

# THREE GERMANIUM DIODE CRYSTAL

By L. M. Dezettl

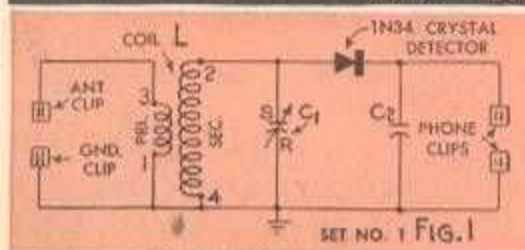
CRYSTAL sets have been a favorite of experimenters for many years as they are easy to build and they reproduce voice and music with true lifelike quality. The three crystal sets described here use sensitive Sylvania 1N34 germanium diodes as fixed crystal detectors. The diodes are available from all radio-parts houses.

Set No. 1, shown in photo A, is assembled on a  $\frac{3}{4}$  x 5 x 9-in. piece of well-sanded soft pine wood. All parts are mounted with  $\frac{1}{2}$ -in. No. 6 roundheaded wood screws. Set the parts up on the baseboard and mark the locations for the wood screws. Use a No. 36 drill, and drill about halfway into the wood at each of these points. Small angle brackets are employed to mount the variable condenser on the baseboard. Use  $\frac{1}{16}$ -in. 6-32 machine screws to fasten the brackets to the variable condenser; do not use longer machine screws. The same assembly method is used for all three receivers.

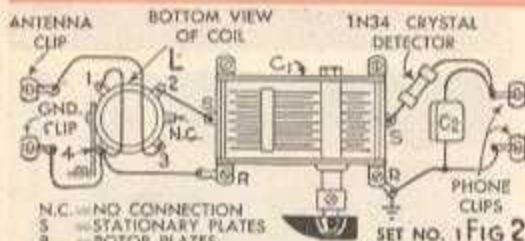
The schematic circuit diagram for set No. 1 is shown in Fig. 1, and the pictorial wiring diagram appears in Fig. 2. This is a standard crystal-set circuit using an inexpensive factory-wound coil. Variable condenser C1 can be any capacity between 365 mfd. and 500 mfd. It will provide reasonably loud signals from



SET NO. 1

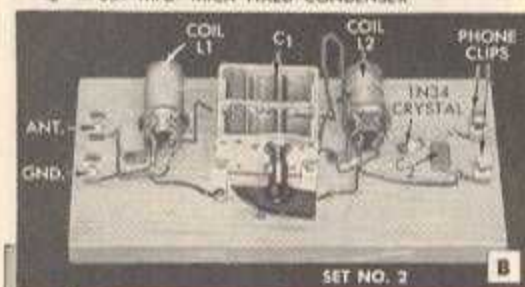


SET NO. 1 FIG. 1

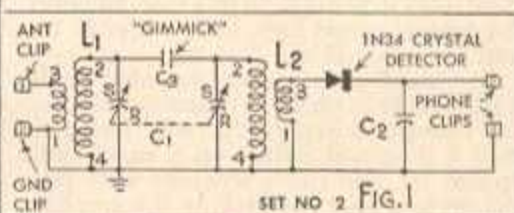


SET NO. 1 FIG. 2

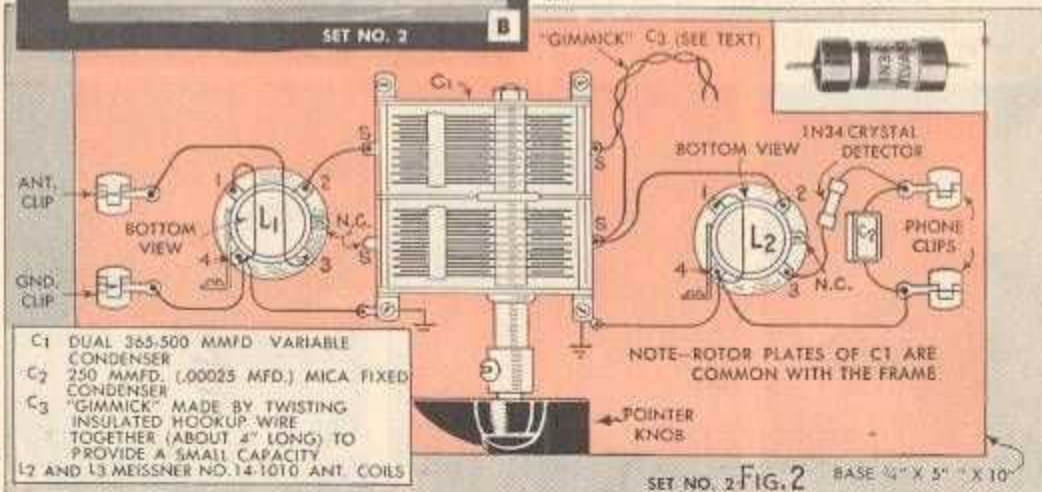
- N.C. = NO CONNECTION
- S = STATIONARY PLATES
- R = ROTOR PLATES
- (COMMON WITH CONDENSER FRAME)
- L = MEISSNER NO. 14-1010 ANT. COIL
- C1 = 365-500 MMFD. VARIABLE CONDENSER
- C2 = .001 MFD. MICA FIXED CONDENSER



SET NO. 2



SET NO. 2 FIG. 1



SET NO. 2 FIG. 2 BASE  $\frac{3}{4}$  X 5 X 10

- C1 DUAL 365-500 MMFD. VARIABLE CONDENSER
- C2 250 MMFD. (.00025 MFD.) MICA FIXED CONDENSER
- C3 "GIMMICK" MADE BY TWISTING INSULATED HOOKUP WIRE TOGETHER (ABOUT 4" LONG) TO PROVIDE A SMALL CAPACITY
- L2 AND L3 MEISSNER NO. 14-1010 ANT. COILS

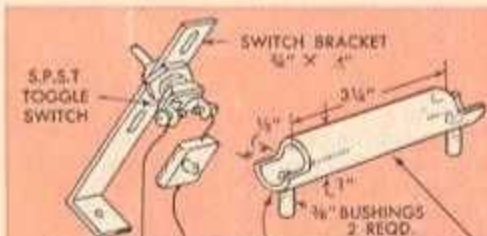
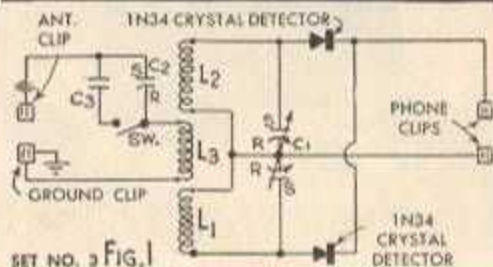
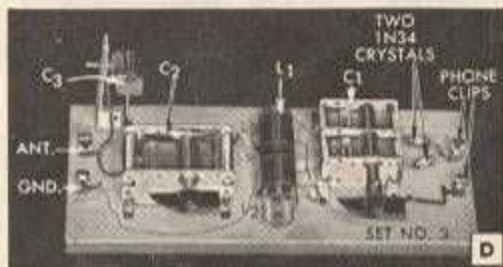
NOTE—ROTOR PLATES OF C1 ARE COMMON WITH THE FRAME

# RECEIVERS FOR BEGINNERS . . .

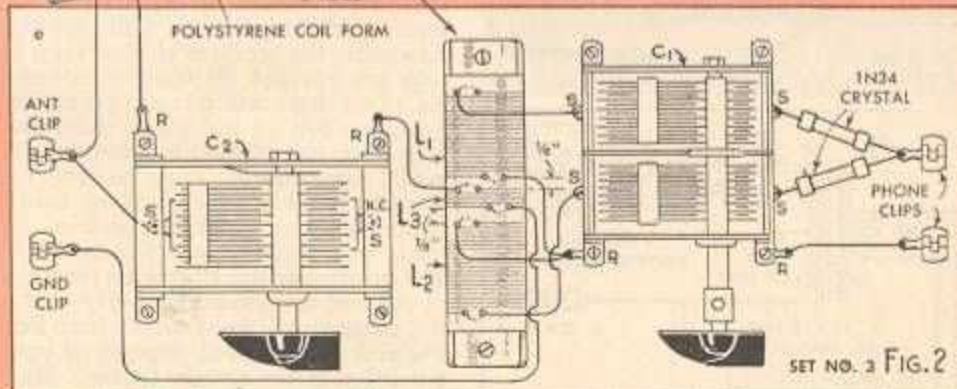
local broadcasting stations in dual-type headsets with an impedance of 2000 ohms, or higher. The antenna should be a high, well-insulated outdoor type at least 100 feet long, although antennas as short as 40 feet will work. The ground should be made to a cold-water pipe.

The practical receiving range of any crystal receiver is limited to about 40 miles for powerful broadcasting stations. Set No. 2 is double-tuned for improved selectivity. Two coils like the one used in set No. 1 are employed and each coil is tuned by one section of a dual variable condenser. Coupling between the two tuned circuits is by means of a "gimmick" made by twisting two pieces of insulated wire together for a length of about 4 in. This is condenser C3. The longer this "gimmick" the louder the signals, but the poorer the selectivity.

Set No. 3 is an experimental arrangement using two 1N34 diode crystals in push-pull to provide louder signals than conventional crystal circuits. The coils are hand-wound to provide a split secondary winding with a primary winding between. Both primary and secondary are tuned. The dual-section variable condenser tunes the secondary of the coil to the frequency of the station. Condenser C2 in primary L3 tunes the station but it has its greatest effect on very long antennas. If the desired station operates on 850 kc. or higher, "open" the toggle switch on the bracket. Detailed student material list is R-396.



- C1 DUAL 365-500 MMFD. VARIABLE CONDENSER
- C2 SINGLE 365-500 MMFD. VARIABLE CONDENSER
- C3 001 MFD. MICA. FIXED CONDENSER
- L1 HAND-WOUND COIL ON A 1" DIA. POLYSTYRENE TUBE (SEE TEXT)
- L2 AND L3 120 TURNS OF NO 32 ENAMELED WIRE
- L3 43 TURNS OF NO 32 ENAMELED WIRE
- ALL THREE COILS ARE CLOSE-WOUND IN THE SAME CLOCKWISE DIRECTION AND SPACED 1/8" APART
- NOTE-VARIABLE CONDENSER ROTORS ARE COMMON WITH FRAMES



NOTE - N.C. = NO CONNECTION

BASE 1/2" X 5" X 12"