## Mains Remote Control

THIS ultrasonic remote control link enables a mains load to be switched on or off. It has numerous applications from the switching of a tv or radio set to controlling a garage door lock.

The signal from the transmitter is picked up by the ultrasonic receiver RX1 which is strongly resonant to ultrasound of frequency 40kHz, but is virtually unaffected by sounds of other frequencies. The signal from RX1 is amplified by TR1 and TR2 with R3 providing negative feedback. The output is then passed to the next amplifier stage TR3 with C3 adding some noise immunity. The output from the collector of TR3 is then rectified by D1, and smoothed by C4. R8 and C4 also provide a 'debouncing' action for the transmitter switch. The signal is then passed to a comparator IC1, the output of which is either high or low indicating the presence of ultrasound. The sensitivity of the receiver can be adjusted by VR1. IC2 forms a simple toggle switch with TR4 providing logic levels favourable to ttl. The relay is driven by TR5.

The transmitter circuit consists of an astable multivibrator which drives the ultrasonic transducer TX1. The frequency of the astable multivibrator is tuned to 40kHz by adjusting VR2.

**M. Essa, Ilford.**

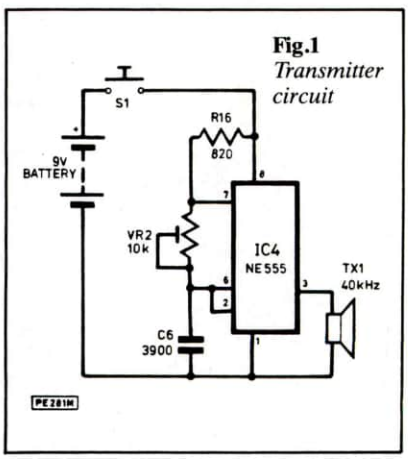


**Fig.1** *Transmitter circuit*

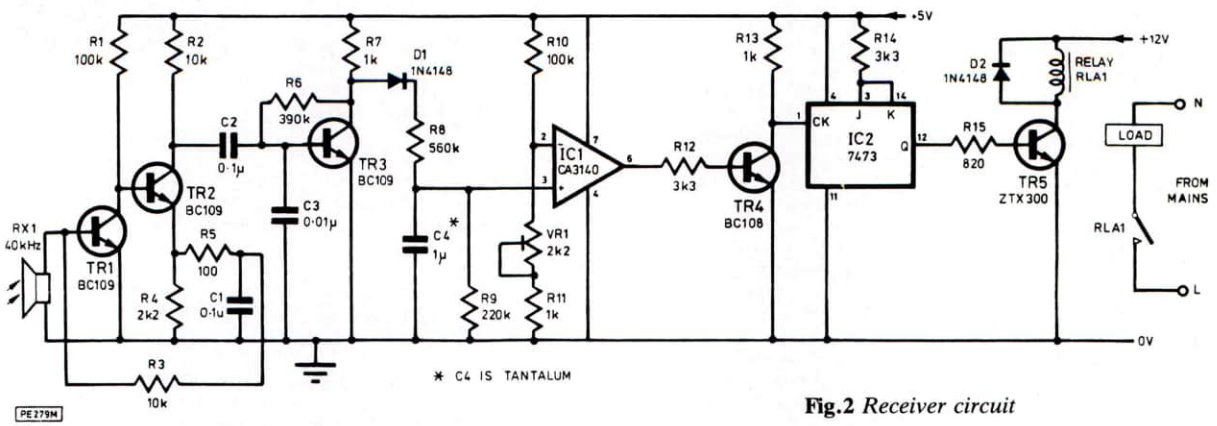


**Fig.2** *Receiver circuit*