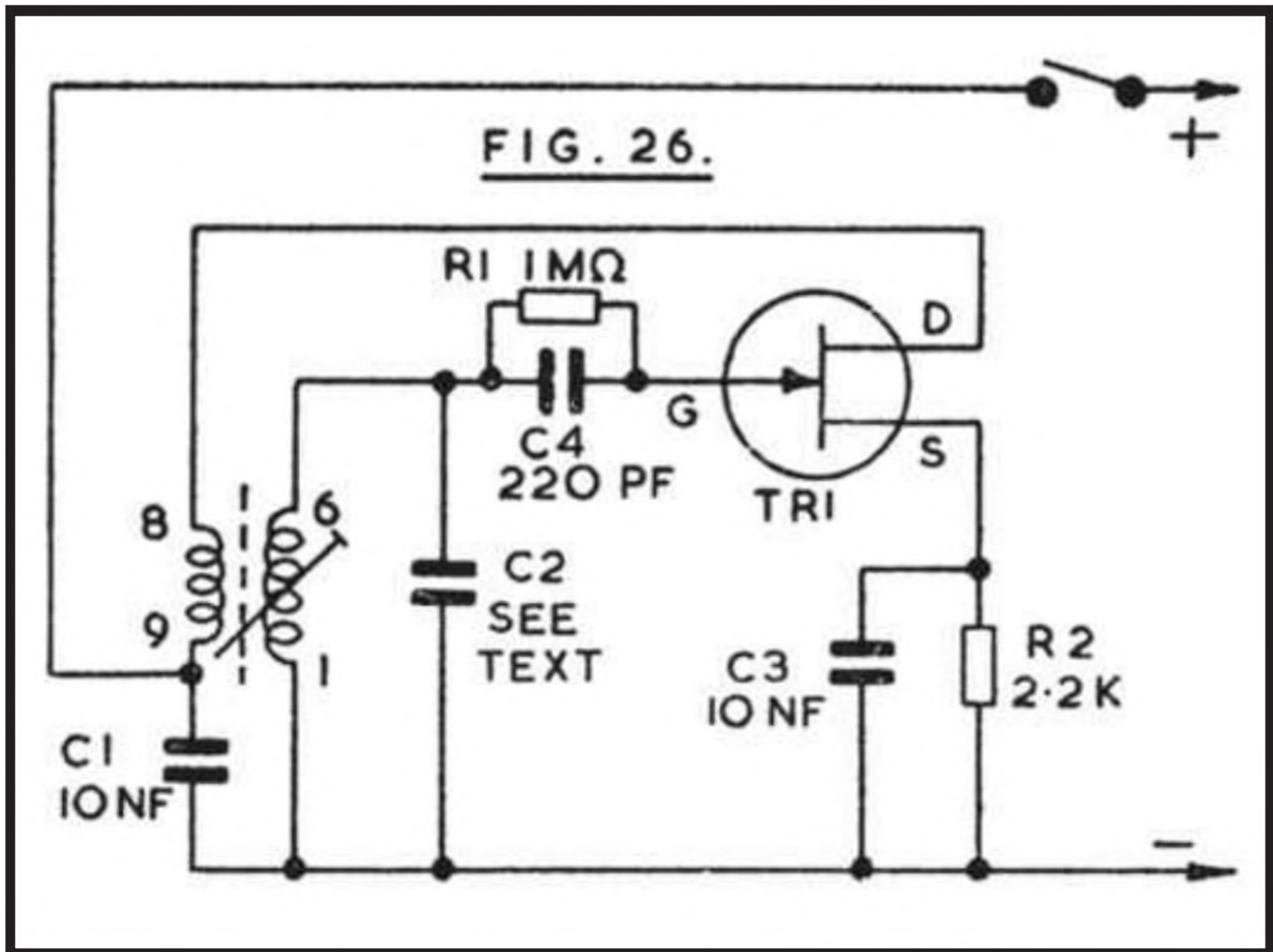


Tunable Marker

The use of a crystal as described for Figure 25 provides high frequency stability and accuracy. However, it is possible to economise by using an LC circuit, instead of the crystal. With such a circuit, frequency accuracy is sufficient for general purposes if it is checked before use, and no crystals need be obtained.



In Figure 26, C2 and the associated coil will determine the frequency, which is set by movement of the coil core. Oscillation is obtained by feedback of the drain circuit.

Pin numbers shown are for the Denco (Clacton) "Blue" and "Yellow" valve type coils. Should other coils be tried in this, marker, and no oscillation be obtained, reverse connections to the feedback winding. A 2N3819 is used.

Using a Range 1 coil, C2 is 1000pF, for 100kHz. With this coil, changing C2 to 250pF will allow 200kHz to be reached. For 1MHz, the value of C2 is 82pF, with a Range 2 coil.

Coupling to the receiver can be by placing the aerial lead near the coil, or as explained for Figure 25. It may be necessary to remove or reduce coupling from the usual outdoor type aerial, to avoid signal swamping the marker signal.

To tune the marker for 100kHz or 200kHz, tune the receiver to the 200kHz or 1500m BBC transmitter, and adjust the core of the coil until the heterodyne is heard. Set the core for the zero beat position. Rotating the core either way will then cause an audio tone which rises in pitch. If C2 is as explained, this will be the 2nd harmonic, or fundamental, according to whether the marker is working a 100kHz or 200kHz.

For the 1MHz setting, tune this as closely as convenient by choosing a MW signal near this frequency. Then tune the receiver to the standard frequency transmission which will be heard on 5MHz. The core is then slightly adjusted, to bring the 5th harmonic into zero beat with this. Check on the MW band to make sure that the 4th or 6th harmonics are not being heard (1250kHz or 833kHz).

Use of the tunable marker is as described for the crystal controlled devices. However, tuning should be checked in the way just explained before using the harmonics for frequency calibration. With a little care, frequencies may be obtained with sufficient accuracy for any general purpose.