

This Crystal Set Works a Loudspeaker

(Abridged article from *Hobbies Illustrated*)

MANY readers, upon noticing this heading, will probably burst into derisive laughter. However, it represents the result of weeks of experimental work. The set described and illustrated will work a loudspeaker. At our location three stations could be clearly heard, and loudest being just audible in an adjoining room.

THE secret lay firstly in using a modern super-sensitive permag speaker and secondly in getting the last ounce of efficiency from the crystal circuit and using the best available crystal. As the diagram shows, this means a simple circuit with the least losses, so it is only recommended for localities where the stations are not too far away (within 4 or 5 miles) and are sufficiently far apart in frequency to avoid interference.

Even so, don't expect the volume to rattle the flies off the lampshade, or even to approximate the output from a small portable; remember, a crystal set can't amplify and you can only get what comes down the aerial, less circuit losses. Results are best during the quiet of night, so with a good aerial (60ft. at least, outside, high up) and earth, this set is very satisfactory as a bedside wireless, and when placed alongside the pillow on a table the voices and music come through quite clearly, yet soft enough not to annoy other members of the family.

THE TUNING COIL

Using a piece of coil former 1½ in. diameter by 3 in. long, wind on 110 turns of approximately 30-gauge S.W.G. enamelled or cotton-covered wire, starting about ½ in. from the bottom, to clear the mounting brackets. Make a tap at the 10th turn and then every 5 turns up to the sixtieth turn or up to the eightieth if you haven't "had it" by then! A simple way to make the tap is to bare half an inch of the wire, loop it and twist it up, then fix it with a drop of solder. "Stagger"

the taps about half an inch on the former to help in connecting and avoiding shorts.

The little angle brackets supplied with each kit are fixed to the coil with ¼ in. Whitworth brass bolts and nuts, and to the baseboard with short screws.

THE CRYSTAL

Quite some time was spent trying the various types, and we found that while the cats-whisker type could give very loud signals, the sensitive spots were few and far between, and the catswhisker would jump off with the least provocation. However, as there are no phone cords to jerk the set round, they are practical and those who must use this type can get a good imported crystal.

However, the best all-round type is undoubtedly the "Red Diamond" semi-permanent detector, where a special second crystal takes the place of the catswhisker, and the two are held firmly by a spring.

A DE-LUXE CRYSTAL

Some of you wealthy fellows can try the new Sylvania 1N34 crystal diode, reputed to be the "loudest crystal ever" by American enthusiasts. Our depleted pocket could not stand the required £1 or so, but we understand that they have extremely small losses and need no polarising, so ought to be highly suitable for our purpose.

IMPORTANT

When adjusting any kind of double crystal always pull apart the crystals before moving by means of the arm. Always keep them from scraping, i.e., never rotate the arm or move it about with the crystals touching, but pull outwards, move or turn it, and place directly back without any twisting or scraping.

THE CHASSIS

The chassis consists of a front and back strip cut from ¼ in. plywood as shown in Fig. 3, screwed to a base measuring 6½ x 3½ in. The .0005 mfd. variable tuning condenser, on-off switch and detector, are mounted on the front strip, as seen by the top plan in Fig. 3.

Having fitted the four terminals to the back strip, screw the coil down and wire it in, then wire the rest according to Fig. 2.

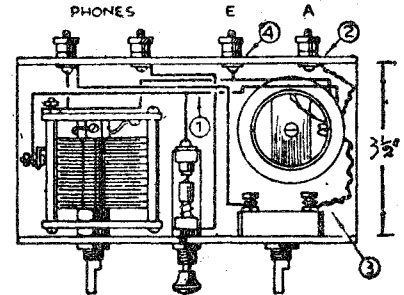
Check the circuit and see that it is all right. Do not try to follow the wiring off Fig. 3 just copy the lay-out, as the drawing is actually of a different circuit we were experimenting with and we used it to avoid making a fresh one! For the connections use Fig. 2.

THE SPEAKER

The set is designed for a 6 in. Rola permag. which is an exceptionally sensitive type, with a 15,000 ohm matching transformer (anything from 10,000 ohms will do). We have also tried an 8 in. Rola with equally good results.

AERIAL AND EARTH

As we have said before you need a good aerial to catch all the signal you can. Use about sixty feet, up to a hundred feet, and as high as possible. Make it about 50ft. long, of bellwire or similar—you can get nylx-covered which is cheap and efficient. If the aerial to the house set runs near your window, you can make a connection to it.

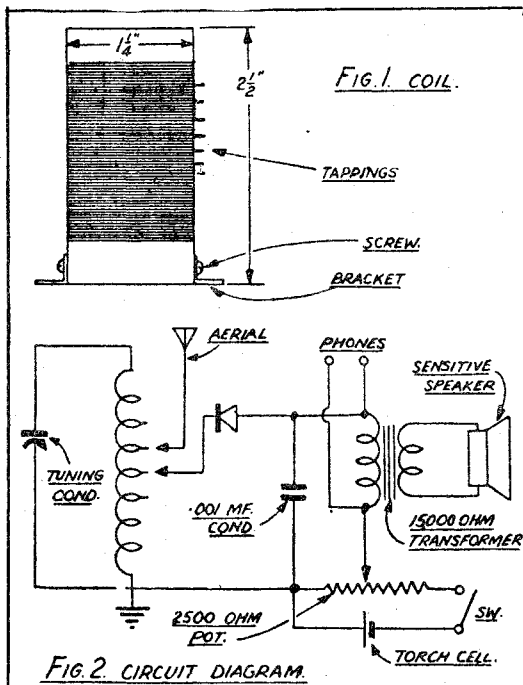


The earth must be good—connect to a water-pipe (NOT a gas-pipe) near where it runs underground if possible, or drive a pipe into the earth for 2 or 3 feet, fill with salt or a few copper-sulphate crystals and moisten. Drill for a screw to make a good connection, or use a commercial earth clip.

OPERATING

Set the tuning dial to the middle of its range and adjust the crystal until you hear a station, tune it in and vary the potentiometer until the signal is best. Reverse the battery leads if there is no improvement.

Try the aerial and crystal leads on the various taps (the same, and different ones, independently) until you have the best compromise between the strength and lack of interference. Re-tune each time you alter a tap. Furthermore, don't bend the taps over much, as breakage of coil-wire might ensue, occasioning much wrath, which, as we all know, is bad for the system.



PARTS LIST

- 1 .0005 mfd. Tuning Condenser.
- 1 .001 Fixed Condenser.
- 2oz. 30-gauge Enamelled Wire.
- 1 Red Diamond Crystal Detector.
- 1 2500 ohm Potentiometer.
- 1 1½ in. x 3 in. Coil Former.
- 1 S.P.S.T. Toggle Switch.
- 4 Terminals.
- 2 Knobs.
- 1 Torch Cell.
- 1 Baseboard.
- 2 Panels.
- 2 Crocodile Clips.
- Sundries: Hook-up wire, lugs, screws, etc.

KIT OF PARTS

(As above)

Cat. No. AK2064— **28/11**
 "Rola" 6 in. Model 6J **£2/3/-**
 Speaker (Extra).