

TELEVISION

RADIO'S GREATEST MAGAZINE

RADIOVISION

RADIO NEWS

REG. U.S. PAT. OFF.

OCTOBER
25 Cents

Over 200
Illustrations



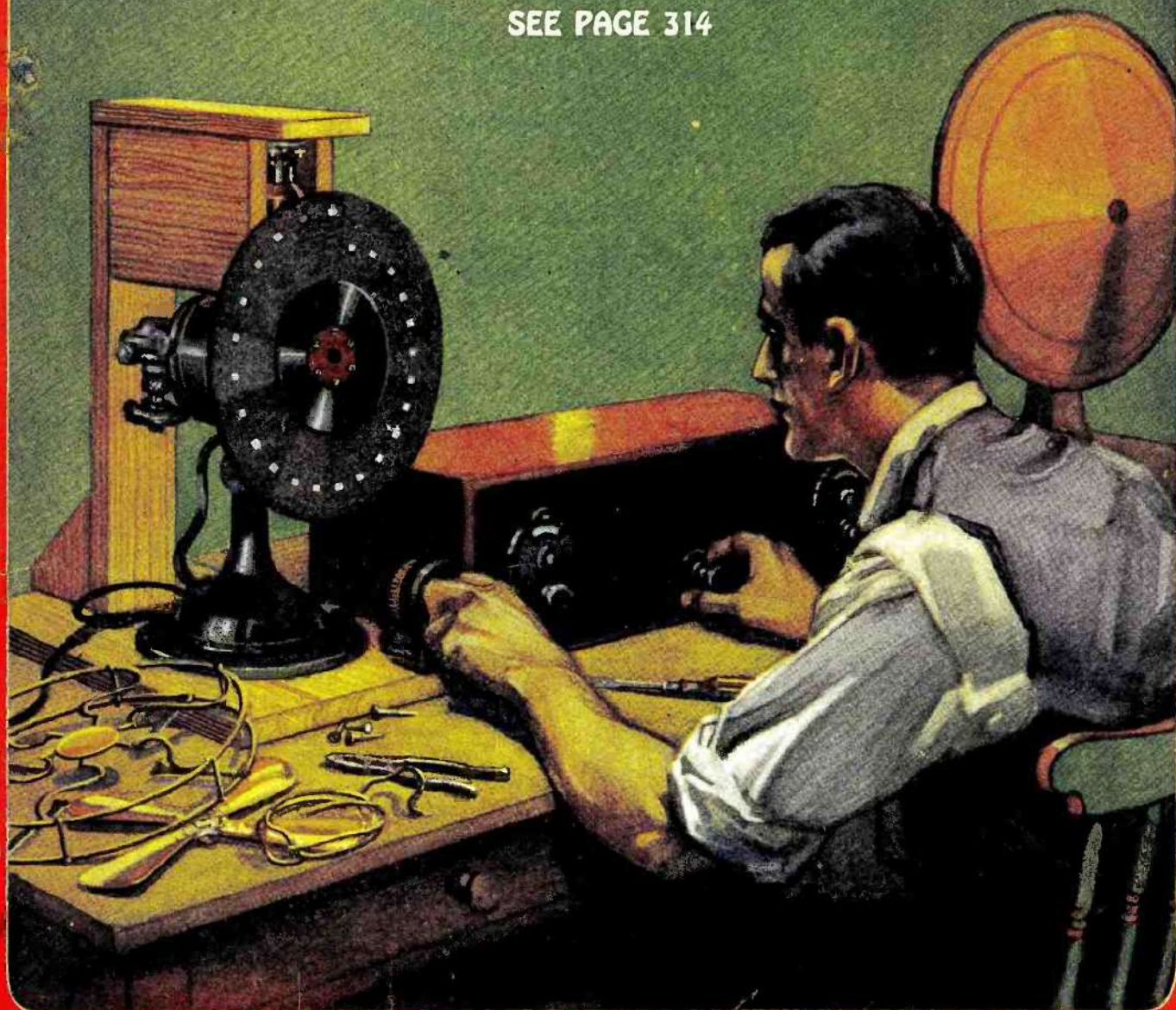
BROADCAST
WRNY
STATION



Edited by HUGO GERNSBACK

"SEEING" MUSIC WITH A
TELEVISION RECEIVER

SEE PAGE 314



RADIOVISION

TELEVISION

RADIOVISION

TELEVISION

RADIOVISION

TELEVISION

RADIOVISION

TELEVISION

RADIOVISION

TELEVISION

TELEVISION

EXPERIMENTER PUBLISHING COMPANY, 230 E. 42ND ST., NEW YORK

RADIOVISION



“Seeing” Music with a Television Receiver

TELEVISION has arrived, but as yet only a few scattered stations are transmitting television images. While preparing for regular television programs, however, the radio fan can perform some highly interesting experiments with a simple television apparatus that he can construct himself at little cost. This machine has all the parts of what is now generally considered the standard television receiver: namely, a scanning disc pierced by a spiral of holes, a motor to drive it, a neon glow tube, and a means of controlling the speed of the motor. By assembling it, the experimenter will obtain a good introduction to the theory and practice of television without having to spend a great deal of money on complex apparatus. After acquainting himself with some of the fundamental theoretical principles and practical operating difficulties, he will be better able to make and use a real television receiver when regular television service is available.

The parts composing the crude machine illustrated in these pages were picked up

at random in the RADIO NEWS Laboratories. An electric fan, which was about to be packed away, was instead dusted off and the blades and wire guard removed from it. As the fan was of the “oscillating” type, the worm mechanism which makes it swing back and forth was unhooked, so that the motor would remain stationary while in operation. (These operations did not ruin the fan, as the blades, guard and worm mechanism can be reattached in a few minutes.) It was decided to use a fan instead of a special television motor because fans are very widely used, and because the summer will be well over by the time the constructor builds this machine. Few people would care to spend \$25 or \$30 for a special motor just for an experiment, but they can easily make use of an idle electric fan.

The general appearance of the complete machine, as assembled in the RADIO NEWS laboratories in about two hours, is shown in the pictures on this and the facing page, and in uncompleted form on the front cover. It was built, not for the purpose of receiving television images, but merely

to show how ordinary voice and music “looks” in a television receiver. The geometric patterns and formations built up by the apparatus are extremely interesting to behold. More will be said about the operation later.

A CHEAP, USABLE DISC

After taking the fan apart, lay it aside for a while and make the scanning disc. All the discs which are now being sold commercially for television purposes are made of aluminum and are accurately drilled with round or square holes, not more than one sixteenth of an inch across. For this home-made contraption, an ordinary flat piece of cardboard is perfectly satisfactory. It should be not less than a sixteenth of an inch thick, and cut into a disc 12 inches in diameter.

With the aid of a pencil, a ruler and a compass (which you can borrow from your son's or little brother's school bag), now mark off 24 radii (lines running from the center of the disc out to the edge). These should be 15 degrees apart. As a circle has 360 degrees, the lines will radiate outward evenly. If you have forgotten how to subdivide angles with a compass, simply draw one diameter first through the center of the disc. Then draw another one exactly at right angles to it. These give you four lines. Now spot the middle of each of the four sections as closely as you can, and draw four more lines from the center. If you now subdivide each of the resulting sections into three equal parts, you will have the twenty-four lines.

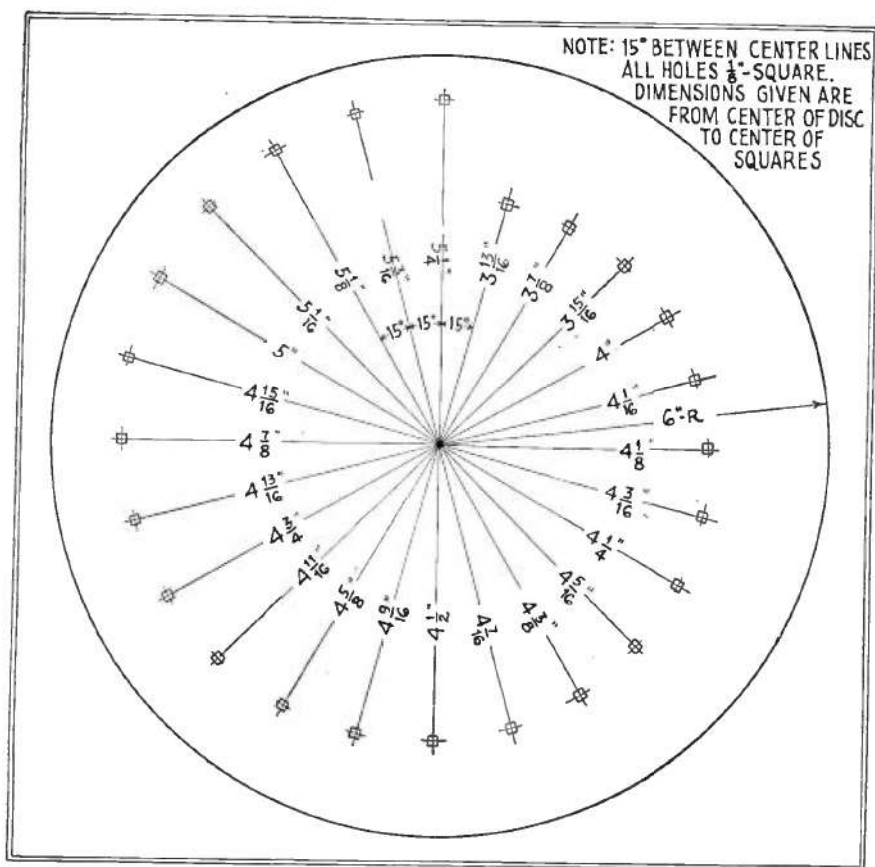
Take the ruler and measure a distance of $5\frac{1}{4}$ inches along the vertical center line. Make a mark at this point. Proceeding on the next line to the left, measure a distance of $5\frac{3}{16}$ inches. Proceed along, measuring off the distances as indicated in Fig. 1 on page 315; you will have a total of 24 points. Through each one, drill a hole slightly less than $\frac{1}{8}$ -inch in diameter; then, with a piece of stiff wire or a narrow strip of brass, ream out the holes so that they will be square in shape. Their edges are bound to be a little fuzzy, but do not worry about this.

For those who want to save themselves the trouble of marking out the individual lines, RADIO NEWS has prepared full-size blueprints which can be used as drilling templates. To use one of these blueprints, you simply lay it over the piece of cardboard and punch through the center points marked on it. (These templates are free; simply write to RADIO NEWS, 230 Fifth Avenue, New York, N. Y., and ask for the Television Disc Blueprint.)

If you haven't a piece of cardboard of the right size at home, go to the nearest stationery or draftsmen's supplies store and ask for a piece of heavy bristol board. This will cost only a few cents.



Fig. A. The experimental television receiver in the RADIO NEWS Laboratories. The only adjustment is the knob regulating the motor's speed. The patterns created by the music are observed through the square hole cut in the cloth, opposite the neon lamp.



reproduces the changes as variations of light. When a regular television receiver is being operated with television impulses, a picture is built up on the plates of the tube with the aid of the scanning disc.

On the other hand, if voice or music impulses are led to the tube while the disc is rotating, endless varieties of patterns will be observed. After watching them for a while you will be able to distinguish a low note from a high one by merely watching the picture it makes; and you will be able to tell the difference between voice and music.

The neon tube is suspended just behind the scanning disc. It may be either fastened to the underside of the bread board that holds the radio receiver as shown in the pictures (Figs. B and C) or supported on an arm such as that shown on the front cover. In the laboratory machine, four corner pieces (old broom sticks) were used to allow a cloth cover to be tacked around the fan. A hole was cut in the front of the cloth, so that the upper section of the disc between the farthest and innermost holes could be observed. The neon tube should be so placed that the hole which is $5\frac{1}{4}$ inches from the center of the disc passes just across the top of the plate, and the hole which is $3\frac{13}{16}$ inches from the center just across the bottom edge.

THE CIRCUIT

A double-impedance unit, such as are used in audio amplifiers, is mounted anywhere along the breadboard on which the motor rests. A 60-ohm rheostat for controlling the speed of the motor is mounted on the front edge, so that it can be adjusted easily.

(Continued on page 385)

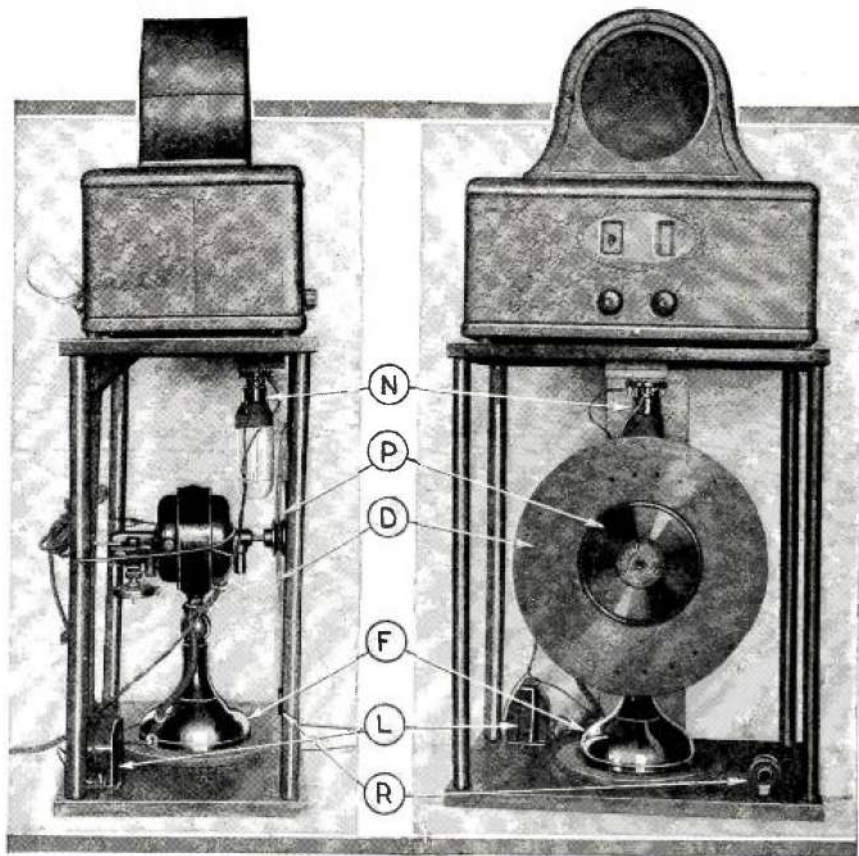
After drilling the scanning disc, the next problem is to mount it to the shaft of the fan motor. Obtain from a hardware store a pulley that will fit the shaft of your particular motor. This will have a set screw which allows it to be tightened against the shaft. To fasten the cardboard disc to the face of the pulley, first drill and tap the latter for four 8-32 screws, then clamp the disc between two 5-cent phonograph records and pass the screws through into the pulley, as shown in Fig. 2 (page 385). This was the arrangement used in the original model of the machine; but any other that suggests itself may be employed. The important thing is to make the disc run as smoothly and as evenly as possible. After mounting it, give it a coat of black paint. Liquid shoe polish will serve just as well; the idea is merely to darken the cardboard.

THE FLASH LAMP

The main item of expense involved in this "television" receiver is the neon glow tube. This costs about \$12, but is a good investment because you will be able to use it later in any real television instrument you build. This tube is about six inches long and two and a half inches in diameter, and is fitted with a standard UX-type base, which fits in a standard tube socket. It contains two flat metal plates, placed about a sixteenth of an inch apart and parallel to each other. When an electric current of the proper value is passed through it, the entire surface of one of the plates lights up with a pinkish-red glow, characteristic of the gas neon. The eye-catching red signs now being used so extensively for advertising purposes contain this same gas.

The neon glow tube responds to changes in electrical current just as a loud speaker does but, instead of producing sound, it

Fig. 1. Details of the scanning disc used in the set-up. The holes overlap; but very interesting images are obtained.



Figs. B and C. The apparatus with the cloth cover removed; N, neon lamp; D, scanning disc; P, phonograph records used for clamp (see Fig. 2); F, fan base; R, motor rheostat; L, double-impedance unit (see Fig. 3).

Television—"Seeing" Music

(Continued from page 315)

This rheostat is connected simply in series with the motor. Try any rheostat you happen to have on hand, and see how much control it gives.

Of course, the radio receiver need not be mounted on the top of the framework, as shown. One of the new Stewart-Warner

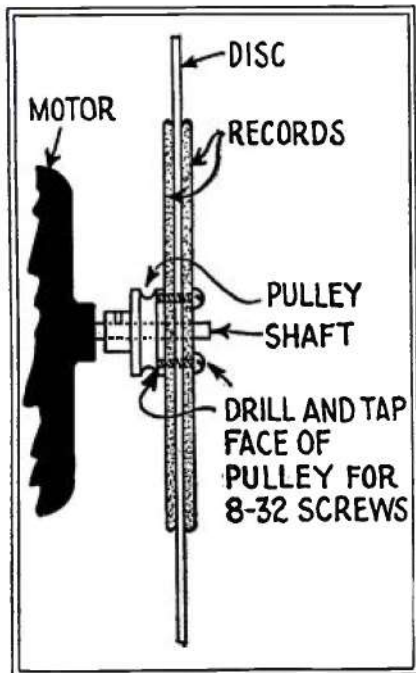


Fig. 2. The method of clamping the scanning disc to the fan shaft. It must be centered exactly.

A.C. receivers, which had been submitted to the Radio News Laboratories for test, happened to fit nicely in this position, so it was used.

The method of connecting the neon tube is shown in Fig. 3. A "B" battery of 180 volts is required for the neon tube itself; although fairly good results will be obtained if the high-voltage side of a "B" socket-power unit is used. The resistor marked R in this diagram is not the motor rheostat marked R in the picture on page 315, but a universal-range rheostat for adjusting the local current through the neon tube; it should have a resistance of from 200 to

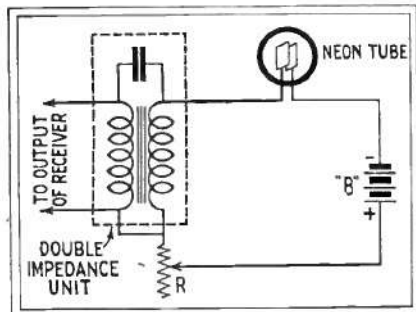


Fig. 3. Schematic diagram of the lamp circuit. This resistor R is not the one pictured in Figs. A, B and C (which is in the motor circuit) and it does not require continual adjustment.

500,000 ohms. The procedure is to adjust this rheostat until the neon tube just lights up; then the signal fluctuations will cause

New **T. C. A. AMPLI-PACK**

Makes Your Set an Ultra-Modern A. C. Power Receiver

A Complete A.C. Power Supply—"A" and "B" and "C"—Makes any D.C. Set into an Ultra-Modern A.C. Receiver. Uses two 210 type tubes in Push-pull; or one of the new 250 type tubes. Power Amplification gives perfect reproduction over the entire musical scale range.

Lets You Enjoy Real Musical Reception

Clear, bell-like tone. Powerful volume. AmpliPack gives you an advanced radio instrument at less cost than ever before offered. Consumes no more current than an ordinary 50-watt light. Cool, quiet, dependable.

Quickly Assembled

You can assemble an AmpliPack easily in one evening. A screw driver, a pair of pliers and a soldering iron are all the tools needed. We supply complete layout diagrams. Simple to install. Attached to set in 3 minutes.

171 Push-Pull and Straight 210 Power Packs

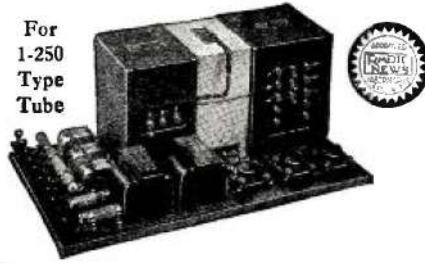
Complete power supply units for home constructed amplifiers. Compact, scientific design together with silent, absolutely dependable operation make these our most popular Power Packs for home construction.

At All Leading Dealers

Ask your dealer for AmpliPack. He can give you full details and our simple assembly diagrams. Don't be satisfied with out-of-date reception—build an AmpliPack tonight!

TRANSFORMER CORPORATION OF AMERICA

1428-32 Orleans St. CHICAGO, ILL.



For 1-250 Type Tube

The T. C. A. High Quality Line

also includes AUDIO TRANSFORMERS, AUDIO OUTPUT CHOKES, POWER PACKS and CHOKES and other Transformers

Every coil in our Transformers is vacuum impregnated with a special compound. This prevents moisture disintegration and short circuiting. Clean cut laminations make them hum proof and banish noise interference.

Send Coupon for Free Booklet

Transformer Corporation of America, 1428-32 Orleans St., Chicago, Ill.

Please send me Booklet on your complete line of radio products. No obligation or cost.

Name
Address
City..... State.....

All the New Kits

Everything in radio—kits, parts, accessories, sets. Improved designs and styles. Big selection at worthwhile saving. Immediate service; personal attention. Send for complete, illustrated Catalog "B."

Allied Radio CORPORATION
711 W. LAKE STREET, CHICAGO

\$5.50 buys this famous cabinet

The Itesline

Sizes range from 7x18x10 to 7x30x12. Mahogany finish, \$5.50 to \$8.75. Solid Walnut, \$6.50 to \$10.25. F.O.B. Hickory. Twelve-hour service. Write for Catalog.

SOUTHERN TOY COMPANY, MAN'FR. HICKORY, N.C.

FREE RADIO GUIDE

Radio has been changing so fast lately that it's hard to keep up with it. Barawik's Big Radio Guide will keep you posted on the newest wrinkles. Thousands of illustrations of sets, parts, new ideas. Big chance to save big money. Send for free copy now.

BARAWIK CO. 210CC Canal St. CHICAGO, U. S. A.

Please say you saw it in Radio News



Easy to build... unequalled performance
.. at a price you will be glad to pay

Marvelously Realistic Reproduction Remler Audio System Perfect Control of Volume from Maximum to a Whisper.
Simple to Operate Expert Results for Every Member of the Family.
All the Selectivity that Could be Desired . . . Clean-Cut Separation of Stations on Adjacent Channels.
Superheterodyne Sensitivity Shield-Grid Amplification.
Stable Operation Completely Shielded Throughout.
Easy to build Can be Assembled, Wired and Put into Operation in One Evening. No Special Knowledge or Experience Necessary.
Most of the Wiring Completed and the Circuits Balanced at the Factory . . . Only a Few Wires to be Installed by the Builder in Accordance with Color Code.
Eliminator or Battery Operated.
Combined Power Amplifier and Plate Supply . . . CX 350 (UX 250) Power Tube . . . Full Wave Rectification B Voltage Regulation Provided For.
Steel Chassis Amplifier Construction Compact and Rigid.
Power Transformer Primary Tapped for Different Line Voltages.



REMLER POWER AMPLIFIER

The story of the "29," what it is and what it does, is complete in Bulletin No. 17. Sign the coupon for your free copy.

Remler Division, Gray & Danielson Mfg. Co.
260 First Street, San Francisco, California.
Gentlemen: Please send me:
 All the "dope" on the "29".
 Bulletin service for professional set builders.

Name _____
Address _____
City _____ State _____

WRITE TODAY

Send for large, new illustrated Catalog "B," showing the latest of everything in radio at wholesale prices.

Allied Radio CORPORATION
711 W. LAKE STREET, CHICAGO

PATENTS As one of the oldest patent firms in America we give inventors at lowest consistent charge, a service noted for results, evidenced by many well known Patents of extraordinary value. Book, Patent-Sense, free.
Lacey & Lacey, 631 F St., Washington, D. C. Estab. 1869

the light to vary and the patterns will appear.

To "see" music with this television receiver, tune in a broadcast station in the usual manner, and then connect the left side of the output impedance unit to where the loud speaker normally attaches to your set. Start up the motor and look through the disc into the neon tube, and you will observe the music "pictures" immediately. By varying the speed of the motor, you can make the patterns move back and forth, and up and down, and perform many other interesting antics. By connecting the loud speaker in series with the double impedance unit, both it and the neon tube can be made to operate together; and the different effects produced by different notes can readily be compared.

Although this entire machine is a crude affair, there is no reason why it cannot be made to reproduce actual television images; provided, of course, the listener is within range of one of the stations now transmitting television impulses. Station WGY is on the air every Tuesday, Friday and Thursday afternoon between 1:30 and 2:00 p. m., Eastern Standard Time, transmitting on its regular 380-meter wave. By the time this article appears, other stations will also probably be on the air with television. If you can pick up a television program, try it on this crude television; you may have good luck and actually see pictures

The Radio Beginner—The "Milk-Shaker Special"

(Continued from page 327)

The socket for V2 is located 1 inch from the right edge of the baseboard and about 2½ inches from the rear edge. The filament-ballast resistor R3 is located directly in front of the socket, and the vertical mounting for the grid leak R4 is fixed at the rear of the socket. Next, complete the assembly of parts on the baseboard by mounting the R.F. choke coil L5 near the front edge of the baseboard slightly to the left of the filament-ballast resistor.

Arranging the parts on the front panel is a very simple matter after the panel has been drilled. The layout in Fig. 3 shows the location of all holes required and also the size drill needed for drilling the holes. The hole on the left side of the panel is for the rheostat R2, and the hole in the same corresponding position on the right of the panel is for the variable high resistor R5. The battery switch SW is mounted near the bottom of the panel in the center, and the jack J is located in the hole in the lower right corner of the panel. The remaining holes are for mounting the two variable condensers, C1 and C2.

WIRING SUGGESTIONS

Before starting the wiring of the receiver, it is wise to fasten the front panel to the baseboard with three wood-screws. This is necessary because there are a number of wires which connect parts on the panel with those on the baseboard.

When wiring the set it is best to use the pictorial wiring diagram (Fig. 4) as a guide for making connections. In this diagram each piece of apparatus is shown in its correct position; but the scale of the parts in relation to that of the baseboard has been reduced somewhat, in order to allow ample space for showing the wiring.

Please say you saw it in Radio News

Latest GREATEST RADIO CATALOG and GUIDE

THE BARAWIK CO. has, all these years, been famous for its variety of radio supplies, which it offers at money-saving prices. Newest dynamic speakers, "B" eliminators, socket power equipment, A-C harness, fine cabinets and furniture, amplifiers, latest amateur equipment, tubes, batteries; in fact, anything you can ask for is here, ready to ship, at a saving in price. Quality merchandise, selected goods by reliable makers — just what you want — at big discounts.

Your Savings are Tremendous

Ask any of the quarter million Barawik customers why they trade here, and they'll tell you that, **quality considered**, our prices can't be beat. That's something to think about! Quality comes first — new, fresh, good reliable merchandise, but the price always means a tremendous saving, nevertheless. Get our catalog and prove this to yourself. Don't spend a nickel until you see our offerings first.

You need this great radio bargain book as never before — Mail the coupon now — TODAY.



BARAWIK CO. 310 A Canal St., CHICAGO, U. S. A.

Mail This Coupon for FREE Bargain Book.

mail Coupon now

Name _____
Address _____

DRESNER SHORT-WAVE CONVERTER

WAVE-LENGTH RANGE 15 to 550 Meters



COMPLETE \$22.50 (SPECIAL)

May be used with any type of broadcast receiver. Easily connected in just a few moments' time. No complicated wiring. Simply plugged into the detector socket in the set. Covers the entire range of wave lengths from 15 to 550 meters. Maximum satisfaction from top to bottom. Don't miss the excellent programs now being broadcast on the short waves. Get a Dresner Converter. Five interchangeable coils furnished with each unit. If your dealer can't supply you, call on us direct.

Write for booklet

DRESNER RADIO MANUFACTURING CORP.
640 Southern Boulevard New York, N. Y.

MOVIES teach YOU ELECTRICITY

AMAZING new film method prepares you at home, easily, quickly, for bigger pay jobs in all branches of electricity: Radio, Automotive, Aviation, Switchboard Work, etc. Actual motion pictures make everything simple and clear, and train you for a better job and more pay.

DeVry Motion Picture Projector and thousands of feet of film supplied at no extra cost. Easy to operate in home. No dry text books, but live, fascinating instruction. Practicing engineers endorse training as sure, quick, practical.



We promise in writing to help get you a better job and more pay, or you need not pay a cent.
FREE Three Lessons and New Book, "The Film Way to Bigger Pay in Electricity." Send coupon for your copy now.

National School of Visual Education
537 S. Dearborn St., Dept. 100 Chicago

Please send free lessons and book, "The Film Way to Bigger Pay in Electricity."

Name _____
St. or R.F.D. _____
City _____
State _____