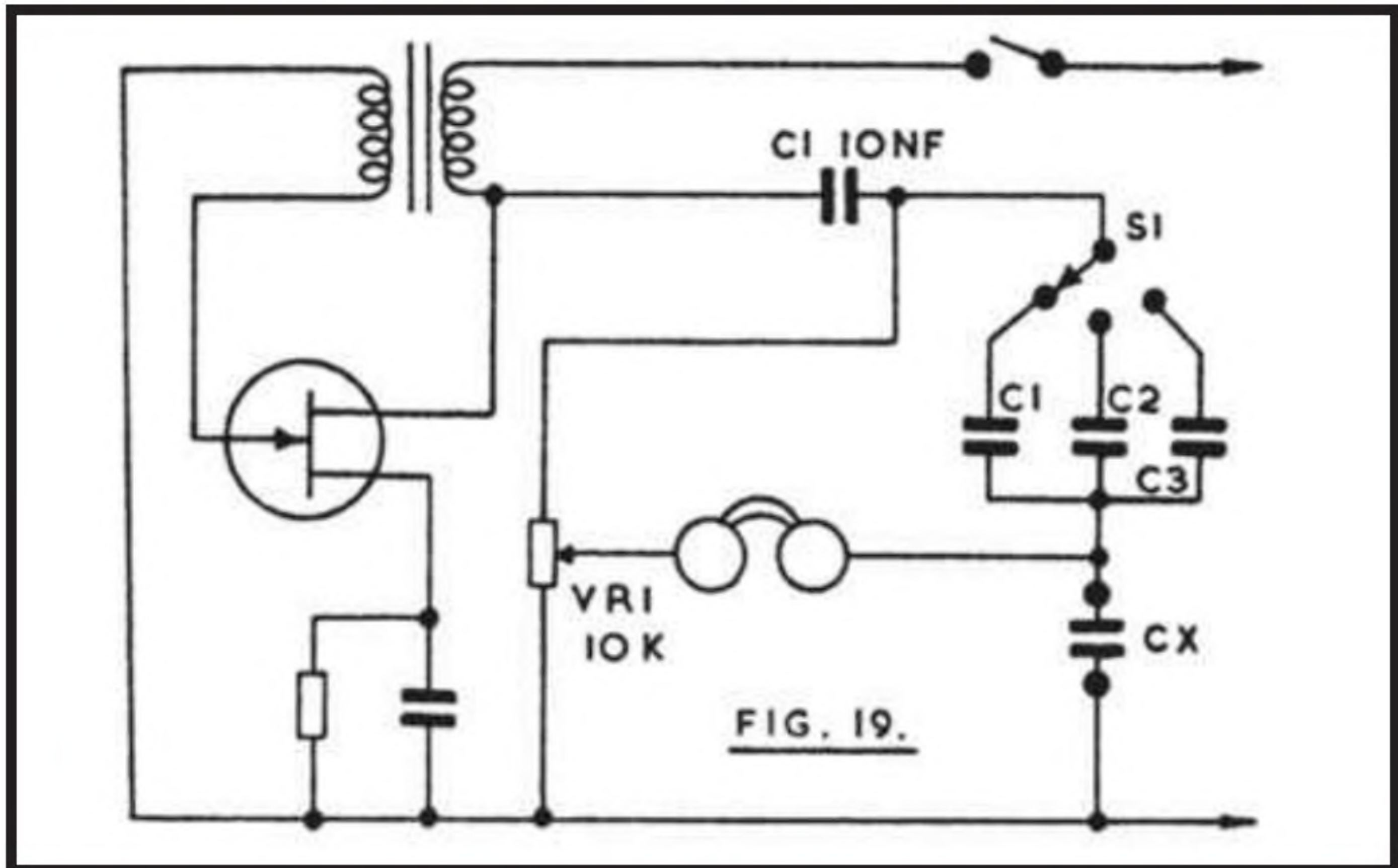


Capacitance Bridge

One of the FET oscillator circuits described is convenient to provide audio for a capacitance bridge. The FET oscillator in Figure 19 can be built as described for Figure 16. The source resistor and capacitor can be chosen so that a strong, fairly high pitched tone is produced. Best values will depend on the FET and transformer, but are not critical. For a 2N3819, a 3.3k resistor is suggested, with 0.5uF capacitor. Rather low frequencies are less suitable, as volume will become insufficient when checking small capacitors.

Audio output is coupled to the bridge by C1. S1 selects C1, C2 or C3 which together with the unknown capacitor Cx forms one side of the bridge, the other side being upper and lower sections of VR1.

Values of 100pF for C1, 10.000pF, 10nF or 0.01uF for C2, and 1uF for C3 will give wide ranges having centre values of 100pF, 10nF and 1uF. VR1 should be a good quality linear potentiometer.



Calibration of its scale can be by placing known values at Cx; or the scale shown on page 28 of "Two Transistor Electronic Projects" (Babani Press No. BP30) may be used.

High impedance headphones are most suitable for detecting the audio tone. VR1 is rotated for the null, when the audio signal ceases, and the bridge is then balanced, and the value of Cx can be read off from the scale. When checking capacitors from audio circuits or other equipment, it should be noted that there is often quite a wide latitude in the value, which is not critical. The bridge is not intended for finding the values of very small capacitors, as the audio tone grows too weak, and readings are influenced by stray circuit capacitance. This limits the range for the smallest values to about 10-20pF. The bridge will be found very useful for checking the values of unknown or coded components.