



THE MAGIC CRYSTAL

ALVA F. ALLEN
Manufacturer and Distributor

DEVOTED TO CREATING INTEREST IN TUBELESS, BATTERYLESS, CRYSTAL RADIOS

CLINTON, MISSOURI
U. S. A.

Crystal Radios Require No Tubes or Batteries

No Static or Distortion is Reported in Reception Over Hundreds of Miles; No Expense to Operate Sets.

Crystal Radio Sets use no batteries or tubes yet are able to receive programs, in many cases over hundreds of miles. The sets are simple, practical and efficient. There is no expense to operate a Crystal Radio Set.

While the ordinary range is up to fifty miles, distance reception is not at all unusual. Many reports have been received telling of clear reception over hundreds of miles. Even with the most simple Crystal Radio Set long distance reception can be expected and obtained in practically any part of the country, under favorable conditions.

Extreme simplicity and ease of construction are responsible for the tremendous interest shown in crystal radios. In order to gain a fundamental knowledge of radio every boy should make and enjoy a radio set. In this day of super-powered broadcasting stations the world's best talent is available to the crystal user. Since no tubes or batteries are used, Crystal Radios have always been noted for their pure, undistorted tone qualities.

It should be remembered that the operating efficiency of crystal radios depends greatly upon the correct installation. The only current used by the set is the very small amount picked up by the aerial and a good aerial and ground is of utmost importance, especially where distance reception is desired.

"DISTITE"

Midget Semi-Fixed Crystal Detector



Actual Size

No. D-125.....50c

Ideal for Smallest Pocket Type Sets; Semi-Fixed Converted Into Permanent Detector.

No. set Semi-Fixed Crystal Detector, No. D-125, is a super compact Crystal Detector especially designed for use with small size crystal sets. The midget size makes it easy to enclose inside the case of the smallest pocket type sets.

"Semi-Fixed" means that the catwhisker wire of this Crystal Detector, is of such a size and shape as to remain securely in place when adjusted, yet allowing it to be easily moved to readjust when necessary.

If a permanent type detector is desired it may be done by simply adjusting the catwhisker contact to place where signals are loudest and then apply a drop of collodion cement, Du Pont Duco household cement or similar preparation, to the point of contact.

When this cement dries, the detector will stand considerable vibration without getting out of adjustment. This is recommended for pocket type sets.

"Crystal Detector Superior"

Opinions Obtained from Leading Magazine Prove Practicability of Crystal Radios.

"As every radio man knows," Radio-Craft magazine said, "there is nothing superior to the crystal detector when it comes to quality." This statement alone will eliminate any doubt as to the fact that a radio which uses no tubes or batteries is able to receive programs from broadcasting stations located miles away.

Presented herein are the opinions of leading magazines as shown by items which have appeared in their columns, in order to prove the practicability of Crystal Radios.

The editorial, by Hugo Cernsback, appearing in Radio-Craft said in part:

"Take for instance our present-day detector tube. It is woefully inadequate (with regard to quality) and compared to the crystal detector, it is exceedingly poor. This has led a Western experimenter to substitute a crystal for a detector tube in his television set, with astonishingly better results in the quality of the received image. The crystal detector is full of mysteries as yet unsolved by radio engineers. As every radio man knows, there is nothing superior to the crystal detector when it comes to quality. What all of them do not know, however, is that the crystal has frequently been an excellent distance getter, and there have been many certifications of this. For no known reason at all, the crystal, whose limit is usually 15 to 25 miles, has been able to bring in signals from distances up to 300 miles. Of course, the 'wise' radio man will point out that this must be a 'freak' reception, and let it go at that, but when the same freak reception is duplicated hundreds of times they are no longer 'freaks' but become pretty normal.

"Believe it or not, but we have received more inquiries from beginners for crystal receivers than for any other type of set." Popular Science Monthly, one of the most outstanding science magazines in the country says: "Almost the first practical radio receivers, long before the days of modern vacuum tubes, used a

Melomite Crystals Famous for Tone and Distance Reception

Nationally Known for Distance and Tone, Melomite "Supersensitive" Crystals Give New Life to Old Radio Sets.

Melomite Crystals are nationally known for clearness of reception, tone, sensitiveness and long distance records. These crystals are made of carefully selected mineral.

There is no hunting for "hot" spots when the Melomite Crystal is used. Once the contact is made the granulated surface of this crystal eliminates all chances of contact disturbance.

Melomite Crystals will give your old crystal set new life. This crystal, packed in glassine envelope on attractive individual display card, assures the user of the best possible results at all times.

Genuine 'Melomite' Radio Crystals



25c each
5 for \$1.00
POSTPAID

sensitive crystal to detect and rectify the radio signals. Remember it was years before the tone quality obtainable from the loud speaker of a vacuum tube set equalled that obtainable from the simplest crystal hook-up.

"In these days of elaborate multitude radio receivers—it is well to remember that far simpler sets will meet the broadcast reception requirements of a certain class radio listeners. If, for example, you live within a mile or so of a broadcasting station and are willing to restrict your radio entertainment to the output of this station and use head-phones, a simple crystal set will meet your needs."

These Crystal Radio Sets may be made or purchased today. The cost in either case is so small the money will never be missed by the purchaser. Users of these sets say "The enjoyment that a Crystal Set will give will amply repay you for your efforts. It is a marvelous little radio!"

Rich awards await the person who perfects a simple method of amplifying a Crystal Radio. The volume obtained over a simple Crystal Set located close to a broadcasting station is ample to operate a loud speaker. With a long aerial and a good ground, these results can be considerably extended.

The advantages of having a Melomite Crystal in your set cannot be overemphasized.

Questions and Answers

In Regard to Crystal Sets

Below I am listing some of the common questions which crystal set fans have asked. These have been answered to the best of my ability. If you have a question regarding crystal sets which you would like answered please write me, enclosing stamped addressed envelope for reply. If you have any answers to Crystal Set problems which you think would be of interest to others, especially beginners, please send them in and will try to print them in the next issue.

Q. Can I use phones of different resistance together?

A. Yes. They will give good results. Connect phones in series.

Q. What is there to wear out on a crystal radio?

A. The crystal is the only part which wears out and they will last from six months to several years.

Q. Do I have to be an expert to build or install a crystal radio?

A. No. Simply follow the directions sheet supplied with our products and you should have no trouble at all. Remember that since no batteries or tubes are required you do not have any complicated connections to bother with.

Q. Do big super-power transmitting stations hurt a crystal set?

A. No. The stronger the station the farther away they can be heard.

Q. Can I use more than one pair of phones with a crystal set?

A. Yes. As many as five pairs

of good phones will give good results. Connect the phones in series. That is, hook one terminal of one phone to set, connect other terminal to terminal of other phone, and other phone tip to set. This increases resistance of phones while connecting in parallel cuts down the resistance and lowers efficiency of phones.

Q. Is anything to be gained by two or three crystals in series or in parallel?

A. No. Crystals have no amplifying property. They merely detect or rectify the incoming signals. A vacuum tube amplifier may be used to amplify the output of a crystal set and will operate a loud speaker.

Q. If I leave a crystal set going all the time will it wear out the crystal or earphones?

A. No. Crystals have no amplifying property. They merely detect or rectify the incoming signals. A vacuum tube amplifier may be used to amplify the output of a crystal set and will operate a loud speaker.

Q. Can I use more than one pair of phones with a crystal set?

A. Yes. As many as five pairs

of good phones will give good results. Connect the phones in series. That is, hook one terminal of one phone to set, connect other terminal to terminal of other phone, and other phone tip to set. This increases resistance of phones while connecting in parallel cuts down the resistance and lowers efficiency of phones.

Q. Is anything to be gained by two or three crystals in series or in parallel?

A. No. Crystals have no amplifying property. They merely detect or rectify the incoming signals. A vacuum tube amplifier may be used to amplify the output of a crystal set and will operate a loud speaker.

Q. If I leave a crystal set going all the time will it wear out the crystal or earphones?

A. No. Crystals have no amplifying property. They merely detect or rectify the incoming signals. A vacuum tube amplifier may be used to amplify the output of a crystal set and will operate a loud speaker.

Q. Can I use more than one pair of phones with a crystal set?

A. Yes. As many as five pairs

Midget Crystal No. 985 Ideal For Small Sets

The small size of this crystal does not detract from its efficiency in the least since a small piece of mineral is just as sensitive as a large crystal.

Each Midget Crystal No. 985, is the same as all other crystals obtained from Alva F. Allen and is of the highest quality, and is given complete testing before shipping.

A small piece of suitable cat whisker wire is included FREE with each No. 985 crystal.

MIDGET CRYSTAL

No. 985.....each 35c

Natural Ores Provide The Most Efficient Radio Detection

Natural ores possess a rectifying quality which permits the passage of radio frequency currents in one direction only. Only superior quality natural ores are used in making Melomite Radio Crystals.

This ore must pass very rigid tests both before and after mounting in the soft metal holder. These Radio Crystals are given an actual reception test and must be able to bring in clear and distinct reception from broadcasting station located about seventy-five miles distant.

Lead galena, used in Melomite Radio Crystals, is smooth on fracture and has a tendency to break in cubes. Silver galena has a brilliant sparkling surface and will maintain a sensitive surface for a considerable length of time. Both lead and silver steel galena require a very sensitive contact for best results.

The function of a Crystal Detector as used in a Crystal Radio is to serve as a valve or rectifier allowing only a certain part of the current received from the transmitting station to pass into the ear phones, changing this current from an alternating to a pulsating direct current so that the headphones will respond to the varying intensity of the received signal.

Among these natural ores which possess this quality are lead galena, iron pyrites, silver steel galena and silicon. There are other minerals which must be used in combination to obtain this rectifying quantity; among these are zincite used with bornite or rock crystal.

Carborundum and meledenum have also been used but they are used in combination with a battery and potentiometer to vary the current. They are stable in operation but not as sensitive as the minerals requiring a sensitive catwhisker contact.

Many attempts to produce a sensitive synthetic mineral have been made, however none have proven as successful as the natural mineral. The natural ores vary considerably in radio-sensitive qualities and in many cases are of identical physical characteristics vary greatly in rectifying qualities.

For this reason only the best, most efficient, natural ores are used in making the Melomite Radio Crystals.

(Continued on page 2)

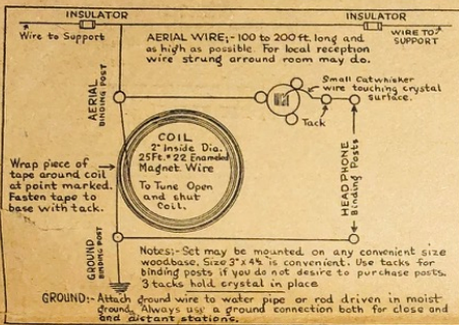
LONG DISTANCE CRYSTAL RADIO SET IS EASY TO MAKE WHEN YOU FOLLOW THESE FEW SIMPLE INSTRUCTIONS

"Distite" Crystal Radio Set No. 1 is Recommended for Beginners Before Building More Elaborate Set.

The simple crystal set described below is very efficient and under favorable conditions is capable of receiving stations located many miles away. The ordinary range of 10 to 50 miles is greatly extended providing the broadcasting station is powerful and local conditions are favorable. Reception at night is always better than during the day. Greater distances can be covered in winter than in summer.

"DISTITE" CRYSTAL RADIO No. 1

The "Distite" Crystal Radio set has been made by thousands of persons and will give fine results. We recommend that you make this set before building a more elaborate set, as you will thereby become familiar with the operation of a crystal radio.



You should have no trouble constructing this set as full instructions are printed in above drawing. The coil is made of 25 ft. of No. 24 enameled magnet wire (other size wire may be used). Wind wire around form about 2 inches in diameter, slip wire from form and wrap a small piece of tape to base. Leave wire ends about 3 inches long to fasten to Binding Posts. You can tune this set by opening and closing the coils of wire as you would a book, separating the various turns of wire. This varies the capacity (or inductance) to a surprising extent and allows separation of stations.

base with 3 tacks or small nail or use crystal cup. Cut 1 1/2 inch length of fine wire for catwhisker. Fasten one end of wire to base with tack spaced about 3/4 inch from crystal, bend wire so that point gently touches surface crystal.

INSTRUCTIONS

Instructions for making DISTITE CRYSTAL SETS are very simple. The directions and diagrams are printed on heavy paper and may be fastened to the bottom of the set.

This instruction sheet may be obtained by placing an order for "INSTRUCTION SHEET," IS-1.

DETECTOR—Fasten crystal to

PARTS FOR MAKING "DISTITE" CRYSTAL SET NO. 1

CO-1	Coil approximately 25 ft. No. 24 enameled wire, loose wound, comes ready to connect	.15
CC-1	Crystal cup, spring clip type	.10
BP-4	Binding post, spring type	4 for .10
CW-1	Catwhisker wire, 6-inch length	.08
FP-1	Printed front panel	.10
IS-1	Printed instruction sheet, heavy paper to fasten to the bottom of the set	.05
B-1	Wooden base, 3"x4 1/2" drilled and sanded	.15

AERIAL and GROUND—See detailed illustrations to right.
HEADPHONES—See Headphones listed elsewhere in this circular.



DISTITE CRYSTAL RADIO PROVES EFFICIENT

Pictured above is a Distite Crystal Radio Set using above circuit which proves very efficient. The size of the base is only 3 inches by 4 inches. This can be mounted on a wood base to make a very attractive set.

It is very easy to make a Crystal Radio Set to resemble this professional looking one. The printed front can be glued to a wood base with very little effort.

For this set a Panel No. FP-1 can be ordered. The price is only 10 cents each, or three for 25 cents.

CORRECTLY INSTALLED AERIAL IS BIG ASSET IN SUCCESSFUL OPERATION OF CRYSTAL RADIO

Distance Reception Requires Aerial at Greatest Height Possible and 100 to 200 Feet Long

Since a crystal radio uses no tubes or batteries and is dependent for its operation upon the signal received from the broadcasting station, your success depends a lot upon correctly installing the aerial to take full advantage of this signal.

If you are located close to a broadcast station your aerial may be very simple, sometimes a wire strung around the room will be satisfactory. For best results and especially where distance reception is desired, the aerial should be as high as possible (50 feet or more) and from 100 to 200 feet long. The simplest and best aerial is made of a single copper wire run from a tree, garage, barn or other suitable support to your house as shown in drawing below.

wires can be arranged in parallel, two or more wires can be used. The advantage of this construction is that more wire surface is exposed with corresponding gain in amount of current picked up. If you are located where you have plenty of space you will find it interesting to experiment with various types and lengths of aerial.

WARNING: DO NOT ERECT YOUR AERIAL OVER OR UNDER ELECTRIC LINES, TO DO SO IS DANGEROUS.

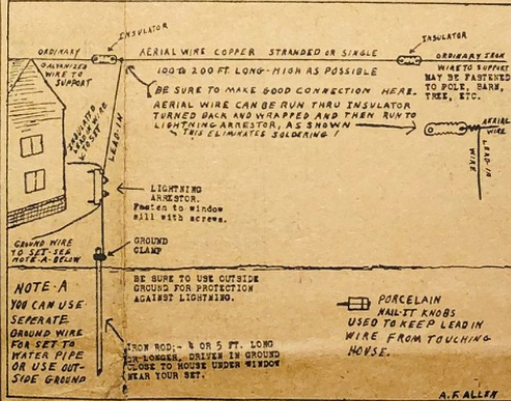
Before proceeding with the erection of your aerial study the various locations available. If possible run your wire in the direction of station you are most anxious to receive. Keep in

each end. To the other ends of insulators fasten lengths of wire necessary to fasten to supports. Before raising the wire in place, remove six inches of insulation from lead-in wire and securely twist around aerial wire. Best connection is made by soldering. If a tree is used for support be sure insulator is placed beyond branches. Bring the insulated lead-in wire down to the window, fastening to the house with nail-it knobs. Run your wire under the window sash, strip the insulation from end of wire and connect to ground post of your set.

GROUND: The use of a good ground connection is an absolute necessity for the successful operation of crystal sets. The simplest way is merely to connect wire to a water pipe. It is better to use the cold water pipe as this ordinarily leads more directly to the outside. Connection to pipe should be by means of clamp. If a water pipe is not available take a piece of iron rod or pipe, the longer the better, and drive in the ground as close to your set as possible. Connect ground wire to top of rod or pipe making sure that pipe is cleaned thoroughly where connection is made to assure good contact. The use of ground clamp is recommended. Sometimes several rods spaced about two feet apart and connected together will improve results. A very efficient ground can be made by soldering wire to old copper boiler or auto radiator and burying this in several feet of moist soil. Use insulated copper wire (stranded preferred) and run as direct to set as possible.

HEADPHONES: Many different makes of headphones are available from electrical and radio dealers, at low prices. I recommend 2000 ohm headphones for use with crystal sets. You may be able to find a good used set in your neighborhood as many thousands of headphones were sold in the early days of radio. Old telephone receivers can be used if you are close to broadcast station, these are generally of low ohmage (75 ohms) and are not very sensitive.

The above described sets are by no means all types of crystal sets. Many methods of tuning have been devised and if you will follow magazines such as Popular Mechanics, Popular Science, Science & Mechanics, Mechanics Illustrated and Radio-Craft you will find from time to time articles describing crystal radios that you can make.



This is the type aerial in greatest use and is hard to beat. If space is limited wire can be run to other supports, in shape of L or V, taking care to insulate (with aerial insulator) at all supports.

mind the location of set in the house so that lead-in wire can be easily run to a window near your set. Be sure to do the work carefully and remember that the aerial wire is sometimes subjected to severe strains.

After selecting the location cut the wire to length, fasten the insulators to

If a more elaborate aerial is desired

To Crystal Set Fans

I have been making radio crystals since 1920. The simple Crystal Radio Set has been the first set made by many present day radio experts. I will certainly welcome any suggestions which will improve "The Magic Crystal" and make it more interesting and instructive.

In the next issue of "The Magic Crystal" I would like to publish more names and addresses of crystal fans who wish to exchange ideas with others. If you would like your name and address to appear, send me a letter with your name and address written plainly with request that it appear.

Sincerely yours,
Alva F. Allen.

Questions and Answers For Crystal Users

(Continued from Page 1)

A. There is no wear on the phones and hardly any on the crystal. Crystals are in most cases worn out by scraping the catwhisker wire over their surface. We advise lifting the catwhisker wire slightly when making same and you will find that crystals will last much longer.

Q. How can I clean the surface of a crystal?

A. Use a soft cloth moistened with water or alcohol. Do not scrape the surface with a knife as this will render the crystal useless.

Q. What is the function of a crystal?

A. The radio crystal serves as a valve and allows to pass into the headphones only a certain part of the radio wave, changing its character from an alternating current so that the headphones will respond.

(Continued on Page 3)

"MELODY KING" CRYSTAL SET No. 2

CONSTRUCTION INFORMATION

COILS—The No. CO-2 Coil is that of the flat type and is single layer, wound with No. 30 enameled copper magnet wire on heavy fibre board form. Coil is 1/2 inch thick by 3 inches long by 1 1/2 inches wide. The wire is wound within 1/4 inch of each end, leaving wire space 2 1/2 inches. Two small holes are punched in end for mounting. Due to the small size of this coil, it can be used in making many different style sets.

No. CO-3 Coil is of slightly heavier construction, being 3/4 inch thick by 3 inches long and 1 1/2 inches wide. This coil is single layer wound, holes are drilled in the ends. Due to the larger size of this coil, you will find it a very practical size for all small sets.

The size of coil can be changed to suit your purpose and different size wire can be used if desired. However, we do not recommend using wire smaller than No. 30 or larger than No. 26 for pocket sets. If you desire to make large size sets, No. 24 or No. 22 wire will be satisfactory. Enameled copper wire should always be used for coils due to the ease of handling. Wire should always be wound carefully so that the turns will be tight and close to each other, so the slider arm will move smoothly over the surface. After the set is assembled and slider arm is in place, move slider back holding the contact end tightly against wire until the enamel insulation is cut through and bright copper shows. This allows slider to make contact with the various turns so that more or less turns of wire are in the circuit. This varies the capacity of the coil and tunes the set to the various wave lengths necessary.

For connecting the various parts of your set together, use small size copper wire. The same size as used in your coil will be satisfactory. Small wire is just as efficient as large wire for this purpose and is a lot easier to handle. The insulation should be removed completely at points where connections are to be made. Sandpaper or a knife may be used. Lots of beginners forget to remove insulation at connections and consequently their sets refuse to work. If connections are not carefully made your set will not work. It is always best to solder wires together. However, if tightly twisted they should give no trouble.

Pocket Radios are connected to the Aerial and Ground in exactly the same manner as larger crystal

radios. Complete detailed instructions are given elsewhere in this catalog.

In making a pocket size set the main thing is to make the parts small in size so as to be readily enclosed in a small case. Construction details are given of several different style sets which can easily be made. These construction details can be changed to suit individual tastes and needs.

Small size sets will give practically the same results as the large type sets with the added advantage of being easily carried from place to place.

While many crystal radios have been sold as "pocket radios," these sets are pocket radios only in that they are of such a size as to be easily carried in the pocket. As far as being able to give satisfactory reception while the user is walking or riding, it must be stated that such results are not to be expected.

All pocket radios which do not require tubes or batteries are dependent upon the crystal detector for their operation and are crystal radios in every respect. They use a standard crystal set circuit with coil, detector and binding posts for the connection to aerial, ground and phones. The simplicity of design and construction of the crystal radio makes it an easy matter to make the parts of a suitable size as to be easily enclosed in a small case.

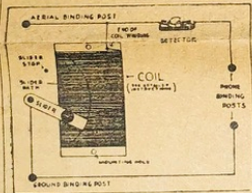


Figure MK-1.

MIDGET SEMI-FIXED CRYSTAL DETECTOR No. D-125



Actual Size

A super compact Crystal Detector especially designed for use with small size crystal sets. Midget size makes it easy to enclose inside the smallest pocket type sets.

Midget Semi-Fixed Crystal Detector, No. D-125 Price **50c**

PARTS FOR MAKING CRYSTAL SET NO. 3

- CO-4 Coil approximately 72 turns secondary and 23 turns primary of No. 26 Enameled Magnet wire on form 3/4" thick, 3 1/2" long and 2" wide. **.65**
- VC-1 Variable condenser, .00035 MFD. with Tuning Knob **\$1.50**
- No. 250 Detector Melomite, Less Crystal **.25**
- BP-4 Binding Posts, spring type **4 for .10**
- PC-1 Phone Condenser .00025 MFD. **.10**
- MC-1 Melomite Supersensitive Crystal **.25**
- CO-28 25 ft Coil No. 28 enameled wire for connections... **.05**

PARTS FOR MAKING "MELODY KING" CRYSTAL SET NO. 2

CO-2	Coil approximately 250 turns No. 30 enameled magnet wire on form 1/2 inch thick, 3 inches long and 1 1/2 inches wide	.35
CO-3	Coil approximately 250 turns No. 30 enameled magnet wire on form 3/4 inch thick, 3 inches long and 1 1/2 inches wide	.45
SL-1	Slider arm 5/16 inch wide and 1 1/2 inches long, with mounting screws	.10
BP-4	Binding posts, 4 spring type	.10
CO-28	25 foot coil No. 28 enameled wire for connections	.05
IS-2	Melody King instruction sheet printed on heavy paper to fasten to set	.05

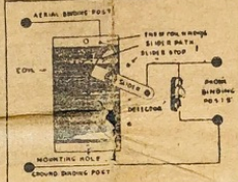


Figure MK-2.

Figures MK-1 and MK-2 show two different methods of wiring this very efficient little set, using the same parts. These circuits are the standard single slide tuning coil circuits used by practically all makers of commercial crystal sets.

It has proven very practical and efficient and is considered best for small crystal sets.

Both these drawings show Midget Semi-Fixed Detector No. D125.

Questions and Answers For Crystal Users

(Continued from Page 2)

Q. Can I use a fire escape as a ground for my crystal set?

A. In many cases fire escapes are not grounded and for this reason should be worthless as a ground. However, on very close stations it might be used as an aerial.

Q. I have made my crystal set and all I get is a humming sound. What is the cause of this?

A. This sometimes denotes a poor connection. Be sure to check your set completely, be sure that connections are perfectly made. If enamel wire is used remove the insulation with sandpaper or by scraping with a knife. Also a humming sound may be used by your aerial running parallel to a power line. In that case place your aerial at right angles to the power line.

Q. May a loudspeaker be used with a crystal set?

A. Only in very unusual cases. Sometimes when located within a few blocks of a powerful broadcasting station signals are strong enough to operate a sensitive speaker with fair volume. A regular tube type amplifier may be used by connecting the output of phone terminals to the input terminals of amplifier.

Q. Is it absolutely necessary to insulate the crystal?

A. In dry weather an uninsulated aerial may be used without much leakage. In damp weather, however, it is necessary to have the aerial insulated at all points of contact.

(Continued on Page 4)

CRYSTAL SET PARTS



Melomite Universal Adjustment Crystal Detector No. 250 (less crystal). A reliable and efficient crystal detector at a low price. Spring type crystal cup. Contact stays where placed and will not jar out of adjustment. Simple, positive adjustment allows reaching entire surface of crystal **.25**

- N. 250 CW Replacement catwhiskers for above **10 3 for .25**
3 for .25
- No. CW-500 Fit many types detectors, furnished in package of **.25 5 for \$1.00**
- MC-1 Melomite Radio Crystals **.35**
- M-985 Midget crystal **.50**
- D-125 Midget Semi-fixed Detector **.25**

AERIAL SUPPLIES

- RA-1 Regular Aerial kit, for outdoor installation; contains 100 ft. Aerial wire, 2 Aerial insulators, 25 ft. Insulated wire, 2 lead-in insulators and ground clamp **\$1.75**
- LDA-1 Long distance aerial kit—for best results. Contains 150 ft. Insulated wire, 2 Aerial insulators, 2 Lead-in Insulators and Ground Clamp **\$2.50**
- XLW-25 25 ft. Coil Covered Copper Lead-in Wire **.30**
- XAW-25 25 ft. Aerial Wire **.35**

CRYSTAL SET HEADPHONES

Well made phones of approved design, especially suitable for use with crystal radios. I recommend these phones highly and know you will be pleased with their performance.

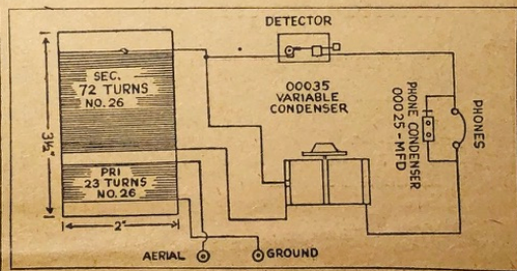
- 2000 ohm Phones, complete with headband **\$2.95**
- Single Phone, 1000 ohm, with headband **1.65**



CRYSTAL SET No. 3

For those who desire a more elaborate and efficient set we recommend the set described below. These instructions should enable you to make a very satisfactory set and one which under favorable conditions will receive programs from stations a considerable distance away.

If you will follow the hook-up carefully no difficulty should be encountered either in making or installing the set. A cigar box may be used to house the parts and if stained or painted will make a very attractive case. Best connections are made by soldering. If this is not convenient be sure to twist the wire together securely. In either case the insulation must be removed at point of connection. Sandpaper or scrape enamel until bright copper shows.



CIRCUIT DIAGRAM FOR SET NO. 3

The coil can be wound on any convenient form. We recommend using a 2"x3 1/2" wooden form, 3/4" thick. Wind 72 turns No. 26 wire, single layer for secondary coil with 23 turns No. 26 wire, single layer, primary coil. Size of wire is not of great importance and if you have different size wire on hand this may be used. If you have a different capacity variable condenser on hand it will no doubt give good results, at least it will pay you to give it a trial. Phone condenser is not absolutely necessary but sometimes will improve reception.

SATISFIED CRYSTAL RADIO USERS WRITE FROM ALL OVER U. S. AND CANADA

ALABAMA
Walter Polk, 1820 Kilgore St., Jasper, Ala., Aug. 25, 1947. "I want to express my thanks for the information that you sent me. Last night I received two stations in Texas and two in New Orleans. Station WVNZ here in Jasper is so loud I have to tune it down to keep from hurting my ears. I fully recommend your parts."

ARIZONA
James Campbell, Sandy Route, Kingman, Ariz. "I received my melomite crystal and I am more than pleased with it."

ARKANSAS
Loule Trickett, Booneville, Ark., Feb. 1, 1947. "I think your crystals are the best made and I can get stations over 600 miles away with them."

CALIFORNIA
Ben Yabu, Rt. 1, Box 190, Clarksburg, Calif., April 10, 1950. "I received your crystal and I want to tell you that it works wonderful. Its tone is very clear and loud."

COLORADO
Robert Buchanan, Box 607, Pierce, Colo., Oct. 4, 1947. "I think your crystal radio parts are the best on the market today. With your crystal I can get all four Denver stations."

CONNECTICUT
Joseph Redone, 151 Zestbury Rd., Zaterdag, Conn. "I have made your crystal set No. 3 and I have had very good reception with it. It works without a ground. I am very satisfied."

GEORGIA
Felton Argo, 645 Elizabeth Place, Atlanta, Ga., Feb. 24, 1949. "I ordered one of your crystals last year and it is one of the best I have ever seen. I have reached distances over 150 miles away."

IDAHO
Warren A. Anderson, 724 Young Avenue, Couer D'Alene, Idaho. "I received your crystal and it worked wonders to my set."
Norman Scroggum, 655 "K" St., Idaho Falls, Idaho. "I received your plans and crystal the day before yesterday. I put it on my set to see how good it was and I mean to tell you it worked three times better than my old one."

ILLINOIS
William Jones, 1745 Ridge Road, Homewood, Ill. "I have completed your radio set No. 1 and I like it so much that I am starting on the Melody King set No. 2. My first set received all the principal Chicago stations."

INDIANA
David Sprunger, Decatur, Ind. "I received and liked very much your crystal set No. 1 and your Melomite crystal. I received stations WKJG and WOWO in Fort Wayne, Ind., which is about 35 miles away."

IOWA
Jim Roy Seda, Clutier, Ia., July 2, 1950. "I received crystal and parts the other day. I made set

No. 1 and I can get KXEL, Waterloo, day and night and fairly loud."

KANSAS
Roger Record, Route No. 1, Goff, Kan. "I have made a Melody King radio and just as soon as I got it together I hooked it up and got KFAB Omaha, and Lincoln over a hundred and fifty miles away. Then I got KCMO, Kansas City, Mo., about seventy miles away."

LOUISIANA
Richard Ford, 805 Lafonuche Drive, Philodaux, La. "Your Melomite crystal is the best I have ever used. Until now I have used three and I am ordering another with this letter."

MINNESOTA
Clark Eid, Gary, Minn. "About three years ago I bought a Melomite crystal from you. I have found it very satisfactory. These are some of the cities I have received broadcasts from and the approximate distance; Fargo, N. D., 60 miles; Jamestown, N. D., 120 miles; Minneapolis, Minn., 300 miles; Waterloo, Ia., 500 miles; and Chicago, Ill., 900 miles away."

MAINE
Sidney Eaton, 1070 Mussey St., So. Portland, Maine. "I received your Melomite crystal yesterday. It is really swell. I can hear WCSH clear as day without any static."

MARYLAND
Milton L. Schuman, 5104 Belle Ave., Baltimore, Md. "Your Magic Crystal showed no letters from Maryland so I thought I would write you. I received your Melomite Crystal and found it very loud and sensitive."

MICHIGAN
Howard Mergensner, 5008 South Auburn, Auburn, Mich., May 12, 1947. "I have built your crystal set No. 3 and I think it is a very powerful little set. I have received stations many miles away."

MISSISSIPPI
Rubert Guthrie, Newton, Miss., Nov. 15, 1948. "I am using one of your crystals and your Distite sets. I can receive stations up to 600 miles away."

MISSOURI
Edward Pigg, Worth, Mo., April 21, 1950. "I received my Melomite Crystal from you a few days ago, and I want to report my successful results with the set. My aerial is about one hundred and fifty feet long, and I have a good ground for the set. I receive stations one hundred and twenty miles away with excellent results and stations much farther with good results. Among these stations are as follows: WHB, KCMO, WDAF, KMBC, KFEQ, KRES, KMA."

NEW HAMPSHIRE
Wilford Caswell, 134 Main St., New Castle, N. H., Jan. 25, "I put your Melomite Crystal in an old radio and got programs from stations I never heard before."

NEW MEXICO
Bill Ward, Ute Park, N. M., March 1, 1947. "I built your crystal set No. 3 with swell results. Received KOMA, Oklahoma City; KRDL, Dallas, Tex."

NEW YORK
Bob Koomes, 125 Butternut Drive, DeWitt, N. Y., Feb. 25, 1950. "I received the Melomite Radio Crystal you sent me yesterday and started to assemble my set right away. When I got finished I found that my little radio was working like a charm."

NORTH CAROLINA
Joe White, Guilford College, Rt. No. 1, N. C. "I have been a crystal set builder for the past three years, and have tried many types crystals but I find that your Melomite Crystals are the finest that can be purchased for such a low price."

NORTH DAKOTA
Alvin Sauter, Carson, N. D., May 3, 1949. "I received your crystal some time ago and it really works good. I have gotten stations over 1,000 miles away."

OKLAHOMA
Jim Bolond, Pond Creek, Okla., May 29, 1950. "I picked up 25 different stations in 10 different states and four in Mexico in about four months. The furthest stations I have picked up are KLLX, Twin Falls, Idaho and KOH, Reno, Nevada."

OHIO
Jim Singer, 1005 Woodward, Akron 10, Ohio, Jan. 15, 1947. "I just wish to tell you of my success in making a set using your Melomite Crystal. One of my friends has seen my set and is going to make a set too."

support. Ordinary porcelain insulators are satisfactory.

Q. Is it necessary to have the aerial far removed from metallic objects and buildings?

A. It is best to keep the aerial as far away from metallic structures as possible. It is not absolutely necessary to have it any great distance away, but in general, the further away the better the results.

Q. Is it necessary to solder the joints in aerial?

A. It is advisable to do so, particularly if the aerial is to be more or less permanent. The corrosion of the wire at the joints will increase the resistance at those points unless the joints are soldered.

Q. How long should the aerial be?

A. This depends upon the wave lengths to be received. The aerial wire should be about 100 feet long for moderate length waves and 300 feet long for long waves. With the lead-in wire lengths will be 40 to 60 feet longer.

Q. How high should aerial be?

A. In general, the higher the better. We advise having your aerial 40 feet high at least, however, lower heights are satisfactory in most cases.

Q. Can a gas pipe, fire escape, drain pipe, etc., be used for an aerial?

A. In some cases any one of them might be used and some persons report fair results using them. Bed springs, screens, telephone hooks, outside metal parts of light fixtures, etc., may sometimes be used for aerial providing the broadcasting station is not too far away. A regular aerial always gives the best results.

Q. Where should lead-in from aerial be connected?

OREGON
Robert Hurd, Route No. 2, Eugene, Ore. "I think your crystals are wonderful, I have been able to get stations KOYE, Eugene, Ore., KUGN, Eugene, Ore., and KIRO in Seattle, Wash."

PENNSYLVANIA
Harry Lazor, 716 Mary St., McKees Rocks, Pa., December 30, 1949. "I am writing this note to tell you how much I am pleased with your crystals. I have made two of the illustrated sets with the directions you sent to me. I receive 5 Pittsburgh stations with only 30 feet of aerial wire."

SOUTH CAROLINA
Thornwell Madden, Route No. 6, Anderson, S. C. "I received my radio crystal April 3, 1950 and I have received many stations. I have picked up many stations that our family radio has never picked up."

SOUTH DAKOTA
Bob Robinson, Box 46, Tea, S. D. "I received my order yesterday and I think the Midget Semi-fixed Detector works fine. I got KOA, Denver, Colo., with fine volume."

TENNESSEE
Gorden F. Benett, R.F.D. No. 1, Byington, Tenn., Nov. 19, 1948. "The Melomite Crystal I ordered from you is the best crystal I have ever used. It is the most powerful crystal I have ever owned. As quick as I made your set No. 1 I got good reception on local stations and set No. 2 worked very good also."

TEXAS
Ken Thompson, Pasadena, Tex., June 21, 1949. "Thank you for the parts you sent me. When I received your Melomite Crystal I put it to-

gether and received KXYZ, 16 miles away."

VIRGINIA
Sam W. Rash, R.F.D. No. 1, Box 30, Dundas, Va. "I put up an aerial of about 250 feet for my crystal set. Then one night I happened to pick up WHAS, Louisville, Ky., which is about 250 miles from where I live."

WASHINGTON
Bob Burrows, Leavenworth, Wash., March 13, 1950. "It's pretty rugged country around here but your crystal makes reception very good, I have been using it three days now and I have picked up KIRO, 125 miles away. This is the first set I have built and I didn't think it could be done."

WEST VIRGINIA
Joseph Maiolo, Jr., 332 Kingwood St., Morgantown, W. Va. "Please send me one of your Melomite Crystals. They are the best I have ever used."

WISCONSIN
Donald Drees, 325 Leavenworth Ave., Fond du Lac, Wis., August 1949. "I have been building crystal sets for about four years and the Melomite Crystal is by far the best I have ever used."

CANADA
Earl Brown, 926 Atkinson St., Regina, Sask., Canada. "I've bought a crystal which was manufactured here in Canada and even though it gives clear reception I consider yours to have a better, clearer tone."

Charles Cornier, New Brunswick, Canada. "Your Melomite Crystal is a great receiver, I have had a crystal radio for five years and I have never had such results from a crystal before."

QUESTIONS AND ANSWERS

CONTINUED FROM PAGE 3

A. It should be connected at point closest to location of your set.

Q. What kind of wire should be used for aerial?

A. Any kind of copper, bronze, or aluminum wire may be used. Stranded wire seems to give better results than solid wire as more surface is exposed. Iron wire can even be used in some cases, although its use is not recommended for best results.

Q. How can I eliminate stations interfering with each other?

A. This trouble can in many cases be eliminated by using a counterpoise instead of a ground. A counterpoise is simply another aerial strung below the regular aerial. This wire should be at least as long as the regular aerial and should be from six to eight feet above the ground. Use regular stranded copper aerial wire and insulate well at both ends with aerial insulators and use insulated wire for the lead wire to set. This lead wire is connected to the ground post of set. You now have two aerials, one below the other. Tuning is sharpened considerably by this arrangement.

Q. Do you guarantee that I can hear stations hundreds of miles away with Melody King Crystal Set or by using Melomite Crystal in my set?

A. No, we are unable to guarantee such results due to some localities not being suited for distance reception. However, we do guarantee that you will be satisfied or will gladly replace any of our products that are not perfectly satisfactory.

Q. Can insulated wire be used for my aerial?

A. Insulated copper wire makes a very good aerial. It is not necessary to remove the insulation.

Be sure the insulation is removed at point of connection to lead-in.

Q. What is the function of a variable condenser in a crystal set circuit?

A. It is used to vary the wave length range the set will respond to. If the condenser is placed in series with the aerial or ground the wave-length will be decreased. If placed in parallel or across the tuning coil the wave-length range will be increased.

Q. The instructions for making a simple crystal set as shown on back of MELOMITE Crystal card call for 25 feet of wire in coil. What would be the result of less or more wire in this coil?

A. The tuning effect of this coil depends both on the length of wire and the varying capacity effect of opening and closing the coil, book fashion. More wire in the coil will increase the wave-length range, less wire will decrease the range. We advise that you try various length of wire in this coil until you find a length which gives you best results.

Q. Can I connect my crystal set to the aerial of an electric radio and have satisfactory results?

A. No. The aerial when connected to an electric set is grounded through the R. F. Coil and you will be unable to receive any signals with your crystal set. However, if you will connect your electric set to the aerial through a small condenser, say .0025 mfd capacity the aerial may then be used for your crystal set. It is best to disconnect aerial wire from electric set when using crystal set on aerial.

Q. How many wires are necessary in an aerial?

A. Only one wire is necessary and there is no advantage in using more.