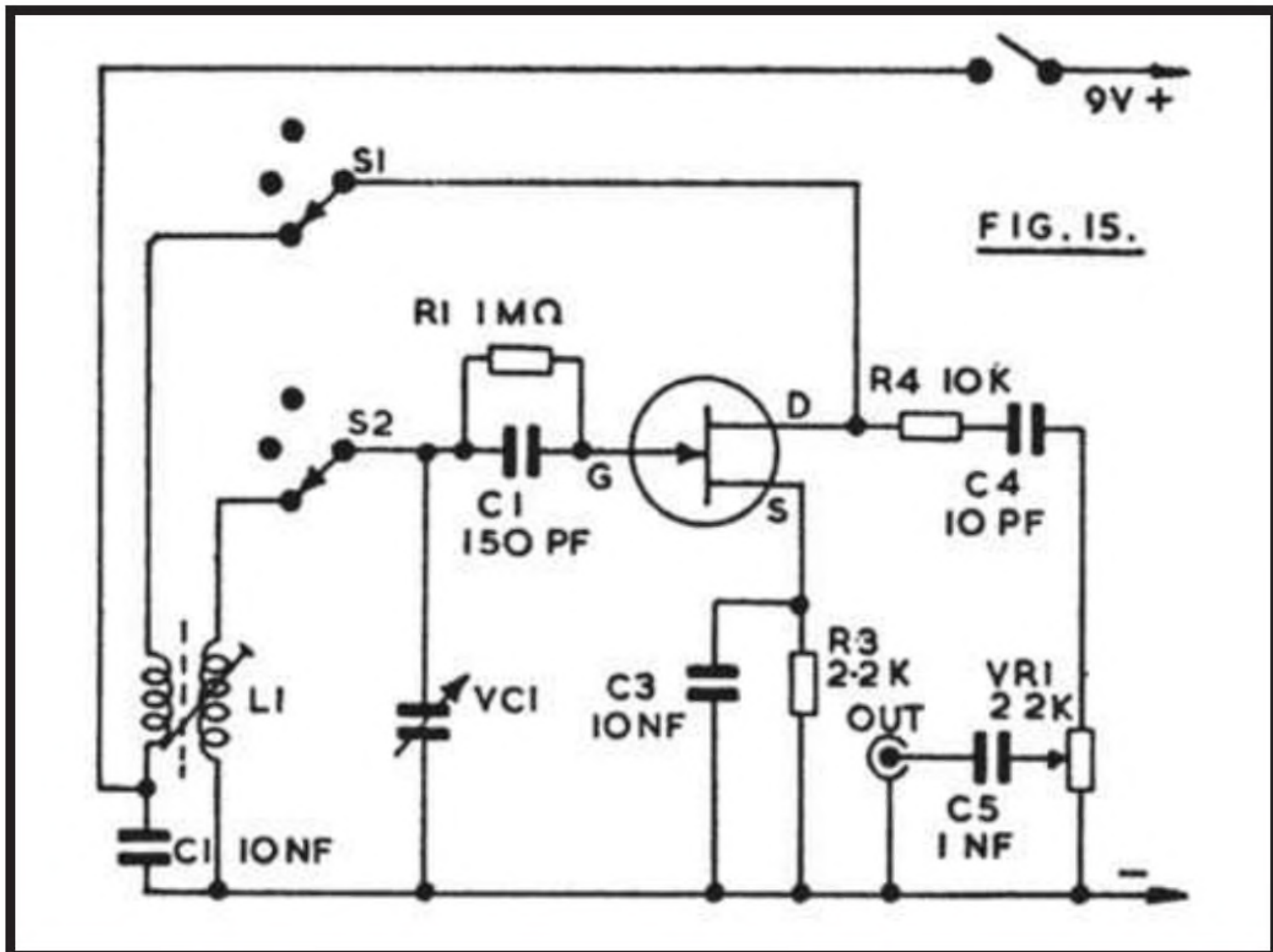


RF Signal Generator

A signal generator is a most useful instrument for aligning and checking the RF and IF sections of a receiver. Figure 15 shows the RF section of a generator, to which modulation can be added as explained later.

L1 and VC1 can be selected from a wide range of values, to secure the coverage required. It is convenient to fit the Denco (Clacton) "Red" oscillator coils, of valve type. With these, pin 8 is taken to drain (S1) and pin 9 to C1. Pin 1 goes to S2 for all coils except Range 1, when pin 7 is used. The appropriate ground pin



for each range is as shown below, which indicates the bands over which these coils can be used, with a capacitance swing of approximately 20-350pF for VC1.

Range 1.	(5)	380 - 1600kHz.
Range 2.	(2)	0.8 - 3.5MHz.
Range 3.	(3)	2 - 8.5MHz.
Range 4.	(4)	6 - 22MHz.
Range 5.	(6)	15 - 45MHz.

If other coils are used, allowance has to be made for the omission of the usual padders and trimmers, as well as for the difference in receiver aerial and oscillator frequencies.

S1/S2 can have as many ways as bands required. However, the higher frequency coils need short connections, and coils must be reasonably separated from each other. Numerous general purpose and RF type FETs will be found suitable. The presence of oscillation throughout each band can be checked with a meter in one battery lead - current should change if VC1 is shorted. The drain feedback winding must be correctly phased to obtain oscillation.

VR1 is an output attenuator. Construction should be in a metal cabinet, with a reasonably large scale for VC1. Calibration can be by the methods described later.

The signal produced by this generator is unmodulated, or silent. Unmodulated RF is used for tuning sharp crystal filters, and can be used for alignment of receivers which have a tuning meter or indicator, or where a meter is clipped to the AVC circuit to show the effect of adjustments. For other purposes, it is necessary that an audio tone is present with the carrier or RF signal.

Modulated RF Generator

Adding T1, TR2 and associated items, shown in Figure 16, will allow modulation of the RF signal produced by the generator.

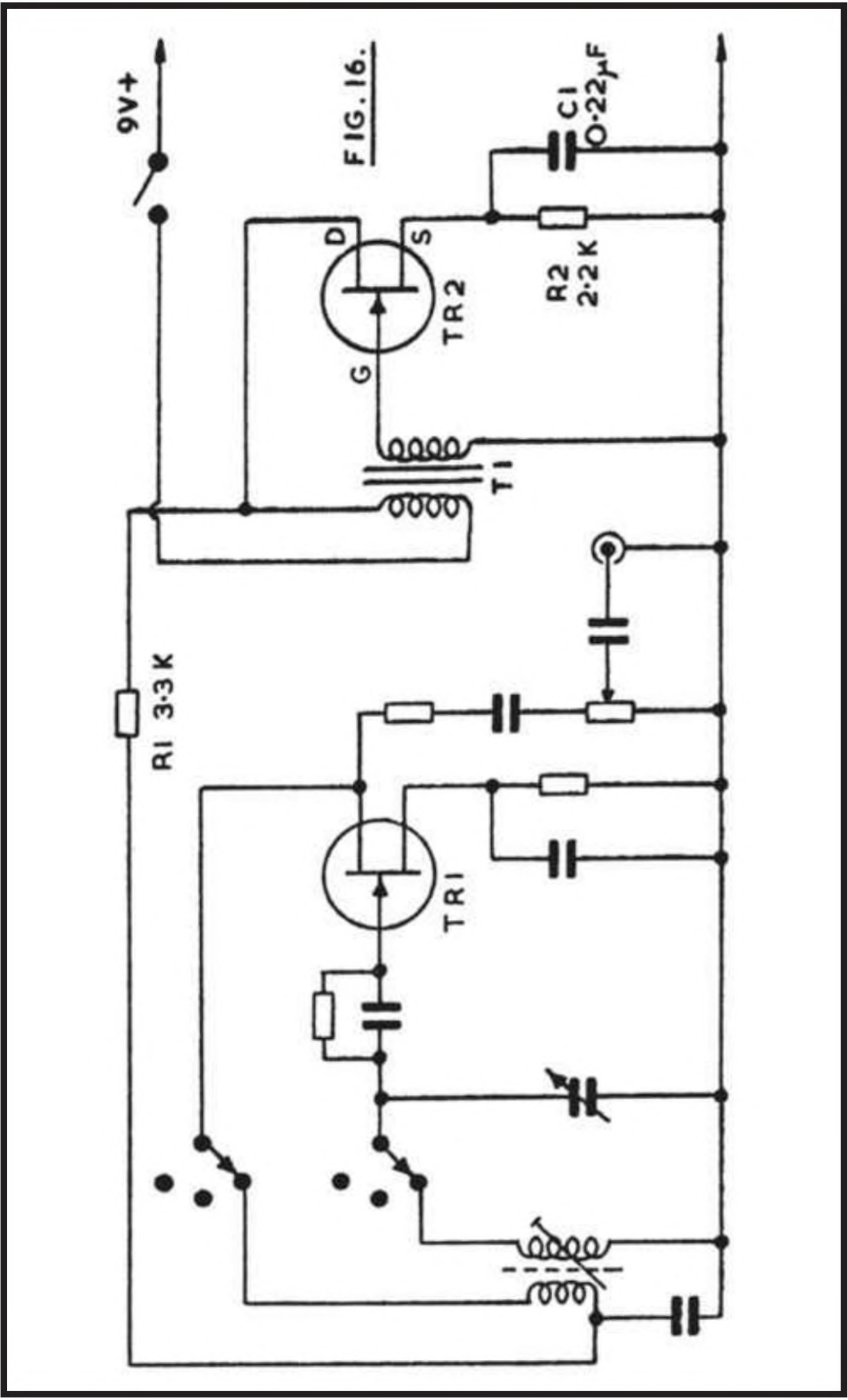


FIG. 16.

9V+

R1 3.3K

R2 2.2K
C1 0.22µF

TR2

TR1

T1

The first stage in Figure 16 consists of the RF generator, as in Figure 15.

TR2 is an audio oscillator, with feedback from drain to gate by means of the transformer windings. A small driver transformer, as used to couple the driver stage to $\frac{1}{2}$ -watt and similar push-pull output stages in transistor portable and other receivers, will be found suitable for T1. The original primary is used for the drain circuit. The whole of the secondary is employed for the gate, the centre-tap being ignored. If no oscillation is secured, reverse the connections to one winding. It will be found that considerable control over the tone produced can be exercised by the choice of values for R1, R2 and C1. A clear tone of middle frequency (say 400 hertz) is most satisfactory. TR2 is a general purpose or audio FET.

The RF produced by TR1 will now be heard to carry an audio tone, so can be tuned in by ear with a receiver. For trimming and similar adjustments, take the generator output to the aerial circuit of the receiver, or to a loop of a few turns near or on its ferrite rod. Signal level must be kept down with VR1, or the receiver automatic volume control response will mask exact adjustments.

RF Calibration

If a wide range, correctly calibrated receiver can be used, simply calibrate the generator scales by tuning in the generator signal.

Note that harmonics of the generator frequency will be heard with the receiver. These are multiples. As example, if the generator is tuned to 1MHz, it will be heard also on 2MHz, 3MHz, and higher multiples, these growing progressively weaker. This can cause errors if not watched, but can be useful in allowing calibration of the generator at frequencies not available on the receiver.

If an accurately calibrated receiver is not available, very exact calibration points can be obtained with a harmonic marker, described later.